

AMENDMENT OF SOLICITATION

|   |  |  |                 |
|---|--|--|-----------------|
| 1. AMENDMENT/MODIFICATION NO. <b>0002</b>   |  | 2. EFFECTIVE DATE <b>APRIL 30, 2003</b>  |                 |
| 3. ISSUED BY<br><br>DEPARTMENT OF THE ARMY, BALTIMORE DISTRICT<br>CORPS OF ENGINEERS<br>P.O. BOX 1715<br>BALTIMORE, MARYLAND 21203-1715   |  |  |                 |
| 4. NAME AND ADDRESS OF CONTRACTOR (Name, street, county, State and ZIP Code)  |  | 4A. AMENDMENT OF SOLICITATION NO.<br><br><b>DACW31-03-R-0008</b>               |                 |
|   |  | 4B. DATED (SEE ITEM 5)<br><b>APRIL 03, 2003</b>                                |                 |
| 5. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS<br>The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers <b>is not extended.</b><br><b>DATE OF RECEIPT OF PROPOSAL 4:00 PM, Local Time MAY 02, 2003</b><br>Others must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods: (a) By completing items 4 and 8, and returning <u>1</u> copy of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGEMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of the amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified. |  |  |                 |
| 6. ACCOUNTING AND APPROPRIATION DATA (If required)<br><br><b>LUKE C. MOORE SENIOR HIGH SCHOOL<br/>WASHINGTON, D.C.</b>  |  |  |                 |
| 7. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)<br><br><p style="text-align: center;"><b><u>SEE THE FOLLOWING PAGES</u></b></p>  |  |  |                 |
| Except as provided herein, all terms and conditions of the document referenced in Item 4A, as heretofore changed, remains unchanged and in full force.  |  |  |                 |
| 8. NAME AND TITLE OF SIGNER (Type or print)   |  | 9. CONTRACTOR/OFFEROR<br><br>_____<br>(Signature of person authorized to sign) | 10. DATE SIGNED |

AMENDMENT NO. 0002 TO ADVERTISED RFP DACW31-03-R-0008  
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AMENDMENTS:

- 1) Amendment 0001, Item 9: Revise to read "Delete Paragraph 1.16."
- 2) Amendment 0001, Item 14: In Section 02300a-3, Paragraph 1.6, delete the following sentence from the second paragraph of this section: "The estimated quantity of soil cut is 5,250 cu. yds. and estimated quantity of fill is 520 cu. yds. for the Project."
- 3) Amendment 0001, Item 43: In the "Submittals" paragraphs of Section 13721, pages 13721-3 and 4, revise every designation "G" to read "G AE".
- 4) Amendment 0001, Item 53: In the "Delivery of Technical Data and Computer Software of Section 16751, added in Amendment 0001, pages 16751-2, 3, 4, 5, and 6, add the designation "G AE" to these items: 1.3.1 Group I Technical Data Package; 1.3.2 Group II Technical Data Package; 1.3.3 Group III Technical Data Package; Group IV Technical Data Package.

SPECIFICATIONS:

- 5) Table of Contents: Add "13280A – Asbestos Abatement."
- 6) Page 01000-1, Paragraph 1.2: Revise this section as follows:
  - a) Paragraph "b": Substitute the following: "Site Access Points: Site access is limited to site entrances on Monroe and Lawrence Streets. Street Closing Permits and Sidewalk Crossing Permits issued by the government of the District of Columbia will be required for lane closures on all streets. Contractor is responsible for obtaining these permits."
  - b) Paragraph "c": Delete this paragraph in its entirety.
  - c) Paragraph "e": Substitute the following: "School Hours: 8:45 AM to 3:15 PM Monday through Friday. The last day of school for students for year 2003 is June 20."
  - d) Paragraph "f": Delete this paragraph in its entirety.
  - e) Paragraph "g": Substitute the following: Permissible Work Hours for Site: 7:00 AM to 7:00 PM Monday through Saturday.
- 7) Page 01000-2, Paragraph 1.4: Delete this paragraph in its entirety.
- 8) Page 01000-3, Paragraph 1.5.4: Delete the second sentence of this paragraph.
- 9) Page 01000-6, Paragraph 1.12: Delete this paragraph in its entirety.
- 10) Page 01050-8, Paragraph 1.15: Delete this paragraph in its entirety.
- 11) Section 01050: Add at the end of this section the "Summarization of Airborne Asbestos Sampling Results" form attached to this Amendment.
- 12) Section 01330, Submittal Register: Delete submittal register in its entirety as originally issued and substitute the attached revised register, dated Apr 29, 2003.

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13) Page 04900-7, Paragraph 2.2.5: Revise maximum spray equipment water pressure from “500 psi” to “400 psi.”

14) Page 07311-1, Paragraph 1.1: Delete ASTM References D 226, D 1970, D 3018, D 3161, and D3462, and delete NRCA Shingle Manual. Add ASTM C 406, (2000) Roofing Slate to reference list.

15) Page 07311-3, Paragraph 2.1.6: Delete this paragraph in its entirety and substitute the following paragraph:

2.1.6 Slate Shingles

Provide slate shingles for canopy roof complying with the following:

1. Type: Standard slate shingles, ASTM C 406, Grade S1, machine punched for two nails located to form proper head lap.
2. Color, Size and Texture: Match existing slate shingles.
3. Nominal Thickness: Minimum ¼ inches.

16) Page 07311-3, Paragraph 2.2: Delete this paragraph in its entirety.

17) Page 09641N-3, Paragraph 2.2.1: Delete this paragraph in its entirety and substitute the following paragraph:

2.2.1 Wood Flooring System

Provide flooring system consisting of the following:

1. Polyethylene vapor barrier membrane as specified.
2. Resilient Pads: rubber pads, ½-inch thick by 2 inches by 2 inches.
3. Plywood Subfloor: Pre-assembled panels consisting of 2 layers of 15/32-inch thick plywood as specified.
4. Channels: Continuous 16 gage coated steel channels to ensure uniform substrate fastening and resistance to pin pull.
5. Strip Flooring: As specified.

18) Page 09641N-4: Delete all references to wood sleepers and nailers in section. In lieu of wood sleepers and nailers, steel channels shall be used.

19) Page 09900-19, Paragraph 3.11.1: Immediately following Paragraph A, add the following paragraph:

A. Existing, previously painted concrete sill surfaces:

1. Latex  
Existing, MPI REX 3.1A C5 (Semigloss)  
Primer: Intermediate: Topcoat:  
Per manufacturer MPI 11 MP 11  
System DFT: Per manufacturer.

Surface preparation to remove existing coatings in accordance with manufacturer’s instructions. Provide primer or block filler as recommended by manufacturer to fill all voids in porous surface.

20) Page 09650A-3, Paragraph 2.10: Add the following at the end of paragraph: “Curved cuts will be required in the tile pattern at Lobby A23.”

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- 21) Page 13202-4, 5, and 6: In the "Submittals" paragraphs, where the designation following the "G" designation is "RE", revise it to "AE".
- 22) Page 13286-3: In the "Submittals" paragraphs, revise each "G" designation to read "G AE".
- 23) Section 13280A, Asbestos Abatement: Add this section in its entirety, attached to this Amendment.
- 24) Hazardous Material Survey Report: Add this attached report in its entirety immediately following Specification Section 13280A.
- 25) Page 15070-3: In the "Submittals" paragraphs, revise every "G" designation to read "G AE."
- 26) Page 15181-5:
  - a) Revise "Spare Parts; G" to read "Spare Parts".
  - b) Revise "Qualifications; G" to read "Qualifications; G AE".
- 27) Page 15182-4:
  - a) Revise each designation "G, RE" to read "G AE".
  - b) In "Spare Parts," fill in the blank with "two".
- 28) Page 15185-4: In the "Submittals" paragraphs, revise each designation "G" to read "G AE".
- 29) Page 15190-3: In the "Submittals" paragraphs, revise "Qualifications; G, RE" to read "Qualifications; G AE". In the "Test Reports" paragraph, delete each designation "G, RE".
- 30) Page 15400-9 and 10: In the "Submittals" paragraphs, revise every designation "G, RE" to read "G AE" except for Operation and maintenance data delete the designation entirely.
- 31) Page 15400-39: At top of page, revise depth of F-5 countertop sink to 5.5 inches.
- 32) Page 15515-3: In "Shop Drawings", "Product Data", "Test Reports", and "Certificates, add the designation "G AE" to each item that has no designation.
- 33) Pages 15620-3, 4 and 5: Revise every designation "G, RE" to read "G AE"
- 34) Page 15700-3, 4 and 5: Revise every designation "G, RE" to read "G AE", except at "Spare Parts Data", "Posted Instructions", and "Service Organization", delete the designation entirely.
- 35) Page 15771-1: In the "Submittals" paragraphs, revise each designation "G" to read "G AE".
- 36) Page 15895-6 and 7: Revise every designation "G, RE" to read "G AE".
- 37) Page 15895-19: Add to paragraph 2.8.5 "Sound power level shall be less than NC 25."
- 38) Pages 15951-7, 8, and 9: Revise every designation "G, RE" to read "G AE", except on page 7 at "Service Organizations", and page 9 in "Operation and Maintenance Data" delete the designations entirely.
- 39) Pages 15990-1, 2, and 3: Revise every designation "G, RE" to read "G AE".

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- 40) Pages 16261-2 and 3: Revise “Shop Drawings”, “Product Data”, “Test Reports”, and “VFD Factory Test Plan” to have the designation “G AE”.
- 41) Pages 16264-2, 3, 4 and 5: Revise every designation “G” to read “G AE”.
- 42) Page 16403-3: Revise every designation “G” to read “G AE”.
- 43) Pages 16410-2 and 3: Revise every designation “G” to read “G AE”.
- 44) Pages 16415-7, 8, and 9: Revise every designation “G” to read “G AE”.
- 45) Pages 16528-3 and 4:
- a) Revise every designation “G” to read “G AE.”
  - b) At “As-Built Drawings” delete the designation entirely.
- 46) Page 16551-2: Revise every designation “G” to read “G AE”.
- 47) Pages 16710-3, 4, and 5: Revise every designation “G” to read “G AE”.
- 48) Page 16711-1: In the “Submittals” paragraph, revise every designation “G” to read “G AE”.
- 49) Page 16722-1 and 2: In the “Submittals” paragraphs, revise every designation “G” to read “G AE”.
- 50) Page 16785-2 and 3: In the “Submittals” paragraphs, revise every designation “G” to read “G AE”.
- 51) Pages 16815-1, 2, and 3: Revise every designation “G” to read “G AE”.

DRAWINGS:

- 52) Sheet C-5: Revise General Note number one (1) as follows: “See Specification for excavation support requirements.”
- 53) Sheet A-1.4:
- a) Revise wall type at east wall of Student Lounge, B204 from “Z2” to “F4.”
  - b) Revise section reference in room B214 from “B5/A-4.6” to “B1/A-4.6.”
- 54) Sheet A-1.6: Revise section reference in room B312 from “B5/A-4.6” to “B1/A-4.6.”
- 55) Sheet A-1.7: Revise note at ships ladder as follows: “SHIPS LADDER – SEE DETAIL C5/A-1.9 FOR DETAIL AT BASE.”
- 56) Sheet A-1.8:
- a) Add section reference mark E2/A-4.12 at low roof canopy on east side of building.
  - b) Add Typical Roof Note 16 as follows: “16. REFERENCE NRCA STEEP ROOFING STANDARDS FOR SLATE ROOFING FOR TYPICAL FLASHING DETAILS AT ANY NEW PENETRATIONS IN EXISTING SLATE ROOF.”

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- 57) Sheet A-1.9:  
 a) Add the following note at edge of metal deck at details F1 and H5: "10" 16GA. CONT. GALV. BRIDGE PLATE, TYP."  
 b) Add new detail C5 as shown on the attached Sketch SK-A-1, dated 4/22/03.
- 58) Sheet A-4.12: Add new section E2 at canopy as shown on the attached Sketch SK-A-2, dated 4/22/03.
- 59) Sheet S-3.2: Revise as indicated on attached Sketch SK-S-3, dated 4/22/03.
- 60) Sheet S-4.2: Revise as indicated on attached Sketch SK-S-1, dated 4/22/03.
- 61) Sheet S-5.2: Revise as indicated on attached Sketch SK-S-2, dated 4/22/03.
- 62) Sheet P1.1: Revise as indicated on attached Sketch SK-P-3, dated 4/22/03.
- 63) Sheet P1.3: Revise as indicated on attached Sketches SK-P-1 and SK-P-2, dated 4/22/03.
- 64) Sheet E0.1: Revise sheet in accordance with the attached Sketch SK-E-1, dated 4/22/03.
- 65) Sheet E1.1: Revise sheet in accordance with the attached Sketch SK-E-2, dated 4/22/03.
- 66) Sheet E1.2: Revise sheet in accordance with the attached Sketch SK-E-3, dated 4/22/03.
- 67) Sheet E1.3: Revise sheet in accordance with the attached Sketches SK-E-4 and SK-E-5, dated 4/22/03.
- 68) Sheet E1.4: Revise sheet in accordance with the attached Sketches SK-E-6 and SK-E-7, dated 4/22/03.
- 69) Sheet E1.5: Revise sheet in accordance with the attached Sketch SK-E-8, dated 4/22/03.
- 70) Sheet E1.6: Revise sheet in accordance with the attached Sketches SK-E-9 and SK-E-10, dated 4/22/03.
- 71) Sheet E2.1: Revise sheet by altering the locations of cabinet unit heaters CUH-1 and CUH-2 in accordance with revised locations on the mechanical revision Sketch SK-M-1, dated 4/17/03, which was attached to Amendment 0001.
- 72) Sheet E2.2: Revise sheet in accordance with the attached Sketch SK-E-11, dated 4/22/03.
- 73) Sheet E2.3:  
 a) Revise sheet in accordance with the attached Sketches SK-E-12 and SK-E-13, dated 4/22/03.  
 b) In the gymnasium where temporary partitions are indicated, defining temporary classrooms and media room, add these electrical items:  
 1) Each Classroom (typical of 4):  
 a) Add standard duplex data outlet.  
 b) Add quadruplex receptacle adjacent to each data outlet. Connect to panel CMA, maximum of 3 receptacles per circuit.  
 c) Add duplex receptacle in each classroom. Connect to Panel RMA, maximum of 4 receptacles per circuit.

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- 2) Media Area (at east end of Gym):
- a) Add two quad (or double duplex) data outlets (total of 8) on east wall.
  - b) Add two quadraplex receptacles, one at each group of data outlets. Connect to two circuits in Panel CMA.
  - c) Add standard duplex data outlets on north and south walls.
  - d) Add one combination voice/data outlets.
  - e) Add quadraplex receptacle adjacent to each data outlet. Connect to Panel CMA.
- 3) General:
- a) Temporary devices, wiring, and conduit shall be surface-mounted.
  - b) Provide additional 20 amp breakers in Panel CMA.
  - c) Provide additional 20 amp breaker in Panel RMA.
  - d) Wire all voice/data outlets to Room A302.
  - e) Remove all devices, conduit, and wiring at completion of project.
- 74) Sheet E2.4: Revise sheet in accordance with the attached Sketches SK-E-14 and SK-E-15, dated 4/22/03.
- 75) Sheet E2.6: Revise sheet in accordance with the attached Sketch SK-E-16, dated 4/22/03.
- 76) Sheet E3.1: Delete this sheet as originally issued and substitute the attached revised Sheet E3.1, dated 4/17/03.
- 77) Sheet E3.2: Delete this sheet as originally issued and substitute the attached revised Sheet E3.2, dated 4/17/03.
- 78) Sheet E3.3:
- a) Delete this sheet as originally issued and substitute the attached revised Sheet E3.3, dated 4/22/03.
  - b) Coordinate systems in the gymnasium where temporary partitions are indicated, defining temporary classrooms and media room.
- 79) Sheet E3.4: Delete this sheet as originally issued and substitute the attached revised Sheet E3.4, dated 4/17/03.
- 80) Sheet E3.5: Delete this sheet as originally issued and substitute the attached revised Sheet E3.5, dated 4/17/03.
- 81) Sheet E3.6: Delete this sheet as originally issued and substitute the attached revised Sheet E3.6, dated 4/17/03.
- 82) Sheet E4.3: Revise this sheet in accordance with the attached Sketch SK-E-17, dated 4/22/03.
- 83) Sheet E5.2: Delete this sheet as originally issued and substitute the attached revised Sheet E5.2, dated 4/17/03.
- 84) Sheet E5.3: Revise sheet in accordance with the attached Sketch SK-E-18, dated 4/22/03.
- 85) Sheet E5.5: Delete this sheet as originally issued and substitute the attached revised Sheet E5.5, dated 4/17/03.

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- 86) Sheet E5.6: Delete this sheet as originally issued and substitute the attached revised Sheet E5.6, dated 4/17/03.
- 87) Sheet E7.2: Revise this sheet in accordance with the attached Sketch SK-E-19, dated 4/22/03.
- 88) Sheet E7.3: Revise sheet in accordance with the attached Sketches SK-E-20 and SK-E-21, dated 4/22/03.
- 89) Sheet E7.4: Revise sheet in accordance with the attached sketch SK-E-22, dated 4/22/03.
- 90) Sheet E7.5: The demand load of Panel LUA2 is 112.4 KVA.

ATTACHMENTS:

- 1. New Section 13280A – Asbestos Abatement
- 2. Hazardous Material Survey Report
- 3. Summarization of Airborne Asbestos Sampling Results form.
- 4. Revised Submittal Register, dated Apr 29, 2003.
- 5. Revised Sheets E3.1 thru E3.6, E5.2, E5.5 and E5.6, revised 4/17/03.
- 6. Sketches SK-A-1 thru SK-A-2, SK-S-1 thru SK-S-3, SK-P-1 thru SK-P-3, SK-E-1 thru SK-E-21, dated 4/22/03.

## SUMMARIZATION OF AIRBORNE ASBESTOS SAMPLING RESULTS

|   |  |                     |
|---|--|---------------------|
| <b>CORPS DISTRICT</b>   | <b>WORK LOCATION</b> <i>(Installation, Building, Room, City, State)</i>  | <b>CONTRACT NO.</b> |
| AMOUNT OF ASBESTOS _____ SQ. FT. _____ LINEAR FT.<br>WORK AREA DIMENSIONS _____ L x _____ W x _____ H |  |                     |
| <b>ASBESTOS INVOLVED</b>  | <input type="checkbox"/> FRIABLE <span style="margin-left: 200px;"><input type="checkbox"/> NON-FRIABLE</span>   |                     |
| <b>TYPE OF MATERIAL</b>   | <input type="checkbox"/> CEILING TILE <input type="checkbox"/> FLOOR TILE <input type="checkbox"/> SPRAY-ON <input type="checkbox"/> ROOFING <input type="checkbox"/> WALL PANELS <input type="checkbox"/> CLOTH<br><input type="checkbox"/> PIPE LAGGING <input type="checkbox"/> PLASTER MUD <input type="checkbox"/> PAPER SHEET <input type="checkbox"/> GASKET <input type="checkbox"/> ROPE <input type="checkbox"/> OTHER |                     |
| <b>TYPE OF ACTION</b>   | <input type="checkbox"/> REMOVAL <input type="checkbox"/> ENCLOSURE <input type="checkbox"/> ENCAPSULATION <input type="checkbox"/> OTHER  |                     |
| <b>WET METHODS</b>  | <input type="checkbox"/> ON WORK <input type="checkbox"/> ON WASTE <input type="checkbox"/> AMENDED WATER <input type="checkbox"/> NOT USED  |                     |
| <b>WASTE HANDLING</b>   | <input type="checkbox"/> SHIFT END <input type="checkbox"/> 2x/SHIFT <input type="checkbox"/> CONTINUOUS <input type="checkbox"/> ACCEPTABLE   |                     |
| <b>BARRIER FILMS</b>  | <input type="checkbox"/> FLOOR <input type="checkbox"/> WALL <input type="checkbox"/> CEILING <input type="checkbox"/> DOUBLE <input type="checkbox"/> AIR VENTS <input type="checkbox"/> OTHER <input type="checkbox"/> NONE  |                     |
| <b>WORK ZONE PRESSURE DIFFERENTIAL</b>  | <input type="checkbox"/> NEGATIVE <input type="checkbox"/> POSITIVE <input type="checkbox"/> AMBIENT <input type="checkbox"/> NONE   |                     |
| <b>CAUTION SIGNS</b>  | <input type="checkbox"/> PERIMETER <input type="checkbox"/> DUMPSTER <input type="checkbox"/> WASTE BAGS   |                     |
| <b>SITE ISOLATION</b>   | <input type="checkbox"/> PERIMETER <input type="checkbox"/> AIRLOCK <input type="checkbox"/> DUCTS <input type="checkbox"/> OTHER  |                     |
| <b>WORK PRACTICES</b>   | <input type="checkbox"/> HEPA VACUUM <input type="checkbox"/> MICROTRAP <input type="checkbox"/> CHANGE ROOM <input type="checkbox"/> SHOWERS  |                     |
| <b>RESPIRATORS</b>  | <input type="checkbox"/> SUPPLY AIR <input type="checkbox"/> PAPR <input type="checkbox"/> AIR PURIFYING <i>(Neg. Press.)</i><br><input type="checkbox"/> SINGLE USE <input type="checkbox"/> REUSABLE <input type="checkbox"/> NONE   |                     |
| <b>PROTECTIVE CLOTHING</b>  | <input type="checkbox"/> DISPOSABLE <input type="checkbox"/> REUSABLE <input type="checkbox"/> SHOE COVERS <input type="checkbox"/> GLOVES   |                     |

### SUMMARY OF SAMPLING RESULTS

| CEILING VALUES |           | TWA-VALUES |             |      |           |           |
|----------------|-----------|------------|-------------|------|-----------|-----------|
| FIBERS/CC      | OPERATION | FIBERS/CC  | SAMPLE HRS. | A/P* | B/D/P/O** | OPERATION |
|                |           |            |             |      |           |           |

\* A/P (A-Area Sample; P-Personal Sample)

\*\* B/D/P/O (B-Baseline; D-Daily; P-Post-Clean; O-Other)

|  |                  |             |                               |
|--|------------------|-------------|-------------------------------|
| <b>CIH NAME</b> <i>(Typed/Printed)</i> | <b>SIGNATURE</b> | <b>DATE</b> | <b>ABIH CERTIFICATION NO.</b> |
|  |                  |             |                               |

**SUBMITTAL REGISTER, Apr 29, 2003**

CONTRACT NO.

| TITLE AND LOCATION    |                |           |                                      |           |                     | CONTRACTOR                 |                     |                            |                            |                |                     |                |                |                |                |         |     |
|-----------------------|----------------|-----------|--------------------------------------|-----------|---------------------|----------------------------|---------------------|----------------------------|----------------------------|----------------|---------------------|----------------|----------------|----------------|----------------|---------|-----|
| Luke C. Moore Academy |                |           |                                      |           |                     |                            |                     |                            |                            |                |                     |                |                |                |                |         |     |
| ACTIVITY NO           | TRANSMITTAL NO | SPEC SECT | DESCRIPTION ITEM SUBMITTED           | PARAGRAPH | GOVT CLASSIFICATION | CONTRACTOR: SCHEDULE DATES |                     |                            | CONTRACTOR ACTION          |                | APPROVING AUTHORITY |                |                |                |                | REMARKS |     |
|                       |                |           |                                      |           |                     | DATE FWD TO APPR AUTH/     | DATE RCD FROM CONTR | DATE FWD TO OTHER REVIEWER | DATE RCD FROM OTH REVIEWER | DATE OF ACTION | DATE OF ACTION      | DATE OF ACTION | DATE OF ACTION | DATE OF ACTION | DATE OF ACTION |         |     |
| (a)                   | (b)            | (c)       | (d)                                  | (e)       | (f)                 | (g)                        | (h)                 | (i)                        | (j)                        | (k)            | (l)                 | (m)            | (n)            | (o)            | (p)            | (q)     | (r) |
|                       |                | 01000     | SD-01 Preconstruction Submittals     |           |                     |                            |                     |                            |                            |                |                     |                |                |                |                |         |     |
|                       |                |           | Title Evidence                       |           | FIO                 |                            |                     |                            |                            |                |                     |                |                |                |                |         |     |
|                       |                |           | Invoice Copies                       |           | FIO                 |                            |                     |                            |                            |                |                     |                |                |                |                |         |     |
|                       |                |           | SD-03 Product Data                   |           |                     |                            |                     |                            |                            |                |                     |                |                |                |                |         |     |
|                       |                |           | Cost or Pricing Data                 | 1.8       | FIO                 |                            |                     |                            |                            |                |                     |                |                |                |                |         |     |
|                       |                |           | Equipment Data                       | 1.9       | FIO                 |                            |                     |                            |                            |                |                     |                |                |                |                |         |     |
|                       |                |           | SD-10 Operation and Maintenance Data |           |                     |                            |                     |                            |                            |                |                     |                |                |                |                |         |     |
|                       |                |           | O and M Data                         | 1.10      | FIO                 |                            |                     |                            |                            |                |                     |                |                |                |                |         |     |
|                       |                |           | Commissioning Activity for HVAC      | 1.4.5     | G AR                |                            |                     |                            |                            |                |                     |                |                |                |                |         |     |
|                       |                | 01050     | SD-01 Preconstruction Submittals     |           |                     |                            |                     |                            |                            |                |                     |                |                |                |                |         |     |
|                       |                |           | Shut Down Utility Services           | 1.5.3     | G AR                |                            |                     |                            |                            |                |                     |                |                |                |                |         |     |
|                       |                |           | Advance Notice                       | 1.5.4     | FIO                 |                            |                     |                            |                            |                |                     |                |                |                |                |         |     |
|                       |                |           | Checklist                            |           | G AR                |                            |                     |                            |                            |                |                     |                |                |                |                |         |     |
|                       |                |           | Control Records                      | 1.12      | FIO                 |                            |                     |                            |                            |                |                     |                |                |                |                |         |     |
|                       |                |           | SD-05 Design Data                    |           |                     |                            |                     |                            |                            |                |                     |                |                |                |                |         |     |
|                       |                |           | Summarization                        | 1.15.7    | FIO                 |                            |                     |                            |                            |                |                     |                |                |                |                |         |     |
|                       |                |           | SD-07 Certificates                   |           |                     |                            |                     |                            |                            |                |                     |                |                |                |                |         |     |
|                       |                |           | Operations Statement                 | 1.13.2    | FIO                 |                            |                     |                            |                            |                |                     |                |                |                |                |         |     |
|                       |                | 01060     | SD-01 Preconstruction Submittals     |           |                     |                            |                     |                            |                            |                |                     |                |                |                |                |         |     |
|                       |                |           | Safety Supervisor                    | 1.4       | G AR                |                            |                     |                            |                            |                |                     |                |                |                |                |         |     |
|                       |                |           | Activity Phase Hazard Analysis Plan  | 1.4       | G AR                |                            |                     |                            |                            |                |                     |                |                |                |                |         |     |
|                       |                |           | Site Safety and Health Plan          |           | G AR                |                            |                     |                            |                            |                |                     |                |                |                |                |         |     |
|                       |                |           | Qualifications                       |           | G AR                |                            |                     |                            |                            |                |                     |                |                |                |                |         |     |
|                       |                |           | SD-02 Shop Drawings                  |           |                     |                            |                     |                            |                            |                |                     |                |                |                |                |         |     |

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|             |                | 01060     | Work Layout Drawings  |           | G AR                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | SD-07 Certificates  |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Language Certification  | 1.4       | FIO                 |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | SD-09 Manufacturer's Field Reports  |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Activity Hazard Analyses in accordance with EM 385-1-1, paragraph 01.A.09 |           | G AR                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Outline Report  |           | FIO                 |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | OSHA Log  |           | FIO                 |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Slte Control Log  |           | G AR                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                | 01200     | SD-04 Samples   |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Sample Tags   | 1.7.2.2   | FIO                 |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                | 01320     | SD-01 Preconstruction Submittals  |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Initial Project Schedule  |           | G AR                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Preliminary Project Schedule  |           | G AR                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Periodic Schedule Updates   |           | G AR                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Qualifications  | 1.3       | G AR                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Narrative Report  | 3.5.2     | G AR                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Schedule Reports  | 3.5.4     | G AR                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                | 01451     | SD-01 Preconstruction Submittals  |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | CQC Plan  | 3.2       | G AR                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Phase Notification  |           | FIO                 |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Request   |           | G AR                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | CQC Mgr Qualification   |           | G AR                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | SD-05 Design Data   |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |

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|                |                   | 01451        | Notification of Changes          | 3.2.4     | FIO                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |  |         |                      |
|                |                   |              | Punchlist                        | 3.8.1     | FIO                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |  |         |                      |
|                |                   |              | Minutes                          | 3.3       | FIO                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |  |         |                      |
|                |                   |              | SD-06 Test Reports               |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |  |         |                      |
|                |                   |              | Tests                            | 3.7.1     | FIO                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |  |         |                      |
|                |                   |              | Documentation                    | 3.9       | FIO                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |  |         |                      |
|                |                   |              | Tests Performed                  | 3.7.1     | FIO                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |  |         |                      |
|                |                   |              | QC Records                       |           | G AR                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |  |         |                      |
|                |                   | 01460        | SD-01 Preconstruction Submittals |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |  |         |                      |
|                |                   |              | Site Security Plan               | 1.5       | G AR                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |  |         |                      |
|                |                   | 01510        | SD-02 Shop Drawings              |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |  |         |                      |
|                |                   |              | Temporary Electrical Work        |           | G AR                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |  |         |                      |
|                |                   | 01520        | SD-01 Preconstruction Submittals |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |  |         |                      |
|                |                   |              | Prints with Original Negatives   |           | FIO                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |  |         |                      |
|                |                   |              | Electronic Format                | 1.5       | G AR                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |  |         |                      |
|                |                   |              | Videotape Recordings             | 1.6       | FIO                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |  |         |                      |
|                |                   | 01561        | SD-05 Design Data                |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |  |         |                      |
|                |                   |              | Facility Plan                    | 1.9.4     | G AR                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |  |         |                      |
|                |                   |              | Temporary Plan                   | 1.9.5     | G AR                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |  |         |                      |
|                |                   | 01720        | SD-11 Closeout Submittals        |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |  |         |                      |
|                |                   |              | Progress Prints                  |           | G AR                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |  |         |                      |
|                |                   |              | Final Requirements               | 1.6       | G AR                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |  |         |                      |
|                |                   |              | CADD Files                       |           | FIO                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |  |         |                      |
|                |                   | 01731        | SD-01 Preconstruction Submittals |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |  |         |                      |
|                |                   |              | Cutting and Patching Proposal    |           | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |  |         |                      |
|                |                   | 02220        | SD-03 Product Data               |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |  |         |                      |

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|                |                   |              |  |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  | (g) |
|                |                   | 02220        | Work Plan  |           | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | SD-07 Certificates                                 |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Demolition plan                                    | 1.9       | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Notifications                                      | 1.4.1     | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Notification of Demolition and<br>Renovation forms | 1.4.1     | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   | 02230a       | SD-03 Product Data                                 |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Materials Other Than Salable<br>Timber             | 3.3.1     | G                      |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   | 02260        | SD-02 Shop Drawings                                |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Excavation Support and<br>Protection               |           | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   | 02300a       | SD-03 Product Data                                 |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Earthwork  |           | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | SD-06 Test Reports                                 |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Testing  | 3.9       | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | SD-07 Certificates                                 |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Testing  | 3.9       | FIO                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   | 02315a       | SD-06 Test Reports                                 |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Testing  | 3.14      | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   | 02316a       | SD-06 Test Reports                                 |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Field Density Tests                                | 3.4.3     | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Testing of Backfill Materials                      | 3.4.2     | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   | 02364a       | SD-03 Product Data                                 |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Termiticide Application Plan                       |           | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Termiticides                                       | 2.1       | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |

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|                |                   |              |   |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  | (g) |
|                |                   | 02364a       | Foundation Exterior                           | 3.1.3     | FIO                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Utilities and Vents                           | 3.1.4     | FIO                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Crawl and Plenum Air Spaces                   | 3.1.5     | FIO                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Verification of Measurement                   | 3.4       | FIO                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Application Equipment                         | 3.3.1     | FIO                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | SD-06 Test Reports                            |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Equipment Calibration and Tank<br>Measurement | 3.3.1     | FIO                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | SD-07 Certificates                            |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Qualifications                                | 1.2       | FIO                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   | 02510a       | SD-03 Product Data                            |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Installation                                  | 3.1       | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Waste Water Disposal Method                   |           | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Satisfactory Installation                     |           | FIO                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | SD-06 Test Reports                            |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Bacteriological Disinfection                  | 3.3.1     | FIO                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | SD-07 Certificates                            |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Installation                                  | 3.1       | FIO                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Meters  | 2.8.3     | FIO                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   | 02531a       | SD-07 Certificates                            |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Portland Cement                               | 2.7.1     | FIO                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Joints  | 2.3       | FIO                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   | 02556A       | SD-02 Shop Drawings                           |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Pipe, Fittings, and Associated<br>Materials   | 2.1       | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | SD-03 Product Data                            |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |

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|             |                | 02556A    | Materials and Equipment               | 1.3.2     | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |     |
|             |                |           | Spare Parts Data                      |           | G RE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |     |
|             |                |           | Welding Steel Piping                  | 1.3.1     | G RE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |     |
|             |                |           | SD-06 Test Reports                    |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |     |
|             |                |           | Pressure and Leak Tests               | 3.9.1     | G RE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |     |
|             |                |           | SD-07 Certificates                    |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |     |
|             |                |           | Utility Work                          | 3.8.1     | G RE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |     |
|             |                |           | Training                              |           | G RE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |     |
|             |                |           | SD-10 Operation and Maintenance Data  |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |     |
|             |                |           | Gas Distribution System               | 3.5       | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |     |
|             |                | 02620a    | SD-04 Samples                         |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |     |
|             |                |           | Filter Fabric                         | 2.2       | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |     |
|             |                |           | Pipe for Subdrains                    | 2.1       | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |     |
|             |                |           | SD-07 Certificates                    |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |     |
|             |                |           | Filter Fabric                         | 2.2       | FIO                 |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |     |
|             |                |           | Pipe for Subdrains                    | 2.1       | FIO                 |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |     |
|             |                | 02630a    | SD-03 Product Data                    |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |     |
|             |                |           | Placing Pipe                          | 3.3       | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |     |
|             |                |           | SD-07 Certificates                    |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |     |
|             |                |           | Resin Certification                   | 2.1.2     | FIO                 |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |     |
|             |                |           | Pipeline Testing                      | 3.8       | FIO                 |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |     |
|             |                |           | Hydrostatic Test on Watertight Joints | 2.7       | FIO                 |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |     |
|             |                |           | Determination of Density              | 3.7.5     | FIO                 |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |     |
|             |                |           | Frame and Cover for Gratings          | 2.3.6     | FIO                 |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |     |

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|             |                | 02722a    | SD-03 Product Data              |           |                     |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | Plant, Equipment, and Tools     | 1.6       | FIO                 |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | SD-06 Test Reports              |           |                     |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | Sampling and testing            | 1.4       | G AE                |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | Field Density Tests             | 1.4.2.4   | G AE                |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                | 02751     | SD-03 Product Data              |           |                     |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | Asphalt Mix Design              | 2.2.1     | G AE                |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | SD-06 Test Reports              |           |                     |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | Density Testing                 |           | FIO                 |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | for pavement density;           |           | G AE                |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | Plant Control                   |           | G AE                |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | SD-07 Certificates              |           |                     |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | Tack Coat                       |           | FIO                 |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                | 02754a    | SD-03 Product Data              |           |                     |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | Equipment                       | 1.6       | FIO                 |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | Paving                          | 3.4       | FIO                 |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | Mixture Proportions             | 2.10      | G AE                |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                | 02763a    | SD-03 Product Data              |           |                     |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | Equipment                       | 1.3       | G AE                |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | Composition Requirements        |           | FIO                 |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | Qualifications                  |           | FIO                 |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | SD-06 Test Reports              |           |                     |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | Sampling and Testing            | 2.3       | FIO                 |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | SD-07 Certificates              |           |                     |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | Volatile Organic Compound (VOC) |           | FIO                 |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |

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|             |                | 02770a    | SD-03 Product Data            |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Concrete                      | 2.1       | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | SD-06 Test Reports            |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Field Quality Control         | 3.8       | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                | 02815     | SD-02 Shop Drawings           |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Fountains                     |           | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | SD-03 Product Data            |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Site Furnishings              |           | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Installation                  |           | FIO                 |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                | 02821a    | SD-07 Certificates            |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Chain Link Fence              | 2.1.1     | FIO                 |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                | 02870a    | SD-02 Shop Drawings           |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Site Furnishing Standards     |           | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | SD-03 Product Data            |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Site Furnishings              | 1.4       | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Site Furnishings              | 2.4       | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Installation                  | 3.1       | FIO                 |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | SD-04 Samples                 |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Finish                        | 2.3       | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                | 02882     | SD-02 Shop Drawings           |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Configuration                 | 2.2.1     | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Shop Drawings                 | 3.1.2.2   | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Fall Height                   | 3.2.6     | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | SD-03 Product Data            |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Equipment                     | 2.2       | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Equipment Identification      | 1.6       | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |

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|                |                   | 02882        | Delivery, Storage and Handling  | 1.5       | FIO                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |                              |
|                |                   |              | Manufacturer Qualification      | 1.9       | FIO                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |                              |
|                |                   |              | Spare Parts                     | 3.4.2     | FIO                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |                              |
|                |                   |              | Materials                       | 2.1       | FIO                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |                              |
|                |                   |              | SD-04 Samples                   |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |                              |
|                |                   |              | Color                           | 2.1.4     | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |                              |
|                |                   |              | SD-07 Certificates              |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |                              |
|                |                   |              | Materials                       | 2.1       | FIO                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |                              |
|                |                   |              | Manufacturer Qualification      | 1.9       | FIO                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |                              |
|                |                   |              | Installer Qualification         | 1.10      | FIO                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |                              |
|                |                   |              | Manufacturer's Representative   | 1.12      | FIO                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |                              |
|                |                   |              | SD-10 Operation and Maintenance |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |                              |
|                |                   |              | Data                            |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |                              |
|                |                   |              | Maintenance Instruction         | 3.4.3     | FIO                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |                              |
|                |                   | 02922        | SD-07 Certificates              |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |                              |
|                |                   |              | Sod                             | 2.1       | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |                              |
|                |                   | 02930a       | SD-07 Certificates              |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |                              |
|                |                   |              | Plant Material                  | 2.1       | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |                              |
|                |                   |              | Topsoil                         | 2.2       | FIO                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |                              |
|                |                   |              | pH Adjuster                     | 2.3.1     | FIO                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |                              |
|                |                   |              | Fertilizer                      | 2.3.2     | FIO                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |                              |
|                |                   |              | Organic Material                | 2.3.3     | FIO                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |                              |
|                |                   |              | Soil Conditioner                | 2.3.4     | FIO                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |                              |
|                |                   |              | Organic Mulch                   | 2.4.1     | FIO                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |                              |
|                |                   |              | Mycorrhizal Fungi Inoculum      | 2.11      | FIO                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |                              |
|                |                   |              | Pesticide                       | 2.13      | FIO                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |                              |

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|             |                | 03300N    | SD-02 Shop Drawings           |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |
|             |                |           | Reinforcing steel             | 1.6.1.1   | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |
|             |                |           | SD-03 Product Data            |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |
|             |                |           | Materials for curing concrete | 2.4.7     | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |
|             |                |           | Vapor retarder                |           | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |
|             |                |           | Epoxy bonding compound        | 2.4.10    | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |
|             |                |           | Waterstops                    | 2.2.1     | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |
|             |                |           | Cement-Based Underlayment;    |           | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |
|             |                |           | SD-05 Design Data             |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |
|             |                |           | mix design                    | 2.3.1     | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |
|             |                |           | SD-06 Test Reports            |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |
|             |                |           | Concrete mix design           | 1.6.3.1   | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |
|             |                |           | Tolerance report              | 3.7.2.1   | FIO                 |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |
|             |                |           | Compressive strength tests    | 3.10.2.3  | FIO                 |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |
|             |                |           | Air Content                   | 3.10.2.4  | FIO                 |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |
|             |                |           | SD-07 Certificates            |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |
|             |                |           | Curing concrete elements      | 1.6.2.1   | FIO                 |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |
|             |                |           | VOC Content for form release  | 1.6.2.4   | FIO                 |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |
|             |                |           | agents and curing compounds   |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |
|             |                |           | Material Safety Data Sheets   | 1.6.2.5   | FIO                 |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |
|             |                | 04200A    | SD-02 Shop Drawings           |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |
|             |                |           | Masonry Work                  |           | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |
|             |                |           | SD-03 Product Data            |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |
|             |                |           | Cold Weather Installation     | 3.1.2     | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |
|             |                |           | SD-04 Samples                 |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |
|             |                |           | Clay or Shale Brick           | 2.2       | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |

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|                |                   | 04200A       | Natural Stone at Fountain       |           | FIO                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |
|                |                   |              | Anchors, Ties, and Bar          | 2.9       | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |
|                |                   |              | Positioners                     |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |
|                |                   |              | Expansion-Joint Material        |           | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |
|                |                   |              | Joint Reinforcement             | 2.10      | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |
|                |                   |              | Portable Panel                  |           | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |
|                |                   |              | SD-06 Test Reports              |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |
|                |                   |              | Field Testing of Mortar         | 3.21.1    | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |
|                |                   |              | Field Testing of Grout          | 3.21.2    | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |
|                |                   |              | Special Inspection              | 1.5       | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |
|                |                   |              | SD-07 Certificates              |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |
|                |                   |              | Clay or Shale Brick             | 2.2       | FIO                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |
|                |                   |              | Concrete Masonry Units (CMU)    | 2.3       | FIO                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |
|                |                   |              | Control Joint Keys              | 2.12      | FIO                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |
|                |                   |              | Anchors, Ties, and Bar          | 2.9       | FIO                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |
|                |                   |              | Positioners                     |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |
|                |                   |              | Expansion-Joint Materials       | 2.13      | FIO                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |
|                |                   |              | Joint Reinforcement             | 2.10      | FIO                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |
|                |                   |              | Reinforcing Steel Bars and Rods | 2.11      | FIO                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |
|                |                   |              | Portland lime-cement mix        |           | FIO                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |
|                |                   |              | Precast Concrete Items          | 2.6       | FIO                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |
|                |                   | 04900        | SD-03 Product Data              |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |
|                |                   |              | Cleaning and Restoration        | 1.2.1     | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |
|                |                   |              | Methods                         |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |
|                |                   |              | Qualifications                  | 1.4       | FIO                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |
|                |                   |              | SD-07 Certificates              |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |

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|             |                | 04900     | Materials                       | 2.1       | FIO                 |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |
|             |                | 05120A    | SD-02 Shop Drawings             |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |
|             |                |           | Structural Steel System         |           | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |
|             |                |           | Structural Connections          | 3.2.1     | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |
|             |                |           | SD-03 Product Data              |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |
|             |                |           | Erection                        | 3.2       | FIO                 |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |
|             |                |           | Welding                         | 3.3       | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |
|             |                |           | SD-07 Certificates              |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |
|             |                |           | Mill Test Reports               |           | FIO                 |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |
|             |                |           | Welder Qualifications           |           | FIO                 |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |
|             |                |           | Welding Inspector               | 1.5       | FIO                 |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |
|             |                |           | Fabrication                     | 3.1       | FIO                 |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |
|             |                | 05210a    | SD-02 Shop Drawings             |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |
|             |                |           | Steel Joists                    | 1.3       | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |
|             |                |           | Double Pitched Long Span Joists |           | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |
|             |                |           | SD-07 Certificates              |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |
|             |                |           | Steel Joists                    | 1.3       | FIO                 |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |
|             |                | 05300a    | SD-02 Shop Drawings             |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |
|             |                |           | Deck Units                      | 2.1       | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |
|             |                |           | Accessories                     | 2.5       | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |
|             |                |           | Attachments                     | 3.3       | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |
|             |                |           | Holes and Openings              | 3.4       | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |
|             |                |           | SD-03 Product Data              |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |
|             |                |           | Deck Units                      | 2.1       | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |
|             |                |           | Attachments                     | 3.3       | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |
|             |                |           | SD-07 Certificates              |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |

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|             |                | 05300a    | Deck Units                    | 2.1       | FIO                 |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | Attachments                   | 3.3       | FIO                 |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                | 05400a    | SD-02 Shop Drawings           |           |                     |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | Framing Components            | 2.1       | G AE                |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | SD-07 Certificates            |           |                     |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | Mill Certificates             |           | FIO                 |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | Welds                         | 3.2.1     | FIO                 |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                | 05500a    | SD-02 Shop Drawings           |           |                     |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | Miscellaneous Metal Items     | 1.6       | G AE                |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | SD-03 Product Data            |           |                     |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | Miscellaneous Metal Items     | 1.6       | G AE                |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                | 06100a    | SD-07 Certificates            |           |                     |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | Grading and Marking           | 2.1.1     | FIO                 |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                | 06200A    | SD-02 Shop Drawings           |           |                     |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | Finish Carpentry              |           | G AE                |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                | 06410A    | SD-02 Shop Drawings           |           |                     |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | Shop Drawings                 | 1.5       | G AE                |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | Shop Drawings                 | 1.8       | G AE                |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | Installation                  | 3.1       | G AE                |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | SD-03 Product Data            |           |                     |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | Wood Materials                | 2.1       | G AE                |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | Wood Finishes                 |           | G AE                |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | SD-04 Samples                 |           |                     |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | Plastic Laminates             | 2.2       | G AE                |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | Cabinet Hardware              | 2.5       | G AE                |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | SD-07 Certificates            |           |                     |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |

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|             |                | 06410A    | Quality Assurance                         | 1.4       | FIO                 |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Laminate Clad Casework                    | 3.1       | FIO                 |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                | 06415     | SD-02 Shop Drawings                       |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Shop Drawings                             | 1.5       | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Shop Drawings                             | 1.8       | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Installation                              | 3.1       | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | SD-03 Product Data                        |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Wood Materials                            | 2.1       | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Wood Finishes                             | 2.5       | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Epoxy Resin Tops                          |           | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Fume Hood                                 |           | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | SD-04 Samples                             |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Wood Veneer Finish                        |           | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Cabinet Hardware                          | 2.3       | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | SD-07 Certificates                        |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Quality Assurance                         | 1.4       | FIO                 |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Wood Veneer Casework                      |           | FIO                 |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                | 07131     | SD-03 Product Data                        |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Elastomeric waterproofing sheet material; | 2.1       | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Protection board;                         | 2.3       | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Primers, adhesives, and mastics           | 2.1       | FIO                 |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | SD-06 Test Reports                        |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Elastomeric waterproofing sheet material  | 2.1       | FIO                 |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                | 07212N    | SD-03 Product Data                        |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |

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|                |                   |              |                                   |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  | (g) |
|                |                   | 07212N       | Blanket insulation                | 2.1       | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | SD-08 Manufacturer's Instructions |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Insulation                        | 3.3.1     | FIO                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   | 07214N       | SD-03 Product Data                |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Block or board insulation         | 2.1       | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Accessories                       | 2.2       | FIO                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   | 07220a       | SD-03 Product Data                |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Application of Insulation         | 3.5       | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Inspection                        | 3.6       | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | SD-07 Certificates                |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Insulation                        | 2.2       | FIO                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   | 07311a       | SD-03 Product Data                |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Application of Roofing Materials  | 3.2       | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | SD-04 Samples                     |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Shingles                          |           | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   | 07551a       | SD-03 Product Data                |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | EVT and Flash Point               | 3.5       | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Materials                         | 3.12      | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Installation                      | 3.7       | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | SD-07 Certificates                |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Manufacturer                      | 1.2       | FIO                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Materials                         | 3.12      | FIO                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   | 07600a       | SD-02 Shop Drawings               |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Materials                         | 2.1       | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | SD-03 Product Data                |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Copings and Fascia Panels         |           | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |

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|                |                   |              |                               |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |  |         |                      |
|                |                   | 07600a       | Composite Metal Panels        |           | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |  |         |                      |
|                |                   | 07810a       | SD-03 Product Data            |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |  |         |                      |
|                |                   |              | Fireproofing Material         | 3.3       | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |  |         |                      |
|                |                   |              | SD-04 Samples                 |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |  |         |                      |
|                |                   |              | Spray-Applied Fireproofing    | 2.1       | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |  |         |                      |
|                |                   |              | SD-06 Test Reports            |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |  |         |                      |
|                |                   |              | Fire Resistance Rating        | 1.7       | FIO                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |  |         |                      |
|                |                   |              | SD-07 Certificates            |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |  |         |                      |
|                |                   |              | Installer Qualifications      | 1.5       | FIO                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |  |         |                      |
|                |                   |              | Surface Preparation           | 3.1       | FIO                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |  |         |                      |
|                |                   |              | Manufacturer's Inspection     | 3.5.3     | FIO                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |  |         |                      |
|                |                   | 07840a       | SD-02 Shop Drawings           |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |  |         |                      |
|                |                   |              | Firestopping Materials        | 2.1       | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |  |         |                      |
|                |                   |              | SD-07 Certificates            |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |  |         |                      |
|                |                   |              | Firestopping Materials        | 2.1       | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |  |         |                      |
|                |                   |              | Installer Qualifications      | 1.5       | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |  |         |                      |
|                |                   |              | Inspection                    | 3.3       | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |  |         |                      |
|                |                   | 07900a       | SD-03 Product Data            |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |  |         |                      |
|                |                   |              | Backing                       | 2.1       | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |  |         |                      |
|                |                   |              | Bond-Breaker                  | 2.2       | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |  |         |                      |
|                |                   |              | Sealant                       | 2.4       | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |  |         |                      |
|                |                   |              | SD-07 Certificates            |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |  |         |                      |
|                |                   |              | Sealant                       | 2.4       | FIO                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |  |         |                      |
|                |                   | 08110        | SD-02 Shop Drawings           |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |  |         |                      |
|                |                   |              | Doors                         | 2.1       | G G                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |  |         |                      |
|                |                   |              | Doors                         | 2.1       | G G                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |  |         |                      |

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|                |                   |              |                                   |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  | (g) |
|                |                   | 08110        | Frames                            | 2.5       | G G                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Frames                            | 2.5       | G G                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Accessories                       | 2.3       | FIO                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | SD-03 Product Data                |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Doors                             | 2.1       | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Frames                            | 2.5       | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Accessories                       | 2.3       | FIO                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   | 08120        | SD-02 Shop Drawings               |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Doors and frames                  | 2.1       | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | SD-04 Samples                     |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Finishes                          | 2.3.8     | G AE.                  |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | SD-06 Test Reports                |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Product Test Reports              |           | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | SD-08 Manufacturer's Instructions |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Doors and frames                  | 2.1       | FIO                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   | 08210        | SD-02 Shop Drawings               |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Doors                             | 2.1       | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | SD-03 Product Data                |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Doors                             | 2.1       | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Accessories                       | 2.2       | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | warranty                          | 1.4       | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | SD-04 Samples                     |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Doors                             | 2.1       | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Door finish colors                |           | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | SD-06 Test Reports                |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Split resistance                  | 2.4       | FIO                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |

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|                |                   |              |                                 |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  | (g) |
|                |                   | 08210        | Cycle-slam                      | 2.4       | FIO                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Hinge loading resistance        | 2.4       | FIO                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   | 08330a       | SD-02 Shop Drawings             |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Overhead Rolling Door Unit      |           | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | SD-03 Product Data              |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Overhead Rolling Door Unit      |           | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | SD-10 Operation and Maintenance |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Data                            |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Operation Manual                |           | FIO                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Maintenance and Repair Manual   |           | FIO                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   | 08520N       | SD-02 Shop Drawings             |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Windows                         | 2.1       | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | SD-03 Product Data              |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Windows                         | 2.1       | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Hardware                        | 2.2.7.1   | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Fasteners                       | 2.2.7.2   | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Weatherstripping                | 2.2.2     | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Accessories                     | 2.2.7     | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | SD-04 Samples                   |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Finish Sample;                  | 1.4.2.1   | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | SD-05 Design Data               |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Structural calculations for     | 2.1       | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | deflection                      |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | SD-06 Test Reports              |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Minimum condensation resistance | 1.4.4     | FIO                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | factor                          |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |

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|             |                | 08520N    | Resistance to forced entry<br>SD-10 Operation and Maintenance Data | 1.4.4     | FIO                 |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Windows  | 2.1       | G                   |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                | 08630     | SD-02 Shop Drawings<br>Shop Drawings                               | 3.2       | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | SD-03 Product Data<br>Skylights                                    |           | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Warranty   | 1.6       | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | SD-04 Samples<br>Aluminum Finish                                   | 2.4       | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | SD-07 Certificates<br>Skylights                                    |           | FIO                 |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Qualifications   | 1.4       | FIO                 |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                | 08710     | SD-02 Shop Drawings<br>Hardware schedule                           | 1.3       | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Keying system  |           | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | SD-03 Product Data<br>Hardware items                               | 2.3       | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | SD-08 Manufacturer's Instructions<br>Installation                  | 3.1       | FIO                 |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | SD-10 Operation and Maintenance<br>Data                            |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Hardware Schedule  | 1.3       | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | SD-11 Closeout Submittals<br>Key bitting                           | 1.4       | FIO                 |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |

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|             |                | 08810a    | SD-02 Shop Drawings                              |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Installation                                     | 3.2       | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | SD-03 Product Data                               |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Insulating Glass                                 | 2.2       | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Glazing Accessories                              | 2.8       | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | SD-04 Samples                                    |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Insulating Glass                                 | 2.2       | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | SD-07 Certificates                               |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Insulating Glass                                 | 2.2       | FIO                 |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                | 08900     | SD-02 Shop Drawings                              |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Glazed curtain wall system                       | 1.5       | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | SD-03 Product Data                               |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Glazed curtain wall system                       | 1.5       | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | SD-04 Samples                                    |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Finish   | 2.1.1.2   | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | SD-05 Design Data                                |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Calculations                                     | 1.3       | FIO                 |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | SD-08 Manufacturer's Instructions                |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Glazed curtain wall system                       | 1.5       | FIO                 |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Insulating glass                                 |           | FIO                 |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                | 09250     | SD-03 Product Data                               |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Cementitious backer units                        | 2.1.5     | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Water-Resistant Gypsum Backing Board             | 2.1.2     | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Glass Mat Covered or Reinforced Gypsum Sheathing | 2.1.3     | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |

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|             |                | 09250     | Impact (Abuse) Resistant Gypsum Board | 2.1.4     | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Accessories                           | 2.1.10    | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | SD-07 Certificates                    |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Asbestos Free Materials               | 2.1       | G                   |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                | 09310A    | SD-03 Product Data                    |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Tile                                  | 2.1       | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Setting-Bed                           | 2.2       | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Mortar, Grout, and Adhesive           | 2.4       | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | SD-04 Samples                         |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Tile                                  | 2.1       | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Accessories                           | 2.1.4     | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Marble Thresholds                     | 2.5       | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | SD-07 Certificates                    |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Tile                                  | 2.1       | FIO                 |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Mortar, Grout, and Adhesive           | 2.4       | FIO                 |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                | 09510A    | SD-02 Shop Drawings                   |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Approved Detail Drawings              | 1.3       | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | SD-03 Product Data                    |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Acoustical Ceiling Systems            |           | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | SD-04 Samples                         |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Acoustical Units                      | 2.1       | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | SD-06 Test Reports                    |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Ceiling Attenuation Class and Test    | 2.6       | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Interactive Acoustical Panels         |           | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |

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|             |                | 09510A    | SD-07 Certificates                |           |                     |                            |                    |                    |                   |                |  |                            |                            |             |         |                |   |
|             |                |           | Acoustical Units                  | 2.1       | FIO                 |                            |                    |                    |                   |                |  |                            |                            |             |         |                |   |
|             |                | 09620A    | SD-03 Product Data                |           |                     |                            |                    |                    |                   |                |  |                            |                            |             |         |                |   |
|             |                |           | Installation                      | 3.3       | G AE                |                            |                    |                    |                   |                |  |                            |                            |             |         |                |   |
|             |                |           | SD-04 Samples                     |           |                     |                            |                    |                    |                   |                |  |                            |                            |             |         |                |   |
|             |                |           | Flooring                          | 1.3       | G AE                |                            |                    |                    |                   |                |  |                            |                            |             |         |                |   |
|             |                |           | SD-07 Certificates                |           |                     |                            |                    |                    |                   |                |  |                            |                            |             |         |                |   |
|             |                |           | Materials                         | 1.4       | FIO                 |                            |                    |                    |                   |                |  |                            |                            |             |         |                |   |
|             |                | 09641N    | SD-02 Shop Drawings               |           |                     |                            |                    |                    |                   |                |  |                            |                            |             |         |                |   |
|             |                |           | Hardwood strip flooring           | 2.1       | G AE                |                            |                    |                    |                   |                |  |                            |                            |             |         |                |   |
|             |                |           | SD-03 Product Data                |           |                     |                            |                    |                    |                   |                |  |                            |                            |             |         |                |   |
|             |                |           | Hardwood strip flooring           | 2.1       | G AE                |                            |                    |                    |                   |                |  |                            |                            |             |         |                |   |
|             |                |           | SD-04 Samples                     |           |                     |                            |                    |                    |                   |                |  |                            |                            |             |         |                |   |
|             |                |           | Strip flooring                    | 2.2.1     | G AE                |                            |                    |                    |                   |                |  |                            |                            |             |         |                |   |
|             |                |           | Molded-rubber base                | 2.2.3     | G AE                |                            |                    |                    |                   |                |  |                            |                            |             |         |                |   |
|             |                |           | Cushions and pads                 | 2.2.4     | G AE                |                            |                    |                    |                   |                |  |                            |                            |             |         |                |   |
|             |                |           | Sleepers and nailers              | 2.2.6     | G AE                |                            |                    |                    |                   |                |  |                            |                            |             |         |                |   |
|             |                |           | SD-06 Test Reports                |           |                     |                            |                    |                    |                   |                |  |                            |                            |             |         |                |   |
|             |                |           | Preservative treatment            | 2.2.6     | FIO                 |                            |                    |                    |                   |                |  |                            |                            |             |         |                |   |
|             |                |           | SD-08 Manufacturer's Instructions |           |                     |                            |                    |                    |                   |                |  |                            |                            |             |         |                |   |
|             |                |           | system                            | 2.1       | FIO                 |                            |                    |                    |                   |                |  |                            |                            |             |         |                |   |
|             |                |           | Adhesive                          | 3.2.1     | FIO                 |                            |                    |                    |                   |                |  |                            |                            |             |         |                |   |
|             |                |           | SD-10 Operation and Maintenance   |           |                     |                            |                    |                    |                   |                |  |                            |                            |             |         |                |   |
|             |                |           | Data                              |           |                     |                            |                    |                    |                   |                |  |                            |                            |             |         |                |   |
|             |                |           | strip flooring                    | 2.2.1     | G                   |                            |                    |                    |                   |                |  |                            |                            |             |         |                |   |
|             |                | 09650A    | SD-03 Product Data                |           |                     |                            |                    |                    |                   |                |  |                            |                            |             |         |                |   |

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|             |                | 09650A    | Resilient Flooring and Accessories               |            | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |     |
|             |                |           | SD-04 Samples Flooring                           | 3.2        | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |     |
|             |                |           | SD-06 Test Reports Moisture Test                 | 3.3        | FIO                 |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |     |
|             |                | 09680A    | SD-02 Shop Drawings Installation                 | 3.4        | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |     |
|             |                |           | Molding  | 2.3        | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |     |
|             |                |           | SD-03 Product Data Carpet                        |            | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |     |
|             |                |           | Surface Preparation Installation                 | 3.1<br>3.4 | G AE<br>G AE        |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |     |
|             |                |           | Regulatory Requirements                          | 1.3        | G                   |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |     |
|             |                |           | SD-04 Samples Carpet                             |            | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |     |
|             |                |           | Molding  | 2.3        | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |     |
|             |                |           | SD-06 Test Reports Moisture and Alkalinity Tests | 3.2        | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |     |
|             |                |           | SD-07 Certificates Carpet                        |            | FIO                 |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |     |
|             |                |           | Regulatory Requirements                          | 1.3        | FIO                 |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |     |
|             |                |           | SD-10 Operation and Maintenance Data             |            |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |     |
|             |                |           | Carpet   |            | G                   |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |     |
|             |                |           | Cleaning and Protection                          | 3.5        | G                   |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |     |

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|                |                   |              |                                   |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |
|                |                   | 09840A       | SD-02 Shop Drawings               |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |
|                |                   |              | Approved Detail Drawings          | 2.1       | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |
|                |                   |              | Approved Detail Drawings          | 2.2       | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |
|                |                   |              | Approved Detail Drawings          | 2.3       | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |
|                |                   |              | SD-03 Product Data                |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |
|                |                   |              | Installation                      | 3.2       | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |
|                |                   |              | Acoustical Wall Panels            |           | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |
|                |                   |              | SD-04 Samples                     |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |
|                |                   |              | Acoustical Wall Panels            |           | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |
|                |                   |              | SD-07 Certificates                |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |
|                |                   |              | Acoustical Wall Panels            |           | FIO                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |
|                |                   | 09900        | SD-02 Shop Drawings               |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |
|                |                   |              | Piping identification             | 3.9       | G                      |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |
|                |                   |              | stencil                           | 3.9       | G                      |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |
|                |                   |              | SD-03 Product Data                |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |
|                |                   |              | Coating                           | 2.1       | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |
|                |                   |              | Manufacturer's Technical Data     | 2.1       | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |
|                |                   |              | Sheets                            |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |
|                |                   |              | SD-04 Samples                     |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |
|                |                   |              | Color                             | 1.9       | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |
|                |                   |              | SD-07 Certificates                |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |
|                |                   |              | Applicator's qualifications       | 1.3       | FIO                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |
|                |                   |              | Qualification Testing             | 1.4.1.2   | G                      |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |
|                |                   |              | SD-08 Manufacturer's Instructions |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |
|                |                   |              | Application instructions          | 3.2.1     | FIO                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |
|                |                   |              | Mixing                            | 3.6.2     | FIO                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |

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|             |                | 09900     | Manufacturer's Material Safety Data Sheets | 1.7.2     | G                   |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | SD-10 Operation and Maintenance Data       |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Coatings:                                  | 2.1       | G                   |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                | 09963N    | SD-03 Product Data                         |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | High-build glaze coatings                  | 2.1.4     | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | SD-04 Samples                              |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | High-build glaze coatings                  | 2.1.4     | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Coating system                             | 2.1.4     | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | SD-06 Test Reports                         |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Filler material                            | 2.1.1     | FIO                 |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Primers                                    | 2.1.2     | FIO                 |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Top coating                                | 2.1.3     | FIO                 |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | SD-07 Certificates                         |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Qualifications of installer                | 1.5       | FIO                 |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | SD-08 Manufacturer's Instructions          |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Wall coating system                        | 2.1       | FIO                 |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                | 10100A    | SD-03 Product Data                         |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Visual Display Boards                      |           | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Television Mounting System                 |           | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | SD-04 Samples                              |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Porcelain Enamel                           | 2.2.1     | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Materials                                  | 2.2       | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | 07 Certificates                            |           | FIO                 |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Visual Display Boards                      |           | FIO                 |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |

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|                |                   |              |                                   |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  | (g) |
|                |                   | 10100A       | Television Mounting System        |           | FIO                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   | 10160A       | SD-02 Shop Drawings               |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Toilet Partition System           |           | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | SD-03 Product Data                |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Toilet Partition System           |           | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | SD-04 Samples                     |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Toilet Partition System           |           | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   | 10191N       | SD-02 Shop Drawings               |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Cubicle track layout              | 1.3       | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | SD-03 Product Data                |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Cubicle track system              | 2.1       | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Cubicle curtain                   |           | FIO                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | SD-08 Manufacturer's Instructions |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | installation                      | 3.1       | FIO                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | SD-10 Operation and Maintenance   |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Data                              |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Cubicle track system              | 2.1       | G                      |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   | 10201N       | SD-02 Shop Drawings               |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Wall louvers                      | 2.2       | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | SD-04 Samples                     |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Wall louvers                      | 2.2       | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   | 10300        | SD-02 Shop Drawings               |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Fireplaces                        | 2.2       | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | SD-03 Product Data                |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Fireplaces                        | 2.2       | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |

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|----------------|-------------------|--------------|---|-----------|------------------------|-------------------------------|--------------------------|--------------------------|----------------------|----------------------|---|----------------------------------|----------------------------------|----------------|--|---------|----------------------|-----|
|                |                   |              |   |           |                        | SUBMIT                        | APPROVAL<br>NEEDED<br>BY | MATERIAL<br>NEEDED<br>BY | ACTION<br>CODE       | DATE<br>OF<br>ACTION | DATE FWD<br>TO APPR<br>AUTH/<br>DATE RCD<br>FROM<br>CONTR | DATE FWD<br>TO OTHER<br>REVIEWER | DATE RCD<br>FROM OTH<br>REVIEWER | ACTION<br>CODE |  |         | DATE<br>OF<br>ACTION |     |
|                |                   |              |   |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |  |         |                      | (g) |
|                |                   | 10300        | SD-10 Operation and Maintenance<br>Data |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |  |         |                      |     |
|                |                   |              | Fireplaces                              | 2.2       | G                      |                               |                          |                          |                      |                      |   |                                  |                                  |                |  |         |                      |     |
|                |                   | 10440A       | SD-02 Shop Drawings                     |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |  |         |                      |     |
|                |                   |              | Detail Drawings                         | 3.1       | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |  |         |                      |     |
|                |                   |              | SD-03 Product Data                      |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |  |         |                      |     |
|                |                   |              | Installation                            | 3.1       | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |  |         |                      |     |
|                |                   |              | SD-04 Samples                           |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |  |         |                      |     |
|                |                   |              | Interior Signage                        | 1.3       | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |  |         |                      |     |
|                |                   | 10505N       | SD-02 Shop Drawings                     |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |  |         |                      |     |
|                |                   |              | Types                                   |           | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |  |         |                      |     |
|                |                   |              | Location                                | 2.1       | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |  |         |                      |     |
|                |                   |              | Location                                | 2.2       | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |  |         |                      |     |
|                |                   |              | Location                                | 2.3       | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |  |         |                      |     |
|                |                   |              | Installation                            | 3.1       | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |  |         |                      |     |
|                |                   |              | Numbering system                        | 3.2       | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |  |         |                      |     |
|                |                   |              | SD-03 Product Data                      |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |  |         |                      |     |
|                |                   |              | Material                                | 2.4       | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |  |         |                      |     |
|                |                   |              | Finish                                  | 2.4.3     | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |  |         |                      |     |
|                |                   |              | components                              | 2.5       | FIO                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |  |         |                      |     |
|                |                   |              | Assembly                                | 3.1       | FIO                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |  |         |                      |     |
|                |                   |              | SD-04 Samples                           |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |  |         |                      |     |
|                |                   |              | Color chips                             | 1.5.1     | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |  |         |                      |     |
|                |                   | 10800A       | SD-03 Product Data                      |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |  |         |                      |     |
|                |                   |              | Finishes                                | 2.1.2     | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |  |         |                      |     |
|                |                   |              | Accessory Items                         | 2.2       | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |  |         |                      |     |

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|                |                   |              |                                   |           |                        | SUBMIT                        | APPROVAL<br>NEEDED<br>BY | MATERIAL<br>NEEDED<br>BY | ACTION<br>CODE       | DATE<br>OF<br>ACTION | DATE FWD<br>TO APPR<br>AUTH/<br>DATE RCD<br>FROM<br>CONTR | DATE FWD<br>TO OTHER<br>REVIEWER | DATE RCD<br>FROM OTH<br>REVIEWER | ACTION<br>CODE |         | DATE<br>OF<br>ACTION | MAILED<br>TO<br>CONTR/<br>DATE RCD<br>FRM APPR<br>AUTH |     |
|                |                   |              |                                   |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  | (g) |
|                |                   | 10800A       | SD-04 Samples                     |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Finishes                          | 2.1.2     | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Accessory Items                   | 2.2       | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   | 11063        | SD-02 Shop Drawings               |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Stage Curtain System              |           | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Television Studio Curtain System  |           | G                      |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | SD-03 Product Data                |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Stage Curtain System              |           | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Television Studio Curtain System  |           | FIO                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | SD-04 Samples                     |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Curtain fabric                    |           | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | SD-06 Test Reports                |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Flame resistance                  | 2.1.1.4   | FIO                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | SD-08 Manufacturer's Instructions |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Track installation                |           | FIO                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | fabrication                       |           | FIO                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | SD-10 Operation and Maintenance   |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Data                              |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Stage curtain system              |           | G                      |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   | 11400A       | SD-02 Shop Drawings               |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Food Service Equipment            | 2.1.6     | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Installation                      | 3.1       | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | SD-03 Product Data                |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Food Service Equipment            | 2.1.6     | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | SD-06 Test Reports                |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Testing                           | 3.3       | FIO                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |

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|-------------|----------------|-----------|--------------------------------------|-----------|---------------------|----------------------------|--------------------|--------------------|-------------------|----------------|-----------------------------------|----------------------------|----------------------------|-------------|---------|----------------|------------------------|
|             |                |           |                                      |           |                     | SUBMIT                     | APPROVAL NEEDED BY | MATERIAL NEEDED BY | ACTION CODE       | DATE OF ACTION | DATE FWD TO APPR AUTH/ FROM CONTR | DATE FWD TO OTHER REVIEWER | DATE RCD FROM OTH REVIEWER | ACTION CODE |         | DATE OF ACTION | DATE RCD FRM APPR AUTH |
| (a)         | (b)            | (c)       | (d)                                  | (e)       | (f)                 | (g)                        | (h)                | (i)                | (j)               | (k)            | (l)                               | (m)                        | (n)                        | (o)         | (p)     | (q)            | (r)                    |
|             |                | 11400A    | SD-10 Operation and Maintenance Data |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Food Service Equipment               | 2.1.6     | G                   |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                | 11490     | SD-02 Shop Drawings                  |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Gymnasium Equipment                  |           | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Gymnasium Bleacher Installation      |           | G                   |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | SD-03 Product Data                   |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Gymnasium Equipment                  |           | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Bleachers                            |           | G                   |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | SD-04 Samples                        |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Wall Padding                         |           | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | SD-07 Certificates                   |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Gymnasium Equipment                  |           | FIO                 |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | SD-10 Operation and Maintenance Data |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Basketball Backstops and Goals       | 2.2       | FIO                 |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                | 11670     | SD-03 Product Data                   |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Kilns                                | 2.1       | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | SD-10 Operation and Maintenance Data |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Kilns                                | 2.1       | G                   |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                | 12490A    | SD-02 Shop Drawings                  |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Approved Detail Drawings             | 3.1       | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | SD-03 Product Data                   |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Window Treatments                    | 3.1       | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | SD-04 Samples                        |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |

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|----------------|-------------------|--------------|--|--------------------------------------|------------------------------|-------------------------------|--------------------------|--------------------------|----------------------|----------------------|---|----------------------------------|----------------------------------|----------------|----------------------|---------|--|-----|
|                |                   |              |  |                                      |                              | SUBMIT                        | APPROVAL<br>NEEDED<br>BY | MATERIAL<br>NEEDED<br>BY | ACTION<br>CODE       | DATE<br>OF<br>ACTION | DATE FWD<br>TO APPR<br>AUTH/<br>DATE RCD<br>FROM<br>CONTR | DATE FWD<br>TO OTHER<br>REVIEWER | DATE RCD<br>FROM OTH<br>REVIEWER | ACTION<br>CODE | DATE<br>OF<br>ACTION |         | MAILED<br>TO<br>CONTR/<br>DATE RCD<br>FRM APPR<br>AUTH |     |
|                |                   |              |  |                                      |                              |                               |                          |                          |                      |                      |   |                                  |                                  |                |                      |         |  | (g) |
|                |                   | 12490A       | Window Treatments  | 3.1                                  | G AE                         |                               |                          |                          |                      |                      |   |                                  |                                  |                |                      |         |  |     |
|                |                   | 12600        | SD-02 Shop Drawings<br>Installation  | 3.1                                  | G                            |                               |                          |                          |                      |                      |   |                                  |                                  |                |                      |         |  |     |
|                |                   |              | SD-03 Product Data<br>Theater Chairs   | 1.2                                  | FIO                          |                               |                          |                          |                      |                      |   |                                  |                                  |                |                      |         |  |     |
|                |                   | 12627        | SD-02 Shop Drawings<br>Shelving Units<br>Library Security System               |                                      | G AE<br>G AE                 |                               |                          |                          |                      |                      |   |                                  |                                  |                |                      |         |  |     |
|                |                   |              | SD-03 Product Data<br>Shelving Units<br>Accessories<br>Library Security System |                                      | G AE<br>G AE<br>G AE         |                               |                          |                          |                      |                      |   |                                  |                                  |                |                      |         |  |     |
|                |                   |              | Installation instructions<br>SD-04 Samples<br>Finish                           | 3.2                                  | FIO<br>G AE                  |                               |                          |                          |                      |                      |   |                                  |                                  |                |                      |         |  |     |
|                |                   | 13100A       | SD-02 Shop Drawings<br>Drawings  |                                      | G                            |                               |                          |                          |                      |                      |   |                                  |                                  |                |                      |         |  |     |
|                |                   |              | SD-07 Certificates<br>Materials  | 2.1                                  | G                            |                               |                          |                          |                      |                      |   |                                  |                                  |                |                      |         |  |     |
|                |                   | 13202A       | SD-02 Shop Drawings<br>Fueling System<br>Monitoring Systems                    |                                      | G AE<br>G AE                 |                               |                          |                          |                      |                      |   |                                  |                                  |                |                      |         |  |     |
|                |                   |              | SD-03 Product Data<br>Fueling System<br>Permitting<br>Registration             | 3.3.2.1<br>3.3.2.1<br>1.5.1<br>1.5.2 | G AE<br>G AE<br>G AE<br>G AE |                               |                          |                          |                      |                      |   |                                  |                                  |                |                      |         |  |     |

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|----------------|-------------------|--------------|----------------------------------|-----------|------------------------|-------------------------------|--------------------------|--------------------------|----------------------|----------------------|---|----------------------------------|----------------------------------|----------------|---------|----------------------|--|-----|
|                |                   |              |                                  |           |                        | SUBMIT                        | APPROVAL<br>NEEDED<br>BY | MATERIAL<br>NEEDED<br>BY | ACTION<br>CODE       | DATE<br>OF<br>ACTION | DATE FWD<br>TO APPR<br>AUTH/<br>DATE RCD<br>FROM<br>CONTR | DATE FWD<br>TO OTHER<br>REVIEWER | DATE RCD<br>FROM OTH<br>REVIEWER | ACTION<br>CODE |         | DATE<br>OF<br>ACTION | MAILED<br>TO<br>CONTR/<br>DATE RCD<br>FRM APPR<br>AUTH |     |
|                |                   |              |                                  |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  | (g) |
|                |                   | 13202A       | Spare Parts Data                 |           | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Installation                     | 3.1       | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Framed Instructions              | 3.1.4     | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Monitoring Systems               |           | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Tests                            | 3.2       | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Demonstrations                   | 3.4       | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Experience                       | 1.4.1     | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Welding                          | 1.4.2     | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Verification of Dimensions       | 1.7.1     | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Fuel Supply                      | 1.7.2     | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | SD-06 Test Reports               |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Tests                            | 3.2       | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | SD-10 Operation and Maintenance  |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Data                             |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Operation Manuals                |           | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Maintenance Manuals              | 3.4       | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   | 13286N       | SD-07 Certificates               |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Qualifications of CIH            | 1.8.1     | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Training Certification           | 1.8.1     | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | PCB and Lamp Removal Work        | 1.8.2     | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Plan                             |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | PCB and Lamp Disposal Plan       | 1.8.3     | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | SD-11 Closeout Submittals        |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Transporter certification        | 3.5.2     | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Certification of Decontamination | 3.2.4     | FIO                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |

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|             |                | 13286N    | Certificate of Disposal and/or recycling | 3.5.2.1   | FIO                 |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | DD Form 1348-1                           |           | FIO                 |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                | 13721     | SD-03 Product Data                       |           |                     |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | Intrusion Detection System               |           | G AE                |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | Manufacturer's Instructions              |           | G AE                |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | Testing                                  | 1.4       | G AE                |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | Experience                               | 1.6       | G AE                |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | SD-06 Test Reports                       |           |                     |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | Performance Verification Test            | 3.3.3     | G AE                |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | Materials and Equipment                  | 2.1.1     | G AE                |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                | 13820a    | SD-03 Product Data                       |           |                     |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | Respiratory Protection Program           | 1.12      | G AE                |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | Cleanup and Disposal                     | 3.11      | G AE                |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | Detailed Drawings                        |           | G AE                |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | Materials and Equipment                  |           | G AE                |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | Qualifications                           | 1.5       | G AE                |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | Training Program                         | 1.11      | FIO                 |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | Medical Requirements                     | 1.10      | G AE                |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | Encapsulants                             | 2.1       | G AE                |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | SD-06 Test Reports                       |           |                     |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | Exposure Assessment and Air Monitoring   | 3.9       | G AE                |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | Local Exhaust Ventilation                | 1.20      | G AE                |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | Licenses, Permits and Notifications      | 1.14      | G AE                |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |

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|             |                |           |  |           |                     | SUBMIT                     | APPROVAL NEEDED BY | MATERIAL NEEDED BY | ACTION CODE       | DATE OF ACTION | DATE FWD TO APPR AUTH/ FROM CONTR | DATE FWD TO OTHER REVIEWER | DATE RCD FROM OTH REVIEWER | ACTION CODE |         | DATE OF ACTION | DATE RCD FRM APPR AUTH |
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|             |                | 13820a    | SD-07 Certificates                           |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Vacuum, Filtration and Ventilation Equipment |           | FIO                 |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                | 13851     | SD-02 Shop Drawings                          |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Fire Alarm Reporting System                  | 1.4.1     | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | SD-03 Product Data                           |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Storage Batteries                            | 1.8       | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Voltage Drop                                 |           | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Special Tools and Spare Parts                | 1.14      | FIO                 |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Technical Data and Computer Software         | 1.5       | FIO                 |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Training                                     | 1.18      | FIO                 |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Testing                                      | 1.17      | FIO                 |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | SD-06 Test Reports                           |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Testing                                      | 1.17      | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | SD-07 Certificates                           |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Equipment                                    |           | FIO                 |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Qualifications                               | 1.3.7     | FIO                 |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | SD-10 Operation and Maintenance              |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Data   |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Technical Data and Computer Software         | 1.5       | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                | 13920     | SD-02 Shop Drawings                          |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Installation Requirements                    | 3.3       | FIO                 |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | As-Built Drawings                            |           | FIO                 |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | SD-03 Product Data                           |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |

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|                |                   |              |                                    |           |                        | SUBMIT                        | APPROVAL<br>NEEDED<br>BY | MATERIAL<br>NEEDED<br>BY | ACTION<br>CODE       | DATE<br>OF<br>ACTION | DATE FWD<br>TO APPR<br>AUTH/<br>DATE RCD<br>FROM<br>CONTR | DATE FWD<br>TO OTHER<br>REVIEWER | DATE RCD<br>FROM OTH<br>REVIEWER | ACTION<br>CODE |         | DATE<br>OF<br>ACTION | MAILED<br>TO<br>CONTR/<br>DATE RCD<br>FRM APPR<br>AUTH |     |
|                |                   |              |                                    |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  | (g) |
|                |                   | 13920        | Fire Pump Installation Related     | 3.1       | FIO                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Submittals                         |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Installation Requirements          | 3.3       | FIO                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Spare Parts                        |           | FIO                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Preliminary Test                   | 3.8.2     | FIO                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | System Diagrams                    |           | FIO                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Fire Protection Specialist         | 1.8       | FIO                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Manufacturer's Representative      | 1.9       | FIO                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Field Training                     | 3.10      | FIO                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Final Acceptance Test              | 3.8.3     | FIO                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | SD-06 Test Reports                 |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Preliminary Test                   | 3.8.2     | FIO                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Final Acceptance Test              | 3.8.3     | FIO                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | SD-07 Certificates                 |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Fire Protection Specialist         | 1.8       | FIO                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | SD-10 Operation and Maintenance    |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Data                               |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Fire Pumps                         | 3.8.2     | FIO                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   | 13930        | SD-02 Shop Drawings                |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Sprinkler System Shop Drawings     |           | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | As-Built Shop Drawings             |           | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | SD-03 Product Data                 |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Fire Protection Related Submittals | 3.1       | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Load Calculations for Sizing Sway  |           | FIO                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Bracing                            |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Components and Equipment Data      |           | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |

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|                |                   |              |  |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |
|                |                   | 13930        | Hydraulic Calculations                       | 1.7       | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |
|                |                   |              | Spare Parts                                  |           | FIO                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |
|                |                   |              | Preliminary Tests Procedures                 |           | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |
|                |                   |              | Final Acceptance Test Procedures             |           | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |
|                |                   |              | On-site Training Schedule                    |           | FIO                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |
|                |                   |              | Preliminary Tests                            | 3.9       | FIO                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |
|                |                   |              | Final Acceptance Test                        |           | FIO                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |
|                |                   |              | Fire Protection Specialist<br>Qualifications |           | FIO                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |
|                |                   |              | Sprinkler System Installer<br>Qualifications | 1.9       | FIO                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |
|                |                   |              | SD-06 Test Reports                           |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |
|                |                   |              | Preliminary Tests Report                     |           | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |
|                |                   |              | Final Acceptance Test Report                 |           | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |
|                |                   |              | SD-07 Certificates                           |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |
|                |                   |              | Fire Protection Specialist<br>Inspection     |           | FIO                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |
|                |                   |              | SD-10 Operation and Maintenance<br>Data      |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |
|                |                   |              | Wet Pipe Sprinkler System                    |           | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |
|                |                   | 14240A       | SD-02 Shop Drawings                          |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |
|                |                   |              | Elevator System                              |           | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |
|                |                   |              | SD-03 Product Data                           |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |
|                |                   |              | Training Data                                |           | FIO                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |
|                |                   |              | Elevator System                              |           | FIO                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |
|                |                   |              | Framed Instructions                          | 3.7       | FIO                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |

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| (a)            | (b)               | (c)          | (d)                             | (e)       | (f)                    | (g)                           | (h)                       | (i)                              | (j)                              | (k)               | (l)                 | (m)               | (n)               | (o) | (p)     | (q) | (r) |
|                |                   | 14240A       | Test Procedures                 |           | FIO                    |                               |                           |                                  |                                  |                   |                     |                   |                   |     |         |     |     |
|                |                   |              | SD-04 Samples                   |           |                        |                               |                           |                                  |                                  |                   |                     |                   |                   |     |         |     |     |
|                |                   |              | Finishes                        |           | G AE                   |                               |                           |                                  |                                  |                   |                     |                   |                   |     |         |     |     |
|                |                   |              | SD-06 Test Reports              |           |                        |                               |                           |                                  |                                  |                   |                     |                   |                   |     |         |     |     |
|                |                   |              | Testing                         | 3.6       | FIO                    |                               |                           |                                  |                                  |                   |                     |                   |                   |     |         |     |     |
|                |                   |              | SD-07 Certificates              |           |                        |                               |                           |                                  |                                  |                   |                     |                   |                   |     |         |     |     |
|                |                   |              | Qualification Certificates      |           | FIO                    |                               |                           |                                  |                                  |                   |                     |                   |                   |     |         |     |     |
|                |                   |              | SD-10 Operation and Maintenance |           |                        |                               |                           |                                  |                                  |                   |                     |                   |                   |     |         |     |     |
|                |                   |              | Data                            |           |                        |                               |                           |                                  |                                  |                   |                     |                   |                   |     |         |     |     |
|                |                   |              | Elevator System                 |           | G                      |                               |                           |                                  |                                  |                   |                     |                   |                   |     |         |     |     |
|                |                   | 14440        | SD-02 Shop Drawings             |           |                        |                               |                           |                                  |                                  |                   |                     |                   |                   |     |         |     |     |
|                |                   |              | Wheelchair Lifts                | 2.2       | G AE                   |                               |                           |                                  |                                  |                   |                     |                   |                   |     |         |     |     |
|                |                   |              | SD-03 Product Data              |           |                        |                               |                           |                                  |                                  |                   |                     |                   |                   |     |         |     |     |
|                |                   |              | Wheelchair Lifts                | 2.2       | G AE                   |                               |                           |                                  |                                  |                   |                     |                   |                   |     |         |     |     |
|                |                   |              | SD-10 Operation and Maintenance |           |                        |                               |                           |                                  |                                  |                   |                     |                   |                   |     |         |     |     |
|                |                   |              | Data                            |           |                        |                               |                           |                                  |                                  |                   |                     |                   |                   |     |         |     |     |
|                |                   |              | Wheelchair Lifts                | 2.2       | FIO                    |                               |                           |                                  |                                  |                   |                     |                   |                   |     |         |     |     |
|                |                   | 15070A       | SD-02 Shop Drawings             |           |                        |                               |                           |                                  |                                  |                   |                     |                   |                   |     |         |     |     |
|                |                   |              | Coupling and Bracing            | 3.1       | G AE                   |                               |                           |                                  |                                  |                   |                     |                   |                   |     |         |     |     |
|                |                   |              | Flexible Couplings or Joints    | 3.3       | G AE                   |                               |                           |                                  |                                  |                   |                     |                   |                   |     |         |     |     |
|                |                   |              | Equipment Requirements          |           | G AE                   |                               |                           |                                  |                                  |                   |                     |                   |                   |     |         |     |     |
|                |                   |              | Contractor Designed Bracing     | 1.2.4     | G AE                   |                               |                           |                                  |                                  |                   |                     |                   |                   |     |         |     |     |
|                |                   |              | SD-03 Product Data              |           |                        |                               |                           |                                  |                                  |                   |                     |                   |                   |     |         |     |     |
|                |                   |              | Coupling and Bracing            | 3.1       | G AE                   |                               |                           |                                  |                                  |                   |                     |                   |                   |     |         |     |     |
|                |                   |              | Equipment Requirements          |           | G AE                   |                               |                           |                                  |                                  |                   |                     |                   |                   |     |         |     |     |
|                |                   |              | Contractor Designed Bracing     | 1.2.4     | G AE                   |                               |                           |                                  |                                  |                   |                     |                   |                   |     |         |     |     |

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|             |                | 15080     | SD-04 Samples                        |           |                     |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | Thermal Insulation Materials         |           | G AE                |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                | 15181A    | SD-02 Shop Drawings                  |           |                     |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | Piping System                        | 2.4       | G AE                |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | SD-03 Product Data                   |           |                     |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | Piping System                        | 2.4       | G AE                |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | Water Treatment Systems              | 2.12      | G AE                |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | Spare Parts                          |           | G AE                |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | Qualifications                       | 1.3       | G AE                |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | Field Tests                          | 3.3       | FIO                 |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | Demonstrations                       | 3.4       | FIO                 |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | Verification of Dimensions           | 1.6.1     | FIO                 |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | SD-06 Test Reports                   |           |                     |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | Field Tests                          | 3.3       | FIO                 |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | SD-07 Certificates                   |           |                     |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | Service Organization                 | 2.1       | FIO                 |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | SD-10 Operation and Maintenance Data |           |                     |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | Operation Manuals                    |           | G AE                |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | Maintenance Manuals                  | 3.4       | G AE                |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | Water Treatment Systems              | 2.12      | G AE                |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                | 15182A    | SD-02 Shop Drawings                  |           |                     |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | Refrigerant Piping System            | 2.3       | G AE                |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | SD-03 Product Data                   |           |                     |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | Refrigerant Piping System            | 2.3       | G AE                |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | Spare Parts                          |           | G AE                |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |

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|             |                | 15182A    | Qualifications                       | 1.3       | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |     |
|             |                |           | Refrigerant Piping Tests             | 3.3       | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |     |
|             |                |           | Demonstrations                       | 3.4       | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |     |
|             |                |           | Verification of Dimensions           | 1.6.1     | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |     |
|             |                |           | SD-06 Test Reports                   |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |     |
|             |                |           | Refrigerant Piping Tests             | 3.3       | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |     |
|             |                |           | SD-07 Certificates                   |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |     |
|             |                |           | Service Organization                 | 2.1       | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |     |
|             |                |           | SD-10 Operation and Maintenance Data |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |     |
|             |                |           | Operation Manuals                    |           | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |     |
|             |                |           | Maintenance Manuals                  | 3.4       | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |     |
|             |                | 15185     | SD-02 Shop Drawings                  |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |     |
|             |                |           | Hot water heating system             |           | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |     |
|             |                |           | SD-03 Product Data                   |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |     |
|             |                |           | Convectors                           | 2.4.2     | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |     |
|             |                |           | Finned tube radiators                | 2.4.1     | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |     |
|             |                |           | Pumps                                | 2.3.1     | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |     |
|             |                |           | Valves                               | 2.1.7     | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |     |
|             |                |           | Expansion tanks                      | 2.3.2     | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |     |
|             |                |           | Flow measuring equipment             | 2.3.5     | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |     |
|             |                |           | Backflow preventers                  | 2.3.4     | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |     |
|             |                |           | External air separation tanks        | 2.3.3     | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |     |
|             |                |           | Hot water heating pipe               | 2.1.1     | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |     |
|             |                |           | Fittings                             | 2.1.2     | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |     |
|             |                |           | Mechanical pipe coupling system      | 2.1.3     | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |     |

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|                |                   |              |   |           |                        | SUBMIT                        | APPROVAL<br>NEEDED<br>BY | MATERIAL<br>NEEDED<br>BY | ACTION<br>CODE       | DATE<br>OF<br>ACTION | DATE FWD<br>TO APPR<br>AUTH/<br>DATE RCD<br>FROM<br>CONTR | DATE FWD<br>TO OTHER<br>REVIEWER | DATE RCD<br>FROM OTH<br>REVIEWER | ACTION<br>CODE |         | DATE<br>OF<br>ACTION | MAILED<br>TO<br>CONTR/<br>DATE RCD<br>FRM APPR<br>AUTH |
|                |                   |              |   |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |
|                |                   | 15185        | SD-06 Test Reports                      |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |
|                |                   |              | Hydrostatic test of piping system       | 3.3.1     | FIO                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |
|                |                   |              | Auxiliary equipment and accessory tests | 3.3.2     | FIO                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |
|                |                   |              | SD-07 Certificates                      |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |
|                |                   |              | Backflow preventer certification        | 1.5.4     | FIO                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |
|                |                   |              | Report of prior installations           | 1.5.2.1   | FIO                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |
|                |                   |              | Welding procedures                      | 1.5.2.2   | FIO                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |
|                |                   |              | Welder's qualifications                 | 1.5.2.3   | FIO                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |
|                |                   |              | SD-10 Operation and Maintenance Data    |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |
|                |                   |              | Convectors                              | 2.4.2     | FIO                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |
|                |                   |              | Finned tube radiators                   | 2.4.1     | FIO                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |
|                |                   | 15190A       | SD-02 Shop Drawings                     |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |
|                |                   |              | Gas Piping System                       | 3.2       | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |
|                |                   |              | SD-03 Product Data                      |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |
|                |                   |              | Qualifications                          |           | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |
|                |                   |              | SD-06 Test Reports                      |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |
|                |                   |              | Testing                                 |           | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |
|                |                   |              | Pressure Tests                          | 3.15.1    | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |
|                |                   |              | Test With Gas                           | 3.15.2    | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |
|                |                   | 15400        | SD-02 Shop Drawings                     |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |
|                |                   |              | Plumbing System                         | 3.8.1     | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |
|                |                   |              | Electrical Schematics                   |           | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |
|                |                   |              | SD-03 Product Data                      |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |
|                |                   |              | Welding                                 | 1.5.1     | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |

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|             |                | 15400     | Plumbing Fixture Schedule         | 3.9       | G AE                |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | Vibration-Absorbing Features      | 3.4       | G AE                |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | Plumbing System                   | 3.8.1     | G AE                |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | SD-06 Test Reports                |           |                     |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | Tests, Flushing and Disinfection  | 3.8       | G AE                |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | Backflow Prevention Assembly      |           | G AE                |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | Tests                             |           |                     |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | SD-07 Certificates                |           |                     |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | Materials and Equipment           |           | G AE                |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | Bolts                             | 2.1.1     | G AE                |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | SD-10 Operation and Maintenance   |           |                     |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | Data                              |           |                     |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | Plumbing System                   | 3.8.1     | FIO                 |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                | 15515     | SD-02 Shop Drawings               |           |                     |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | Fuel trains                       | 1.3.1     | G AE                |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | Wiring diagrams                   | 1.3.1     | G AE                |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | SD-03 Product Data                |           |                     |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | Boilers                           | 2.1       | G AE                |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | Boiler trim and control equipment | 2.3       | G AE                |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | Burners and control equipment     | 2.2       | G AE                |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | Stack, breeching, and supports    | 2.3.20    | G AE                |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | SD-06 Test Reports                |           |                     |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | Operational tests                 | 3.5.1     | G AE                |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | SD-07 Certificates                |           |                     |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | Boilers                           | 2.1       | G G                 |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | Boilers                           | 2.1       | G G                 |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |

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|             |                | 15515     | Burners and control equipment     | 2.2       | G G                 |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Burners and control equipment     | 2.2       | G G                 |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Boiler trim and control equipment | 2.3       | G G                 |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Boiler trim and control equipment | 2.3       | G G                 |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Water analysis                    | 1.3.2     | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | SD-08 Manufacturer's Instructions |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Boilers                           | 2.1       | FIO                 |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Feedwater treatment system        | 2.3.9     | FIO                 |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | SD-10 Operation and Maintenance   |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Data                              |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Boilers                           | 2.1       | FIO                 |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | SD-11 Closeout Submittals         |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | boilers                           | 2.1       | FIO                 |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                | 15620A    | SD-02 Shop Drawings               |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Drawings                          |           | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Installation                      | 3.1       | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | SD-03 Product Data                |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Refrigeration System              | 3.1.1     | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Spare Parts                       |           | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Posted Instructions               | 3.5       | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Verification of Dimensions        | 1.5.1     | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Manufacturer's Multi-Year         | 1.6       | FIO                 |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Compressor Warranty               |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Factory Tests                     | 2.7       | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | System Performance Tests          | 3.1.1.2   | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | System Performance Tests          | 3.4       | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |

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|                |                   |              |  |           |                        | SUBMIT                        | APPROVAL<br>NEEDED<br>BY | MATERIAL<br>NEEDED<br>BY | ACTION<br>CODE       | DATE<br>OF<br>ACTION | DATE FWD<br>TO APPR<br>AUTH/<br>DATE RCD<br>FROM<br>CONTR | DATE FWD<br>TO OTHER<br>REVIEWER | DATE RCD<br>FROM OTH<br>REVIEWER | ACTION<br>CODE |         | DATE<br>OF<br>ACTION | MAILED<br>TO<br>CONTR/<br>DATE RCD<br>FRM APPR<br>AUTH |     |
|                |                   |              |  |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  | (g) |
|                |                   | 15620A       | Demonstrations                               | 3.5       | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | SD-06 Test Reports                           |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Factory Tests                                | 2.7       | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | System Performance Tests                     | 3.1.1.2   | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | System Performance Tests                     | 3.4       | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | SD-07 Certificates                           |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Refrigeration System                         | 3.1.1     | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Service Organization                         | 2.1       | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | SD-10 Operation and Maintenance<br>Data      |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Operation Manuals                            |           | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Maintenance Manuals                          | 3.5       | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   | 15700A       | SD-02 Shop Drawings                          |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Drawings                                     |           | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | SD-03 Product Data                           |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Unitary Equipment                            | 2.4       | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Unitary Equipment                            | 2.5       | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Spare Parts Data                             |           | FIO                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Posted Instructions                          | 3.5       | FIO                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Verification of Dimensions                   | 1.5.1     | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | System Performance Tests                     | 3.4       | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Demonstrations                               | 3.5       | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | SD-06 Test Reports                           |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Refrigerant Tests, Charging, and<br>Start-Up | 3.3       | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | System Performance Tests                     | 3.4       | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |

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|             |                | 15700A    | SD-07 Certificates                   |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Unitary Equipment                    | 2.4       | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Unitary Equipment                    | 2.5       | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Service Organization                 | 2.1       | FIO                 |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | SD-10 Operation and Maintenance Data |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Operation Manuals                    |           | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Maintenance Manuals                  | 3.5       | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                | 15895     | SD-02 Shop Drawings                  |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Drawings                             | 3.1.9     | G G                 |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | SD-03 Product Data                   |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Components and Equipment             | 2.1       | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Test Procedures                      | 2.11.1    | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Welding Procedures                   | 3.1.1.1   | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | System Diagrams                      |           | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Similar Services                     |           | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Welding Joints                       |           | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Testing, Adjusting and Balancing     | 3.6       | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Field Training                       | 3.8       | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | SD-06 Test Reports                   |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Performance Tests                    | 3.7       | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | SD-07 Certificates                   |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Bolts                                | 2.5.2.2   | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | SD-10 Operation and Maintenance Data |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |

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|             |                | 15895     | Operating and Maintenance Instructions                         | 3.8       | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                | 15951     | SD-02 Shop Drawings<br>HVAC Control System                     | 3.1.2     | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | SD-03 Product Data<br>Service Organizations                    |           | FIO                 |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Equipment Compliance Booklet                                   | 1.8       | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Commissioning Procedures                                       | 3.5       | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Performance Verification Test Procedures                       | 1.8       | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Training   |           | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | SD-06 Test Reports<br>Commissioning Report                     |           | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Performance Verification Test                                  |           | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | SD-10 Operation and Maintenance Data<br>Operation Manual       | 1.7       | FIO                 |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Maintenance and Repair Manual                                  | 1.8       | FIO                 |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                | 15990     | SD-02 Shop Drawings<br>TAB Schematic Drawings and Report Forms | 3.3       | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | SD-03 Product Data<br>TAB Related HVAC Submittals              | 3.2       | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | TAB Procedures   | 3.5.1     | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Calibration  | 1.4       | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Systems Readiness Check  | 3.5.2     | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |

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|             |                | 15990     | TAB Execution                     | 3.5.1     | G AE                |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | TAB Verification                  | 3.5.4     | G AE                |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | SD-06 Test Reports                |           |                     |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | Design Review Report              | 3.1       | G AE                |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | Systems Readiness Check           | 3.5.2     | G AE                |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | TAB Report                        | 3.5.3     | G AE                |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | TAB Verification Report           | 3.5.4     | G AE                |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | SD-07 Certificates                |           |                     |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | Ductwork Leak Testing             | 3.4       | G AE                |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | TAB Firm                          | 1.5.1     | G AE                |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | TAB Specialist                    | 1.5.2     | G AE                |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                | 16261N    | SD-02 Shop Drawings               |           |                     |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | Schematic diagrams                | 1.5.1     | G AE                |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | Interconnecting diagrams          | 1.5.2     | G AE                |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | Installation drawings             | 1.5.3     | G AE                |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | SD-03 Product Data                |           |                     |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | Variable frequency drives         | 2.1       | G AE                |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | Wires and cables                  | 2.3       | G AE                |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | Equipment schedule                | 1.5.4     | G AE                |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | SD-06 Test Reports                |           |                     |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | VFD Test                          | 3.2.1     | G AE                |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | Performance Verification Tests    | 3.2.2     | G AE                |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | Endurance Test                    | 3.2.3     | FIO                 |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | SD-08 Manufacturer's Instructions |           |                     |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | Installation instructions         | 1.5.5     | FIO                 |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |

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|             |                | 16261N    | SD-09 Manufacturer's Field Reports   |           |                     |                            |                    |                    |                   |                |   |                            |                            |             |  |         |                |
|             |                |           | VFD Factory Test Plan                | 2.5.1     | G AE                |                            |                    |                    |                   |                |   |                            |                            |             |  |         |                |
|             |                |           | Factory test results                 | 1.5.6     | FIO                 |                            |                    |                    |                   |                |   |                            |                            |             |  |         |                |
|             |                |           | SD-10 Operation and Maintenance Data |           |                     |                            |                    |                    |                   |                |   |                            |                            |             |  |         |                |
|             |                |           | Variable frequency drives            | 2.1       | FIO                 |                            |                    |                    |                   |                |   |                            |                            |             |  |         |                |
|             |                | 16264     | SD-02 Shop Drawings                  |           |                     |                            |                    |                    |                   |                |   |                            |                            |             |  |         |                |
|             |                |           | Layout                               |           | G AE                |                            |                    |                    |                   |                |   |                            |                            |             |  |         |                |
|             |                |           | Drawings                             |           | G AE                |                            |                    |                    |                   |                |   |                            |                            |             |  |         |                |
|             |                |           | Acceptance                           | 3.7       | G AE                |                            |                    |                    |                   |                |   |                            |                            |             |  |         |                |
|             |                |           | SD-03 Product Data                   |           |                     |                            |                    |                    |                   |                |   |                            |                            |             |  |         |                |
|             |                |           | Performance Tests                    | 3.3.5     | FIO                 |                            |                    |                    |                   |                |   |                            |                            |             |  |         |                |
|             |                |           | Sound Limitations                    | 2.6       | G AE                |                            |                    |                    |                   |                |   |                            |                            |             |  |         |                |
|             |                |           | Generator                            | 2.12      | G AE                |                            |                    |                    |                   |                |   |                            |                            |             |  |         |                |
|             |                |           | Day Tank                             | 2.3.5     | G AE                |                            |                    |                    |                   |                |   |                            |                            |             |  |         |                |
|             |                |           | Power Factor                         | 3.3.1.2   | FIO                 |                            |                    |                    |                   |                |   |                            |                            |             |  |         |                |
|             |                |           | Time-Delay on Alarms                 | 2.16.5    | FIO                 |                            |                    |                    |                   |                |   |                            |                            |             |  |         |                |
|             |                |           | Cooling System                       | 2.5       | G AE                |                            |                    |                    |                   |                |   |                            |                            |             |  |         |                |
|             |                |           | Manufacturer's Catalog               | 2.2       | FIO                 |                            |                    |                    |                   |                |   |                            |                            |             |  |         |                |
|             |                |           | Vibration Isolation                  | 1.4.7     | FIO                 |                            |                    |                    |                   |                |   |                            |                            |             |  |         |                |
|             |                |           | Instructions                         | 3.6       | G AE                |                            |                    |                    |                   |                |   |                            |                            |             |  |         |                |
|             |                |           | Experience                           | 1.4.8     | FIO                 |                            |                    |                    |                   |                |   |                            |                            |             |  |         |                |
|             |                |           | Field Engineer                       | 1.4.9     | FIO                 |                            |                    |                    |                   |                |   |                            |                            |             |  |         |                |
|             |                |           | General Installation                 | 3.1       | FIO                 |                            |                    |                    |                   |                |   |                            |                            |             |  |         |                |
|             |                |           | Site Visit                           |           | FIO                 |                            |                    |                    |                   |                |   |                            |                            |             |  |         |                |

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|             |                | 16264     | SD-06 Test Reports            |           |                     |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | Onsite Inspection and Tests   | 3.3       | G AE                |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | SD-07 Certificates            |           |                     |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | Vibration Isolation           | 1.4.7     | FIO                 |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | Prototype Tests               |           | FIO                 |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | Reliability and Durability    |           | FIO                 |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | Emissions                     | 2.9       | FIO                 |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | Sound limitations             | 2.6       | FIO                 |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | Flywheel Balance              |           | FIO                 |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | Materials and Equipment       | 2.1       | FIO                 |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | Factory Inspection and Tests  | 2.24      | FIO                 |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | Inspections                   | 3.3.3     | FIO                 |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | Cooling System                | 2.5       | FIO                 |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                | 16403A    | SD-02 Shop Drawings           |           |                     |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | Drawings                      |           | G AE                |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | Shop Drawings                 | 2.2.1     | G AE                |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | Switchboards                  | 2.3       | G AE                |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | Panelboards                   | 2.4       | G AE                |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | SD-03 Product Data            |           |                     |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | Equipment                     |           | G AE                |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                | 16410A    | SD-02 Shop Drawings           |           |                     |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | Switches                      |           | G AE                |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | Equipment                     | 1.3.1     | G AE                |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | Installation                  | 3.1       | G AE                |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | SD-03 Product Data            |           |                     |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |
|             |                |           | Material                      | 1.3.1     | G AE                |                            |                     |                            |                            |                |                     |                |                |     |         |     |     |

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|                |                   | 16410A       | Equipment                        | 1.3.1     | G AE                                       |                               |                          |                          |                      |                      |   |                                  |                                  |                |  |         |                      |
|                |                   |              | SD-06 Test Reports               |           |  |                               |                          |                          |                      |                      |   |                                  |                                  |                |  |         |                      |
|                |                   |              | Testing                          | 2.3       | G AE                                       |                               |                          |                          |                      |                      |   |                                  |                                  |                |  |         |                      |
|                |                   |              | SD-07 Certificates               |           |  |                               |                          |                          |                      |                      |   |                                  |                                  |                |  |         |                      |
|                |                   |              | Material                         | 1.3.1     | FIO  |                               |                          |                          |                      |                      |   |                                  |                                  |                |  |         |                      |
|                |                   |              | Switching Equipment              |           | G AE                                       |                               |                          |                          |                      |                      |   |                                  |                                  |                |  |         |                      |
|                |                   |              | SD-10 Operation and Maintenance  |           |  |                               |                          |                          |                      |                      |   |                                  |                                  |                |  |         |                      |
|                |                   |              | Data                             |           |  |                               |                          |                          |                      |                      |   |                                  |                                  |                |  |         |                      |
|                |                   |              | Switching Equipment              |           | G AE                                       |                               |                          |                          |                      |                      |   |                                  |                                  |                |  |         |                      |
|                |                   |              | Instructions                     | 3.2       | G AE                                       |                               |                          |                          |                      |                      |   |                                  |                                  |                |  |         |                      |
|                |                   | 16415        | SD-02 Shop Drawings              |           |  |                               |                          |                          |                      |                      |   |                                  |                                  |                |  |         |                      |
|                |                   |              | Interior Electrical Equipment    |           | G AE                                       |                               |                          |                          |                      |                      |   |                                  |                                  |                |  |         |                      |
|                |                   |              | SD-03 Product Data               |           |  |                               |                          |                          |                      |                      |   |                                  |                                  |                |  |         |                      |
|                |                   |              | Manufacturer's Catalog           |           | G AE                                       |                               |                          |                          |                      |                      |   |                                  |                                  |                |  |         |                      |
|                |                   |              | Material, Equipment, and Fixture |           | G AE                                       |                               |                          |                          |                      |                      |   |                                  |                                  |                |  |         |                      |
|                |                   |              | Lists                            |           |  |                               |                          |                          |                      |                      |   |                                  |                                  |                |  |         |                      |
|                |                   |              | Installation Procedures          |           | G AE                                       |                               |                          |                          |                      |                      |   |                                  |                                  |                |  |         |                      |
|                |                   |              | As-Built Drawings                | 1.2.6     | FIO  |                               |                          |                          |                      |                      |   |                                  |                                  |                |  |         |                      |
|                |                   |              | Onsite Tests                     | 3.18.2    | G AE                                       |                               |                          |                          |                      |                      |   |                                  |                                  |                |  |         |                      |
|                |                   |              | SD-06 Test Reports               |           |  |                               |                          |                          |                      |                      |   |                                  |                                  |                |  |         |                      |
|                |                   |              | Factory Test Reports             |           | G AE                                       |                               |                          |                          |                      |                      |   |                                  |                                  |                |  |         |                      |
|                |                   |              | Field Test Plan                  |           | G AE                                       |                               |                          |                          |                      |                      |   |                                  |                                  |                |  |         |                      |
|                |                   |              | Field Test Reports               | 3.16      | G AE                                       |                               |                          |                          |                      |                      |   |                                  |                                  |                |  |         |                      |
|                |                   |              | SD-07 Certificates               |           |  |                               |                          |                          |                      |                      |   |                                  |                                  |                |  |         |                      |
|                |                   |              | Materials and Equipment          | 1.4       | G AE                                       |                               |                          |                          |                      |                      |   |                                  |                                  |                |  |         |                      |
|                |                   | 16528        | SD-02 Shop Drawings              |           |  |                               |                          |                          |                      |                      |   |                                  |                                  |                |  |         |                      |

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|                |                   | 16528        | Lighting System                 | 1.3.1     | G AE                                       |                               |                          |                          |                      |                      |   |                                  |                                  |                |                      |         |  |
|                |                   |              | Detail Drawings                 |           | G AE                                       |                               |                          |                          |                      |                      |   |                                  |                                  |                |                      |         |  |
|                |                   |              | As-Built Drawings               |           | FIO  |                               |                          |                          |                      |                      |   |                                  |                                  |                |                      |         |  |
|                |                   |              | SD-03 Product Data              |           |  |                               |                          |                          |                      |                      |   |                                  |                                  |                |                      |         |  |
|                |                   |              | Equipment and Materials         |           | G AE                                       |                               |                          |                          |                      |                      |   |                                  |                                  |                |                      |         |  |
|                |                   |              | Spare Parts                     |           | FIO  |                               |                          |                          |                      |                      |   |                                  |                                  |                |                      |         |  |
|                |                   |              | SD-06 Test Reports              |           |  |                               |                          |                          |                      |                      |   |                                  |                                  |                |                      |         |  |
|                |                   |              | Operating Test                  | 3.8.1     | G AE                                       |                               |                          |                          |                      |                      |   |                                  |                                  |                |                      |         |  |
|                |                   |              | SD-10 Operation and Maintenance |           |  |                               |                          |                          |                      |                      |   |                                  |                                  |                |                      |         |  |
|                |                   |              | Data                            |           |  |                               |                          |                          |                      |                      |   |                                  |                                  |                |                      |         |  |
|                |                   |              | Lighting System                 | 1.3.1     | G AE                                       |                               |                          |                          |                      |                      |   |                                  |                                  |                |                      |         |  |
|                |                   | 16551        | SD-02 Shop Drawings             |           |  |                               |                          |                          |                      |                      |   |                                  |                                  |                |                      |         |  |
|                |                   |              | Dimmer rack;                    |           | G AE                                       |                               |                          |                          |                      |                      |   |                                  |                                  |                |                      |         |  |
|                |                   |              | Show configuration of dimmer    |           | FIO  |                               |                          |                          |                      |                      |   |                                  |                                  |                |                      |         |  |
|                |                   |              | rack                            |           |  |                               |                          |                          |                      |                      |   |                                  |                                  |                |                      |         |  |
|                |                   |              | System diagram;                 |           | G AE                                       |                               |                          |                          |                      |                      |   |                                  |                                  |                |                      |         |  |
|                |                   |              | SD-03 Product Data              |           |  |                               |                          |                          |                      |                      |   |                                  |                                  |                |                      |         |  |
|                |                   |              | Dimmer enclosure                |           | G AE                                       |                               |                          |                          |                      |                      |   |                                  |                                  |                |                      |         |  |
|                |                   |              | Dimmers;                        |           | G AE                                       |                               |                          |                          |                      |                      |   |                                  |                                  |                |                      |         |  |
|                |                   |              | Circuit breakers                |           | G AE                                       |                               |                          |                          |                      |                      |   |                                  |                                  |                |                      |         |  |
|                |                   |              | Torroidal filter                |           | G AE                                       |                               |                          |                          |                      |                      |   |                                  |                                  |                |                      |         |  |
|                |                   |              | Control console                 |           | G AE                                       |                               |                          |                          |                      |                      |   |                                  |                                  |                |                      |         |  |
|                |                   |              | Stage connector strips          |           | G AE                                       |                               |                          |                          |                      |                      |   |                                  |                                  |                |                      |         |  |
|                |                   |              | Pipe battens                    | 2.4       | G AE                                       |                               |                          |                          |                      |                      |   |                                  |                                  |                |                      |         |  |
|                |                   |              | Theatrical lighting fixtures    |           | G AE                                       |                               |                          |                          |                      |                      |   |                                  |                                  |                |                      |         |  |
|                |                   |              | SD-07 Certificates              |           |  |                               |                          |                          |                      |                      |   |                                  |                                  |                |                      |         |  |

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|                |                   |              |                                  |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  | (g) |
|                |                   | 16551        | Factory tests                    |           | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Installed system                 |           | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | SD-11 Closeout Submittals        |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Project record drawings          |           | FIO                    |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   | 16710        | SD-02 Shop Drawings              |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Premises Distribution System     | 1.8       | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Firestopping;                    |           | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Record Drawings                  |           | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | SD-03 Product Data               |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Equipment rack;                  |           | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | File server rack;                |           | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Server cabinet;                  |           | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Remote equipment cabinet;        |           | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | UPS equipment;                   |           | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Plywood;                         |           | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Fire-retardant paint;            |           | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Cable management equipment;      |           | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Single-mode fiber optic cable;   |           | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Multimode fiber optic cable;     |           | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Six-pack adapter and bracket     |           | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | mount;                           |           |                        |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | UTP copper cable;                |           | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Horizontal data and voice cable; |           | G                      |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Faceplates;                      |           | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Modular jacks;                   |           | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |
|                |                   |              | Surface housings;                |           | G AE                   |                               |                          |                          |                      |                      |   |                                  |                                  |                |         |                      |  |     |

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|-------------|----------------|-----------|----------------------------------|-----------|---------------------|----------------------------|--------------------|--------------------|-------------------|----------------|--|----------------------------|----------------------------|-------------|---------|----------------|---|
|             |                |           |                                  |           |                     | SUBMIT                     | APPROVAL NEEDED BY | MATERIAL NEEDED BY | ACTION CODE       | DATE OF ACTION | DATE FWD TO APPR AUTH/ DATE RCD FROM CONTR | DATE FWD TO OTHER REVIEWER | DATE RCD FROM OTH REVIEWER | ACTION CODE |         | DATE OF ACTION | MAILED TO CONTR/ DATE RCD FRM APPR AUTH |
| (a)         | (b)            | (c)       | (d)                              | (e)       | (f)                 | (g)                        | (h)                | (i)                | (j)               | (k)            | (l)  | (m)                        | (n)                        | (o)         | (p)     | (q)            | (r)                                     |
|             |                | 16710     | Patch panels;                    |           | G                   |                            |                    |                    |                   |                |  |                            |                            |             |         |                |   |
|             |                |           | Record Keeping and Documentation | 1.9       | G AE                |                            |                    |                    |                   |                |  |                            |                            |             |         |                |   |
|             |                |           | Spare Parts                      |           | FIO                 |                            |                    |                    |                   |                |  |                            |                            |             |         |                |   |
|             |                |           | Manufacturer's Recommendations   | 3.1.3     | G AE                |                            |                    |                    |                   |                |  |                            |                            |             |         |                |   |
|             |                |           | Test Plan                        |           | G AE                |                            |                    |                    |                   |                |  |                            |                            |             |         |                |   |
|             |                |           | Qualifications                   | 1.5       | G AE                |                            |                    |                    |                   |                |  |                            |                            |             |         |                |   |
|             |                |           | SD-06 Test Reports               |           |                     |                            |                    |                    |                   |                |  |                            |                            |             |         |                |   |
|             |                |           | Test Reports                     |           | FIO                 |                            |                    |                    |                   |                |  |                            |                            |             |         |                |   |
|             |                |           | SD-07 Certificates               |           |                     |                            |                    |                    |                   |                |  |                            |                            |             |         |                |   |
|             |                |           | Premises Distribution System     | 1.8       | FIO                 |                            |                    |                    |                   |                |  |                            |                            |             |         |                |   |
|             |                |           | Materials and Equipment          | 2.1       | FIO                 |                            |                    |                    |                   |                |  |                            |                            |             |         |                |   |
|             |                |           | Installers                       |           | G AE                |                            |                    |                    |                   |                |  |                            |                            |             |         |                |   |
|             |                |           | Certified Channel Warranty       |           | FIO                 |                            |                    |                    |                   |                |  |                            |                            |             |         |                |   |
|             |                | 16711     | SD-03 Product Data               |           |                     |                            |                    |                    |                   |                |  |                            |                            |             |         |                |   |
|             |                |           | Router                           |           | G AE                |                            |                    |                    |                   |                |  |                            |                            |             |         |                |   |
|             |                |           | Chassis switch                   |           | G AE                |                            |                    |                    |                   |                |  |                            |                            |             |         |                |   |
|             |                |           | Stackable switch                 |           | G AE                |                            |                    |                    |                   |                |  |                            |                            |             |         |                |   |
|             |                | 16721     | SD-02 Shop Drawings              |           |                     |                            |                    |                    |                   |                |  |                            |                            |             |         |                |   |
|             |                |           | Intercommunication System        |           | G AE                |                            |                    |                    |                   |                |  |                            |                            |             |         |                |   |
|             |                |           | Installation                     | 3.1       | G AE                |                            |                    |                    |                   |                |  |                            |                            |             |         |                |   |
|             |                |           | SD-03 Product Data               |           |                     |                            |                    |                    |                   |                |  |                            |                            |             |         |                |   |
|             |                |           | Spare Parts                      |           | FIO                 |                            |                    |                    |                   |                |  |                            |                            |             |         |                |   |
|             |                |           | SD-06 Test Reports               |           |                     |                            |                    |                    |                   |                |  |                            |                            |             |         |                |   |
|             |                |           | Acceptance Tests                 | 3.3       | FIO                 |                            |                    |                    |                   |                |  |                            |                            |             |         |                |   |

**SUBMITTAL REGISTER**

CONTRACT NO.

TITLE AND LOCATION

Luke C. Moore Academy

CONTRACTOR

| ACTIVITY NO | TRANSMITTAL NO | SPEC SECT | DESCRIPTION<br>ITEM SUBMITTED        | PARAGRAPH | GOVT CLASSIFICATION | CONTRACTOR: SCHEDULE DATES |                    |                    | CONTRACTOR ACTION |                | APPROVING AUTHORITY               |                            |                            |             | REMARKS |                |   |
|-------------|----------------|-----------|--------------------------------------|-----------|---------------------|----------------------------|--------------------|--------------------|-------------------|----------------|-----------------------------------|----------------------------|----------------------------|-------------|---------|----------------|---|
|             |                |           |                                      |           |                     | SUBMIT                     | APPROVAL NEEDED BY | MATERIAL NEEDED BY | ACTION CODE       | DATE OF ACTION | DATE FWD TO APPR AUTH/ FROM CONTR | DATE FWD TO OTHER REVIEWER | DATE RCD FROM OTH REVIEWER | ACTION CODE |         | DATE OF ACTION | MAILED TO CONTR/ DATE RCD FRM APPR AUTH |
| (a)         | (b)            | (c)       | (d)                                  | (e)       | (f)                 | (g)                        | (h)                | (i)                | (j)               | (k)            | (l)                               | (m)                        | (n)                        | (o)         | (p)     | (q)            | (r)                                     |
|             |                | 16721     | SD-10 Operation and Maintenance Data |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |
|             |                |           | Intercommunication System            |           | FIO                 |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |
|             |                | 16751     | SD-03 Product Data                   |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |
|             |                |           | System Drawings                      | 1.4.1.1   | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |
|             |                |           | Manufacturer's Data                  | 1.4.1.2   | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |
|             |                |           | System Description and Analysis      |           | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |
|             |                |           | Software Data                        | 1.4.1.4   | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |
|             |                |           | Group II Technical Data Package      | 1.4.2     | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |
|             |                |           | SD-06 Test Reports                   |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |
|             |                |           | Group III Technical Data Package     | 1.4.3     | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |
|             |                |           | Group IV Technical Data Package      | 1.4.4     | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |
|             |                |           | SD-10 Operation and Maintenance Data |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |
|             |                |           | Operation and Maintenance Manuals    |           | FIO                 |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |
|             |                | 16785a    | SD-02 Shop Drawings                  |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |
|             |                |           | Cable TV, and Distribution Equipment |           | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |
|             |                |           | SD-03 Product Data                   |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |
|             |                |           | Spare Parts                          |           | FIO                 |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |
|             |                |           | System Calculations                  |           | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |
|             |                |           | Testing                              | 3.4       | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |
|             |                |           | SD-06 Test Reports                   |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |
|             |                |           | Testing                              | 3.4       | FIO                 |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |
|             |                |           | SD-07 Certificates                   |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |   |

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| (a)         | (b)            | (c)       | (d)  | (e)       | (f)                 | (g)                        | (h)                | (i)                | (j)               | (k)            | (l)                               | (m)                        | (n)                        | (o)         | (p)     | (q)            | (r)                    |
|             |                | 16785a    | Installer's qualifications                                 |           | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | SD-10 Operation and Maintenance Data                       |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Signal Reception System                                    |           | FIO                 |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                | 16815a    | SD-02 Shop Drawings  |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Cable Television Premises Distribution System Installation |           | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | SD-03 Product Data   |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Outlets  |           | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Traps and filters  |           | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Coaxial trunk and drop cable                               |           | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Audio and video patch panels                               |           | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Combiners  |           | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Electronic bulletin board equipment                        |           | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Video cassette records                                     |           | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Control and interface unit for media retrieval             |           | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Spare Parts  |           | FIO                 |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Manufacturer's Recommendations                             |           | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Test Plan  |           | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Qualifications   | 1.5       | G AE                |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | SD-06 Test Reports   |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | Testing  | 3.6       | FIO                 |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |
|             |                |           | SD-07 Certificates   |           |                     |                            |                    |                    |                   |                |                                   |                            |                            |             |         |                |                        |



## SECTION 13280A

ASBESTOS ABATEMENT  
11/01

## PART 1 GENERAL

## 1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

## AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

- ANSI Z9.2 (1979; R 1991) Fundamentals Governing the Design and Operation of Local Exhaust Systems
- ANSI Z87.1 (1989; Errata; Z87.1a) Occupational and Educational Eye and Face Protection
- ANSI Z88.2 (1992) Respiratory Protection

## AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

- ASTM C 732 (1995) Aging Effects of Artificial Weathering on Latex Sealants
- ASTM D 522 (1993a) Mandrel Bend Test of Attached Organic Coatings
- ASTM D 1331 (1989; R 1995) Surface and Interfacial Tension of Solutions of Surface-Active Agents
- ASTM D 2794 (1993; R 1999e1) Resistance of Organic Coatings to the Effects of Rapid Deformation (Impact)
- ASTM D 4397 (1996) Polyethylene Sheeting for Construction, Industrial, and Agricultural Applications
- ASTM E 84 (2000a) Surface Burning Characteristics of Building Materials
- ASTM E 96 (2000) Water Vapor Transmission of Materials
- ASTM E 119 (2000) Fire Tests of Building Construction and Materials

ASTM E 736 (1992) Cohesion/Adhesion of Sprayed Fire-Resistive Materials Applied to Structural Members

ASTM E 1368 (2000) Visual Inspection of Asbestos Abatement Projects

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

29 CFR 1910 Occupational Safety and Health Standards

29 CFR 1926 Safety and Health Regulations for Construction

40 CFR 61 National Emissions Standards for Hazardous Air Pollutants

40 CFR 763 Asbestos

49 CFR 107 Hazardous Materials Program Procedures

49 CFR 171 General Information, Regulations and Definitions

49 CFR 172 Hazardous Materials Table, Special Provisions, Hazardous Materials Communications, Emergency Response Information, and Training Requirements

49 CFR 173 Shippers - General Requirements for Shipments and Packagings

COMPRESSED GAS ASSOCIATION (CGA)

CGA G-7 (1990) Compressed Air for Human Respiration

CGA G-7.1 (1997) Commodity Specification for Air

U.S. ARMY CORPS OF ENGINEERS (USACE)

EM 385-1-1 (1996) U.S. Army Corps of Engineers Safety and Health Requirements Manual

ENVIRONMENTAL PROTECTION AGENCY (EPA)

EPA 340/1-90-018 (1990) Asbestos/NESHAP Regulated Asbestos Containing Materials Guidance

EPA 340/1-90-019 (1990) Asbestos/NESHAP Adequately Wet Guidance

## NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 701 (1999) Methods of Fire Tests for  
Flame-Resistant Textiles and Films

## NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH (NIOSH)

NIOSH Pub No. 84-100 (1984; Supple 1985, 1987, 1988 & 1990)  
NIOSH Manual of Analytical Methods

## UNDERWRITERS LABORATORIES (UL)

UL 586 (1996; Rev thru Aug 1999) High-Efficiency,  
Particulate, Air Filter Units

## 1.2 DEFINITIONS

- a. Adequately Wet: A term defined in 40 CFR 61, Subpart M, and EPA 340/1-90-019 meaning to sufficiently mix or penetrate with liquid to prevent the release of particulate. If visible emissions are observed coming from asbestos-containing material (ACM), then that material has not been adequately wetted. However, the absence of visible emissions is not sufficient evidence of being adequately wetted.
- b. Aggressive Method: Removal or disturbance of building material by sanding, abrading, grinding, or other method that breaks, crumbles, or disintegrates intact asbestos-containing material (ACM).
- c. Amended Water: Water containing a wetting agent or surfactant with a surface tension of at least 29 dynes per square centimeter when tested in accordance with ASTM D 1331.
- d. Asbestos: Asbestos includes chrysotile, amosite, crocidolite, tremolite asbestos, anthophyllite asbestos, actinolite asbestos, and any of these minerals that have been chemically treated and/or altered.
- e. Asbestos-Containing Material (ACM): Any materials containing more than one percent asbestos.
- f. Asbestos Fiber: A particulate form of asbestos, 5 micrometers or longer, with a length-to-width ratio of at least 3 to 1.
- g. Authorized Person: Any person authorized by the Contractor and required by work duties to be present in the regulated areas.
- h. Building Inspector: Individual who inspects buildings for asbestos and has EPA Model Accreditation Plan (MAP) "Building Inspector" training; accreditation required by 40 CFR 763, Subpart E, Appendix C.
- i. Certified Industrial Hygienist (CIH): An Industrial Hygienist certified in the practice of industrial hygiene by the American Board of Industrial Hygiene.
- j. Class I Asbestos Work: Activities defined by OSHA involving the removal of Thermal System Insulation (TSI) and surfacing ACM.

- k. Class II Asbestos Work: Activities defined by OSHA involving the removal of ACM which is not thermal system insulation or surfacing material. This includes, but is not limited to, the removal of asbestos - containing wallboard, floor tile and sheeting, roofing and siding shingles, and construction mastic. Certain "incidental" roofing materials such as mastic, flashing and cements when they are still intact are excluded from Class II asbestos work. Removal of small amounts of these materials which would fit into a glovebag may be classified as a Class III job.
- l. Class III Asbestos Work: Activities defined by OSHA that involve repair and maintenance operations, where ACM, including TSI and surfacing ACM, is likely to be disturbed. Operations may include drilling, abrading, cutting a hole, cable pulling, crawling through tunnels or attics and spaces above the ceiling, where asbestos is actively disturbed or asbestos-containing debris is actively disturbed.
- m. Class IV Asbestos Work: Maintenance and custodial construction activities during which employees contact but do not disturb ACM and activities to clean-up dust, waste and debris resulting from Class I, II, and III activities. This may include dusting surfaces where ACM waste and debris and accompanying dust exists and cleaning up loose ACM debris from TSI or surfacing ACM following construction.
- n. Clean room: An uncontaminated room having facilities for the storage of employees' street clothing and uncontaminated materials and equipment.
- o. Competent Person: In addition to the definition in 29 CFR 1926, Section .32(f), a person who is capable of identifying existing asbestos hazards as defined in 29 CFR 1926, Section .1101, selecting the appropriate control strategy, has the authority to take prompt corrective measures to eliminate them and has EPA Model Accreditation Plan (MAP) "Contractor/Supervisor" training; accreditation required by 40 CFR 763, Subpart E, Appendix C.
- p. Contractor/Supervisor: Individual who supervises asbestos abatement work and has EPA Model Accreditation Plan "Contractor/Supervisor" training; accreditation required by 40 CFR 763, Subpart E, Appendix C.
- q. Critical Barrier: One or more layers of plastic sealed over all openings into a regulated area or any other similarly placed physical barrier sufficient to prevent airborne asbestos in a regulated area from migrating to an adjacent area.
- r. Decontamination Area: An enclosed area adjacent and connected to the regulated area and consisting of an equipment room, shower area, and clean room, which is used for the decontamination of workers, materials, and equipment that are contaminated with asbestos.
- s. Demolition: The wrecking or taking out of any load-supporting structural member and any related razing, removing, or stripping of asbestos products.

- t. Disposal Bag: A 6 mil thick, leak-tight plastic bag, pre-labeled in accordance with 29 CFR 1926, Section .1101, used for transporting asbestos waste from containment to disposal site.
- u. Disturbance: Activities that disrupt the matrix of ACM, crumble or pulverize ACM, or generate visible debris from ACM. Disturbance includes cutting away small amounts of ACM, no greater than the amount which can be contained in 1 standard sized glovebag or waste bag, not larger than 60 inches in length and width in order to access a building component.
- v. Equipment Room or Area: An area adjacent to the regulated area used for the decontamination of employees and their equipment.
- w. Employee Exposure: That exposure to airborne asbestos that would occur if the employee were not using respiratory protective equipment.
- x. Fiber: A fibrous particulate, 5 micrometers or longer, with a length to width ratio of at least 3 to 1.
- y. Friable ACM: A term defined in 40 CFR 61, Subpart M and EPA 340/1-90-018 meaning any material which contains more than 1 percent asbestos, as determined using the method specified in 40 CFR 763, Subpart E, Appendix A, Section 1, Polarized Light Microscopy (PLM), that when dry, can be crumbled, pulverized, or reduced to powder by hand pressure. If the asbestos content is less than 10 percent, as determined by a method other than point counting by PLM, the asbestos content is verified by point counting using PLM.
- z. Glovebag: Not more than a 60 by 60 inch impervious plastic bag-like enclosure affixed around an asbestos-containing material, with glove-like appendages through which material and tools may be handled.
- aa. High-Efficiency Particulate Air (HEPA) Filter: A filter capable of trapping and retaining at least 99.97 percent of all mono-dispersed particles of 0.3 micrometers in diameter.
- bb. Homogeneous Area: An area of surfacing material or thermal system insulation that is uniform in color and texture.
- cc. Industrial Hygienist: A professional qualified by education, training, and experience to anticipate, recognize, evaluate, and develop controls for occupational health hazards.
- dd. Intact: ACM which has not crumbled, been pulverized, or otherwise deteriorated so that the asbestos is no longer likely to be bound with its matrix. Removal of "intact" asphaltic, resinous, cementitious products does not render the ACM non-intact simply by being separated into smaller pieces.
- ee. Model Accreditation Plan (MAP): USEPA training accreditation requirements for persons who work with asbestos as specified in 40 CFR 763, Subpart E, Appendix C.
- ff. Modification: A changed or altered procedure, material or component of a control system, which replaces a procedure,

- material or component of a required system.
- gg. Negative Exposure Assessment: A demonstration by the Contractor to show that employee exposure during an operation is expected to be consistently below the OSHA Permissible Exposure Limits (PELs).
  - hh. NESHAP: National Emission Standards for Hazardous Air Pollutants. The USEPA NESHAP regulation for asbestos is at 40 CFR 61, Subpart M.
  - ii. Nonfriable ACM: A NESHAP term defined in 40 CFR 61, Subpart M and EPA 340/1-90-018 meaning any material containing more than 1 percent asbestos, as determined using the method specified in 40 CFR 763, Subpart E, Appendix A, Section 1, Polarized Light Microscopy, that, when dry, cannot be crumbled, pulverized or reduced to powder by hand pressure.
  - jj. Nonfriable ACM (Category I): A NESHAP term defined in 40 CFR 61, Subpart E and EPA 340/1-90-018 meaning asbestos-containing packings, gaskets, resilient floor covering, and asphalt roofing products containing more than 1 percent asbestos as determined using the method specified in 40 CFR 763, Subpart F, Appendix A, Section 1, Polarized Light Microscopy.
  - kk. Nonfriable ACM (Category II): A NESHAP term defined in 40 CFR 61, Subpart E and EPA 340/1-90-018 meaning any material, excluding Category I nonfriable ACM, containing more than 1 percent asbestos, as determined using the methods specified in 40 CFR 763, Subpart F, Appendix A, Section 1, Polarized Light Microscopy, that when dry, cannot be crumbled, pulverized, or reduced to powder by hand pressure.
  - ll. Permissible Exposure Limits (PELs):
    - (1) PEL-Time weighted average(TWA): Concentration of asbestos not in excess of 0.1 fibers per cubic centimeter of air (f/cc) as an 8 hour time weighted average (TWA), as determined by the method prescribed in 29 CFR 1926, Section .1101, Appendix A, or the current version of NIOSH Pub No. 84-100 analytical method 7400.
    - (2) Short Term Excursion Limit: An airborne concentration of asbestos not in excess of 1.0 f/cc of air as averaged over a sampling period of 30 minutes as determined by the method prescribed in 29 CFR 1926, Section .1101, Appendix A, or the current version of NIOSH Pub No. 84-100 analytical method 7400.
  - mm. Regulated Area: An OSHA term defined in 29 CFR 1926, Section .1101 meaning an area established by the Contractor to demarcate areas where Class I, II, and III asbestos work is conducted; also any adjoining area where debris and waste from such asbestos work accumulate; and an area within which airborne concentrations of asbestos exceed, or there is a reasonable possibility they may exceed, the permissible exposure limit.
  - nn. Removal: All operations where ACM is taken out or stripped from structures or substrates, and includes demolition operations.
  - oo. Repair: Overhauling, rebuilding, reconstructing, or reconditioning of structures or substrates, including

encapsulation or other repair of ACM attached to structures or substrates. If the amount of asbestos so "disturbed" cannot be contained in 1 standard glovebag or waste bag, Class I precautions are required.

- pp. Spills/Emergency Cleanups: Cleanup of sizable amounts of asbestos waste and debris which has occurred, for example, when water damage occurs in a building, and sizable amounts of ACM are dislodged. A Competent Person evaluates the site and ACM to be handled, and based on the type, condition and extent of the dislodged material, classifies the cleanup as Class I, II, or III. Only if the material was intact and the cleanup involves mere contact of ACM, rather than disturbance, could there be a Class IV classification.
- qq. Surfacing ACM: Asbestos-containing material which contains more than 1% asbestos and is sprayed-on, troweled-on, or otherwise applied to surfaces, such as acoustical plaster on ceilings and fireproofing materials on structural members, or other materials on surfaces for acoustical, fireproofing, or other purposes.
- rr. Thermal system insulation (TSI) ACM: ACM which contains more than 1% asbestos and is applied to pipes, fittings, boilers, breeching, tanks, ducts, or other interior structural components to prevent heat loss or gain or water condensation.
- ss. Transite: A generic name for asbestos cement wallboard and pipe.
- tt. Worker: Individual (not designated as the Competent Person or a supervisor) who performs asbestos work and has completed asbestos worker training required by 29 CFR 1926, Section .1101, to include EPA Model Accreditation Plan (MAP) "Worker" training; accreditation required by 40 CFR 763, Subpart E, Appendix C, if required by the OSHA Class of work to be performed or by the state where the work is to be performed.

### 1.3 DESCRIPTION OF WORK

The work covered by this section includes the removal of asbestos-containing materials (ACM) which are encountered during renovation activities associated with this project and describes procedures and equipment required to protect workers and occupants of the regulated area from contact with airborne asbestos fibers and ACM dust and debris.

Activities include OSHA Class I and Class II work operations involving ACM.

The work also includes containment, storage, transportation and disposal of the generated ACM wastes. More specific operational procedures shall be detailed in the required Accident Prevention Plan and its subcomponents, the Asbestos Hazard Abatement Plan and Activity Hazard Analyses required in paragraph SAFETY AND HEALTH PROGRAM AND PLANS.

#### 1.3.1 Abatement Work Tasks

The specific ACM to be abated is identified on the detailed plans and project drawings. A summary of work task data elements for each individual ACM abatement work task to include the appropriate RESPONSE ACTION DETAIL SHEET (item to be abated and methods to be used) and SET-UP DETAIL SHEETS (containment techniques to include safety precautions and methods) is included in Table 1, "Individual Work Task Data Elements" at the end of this section.

### 1.3.2 Unexpected Discovery of Asbestos

For any previously untested building components suspected to contain asbestos and located in areas impacted by the work, the Contractor shall notify the Contracting Officer (CO) who will have the option of ordering up to three bulk samples to be obtained at the Contractor's expense and delivered to a laboratory accredited under the National Institute of Standards and Technology (NIST) "National Voluntary Laboratory Accreditation Program (NVLAP)" and analyzed by PLM at no additional cost to the Government. Any additional components identified as ACM that have been approved by the Contracting Officer for removal shall be removed by the Contractor and will be paid for by an equitable adjustment to the contract price under the CONTRACT CLAUSE titled "changes". Sampling activities undertaken to determine the presence of additional ACM shall be conducted by personnel who have successfully completed the EPA Model Accreditation Plan (MAP) "Building Inspector" training course required by 40 CFR 763, Subpart E, Appendix C.

### 1.4 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

#### SD-03 Product Data

Respiratory Protection Program; G AE

Records of the respirator program.

Cleanup and Disposal; G AE

Waste shipment records. Weigh bills and delivery tickets shall be furnished for information only.

Detailed Drawings; G AE

Descriptions, detail project drawings, and site layout to include worksite containment area techniques as prescribed on applicable SET-UP DETAIL SHEETS, local exhaust ventilation system locations, decontamination units and load-out units, other temporary waste storage facility, access tunnels, location of temporary utilities (electrical, water, sewer) and boundaries of each regulated area.

Materials and Equipment; G AE

Manufacturer's catalog data for all materials and equipment to be used in the work, including brand name, model, capacity, performance characteristics and any other pertinent information. Test results and certificates from the manufacturer of encapsulants substantiating compliance with performance requirements of this specification. Material Safety Data Sheets for all chemicals to be used onsite in the same format as implemented in the Contractor's HAZARD COMMUNICATION PROGRAM. Data shall include, but shall not be limited to, the following

items:

- a. High Efficiency Filtered Air (HEPA) local exhaust equipment;
- b. Vacuum cleaning equipment;
- c. Pressure differential monitor for HEPA local exhaust equipment;
- d. Air monitoring equipment;
- e. Respirators;
- f. Personal protective clothing and equipment;
  - (1) Coveralls
  - (2) Underclothing
  - (3) Other work clothing
  - (4) Foot coverings
  - (5) Hard hats
  - (6) Eye protection
  - (7) Other items required and approved by Contractors
- Designated Competent Person;G
- g. Glovebag
- h. Duct Tape
- i. Disposal Containers
  - (1) Disposal bags
  - (2) Fiberboard drums
  - (3) Paperboard boxes
- j. Sheet Plastic
  - (1) Polyethylene Sheet - General
  - (2) Polyethylene Sheet - Flame Resistant
  - (3) Polyethylene Sheet - Reinforced
- k. Wetting Agent
  - (1) Amended Water
  - (2) Removal encapsulant
- l. Strippable Coating
- m. Prefabricated Decontamination Unit
- n. Other items
- o. Chemical encapsulant
- p. Chemical encasement materials
- q. Material Safety Data Sheets (for all chemicals proposed)

Qualifications; G AE

A written report providing evidence of qualifications for personnel, facilities and equipment assigned to the work.

Training Program;

A copy of the written project site-specific training material as indicated in 29 CFR 1926, Section .1101 that will be used to train onsite employees. The training document shall be signed by the Contractor's Designated IH and Competent Person.

Medical Requirements; G AE

Physician's written opinion.

Encapsulants; G AE

Certificates stating that encapsulants meet the applicable specified performance requirements.

SD-06 Test Reports

Exposure Assessment and Air Monitoring; G AE

Initial exposure assessments, negative exposure assessments, air-monitoring results and documentation.

Local Exhaust Ventilation;G AE

Pressure differential recordings.

Licenses, Permits and Notifications; G AE

Licenses, permits, and notifications.

SD-07 Certificates

Vacuum, Filtrationand Ventilation Equipment;

Manufacturer's certifications showing compliance with ANSI Z9.2 for:

- a. Vacuums.
- b. Water filtration equipment.
- c. Ventilation equipment.
- d. Other equipment required to contain airborne asbestos fibers.

## 1.5 QUALIFICATIONS

### 1.5.1 Written Qualifications and Organization Report

The Contractor shall furnish a written qualifications and organization report providing evidence of qualifications of the Contractor, Contractor's Project Supervisor, Designated Competent Person, supervisors and workers; Designated IH (person assigned to project and firm name); independent testing laboratory (including name of firm, principal, and analysts who will perform analyses); all subcontractors to be used including disposal

transportation and disposal facility firms, subcontractor supervisors, subcontractor workers; and any others assigned to perform asbestos abatement and support activities. The report shall include an organization chart showing the Contractor's staff organization for this project by name and title, chain of command and reporting relationship with all subcontractors. The report shall be signed by the Contractor, the Contractor's onsite project manager, Designated Competent Person, Designated IH, designated testing laboratory and the principals of all subcontractors to be used. The Contractor shall include the following statement in the report: "By signing this report I certify that the personnel I am responsible for during the course of this project fully understand the contents of 29 CFR 1926, Section .1101, 40 CFR 61, Subpart M, and the federal, state and local requirements specified in paragraph SAFETY AND HEALTH PROGRAM AND PLANS for those asbestos abatement activities that they will be involved in."

#### 1.5.2 Specific Requirements

The Contractor shall designate in writing, personnel meeting the following qualifications:

- a. Designated Competent Person: The name, address, telephone number, and resume of the Contractor's Designated Competent Person shall be provided. Evidence that the full-time Designated Competent Person is qualified in accordance with 29 CFR 1926, Sections .32 and .1101, has EPA Model Accreditation Plan (MAP) "Contractor/Supervisor" training accreditation required by 40 CFR 763, Subpart E, Appendix C, and is experienced in the administration and supervision of asbestos abatement projects, including exposure assessment and monitoring, work practices, abatement methods, protective measures for personnel, setting up and inspecting asbestos abatement work areas, evaluating the integrity of containment barriers, placement and operation of local exhaust systems, ACM generated waste containment and disposal procedures, decontamination units installation and maintenance requirements, site safety and health requirements, notification of other employees onsite, etc. The duties of the Competent Person shall include the following: controlling entry to and exit from the regulated area; supervising any employee exposure monitoring required by 29 CFR 1926, Section .1101; ensuring that all employees working within a regulated area wear the appropriate personal protective equipment (PPE), are trained in the use of appropriate methods of exposure control, and use the hygiene facilities and decontamination procedures specified; and ensuring that engineering controls in use are in proper operating conditions and are functioning properly. The Designated Competent Person shall be responsible for compliance with applicable federal, state and local requirements, the Contractor's Accident Prevention Plan and Asbestos Hazard Abatement Plan. The Designated Competent Person shall provide, and the Contractor shall submit, the "Contractor/Supervisor" course completion certificate and the most recent certificate for required refresher training with the employee "Certificate of Worker Acknowledgment" required by this paragraph. The Contractor shall submit evidence that this person has a minimum of 2 years of on-the-job asbestos abatement experience relevant to OSHA competent person requirements. The Designated Competent Person shall be onsite at all times during the project.

- b. Project and Other Supervisors: The Contractor shall provide the name, address, telephone number, and resume of the Project Supervisor and other supervisors who have responsibility to implement the Accident Prevention Plan, including the Asbestos Hazard Abatement Plan and Activity Hazard Analyses, the authority to direct work performed under this contract and verify compliance, and have EPA Model Accreditation Plan (MAP) "Contractor/Supervisor" training accreditation required by 40 CFR 763, Subpart E, Appendix C. The Project Supervisor and other supervisors shall provide, and the Contractor shall submit, the "Contractor/Supervisor" course completion certificate and the most recent certificate for required refresher training with the employee "Certificate of Worker Acknowledgment" required by this paragraph. The Contractor shall submit evidence that the Project Supervisor has a minimum of 2 years of on-the-job asbestos abatement experience relevant to project supervisor responsibilities and the other supervisors have a minimum of 1 year on-the-job asbestos abatement experience commensurate with the responsibilities they will have on this project.
- c. Designated Industrial Hygienist: The Contractor shall provide the name, address, telephone number, resume and other information specified below for the Industrial Hygienist (IH) selected to prepare the Contractor's Asbestos Hazard Abatement Plan, prepare and perform training, direct air monitoring and assist the Contractor's Competent Person in implementing and ensuring that safety and health requirements are complied with during the performance of all required work. The Designated IH shall be a person who is board certified in the practice of industrial hygiene as determined and documented by the American Board of Industrial Hygiene (ABIH), has EPA Model Accreditation Plan (MAP) "Contractor/Supervisor" training accreditation required by 40 CFR 763, Subpart E, Appendix C, and has a minimum of 2 years of comprehensive experience in planning and overseeing asbestos abatement activities. The Designated IH shall provide, and the Contractor shall submit, the "Contractor/Supervisor" course completion certificate and the most recent certificate for required refresher training with the employee "Certificate of Worker Acknowledgment" required by this paragraph. The Designated IH shall be completely independent from the Contractor according to federal, state, or local regulations; that is, shall not be a Contractor's employee or be an employee or principal of a firm in a business relationship with the Contractor negating such independent status. A copy of the Designated IH's current valid ABIH certification shall be included. The Designated IH shall be onsite at all times for the duration of asbestos activities and shall be available for emergencies. In addition, the Designated IH shall prepare, and the Contractor shall submit, the name, address, telephone numbers and resumes of additional IH's and industrial hygiene technicians (IHT) who will be assisting the Designated IH in performing onsite tasks. IHs and IHTs supporting the Designated IH shall have a minimum of 2 years of practical onsite asbestos abatement experience. The formal reporting relationship between the Designated IH and the support IHs and IHTs, the Designated Competent Person, and the Contractor shall be indicated.
- d. Asbestos Abatement Workers: Asbestos abatement workers shall meet the requirements contained in 29 CFR 1926, Section .1101, 40 CFR 61,

Subpart M, and other applicable federal, state and local requirements. Worker training documentation shall be provided as required on the "Certificate of Workers Acknowledgment" in this paragraph.

- e. Worker Training and Certification of Worker Acknowledgment: Training documentation will be required for each employee who will perform OSHA Class I and Class II asbestos abatement operations. Such documentation shall be submitted on a Contractor generated form titled "Certificate of Workers Acknowledgment", to be completed for each employee in the same format and containing the same information as the example certificate at the end of this section. Training course completion certificates (initial and most recent update refresher) required by the information checked on the form shall be attached.
- f. Physician: The Contractor shall provide the name, medical qualifications, address, telephone number and resume of the physician who will or has performed the medical examinations and evaluations of the persons who will conduct the asbestos abatement work tasks. The physician shall be currently licensed by the state where the workers will be or have been examined, have expertise in pneumoconiosis and shall be responsible for the determination of medical surveillance protocols and for review of examination/test results performed in compliance with 29 CFR 1926, Section .1101 and paragraph MEDICAL REQUIREMENTS. The physician shall be familiar with the site's hazards and the scope of this project.
- g. First Aid and CPR Trained Persons: The names of at least 2 persons who are currently trained in first aid and CPR by the American Red Cross or other approved agency shall be designated and shall be onsite at all times during site operations. They shall be trained in universal precautions and the use of PPE as described in the Bloodborne Pathogens Standard of 29 CFR 1910, Section .1030 and shall be included in the Contractor's Bloodborne Pathogen Program. These persons may perform other duties but shall be immediately available to render first aid when needed. A copy of each designated person's current valid First Aid and CPR certificate shall be provided.
- h. Independent Testing Laboratory: The Contractor shall provide the name, address and telephone number of the independent testing laboratory selected to perform the sample analyses and report the results. The testing laboratory shall be completely independent from the Contractor as recognized by federal, state or local regulations. Written verification of the following criteria, signed by the testing laboratory principal and the Contractor, shall be submitted:

(1) Phase contrast microscopy (PCM): The laboratory is fully equipped and proficient in conducting PCM of airborne samples using the methods specified by 29 CFR 1926, Section .1101, OSHA method ID-160, the most current version of NIOSH Pub No. 84-100 Method 7400, and NIOSH Pub No. 84-100 Method 7402, transmission electron microscopy (TEM); the laboratory is currently judged proficient (classified as acceptable) in counting airborne asbestos samples by PCM by successful participation in each of the last 4 rounds in the American Industrial Hygiene Association

(AIHA) Proficiency Analytical Testing (PAT) Program; the names of the selected microscopists who will analyze airborne samples by PCM with verified documentation of their proficiency to conduct PCM analyses by being judged proficient in counting samples as current participating analysts in the AIHA PAT Program, and having successfully completed the Asbestos Sampling and Analysis course (NIOSH 582 or equivalent) with a copy of course completion certificate provided; when the PCM analysis is to be conducted onsite, documentation shall be provided certifying that the onsite analyst meets the same requirements.

(2) Polarized light microscopy (PLM): The laboratory is fully equipped and proficient in conducting PLM analyses of suspect ACM bulk samples in accordance with 40 CFR 763, Subpart E, Appendix E; the laboratory is currently accredited by NIST under the NVLAP for bulk asbestos analysis and will use analysts (names shall be provided) with demonstrated proficiency to conduct PLM to include its application to the identification and quantification of asbestos content.

(3) Transmission electron microscopy (TEM): The laboratory is fully equipped and proficient in conducting TEM analysis of airborne samples using the mandatory method specified by 40 CFR 763, Subpart E, Appendix E; the laboratory is currently accredited by NIST under the NVLAP for airborne sample analysis of asbestos by TEM; the laboratory will use analysts (names shall be provided) that are currently evaluated as competent with demonstrated proficiency under the NIST NVLAP for airborne sample analysis of asbestos by TEM.

(4) PCM/TEM: The laboratory is fully equipped and each analyst (name shall be provided) possesses demonstrated proficiency in conducting PCM and TEM analysis of airborne samples using NIOSH Pub No. 84-100 Method 7400 PCM and NIOSH Pub No. 84-100 Method 7402 (TEM confirmation of asbestos content of PCM results) from the same filter.

- i. Disposal Facility, Transporter: The Contractor shall provide written evidence that the landfill to be used is approved for asbestos disposal by the USEPA and state regulatory agencies. Copies of signed agreements between the Contractor (including subcontractors and transporters) and the asbestos waste disposal facility to accept and dispose of all asbestos containing waste generated during the performance of this contract shall be provided. Qualifications shall be provided for each subcontractor or transporter to be used, indicating previous experience in transport and disposal of asbestos waste to include all required state and local waste hauler requirements for asbestos. The Contractor and transporters shall meet the DOT requirements of 49 CFR 171, 49 CFR 172, and 49 CFR 173 as well as registration requirements of 49 CFR 107 and other applicable state or local requirements. The disposal facility shall meet the requirements of 40 CFR 61, Sections .154 or .155, as required in 40 CFR 61, Section .150(b), and other applicable state or local requirements.

#### 1.5.3 Federal, State or Local Citations on Previous Projects

The Contractor and all subcontractors shall submit a statement, signed by an officer of the company, containing a record of any citations issued by Federal, State or local regulatory agencies relating to asbestos activities (including projects, dates, and resolutions); a list of penalties incurred through non-compliance with asbestos project specifications, including liquidated damages, overruns in scheduled time limitations and resolutions; and situations in which an asbestos-related contract has been terminated (including projects, dates, and reasons for terminations). If there are none, a negative declaration signed by an officer of the company shall be provided.

#### 1.6 REGULATORY REQUIREMENTS

In addition to detailed requirements of this specification, work performed under this contract shall comply with EM 385-1-1, applicable federal, state, and local laws, ordinances, criteria, rules and regulations regarding handling, storing, transporting, and disposing of asbestos waste materials. This includes, but is not limited to, OSHA standards, 29 CFR 1926, especially Section .1101, 40 CFR 61, Subpart M and 40 CFR 763. Matters of interpretation of standards shall be submitted to the appropriate administrative agency for resolution before starting work. Where the requirements of this specification, applicable laws, criteria, ordinances, regulations, and referenced documents vary, the most stringent requirements shall apply. The following state and local laws, rules and regulations regarding demolition, removal, encapsulation, construction alteration, repair, maintenance, renovation, spill/emergency cleanup, housekeeping, handling, storing, transporting and disposing of asbestos material apply.

## 1.7 SAFETY AND HEALTH PROGRAM AND PLANS

The Contractor shall develop and submit a written comprehensive site-specific Accident Prevention Plan at least 30 days prior to the preconstruction conference. The Accident Prevention Plan shall address requirements of EM 385-1-1, Appendix A, covering onsite work to be performed by the Contractor and subcontractors. The Accident Prevention Plan shall incorporate an Asbestos Hazard Abatement Plan, and Activity Hazard Analyses as separate appendices into 1 site specific Accident Prevention Plan document. Any portions of the Contractor's overall Safety and Health Program that are referenced in the Accident Prevention Plan, e.g., respirator program, hazard communication program, confined space entry program, etc., shall be included as appendices to the Accident Prevention Plan. The plan shall take into consideration all the individual asbestos abatement work tasks identified in Table 1. The plan shall be prepared, signed (and sealed, including certification number if required), and dated by the Contractor's Designated IH, Competent Person, and Project Supervisor.

### 1.7.1 Asbestos Hazard Abatement Plan Appendix

The Asbestos Hazard Abatement Plan appendix to the Accident Prevention Plan shall include, but not be limited to, the following:

- a. The personal protective equipment to be used;
- b. The location and description of regulated areas including clean and dirty areas, access tunnels, and decontamination unit (clean room, shower room, equipment room, storage areas such as load-out unit);
- c. Initial exposure assessment in accordance with 29 CFR 1926, Section .1101;
- d. Level of supervision;
- e. Method of notification of other employers at the worksite;
- f. Abatement method to include containment and control procedures;
- g. Interface of trades involved in the construction;
- h. Sequencing of asbestos related work;
- i. Storage and disposal procedures and plan;
- j. Type of wetting agent and asbestos encapsulant to be used;
- k. Location of local exhaust equipment;
- l. Air monitoring methods (personal, environmental and clearance);
- m. Bulk sampling and analytical methods (if required);
- n. A detailed description of the method to be employed in order to control the spread of ACM wastes and airborne fiber concentrations;
- o. Fire and medical emergency response procedures;

- p. The security procedures to be used for all regulated areas.

#### 1.7.2 Activity Hazard Analyses Appendix

Activity Hazard Analyses, for each major phase of work, shall be submitted and updated during the project. The Activity Hazard Analyses format shall be in accordance with EM 385-1-1 (Figure 1-1). The analysis shall define the activities to be performed for a major phase of work, identify the sequence of work, the specific hazards anticipated, and the control measures to be implemented to eliminate or reduce each hazard to an acceptable level. Work shall not proceed on that phase until the Activity Hazard Analyses has been accepted and a preparatory meeting has been conducted by the Contractor to discuss its contents with everyone engaged in the activities, including the onsite Government representatives. The Activity Hazard Analyses shall be continuously reviewed and, when appropriate, modified to address changing site conditions or operations.

#### 1.8 PRECONSTRUCTION CONFERENCE AND ONSITE SAFETY

The Contractor and the Contractor's Designated Competent Person, Project Supervisor, and Designated IH shall meet with the Contracting Officer prior to beginning work at a safety preconstruction conference to discuss the details of the Contractor's submitted Accident Prevention Plan to include the Asbestos Hazard Abatement Plan and Activity Hazard Analyses appendices. Deficiencies in the Accident Prevention Plan will be discussed and the Accident Prevention Plan shall be revised to correct the deficiencies and resubmitted for acceptance. Any changes required in the specification as a result of the Accident Prevention Plan shall be identified specifically in the plan to allow for free discussion and acceptance by the Contracting Officer, prior to the start of work. Onsite work shall not begin until the Accident Prevention Plan has been accepted. A copy of the written Accident Prevention Plan shall be maintained onsite. Changes and modifications to the accepted Accident Prevention Plan shall be made with the knowledge and concurrence of the Designated IH, the Project Supervisor, Designated Competent Person, and the Contracting Officer. Should any unforeseen hazard become evident during the performance of the work, the Designated IH shall bring such hazard to the attention of the Project Supervisor, Designated Competent Person, and the Contracting Officer, both verbally and in writing, for resolution as soon as possible. In the interim, all necessary action shall be taken by the Contractor to restore and maintain safe working conditions in order to safeguard onsite personnel, visitors, the public, and the environment. Once accepted by the Contracting Officer, the Accident Prevention Plan, including the Asbestos Hazard Abatement Plan and Activity Hazard Analyses will be enforced as if an addition to the contract. Disregarding the provisions of this contract or the accepted Accident Prevention Plan will be cause for stopping of work, at the discretion of the Contracting Officer, until the matter has been rectified.

#### 1.9 SECURITY

Fenced and/or locked security area shall be provided for each regulated area. A log book shall be kept documenting entry into and out of the regulated area. Entry into regulated areas shall only be by personnel authorized by the Contractor and the Contracting Officer. Personnel authorized to enter regulated areas shall be trained, be medically evaluated, and wear the required personal protective equipment for the specific regulated area to be entered.

#### 1.10 MEDICAL REQUIREMENTS

Medical requirements shall conform to 29 CFR 1926, Section .1101.

#### 1.10.1 Medical Examinations

Before being exposed to airborne asbestos fibers, workers shall be provided with a medical examination as required by 29 CFR 1926, Section .1101 and other pertinent state or local requirements. This requirement shall have been satisfied within the last 12 months. The same medical examination shall be given on an annual basis to employees engaged in an occupation involving asbestos and within 30 calendar days before or after the termination of employment in such occupation. X-ray films of asbestos workers shall be identified to the consulting radiologist and medical record jackets shall be marked with the word "asbestos."

##### 1.10.1.1 Information Provided to the Physician

The Contractor shall provide the following information in writing to the examining physician:

- a. A copy of 29 CFR 1926, Section .1101 and Appendices D, E, G, and I;
- b. A description of the affected employee's duties as they relate to the employee's exposure;
- c. The employee's representative exposure level or anticipated exposure level;
- d. A description of any personal protective and respiratory equipment used or to be used;
- e. Information from previous medical examinations of the affected employee that is not otherwise available to the examining physician.

##### 1.10.1.2 Written Medical Opinion

For each worker, a written medical opinion prepared and signed by a licensed physician indicating the following:

- a. Summary of the results of the examination.
- b. The potential for an existing physiological condition that would place the employee at an increased risk of health impairment from exposure to asbestos.
- c. The ability of the individual to wear personal protective equipment, including respirators, while performing strenuous work tasks under cold and/or heat stress conditions.

d. A statement that the employee has been informed of the results of the examination, provided with a copy of the results, informed of the increased risk of lung cancer attributable to the combined effect of smoking and asbestos exposure, and informed of any medical condition that may result from asbestos exposure.

#### 1.10.2 Medical and Exposure Records

Complete and accurate records shall be maintained of each employee's medical examinations, medical records, and exposure data, as required by 29 CFR 1910, Section .1910.20 and 29 CFR 1926, Section .1101 for a period of 50 years after termination of employment. Records of the required medical examinations and exposure data shall be made available, for inspection and copying, to the Assistant Secretary of Labor for Occupational Safety and Health (OSHA) or authorized representatives of the employee and an employee's physician upon request of the employee or former employee. A copy of the required medical certification for each employee shall be maintained on file at the worksite for review, as requested by the Contracting Officer or the representatives.

#### 1.11 TRAINING PROGRAM

##### 1.11.1 General Training Requirements

The Contractor shall establish a training program as specified by EPA Model Accreditation Plan (MAP), training requirements at 40 CFR 763, Subpart E, Appendix C, the District of Columbia 20 DCMR Section 800 OSHA requirements at 29 CFR 1926, Section .1101(k)(9), and this specification. Contractor employees shall complete the required training for the type of work they are to perform and such training shall be documented and provided to the Contracting Officer as specified in paragraph QUALIFICATIONS.

##### 1.11.2 Project Specific Training

Prior to commencement of work, each worker shall be instructed by the Contractor's Designated IH and Competent Person in the following project specific training:

- a. The hazards and health effects of the specific types of ACM to be abated;
- b. The content and requirements of the Contractor's Accident Prevention Plan to include the Asbestos Hazard Abatement Plan and Activity Hazard Analyses and site-specific safety and health precautions;
- c. Hazard Communication Program;
- d. Hands-on training for each asbestos abatement technique to be employed;
- e. Heat and/or cold stress monitoring specific to this project;
- f. Air monitoring program and procedures;
- g. Medical surveillance to include medical and exposure record-keeping procedures;
- h. The association of cigarette smoke and asbestos-related disease;

- i. Security procedures;
- j. Specific work practice controls and engineering controls required for each Class of work in accordance with 29 CFR 1926, Section .1101.

#### 1.12 RESPIRATORY PROTECTION PROGRAM

The Contractor's Designated IH shall establish in writing, and implement a respiratory protection program in accordance with 29 CFR 1926, Section .1101, 29 CFR 1910, Section .134, ANSI Z88.2, CGA G-7, CGA G-7.1 and DETAIL SHEET 12. The Contractor's Designated IH shall establish minimum respiratory protection requirements based on measured or anticipated levels of airborne asbestos fiber concentrations encountered during the performance of the asbestos abatement work. The Contractor's respiratory protection program shall include, but not be limited to, the following elements:

- a. The company policy, used for the assignment of individual responsibility, accountability, and implementation of the respiratory protection program.
- b. The standard operating procedures covering the selection and use of respirators. Respiratory selection shall be determined by the hazard to which the worker is exposed.
- c. Medical evaluation of each user to verify that the worker may be assigned to an activity where respiratory protection is required.
- d. Training in the proper use and limitations of respirators.
- e. Respirator fit-testing, i.e., quantitative, qualitative and individual functional fit checks.
- f. Regular cleaning and disinfection of respirators.
- g. Routine inspection of respirators during cleaning and after each use when designated for emergency use.
- h. Storage of respirators in convenient, clean, and sanitary locations.
- i. Surveillance of regulated area conditions and degree of employee exposure (e.g., through air monitoring).
- j. Regular evaluation of the continued effectiveness of the respiratory protection program.
- k. Recognition and procedures for the resolution of special problems as they affect respirator use (e.g., no facial hair that comes between the respirator face piece and face or interferes with valve function; prescription eye wear usage; contact lenses usage; etc.).
- l. Proper training in putting on and removing respirators.

##### 1.12.1 Respiratory Fit Testing

A qualitative or quantitative fit test conforming to 29 CFR 1926, Section 1101, Appendix C shall be conducted by the Contractor's Designated IH for

each Contractor worker required to wear a respirator, and for the Contracting Officer and authorized visitors who enter a regulated area where respirators are required to be worn. A respirator fit test shall be performed for each worker wearing a negative-pressure respirator prior to initially wearing a respirator on this project and every 12 months thereafter. The qualitative fit tests may be used only for testing the fit of half-mask respirators where they are permitted to be worn, or of full-facepiece air purifying respirators where they are worn at levels at which half-facepiece air purifying respirators are permitted. If physical changes develop that will affect the fit, a new fit test for the worker shall be performed. Functional fit checks shall be performed by employees each time a respirator is put on and in accordance with the manufacturer's recommendation.

#### 1.12.2 Respirator Selection and Use Requirements

The Contractor shall provide respirators, and ensure that they are used as required by 29 CFR 1926, Section .1101 and in accordance with the manufacturer's recommendations. Respirators shall be jointly approved by the Mine Safety and Health Administration and the National Institute for Occupational Safety and Health NIOSH. For use in environments containing airborne asbestos fibers. Personnel who handle ACM, enter regulated areas that require the wearing of a respirator, or who are otherwise carrying out abatement activities that require the wearing of a respirator, shall be provided with approved respirators that are fully protective of the worker at the measured or anticipated airborne asbestos concentration level to be encountered. For air-purifying respirators, the particulate filter portion of the cartridges or canister approved for use in airborne asbestos environments shall be High Efficiency Particulate Air (HEPA). The initial respirator selection and the decisions regarding the upgrading or downgrading of respirator type shall be made by the Contractor's Designated IH based on the measured or anticipated airborne asbestos fiber concentrations to be encountered. Recommendations made by the Contractor's Designated IH to downgrade respirator type shall be submitted in writing to the Contracting Officer. The Contractor's Designated Competent Person in consultation with the Designated IH, shall have the authority to take immediate action to upgrade or downgrade respiratory type when there is an immediate danger to the health and safety of the wearer. Respirators shall be used in the following circumstances:

- a. During all Class I asbestos jobs.
- b. During all Class II work where the ACM is not removed in a substantially intact state.
- c. During all Class II and III work which is not performed using wet methods. Respirators need not be worn during removal of ACM from sloped roofs when a negative exposure assessment has been made and ACM is removed in an intact state.

- d. During all Class II and III asbestos jobs where the Contractor does not produce a negative exposure assessment.
- e. During all Class III jobs where TSI or surfacing ACM is being disturbed.
- f. During all Class IV work performed within regulated areas where employees performing other work are required to wear respirators.
- g. During all work where employees are exposed above the PEL-TWA or PEL-Excursion Limit.
- h. In emergencies

#### 1.12.3 Class I Work

The Contractor shall provide: (1) a tight-fitting, powered air purifying respirator equipped with high efficiency filters, or (2) a full-facepiece supplied air respirator operated in the pressure demand mode, equipped with HEPA egress cartridges, or (3) an auxiliary positive pressure self-contained breathing apparatus, for all employees within the regulated area where Class I work is being performed; provided that a negative exposure assessment has not been produced, and that the exposure level will not exceed 1 f/cc as an 8-hour time weighted average. A full-facepiece supplied air respirator, operated in the pressure demand mode, equipped with an auxiliary positive pressure self-contained breathing apparatus shall be provided under such conditions, if the exposure assessment indicates exposure levels above 1 f/cc as an 8-hour time weighted average.

#### 1.12.4 Class II and III Work

The Contractor shall provide an air purifying respirator, other than a disposable respirator, equipped with high-efficiency filters whenever the employee performs Class II and III asbestos jobs where the Contractor does not produce a negative exposure assessment ; and Class III jobs where TSI or surfacing ACM is being disturbed.

#### 1.12.5 Sanitation

Employees who wear respirators shall be permitted to leave work areas to wash their faces and respirator facepieces whenever necessary to prevent skin irritation associated with respirator use.

#### 1.13 HAZARD COMMUNICATION PROGRAM

A hazard communication program shall be established and implemented in accordance with 29 CFR 1926, Section .59. Material safety data sheets (MSDSs) shall be provided for all hazardous materials brought onto the worksite. One copy shall be provided to the Contracting Officer and 1 copy shall be included in the Contractor's Hazard Communication Program.

## 1.14 1.14 LICENSES, PERMITS AND NOTIFICATIONS

## 1.14.1 General Legal Requirements

Necessary licenses, permits and notifications shall be obtained in conjunction with the project's asbestos abatement, transportation and disposal actions and timely notification furnished of such actions as required by federal, state, regional, and local authorities. The Contractor shall notify the EPA Region 3 USEPA local air pollution control district/agency and the Contracting Officer in writing, at least 10 days prior to the commencement of work, in accordance with 40 CFR 61, Subpart M, and state and local requirements to include the mandatory "Notification of Demolition and Renovation Record" form and other required notification documents. Notification shall be by Certified Mail, Return Receipt Requested. The Contractor shall furnish copies of the receipts to the Contracting Officer, in writing, prior to the commencement of work. Local fire department shall be notified 3 days before fire-proofing material is removed from a building and the notice shall specify whether or not the material contains asbestos. A copy of the rental company's written acknowledgment and agreement shall be provided as required by paragraph RENTAL EQUIPMENT. For licenses, permits, and notifications that the Contractor is responsible for obtaining, the Contractor shall pay any associated fees or other costs incurred.

## 1.14.2 Litigation and Notification

The Contractor shall notify the Contracting Officer if any of the following occur:

- a. The Contractor or any of the subcontractors are served with notice of violation of any law, regulation, permit or license which relates to this contract;
- b. Proceedings are commenced which could lead to revocation of related permits or licenses; permits, licenses or other Government authorizations relating to this contract are revoked;
- c. Litigation is commenced which would affect this contract;
- d. The Contractor or any of the subcontractors become aware that their equipment or facilities are not in compliance or may fail to comply in the future with applicable laws or regulations.

## 1.15 PERSONAL PROTECTIVE EQUIPMENT

Three complete sets of personal protective equipment shall be made available to the Contracting Officer and authorized visitors for entry to the regulated area. Contracting Officer and authorized visitors shall be provided with training equivalent to that provided to Contractor employees in the selection, fitting, and use of the required personal protective equipment and the site safety and health requirements. Contractor workers shall be provided with personal protective clothing and equipment and the Contractor shall ensure that it is worn properly. The Contractor's Designated IH and Designated Competent Person shall select and approve all the required personal protective clothing and equipment to be used.

#### 1.15.1 1.15.1 Respirators

Respirators shall be in accordance with paragraph RESPIRATORY PROTECTION PROGRAM.

#### 1.15.2 Whole Body Protection

Personnel exposed to airborne concentrations of asbestos that exceed the PELs, or for all OSHA Classes of work for which a required negative exposure assessment is not produced, shall be provided with whole body protection and such protection shall be worn properly. The Contractor's Designated IH and Competent Person shall select and approve the whole body protection to be used. The Competent Person shall examine work suits worn by employees at least once per work shift for rips or tears that may occur during performance of work. When rips or tears are detected while an employee is working, rips and tears shall be immediately mended, or the work suit shall be immediately replaced. Disposable whole body protection shall be disposed of as asbestos contaminated waste upon exiting from the regulated area. Reusable whole body protection worn shall be either disposed of as asbestos contaminated waste upon exiting from the regulated area or be properly laundered in accordance with 29 CFR 1926, Section .1101.

Whole body protection used for asbestos abatement shall not be removed from the worksite by a worker to be cleaned. Recommendations made by the Contractor's Designated IH to downgrade whole body protection shall be submitted in writing to the Contracting Officer. The Contractor's Designated Competent Person, in consultation with the Designated IH, has the authority to take immediate action to upgrade or downgrade whole body protection when there is an immediate danger to the health and safety of the wearer.

##### 1.15.2.1 Coveralls

Disposable-impermeable coveralls with a zipper front shall be provided. Sleeves shall be secured at the wrists, and foot coverings secured at the ankles. See DETAIL SHEET 13.

##### 1.15.2.2 Underwear

Disposable underwear shall be provided. If reusable underwear are used, they shall be disposed of as asbestos contaminated waste or laundered in accordance with 29 CFR 1926, Section .1101. Asbestos abatement workers shall not remove contaminated reusable underwear worn during abatement of ACM from the site to be laundered.

##### 1.15.2.3 Work Clothing

An additional coverall shall be provided when the abatement and control method employed does not provide for the exit from the regulated area directly into an attached decontamination unit. Cloth work clothes for wear under the protective coverall, and foot coverings, shall be provided when work is being conducted in low temperature conditions. Cloth work clothes shall be either disposed of as asbestos contaminated waste or properly laundered in accordance with 29 CFR 1926, Section .1101.

## 1.15.2.4 1.15.2.4 Gloves

Gloves shall be provided to protect the hands. Where there is the potential for hand injuries (i.e., scrapes, punctures, cuts, etc.) a suitable glove shall be provided and used.

## 1.15.2.5 Foot Coverings

Cloth socks shall be provided and worn next to the skin. Footwear, as required by OSHA and EM 385-1-1, that is appropriate for safety and health hazards in the area shall be worn. Rubber boots shall be used in moist or wet areas. Reusable footwear removed from the regulated area shall be thoroughly decontaminated or disposed of as ACM waste. Disposable protective foot covering shall be disposed of as ACM waste. If rubber boots are not used, disposable foot covering shall be provided.

## 1.15.2.6 Head Covering

Hood type disposable head covering shall be provided. In addition, protective head gear (hard hats) shall be provided as required. Hard hats shall only be removed from the regulated area after being thoroughly decontaminated.

## 1.15.2.7 Protective Eye Wear

Eye protection provided shall be in accordance with ANSI Z87.1.

## 1.16 HYGIENE FACILITIES AND PRACTICES

The Contractor shall establish a decontamination area for the decontamination of employees, material and equipment. The Contractor shall ensure that employees enter and exit the regulated area through the decontamination area.

## 1.16.1 Shower Facilities

Shower facilities, when provided, shall comply with 29 CFR 1910, Section .141(d)(3).

## 1.16.2 3-Stage Decontamination Area

A temporary negative pressure leak tight decontamination unit that is contiguous with the regulated area shall be provided as described in SET-UP DETAIL SHEET Numbers 22 and 23. Utilization of prefabricated units shall have prior approval of the Contracting Officer. The decontamination unit shall have an equipment room and a clean room separated by a shower that complies with 29 CFR 1910, Section .141 (unless the Contractor can demonstrate that such facilities are not feasible). Equipment and surfaces of containers filled with ACM shall be cleaned prior to removing them from the equipment room or area. Surfaces of the equipment room shall be wet wiped 2 times after each shift. Materials used for wet wiping shall be disposed of as asbestos contaminated waste. Two separate lockers shall be provided for each asbestos worker, one in the equipment room and one in the clean room. Hot water service may be secured from the building hot water system provided backflow protection is installed by the Contractor at the point of connection. Should sufficient hot water be unavailable, the Contractor shall provide a minimum 40 gal. electric water heater with minimum recovery rate of 20 gal. per hour and a temperature controller for each showerhead. The Contractor shall provide a minimum of 2 showers. Instantaneous type in-line water heater may be incorporated at each shower

head in lieu of hot water heater, upon approval by the Contracting Officer.

Flow and temperature controls shall be located within the shower and shall be adjustable by the user. The wastewater pump shall be sized for 1.25 times the showerhead flow-rate at a pressure head sufficient to satisfy the filter head loss and discharge line losses. The pump shall supply a minimum 25 gpm flow with 35 ft. of pressure head. Used shower water shall be collected and filtered to remove asbestos contamination. Filters and residue shall be disposed of as asbestos contaminated material, per DETAIL SHEETS 9 and 14. Filtered water shall be discharged to the sanitary system.

Wastewater filters shall be installed in series with the first stage pore size of 20 microns and the second stage pore size of 5 microns. The floor of the decontamination unit's clean room shall be kept dry and clean at all times. Water from the shower shall not be allowed to wet the floor in the clean room. Surfaces of the clean room and shower shall be wet-wiped 2 times after each shift change with a disinfectant solution. Proper housekeeping and hygiene requirements shall be maintained. Soap and towels shall be provided for showering, washing and drying. Any cloth towels provided shall be disposed of as ACM waste or shall be laundered in accordance with 29 CFR 1926, Section .1101.

#### 1.16.3 Decontamination Area Entry Procedures

The Contractor shall ensure that employees entering the decontamination area through the clean room or clean area:

- a. Remove street clothing in the clean room or clean area and deposit it in lockers.
- b. Put on protective clothing and respiratory protection before leaving the clean room or clean area.
- c. Pass through the equipment room to enter the regulated area.

#### 1.16.4 Decontamination Area Exit Procedures

The Contractor shall ensure that the following procedures are followed:

- a. Before leaving the regulated area, respirators shall be worn while employees remove all gross contamination and debris from their work clothing using a HEPA vacuum.
- b. Employees shall remove their protective clothing in the equipment room and deposit the clothing in labeled impermeable bags or containers (see Detail Sheets 9 and 14) for disposal and/or laundering.
- c. Employees shall not remove their respirators in the equipment room.
- d. After showering, employees shall enter the clean room before changing into street clothes.

## 1.16.5 Lunch Areas

The Contractor shall provide lunch areas in which the airborne concentrations of asbestos are below 0.01 f/cc.

## 1.16.6 Smoking

Smoking, if allowed by the Contractor, shall only be permitted in designated areas approved by the Contracting Officer.

## 1.17 REGULATED AREAS

All asbestos work shall be conducted within regulated areas. The regulated area shall be demarcated to minimize the number of persons within the area and to protect persons outside the area from exposure to airborne asbestos.

Where critical barriers or negative pressure enclosures are used, they shall demarcate the regulated area. Access to regulated areas shall be limited to authorized persons. The Contractor shall control access to regulated areas, ensure that only authorized personnel enter, and verify that Contractor required medical surveillance, training and respiratory protection program requirements are met prior to allowing entrance.

## 1.18 WARNING SIGNS AND TAPE

Warning signs and tape printed bilingually in English and Spanish shall be provided at the regulated boundaries and entrances to regulated areas. The Contractor shall ensure that all personnel working in areas adjacent to regulated areas comprehend the warning signs. Signs shall be located to allow personnel to read the signs and take the necessary protective steps required before entering the area. Warning signs, as shown and described in DETAIL SHEET 11, shall be in vertical format conforming to 29 CFR 1910 and 29 CFR 1926, Section .1101, a minimum of 20 by 14 inches, and displaying the following legend in the lower panel:

DANGER  
ASBESTOS  
CANCER AND LUNG DISEASE HAZARD  
AUTHORIZED PERSONNEL ONLY  
[RESPIRATORS AND PROTECTIVE CLOTHING ARE REQUIRED IN THIS AREA]

Spacing between lines shall be at least equal to the height of the upper of any two lines. Warning tape shall be provided as shown and described on DETAIL SHEET 11. Decontamination unit signage shall be as shown and described on DETAIL SHEET 15.

## 1.19 WARNING LABELS

Warning labels shall be affixed to all asbestos disposal containers used to contain asbestos materials, scrap, waste debris, and other products contaminated with asbestos. Containers with preprinted warning labels conforming to requirements are acceptable. Warning labels shall be as described in DETAIL SHEET 14, shall conform to 29 CFR 1926, Section .1101 and shall be of sufficient size to be clearly legible displaying the following legend:

DANGER  
CONTAINS ASBESTOS FIBERS  
AVOID CREATING DUST  
CANCER AND LUNG DISEASE HAZARD

1.20 LOCAL EXHAUST VENTILATION

Local exhaust ventilation units shall conform to ANSI Z9.2 and 29 CFR 1926, Section .1101. Filters on local exhaust system equipment shall conform to ANSI Z9.2 and UL 586. Filter shall be UL labeled.

1.21 TOOLS

Vacuums shall be leak proof to the filter, equipped with HEPA filters, of sufficient capacity and necessary capture velocity at the nozzle or nozzle attachment to efficiently collect, transport and retain the ACM waste material. Power tools shall not be used to remove ACM unless the tool is equipped with effective, integral HEPA filtered exhaust ventilation capture and collection system, or has otherwise been approved for use by the Contracting Officer. Residual asbestos shall be removed from reusable tools prior to storage and reuse. Reusable tools shall be thoroughly decontaminated prior to being removed from regulated areas.

1.22 RENTAL EQUIPMENT

If rental equipment is to be used, written notification shall be provided to the rental agency, concerning the intended use of the equipment, the possibility of asbestos contamination of the equipment and the steps that will be taken to decontaminate such equipment. A written acceptance of the terms of the Contractor's notification shall be obtained from the rental agency.

1.23 AIR MONITORING EQUIPMENT

The Contractor's Designated IH shall approve air monitoring equipment to be used to collect samples. The equipment shall include, but shall not be limited to:

- a. High-volume sampling pumps that can be calibrated and operated at a constant airflow up to 16 liters per minute (lpm) when equipped with a sampling train of tubing and filter cassette. Post abatement flowrates shall not exceed 10 lpm.
- b. Low-volume, battery powered, body-attachable, portable personal pumps that can be calibrated to a constant airflow up to approximately 2.5 liters per minute when equipped with a sampling train of tubing and filter cassette, and a self-contained rechargeable power pack capable of sustaining the calibrated flow rate for a minimum of 10 hours. The pumps shall also be equipped with an automatic flow control unit which shall maintain a constant flow, even as filter resistance increases due to accumulation of fiber and debris on the filter surface.

- c. Single use standard 25 mm diameter cassette, open face, 0.8 micron pore size, mixed cellulose ester membrane filters and cassettes with 50 mm electrically conductive extension cowl, and shrink bands, to be used with low flow pumps in accordance with 29 CFR 1926, Section .1101 for personal air sampling.
- d. Single use standard 25 mm diameter cassette, open face, 0.45 micron pore size, mixed cellulose ester membrane filters and cassettes with 50 mm electrically conductive cowl, and shrink bands, to be used with high flow pumps when conducting environmental area sampling using NIOSH Pub No. 84-100 Methods 7400 and 7402, (and the transmission electric microscopy method specified at 40 CFR 763 if required).
- e. Appropriate plastic tubing to connect the air sampling pump to the selected filter cassette.
- f. A flow calibrator capable of calibration to within plus or minus 2 percent of reading over a temperature range of minus 4 to plus 140 degrees F and traceable to a NIST primary standard.

#### 1.24 EXPENDABLE SUPPLIES

##### 1.24.1 Glovebag

Glovebags shall be provided as described in 29 CFR 1926, Section .1101 and SET-UP DETAIL SHEET 10. The glovebag assembly shall be 6 mil thick plastic, prefabricated and seamless at the bottom with preprinted OSHA warning label.

##### 1.24.2 Duct Tape

Industrial grade duct tape of appropriate widths suitable for bonding sheet plastic and disposal container shall be provided.

##### 1.24.3 Disposal Containers

Leak-tight (defined as solids, liquids, or dust that cannot escape or spill out) disposal containers shall be provided for ACM wastes as required by 29 CFR 1926 Section .1101 and DETAIL SHEETS 9A, 9B, 9C and 14.

##### 1.24.4 Disposal Bags

Leak-tight bags, 6 mil thick, shall be provided for placement of asbestos generated waste as described in DETAIL SHEET 9A.

##### 1.24.5 Cardboard Boxes

Heavy-duty corrugated cardboard boxes, coated with plastic or wax to retard deterioration from moisture, shall be provided as described in DETAIL SHEET 9C, if required by state and local requirements. Boxes shall fit into selected ACM disposal bags. Filled boxes shall be sealed leak-tight with duct tape.

#### 1.24.6 1.24.6 Sheet Plastic

Sheet plastic shall be polyethylene of 6 mil minimum thickness and shall be provided in the largest sheet size necessary to minimize seams, as indicated on the project drawings. Film shall be frosted and conform to ASTM D 4397, except as specified below:

##### 1.24.6.1 Flame Resistant

Where a potential for fire exists, flame-resistant sheets shall be provided. Film shall be frosted and shall conform to the requirements of NFPA 701.

##### 1.24.6.2 Reinforced

Reinforced sheets shall be provided where high skin strength is required, such as where it constitutes the only barrier between the regulated area and the outdoor environment. The sheet stock shall consist of translucent, nylon-reinforced or woven-polyethylene thread laminated between 2 layers of polyethylene film. Film shall meet flame resistant standards of NFPA 701.

##### 1.24.7 Amended Water

Amended water shall meet the requirements of ASTM D 1331.

##### 1.24.8 Mastic Removing Solvent

Mastic removing solvent shall be nonflammable and shall not contain methylene chloride, glycol ether, or halogenated hydrocarbons. Solvents used onsite shall have a flash point greater than 140 degrees F.

##### 1.24.9 Leak-tight Wrapping

Two layers of 6 mil minimum thick polyethylene sheet stock shall be used for the containment of removed asbestos-containing components or materials such as reactor vessels, large tanks, boilers, insulated pipe segments and other materials too large to be placed in disposal bags as described in DETAIL SHEET 9B. Upon placement of the ACM component or material, each layer shall be individually leak-tight sealed with duct tape.

##### 1.24.10 Viewing Inspection Window

Where feasible, a minimum of 1 clear, 1/8 inch thick, acrylic sheet, 18 by 24 inches, shall be installed as a viewing inspection window at eye level on a wall in each containment enclosure. The windows shall be sealed leak-tight with industrial grade duct tape.

##### 1.24.11 Wetting Agents

Removal encapsulant (a penetrating encapsulant) shall be provided when conducting removal abatement activities that require a longer removal time or are subject to rapid evaporation of amended water. The removal encapsulant shall be capable of wetting the ACM and retarding fiber release during disturbance of the ACM greater than or equal to that provided by amended water. Performance requirements for penetrating encapsulants are specified in paragraph ENCAPSULANTS.

##### 1.24.12 Strippable Coating

Strippable coating in aerosol cans shall be used to adhere to surfaces and to be removed cleanly by stripping, at the completion of work. This work shall only be done in well ventilated areas.

1.25 MISCELLANEOUS ITEMS

A sufficient quantity of other items, such as, but not limited to: scrapers, brushes, brooms, staple guns, tarpaulins, shovels, rubber squeegees, dust pans, other tools, scaffolding, staging, enclosed chutes, wooden ladders, lumber necessary for the construction of containments, UL approved temporary electrical equipment, material and cords, ground fault circuit interrupters, water hoses of sufficient length, fire extinguishers, first aid kits, portable toilets, logbooks, log forms, markers with indelible ink, spray paint in bright color to mark areas, project boundary fencing, etc., shall be provided.

PART 2 PRODUCTS

2.1 ENCAPSULANTS

Encapsulants shall conform to USEPA requirements, shall contain no toxic or hazardous substances and no solvent and shall meet the following requirements:

ALL ENCAPSULANTS

| Requirement                                       | Test Standard                |
|---|------------------------------|
| Flame Spread - 25,<br>Smoke Emission - 50         | ASTM E 84                    |
| Combustion Toxicity<br>Zero Mortality             | Univ. of Pittsburgh Protocol |
| Life Expectancy, 20 yrs<br>Accelerated Aging Test | ASTM C 732                   |
| Permeability, Minimum<br>0.4 perms                | ASTM E 96                    |

Additional Requirements for Bridging Encapsulant

| Requirement   | Test Standard |
|---|---------------|
| Cohesion/Adhesion Test,<br>50 pounds of force/foot  | ASTM E 736    |
| Fire Resistance, Negligible<br>affect on fire resistance<br>rating over 3 hour test (Classified<br>by UL for use over fibrous and<br>cementitious sprayed fireproofing) | ASTM E 119    |
| Impact Resistance, Minimum<br>43 in-lb (Gardner Impact Test)  | ASTM D 2794   |

ALL ENCAPSULANTS

| Requirement   | Test Standard |
|---|---------------|
| Flexibility, no rupture or cracking (Mandrel Bend Test) | ASTM D 522    |

Additional Requirements for Penetrating Encapsulant

| Requirement  | Test Standard |
|--|---------------|
| Cohesion/Adhesion Test, 50 pounds of force/foot  | ASTM E 736    |
| Fire Resistance, Negligible affect on fire resistance rating over 3 hour test(Classified by UL for use over fibrous and cementitious sprayed fireproofing) | ASTM E 119    |
| Impact Resistance, Minimum 43 in-lb (Gardner Impact Test)  | ASTM D 2794   |
| Flexibility, no rupture or cracking (Mandrel Bend Test)  | ASTM D 522    |

Additional Requirements for Lockdown Encapsulant

| Requirement   | Test Standard |
|---|---------------|
| Fire Resistance, Negligible affect on fire resistance rating over 3 hour test(Tested with fireproofing over encapsulant applied directly to steel member) | ASTM E 119    |
| Bond Strength, 100 pounds of force/foot (Tests compatibility with cementitious and fibrous fireproofing)  | ASTM E 736    |

2.2 ENCASEMENT PRODUCTS

Encasement shall consist of primary cellular polymer coat, polymer finish coat, and any other finish coat as approved by the Contracting Officer.

2.3 RECYCLABLE MATERIALS

Recyclable materials shall conform to EPA requirements in accordance with Section 01670 RECYCLED / RECOVERED MATERIALS.

PART 3 EXECUTION

3.1 GENERAL REQUIREMENTS

Asbestos abatement work tasks shall be performed as shown on the detailed plans and drawings, as summarized in paragraph DESCRIPTION OF WORK and including Table 1 and the Contractor's Accident Prevention Plan, Asbestos Hazard Abatement Plan, and the Activity Hazard Analyses. The Contractor shall use the engineering controls and work practices required in 29 CFR 1926, Section .1101(g) in all operations regardless of the levels of exposure. Personnel shall wear and utilize protective clothing and equipment as specified. The Contractor shall not permit eating, smoking,

drinking, chewing or applying cosmetics in the regulated area. All hot work (burning, cutting, welding, etc.) shall be conducted under controlled conditions in conformance with 29 CFR 1926, Section .352, Fire Prevention. Personnel of other trades, not engaged in asbestos abatement activities, shall not be exposed at any time to airborne concentrations of asbestos unless all the administrative and personal protective provisions of the Contractor's Accident Prevention Plan are complied with. Power to the regulated area shall be locked-out and tagged in accordance with 29 CFR 1910, and temporary electrical service with ground fault circuit interrupters shall be provided as needed. Temporary electrical service shall be disconnected when necessary for wet removal. The Contractor shall stop abatement work in the regulated area immediately when the airborne total fiber concentration: (1) equals or exceeds 0.01 f/cc, or the pre-abatement concentration, whichever is greater, outside the regulated area; or (2) equals or exceeds 1.0 f/cc inside the regulated area. The Contractor shall correct the condition to the satisfaction of the Contracting Officer, including visual inspection and air sampling. Work shall resume only upon notification by the Contracting Officer. Corrective actions shall be documented.

### 3.2 PROTECTION OF ADJACENT WORK OR AREAS TO REMAIN

Asbestos abatement shall be performed without damage to or contamination of adjacent work or area. Where such work or area is damaged or contaminated, as verified by the Contracting Officer using visual inspection or sample analysis, it shall be restored to its original condition or decontaminated by the Contractor at no expense to the Government, as deemed appropriate by the Contracting Officer. This includes inadvertent spill of dirt, dust or debris in which it is reasonable to conclude that asbestos may exist. When these spills occur, work shall stop in all effected areas immediately and the spill shall be cleaned. When satisfactory visual inspection and air sampling analysis results are obtained and have been evaluated by the Contractor's Designated IH and the Contracting Officer, work shall proceed.

### 3.3 OBJECTS

#### 3.3.1 Removal of Mobile Objects

Mobile objects, furniture, and equipment will be removed from the area of work by the Government before asbestos abatement work begins. DETAIL SHEET 27, contains a summary of Contractor's required handling, cleaning and storage and reinstallation of mobile objects, furniture and equipment located in each abatement area. Mobile objects and furnishings identified in DETAIL SHEET 27 are considered contaminated with asbestos fibers. Mobile objects and furnishings shall be precleaned using HEPA filtered vacuum followed by wet wiping. These objects shall be removed to an area or site designated on DETAIL SHEET 27 and as identified by the Contracting Officer, and stored; or other appropriate action taken as identified on DETAIL SHEET 27.

#### 3.3.2 Stationary Objects

Stationary objects, furniture, and equipment as shown on DETAIL SHEET 27, shall remain in place and shall be precleaned using HEPA vacuum followed by adequate wet wiping. Stationary objects and furnishings shall be covered with 2 layers of polyethylene and edges sealed with duct tape.

### 3.3.3 Reinstallation of Mobile Objects

At the conclusion of the asbestos abatement work in each regulated area, and after meeting the final clearance requirements for each regulated area, objects previously removed shall be transferred back to the cleaned area from which they came in accordance with the storage code designation for that material as shown on DETAIL SHEET 27, and reinstalled.

### 3.4 BUILDING VENTILATION SYSTEM AND CRITICAL BARRIERS

Building ventilating systems supplying air into or returning air out of a regulated area shall be isolated by airtight seals to prevent the spread of contamination throughout the system. Air-tight critical barriers shall be installed on building ventilating openings located inside the regulated area that supply or return air from the building ventilation system or serve to exhaust air from the building. The critical barriers shall consist of 2 layers of polyethylene. Edges to wall, ceiling and floor surfaces shall be sealed with industrial grade duct tape. Critical barriers shall be installed as shown on drawings and appended SET-UP DETAIL SHEETS.

### 3.5 PRECLEANING

Surfaces shall be cleaned by HEPA vacuum and adequately wet wiped prior to establishment of containment.

### 3.6 METHODS OF COMPLIANCE

#### 3.6.1 Mandated Practices

The Contractor shall employ proper handling procedures in accordance with 29 CFR 1926 and 40 CFR 61, Subpart M, and the specified requirements. The specific abatement techniques and items identified shall be detailed in the Contractor's Asbestos Hazard Abatement Plan including, but not limited to, details of construction materials, equipment, and handling procedures. The Contractor shall use the following engineering controls and work practices in all operations, regardless of the levels of exposure:

- a. Vacuum cleaners equipped with HEPA filters to collect debris and dust containing ACM.
- b. Wet methods or wetting agents to control employee exposures during asbestos handling, mixing, removal, cutting, application, and cleanup; except where it can be demonstrated that the use of wet methods is unfeasible due to, for example, the creation of electrical hazards, equipment malfunction, and in roofing.
- c. Prompt clean-up and disposal, in leak-tight containers of wastes and debris contaminated with asbestos.
- d. Inspection and repair of polyethylene in work and high traffic areas.
- e. A negative pressure gradient inside the work area shall be maintained at minus 0.02 inches of water throughout the project, until final clearance testing criteria is met. Where the feasible work practice controls described above are not sufficient to reduce employee exposure to or below the PELs, the Contractor shall use them to reduce employee exposure to the lowest levels

attainable by these controls and shall supplement them by the use of respiratory protection that complies with paragraph, RESPIRATORY PROTECTION PROGRAM.

### 3.6.2 Control Methods

The Contractor shall use the following control methods to comply with the PELs:

- a. Local exhaust ventilation equipped with HEPA filter dust collection systems;
- b. Enclosure or isolation of processes producing asbestos dust;
- c. Ventilation of the regulated area to move contaminated air away from the breathing zone of employees and toward a filtration or collection device equipped with a HEPA filter;
- d. Use of other work practices and engineering controls;
- e. Where the feasible engineering and work practice controls described above are not sufficient to reduce employee exposure to or below the PELs, the Contractor shall use them to reduce employee exposure to the lowest levels attainable by these controls and shall supplement them by the use of respiratory protection that complies with paragraph, RESPIRATORY PROTECTION PROGRAM.

### 3.6.3 Unacceptable Practices

The following work practices and engineering controls shall not be used for work related to asbestos or for work which disturbs ACM, regardless of measured levels of asbestos exposure or the results of initial exposure assessments:

- a. High-speed abrasive disc saws that are not equipped with point of cut ventilator or enclosures with HEPA filtered exhaust air.
- b. Compressed air used to remove asbestos, or materials containing asbestos, unless the compressed air is used in conjunction with an enclosed ventilation system designed to capture the dust cloud created by the compressed air.
- c. Dry sweeping, shoveling, or other dry clean-up of dust and debris containing ACM.
- d. Employee rotation as a means of reducing employee exposure to asbestos.

### 3.6.4 Class I Work Procedures

In addition to requirements of paragraphs Mandated Practices and Control Methods, the following engineering controls and work practices shall be used:

- a. A Competent Person shall supervise the installation and operation of the control system.

- b. For jobs involving the removal of more than , 25 feet, or , 10 square feet of TSI or surfacing material, the Contractor shall place critical barriers over all openings to the regulated area.
- c. HVAC systems shall be isolated in the regulated area by sealing with a double layer of plastic or air-tight rigid covers.
- d. Impermeable dropcloths ( 6 mil or greater thickness) shall be placed on surfaces beneath all removal activity.
- e. Objects within the regulated area shall be handled as specified in paragraph OBJECTS.
- f. Where a negative exposure assessment has not been provided or where exposure monitoring shows the PEL was exceeded, the regulated area shall be ventilated to move contaminated air away from the employee's breathing zone toward a HEPA unit or collection device.

### 3.6.5 Specific Control Methods for Class I Work

In addition to requirements of paragraph Class I Work Procedures, Class I asbestos work shall be performed using the control methods identified in the subparagraphs below.

#### 3.6.5.1 Negative Pressure Enclosure (NPE) System

The NPE system shall be as shown in SETUP DETAIL SHEET 2, 3, 4, and 8. The system shall provide at least 4 air changes per hour inside the containment. The local exhaust unit equipment shall be operated 24 hours per day until the containment is removed, and shall be leak-proof to the filter and equipped with HEPA filters. Air movement shall be directed away from the employees and toward a HEPA filtration device. The NPE shall be smoke tested for leaks at the beginning of each shift. Local exhaust equipment shall be sufficient to maintain a minimum pressure differential of minus 0.02 inch of water column relative to adjacent, unsealed areas. Pressure differential shall be monitored continuously, 24 hours per day, with an automatic manometric recording instrument. Pressure differential recordings shall be provided daily on the same day collected. Readings shall be reviewed by the Contractor's Designated Competent Person and IH prior to submittal. The Contracting Officer shall be notified immediately if the pressure differential falls below the prescribed minimum. The building ventilation system shall not be used as the local exhaust system for the regulated area. The local exhaust system shall terminate outdoors unless an alternate arrangement is allowed by the Contract Officer. All filters used shall be new at the beginning of the project and shall be periodically changed as necessary and disposed of as ACM waste.

### 3.6.5.2 3.6.5.2 Glovebag Systems

Glovebag systems shall be as shown in SETUP DETAIL SHEET 10. The glovebag system shall be used to remove ACM from straight runs of piping and elbows and other connections. Glovebags shall be used without modification and shall be smoke-tested for leaks and any leaks sealed prior to use. Glovebags shall be installed to completely cover the circumference of pipe or other structures where the work is to be done. Glovebags shall be used only once and shall not be moved. Glovebags shall not be used on surfaces that have temperatures exceeding 150 degrees F. Prior to disposal, glovebags shall be collapsed by removing air within them using a HEPA vacuum. Before beginning the operation, loose and friable material adjacent to the glovebag operation shall be wrapped and sealed in 2 layers of plastic or otherwise rendered intact. At least 2 persons shall perform Class I glovebag removal. Asbestos regulated work areas shall be established as specified and shown on detailed drawings and plans for glovebag abatement. Designated boundary limits for the asbestos work shall be established with rope or other continuous barriers and all other requirements for asbestos control areas shall be maintained, including area signage and boundary warning tape as specified in SET-UP DETAIL SHEET 11.

- a. In addition to requirements for negative pressure glovebag systems above, the Contractor shall attach HEPA vacuum systems or other devices to the bag to prevent collapse during removal of ACM from straight runs of piping and elbows and other connections.
- b. The negative pressure glove bags used to remove ACM from pipe runs shall be fitted with gloved apertures and a bagging outlet and constructed with rigid sides from metal or other material which can withstand the weight of the ACM and water used during removal. A negative pressure shall be created in the system using a HEPA filtration system. The box shall be smoke tested for leaks prior to each use.

### 3.6.5.3 Mini-Enclosures

Mini-containment (small walk-in enclosure)] as shown in SETUP DETAIL SHEET 5, 6, 7 to accommodate no more than 2 persons, may be used if the disturbance or removal can be completely contained by the enclosure with the following specifications and work practices. The mini-enclosure shall be inspected for leaks and smoke tested before each use. Air movement shall be directed away from the employee's breathing zone within the mini-enclosure.

### 3.6.5.4 Wrap and Cut Operation

Wrap and cut operations shall be as shown in SETUP DETAIL SHEET 9B 10. Prior to cutting pipe, the asbestos-containing insulation shall be wrapped with polyethylene and securely sealed with duct tape to prevent asbestos becoming airborne as a result of the cutting process. The following steps shall be taken: install glovebag, strip back sections to be cut 6 inches from point of cut, and cut pipe into manageable sections.

### 3.6.6 3.6.6 Class II Work

In addition to the requirements of paragraphs Mandated Practices and Control Methods, the following engineering controls and work practices shall be used:

- a. A Competent Person shall supervise the work.
- b. For indoor work, critical barriers shall be placed over all openings to the regulated area.
- c. Impermeable dropcloths shall be placed on surfaces beneath all removal activity.

### 3.6.7 Specific Control Methods for Class II Work

In addition to requirements of paragraph Class II Work, Class II work shall be performed using the following methods:

#### 3.6.7.1 Vinyl and Asphalt Flooring Materials

When removing vinyl and asphalt flooring materials which contain ACM, the Contractor shall use the following practices as shown in RESPONSE ACTION DETAIL SHEET 56, 57, 58, 59, 60, 61, 62, 63, and 64. Resilient sheeting shall be removed by adequately wet methods. Tiles shall be removed intact (if possible); wetting is not required when tiles are heated and removed intact. Flooring or its backing shall not be sanded. Scraping of residual adhesive and/or backing shall be performed using wet methods. Mechanical chipping is prohibited unless performed in a negative pressure enclosure. Dry sweeping is prohibited. The Contractor shall use vacuums equipped with HEPA filter, disposable dust bag, and metal floor tool (no brush) to clean floors.

### 3.6.8 Cleaning After Asbestos Removal

After completion of all asbestos removal work, surfaces from which ACM has been removed shall be wet wiped or sponged clean, or cleaned by some equivalent method to remove all visible residue. Run-off water shall be collected and filtered through a dual filtration system. A first filter shall be provided to remove fibers 20 micrometers and larger, and a final filter provided that removes fibers 5 micrometers and larger. After the gross amounts of asbestos have been removed from every surface, remaining visible accumulations of asbestos on floors shall be collected using plastic shovels, rubber squeegees, rubber dustpans, and HEPA vacuum cleaners as appropriate to maintain the integrity of the regulated area. When TSI and surfacing material has been removed, workmen shall use HEPA vacuum cleaners to vacuum every surface. Surfaces or locations which could harbor accumulations or residual asbestos dust shall be checked after vacuuming to verify that no asbestos-containing material remains; and shall be re-vacuumed as necessary to remove the ACM.

### 3.6.9 Class I Asbestos Work Response Action Detail Sheets

The following Class I Asbestos Work Response Action Detail Sheet is specified on Table 1 for each individual work task to be performed:

- a. Pipe Insulation (Using a Glovebag): See Sheet 87
- b. Pipe and Fitting Insulation (using Glovebag): See Sheet 86

### 3.6.10 Class II Asbestos Work Response Action Detail Sheets

The following Class II Asbestos Work Response Action Detail Sheet is specified on Table 1 for each individual work task to be performed:

- a. Vinyl or Vinyl Asbestos Tile Adhered to Concrete Floor System by Asbestos-Containing Adhesive: See Sheet 56
- b. Roof, Shingles and Underlayment: See Sheet 75

### 3.6.11 Encapsulation of ACM

Prior to applying any encapsulant, the entire surface area shall be inspected for loose, or damaged asbestos material:

- a. Penetrating Encapsulation: Before penetrating encapsulation is applied, asbestos removal work in the area shall be complete and the surfaces to be encapsulated shall be free of loose or damaged material. Substrate shall be evaluated before application to ensure that the encapsulant will not cause the substrate to fail in any way. Acoustical wall and ceiling plaster surfaces shall be encapsulated in accordance with manufacturer's recommendations. Plug samples shall be taken to determine if full penetration has been achieved. If full penetration has not been achieved, surfaces shall be recoated while the matrix is still wet, until full penetration is achieved: See Detail Sheet 39.
- b. Bridging Encapsulation: Prior to applying the bridging encapsulant, the pre-encapsulation inspection shall be performed. The surface shall be encapsulated in sections of 1000 square feet or less as recommended by the encapsulant manufacturer. Upon completion of each section, the dry thickness of the bridging encapsulation shall be measured. Additional bridging encapsulant shall be applied to obtain the desired encapsulant thickness. Additional coats shall blend with the original bridging encapsulant. Bridging encapsulation shall include:
  - (1) Troweled Wall Plaster: See Detail Sheet 29
  - (2) Troweled Ceiling Plaster: See Detail Sheet 34
  - (3) Acoustical Wall Plaster: See Detail Sheet 38
  - (4) Acoustical Ceiling Plaster: See Detail Sheet 34
  - (5) Asbestos Cement Wall, Fiberboard and Drywall Panels: See Detail Sheet 49
  - (6) Exterior Asbestos Stucco: See Detail Sheet 76
  - (7) Boiler and Piping Gasket: See Detail Sheet 98.

### 3.6.12 Sealing Contaminated Items Designated for Disposal

Contaminated architectural, mechanical, and electrical appurtenances such as Venetian blinds, full height partitions, carpeting, duct work, pipes and fittings, radiators, light fixtures, conduit panels, and other contaminated items designated for removal shall be coated with an asbestos lockdown encapsulant at the demolition site before being removed from the asbestos control area. These items shall be vacuumed prior to application of the lockdown encapsulant. The asbestos lockdown encapsulant shall be tinted a contrasting color and shall be spray applied by airless method. Thoroughness of sealing operation shall be visually gauged by the extent of colored coating on exposed surfaces.

### 3.7 FINAL CLEANING AND VISUAL INSPECTION

Upon completion of abatement, the regulated area shall be cleaned by collecting, packing, and storing all gross contamination; see SET-UP DETAIL SHEETS 9, 14 and 20. A final cleaning shall be performed using HEPA vacuum and wet cleaning of all exposed surfaces and objects in the regulated area. Upon completion of the cleaning, the Contractor shall conduct a visual pre-inspection of the cleaned area in preparation for a final inspection before final air clearance monitoring and recleaning, as necessary. Upon completion of the final cleaning, the Contractor and the Contracting Officer shall conduct a final visual inspection of the cleaned regulated area in accordance with ASTM E 1368 and document the results on the Final Cleaning and Visual Inspection as specified on the SET-UP DETAIL SHEET 19. If the Contracting Officer rejects the clean regulated area as not meeting final cleaning requirements, the Contractor shall reclean as necessary and have a follow-on inspection conducted with the Contracting Officer. Recleaning and follow-up reinspection shall be at the Contractor's expense.

### 3.8 LOCKDOWN

Prior to removal of plastic barriers and after clean-up of gross contamination and final visual inspection, a post removal (lockdown) encapsulant shall be spray applied to ceiling, walls, floors, and other surfaces in the regulated area.

### 3.9 EXPOSURE ASSESSMENT AND AIR MONITORING

#### 3.9.1 General Requirements For Exposure

Exposure assessment, air monitoring and analysis of airborne concentration of asbestos fibers shall be performed in accordance with 29 CFR 1926, Section .1101, the Contractor's air monitoring plan, and as specified. Personal exposure air monitoring (collected at the breathing zone) that is representative of the exposure of each employee who is assigned to work within a regulated area shall be performed by the Contractor's Designated IH.

Breathing zone samples shall be taken for at least 25 percent of the workers in each shift, or a minimum of 2, whichever is greater. Air monitoring results at the 95 percent confidence level shall be calculated as shown in Table 2 at the end of this section. The Contractor shall provide an onsite independent testing laboratory with qualified analysts and appropriate equipment to conduct sample analyses of air samples using the methods prescribed in 29 CFR 1926, Section .1101, to include NIOSH Pub No. 84-100 Method 7400. Preabatement and abatement ambient air monitoring shall be performed by the Contracting Officer's IH. Final clearance environmental air monitoring, shall be performed by the Contracting Officer's IH. Environmental and final clearance air monitoring shall be performed using NIOSH Method 7402 (TEM) the EPA TEM Method specified in 40 CFR 763. For environmental and final clearance, air monitoring shall be conducted at a sufficient velocity and duration to establish the limit of detection of the method used at 0.005 str/mm<sup>2</sup>.

Confirmation of asbestos fiber concentrations (asbestos) from ambient samples collected and analyzed by NIOSH Method 7400 (total f/cc) may be conducted using TEM in accordance with NIOSH Method 7402. When such confirmation is conducted, it shall be from the same sample filter used for the NIOSH Method 7400 PCM analysis. For all samples required to have confirmatory TEM analysis as a result of the contractor's negligence shall be at the Contractor's expense. Monitoring may be duplicated by the

Government at the discretion of the Contracting Officer. Results of breathing zone samples shall be posted at the job site and made available to the Contracting Officer.

The Contractor shall maintain a fiber concentration inside a regulated area less than or equal to 0.1 f/cc expressed as an 8 hour, time-weighted average (TWA) during the asbestos abatement. If fiber concentration rises above 0.1 f/cc, work procedures shall be investigated with the Contracting Officer to determine the cause. At the discretion of the Contracting Officer, fiber concentration may exceed 0.1 f/cc but shall not exceed 1.0 f/cc expressed as an 8-hour TWA. The Contractor's workers shall not be exposed to an airborne fiber concentration in excess of 1.0 f/cc, as averaged over a sampling period of 30 minutes. Should either an ambient concentration of 1.0 f/cc expressed as an 8-hour TWA or a personal excursion concentration of 1.0 f/cc expressed as a 30-minute sample occur inside a regulated work area, the Contractor shall stop work immediately, notify the Contracting Officer, and implement additional engineering controls and work practice controls to reduce airborne fiber levels below prescribed limits in the work area. Work shall not restart until authorized by the Contracting Officer.

### 3.9.2 Initial Exposure Assessment

The Contractor's Designated IH shall conduct an exposure assessment immediately before or at the initiation of an asbestos abatement operation to ascertain expected exposures during that operation. The assessment shall be completed in time to comply with the requirements which are triggered by exposure data or the lack of a negative exposure assessment, and to provide information necessary to assure that all control systems planned are appropriate for that operation. The assessment shall take into consideration both the monitoring results and all observations, information or calculations which indicate employee exposure to asbestos, including any previous monitoring conducted in the workplace, or of the operations of the Contractor which indicate the levels of airborne asbestos likely to be encountered on the job. For Class I asbestos work, until the employer conducts exposure monitoring and documents that employees on that job will not be exposed in excess of PELs, or otherwise makes a negative exposure assessment, the Contractor shall presume that employees are exposed in excess of the PEL-TWA and PEL-Excursion Limit.

### 3.9.3 Negative Exposure Assessment

The Contractor shall provide a negative exposure assessment for the specific asbestos job which will be performed. The negative exposure assessment shall be provided within 90 days of the initiation of the project and conform to the following criteria:

- a. Objective Data: Objective data demonstrating that the product or material containing asbestos minerals or the activity involving such product or material cannot release airborne fibers in concentrations exceeding the PEL-TWA and Short Term Excursion Limit under those work conditions having the greatest potential for releasing asbestos.
- b. Prior Asbestos Jobs: Where the Contractor has monitored prior asbestos jobs for the PEL and the Short Term Excursion Limit within 12 months of the current job, the monitoring and analysis were performed in compliance with asbestos standard in effect; the data were obtained during work operations conducted under

workplace conditions closely resembling the processes, type of material, control methods, work practices, and environmental conditions used and prevailing in the Contractor's current operations; the operations were conducted by employees whose training and experience are no more extensive than that of employees performing the current job; and these data show that under the conditions prevailing and which will prevail in the current workplace, there is a high degree of certainty that the monitoring covered exposure from employee exposures will not exceed the PEL-TWA and Short Term Excursion Limit.

- c. Initial Exposure Monitoring: The results of initial exposure monitoring of the current job, made from breathing zone air samples that are representative of the 8-hour PEL-TWA and 30-minute short-term exposures of each employee. The monitoring covered exposure from operations which are most likely during the performance of the entire asbestos job to result in exposures over the PEL and STEL.

#### 3.9.4 Independent Environmental Monitoring

The Government has retained an independent air monitoring firm to perform air sampling before, during and after abatement. The air monitoring contractor has been provided a copy of the contract that includes this abatement work. The abatement contractor will provide the air monitoring contractor with an up-to-date copy of the accepted Asbestos Hazard Abatement Plan, Accident Prevention Plan and pertinent detailed drawings. The air monitoring contractor is required to comply with the abatement contractor's safety and health requirements. The abatement contractor will coordinate all onsite activities with the air monitoring contractor, the COR, and other affected parties as directed by the COR. The abatement contractor will provide the air monitoring contractor with an up-to-date schedule of abatement contractor work activities. The air monitoring contractor will coordinate with the abatement contractor and the COR during the performance of Government required air monitoring. The abatement contractor is responsible for performing exposure assessment and personal air monitoring of abatement contractor's work. The air monitoring contractor is responsible for performing these tasks for its employee.

#### 3.9.5 Preabatement Environmental Air Monitoring

Preabatement environmental air monitoring shall be established 1 day prior to the masking and sealing operations for each regulated area to determine background concentrations before abatement work begins. As a minimum, preabatement air samples shall be collected using NIOSH Pub No. 84-100 Method 7400, PCM at these locations: outside the building; inside the building, but outside the regulated area perimeter; and inside each regulated work area. One sample shall be collected for every 2000 square feet of floor space. At least 2 samples shall be collected outside the building: at the exhaust of the HEPA unit; and downwind from the abatement site. The PCM samples shall be analyzed within 24 hours; and if any result in fiber concentration greater than 0.01 f/cc, asbestos fiber concentration shall be confirmed using NIOSH Pub No. 84-100 Method 7402 (TEM).

#### 3.9.6 Environmental Air Monitoring During Abatement

Until an exposure assessment is provided to the Contracting Officer, ambient air monitoring shall be conducted at locations and frequencies that will accurately characterize any evolving airborne asbestos fiber

concentrations. The assessment shall demonstrate that the product or material containing asbestos minerals, or the abatement involving such product or material, cannot release airborne asbestos fibers in concentrations exceeding 0.01 f/cc as a TWA under those work conditions having the greatest potential for releasing asbestos. The monitoring shall be at least once per shift at locations including, but not limited to, close to the work inside a regulated area; preabatement sampling locations; outside entrances to a regulated area; close to glovebag operations; representative locations outside of the perimeter of a regulated area; inside clean room; and at the exhaust discharge point of local exhaust system ducted to the outside of a containment (if used). If the sampling outside regulated area shows airborne fiber levels have exceeded background or 0.01 f/cc, whichever is greater, work shall be stopped immediately, and the Contracting Officer notified. The condition causing the increase shall be corrected. Work shall not restart until authorized by the Contracting Officer.

### 3.9.7 Final Clearance Air Monitoring

Prior to conducting final clearance air monitoring, the Contractor and the Contracting Officer shall conduct a final visual inspection of the regulated area where asbestos abatement has been completed. The final visual inspection shall be as specified in SET-UP DETAIL SHEET 19. Final clearance air monitoring shall not begin until acceptance of the Contractor's final cleaning by the Contracting Officer. The Contracting Officer's IH will conduct final clearance air monitoring using aggressive air sampling techniques as defined in EPA AHERA 40 CFR 763. The sampling and analytical method used will be NIOSH Pub No. 84-100 Method 7402 (TEM).

#### 3.9.7.1 Final Clearance Requirements, NIOSH PCM Method

For PCM sampling and analysis using NIOSH Pub No. 84-100 Method 7400, the fiber concentration inside the abated regulated area. Five samples shall be collected in each work area that is less than 160 square feet and 260 linear feet. Each airborne sample, shall be less than 0.01 f/cc. The abatement inside the regulated area is considered complete when every PCM final clearance sample is below the clearance limit. If any sample result is greater than 0.01 total f/cc, the asbestos fiber concentration (asbestos f/cc) shall be confirmed from that same filter using NIOSH Pub No. 84-100 Method 7402 (TEM) at Contractor's expense. If any confirmation sample result is greater than 0.01 asbestos f/cc, abatement is incomplete and cleaning shall be repeated. Upon completion of any required recleaning, resampling with results to meet the above clearance criteria shall be done.

### 3.9.7.2 3.9.7.2 Final Clearance Requirements, EPA TEM Method

For EPA TEM sampling and analysis, using the EPA Method specified in 40 CFR 763, abatement inside the regulated area is considered complete when the arithmetic mean asbestos concentration of the 5 inside samples is less than or equal to 70 structures per square millimeter squared (70 S/mm<sup>2</sup>). When the arithmetic mean is greater than 70 S/mm<sup>2</sup>, the 3 blank samples shall be analyzed. If the 3 blank samples are greater than 70 S/mm<sup>2</sup>, resampling shall be done. If the blanks measure less than 70 S/mm<sup>2</sup>, the 5 outside samples shall be analyzed and a Z-test analysis performed. When the Z-test results are less than 1.65, the decontamination shall be considered complete. If the Z-test results are more than 1.65, the abatement is incomplete and cleaning shall be repeated. Upon completion of any required recleaning, resampling with results to meet the above clearance criteria shall be done.

### 3.9.7.3 Air Clearance Failure

If clearance sampling results fail to meet the final clearance requirements, the Contractor shall pay all costs associated with the required recleaning, resampling, and analysis, until final clearance requirements are met.

### 3.9.8 Air-Monitoring Results and Documentation

Air sample fiber counting shall be completed and results provided within 24 hours (breathing zone samples). Ambient and clearance monitoring shall be completed 24 hours after the a sampling period. The Contracting Officer shall be notified immediately of any airborne levels of asbestos fibers in excess of established requirements. Written sampling results shall be provided within 5 working days of the date of collection. The written results shall be signed by testing laboratory analyst, testing laboratory principal and the Contracting Officer's IH. The air sampling results shall be documented on a Contractor's daily air monitoring log. The daily air monitoring log shall contain the following information for each sample:

- a. Sampling and analytical method used;
- b. Date sample collected;
- c. Sample number;
- d. Sample type: BZ = Breathing Zone (Personal), P = Preabatement, E = Environmental, C = Abatement Clearance;
- e. Location/activity/name where sample collected;
- f. Sampling pump manufacturer, model and serial number, beginning flow rate, end flow rate, average flow rate (L/min);
- g. Calibration date, time, method, location, name of calibrator, signature;
- h. Sample period (start time, stop time, elapsed time (minutes));
- i. Total air volume sampled (liters);
- j. Sample results (f/cc and S/mm square) if EPA methods are required for final clearance;

- k. Laboratory name, location, analytical method, analyst, confidence level. In addition, the printed name and a signature and date block for the Industrial Hygienist who conducted the sampling and for the Industrial Hygienist who reviewed the daily air monitoring log verifying the accuracy of the information.

### 3.10 CLEARANCE CERTIFICATION

When asbestos abatement is complete, ACM waste is removed from the regulated areas, and final clean-up is completed, the Contracting Officer will certify the areas as safe before allowing the warning signs and boundary warning tape to be removed. After final clean-up and acceptable airborne concentrations are attained, but before the HEPA unit is turned off and the containment removed, the Contractor shall remove all pre-filters on the building HVAC system and provide new pre-filters. The Contractor shall dispose of such filters as asbestos contaminated materials. HVAC, mechanical, and electrical systems shall be re-established in proper working order. The Contractor and the Contracting Officer shall visually inspect all surfaces within the containment for residual material or accumulated debris. The Contractor shall reclean all areas showing dust or residual materials. The Contracting Officer will certify in writing that the area is safe before unrestricted entry is permitted. The Government will have the option to perform monitoring to certify the areas are safe before entry is permitted.

### 3.11 CLEANUP AND DISPOSAL

#### 3.11.1 Title to ACM Materials

ACM material resulting from abatement work, except as specified otherwise, shall become the property of the Contractor and shall be disposed of as specified and in accordance with applicable federal, state and local regulations.

#### 3.11.2 Collection and Disposal of Asbestos

All ACM waste shall be collected and including contaminated wastewater filters, scrap, debris, bags, containers, equipment, and asbestos contaminated clothing, shall be collected and placed in leak-tight containers such as double plastic bags (see DETAIL SHEET 9A); sealed double wrapped polyethylene sheet (see DETAIL 9B); sealed fiberboard boxes (see DETAIL SHEET 9C); or other approved containers. Waste within the containers shall be wetted in case the container is breached. Asbestos-containing waste shall be disposed of at an EPA, state and local approved asbestos landfill. For temporary storage, sealed impermeable containers shall be stored in an asbestos waste load-out unit or in a storage/transportation conveyance (i.e., dumpster, roll-off waste boxes, etc.) in a manner acceptable to and in an area assigned by the Contracting Officer. Procedure for hauling and disposal shall comply with 40 CFR 61, Subpart M, state, regional, and local standards.

### 3.11.3 3.11.3 Scale Weight Measurement

Scales used for measurement shall be public scales. Weighing shall be at a point nearest the work at which a public scale is available. Scales shall be standard truck scales of the beam type; scales shall be equipped with the type registering beam and an "over and under" indicator; and shall be capable of accommodating the entire vehicle. Scales shall be tested, approved and sealed by an inspector of the District of Columbia. Scales shall be calibrated and resealed as often as necessary and at least once every three months to ensure continuous accuracy. Vehicles used for hauling ACM shall be weighed empty daily at such time as directed and each vehicle shall bear a plainly legible identification mark.

### 3.11.4 Weigh Bill and Delivery Tickets

Copies of weigh bills and delivery tickets shall be submitted to the Contracting Officer during the progress of the work. The Contractor shall furnish the Contracting Officer scale tickets for each load of ACM weighed and certified. These tickets shall include tare weight; identification mark for each vehicle weighed; and date, time and location of loading and unloading. Tickets shall be furnished at the point and time individual trucks arrive at the worksite. A master log of all vehicle loading shall be furnished for each day of loading operations. Before the final statement is allowed, the Contractor shall file with the Contracting Officer certified weigh bills and/or certified tickets and manifests of all ACM actually disposed by the Contractor for this contract.

### 3.11.5 Asbestos Waste Shipment Record

The Contractor shall complete and provide the Contracting Officer final completed copies of the Waste Shipment Record for all shipments of waste material as specified in 40 CFR 61, Subpart M and other required state waste manifest shipment records, within 3 days of delivery to the landfill.

Each Waste Shipment Record shall be signed and dated by the Contractor, the waste transporter and disposal facility operator.

TABLE 1

INDIVIDUAL WORK TASK DATA ELEMENTS

Sheet 1 of 4

There is a separate data sheet for each individual work task.

1. WORK TASK DESIGNATION NUMBER \_\_\_\_\_
2. LOCATION OF WORK TASK 1st floor storage room, near main office
3. BRIEF DESCRIPTION OF MATERIAL TO BE ABATED: Green & Black 9 X 9" Floor
  - a. Type of Asbestos Chrysotile
  - b. Percent asbestos content 4 - 7% %
4. ABATEMENT TECHNIQUE TO BE USED Removal = REM
5. OSHA ASBESTOS CLASS DESIGNATION FOR WORK TASK Class II
6. EPA NESHAP FRIABILITY DESIGNATION FOR WORK TASK  
Friable \_\_\_\_\_ Non-friable Category I \_\_\_\_\_  
Non-friable Category II X
7. FORM \_\_\_\_\_ and CONDITION OF ACM: GOOD X FAIR \_\_\_\_\_ POOR \_\_\_\_\_
8. QUANTITY: METERS \_\_\_\_\_, SQUARE METERS \_\_\_\_\_
- 8a. QUANTITY: LINEAR FT. \_\_\_\_\_, SQUARE FT. 189
9. RESPONSE ACTION DETAIL SHEET NUMBER FOR WORK TASK 57
10. SET-UP DETAIL SHEET NUMBERS  
FOR WORK TASK 4, 9, 14, 18,  
21, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_.

NOTES:

- (1) Numeric sequence of individual work tasks (1,2,3,4, etc.) for each regulated area. Each category of EPA friability/OSHA class has a separate task.
- (2) Specific location of work (building, floor, area, e.g., Building 1421, 2nd Floor, Rm 201)
- (3) A description of material to be abated (example: horizontal pipe, cement wall panels, tile, stucco, etc.) type of asbestos (chrysotile, amosite, crocidolite, etc.); and % asbestos content.
- (4) Technique to be used: Removal = REM; Encapsulation = ENCAP; Encasement = ENCAS; Enclosure = ENCL; Repair = REP.
- (5) Class designation: Class I, II, III, or IV (OSHA designation).
- (6) Friability of materials: Check the applicable EPA NESHAP friability designation.
- (7) Form: Interior or Exterior Architectural = IA or EA; Mechanical/Electrical = ME.  
Condition: Good = G; Fair = F; Poor = P.
- (8) Quantity of ACM for each work task in meters or square meters.
- (8a) Quantity of ACM for each work task in linear feet or square feet.
- (9) Response Action Detail Sheet specifies the material to be abated and the methods to be used. There is only one Response Action Detail Sheet for each abatement task.
- (10) Set-up Detail Sheets indicate containment and control methods used in support of the response action (referenced in the selected Response Action Detail Sheet).

TABLE 1

INDIVIDUAL WORK TASK DATA ELEMENTS

Sheet 2 of 4

There is a separate data sheet for each individual work task.

1. WORK TASK DESIGNATION NUMBER \_\_\_\_\_
2. LOCATION OF WORK TASK Ceiling at custodians office located  
in basement
3. BRIEF DESCRIPTION OF MATERIAL TO BE ABATED: Spray-on ceiling  
insulation and debris
  - a. Type of Asbestos Chrysotile
  - b. Percent asbestos content 25% %
4. ABATEMENT TECHNIQUE TO BE USED REM
5. OSHA ASBESTOS CLASS DESIGNATION FOR WORK TASK Class I
6. EPA NESHAP FRIABILITY DESIGNATION FOR WORK TASK  
Friable  Non-friable Category I \_\_\_\_\_  
Non-friable Category II \_\_\_\_\_
7. FORM \_\_\_\_\_ and CONDITION OF ACM: GOOD \_\_\_\_\_ FAIR \_\_\_\_\_ POOR
8. QUANTITY: METERS \_\_\_\_\_, SQUARE METERS \_\_\_\_\_
- 8a. QUANTITY: LINEAR FT. \_\_\_\_\_, SQUARE FT. 300
9. RESPONSE ACTION DETAIL SHEET NUMBER FOR WORK TASK 68
10. SET-UP DETAIL SHEET NUMBERS  
FOR WORK TASK 2, 3, 4, 14,  
9, 16, 17, 18.

NOTES:

- (1) Numeric sequence of individual work tasks (1,2,3,4, etc.) for each regulated area. Each category of EPA friability/OSHA class has a separate task.
- (2) Specific location of work (building, floor, area, e.g., Building 1421, 2nd Floor, Rm 201)
- (3) A description of material to be abated (example: horizontal pipe, cement wall panels, tile, stucco, etc.) type of asbestos (chrysotile, amosite, crocidolite, etc.); and % asbestos content.
- (4) Technique to be used: Removal = REM; Encapsulation = ENCAP; Encasement = ENCAS; Enclosure = ENCL; Repair = REP.
- (5) Class designation: Class I, II, III, or IV (OSHA designation).
- (6) Friability of materials: Check the applicable EPA NESHAP friability designation.
- (7) Form: Interior or Exterior Architectural = IA or EA; Mechanical/Electrical = ME.  
Condition: Good = G; Fair = F; Poor = P.
- (8) Quantity of ACM for each work task in meters or square meters.
- (8a) Quantity of ACM for each work task in linear feet or square feet.
- (9) Response Action Detail Sheet specifies the material to be abated and the methods to be used. There is only one Response Action Detail Sheet for each abatement task.
- (10) Set-up Detail Sheets indicate containment and control methods used in support of the response action (referenced in the selected Response Action Detail Sheet).

TABLE 1

INDIVIDUAL WORK TASK DATA ELEMENTS

Sheet 3 of 4

There is a separate data sheet for each individual work task.

1. WORK TASK DESIGNATION NUMBER \_\_\_\_\_
2. LOCATION OF WORK TASK Basement area near girl's restroom  
custodian's office, girl's restroom and crawl space
3. BRIEF DESCRIPTION OF MATERIAL TO BE ABATED: 6" - 8" outer  
diameter thermal system insulation
  - a. Type of Asbestos Chrysotile
  - b. Percent asbestos content 10% %
4. ABATEMENT TECHNIQUE TO BE USED REM
5. OSHA ASBESTOS CLASS DESIGNATION FOR WORK TASK Class I
6. EPA NESHAP FRIABILITY DESIGNATION FOR WORK TASK  
Friable X Non-friable Category I \_\_\_\_\_  
Non-friable Category II \_\_\_\_\_
7. FORM \_\_\_\_\_ and CONDITION OF ACM: GOOD \_\_\_\_\_ FAIR X POOR \_\_\_\_\_
8. QUANTITY: METERS \_\_\_\_\_, SQUARE METERS \_\_\_\_\_
- 8a. QUANTITY: LINEAR FT. 300, SQUARE FT. \_\_\_\_\_
9. RESPONSE ACTION DETAIL SHEET NUMBER FOR WORK TASK 87
10. SET-UP DETAIL SHEET NUMBERS  
FOR WORK TASK 10, 21, \_\_\_\_\_, \_\_\_\_\_,  
\_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_.

NOTES:

- (1) Numeric sequence of individual work tasks (1,2,3,4, etc.) for each regulated area. Each category of EPA friability/OSHA class has a separate task.
- (2) Specific location of work (building, floor, area, e.g., Building 1421, 2nd Floor, Rm 201)
- (3) A description of material to be abated (example: horizontal pipe, cement wall panels, tile, stucco, etc.) type of asbestos (chrysotile, amosite, crocidolite, etc.); and % asbestos content.
- (4) Technique to be used: Removal = REM; Encapsulation = ENCAP; Encasement = ENCAS; Enclosure = ENCL; Repair = REP.
- (5) Class designation: Class I, II, III, or IV (OSHA designation).
- (6) Friability of materials: Check the applicable EPA NESHAP friability designation.
- (7) Form: Interior or Exterior Architectural = IA or EA; Mechanical/Electrical = ME.  
Condition: Good = G; Fair = F; Poor = P.
- (8) Quantity of ACM for each work task in meters or square meters.
- (8a) Quantity of ACM for each work task in linear feet or square feet.
- (9) Response Action Detail Sheet specifies the material to be abated and the methods to be used. There is only one Response Action Detail Sheet for each abatement task.
- (10) Set-up Detail Sheets indicate containment and control methods used in support of the response action (referenced in the selected Response Action Detail Sheet).

TABLE 1

INDIVIDUAL WORK TASK DATA ELEMENTS

Sheet 4 of 4

There is a separate data sheet for each individual work task.

1. WORK TASK DESIGNATION NUMBER \_\_\_\_\_
2. LOCATION OF WORK TASK Basement area near girl's restroom, custodians
3. BRIEF DESCRIPTION OF MATERIAL TO BE ABATED: Pipe elbows, office, girl's restroom, and crawl space
  - a. Type of Asbestos Chrysotile
  - b. Percent asbestos content 30% %
4. ABATEMENT TECHNIQUE TO BE USED REM
5. OSHA ASBESTOS CLASS DESIGNATION FOR WORK TASK Class
6. EPA NESHAP FRIABILITY DESIGNATION FOR WORK TASK  
Friable  Non-friable Category I \_\_\_\_\_  
Non-friable Category II \_\_\_\_\_
7. FORM \_\_\_\_\_ and CONDITION OF ACM: GOOD \_\_\_\_\_ FAIR  POOR \_\_\_\_\_
8. QUANTITY: METERS \_\_\_\_\_, SQUARE METERS \_\_\_\_\_
- 8a. QUANTITY: LINEAR FT. 100, SQUARE FT. \_\_\_\_\_
9. RESPONSE ACTION DETAIL SHEET NUMBER FOR WORK TASK 94
10. SET-UP DETAIL SHEET NUMBERS  
FOR WORK TASK 10, 21, \_\_\_\_\_, \_\_\_\_\_,  
\_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_.

NOTES:

- (1) Numeric sequence of individual work tasks (1,2,3,4, etc.) for each regulated area. Each category of EPA friability/OSHA class has a separate task.
- (2) Specific location of work (building, floor, area, e.g., Building 1421, 2nd Floor, Rm 201)
- (3) A description of material to be abated (example: horizontal pipe, cement wall panels, tile, stucco, etc.) type of asbestos (chrysotile, amosite, crocidolite, etc.); and % asbestos content.
- (4) Technique to be used: Removal = REM; Encapsulation = ENCAP; Encasement = ENCAS; Enclosure = ENCL; Repair = REP.
- (5) Class designation: Class I, II, III, or IV (OSHA designation).
- (6) Friability of materials: Check the applicable EPA NESHAP friability designation.
- (7) Form: Interior or Exterior Architectural = IA or EA; Mechanical/Electrical = ME.  
Condition: Good = G; Fair = F; Poor = P.
- (8) Quantity of ACM for each work task in meters or square meters.
- (8a) Quantity of ACM for each work task in linear feet or square feet.
- (9) Response Action Detail Sheet specifies the material to be abated and the methods to be used. There is only one Response Action Detail Sheet for each abatement task.
- (10) Set-up Detail Sheets indicate containment and control methods used in support of the response action (referenced in the selected Response Action Detail Sheet).

TABLE 2

FORMULA FOR CALCULATION OF THE 95 PERCENT CONFIDENCE LEVEL  
(Reference: NIOSH 7400)

---

$$\text{Fibers/cc(01.95 percent CL)} = X + [(X) * (1.645) * (CV)]$$

Where:  $X = ((E) (AC)) / ((V) (1000))$

$$E = ((F/Nf) - (B/Nb)) / Af$$

CV = The precision value; 0.45 shall be used unless the analytical laboratory provides the Contracting Officer with documentation (Round Robin Program participation and results) that the laboratory's precision is better.

AC = Effective collection area of the filter in square millimeters

V = Air volume sampled in liters

E = Fiber density on the filter in fibers per square millimeter

F/Nf = Total fiber count per graticule field

B/Nb = Mean field blank count per graticule field

Af = Graticule field area in square millimeters

$$\text{TWA} = C1/T1 + C2/T2 = Cn/Tn$$

Where: C = Concentration of contaminant

T = Time sampled.

TABLE 3

## NIOSH METHOD 7400

## PCM ENVIRONMENTAL AIR SAMPLING PROTOCOL (NON-PERSONAL)

| Sample Location   | Minimum No. of Samples              | Filter Pore Size (Note 1) | Min. Vol. (Note 2) (Liters) | Sampling Rate (liters/min.) |
|---|-------------------------------------|---------------------------|-----------------------------|-----------------------------|
| Inside Abatement Area                                     | 0.5/140 Square Meters (Notes 3 & 4) | 0.45 microns              | 3850                        | 2-16                        |
| Each Room in 1 Abatement Area Less than 140 Square meters |                                     | 0.45 microns              | 3850                        | 2-16                        |
| Field Blank   | 2                                   | 0.45 microns              | 0                           | 0                           |
| Laboratory Blank  | 1                                   | 0.45 microns              | 0                           | 0                           |

## Notes:

1. Type of filter is Mixed Cellulose Ester.
2. Ensure detection limit for PCM analysis is established at 0.005 fibers/cc.
3. One sample shall be added for each additional 140 square meters. (The corresponding I-P units are 5/1500 square feet).
4. A minimum of 5 samples are to be taken per abatement area, plus 2 field blanks.

TABLE 4

## EPA AHERA METHOD: TEM AIR SAMPLING PROTOCOL

| Location Sampled       | Minimum No. of Samples | Filter Pore Size | Min. Vol. (Liters) | Sampling Rate (liters/min.) |
|------------------------|------------------------|------------------|--------------------|-----------------------------|
| Inside Abatement Area  | 5                      | 0.45 microns     | 1500               | 2-16                        |
| Outside Abatement Area | 5                      | 0.45 microns     | 1500               | 2-16                        |
| Field Blank            | 2                      | 0.45 microns     | 0                  | 0                           |
| Laboratory Blank       | 1                      | 0.45 microns     | 0                  | 0                           |

## Notes:

1. Type of filter is Mixed Cellulose Ester.
2. The detection limit for TEM analysis is 70 structures/square mm.

CERTIFICATE OF WORKER'S ACKNOWLEDGMENT

PROJECT NAME \_\_\_\_\_ CONTRACT NO. \_\_\_\_\_  
PROJECT ADDRESS \_\_\_\_\_  
CONTRACTOR FIRM NAME \_\_\_\_\_  
EMPLOYEE'S NAME \_\_\_\_\_  
(Print) (Last) (First) (MI)

Social Security Number: \_\_\_\_\_ - \_\_\_\_\_ - \_\_\_\_\_

WORKING WITH ASBESTOS CAN BE DANGEROUS. INHALING ASBESTOS FIBERS HAS BEEN LINKED WITH TYPES OF LUNG DISEASE AND CANCER. IF YOU SMOKE AND INHALE ASBESTOS FIBERS, THE CHANCE THAT YOU WILL DEVELOP LUNG CANCER IS GREATER THAN THAT OF THE NONSMOKING PUBLIC.

Your employer's contract for the above project requires that you be provided and you complete formal asbestos training specific to the type of work you will perform and project specific training; that you be supplied with proper personal protective equipment including a respirator, that you be trained in its use; and that you receive a medical examination to evaluate your physical capacity to perform your assigned work tasks, under the environmental conditions expected, while wearing the required personal protective equipment. These things are to be done at no cost to you. By signing this certification, you are acknowledging that your employer has met these obligations to you. The Contractor's Designated Industrial Hygienist will check the block(s) for the type of formal training you have completed. Review the checked blocks prior to signing this certification.

FORMAL TRAINING:

\_\_\_\_\_ a. For Competent Persons and Supervisors: I have completed EPA's Model Accreditation Program (MAP) training course, "Contractor/Supervisor", that meets this State's requirements.

b. For Workers:

\_\_\_\_\_ (1) For OSHA Class I work: I have completed EPA's MAP training course, "Worker", that meets this State's requirements.

\_\_\_\_\_ (2) For OSHA Class II work (where there will be abatement of more than one type of Class II materials, i.e., roofing, siding, floor tile, etc.): I have completed EPA's MAP training course, "Worker", that meets this State's requirements.

(3) For OSHA Class II work (there will only be abatement of one type of Class II material):

\_\_\_\_\_ (a) I have completed an 8-hour training class on the elements of 29 CFR 1926, Section .1101(k)(9)(viii), in addition to the specific work practices and engineering controls of 29 CFR 1926, Section .1101(g) and hands-on training.

\_\_\_\_\_ (b) I have completed EPA's MAP training course, "Worker", that meets this State's requirements.

\_\_\_\_\_ (4) For OSHA Class III work: I have completed at least a 16-hour course consistent with EPA requirements for training of local education agency maintenance and custodial staff at 40 CFR 763, Section .92(a)(2) and the elements of 29 CFR 1926, Section .1101(k)(9)(viii), in addition to the specific work practices and engineering controls at 29 CFR 1926, Section .1101, and hands-on training.

CERTIFICATE OF WORKER'S ACKNOWLEDGMENT

\_\_\_\_\_ (5) For OSHA Class IV work: I have completed at least a 2-hr course consistent with EPA requirements for training of local education agency maintenance and custodial staff at 40 CFR 763, (a)(1), and the elements of 29 CFR 1926, Section .1101(k)(9)(viii), in addition to the specific work practices and engineering controls at 29 CFR 1926, Section .1101(g) and hands-on training.

\_\_\_\_\_ c. Workers, Supervisors and the Designated Competent Person: I have completed annual refresher training as required by EPA's MAP that meets this State's requirements.

PROJECT SPECIFIC TRAINING:

\_\_\_\_\_ I have been provided and have completed the project specific training required by this Contract. My employer's Designated Industrial Hygienist and Designated Competent Person conducted the training.

RESPIRATORY PROTECTION:

\_\_\_\_\_ I have been trained in accordance with the criteria in the Contractor's Respiratory Protection program. I have been trained in the dangers of handling and breathing asbestos dust and in the proper work procedures and use and limitations of the respirator(s) I will wear. I have been trained in and will abide by the facial hair and contact lens use policy of my employer.

RESPIRATOR FIT-TEST TRAINING:

\_\_\_\_\_ I have been trained in the proper selection, fit, use, care, cleaning, maintenance, and storage of the respirator(s) that I will wear. I have been fit-tested in accordance with the criteria in the Contractor's Respiratory Program and have received a satisfactory fit. I have been assigned my individual respirator. I have been taught how to properly perform positive and negative pressure fit-check upon donning negative pressure respirators each time.

MEDICAL EXAMINATION:

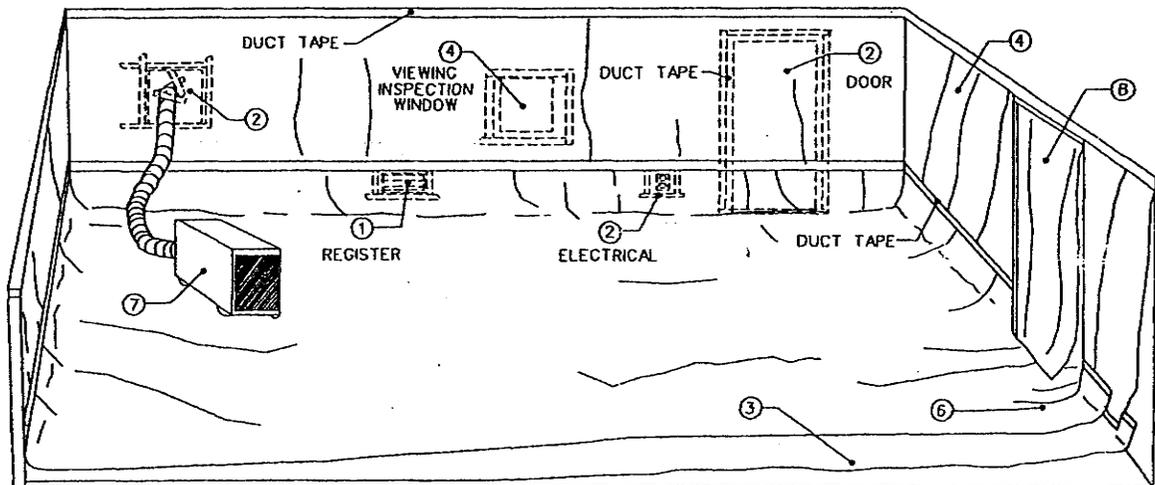
\_\_\_\_\_ I have had a medical examination within the last twelve months which was paid for by my employer. The examination included: health history, pulmonary function tests, and may have included an evaluation of a chest x-ray. A physician made a determination regarding my physical capacity to perform work tasks on the project while wearing personal protective equipment including a respirator. I was personally provided a copy and informed of the results of that examination. My employer's Industrial Hygienist evaluated the medical certification provided by the physician and checked the appropriate blank below. The physician determined that there:

\_\_\_\_\_ were no limitations to performing the required work tasks.

\_\_\_\_\_ were identified physical limitations to performing the required work tasks.

Date of the medical examination \_\_\_\_\_

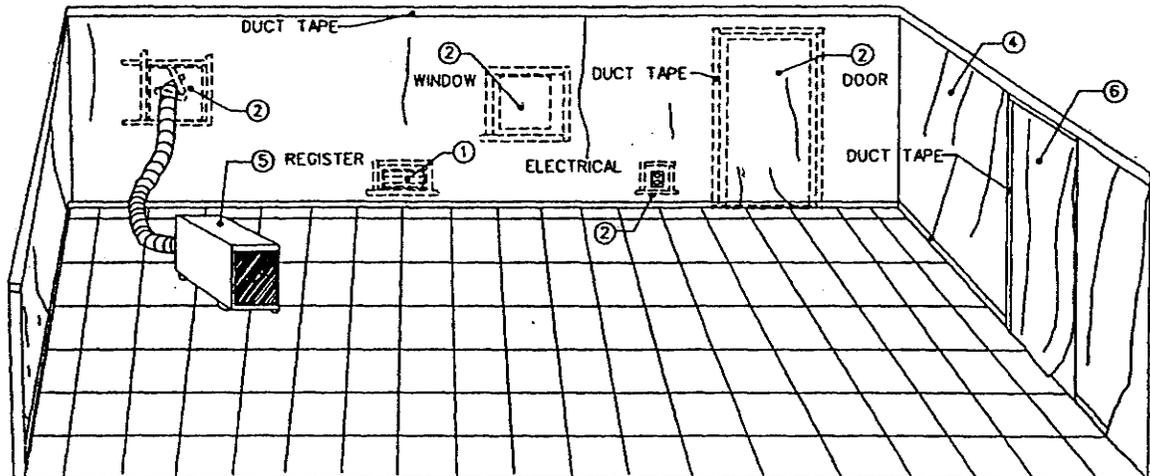
Employee Signature \_\_\_\_\_ date \_\_\_\_\_  
Contractor's Industrial  
Hygienist Signature \_\_\_\_\_ date \_\_\_\_\_



### Installation of critical barrier and full containment area (for hard floor surfaces)

1. Establish work area so that unauthorized entry is prevented; see sheet 11. Eliminate airflow into containment area by isolation of all supply and return air ducts from mechanical system. Lock doors and windows not required for access.
2. Install 6-mil polyethylene critical barriers over all windows, doors, wall openings, electrical outlets, etc. Secure with duct tape on all sides. HEPA vacuum furniture, fixtures, and equipment and remove from or protect in containment area, as specified by the contract.
3. Install first layer of 6-mil polyethylene on floor, extending the polyethylene 18 inches up wall. Secure with duct tape.
4. Protect wall surface with 6-mil polyethylene from floor to ceiling. Install view inspection windows, where feasible.
5. Prepare area as follows: turn off electrical power and remove light fixtures. Protect ceiling as required. HEPA vacuum floor and walls.
6. Install top layer of 6-mil polyethylene.
7. Install HEPA filter unit and duct work; see sheet 8.
8. Prepare door into decontamination unit or load-out unit; see sheet 22 for decontamination unit and sheet 20 for load-out unit. Doors that swing into the work area must be removed from hinges.

Final clearance requirements: After abatement has been completed, see sheet 17 for final clearance requirements.

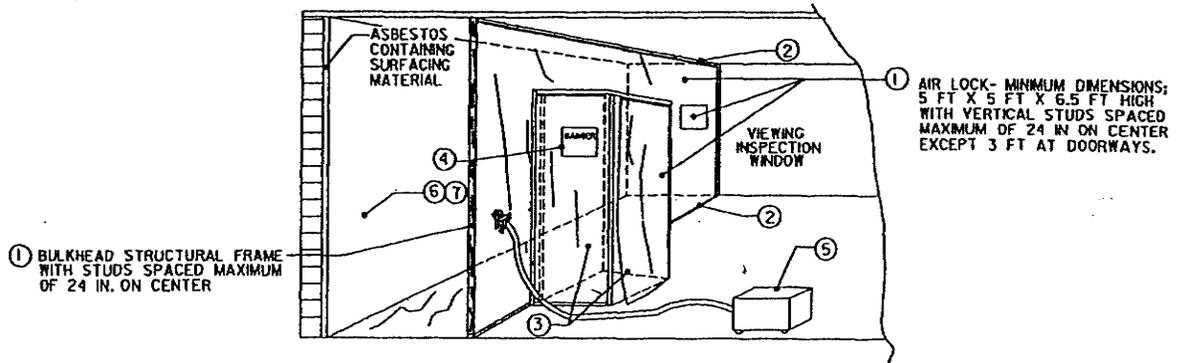


### Installation of critical barrier and full containment area (for vinyl tile floors)

1. Establish work area so that unauthorized entry is prevented; see sheet 11. Eliminate airflow into containment area by isolating all supply and return air ducts from mechanical system. Lock doors and windows not required for access.
2. Install 6-mil polyethylene critical barriers over all windows, doors, wall openings, electrical outlets, etc. Secure with duct tape on all sides. HEPA vacuum furniture, fixtures, and equipment and remove from or protect in containment area, as specified by the contract.
3. Prepare area as follows: turn off electrical power and remove light fixtures. Protect ceiling as required. HEPA vacuum floors and walls.

4. Protect wall surface with 6-mil polyethylene from floor to ceiling. Install viewing inspection windows, where feasible.
5. Install HEPA filter unit and duct work; see sheet 8.
6. Prepare door into decontamination unit or load-out unit; see sheet 22 for decontamination unit and sheet 20 for load-out unit. Doors that swing into the work area must be removed from hinges.

Final clearance requirements. After abatement has been completed, see sheet 18 for final clearance requirements.

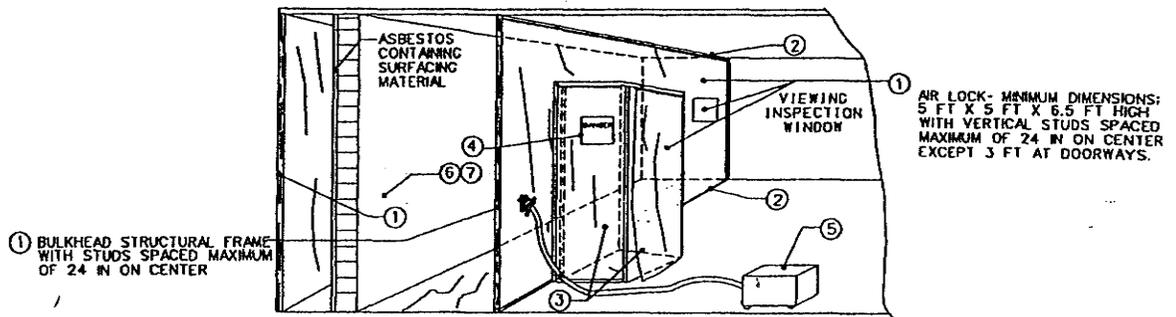


### Single bulkhead containment area

1. Establish work area so that unauthorized entry is prevented; see sheet 11. Construct a structural frame for a bulkhead wall and an air lock. See sheet 1 for air lock requirements other than those identified in note 1 of this drawing. Bulkhead is to be parallel to the item requiring abatement. Attach structural frame to walls, floor, or ceiling as necessary for stability. Cover the frame with one layer and the floor with two layers of 6-mil polyethylene sheeting, sealing edges of polyethylene to walls, ceilings, and floor surfaces with duct tape. Install viewing inspection windows, where feasible.
2. Seal with duct tape all penetrations (typical) such as pipes, electrical conduit, or ducts.
3. Install triple 6-mil polyethylene flaps at both doorways. Place portable sprayer with clean water, disposable towels, and prelabeled disposal bag in air lock.
4. Install danger signs on outside of containment area; see sheet 11.
5. Install HEPA vacuum. Extend hose into mini-containment area for general vacuuming, negative air, and cleaning of disposable suit.

6. Accumulate all loose materials for disposal, and place in approved container; see Sheet 9. Apply labels; see sheet 14. Adequately wet clean all wall, floor, tool, and equipment surfaces.
7. Abatement worker must wear two disposable suits. Remove outer suit in work area and place in a plastic bag; see sheet 9. Enter air lock.
8. In air lock, wet wipe respirator and wash hands with clean water from portable sprayer. Remove respirator and place in clean plastic bag. Proceed to remote shower where inner suit may be removed.

**Final Clearance Requirements:** After abatement is completed, prepare area for final clearance. Contractor and Contracting Officer will verify visual inspection of work area on sheet 9. **Certification of Final Clearance and Visual Inspection:** Contractor will apply lockdown encapsulant. Contractor (designated) will provide final air clearance monitoring as required by the contract. Remove containment area upon instructions from the Contracting Officer and treat as asbestos-contaminated material. Place in approved container; see sheet 9. Apply labels; see sheet 14. Dispose of as specified in the contract.



### Double bulkhead containment area

1. Establish work area so that unauthorized entry is prevented; see sheet 11. Construct a structural frame for two bulkhead walls and an air lock. See sheet 1 for air lock requirements other than those identified in note 1 of this drawing. Bulkheads are to be parallel to the wall being removed. Attach structural frame to walls, floor, or ceiling as necessary for stability. Locate change room on the side opposite the asbestos-containing surface material. Cover the frame with one layer and the floor with two layers of 6-mil polyethylene sheeting and seal edges to walls, ceiling, and floor surfaces with duct tape. If a bulkhead is located outside the building, end walls and a roof will also be required. Install viewing inspection windows, where feasible.

2. Seal with duct tape all penetrations (typical) such as pipes, electrical conduit, or ducts.

3. Install triple 6-mil polyethylene flaps at doorways. Place portable sprayer with clean water, disposable towels, and prelabeled disposal bag in air lock.

4. Install danger signs on outside of containment area; see sheet 11.

5. Install HEPA vacuum; extend hose into mini-containment area for general vacuuming, negative air, and cleaning of disposable suit.

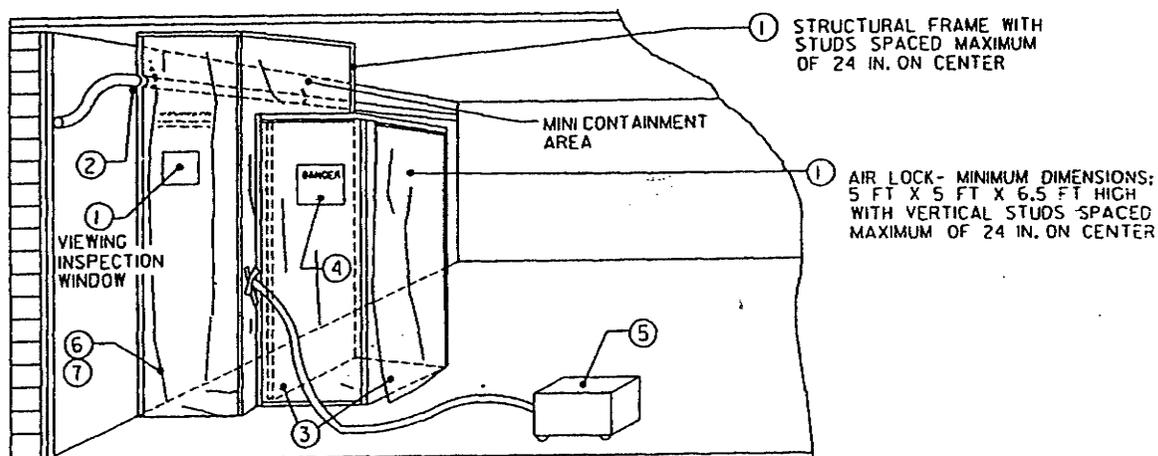
6. Accumulate all loose materials for disposal. Place in approved container; see sheet 9. Apply labels; see sheet 14. Adequately wet clean all wall, floor, tool, and equipment surfaces.

7. Abatement worker must wear two disposable suits. Remove outer suit in work area and place in a plastic bag; see sheet 9. Enter air lock.

8. In air lock, wet wipe respirator and wash hands with clean water from portable sprayer. Remove respirator and place in a clean plastic bag. Proceed to shower where inner suit may be removed.

9. After abatement is completed, prepare area for final clearance.

**Final clearance requirements:** After abatement is completed, prepare area for final clearance. Contractor and Contracting Officer will perform visual inspection of work area on sheet 19, *Certification of Final Cleaning and Visual Inspection*. Contractor will apply lockdown equipment. Contract designee(s) will conduct final air clearance monitoring as required by the contract. Remove containment area upon instructions from the Contracting Officer and treat it as asbestos-contaminated material. Place in approved container, see sheet 9. Apply labels, see sheet 14. Dispose of as specified in the contract.



### Mini-containment area

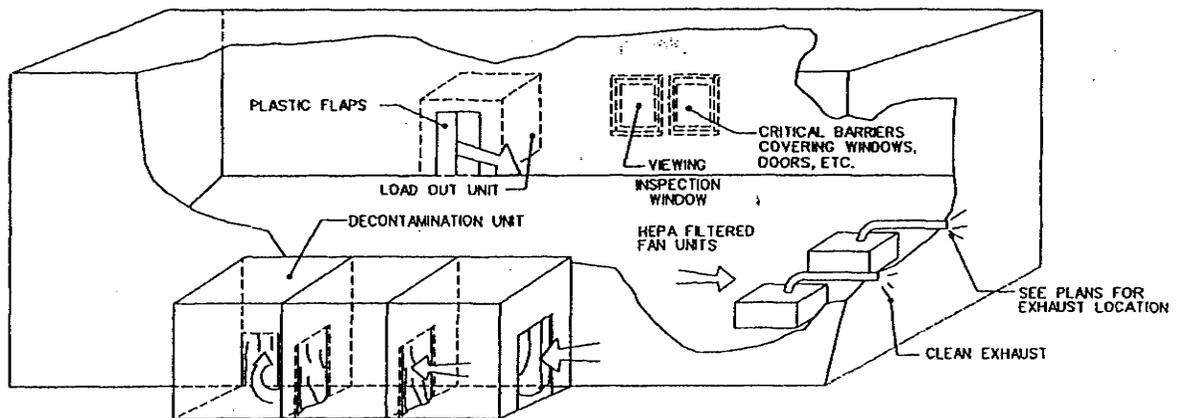
1. Establish work area so that unauthorized entry is prevented; see sheet 11. Construct a two-compartment wood frame around work area; install one layer 6-mil polyethylene sheeting to structural members and two layers 6-mil polyethylene sheeting to the floor. Seal all edges to wall, ceiling, and floor surfaces with duct tape. Install viewing inspection windows, where feasible.
2. Seal with duct tape all penetrations (typical) such as pipes, electrical conduit, or ducts.
3. Install triple 6-mil polyethylene flaps at both doorways. Place portable sprayer with clean water, disposable towels, and prelabeled disposal bag in air lock.
4. Install danger signs on outside of containment area. See sheet 11.
5. Install HEPA vacuum; extend hose into mini-containment area for general vacuuming, negative air, and cleaning of disposable suit.
6. Accumulate all loose materials for disposal. Place in approved container; see sheet 9. Apply labels; see

sheet 14. Adequately wet clean all wall, floor, tool, and equipment surfaces.

7. Abatement worker must wear two disposable suits. Remove outer suit in work area and place in a plastic bag; see sheet 9. Enter air lock.

8. In air lock, wet wipe respirator and wash hands with clean water. Remove respirator and place in a clean plastic bag. Proceed to remote shower unit where inner suit may be removed.

**Final clearance requirements:** After abatement is completed, prepare area for final clearance. Contractor and Contracting Officer will certify visual inspection of work area on sheet 19; *Certification of Final Cleaning and Visual Inspection*. Contractor will apply lockdown encapsulant. Contract designee(s) will conduct final air-clearance monitoring as required by the contract. Remove containment area upon instructions from the Contracting Officer, and treat it as asbestos-contaminated material. Place in approved container; see sheet 9. Apply labels, see sheet 14. Dispose of as specified in the contract.

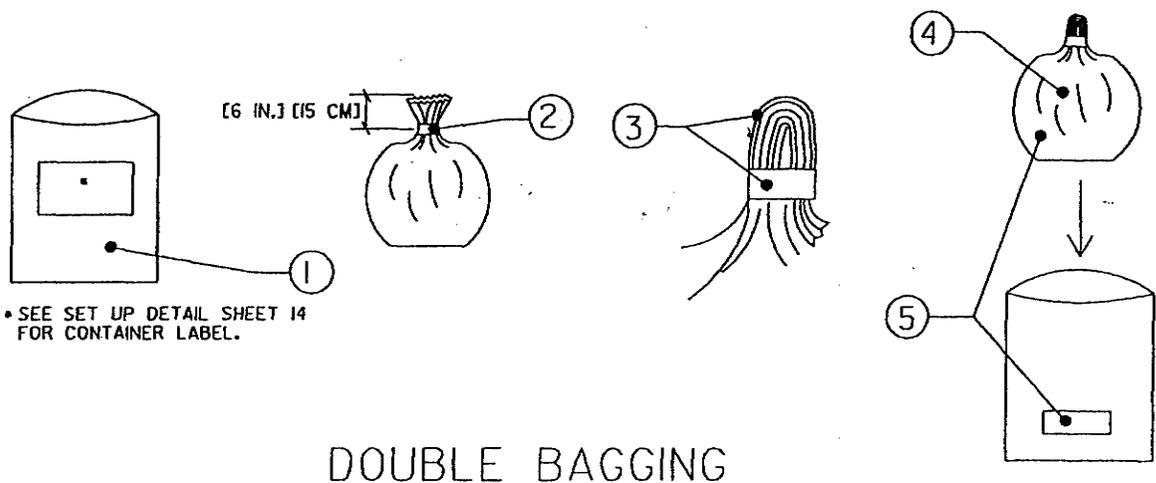


### Ventilation of containment area and decontamination unit, using HEPA filters

1. Install a ventilation system in the containment area that draws the air supply through the decontamination and load-out units. See sheets 20 and 22.
2. Operate ventilation system 24 hours a day from start of abatement through final clearance.
3. Place at the decontamination unit entrance a pressure gauge that measures differential pressure between abatement and ambient areas. Gauge must be read hourly and logged or continuously recorded.
4. The ventilation system must create, as a minimum, a negative pressure of 0.02 inches of water inside the containment area (relative to the outside of the containment area) and must be sized for a minimum of four air changes per hour or more, as specified in the contractor's asbestos hazard abatement plan.

5. Locate HEPA filters in order to prevent dead air pockets.
6. Exhaust filtered air to outside of building, unless otherwise approved by the Contracting Officer.

Final clearance requirements for final clearance. Remove ventilation system upon instruction from the Contracting Officer and relocate to equipment room of decontamination unit. Thoroughly HEPA vacuum unit and interior. Adequately wet clean all surfaces and wheels of units. Collectable waste debris and materials and remove it as asbestos contaminated material. Place in approved container (see sheet 9). Apply labels (see sheet 14). Dispose of waste as required by the contract. Wrap unit in one layer of 6 mil polyethylene sheeting and seal with duct tape before removing from job location.



### Containers—double bagging

1. Place the still-wet asbestos-containing and asbestos-contaminated material into a prelabelled 6-mil polyethylene bag. Do not overfill. Do not use bag for asbestos-containing or asbestos-contaminated material that could puncture the bag. (See sheet 9C for packaging items that could puncture bags.)

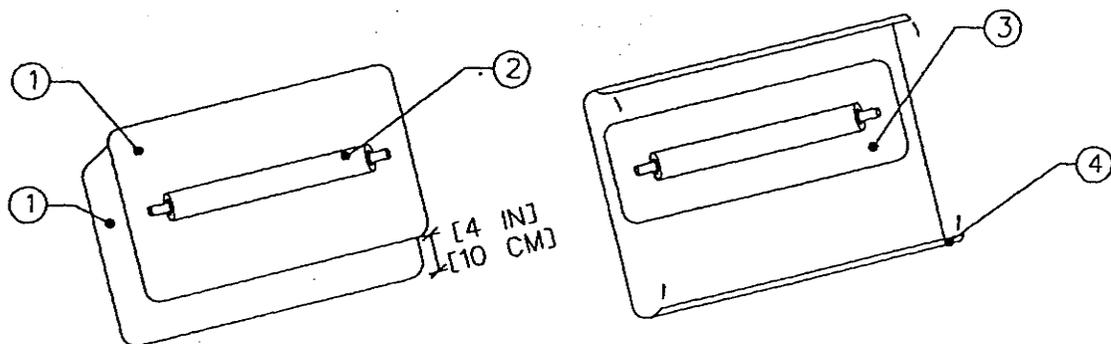
2. Evacuate with HEPA vacuum, and seal collapsed bag by twisting top [6 in] [15 cm] closed and wrapping with a minimum of two layers of duct tape.

3. Twist top and fold over. Apply second wrap of duct tape.

4. Adequately wet clean outside of disposal bag by wet wiping, and take bag to the equipment and staging area.

5. Place bag inside a second prelabelled 6-mil polyethylene bag.

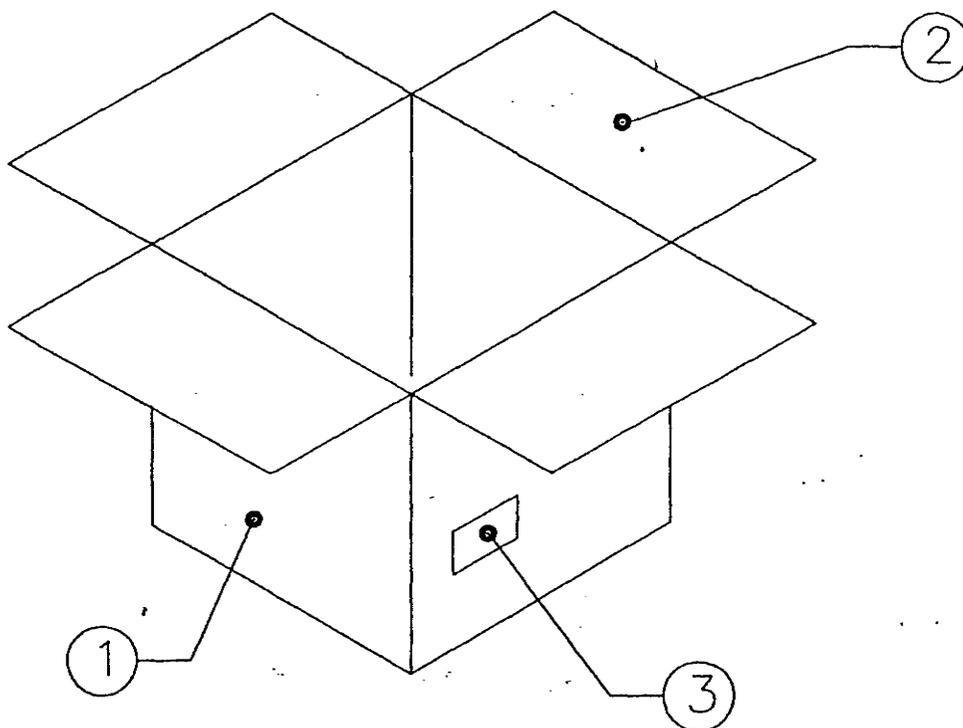
6. Seal outer bag by repeating steps 2 and 3 above. Take bag to load-out unit; see sheet 20.



### Containers—leak-tight wrapping

1. Place two layers of 6-mil polyethylene sheet on surface so that the bottom layer is offset [4 in] [10 cm] from the top layer.
2. Place the still-wet asbestos-containing or asbestos-contaminated material that is too large (boiler, vessel, pipe segment, etc.) to be placed in disposal bags on the top layer of polyethylene.

3. Wrap the top layer tightly around the contaminated material. Seal all edges of the top layer of sheeting with duct tape. Apply labels; see sheet 14.
4. Repeat procedure with bottom layer, including labeling. Take to load-out unit; see sheet 20.

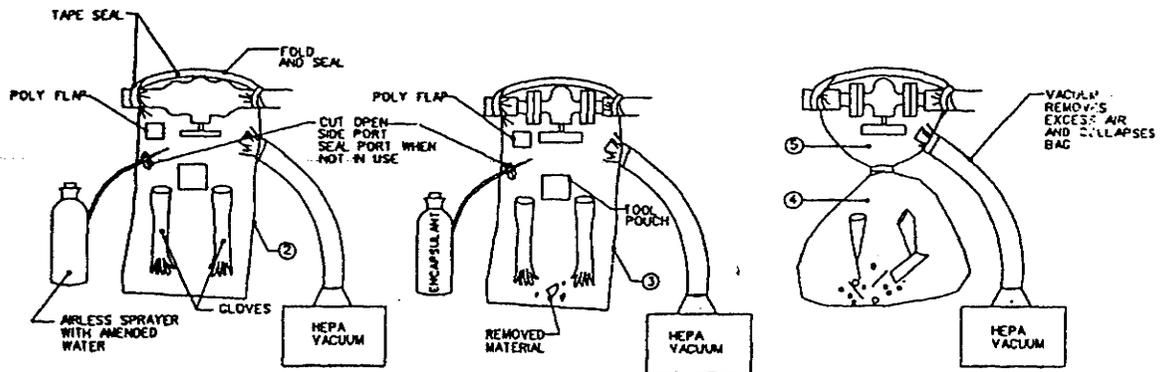


### Containers—corrugated cardboard boxes

1. Place still-wet asbestos-containing or asbestos-contaminated material that could puncture disposal bags into heavy-duty corrugated cardboard boxes coated with plastic or wax that will retard deterioration from moisture.

2. Close flaps, and seal with duct tape.

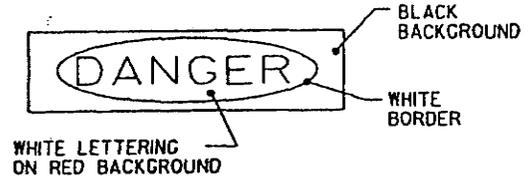
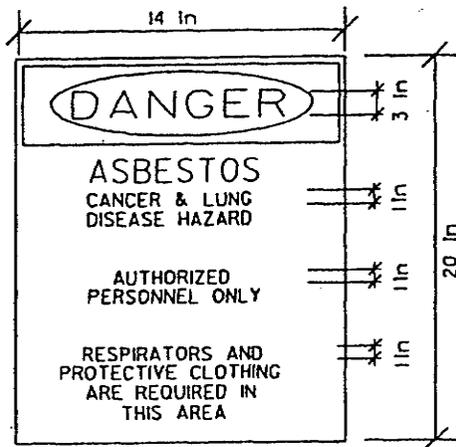
3. Apply labels; see sheet 14. Place box into disposal bags; see sheet 9A. Take to load-out unit; see sheet 20.



### Glove bag

1. Construct modified containment area in accordance with sheet 21. **NOTE:** Inspect for structural integrity the insulation material adjacent to section being removed, since glove bag removal procedure is not appropriate if it will cause asbestos fiber release from adjacent asbestos-containing material.
2. Put tools and rags inside glove bag. Insulation adjacent to the asbestos-containing material being removed must be adequately wet cleaned and sprayed with an encapsulant before placing glove bag over the area to be removed. Install glove bag according to manufacturer's instructions. (**NOTE:** Negative-air glove bags may be used if first approved by Contracting Officer. Manufacturer procedures for negative-air glove bags will vary from procedures identified on this sheet.) Install HEPA filter vacuum cleaner with hose ducted into bag. Seal with duct tape. Smoke test for leaks. Soak insulation with amended water.
3. Remove insulation and clean exposed metal surfaces. Encapsulate exposed ends of insulation and metal surfaces. Adequately wet clean glove bag surfaces to below tool pouch.
4. Grasp tools in pouch and withdraw by pulling glove inside out. Twist glove above encased tools to create a constriction, and tape constricted area with duct tape. Cut through middle of taped area so that tools and glove bag will both remain sealed. Place encased tools into tool pouch of next glove bag or decontaminate by water immersion.
5. Evacuate glove bag, using HEPA vacuum. Twist bag to create a constriction below tool pouch. Wrap constricted area with duct tape. Cut bag (4 in) [10 cm] above constriction. Double bag cut off portion of bag; see sheet 9. Apply labels; see sheet 14. Cap and seal end of HEPA vacuum hose in order to prevent incidental fiber release.
6. Remove remaining portion of glove bag. Place in approved container; see sheet 9. Apply labels; see sheet 14. Dispose as asbestos-contaminated waste.

**Final Clearance Requirements:** For final clearance, Contractor and Contracting Officer will certify visual inspection of work area on sheet 19. **Certification of Final Clearance and Visual Inspection:** Contract design(s) will conduct final air clearance monitoring as required by the contract.

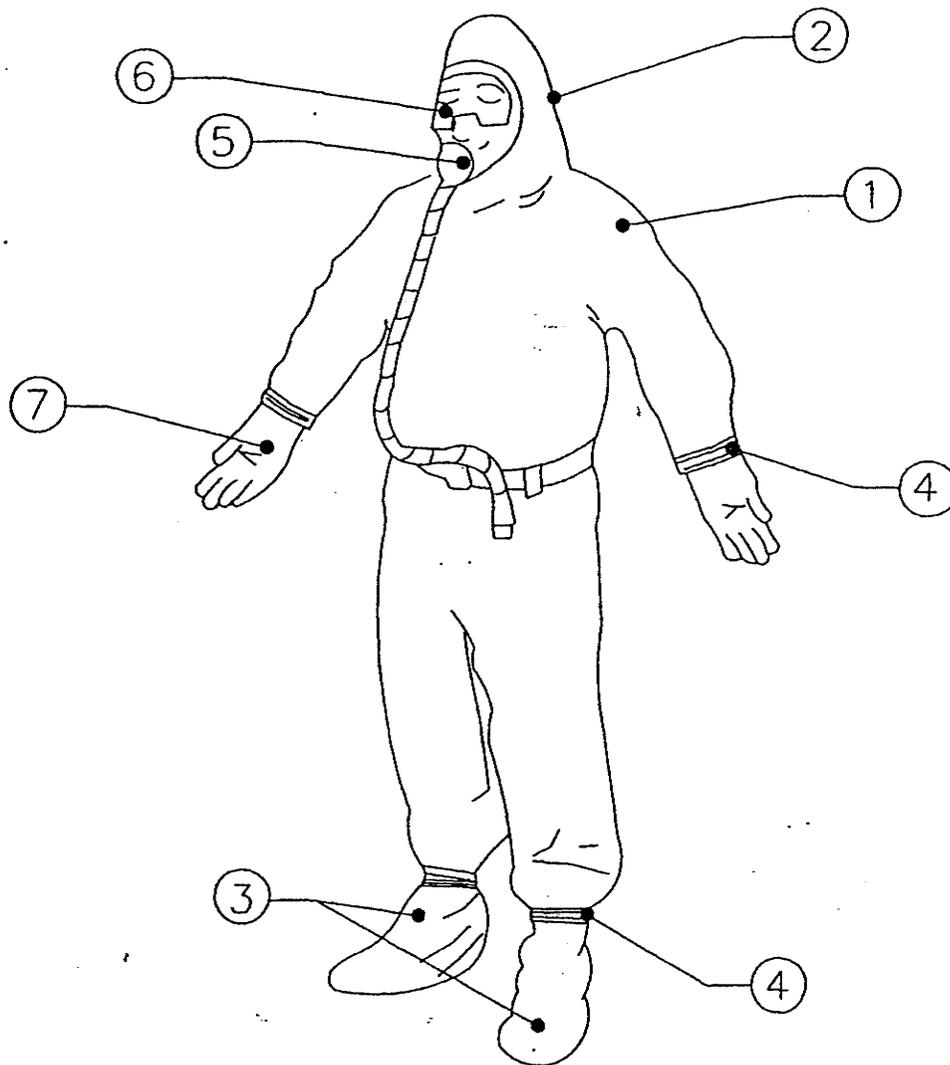


AREA WARNING SIGNS AND WARNING TAPE

DETAIL

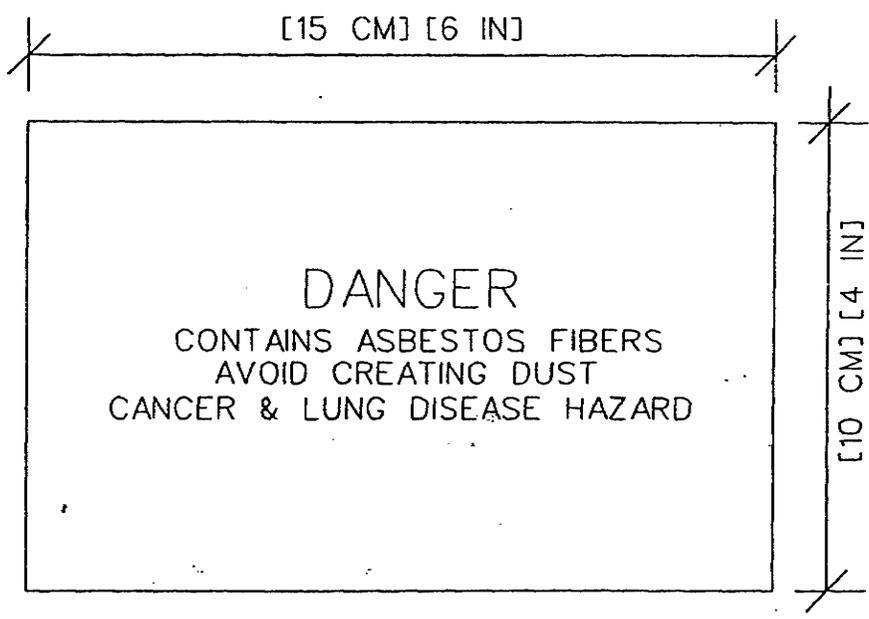
**Area warning signs and warning tape**

1. Provide and install [4 mil] [0.10 mm] polyethylene warning tape at locations shown on the abatement area plan.
2. Warning tape is to be attached to wood or metal posts at [10 ft] [300 cm] on center. Tape must be [3 ft] [100 cm] from ground.
3. Attach both warning signs at each entrance of the work area and at [33 yd] [30 m] on center where security fencing is installed.
4. Warning signs must be in English and other languages required by the contract.
5. Install at eye level.



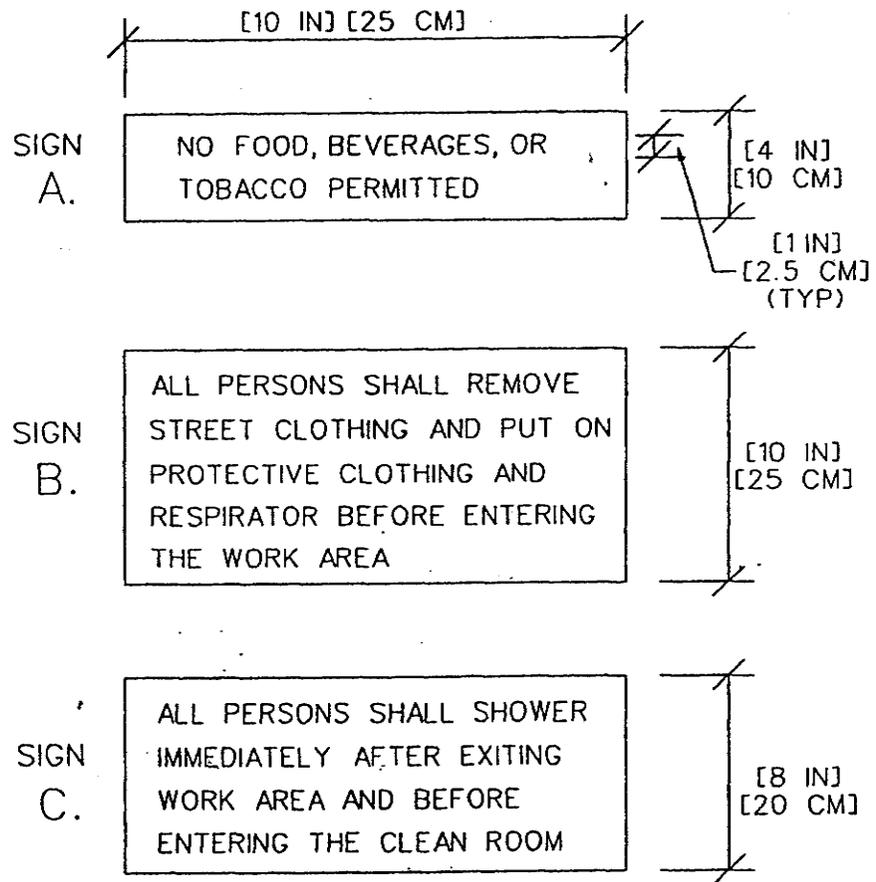
### Protective clothing

- |  |  |
|--|--|
| <p>1. Disposable or reusable full body suit with elastic around hood and shoe cover openings is required or as otherwise specified in the contract.</p> <p>2. Hood shall be worn over respirator's head and neck straps.</p> <p>3. Shoe covers shall be worn over work shoes.</p> <p>4. Cuffs shall be taped with duct tape at wrists and ankles in order to prevent infiltration.</p> | <p>5. Cartridge-type air-purifying HEPA filter respirator is minimal requirement. Type shall be selected in accordance with sheet 12.</p> <p>6. If eye protection is not integral with respirator, protection goggles are required.</p> <p>7. Rubber work gloves are recommended to be worn alone or under outer work gloves provided for hand and operation safety.</p> |
|--|--|



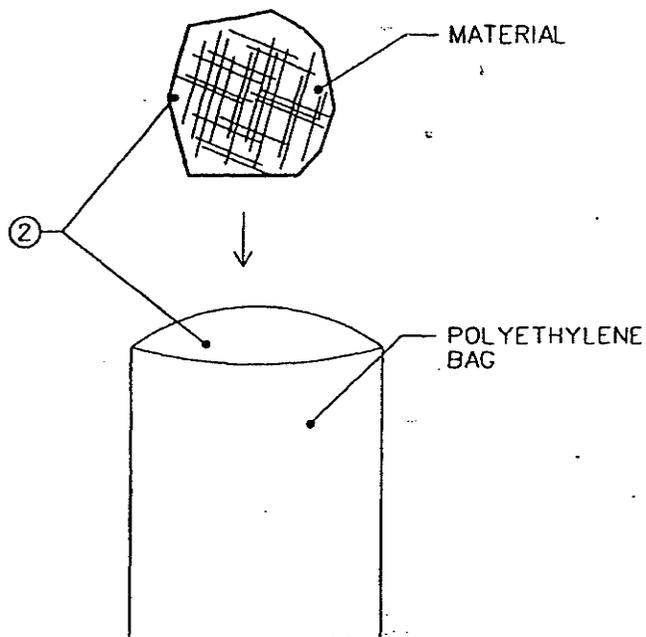
**Disposal container label**

Attach warning labels to each disposal container removed from abatement area.



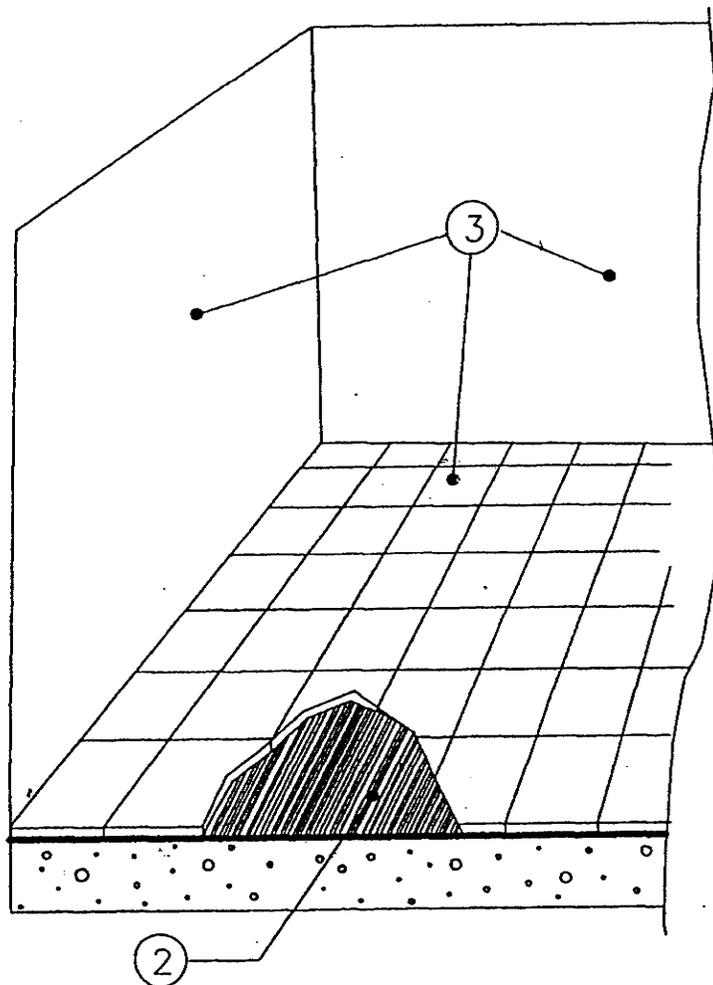
**Decontamination unit signage**

1. Provide signs in English and other languages required by the contract.
2. Install at eye level.



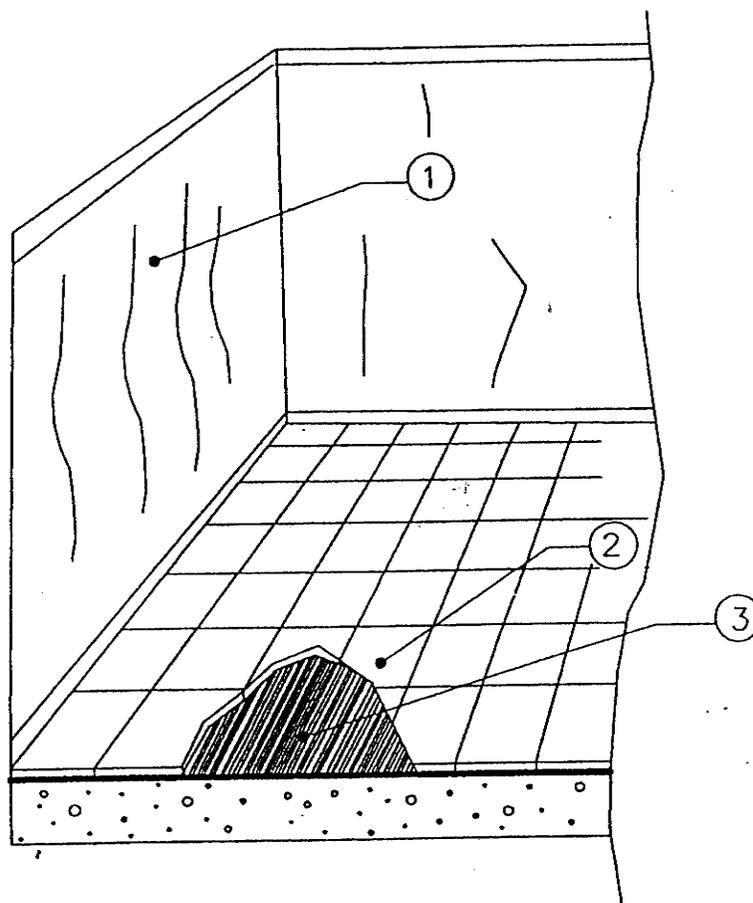
### Removal of miscellaneous asbestos-containing materials

1. Establish work area so that unauthorized entry is prevented; see sheet 11. Prepare containment area as specified on sheet 21.
2. Adequately wet mist materials with amended water. Remove and place in approved container; see sheet 9. Apply labels; see sheet 14.
3. HEPA vacuum and wet wipe area in the immediate vicinity of removed materials.
4. Prepare area for final clearance.
5. Carry out final clearance requirements as specified on sheet 21.



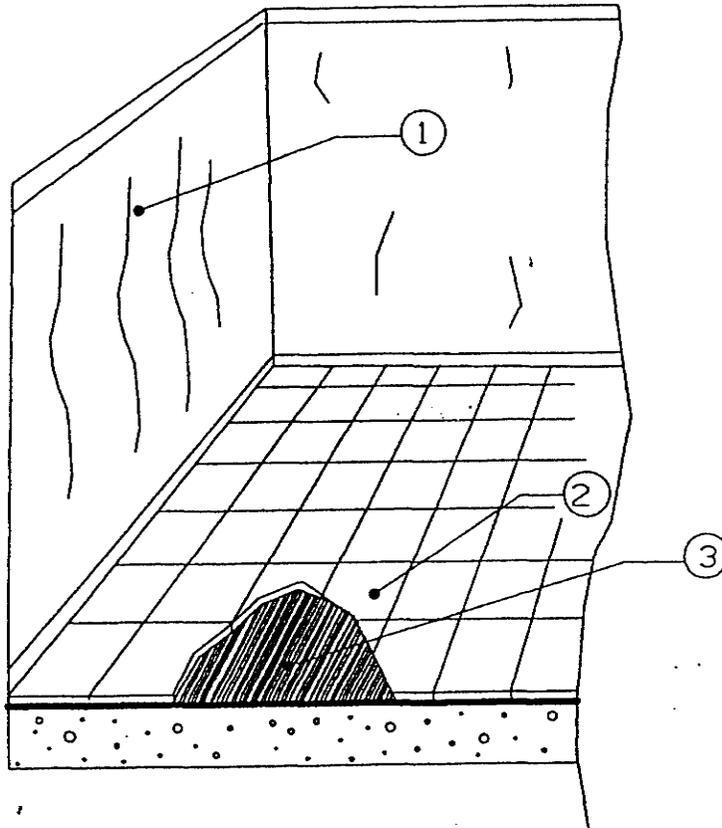
### Repair of vinyl asbestos tile adhered to concrete floor system

1. Prepare work area; see sheet 21. Prevent unauthorized entry; see sheet 11.
2. Remove damaged asbestos tile. Place into an approved container; see sheet 9. Apply labels; see sheet 14.
3. HEPA vacuum and adequately wet clean.
4. Inspect.
5. Install new tile.
6. Prepare area for final clearance.
7. Carry out final clearance requirements specified on sheet 21.



**Removal of vinyl asbestos tile adhered to concrete floor system by  
asbestos-containing adhesive**

1. Prepare containment area as specified on sheet 21. **NOTE:** Where full containment area is required, follow instructions on sheet 4, except omit polyethylene on floor.
2. Lightly flood asbestos tile with amended water, and let soak for 48 hours. Remove asbestos tile and adhesive while they are wet in order to prevent asbestos fiber release. Place tile and adhesive into an approved container; see sheet 9. Apply labels; see sheet 14.
3. Clean, HEPA vacuum, and wet wipe all surfaces.
4. Inspect and reclean area as necessary.
5. Prepare area for final air clearance.
6. Carry out final clearance requirements as specified on applicable sheet 18 or 21.



### Removal of vinyl asbestos tile adhered to concrete floor system by asbestos-free adhesive

1. Prepare containment area as specified on sheet 21.  
**NOTE:** Where full containment area is required, follow instructions on sheet 4, except omit polyethylene on floor.

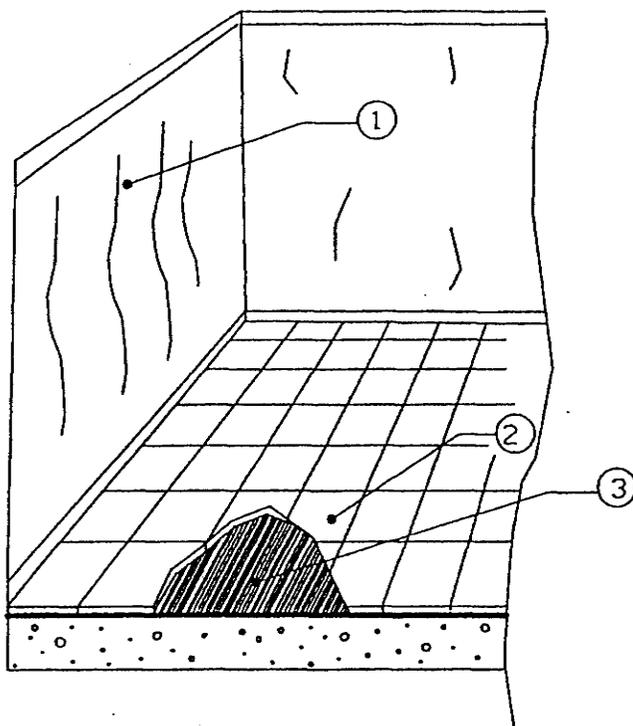
2. Lightly flood asbestos tile, and soak for 48 hours. Remove asbestos tile and adhesive while they are wet in order to prevent asbestos fiber release. Place tile and adhesive into an approved container; see sheet 9. Apply labels; see sheet 14.

3. Clean, HEPA vacuum, and adequately wet clean all surfaces.

4. Inspect and reclean area as necessary.

5. Prepare area for final air clearance.

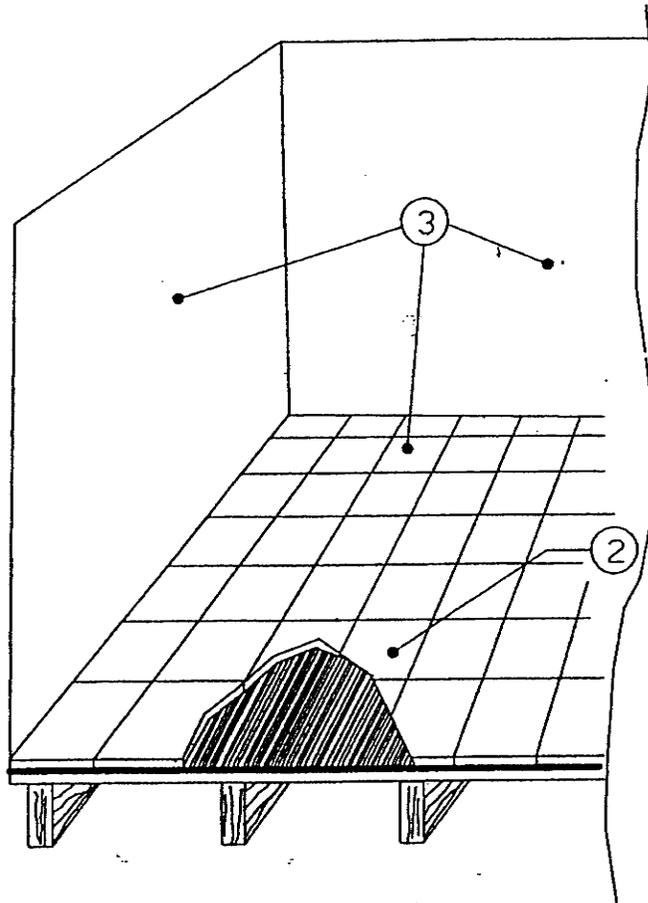
6. Carry out final clearance requirements as specified on applicable sheet 18 or 21.



USE THIS DETAIL ONLY FOR  
- SMALL SCALE PROJECTS  
- GROUND FLOOR APPLICATIONS

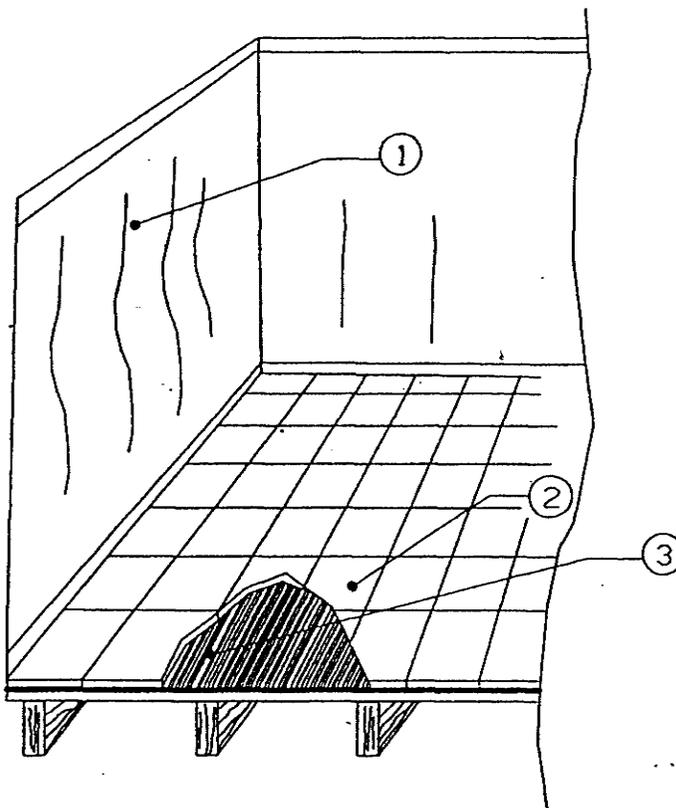
### Removal of vinyl asbestos tile and chemical dissolution of asbestos-containing adhesives on concrete floor system

1. Prepare containment area as specified on sheet 4.
2. Lightly flood asbestos tile, and soak for 48 hours. Remove asbestos tile and adhesive while they are wet in order to prevent asbestos fiber release. Place tile and adhesive into an approved container; see sheet 9. Apply labels; see sheet 14.
3. Before removing adhesive, increase ventilation rate to 10 air changes per hour. Air must be exhausted outside building.
4. Apply liquid adhesive remover. As soon as the adhesive is soft enough to scrape, remove and put into approved container; see sheet 9. Apply labels; see sheet 14.
5. Prepare area for final air clearance.
6. Carry out final clearance requirements as specified on sheet 18.



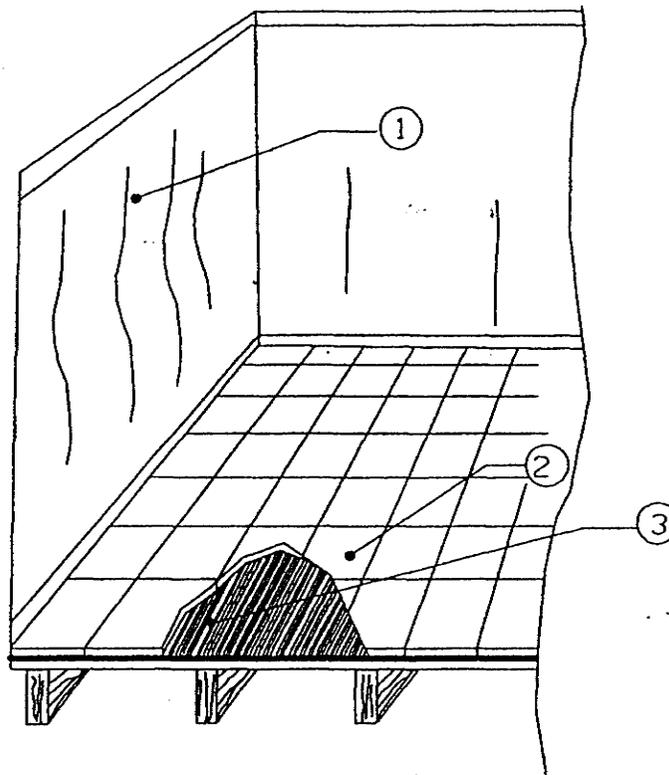
**Repair of vinyl asbestos tile adhered to wood floor system by  
asbestos-containing adhesive**

1. Prepare work area; see sheet 21. Prevent unauthorized entry; see sheet 11.
2. Adequately mist and remove damaged asbestos tile and adhesive. Place tile and adhesive into an approved container; see sheet 9. Apply labels; see sheet 14.
3. HEPA vacuum and wet wipe area.
4. Install new tile.
5. Inspect.
6. Prepare area for final clearance.
7. Carry out final clearance requirements specified on sheet 21.



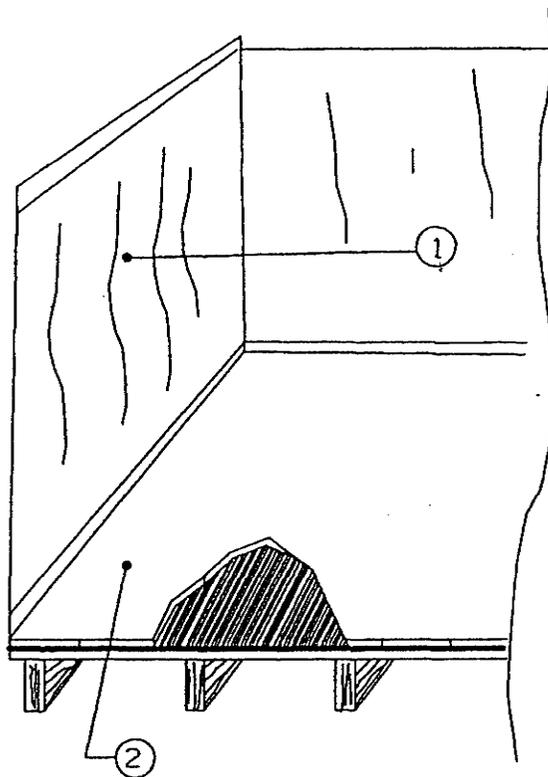
### Removal of vinyl asbestos tile adhered to wood floor system by asbestos-containing adhesive

1. Prepare containment area as specified on sheet 21, except omit polyethylene on floor. **NOTE:** Where full containment is required, follow instructions on sheet 4.
  2. Where wood flooring is to remain, adequately wet and remove asbestos tile and adhesive in order to prevent asbestos fiber release. Place tile and adhesive into an approved container; see sheet 9. Apply labels; see sheet 14. **Note:** Where wood flooring is to be removed, adequately wet and remove existing wood flooring. Treat as asbestos-contaminated material. Spread a plastic sheet on the floor, and stack removed wood flooring onto two layers of 6-mil polyethylene.
  3. Clean, HEPA vacuum, and adequately wet clean all surfaces.
  4. Inspect and reclean area as necessary.
  5. Prepare area for final air clearance.
  6. Carry out final clearance requirements specified in applicable sheet 18 or 21.
- Wrap each polyethylene layer around the stack, sealing all joints and edges with duct tape; see sheet 9. Apply labels to stack; see sheet 14. Smaller material will be placed in approved container; see sheet 9. Apply labels; see sheet 14.



### Removal of vinyl asbestos tile adhered to wood floor system by asbestos-free adhesive

1. Prepare containment area as specified on sheet 21.  
NOTE: Where full containment is required, follow instructions on sheet 4, except omit polyethylene on floor.
2. Adequately wet and remove asbestos tile and adhesive while they are wet in order to prevent asbestos fiber release. Place tile and adhesive into an approved container; see sheet 9. Apply labels; see sheet 14.
3. Clean, HEPA vacuum, and wet wipe all surfaces.
4. Inspect and reclean area as necessary.
5. Prepare area for final air clearance.
6. Carry out final clearance requirements specified on applicable sheet 18 or 21.



### Removal of sheet-flooring adhered to wood floor system

1. Prepare containment area as specified on sheet 21.  
**NOTE:** Where full containment is required, follow instructions on sheet 4, except omit polyethylene on floor.

2. Mist exposed surfaces with amended water just before sheet flooring is removed. Remove flooring in manageable pieces and place on two layers of 6-mil polyethylene. Wrap each layer of polyethylene around the stack, sealing all joints and edges with duct tape; see sheet 9. Apply labels; see sheet 14. Place smaller

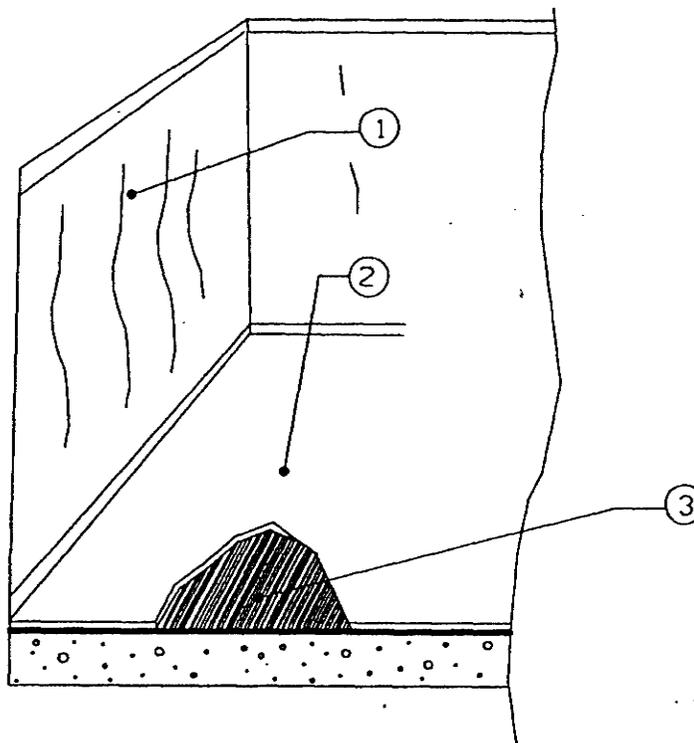
material in approved container; see sheet 9. Apply labels; see sheet 14.

3. Clean, HEPA vacuum, and adequately wet clean all surfaces.

4. Inspect and reclean area as necessary.

5. Prepare area for final air clearance.

6. Carry out final clearance requirements as specified on applicable sheet 18 or 21.



### Removal of sheet-flooring adhered to concrete floor system by asbestos-containing adhesive

1. Prepare containment area as specified on sheet 21.  
**NOTE:** Where full containment is required, follow instructions on sheet 4, except omit polyethylene on floor.

2. Mist exposed surfaces with amended water just before sheet flooring is removed. Remove flooring in manageable pieces and place on two layers of 6-mil polyethylene. Wrap each layer of polyethylene around the stack, sealing all joints and edges with duct tape; see sheet 9. Apply labels; see sheet 14. Place smaller material in approved container; see sheet 9. Apply labels; see sheet 14.

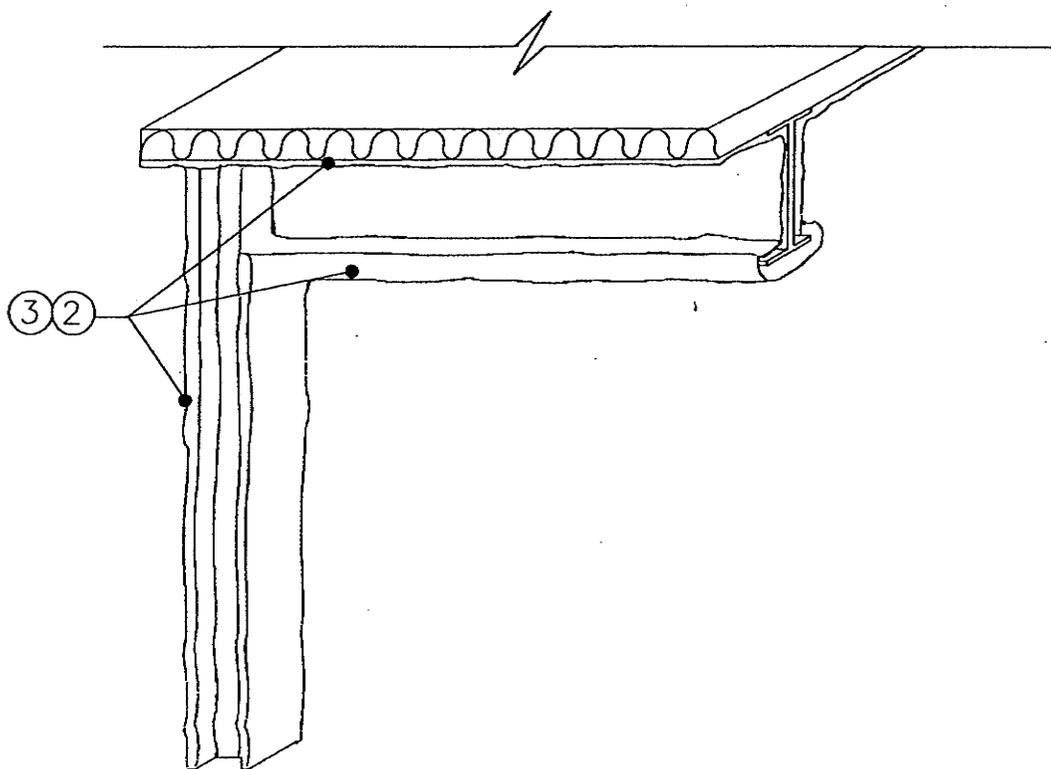
3. Remove remaining adhesive down to bare concrete. Place in approved container; see sheet 9. Apply labels; see sheet 14.

4. Clean, HEPA vacuum, and wet wipe all surfaces.

5. Inspect and reclean area as necessary.

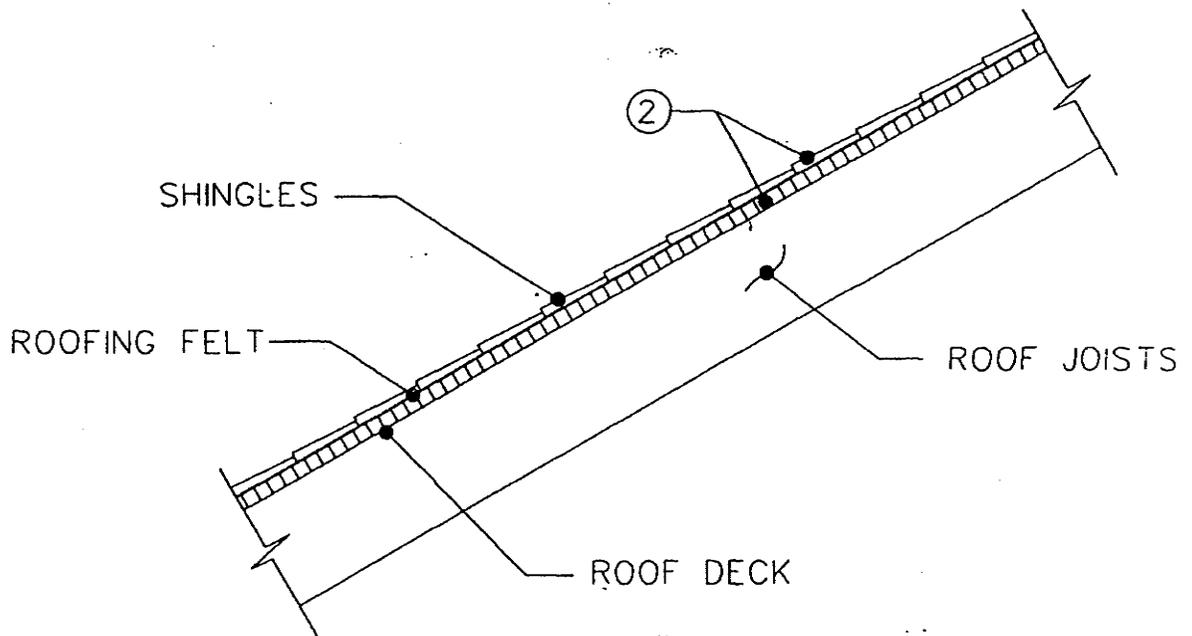
6. Prepare area for final air clearance.

7. Carry out final clearance requirements specified on applicable sheet 18 or 21.



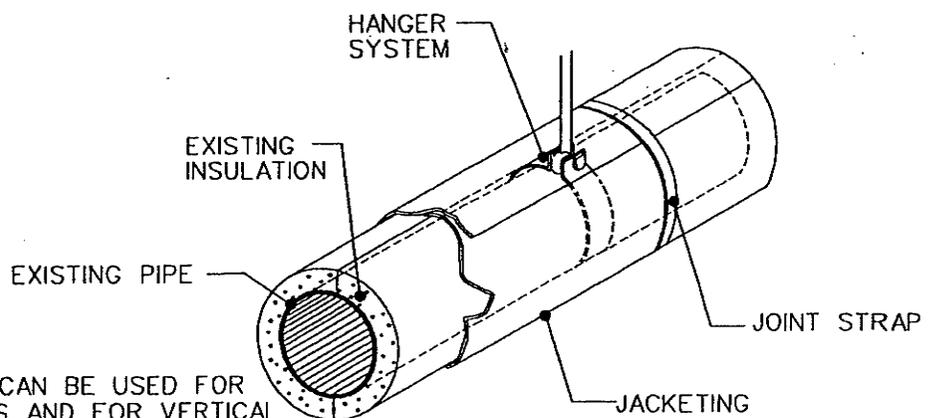
### Removal of fireproofing or thermal surface insulation

1. Prepare containment area as specified on applicable sheet 2, 3, or 4.
2. Adequately wet mist surface of insulation/fireproofing with amended water, initially and during removal procedures.
3. Remove sprayed-on fireproofing from all structural members. Brush, HEPA vacuum, and wet wipe exposed steel surfaces in order to remove residual material. Place removed asbestos-containing material in approved containers; see sheet 9. Apply labels; see sheet 14.
4. Inspect and reclean area as necessary.
5. Apply tinted penetrating encapsulant. Inspect and reapply encapsulant as necessary.
6. Prepare area for final air clearance.
7. Carry out final clearance requirements as specified on applicable sheet 16, 17, or 18.



### Removal of roof, shingles, and underlay

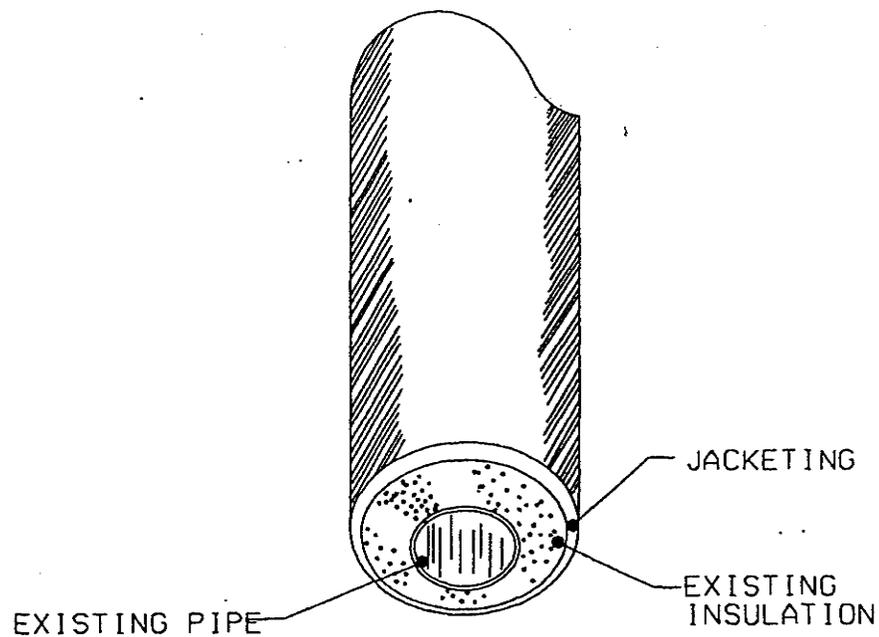
1. No containment area is required. Establish boundaries of asbestos-regulated work area so that unauthorized entry is prevented, and install warning signs; see sheet 11. Provide personal protection and decontamination facilities as specified in contractor's asbestos hazard abatement plan.
2. Remove shingles, roofing felt, nails, and debris, using wet removal technique.
3. Dispose of all materials by carefully sliding them down an enclosed chute into an enclosed Dumpster or truck that is lined with two layers of 6-mil polyethylene. When Dumpster or truck is filled, fold the polyethylene edges over each other and seal with duct tape; see sheet 9. Apply labels; see sheet 14.
4. Clean and HEPA vacuum roof.
5. Inspect and reclean area as necessary.
6. Apply tinted penetrating encapsulant to exposed roof deck, using an airless sprayer.
7. Prepare area for final clearance.
8. Contractor and contracting officer will certify visual inspection of work area on sheet 19, *Certification of Final Cleaning and Visual Inspection*.



NOTE: THIS SHEET CAN BE USED FOR  
PIPE FITTINGS AND FOR VERTICAL  
OR HORIZONTAL PIPING.

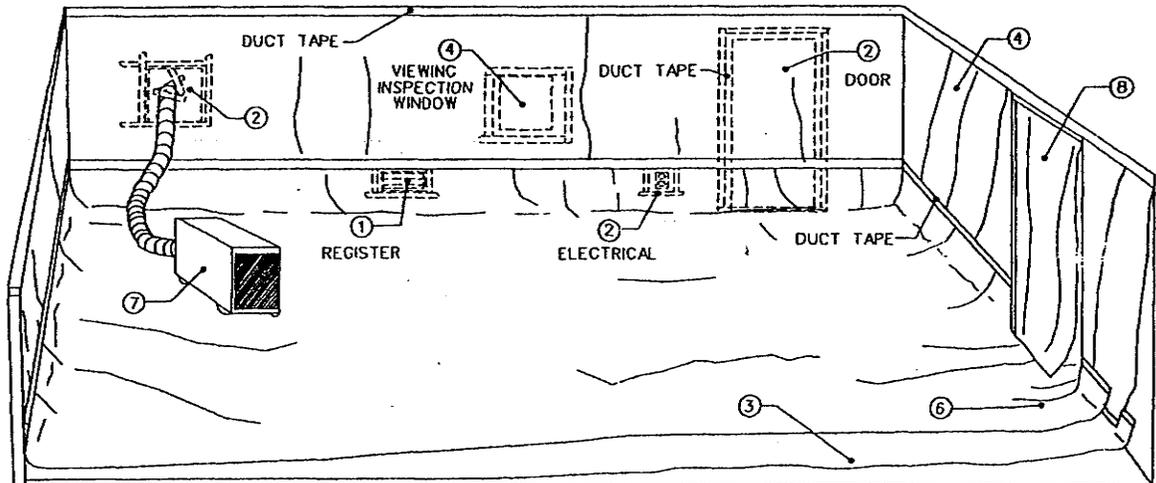
### Removal of horizontal pipe insulation (using containment area)

1. Prepare containment area as specified on applicable sheet 2, 3, or 4.
2. Adequately wet mist insulation surface with amended water, initially and during removal. Remove jacketing and insulation from pipe and hanger system.
3. Clean exposed surfaces by spraying with amended water and brushing.
4. Inspect and reclean as necessary.
5. Spray a tinted penetrating encapsulant on pipe and exposed ends of insulation.
6. Inspect piping and reapply encapsulant as necessary.
7. Prepare area for final air clearance.
8. Carry out final clearance requirements specified on applicable sheet 16, 17, or 18.



### Removal of pipe insulation (using mini-containment area)

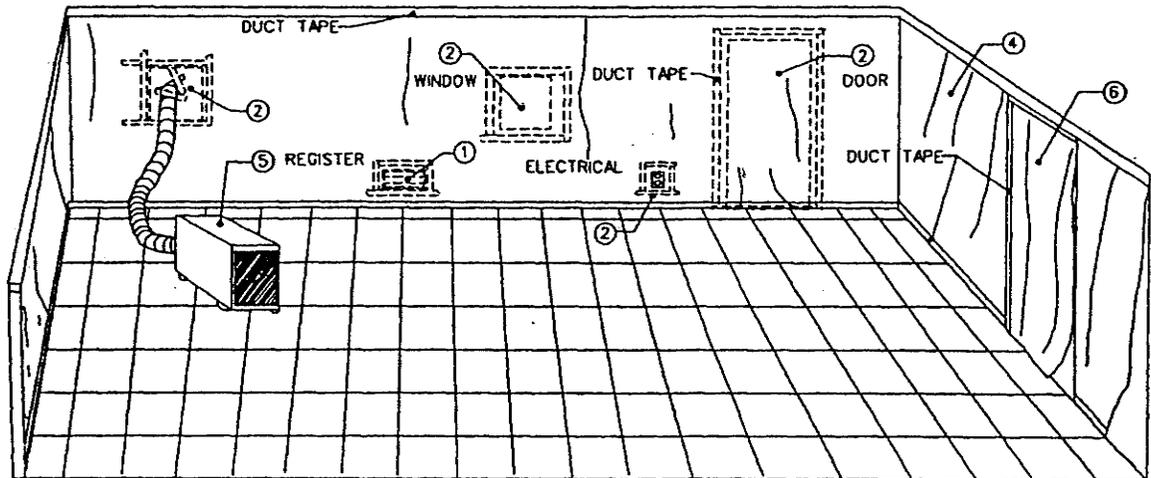
1. Prepare mini-containment area as specified on sheet 7.
2. Adequately wet mist insulation surface with amended water, initially and during removal. Remove jacketing and insulation from pipe and hanger system.
3. Clean exposed surfaces by spraying with amended water and brushing.
4. Inspect and reclean area as necessary.
5. Spray a tinted penetrating encapsulant on pipe and exposed ends of insulation. Inspect and reapply as necessary.
6. Prepare area for final clearance.
7. Carry out final clearance requirements specified on sheet 7.



### Installation of critical barrier and full containment area (for hard floor surfaces)

1. Establish work area so that unauthorized entry is prevented; see sheet 11. Eliminate airflow into containment area by isolation of all supply and return air ducts from mechanical system. Lock doors and windows not required for access.
2. Install 6-mil polyethylene critical barriers over all windows, doors, wall openings, electrical outlets, etc. Secure with duct tape on all sides. HEPA vacuum furniture, fixtures, and equipment and remove from or protect in containment area, as specified by the contract.
3. Install first layer of 6-mil polyethylene on floor, extending the polyethylene 18 inches up wall. Secure with duct tape.
4. Protect wall surface with 6-mil polyethylene from floor to ceiling. Install view inspection windows, where feasible.
5. Prepare area as follows: turn off electrical power and remove light fixtures. Protect ceiling as required. HEPA vacuum floor and walls.
6. Install top layer of 6-mil polyethylene.
7. Install HEPA filter unit and duct work; see sheet 8.
8. Prepare door into decontamination unit or load-out unit; see sheet 22 for decontamination unit and sheet 20 for load-out unit. Doors that swing into the work area must be removed from hinges.

Final clearance requirements: After abatement has been completed, see sheet 17 for final clearance requirements.



### Installation of critical barrier and full containment area (for vinyl tile floors)

1. Establish work area so that unauthorized entry is prevented; see sheet 11. Eliminate airflow into containment area by isolating all supply and return air ducts from mechanical system. Lock doors and windows not required for access.

2. Install 6-mil polyethylene critical barriers over all windows, doors, wall openings, electrical outlets, etc. Secure with duct tape on all sides. HEPA vacuum furniture, fixtures, and equipment and remove from or protect in containment area, as specified by the contract.

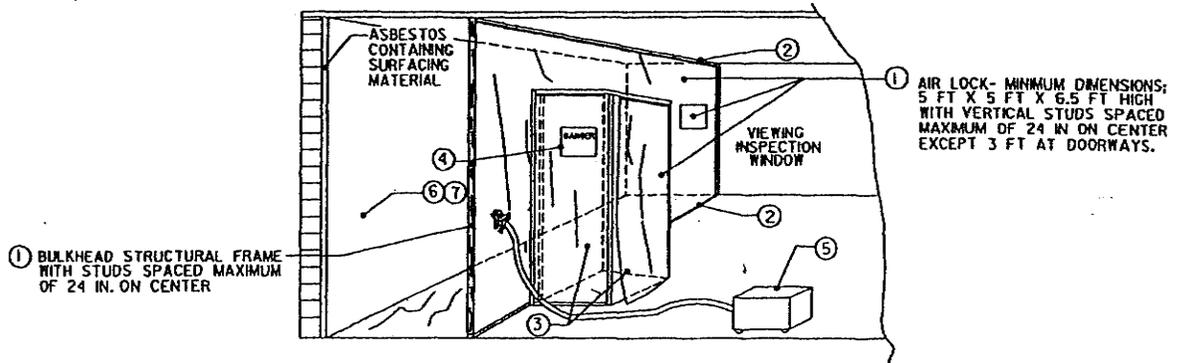
3. Prepare area as follows: turn off electrical power and remove light fixtures. Protect ceiling as required. HEPA vacuum floors and walls.

4. Protect wall surface with 6-mil polyethylene from floor to ceiling. Install viewing inspection windows, where feasible.

5. Install HEPA filter unit and duct work; see sheet 8.

6. Prepare door into decontamination unit or load-out unit; see sheet 22 for decontamination unit and sheet 20 for load-out unit. Doors that swing into the work area must be removed from hinges.

Final clearance requirements. After abatement has been completed, see sheet 18 for final clearance requirements.

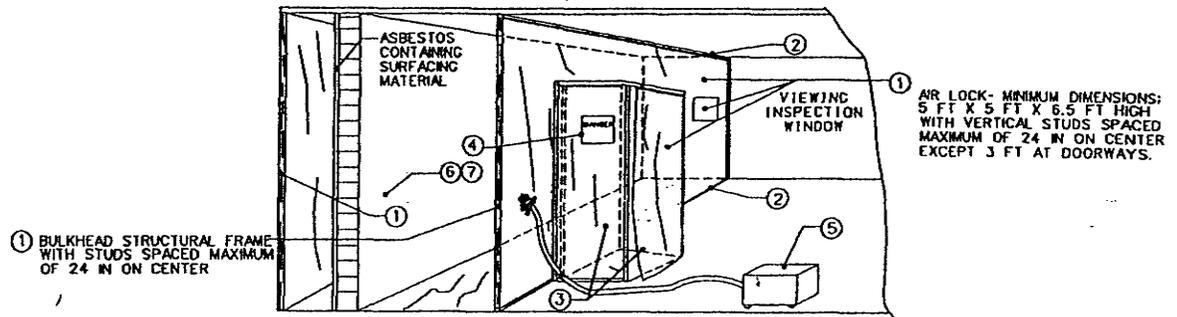


### Single bulkhead containment area

1. Establish work area so that unauthorized entry is prevented; see sheet 11. Construct a structural frame for a bulkhead wall and an air lock. See sheet 1 for air lock requirements other than those identified in note 1 of this drawing. Bulkhead is to be parallel to the item requiring abatement. Attach structural frame to walls, floor, or ceiling as necessary for stability. Cover the frame with one layer and the floor with two layers of 6-mil polyethylene sheeting, sealing edges of polyethylene to walls, ceilings, and floor surfaces with duct tape. Install viewing inspection windows, where feasible.
2. Seal with duct tape all penetrations (typical) such as pipes, electrical conduit, or ducts.
3. Install triple 6-mil polyethylene flaps at both doorways. Place portable sprayer with clean water, disposable towels, and prelabeled disposal bag in air lock.
4. Install danger signs on outside of containment area; see sheet 11.
5. Install HEPA vacuum. Extend hose into mini-containment area for general vacuuming, negative air, and cleaning of disposable suit.

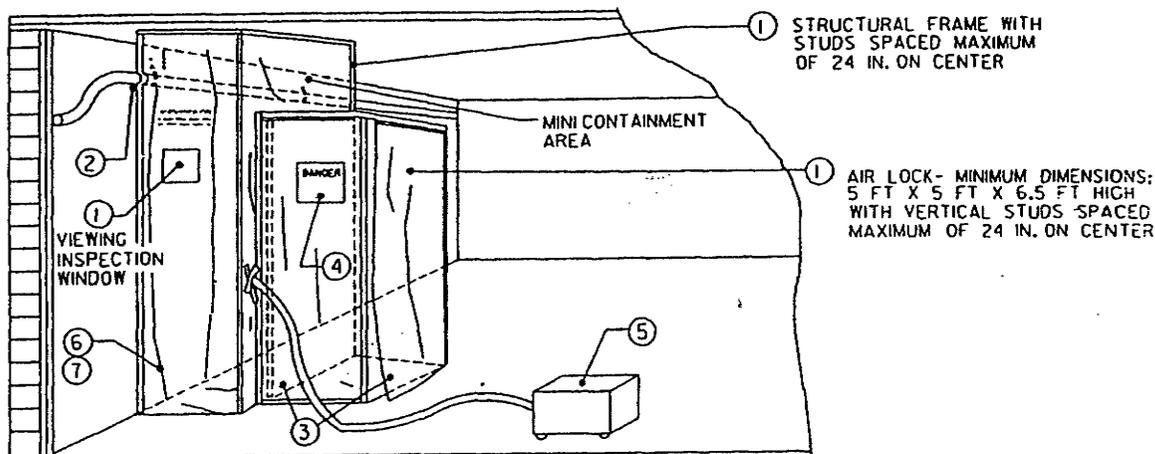
6. Accumulate all loose materials for disposal, and place in approved container; see Sheet 9. Apply labels; see sheet 14. Adequately wet clean all wall, floor, tool, and equipment surfaces.
7. Abatement worker must wear two disposable suits. Remove outer suit in work area and place in a plastic bag; see sheet 9. Enter air lock.
8. In air lock, wet wipe respirator and wash hands with clean water from portable sprayer. Remove respirator and place in clean plastic bag. Proceed to remote shower where inner suit may be removed.

**Final Clearance Requirements:** After abatement is completed, prepare area for final clearance. Contractor and Contracting Officer will verify visual inspection of work area on sheet 9. **Final Clearance and Visual Inspection:** Contractor will apply lockdown encapsulant. Contracting Officer will provide final air clearance monitoring as required by the contract. Remove containment area upon instructions from the Contracting Officer and treat it as asbestos-contaminated material. Place in approved container; see sheet 9. Apply labels; see sheet 14. Dispose of as specified in the contract.



### Double bulkhead containment area

1. Establish work area so that unauthorized entry is prevented; see sheet 11. Construct a structural frame for two bulkhead walls and an air lock. See sheet 1 for air lock requirements other than those identified in note 1 of this drawing. Bulkheads are to be parallel to the wall being removed. Attach structural frame to walls, floor, or ceiling as necessary for stability. Locate change room on the side opposite the asbestos-containing surface material. Cover the frame with one layer and the floor with two layers of 6-mil polyethylene sheeting and seal edges to walls, ceiling, and floor surfaces with duct tape. If a bulkhead is located outside the building, end walls and a roof will also be required. Install viewing inspection windows, where feasible.
  2. Seal with duct tape all penetrations (typical) such as pipes, electrical conduit, or ducts.
  3. Install triple 6-mil polyethylene flaps at doorways. Place portable sprayer with clean water, disposable towels, and prelabeled disposal bag in air lock.
  4. Install danger signs on outside of containment area; see sheet 11.
  5. Install HEPA vacuum; extend hose into mini-containment area for general vacuuming, negative air, and cleaning of disposable suit.
  6. Accumulate all loose materials for disposal. Place in approved container; see sheet 9. Apply labels; see sheet 14. Adequately wet clean all wall, floor, tool, and equipment surfaces.
  7. Abatement worker must wear two disposable suits. Remove outer suit in work area and place in a plastic bag; see sheet 9. Enter air lock.
  8. In air lock, wet wipe respirator and wash hands with clean water from portable sprayer. Remove respirator and place in a clean plastic bag. Proceed to shower where inner suit may be removed.
  9. After abatement is completed, prepare area for final clearance.
- Final clearance requirements:** After abatement is completed, prepare area for final clearance. Contractor and Contracting Officer will verify visual inspection of work area on sheet 19, *Certification of Final Cleaning and Visual Inspection*. Contractor will apply lockdown encapsulant. Contract designee(s) will conduct final air clearance monitoring as required by the contract. Remove containment area upon instructions from the Contracting Officer, and treat it as asbestos-contaminated material. Place in approved container, see sheet 9. Apply labels, see sheet 14. Dispose of as specified in the contract.



### Mini-containment area

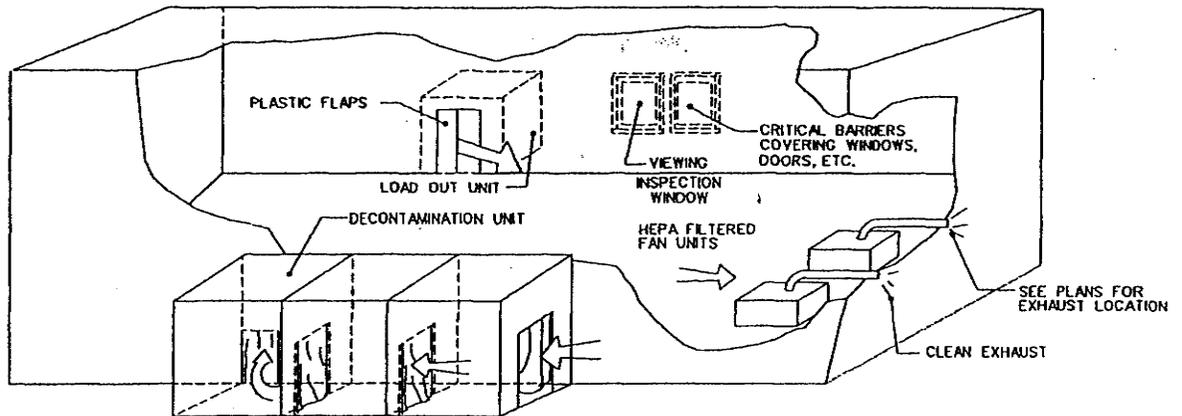
1. Establish work area so that unauthorized entry is prevented; see sheet 11. Construct a two-compartment wood frame around work area; install one layer 6-mil polyethylene sheeting to structural members and two layers 6-mil polyethylene sheeting to the floor. Seal all edges to wall, ceiling, and floor surfaces with duct tape. Install viewing inspection windows, where feasible.
2. Seal with duct tape all penetrations (typical) such as pipes, electrical conduit, or ducts.
3. Install triple 6-mil polyethylene flaps at both doorways. Place portable sprayer with clean water, disposable towels, and pre-labeled disposal bag in air lock.
4. Install danger signs on outside of containment area. See sheet 11.
5. Install HEPA vacuum; extend hose into mini-containment area for general vacuuming, negative air, and cleaning of disposable suit.
6. Accumulate all loose materials for disposal. Place in approved container; see sheet 9. Apply labels; see

sheet 14. Adequately wet clean all wall, floor, tool, and equipment surfaces.

7. Abatement worker must wear two disposable suits. Remove outer suit in work area and place in a plastic bag; see sheet 9. Enter air lock.

8. In air lock, wet wipe respirator and wash hands with clean water. Remove respirator and place in a clean plastic bag. Proceed to remote shower unit where inner suit may be removed.

**Final clearance requirements.** After abatement is completed, prepare area for final clearance. Contractor and Contracting Officer will certify visual inspection of work area on sheet 19; *Certification of Final Cleaning and Visual Inspection*. Contractor will apply lockdown encapsulant. Contract designee(s) will conduct final air-clearance monitoring as required by the contract. Remove containment area upon instructions from the Contracting Officer, and treat it as asbestos-contaminated material. Place in approved container; see sheet 9. Apply labels, see sheet 14. Dispose of as specified in the contract.



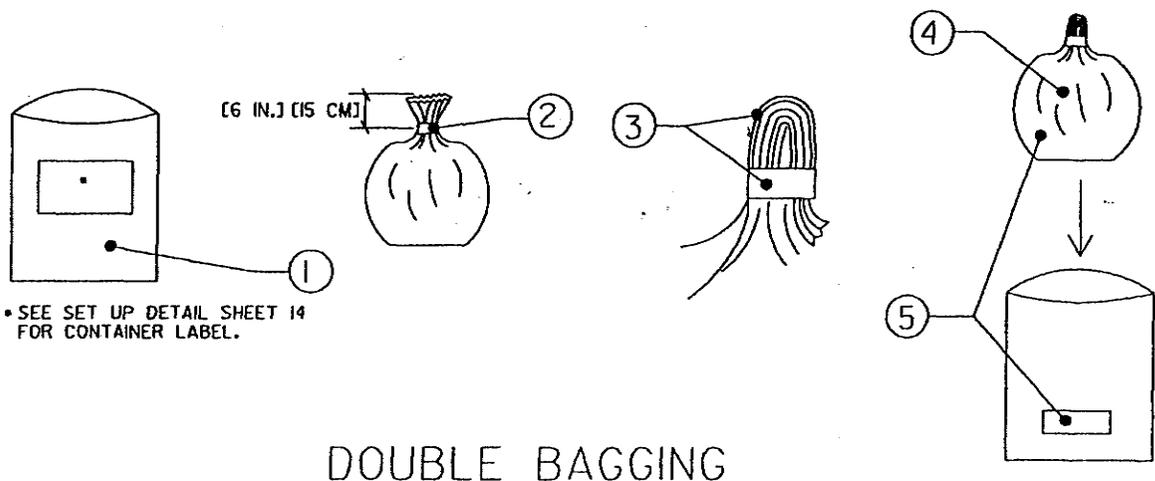
### Ventilation of containment area and decontamination unit, using HEPA filters

1. Install a ventilation system in the containment area that draws the air supply through the decontamination and load-out units. See sheets 20 and 22.
2. Operate ventilation system 24 hours a day from start of abatement through final clearance.
3. Place at the decontamination unit entrance a pressure gauge that measures differential pressure between abatement and ambient areas. Gauge must be read hourly and logged or continuously recorded.
4. The ventilation system must create, as a minimum, a negative pressure of 0.02 inches of water inside the containment area (relative to the outside of the containment area) and must be sized for a minimum of four air changes per hour or more, as specified in the contractor's asbestos hazard abatement plan.

5. Locate HEPA filters in order to prevent dead air pockets.

6. Exhaust filtered air to outside of building, unless otherwise approved by the Contracting Officer.

and clearance requirements for final clearance. Remove ventilation system per instruction from the Contracting Officer and relocate equipment from decontamination unit. Thoroughly HEPA vacuum unit and interior. Adequately wet clean all surfaces and wheels of vehicles. Collect all waste debris and materials and treat as asbestos contaminated material. Place in approved containers. See sheet 69. Apply labels per sheet 14. Dispose of waste as required by the contract. Wrap unit in one layer of 6 mil polyethylene sheeting and seal with tape before removing from job location.

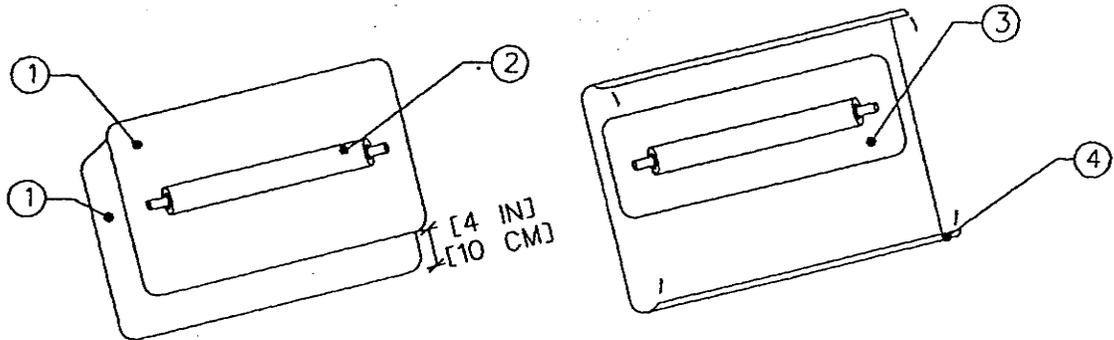


• SEE SET UP DETAIL SHEET 14 FOR CONTAINER LABEL.

## DOUBLE BAGGING

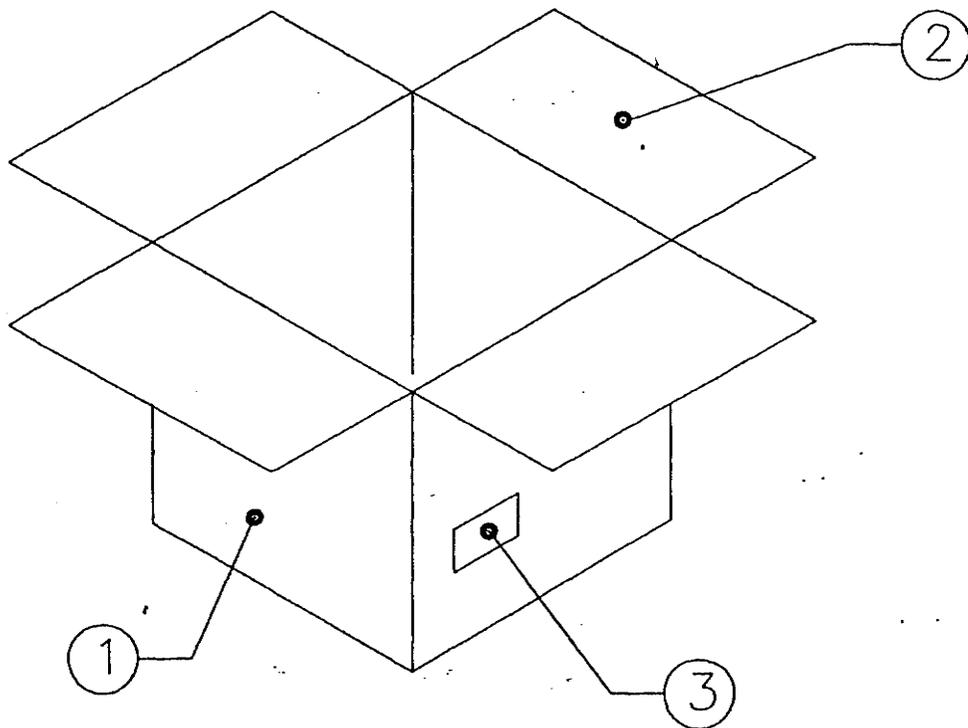
### Containers—double bagging

1. Place the still-wet asbestos-containing and asbestos-contaminated material into a prelabelled 6-mil polyethylene bag. Do not overfill. Do not use bag for asbestos-containing or asbestos-contaminated material that could puncture the bag. (See sheet 9C for packaging items that could puncture bags.)
2. Evacuate with HEPA vacuum, and seal collapsed bag by twisting top [6 in] [15 cm] closed and wrapping with a minimum of two layers of duct tape.
3. Twist top and fold over. Apply second wrap of duct tape.
4. Adequately wet clean outside of disposal bag by wet wiping, and take bag to the equipment and staging area.
5. Place bag inside a second prelabelled 6-mil polyethylene bag.
6. Seal outer bag by repeating steps 2 and 3 above. Take bag to load-out unit; see sheet 20.



### Containers—leak-tight wrapping

1. Place two layers of 6-mil polyethylene sheet on surface so that the bottom layer is offset [4 in] [10 cm] from the top layer.
2. Place the still-wet asbestos-containing or asbestos-contaminated material that is too large (boiler, vessel, pipe segment, etc.) to be placed in disposal bags on the top layer of polyethylene.
3. Wrap the top layer tightly around the contaminated material. Seal all edges of the top layer of sheeting with duct tape. Apply labels; see sheet 14.
4. Repeat procedure with bottom layer, including labeling. Take to load-out unit; see sheet 20.

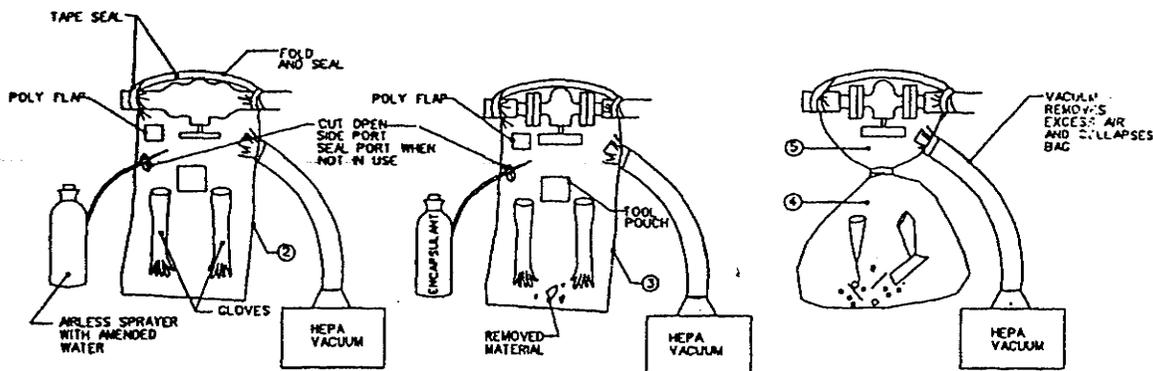


### Containers—corrugated cardboard boxes

1. Place still-wet asbestos-containing or asbestos-contaminated material that could puncture disposal bags into heavy-duty corrugated cardboard boxes coated with plastic or wax that will retard deterioration from moisture.

2. Close flaps, and seal with duct tape.

3. Apply labels; see sheet 14. Place box into disposal bags; see sheet 9A. Take to load-out unit; see sheet 20.



### Glove bag

1. Construct modified containment area in accordance with sheet 21. NOTE: Inspect for structural integrity the insulation material adjacent to section being removed, since glove bag removal procedure is not appropriate if it will cause asbestos fiber release from adjacent asbestos-containing material.

2. Put tools and rags inside glove bag. Insulation adjacent to the asbestos-containing material being removed must be adequately wet cleaned and sprayed with an encapsulant before placing glove bag over the area to be removed. Install glove bag according to manufacturer's instructions. (NOTE: Negative-air glove bags may be used if first approved by Contracting Officer. Manufacturer procedures for negative-air glove bags will vary from procedures identified on this sheet.) Install HEPA filter vacuum cleaner with hose ducted into bag. Seal with duct tape. Smoke test for leaks. Soak insulation with amended water.

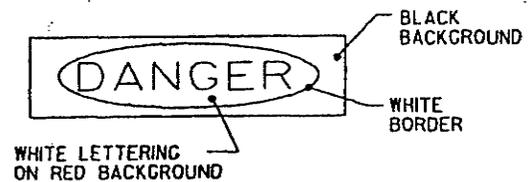
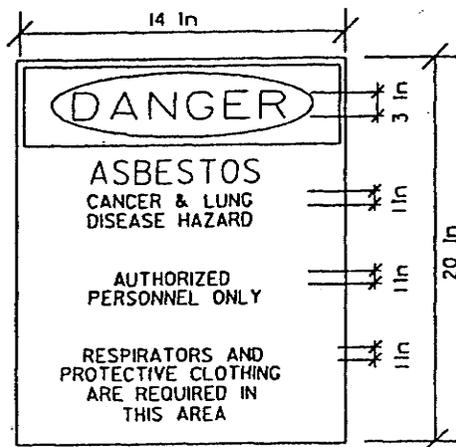
3. Remove insulation and clean exposed metal surfaces. Encapsulate exposed ends of insulation and metal surfaces. Adequately wet clean glove bag surfaces to below tool pouch.

4. Grasp tools in pouch and withdraw by pulling glove inside out. Twist glove above encased tools to create a constriction, and tape constricted area with duct tape. Cut through middle of taped area so that tools and glove bag will both remain sealed. Place encased tools into tool pouch of next glove bag or decontaminate by water immersion.

5. Evacuate glove bag, using HEPA vacuum. Twist bag to create a constriction below tool pouch. Wrap constricted area with duct tape. Cut bag (4 in) [10 cm] above constriction. Double bag cut off portion of bag; see sheet 9. Apply labels; see sheet 14. Cap and seal end of HEPA vacuum hose in order to prevent incidental fiber release.

6. Remove remaining portion of glove bag. Place in approved container; see sheet 9. Apply labels; see sheet 14. Dispose as asbestos-contaminated waste.

**Final Clearance requirements:** For final clearance, Contractor and Contracting Officer will certify visual inspection of work area on sheet 19. **Certification of Final Clearance and Visual Inspection:** Contract designee(s) will conduct final air-clearance monitoring as required by the contract.

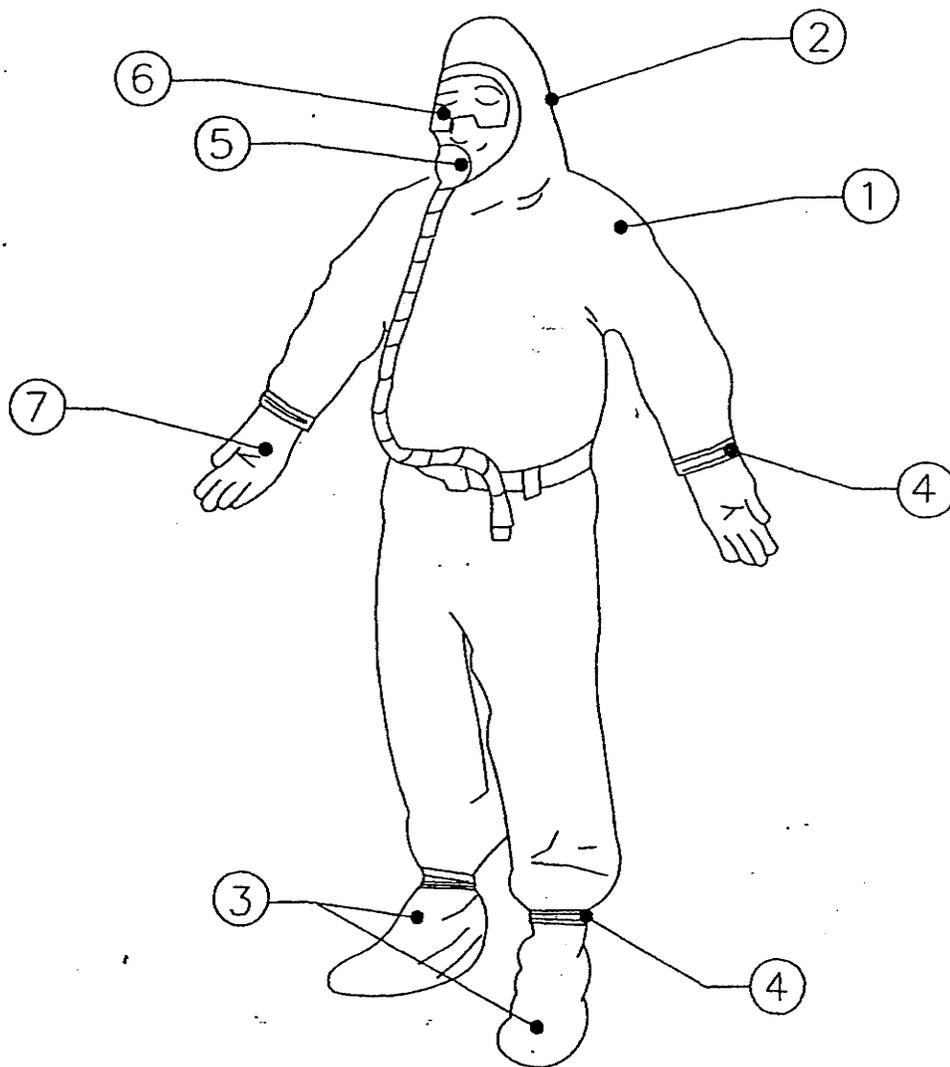


AREA WARNING SIGNS AND WARNING TAPE

DETAIL

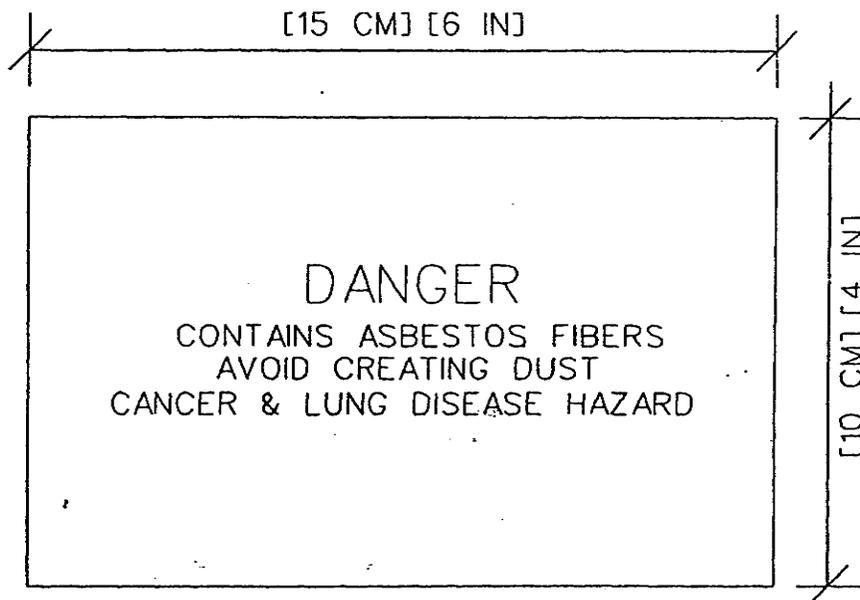
**Area warning signs and warning tape**

1. Provide and install [4 mil] [0.10 mm] polyethylene warning tape at locations shown on the abatement area plan.
2. Warning tape is to be attached to wood or metal posts at [10 ft] [300 cm] on center. Tape must be [3 ft] [100 cm] from ground.
3. Attach both warning signs at each entrance of the work area and at [33 yd] [30 m] on center where security fencing is installed.
4. Warning signs must be in English and other languages required by the contract.
5. Install at eye level.



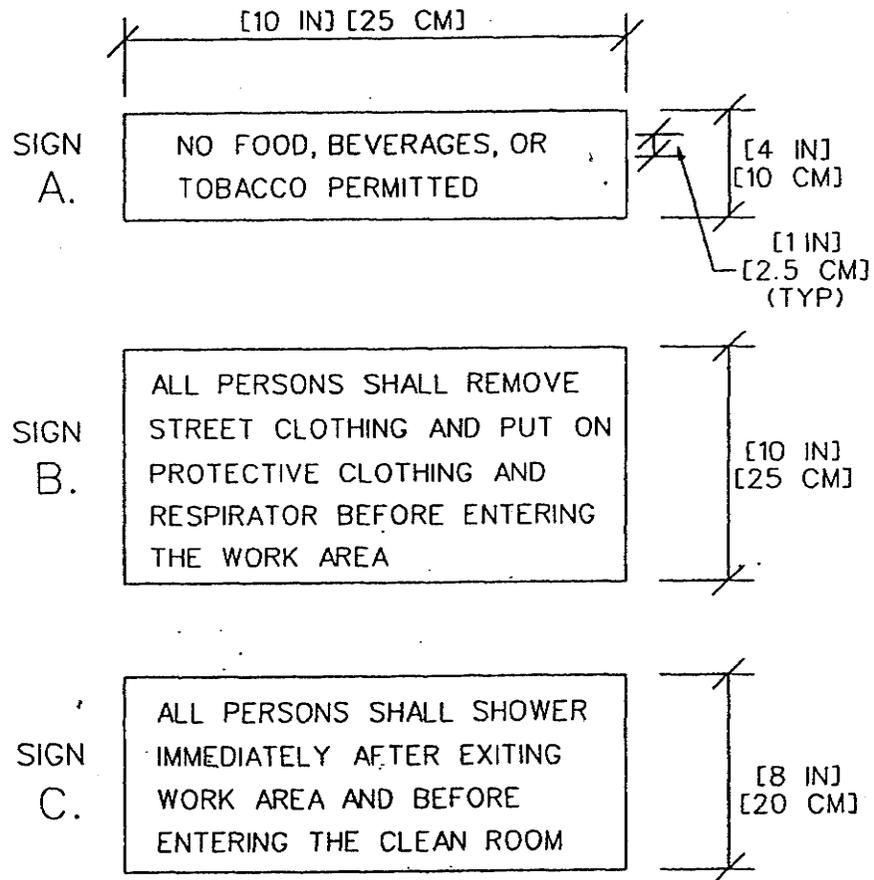
### Protective clothing

- |   |   |
|---|---|
| <p>1. Disposable or reusable full body suit with elastic around hood and shoe cover openings is required or as otherwise specified in the contract.</p> | <p>5. Cartridge-type air-purifying HEPA filter respirator is minimal requirement. Type shall be selected in accordance with sheet 12.</p> |
| <p>2. Hood shall be worn over respirator's head and neck straps.</p>  | <p>6. If eye protection is not integral with respirator, protection goggles are required.</p>   |
| <p>3. Shoe covers shall be worn over work shoes.</p>  | <p>7. Rubber work gloves are recommended to be worn alone or under outer work gloves provided for hand and operation safety.</p>          |
| <p>4. Cuffs shall be taped with duct tape at wrists and ankles in order to prevent infiltration.</p>  |   |



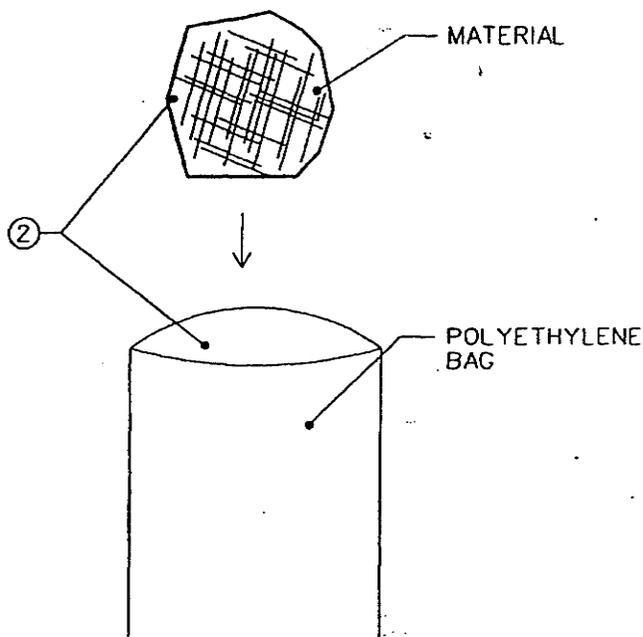
**Disposal container label**

Attach warning labels to each disposal container removed from abatement area.



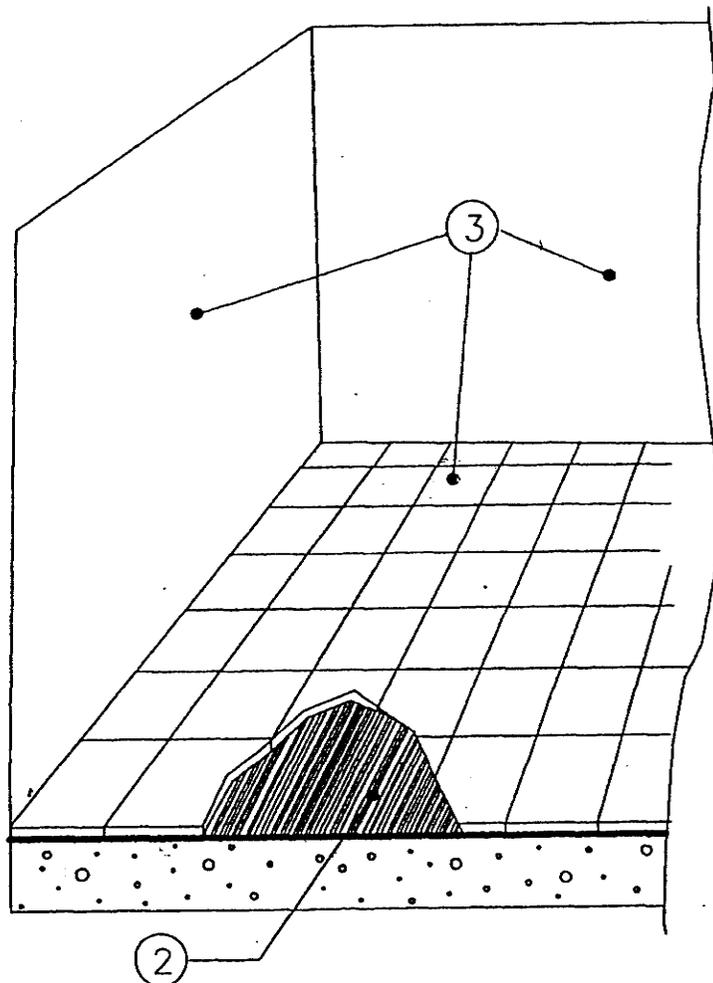
**Decontamination unit signage**

1. Provide signs in English and other languages required by the contract.
2. Install at eye level.



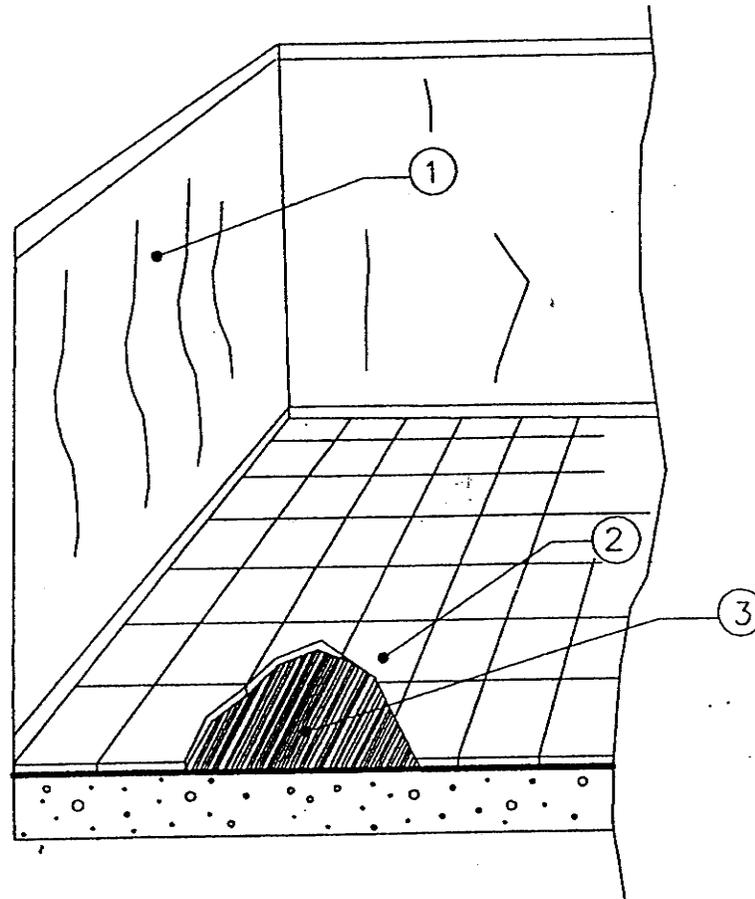
### Removal of miscellaneous asbestos-containing materials

1. Establish work area so that unauthorized entry is prevented; see sheet 11. Prepare containment area as specified on sheet 21.
2. Adequately wet mist materials with amended water. Remove and place in approved container; see sheet 9. Apply labels; see sheet 14.
3. HEPA vacuum and wet wipe area in the immediate vicinity of removed materials.
4. Prepare area for final clearance.
5. Carry out final clearance requirements as specified on sheet 21.



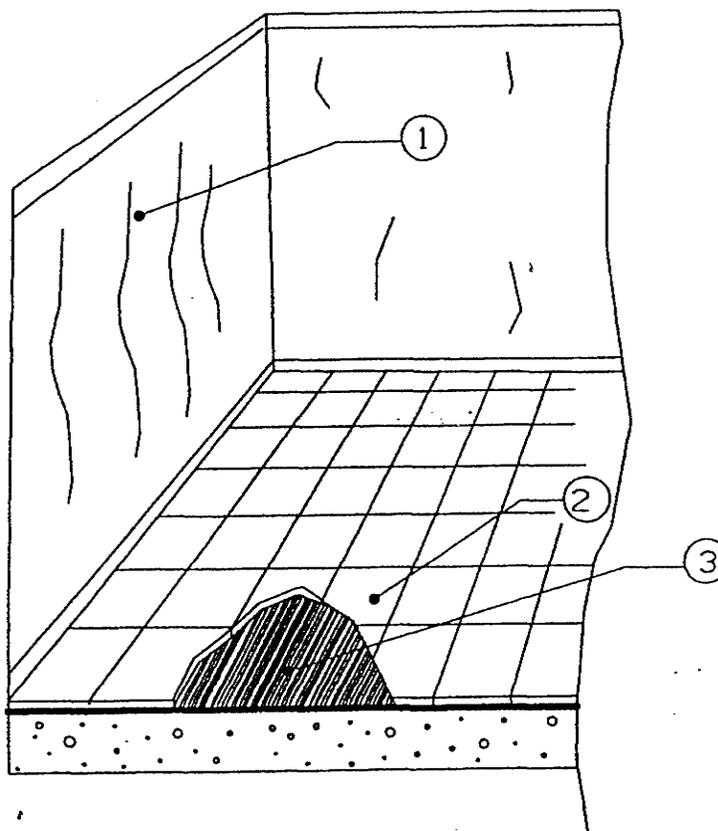
### Repair of vinyl asbestos tile adhered to concrete floor system

1. Prepare work area; see sheet 21. Prevent unauthorized entry; see sheet 11.
2. Remove damaged asbestos tile. Place into an approved container; see sheet 9. Apply labels; see sheet 14.
3. HEPA vacuum and adequately wet clean.
4. Inspect.
5. Install new tile.
6. Prepare area for final clearance.
7. Carry out final clearance requirements specified on sheet 21.



**Removal of vinyl asbestos tile adhered to concrete floor system by  
asbestos-containing adhesive**

1. Prepare containment area as specified on sheet 21. approved container; see sheet 9. Apply labels; see sheet 14.
- NOTE: Where full containment area is required, follow instructions on sheet 4, except omit polyethylene on floor.
2. Lightly flood asbestos tile with amended water, and let soak for 48 hours. Remove asbestos tile and adhesive while they are wet in order to prevent asbestos fiber release. Place tile and adhesive into an
3. Clean, HEPA vacuum, and wet wipe all surfaces.
4. Inspect and reclean area as necessary.
5. Prepare area for final air clearance.
6. Carry out final clearance requirements as specified on applicable sheet 18 or 21.



### Removal of vinyl asbestos tile adhered to concrete floor system by asbestos-free adhesive

1. Prepare containment area as specified on sheet 21.  
NOTE: Where full containment area is required, follow instructions on sheet 4, except omit polyethylene on floor.

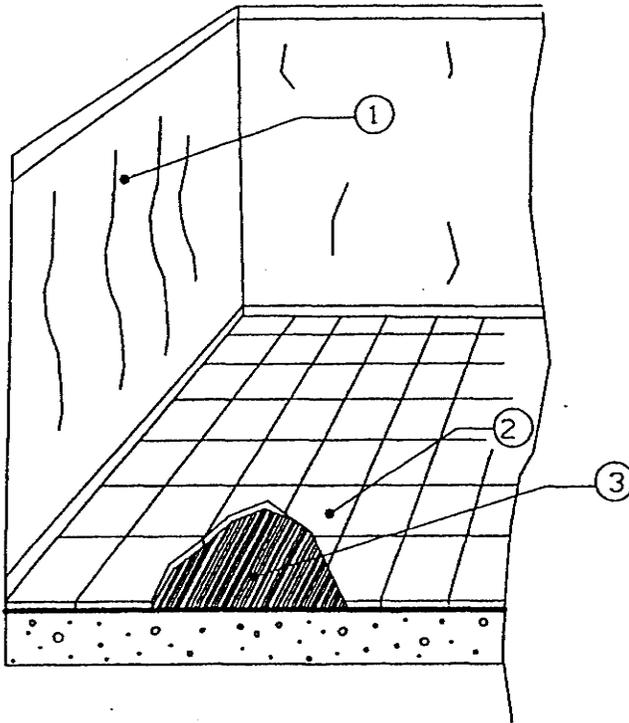
2. Lightly flood asbestos tile, and soak for 48 hours. Remove asbestos tile and adhesive while they are wet in order to prevent asbestos fiber release. Place tile and adhesive into an approved container; see sheet 9. Apply labels; see sheet 14.

3. Clean, HEPA vacuum, and adequately wet clean all surfaces.

4. Inspect and reclean area as necessary.

5. Prepare area for final air clearance.

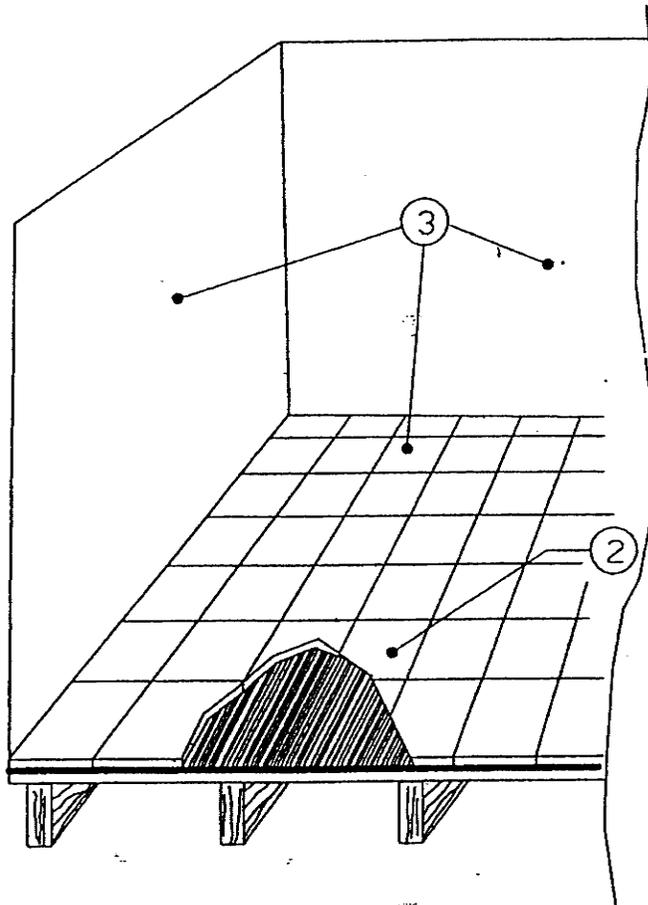
6. Carry out final clearance requirements as specified on applicable sheet 18 or 21.



USE THIS DETAIL ONLY FOR  
- SMALL SCALE PROJECTS  
- GROUND FLOOR APPLICATIONS

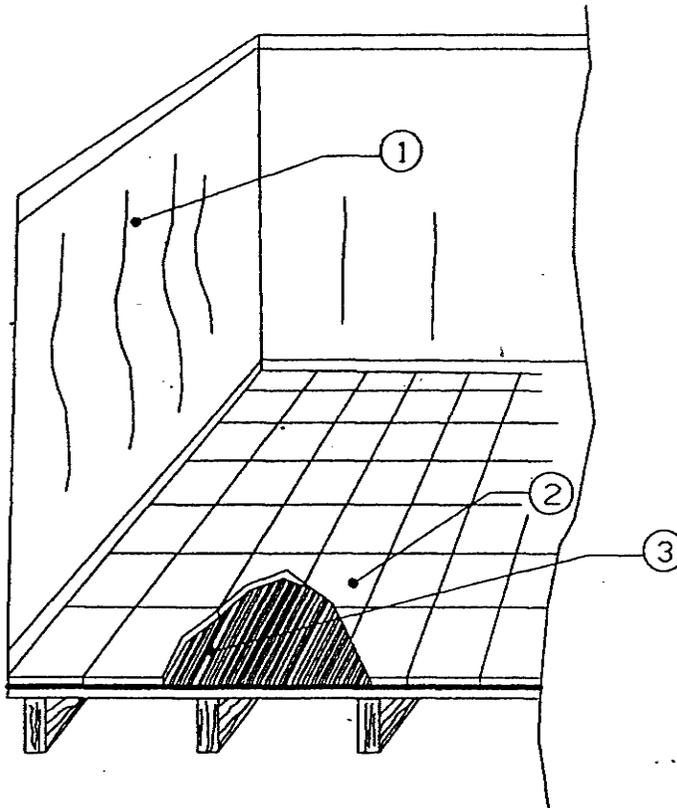
### Removal of vinyl asbestos tile and chemical dissolution of asbestos-containing adhesives on concrete floor system

1. Prepare containment area as specified on sheet 4.
2. Lightly flood asbestos tile, and soak for 48 hours. Remove asbestos tile and adhesive while they are wet in order to prevent asbestos fiber release. Place tile and adhesive into an approved container; see sheet 9. Apply labels; see sheet 14.
3. Before removing adhesive, increase ventilation rate to 10 air changes per hour. Air must be exhausted outside building.
4. Apply liquid adhesive remover. As soon as the adhesive is soft enough to scrape, remove and put into approved container; see sheet 9. Apply labels; see sheet 14.
5. Prepare area for final air clearance.
6. Carry out final clearance requirements as specified on sheet 18.



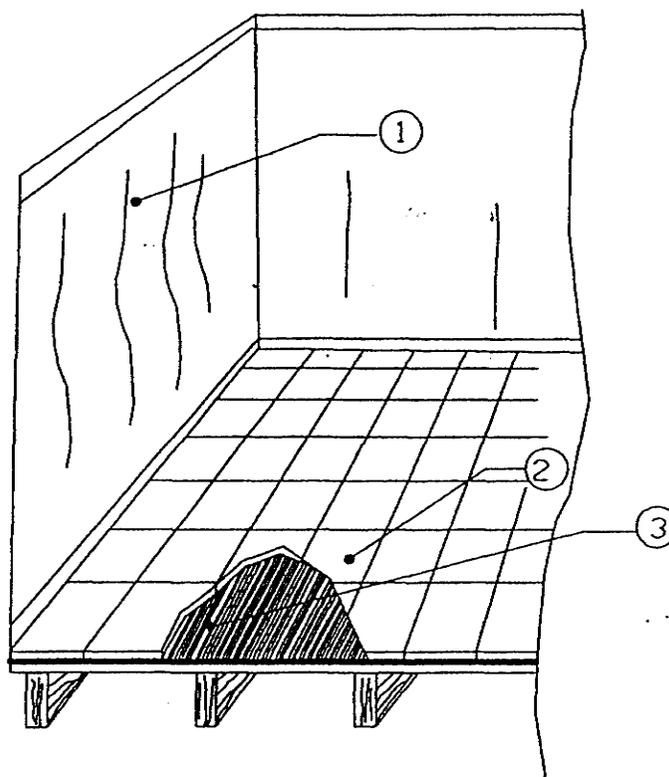
**Repair of vinyl asbestos tile adhered to wood floor system by  
asbestos-containing adhesive**

1. Prepare work area; see sheet 21. Prevent unauthorized entry; see sheet 11.
2. Adequately mist and remove damaged asbestos tile and adhesive. Place tile and adhesive into an approved container; see sheet 9. Apply labels; see sheet 14.
3. HEPA vacuum and wet wipe area.
4. Install new tile.
5. Inspect.
6. Prepare area for final clearance.
7. Carry out final clearance requirements specified on sheet 21.



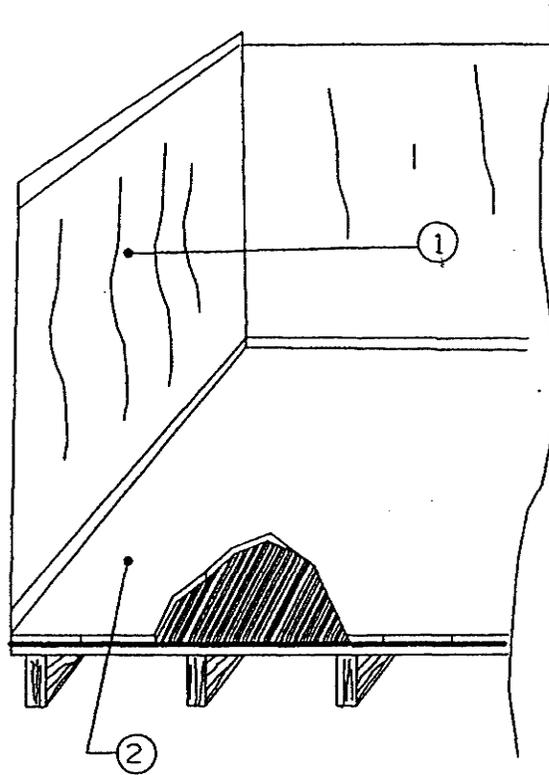
### Removal of vinyl asbestos tile adhered to wood floor system by asbestos-containing adhesive

1. Prepare containment area as specified on sheet 21, except omit polyethylene on floor. **NOTE:** Where full containment is required, follow instructions on sheet 4.
  2. Where wood flooring is to remain, adequately wet and remove asbestos tile and adhesive in order to prevent asbestos fiber release. Place tile and adhesive into an approved container; see sheet 9. Apply labels; see sheet 14. **Note:** Where wood flooring is to be removed, adequately wet and remove existing wood flooring. Treat as asbestos-contaminated material. Spread a plastic sheet on the floor, and stack removed wood flooring onto two layers of 6-mil polyethylene.
  3. Clean, HEPA vacuum, and adequately wet clean all surfaces.
  4. Inspect and reclean area as necessary.
  5. Prepare area for final air clearance.
  6. Carry out final clearance requirements specified in applicable sheet 18 or 21.
- Wrap each polyethylene layer around the stack, sealing all joints and edges with duct tape; see sheet 9. Apply labels to stack; see sheet 14. Smaller material will be placed in approved container; see sheet 9. Apply labels; see sheet 14.



**Removal of vinyl asbestos tile adhered to wood floor system by  
asbestos-free adhesive**

1. Prepare containment area as specified on sheet 21.  
NOTE: Where full containment is required, follow instructions on sheet 4, except omit polyethylene on floor.
2. Adequately wet and remove asbestos tile and adhesive while they are wet in order to prevent asbestos fiber release. Place tile and adhesive into an approved container; see sheet 9. Apply labels; see sheet 14.
3. Clean, HEPA vacuum, and wet wipe all surfaces.
4. Inspect and reclean area as necessary.
5. Prepare area for final air clearance.
6. Carry out final clearance requirements specified on applicable sheet 18 or 21.



### Removal of sheet-flooring adhered to wood floor system

1. Prepare containment area as specified on sheet 21.  
**NOTE:** Where full containment is required, follow instructions on sheet 4, except omit polyethylene on floor.

2. Mist exposed surfaces with amended water just before sheet flooring is removed. Remove flooring in manageable pieces and place on two layers of 6-mil polyethylene. Wrap each layer of polyethylene around the stack, sealing all joints and edges with duct tape; see sheet 9. Apply labels; see sheet 14. Place smaller

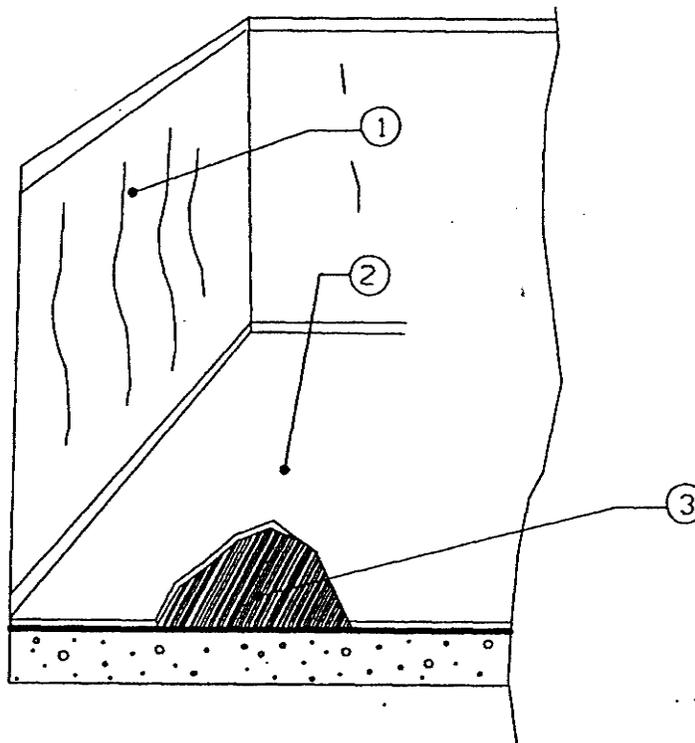
material in approved container; see sheet 9. Apply labels; see sheet 14.

3. Clean, HEPA vacuum, and adequately wet clean all surfaces.

4. Inspect and reclean area as necessary.

5. Prepare area for final air clearance.

6. Carry out final clearance requirements as specified on applicable sheet 18 or 21.



### Removal of sheet-flooring adhered to concrete floor system by asbestos-containing adhesive

1. Prepare containment area as specified on sheet 21.  
**NOTE:** Where full containment is required, follow instructions on sheet 4, except omit polyethylene on floor.

2. Mist exposed surfaces with amended water just before sheet flooring is removed. Remove flooring in manageable pieces and place on two layers of 6-mil polyethylene. Wrap each layer of polyethylene around the stack, sealing all joints and edges with duct tape; see sheet 9. Apply labels; see sheet 14. Place smaller material in approved container; see sheet 9. Apply labels; see sheet 14.

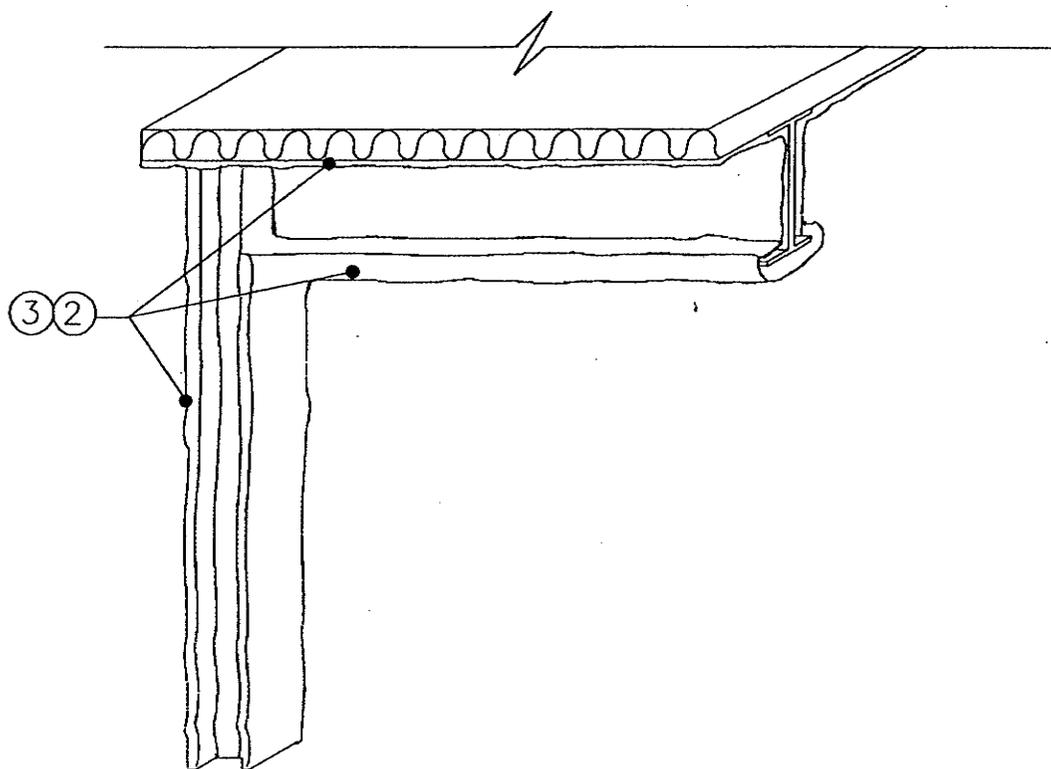
3. Remove remaining adhesive down to bare concrete. Place in approved container; see sheet 9. Apply labels; see sheet 14.

4. Clean, HEPA vacuum, and wet wipe all surfaces.

5. Inspect and reclean area as necessary.

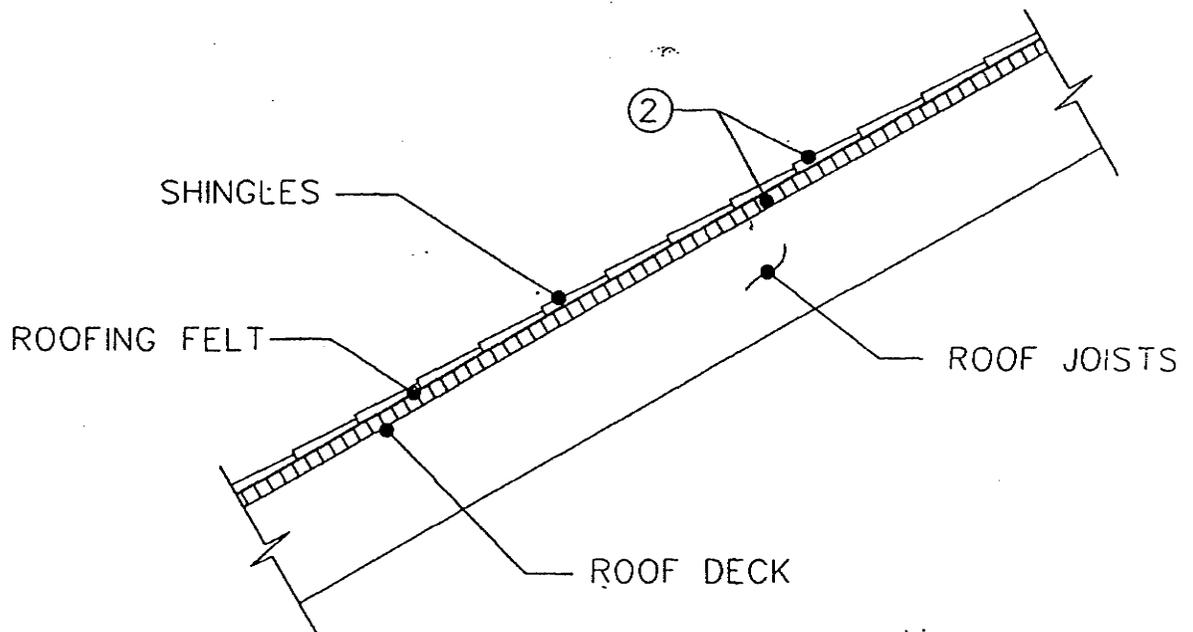
6. Prepare area for final air clearance.

7. Carry out final clearance requirements specified on applicable sheet 18 or 21.



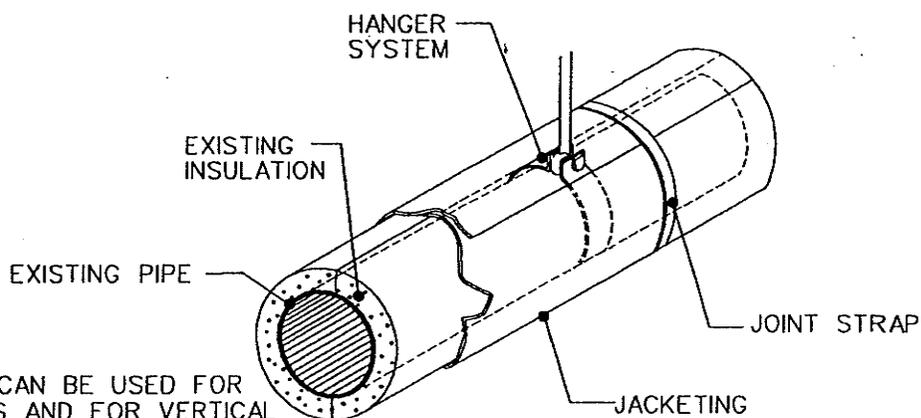
### Removal of fireproofing or thermal surface insulation

1. Prepare containment area as specified on applicable sheet 2, 3, or 4.
2. Adequately wet mist surface of insulation/fireproofing with amended water, initially and during removal procedures.
3. Remove sprayed-on fireproofing from all structural members. Brush, HEPA vacuum, and wet wipe exposed steel surfaces in order to remove residual material. Place removed asbestos-containing material in approved containers; see sheet 9. Apply labels; see sheet 14.
4. Inspect and reclean area as necessary.
5. Apply tinted penetrating encapsulant. Inspect and reapply encapsulant as necessary.
6. Prepare area for final air clearance.
7. Carry out final clearance requirements as specified on applicable sheet 16, 17, or 18.



### Removal of roof, shingles, and underlay

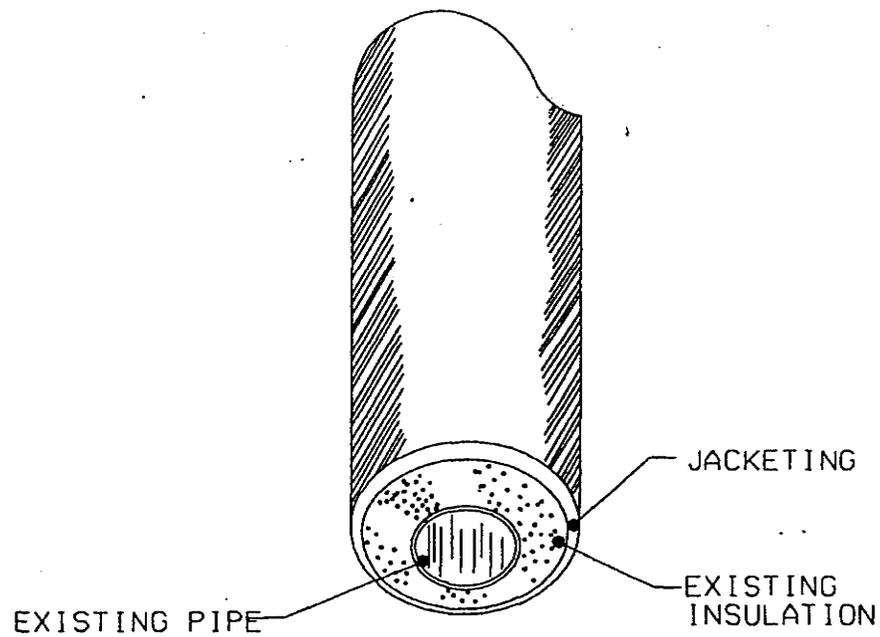
1. No containment area is required. Establish boundaries of asbestos-regulated work area so that unauthorized entry is prevented, and install warning signs; see sheet 11. Provide personal protection and decontamination facilities as specified in contractor's asbestos hazard abatement plan.
2. Remove shingles, roofing felt, nails, and debris, using wet removal technique.
3. Dispose of all materials by carefully sliding them down an enclosed chute into an enclosed Dumpster or truck that is lined with two layers of 6-mil polyethylene. When Dumpster or truck is filled, fold the polyethylene edges over each other and seal with duct tape; see sheet 9. Apply labels; see sheet 14.
4. Clean and HEPA vacuum roof.
5. Inspect and reclean area as necessary.
6. Apply tinted penetrating encapsulant to exposed roof deck, using an airless sprayer.
7. Prepare area for final clearance.
8. Contractor and contracting officer will certify visual inspection of work area on sheet 19, *Certification of Final Cleaning and Visual Inspection*.



NOTE: THIS SHEET CAN BE USED FOR  
PIPE FITTINGS AND FOR VERTICAL  
OR HORIZONTAL PIPING.

### Removal of horizontal pipe insulation (using containment area)

1. Prepare containment area as specified on applicable sheet 2, 3, or 4.
2. Adequately wet mist insulation surface with amended water, initially and during removal. Remove jacketing and insulation from pipe and hanger system.
3. Clean exposed surfaces by spraying with amended water and brushing.
4. Inspect and reclean as necessary.
5. Spray a tinted penetrating encapsulant on pipe and exposed ends of insulation.
6. Inspect piping and reapply encapsulant as necessary.
7. Prepare area for final air clearance.
8. Carry out final clearance requirements specified on applicable sheet 16, 17, or 18.



### Removal of pipe insulation (using mini-containment area)

1. Prepare mini-containment area as specified on sheet 7.
2. Adequately wet mist insulation surface with amended water, initially and during removal. Remove jacketing and insulation from pipe and hanger system.
3. Clean exposed surfaces by spraying with amended water and brushing.
4. Inspect and reclean area as necessary.
5. Spray a tinted penetrating encapsulant on pipe and exposed ends of insulation. Inspect and reapply as necessary.
6. Prepare area for final clearance.
7. Carry out final clearance requirements specified on sheet 7.



**FINAL HAZARDOUS MATERIALS SURVEY REPORT**

**The Luke Moore Academy School Building  
1001 Monroe Street, NE  
Washington, D.C.**

**Prepared for:**

**Grimm & Parker Architects, Inc.  
11785 Beltsville Drive  
Calverton, MD 20705**

**March 11, 2002**

**Prepared by:**

**Julius R. Williams  
Asbestos Inspector License - 057169  
Project Manager – Field Services**

**Applied Environmental, Inc.  
Project Number 1148-02-0046**



## FINAL HAZARDOUS MATERIALS SURVEY REPORT

Luke Moore Academy School  
1001 Monroe Street, NE  
Washington, D.C.

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## FINAL HAZARDOUS MATERIALS SURVEY REPORT

**Luke Moore Academy School  
1001 Monroe Street, NE  
Washington, D.C.**

### 1.0 INTRODUCTION

Applied Environmental, Inc. conducted a hazardous material survey of the Luke Moore Academy School Building located at 1001 Monroe Street, NE, Washington, D.C. The original building was constructed in 1891 with additions completed in 1896 and 1903. The two-story facility has been used primarily as a school during most of those years. There have been minimal alterations to the original structure in the past 15 years. However, progressive changes such as, new boilers and roof repair and replacement on both additions have been made as part of maintenance and building repair.

The survey included intrusive and non-intrusive inspections for Asbestos-Containing Materials (ACM), Lead-Based Paint (LBP), Polychlorinated Biphenyl (PCB) containing fluorescent light ballasts, Mercury-containing fluorescent light tubes, Chlorofluorocarbon (CFC)-containing air conditioning or refrigeration equipment, and any other miscellaneous stored hazardous materials or chemicals. The purpose of the inspection was to identify hazardous materials that may be present in the building that may be impacted during the planned renovation activities. The inspection was conducted by an Environmental Protection Agency (EPA) accredited asbestos inspector and District of Columbia certified lead-based paint risk assessor.

All accessible and normally inaccessible suspect hazardous materials present on the exterior, interior and roof of the building was sampled and analyzed in accordance with EPA and Occupational Safety and Health Administration (OSHA) inspection and sampling protocol. Approximate quantities of any identified hazardous materials, with the exception of lead-containing surface coatings, are included in this report.



## **2.0 ASBESTOS INSPECTION**

### **2.1 Building Description**

The Luke Moore Academy, which is located at 10<sup>th</sup> and Monroe Streets, NE, was constructed in 1891 as a four-room school building. An addition was constructed in 1896. The final addition of four rooms was added in 1903. Two-stories in height, the red brick building has been used primarily as a senior high school serving students between the ages of 16 and 21. The east-side addition of the building, constructed in 1903, consists of four classrooms. The main portion of the building houses the administrative offices and several classrooms. The additions are connected on all levels through open doorways and stairwells. There is a boiler room and crawlspace located in the basement of the original building. In addition, there is an attic located in both the east and west additions. The boilers and the roofing systems were reportedly replaced within the past five years.

The majority of the interior finishing materials within the building ranged from poor to fair condition. Severely damaged asbestos-containing thermal system insulation was observed throughout the building. Other suspect asbestos-containing materials were observed to be fair condition.

The roof of the east building consists of a pitched roof that was not accessible during the inspection. The roofing system on the west building consisted of a built-up roof with asphalt shingles. Destructive sampling was not conducted during our inspection; however, these materials must be assumed to be asbestos-containing until sampling proves otherwise.

The interior of the building was observed to be constructed mainly of plaster on concrete walls, and the ceilings are constructed of block and wood with wood joisted floors and a variety of floor, wall, and ceiling finishes. Previously identified asbestos-containing pipe insulation was observed to have been removed from the majority of the building, but still remains in other areas of the building such as the basement, crawl space, and custodial office.



Small quantities of thermal system insulation debris were observed in the custodian's office where the thermal system insulation and spray-on insulation has collapsed. In addition, large amounts of thermal system insulation debris were observed in the basement crawlspace. These areas are considered to be contaminated with asbestos. Refer to Section 5:0 for more detailed recommendations.

## **2.2 Asbestos Inspection**

The asbestos inspection was completed in accordance with EPA Standard 40 CFR 763, Subpart E, Asbestos Hazard Emergency Response Act (AHERA) and OSHA Standard 29 1926.1101 inspection and sampling protocol. A total of 48 representative bulk samples were collected from materials suspected to contain asbestos. These materials included resilient flooring materials floor mastic, pipe wrap on pipe insulation, wall and ceiling plaster, gypsum wallboard and joint compound, pipe insulation and fittings, textured wall material, wall board, sprayed-on ceiling insulation, cove base mastic, and roofing tar.

The following materials were assumed asbestos-containing:

- Assumed asbestos-containing roofing materials (east & west addition), and
- Assumed asbestos-containing firedoors.

No other suspect asbestos-containing materials were observed at the time of the inspection.

The collected samples were submitted to the Applied Environmental, Inc. asbestos analytical laboratory for analysis by Polarized Light Microscopy (PLM) in accordance with EPA testing methods. Samples were analyzed by EPA Method for the Determination of Asbestos in Bulk Insulation Samples (EPA 600M4-82-020). The Applied Environmental asbestos analytical laboratory is accredited by the U.S. Department of Commerce, National Institute of Standards and Technology, National Voluntary Laboratory Accreditation Program for bulk asbestos identification by PLM. The laboratory analytical reports are provided in Appendix A for your reference.



As stated previously, the roofing system on the west building was reportedly repaired and replaced within the past five years thus, was not sampled during our inspection. As such, all suspect existing and pre-existing asbestos-containing materials must be assumed to contain asbestos until sampled and proven otherwise.

Although the roof of the east building was not physically accessible a piece of slate (the roofing materials present on the roof of the east building) was found in the attic. A sample of tar was collected from this material and sampled for asbestos. Laboratory analyses later determined this material to be asbestos-containing and should be assumed present throughout the roof of the east building.

All of the identified asbestos-containing materials and assumed asbestos-containing materials are indicated in Appendix C, Asbestos-Containing Material Estimated Quantities and Removal Costs Tables.

### **3.0 LEAD-BASED PAINT SURVEY**

Applied Environmental conducted a lead-based paint screening survey of the interior and exterior of the Luke Moore Academy Building to generally identify building components coated with lead to provide contractors with general information regarding lead-containing surface coatings within the building. The survey consisted of testing the lead concentrations of painted surfaces throughout the building. The testing was performed using a Niton XL X-Ray Fluorescence (XRF) spectrum analyzer (unit serial number U18134706LY) to all manufacturer operating instructions. The XRF source date is January 2002, and the District of Columbia radioactive materials license number is RR9400077). Typical surfaces, which were tested included but were not limited to walls, doors, doorframes, ceilings, structural steel, mechanical equipment, and window components.



The following building component surfaces were tested and measured equal to or greater than the District of Columbia definition of lead-based paint, 0.7 milligrams lead per square centimeter (mg/cm<sup>2</sup>):

- Wood doors and associated components;
- Cream textured plaster walls;
- Blue wood wall paneling and blue wood cabinets in the Assembly Room;
- Tan wood baseboards;
- Cream, and red metal staircase stringers;
- Wood window components, interior and exterior, including stone exterior window aprons;
- Tan, and red stone baseboards;
- Tan wood wall paneling;
- Tan metal handrails, and staircase components;
- Brick walls in the basement restrooms, and Physical Education room;
- White ceramic bathroom fixtures;
- Red stairwell risers;
- White steel structural members;
- White metal underside of stairs;
- Green wood doors and associated components;
- Blue metal radiator in the first floor Assembly Room;
- Blue wood doors and associated components;
- Red cement floors in the basement Physical Education room;
- Green wood chair rails;
- Cream plaster south perimeter wall in Room 210;
- Cream metal drain pipe in the second floor Nurse's office;
- Tan metal ladder in the Nurse's office;
- Cream plaster walls in Room 211; and
- White wood exterior door casing.

The following building component surfaces were tested and measured detectable concentrations of lead ranging from 0.2 mg/cm<sup>2</sup> lead to 0.6 mg/cm<sup>2</sup> lead:

- Tan, blue and green metal radiators;
- Cream and tan metal drain pipes in the basement Ladies Restroom, and cream pipes in the first floor northwest, central hallways, and basement Boy's restroom;
- Smooth plaster walls;
- Cream brick walls in the basement west foyer;
- Green metal duct in the basement Janitor's office;
- Tan brick walls in the basement hallway outside the Boy's Restroom;
- Green, yellow and black wood wall paneling in classrooms;



- Blue metal door components of the Physical Education room;
- Blue plaster walls in classrooms;
- Cream plaster columns;
- Tan and cream cement walls;
- Tan wood railing cap;
- Green metal door of Room 203;
- Red cement floor in the basement Boiler Room;
- Tan metal door in the basement Boiler Room;
- Tan metal door components of the first floor northwest restroom, and Room 210;
- Tan wood chair rail, and door components in the Library;
- White metal duct in the basement Boiler Room;
- Green wood exterior door casing; and
- Green metal exterior doors.

All other tested building component surfaces consistently measured equal to or less than the detection limit of 0.1 mg/cm<sup>2</sup> lead.

Please note that as the screening inspection was limited in scope, Applied Environmental recommends that building components that were identified with lead-containing surface coatings in specific areas of the buildings should be assumed to have similar surface concentrations of lead throughout the rest of the building until additional XRF or paint chip analysis proves otherwise.

A data table presenting the results of the XRF sampling is provided as Appendix B. Individual building components tested are listed under "Floor", "Room", and "Structure". The condition of the tested component is noted under "Condition." The substrate on which the paint film is applied to is noted under "Substrate." The color of the topcoat layer of paint is noted under "color" to assist in determining the location of the building components tested. The surface coating lead concentration measured is noted in mg/cm<sup>2</sup> in the "Result" column. The accuracy of each test is noted in the "Precision (+/-)" column.



#### **4.0 OTHER HAZARDOUS MATERIALS**

##### **4.1 Polychlorinated Biphenyls (PCBs)**

According to the EPA, all ballasts manufactured prior to July 1978 have greater than 50% chance of containing PCB's at 50 part per million (ppm) in their potting material. Ballasts manufactured after July 1978 are required to bear a "No PCB's" label indicating that they do not contain PCB's.

A representative number of fluorescent light fixtures within the Luke Moore Academy were visually inspected for suspect PCB-containing light ballasts. All of the light ballasts inspected were marked with labeling indicating "No PCBs" and therefore are assumed not to contain PCBs. The majority of the non-PCB containing light ballasts were observed to be in good condition.

If during the course of removal, ballasts are encountered without "No PCBs" labeling, they should be treated as PCB-containing.

##### **4.2 Fluorescent Light Tubes**

The EPA currently regulates mercury-containing light tubes under the Resource Conservation Recovery Act (RCRA) and Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). The EPA currently requires fluorescent light tubes containing equal to or greater than 0.2 mg/L or parts per million (ppm) mercury be handled as hazardous waste.

A representative number of fluorescent light tubes within the Luke Moore Academy School Building were visually inspected. The light tubes observed were new Sylvania fluorescent light tubes. These tubes are easily identified by the green colored metal caps at each end of the tube. If any light tubes are encountered that do not have green caps, the tubes should be suspected as containing mercury and tested or assumed to contain mercury and handled appropriately.



#### **4.3 Chlorofluorocarbon (CFC) Refrigerants**

An inspection to determine the presence of refrigeration and air conditioning equipment was conducted. During the inspection the building engineer informed Applied Environmental that the school was not equipped with a central air conditioning system. However, the computer lab had been recently equipped with a small central air conditioning unit located on the exterior of the building and the administrative offices were equipped with window air conditioning units. The quantity of CFC materials that the equipment was charged with was unable to be obtained from labels attached to the equipment.

#### **4.4 Miscellaneous Stored Chemicals and Hazardous Materials**

The following miscellaneous chemicals and potentially hazardous materials were observed at the time of the inspection:

- One gallon can of Duron Everlast Interior Alkyd/Oil deep base
- Five gallon container of Glidden Ultra Hyde
- One gallon Sunnyside Paint Thinner
- One gallon Mineral Spirit paint thinner
- One pint Kilz Prime
- 12 29 fl oz of Drywall/Metal framing adhesive
- Two large 50 gallon drums of unknown liquid
- Five gallon of Zep Focus floor Finish
- Five gallon Duron latex paint
- 10 one half gallon of Skilcraft cleaning compound
- Five gallon container of Woodglo Tackasol
- 11 one gallon container Hi-Traffic Carpet Cleaner
- Five gallon container Behr Premium Plus Paint
- Six five gallon container BH-33 Industrial Strength Buyl Base Degreaser
- Five gallon container Zep Strip Ease
- Four one in a half containers of Aqua Coat Wood and Concrete Floor Coating
- Two one in a half containers of Awesome R-T-U Spray disinfectant
- Four one in a half containers of DX-50 Bio-enzyme odor and stain eliminator
- Two five gallon containers of BPT Super Strip
- Three five gallon containers of Zep ph perfect
- Four one gallon containers of Carpet Spotter
- Three one quart containers of Scrub and Shine
- Two one gallon containers of Bowl Bright
- 96 22oz of Scouring Powder



- Four one in half gallon containers of Pine Quart Disinfectant/Cleaner
- Five gallon container of Bravo Heavy Duty Stripper
- Two five gallon containers of Professional Floor Stripper
- 36 one gallon containers of A-1 Bleach
- 10 one gallon containers of All Purpose Cleaner
- One five gallon container of Tempo Semi-Gloss
- Two one quart containers of Multi-Purpose ATF
- Three 10oz containers of Speed Demon Latex Caulk
- One 14oz container of L-427 Grease
- One quart container of Resilient file adhesive
- One five pound container of LA CO Plumber Set Pulley
- One gallon container of Exterior Waterproofing Seal
- One 16oz container of Perimeter Pipe Joint Compound
- One gallon container of Vinyl Interior
- One gallon container of Sealzit Sealer
- One gallon container of Alkyd Semi-gloss
- Four one gallon containers of Dura Clad Industrial Coating
- 10 one gallon containers of Ultra Deluxe
- 12 one gallon containers of Polyurethane Fortified Alkyd
- One gallon container of Polyurethane Gloss Floor and Porch
- One quart container of Acrylic Latex Gloss Enamel
- Four one gallon containers of Ultra Tide Alkyd
- One quart of Paint Thinner Klean-Strip
- Four five gallon containers of Pr Kohe Latex
- One five gallon container of Industrial Maintenance Coating
- One gallon container of Kilz Primer
- One gallon container of Plastic Kote Latex
- One quart container of Plastic Kote Latex
- One gallon container of Exterior Allied
- One 55 gallon drum of Spray Nine
- Three five gallon containers of Spray Nine
- One pound container of Anti-seize lubricant
- 24 lb. container of Floor Star Conquer
- One five gallon container of Floor Star Light Duty Cleaner
- Two five gallon containers of Sanimaster
- One five gallon container of Dust Mop Treatment Compound
- One five gallon container of Interior Latex
- One container of Surface Remover Sealer
- One five gallon container of Interior Alkyd Oil
- One quart container of Oil Base Enamel
- One pint container of Auto Finish
- One quart container of Kool Patch
- One pound container of ZY 2000 Grease



- 18.5oz container of Floor Star Baseboard Finish Remover
- Two one pint containers of Grease-B-Gone
- One in a half gallon container of Dura Clad Alkyd Enamel Urethane Modified
- Three one gallon containers of Wall Kote
- One gallon container of Safe-Set Cove Base Adhesive
- One gallon container of Shur-Stick 510 Floor Adhesive
- 36 one pint containers of Tempera Paint

Dispose of all waste materials in compliance with all applicable EPA, OSHA, and District of Columbia regulations and codes.

#### **4.5 Other Hazardous Materials**

Concentrations of pigeon excrement and pigeon carcasses were observed throughout the building with significant concentrations in the attics, window wells, and exterior perimeter. There is concern for worker exposure to *Histoplasma capsulatum* fungal spores when impacting significant quantities of pigeon droppings. These fungal spores may become airborne and cause acute pulmonary infection. Workers impacting the pigeon droppings should wear negative pressure respiratory protection equipped with High Efficiency Particulate Air (HEPA) filters. Compliance with the OSHA respiratory protection Standard 29 CFR 1910.134 is required for personnel using this type of respiratory protection.

No other suspect hazardous chemicals or materials were observed at the time of the site inspection.

## **5.0 RESULTS AND DISCUSSION**

### **5.1 Asbestos-Containing Materials**

1. All of the asbestos-containing pipe insulation, pipe insulation debris, and the contaminated spray-applied ceiling insulation are friable materials as defined in EPA Standard 40 CFR Part 61, Asbestos NESHAP; Asbestos NESHAP Revision; Final Rule. A friable asbestos-containing material is defined as any material that contains more than one percent asbestos by weight that by hand pressure can be crumbled, pulverized, or reduced to powder when dry.



2. Access to areas where friable pipe insulation and spray-applied ceiling insulation is damaged should be restricted until a qualified licensed asbestos abatement contractor can remove and/or cleanup the damaged insulation. These areas include the custodian office/storage and crawl space located in basement area. As several of the friable asbestos-containing materials were observed to be damaged, all personnel working at the project site should have a minimum of two-hour asbestos awareness training in accordance with OSHA Standard 29 CFR 1926.1101.
3. Access to the crawl space and the custodian office/storage area should be restricted as both areas are contaminated with damaged thermal system insulation. Appropriate personal protective equipment, including respiratory protection and disposable clothing, should be donned prior to entering these areas and appropriate decontamination facilities should be established adjacent to the areas. These areas should be pre-cleaned and decontaminated prior to any further abatement activities or access by personnel without proper training.
4. The remaining asbestos-containing materials such as flooring materials, fire doors, roofing materials, and mastics are non-friable materials as defined in the EPA Standard 40 CFR Part 61, Asbestos NESHAP; Asbestos NESHAP Revision; Final Rule. A non-friable asbestos-containing material is defined as any material that contains more than one percent asbestos by weight that hand pressure cannot crumble, pulverize, or reduce to powder when dry. The majority of the non-friable asbestos-containing materials were observed to be in good condition.
5. All asbestos-containing materials must be removed by a qualified, District of Columbia licensed asbestos abatement contractor prior to being impacted by any renovation or selective demolition activities in accordance with all applicable EPA, OSHA, and District of Columbia regulations.



## 5.2 Lead-Based Paint

1. The District of Columbia lead-based paint standard, 20 DCMR, Chapter 8, §806, Control of Lead, regulates all renovation and demolition work activities impacting surfaces with a concentration of lead equal to or greater than the District of Columbia definition of lead-based paint. As such, any renovation or demolition activities impacting surfaces with "lead-based paint" must be conducted in accordance with the District of Columbia lead-based paint regulations.
2. All construction activities that involve lead are regulated by the OSHA Lead in Construction Standard, 29 CFR 1926.62. The standard currently does not define a specific concentration of lead, which must be present within paint for it to be considered "lead-containing." Therefore, painted and glazed surfaces that contain less than the District of Columbia, definition of lead-based paint, 0.7 mg/cm<sup>2</sup> as measured by XRF or 0.5% lead by weight, but still have detectable concentrations of lead, must be handled in accordance with the OSHA Lead in Construction Standard. Since OSHA does not define a specific concentration of lead which must be present within paint for it to be considered "lead-containing," any contractor performing work that could impact paint films or glazing that have detectable concentrations of lead should be informed of the testing results, and should take appropriate actions to comply with OSHA Standard 29 CFR 1926.62. These appropriate actions would include performing air monitoring to measure worker exposure; assuring that the workers are provided with adequate respiratory protection; and assuring that workers are provided with appropriate training.
3. The disposal of waste generated during any restoration, renovation, or demolition operations, including items coated with lead paint, is regulated by EPA Standard 40 CFR 261, Subpart C. This regulation requires that a Toxicity Characteristic Leaching Procedure (TCLP) test be utilized to determine if the lead paint is considered hazardous waste. A material is considered hazardous if it is ignitable, reactive, corrosive, or toxic. It is generally

recommended that items with relatively high concentrations of lead be segregated from other items and tested separately. The intent should be to assure that any item that is categorized as hazardous waste be identified and kept segregated from other waste material, while not to bias the sampling results (either positively or negatively) with regard to TCLP sampling. Depending on the renovation and demolition techniques, the TCLP sample should be collected in a manner to represent the whole construction waste stream. The collection of bulk samples for TCLP analysis was not included in the scope of work of the inspection.

### **5.3 Other Hazardous Materials**

1. All of the light ballasts inspected were marked with labeling indicating "No PCBs" and therefore are assumed not to contain PCBs.
2. All light ballasts should be visually inspected for "No PCBs" labeling during demolition activities and any ballast found that do not have the "No PCBs" labeling should be segregated appropriately. Department of Transportation (DOT) requirements stipulate packaging requirements and hazard warning labels for PCB-containing materials during transport. Additional hazardous materials training regulations are contained in HM-181. Packaging requirements for whole, non-leaking ballasts are generally Class 9, Packaging III in a DOT specified 17H or 17C drum. These drums should be kept closed at all times, except when placing wastes into the drum. The drums must be marked with appropriate waste insignia in accordance with current EPA and DOT regulations, including the accumulation date. Storage and disposal of PCB-containing materials must be in accordance with EPA regulations under 40 CFR 700 to 799, the Toxic Substances Control Act (TSCA).
3. Any CFC materials within the air conditioning unit, if any, should be drained by qualified and licensed personnel prior to demolition or other activities, which may damage or burst refrigerant lines resulting in CFC leakage.



4. Prior to being impacted by abatement activities or other construction trades work, the pigeon droppings should be treated with a solution of 10% sodium hypochlorite (household bleach) and water. This solution should be allowed to penetrate the pigeon dropping for 20 minutes prior to shoveling the material into bags for disposal. For concentrations of droppings with significant depth, the solution will have to be reapplied and allowed to penetrate prior to shoveling through all layers of the material.
  
5. Dispose of all hazardous materials in compliance with all applicable EPA, OSHA, and District of Columbia regulations and codes.



## **APPENDIX A**

### **Laboratory Analytical Reports**



# BULK SAMPLE ANALYSIS REPORT

Date Received: 02/04/2002 Date Analyzed: 02/08/2002  
 Client Name: Grimm & Parker Architects  
 Client Project #: 1148-02-0046  
 Project Location: Luke Moore Academy, 1001 Monroe Street

Lab Project #: 3926 Lab Sample #: 1020898 Color: Tan  
 Client Sample #: LM-1148-JRW-01 Characterization: Homogeneous, Non-Fibrous  
 Comments: Beige 12" x 12" floor tile, basement area near girl's restroom

| <u>ASBESTOS COMPONENTS</u> |            | <u>FIBROUS COMPONENTS</u> |            | <u>NON-FIBROUS COMPONENTS</u> |             |
|----------------------------|------------|---------------------------|------------|-------------------------------|-------------|
|                            |            | Cellulose                 | 2 %        | Filler/Binder                 | 98 %        |
| <b>Asbestos Total:</b>     | <b>NAD</b> | <b>Fibrous Total:</b>     | <b>2 %</b> | <b>Non-Fibrous Total:</b>     | <b>98 %</b> |

Lab Project #: 3926 Lab Sample #: 1020899 Color: Black  
 Client Sample #: LM-1148-JRW-02 Characterization: Homogeneous, Non-Fibrous  
 Comments: Mastic on beige 12" x 12" floor tile, basement area near girl's restroom

| <u>ASBESTOS COMPONENTS</u> |            | <u>FIBROUS COMPONENTS</u> |            | <u>NON-FIBROUS COMPONENTS</u> |             |
|----------------------------|------------|---------------------------|------------|-------------------------------|-------------|
|                            |            | Cellulose                 | 1 %        | Filler/Binder                 | 99 %        |
| <b>Asbestos Total:</b>     | <b>NAD</b> | <b>Fibrous Total:</b>     | <b>1 %</b> | <b>Non-Fibrous Total:</b>     | <b>99 %</b> |

Lab Project #: 3926 Lab Sample #: 1020900 Color: White  
 Client Sample #: LM-1148-JRW-03 Characterization: Heterogeneous, Fibrous  
 Comments: Pipe wrap on 8" pipe, basement area near girl's restroom

| <u>ASBESTOS COMPONENTS</u> |            | <u>FIBROUS COMPONENTS</u> |             | <u>NON-FIBROUS COMPONENTS</u> |      |
|----------------------------|------------|---------------------------|-------------|-------------------------------|------|
|                            |            | Cellulose                 | 40 %        | Filler/Binder                 | 55 % |
|                            |            | Fibrous Glass             | <1 %        | Non-Fibrous Total:            | 55 % |
|                            |            | Synthetic Fibers          | 5 %         |                               |      |
| <b>Asbestos Total:</b>     | <b>NAD</b> | <b>Fibrous Total:</b>     | <b>45 %</b> |                               |      |

Lab Project #: 3926 Lab Sample #: 1020901 Color: White  
 Client Sample #: LM-1148-JRW-04 Characterization: Homogeneous, Fibrous  
 Comments: 8" pipe elbow, basement area near girl's restroom

| <u>ASBESTOS COMPONENTS</u> |             | <u>FIBROUS COMPONENTS</u> |             | <u>NON-FIBROUS COMPONENTS</u> |             |
|----------------------------|-------------|---------------------------|-------------|-------------------------------|-------------|
| Chrysotile                 | 20 %        | Cellulose                 | 30 %        | Filler/Binder                 | 50 %        |
| <b>Asbestos Total:</b>     | <b>20 %</b> | <b>Fibrous Total:</b>     | <b>30 %</b> | <b>Non-Fibrous Total:</b>     | <b>50 %</b> |

Lab Project #: 3926 Lab Sample #: 1020902 Color: Gray  
 Client Sample #: LM-1148-JRW-05 Characterization: Heterogeneous, Fibrous  
 Comments: Drywall, basement area near girl's restroom

| <u>ASBESTOS COMPONENTS</u> |            | <u>FIBROUS COMPONENTS</u> |            | <u>NON-FIBROUS COMPONENTS</u> |             |
|----------------------------|------------|---------------------------|------------|-------------------------------|-------------|
|                            |            | Cellulose                 | 5 %        | Filler/Binder                 | 95 %        |
| <b>Asbestos Total:</b>     | <b>NAD</b> | <b>Fibrous Total:</b>     | <b>5 %</b> | <b>Non-Fibrous Total:</b>     | <b>95 %</b> |



# BULK SAMPLE ANALYSIS REPORT

Date Received: 02/04/2002 Date Analyzed: 02/08/2002  
 Client Name: Grimm & Parker Architects  
 Client Project #: 1148-02-0046  
 Project Location: Luke Moore Academy, 1001 Monroe Street

Lab Project #: 3926 Lab Sample #: 1020903 Color: Gray  
 Client Sample #: LM-1148-JRW-06 Characterization: Heterogeneous, Fibrous  
 Comments: Drywall, basement area near girl's restroom

| <u>ASBESTOS COMPONENTS</u> |            | <u>FIBROUS COMPONENTS</u> |            | <u>NON-FIBROUS COMPONENTS</u> |             |
|----------------------------|------------|---------------------------|------------|-------------------------------|-------------|
|                            |            | Cellulose                 | 5 %        | Filler/Binder                 | 95 %        |
| <b>Asbestos Total:</b>     | <b>NAD</b> | <b>Fibrous Total:</b>     | <b>5 %</b> | <b>Non-Fibrous Total:</b>     | <b>95 %</b> |

Lab Project #: 3926 Lab Sample #: 1020904 Color: Gray  
 Client Sample #: LM-1148-JRW-07 Characterization: Homogeneous, Fibrous  
 Comments: Drywall, basement area near girl's restroom

| <u>ASBESTOS COMPONENTS</u> |            | <u>FIBROUS COMPONENTS</u> |            | <u>NON-FIBROUS COMPONENTS</u> |             |
|----------------------------|------------|---------------------------|------------|-------------------------------|-------------|
|                            |            | Cellulose                 | 5 %        | Filler/Binder                 | 95 %        |
| <b>Asbestos Total:</b>     | <b>NAD</b> | <b>Fibrous Total:</b>     | <b>5 %</b> | <b>Non-Fibrous Total:</b>     | <b>95 %</b> |

Lab Project #: 3926 Lab Sample #: 1020905 Color: White  
 Client Sample #: LM-1148-JRW-08 Characterization: Homogeneous, Fibrous  
 Comments: Pipe elbow 6" pipe in girl's restroom

| <u>ASBESTOS COMPONENTS</u> |             | <u>FIBROUS COMPONENTS</u> |  | <u>NON-FIBROUS COMPONENTS</u> |             |
|----------------------------|-------------|---------------------------|--|-------------------------------|-------------|
| Chrysotile                 | 30 %        |                           |  | Filler/Binder                 | 70 %        |
| <b>Asbestos Total:</b>     | <b>30 %</b> | <b>Fibrous Total:</b>     |  | <b>Non-Fibrous Total:</b>     | <b>70 %</b> |

Lab Project #: 3926 Lab Sample #: 1020906 Color: Brown  
 Client Sample #: LM-1148-JRW-09 Characterization: Heterogeneous, Fibrous  
 Comments: Pipe wrap skim-coat on hard pipe, girl's restroom

| <u>ASBESTOS COMPONENTS</u> |            | <u>FIBROUS COMPONENTS</u> |             | <u>NON-FIBROUS COMPONENTS</u> |             |
|----------------------------|------------|---------------------------|-------------|-------------------------------|-------------|
|                            |            | Cellulose                 | 60 %        | Filler/Binder                 | 40 %        |
| <b>Asbestos Total:</b>     | <b>NAD</b> | <b>Fibrous Total:</b>     | <b>60 %</b> | <b>Non-Fibrous Total:</b>     | <b>40 %</b> |

Lab Project #: 3926 Lab Sample #: 1020907 Color: Brown  
 Client Sample #: LM-1148-JRW-10 Characterization: Heterogeneous, Fibrous  
 Comments: Insulation on 6" pipe 2 layers, girl's restroom

| <u>ASBESTOS COMPONENTS</u> |             | <u>FIBROUS COMPONENTS</u> |             | <u>NON-FIBROUS COMPONENTS</u> |      |
|----------------------------|-------------|---------------------------|-------------|-------------------------------|------|
| Chrysotile                 | 10 %        | Cellulose                 | 45 %        | Filler/Binder                 | 40 % |
|                            |             | Synthetic Fibers          | 5 %         | Non-Fibrous Total:            | 40 % |
| <b>Asbestos Total:</b>     | <b>10 %</b> | <b>Fibrous Total:</b>     | <b>50 %</b> |                               |      |



# BULK SAMPLE ANALYSIS REPORT

Date Received: 02/04/2002 Date Analyzed: 02/08/2002  
 Client Name: Grimm & Parker Architects  
 Client Project #: 1148-02-0046  
 Project Location: Luke Moore Academy, 1001 Monroe Street

Lab Project #: 3926 Lab Sample #: 1020908 Color: Tan  
 Client Sample #: LM-1148-JRW-11 Characterization: Homogeneous, Non-Fibrous  
 Comments: Brown coat wall plaster, basement area near girl's room

| <u>ASBESTOS COMPONENTS</u> |            | <u>FIBROUS COMPONENTS</u> |                | <u>NON-FIBROUS COMPONENTS</u> |              |
|----------------------------|------------|---------------------------|----------------|-------------------------------|--------------|
|                            |            | Cellulose                 | <1 %           | Filler/Binder                 | 100 %        |
| <b>Asbestos Total:</b>     | <b>NAD</b> | <b>Fibrous Total:</b>     | <b>&lt;1 %</b> | <b>Non-Fibrous Total:</b>     | <b>100 %</b> |

Lab Project #: 3926 Lab Sample #: 1020909 Color: Brown  
 Client Sample #: LM-1148-JRW-12 Characterization: Heterogeneous, Fibrous  
 Comments: Pipe insulation, boiler room closet

| <u>ASBESTOS COMPONENTS</u> |            | <u>FIBROUS COMPONENTS</u> |             | <u>NON-FIBROUS COMPONENTS</u> |      |
|----------------------------|------------|---------------------------|-------------|-------------------------------|------|
|                            |            | Cellulose                 | 80 %        | Filler/Binder                 | 10 % |
|                            |            | Synthetic Fibers          | 10 %        | Non-Fibrous Total:            | 10 % |
| <b>Asbestos Total:</b>     | <b>NAD</b> | <b>Fibrous Total:</b>     | <b>90 %</b> |                               |      |

Lab Project #: 3926 Lab Sample #: 1020910 Color: White  
 Client Sample #: LM-1148-JRW-13 Characterization: Heterogeneous, Non-Fibrous  
 Comments: Textured wall plaster, student lounge stairwell

| <u>ASBESTOS COMPONENTS</u> |            | <u>FIBROUS COMPONENTS</u> |                | <u>NON-FIBROUS COMPONENTS</u> |              |
|----------------------------|------------|---------------------------|----------------|-------------------------------|--------------|
|                            |            | Cellulose                 | <1 %           | Filler/Binder                 | 100 %        |
| <b>Asbestos Total:</b>     | <b>NAD</b> | <b>Fibrous Total:</b>     | <b>&lt;1 %</b> | <b>Non-Fibrous Total:</b>     | <b>100 %</b> |

Lab Project #: 3926 Lab Sample #: 1020911 Color: White  
 Client Sample #: LM-1148-JRW-14 Characterization: Heterogeneous, Non-Fibrous  
 Comments: Textured wall plaster, student lounge stairwell

| <u>ASBESTOS COMPONENTS</u> |            | <u>FIBROUS COMPONENTS</u> |                | <u>NON-FIBROUS COMPONENTS</u> |              |
|----------------------------|------------|---------------------------|----------------|-------------------------------|--------------|
|                            |            | Cellulose                 | <1 %           | Filler/Binder                 | 100 %        |
| <b>Asbestos Total:</b>     | <b>NAD</b> | <b>Fibrous Total:</b>     | <b>&lt;1 %</b> | <b>Non-Fibrous Total:</b>     | <b>100 %</b> |

Lab Project #: 3926 Lab Sample #: 1020912 Color: Tan  
 Client Sample #: LM-1148-JRW-15 Characterization: Heterogeneous, Non-Fibrous  
 Comments: Textured wall plaster, student lounge stairwell

| <u>ASBESTOS COMPONENTS</u> |            | <u>FIBROUS COMPONENTS</u> |                | <u>NON-FIBROUS COMPONENTS</u> |              |
|----------------------------|------------|---------------------------|----------------|-------------------------------|--------------|
|                            |            | Cellulose                 | <1 %           | Filler/Binder                 | 100 %        |
| <b>Asbestos Total:</b>     | <b>NAD</b> | <b>Fibrous Total:</b>     | <b>&lt;1 %</b> | <b>Non-Fibrous Total:</b>     | <b>100 %</b> |



# BULK SAMPLE ANALYSIS REPORT

**Date Received:** 02/04/2002 **Date Analyzed:** 02/08/2002  
**Client Name:** Grimm & Parker Architects  
**Client Project #:** 1148-02-0046  
**Project Location:** Luke Moore Academy, 1001 Monroe Street

Lab Project #: 3926 Lab Sample #: 1020913 Color: Tan  
 Client Sample #: LM-1148-JRW-16 Characterization: Homogeneous, Non-Fibrous  
 Comments: Brown coat wall plaster, student lounge stairwell

| <u>ASBESTOS COMPONENTS</u> |            | <u>FIBROUS COMPONENTS</u> |                | <u>NON-FIBROUS COMPONENTS</u> |              |
|----------------------------|------------|---------------------------|----------------|-------------------------------|--------------|
|                            |            | Cellulose                 | <1 %           | Filler/Binder                 | 100 %        |
| <b>Asbestos Total:</b>     | <b>NAD</b> | <b>Fibrous Total:</b>     | <b>&lt;1 %</b> | <b>Non-Fibrous Total:</b>     | <b>100 %</b> |

Lab Project #: 3926 Lab Sample #: 1020914 Color: Tan  
 Client Sample #: LM-1148-JRW-17 Characterization: Homogeneous, Non-Fibrous  
 Comments: Brown coat wall plaster, student lounge stairwell

| <u>ASBESTOS COMPONENTS</u> |            | <u>FIBROUS COMPONENTS</u> |                | <u>NON-FIBROUS COMPONENTS</u> |              |
|----------------------------|------------|---------------------------|----------------|-------------------------------|--------------|
|                            |            | Cellulose                 | <1 %           | Filler/Binder                 | 100 %        |
| <b>Asbestos Total:</b>     | <b>NAD</b> | <b>Fibrous Total:</b>     | <b>&lt;1 %</b> | <b>Non-Fibrous Total:</b>     | <b>100 %</b> |

Lab Project #: 3926 Lab Sample #: 1020915 Color: Tan  
 Client Sample #: LM-1148-JRW-18 Characterization: Homogeneous, Non-Fibrous  
 Comments: Brown coat wall plaster, student lounge stairwell

| <u>ASBESTOS COMPONENTS</u> |            | <u>FIBROUS COMPONENTS</u> |                | <u>NON-FIBROUS COMPONENTS</u> |              |
|----------------------------|------------|---------------------------|----------------|-------------------------------|--------------|
|                            |            | Cellulose                 | <1 %           | Filler/Binder                 | 100 %        |
| <b>Asbestos Total:</b>     | <b>NAD</b> | <b>Fibrous Total:</b>     | <b>&lt;1 %</b> | <b>Non-Fibrous Total:</b>     | <b>100 %</b> |

Lab Project #: 3926 Lab Sample #: 1020916 Color: Tan  
 Client Sample #: LM-1148-JRW-19 Characterization: Homogeneous, Non-Fibrous  
 Comments: 12" x 12" beige floor tile, boy's bathroom

| <u>ASBESTOS COMPONENTS</u> |            | <u>FIBROUS COMPONENTS</u> |            | <u>NON-FIBROUS COMPONENTS</u> |             |
|----------------------------|------------|---------------------------|------------|-------------------------------|-------------|
|                            |            | Cellulose                 | 1 %        | Filler/Binder                 | 99 %        |
| <b>Asbestos Total:</b>     | <b>NAD</b> | <b>Fibrous Total:</b>     | <b>1 %</b> | <b>Non-Fibrous Total:</b>     | <b>99 %</b> |

Lab Project #: 3926 Lab Sample #: 1020917 Color: Brown  
 Client Sample #: LM-1148-JRW-20 Characterization: Heterogeneous, Fibrous  
 Comments: Wall board (wool-like), assembly room

| <u>ASBESTOS COMPONENTS</u> |            | <u>FIBROUS COMPONENTS</u> |             | <u>NON-FIBROUS COMPONENTS</u> |             |
|----------------------------|------------|---------------------------|-------------|-------------------------------|-------------|
|                            |            | Cellulose                 | 90 %        | Filler/Binder                 | 10 %        |
| <b>Asbestos Total:</b>     | <b>NAD</b> | <b>Fibrous Total:</b>     | <b>90 %</b> | <b>Non-Fibrous Total:</b>     | <b>10 %</b> |



# BULK SAMPLE ANALYSIS REPORT

Date Received: 02/04/2002 Date Analyzed: 02/08/2002  
 Client Name: Grimm & Parker Architects  
 Client Project #: 1148-02-0046  
 Project Location: Luke Moore Academy, 1001 Monroe Street

Lab Project #: 3926 Lab Sample #: 1020918 Color: Brown  
 Client Sample #: LM-1148-JRW-21 Characterization: Heterogeneous, Fibrous  
 Comments: Bulletin board materials, assembly room

| <u>ASBESTOS COMPONENTS</u> |            | <u>FIBROUS COMPONENTS</u> |             | <u>NON-FIBROUS COMPONENTS</u> |             |
|----------------------------|------------|---------------------------|-------------|-------------------------------|-------------|
|                            |            | Cellulose                 | 90 %        | Filler/Binder                 | 10 %        |
| <b>Asbestos Total:</b>     | <b>NAD</b> | <b>Fibrous Total:</b>     | <b>90 %</b> | <b>Non-Fibrous Total:</b>     | <b>10 %</b> |

Lab Project #: 3926 Lab Sample #: 1020919 Color: Black  
 Client Sample #: LM-1148-JRW-22 Characterization: Homogeneous, Non-Fibrous  
 Comments: Cove base, main office

| <u>ASBESTOS COMPONENTS</u> |            | <u>FIBROUS COMPONENTS</u> |                | <u>NON-FIBROUS COMPONENTS</u> |              |
|----------------------------|------------|---------------------------|----------------|-------------------------------|--------------|
|                            |            | Cellulose                 | <1 %           | Filler/Binder                 | 100 %        |
| <b>Asbestos Total:</b>     | <b>NAD</b> | <b>Fibrous Total:</b>     | <b>&lt;1 %</b> | <b>Non-Fibrous Total:</b>     | <b>100 %</b> |

Lab Project #: 3926 Lab Sample #: 1020920 Color: Brown  
 Client Sample #: LM-1148-JRW-23 Characterization: Homogeneous, Non-Fibrous  
 Comments: Cove base mastic, main office

| <u>ASBESTOS COMPONENTS</u> |            | <u>FIBROUS COMPONENTS</u> |            | <u>NON-FIBROUS COMPONENTS</u> |      |
|----------------------------|------------|---------------------------|------------|-------------------------------|------|
|                            |            | Cellulose                 | 2 %        | Filler/Binder                 | 93 % |
|                            |            | Wollastonite              | 5 %        | Non-Fibrous Total:            | 93 % |
| <b>Asbestos Total:</b>     | <b>NAD</b> | <b>Fibrous Total:</b>     | <b>7 %</b> |                               |      |

Lab Project #: 3926 Lab Sample #: 1020921 Color: Black  
 Client Sample #: LM-1148-JRW-24 Characterization: Homogeneous, Non-Fibrous  
 Comments: 9" x 9" black floor tile, first floor, storage room near main office

| <u>ASBESTOS COMPONENTS</u> |            | <u>FIBROUS COMPONENTS</u> |                | <u>NON-FIBROUS COMPONENTS</u> |             |
|----------------------------|------------|---------------------------|----------------|-------------------------------|-------------|
| Chrysotile                 | 4 %        | Cellulose                 | <1 %           | Filler/Binder                 | 96 %        |
| <b>Asbestos Total:</b>     | <b>4 %</b> | <b>Fibrous Total:</b>     | <b>&lt;1 %</b> | <b>Non-Fibrous Total:</b>     | <b>96 %</b> |

Lab Project #: 3926 Lab Sample #: 1020922 Color: Green  
 Client Sample #: LM-1148-JRW-25 Characterization: Homogeneous, Non-Fibrous  
 Comments: 9" x 9" green floor tile, first floor, storage room near main office

| <u>ASBESTOS COMPONENTS</u> |            | <u>FIBROUS COMPONENTS</u> |                | <u>NON-FIBROUS COMPONENTS</u> |             |
|----------------------------|------------|---------------------------|----------------|-------------------------------|-------------|
| Chrysotile                 | 7 %        | Cellulose                 | <1 %           | Filler/Binder                 | 93 %        |
| <b>Asbestos Total:</b>     | <b>7 %</b> | <b>Fibrous Total:</b>     | <b>&lt;1 %</b> | <b>Non-Fibrous Total:</b>     | <b>93 %</b> |



# BULK SAMPLE ANALYSIS REPORT

Date Received: 02/04/2002 Date Analyzed: 02/08/2002  
 Client Name: Grimm & Parker Architects  
 Client Project #: 1148-02-0046  
 Project Location: Luke Moore Academy, 1001 Monroe Street

Lab Project #: 3926 Lab Sample #: 1020923 Color: Black  
 Client Sample #: LM-1148-JRW-26 Characterization: Homogeneous, Non-Fibrous  
 Comments: Mastic on 9" x 9" green floor tile, first floor, storage room near main office

| <u>ASBESTOS COMPONENTS</u> |            | <u>FIBROUS COMPONENTS</u> |            | <u>NON-FIBROUS COMPONENTS</u> |             |
|----------------------------|------------|---------------------------|------------|-------------------------------|-------------|
| Chrysotile                 | 3 %        | Cellulose                 | 1 %        | Filler/Binder                 | 96 %        |
| <b>Asbestos Total:</b>     | <b>3 %</b> | <b>Fibrous Total:</b>     | <b>1 %</b> | <b>Non-Fibrous Total:</b>     | <b>96 %</b> |

Lab Project #: 3926 Lab Sample #: 1020924 Color: White  
 Client Sample #: LM-1148-JRW-27 Characterization: Homogeneous, Fibrous  
 Comments: Spray-on ceiling insulation, basement storage room

| <u>ASBESTOS COMPONENTS</u> |             | <u>FIBROUS COMPONENTS</u> |             | <u>NON-FIBROUS COMPONENTS</u> |             |
|----------------------------|-------------|---------------------------|-------------|-------------------------------|-------------|
| Chrysotile                 | 25 %        | Cellulose                 | 2 %         | Filler/Binder                 | 38 %        |
|                            |             | Mineral Wool              | 35 %        | <b>Non-Fibrous Total:</b>     | <b>38 %</b> |
| <b>Asbestos Total:</b>     | <b>25 %</b> | <b>Fibrous Total:</b>     | <b>37 %</b> |                               |             |

Lab Project #: 3926 Lab Sample #: 1020927 Color: White  
 Client Sample #: LM-1148-JRW-30 Characterization: Homogeneous, Fibrous  
 Comments: Pipe insulation, basement storage room

| <u>ASBESTOS COMPONENTS</u> |             | <u>FIBROUS COMPONENTS</u> |             | <u>NON-FIBROUS COMPONENTS</u> |             |
|----------------------------|-------------|---------------------------|-------------|-------------------------------|-------------|
| Chrysotile                 | 20 %        | Cellulose                 | 5 %         | Filler/Binder                 | 40 %        |
|                            |             | Mineral Wool              | 35 %        | <b>Non-Fibrous Total:</b>     | <b>40 %</b> |
| <b>Asbestos Total:</b>     | <b>20 %</b> | <b>Fibrous Total:</b>     | <b>40 %</b> |                               |             |

Lab Project #: 3926 Lab Sample #: 1020928 Color: White  
 Client Sample #: LM-1148-JRW-31 Characterization: Homogeneous, Fibrous  
 Comments: Pipe elbow, basement storage room

| <u>ASBESTOS COMPONENTS</u> |             | <u>FIBROUS COMPONENTS</u> |            | <u>NON-FIBROUS COMPONENTS</u> |             |
|----------------------------|-------------|---------------------------|------------|-------------------------------|-------------|
| Chrysotile                 | 45 %        | Cellulose                 | 5 %        | Filler/Binder                 | 50 %        |
| <b>Asbestos Total:</b>     | <b>45 %</b> | <b>Fibrous Total:</b>     | <b>5 %</b> | <b>Non-Fibrous Total:</b>     | <b>50 %</b> |

Lab Project #: 3926 Lab Sample #: 1020929 Color: Green  
 Client Sample #: LM-1148-JRW-32 Characterization: Homogeneous, Non-Fibrous  
 Comments: 12" x 12" green floor tile, teacher's lounge

| <u>ASBESTOS COMPONENTS</u> |            | <u>FIBROUS COMPONENTS</u> |                | <u>NON-FIBROUS COMPONENTS</u> |              |
|----------------------------|------------|---------------------------|----------------|-------------------------------|--------------|
|                            |            | Cellulose                 | <1 %           | Filler/Binder                 | 100 %        |
| <b>Asbestos Total:</b>     | <b>NAD</b> | <b>Fibrous Total:</b>     | <b>&lt;1 %</b> | <b>Non-Fibrous Total:</b>     | <b>100 %</b> |



# BULK SAMPLE ANALYSIS REPORT

Date Received: 02/04/2002 Date Analyzed: 02/08/2002  
 Client Name: Grimm & Parker Architects  
 Client Project #: 1148-02-0046  
 Project Location: Luke Moore Academy, 1001 Monroe Street

Lab Project #: 3926 Lab Sample #: 1020930 Color: White  
 Client Sample #: LM-1148-JRW-33 Characterization: Homogeneous, Non-Fibrous  
 Comments: 12" x 12" white floor tile, teacher's lounge

| <u>ASBESTOS COMPONENTS</u> |            | <u>FIBROUS COMPONENTS</u> |                | <u>NON-FIBROUS COMPONENTS</u> |              |
|----------------------------|------------|---------------------------|----------------|-------------------------------|--------------|
|                            |            | Cellulose                 | <1 %           | Filler/Binder                 | 100 %        |
| <b>Asbestos Total:</b>     | <b>NAD</b> | <b>Fibrous Total:</b>     | <b>&lt;1 %</b> | <b>Non-Fibrous Total:</b>     | <b>100 %</b> |

Lab Project #: 3926 Lab Sample #: 1020931 Color: Brown  
 Client Sample #: LM-1148-JRW-34 Characterization: Heterogeneous, Non-Fibrous  
 Comments: Covebase mastic, computer lab

| <u>ASBESTOS COMPONENTS</u> |            | <u>FIBROUS COMPONENTS</u> |            | <u>NON-FIBROUS COMPONENTS</u> |             |
|----------------------------|------------|---------------------------|------------|-------------------------------|-------------|
|                            |            | Cellulose                 | 3 %        | Filler/Binder                 | 97 %        |
| <b>Asbestos Total:</b>     | <b>NAD</b> | <b>Fibrous Total:</b>     | <b>3 %</b> | <b>Non-Fibrous Total:</b>     | <b>97 %</b> |

Lab Project #: 3926 Lab Sample #: 1020932 Color: Tan  
 Client Sample #: LM-1148-JRW-35 Characterization: Homogeneous, Non-Fibrous  
 Comments: 12" x 12" beige floor tile, computer lab

| <u>ASBESTOS COMPONENTS</u> |            | <u>FIBROUS COMPONENTS</u> |                | <u>NON-FIBROUS COMPONENTS</u> |              |
|----------------------------|------------|---------------------------|----------------|-------------------------------|--------------|
|                            |            | Cellulose                 | <1 %           | Filler/Binder                 | 100 %        |
| <b>Asbestos Total:</b>     | <b>NAD</b> | <b>Fibrous Total:</b>     | <b>&lt;1 %</b> | <b>Non-Fibrous Total:</b>     | <b>100 %</b> |

Lab Project #: 3926 Lab Sample #: 1020933 Color: Tan  
 Client Sample #: LM-1148-JRW-36 Characterization: Homogeneous, Fibrous  
 Comments: Wall plaster, library office

| <u>ASBESTOS COMPONENTS</u> |            | <u>FIBROUS COMPONENTS</u> |                | <u>NON-FIBROUS COMPONENTS</u> |              |
|----------------------------|------------|---------------------------|----------------|-------------------------------|--------------|
|                            |            | Cellulose                 | <1 %           | Filler/Binder                 | 100 %        |
| <b>Asbestos Total:</b>     | <b>NAD</b> | <b>Fibrous Total:</b>     | <b>&lt;1 %</b> | <b>Non-Fibrous Total:</b>     | <b>100 %</b> |

Lab Project #: 3926 Lab Sample #: 1020934 Color: White  
 Client Sample #: LM-1148-JRW-37 Characterization: Heterogeneous, Fibrous  
 Comments: Drywall joint compound, partition in Room 110

| <u>ASBESTOS COMPONENTS</u> |            | <u>FIBROUS COMPONENTS</u> |            | <u>NON-FIBROUS COMPONENTS</u> |             |
|----------------------------|------------|---------------------------|------------|-------------------------------|-------------|
|                            |            | Cellulose                 | 5 %        | Filler/Binder                 | 95 %        |
| <b>Asbestos Total:</b>     | <b>NAD</b> | <b>Fibrous Total:</b>     | <b>5 %</b> | <b>Non-Fibrous Total:</b>     | <b>95 %</b> |



# BULK SAMPLE ANALYSIS REPORT

Date Received: 02/04/2002 Date Analyzed: 02/08/2002  
 Client Name: Grimm & Parker Architects  
 Client Project #: 1148-02-0046  
 Project Location: Luke Moore Academy, 1001 Monroe Street

Lab Project #: 3926 Lab Sample #: 1020935 Color: Tan  
 Client Sample #: LM-1148-JRW-38 Characterization: Homogeneous, Non-Fibrous  
 Comments: Wall plaster, brown coat, Room 110

ASBESTOS COMPONENTS

FIBROUS COMPONENTS

NON-FIBROUS COMPONENTS

|                        |            |                       |                |                           |              |
|------------------------|------------|-----------------------|----------------|---------------------------|--------------|
|                        |            | Cellulose             | <1 %           |                           |              |
| <b>Asbestos Total:</b> | <b>NAD</b> | <b>Fibrous Total:</b> | <b>&lt;1 %</b> | <b>Filler/Binder</b>      | <b>100 %</b> |
|                        |            |                       |                | <b>Non-Fibrous Total:</b> | <b>100 %</b> |

Lab Project #: 3926 Lab Sample #: 1020936 Color: Tan  
 Client Sample #: LM-1148-JRW-39 Characterization: Homogeneous, Non-Fibrous  
 Comments: Wall plaster, brown coat, Room 203, office

ASBESTOS COMPONENTS

FIBROUS COMPONENTS

NON-FIBROUS COMPONENTS

|                        |            |                       |                |                           |              |
|------------------------|------------|-----------------------|----------------|---------------------------|--------------|
|                        |            | Cellulose             | <1 %           |                           |              |
| <b>Asbestos Total:</b> | <b>NAD</b> | <b>Fibrous Total:</b> | <b>&lt;1 %</b> | <b>Filler/Binder</b>      | <b>100 %</b> |
|                        |            |                       |                | <b>Non-Fibrous Total:</b> | <b>100 %</b> |

Lab Project #: 3926 Lab Sample #: 1020937 Color: White  
 Client Sample #: LM-1148-JRW-40 Characterization: Heterogeneous, Non-Fibrous  
 Comments: Wall plaster, second floor, nurse's office

ASBESTOS COMPONENTS

FIBROUS COMPONENTS

NON-FIBROUS COMPONENTS

|                        |            |                       |                |                           |              |
|------------------------|------------|-----------------------|----------------|---------------------------|--------------|
|                        |            | Cellulose             | <1 %           |                           |              |
| <b>Asbestos Total:</b> | <b>NAD</b> | <b>Fibrous Total:</b> | <b>&lt;1 %</b> | <b>Filler/Binder</b>      | <b>100 %</b> |
|                        |            |                       |                | <b>Non-Fibrous Total:</b> | <b>100 %</b> |

Lab Project #: 3926 Lab Sample #: 1020938 Color: White  
 Client Sample #: LM-1148-JRW-41 Characterization: Heterogeneous, Non-Fibrous  
 Comments: Wall plaster, Room 211

ASBESTOS COMPONENTS

FIBROUS COMPONENTS

NON-FIBROUS COMPONENTS

|                        |            |                       |                |                           |              |
|------------------------|------------|-----------------------|----------------|---------------------------|--------------|
|                        |            | Cellulose             | <1 %           |                           |              |
| <b>Asbestos Total:</b> | <b>NAD</b> | <b>Fibrous Total:</b> | <b>&lt;1 %</b> | <b>Filler/Binder</b>      | <b>100 %</b> |
|                        |            |                       |                | <b>Non-Fibrous Total:</b> | <b>100 %</b> |

Lab Project #: 3926 Lab Sample #: 1020939 Color: Tan  
 Client Sample #: LM-1148-JRW-42 Characterization: Homogeneous, Non-Fibrous  
 Comments: 12" x 12" beige floor tile with red streaks, second floor, stair landing near Room 210, in rear of building

ASBESTOS COMPONENTS

FIBROUS COMPONENTS

NON-FIBROUS COMPONENTS

|                        |            |                       |                |                           |              |
|------------------------|------------|-----------------------|----------------|---------------------------|--------------|
|                        |            | Cellulose             | <1 %           |                           |              |
| <b>Asbestos Total:</b> | <b>NAD</b> | <b>Fibrous Total:</b> | <b>&lt;1 %</b> | <b>Filler/Binder</b>      | <b>100 %</b> |
|                        |            |                       |                | <b>Non-Fibrous Total:</b> | <b>100 %</b> |



# BULK SAMPLE ANALYSIS REPORT

**Date Received:** 02/04/2002 **Date Analyzed:** 02/08/2002  
**Client Name:** Grimm & Parker Architects  
**Client Project #:** 1148-02-0046  
**Project Location:** Luke Moore Academy, 1001 Monroe Street

Lab Project #: 3926 Lab Sample #: 1020940 Color: Black  
 Client Sample #: LM-1148-JRW-43 Characterization: Homogeneous, Non-Fibrous  
 Comments: Mastic on 12" x 12" beige with red streaks floor tile, second floor, stair landing near Room 210, in rear of building

ASBESTOS COMPONENTS

FIBROUS COMPONENTS

NON-FIBROUS COMPONENTS

Cellulose 3 %  
 Synthetic Fibers <1 %

Filler/Binder 97 %  
 Non-Fibrous Total: 97 %

Asbestos Total: NAD Fibrous Total: 3 %

Lab Project #: 3926 Lab Sample #: 1020941 Color: White  
 Client Sample #: LM-1148-JRW-44 Characterization: Homogeneous, Non-Fibrous  
 Comments: Wall plaster from Room 210

ASBESTOS COMPONENTS

FIBROUS COMPONENTS

NON-FIBROUS COMPONENTS

Cellulose <1 %

Filler/Binder 100 %  
 Non-Fibrous Total: 100 %

Asbestos Total: NAD Fibrous Total: <1 %

Lab Project #: 3926 Lab Sample #: 1020942 Color: White  
 Client Sample #: LM-1148-JRW-45 Characterization: Heterogeneous, Non-Fibrous  
 Comments: Wall plaster from Room 211

ASBESTOS COMPONENTS

FIBROUS COMPONENTS

NON-FIBROUS COMPONENTS

Cellulose <1 %

Filler/Binder 100 %  
 Non-Fibrous Total: 100 %

Asbestos Total: NAD Fibrous Total: <1 %

Lab Project #: 3926 Lab Sample #: 1020943 Color: Black  
 Client Sample #: LM-1148-JRW-46 Characterization: Homogeneous, Non-Fibrous  
 Comments: Roof tar, slate roof

ASBESTOS COMPONENTS

FIBROUS COMPONENTS

NON-FIBROUS COMPONENTS

Chrysotile 4 %

Filler/Binder 96 %  
 Non-Fibrous Total: 96 %

Asbestos Total: 4 % Fibrous Total:

Lab Project #: 3926 Lab Sample #: 1020944 Color: Gray  
 Client Sample #: LM-1148-JRW-47 Characterization: Heterogeneous, Non-Fibrous  
 Comments: Ceiling plaster, boiler room

ASBESTOS COMPONENTS

FIBROUS COMPONENTS

NON-FIBROUS COMPONENTS

Cellulose <1 %

Filler/Binder 100 %  
 Non-Fibrous Total: 100 %

Asbestos Total: NAD Fibrous Total: <1 %





# BULK SAMPLE ANALYSIS REPORT

Date Received: 02/04/2002 Date Analyzed: 02/08/2002  
Client Name: Grimm & Parker Architects  
Client Project #: 1148-02-0046  
Project Location: Luke Moore Academy, 1001 Monroe Street

Lab Project #: 3926 Lab Sample #: 1020945 Color: Gray  
Client Sample #: LM-1148-JRW-48 Characterization: Heterogeneous, Non-Fibrous  
Comments: Ceiling plaster, boiler room

ASBESTOS COMPONENTS

FIBROUS COMPONENTS

NON-FIBROUS COMPONENTS

Cellulose 2 %

Asbestos Total: NAD

Fibrous Total: 2 %

Filler/Binder 98 %

Non-Fibrous Total: 98 %





## **APPENDIX B**

### **Lead-Based Paint XRF Testing Data Tables**

**Lead-Based Paint XRF Data Table**  
**Luke C. Moore Academy**  
**1001 Monroe Street, NE**  
**Washington, DC**

mg/cm<sup>2</sup> = milligrams per squared centimeter

| No                   | Floor | Room              | Structure                | Color | Substrate | Condition | Result<br>(mg/cm <sup>2</sup> ) | Precision<br>(+/-) | DI  |
|----------------------|-------|-------------------|--------------------------|-------|-----------|-----------|---------------------------------|--------------------|-----|
| <b>WEST BUILDING</b> |       |                   |                          |       |           |           |                                 |                    |     |
| 61                   |       | Shutter Cal 1     |                          |       |           |           | NA                              |                    | 0   |
| 62                   |       | 1.0 Calibration   |                          |       |           |           | 1.06                            | 0.15               | 1   |
| 63                   |       | 1.0 Calibration   |                          |       |           |           | 1.01                            | 0.12               | 1   |
| 64                   |       | 1.0 Calibration   |                          |       |           |           | 1.03                            | 0.12               | 1   |
| 65                   | 1     | SW Corner Hallway | Wall, Interior Partition | Cream | Drywall   | Solid     | 0.00                            | 0.01               | 1   |
| 66                   | 1     | SW Corner Hallway | Textured Wall            | Cream | Plaster   | Solid     | 0.56                            | 0.42               | 8.7 |
| 67                   | 1     | SW Corner Hallway | Chair Rail               | Tan   | Wood      | Solid     | 0.09                            | 0.09               | 2.8 |
| 68                   | 1     | SW Corner Hallway | Wall Panel               | Tan   | Wood      | Solid     | 0.25                            | 0.17               | 2   |
| 69                   | 1     | SW Corner Hallway | Door Jamb                | Tan   | Wood      | Solid     | 12.67                           | 3.96               | 10  |
| 70                   | 1     | West Foyer        | Wall, Interior Partition | Cream | Plaster   | Solid     | 0.15                            | 0.14               | 6.1 |
| 71                   | 1     | West Foyer        | Baseboard                | Tan   | Wood      | Solid     | 11.05                           | 3.60               | 8.2 |
| 72                   | 1     | 107               | Door                     | Tan   | Wood      | Solid     | 12.98                           | 5.86               | 6.8 |
| 73                   | 1     | NW Hallway        | Radiator                 | Tan   | Metal     | Solid     | 0.34                            | 0.23               | 2.9 |
| 75                   | 1     | NW Hallway        | Drain Pipe               | Cream | Metal     | Solid     | 0.31                            | 0.23               | 5   |
| 76                   | 1     | NW Hallway        | Wall, Interior Partition | Cream | Plaster   | Solid     | 0.57                            | 0.40               | 9.4 |
| 77                   | 1     | NW Entrance       | Door Casing              | Tan   | Wood      | Solid     | 0.00                            | 0.01               | 1   |
| 78                   | 1     | NW Entrance       | Door Jamb                | Tan   | Metal     | Solid     | 0.00                            | 0.04               | 1   |
| 79                   | 1     | NW Entrance       | Door                     | Tan   | Metal     | Solid     | 0.00                            | 0.09               | 1   |
| 80                   | 1     | Northwest Foyer   | Wall Trim Board          | Tan   | Wood      | Solid     | 0.04                            | 0.05               | 1   |
| 81                   | 1     | Northwest Foyer   | Door Casing              | Tan   | Wood      | Solid     | 13.36                           | 3.82               | 10  |
| 82                   | 1     | 102               | Door Casing              | Tan   | Metal     | Solid     | 0.00                            | 0.01               | 1   |
| 83                   | 1     | 102               | Door                     | Tan   | Metal     | Solid     | 0.00                            | 0.01               | 1   |
| 84                   | 1     | NW Stairwell      | Stringer                 | Cream | Metal     | Solid     | 0.72                            | 0.31               | 4   |
| 86                   | 1     | NW Stairwell      | Newal Post               | Cream | Metal     | Solid     | 0.66                            | 0.42               | 8.7 |
| 89                   | 1     | NW Stairwell      | Underside of Stairs      | White | Metal     | Solid     | 0.20                            | 0.14               | 5.7 |
| 90                   | 1     | Central Hallway   | Column                   | Cream | Plaster   | Solid     | 0.17                            | 0.11               | 3.5 |
| 91                   | 2     | West Stairwell    | Handrail                 | Tan   | Metal     | Solid     | 0.22                            | 0.15               | 4   |
| 92                   | 2     | West Stairwell    | Stringer                 | Red   | Wood      | Solid     | 0.99                            | 0.45               | 8.9 |

**Lead-Based Paint XRF Data Table**  
**Luke C. Moore Academy**  
**1001 Monroe Street, NE**  
**Washington, DC**

mg/cm<sup>2</sup> = milligrams per squared centimeter

| No  | Floor | Room            | Structure                | Color | Substrate | Condition | Result<br>(mg/cm <sup>2</sup> ) | Precision<br>(+/-) | DI  |
|-----|-------|-----------------|--------------------------|-------|-----------|-----------|---------------------------------|--------------------|-----|
| 93  | 2     | West Stairwell  | Tread                    | Tan   | Wood      | Solid     | 0.01                            | 0.08               | 1.3 |
| 94  | 2     | West Stairwell  | Window Casing            | Tan   | Wood      | Solid     | 11.95                           | 4.03               | 10  |
| 95  | 2     | West Stairwell  | Window Sill              | Tan   | Wood      | Solid     | 12.63                           | 3.82               | 10  |
| 96  | 2     | West Stairwell  | Wall, Interior Partition | Tan   | Cement    | Solid     | 0.26                            | 0.22               | 7.4 |
| 97  | 2     | West Stairwell  | Stairwell Cap            | Tan   | Wood      | Solid     | 0.57                            | 0.37               | 6.2 |
| 98  | 2     | West Foyer      | Wall Panel               | Tan   | Wood      | Solid     | 0.31                            | 0.24               | 3.1 |
| 99  | 2     | 205             | Door Casing              | Tan   | Wood      | Solid     | 12.65                           | 3.77               | 10  |
| 100 | 2     | NW Hallway      | Wall, Interior Partition | Cream | Plaster   | Solid     | 0.18                            | 0.12               | 3.8 |
| 103 | 2     | NW Hallway      | Locker                   | Tan   | Metal     | Solid     | 0.00                            | 0.05               | 1   |
| 104 | 2     | NW Hallway      | Railing                  | Tan   | Wood      | Solid     | 0.09                            | 0.08               | 1.7 |
| 105 | 2     | NW Bathroom     | Door Casing              | Tan   | Metal     | Solid     | 0.15                            | 0.09               | 2.3 |
| 106 | 2     | NW Bathroom     | Baseboard                | Tan   | Stone     | Solid     | 0.35                            | 0.18               | 2.9 |
| 107 | 2     | Central Hallway | Baseboard                | Tan   | Wood      | Solid     | 0.58                            | 0.24               | 2.3 |
| 108 | 2     | Central Hallway | Drain Pipe               | Cream | Metal     | Solid     | 0.01                            | 0.06               | 1   |
| 109 |       | Shutter Cal 1   |                          |       |           |           | NA                              |                    | 0   |
| 110 |       | 1.0 Calibration |                          |       |           |           | 1.03                            | 0.08               | 1   |
| 111 |       | 1.0 Calibration |                          |       |           |           | 1.21                            | 0.16               | 1.1 |
| 112 |       | 1.0 Calibration |                          |       |           |           | 1.21                            | 0.16               | 1.1 |
| 113 | 1     | Office          | Wall, South Perimeter    | Cream | Cement    | Solid     | 0.27                            | 0.20               | 4.2 |
| 114 | 1     | Office          | Window Casing            | Tan   | Wood      | Solid     | 12.19                           | 3.77               | 10  |
| 115 | 1     | Office          | Door Casing              | Tan   | Wood      | Solid     | 0.00                            | 0.01               | 1   |
| 116 | 1     | Office          | Wall Panel               | Tan   | Wood      | Solid     | 0.73                            | 0.32               | 3.7 |
| 117 | 1     | Office          | Wall, Interior Partition | Cream | Drywall   | Solid     | 0.09                            | 0.09               | 2.6 |
| 118 | 1     | Office          | Wall, Interior Partition | Cream | Cement    | Solid     | 0.22                            | 0.15               | 3.5 |
| 119 | 1     | Office          | Conduit                  | Cream | Metal     | Solid     | 0.02                            | 0.05               | 3.9 |
| 120 | 1     | Office          | Door Jamb                | Tan   | Wood      | Solid     | 0.05                            | 0.09               | 2.7 |
| 121 | 1     | Office          | Door                     | Tan   | Wood      | Solid     | 0.01                            | 0.09               | 1.5 |
| 122 | 1     | West Stairwell  | Window Casing            | Tan   | Wood      | Solid     | 11.20                           | 3.90               | 10  |
| 123 | 1     | West Stairwell  | Wall, Interior Partition | Tan   | Cement    | Solid     | 0.25                            | 0.24               | 5.9 |

**Lead-Based Paint XRF Data Table**  
**Luke C. Moore Academy**  
**1001 Monroe Street, NE**  
**Washington, DC**

mg/cm<sup>2</sup> = milligrams per squared centimeter

| No                   | Floor | Room             | Structure                | Color | Substrate | Condition | Result<br>(mg/cm <sup>2</sup> ) | Precision<br>(+/-) | DI  |
|----------------------|-------|------------------|--------------------------|-------|-----------|-----------|---------------------------------|--------------------|-----|
| 124                  | 1     | West Stairwell   | Baseboard                | Red   | Stone     | Solid     | 1.79                            | 0.71               | 6.3 |
| 125                  | 1     | West Stairwell   | Tread                    | Red   | Wood      | Solid     | 0.04                            | 0.09               | 2.9 |
| 126                  | 1     | West Stairwell   | Riser                    | Red   | Wood      | Solid     | 0.68                            | 0.41               | 10  |
| 127                  | 1     | West Stairwell   | Handrail                 | Tan   | Metal     | Solid     | 0.82                            | 0.41               | 8.5 |
| 128                  | B     | West Foyer       | Wall, Interior Partition | Cream | Block     | Solid     | 0.05                            | 0.08               | 2.7 |
| 129                  | B     | West Foyer       | Wall, Interior Partition | Tan   | Brick     | Solid     | 0.12                            | 0.06               | 3.9 |
| 131                  | B     | West Foyer       | Drain Pipe               | Tan   | Metal     | Solid     | 0.02                            | 0.05               | 4.1 |
| 132                  | B     | West Foyer       | Drain Pipe               | Cream | Metal     | Solid     | 0.01                            | 0.05               | 1.3 |
| 133                  | B     | Janitor's Office | Wall, Interior Partition | Green | Brick     | Solid     | 0.05                            | 0.08               | 2.1 |
| 134                  | B     | Janitor's Office | Duct                     | Green | Metal     | Solid     | 0.26                            | 0.20               | 4.8 |
| 135                  | B     | Janitor's Office | Drain Pipe               | Green | Metal     | Solid     | 0.09                            | 0.09               | 2.3 |
| 136                  | B     | Janitor's Office | Door Jamb                | Green | Metal     | Solid     | 0.04                            | 0.09               | 2.4 |
| 137                  | B     | Janitor's Office | Door                     | Green | Metal     | Solid     | 0.02                            | 0.06               | 1   |
| 138                  | B     | Janitor's Office | Floor                    | Red   | Cement    | Solid     | 0.03                            | 0.06               | 1   |
| 139                  | B     | Ladies Restroom  | Door Casing              | Tan   | Wood      | Solid     | 12.05                           | 3.87               | 10  |
| 140                  | B     | Ladies Restroom  | Wall, West Perimeter     | Cream | Brick     | Solid     | 3.26                            | 2.84               | 9.5 |
| 141                  | B     | Ladies Restroom  | Window Casing            | Tan   | Wood      | Solid     | 3.46                            | 1.09               | 5.1 |
| 142                  | B     | Ladies Restroom  | Wall, South Perimeter    | Cream | Brick     | Solid     | 1.30                            | 0.35               | 3.2 |
| 143                  | B     | Ladies Restroom  | Stall Frame              | Tan   | Metal     | Solid     | 0.00                            | 0.02               | 1   |
| 144                  | B     | Ladies Restroom  | Sink                     | White | Ceramic   | Solid     | 4.47                            | 1.62               | 1.5 |
| 145                  | B     | Ladies Restroom  | Wall Panel               | Tan   | Wood      | Solid     | 10.52                           | 3.54               | 10  |
| 146                  | B     | Ladies Restroom  | Drain Pipe               | Cream | Metal     | Solid     | 0.17                            | 0.12               | 5.3 |
| 147                  | B     | Ladies Restroom  | Drain Pipe               | Tan   | Metal     | Solid     | 0.27                            | 0.19               | 6.6 |
| 148                  | B     | Hallway          | Door Casing              | Tan   | Metal     | Solid     | 0.00                            | 0.04               | 1   |
| 149                  | B     | Hallway          | Door                     | Tan   | Metal     | Solid     | 0.02                            | 0.07               | 1.4 |
| <b>EAST BUILDING</b> |       |                  |                          |       |           |           |                                 |                    |     |
| 150                  | 2     | Foyer            | Wall, Interior Partition | Cream | Plaster   | Solid     | 0.26                            | 0.25               | 7.4 |
| 151                  | 2     | Hallway          | Door Casing              | Tan   | Wood      | Solid     | 0.37                            | 0.32               | 6   |
| 152                  | 2     | Hallway          | Door                     | Tan   | Wood      | Solid     | 0.45                            | 0.27               | 2   |

Note: The testing was conducted using a Niton XL XRF spectrum analyzer with a 10 mCi Cd-109 source.

**Lead-Based Paint XRF Data Table**  
**Luke C. Moore Academy**  
**1001 Monroe Street, NE**  
**Washington, DC**

Date Surveyed: 2/4/02

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mg/cm<sup>2</sup> = milligrams per squared centimeter

| No  | Floor | Room          | Structure                | Color | Substrate | Condition | Result<br>(mg/cm <sup>2</sup> ) | Precision<br>(+/-) | DI  |
|-----|-------|---------------|--------------------------|-------|-----------|-----------|---------------------------------|--------------------|-----|
| 153 | 2     | Hallway       | Radiator                 | Tan   | Metal     | Solid     | 0.40                            | 0.34               | 3.9 |
| 154 | 2     | Hallway       | Door Jamb                | Tan   | Wood      | Solid     | 0.50                            | 0.32               | 3.1 |
| 155 | 2     | Hallway       | Handrail                 | Tan   | Metal     | Solid     | 0.03                            | 0.07               | 1.2 |
| 156 | 2     | Hallway       | Tread                    | Red   | Wood      | Solid     | 0.00                            | 0.02               | 1   |
| 157 | 2     | Hallway       | Floor                    | Brown | Wood      | Solid     | 0.01                            | 0.06               | 1   |
| 159 | 2     | Hallway       | Baseboard                | Tan   | Wood      | Solid     | 0.58                            | 0.28               | 2.9 |
| 160 | 2     | Hallway       | Ceiling                  | Cream | Wood      | Solid     | 0.00                            | 0.07               | 1   |
| 161 | 2     | Hallway       | Ceiling Lattice          | Cream | Wood      | Solid     | 0.01                            | 0.02               | 1.2 |
| 162 | 2     | Foyer         | Baseboard                | Red   | Stone     | Solid     | 0.74                            | 0.23               | 2.7 |
| 163 | 2     | Foyer         | Drain Pipe               | Tan   | Metal     | Solid     | 0.01                            | 0.05               | 1.1 |
| 164 | 2     | Stairwell     | Railing                  | Tan   | Wood      | Solid     | 0.09                            | 0.06               | 2   |
| 165 | 2     | Stairwell     | Newal Post               | Tan   | Metal     | Solid     | 0.57                            | 0.28               | 3.1 |
| 166 | 2     | Stairwell     | Baluster                 | Tan   | Metal     | Solid     | 6.30                            | 2.23               | 5.7 |
| 167 | 2     | Stairwell     | Tread                    | Red   | Metal     | Solid     | 0.01                            | 0.07               | 1.1 |
| 168 | 2     | Stairwell     | Riser                    | Red   | Metal     | Solid     | 8.06                            | 2.70               | 7.2 |
| 170 | 2     | Stairwell     | Window Frame             | Tan   | Wood      | Solid     | 0.20                            | 0.14               | 5.4 |
| 171 | 2     | Stairwell     | Window Sill              | Tan   | Wood      | Solid     | 0.51                            | 0.34               | 10  |
| 173 | 1     | Stairwell     | Handrail                 | Tan   | Metal     | Solid     | 6.05                            | 2.14               | 8   |
| 174 | 1     | Hallway       | Wall, Interior Partition | Cream | Plaster   | Solid     | 0.18                            | 0.12               | 3.7 |
| 175 | 1     | Hallway       | Door Casing              | Tan   | Wood      | Solid     | 0.35                            | 0.26               | 3.2 |
| 176 | 1     | Hallway       | Door                     | Tan   | Wood      | Solid     | 0.08                            | 0.08               | 1.4 |
| 177 | 1     | Hallway       | Drain Pipe               | Cream | Metal     | Solid     | 0.18                            | 0.14               | 5.5 |
| 178 | 1     | East Entrance | Door Casing              | Tan   | Wood      | Solid     | 0.46                            | 0.18               | 1.4 |
| 179 | 1     | East Entrance | Door                     | Tan   | Metal     | Solid     | 0.34                            | 0.20               | 1.4 |
| 180 | 1     | Stairwell     | Structural I-beam        | White | Steel     | Solid     | 19.56                           | 5.21               | 10  |
| 181 | 1     | Stairwell     | Underside of Stairs      | White | Metal     | Solid     | 15.33                           | 4.66               | 10  |
| 182 | 1     | Stairwell     | Tread                    | Red   | Metal     | Solid     | 0.03                            | 0.09               | 1.9 |
| 183 | 1     | Stairwell     | Riser                    | Red   | Metal     | Solid     | 2.76                            | 1.15               | 5.7 |
| 184 | B     | Stairwell     | Handrail                 | Tan   | Metal     | Solid     | 0.72                            | 0.34               | 4.6 |

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**Washington, DC**

mg/cm<sup>2</sup> = milligrams per squared centimeter

| No                   | Floor | Room           | Structure                | Color    | Substrate | Condition | Result<br>(mg/cm <sup>2</sup> ) | Precision<br>(+/-) | DI  |
|----------------------|-------|----------------|--------------------------|----------|-----------|-----------|---------------------------------|--------------------|-----|
| 185                  | B     | Hallway        | Wall, Interior Partition | Tan      | Brick     | Solid     | 0.27                            | 0.22               | 7.2 |
| 186                  | B     | Hallway        | Door Casing              | Tan      | Wood      | Solid     | 13.38                           | 5.82               | 5.9 |
| 187                  | B     | Hallway        | Door                     | Tan      | Wood      | Solid     | 11.40                           | 3.64               | 9.8 |
| 188                  | B     | Hallway        | Drain Pipe               | Cream    | Metal     | Solid     | 0.00                            | 0.03               | 1   |
| 190                  | 1     | Stairwell      | Window Frame             | Tan      | Wood      | Solid     | 3.11                            | 1.03               | 3.3 |
| 191                  | 1     | Stairwell      | Window Casing            | Tan      | Wood      | Solid     | 0.47                            | 0.28               | 5.4 |
| <b>WEST BUILDING</b> |       |                |                          |          |           |           |                                 |                    |     |
| 192                  | 1     | Storage Closet | Window Casing            | Green    | Wood      | Solid     | 12.08                           | 3.85               | 10  |
| 193                  | 1     | Storage Closet | Door Jamb                | Green    | Wood      | Solid     | 0.06                            | 0.06               | 1.2 |
| 194                  | 1     | Storage Closet | Door                     | Green    | Wood      | Solid     | 14.69                           | 6.28               | 4.2 |
| 195                  | 1     | Storage Closet | Wall Trim Board          | Green    | Wood      | Solid     | 0.17                            | 0.11               | 4.1 |
| 196                  |       | Shutter Cal    |                          |          |           |           | NA                              |                    | 0   |
| 197                  | 1     | Assembly Room  | Wall, Interior Partition | Lt. Blue | Plaster   | Solid     | 0.01                            | 0.02               | 1.7 |
| 198                  | 1     | Assembly Room  | Wall Panel               | Blue     | Wood      | Solid     | 0.32                            | 0.24               | 3.7 |
| 199                  | 1     | Assembly Room  | Window Sill              | Blue     | Wood      | Solid     | 12.33                           | 4.02               | 10  |
| 200                  | 1     | Assembly Room  | Window Casing            | Blue     | Wood      | Solid     | 12.54                           | 4.31               | 10  |
| 203                  | 1     | Assembly Room  | Radiator                 | Blue     | Metal     | Solid     | 0.37                            | 0.27               | 4.5 |
| 204                  | 1     | Assembly Room  | Cabinet                  | Blue     | Wood      | Solid     | 0.60                            | 0.39               | 5.3 |
| 206                  | 1     | Assembly Room  | Door Casing              | Blue     | Wood      | Solid     | 8.74                            | 3.36               | 10  |
| 207                  | 1     | Assembly Room  | Door                     | Blue     | Wood      | Solid     | 12.38                           | 4.24               | 10  |
| 208                  | 1     | SW Bathroom    | Wall Tile                | Tan      | Ceramic   | Solid     | 0.00                            | 0.02               | 1   |
| 209                  | 1     | SW Bathroom    | Window Ledge             | Tan      | Wood      | Solid     | 8.56                            | 3.39               | 8.9 |
| 210                  | 1     | 103            | Window Sill              | Green    | Wood      | Solid     | 16.32                           | 4.48               | 9.1 |
| 211                  | 1     | 103            | Wall, North Perimeter    | Green    | Plaster   | Solid     | 0.00                            | 0.07               | 1   |
| 212                  | 1     | 103            | Mid-Wall Trim            | Green    | Wood      | Solid     | 0.09                            | 0.08               | 2.8 |
| 213                  | 1     | 103            | Door Casing              | Green    | Wood      | Solid     | 11.47                           | 4.08               | 9.1 |
| 214                  | 1     | 103            | Wall Panel               | Green    | Wood      | Solid     | 0.31                            | 0.23               | 2.6 |
| 215                  | 1     | 103            | Door                     | Green    | Wood      | Solid     | 0.00                            | 0.08               | 1   |
| 216                  | 1     | 103            | Wall Panel               | Black    | Wood      | Solid     | 0.33                            | 0.27               | 2.6 |

Note: The testing was conducted using a Niton XL XRF spectrum analyzer with a 10 mCi Cd-109 source.

**Lead-Based Paint XRF Data Table**  
**Luke C. Moore Academy**  
**1001 Monroe Street, NE**  
**Washington, DC**

Date Surveyed: 2/4/02

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mg/cm<sup>2</sup> = milligrams per squared centimeter

| No  | Floor | Room               | Structure                | Color  | Substrate | Condition | Result<br>(mg/cm <sup>2</sup> ) | Precision<br>(+/-) | DI  |
|-----|-------|--------------------|--------------------------|--------|-----------|-----------|---------------------------------|--------------------|-----|
| 217 | 1     | 103                | Window Casing            | Black  | Wood      | Solid     | 15.07                           | 4.18               | 8.8 |
| 218 | 2     | Staff Bathroom     | Wall Tile                | Tan    | Ceramic   | Solid     | 0.00                            | 0.02               | 1   |
| 219 | 2     | Staff Bathroom     | Toilet                   | White  | Ceramic   | Solid     | 0.00                            | 0.03               | 1   |
| 220 | 2     | Staff Bathroom     | Window Frame             | Tan    | Wood      | Solid     | 11.33                           | 3.56               | 10  |
| 221 | B     | Physical Education | Wall, Interior Partition | Green  | Block     | Solid     | 0.00                            | 0.01               | 1   |
| 222 | B     | Physical Education | Wall, East Perimeter     | Green  | Brick     | Solid     | 16.78                           | 4.87               | 5.3 |
| 224 | B     | Physical Education | Sprinkler Pipe           | Green  | Metal     | Solid     | 0.02                            | 0.07               | 1   |
| 225 | B     | Physical Education | Floor                    | Red    | Cement    | Solid     | 0.23                            | 0.14               | 2.5 |
| 226 | B     | Physical Education | Door Jamb                | Blue   | Metal     | Solid     | 0.47                            | 0.22               | 1.5 |
| 227 | 1     | Teacher's Lounge   | Window Frame             | Purple | Wood      | Solid     | 11.28                           | 3.67               | 10  |
| 228 | 1     | Teacher's Lounge   | Wall, North Perimeter    | Blue   | Plaster   | Solid     | 0.00                            | 0.02               | 2.3 |
| 229 | 1     | Teacher's Lounge   | Radiator                 | Green  | Metal     | Peeling   | 0.16                            | 0.10               | 2.1 |
| 230 | 1     | 101                | Wall, Interior Partition | Green  | Plaster   | Solid     | 0.00                            | 0.05               | 1   |
| 231 | 1     | 101                | Door Casing              | Green  | Wood      | Solid     | 10.07                           | 3.80               | 10  |
| 232 | 1     | 101                | Chair Rail               | Green  | Wood      | Solid     | 3.12                            | 1.12               | 10  |
| 233 | 1     | 101                | Wall, Interior Partition | Green  | Drywall   | Solid     | 0.01                            | 0.09               | 1.9 |
| 234 | 1     | 101                | Window Ledge             | Green  | Wood      | Solid     | 15.39                           | 4.57               | 10  |
| 235 | 1     | 101                | Radiator                 | Green  | Metal     | Peeling   | 0.20                            | 0.14               | 3.7 |
| 236 | 1     | 101                | Pipe                     | Green  | Metal     | Peeling   | 0.01                            | 0.08               | 1   |
| 237 | 1     | Computer Lab       | Wall, Interior Partition | Blue   | Drywall   | Solid     | 0.00                            | 0.01               | 1   |
| 238 | 1     | Computer Lab       | Window Casing            | Blue   | Wood      | Solid     | 13.85                           | 4.34               | 10  |
| 239 | 1     | Computer Lab       | Wall, Interior Partition | Blue   | Plaster   | Solid     | 0.31                            | 0.24               | 6.6 |
| 240 | 1     | Computer Lab       | Radiator                 | Blue   | Metal     | Solid     | 0.31                            | 0.22               | 4.1 |
| 241 | 1     | Computer Lab       | Door Casing              | Blue   | Metal     | Solid     | 0.01                            | 0.07               | 1   |
| 242 | 1     | Computer Lab       | Wall Panel               | Blue   | Wood      | Solid     | 0.26                            | 0.21               | 5.3 |
| 243 | 1     | 107                | Window Frame             | Purple | Wood      | Solid     | 17.10                           | 4.81               | 10  |
| 244 | 1     | 107                | Wall Panel               | Purple | Wood      | Solid     | 0.26                            | 0.24               | 5.8 |
| 246 | 1     | 107                | Radiator                 | Green  | Metal     | Solid     | 0.31                            | 0.23               | 3.9 |
| 247 | 2     | 202                | Window Casing            | Peach  | Wood      | Solid     | 12.95                           | 3.92               | 10  |

Note: The testing was conducted using a Niton XL XRF spectrum analyzer with a 10 mCi Cadmium 109 source.

**Lead-Based Paint XRF Data Table**  
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**Washington, DC**

mg/cm<sup>2</sup> = milligrams per squared centimeter

| No                   | Floor | Room            | Structure                | Color  | Substrate | Condition | Result<br>(mg/cm <sup>2</sup> ) | Precision<br>(+/-) | DI  |
|----------------------|-------|-----------------|--------------------------|--------|-----------|-----------|---------------------------------|--------------------|-----|
| 249                  | 2     | 202             | Window Frame             | Yellow | Wood      | Solid     | 11.97                           | 4.36               | 9.3 |
| 250                  | 2     | 202             | Radiator                 | Cream  | Metal     | Solid     | 0.08                            | 0.13               | 2.6 |
| 252                  | 2     | 202             | Wall, East Perimeter     | Yellow | Plaster   | Solid     | 0.00                            | 0.04               | 1   |
| 253                  | 2     | 202             | Door Casing              | Peach  | Wood      | Solid     | 11.88                           | 3.98               | 10  |
| 254                  | 2     | 203             | Wall, Interior Partition | Yellow | Plaster   | Solid     | 0.07                            | 0.06               | 4.6 |
| 255                  | 2     | 203             | Window Casing            | Green  | Wood      | Solid     | 17.19                           | 4.62               | 9.3 |
| 256                  | 2     | 203             | Door Casing              | Green  | Wood      | Solid     | 10.40                           | 4.06               | 9.7 |
| 257                  | 2     | 203             | Door                     | Green  | Metal     | Solid     | 0.28                            | 0.20               | 2.3 |
| 258                  | 2     | 203             | Window Casing            | Peach  | Wood      | Solid     | 14.91                           | 4.65               | 10  |
| 259                  | 2     | 205             | Wall Panel               | Yellow | Wood      | Solid     | 0.48                            | 0.39               | 6.1 |
| 260                  | 2     | 205             | Window Frame             | Green  | Wood      | Solid     | 8.19                            | 3.40               | 3.6 |
| 261                  | 2     | 205             | Door                     | Peach  | Wood      | Solid     | 11.40                           | 3.67               | 10  |
| 262                  | B     | Boiler Room     | Wall, Interior Partition | White  | Brick     | Peeling   | 0.02                            | 0.08               | 3.1 |
| 263                  | B     | Boiler Room     | Floor                    | Red    | Cement    | Solid     | 0.24                            | 0.18               | 3.7 |
| 264                  | B     | Boiler Room     | Door                     | Tan    | Metal     | Solid     | 0.40                            | 0.29               | 1.6 |
| 265                  | B     | Boiler Room     | Drain Pipe               | White  | Metal     | Cracked   | 0.04                            | 0.09               | 3.8 |
| 268                  | 1     | Hallway         | Cove Base                | Tan    | Vinyl     | Solid     | 0.02                            | 0.09               | 4.3 |
| <b>EAST BUILDING</b> |       |                 |                          |        |           |           |                                 |                    |     |
| 1                    |       | Shutter Cal     | 1                        |        |           |           | NA                              |                    | 0   |
| 2                    |       | 1.0 Calibration |                          |        |           |           | 1.03                            | 0.12               | 1   |
| 3                    |       | 1.0 Calibration |                          |        |           |           | 1.04                            | 0.08               | 1   |
| 4                    |       | 1.0 Calibration |                          |        |           |           | 1.06                            | 0.09               | 1   |
| 5                    | 2     | 210             | Wall, South Perimeter    | Cream  | Plaster   | Solid     | 5.98                            | 2.09               | 1   |
| 6                    | 2     | 210             | Window Casing            | Tan    | Wood      | Solid     | 0.36                            | 0.29               | 4   |
| 7                    | 2     | 210             | Baseboard                | Tan    | Wood      | Solid     | 0.22                            | 0.14               | 2.4 |
| 8                    | 2     | 210             | Door Jamb                | Tan    | Metal     | Solid     | 0.24                            | 0.17               | 3.9 |
| 10                   | 2     | 210             | Door Casing              | Tan    | Wood      | Solid     | 0.46                            | 0.27               | 6.1 |
| 11                   | 2     | Nurse's Office  | Chair Rail               | Tan    | Wood      | Solid     | 0.30                            | 0.20               | 4.2 |
| 12                   | 2     | Nurse's Office  | Wall, Interior Partition | Cream  | Plaster   | Solid     | 0.65                            | 0.37               | 8.3 |

Note: The testing was conducted using a Niton XL XRF spectrum analyzer with a 10 mCi Cadmium 109 source.

**Lead-Based Paint XRF Data Table**  
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**1001 Monroe Street, NE**  
**Washington, DC**

mg/cm<sup>2</sup> = milligrams per squared centimeter

| No | Floor | Room               | Structure                | Color  | Substrate | Condition | Result<br>(mg/cm <sup>2</sup> ) | Precision<br>(+/-) | DI  |
|----|-------|--------------------|--------------------------|--------|-----------|-----------|---------------------------------|--------------------|-----|
| 13 | 2     | Nurse's Office     | Ladder                   | Tan    | Metal     | Solid     | 0.67                            | 0.23               | 1.8 |
| 14 | 2     | Nurse's Office     | Ceiling                  | Cream  | Wood      | Solid     | 0.03                            | 0.09               | 3.5 |
| 16 | 2     | Nurse's Office     | Drain Pipe               | Cream  | Metal     | Solid     | 1.48                            | 0.47               | 7.8 |
| 17 | 2     | 211                | Wall, North Perimeter    | Cream  | Plaster   | Solid     | 0.00                            | 0.07               | 1   |
| 18 | 2     | 211                | Window Sill              | Tan    | Wood      | Solid     | 0.98                            | 0.22               | 4.7 |
| 19 | 2     | 211                | Window Frame             | Tan    | Wood      | Solid     | 2.98                            | 1.09               | 3   |
| 20 | 2     | 211                | Wall, Interior Partition | Cream  | Plaster   | Solid     | 6.76                            | 2.29               | 1   |
| 21 | 2     | 211                | Ceiling                  | White  | Wood      | Solid     | 0.05                            | 0.08               | 5   |
| 24 | 2     | 211                | Ceiling Latrice          | White  | Wood      | Solid     | 0.02                            | 0.09               | 3.5 |
| 25 | 2     | Foyer              | Ceiling                  | Cream  | Plaster   | Solid     | 0.00                            | 0.03               | 1   |
| 27 | 1     | Library (111)      | Wall, North Perimeter    | Yellow | Plaster   | Solid     | 0.03                            | 0.09               | 3.1 |
| 28 | 1     | Library (111)      | Window Casing            | Tan    | Wood      | Solid     | 0.57                            | 0.32               | 4.1 |
| 29 | 1     | Library (111)      | Chair Rail               | Tan    | Wood      | Solid     | 0.19                            | 0.12               | 3.6 |
| 30 | 1     | Library (111)      | Floor                    | Brown  | Wood      | Solid     | 0.09                            | 0.04               | 1   |
| 31 | 1     | Library (111)      | Door Casing              | Tan    | Wood      | Solid     | 0.21                            | 0.14               | 2.8 |
| 32 | 1     | Library (111)      | Shelves                  | Tan    | Wood      | Solid     | 0.00                            | 0.09               | 1   |
| 33 | 1     | Librarian's Office | Mid-Wall Trim            | Tan    | Wood      | Solid     | 0.01                            | 0.08               | 1   |
| 34 | 1     | Librarian's Office | Door                     | Tan    | Wood      | Solid     | 0.16                            | 0.08               | 1.5 |
| 35 | 1     | Librarian's Office | Wall, Interior Partition | Yellow | Plaster   | Solid     | 0.00                            | 0.07               | 1   |
| 36 | 1     | Librarian's Office | Baseboard                | Tan    | Wood      | Solid     | 0.01                            | 0.08               | 1.4 |
| 37 | 1     | Librarian's Office | Door Casing              | Tan    | Wood      | Solid     | 0.21                            | 0.13               | 3.7 |
| 38 | 1     | Librarian's Office | Door                     | Tan    | Wood      | Solid     | 0.14                            | 0.08               | 2.3 |
| 39 | B     | Boy's Room         | Wall, Interior Partition | Cream  | Brick     | Solid     | 18.48                           | 5.58               | 10  |
| 40 | B     | Boy's Room         | Urinal                   | White  | Ceramic   | Solid     | 5.10                            | 2.01               | 1.5 |
| 41 | B     | Boy's Room         | Bulkhead                 | Cream  | Cement    | Solid     | 0.21                            | 0.15               | 5.2 |
| 42 | B     | Boy's Room         | Stall Frame              | Tan    | Metal     | Solid     | 0.00                            | 0.02               | 1   |
| 43 | B     | Boy's Room         | Drain Pipe               | Cream  | Metal     | Solid     | 0.21                            | 0.15               | 5.6 |
| 44 | B     | Boy's Room         | Ceiling                  | White  | Drywall   | Solid     | 0.02                            | 0.05               | 4.9 |
| 45 | B     | Boiler Room        | Duct                     | White  | Metal     | Peeling   | 0.18                            | 0.14               | 8   |

**Lead-Based Paint XRF Data Table**  
**Luke C. Moore Academy**  
**1001 Monroe Street, NE**  
**Washington, DC**

mg/cm<sup>2</sup> = milligrams per squared centimeter

| No              | Floor | Room           | Structure                | Color  | Substrate | Condition | Result<br>(mg/cm <sup>2</sup> ) | Precision<br>(+/-) | DI  |
|-----------------|-------|----------------|--------------------------|--------|-----------|-----------|---------------------------------|--------------------|-----|
| 47              | B     | Student Lounge | Wall, Interior Partition | Blue   | Brick     | Solid     | 0.04                            | 0.08               | 2.4 |
| 48              | B     | Student Lounge | Wall, East Perimeter     | Blue   | Cement    | Solid     | 0.00                            | 0.04               | 1   |
| 49              | B     | Student Lounge | Window Frame             | Blue   | Wood      | Solid     | 0.09                            | 0.08               | 2.1 |
| <b>EXTERIOR</b> |       |                |                          |        |           |           |                                 |                    |     |
| 50              | 1     | Exterior       | Window Ledge             | White  | Wood      | Cracked   | 4.39                            | 1.35               | 1.4 |
| 51              | 1     | Exterior       | Window Casing            | White  | Wood      | Cracked   | 44.95                           | 13.39              | 4.5 |
| 52              | 1     | Exterior       | West Door Casing         | Blue   | Metal     | Solid     | 45.47                           | 13.84              | 5.3 |
| 53              | 1     | Exterior       | Window Apron             | White  | Stone     | Solid     | 8.35                            | 2.86               | 4   |
| 54              | 1     | Exterior       | Window Caging            | White  | Metal     | Solid     | 0.05                            | 0.08               | 1.9 |
| 55              | 1     | Exterior       | Gutter Collar            | White  | Steel     | Solid     | 0.07                            | 0.09               | 1.3 |
| 56              | 1     | Exterior       | Door Casing              | Green  | Wood      | Solid     | 0.65                            | 0.23               | 1.5 |
| 57              | 1     | Exterior       | Handrail                 | Green  | Metal     | Solid     | 0.03                            | 0.06               | 1   |
| 58              | 1     | Exterior       | Door                     | Green  | Metal     | Solid     | 0.48                            | 0.33               | 8.5 |
| 59              | 1     | Exterior       | Door Casing              | Green  | Metal     | Solid     | 0.01                            | 0.04               | 1   |
| 60              | B     | Exterior       | Door                     | White  | Metal     | Solid     | 0.03                            | 0.09               | 1.8 |
| 61              | B     | Exterior       | Door Casing              | White  | Metal     | Solid     | 0.00                            | 0.08               | 1   |
| 63              | B     | Exterior       | Window Caging            | White  | Metal     | Solid     | 0.05                            | 0.06               | 1   |
| 64              | 1     | Exterior       | Door Casing              | White  | Wood      | Solid     | 48.10                           | 14.44              | 3.6 |
| 65              | 1     | Exterior       | Pipe                     | Yellow | Metal     | Solid     | 0.01                            | 0.02               | 1   |
| 66              | 1     | Exterior       | Window Apron             | White  | Stone     | Solid     | 1.51                            | 0.48               | 2.5 |



## **APPENDIX C**

### **Asbestos-Containing Materials Estimated Quantities and Removal Costs Table**



**ASBESTOS-CONTAINING MATERIAL ESTIMATED QUANTITIES  
and REMOVAL COSTS**

**Luke Moore Academy School  
1001 Monroe Street, NE  
Washington, D.C.**

**Grimm & Parker Architects**

**MARCH 11, 2002**

| Item Description   | Location  | Quantity | Unit Cost  | Total Unit Cost    |
|--|---|----------|------------|--------------------|
| 9" x 9" green and black floor tile & mastic, west storage room         | First floor, near main office   | 189 SF   | \$3.50/SF  | \$661.50           |
| Spray-on ceiling insulation, custodian office/storage                  | Basement, west building   | 300 SF   | \$15.00/SF | \$4500.00          |
| 6" - 8" outer diameter thermal system insulation with mudded fittings* | Basement, area near girl's restroom, custodian office/storage room, girl's restroom, crawl space* | 100 LF   | \$10.00/LF | \$1,000.00         |
| Assumed asbestos-containing fire doors                                 | Basement  | 2 ea     | \$75.00/ea | \$150.00           |
| Roofing Tar  | East addition   | 2500 SF  | \$5.00/SF  | \$1,2500.00        |
| Debris   | Custodian office/storage room, crawl space  | 50 SF    | \$12.00/SF | \$600.00           |
| <b>Total Cost</b>  |   |          |            | <b>\$19,411.50</b> |

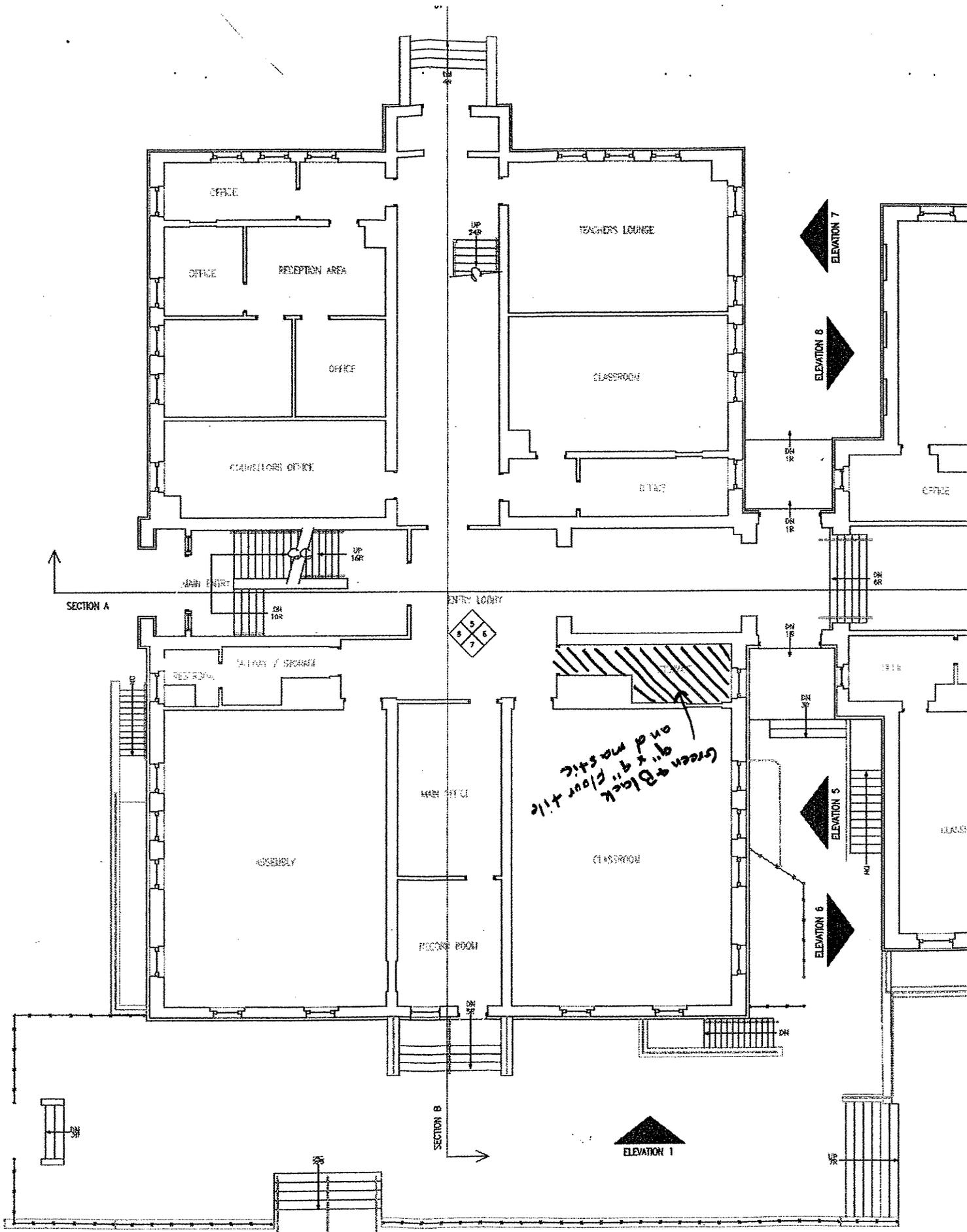
**Note:** Unit prices for removal, decontamination, transportation, and disposal of the various materials include labor, materials, products (containments), and equipment. Quantity estimates are not to be used for contractor bidding. Contractor should field verify quantity of material. Costs will vary depending upon access restrictions to the contractor and/or condensed time frame for completion of work. Air monitoring costs are not included in the estimated removal costs.

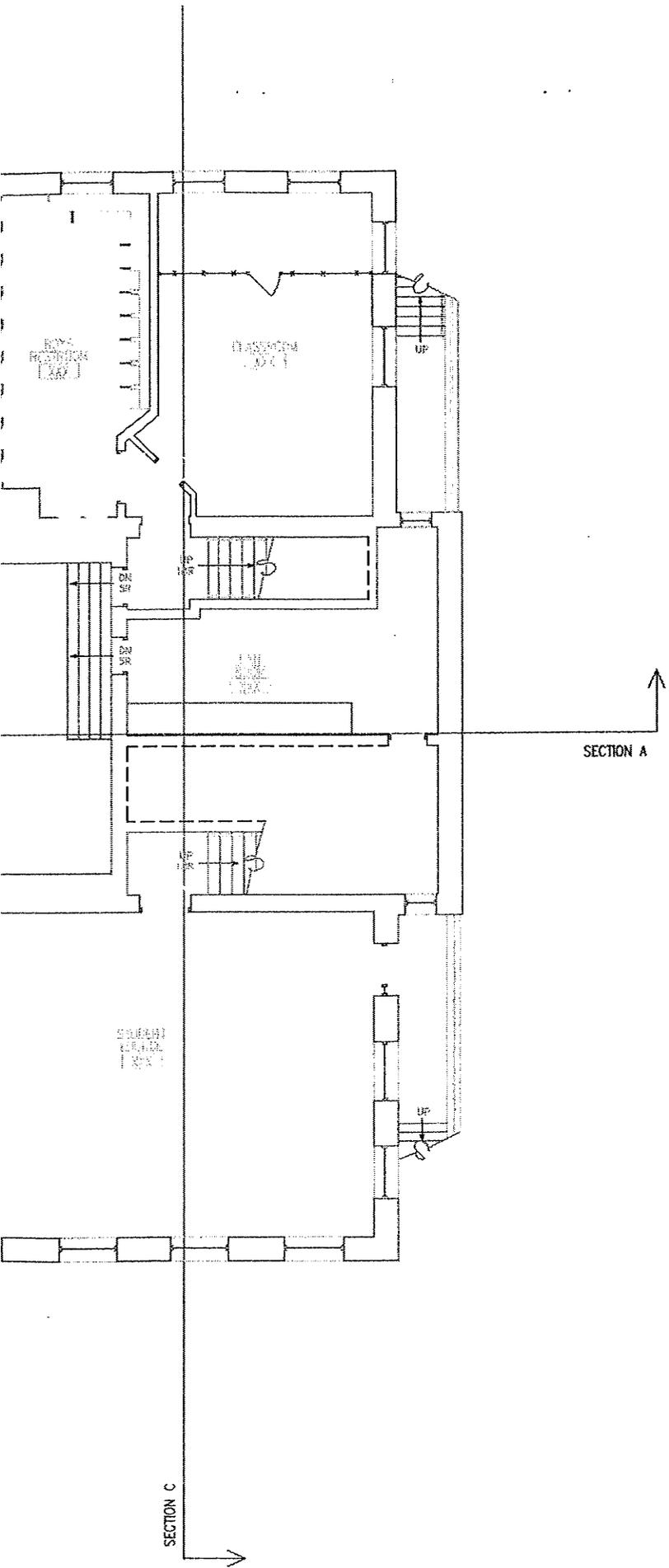
\* Quantities of asbestos-containing TSI debris in the crawl space located in the basement could not be confirm because of access constraints. The 8" steam lines section off into several directions throughout the crawl space. There is approximately 20' of accessible pipe; however, the remaining pipe is under the building.



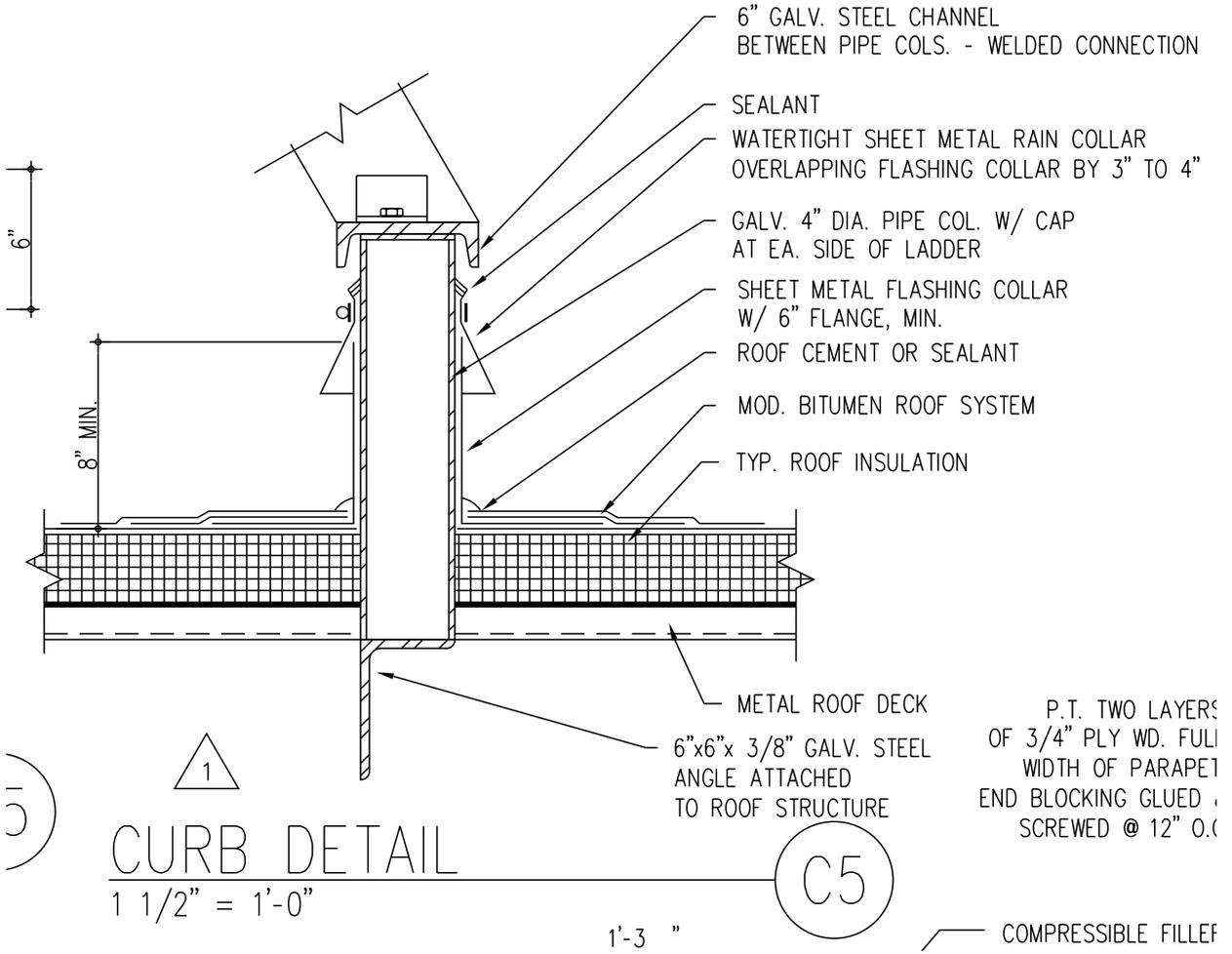
## **APPENDIX D**

### **Hand Edited Drawings of Asbestos-Containing Materials**





Basement



**LUKE C. MOORE ACADEMY HIGH SCHOOL**

SHEET: A-1.9

SCALE: 1 1/2" = 1'-0"

DATE  
04/22/03

AMENDMENT  
2  
SK-A-1

**GRIMM +  
PARKER**  
ARCHITECTS

2 Bethesda Metro Center  
Suite 1350  
Bethesda, MD 20814

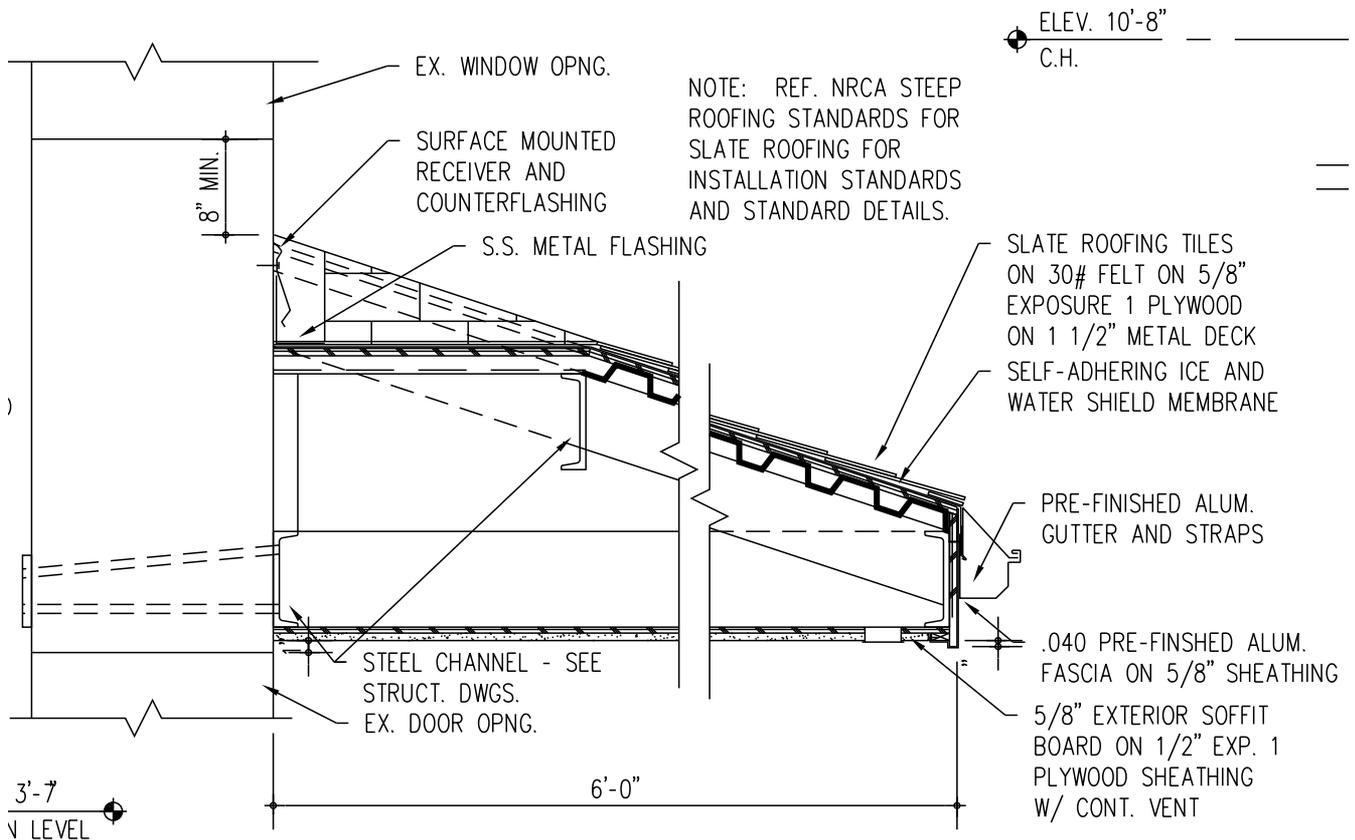
1355 Beverly Road  
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Tel 703.903.9100  
Fax 703.903.9755

Tel 301.595.1000  
Fax 301.595.0089



1 WALL SECTION - CANOPY E2  
 3/4" = 1'-0"

**LUKE C. MOORE ACADEMY HIGH SCHOOL**

SHEET: A-4.12

SCALE: 1/8" = 1'-0"

DATE

04/22/03

AMENDMENT

2

SK-A-2

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PARKER**

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2 Bethesda Metro Center  
Suite 1350  
Bethesda, MD 20814

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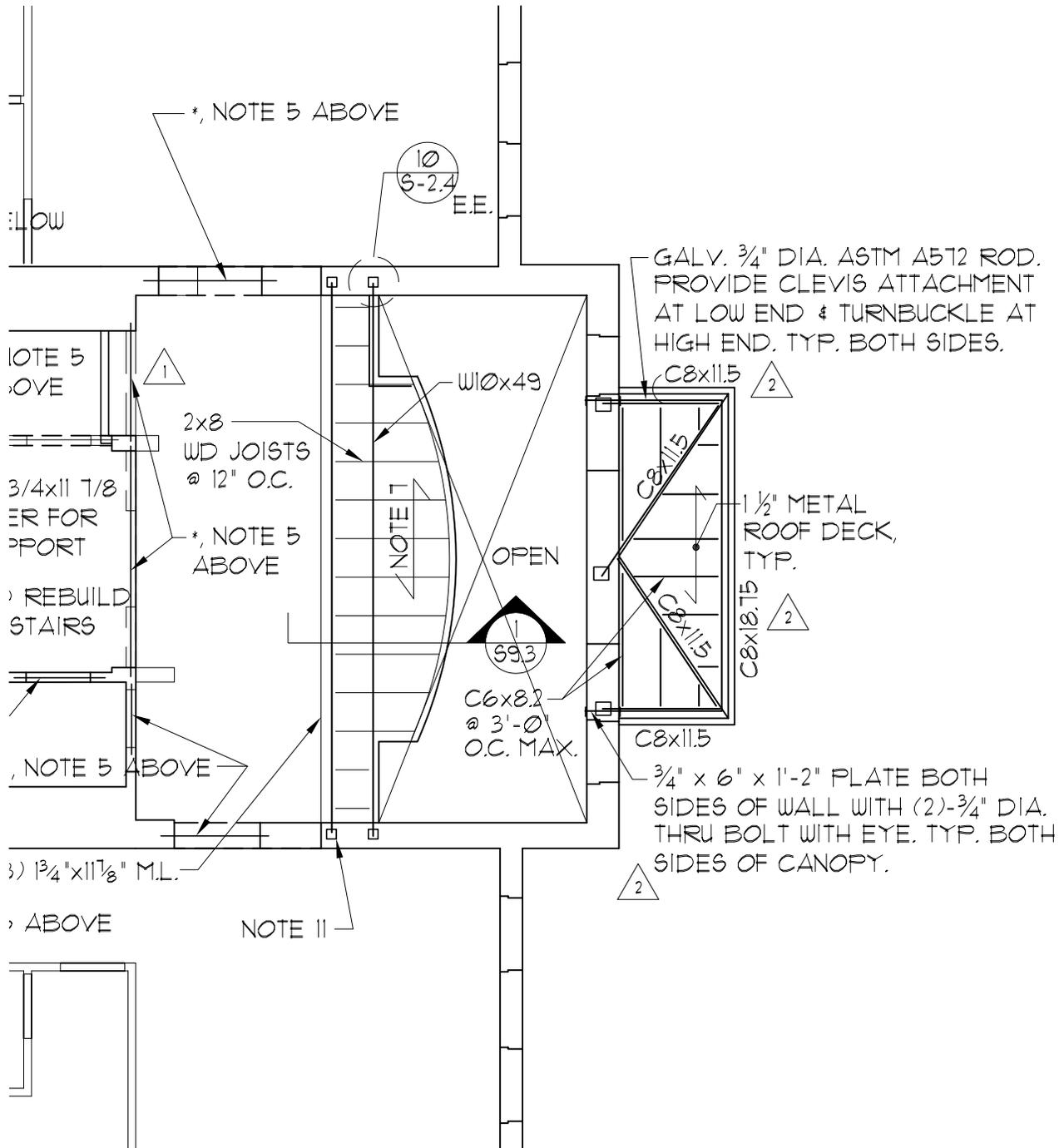
11785 Beltsville Drive  
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Fax 703.903.9755

Tel 301.595.1000  
Fax 301.595.0089





**LUKE C. MOORE ACADEMY HIGH SCHOOL**

SHEET NO: S-5.2

SCALE: N.T.S.

DATE

04/22/03

AMENDMENT

2

SK-S-2



2 Bethesda Metro Center  
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1 1/2" CW UP  
AND CONNECT  
TO REFRIGERATOR  
ICEMAKER

MATCHLINE

SEE P1.4 FOR CONT.

3/4" CD DN

3/4" CD UP

1 1/2" SAN, 1/2"  
HW & CW UP

3/4" CD UP

3/4" CD DN

3/4" CD UP

FLOOR MOUNTED  
FCU (TYP)

SHEET: P1.3

# LUKE C. MOORE ACADEMY HIGH SCHOOL

SCALE: 1/8"=1'-0"

DATE

04/22/03

AMENDMENT

2  
SK-P-1

**GRIMM+**  
**PARKER**  
ARCHITECTS

2 Bethesda Metro Center  
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Bethesda, MD 20814

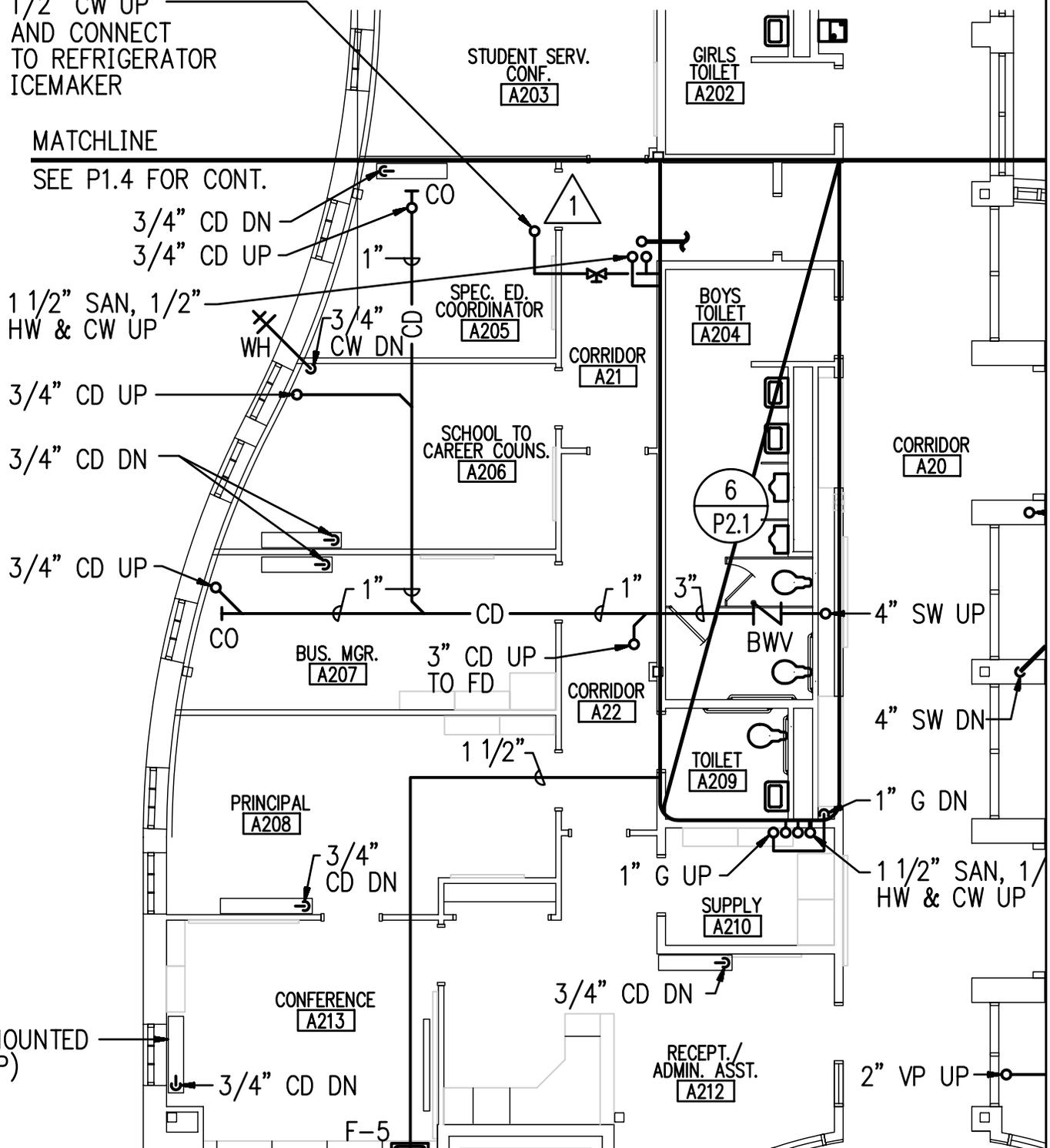
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McLean, VA 22101

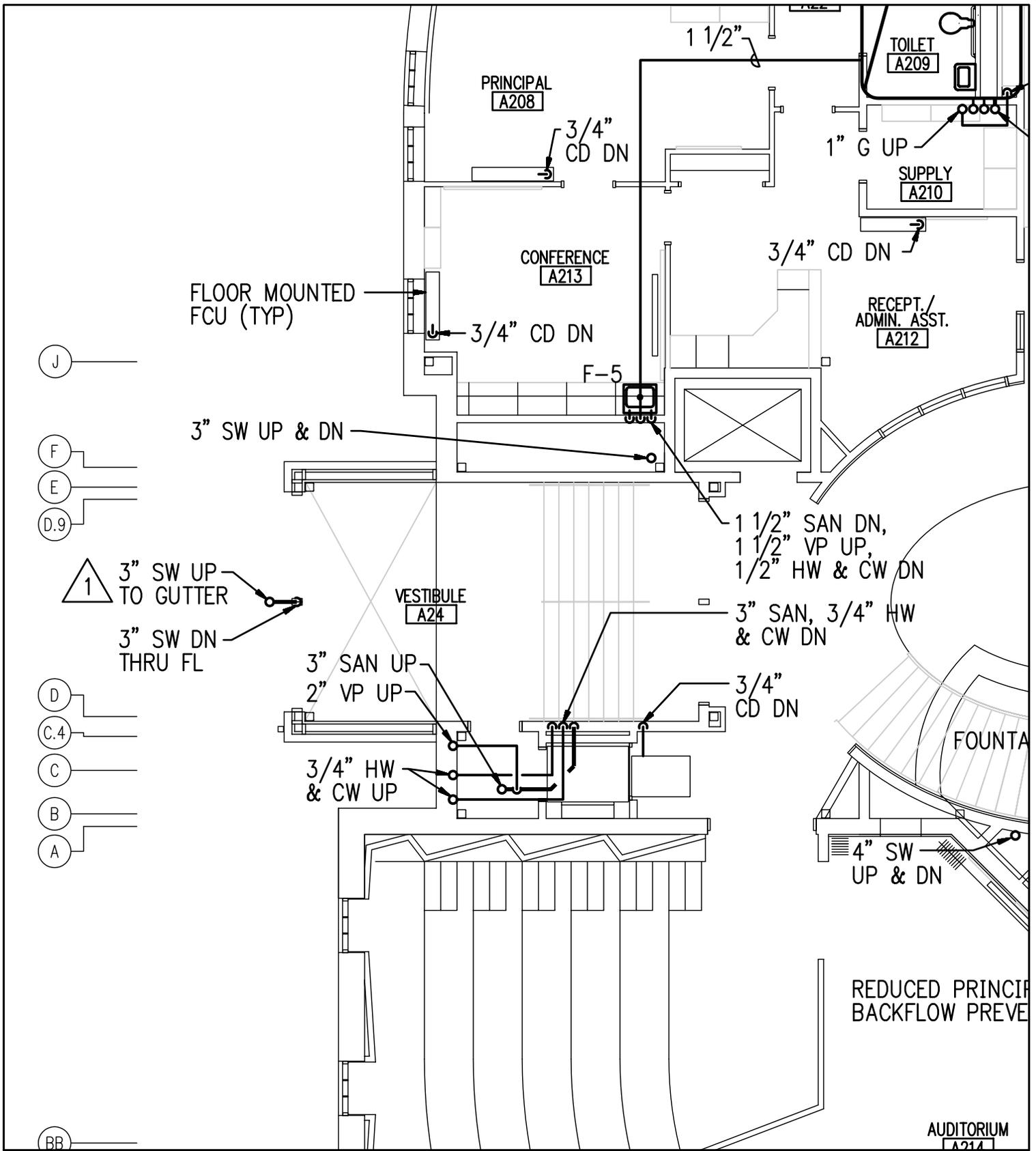
1785 Behndale Drive  
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Fax 240.223.0510

Tel 703.903.9100  
Fax 703.903.9755

Tel 901.885.3000  
Fax 901.885.0089





**LUKE C. MOORE ACADEMY HIGH SCHOOL**

SHEET: P1.3

SCALE: 1/8"=1'-0"

DATE

04/22/03

AMENDMENT

2  
SK-P-2



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Fax 703.903.9755

Tel 901.885.1000  
Fax 901.885.0089



- ▲  SECURITY CAMERA AND HOUSING.
- ▲  WP OUTDOOR SECURITY SECURITY CAMERA AND HOUSING.
- ▲  S SECURITY VIDEO SERVER AND CAMERA POWER SUPPLY.
- ▲  H □ □ SECURITY VIDEO MONITOR, WALL OR CEILING MOUNT AS NOTED. COORDINATE MOUNTING HEIGHT WITH ARCHITECT UON.
- ▲  WP 1 ○ WALL MOUNT DIRECTIONAL OR CEILING INTRUSION DETECTION SYSTEM MOTION DETECTOR. EACH DETECTOR HAS A SERIAL INTERFACE MODULE MOUNTED IN AN ADJACENT JUNCTION BOX UON. WALL MOUNT 7'-6" AFF W-DENOTES WIDE BEAM; N- DENOTES NARROW.
- ▲  DS MAGNETIC DOOR SWITCH. SEE DETAIL  5 / E5.2
- ▲  K KEYPAD, 48" AFF
- ▲  DS 2 TWO MAGNETIC DOOR SWITCHES, ONE PER LEAF, CONNECTED TO ONE SIM. OTHERWISE SIMILIAR TO  DS
- ▲  H-A INTRUSION DETECTION SYSTEM 30 WATT SOUNDER. WALL MOUNT 7'-6" AF

- ▲ SIM SERIAL INTERFACE MODULE
- ▲ TELECOM TELECOMMUNICATIONS
- ▲ TEMP TEMPORARY
- ▲ TYP TYPICAL
- ▲ UON UNLESS OTHERWISE NOTED
- ▲ USACE UNITED STATES ARMY CORPS OF ENGINEERS
- ▲ V VOLT
- ▲ VA VOLT AMP
- ▲ W WIDE, WIRE, WATT

# LUKE C. MOORE ACADEMY HIGH SCHOOL

SHEET: E0.1

SCALE:

DATE

04/22/03

AMENDMENT

#  
SK-E-1



2 Bethesda Metro Center  
Suite 1350  
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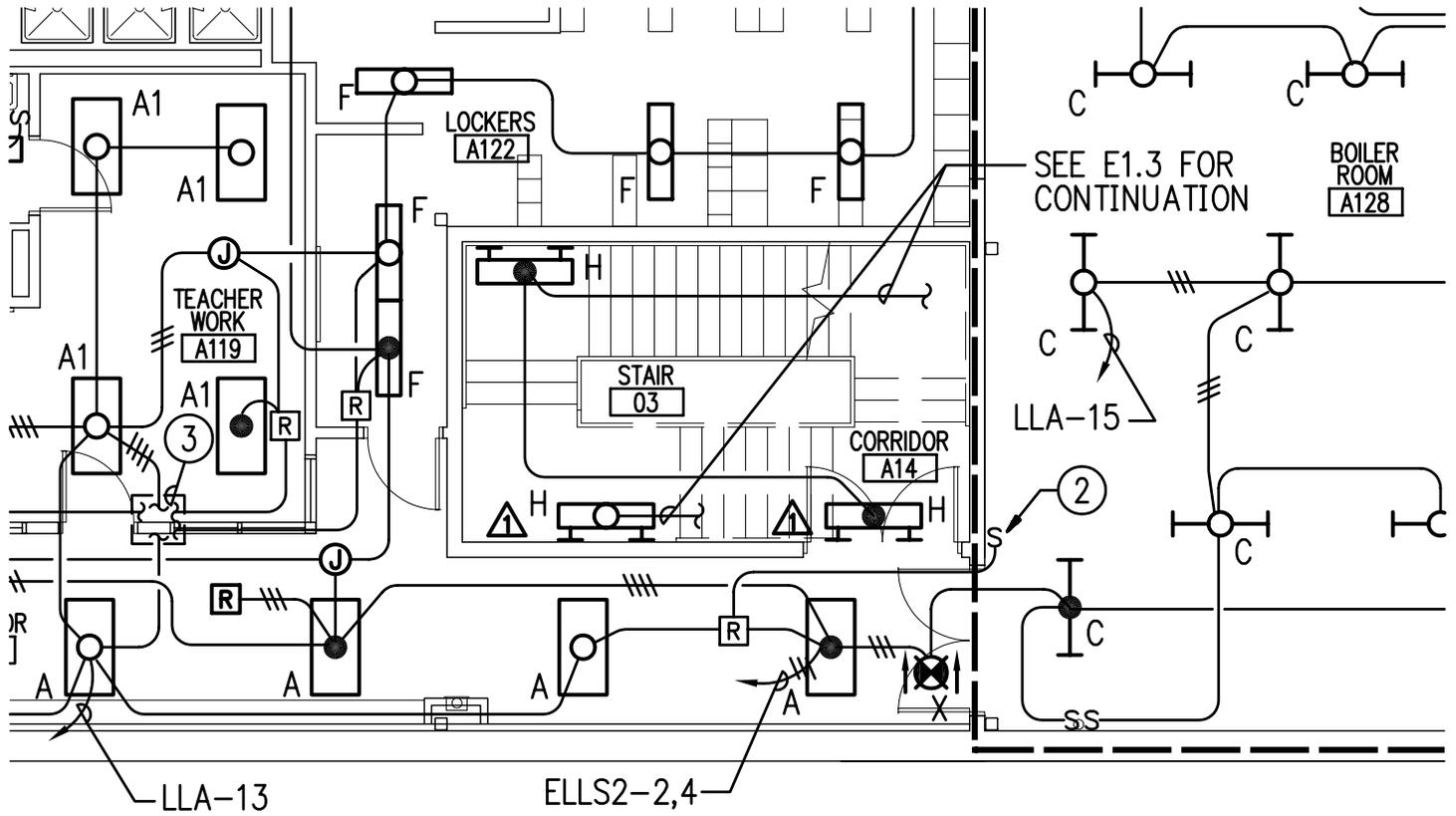
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Suite 105  
McLean, VA 22101

11705 Beltsville Drive  
Suite 1400  
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Tel 240.223.0500  
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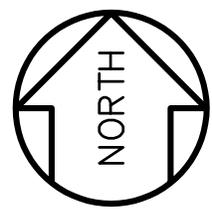
Tel 703.903.9100  
Fax 703.903.9755

Tel 901.886.3000  
Fax 901.886.0069



LOWER LEVEL PLAN – AREA A  
 LIGHTING

SCALE: 1/8" = 1'-0"



LUKE C. MOORE ACADEMY HIGH SCHOOL

SHEET: E1.1

SCALE: 1/8" = 1'-0"

DATE  
04/22/03

AMENDMENT  
#  
SK-E-2



2 Bethesda Metro Center  
Suite 1350  
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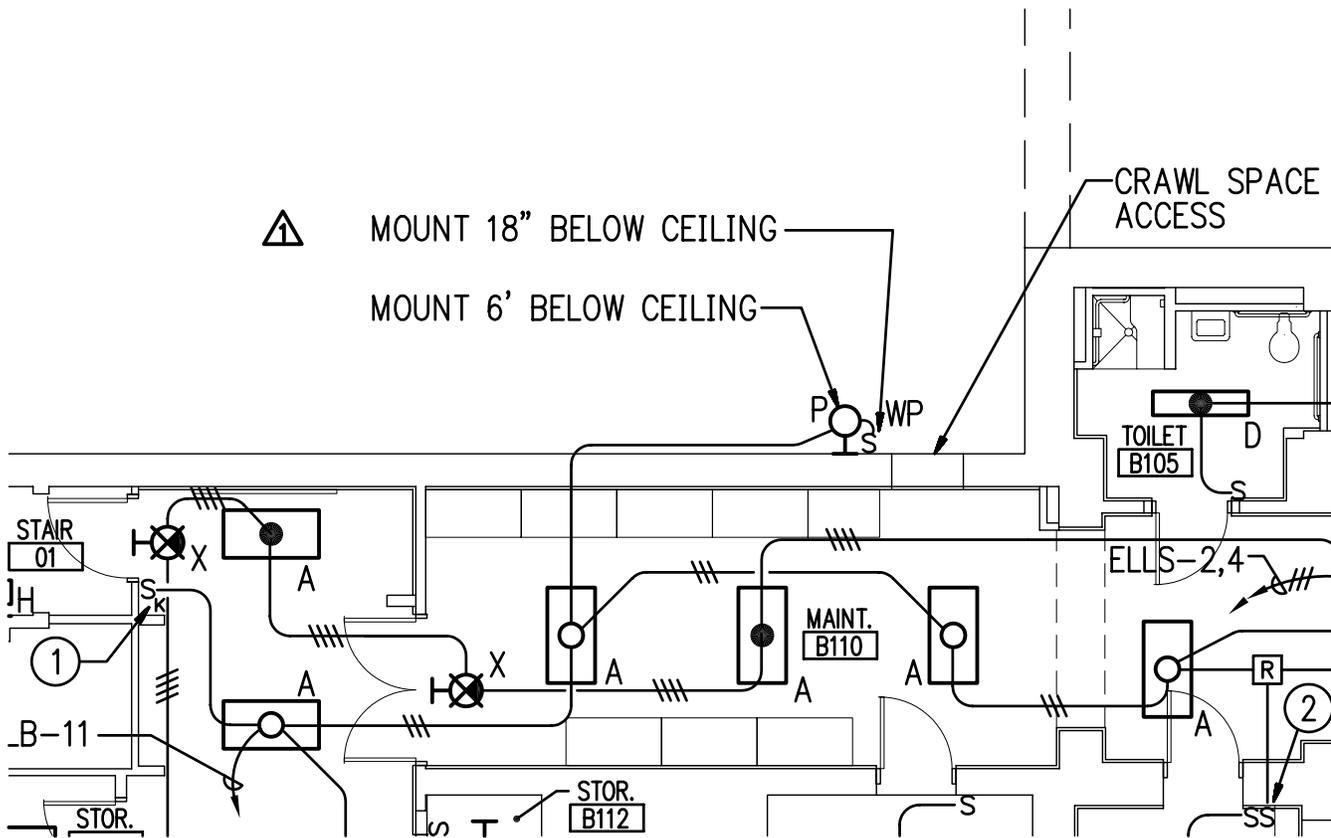
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Fax 703.903.9755

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Fax 901.886.0089



# LUKE C. MOORE ACADEMY HIGH SCHOOL

SHEET: E1.2

SCALE: 1/8" = 1'-0"

DATE

04/22/03

AMENDMENT

# SK-E-3



2 Bethesda Metro Center  
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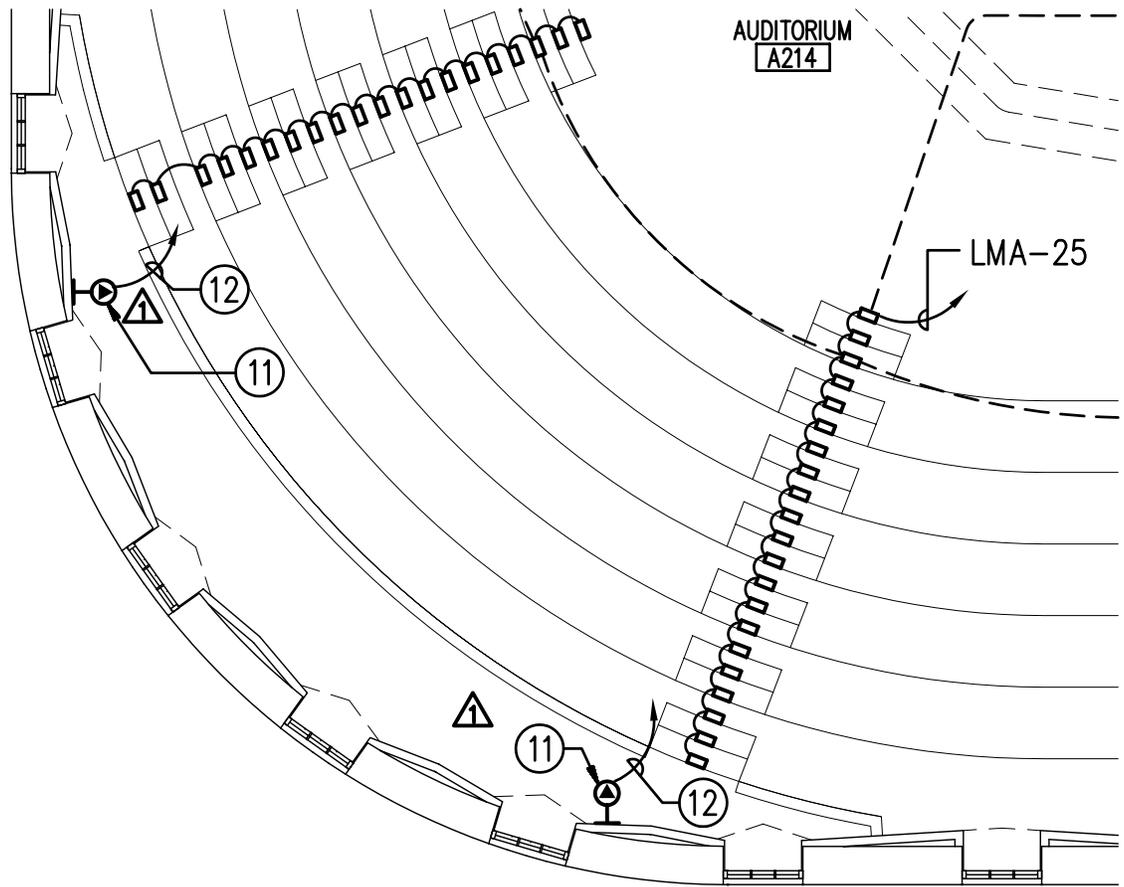
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Tel 703.903.9100  
Fax 703.903.9755

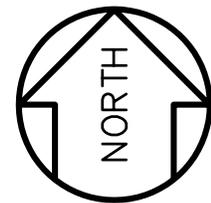
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Fax 901.886.0089



MAIN LEVEL PLAN — AREA A

LIGHTING

SCALE: 1/8"=1'-0"



LUKE C. MOORE ACADEMY HIGH SCHOOL

SHEET: E1.3

SCALE: 1/8"=1'-0"

DATE

04/22/03

AMENDMENT

#  
SK-E-4



2 Bethesda Metro Center  
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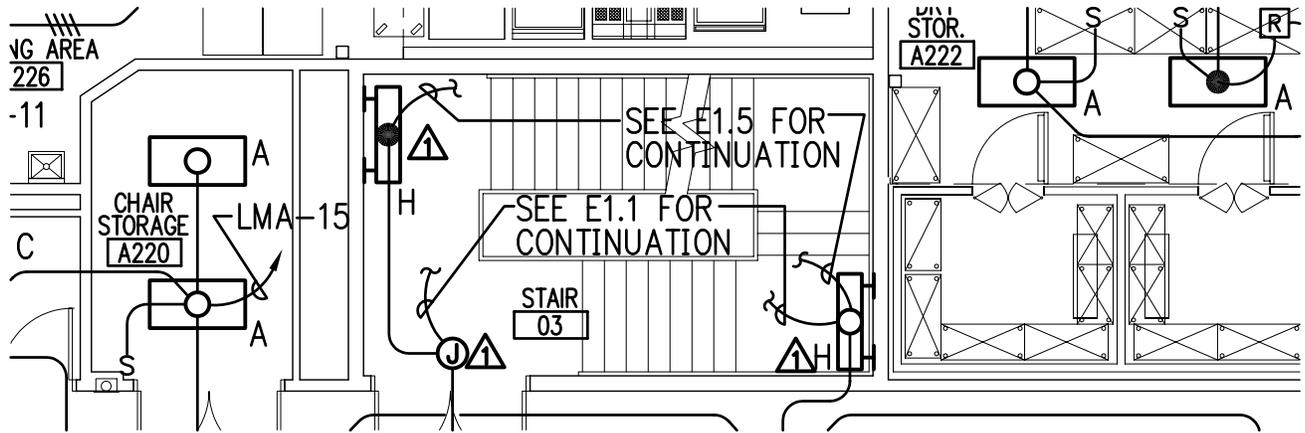
11785 Beltsville Drive  
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Calverton, MD 20705

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Fax 240.223.0510

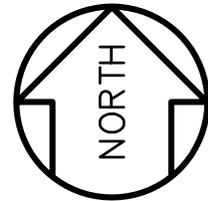
Tel 703.903.9100  
Fax 703.903.9755

Tel 301.885.1000  
Fax 301.885.0089

⚠ (13) TO TYPE M FIXTURES ON EMERGENCY CIRCUIT. LABEL SWITCH "VESTIBULE NIGHT LIGHTS".



MAIN LEVEL PLAN - AREA A  
 LIGHTING  
 SCALE: 1/8"=1'-0"



LUKE C. MOORE ACADEMY HIGH SCHOOL

SHEET: E1.3

SCALE: 1/8"=1'-0"

DATE

04/22/03

AMENDMENT

#  
SK-E-5

**GRIMM +  
PARKER**  
ARCHITECTS

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Bethesda, MD 20814

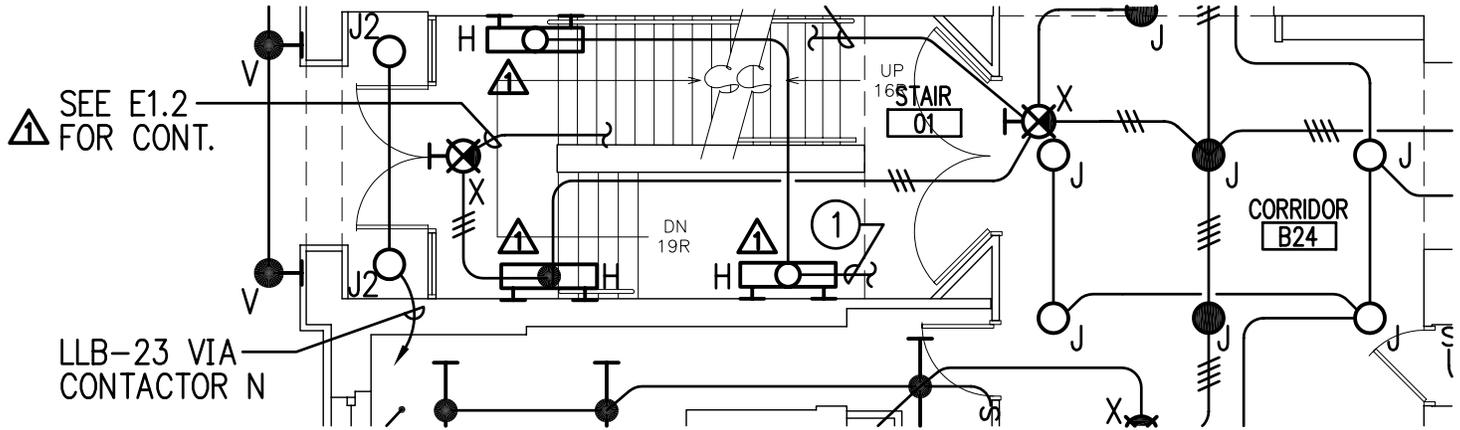
1355 Beverly Road  
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McLean, VA 22101

11783 Beltsville Drive  
Suite 1400  
Calverton, MD 20705

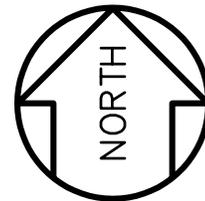
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Fax 240.223.0510

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Fax 703.903.9755

Tel 301.885.1000  
Fax 301.885.0089



MAIN LEVEL PLAN — AREA B  
 LIGHTING  
 SCALE: 1/8"=1'-0"



LUKE C. MOORE ACADEMY HIGH SCHOOL

SHEET: E1.4

SCALE: 1/8"=1'-0"

DATE

04/22/03

AMENDMENT

#  
SK-E-6



2 Bethesda Metro Center  
 Suite 1350  
 Bethesda, MD 20814

1355 Beverly Road  
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 McLean, VA 22101

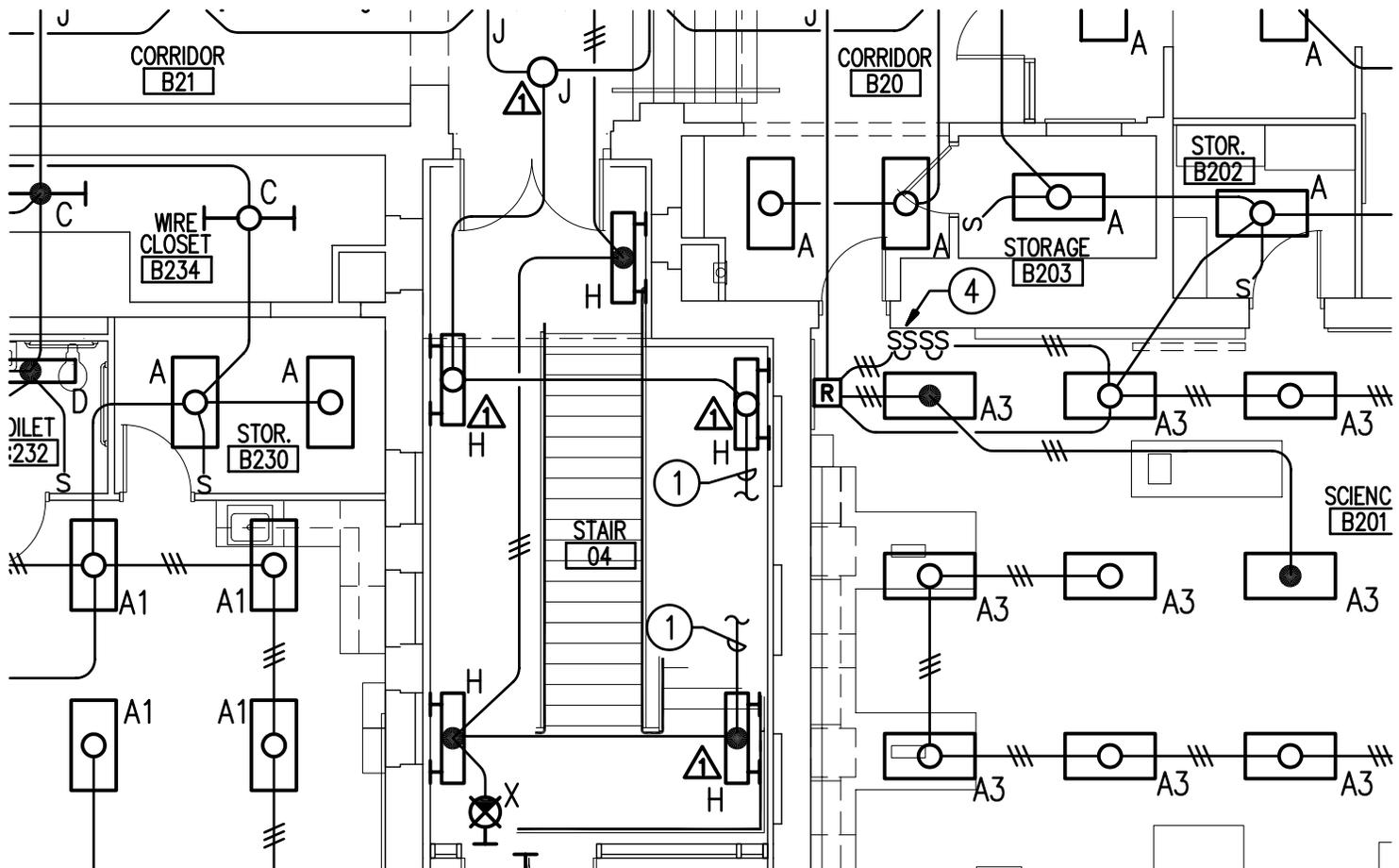
11785 Beltsville Drive  
 Suite 1400  
 Calverton, MD 20705

Tel 240.223.0500  
 Fax 240.223.0510

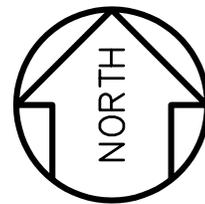
Tel 703.903.9100  
 Fax 703.903.9755

Tel 301.885.1000  
 Fax 301.885.0089

⚠ (1) SEE SHEET E1.6 FOR CONTINUATION.



MAIN LEVEL PLAN - AREA B  
 LIGHTING  
 SCALE: 1/8"=1'-0"



LUKE C. MOORE ACADEMY HIGH SCHOOL

SHEET: E1.4

SCALE: 1/8"=1'-0"

DATE

04/22/03

AMENDMENT

# SK-E-7



2 Bethesda Metro Center  
 Suite 1350  
 Bethesda, MD 20814

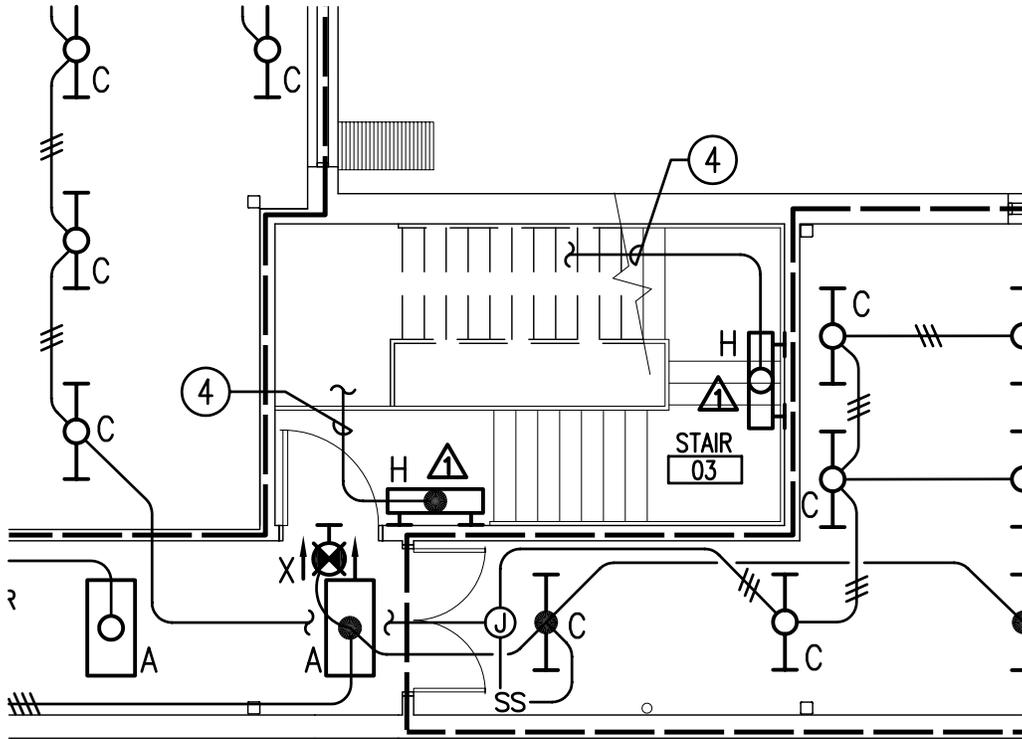
1355 Beverly Road  
 Suite 105  
 McLean, VA 22101

1785 Beltsville Drive  
 Suite 1400  
 Calverton, MD 20705

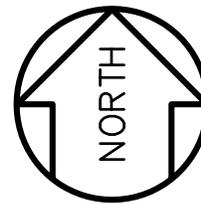
Tel 240.223.0500  
 Fax 240.223.0510

Tel 703.903.9100  
 Fax 703.903.9755

Tel 301.885.1000  
 Fax 301.885.0089



UPPER LEVEL PLAN  
 AREA-A LIGHTING  
 SCALE: 1/8"=1'-0"



LUKE C. MOORE ACADEMY HIGH SCHOOL

SHEET: E1.5

SCALE: 1/8"=1'-0"

DATE

04/22/03

AMENDMENT

#  
SK-E-8



2 Bethesda Metro Center  
 Suite 1350  
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 Suite 105  
 McLean, VA 22101

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 Suite 1400  
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 Fax 240.223.0510

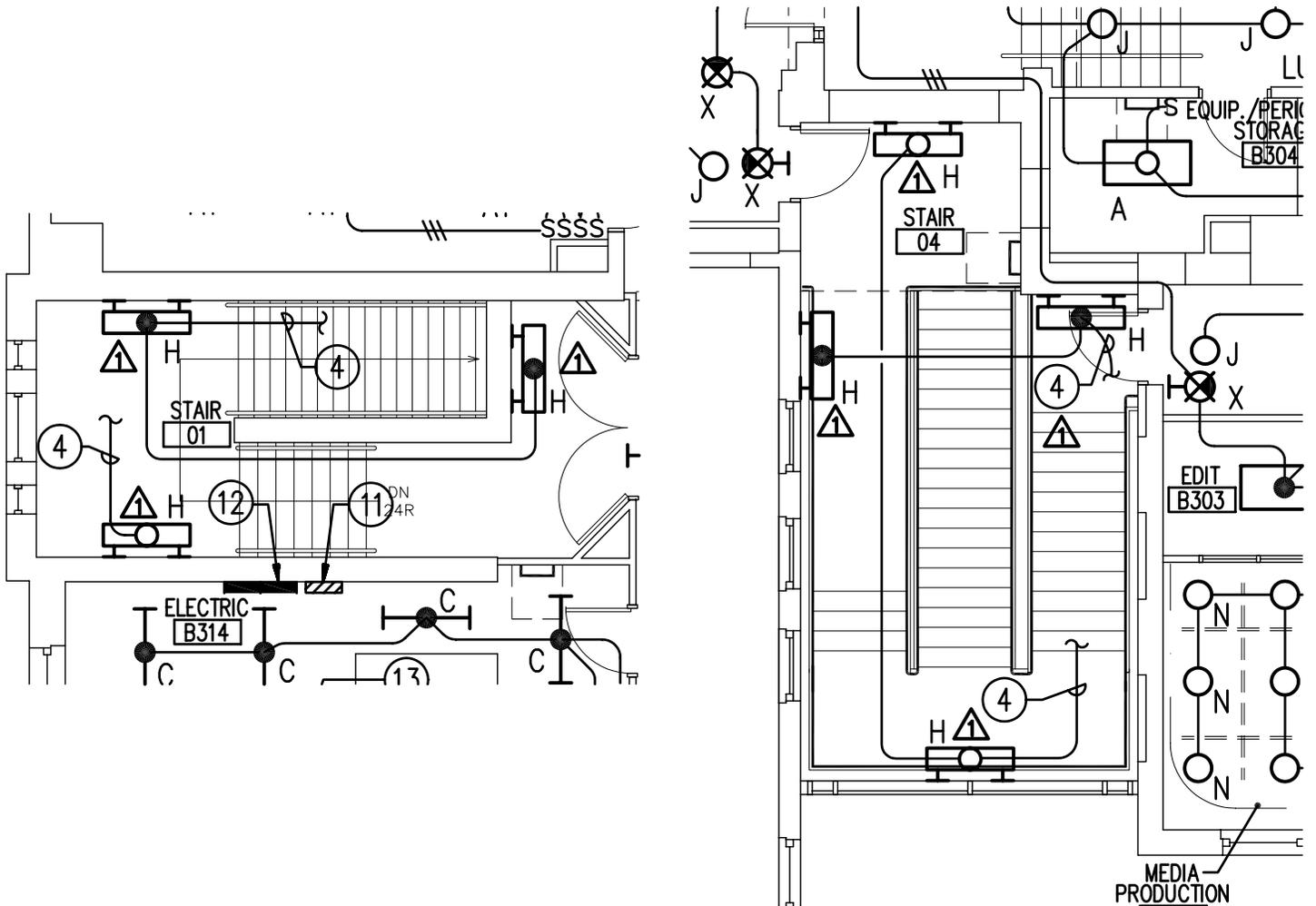
Tel 703.903.9100  
 Fax 703.903.9755

Tel 901.886.1000  
 Fax 901.886.0089

⑤ VIA EMERGENCY RELAY CABINET IN PANEL A.



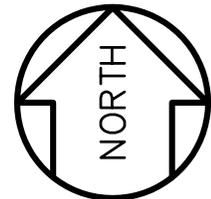
⑥ SEE WIRING SCHEDULE AUDITORIUM LIGHTING CONTROL PANEL A, OPTIONAL BID ITEM "STAGE LIGHTING" FOR CIRCUITING FOR SECOND AND THIRD ELECTRIC OVER STAGE.



# UPPER LEVEL PLAN – AREA B

## LIGHTING

SCALE: 1/8"=1'-0"



**LUKE C. MOORE ACADEMY HIGH SCHOOL**

SHEET: E1.6

SCALE: 1/8"=1'-0"

DATE

04/22/03

AMENDMENT

# SK-E-9



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Bethesda, MD 20814

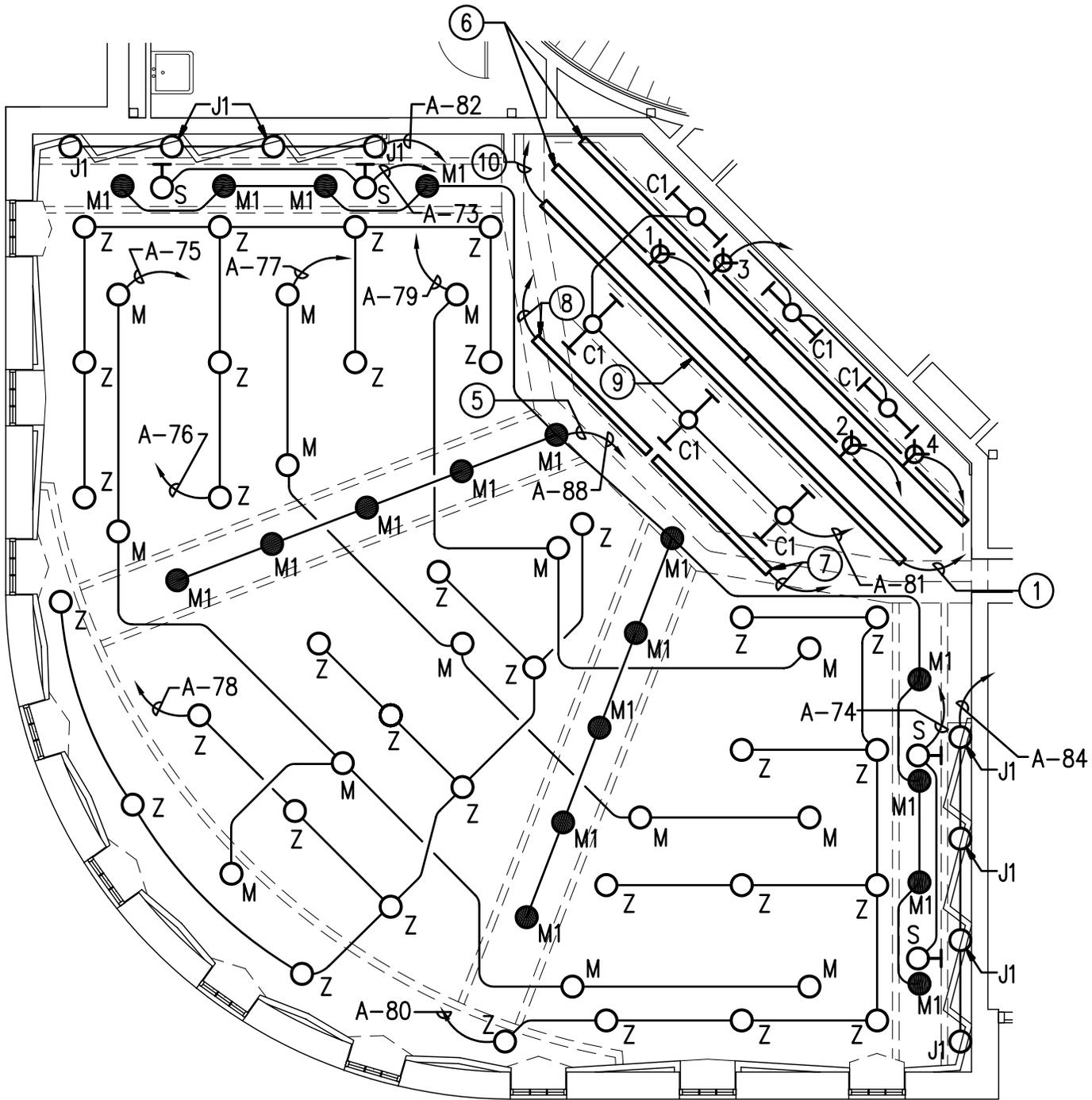
1355 Beverly Road  
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Suite 1400  
Calverton, MD 20705

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Fax 240.223.0510

Tel 703.903.9100  
Fax 703.903.9755

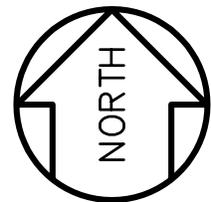
Tel 901.885.1000  
Fax 901.885.0089



# PART PLAN - STAGE LIGHTING

OPTIONAL BID ITEM "STAGE LIGHTING"

SCALE: 1/8"=1'-0"



**LUKE C. MOORE ACADEMY HIGH SCHOOL**

SHEET: E1.6

SCALE: 1/8"=1'-0"

DATE

04/22/03

AMENDMENT

# SK-E-10

**GRIMM+**  
**PARKER**  
ARCHITECTS

2 Bethesda Metro Center  
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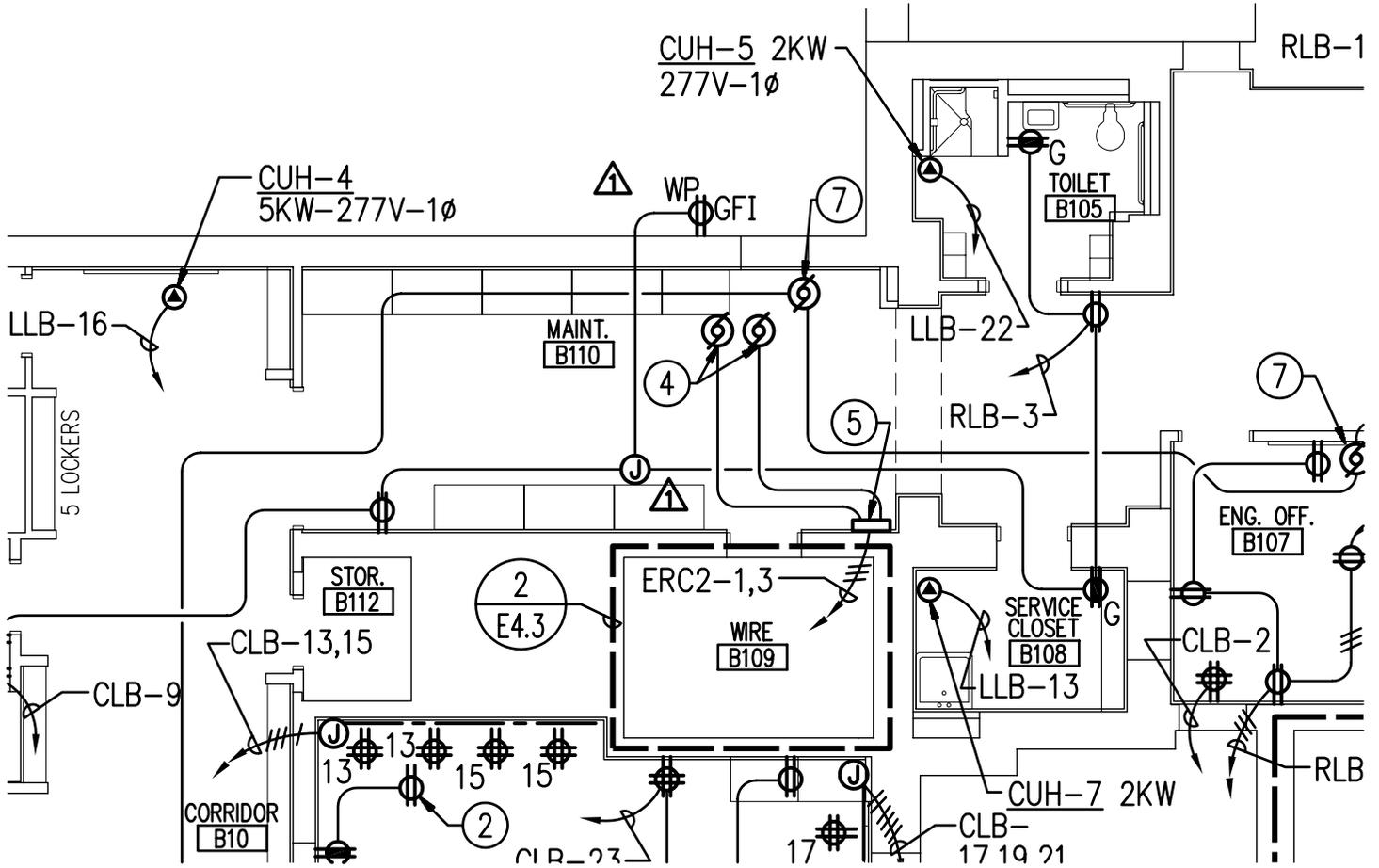
1355 Beverly Road  
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Fax 703.903.9755

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Fax 901.885.0089



# LOWER LEVEL PLAN - AREA B

## POWER

SCALE: 1/8" = 1'-0"



**LUKE C. MOORE ACADEMY HIGH SCHOOL**

SHEET: E2.2

SCALE: 1/8" = 1'-0"

DATE

04/22/03

AMENDMENT

#  
SK-E-11



2 Bethesda Metro Center  
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Tel 901.555.3000  
Fax 901.555.0089

⚠ (16) AUDITORIUM SOUND EQUIPMENT RACK.

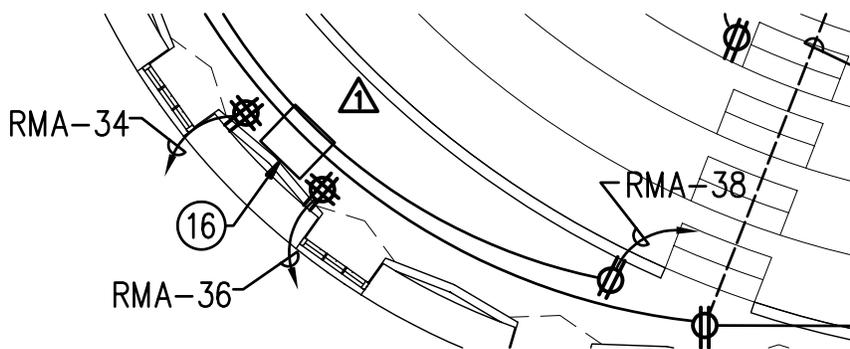
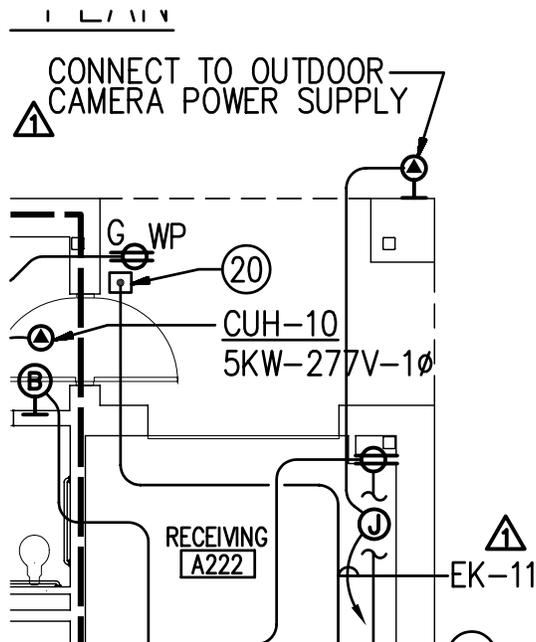
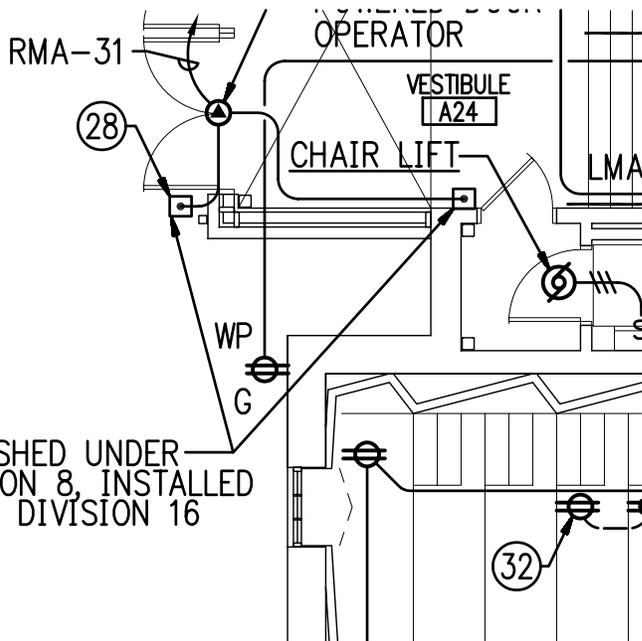
(28) 4"x4"x4' HIGH STEEL POST FOR POWERED DOOR OPERATOR PUSHBUTTON. SECURELY ANCHOR PEDESTAL TO PAVEMENT. SEE DETAIL

8  
E6.1



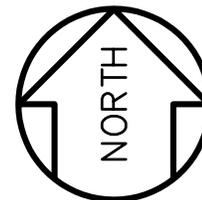
- D
- C.4
- C
- B
- A

⚠ FURNISHED UNDER DIVISION 8, INSTALLED UNDER DIVISION 16



# MAIN LEVEL PLAN - AREA A

POWER  
SCALE: 1/8"=1'-0"



## LUKE C. MOORE ACADEMY HIGH SCHOOL

SHEET: E2.3

SCALE: 1/8"=1'-0"

DATE

04/22/03

AMENDMENT

#  
SK-E-12



2 Bethesda Metro Center  
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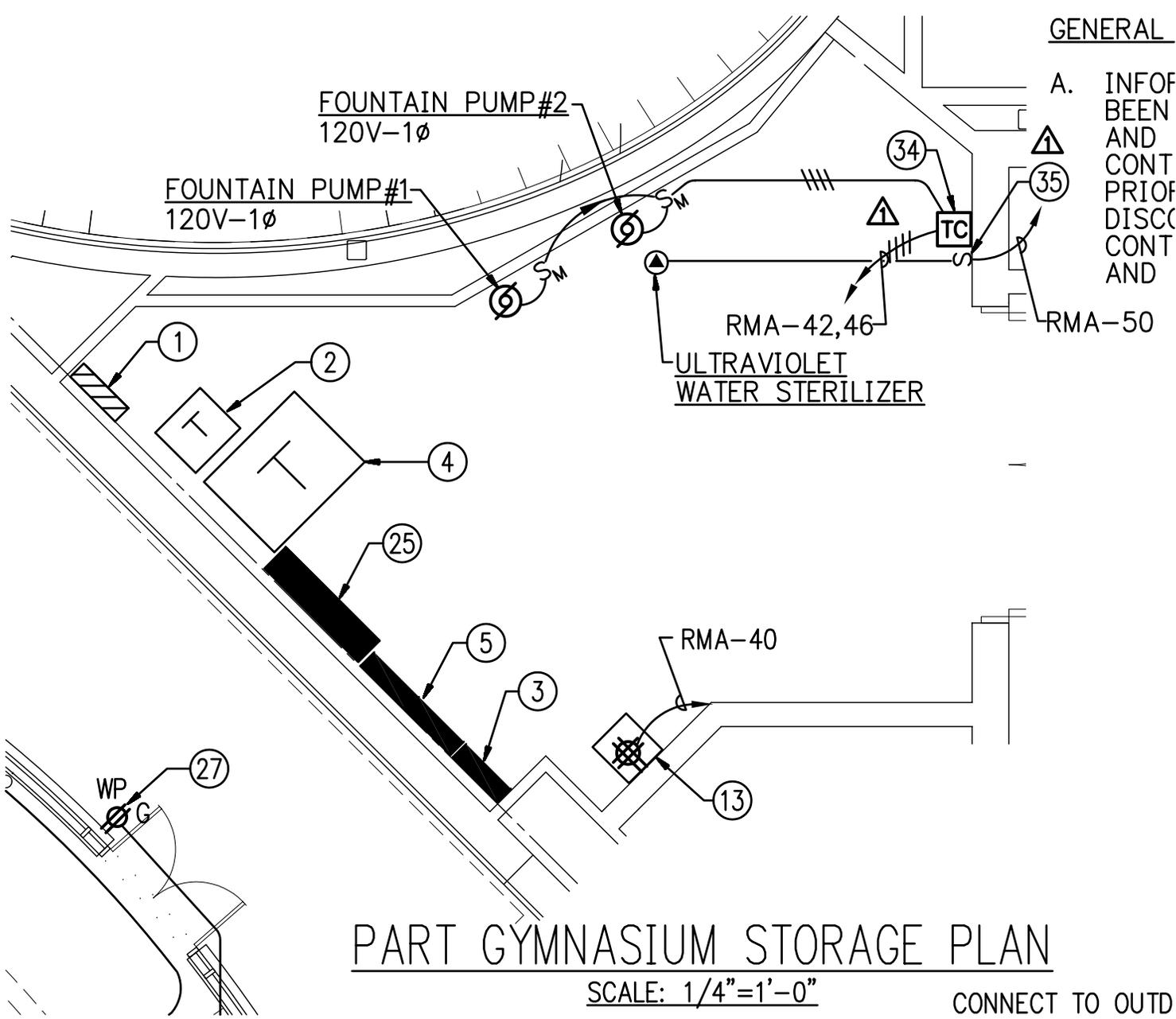
1355 Beverly Road  
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Fax 703.903.9755

Tel 301.885.3000  
Fax 301.885.0089



**PART GYMNASIUM STORAGE PLAN**

SCALE: 1/4" = 1'-0"

CONNECT TO OUTD

**LUKE C. MOORE ACADEMY HIGH SCHOOL**

SHEET: E2.3

SCALE: 1/8" = 1'-0"

DATE

04/22/03

AMENDMENT

# SK-E-13



2 Bethesda Metro Center  
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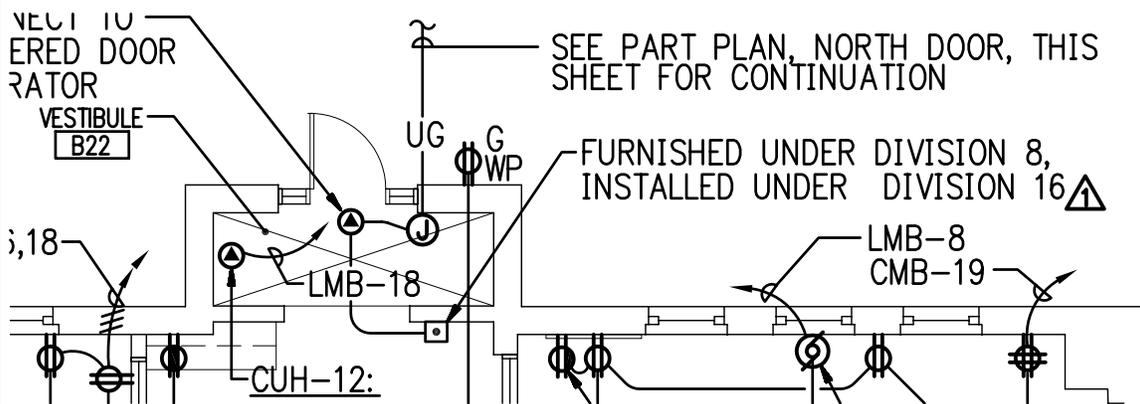
1355 Beverly Road  
Suite 105  
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11783 Beltsville Drive  
Suite 1400  
Calverton, MD 20705

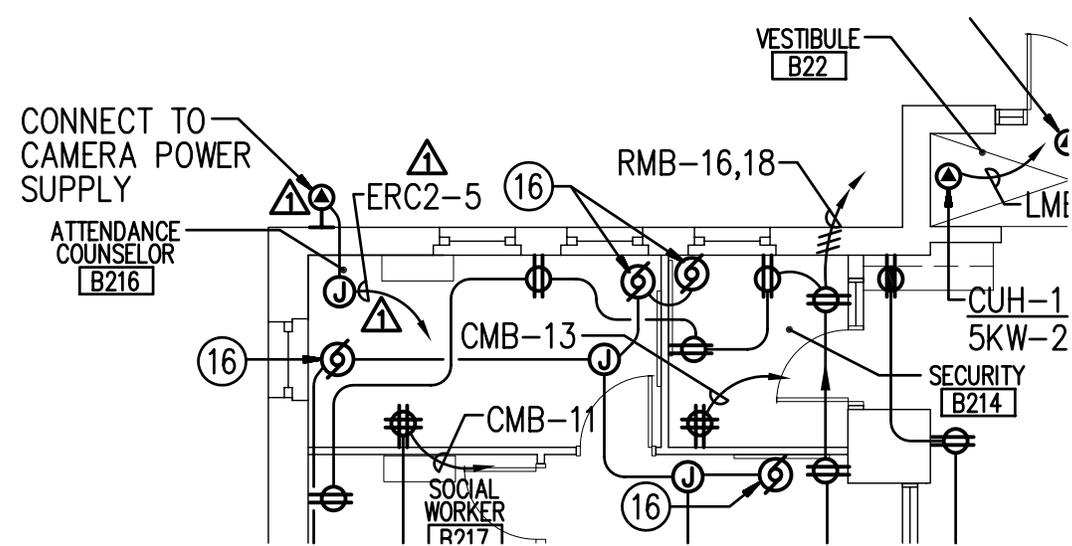
Tel 240.223.0500  
Fax 240.223.0510

Tel 703.903.9100  
Fax 703.903.9755

Tel 301.885.3000  
Fax 301.885.0089

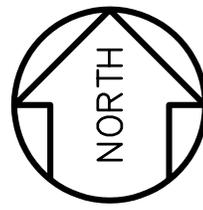


PRIOR TO  
DISCOVERE  
CONTRACT  
AND AWAI



MAIN LEVEL PLAN - AREA B

POWER  
SCALE: 1/8"=1'-0"



LUKE C. MOORE ACADEMY HIGH SCHOOL

SHEET: E2.4

SCALE: 1/8"=1'-0"

DATE

04/22/03

AMENDMENT

#  
SK-E-14



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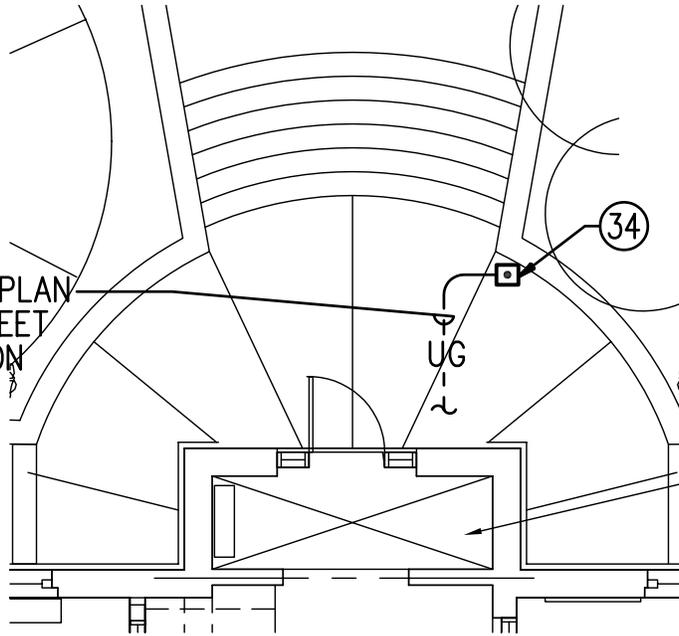
1785 Beltsville Drive  
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Tel 703.903.9100  
Fax 703.903.9755

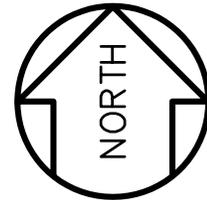
Tel 301.885.3000  
Fax 301.885.0089

SEE MAIN LEVEL PLAN  
AREA B, THIS SHEET  
FOR CONTINUATION



34 FURNISHED UNDER DIVISION  
8, INSTALLED UNDER  
DIVISION 16 ⚠

PART PLAN – NORTH DOOR  
POWER  
SCALE: 1/8"=1'-0"



**LUKE C. MOORE ACADEMY HIGH SCHOOL**

SHEET: E2.4

SCALE: 1/8"=1'-0"

DATE

04/22/03

AMENDMENT

#  
SK-E-15

**GRIMM+**  
**PARKER**  
ARCHITECTS

2 Bethesda Metro Center  
Suite 1350  
Bethesda, MD 20814

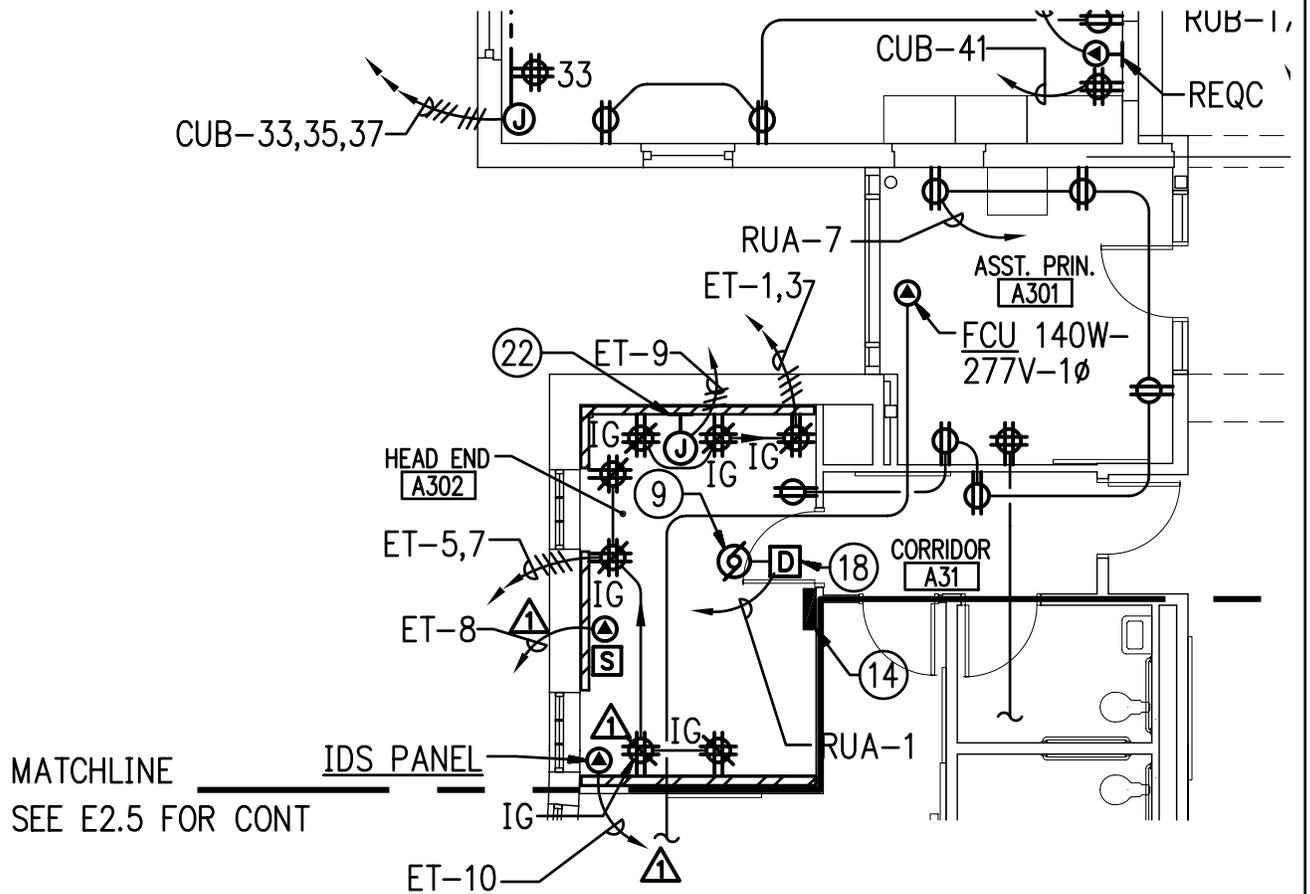
1355 Beverly Road  
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# UPPER LEVEL PLAN - AREA B

## POWER

SCALE: 1/8"=1'-0"



**LUKE C. MOORE ACADEMY HIGH SCHOOL**

SHEET: E2.6

SCALE: 1/8"=1'-0"

DATE

04/22/03

AMENDMENT

#  
SK-E-16



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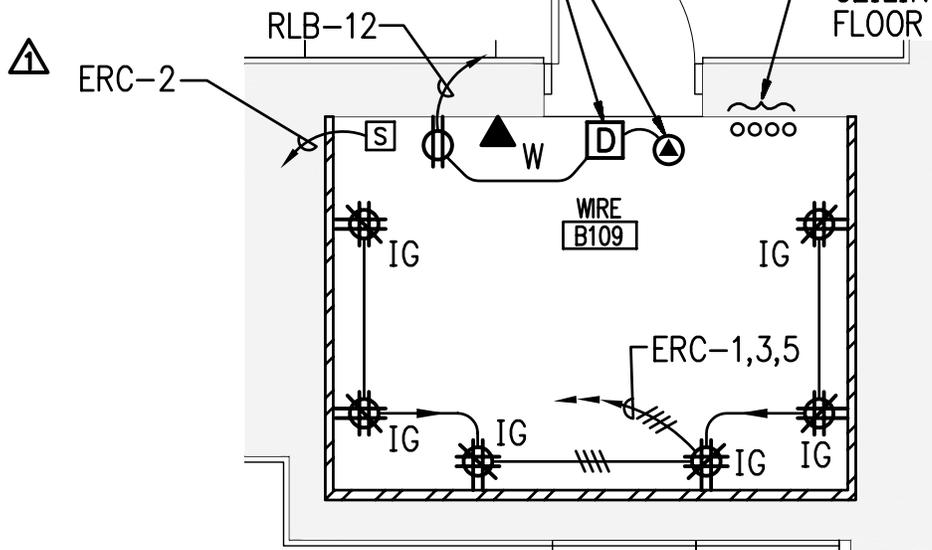
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DSAC-3 12 AMPS, 120 VOLTS,  
1Ø, AND 30 AMP 2 POLE FUSED  
SAFETY SWITCH.

FOUR 4" CONDUITS FROM 6" BELOW  
CEILING OF B109 TO 6" ABOVE  
FLOOR OF B234.



2  
E4.3

PART PLAN

LOWER LEVEL WIRE ROOM B109

SCALE: 1/4"=1'0"

LUKE C. MOORE ACADEMY HIGH SCHOOL

SHEET: E4.3

SCALE: 1/8"=1'-0"

DATE

04/22/03

AMENDMENT

#  
SK-E-17



2 Bethesda Metro Center  
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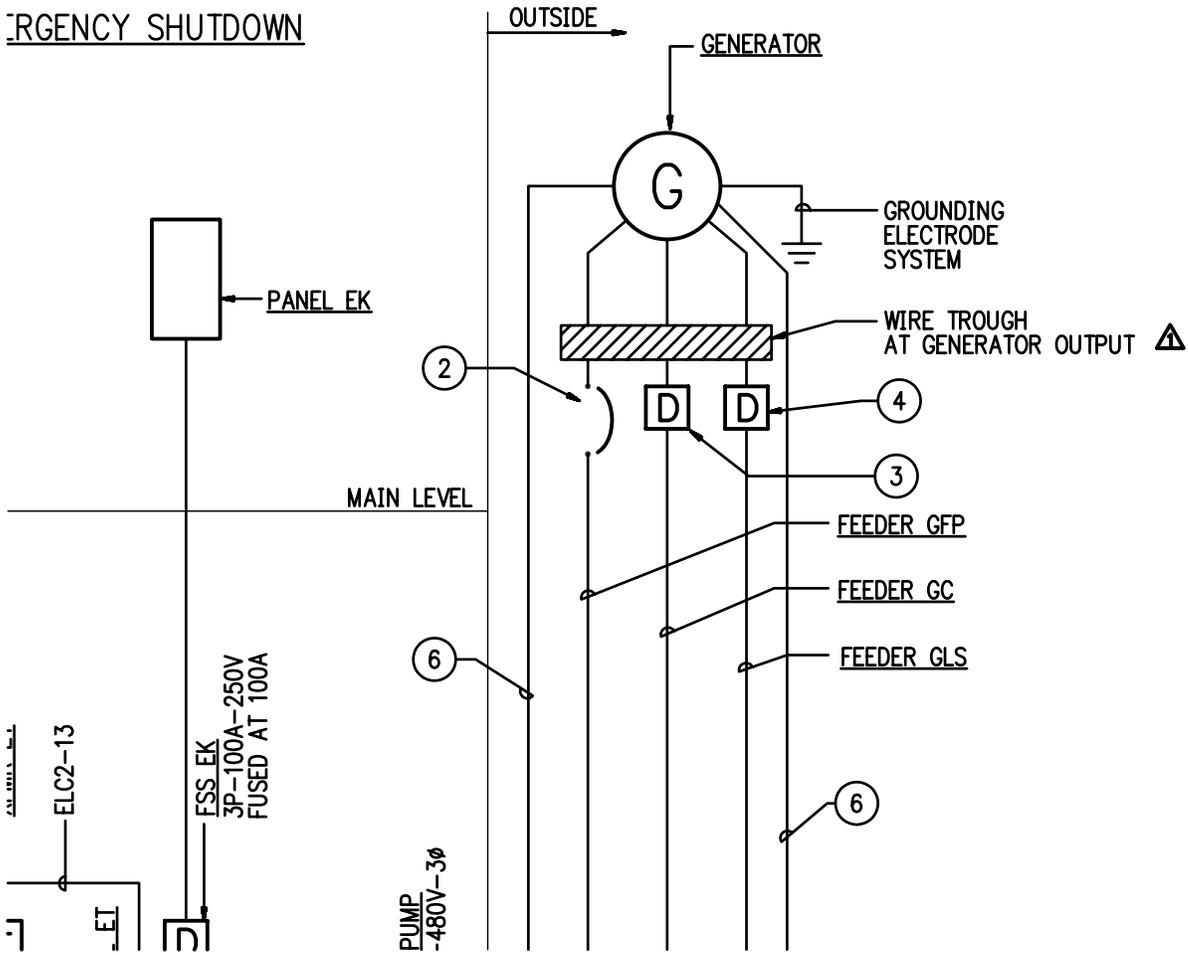
11785 Beltsville Drive  
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Fax 703.903.9755

Tel 901.555.3000  
Fax 901.555.0069

EMERGENCY SHUTDOWN



EMERGENCY POWER RISER DIAGRAM

NOT TO SCALE

**LUKE C. MOORE ACADEMY HIGH SCHOOL**

SHEET: E5.3

SCALE: 1/8" = 1'-0"

DATE

04/22/03

AMENDMENT

#  
SK-E-18



2 Bethesda Metro Center  
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### WIRING SCHEDULE PANEL EK

| 120 / 208 VOLTS  |                     | 3 PHASE      |         | 4 WIRE |        | 100 AMP MAINS    |               |      |     |     |      | SURFACE MOUNTED     |           |         |    |  |
|------------------|---------------------|--------------|---------|--------|--------|------------------|---------------|------|-----|-----|------|---------------------|-----------|---------|----|--|
| POLE             | DESCRIPTION         | WIRE/COND    | BREAKER |        | KVA    |                  |               |      |     |     | POLE | DESCRIPTION         | WIRE/COND | BREAKER |    |  |
|                  |                     |              | POLE    | AMP    | A      | B                | C             | POLE | AMP |     |      |                     |           |         |    |  |
| 1                | COOLER COMPRESSOR   | 3 #10        | 3       | 20     | 1.3    | 2.1              |               |      |     |     | 2    | FREEZER COMPRESSOR  | 4 #10     | 3       | 35 |  |
| 3                | 3 HP                | #10 G        | -       | -      |        |                  | 1.3           | 2.1  |     |     | 4    | 5 HP                | #10 G     | -       | -  |  |
| 5                | -                   | 1" C         | -       | -      |        |                  |               |      | 1.3 | 2.1 | 6    | -                   | 1-1/4" C  | -       | -  |  |
| 7                | COOLER BLOWER COIL  | #10 / 1"     | 1       | 20     | 0.5    | 1.9              |               |      |     |     | 8    | FREEZER BLOWER COIL | #10 / 1"  | 1       | 20 |  |
| 9                | FREEZER HEAT TAPE   | #12 / 3/4" C | 1       | 20     |        |                  | 0.6           | 1.0  |     |     | 10   | CHILLER HEAT TAPE   | #10 / 1"  | 1       | 20 |  |
| 11               | LOADING DOCK CAMERA | #12 / 3/4" C | 1       | 20     |        |                  |               |      | 0.1 | 1.0 | 12   | CHILLER HEAT TAPE   | #10 / 1"  | 1       | 20 |  |
| 13               | SPARE               | -            | 1       | 20     | -      | -                |               |      |     |     | 14   | SPACE & PROVISION   | -         | 1       | -  |  |
| 15               | SPARE               | -            | 1       | 20     |        |                  | -             | -    |     |     | 16   | SPACE & PROVISION   | -         | 1       | -  |  |
| 17               | SPACE & PROVISION   | -            | 1       | -      |        |                  |               |      | -   | -   | 18   | SPACE & PROVISION   | -         | 1       | -  |  |
| CONNECTED LOAD = |                     |              |         |        | 15.4   | KVA              | 1.8           | 4.0  | 1.9 | 3.1 | 1.4  | 3.1                 |           |         |    |  |
| DEMAND LOAD =    |                     |              |         |        | 15.3   | KVA              | 5.9           | 5.0  | 4.5 |     |      |                     |           |         |    |  |
| MIN AIC RATING = |                     |              |         |        | 10,000 | AMPS SYMMETRICAL | MAIN LUG ONLY |      |     |     |      |                     |           |         |    |  |

**LUKE C. MOORE ACADEMY HIGH SCHOOL**

SHEET: E7.2

SCALE: 1/8" = 1'-0"

DATE

04/22/03

AMENDMENT

#  
SK-E-19



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### WIRING SCHEDULE PANEL ERC2

| 120 / 208 VOLTS |                          | 3 PHASE      |         | 4 WIRE |     |     | 100 AMP MAINS |      |                        | SURFACE MOUNTED       |            |     |    |
|-----------------|--------------------------|--------------|---------|--------|-----|-----|---------------|------|------------------------|-----------------------|------------|-----|----|
| POLE            | DESCRIPTION              | WIRE/COND    | BREAKER |        | KVA |     |               | POLE | DESCRIPTION            | WIRE/COND             | BREAKER    |     |    |
|                 |                          |              | POLE    | AMP    | A   | B   | C             |      |                        |                       | POLE       | AMP |    |
| 1               | SUMP PUMP WING B- 1/2 HP | #10 / 3/4" C | 1       | 20     | 1.2 | 0.3 |               | 2    | INFIRMARY REFRIGERATOR | #10 / 3/4"            | 1          | 20  |    |
| 3               | SUMP PUMP WING B- 1/2 HP | #10 / 3/4" C | 1       | 20     |     |     | 1.2           | 0.5  | 4                      | ELECTRIC ROOM OUTLETS | #10 / 3/4" | 1   | 20 |
| 5               | OUTDOOR CAMERA           | #12 / 3/4" C | 1       | 20     |     |     |               |      | 6                      | SPARE                 | 1          | 20  |    |
|                 |                          |              |         |        | 1.2 | 0.3 | 1.2           | 0.5  | 0.1                    | 0.0                   |            |     |    |
|                 |                          |              |         |        | 1.5 |     | 1.7           |      | 0.1                    |                       |            |     |    |

CONNECTED LOAD = 3.3 KVA

DEMAND LOAD = 3.2 KVA

MIN AIC RATING = 10,000 AMPS SYMMETRICAL

MAIN BREAKER 20 AMPS

**LUKE C. MOORE ACADEMY HIGH SCHOOL**

SHEET: E7.3

SCALE: 1/8"=1'-0"

DATE

04/22/03

AMENDMENT

#  
SK-E-20



2 Bethesda Metro Center  
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### WIRING SCHEDULE PANEL ERC

| 120 / 208 VOLTS |                            | 3 PHASE    |         | 4 WIRE |     | 100 AMP MAINS |     |      | SURFACE MOUNTED |                   |                   |     |   |
|-----------------|----------------------------|------------|---------|--------|-----|---------------|-----|------|-----------------|-------------------|-------------------|-----|---|
| POLE            | DESCRIPTION                | WIRE/COND  | BREAKER |        | KVA |               |     | POLE | DESCRIPTION     | WIRE/COND         | BREAKER           |     |   |
|                 |                            |            | POLE    | AMP    | A   | B             | C   |      |                 |                   | POLE              | AMP |   |
| 1               | LOWER LEVEL WIRE CLOSET- B | #10 / 3/4" | 1       | 20     | 1.2 | 0.2           |     | 2    | SECURITY VIDEO  | #12/ 3/4"C        | 1                 | 20  |   |
| 3               | LOWER LEVEL WIRE CLOSET-B  | #10 / 3/4" | 1       | 20     |     |               | 1.2 | -    | 4               | SPACE & PROVISION | -                 | 1   |   |
| 5               | LOWER LEVEL WIRE CLOSET-B  | #10 / 3/4" | 1       | 20     |     |               |     | 1.2  | -               | 6                 | SPACE & PROVISION | 1   |   |
| 7               | MIDDLE LEVEL WIRE CLOSET   | #10 / 3/4" | 1       | 20     | 0.6 | -             |     |      | 8               | SPACE & PROVISION | -                 | 1   |   |
| 9               | MIDDLE LEVEL WIRE CLOSET   | #10 / 3/4" | 1       | 20     |     |               | 1.2 | -    | 10              | SPACE & PROVISION | -                 | 1   |   |
| 11              | MIDDLE LEVEL WIRE CLOSET   | #10 / 3/4" | 1       | 20     |     |               |     | 1.2  | -               | 12                | SPACE & PROVISION | -   | 1 |

CONNECTED LOAD =

6.8 KVA

DEMAND LOAD =

6.6 KVA

MIN AIC RATING =

10,000 AMPS SYMMETRICAL

|     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|
| 1.8 | 0.2 | 2.4 | 0.0 | 2.4 | 0.0 |
| 2.0 |     | 2.4 |     | 2.4 |     |

MAIN BREAKER 30 AMPS

- NOTES
1. PROVIDE 200% RATED NEUTRAL BUS.
  2. PROVIDE ISOLATED GROUND BUS.
  3. BRANCH CIRCUITS SHALL NOT SHARE NEUTRAL CONDUCTORS.
  4. BRANCH CIRCUITS SHALL HAVE AN ISOLATED GROUND CONDUCTOR AND AN EQUIPMENT GROUNDING CONDUCTOR.
  5. PROVIDE TRANSIENT VOLTAGE SURGE SUPPRESSOR.

## LUKE C. MOORE ACADEMY HIGH SCHOOL

SHEET: E7.3

SCALE: 1/8"=1'-0"

DATE

04/22/03

AMENDMENT

#  
SK-E-21



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