Exhibit D
Remedial Action Plan, Environmental Operations, Oct. 18, 2006.

Environmental Operations, Inc.

October 18, 2006

EOI Project #1388

Brownfields/Voluntary Cleanup Section
Missouri Department of Natural Resources
P.O. Box 176
Jefferson City, Missouri 65102-0176

Subject: Remedial Action Plan
Arcade Building
812 Olive Street
St. Louis, Missouri

To Whom It May Concern:

Environmental Operations, Inc. (EOI) is pleased to submit this Remedial Action Plan (RAP) for the Arcade Building located at 812 Olive Street in St. Louis, Missouri. At the request of The Pyramid Companies, EOI prepared this Remedial Action Plan for the redevelopment of the building.

Renovation plans for the building include the potential for commercial and residential use. Pyramid intends to completely renovate and rehabilitate the building into retail/restaurant, office, and residential space with parking. It is anticipated that the residential space consists of condominiums and apartment units that will be sold or rented to mid- to upper-income individuals. The Redevelopment Project will also provide necessary public improvements such as utility relocation, curbs, sidewalks, gutters, landscaping, irrigation, and other public improvements. The building is an 18-story former office building and hotel that is located in the City of St. Louis west of 8th Street and between Pine and Olive Streets.

The current structure is made up of two buildings, the Arcade and the Wright Building. The hotel portion of the building, 18 stories, was built first and called the Wright Building. The Wright Building was built in 1900 and makes up the southeastern section of the current structure. The Arcade was added in 1918 and has 18 stories with a penthouse, the entire building totaling approximately 500,000 square foot. The building has a steel framed structure and reinforced concrete floors in the Arcade portion and a similar structure with reinforced cinder crete fill over clay block in the Wright Building. The interior walls and ceilings are mostly plaster on lath with metal frames and the floors are built-up tongue and groove wood over sleepers. Additional renovations have added partition walls with gypsum wallboard, suspended ceilings with lay-in panels or concealed spline, and various floor finishes.

Environmental Consulting & Remediation
1530 South Second Street • Suite 200 • Saint Louis, Missouri 63104–4500 • 314–241–0900 • 314–436–2900 Fax
www.environmentalops.com
Printed On Recycled Paper

Environmental Operations, Inc. conducted the asbestos-containing material, lead-based paint, and household hazardous materials survey dated June 25, 2004. A copy of this report is included in the Appendix A.

The environmental issues at the site to be addressed by this RAP include asbestos-containing materials (ACM), lead-based paint (LBP), fluorescent light tubes, ballasts and other miscellaneous hazardous chemicals/materials. The technical specifications for the abatement of these materials are included in Appendix B, "Specifications for Environmental Abatement". This document summarizes the Remedial Action Plan for the subject site.

Asbestos was identified in pipe fitting elbows and valve insulation, pipe insulation, vibration cloth on HVAC units, ceiling tile adhesive, transite paneling, boiler insulation, tank insulation, linoleum, tile flooring and flooring adhesives. Demolition will be required to complete the abatement activities including but is not limited to removal of carpet to access the asbestos-containing flooring materials, removal of suspended ceilings to access the asbestos-containing pipe insulation, and removal of pipe chase walls to access asbestos-containing pipe insulation.

Lead was identified on the exterior and interior walls, ceilings, interior columns, stairwell rails, stairwell treads, window sills and window frames throughout the building. Other miscellaneous wastes identified at the site include but are not limited to, household cleaning chemicals, mercury thermostats, fluorescent light tubes, H.I.D. Lamps, pcb-containing ballasts, smoke detectors, gasoline, solvents/paints, oil, batteries and ac units.

The remedial plans for the site include the complete removal of the identified asbestos-containing materials, the removal, encapsulation or enclosing of the items covered by lead-based paint and the removal of the miscellaneous wastes identified in the building. The planned asbestos abatement activities for the site include:

• Pipe Fitting, Elbow and Valve Insulation[1]	Glovebag Method
• Pipe Insulation[1]	Glovebag Method/Wrap & Cut
• Duct, Tank Insulation[2]	Mini-enclosure/Gross Removal
• Linoleum[2]	Mini-enclosure/Gross Removal
• Ceiling Tile Adhesive[3]	Manually scrape/Component Removal
• Floor Tile and Mastic[3]	Manually scrape/Solvent Mastic Removal
• Vibration Joint Cloths[3]	Wrap and Cut/Component Removal
• Transite Panels[3]	Outside of Building/Remove Intact

[1]Preparation/area set-up includes critical barriers, negative air machines within 15 feet of the removal work, two-chamber decon and remote shower decontamination unit. Workers will utilize ½ face HEPA filtered respirators and tyvek suits.

[2]Preparation/area set-up includes critical barriers, negative pressure mini-enclosure, and decontamination unit. Workers will utilize HEPA filtered respirators and tyvek suits.

[3]Preparation/area set-up includes barrier tape and proper signage to designate regulated area and splash guards or drop poly, as needed. Workers will utilize HEPA filtered respirators and tyvek suits.

Asbestos abatement activities will pass air sampling clearance testing (<0.01 f/cc).

The planned lead-based paint abatement activities for the site include intact component removal of selective items having lead-based paint, and encapsulation or enclosure of lead-based paint that will remain on-site. The miscellaneous wastes will be recycled, incinerated or land filled properly.

Environmental Operations, Inc. will submit a complete report summarizing the remedial activities conducted with attachments including: waste disposal documentation, notification, permits, clearance sampling results, and daily logs.

If you have any questions regarding these items, please call my office at (314) 241-0900.

Sincerely,

Andy Kramper
Project Manager
Abatement and Demolition Services

Richard J. Cwiklowski, P.E.
Vice President
Contracting / Field Services

APPENDIX A

ENVIRONMENTAL OPRATIONS INC.'S INSPECTION REPORT

Exhibit D

Environmental Operations, Inc.

June 25, 2004

EOI Project #1388

Mr. Matt O'Leary
Pyramid Commercial Contracting, LLC
906 Olive Street, Suite 600
St. Louis, Missouri 63101

Subject: **Asbestos and Lead Inspection**
Arcade/Wright Building
St. Louis, Missouri

Mr. O'Leary:

Environmental Operations Inc. (EOI) has completed an asbestos and lead inspection for the Arcade/Wright Building located at 812 Olive Street in St. Louis, Missouri. The inspection was performed by Reid L. Hartmann, Andy Kramper and Dale Edgerley on May 17th, 18th and 19th, 2004 and June 14th, 15th and 16th, 2004.

The following presents the asbestos inspection results: EOI collected 144 bulk samples of various suspect asbestos-containing building materials (ACBMs), which included 12"x 12" floor tile, 2'x 2' ceiling tile, 2'x 4' ceiling tile, mastic on ceramic tile, Thermal System Insulation (TSI) pipe insulation, caulk, glazing, transite, 9"x 9" floor tile, plaster, vibration joint cloth, 1'x 1' ceiling tile, mastic pucks, tar paper, floor sheeting, ceiling spray-on, linoleum, drywall and joint compound.

ASBESTOS FINDINGS

The following materials were determined to be asbestos containing:

Roof

MATERIALS	LOCATION	QUANTITIES
Transite Paneling	Chiller Towers on Roof	2,500 ft^2

19th Floor (Penthouse)

MATERIALS	LOCATION	QUANTITIES
Pipe Insulation	Throughout	5,500 Linear Feet
Vibration Cloth	On HVAC units	45 Linear Feet
Tank Insulation	Tank in penthouse	100 ft^2
Floor Tile 9"x 9"	In rooms on the floor	1,265 ft^2

18th Floor

MATERIALS	LOCATION	QUANTITIES
Pipe Insulation	Throughout – Risers/Loop	3,850 Linear Feet
Vibration Cloth	On HVAC units	45 Linear Feet
Ceiling Tile 2'x 4'	Throughout – On Ground	4,900 ft^2
Hockey Pucks	Throughout Floor	8,950 ft^2
Floor Tile 12"x 12"	Throughout Floor	1,800 ft^2
Floor Tile 9"x 9"	Throughout Floor	12,800 ft^2

17th Floor

MATERIALS	LOCATION	QUANTITIES
Pipe Insulation	Throughout – Risers	2,200 Linear Feet
Vibration Cloth	On HVAC units	45 Linear Feet
Hockey Pucks	Above 1'x 1' Ceiling Tile	8,900 ft^2
Floor Tile 9"x 9"	Throughout Floor	7,450 ft^2

16th Floor

MATERIALS	LOCATION	QUANTITIES
Pipe Insulation	Throughout – Risers/Loop	3,300 Linear Feet
Vibration Cloth	On HVAC units	45 Linear Feet
Hockey Pucks	Above 1'x 1' Ceiling Tile	10,500 ft^2
Floor Tile 12"x 12"	Throughout	1,300 ft^2
Floor Tile 9"x 9"	Throughout	11,300 ft^2

15th Floor

MATERIALS	LOCATION	QUANTITIES
Pipe Insulation	Throughout – Risers	2,750 Linear Feet
Vibration Cloth	On HVAC units	45 Linear Feet
Hockey Pucks	Above 1'x 1' Ceiling Tile	14,980 ft^2
Floor Tile 9"x 9"	Throughout	8,300 ft^2

14th Floor

MATERIALS	LOCATION	QUANTITIES
Pipe Insulation	Throughout – Risers	2,970 Linear Feet
Vibration Cloth	On HVAC units	45 Linear Feet
Hockey Pucks	Above 1'x 1' Ceiling Tile	16,456 ft^2
Floor Tile 9"x 9"	Throughout	6,450 ft^2

13th Floor

MATERIALS	LOCATION	QUANTITIES
Pipe Insulation	Throughout – Risers	2,750 Linear Feet
Vibration Cloth	On HVAC units	45 Linear Feet
Hockey Pucks	Above 1'x 1' Ceiling Tile	2,000 ft^2
Transite Paneling	Ceiling Tile	900 ft^2
Floor Tile 12"x 12"	Throughout	4,400 ft^2
Floor Tile 9"x 9"	Throughout	11,470 ft^2

12th Floor

MATERIALS	LOCATION	QUANTITIES
Pipe Insulation	Throughout – Risers	2,750 Linear Feet
Vibration Cloth	On HVAC units	45 Linear Feet
Hockey Pucks	Above 1'x 1' Ceiling Tile	3,500 ft^2
Floor Tile 12"x 12"	Throughout	10,475 ft^2
Floor Tile 9"x 9"	Throughout	5,530 ft^2

11th Floor

MATERIALS	LOCATION	QUANTITIES
Pipe Insulation	Throughout – Risers	2,750 Linear Feet
Vibration Cloth	On HVAC units	45 Linear Feet
Hockey Pucks	Above 1'x 1' Ceiling Tile	11,200 ft^2
Floor Tile 9"x 9"	Throughout	14,000 ft^2

10th Floor

MATERIALS	LOCATION	QUANTITIES
Pipe Insulation	Throughout – Risers	2,750 Linear Feet
Vibration Cloth	On HVAC units	45 Linear Feet
Hockey Pucks	Above 1'x 1' Ceiling Tile	9,150 ft^2
Floor Tile 9"x 9"	Throughout	11,100 ft^2

9th Floor

MATERIALS	LOCATION	QUANTITIES
Pipe Insulation	Throughout – Risers	3,000 Linear Feet
Vibration Cloth	On HVAC units	45 Linear Feet
Hockey Pucks	Above 1'x 1' Ceiling Tile	2,650 ft^2
Floor Tile 9"x 9"	Throughout	13,800 ft^2

8th Floor

MATERIALS	LOCATION	QUANTITIES
Pipe Insulation	Throughout – Risers	3,000 Linear Feet
Vibration Cloth	On HVAC units	45 Linear Feet
Hockey Pucks	Above 1'x 1' Ceiling Tile	9,250 ft^2
Floor Tile 9"x 9"	Throughout	9,500 ft^2

6th Floor

MATERIALS	LOCATION	QUANTITIES
Pipe Insulation	Throughout – Risers	3,000 Linear Feet
Vibration Cloth	On HVAC units	45 Linear Feet
Hockey Pucks	Above 1'x 1' Ceiling Tile	9,000 ft^2
Floor Tile 9"x 9"	Throughout	16,620 ft^2

5th Floor

MATERIALS	LOCATION	QUANTITIES
Pipe Insulation	Throughout – Risers	3,000 Linear Feet
Vibration Cloth	On HVAC units	45 Linear Feet
Hockey Pucks	Above 1'x 1' Ceiling Tile	14,080 ft^2
Linoleum	Northwest Corner	1,500 ft^2
Floor Tile 12"x 12"	Throughout	1,135 ft^2
Floor Tile 9"x 9"	Throughout	21,730 ft^2

3rd Floor

MATERIALS	LOCATION	QUANTITIES
Pipe Insulation	Throughout – Risers	3,300 Linear Feet
Vibration Cloth	On HVAC units	45 Linear Feet
Hockey Pucks	Above 1'x 1' Ceiling Tile	8,650 ft^2
Floor Tile 9"x 9"	Throughout	15,650 ft^2

2nd Floor

MATERIALS	LOCATION	QUANTITIES
Pipe Insulation	Throughout – Risers	3,450 Linear Feet
Vibration Cloth	On HVAC units	45 Linear Feet
Transite Paneling	Southwest Corner	3,500 ft^2
Hockey Pucks	Above 1'x 1' Ceiling Tile	14,550 ft^2
Floor Tile 9"x 9"	Throughout	14,745 ft^2

1st Floor Mezzanine

MATERIALS	LOCATION	QUANTITIES
Pipe Insulation	Throughout – Risers	750 Linear Feet
Hockey Pucks	Above 1'x 1' Ceiling Tile	1,000 ft^2
Floor Tile 9"x 9"	Throughout	1,875 ft^2

1st Floor

MATERIALS	LOCATION	QUANTITIES
Pipe Insulation	Throughout – Risers	3,000 Linear Feet
Vibration Cloth	On HVAC units	45 Linear Feet
Hockey Pucks	Above 1'x 1' Ceiling Tile	5,500 ft^2
Floor Tile 12"x 12"	Throughout	600 ft^2
Floor Tile 9"x 9"	Throughout	6,850 ft^2

Basement

MATERIALS	LOCATION	QUANTITIES
Pipe Insulation	Throughout – Risers/Runs	8,500 Linear Feet

Sub-Basement

MATERIALS	LOCATION	QUANTITIES
Pipe Insulation	Throughout – Risers/Runs	7,200 Linear Feet
Boiler Insulation	On Boilers / Tanks	100 ft^2

All asbestos containing materials should be removed prior to renovation or demolition activities.

LEAD-BASED PAINT FINDINGS

The lead inspection results indicate that 2 readings of the 39 taken in the building are considered lead containing (≥ 1.0 mg/cm^2). The following XRF survey report indicates locations of all readings, the surfaces, substrates and colors tested, and the lead result.

SAMPLE	LOCATION	COMPONENT	SUBSTRATE	COLOR	CONCENTRATION
01	**Calibration**	**N/A**	**N/A**	**N/A**	**2.0**
02	**Calibration**	**N/A**	**N/A**	**N/A**	**1.8**
03	Calibration	N/A	N/A	N/A	-0.0
04	Calibration	N/A	N/A	N/A	-0.0
05	Penthouse	Ceiling	Concrete	White	-0.1
06	Penthouse	Wall	Block	White	0.0
07	Penthouse	Wall (across from elevator)	Brick	White	-0.1
08	Stairwell	Wall	Plaster	White	0.2
09	**18th Floor**	**Ex. Wall**	**Plaster**	**White**	**1.0**
10	**18th Floor**	**Int. Wall**	**Plaster**	**White**	**> 9.9**
11	**18th Floor**	**Ceiling**	**Plaster**	**White**	**7.8**
12	**Back Stairwell**	**Wall**	**Plaster**	**Green & White**	**> 9.9**
13	17th Floor	Hallway Molding	Plaster	White	-0.1
14	**17th Floor**	**Ex. Wall**	**Plaster**	**Tan**	**> 9.9**
15	17th Floor	Int. Wall	Plaster	Tan	-0.1
16	17th Floor Hallway	Ceiling	Plaster	White	-0.0
17	17th Floor	Window Sill	Wood	Tan	0.4
18	17th Floor	Window	Wood	Tan	0.2
19	17th Floor	Door	Wood	Brown	-0.1
20	17th Floor	Door Frame	Wood	Brown	-0.1
21	**16th Floor**	**Ex. Wall**	**Plaster**	**White**	**> 9.9**
22	16th Floor	Window Sill	Wood	White	0.0
23	16th Floor	Window	Wood	White	0.0
24	**16th Floor**	**Int. Wall**	**Plaster**	**White**	**> 9.9**
25	**16th Floor**	**Ceiling**	**Plaster**	**White**	**> 9.9**
26	15th Floor	Ex. Wall	Plaster	Tan	-0.0
27	15th Floor	Int. Wall	Drywall	Lt. Green	-0.1
28	**15th Floor**	**Ex. Wall**	**Plaster**	**Lt. Green**	**> 9.9**

29	**15th Floor**	**Ceiling**	**Plaster**	**Lt. Green**	**> 9.9**
30	15th Floor	Window Sill	Wood	Lt. Green	0.1
31	15th Floor	Window Frame	Wood	Lt. Green	0.0
32	**14th Floor**	**Ex. Wall**	**Plaster**	**White**	**> 9.9**
33	14th Floor	Window Sill	Wood	White	-0.1
34	14th Floor	Window	Wood	White	0.1
35	**14th Floor**	**Int. Wall**	**Plaster**	**Lt. Blue**	**> 9.9**
36	14th Floor	Duct	Metal	Lt. Blue	0.3
37	**14th Floor**	**Ceiling**	**Plaster**	**Tan**	**> 9.9**
38	14th Floor	Door Frame	Wood	Tan	-0.1
39	14th Floor	Door	Wood	Tan	-0.1
40	**14th Floor**	**Back Stairwell Rail**	**Steel**	**Black**	**5.2**
41	**14th Floor**	**Back Stairwell Tread**	**Steel**	**Black**	**3.4**
42	**13th Floor**	**Int. Wall**	**Plaster**	**Tan**	**> 9.9**
43	**13th Floor**	**Ex. Wall**	**Plaster**	**Tan**	**> 9.9**
44	13th Floor	Window Sill	Wood	Tan	-0.0
45	13th Floor	Window	Wood	Tan	-0.0
46	**13th Floor**	**Ceiling**	**Plaster**	**White**	**> 9.9**
47	**13th Floor**	**North Stairwell Wall**	**Plaster**	**Brown**	**9.6**
48	**Calibration**	**N/A**	**N/A**	**N/A**	**2.4**
49	**Calibration**	**N/A**	**N/A**	**N/A**	**1.7**
50	Calibration	N/A	N/A	N/A	-0.0
51	Calibration	N/A	N/A	N/A	0.1
52	**Calibration**	**N/A**	**N/A**	**N/A**	**2.4**
53	**Calibration**	**N/A**	**N/A**	**N/A**	**1.7**
54	Calibration	N/A	N/A	N/A	-0.2
55	Calibration	N/A	N/A	N/A	-0.0
56	**12th Floor**	**Ex. Column**	**Plaster**	**Tan**	**> 9.9**
57	**12th Floor**	**Ex. Wall**	**Plaster**	**Tan**	**> 9.9**
58	12th Floor	Window Sill	Wood	Tan	0.2
59	12th Floor	Window	Wood	Tan	-0.1
60	**12th Floor**	**Ceiling**	**Plaster**	**Tan**	**> 9.9**
61	**11th Floor**	**Ex. Wall**	**Plaster**	**Tan**	**> 9.9**

62	11th Floor	Window Sill	Wood	Tan	-0.2
63	**11th Floor**	**Window**	**Metal**	**Tan**	**1.0**
64	**11th Floor**	**Int. Wall**	**Plaster**	**Tan**	**> 9.9**
65	**12th Floor**	**Int. Wall**	**Plaster**	**Tan**	**> 9.9**
66	**11th Floor**	**Ceiling**	**Plaster**	**Tan**	**> 9.9**
67	**10th Floor**	**Ex. Wall**	**Plaster**	**Tan**	**> 9.9**
68	10th Floor	Int. Wall	Drywall	Tan	-0.1
69	**10th Floor**	**Int. Column**	**Plaster**	**Tan**	**> 9.9**
70	**10th Floor**	**Window Sill**	**Wood**	**Tan**	**> 9.9**
71	10th Floor	Window	Wood	Tan	0.5
72	**10th Floor**	**Ceiling**	**Plaster**	**Tan**	**> 9.9**
73	**9th Floor**	**Int. Wall**	**Plaster**	**Tan**	**> 9.9**
74	**9th Floor**	**Ex. Wall**	**Plaster**	**Tan**	**> 9.9**
75	9th Floor	Window Sill	Wood	Tan	0.0
76	9th Floor	Window	Wood	Tan	0.0
77	**9th Floor**	**Ceiling**	**Plaster**	**Lt. Green**	**> 9.9**
78	**8th Floor**	**Front Stairwell Wall**	**Plaster**	**Tan**	**8.7**
79	8th Floor	Int. Wall	Plaster	Lt. Green	-0.0
80	**8th Floor**	**Ex. Wall**	**Plaster**	**Lt. Green**	**> 9.9**
81	8th Floor	Window Frame	Wood	Lt. Green	0.2
82	8th Floor	Window Sill	Wood	Lt. Green	-0.1
83	8th Floor	Int. Wall	Drywall	Yellow	-0.1
84	8th Floor	Int. Wall	Drywall	Lt. Blue	0.0
85	**6th Floor**	**Ex. Wall**	**Plaster**	**Lt. Blue**	**> 9.9**
86	6th Floor	Int. Wall	Plaster	Lt. Blue	0.2
87	6th Floor	Window Sill	Wood	Lt. Green	-0.1
88	**6th Floor**	**Window**	**Wood**	**White**	**2.8**
89	**6th Floor**	**Ceiling**	**Plaster**	**Lt. Blue**	**> 9.9**
90	**5th Floor**	**Int. Wall**	**Plaster**	**Lt. Blue**	**> 9.9**
91	**5th Floor**	**Ex. Wall**	**Plaster**	**Lt. Blue**	**> 9.9**
92	5th Floor	Window Sill	Wood	Lt. Blue	0.3
93	**5th Floor**	**Window**	**Wood**	**Lt. Blue**	**3.3**
94	**5th Floor**	**Ceiling**	**Plaster**	**White**	**> 9.9**
95	**3rd Floor**	**Ex. Wall**	**Plaster**	**Lt. Green**	**> 9.9**
96	**3rd Floor**	**Int. Wall**	**Plaster**	**Lt. Green**	**> 9.9**

97	3rd Floor	Window Sill	Wood	Black	0.0
98	**3rd Floor**	**Window**	**Wood**	**Black**	**1.0**
99	**3rd Floor**	**Ceiling**	**Plaster**	**Lt. Green**	**> 9.9**
100	**2nd Floor**	**Ex. Wall**	**Plaster**	**Tan**	**1.5**
101	**2nd Floor**	**Int. Wall**	**Plaster**	**Tan**	**> 9.9**
102	**2nd Floor**	**Ceiling**	**Plaster**	**Tan**	**> 9.9**
103	**Calibration**	**N/A**	**N/A**	**N/A**	**2.0**
104	**Calibration**	**N/A**	**N/A**	**N/A**	**2.0**
105	Calibration	N/A	N/A	N/A	-0.0
106	Calibration	N/A	N/A	N/A	0.1
107	NE Elevator Shaft	Wall	Plaster	Brown	0.1
108	SE Elevator Shaft	Wall	Plaster	Brown	0.1
109	**1st Floor**	**Ex. Wall**	**Plaster**	**Pink**	**1.0**
110	1st Floor	Ceiling	Plaster	White	-0.0
111	**1st Floor**	**Int. Wall**	**Plaster**	**White**	**1.0**
112	Basement	Int. Wall	Block	White	-0.0
113	Basement	Ex. Wall	Brick	White	0.1
114	Basement	Int. Wall	Brick	White	0.0
115	Sub-basement	Int. Wall	Block	White	0.6
116	Basement	Ceiling	Concrete	White	-0.1
117	**Calibration**	**N/A**	**N/A**	**N/A**	**1.9**
118	**Calibration**	**N/A**	**N/A**	**N/A**	**1.8**
119	Calibration	N/A	N/A	N/A	0.2
120	Calibration	N/A	N/A	N/A	-0.1

If you have any questions regarding this report, please call my office at (314) 241-0900.

Sincerely,

Reid L. Hartmann
Missouri Inspector #7028013004MOIR2396
Missouri Lead Inspector 020617-232005328

Richard J. Cwiklowski, P.E.
Vice President
Demolition & Abatement Services

Attachments: Asbestos Sample Log and Analytical Results

ENVIRONMENTAL OPERATIONS, INC. 314-241-0900 FAX: 314-436-2900
757 SOUTH SECOND STREET ST. LOUIS, MO 63102-1617

DATE: 5-17-04 PROJECT: Arcade Building JOB NUMBER: 1388

LOCATION: 8th & Olive SAMPLER: AK/DE/JH

SAMPLE NUMBER	ACM TYPE	CONDITION	LOCATION	FRIABLE Y or N	AMOUNT Square Linear FT.	CONTAINS ASBETOS Yes OR No
1-3	TSI mag		19th Floor			Yes
4-6	TSI Aircell		19th Floor			Yes
7-9	Window Caulking		Roof Area			Yes
10-12	Window Glazing		Roof Area			No
13-15	Transite		Cooling towers			Yes
16-18	Cork piping		19th Floor			No
19-21	Cork Tank		19th Floor			Yes Felt
22-24	Fitting on Cork Lines		" "		25	Yes
25-27	9"x9" Floor Tile Brown		" "		600 sq ft	Yes
28-30	9"x9" Floor tile Brown		" "		200 sq ft	Yes
31-33	12"x12" Floor tile white/Grey		" "		500 sq ft	Yes
34-36	2'x4' Ceiling tile		" "		500 sq ft	No

ACM TYPE	A THERMAL	D FLOOR TILE	G CEMENTIOUS		CONDITION	1 SIGNIF. DAMAGED
	B ACCOUSTICAL	E MASTIC	H ROOFING			2 DAMAGED
	C FIREPROOFING	F CEILING TILE	I OTHER			3 GOOD

ENVIRONMENTAL OPERATIONS, INC. 314-241-0900 FAX: 314-436-2900
757 SOUTH SECOND STREET ST. LOUIS, MO 63102-1617

DATE: 5-19-04 PROJECT: Arcade Building JOB NUMBER: 1388

LOCATION: 8th & Olive SAMPLER: AK/DE/JH

SAMPLE NUMBER	ACM TYPE	CONDITION	LOCATION	FRIABLE Y or N	AMOUNT Square Linear FT.	CONTAINS ASBETOS Yes OR No
37-39	Plaster		19th Floor			No
40-42	vibration cloth		19th Floor		8 lin ft.	Yes
43-45	F.T. 9"x9" w/ Mastic (Tan)	1	18th Floor (North)		13,000 ft²	Yes
46-48	F.T. 12"x12" w/ Mastic	1	18th Floor (North)		1,000 ft²	Yes
49-51	Ceiling Tile 12"x12"	1	18th Floor (Throughout)		10,000 ft²	No
52-54	Ceiling Tile 2'x4'	1	18th Floor (Throughout)		10,000 ft²	Yes
55-57	Hockey Puck	1	18th Floor (Throughout)		10,000 ft²	Yes
58-60	Tar Paper (under some tile)	1	18th Floor (Various Places)		10,000 ft²	No
61-63	Tar Paper (under wood)	1	18th Floor (Various Places)		10,000 ft²	No
64-66	Window Caulking	1	18th Floor (Exterior Windows)			Yes
67-69	Window Glazing	1	18th Floor (Exterior Windows)			Yes
70-72	12x12 F.T. w/ Mastic		17th Floor			Yes

ACM TYPE					CONDITION	
	A THERMAL	D FLOOR TILE	G CEMENTIOUS		CONDITION	1 SIGNIF. DAMAGED
	B ACCOUSTICAL	E MASTIC	H ROOFING			2 DAMAGED
	C FIREPROOFING	F CEILING TILE	I OTHER			3 GOOD

ENVIRONMENTAL OPERATIONS, INC. 314-241-0900 FAX: 314-436-2900
757 SOUTH SECOND STREET ST. LOUIS, MO 63102-1617

DATE: 5-19-04 PROJECT: Arcade Bldg JOB NUMBER: 1388

LOCATION: 8th + Olive SAMPLER: PE/AK

SAMPLE NUMBER	ACM TYPE	CONDITION	LOCATION	FRIABLE Y or N	AMOUNT Square Linear FT.	CONTAINS ASBETOS Yes OR No
73-75	Floor Sheeting		17th Floor			No
76-78	Floor Sheeting		17th Floor			No
79-81	Ceiling Tile 12"x12"		17th Floor			No
82-84	Hockey Pucks		17th Floor		10,000 ft²	Yes
85-87	Window Caulking		17th Floor			Yes
88-90	Window Glazing		17th Floor			No
91-93	Plaster		17th Floor			No
94-96	Drywall + Joint Compound		17th Floor			
97-99	Vibration Cloth		17th Floor		10 Lin Ft.	Yes

ACM TYPE					CONDITION	
	A THERMAL	D FLOOR TILE	G CEMENTIOUS			1 SIGNIF. DAMAGED
	B ACCOUSTICAL	E MASTIC	H ROOFING			2 DAMAGED
	C FIREPROOFING	F CEILING TILE	I OTHER			3 GOOD

ENVIRONMENTAL OPERATIONS, INC. 314-241-0900 FAX: 314-436-2900
757 SOUTH SECOND STREET ST. LOUIS, MO 63102-1617

DATE: 6-16-04 PROJECT: Arcade JOB NUMBER: 1388

LOCATION: 8th & Olive SAMPLER: AK/RH/DE

SAMPLE NUMBER	ACM TYPE	CONDITION	LOCATION	FRIABLE Y or N	AMOUNT Square Linear FT.	CONTAINS ASBETOS Yes OR No
100-102	2x4 Ceiling Tile		17th Floor			No
103-105	2x4 Ceiling Tile		16th Floor			No
106-108	2x4 Ceiling Tile		15th Floor			No
109-111	2x4 Ceiling Tile		14th Floor			No
112-114	2x4 Ceiling Tile		12th Floor			No
115-117	2x4 Ceiling Tile		11th Floor			No
118-120	2x4 Ceiling Tile		10th Floor			No
121-123	2x4 Ceiling Tile		9th Floor			No
124-126	2x4 Ceiling Tile		8th Floor			No
127-129	2x4 Ceiling Tile		6th Floor			No
130-132	2x4 Ceiling Tile		5th Floor			No
133-135	2x4 Ceiling Tile		3rd Floor			No

ACM TYPE	A THERMAL	D FLOOR TILE	G CEMENTIOUS		CONDITION	1 SIGNIF. DAMAGED
	B ACCOUSTICAL	E MASTIC	H ROOFING			2 DAMAGED
	C FIREPROOFING	F CEILING TILE	I OTHER			3 GOOD

ENVIRONMENTAL OPERATIONS, INC. 314-241-0900 FAX: 314-436-2900
757 SOUTH SECOND STREET ST. LOUIS, MO 63102-1617

DATE: 6-16-04 PROJECT: Arcade Building JOB NUMBER: 1388

LOCATION: 8th + Olive SAMPLER: AK / R.H.)

SAMPLE NUMBER	ACM TYPE	CONDITION	LOCATION	FRIABLE Y or N	AMOUNT Square Linear FT.	CONTAINS ASBETOS Yes OR No
136-138	2x4 Ceiling Tile		1st Floor			No
139-141	Spray-On		1st Floor			No
142-144	Lindeum		3rd Floor			Yes

ACM TYPE					CONDITION	
	A THERMAL	D FLOOR TILE	G CEMENTIOUS			1 SIGNIF. DAMAGED
	B ACCOUSTICAL	E MASTIC	H ROOFING			2 DAMAGED
	C FIREPROOFING	F CEILING TILE	I OTHER			3 GOOD

EMC LABS, INC.

9830 S. 51st Street, Suite B109, Phoenix, AZ 85044
Phone: 800-362-3373 or 480-940-5294 - Fax: (480) 893-1726

Laboratory Report
0022317

Bulk Asbestos Analysis by Polarized Light Microscopy

NVLAP#101926-0

Client:	ENVIRONMENTAL OPERATIONS	Job# / P.O. #:	1388	1388
Address:	757 S. 2ND STREET ST. LOUIS MO 63102	Date Received:	05/25/2004	
		Date Analyzed:	05/28/2004	
Collected:	05/17/2004	Date Reported:	05/28/2004	
Project Name/	ARCADE BUILDING	EPA Method:	EPA 600/M4-82-020	
Address:		Submitted By:	DALE L. EDGERLEY	
		Collected By:	Customer	

Lab ID Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type	(%)	Non-Asbestos Constituents	
0022317-001 1		TSI Mag, White	Yes	Chrysotile	15%	Mineral Wool	3%
						Mica	
						Gypsum	
						Gypsum	82%
0022317-002 2		TSI Mag, Note: *Not analyzed per client request					
0022317-003 3		TSI Mag, Note: *Not analyzed per client request					
0022317-004 4		TSI Aircell, White	Yes	Chrysotile	85%		
						Quartz	
						Binder/Filler	15%
0022317-005 5		TSI Aircell, Note: *Not analyzed per client request					
0022317-006 6		TSI Aircell, Note: *Not analyzed per client request					
0022317-007 7		Window Caulking, Cream	Yes	Chrysotile	2%		
						Quartz	
						Carbonates	
						Binder/Filler	98%
0022317-008 8		Window Caulking, Note: *Not analyzed per client request					
0022317-009 9		Window Caulking, Note: *Not analyzed per client request					

EMC LABS, INC.

9830 S. 51st Street, Suite B109, Phoenix, AZ 85044
Phone: 800-362-3373 or 480-940-5294 - Fax: (480) 893-1726

Laboratory Report
0022317

Bulk Asbestos Analysis by Polarized Light Microscopy

NVLAP#101926-0

Client:	ENVIRONMENTAL OPERATIONS	Job# / P.O. #:	1388	1388
Address:	757 S. 2ND STREET ST. LOUIS MO 63102	Date Received:	05/25/2004	
		Date Analyzed:	05/28/2004	
Collected:	05/17/2004	Date Reported:	05/28/2004	
Project Name/ Address:	ARCADE BUILDING	EPA Method:	EPA 600/M4-82-020	
		Submitted By:	DALE L. EDGERLEY	
		Collected By:	Customer	

Lab ID Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type (%)		Non-Asbestos Constituents	
0022317-010 10		Window Glazing, Beige	No				
						Carbonates Binder/Filler	100%
0022317-011 11		Window Glazing, Beige	No				
						Carbonates Binder/Filler	100%
0022317-012 12		Window Glazing, Beige	No				
						Carbonates Binder/Filler	100%
0022317-013 13		Transite, Gray	Yes	Chrysotile	20%		
						Mica Quartz Gypsum Binder/Filler	80%
0022317-014 14		Transite, Note: *Not analyzed per client request					
0022317-015 15		Transite, Note: *Not analyzed per client request					
0022317-016 16		LAYER 1 Cork Piping, Brown	No				
						Cork Binder/Filler	100%
		LAYER 2 Tar, Black	No			Fibrous Glass	<1%
						Quartz Binder/Filler	99%

EMC LABS, INC.

9830 S. 51st Street, Suite B109, Phoenix, AZ 85044
Phone: 800-362-3373 or 480-940-5294 - Fax: (480) 893-1726

Laboratory Report
0022317

Bulk Asbestos Analysis by Polarized Light Microscopy

NVLAP#101926-0

Client:	ENVIRONMENTAL OPERATIONS	Job# / P.O. #:	1388	1388
Address:	757 S. 2ND STREET ST. LOUIS MO 63102	Date Received:	05/25/2004	
		Date Analyzed:	05/28/2004	
Collected:	05/17/2004	Date Reported:	05/28/2004	
Project Name/ Address:	ARCADE BUILDING	EPA Method:	EPA 600/M4-82-020	
		Submitted By:	DALE L. EDGERLEY	
		Collected By:	Customer	

Lab ID Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type (%)		Non-Asbestos Constituents	
0022317-017 17		LAYER 1 Cork Piping, Brown	No				
						Cork Binder/Filler	100%
		LAYER 2 Tar, Black	No			Fibrous Glass	<1%
						Quartz Binder/Filler	99%
0022317-018 18		LAYER 1 Cork Piping, Brown	No				
						Cork Binder/Filler	100%
		LAYER 2 Tar, Black	No			Fibrous Glass	<1%
						Quartz Binder/Filler	99%
0022317-019 19		LAYER 1 Cork Tank, Brown	No				
						Cork Binder/Filler	100%
		LAYER 2 Felt, Black	Yes	Chrysotile	40%		
						Quartz Binder/Filler	60%
0022317-020 20		LAYER 1 Cork Tank, Brown	No				
						Cork Binder/Filler	100%
		LAYER 2 Felt, Black Note: *Not analyzed per client request					

EMC LABS, INC.

9830 S. 51st Street, Suite B109, Phoenix, AZ 85044
Phone: 800-362-3373 or 480-940-5294 - Fax: (480) 893-1726

Laboratory Report
0022317

Bulk Asbestos Analysis by Polarized Light Microscopy

NVLAP#101926-0

Client:	ENVIRONMENTAL OPERATIONS	Job# / P.O. #:	1388	1388
Address:	757 S. 2ND STREET ST. LOUIS MO 63102	Date Received:	05/25/2004	
		Date Analyzed:	05/28/2004	
Collected:	05/17/2004	Date Reported:	05/28/2004	
Project Name/ Address:	ARCADE BUILDING	EPA Method:	EPA 600/M4-82-020	
		Submitted By:	DALE L. EDGERLEY	
		Collected By:	Customer	

Lab ID Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type (%)	Non-Asbestos Constituents	
0022317-021 21		LAYER 1 Cork Tank, Brown	No			
					Cork Binder/Filler	100%
		LAYER 2 Felt, Black Note: *Not analyzed per client request				
0022317-022 22		LAYER 1 Fitting On Cork Lines, Beige	Yes	Chrysotile	85%	
					Quartz Binder/Filler	15%
		LAYER 2 Fitting On Cork Lines, Black	Yes	Chrysotile	40%	
					Quartz Carbonates Binder/Filler	60%
0022317-023 23		LAYER 1 Fitting on Cork Lines, Beige Note: *Not analyzed per client request				
		LAYER 2 Fitting on Cork Lines, Black Note: *Not analyzed per client request				
0022317-024 24		LAYER 1 Fitting on Cork Lines, Beige Note: *Not analyzed per client request				
		LAYER 2 Fitting on Cork Lines, Black Note: *Not analyzed per client request				

EMC LABS, INC.

9830 S. 51st Street, Suite B109, Phoenix, AZ 85044
Phone: 800-362-3373 or 480-940-5294 - Fax: (480) 893-1726

Laboratory Report
0022317

Bulk Asbestos Analysis by Polarized Light Microscopy

NVLAP#101926-0

Client:	ENVIRONMENTAL OPERATIONS	Job# / P.O. #:	1388	1388
Address:	757 S. 2ND STREET ST. LOUIS MO 63102	Date Received:	05/25/2004	
		Date Analyzed:	05/28/2004	
Collected:	05/17/2004	Date Reported:	05/28/2004	
Project Name/ Address:	ARCADE BUILDING	EPA Method:	EPA 600/M4-82-020	
		Submitted By:	DALE L. EDGERLEY	
		Collected By:	Customer	

Lab ID Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type	(%)	Non-Asbestos Constituents	
0022317-025 25		LAYER 1 9x9 Floor Tile, Brown	Yes	Chrysotile	15%		
						Quartz Carbonates Binder/Filler	85%
		LAYER 2 Mastic, Black	Yes	Chrysotile	3%		
						Carbonates Binder/Filler	97%
0022317-026 26		LAYER 1 9x9 Floor Tile, Note: *Not analyzed per client request					
		LAYER 2 9x9 Floor Tile, Note: *Not analyzed per client request					
0022317-027 27		LAYER 1 9x9 Floor Tile, Note: *Not analyzed per client request					
		LAYER 2 9x9 Floor Tile, Note: *Not analyzed per client request					
0022317-028 28		LAYER 1 9x9 Floor Tile, Brown	Yes	Chrysotile	10%		
						Quartz Carbonates Binder/Filler	90%
		LAYER 2 Mastic, Black	Yes	Chrysotile	3%		
						Quartz Carbonates Binder/Filler	97%

EMC LABS, INC.

9830 S. 51st Street, Suite B109, Phoenix, AZ 85044
Phone: 800-362-3373 or 480-940-5294 - Fax: (480) 893-1726

Laboratory Report
0022317

Bulk Asbestos Analysis by Polarized Light Microscopy

NVLAP#101926-0

Client:	ENVIRONMENTAL OPERATIONS	Job# / P.O. #:	1388	1388
Address:	757 S. 2ND STREET ST. LOUIS MO 63102	Date Received:	05/25/2004	
		Date Analyzed:	05/28/2004	
Collected:	05/17/2004	Date Reported:	05/28/2004	
Project Name/ Address:	ARCADE BUILDING	EPA Method:	EPA 600/M4-82-020	
		Submitted By:	DALE L. EDGERLEY	
		Collected By:	Customer	

Lab ID Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type (%)		Non-Asbestos Constituents	
0022317-029 29		LAYER 1 9x9 Floor Tile, Note: *Not analyzed per client request					
		LAYER 2 9x9 Floor Tile, Note: *Not analyzed per client request					
0022317-030 30		LAYER 1 9x9 Floor Tile, Note: *Not analyzed per client request					
		LAYER 2 9x9 Floor Tile, Note: *Not analyzed per client request					
0022317-031 31		LAYER 1 12x12 Floor Tile, White/ Gray	Yes	Chrysotile	5%		
						Carbonates Gypsum Quartz Binder/Filler	95%
		LAYER 2 Mastic, Yellow	No			Cellulose Fiber	<1%
						Quartz Binder/Filler	99%
0022317-032 32		LAYER 1 12x12 Floor Tile, Note: *Not analyzed per client request					
		LAYER 2 Mastic, Yellow	No			Cellulose Fiber	<1%
						Quartz Binder/Filler	99%

EMC LABS, INC.

9830 S. 51st Street, Suite B109, Phoenix, AZ 85044
Phone: 800-362-3373 or 480-940-5294 - Fax: (480) 893-1726

Laboratory Report
0022317

Bulk Asbestos Analysis by Polarized Light Microscopy

NVLAP#101926-0

Client:	ENVIRONMENTAL OPERATIONS	Job# / P.O. #:	1388	1388
Address:	757 S. 2ND STREET ST. LOUIS MO 63102	Date Received:	05/25/2004	
		Date Analyzed:	05/28/2004	
Collected:	05/17/2004	Date Reported:	05/28/2004	
Project Name/ Address:	ARCADE BUILDING	EPA Method:	EPA 600/M4-82-020	
		Submitted By:	DALE L. EDGERLEY	
		Collected By:	Customer	

Lab ID Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type (%)	Non-Asbestos Constituents	
0022317-033 33		LAYER 1 12x12 Floor Tile, Note: *Not analyzed per client request				
		LAYER 2 Mastic, Yellow	No		Cellulose Fiber Quartz Binder/Filler	<1% 99%
0022317-034 34		2x4 C.T., Beige/ Gray	No		Cellulose Fiber Mineral Wool Perlite Carbonates Binder/Filler	40% 40% 20%
0022317-035 35		2x4 C.T., Beige/ Gray	No		Cellulose Fiber Mineral Wool Perlite Carbonates Binder/Filler	40% 40% 20%
0022317-036 36		2x4 C.T., Beige/ Gray	No		Cellulose Fiber Mineral Wool Perlite Carbonates Binder/Filler	40% 40% 20%
0022317-037 37		Plaster, Brown	No		Cellulose Fiber Mica Quartz Gypsum Binder/Filler	<1% 99%
0022317-038 38		Plaster, Brown	No		Cellulose Fiber Mica Quartz Gypsum Binder/Filler	<1% 99%

EMC LABS, INC.

9830 S. 51st Street, Suite B109, Phoenix, AZ 85044
Phone: 800-362-3373 or 480-940-5294 - Fax: (480) 893-1726

Laboratory Report
0022317

Bulk Asbestos Analysis by Polarized Light Microscopy

NVLAP#101926-0

Client:	ENVIRONMENTAL OPERATIONS	Job# / P.O. #:	1388	1388
Address:	757 S. 2ND STREET ST. LOUIS MO 63102	Date Received:	05/25/2004	
		Date Analyzed:	05/28/2004	
Collected:	05/17/2004	Date Reported:	05/28/2004	
Project Name/ Address:	ARCADE BUILDING	EPA Method:	EPA 600/M4-82-020	
		Submitted By:	DALE L. EDGERLEY	
		Collected By:	Customer	

Lab ID Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type	(%)	Non-Asbestos Constituents	
0022317-039 39		Plaster, Brown	No			Cellulose Fiber	<1%
						Mica	
						Quartz	
						Gypsum	
						Binder/Filler	99%
0022317-040 40		Vibration Cloth, White	Yes	Chrysotile	80%	Synthetic Fiber	10%
						Gypsum	
						Binder/Filler	10%
0022317-041 41		Vibration Cloth, Note: *Not analyzed per client request					
0022317-042 42		Vibration Cloth, Note: *Not analyzed per client request					
0022317-043 43		LAYER 1 9x9 Floor Tile, Tan	Yes	Chrysotile	5%		
						Quartz	
						Carbonates	
						Binder/Filler	95%
		LAYER 2 Mastic, Black	Yes	Chrysotile	10%		
						Quartz	
						Carbonates	
						Binder/Filler	90%
0022317-044 44		LAYER 1 9x9 Floor Tile, Note: *Not analyzed per client request					
		LAYER 2 9x9 Floor Tile, Note: *Not analyzed per client request					

EMC LABS, INC.

9830 S. 51st Street, Suite B109, Phoenix, AZ 85044
Phone: 800-362-3373 or 480-940-5294 - Fax: (480) 893-1726

Laboratory Report
0022317

Bulk Asbestos Analysis by Polarized Light Microscopy

NVLAP#101926-0

Client:	ENVIRONMENTAL OPERATIONS	Job# / P.O. #:	1388	1388
Address:	757 S. 2ND STREET ST. LOUIS MO 63102	Date Received:	05/25/2004	
		Date Analyzed:	05/28/2004	
Collected:	05/17/2004	Date Reported:	05/28/2004	
Project Name/ Address:	ARCADE BUILDING	EPA Method:	EPA 600/M4-82-020	
		Submitted By:	DALE L. EDGERLEY	
		Collected By:	Customer	

Lab ID Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type	(%)	Non-Asbestos Constituents	
0022317-045 45		LAYER 1 9x9 Floor Tile, Note: *Not analyzed per client request					
		LAYER 2 9x9 Floor Tile, Note: *Not analyzed per client request					
0022317-046 46		LAYER 1 12x12 Floor Tile, White	Yes	Chrysotile	10%		
						Quartz Gypsum Carbonates Binder/Filler	90%
		LAYER 2 Mastic, Black	Yes	Chrysotile	5%		
						Carbonates Binder/Filler	95%
0022317-047 47		LAYER 1 12x12 Floor Tile, Note: *Not analyzed per client request					
		LAYER 2 12x12 Floor Tile, Note: *Not analyzed per client request					
0022317-048 48		LAYER 1 12x12 Floor Tile, Note: *Not analyzed per client request					
		LAYER 2 12x12 Floor Tile, Note: *Not analyzed per client request					

EMC LABS, INC.

9830 S. 51st Street, Suite B109, Phoenix, AZ 85044
Phone: 800-362-3373 or 480-940-5294 - Fax: (480) 893-1726

Laboratory Report
0022317

Bulk Asbestos Analysis by Polarized Light Microscopy

NVLAP#101926-0

Client:	ENVIRONMENTAL OPERATIONS	Job# / P.O. #:	1388	1388
Address:	757 S. 2ND STREET ST. LOUIS MO 63102	Date Received:	05/25/2004	
		Date Analyzed:	05/28/2004	
Collected:	05/17/2004	Date Reported:	05/28/2004	
Project Name/ Address:	ARCADE BUILDING	EPA Method:	EPA 600/M4-82-020	
		Submitted By:	DALE L. EDGERLEY	
		Collected By:	Customer	

Lab ID Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type (%)		Non-Asbestos Constituents	
0022317-049 49		12x12 Ceiling Tile, Tan/ White	No			Cellulose Fiber Binder/Filler	85% 15%
0022317-050 50		12x12 Ceiling Tile, Tan/ White	No			Cellulose Fiber Binder/Filler	85% 15%
0022317-051 51		12x12 Ceiling Tile, Tan/ White	No			Cellulose Fiber Binder/Filler	85% 15%
0022317-052 52		2x4 C.T., Beige/ White	Yes	Chrysotile	3%	Mineral Wool Quartz Binder/Filler	80% 17%
0022317-053 53		2x4 C.T., Note: *Not analyzed per client request					
0022317-054 54		2x4 C.T., Note: *Not analyzed per client request					
0022317-055 55		Mastic Hockey Puck, Brown	Yes	Chrysotile	3%	Cellulose Fiber Gypsum Binder/Filler	1% 96%
0022317-056 56		Mastic Hockey Puck, Note: *Not analyzed per client request					
0022317-057 57		Mastic Hockey Puck, Note: *Not analyzed per client request					
0022317-058 58		Tar Paper Under Tile, Black	No			Cellulose Fiber Gypsum Binder/Filler	40% 60%

EMC LABS, INC.

9830 S. 51st Street, Suite B109, Phoenix, AZ 85044
Phone: 800-362-3373 or 480-940-5294 - Fax: (480) 893-1726

Laboratory Report
0022317

Bulk Asbestos Analysis by Polarized Light Microscopy

NVLAP#101926-0

Client:	ENVIRONMENTAL OPERATIONS	Job# / P.O. #:	1388	1388
Address:	757 S. 2ND STREET ST. LOUIS MO 63102	Date Received:	05/25/2004	
		Date Analyzed:	05/28/2004	
Collected:	05/17/2004	Date Reported:	05/28/2004	
Project Name/ Address:	ARCADE BUILDING	EPA Method:	EPA 600/M4-82-020	
		Submitted By:	DALE L. EDGERLEY	
		Collected By:	Customer	

Lab ID Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type (%)		Non-Asbestos Constituents	
0022317-059 59		Tar Paper Under Tile, Black	No			Cellulose Fiber	40%
						Gypsum	
						Binder/Filler	60%
0022317-060 60		Tar Paper Under Tile, Black	No			Cellulose Fiber	40%
						Gypsum	
						Binder/Filler	60%
0022317-061 61		Tar Paper Under Wood, Black	No			Cellulose Fiber	60%
						Gypsum	
						Quartz	
						Binder/Filler	40%
0022317-062 62		Tar Paper Under Wood, Black	No			Cellulose Fiber	60%
						Gypsum	
						Binder/Filler	40%
0022317-063 63		Tar Paper Under Wood, Black	No			Cellulose Fiber	60%
						Gypsum	
						Binder/Filler	40%
0022317-064 64		Window Caulking, Cream	Yes	Chrysotile	5%		
						Carbonates	
						Quartz	
						Binder/Filler	95%
0022317-065 65		, Note: *Not analyzed per client request					
0022317-066 66		, Note: *Not analyzed per client request					
0022317-067 67		Window Glazing, Beige	Yes	Chrysotile	2%		
						Carbonates	
						Quartz	
						Binder/Filler	98%

EMC LABS, INC.

9830 S. 51st Street, Suite B109, Phoenix, AZ 85044
Phone: 800-362-3373 or 480-940-5294 - Fax: (480) 893-1726

Laboratory Report
0022317

Bulk Asbestos Analysis by Polarized Light Microscopy

NVLAP#101926-0

Client:	ENVIRONMENTAL OPERATIONS	Job# / P.O. #:	1388	1388
Address:	757 S. 2ND STREET ST. LOUIS MO 63102	Date Received:	05/25/2004	
		Date Analyzed:	05/28/2004	
Collected:	05/17/2004	Date Reported:	05/28/2004	
Project Name/ Address:	ARCADE BUILDING	EPA Method:	EPA 600/M4-82-020	
		Submitted By:	DALE L. EDGERLEY	
		Collected By:	Customer	

Lab ID Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type (%)	Non-Asbestos Constituents	
0022317-068 68		, Note: *Not analyzed per client request				
0022317-069 69		, Note: *Not analyzed per client request				
0022317-070 70		LAYER 1 12x12 Floor Tile, Beige	Yes	Chrysotile 3%		
					Carbonates Gypsum Quartz Binder/Filler	97%
		LAYER 2 Mastic, Black	Yes	Chrysotile 10%	Cellulose Fiber	2%
					Gypsum Carbonates Binder/Filler	88%
0022317-071 71		LAYER 1 , Note: *Not analyzed per client request LAYER 2 , Note: *Not analyzed per client request				
0022317-072 72		LAYER 1 , Note: *Not analyzed per client request LAYER 2 , Note: *Not analyzed per client request				

EMC LABS, INC.

9830 S. 51st Street, Suite B109, Phoenix, AZ 85044
Phone: 800-362-3373 or 480-940-5294 - Fax: (480) 893-1726

Laboratory Report
0022317

Bulk Asbestos Analysis by Polarized Light Microscopy

NVLAP#101926-0

Client:	ENVIRONMENTAL OPERATIONS	Job# / P.O. #:	1388	1388
Address:	757 S. 2ND STREET ST. LOUIS MO 63102	Date Received:	05/25/2004	
		Date Analyzed:	05/28/2004	
Collected:	05/17/2004	Date Reported:	05/28/2004	
Project Name/ Address:	ARCADE BUILDING	EPA Method:	EPA 600/M4-82-020	
		Submitted By:	DALE L. EDGERLEY	
		Collected By:	Customer	

Lab ID Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type (%)	Non-Asbestos Constituents	
0022317-073 73		Floor Sheeting, Black/ Green	No		Cellulose Fiber	18%
					Synthetic Fiber	2%
					Gypsum	
					Binder/Filler	80%
0022317-074 74		LAYER 1 Floor Sheeting, Black/ Green	No		Cellulose Fiber	18%
					Synthetic Fiber	2%
					Gypsum	
					Binder/Filler	80%
		LAYER 2 Mastic, Brown	No		Cellulose Fiber	<1%
					Gypsum	
					Quartz	
					Binder/Filler	99%
0022317-075 75		LAYER 1 Floor Sheeting, Black/ Green	No		Cellulose Fiber	18%
					Synthetic Fiber	2%
					Gypsum	
					Binder/Filler	80%
		LAYER 2 Mastic, Brown	No		Cellulose Fiber	<1%
					Gypsum	
					Quartz	
					Binder/Filler	99%
0022317-076 76		LAYER 1 Floor Sheeting, Black/ Tan	No		Cellulose Fiber	18%
					Synthetic Fiber	2%
					Gypsum	
					Binder/Filler	80%
		LAYER 2 Mastic, Brown	No		Cellulose Fiber	<1%
					Gypsum	
					Quartz	
					Binder/Filler	99%

EMC LABS, INC.

9830 S. 51st Street, Suite B109, Phoenix, AZ 85044
Phone: 800-362-3373 or 480-940-5294 - Fax: (480) 893-1726

Laboratory Report
0022317

Bulk Asbestos Analysis by Polarized Light Microscopy

NVLAP#101926-0

Client:	ENVIRONMENTAL OPERATIONS	Job# / P.O. #:	1388	1388
Address:	757 S. 2ND STREET ST. LOUIS MO 63102	Date Received:	05/25/2004	
		Date Analyzed:	05/28/2004	
Collected:	05/17/2004	Date Reported:	05/28/2004	
Project Name/	ARCADE BUILDING	EPA Method:	EPA 600/M4-82-020	
Address:		Submitted By:	DALE L. EDGERLEY	
		Collected By:	Customer	

Lab ID Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type (%)	Non-Asbestos Constituents	
0022317-077 77		LAYER 1 Floor Sheeting, Black/ Tan	No		Cellulose Fiber	15%
					Synthetic Fiber	3%
					Gypsum	
					Binder/Filler	82%
		LAYER 2 Mastic, Brown	No		Cellulose Fiber	3%
					Gypsum	
					Quartz	
					Binder/Filler	97%
0022317-078 78		LAYER 1 Floor Sheeting, Black/ Tan	No		Cellulose Fiber	15%
					Synthetic Fiber	3%
					Gypsum	
					Binder/Filler	82%
		LAYER 2 Mastic, Brown	No		Cellulose Fiber	3%
					Gypsum	
					Quartz	
					Binder/Filler	97%
0022317-079 79		12x12 Ceiling Tile, Beige	No		Mineral Wool	80%
					Cellulose Fiber	2%
					Carbonates	
					Perlite	
					Binder/Filler	18%
0022317-080 80		12x12 Ceiling Tile, Beige	No		Mineral Wool	80%
					Cellulose Fiber	2%
					Carbonates	
					Perlite	
					Binder/Filler	18%
0022317-081 81		12x12 Ceiling Tile, Beige	No		Mineral Wool	80%
					Cellulose Fiber	2%
					Carbonates	
					Perlite	
					Binder/Filler	18%

EMC LABS, INC.

9830 S. 51st Street, Suite B109, Phoenix, AZ 85044
Phone: 800-362-3373 or 480-940-5294 - Fax: (480) 893-1726

Laboratory Report
0022317

Bulk Asbestos Analysis by Polarized Light Microscopy

NVLAP#101926-0

Client:	ENVIRONMENTAL OPERATIONS	Job# / P.O. #:	1388	1388
Address:	757 S. 2ND STREET ST. LOUIS MO 63102	Date Received:	05/25/2004	
		Date Analyzed:	05/28/2004	
Collected:	05/17/2004	Date Reported:	05/28/2004	
Project Name/ Address:	ARCADE BUILDING	EPA Method:	EPA 600/M4-82-020	
		Submitted By:	DALE L. EDGERLEY	
		Collected By:	Customer	

Lab ID Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type (%)		Non-Asbestos Constituents	
0022317-082 82		Mastic Hockey Pucks, Brown	Yes	Chrysotile	3%		
						Gypsum Quartz Binder/Filler	97%
0022317-083 83		Mastic Hockey Pucks, Brown Note: *Not analyzed per client request					
0022317-084 84		Mastic Hockey Pucks, Brown Note: *Not analyzed per client request					
0022317-085 85		Window Caulking, White	Yes	Chrysotile	5%		
						Carbonates Quartz Binder/Filler	95%
0022317-086 86		, Note: *Not analyzed per client request					
0022317-087 87		, Note: *Not analyzed per client request					
0022317-088 88		Window Glazing, Beige	No				
						Carbonates Quartz Binder/Filler	100%
0022317-089 89		Window Glazing, Beige	No				
						Carbonates Quartz Binder/Filler	100%

EMC LABS, INC.

9830 S. 51st Street, Suite B109, Phoenix, AZ 85044
Phone: 800-362-3373 or 480-940-5294 - Fax: (480) 893-1726

Laboratory Report
0022317

Bulk Asbestos Analysis by Polarized Light Microscopy

NVLAP#101926-0

Client:	ENVIRONMENTAL OPERATIONS	Job# / P.O. #:	1388	1388
Address:	757 S. 2ND STREET ST. LOUIS MO 63102	Date Received:	05/25/2004	
		Date Analyzed:	05/28/2004	
Collected:	05/17/2004	Date Reported:	05/28/2004	
Project Name/ Address:	ARCADE BUILDING	EPA Method:	EPA 600/M4-82-020	
		Submitted By:	DALE L. EDGERLEY	
		Collected By:	Customer	

Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type	(%)	Non-Asbestos Constituents	
0022317-090 90		Window Glazing, Beige	No			Carbonates Quartz Binder/Filler	100%
0022317-091 91		Plaster, White	No			Gypsum Carbonates Mica Quartz Binder/Filler	100%
0022317-092 92		Plaster, White	No			Gypsum Carbonates Mica Quartz Binder/Filler	100%
0022317-093 93		Plaster, White	No			Cellulose Fiber Gypsum Carbonates Mica Quartz Binder/Filler	<1% 99%
0022317-094 94		LAYER 1 Drywall, White/ Brown	No			Cellulose Fiber Quartz Gypsum Carbonates Binder/Filler	10% 90%
		LAYER 2 Joint Compound, Beige	Yes	Chrysotile	2%	Cellulose Fiber Quartz Carbonates Binder/Filler	<1% 97%

EMC LABS, INC.

9830 S. 51st Street, Suite B109, Phoenix, AZ 85044
Phone: 800-362-3373 or 480-940-5294 - Fax: (480) 893-1726

Laboratory Report
0022317

Bulk Asbestos Analysis by Polarized Light Microscopy

NVLAP#101926-0

Client:	ENVIRONMENTAL OPERATIONS	Job# / P.O. #:	1388	1388
Address:	757 S. 2ND STREET ST. LOUIS MO 63102	Date Received:	05/25/2004	
		Date Analyzed:	05/28/2004	
Collected:	05/17/2004	Date Reported:	05/28/2004	
Project Name/ Address:	ARCADE BUILDING	EPA Method:	EPA 600/M4-82-020	
		Submitted By:	DALE L. EDGERLEY	
		Collected By:	Customer	

Lab ID Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type (%)		Non-Asbestos Constituents	
0022317-095 95		LAYER 1 Drywall, White/ Brown	No			Cellulose Fiber Quartz Gypsum Carbonates Binder/Filler	10% 90%
		LAYER 2 Joint Compound, Beige Note: *Not analyzed per client request					
0022317-096 96		LAYER 1 Drywall, White/ Brown	No			Cellulose Fiber Quartz Gypsum Carbonates Binder/Filler	10% 90%
		LAYER 2 Joint Compound, Beige Note: *Not analyzed per client request					
0022317-097 97		Vibration Cloth, White	Yes	Chrysotile	80%	Synthetic Fiber Gypsum Binder/Filler	10% 10%
0022317-098 98		Vibration Cloth, Note: *Not analyzed per client request					
0022317-099 99		Vibration Cloth, Note: *Not analyzed per client request					

EMC LABS, INC.

9830 S. 51st Street, Suite B109, Phoenix, AZ 85044
Phone: 800-362-3373 or 480-940-5294 - Fax: (480) 893-1726

Laboratory Report
0022317

Bulk Asbestos Analysis by Polarized Light Microscopy

NVLAP#101926-0

Client:	ENVIRONMENTAL OPERATIONS	Job# / P.O. #:	1388	1388
Address:	757 S. 2ND STREET	Date Received:	05/25/2004	
	ST. LOUIS MO 63102	Date Analyzed:	05/28/2004	
Collected:	05/17/2004	Date Reported:	05/28/2004	
Project Name/	ARCADE BUILDING	EPA Method:	EPA 600/M4-82-020	
Address:		Submitted By:	DALE L. EDGERLEY	
		Collected By:	Customer	

Lab ID Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type (%)	Non-Asbestos Constituents

Analyst - Johann Hofer

Signatory - Lab Director - Kurt Kettler

Distinctly stratified, easily separable layers of samples are analyzed as subsamples of the whole and are reported separately for each discernable layer. All analyses are derived from calibrated visual estimate and measured in weight percent unless otherwise noted. The report applies to the standards or procedures identified and to the sample(s) tested. The test results are not necessarily indicated or representative of the qualities of the lot from which the sample was taken or of apparently identical or similar products, nor do they represent an ongoing quality assurance program unless so noted. These reports are for the exclusive use of the addressed client and that they will not be reproduced wholly or in part for advertising or other purposes over our signature or in connection with our name without special written permission. The report shall not be reproduced except in full, without written approval by our laboratory. The samples not destroyed in testing are retained a maximum of thirty days. The laboratory measurement of uncertainty for the test method is approximately <1% by weight. Accredited by the National Institute of Standards and Technology, Voluntary Laboratory Accreditation Program for selected test method for asbestos. The accreditation or any reports generated by this laboratory in no way constitutes or implies product certification, approval, or endorsement by the National Institute of Standards and Technology. The report must not be used by any entity to claim product endorsement by NVLAP or any agency of the U.S. Government. Polarized Light Microscopy may not be consistently reliable in detecting asbestos in floor coverings and similar non-friable organically bound materials.

GLOBAL ENVIRONMENTAL LABORATORIES, INC.

AIHA Environmental Lead and Industrial Hygiene ACCREDITED LABORATORY

Indoor Air Quality (IAQ), Mold
Bioaerosols, Asbestos, Lead
Environmental & Food Microbiology
Consulting

AIHA Laboratory # 102636

11040 Lin-Valle Dr. St. Louis, MO 63123 (314) 845-8910 FAX (314) 845-6459

Report No. 04-06-01264

June 17, 2004

Environmental Operations, Inc.
757 S. Second Street
St. Louis, MO 63102

Attn: Reid Hartmann

Determination of asbestos content on forty-five (45) bulk samples submitted on June 16, 2004.

TEST REPORT

Project Name: Arcade Bldg #1388

Sample Identification / Description: 100

GEL LN: 096063

Layer #	%	Layer Description	Asbestos		Other Fibrous		Non-Fibrous
1	2	white paint	No asbestos detected				> 95 %
2	97	off-white ceiling tile	Amosite	Trace (<1%)	Cellulose	1 - 3 %	
					Mineral wool	70 - 80 %	10 - 20 %
3	1	off-white flat	No asbestos detected				> 95 %

No additional layers were identified during the course of the analysis for this sample.

Sample Identification / Description: 101

GEL LN: 096064

Layer #	%	Layer Description	Asbestos		Other Fibrous		Non-Fibrous
1	2	white paint	No asbestos detected				> 95 %
2	97	off-white ceiling tile	No asbestos detected		Cellulose	1 - 3 %	
					Mineral wool	70 - 80 %	10 - 20 %
3	1	off-white flat	No asbestos detected				> 95 %

No additional layers were identified during the course of the analysis for this sample.

Sample Identification / Description: 102

GEL LN: 096065

Layer #	%	Layer Description	Asbestos		Other Fibrous		Non-Fibrous
1	2	white paint	No asbestos detected				> 95 %
2	97	off-white ceiling tile	No asbestos detected		Cellulose	1 - 3 %	
					Mineral wool	70 - 80 %	10 - 20 %
3	1	off-white flat	No asbestos detected				> 95 %

No additional layers were identified during the course of the analysis for this sample.

Sample Identification / Description: 103

GEL LN: 096066

Layer #	%	Layer Description	Asbestos		Other Fibrous		Non-Fibrous
1	4	white paint	No asbestos detected				> 95 %
2	95	tan ceiling tile	No asbestos detected		Cellulose	10 - 20 %	
					Mineral wool	60 - 70 %	10 - 20 %
3	1	tan flat	No asbestos detected				> 95 %

No additional layers were identified during the course of the analysis for this sample.

Only data derived directly from sampling or analysis conducted by Global Environmental Laboratories, Inc. (GEL) has been validated. The results reported herein are for summary purposes only and do not represent any opinion or conclusion on the part of GEL.

Report No. 04-06-01264

Sample Identification / Description: 104

GEL LN: 096067

Layer #	%	Layer Description	Asbestos	Other Fibrous		Non-Fibrous
1	4	white paint	No asbestos detected			> 95 %
2	95	tan ceiling tile	No asbestos detected	Cellulose	10 - 20 %	
				Mineral wool	60 - 70 %	10 - 20 %
3	1	tan flat	No asbestos detected			> 95 %

No additional layers were identified during the course of the analysis for this sample.

Sample Identification / Description: 105

GEL LN: 096068

Layer #	%	Layer Description	Asbestos	Other Fibrous		Non-Fibrous
1	4	white paint	No asbestos detected			> 95 %
2	95	tan ceiling tile	No asbestos detected	Cellulose	10 - 20 %	
				Mineral wool	60 - 70 %	10 - 20 %
3	1	tan flat	No asbestos detected			> 95 %

No additional layers were identified during the course of the analysis for this sample.

Sample Identification / Description: 106

GEL LN: 096069

Layer #	%	Layer Description	Asbestos	Other Fibrous		Non-Fibrous
1	4	white paint	No asbestos detected			> 95 %
2	95	tan ceiling tile	No asbestos detected	Cellulose	5 - 10 %	
				Mineral wool	60 - 70 %	20 - 30 %
3	1	tan flat	No asbestos detected			> 95 %

No additional layers were identified during the course of the analysis for this sample.

Sample Identification / Description: 107

GEL LN: 096070

Layer #	%	Layer Description	Asbestos	Other Fibrous		Non-Fibrous
1	4	white paint	No asbestos detected			> 95 %
2	95	tan ceiling tile	No asbestos detected	Cellulose	5 - 10 %	
				Mineral wool	60 - 70 %	20 - 30 %
3	1	tan flat	No asbestos detected			> 95 %

No additional layers were identified during the course of the analysis for this sample.

Sample Identification / Description: 108

GEL LN: 096071

Layer #	%	Layer Description	Asbestos	Other Fibrous		Non-Fibrous
1	4	white paint	No asbestos detected			> 95 %
2	95	tan ceiling tile	No asbestos detected	Cellulose	5 - 10 %	
				Mineral wool	60 - 70 %	20 - 30 %
3	1	tan flat	No asbestos detected			> 95 %

No additional layers were identified during the course of the analysis for this sample.

Sample Identification / Description: 109

GEL LN: 096072

Layer #	%	Layer Description	Asbestos	Other Fibrous		Non-Fibrous
1	4	white paint	No asbestos detected			> 95 %
2	95	off-white ceiling tile	No asbestos detected	Cellulose	10 - 20 %	
				Mineral wool	60 - 70 %	10 - 20 %
3	1	off-white flat	No asbestos detected			> 95 %

No additional layers were identified during the course of the analysis for this sample.

Only data derived directly from sampling or analysis conducted by Global Environmental Laboratories, Inc. (GEL) has been validated. The results reported herein are for summary purposes only and do not represent any opinion or conclusion on the part of GEL.

Report No. 04-06-01264

Sample Identification / Description: 110

GEL LN: 096073

Layer #	%	Layer Description	Asbestos	Other Fibrous		Non-Fibrous
1	4	white paint	No asbestos detected			> 95 %
2	95	off-white ceiling tile	No asbestos detected	Cellulose	10 - 20 %	
				Mineral wool	60 - 70 %	10 - 20 %
3	1	off-white flat	No asbestos detected			> 95 %

No additional layers were identified during the course of the analysis for this sample.

Sample Identification / Description: 111

GEL LN: 096074

Layer #	%	Layer Description	Asbestos	Other Fibrous		Non-Fibrous
1	4	white paint	No asbestos detected			> 95 %
2	95	off-white ceiling tile	No asbestos detected	Cellulose	10 - 20 %	
				Mineral wool	60 - 70 %	10 - 20 %
3	1	off-white flat	No asbestos detected			> 95 %

No additional layers were identified during the course of the analysis for this sample.

Sample Identification / Description: 112

GEL LN: 096075

Layer #	%	Layer Description	Asbestos	Other Fibrous		Non-Fibrous
1	4	white paint	No asbestos detected			> 95 %
2	95	off-white ceiling tile	No asbestos detected	Cellulose	10 - 20 %	
				Mineral wool	60 - 70 %	10 - 20 %
3	1	off-white flat	No asbestos detected			> 95 %

No additional layers were identified during the course of the analysis for this sample.

Sample Identification / Description: 113

GEL LN: 096076

Layer #	%	Layer Description	Asbestos	Other Fibrous		Non-Fibrous
1	4	white paint	No asbestos detected			> 95 %
2	95	off-white ceiling tile	No asbestos detected	Cellulose	10 - 20 %	
				Mineral wool	60 - 70 %	10 - 20 %
3	1	off-white flat	No asbestos detected			> 95 %

No additional layers were identified during the course of the analysis for this sample.

Sample Identification / Description: 114

GEL LN: 096077

Layer #	%	Layer Description	Asbestos	Other Fibrous		Non-Fibrous
1	4	white paint	No asbestos detected			> 95 %
2	95	off-white ceiling tile	No asbestos detected	Cellulose	10 - 20 %	
				Mineral wool	60 - 70 %	10 - 20 %
3	1	off-white flat	No asbestos detected			> 95 %

No additional layers were identified during the course of the analysis for this sample.

Sample Identification / Description: 115

GEL LN: 096078

Layer #	%	Layer Description	Asbestos	Other Fibrous		Non-Fibrous
1	4	white paint	No asbestos detected			> 95 %
2	95	off-white ceiling tile	No asbestos detected	Cellulose	10 - 20 %	
				Mineral wool	60 - 70 %	10 - 20 %
3	1	off-white flat	No asbestos detected			> 95 %

No additional layers were identified during the course of the analysis for this sample.

Only data derived directly from sampling or analysis conducted by Global Environmental Laboratories, Inc. (GEL) has been validated. The results reported herein are for summary purposes only and do not represent any opinion or conclusion on the part of GEL.

GLOBAL ENVIRONMENTAL LABORATORIES, INC.

Report No. 04-06-01264

Sample Identification / Description: 116

GEL LN: 096079

Layer #	%	Layer Description	Asbestos	Other Fibrous		Non-Fibrous
1	4	white paint	No asbestos detected			> 95 %
2	95	off-white ceiling tile	No asbestos detected	Cellulose	10 - 20 %	
				Mineral wool	60 - 70 %	10 - 20 %
3	1	off-white flat	No asbestos detected			> 95 %

No additional layers were identified during the course of the analysis for this sample.

Sample Identification / Description: 117

GEL LN: 096080

Layer #	%	Layer Description	Asbestos	Other Fibrous		Non-Fibrous
1	4	white paint	No asbestos detected			> 95 %
2	95	off-white ceiling tile	No asbestos detected	Cellulose	10 - 20 %	
				Mineral wool	60 - 70 %	10 - 20 %
3	1	off-white flat	No asbestos detected			> 95 %

No additional layers were identified during the course of the analysis for this sample.

Sample Identification / Description: 118

GEL LN: 096081

Layer #	%	Layer Description	Asbestos	Other Fibrous		Non-Fibrous
1	4	white paint	No asbestos detected			> 95 %
2	95	off-white ceiling tile	No asbestos detected	Cellulose	10 - 20 %	
				Mineral wool	60 - 70 %	10 - 20 %
3	1	off-white flat	No asbestos detected			> 95 %

No additional layers were identified during the course of the analysis for this sample.

Sample Identification / Description: 119

GEL LN: 096082

Layer #	%	Layer Description	Asbestos	Other Fibrous		Non-Fibrous
1	4	white paint	No asbestos detected			> 95 %
2	95	off-white ceiling tile	No asbestos detected	Cellulose	10 - 20 %	
				Mineral wool	60 - 70 %	10 - 20 %
3	1	off-white flat	No asbestos detected			> 95 %

No additional layers were identified during the course of the analysis for this sample.

Sample Identification / Description: 120

GEL LN: 096083

Layer #	%	Layer Description	Asbestos	Other Fibrous		Non-Fibrous
1	4	white paint	No asbestos detected			> 95 %
2	95	off-white ceiling tile	No asbestos detected	Cellulose	10 - 20 %	
				Mineral wool	60 - 70 %	10 - 20 %
3	1	off-white flat	No asbestos detected			> 95 %

No additional layers were identified during the course of the analysis for this sample.

Sample Identification / Description: 121

GEL LN: 096084

Layer #	%	Layer Description	Asbestos	Other Fibrous		Non-Fibrous
1	4	white paint	No asbestos detected			> 95 %
2	95	tan ceiling tile	No asbestos detected	Cellulose	20 - 30 %	
				Mineral wool	30 - 40 %	30 - 40 %
3	1	tan flat	No asbestos detected			> 95 %

No additional layers were identified during the course of the analysis for this sample.

Only data derived directly from sampling or analysis conducted by Global Environmental Laboratories, Inc. (GEL) has been validated. The results reported herein are for summary purposes only and do not represent any opinion or conclusion on the part of GEL.

GLOBAL ENVIRONMENTAL LABORATORIES, INC.

Report No. 04-06-01264

Sample Identification / Description: 122

GEL LN: 096085

Layer #	%	Layer Description	Asbestos	Other Fibrous		Non-Fibrous
1	4	white paint	No asbestos detected			> 95 %
2	95	tan ceiling tile	No asbestos detected	Cellulose	20 - 30 %	
				Mineral wool	30 - 40 %	30 - 40 %
3	1	tan flat	No asbestos detected			> 95 %

No additional layers were identified during the course of the analysis for this sample.

Sample Identification / Description: 123

GEL LN: 096086

Layer #	%	Layer Description	Asbestos	Other Fibrous		Non-Fibrous
1	4	white paint	No asbestos detected			> 95 %
2	95	tan ceiling tile	No asbestos detected	Cellulose	20 - 30 %	
				Mineral wool	30 - 40 %	30 - 40 %
3	1	tan flat	No asbestos detected			> 95 %

No additional layers were identified during the course of the analysis for this sample.

Sample Identification / Description: 124

GEL LN: 096087

Layer #	%	Layer Description	Asbestos	Other Fibrous		Non-Fibrous
1	4	yellow paint	No asbestos detected			> 95 %
2	95	tan ceiling tile	No asbestos detected	Cellulose	20 - 30 %	
				Mineral wool	30 - 40 %	30 - 40 %
3	1	brown flat	No asbestos detected			> 95 %

No additional layers were identified during the course of the analysis for this sample.

Sample Identification / Description: 125

GEL LN: 096088

Layer #	%	Layer Description	Asbestos	Other Fibrous		Non-Fibrous
1	4	yellow paint	No asbestos detected			> 95 %
2	95	tan ceiling tile	No asbestos detected	Cellulose	20 - 30 %	
				Mineral wool	30 - 40 %	30 - 40 %
3	1	brown flat	No asbestos detected			> 95 %

No additional layers were identified during the course of the analysis for this sample.

Sample Identification / Description: 126

GEL LN: 096089

Layer #	%	Layer Description	Asbestos	Other Fibrous		Non-Fibrous
1	4	yellow paint	No asbestos detected			> 95 %
2	95	tan ceiling tile	No asbestos detected	Cellulose	20 - 30 %	
				Mineral wool	30 - 40 %	30 - 40 %
3	1	brown flat	No asbestos detected			> 95 %

No additional layers were identified during the course of the analysis for this sample.

Sample Identification / Description: 127

GEL LN: 096090

Layer #	%	Layer Description	Asbestos	Other Fibrous		Non-Fibrous
1	4	white paint	No asbestos detected			> 95 %
2	95	off-white ceiling tile	No asbestos detected	Cellulose	10 - 20 %	
				Mineral wool	60 - 70 %	10 - 20 %
3	1	off-white flat	No asbestos detected			> 95 %

No additional layers were identified during the course of the analysis for this sample.

Only data derived directly from sampling or analysis conducted by Global Environmental Laboratories, Inc. (GEL) has been validated. The results reported herein are for summary purposes only and do not represent any opinion or conclusion on the part of GEL.

GLOBAL ENVIRONMENTAL LABORATORIES, INC.

Report No. 04-06-01264

Sample Identification / Description: 128

GEL LN: 096091

Layer #	%	Layer Description	Asbestos	Other Fibrous		Non-Fibrous
1	4	white paint	No asbestos detected			> 95 %
2	95	off-white ceiling tile	No asbestos detected	Cellulose	10 - 20 %	
				Mineral wool	60 - 70 %	10 - 20 %
3	1	off-white flat	No asbestos detected			> 95 %

No additional layers were identified during the course of the analysis for this sample.

Sample Identification / Description: 129

GEL LN: 096092

Layer #	%	Layer Description	Asbestos	Other Fibrous		Non-Fibrous
1	4	white paint	No asbestos detected			> 95 %
2	95	off-white ceiling tile	No asbestos detected	Cellulose	10 - 20 %	
				Mineral wool	60 - 70 %	10 - 20 %
3	1	off-white flat	No asbestos detected			> 95 %

No additional layers were identified during the course of the analysis for this sample.

Sample Identification / Description: 130

GEL LN: 096093

Layer #	%	Layer Description	Asbestos	Other Fibrous		Non-Fibrous
1	4	off-white paint	No asbestos detected			> 95 %
2	95	off-white ceiling tile	No asbestos detected	Cellulose	20 - 30 %	
				Mineral wool	30 - 40 %	30 - 40 %
3	1	brown flat	No asbestos detected			> 95 %

No additional layers were identified during the course of the analysis for this sample.

Sample Identification / Description: 131

GEL LN: 096094

Layer #	%	Layer Description	Asbestos	Other Fibrous		Non-Fibrous
1	4	off-white paint	No asbestos detected			> 95 %
2	95	off-white ceiling tile	No asbestos detected	Cellulose	20 - 30 %	
				Mineral wool	30 - 40 %	30 - 40 %
3	1	brown flat	No asbestos detected			> 95 %

No additional layers were identified during the course of the analysis for this sample.

Sample Identification / Description: 132

GEL LN: 096095

Layer #	%	Layer Description	Asbestos	Other Fibrous		Non-Fibrous
1	4	off-white paint	No asbestos detected			> 95 %
2	95	off-white ceiling tile	No asbestos detected	Cellulose	20 - 30 %	
				Mineral wool	30 - 40 %	30 - 40 %
3	1	brown flat	No asbestos detected			> 95 %

No additional layers were identified during the course of the analysis for this sample.

Sample Identification / Description: 133

GEL LN: 096096

Layer #	%	Layer Description	Asbestos	Other Fibrous		Non-Fibrous
1	4	off-white paint	No asbestos detected			> 95 %
2	95	off-white ceiling tile	No asbestos detected	Cellulose	10 - 20 %	
				Mineral wool	60 - 70 %	10 - 20 %
3	1	off-white flat	No asbestos detected			> 95 %

No additional layers were identified during the course of the analysis for this sample.

Only data derived directly from sampling or analysis conducted by Global Environmental Laboratories, Inc. (GEL) has been validated. The results reported herein are for summary purposes only and do not represent any opinion or conclusion on the part of GEL.

Report No. 04-06-01264

Sample Identification / Description: 134

GEL LN: 096097

Layer #	%	Layer Description	Asbestos	Other Fibrous		Non-Fibrous
1	4	off-white paint	No asbestos detected			> 95 %
2	95	off-white ceiling tile	No asbestos detected	Cellulose	10 - 20 %	
				Mineral wool	60 - 70 %	10 - 20 %
3	1	off-white flat	No asbestos detected			> 95 %

No additional layers were identified during the course of the analysis for this sample.

Sample Identification / Description: 135

GEL LN: 096098

Layer #	%	Layer Description	Asbestos	Other Fibrous		Non-Fibrous
1	4	off-white paint	No asbestos detected			> 95 %
2	95	off-white ceiling tile	No asbestos detected	Cellulose	10 - 20 %	
				Mineral wool	60 - 70 %	10 - 20 %
3	1	off-white flat	No asbestos detected			> 95 %

No additional layers were identified during the course of the analysis for this sample.

Sample Identification / Description: 136

GEL LN: 096099

Layer #	%	Layer Description	Asbestos	Other Fibrous		Non-Fibrous
1	4	off-white paint	No asbestos detected			> 95 %
2	95	tan ceiling tile	No asbestos detected	Cellulose	20 - 30 %	
				Mineral wool	30 - 40 %	30 - 40 %
3	1	brown flat	No asbestos detected			> 95 %

No additional layers were identified during the course of the analysis for this sample.

Sample Identification / Description: 137

GEL LN: 096100

Layer #	%	Layer Description	Asbestos	Other Fibrous		Non-Fibrous
1	4	off-white paint	No asbestos detected			> 95 %
2	95	tan ceiling tile	No asbestos detected	Cellulose	20 - 30 %	
				Mineral wool	30 - 40 %	30 - 40 %
3	1	brown flat	No asbestos detected			> 95 %

No additional layers were identified during the course of the analysis for this sample.

Sample Identification / Description: 138

GEL LN: 096101

Layer #	%	Layer Description	Asbestos	Other Fibrous		Non-Fibrous
1	4	off-white paint	No asbestos detected			> 95 %
2	95	tan ceiling tile	No asbestos detected	Cellulose	20 - 30 %	
				Mineral wool	30 - 40 %	30 - 40 %
3	1	brown flat	No asbestos detected			> 95 %

No additional layers were identified during the course of the analysis for this sample.

Sample Identification / Description: 139

GEL LN: 096102

Layer #	%	Layer Description	Asbestos	Other Fibrous		Non-Fibrous
1	91	white paint	No asbestos detected			> 95 %
2	9	white insulation	No asbestos detected			> 95 %

No additional layers were identified during the course of the analysis for this sample.

Only data derived directly from sampling or analysis conducted by Global Environmental Laboratories, Inc. (GEL) has been validated. The results reported herein are for summary purposes only and do not represent any opinion or conclusion on the part of GEL.

Report No. 04-06-01264

Sample Identification / Description: 140

GEL LN: 096103

Layer #	%	Layer Description	Asbestos		Other Fibrous		Non-Fibrous	
1	81	white paint	No asbestos detected					
2	19	white insulation	No asbestos detected				> 95	%

No additional layers were identified during the course of the analysis for this sample.

Sample Identification / Description: 141

GEL LN: 096104

Layer #	%	Layer Description	Asbestos		Other Fibrous		Non-Fibrous	
1	91	white paint	No asbestos detected					
2	9	white insulation	No asbestos detected				> 95	%

No additional layers were identified during the course of the analysis for this sample.

Sample Identification / Description: 142

GEL LN: 096105

Layer #	%	Layer Description	Asbestos		Other Fibrous		Non-Fibrous	
1	71	red flooring	No asbestos detected					
2	29	tan felt	Chrysotile	60 - 70 %	Cellulose	3 - 5 %	> 95	%
					Brucite	1 - 3 %	20 - 30	%

Two additional samples submitted as a set with this sample, identified as 143 and 144, were not analyzed based upon the presence of asbestos in the sample analyzed. No additional layers were identified during the course of the analysis for this sample.

The samples submitted were prepared and analyzed for asbestos content by polarized light microscopy (PLM) with dispersion staining. According to the United States Environmental Protection Agency (USEPA), any sample containing greater than one (1) percent asbestos is defined as an asbestos-containing material (ACM). All samples were collected by and all sampling data was provided by the client. The reported results apply only to the samples analyzed, and only for those samples collected in accordance with the appropriate methodology as determined by the client.

Samples analyzed by this method, especially floor tile and other resin bound materials, may yield false negative results due to method limitations. Owing to the subjective nature of the method which provides visual estimates for percentages of constituents present, alternative methods (e.g., TEM) may be utilized at the discretion of the client.

The analysis was conducted under the supervision of a graduate of a McCrone Research Institute's bulk asbestos course. Global Environmental Laboratories, Inc. is a participant in the Bulk Asbestos Proficiency Analytical Testing (BAPAT) program administered by the American Industrial Hygiene Association (Lab # 102636).

Only data derived directly from sampling or analysis conducted by Global Environmental Laboratories, Inc. (GEL) has been validated. The results reported herein are for summary purposes only and do not represent any opinion or conclusion on the part of GEL.

Report No. 04-06-01264

Method Reference: EPA/600/R-93/116, July, 1993. Any asbestos fiber detected is reported; estimates less than (<) 1% are reported as "trace". The samples were submitted in acceptable condition and analyzed on 6/16/04 and 6/17/04.

Respectfully submitted,

Roman (Ray). Narconis, Jr.
Laboratory Director

Graduate, McCrone Research Institute's "Microscopical Identification of Asbestos", "TEM Asbestos Analysis", and NIOSH 582, "Sampling and Evaluating Airborne Asbestos Dust", Certificate # 5 PSI 87761 NI, AAR # 7523.

Only data derived directly from sampling or analysis conducted by Global Environmental Laboratories, Inc. (GEL) has been validated. The results reported herein are for summary purposes only and do not represent any opinion or conclusion on the part of GEL.

APPENDIX B

SPECIFICATIONS FOR ENVIRONMENTAL ABATEMENT

Environmental Operations, Inc.

SPECIFICATIONS

FOR

ENVIRONMENTAL ABATEMENT

ARCADE BUILDING
812 OLIVE STREET
ST. LOUIS, MISSOURI 63101

PREPARED FOR:

THE PYRAMID COMPANIES
906 OLIVE; SUITE 600
ST. LOUIS, MISSOURI 63101

Prepared By:

Environmental Operations, Incorporated
1530 South Second Street, Ste. 200
St. Louis, Missouri 63104

STATE OF MISSOURI
RICHARD J. CWIKLOWSKI
NUMBER E-26340
REGISTERED PROFESSIONAL ENGINEER

Richard J. Cwiklowski

Richard J. Cwiklowski, P.E.
Project Designer

Exp. 12/31/06

October 19, 2006

Environmental Operations, Inc.'s Project #1388

EOI #1426

October 19, 2006

ENVIRONMENTAL/ASBESTOS ABATEMENT
812 OLIVE STREET

TABLE OF CONTENTS

DIVISION 1 - GENERAL REQUIREMENTS

SECTION 01013 - SUMMARY OF THE WORK
SECTION 01043 - PROJECT COORDINATION
SECTION 01091 - DEFINITIONS AND STANDARDS
SECTION 01092 - CODES, REGULATIONS AND STANDARDS
SECTION 01301 - SUBMITTALS
SECTION 01410 - AIR MONITORING - TEST LABORATORY SERVICES
SECTION 01503 - TEMPORARY FACILITIES
SECTION 01513 - TEMPORARY PRESSURE DIFFERENTIAL AND AIR CIRCULATION SYSTEM
SECTION 01526 - TEMPORARY ENCLOSURES
SECTION 01560 - WORKER PROTECTION
SECTION 01562 - RESPIRATORY PROTECTION
SECTION 01563 - DECONTAMINATION UNITS
SECTION 01601 - MATERIALS AND EQUIPMENT
SECTION 01701 - PROJECT CLOSEOUT
SECTION 01711 - PROJECT DECONTAMINATION
SECTION 01714 - WORK AREA CLEARANCE – ASBESTOS ABATEMENT

DIVISION 2 - SITE WORK

SECTION 02081 - REMOVAL OF ASBESTOS-CONTAINING MATERIALS
SECTION 02082 - INTERIOR LEAD ABATEMENT FOR BUILDING RENOVATION
SECTION 02083 - ENCAPSULATION
SECTION 02084 - DISPOSAL OF ASBESTOS-CONTAINING MATERIALS
SECTION 02085 - DISPOSAL OF LEAD CONTAINING WASTE MATERIAL
SECTION 02086 - PCB BALLAST & FLUORESCENT LIGHT TUBE DISPOSAL

ENVIRONMENTAL/ASBESTOS ABATEMENT
812 OLIVE STREET

SECTION 01013
SUMMARY OF THE WORK

PART 1 - GENERAL

RELATED DOCUMENTS:

General provisions of Contract, including General and Supplementary Conditions, and other Division-1 Specification Sections, apply to work of this section.

PROJECT/WORK IDENTIFICATION:

General:

Project name is Environmental Abatement at 812 Olive Street, St. Louis, Missouri as indicated in the Specifications prepared by the Consultant, Environmental Operations, Inc. dated October 19, 2006.

All work shall be completed according to the requirements of the following specification sections in the sequence indicated.

General and Administration Requirements: Are set forth in the following specification sections:

- 01013 Summary of the Work
- 01301 Submittals
- 01701 Project Closeout

Abatement Work: requirements are set forth in the following specification sections, listed here according to the sequence of the work:

- 01526 - Temporary Enclosures: details the requirements for the sheet plastic barriers isolating the work area from the balance of the building.

- 01410 - Air Monitoring - Test Laboratory Services: describes air monitoring by Owner so that the building beyond the work area will remain uncontaminated. Air monitoring to determine required respiratory protection is the responsibility of the Contractor.

- 01563 - Decontamination Units: explains the setup and operation of the personnel and material decontamination units.

- 01513 - Temporary Pressure Differential and Air Circulation System: sets forth the procedures to set up pressure differential isolation and ventilation of the work area.

- 01560 - Worker Protection: describes the equipment and procedures for protecting workers against asbestos contamination and other workplace hazards except for respiratory protection.

- 01562 - Respiratory Protection: sets forth the procedures and equipment required for adequate protection against inhalation of airborne asbestos fibers.

- Asbestos and Lead Removal Work Procedures: are described in the following specification sections:

  - 02081 - Removal of Asbestos-Containing Materials
  - 02084 - Disposal of Asbestos-Containing Waste Material
  - 02061 – Interior Lead Abatement for Building Renovation

- Decontamination of the Work Area: after completion of the abatement work is described in the following sections:

  - 01712 - Initial Cleaning and Decontamination Procedures: sets forth procedures to be used on contaminated objects and rooms which are not part of the abatement work area.

  - 01711 - Project Decontamination: describes the sequence of cleaning and decontamination procedures to be followed during removal of the sheet plastic barriers isolating a work area.

  - 01714 - Work Area Clearance: describes the analytical methods used to determine if the work area has been successfully cleaned of contamination.

  - 01701 - Project Closeout: details the closeout procedures to end the project once abatement work is complete including final paperwork requirements.

WORK PLAN:

Contractor shall include with pre-job submittals a work plan of the procedures proposed for use in complying with the requirements of the specifications. Include in the plan 1) the location and layout of containment areas, 2) the sequencing of asbestos and lead removal, 3) the location of decontamination units, 4) the location of load-out areas, 5) the daily work hours and number of shifts, 6) name and location of the approved disposal site, and 7) specific removal methods.

ENVIRONMENTAL/ASBESTOS ABATEMENT
812 OLIVE STREET

INSPECTION:

Prior to commencement of each phase of work, inspect areas in which work will be performed. Prepare a listing of damage to structure, surfaces, equipment or of surrounding properties which could be misconstrued as damage resulting from the work. Photograph or videotape existing conditions as necessary to document conditions. Submit to Consultant prior to starting work.

STOP WORK:

If the work is not being performed in accordance with the intent of the plans, specifications, and other contract documents, the Owner, or the Consultant, will present a written stop work order to immediately and automatically stop all work. Do not recommence work until authorized in writing by the Owner or Consultant.

ABATEMENT DAMAGE TO EXISTING STRUCTURES:

Contractor shall take all precautions necessary to protect the existing buildings from damage resulting from the asbestos abatement operations.

As an alternative to the Contractor repairing any damage, the Owner reserves the right to negotiate with the contractor to determine a dollar value settlement for the damage, and perform the repairs himself. The dollar amount of the damages shall either be deducted from the contract amount, or paid to the Owner separately by the contractor.

WORK COVERED BY CONTRACT DOCUMENTS:

The work covered by this contract includes the removal of asbestos-containing materials (ACM), lead-based paint (LBP), fluorescent light tubes, ballasts and other miscellaneous household waste from 812 Olive Street in St. Louis, Missouri. The abatement work included in this project is indicated in the inspection report conducted by Environmental Operations, Inc dated June 25, 2004.

WORK SEQUENCE:

Conduct work in stages: Description and proposed sequence dates shall be submitted to the Consultant for approval prior to commencement of abatement work.

END OF SECTION 01013

ENVIRONMENTAL/ASBESTOS ABATEMENT
812 OLIVE STREET

SECTION 01043
PROJECT COORDINATION

PART 1 - GENERAL

RELATED DOCUMENTS:

General provisions of Contract, including General and Supplemental General Conditions and other Division-1 Specification Sections, apply to this section.

SUMMARY

This Section specifies administrative and supervisory requirements necessary for project coordination including, but not necessarily limited to:

- Administrative and supervisory personnel.
- Pre-Construction Conference.
- Progress Meetings.
- Daily Log.
- Special reports.
- Contingency Plans.
- Notifications to other entities at job site.

Requirements for the Contractor's Construction Schedule are included in Section 01301 - Submittals.

ADMINISTRATIVE AND SUPERVISORY PERSONNEL:

All project personnel including managers, supervisors, and workers shall have the required accreditation for the work.

PROGRESS MEETINGS

In addition to specific coordination and pre-installation meetings for each element of work and other regular project meetings specified in Section 01200. Consultant will hold general progress meetings on a weekly basis. These meetings will be scheduled, where possible, at time of preparation of payment request. Require each entity then involved in planning, coordination, or performance of work to be properly represented at each meeting.

COORDINATION MEETINGS

The Owner and Consultant will hold weekly coordination meetings. Each Contractor working at the project site will be present.

ENVIRONMENTAL/ASBESTOS ABATEMENT
812 OLIVE STREET

PRE-CONSTRUCTION CONFERENCE

An initial progress meeting, recognized as the "Pre-Construction Conference" and "Technical Pre-Construction will be convened by the Owner prior to start of any work. Contractor's Representative and Contractor's Superintendents shall meet at project site, or as otherwise directed, with the Building Superintendent, Owner, Consultant, Project Administrator, Asbestos Project Manager, Air Sampling Professional, and other personnel involved with the asbestos abatement work.

This is an organizational meeting, to review the work plan and each entities responsibilities and personnel assignments. Attendees at the conference should come prepared to discuss and agree upon the following project topics:

- Work Plan
- Construction Schedule
- Critical Work Sequencing
- Designation of Responsible Personnel
- Establish Chain of Authority
- Processing of Field Decisions
- Pay Requests
- Temporary Facilities Installation
- Decontamination - Personnel and Equipment
- Required Submittals
- Chemical Solvents Used
- Use of Owner's Premises

DAILY LOG

Contractor shall maintain a daily log documenting the following items at a minimum:

- Meetings; purpose, attendees, brief discussion.
- Visitation, authorized and unauthorized.
- Personnel, by name, entering and leaving the work area.
- Summary of work completed that day.
- Special or unusual events, i.e., barrier breaking, equipment failures, accidents.
- OSHA Air Monitoring tests and test results.

Provide a copy of this log to Consultant and Owner on a daily basis.

SPECIAL REPORTS

Except as otherwise indicated, submit special reports directly to Consultant and other affected by occurrence within one day of occurrence requiring special report.

REPORTING UNUSUAL EVENTS

When an event of unusual and significant nature occurs at site (examples: failure of pressure differential system, rupture of temporary enclosures), prepare and submit a special report listing chain of events, persons participating, response by Contractor's personnel, evaluation of results or effects, and similar pertinent information. When such events are known or predictable in advance, advise Consultant in advance at earliest possible date.

REPORTING ACCIDENTS

Prepare and submit reports of significant accidents at site. Record and document data and actions; comply with industry standards. For this purpose, a significant accident is defined to include events where personal injury is sustained, property loss of substance is sustained, or where the event posed a significant threat of loss or personal injury.

REPORT DISCOVERED CONDITIONS

When an unusual condition of the building is discovered during the work (e.g., leaks, undisclosed damage) verbally notify Consultant immediately, and prepare and submit a special report. Contractor should not proceed with any work outside original scope without written consent from Owner.

CONTINGENCY PLAN

Prepare a contingency plan for emergencies including fire, accident, power failure, pressure differential system failure, supplied air system failure, or any other event that may require modification or abridgement of decontamination or work area isolation procedures. Include in plan specific procedures for decontamination or work area isolation. Note that nothing in this specification should impede safe exiting or providing of adequate medical attention in the event of an emergency. Post: In clean room of Personnel Decontamination Unit post telephone numbers and locations of emergency services including but not limited to fire, ambulance, doctor, hospital, police, power company, telephone company, building Owner's Representative Contractor's headquarters and architect or other professional consultants.

NOTIFICATIONS

As required by the Owner, notify other entities at the job site of the nature of the asbestos abatement activities, location of asbestos-containing materials, requirements relative to asbestos set forth in these specifications and applicable regulations.

Notify emergency service agencies including fire, ambulance, police or other agency that may service the abatement work site in case of an emergency. Notification is to include methods of

entering work area, emergency entry and exit locations, modifications to fire notification or fire fighting equipment, and other information needed by agencies providing emergency services.

Notification of Emergency - Any individual at the job site may notify emergency service agencies if necessary without effect on this Contractor or the Contract Sum.

SUBMITTALS

Before the Start of Work

Submit the following to the Consultant for review. NO WORK SHALL BEGIN until these submittals are returned with Consultant action stamp indicating that the submittal is returned for unrestricted use or final-but-restricted use.

- Contingency Plans: For emergency actions.
- Telephone Numbers: and location of emergency services.
- Notifications: Sent to other entities at the work site.
- Notifications: Sent to emergency service agencies.
- Staff Assignments: Submit a list of the Contractor's principal staff assignments, including supervisors and other personnel in attendance at the site. Include copies of current physical, licenses, and training certificates pertinent to asbestos work.

END OF SECTION 01043

ENVIRONMENTAL/ASBESTOS ABATEMENT
812 OLIVE STREET

SECTION 01091
DEFINITION AND STANDARDS

PART 1 - GENERAL

RELATED DOCUMENTS:

General provisions of Contract, including General and Supplementary Conditions and other Division-1 Specification Sections, apply to this Section.

SUMMARY:

General Explanation: A substantial amount of specification language constitutes definitions for terms found in other contract comments. Certain terms used in Contract Documents are defined in this article.

General Requirements: The provisions or requirements of Division-1 sections apply to entire work of Contract and, where so indicated, to other elements which are included in project.

DEFINITIONS RELATIVE TO ASBESTOS ABATEMENT

Accredited or Accreditation (When Referring to a Person or Laboratory): A person or laboratory accredited in accordance with Section 206 of Title II of the Toxic Substances Control Act (TSCA) and the State of Missouri Interim Policy regarding House Bill 77.

Action Level: Employee exposure, without regard to use of respirators, to an airborne concentration of lead of 30 micrograms per cubic meter of air averaged over an 8-hour period. As used in these sections, "30 micrograms per cubic meter of air" refers to the action level.
Aerosol: A system consisting of particles, solid or liquid, suspended in air.

Air Cell: Insulation normally used on pipes and duct work that is comprised of corrugated cardboard which is cellulose or refractory binders.

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

Amended Water: Water to which a surfactant has been added to increase the surface tension to less than or equal to 35 dynes.

Asbestos Containing Material (ACM): Any material containing more than 1% by weight of Asbestos of any type of mixture of types.

Asbestos Debris: Pieces of ACBM that can be identified by color, texture, or composition, or dust, if the dust is determined by an accredited inspector to be ACM.

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

Asbestos-Containing Building Material (ACBM): Any material which is or is suspected of being, or any material contaminated with, an asbestos-containing material which is to be removed from a work area for disposal.

Asbestos-Containing Waste Material: Any material which is or is suspected of being, or any material contaminated with, an asbestos-containing material which is to be removed from a work area for disposal.

Authorized Visitor: The Owner, the Consultant, testing lab personnel, the Architect/Engineer, emergency personnel or a regulatory or other agency having authority over the project.

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

Biological Monitoring: Is the analysis of a person's blood and/or urine, to determine the level of lead contamination in the body.

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

Bridging Encapsulant: An encapsulant that forms a discrete layer on the surface of an insitu asbestos matrix.

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

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

Demolition: The wrecking or taking out of any building component, system, finish or assembly of a facility together with any related handling operations.

Direct Reading XRF: Is an analyzer which provides the operator with a display of a lead concentration calculated from the lead "K" x-ray intensity.

Disposal: The discharge, deposit, injection, dumping, spilling, leaking, or placing of any solid waste or hazardous waste into or on any land or water so that any constituent there of may enter the environment or be emitted into the air or discharged in any waters, including ground waters.

Disposal Bags: Provide actual 6.0 mil thick leak-tight polyethylene bags used for transporting asbestos waste from work and to disposal site. Bags for lead waste shall be labeled with two labels. (Labels are to be legible, waterproof, and resistant to removal).

Required text - Label #1:

CAUTION
CONTAINS LEAD DUST
AVOID OPENING OR BREAKING CONTAINER
BREATHING LEAD DUST IS HAZARDOUS TO YOUR HEALTH

For Hazardous Lead-Based Paint - Label #2:
[U.S. Department of Transportation regulation on hazardous waste markings. (49 CFR parts 171/172. Hazardous Substances.)]

RQ HAZARDOUS
SUBSTANCE
SOLID, NOS,
ORM-E, NA 9188
(LEAD)

Disposal Facility: A facility or part of a facility at which hazardous waste is intentially placed into or on any land or water, and at which waste will remain after closure.

Generator: Any person who first creates a hazardous waste, or any person who first makes a waste subject to the Subtitle C regulation (e.g., imports a hazardous waste, initiates a shipment of a hazardous waste from a TSD, or mixes hazardous wastes of different DOT shipping descriptions by placing them into a single container).

Eight-Hour Time Weighted Average (TWA): Airborne concentration of lead averaged over an 8-hour work day to which an employee is exposed.

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

Encapsulation: Treatment of asbestos-containing materials, with an encapsulant.

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

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

Friable Asbestos Material: Material that contains more than 1% asbestos by weight and that can be crumbled, pulverized, or reduced to powder by hand pressure when dry.

General Superintendent: This is the Contractor's Representative at the work site. This person will generally be the Competent Person required by OSHA in 29 CFR 1926.

Glovebag: A sack (typically constructed of 6 -mil transparent polyethylene or polyvinylchloride plastic) with inward projecting long-sleeve gloves, which are designed to enclose an object from which an asbestos-containing material is to be removed.

Hazardous Waste: As defined in RCRA the term "hazardous waste" means a solid waste, or combination of solid wastes, which because of its quantity, concentration, or physical chemical, or infectious characteristics may:

- Cause, or significantly contribute to an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness; or
- Pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, or disposed of, or otherwise managed.

As defined in the regulations, a solid waste is hazardous if it meets one of four conditions:

1. Exhibits a characteristic of a hazardous waste (40 CFR Sections 261.20 through 262.24);
2. Has been listed as hazardous (40 CFR Section 261.31 through 261.33);
3. Is a mixture containing a listed hazardous waste and a non-hazardous solid waste (unless the mixture is specifically excluded or no longer exhibits any of the characteristic of hazardous waste); and
4. Is not excluded from regulation as a hazardous waste.

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

HEPA Filter: A High Efficiency Particular Air (HEPA) filter capable of trapping and retaining 99.97% of asbestos fibers greater than 0.3 microns in diameter.

High-Efficiency Particulate Air Filter: (HEPA) refers to a filtering system capable of trapping and retaining 99.97 percent of all monodispersed particles 0.3 microns in diameter or larger.

Lead: Metallic lead, inorganic lead compounds, and organic lead soaps. Excluded from this definition are other organic lead compounds.

Lead Permissible Exposure Limits (PEL): Fifty micrograms per cubic meter of air as an 8-hour time weighted average as determined by 29 CFR 1910.1025. If an employee is exposed for more than 8 hours in a work day, the PEL shall be determined by the following formula:

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

Negative Pressure Ventilation System: A pressure differential and ventilation system.

Penetrating Encapsulant: An encapsulant that is adsorbed by the insitu asbestos matrix without leaving a discrete surface layer.

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

Pressure Differential and Ventilation System: A local exhaust system, utilizing HEPA filtration capable of maintaining a pressure differential with the inside of the Work Area at a lower pressure than any adjacent area, and which cleans recirculated air or generates a constant air flow from adjacent areas into the Work Area.

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

Removal Encapsulant: A penetrating encapsulant specifically designed to minimize fiber release during removal of asbestos-containing materials rather than for insitu encapsulation.

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

Substrate: A surface upon which paint or varnish has been or may be applied. Examples of substrates include wood, plaster, metal and drywall.

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

TCLP: Toxic Characteristics Leaching Procedures, see EP Tox Test.

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

Trades: Use of titles such as "carpentry" is not intended to imply that certain construction activities must be performed by accredited or unionized individuals of a corresponding generic name, such as "carpenter." It also does not imply that requirements specified apply exclusively to tradespersons of the corresponding generic name.

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

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

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

SUBMITTALS:

Permits, Licensed and Certificates: For the Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, and similar documents, correspondence and records established in conjunction with compliance with standards and regulations bearing upon performance of the work.

END OF SECTION 01091

ENVIRONMENTAL/ASBESTOS ABATEMENT
812 OLIVE STREET

SECTION 01092
CODES, REGULATIONS AND STANDARDS

PART 1 - GENERAL

RELATED DOCUMENTS:

General provisions of Contract, including General and Supplementary Conditions and other Division-1 Specification Sections, apply to this section.

SUMMARY:

This section sets forth governments regulations and industry standards which are included and incorporated herein by reference and made a part of the specification. This section also sets forth those notices and permits which are known to the Owner and which either must be applied for and received, or which must be given to governmental agencies before start of work.

Requirements include adherence to work practices and procedures set forth in applicable codes, regulations, and standards.

Requirements include obtaining permits, licenses, inspections, releases and similar documents, as well as payments, statements and similar requirements associated with codes, regulations, and standards.

CODES AND REGULATIONS:

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

Contractor Responsibility: The Contractor shall assume full responsibility and liability for the compliance with all applicable Federal, State, and local regulations pertaining to work practices, hauling, disposal, and protection of workers, visitors to the site, and persons occupying areas adjacent to the site. The Contractor is responsible for providing medical examinations and maintaining medical records of personnel as required by the applicable Federal, State, and local regulations. The Contractor shall hold the Owner and Consultant harmless for failure to comply with any applicable work, hauling, disposal, safety, health or other regulation on the part of himself, his employees, or his subcontractors.

ENVIRONMENTAL/ASBESTOS ABATEMENT
812 OLIVE STREET

Federal Requirements governing asbestos abatement work or hauling and disposal of asbestos waste materials include but are not limited to the following:

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

- Occupational Exposure to Asbestos, Tremolite, Anthophyllite, and Actinolite; Final Rules Title 29, Part 1910, Section 1001 and Part 1926, Section 1101 of the Code of Federal Regulations.
- Respiratory Protection Title 29, Part 1910, Section 134 of the Code of Federal Regulations.
- Construction Industry Title 29, Part 1926, of the Code of Federal Regulations.
- Access to Employee Exposure and Medical Records Title 29, Part 1910, Section 2 of the Code of Federal Regulations.
- Hazard Communication Title 29, Part 1910, Section 1200 of the Code of Federal Regulations.
- Specifications for Accident Prevention Signs and Tags Title 29, Part 1910, Section 145 of the Code of Federal Regulations.

DOT: U.S. Department of Transportation, including but not limited to:

- Hazardous Substances Title 29, Part 171 and 172 of the Code of Federal Regulations.

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

- Asbestos Abatement Projects; Worker Protection Rule Title 40 Part 763, Sub-part G of the Code of Federal Regulations.
- Asbestos Hazard Emergency Response Act (AHERA) Regulation Asbestos Containing Materials in Schools Final Rule & Notice Title 40, Part 763, Sub-part E of the Code of Federal Regulations.
- Training Requirements of (AHERA) Regulation Asbestos Containing Materials in Schools Final Rule & Notice Title 40, Part 763, Sub-part E., Appendix C of the Code of Federal Regulations.
- NESHAPS: National Emission Standard for Asbestos Title 40, Part 61, Sub-part A, and Sub-part M (Revised Sub-part B) of the Code of Federal Regulations. (Revised 11/90).

ENVIRONMENTAL/ASBESTOS ABATEMENT
812 OLIVE STREET

Local and State Requirements: Abide by all location requirements that govern asbestos abatement work or hauling and disposal of asbestos waste materials, including all requirements of the City of St. Louis – Air Pollution Control.

HUD GUIDELINES: All work shall be in compliance with the Department of Housing and Urban Development "Lead Based Paint: Interim Guidelines for Hazard Identification and Abatement in Public and Indian Housing", dated September 1990; Revised May 1991.

CODES OF FEDERAL REGULATIONS (CFR):

29 CFR 1910.134	Respiratory Protection
29 CFR 1910.1025	Lead
29 CFR 1910.1200	Hazard Communication
29 CFR 1926.20	General Safety and Health Provisions
29 CFR 1926.21	Safety Training and Education
29 CFR 1926.25	Housekeeping
29 CFR 1926.28	Personal Protective Equipment
29 CFR 1926.51(f)	Washing Facilities
29 CFR 1926.55	Gases, Vapors, Fumes, Dusts, and Mists
29 CFR 1926.57	Ventilation
40 CFR 61	NESHAP
40 CFR 260	Hazardous Waste Management Systems: General
40 CFR 261	Identification and Listing of Hazardous Waste
40 CFR 262	Generators of Hazardous Waste
40 CFR 263	Transporters of Hazardous Waste
40 CFR 264	Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities
40 CFR 265	Interim Status Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities
40 CFR 268	Land Disposal Restrictions
40 CFR 172	Hazardous Materials Tables and Hazardous Materials Communications Regulations
40 CFR 178	Shipping Container Specification

PERMITS:

All asbestos-containing waste is to be transported by an entity maintaining a current "Hazardous Waste Hauler Permit" specifically for asbestos-containing materials, as required for transporting of waste asbestos-containing materials to a disposal site.

LICENSES:

Maintain current licenses as required by applicable state or local jurisdictions for the removal, transporting, disposal or other regulated activity relative to the work of this contract.

POSTING AND FILING OF REGULATIONS:

Post all notices required by applicable federal, state, and local regulations. Maintain two (2) copies of applicable federal, state, and local regulations and standards. Maintain one copy of each at job site. Keep on file in Contractor's office one copy of each.

SUBMITTALS:

The Contractor shall submit the following to the Consultant for review before start of work; no work shall begin until these submittals are returned with Consultant action stamp indicating that the submittal is returned for unrestricted use or final-but-restricted use.

For the Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgements, and similar documents, correspondence and records established in conjunction with compliance with standards and regulations bearing upon performance of the work include:

State and Local Regulations: Submit copies of codes and regulations applicable to the work.

Notices: Submit notices required by federal, state, and local regulations together with proof of timely transmittal to agency requiring the notice.

Permits: Submit copies of current valid permits required by state and local regulations.

Licenses: Submit copies of all State and local licenses and permits necessary to carry out the work of this contract.

END OF SECTION 01092

ENVIRONMENTAL/ASBESTOS ABATEMENT
812 OLIVE STREET

SECTION 01301
SUBMITTALS

PART 1 - GENERAL

RELATED DOCUMENTS:

General provisions of the Contract, including General and Supplementary Conditions and other Division-1 Specification Sections, apply to this Section.

SUMMARY:

This Section specifies administrative and procedural requirements for submittals required for performance of the Work, including:

- Contractor's construction schedule.
- Daily construction reports.
- Project drawings.
- Product data.
- Miscellaneous submittals.

The Contractor will be issued a list of submittals from the Owner summarizing documents requiring submittal to the Owner and Consultant within three to five days after receipt of the official Notice of Award.

Administrative Submittals: Refer to other Division-1 Sections and other Contract Documents for requirements for administrative submittals. Such submittals include, but are not limited to:

- Permits.
- Performance and payment bonds.
- Insurance certificates.
- List of Subcontractors.

The Schedule of Values submittal is included in Section 00900.

SUBMITTAL PROCEDURES:

Coordination: Coordinate preparation and processing of submittals with performance of construction activities. Transmit each submittal sufficiently in advance of performance of related construction activities to avoid delay. One original submittal along with 6 copies shall be submitted.

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

Coordinate transmittal of different types of submittals for related elements of the work so processing will not be delayed by the need to review submittals concurrently for coordination.

The Consultant reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.

CONTRACTOR'S ABATEMENT SCHEDULE:

Schedule: Provide planned detailed schedule including work dates, work shift times, approximate number of employees per shift, dates of start and completion, including dates of initial cleaning, preparation work, removal, final cleaning, clearance testing, final inspection dates, and substantial completion.

Submit schedule within 10 days of the date established for "Commencement of the Work."

Use the same breakdown of units for the work schedule as used in the "Schedule of Values."

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

Coordinate the Contractor's abatement schedule with the schedule of values, submittal schedule, progress reports, payment requests and other schedules.

Indicate Clearance of each Work Area in advance of the dates established for Clearance. Allow time for testing and other Consultant's procedures necessary for certification of Clearance.

Indicate completion and Clearance of each Work Area in advance of the date established for Substantial Completion. Allow time for testing and other Consultant's procedures necessary for certification of Clearance and Substantial Completion.

Distribution: Following response to the initial submittal, print and distribute copies to the Consultant.

When revisions are made, distribute to the same party.

Schedule Updating: Revise the schedule after each activity, where revisions have been recognized or made, and issue the updated schedule.

MISCELLANEOUS SUBMITTALS:

Material Safety Data Sheets: Process material safety and data sheets as "product data."

Disposal Facility: The disposal facility that will be utilized for this project will be determined by the Contractor with Consultant's approval. The Contractor shall notify the land fill in writing of the following:

- Contractor name, address, phone number, and contact person
- Transportation company name, address, phone number, and contact person
- All testing required for disposal shall be completed by the Consultant

Workers Records: Submit the following records for each worker:

- Asbestos and Lead Abatement Training Certificate
- Physicals and approval to wear respirators
- Fit Test for individually assigned respirators

Medical Examination/ Records: Submit a comprehensive medical program as required by 29 CFR 1910.1025 and 29 CFR 1910.1200. Maintain complete and accurate medical records of employees for a period of at least 40 years or for the duration of the employment plus 30 years, whichever is longer.

Standards: Where submittal of a copy of standards is indicated, and except where copies of standards are specified as an integral part of a "Product Data" submittal, submit a single copy of standards for the Consultant's use.

Closeout Submittals: Refer to section "Project Closeout" and to individual sections of these specifications for specific submittal requirements of project closeout information.

Record Documents: Furnish set of original documents as maintained on the project site.

CONSULTANT'S ACTION:

Except for submittals for record, information or similar purposes, where action and return is required or requested, the Consultant will review each submittal, mark to indicate action taken, and return promptly.

Compliance with specified characteristics is the Contractor's responsibility.

Final Unrestricted Release: Where submittals are marked "Approved," that part of the work covered by the submittal may proceed provided it complies with requirements of the Contract Documents; final acceptance will depend upon that compliance.

Final-But-Restricted Release: When submittals are marked "Approved as Noted," that part of the work covered by the submittal may proceed provided it complies with notations or corrections on the submittal and requirements of the Contract Documents; final acceptance will depend on that compliance.

Returned for Resubmittal: When submittal is marked "Not Approved, Revise and Resubmit," do not proceed with that part of the work covered by the submittal, including purchasing, delivery, or other activity. Revise or prepare a new submittal in accordance with the notations; resubmit without delay. Repeat if necessary to obtain a different action mark.

Do not permit submittals marked "Not Approved, Revise and Resubmit" to be used at the Project site, or elsewhere where work is to progress.

Other Action: Where a submittal is primarily for information or record purposes, special processing or other activity, the submittal will be returned, marked "Action Not Required."

END OF SECTION 01301

ENVIRONMENTAL/ASBESTOS ABATEMENT
812 OLIVE STREET

SECTION 01410
AIR MONITORING - TEST LABORATORY SERVICES

PART 1 - GENERAL

RELATED DOCUMENTS:

General provisions of Contract, including General and Supplementary Conditions and other Division-1 Specification Sections, apply to work of this section.

Air Monitoring: During work area clearance is described in Section 01714 "Work Area Clearance."

DESCRIPTION OF THE WORK:

This section describes work being performed by the Owner's Consultant. **This work is not to be included in the contract sum.**

The section describes air monitoring carried out by the owner to verify that the building beyond the work area and the outside environment remains uncontaminated. This section also establishes airborne fiber concentrations both inside and outside the work area as action levels, and describes the action required by the Contractor if an action level is met or exceeded.

Air monitoring required by OSHA regulation (29 CFR 1926.1101) is work of the Contractor and is not covered in this section.

TEMPORARY FACILITIES:

Electrical service and distribution to be provided by the Contractor for the use of the Owner's Consultant in recovering air samples described herein is outlined in Section 01503 - Temporary Facilities.

AIR MONITORING FOR ACM:

The purpose of the Owner's air monitoring is to detect faults in the work area isolation such as:

- Contamination of the building outside of the work area with airborne asbestos fibers,
- Failure of filtration or rupture in the filter in the ventilation system, and
- Airborne asbestos contamination outside the building.

Should any of the above occur, immediately cease asbestos abatement activities until the fault is corrected. Do not recommence work until authorized by the Consultant.

Work Area Airborne Fiber Concentration

The Owner will monitor airborne fiber concentration in the work area. The purpose of this air monitoring will be to detect airborne asbestos concentrations which may overwhelm the ability of the work area isolation procedures established to protect the balance of the building or outside the building.

Work Area Clearance

To determine if the elevated airborne fiber concentration have been reduced to an acceptable level after abatement activities are completed, the Consultant will sample and analyze air per requirements set forth in this section and Section 01714 - Work Area Clearance.

The Owner's Consultant will be conducting air monitoring throughout the course of the project.

Stop Action Levels:

Inside Work Area: Maintain an average airborne count in the work area of less than the Stop Action Level given below for the type of respiratory protection in use. If the fiber counts rise above this figure for any sample taken, revise work procedures to lower fiber counts. If the Time-Weighted-Average (TWA) fiber count for any work shift or 8-hour period exceeds the Stop Action Level, stop all work except corrective action, leave pressure differential and air circulation system in operation and notify Consultant.

After correcting cause of high fiber levels, do not recommence work for 24 hours unless otherwise authorized, in writing, by Owner's Consultant.

Stop Action Level (f/cc)	Immediate Stop Level (f/cc)	Minimum Respirator Required	Minimum Protection Factor
0.1	1.0	Half-face	10
0.5	5.0	PAPR	100
1.0	10.0	Type C	1,000

If airborne fiber counts exceed Immediate Stop level given above for type of respiratory protection in use for any period of time cease all work except corrective action. Notify Consultant. Do not recommence work until fiber counts fall below Stop Action Level given above for the type of

respiratory protection in use. After correcting cause of high fiber levels, do not recommence work for 24 hours unless otherwise authorized, in writing, by Consultant.

Outside Work Area: If any air sample taken outside of the work area exceeds the base line established, immediately and automatically stop all work except corrective action. The Owner's Consultant will determine the source of the high reading and so notify the Contractor in writing.

If the high reading was the result of a failure of work area isolation measures initiate the following actions:

- Immediately erect new critical barriers as set forth in Section 01526 - Temporary Enclosures, to isolate the affected area from the balance of the building. Erect critical barriers at the next existing structural isolation of the involved space (e.g., wall, ceiling, floor) or as directed by the Owner's Consultant.

- Decontaminate the affected area in accordance with Section 01712 - Initial Cleaning and Decontamination Procedures.

- Require that respiratory protection as set forth in Section 01562 - Respiratory Protection be worn in affected area until area is cleared for re-occupancy in accordance with Section 01714 - Work Area Clearance.

- Leave critical barriers in place until completion of work and insure that the operation of the pressure differential system in the work area results in a flow of air from the balance of the building into the affected area.

- If the exit from the clean room of the personnel decontamination unit enters the affected area, establish a decontamination facility consisting of a shower room and changing room as set forth in Section 01563 - Decontamination Units, at entry point to affected area.

- After Certification of Visual Inspection in the work area remove critical barriers separating the work area from the affected area. Final air samples will be taken within the entire area as set forth in Section 01714 - Work Area Clearance.

- If the high concentration was the result of other causes initiate corrective action as determined by the Owner's Consultant.

Effect On Contract Sum:

Complete corrective work with no change in the contract sum if high airborne fiber counts were caused by Contractor's activities. The contract sum and schedule will be adjusted for additional work caused by high airborne fiber counts beyond the Contractor's control.

ENVIRONMENTAL/ASBESTOS ABATEMENT
812 OLIVE STREET

Analytical Methods:

The following method will be used by the Owner's Consultant in analyzing filters used to collect air samples. Sampling rates may be varied from printed standards to allow for high volume sampling.

Phase-Contrast Microscopy (PCM): Phase-Contrast Microscopy will be performed using National Institute for Occupational Safety and Health Method 7400.

Sample Volumes:

The number and volume of air samples taken by the Owner will be in accordance with the following schedule. Sample volumes given may vary depending upon the analytical method used.

Schedule Of Air Samples:

Before Start of Work: The Owner's Consultant will secure Air Samples to establish a base line before start of work.

Samples will be collected on 25-mm cassettes with a 50-mm extension cowling as follows:

- PCM 0.8 micrometer mixed cellulose ester.

Daily:

From start of the work, through the work of Project Decontamination, the Owner's Consultant will be taking the following samples on a daily basis, as a minimum.

Samples will be collected on 25-mm cassettes with 0.8 micrometer mixed cellulose ester filter media.

Location Sampled	Number of Samples	Analysis Method	Sampling Sensitivity Fibers/cc.	Minimum Volume (Liters)	Rate (LPM)
Each Work Area	1	PCM	0.01 (or as required by conditions)	1,200	1-10
Outside Each Work Area at Critical Barrier	2	PCM	0.01	1,200	1-10

Additional samples may be taken at Owner's or Owner's Consultant's discretion. If airborne fiber counts exceed allowed limits, additional samples will be taken as necessary to monitor fiber levels.

Laboratory Testing:

The services of a testing laboratory will be conducted by the Owner's Consultant. Samples will be analyzed daily on-site or at the laboratory, so that verbal reports on air samples can be obtained within 24 hours.

A complete record of all air monitoring and results will be furnished to the Consultant, the Owner, and the Contractor.

The Contractor may request any additional testing that he deems necessary to correct discrepancies or clarify project requirements during the bidding process. Any requests will be made via the Consultant and negotiated with the Owner if deemed necessary. No additional testing will be performed unless requested in writing and agreed to by Owner.

All air monitoring tests will be posted at the job site on a daily basis.

Additional Testing:

The Contractor may conduct his own air monitoring and laboratory testing.

If he elects to do this, the cost of such air monitoring and laboratory testing shall be at no additional cost to the Owner; and all results of testing will be made available to the Owner at no additional charge.

Personal Monitoring:

Contractor shall be responsible for damage or theft of Owner's Consultant's sampling equipment worn by Contractor's personnel. Contractor shall repair or replace any sampling equipment damaged by the Contractor's personnel.

Owner will not be performing air monitoring to meet Contractor's OSHA requirements for personnel sampling or any other purpose.

AIR MONITORING FOR LBP:

Air Monitoring: Area and clearance air monitoring is to be performed by the Owner's Consultant. OSHA compliance personnel monitoring is the responsibility of the Abatement Contractor. Submit personnel air sampling plan.

Monitoring:

a. Monitoring of airborne concentration of lead shall be in accordance with 29 CFR 1910.1025 and as specified herein. Personnel air monitoring shall be performed by an Air Sampling Professional and analyzed by a laboratory contracted for by the Abatement Contractor and approved by the Consultant. Take personal air monitoring samples on employees who are anticipated to have greatest risk of exposure as determined by the Air Sampling Professional. In addition, take air monitoring samples on at least 25 percent of the work crew or a minimum of two employees, whichever is greater, during each work shift.

b. Submit results of air monitoring samples, within 24 hours after the air samples were taken. Notify the Consultant immediately of exposure of lead at or in excess of the action level of 30 micrograms per cubic meter of air outside of the lead control area. The air monitoring plan must be approved by a CIH.

Monitoring During Removal Work: Perform personal and area monitoring during removal operation. Sufficient area monitoring shall be conducted at the physical boundary to ensure unprotected personnel are not exposed above 30 micrograms per cubic meter of air at all times. If the outside boundary lead levels are at or exceed 30 micrograms per cubic meter of air, work shall be stopped and the Consultant shall immediately review and make recommendations to correct the condition(s) causing the increase levels and notify the Project Architect immediately. The Consultant shall review the air sampling data collected on that day to determine if condition(s) requires any further change in work methods. Removal work shall resume when approval is given by the Consultant. The Abatement Contractor shall control the lead level outside of the work boundary to less than 30 micrograms per cubic meter of air at all times. As a minimum, conduct area monitoring daily on each shift in which removal operations are performed in areas immediately adjacent to the lead control area.

Certification: The Air Sampling Technician shall report in writing and the Consultant shall certify that the air monitoring samples inside and outside the lead control area are less than 30 micrograms per cubic meter of air, the respiratory protection for the employees was adequate, work procedures were performed in accordance with 29 CFR 1910.1025 and that there were no visible accumulations of lead-contaminated paint and dust on the work site.

Personal Samples

Sampling of lead concentration within the breathing zone of an employee to determine the 8-hour time weighted average concentration in accordance with 29 CFR 1910.1025. Sampling shall be representative of the employee's work tasks. Breathing zone shall be considered an area within a hemisphere, forward of the shoulders, with a radius of 6 to 9 inches and the center at the nose or mouth of an employee. The samples are collected with a personal sampling pump, pulling 1 to 4 liters/minute of air.

Action Level: Employee exposure, without regard to use of respirators, to an airborne concentration of lead of 30 micrograms per cubic meter of air averaged over an 8-hour period. As used in these sections, "30 micrograms per cubic meter of air" refers to the action level.

Lead Permissible Exposure Limit (PEL): Fifty micrograms per cubic meter of air as an 8-hour time weighted average as determined by 29 CFR 1910.1025. If an employee is exposed for more than 8 hours in a work day, the PEL shall be determined by the following formula: PEL (micrograms/cubic meter of air) = 400/number of hours worked per day.

Area Monitoring: For indoor operations, at least two samples per shift shall be taken within the lead control area and inside the physical boundaries.

For outdoor operations, at least one sample each shift shall be taken on the downwind side of the lead control area. If adjacent areas are contaminated, clean and visually inspect contaminated areas. The Consultant shall certify that the area has been cleaned of lead contamination.

END OF SECTION 01410

ENVIRONMENTAL/ASBESTOS ABATEMENT
812 OLIVE STREET

SECTION 01503
TEMPORARY FACILITIES - ASBESTOS ABATEMENT

PART 1 - GENERAL

RELATED DOCUMENTS:

General provisions of the Contract, including General and Supplemental General Conditions and other Division-1 Specification Sections, apply to work of this section.

DESCRIPTION OF REQUIREMENTS:

General: Provide temporary facilities as required herein or as necessary to carry out the work. This contractor is to provide all equipment, connections and operations of mechanical, electrical and plumbing systems as required.

PART 2 - PRODUCTS

MATERIALS AND EQUIPMENT:

General: Provide new or used materials and equipment that are undamaged and in serviceable condition. Provide only materials and equipment that are recognized as being suitable for the intended use, by compliance with appropriate standards.

Scaffolding: Provide all scaffolding, ladders, staging, etc. as necessary to accomplish the work of this contract. Scaffolding may be of suspension type or standing type such as metal tube and coupler, tubular welded frame, pole or outrigger type, or cantilever type. The type, erection, and use of all scaffolding shall comply with all applicable OSHA provisions.

Equip rungs of all scaffolding and ladders with an abrasive non-slip surface.

Provide a nonskid surface on all scaffold surfaces subject to foot traffic.

Water Service:

Temporary Water Service Connection: Contractor will be required to supply water for the project. All connections to the water system shall include backflow protection. Valves shall be temperature and pressure rated for operation at the temperatures and pressures encountered.

Water Hoses: Employ heavy-duty abrasion-resistant hoses with a pressure rating greater than the maximum pressure of the water distribution system to provide water into each work area and to each Decontamination Unit.

Shower Hot Water Heater: Provide UL-rated 40-gallon electric hot water heater to supply hot water for the Decontamination Unit shower. Activate from 30-amp GFI circuit breaker located within the Decontamination Unit subpanel. Provide relief valve compatible with water heater operation; pipe relief valve down to drip pan on floor with type L copper. Wiring of the hot water heater shall be in compliance with NEMA, NECA, and UL standards. ACM removal shall not begin until the water heater is installed and operating properly, as approved by the Consultant.

Electrical Service:

General: Comply with applicable NEMA, NECA, and UL standards and governing regulations for materials and layout of temporary electric service.

Temporary Power: Contractor required to supply all necessary electric for project execution.

Voltage Differences: Provide identification warning signs at power outlets other than 110-120 volt power. Provide polarized outlets for plug-in type outlets to prevent insertion of 110-120 volt plugs into higher voltage outlets. Dry-type transformers shall be provided where required to provide voltages necessary for work operations.

Ground-Fault Protection: Equip all circuits entering Work Area with ground-fault circuit interrupters (GFCI). Locate GFCI's exterior to Work Area so all circuits are protected prior to entry to Work Area. Provide circuit-breaker-type ground-fault circuit interrupters (GFCI) equipped with test button and reset switch for all circuits to be used for any purpose in work area, decontamination units, exterior, or as otherwise required by national electrical code, OSHA, or other authority. Locate in panel exterior to Work Area.

Electrical Power Cords: Use only grounded extension cords; use "hard-service" cords where exposed to abrasion and traffic. Use single lengths or use waterproof connectors to connect separate lengths of electric cords, if single lengths will not reach areas of work.

Sampling Pumps: Contractor shall supply and install electrical cords solely for the operation of air sampling pumps by the Consultant. Electrical cords for air sampling pumps shall not be used to supply electricity for other abatement purposes.

Lamps and Light Fixtures: Provide general service incandescent lamps or fluorescent lamps of wattage indicated or required for adequate illumination as required by the work or this document. Protect lamps with guard cages or tempered glass enclosures, where fixtures are exposed to

breakage by construction operation. Provide vapor-tight fixtures in work area and decontamination units. Provide exterior fixtures where fixtures are exposed to the weather or moisture.

Mechanical: Contractor to provide heat sufficient to maintain minimum 60° F within work areas at all times.

First Aid:

First Aid Supplies: Comply with governing regulations and recognized recommendation within the construction industry.

Fire Extinguishers: In all work locations provide type "ABC" dry chemical extinguishers.

EXECUTION:

Scaffolding: During the erection and/or moving of scaffolding, care must be exercised so that the polyethylene floor covering is not damaged.

Clean, as necessary, debris from non-slip surfaces.

At the completion of abatement work, completely decontaminate all construction aids within the Equipment Decontamination Unit (EDU) before removal from the Work Area.

Installation, General:

General: Use qualified tradesmen for installation of temporary services and facilities. Locate temporary services and facilities where they will serve the entire project adequately and result in minimum interference with the performance of the work.

Require that tradesmen accomplishing this work be licensed as required by local authority for the work performed.

Relocate, modify, and extend services and facilities as required during the course of work so as to accommodate the entire work of the project.

Water Service:

General: Contractor shall supply all necessary water for project execution. Hot water for Personnel Decontamination Unit (PDU) shall be supplied at a minimum temperature of 100°F. Supply hot and cold water to the PDU in accordance with Section 01563 - Decontamination Units.

Maintain hose connections and outlet valves in leakproof condition. Where finish work below an outlet might be damaged by spillage or leakage, provide a drip pan of suitable size to minimize the possibility of water damage. Drain water promptly from pans as it accumulates.

Electrical Service:

General: Provide a weatherproof, grounded temporary electric power service and distribution system of sufficient size, capacity, and power characteristics to accommodate performance of work during the construction period. Install temporary lighting adequate to provide sufficient illumination for safe work and traffic conditions in every area of work.

Temporary Electrical Panel: Provide temporary electrical panel as necessary, sized and equipped to accommodate all electrical equipment and lighting required by the work. Protect with circuit breaker or fused disconnect. Locate temporary panel as directed by Consultant.

Power Distribution System: Provide circuits of adequate size and proper characteristics for each use. In general run wiring overhead, and rise vertically where wiring will be least exposed to damage from construction operations.

Circuit Protection: Protect each circuit with a ground-fault circuit interrupter (GFCI) of proper size located in the temporary panel. Do not use outlet type GFCI devices.

Temporary Wiring: Temporary wiring in the Work Area shall be type UF non-metallic sheathed cable located overhead and exposed for surveillance. Do not wire temporary lighting with plain, exposed (insulated) electric conductors. Provide liquid-tight exposures or boxes for wiring devices.

Number of Branch Circuits: Provide sufficient branch circuits as required by the work. All branch circuits are to originate at temporary electrical panel. At minimum provide the following:

- One circuit for each HEPA-filtered fan unit.
- For power tools and task lighting, provide one temporary 4-gang outlet in the following locations. Provide a separate 110-120 Volt, 20-Amp circuit for each 4-gang outlet (4 outlets per circuit).
- One outlet in the work area for each 2,500 square feet of work area.
- One outlet at each decontamination unit, located in equipment room.

Provide 110-120 Volt, 20-Amp branch circuits with 4-gang outlet for Owner's exclusive use while conducting air sampling during the work as follows:

- One in each work area.
- One at clean side of each Decontamination Unit.
- One at each exhaust location for HEPA-filtered fan units.

Provide 110-120 Volt, 20-Amp branch circuits with 4-gang outlet for Owner's exclusive use for conducting final air sampling as set forth in Section 01714 - Work Area Clearance, as follows:

- Five inside work area.
- Two outside work area in location designated by Consultant.

Temporary Lighting:

All lighting to the Work Area and Decontamination facilities is to be provided from temporary electrical panel described above.

Provide the following or equivalent where natural lighting does not meet the required light level:

Provide lighting in areas where work is being performed as required to supply a 50-foot-candle (minimum) light level. Provide lighting in any area being subjected to a visual inspection as required to supply a 50-foot-candle (minimum) light level. Lights must remain in place and operable until final clearance is achieved. Provide lighting in the Decontamination Unit as required to supply a 25-foot-candle (minimum) light level.

Number of Lighting Circuits: Provide sufficient lighting circuits as required by the work. All lighting circuits are to originate at temporary electrical panel.

Circuit Protection: Protect each circuit with a ground-fault circuit interrupter (GFCI) of proper size located in the temporary panel.

Sanitary Facilities: Contractor shall provide temporary sanitary facility.

Fire Extinguishers: Comply with the applicable recommendations of NFPA Standard 10 "Standard for Portable Fire Extinguishers." Locate fire extinguishers where they are most convenient and effective for their intended purpose, but provide not less than one extinguisher in each Work Area, in Equipment Room, and one outside Work Area in Clean Room.

END OF SECTION 01503

ENVIRONMENTAL/ASBESTOS ABATEMENT
812 OLIVE STREET

SECTION 01526
TEMPORARY ENCLOSURES

PART 1 - GENERAL

RELATED DOCUMENTS:

General provision of Contract, including General and Supplementary Conditions and other Division-1 Specification Sections, apply to work of this section.

PART 2 - PRODUCTS:

Sheet Plastic:

Polyethylene Sheet: A single polyethylene film in the largest sheet size possible to minimize seams, 6-mil-thick, clear, frosted, or black, as indicated.

Reinforced Polyethylene Sheet: Where plastic sheet constitutes the only barrier between the work area and the building exterior, provide translucent, nylon-reinforced or woven polyethylene, laminated plastic sheeting. Provide largest size possible to minimize seams, 6-mil-thick, frosted or black.

Miscellaneous Materials:

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

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

PART 3 - EXECUTION

Work Area: The location is where asbestos-abatement work occurs. It is a variable of the extent of work of the Contract. It may be a portion of a room, a single room, or a complex of rooms. A "Work Area" is considered contaminated during the work, and must be isolated from the balance of the building and decontaminated at the completion of the asbestos-control work.
Completely isolate the Work Area from other parts of the building so as to prevent asbestos-containing dust or debris from passing beyond the isolated area. Should the area beyond the Work Area(s) become contaminated with asbestos-containing dust or debris as a consequence of the work, clean those areas in accordance with the procedures indicated in Section 01711 - Project Decontamination. Perform all such required cleaning or decontamination at no additional cost to Owner.

Place all tools, scaffolding, staging, etc., necessary for the work in the area to be isolated prior to completion of Work Area isolation.

Remove all removable furniture that has been designated uncontaminated by the Contract Documents or Consultant. Also remove uncontaminated equipment, and/or supplies from the Work Area before commencing work, or completely cover with two (2) layers of polyethylene sheeting, 6 mil in thickness, securely taped in place with duct tape. Such furniture and equipment shall be considered outside the work area unless covering plastic or seal is breached.

Emergency Exits: Provide emergency exits and emergency lighting as set forth below:

Emergency Exists: At each existing exit door from the Work Area provide the following means for emergency exiting:

- Arrange exit door so that it is secure from outside the Work area but permits exiting from the Work Area.

- Mark outline of door on Primary and Critical Barriers with luminescent tape or paint at least 1" wide. Hang a razor knife on a string beside outline. Arrange Critical and Primary barriers so that they can be easily cut with one pass of razor knife. Spell the words "EMERGENCY EXIT" inside outline with luminescent paint or tape in letters at least one foot high and 2" thick.

Control Access: Isolate the Work Area to prevent entry by others into Work Area or surrounding controlled areas. Accomplish isolation by the following:

- Submit to Consultant a list of doors and other openings that must be secured to isolate Work Area. Indicate on list notation if door or opening is in an indicated exit route.

- After receiving authorization from the Consultant lock all doors into Work Area, or, if doors cannot be locked, chain shut. Cover any signs that direct emergency exiting, either outside or inside of Work Area, to locked doors. Do not obstruct doors required for emergency exists from Work Area or from building.

- After receiving authorization from the Consultant, construct partitions or closures across any opening into Work Area as indicated on the project drawings.

- Fabricate partitions from 2 x 4 wood studs with 1/2" painted plywood on the face visible to other building occupants. Brace at 4'0" on center.

Provide Warning Signs using one-inch-high letters at each locked door leading to Work Area reading as follows:

Legend

KEEP OUT

BEYOND THIS POINT

WORK IN PROGRESS

Immediately inside door and outside critical barriers post an approximately 20-inch by 14-inch manufactured caution sign displaying the following legend with letter sizes and styles of a visibility required by 29 CFR 1926:

Legend

DANGER

ASBESTOS

CANCER AND LUNG DISEASE HAZARD
RESPIRATORS AND PROTECTIVE CLOTHING ARE REQUIRED
IN THIS AREA

Provide spacing between respective lines at least equal to the height of the respective upper line.

Alternate Methods of Enclosure: Alternate methods of containing the Work Area may be submitted to the Owner's Consultant for approval. Do not proceed with any such method(s) without prior written approval of the Owner's Consultant.

CRITICAL BARRIERS:

Completely separate the Work Area from other portions of the building, and the outside by closing all openings to those areas with sheet plastic barriers 6 mil in thickness, or by sealing cracks leading out of Work Area with duct tape.

Provide sheet plastic barriers 6 mil in thickness as required to seal openings completely from the Work Area into adjacent areas. Seal the perimeter of all sheet plastic barriers with duct tape.

Mechanically support sheet plastic independently of duct tape so that seals do not support the weight of the plastic. Following are acceptable methods of supporting sheet plastic barriers. Alternative support methods may be used if approved in writing by the Consultant.

- Plywood squares 6" x 6" x 3/8" held in place with one 6d smooth masonry nail or electro-galvanized common nail driven through center of the plywood and duct tape on plastic so that plywood clamps plastic to the wall. Locate plywood squares at each end, corner, and at maximum 4 feet on centers.

- Nylon or polypropylene rope or wire with a maximum unsupported span of 10 feet, minimum 1/4" in diameter suspended between supports securely fastened on either side of opening at maximum 1 foot below ceiling. Tighten rope so that it has 2" maximum dip. Drape plastic over rope from outside Work Area so that a two-foot-long flap of plastic extends over rope into Work Area. Staple or wire plastic to itself 1" below rope at maximum 6" on centers to form a sheath over rope. Lift flap and seal to ceiling with duct tape. Seal loop at bottom of flap with duct tape. Erect entire assembly so that it hangs vertically without a "shelf" upon which debris could collect.

- Provide Pressure Differential System per Section 01513 - Temporary Pressure Differential and Air Circulation System.

- Spray cement shall only be used to bond and seal lapping sheets of polyethylene.

Prepare Area:

Scaffolding: If fixed scaffolding is to be used to provide access, HEPA vacuum and wet clean area prior to scaffolding installation.

Removal all electrical and mechanical items, such as lighting fixtures, clocks, diffusers, registers, escutcheon plates, etc. that cover any part of the surface to be worked on.

Removal all general construction items such as cabinets, casework, door and window trim, moldings, ceilings, trim, etc., that cover the surface of the work, as required to prevent interference with the work.

Clean all contaminated furniture, equipment, and or supplies with a HEPA-filtered vacuum cleaners or by wet cleaning, as specified in Section 01712 - Initial Cleaning and Decontamination Procedures, prior to being moved or covered. All equipment furniture, etc. is to be deemed contaminated unless specifically declared as uncontaminated on the drawings or in writing by the Owner's Consultant.

Clean all surfaces in work area with a HEPA-filtered vacuum or by wet wiping prior to the installation of primary barrier.

Primary Barrier:

Protect building and other surfaces in the Work Area from damage from water and high humidity or from contamination from asbestos-containing debris, slurry, or high airborne fiber levels by covering with a primary barrier as described below.

Sheet Plastic: Protect surfaces in the Work Area with two (2) layers of plastic sheeting on floor and walls, or as otherwise directed on the Contract Drawings or in writing by the Owner's Consultant. Perform work in the following sequence.

- Cover all walls and ceilings in Work Area, including "Critical Barrier" sheet plastic barriers, with one layer of supported and sealed with duct tape and spray-glue in the same manner as "Critical Barrier" sheet plastic barriers. Tape all joints including the joining with the floor covering with duct tape or as otherwise indicated by the Owner's Consultant.

- Stairs and Ramps: Do not cover stairs or ramps with unsecured sheet plastic. Where stairs or ramps are covered with plastic, provide 3/4" exterior-grade plywood treads securely held in place, over plastic. Do not cover rungs or rails with any type of protective materials.

- Repaired or Damaged Plastic Sheeting: Remove and replace plastic sheeting that has been damaged by removal operations or where seal has failed allowing water to seep between layers. Remove affected sheeting and wipe down entire area as asbestos-containing material. Install new sheet plastic only when area is completely dry.

Stop Work:

If the Critical or Primary Barrier falls or is breached in any manner, stop work immediately and notify Owner's Consultant. Do not start work until authorized in writing by the Owner's Consultant.

Extension of Work Area:

If the Critical Barrier is breached in any manner that could allow the passage of asbestos debris or airborne fibers, then add affected area to the Work Area, enclose it as required by this document of the specification and decontaminate it as described in Section 01711 - Project Decontamination.

Secondary Barrier:

Install Secondary layer of sheet plastic, 6 mil thick, on floors, walls, and ceilings over primary layer using the same procedures and sequencing previously outlined for the primary barrier. Locate seams in secondary layer six feet from, or at right angles to, underlying primary layer of plastic. Install plastic so that secondary layer can be removed independently of primary barrier.

Drop Cloth:

A third layer of sheet plastic shall be placed over the floors as a drop cloth to protect the secondary layer from debris generated by the asbestos abatement work. This drop cloth is specified in the appropriate work documents.

Exterior Enclosures:

Construct exterior enclosures as a Critical Barrier as necessary to completely enclose the work. Fabricate from reinforced polyethylene sheeting and 2" x 4" wood framework. Attach to existing building components or brace as necessary for lateral stability. Construct walls to meet all state and local regulations. Construct to resist a wind of 30 miles per hour; slope ceiling to permit drainage of rain water.

REGULATED AREAS FOR LBP:

Physical Boundary: A physical boundary shall be roped, taped or partitioned off around an enclosed lead control area to limit unauthorized entry of personnel. As used in this section, "inside boundary" shall mean the same as "outside lead control area".

Lead Control Containment: Only trained personnel shall enter an enclosed area or structure with full containment to prevent the spread of lead dust, paint chips, or debris of lead-containing paint removal operations. The lead control area is isolated by physical boundaries to prevent unauthorized entry of personnel.

ENTRY INTO CONTROLLED AREAS

The following procedures will be used for entry into controlled areas:

Physical Boundary: An area will be physically roped or partitioned off around the enclosed lead control area to limit unauthorized entry of personnel.

Lead Control Area Requirements: Entry into an established lead control area will only be authorized to certified personnel. The lead controlled area will completely enclose the area where lead-containing paint contaminated material removal operations will be performed.

Warning Signs: Provide warning signs at approaches to lead control areas. Locate signs at such a distance that personnel may read the sign and take the necessary precautions before entering the area. Signs shall comply with the requirements of 29 CFR 1910.1025.

Signs: Warning signs located at entrances and exits to work areas should read as follows:

CAUTION LEAD HAZARD
DO NOT ENTER WORK AREA UNLESS AUTHORIZED

Size: 20" x 14" with brightly colored bold lettering at least 2 inches high)

Decontamination Units: Entry into decontamination units will be as follows:

Certified and trained personnel will enter the clean rooms where they will wear the proper personal protective equipment and sign in before entering the lead control area.

Personnel Exiting Procedures: Whenever personnel exit the lead-controlled area, they shall perform the following procedures and shall not leave the work place wearing any clothing or equipment worn during the work day:

- Vacuum themselves off.
- Remove protective clothing in the decontamination room, and place them in an approved impermeable disposal bag.
- Shower.
- Change to clean clothes prior to leaving the physical boundary designated around the lead-contaminated job site.
- All personnel leaving the decontamination unit must sign out before exiting.

END OF SECTION 01526

ENVIRONMENTAL/ASBESTOS ABATEMENT
812 OLIVE STREET

SECTION 01560
WORKER PROTECTION

PART 1 - GENERAL

RELATED DOCUMENTS:

General provisions of Contract, including General and Supplementary Conditions and other Division-1 Specification Sections, apply to work of this section.

DESCRIPTION OF WORK:

This section describes the equipment and procedures required for protecting workers against asbestos and lead contamination and other workplace hazards except for respiratory protection.

RELATED WORK SPECIFIED ELSEWHERE:

Respiratory protection is specified in Section 01562.

WORKER TRAINING:

AHERA Accreditation: All workers are to be accredited as Abatement Workers as required by the AHERA regulation 40 CFR 763 Appendix C to Subpart E, April 30, 1987.

State and Local License: All workers are to be trained, certified, and accredited as required by state or local codes or regulations.

Train, in accordance with 29 CFR 1926, all workers in the dangers inherent in handling asbestos and breathing asbestos dust and in proper work procedures and personal and area protective measures. Include but do not limit the topics covered in the course to the following:

- Methods of recognizing asbestos.
- Health effects associated with asbestos.
- Relationship between smoking and asbestos in producing lung cancer.
- Nature of operations that could result in exposure to asbestos.
- Importance of and instruction in the use of necessary protective controls, practices, and procedures to minimize exposure including:

- Engineering controls
- Work practices
- Respirators
- Housekeeping procedures
- Hygiene facilities
- Protective clothing
- Decontamination procedures
- Emergency procedures
- Waste disposal procedures

- Purpose, proper use, fitting, instructions, and limitations of respirators as required by 29 CFR 1910.134.

- Appropriate work practices for the work.

- Requirements of medical surveillance program.

- Review of 29 CFR 1926.

- Ventilation Systems.

- Work practices, including hands-on or on-job training.

- Personal Decontamination procedures.

- Air monitoring, personal and area.

MEDICAL EXAMINATIONS:

Provide medical examinations for all workers who may encounter an airborne fiber level of 0.1 f/cc or greater for an eight-hour Time-Weighted Average. In the absence of specific airborne fiber data, provide medical examinations for all workers who will enter the Work Area for any reason. Examination shall, at a minimum, meet OSHA requirements as set forth in 29 CFR 1926. In addition, provide an evaluation of the individual's ability to work in environments capable of producing heat stress in the worker.

SUBMITTALS:

Before Start of Work: Submit the following to the Owner's Consultant for review. Do not start work until these submittals are returned with Owner's Consultant's action stamp indicating that the submittal is returned for unrestricted use.

AHERA Accreditation: Submit copies of certificates from an USEPA-approved AHERA Abatement Workers course for each worker as evidence that each asbestos Abatement Worker is accredited as required by the AHERA Regulation 40 CFR 763 Appendix C to Subpart E, April 30, 1987.

State and Local License: Submit evidence that all workers have been trained, certified, and accredited as required by state or local code or regulation.

Certificate Worker Acknowledgement: Submit an original signed copy of the Certificate of Worker's Acknowledgement found at the end of this document, or similar document, for each worker who is to enter the Work Area.

Report from Medical Examination: Conduct within last 12 months as part of compliance with OSHA medical surveillance requirements for each worker who is to enter the Work Area. Submit, at a minimum, for each worker the following:

- Name and Social Security Number.
- Physicians Written opinion from examining physician including at a minimum the following:
  - Whether worker has any detected medical conditions that would place the worker at an increased risk of material health impairment from exposure to asbestos.
  - Any recommended limitations on the worker or on the use of personal protective equipment such as respirators.
  - Statement that the worker has been informed by the physician of the results of the medical examination and of any medical conditions that may results from asbestos exposure.
- Copy of information that was provided to physician in compliance with 29 CFR 1926.
- Statement that worker is able to wear and use the type of respiratory protection proposed for the project, and is able to work safely in an environment capable of producing heat stress in the worker.

HEALTH AND SAFETY PLAN:

Provide a health and safety plan that describes the precautions to be taken during abatement in compliance with applicable OSHA regulations for construction activities. Program elements shall include, but are not limited to the following:

	Safety and Health Regulations for Construction Title 29 CFR 1926
Fire Protection	Subpart F
Electrical	Subpart K
Ladders and Scaffolding	Subpart L
Demolition	Subpart T
Heat Stress	ACGIH TLV for Heat Stress
Confined-Space Entry	NIOSH Criteria for Working in Confined Spaces, December 1979

PART 2 - EQUIPMENT

PROTECTIVE CLOTHING:

Personal Clothing: Provide disposal full-body coveralls, disposable head covers, and require that they be worn by all workers in the Work Area.

Provide a sufficient number for all required changes, for all workers in the Work Area.

Boots: Provide work boots with non-skid soles, and where required by OSHA, foot protectives, for all workers. Provide boots at no cost to workers. Do not allow boots to be removed from the Work Area for any reason, after being contaminated with asbestos-containing material. Dispose of boots as asbestos-contaminated waste at the end of the work.

Goggles: Provide eye protective (goggles) as required by OSHA for all workers involved in scraping, spraying, or any other activity which may potentially cause eye injury. Thoroughly clean, decontaminate, and bag goggles before removing them from Work Area at the end of the work.

Gloves: Provide work gloves to all workers as required to do the work, or if requested by the workers. Do not remove gloves from Work Area. Dispose of as asbestos-contaminated waste at the end of the work.

Additional Protective Equipment: Respirators, respirator filters, disposable coveralls, disposable gloves, head covers, and footwear covers shall be provided by the Contractor for the Owner, Consultant, Consultant, and other authorized representatives who may inspect the job site, as this equipment is required by them to carry out the work.

PART 3 - EXECUTION:

GENERAL:

Provide worker protection as required by the most stringent OSHA and/or USEPA standards applicable to the work. The following procedures are minimums to be adhered to regardless of airborne fiber concentration in the Work Area.

Each time Work Area is entered, remove all street clothes in the Changing Room of the PDU and put on new disposable coverall, new head cover, and a clean respirator and filters. Proceed through shower room to equipment room and put on work boots and work clothes.

DECONTAMINATION PROCEDURES

Require all workers to adhere to the following personal decontamination procedures whenever they leave the Work Area:

Type C Supplied Air or Powered Air-Purifying Respirators: Require that all workers use the following decontamination procedure as a minimum requirement whenever leaving the Work Area:

- When exiting area, remove work boots and work clothes, disposable coveralls, disposable gloves, disposable head covers, and disposable footwear covers in the Equipment Room.

- While still wearing the respirator, proceed to showers. Showering is mandatory. Care must be taken to follow reasonable procedures in removing the respirator to avoid asbestos fibers while showering. The following procedures is required as a minimum:

  - Thoroughly wet body including hair and face. If using a Powered Air-Purifying Respirator (PAPR) hold blower unit above head to keep canisters dry.

  - With respirator still in place thoroughly wash body, hair, respirator face piece, and all parts of the respirator except the blower unit and battery pack on a PAPR. Pay particular attention to seal between face and respirator and under straps.

  - Take a deep breath, hold it and/or exhale slowly, completely wet hair, face, and respirator. While still holding breath, remove respirator and hold it away from face before starting to breath.

  - Carefully wash face piece of respirator inside and out.

- If using a PAPR, shut down in the following sequence:

  - First cap inlets to filter cartridges, then turn off blower unit (this sequence will help keep debris that has collected on the inlet side of filter from dislodging and contaminating the outside of the unit).

  - Thoroughly wash blower unit and hoses. Carefully wash battery pack with wet rag. Be extremely cautious of getting water in battery pack as this will short out and destroy battery.

  - Shower completely with soap and water.

  - Rinse thoroughly.

  - Rinse shower room walls and floor prior to exit.

  - Proceed from shower to Changing Room and change into street clothes or into new disposable work items.

Air Purifying-Negative Pressure Respirators: Require that all workers use the following decontamination procedures as a minimum requirement whenever leaving the Work Area with a half or full face cartridge type respirator:

- When exiting area, remove work clothes, disposable coveralls, disposable headcovers, and disposable footwear covers or boots in the Equipment Room.

- While still wearing the respirator, proceed to showers. Showering is mandatory. Care must be taken to follow reasonable procedures in removing the respirator and filters to avoid asbestos fibers while showering. The following procedures is required as a minimum:

  - Thoroughly wet body from neck down.

  - Wet hair as thoroughly as possible without wetting the respirator filter if using an air purifying type respirator.

  - Take a deep breath, hold it and/or exhale slowly, complete wetting of hair, thoroughly wetting face, respirator and filter (air purifying respirator). While still holding breath, remove respirator and hold it away from face before starting to breath.

  - Dispose of wet filters from air purifying respirator.

- Carefully wash face piece of respirator inside and out.
- Shower completely with soap and water.
- Rinse thoroughly.
- Rinse shower room walls and floor prior to exit.
- Proceed from shower to Changing Room and change into street clothes or into new disposable work items.

Within Work Area: Require that workers NOT eat, drink, smoke, chew tobacco or gum, or apply cosmetics in the Work Area. To eat, chew, drink or smoke, workers shall follow the decontamination procedures described previously, then dress in street clothes before entering the Non-Work Areas of the building.

END OF SECTION 01560

ENVIRONMENTAL/ASBESTOS ABATEMENT
812 OLIVE STREET

SECTION 01562
RESPIRATORY PROTECTION

PART 1 - GENERAL

RELATED DOCUMENTS:

general provisions of Contract, including General and Supplementary Conditions and other Division-1 Specification Sections, apply to work of this section.

DESCRIPTION OF WORK:

Instruct and train each worker involved in asbestos abatement or maintenance and repair of friable asbestos-containing materials in proper respiratory use and require that each worker always wear a respirator, properly fitted on the face in the Work Area from the start of any operation which may cause airborne asbestos fibers until the Work Area has been released. Use respiratory protection appropriate for the fiber concentration encountered in the work place or as required for other volatile hazardous chemicals or oxygen-deficient situations encountered.

STANDARDS:

Except to the extent that more stringent requirements are written directly into the Contract Documents, the following regulations and standards have the same force and effect (and are made a part of the Contract Documents by reference) as if copied directly into the Contract Documents, or as if published copies were bound herewith. Where there is a conflict in requirements set forth in these regulations and standards, meet the more stringent requirement.

OSHA - U.S. Department of Labor Occupational Safety and Health Administration, Safety and Health Standards 29 CFR 1910, Section 1001 and Section 1910.134. 29 CFR 1926.1101.

- CGA - Compressed Gas Association, Inc., New York, Pamphlet G-7,
- "Compressed Air for Human Respiration", and Specification G-7.1.
- "Commodity Specification for Air."
- CSA - Canadian Standard Association, Rexdal, Ontario, Standard Z180.1-1978, "Compressed Breathing Air."
- ANSI - American National Standard Practices for Respiratory Protection, ANSI Z88.2-1980.

- NIOSH - National Institute for Occupational Safety and Health
- MSHA - Mine Safety and Health Administration

PART 2 - EQUIPMENT

AIR-PURIFYING RESPIRATORS

Respirator Bodies: Provide half-face- or full-face-type respirators. Equip full-face respirators with a nose cup or other anti-fogging device as would be appropriate for use in air temperatures less than 32 degrees Fahrenheit.

Filter Cartridges: Provide, at a minimum, HEPA-type filters labeled with NIOSH and MSHA Certification for "Radionuclides, Radon Daughters, Dust, Fumes, Mists including Asbestos-Containing Dusts and Mists" and color coded in accordance with ANSI Z228.2 (1980). In addition, a chemical cartridge section may be added, if required, for solvents, etc., in use. In this case, provide cartridges that have each section of the combination canister labeled with the appropriate color code and NIOSH/MSHA Certification.

Non-permitted respirators: Do not use single use, disposable or quarter face respirators.

PART 3 - EXECUTION

GENERAL:

Respiratory Protection Program: Comply with ANSI Z88.2 - 1980 "Practices for Respiratory Protection" and OSHA 29 CFR 1910 and 1926.

Require that respiratory protection be used at all times that there is any possibility of disturbance of asbestos-containing materials whether intentional or accidental.

Require that a respirator be worn by anyone in a Work Area at all times, regardless of activity, during a period that starts with any operation which could cause the release of airborne fibers until the area has been cleared for re-occupancy in accordance with Section 01714.

FIT TESTING:

Initial Fitting: Provide initial fitting of respiratory protection during a respiratory protection course of training set up and administered by a Certified Industrial Hygienist. Fit types of respirator to be actually worn by each individual. Allow an individual to use only those respirators for which

training and fit testing has been provided. Provide documentation to the Consultant, of the satisfactory fit test, qualitative for half-face and quantitative for all other respirators.
Upon Each Wearing: Require that an air-purifying respirator be checked for fit with a positive and negative pressure fit check before each use, in accordance with the manufacturer's instructions or ANSI Z88.2 (1980).

TYPE OF RESPIRATORY PROTECTION REQUIRED:

Powered Air-Purifying (PAPR) Respirators: Full facepiece positive pressure respirators are to be used by all workers engaged in the removal, or demolition of pipes, structures, or equipment covered or insulated with asbestos-containing material, or in the removal or demolition of asbestos insulation or coverings, or any other activity which results in or may result in airborne asbestos fibers.

Where PAPR respiratory protection does not apply, determine the proper level of protection by dividing the expected or actual airborne fiber concentration in the Work Area by the "protection factors" given herein. The level of respiratory protection which calculates an airborne fiber concentration inside the respirator, at the breathing zone of the wearer, at or below the permissible exposure limit (PEL) is the minimum level of protection allowed. Contractor must first present an exposure assessment in accordance with OSHA regulations to utilize respirators having less protection than a PAPR, such as a half-face or full-face type of respirators. Removal of floor tile and mastic by non-friable methods may be performed with a half-face type respirator, this does not apply for floor sheeting.

OSHA PERMISSIBLE EXPOSURE LIMIT (PEL):

Fibers: For purposes of this section, fibers are defined as all fibers regardless of composition as counted in the OSHA Reference Method (ORM), or NIOSH 7400 procedure.

Electron Microscopy: If Electron Microscopy is used to determine airborne fiber levels, only asbestos fibers will be enumerated, but fibers of any size detected by the testing of Section 01714 Work Area Clearance will be counted.

The OSHA Permissible Exposure Limits (PEL) are:

- Time-Weighted Average (TWA) - 0.1 fibers/cc
- 30-minute excursion (ceilings) - 1.0 fibers/cc

RESPIRATORY PROTECTION FACTOR:

RESPIRATOR TYPE	PROTECTION FACTOR
Air purifying: Negative pressure respirator	10

RESPIRATOR TYPE	PROTECTION FACTOR
High efficiency filter Half facepiece	
Air purifying: Negative pressure respirator High efficiency filter Full facepiece	50 (With Quantitative Fit Test)
Powered Air Purifying (PAPR): Positive pressure respirator High efficiency filter Half or full facepiece	100
Type C Supplied Air: Positive pressure respirator Pressure demand or other positive pressure mode Half facepiece	1,000
Type C Supplied Air: Positive pressure respirator Pressure demand or other positive pressure mode Full facepiece	2,000
Type C Supplied Air: Positive pressure respirator Pressure demand or other positive pressure mode Full facepiece Equipped with an auxiliary positive pressure Self-contained breathing apparatus (SCBA)	10,000
Self-contained Breathing Apparatus (SCBA): Positive pressure respirator Pressure demand or other positive pressure mode Full facepiece	10,000

AIR-PURIFYING RESPIRATORS:

Negative Pressure:

Half or Full Face Mask: Supply a sufficient quantity of respirator filters approved for asbestos, so that workers can change filters during the work day. Require that respirator bodies be wet-rinsed, and filters discarded, each time a worker leaves the Work Area. Require that new filters be

installed each time a worker re-enters the Work Area. Store respirators and filters at the job site in the changing room and protect totally from exposure to asbestos prior to their use.

PAPRs: Supply a sufficient quantity of high efficiency respirator filters approved for asbestos so that workers can change filters at any time that flow through the face piece decreases below manufacturer's recommendations. Require that regardless of flow, filter cartridges be replaced after 40 hours of use. Require that HEPA elements in filter cartridges be protected from wetting during showering. Require entire exterior housing of respirator, including blower unit, filter cartridges, hoses, batter pack, face mask, belt, and cords, be washed each time a worker leaves the Work Area. Caution should be used to avoid shorting battery pack during washing. Provide an extra battery pack for each respirator so that one can be charging while one is in use.

RESPIRATORY PROTECTION FOR LBP:

Respiratory Protection Program:

a. Furnish each employee required to wear a negative pressure respirator, or other appropriate type, with a respirator fit test at the time of initial fitting and at least every 6 months thereafter as required by 29 CFR 1910.1025.

b. Establish and implement a respiratory protection program as required by ANSI Z88.2, 29 CFR 1910.134, 29 CFR 1910.1025, and 1926.55.

Respirators: Furnish appropriate respirators approved by the NIOSH, Department of Health and Human Services, for use in the atmospheres containing lead dust. Respirators shall comply with the requirements of 29 CFR 1910.1025/29 CFR 1910.134.

Personal Monitoring: Ensure that sampling of lead concentration within the breathing zone of an employee is carried out to determine the 8-hour time weighted average concentration in accordance with 29 CFR 1910.1025. Sampling shall be representative of the employee's work tasks. Breathing zone shall be considered an area within a hemisphere, forward of the shoulders, with a radius of 6 to 9 inches and the center at the nose or mouth of an employee.

Action Level: Ensure all employees take appropriate measures in areas where action levels have been reached. Action level - 30 micrograms per cubic meter of air averaged over an 8-hour period.

Lead Permissible Exposure Limits (PEL): Ensure that no employee is exposed to levels above the PEL. PEL - Fifty micrograms per cubic meter of air as an 8-hour time weighted average as determined by 29 CFR 1910.1025. If an employee is exposed for more than 8 hours in a work day, notify the consultant. The PEL shall be determined by the following formula:

PEL (micrograms/cubic meter of air) = 400/number of hours worked per day.

Ensure that the respirator protection meets the following requirements:

CODE OF FEDERAL REGULATIONS (CFR)

29 CFR 1910.134	Respiratory Protection
29 CFR 1926.28	Personal Protective Equipment
29 CFR 1926.55	Gases, Vapors, Fumes, Dusts, and Mists
29 CFR 1926.57	Ventilation
40 CFR 61	NESHAP

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

ANSI Z9.2	1979	Fundamentals Governing the Design and Operation of Local Exhaust Systems
ANSI Z88.2	1980	Respiratory Protection

UNDERWRITERS LABORATORIES INC. (UL)

UL 586	1990	High-Efficiency, Particulate, Air Filter Units

END OF SECTION 01562

ENVIRONMENTAL/ASBESTOS ABATEMENT
812 OLIVE STREET

SECTION 01563
DECONTAMINATION UNITS

PART 1 - GENERAL

RELATED DOCUMENTS:

General provisions of Contract, including General and Supplementary Conditions and other Division-1 Specification sections, apply to work of this section.

DESCRIPTION OF WORK:

Provide separate Personnel and Equipment Decontamination facilities. Require that the Personnel Decontamination Unit be the only means of ingress and egress for the Work Area. Require that all materials exit the Work Area through the Equipment Decontamination Unit.

Full containment areas for gross removal activities must have Personnel and Equipment Decontamination facilities attached as outlined below. A remote Personnel Decontamination Unit is required to be installed and operational for use during the duration of the asbestos abatement activities not performed within a full containment.

Provide at a minimum a hand wash station available for workers exiting Lead control areas. The wash station can be a remote location within the building properly identified for the workers use.

RELATED WORK SPECIFIED ELSEWHERE:

Refer to Section 01503 Temporary Facilities for electrical requirements and requirements relative to connection of decontamination facilities to building systems such as water, sewer, and electrical.

SUBMITTALS

Before the Start of Work: Submit the following to the Consultant for review. Do not begin work until these submittals are returned with Consultant's action stamp indicating that the submittal is returned for unrestricted use final-but-unrestricted use.

Personnel Decontamination Unit: Provide project drawing showing location and assembly of personnel decontamination units.

Equipment Decontamination Unit: Provide project drawing showing location and assembly of equipment decontamination units.

Showers: Provide product data.

Filters: Provide product data and drawing of installation on decontamination unit.

Shower Stall: For Wash Down Station provide product data and shop drawing.

PART 2 - PRODUCTS

Polyethylene Sheet: A single polyethylene film in the largest sheet size possible to minimize seams, 6 mil thick, clear, frosted, or black.

Reinforced Polyethylene Sheet: Where plastic sheet is the only separation between the Work Area and building exterior, provide translucent, nylon reinforced, laminated, flame resistant, polyethylene film that conforms to requirements set forth by the National Fire Protection Association Standard 701, Small Scale Fire Test for Flame-resistant Textiles and Films. Provide largest size possible to minimize seams, 6 mil thick, frosted or black.

Duct Tape: Provide duct tape in two-inch or three-inch widths as indicated, with an adhesive which is formulated to stick aggressively to sheet polyethylene.

Spray Adhesive: Provide spray adhesive in aerosol cans which is specifically formulated to stick tenaciously to sheet polyethylene.

Shower Walls: Provide walls fabricated from, impervious, waterproof material. Structurally support as necessary for stability.

Shower Head and Controls: Provide a factory-made shower head producing a spray of water which can be adjusted for spray size and intensity. Feed shower with water mixed from hot and cold supply lines. Arrange so that control of water temperature, flow rate, and shut off is from inside shower without outside aid.

Filters: Provide cascaded filter units on drain lines from showers or any other water source carrying asbestos-contaminated water from the Work Area. Provide units with disposable filter elements as indicated below. Connect so that discharged water passes primary filter and output of primary filter passes through secondary filter.

- Primary Filter - Passes particles 20 microns and smaller.
- Secondary Filter - Passes particles 5 microns and smaller.

Hose Bib: Provide heavy bronze angle type with wheel handle, vacuum breaker, and 3/4-inch National Standard male hose outlet. Shower Stall: For Wash Down Station provide leak tight shower enclosure with integrated drain. Structurally support as necessary for stability. Equip with hose bib, as specified in this section, mounted at approximately four feet-zero inches above drain pan. Connect drain to a reservoir, pump water from reservoir through filters to a drain or store and use for amended water. Mount filters inside shower stall on back wall beneath hose bib.

Lumber: Provide kiln dried lumber of any grade or species.

Sump Pump: Provide totally submersible waterproof sump pump with integral float switch. Provide unit sized to pump 2 times the flow capacity of all showers or hoses supplying water to the sump, through the filters specified herein when they are loaded to the extent that replacement is required. Provide unit capable of pumping debris, sand, plaster or other materials washed off during decontamination procedures without damage to mechanism of pump. Adjust float switch so that a minimum of three inches remains between top of liquid and top of sump pan.

PART 3 - EXECUTION

PERSONNEL DECONTAMINATION UNIT:

Provide a Personnel Decontamination Unit consisting of a serial arrangement of connected rooms or spaces, Changing Room, Drying Room, Shower Room, Equipment Room. Require all persons without exception to pass through this Decontamination Unit for entry into and exiting from the Work Area for any purpose. Do not allow parallel routes for entry or exit. Do not remove equipment or materials through Personnel Decontamination Unit. Provide temporary lighting within Decontamination Units as necessary to reach a lighting level of 100 foot candles.

Changing Room (clean room): Provide a room that is physically and visually separated from the rest of the building for the purpose of changing into protective clothing. Change room shall have minimum dimensions of 10' x 10' x 8' and shall comply with all OSHA standards.

- Construct using polyethylene sheeting, at least 6 mil in thickness, to provide an airtight seal between the Changing Room and the rest of the building.
- Locate so that access to Work Area from Changing Room is through Shower Room.
- Separate Changing Room from the building by a sheet plastic flapped doorway.
- Require workers to remove all street clothes in this room, dress in clean, disposable coveralls, and don respiratory protection equipment. Do not allow asbestos-contaminated items to enter this room. Require workers to enter this room either from outside the structure dressed in street clothes, or naked from the showers.

- An existing room may be utilized as the Changing Room if it is suitably located and of a configuration whereby workers may enter the Changing Room directly from the Shower Room. Protect all surfaces or rooms with sheet plastic as set forth in Section 01526 Temporary Enclosures. Authorization for this must be obtained from the Consultant in writing prior to start of construction. Submit written request in accordance with Section 01632 "Product Substitutions" detailing layout and protective measures proposed.

- Maintain floor of changing room dry and clean at all times. Do not allow overflow water from shower to wet floor in changing room.

- Damp wipe or mist all surfaces twice after each shift change with a disinfectant solution.

- Provide posted information for all emergency phone numbers and procedures.

- Provide all other components indicated on the contract drawings.

Drying Room: Provide a drying room as an airlock and a place for workers to dry after showering.

- Construct room by providing a pan continuous with or draining to Shower Room pan. Install a freely draining wooden or non-skid metal floor in pan at elevation of top of pan.

- Separate this room from the rest of the building with airtight walls fabricated of 6-mil polyethylene.

- Separate this room from the Changing Room and Shower Room with airtight walls fabricated of 6-mil polyethylene.

- Separate from Changing Room by a sheet plastic flapped doorway.

- Provide a continuously adequate supply of disposable bath towels.

- Arrange so that there is a sensible movement of air from clean room through breathing zone of worker in Shower and Drying Room toward Equipment Room.

Shower Room: Provide a completely watertight operational shower to be used for transit by cleanly dressed workers heading for the Work Area from the Changing Room, or for showering by workers headed out of the Work Area after undressing in the Equipment Room.

- Construct room by providing a shower pan and 2 shower walls in a configuration that will cause water running down walls to drip into pan. Install a freely draining wooden floor in shower pan at elevation of top of pan.

- Separate this room from the rest of the building with airtight walls fabricated of 6-mil polyethylene.

- Separate this room from the Drying Room and Airlock with airtight walls fabricated of 6-mil polyethylene.

- Provide splashproof entrances to Drying Room and Airlock with doors arranged in the following configuration:

  - At each entrance to the Shower Room construct a door frame out of nominal two inches by four-inches lumber with 1-1/2 inch jambs (sides) and 1-1/2 inch head (top) and sill (bottom). Attach to this door frame two overlapping flaps of sheet plastic, fastened at the head (top) and jambs (sides) (by clamping between a 1-1/2 inch x 3/4 inch batten and frame). Overlap the flaps a minimum of six inches in a direction that presents a shingle-like configuration to the water stream from the shower. Overlap sill (bottom) by 1-1/2 inch minimum. Arrange so that any air movement out of the Work Area will cause the flaps to seal against the door frame.

- Provide shower head and controls.

- Provide temporary extensions of existing hot and cold water and drainage, as necessary for a complete and operable shower.

- Provide a soap dispenser and a continuously adequate supply of soap and maintain in sanitary condition.

- Arrange so that water from showering does not splash into the Changing or Equipment Rooms.

- Arrange water shut off and drain pump operation controls so that a single individual can shower without assistance from either inside or outside of the Work Area.

- Provide flexible hose shower head.

- Pump wastewater to drain or to storage for use in amended water. If pumped to drain, provide 20 micron and 5 micron wastewater filters in line to drain or wastewater storage. Change filters daily or more often if necessary. Locate filters inside shower unit so that water lost during filter changes is caught by shower pan.

- Provide hose bib.

- Provide all other items indicated on contract drawings.

Airlock: Provide an airlock between Shower Room and Equipment Room. This is a transit area for workers. Separate this room from Equipment Room by a sheet plastic flap doorway.

- Separate this room from the rest of the building with airtight walls fabricated of 6-mil polyethylene.

- Separate this room from the Equipment Room and Shower Room with airtight walls fabricated of 6-mil polyethylene.

- Separate from Equipment Room by a sheet plastic flapped doorway.

Equipment Room (Contaminated Area): Require work equipment, footwear and additional contaminated work clothing to be left here. This is a change and transit area for workers.

- Separate this room from the Work Area by a 6-mil polyethylene flapped doorway.

- Separate this room from the rest of the building with airtight walls fabricated of 6-mil polyethylene.

- Separate this room from the Shower Room and Work Area with airtight walls fabricated of 6-mil polyethylene.

- Provide a drop cloth layer of sheet plastic on floor in the Equipment Room for every shift change expected. Roll drop cloth layer of plastic from Equipment Room into Work Area after each shift change. Replace before next shift change. Provide a minimum of two (2) layers of plastic at all times. Use only clear plastic to cover floors.

Work Area: Separate Work Area from the Equipment Room by polyethylene barriers. If the airborne asbestos level in the Work Area is expected to be high, add an intermediate cleaning space between the Equipment Room and the Work Area. Damp wipe clean all surfaces after each shift change. Provide one additional floor layer of 6-mil polyethylene per shift change and remove contaminated layer after each shift.

Decontamination Sequence: Require that all workers adhere to the following sequence when entering or leaving the Work Area.

- Entering Work Area:

- Worker enters Changing Room and removes street clothing, puts on clean disposable overalls and respirator, and passes through the Shower Room into the Equipment Room.

- Any additional clothing and equipment left in Equipment Room needed by the worker are put on in the Equipment Room.

- Worker proceeds to Work Area.

• Exiting Work Area:

- Before leaving the Work Area, require the worker to remove all gross contamination and debris from overalls and feet.

- The worker then proceeds to the Equipment Room and removes all clothing except respiratory protection equipment.

- Extra work clothing such as boots, hard hats, goggles, gloves, are to be stored in contaminated end of the Equipment Room.

- Disposable coveralls are placed in a bag for disposal with other material.

- Require the Decontamination procedures found in Section 01560 be followed by all individuals leaving the Work Area.

- After showering, the worker moves to the Changing Room and dresses in either new coveralls for another entry or street clothes if leaving.

EQUIPMENT DECONTAMINATION UNIT:

Provide an Equipment Decontamination Unit consisting of serial arrangement of rooms, Clean Room, Holding Room, Wash Room for removal of equipment and material from Work Area. Do not allow personnel to enter or exit Work Area through Equipment Decontamination Unit.

Arrange with airlocks between rooms as required below.

Wash Down Station: Provide an enclosed Shower Unit located in Work Area just outside Wash Room as an equipment, bag and container cleaning station.

Fabricate waterproof floor extending six feet - zero inches beyond Wash Down station in all directions. Install seamless waterproof membrane over area and extend over curbs on all four sides. Form curbs from two-inches by four-inches lumber laid on the flat.

Waterproof membrane is to be fabricated from minimum 10 mil polyethylene.

Do not allow water to collect on waterproof membrane. Remove continuously with a wet vacuum or mops.

Wash Room: Provide wash room for cleaning of bagged or containerized asbestos-containing waste materials passed from the Work Area.

Construct wash room of nominal two-inches by four-inches wood framing and polyethylene sheeting, 6 mil in thickness and located so that packaged materials, after being wiped clean, can be passed to the Holding Room.

Separate this room from the Work Area by a single flapped door of 6-mil polyethylene sheeting.

Provide a drop cloth layer of plastic on floor in the Wash Room for every load-out operation. Roll this drop cloth layer of plastic from Wash Room into Work Area after each load-out. Provide a minimum of two (2) layers of plastic at all times. Use only clear plastic to cover floors.

Airlock: Provide an airlock between Wash Room and Holding Room. This is a transit area.

Separate this room from adjacent spaces by a sheet plastic flapped doorway.

Separate this room from the rest of the building and adjacent spaces with airtight walls fabricated of 6-mil polyethylene.

Holding Room: Provide Holding Room as a drop location for bagged asbestos-containing materials passed from the Wash Room. Construct Holding Room of nominal two-inches by four-inches wood framing and polyethylene sheeting, 6 mil in thickness and located so that bagged materials cannot be passed from the Wash Room through the Holding Room to the Clean Room.

Separate this room from the adjacent rooms by flap doors fabricated from 6-mil sheet plastic.

Airlock: Provide an airlock between Holding Room and Clean Room. This is a transit area.

Separate this room from adjacent spaces by a sheet plastic flap doorway.

Separate this room from the rest of the building and adjacent spaces with airtight walls fabricated of 6-mil polyethylene.

Clean Room: Provide Clean Room to isolate the Holding Room from the building exterior. If possible locate to provide direct access to the Holding Room from the building exterior.

Erect Critical and Primary Barriers as described in Section 01526 "Temporary Enclosures" in an existing space. If no space exists, construct Clean Room of two-inches by four-inches wood framing and polyethylene sheeting, 6 mil in thickness.

Separate this room from the exterior by a single flap door of 6-mil polyethylene sheeting.

Load-Out Area: The load-out area is the transfer area from the building to a truck or dumpster. It may be the Clean Room of the Equipment Decontamination unit or a separate room or loading dock area. Erect Critical and Primary barriers as described in Section 01526 "Temporary Enclosures" in load-out area.

During transfer of material from load-out area erect primary barriers as described in Section 01526 "Temporary Enclosures" as necessary to seal path from load-out area to truck or dumpster.

Decontamination Sequence: Take all equipment or material from the Work Area through the Equipment Decontamination Unit according to the following procedure:

- At washdown station, thoroughly wet and clean contaminated equipment or sealed polyethylene bags and pass into Wash Room.
- When passing equipment or containers into the Wash Room, close all doorways of the Equipment Decontamination Unit, other than the doorway between the Washdown Station and the Wash Room. Keep all outside personnel clear of the Equipment Decontamination Unit.
- Once inside the washroom, wet clean the bags and/or equipment.
- When cleaning is complete pass items into Holding Room. Close all doorways except the doorway between the Holding room and the Clean Room.
- Workers from the building exterior enter Holding Area and remove decontaminated equipment and/or containers for disposal.
- Require these workers to wear full protective clothing and appropriate respiratory protection.
- At no time is a worker from an uncontaminated area to enter the enclosure when a removal worker is inside.

CONSTRUCTION OF THE DECONTAMINATION UNITS:

Walls and Ceiling: Construct airtight walls and ceiling using polyethylene sheeting, 6 mil in thickness. Attach to existing building components or a temporary framework.

Floors: Use 2 layers (minimum) of 6-mil polyethylene sheeting to cover floors in all areas of the Decontamination Units. Use only clear plastic to cover floors.

Flap Doors: Fabricated from three (3) overlapping sheets with openings a minimum of three feet (3') wide. Configure so that sheeting overlaps adjacent surfaces. Weigh sheets at bottoms as required so that they quickly close after being released. Put arrows on sheets to indicate direction of overlap and/or travel. Provide a minimum of six feet (6') between entrance and exit of any room. Provide a minimum of three feet (3') between doors to airlocks.

If the Decontamination area is located within an area containing friable asbestos on overhead ceilings, ducts, piping, etc., provide the area with a minimum 1/4 inch hardboard or 1/2 inch plywood "ceiling" with polyethylene sheeting, 6 mil in thickness covering the top of the "ceiling."

Alternate methods of providing Decontamination facilities may be submitted to the Consultant for approval. Do not proceed with any such method(s) without written authorization of the Consultant.

Electrical: Provide subpanel at Changing Room to accommodate all removal equipment. Power subpanel directly from the Contractor's temporary electrical power. Connect all electrical branch circuits in Decontamination unit and particularly any pumps in shower room to a ground-fault circuit protection device.

CLEANING OF DECONTAMINATION UNITS:

Clean debris and residue from inside the Decontamination Units on a daily basis or as otherwise indicated by consultant. Damp wipe or hose down all surfaces after each shift change. Clean debris from shower pans on a daily basis.

If the Changing Room of the Personnel Decontamination Unit becomes contaminated with asbestos-containing debris, abandon the entire Decontamination Unit and erect a new Decontamination Unit. Use the former Changing Room as an inner section of the new Equipment Room.

SIGNS:

Post an approximately 20 inch by 14 inch manufactured caution sign at each entrance to the Work Area displaying the following legend with letter sizes and styles of a visibility required by 29 CFR 1926:

LEGEND

DANGER

ASBESTOS

ENVIRONMENTAL/ASBESTOS ABATEMENT
812 OLIVE STREET

CANCER AND LUNG DISEASE HAZARD
RESPIRATORS AND PROTECTIVE CLOTHING ARE REQUIRED
IN THIS AREA

Provide spacing between respective lines at least equal to the height of the respective upper line.

Post an approximately 10 inch by 14 inch manufactured sign at each entrance to each Work Area displaying the following legend with letter sizes and styles of a visibility at least equal to the following:

LEGEND NOTATION

• NO FOOD, BEVERAGES OR TOBACCO PERMITTED	3/4" Block
• ALL PERSONS SHALL DON PROTECTIVE CLOTHING (COVERINGS) BEFORE ENTERING THE WORK AREA	3/4" Block
• ALL PERSONS SHALL SHOWER IMMEDIATELY AFTER LEAVING WORK AREA AND BEFORE ENTERING THE CHANGING AREA	3/4" Block

END OF SECTION 01563

ENVIRONMENTAL/ASBESTOS ABATEMENT
812 OLIVE STREET

SECTION 01601
MATERIALS AND EQUIPMENT

PART 1 - GENERAL

RELATE DOCUMENTS

General provisions of Contract, including General and Supplementary Conditions and other Division-1 Specifications Sections, apply to this Section.

SUMMARY

This Section specifies administrative and procedural requirements governing the Contractor's selection of products for use in the project.

The Contractor's Abatement Schedule is included under Section "Submittals".

Standards: Refer to Section 01091 "Definitions and Standards" for applicability of industry standards to products specified.

Administrative procedures for handling requests for substitutions made after award of the Contract are included under Section 01632 "Product Substitutions".

DEFINITIONS

Definitions used in this Article are not intended to change the meaning of other terms used in the Contract Documents, such as "specialties," "systems," "structure," "finishes," "accessories," and similar terms. Such terms are self-explanatory and have well recognized meanings in the construction industry.

"Products" are items purchased for use in performing the work or for incorporation in the Work, whether purchased for the Project or taken from previously purchased stock. The term "product" includes the terms "material", "equipment," "system," and terms of similar intent.

"Named Products" are items identified by manufacturer's product name, including make or model designation, indicated in the manufacturer's published product literature, that is current as of the date of the Contract Documents.

"Materials" are products that are substantially shaped, cut,worked, mixed, finished, refined or otherwise fabricated, processed, or installed to form a part of the Work.

"Equipment" are products that may be either operational or fixed. Operations Equipment are products with operating parts, whether motorized or manually operated, that require temporary or permanent service connections, such a wiring or piping. Fixed Equipment are products necessary for accomplishing the work that are used as a temporary facility during the work and removed afterward.

SUBMITTALS

Required submittals: A general listing of products requiring submittals is included at the end of Section 01301 "Submittals." This listing may not be complete. Submittal requirements are found in each specification section. Prepare a schedule in tabular form showing each product listed. Include the manufacturer's name and proprietary product names for each item listed.

Product List Schedule: Prepare a schedule showing products specified in a tabular form acceptable to the Consultant. Include generic names of products required. Include the manufacturer's name and proprietary product names for each item listed.

Coordinate the product list schedule with the Contractor's Abatement Schedule.

Prepare the product listing schedule with information on each item tabulated under the following column headings:

Related Specification Section number.
Generic name in Contract Documents.
Proprietary name, model number and similar designations.
Manufacturer's name and address.
Installer's name and address.

Consultant's Action: The Consultant will respond in writing to the Contractor within five days of receipt of the completed product list schedule. The Consultant's response will include the following:

A list of unacceptable product selections, containing a brief explanation for this action

QUALITY ASSURANCE

Compatibility of Options: When the Contractor is given the option of selection between two or more products for use on the project, the product selected shall be compatible with products previously selected, even if previously selected products were also options.

PRODUCT DELIVERY, STORAGE, AND HANDLING

Deliver, store and handle products in accordance with the manufacturer's recommendations, using means and methods that will prevent damage, deterioration and loss, including theft.

Schedule delivery to minimize long-term storage at the site and overcrowding of construction spaces.

Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft and other losses.

Deliver products to the site in the manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protection and installing.

Inspect products upon delivery to ensure compliance with the Contractor Documents, and to ensure that products are undamaged and properly protected.

Store products at the site in a manner that will facilitate inspection and measurement of quantity or counting of units.

Store heavy materials away from the project structure in a manner that will not endanger the supporting construction.

Store products subject to damage by the elements above ground, under cover in a weathertight enclosure, with ventilation adequate to prevent condensation. Maintain temperature and humidity within range required by manufacturer's instructions.

PART 2 - PRODUCTS

PRODUCT SELECTION

General Product Requirements: Provide products that comply with the Contract Documents, that are undamaged and, unless otherwise indicate, unused at the time of installation.

Provide products complete with all accessories, trim, finish, safety guards and other devices and details needed for a complete installation and for the intended use and effect.

Standard Products: Where available, provide standard products of types that have been produced and used successfully in similar situations on other projects.

Product Selection Procedures: Product selection is governed by the Contract Documents and governing regulations, not by previous project experience. Procedures governing product selection include the following:

Proprietary Specification Requirements: Where only a single product or manufacturer is named, provide the product indicated. No substitutions will be permitted.

Semi-proprietary Specification Requirements: Where two or more products or manufacturers are named, provide one of the products indicated. No substitutions will be permitted.

Non-Proprietary Specifications: When the Specifications list products or manufacturers that are available and may be incorporated in the Work, but do not restrict the Contractor to use of these products only, the Contractor may propose any available product that complies with Contract requirements. Comply with Contract Document provisions concerning "substitutions: to obtain approval for use of an unnamed product.

Descriptive Specification Requirements: Where Specifications describe a product or assembly, listing exact characteristics required, with or without use of a brand or trade name, provide a product or assembly that provides the characteristics and otherwise complies with Contract requirement.

Performance Specification Requirements: Where Specifications require compliance with performance requirements, provide products that comply with these requirements, and are recommended by the manufacturer for the application indicated. General overall performance of a product is implied where the product is specified for a specific application.

Manufacturer's recommendations may be contained in published product literature, or by the manufacturer's certification of performance.

Compliance with Standards, Codes and Regulations: Where the Specifications only require compliance with an imposed code, standard or regulation, select a product that complies with the stands, codes or regulations specified.

Allowances: Refer to individual Specification Sections and "Allowance" provisions in Division-1 for allowances that control product selection, and for procedures required for processing such selections.

PART 3 - EXECUTION

INSTALLATION OF PRODUCTS

Comply with manufacturer's instructions and recommendation for installation of products in the applications indicated.

END OF SECTION 01601

ENVIRONMENTAL/ASBESTOS ABATEMENT
812 OLIVE STREET

SECTION 01701
PROJECT CLOSEOUT

PART 1 - GENERAL

RELATED DOCUMENTS:

General provisions of Contract, including General and Supplementary Conditions and other Division-1 Specification Sections, apply to this Section.

SUMMARY

This Section specifies administrative and procedural requirements for project closeout, including but not limited to:

- Inspection procedures.
- Project record document submittal.
- Submittal of warranties.
- Final cleaning.

The requirements of this section apply to closeout of each phase.

SUBMITTAL COMPLETION:

Preliminary Procedures: Before requesting inspection for certification of Substantial Completion, complete the following. List exceptions in the request.

In the Application for Payment that coincides with, or first follows, the date Substantial Completion is claimed, show 100 percent completion for the portion of the work claimed as substantially complete. Include supporting documents for completion as indicated in these Contract Documents and a statement showing an accounting of changes to the Contract Sum.

- If 100 percent completion cannot be shown, include a list of incomplete items, the value of incomplete construction, and reasons the work is not complete.

- Advise Owner of pending insurance change over requirements.

- Submit specific warranties, workmanship, bonds, final certifications and similar documents.

- Obtain and submit releases enabling the Owner unrestricted use of the Work and access to services and utilities; include occupancy permits, operating certificates and similar releases, if applicable.

- Submit record drawings, damage survey, or similar final record information.

- Complete start up testing of systems. Discontinue or change over and remove temporary facilities from the site, along with construction tools, and similar elements.

Inspection Procedures: On receipt of a request for inspection, the Consultant will either proceed with inspection or advise the Contractor of unfilled requirements. The Consultant will prepare the Certificate of Substantial Completion following inspection, or advise the Contractor of construction that must be completed or corrected before the certificate will be issued.

The Consultant will repeat inspection when requested and assured that the work has been substantially completed.

Results of the completed inspection will form the basis of requirements for final acceptance.

FINAL ACCEPTANCE:

Preliminary Procedures: Before requesting final inspection for Certification of Final Acceptance and Final Payment, complete the following. List exceptions in the request.

- Submit the Final Payment Request with releases and supporting documentation not previously submitted and accepted. Include Certificates of Insurance for products and completed operations where required.

- Submit an updated final statement, accounting for final additional changes to the Contract Sum.

- Submit a certified copy of the Consultant's final inspection list of items to be completed or corrected, stating that each item has been completed or otherwise resolved for acceptance, and the list has been endorsed and dated by the Consultant.

- Submit final electrical meter readings in each townhouse building.

- Submit consent of surety to Final Payment.

- Submit evidence of final, continuing insurance coverage complying with insurance requirements.

Reinspection Procedure: The Consultant will reinspect the Work upon receipt of notice that the Work, including inspection list items from earlier inspections, has been completed, except items whose completion has been delayed because of circumstances acceptable to the Consultant.

- Upon completion of reinspection, the Consultant will prepare a Certificate of Final Acceptance, or advice the Contractor of work that is incomplete or of obligations that have not been fulfilled but are required for Final Acceptance.

If necessary, reinspection will be repeated.

RECORD DOCUMENT SUBMITTALS:

General: Do not use record documents for abatement purposes; protect from deterioration and loss in a secure, fire-resistive location; provide access to record documents for the Consultant's reference during normal working hours.

Record Specifications: Maintain one complete copy of the Specifications, including addenda, and one copy of other written abatement documents such as Change Orders and modifications issued in printed form during abatement. Mark these documents to show substantial variations in actual work performed in comparison with the text of the Specifications and modifications. Give particular attention to substitutions, selection of options and similar information on elements that are concealed or cannot otherwise be readily discerned later by direct observation. Note related record drawing information and Product Data.

Upon completion of the work, submit record Specifications to the Consultant for the Owner's records.

Record Product Data: Maintain one copy of each Product Data submittal. Mark these documents to show significant variations in the actual work performed in comparison with information submitted. Include variations in products delivered to the site, and from the manufacturer's installation instructions and recommendations. Give particular attention to concealed products and portions of the work which cannot otherwise be readily discerned later by direct observation. Note related Change Orders and mark up of record Drawings and Specifications.

Upon completion of mark up, submit complete set of record Product Data to the Consultant for the Owner's records.

Miscellaneous Record Submittals: Refer to other Specification Sections for requirements of miscellaneous record keeping and submittals in connection with actual performance of the work. Immediately prior to the date or dates of Substantial Completion, complete miscellaneous records and place in good order, properly identified and bound or filed, ready for continued use and reference. Submit to the Consultant for the Owner's records.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION:

FINAL CLEANING:

General: General cleaning during abatement is required by the General Conditions and included in Section 01503 "Temporary Facilities."

Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to the condition expected in a normal, commercial building cleaning and maintenance program. Comply with manufacturer's instructions.

Complete the following cleaning operations before requesting inspection for Certification of Substantial Completion.

- Remove labels that are not permanent labels.
- Clean transparent materials, including mirrors and glass in doors and windows. Replace chipped or broken glass and other damaged transparent materials.
- Clean exposed exterior and interior hard-surfaced finishes to a dust-free condition, free of stains, films and similar foreign substances. Restore reflective surfaces to their original reflective condition. Leave concrete floors broom clean. Vacuum carpeted surfaces.
- Wipe surfaces of mechanical and electrical equipment. Remove excess lubrication and other substances. Clean plumbing fixtures to a sanitary condition. Clean light fixtures and lamps.
- Clean the site, including landscape areas, of rubbish, litter and foreign substances. Sweep paved areas broom clean; remove stains, spills and other foreign deposits. Rake grounds that are neither paved nor planted, to a smooth even-textured surface.

Removal of Protection: Remove temporary protection and facilities installed for protection of the work during abatement.

Compliance: Comply with regulations of authorities having jurisdiction and safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on the Owner's property. Do not discharge volatile, harmful or dangerous materials into drainage systems. Remove waste materials from the site and dispose of in a lawful manner.

Where extra materials of value remaining after completion of associated Work have become the Owner's property, arrange for disposition of these materials as directed.

END OF SECTION 01701

ENVIRONMENTAL/ASBESTOS ABATEMENT
812 OLIVE STREET

SECTION 01711
PROJECT DECONTAMINATION

PART 1 - GENERAL

RELATED DOCUMENTS:

General provisions of Contract, including General and Supplementary Conditions and other Division-1 Specification Sections, apply to work of this section.

DESCRIPTION OF REQUIREMENTS:

General: Decontamination of the Work Area following asbestos abatement.

- If the asbestos abatement work is on damaged or friable materials the work is a three step procedure with cleaning of the Secondary, Primary, and Critical Barrier plastic prior to their removal. Unless specifically indicated otherwise all materials are considered damaged or friable for purposes of this section.

- In all cases operation of the pressure differential system is used to remove airborne fibers generated by the abatement work.

RELATED WORK SPECIFIED ELSEWHERE:

Removal of Gross Debris is integral with the performance of abatement work and as such is specified in the appropriate work section(s) of these specifications:

- Section 02081 - Removal of Asbestos-Containing Materials

Work Area Clearance: Air testing and other requirements which must be met before release of Contractor and reoccupancy of the work area are specified in Section 01714 Work Area Clearance.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

GENERAL:

Work of this Section includes the decontamination of air in the Work Area which has been, or may have been, contaminated by the elevated airborne asbestos fiber levels generated during abatement activities, or which may previously have had elevated fiber levels due to friable asbestos-containing materials in the space.

Work of this Section includes the cleaning, decontamination, and removal of temporary facilities installed prior to abatement work, including:

- Secondary, Primary and Critical Barriers erected by work of Section 01526.
- Decontamination Unit erected by work of Section 01563.
- Pressure Differential System installed by work of Section 01513.

Work of this Section includes the cleaning, and decontamination of all surfaces (ceiling, walls, floor) of the Work Area, and all furniture or equipment in the Work Area.

START OF WORK:

Previous Work: During completion of the asbestos abatement work specified in other sections, any gross debris generated by the asbestos abatement work will have been removed and disposed of.

Start of Work: Work of this section begins with the cleaning of the Secondary Barrier. At start of work the following will be in place:

- Secondary Barrier and Primary Barrier: Two layers of polyethylene sheeting on floors and walls.
- Critical Barrier: An airtight barrier between the Work Area and other portions of the building or the outside.
- Critical Barrier Sheeting: Over lighting fixtures and clocks, ventilation openings, doorways, connectors, speakers and other openings. Decontamination Units: For personnel and equipment in operating condition.
- Pressure Differential System: In operation.

FIRST CLEANING:

First Cleaning: Carry out a first cleaning of all surfaces of the work area including items of remaining sheeting, tools, scaffolding and/or staging by use of damp-cleaning and mopping, and/or a High-Efficiency Particulate Air (HEPA) filtered vacuum. (Note: A HEPA vacuum may fail if used with wet material.) Do not perform dry dusting or dry sweeping. Use each surface of a cleaning cloth one time only and then dispose of as contaminated waste. Continue this cleaning until there is no visible debris from removed materials or residue on plastic sheeting or other surfaces. Remove Secondary Barrier of polyethylene sheeting and dispose of. Remove all filters in

Air Handling System(s) and dispose of as asbestos containing waste in accordance with requirements of Section 02084 Disposal of Asbestos-Containing Waste Material.

Wait 96 Air Changes or 24 hours to allow HEPA-filtered fan units to clean air of airborne asbestos fibers. Use oscillating fans as necessary to assure circulation of air in all parts of work areas during this period. Maintain Pressure Differential System in operation for the entire 96 air change or 24-hour period.

SECOND CLEANING:

Second Cleaning: Carry out a cleaning of the primary barrier and all surfaces in the work area in the same manner as the first cleaning.

Encapsulation of Substrate: Perform encapsulation of substrate and lockdown of primary barrier at this time. Maintain Pressure Differential System in operation during encapsulation work. Perform work only after meeting the following requirements:

- Surfaces to be covered have met the requirements for a visual inspection in this section.
- Airborne fiber counts in the Work Area are at or below 0.01 fibers per cubic centimeter as measured by phase contrast microscopy.

Removal of Primary Barriers:

Immediately following the cleaning of the Primary plastic, remove all Primary Barrier sheeting and Material Decontamination Unit, if there is one, leaving only:

- Critical Barrier: Which forms the sole barrier between the Work Area and other portions of the building or the outside.
- Critical Barrier Sheeting: Cover lighting fixtures and clocks, ventilation openings, doorways, convectors, speakers, and other openings.

Decontamination Unit: For personnel, in operating condition.

Pressure Differential System: Maintain in continuous operation.

Wait 96 Air Changes or 24 hours to allow HEPA-filtered fan units to clean air of airborne asbestos fibers. Use oscillating fans as necessary to assure circulation of air in all parts of work areas during this period. Maintain Pressure Differential System in operation for the entire 96 air change or 24-hour period.

THIRD CLEANING:

Third Cleaning: Carry out a third cleaning of all surfaces in the work area in the same manner as the first cleaning. This cleaning is now being applied to existing room surfaces. Take care to avoid water marks or other damage to surfaces.

Contractor's Testing: At the completion of the above cleaning visually inspect all surfaces. Reclean if any dust, debris, etc. is found. At completion of this inspection sweep entire Work Area including walls, ceilings, ledges, floors and other surfaces in the Work Area with exhaust from forced-air equipment (leaf blower with approximately 1 horsepower electric motor or equivalent). Do not direct forced-air equipment at any seal in any Critical Barrier. If any debris or dust is found repeat the cleaning. continue this process until no debris dust or other material is found while sweeping of all surfaces with forced-air equipment.

Wait 96 Air Changes or 24 hours to allow HEPA-filtered fan units to clean air of airborne asbestos fibers. Use oscillating fans as necessary to assure circulation of air in all parts of work areas during this period. Maintain pressure differential system in operation for the entire 96 air change or 24-hour period.

VISUAL INSPECTION:

96 Air Changes or 24 Hours After Third Cleaning Perform a Complete Visual Inspection of the entire Work Area including all surfaces, ceiling, walls, floor, decontamination unit, all plastic sheeting, seals over ventilation openings, doorways, windows, and other openings; look for debris from any sources, residue on surfaces, dust or other matter. During visual inspection sweep entire work area including walls, ceilings, ledges, floors, and other surfaces in the room with exhaust from forced air equipment (leaf blower with approximately 1 horsepower electric motor or equivalent). If any debris, residue, dust or other matter is found repeat third cleaning and continue decontamination procedure from that point. When the area is visually clean, and if after sweeping of all surfaces with leaf blower, no debris, residue, dust or other material is found, complete the certification at the end of this section. Visual inspection is not complete until confirmed in writing, on the certification, by Consultant.

Temporary Lighting: Provide a minimum of 50 foot candles of lighting on all surfaces in the areas to be subjected to visual inspection. Provide hand held lights providing 150 foot candles at 4 feet capable of reaching all locations in work area.

Lifts: Provide ladders, scaffolding, and lifts as required to provide access to all surfaces in the area to be subjected to visual inspection. Access is to allow touching of all surfaces.

FINAL AIR SAMPLING PCM:

Phase Contrast Microscopy (PCM): After the work area is found to be visually clean, air samples will be taken and analyzed in accordance with the procedure for Phase Contrast Microscopy set forth in Section 01714 "Work Area Clearance":

- If Release Criteria are not met, repeat cleaning and continue Decontamination Procedure from that point.
- If Release Criteria are met, proceed to work of this Section on Removal of Work Area Isolation.

REMOVAL OF WORK AREA ISOLATION:

After all requirements of this section and Section 01714 Work Area Clearance have been met:

- Shut down and remove the Pressure Differential System. Seal HEPA-filtered fan units, HEPA vacuums and similar equipment with 6-mil polyethylene sheet and duct tape to form a tight seal at intake end before being moved from Work Area.
- Remove Personnel Decontamination Unit.
- Remove the Critical Barriers separating the Work Area from the rest of the building. Remove any small quantities of residual material found upon removal of the plastic sheeting with wet wiping, HEPA-filtered vacuum cleaners and local area protection. If significant quantities, as determined by the Consultant, are found then the entire area affected shall be decontaminated as specified in Section 01712 "Initial Cleaning and Decontamination Procedures."
- Remove all equipment, materials, debris from the work site.
- Dispose of all asbestos-containing waste material as specified in Section 02084 "Disposal of Asbestos Containing Waste Material."

SUBSTANTIAL COMPLETION OF ABATEMENT WORK:

Asbestos Abatement Work is Substantially Complete upon meeting the requirements of this section and Section 01714 Work Area Clearance, including submission of:

- Certificate of Visual Inspection.
- Receipts Documenting proper disposal as required by Section 02084 Disposal of Asbestos-Containing Waste Material.

- Punch list detailing repairs to be made and incomplete items.

DECONTAMINTION FOR LEAD ABATEMENT

Perform abatement of lead-containing paint in accordance with approved lead-containing paint abatement plan. Use procedures and equipment required to limit occupation and environmental exposure to lead when lead-containing paint is removed in accordance with 29 CFR 1910.1025, except as specified herein. Disposal of removed paint chips and associated waste in compliance with Environmental Protection Agency (EPA), federal, state, and local requirements.

Execution:

a. Remove surface dust and debris by scrubbing with detergent (trisodium phosphate 5% - 10% solution) and rinsing. Remove loose paint until a sound, intact edge is achieved.

CLEAN-UP AND DISPOSAL

Clean-Up:

a. After the abatement work is completed, remove all debris and perform the first clean using HEPA Vacuum and mopping or wiping with a detergent with a high-phosphate content (containing at least 5% Trisodium Phosphate - TSP).

b. Cleaning Materials: Detergent with a high-phosphate content (containing at least 5% Trisodium Phosphate - TSP).

c. Deposit all lead waste, including but not limited to sealing tape, plastic sheeting, mop heads, sponges, filters, and disposable clothing in double plastic bags of at least 4 mils thick, or double bags 6 mils thick and seal the bags.

d. Vacuum clean all surfaces in the work area including woodwork, walls, window wells, and floors with a HEPA vacuum.

e. After vacuuming clean, wet wash all floors in the work area with a solution containing at least 1 ounce of 5 percent trisodium phosphate to each gallon of water.

f. After washing and after surface has dried, vacuum clean surface with a HEPA vacuum until no visible residue remains.

g. After the first clean, as described above, lead paint encapsulation may begin or, if removal was accomplished begin second clean. After the encapsulation work, a second clean shall be accomplished.

h. Remove all the plastic sheeting left on the floors, windows, vents, and doors etc. Vacuum clean all surfaces with a HEPA vacuum as described below.

i. After all the work is completed, but before the unit turnover, perform the final clean-up with a HEPA vacuum and tri-phosphate wash using cleaning procedures described above. The Consultant will then inspect the area and conduct the "clearance" wipe tests and collect soil samples.

DISPOSAL OF LEAD CONTAINING WASTE MATERIAL

Testing of Lead-Containing Paint Residue Prior to Disposal: The Consultant will test for lead containing paint residue in accordance with 40 CFR 261 for hazardous waste and disposal permit.

Disposal:

a. Collect lead-contaminated waste, scrap, debris, bags, containers, equipment, and lead contaminated clothing which may produce airborne concentrations of lead particles. Label the containers in accordance with 29 CFR 1910.1025. Dispose of lead-contaminated waste material at an approved hazardous waste treatment, storage, or disposal facility.

b. Handle, store, transport, and dispose lead or lead-contaminated waste in accordance with 40 CFR 260, 40 CFR 261, 40 CFR 262, 40 CFR 263, 40 CFR 265, and 40 CFR 265. Comply with land disposal restriction notification requirements as required by 40 CFR 268.

Disposal Documentation: Submit copies of the completed manifest, signed and dated by the initial transporter and landfill in accordance with 40 CFR 260, 40 CFR 261, 40 CFR 262, 40 CFR 263, 40 CFR 264, 40 CFR 265, 40 CFR 268, 49 CFR 172, and 49 CFR 178.

CERTIFICATE OF VISUAL INSPECTION:

Following this section is a "Certificate of Visual Inspection." This certification is to be completed by the Contractor and signed by the Contractor Supervisor directly responsible for the work. Submit completed Certificate with Application for Final Payment. Final payment will not be made until this Certification is executed.

END OF SECTION 01711

ENVIRONMENTAL/ASBESTOS ABATEMENT
812 OLIVE STREET

CERTIFICATION OF VISUAL INSPECTION

In accordance with Section 01711 "Project Decontamination" the Contractor hereby certifies that he has visually inspected the Work Area (all surfaces including pipes, beams, ledges, walls, ceiling and floor, Decontamination Unit, sheet plastic, etc.) and has found no dust, debris, or residue.

By: _____ _____
(Signature) (Date)

_____
(Print Name)

_____
(Print Title)

ENVIRONMENTAL/ASBESTOS ABATEMENT
812 OLIVE STREET

SECTION 01714
WORK AREA CLEARANCE

PART 1 - GENERAL

RELATED DOCUMENTS:

General provision of Contract, including General and Supplementary Conditions and other Division-1 Specification Sections, apply to work of this section.

- Visual Inspection: Required as a prerequisite of air testing, is set forth in Section 01711 Project Decontamination.

- Air Monitoring: performed by the Owner during abatement work, is described in Section 01410 - Test Laboratory Services.

SUMMARY FOR ACM CLEARANCE:

This Section sets forth required post-abatement airborne asbestos concentrations in the Work Area and describes testing procedures used to measure these levels performed by the Owner's Consultant.

The Owner will only pay for the analysis of one set of PCM work area clearance samples. Additional air samples that are required due to failure of the initial samples to meet clearance criteria will be paid for by the Contractor. The Contractor shall use the Owner's testing lab to test air samples.

CONTRACTOR RELEASE CRITERIA:

The Asbestos Abatement Work Area is Cleared when the Work Area is visually clean and airborne asbestos structure concentrations have been reduced to the level specified herein.

VISUAL INSPECTION:

Work of this section will not begin until the visual inspection described in Section 01711 - Project Decontamination is complete and has been signed by the Owner's Consultant.

AIR MONITORING:

To determine if the elevated airborne asbestos structure concentration encountered during abatement operations has been reduced to the specified level, the Owner will secure samples and analyze them according to the following procedures.

- Aggressive sampling procedures as described herein will be followed.

- Work Area Clearance: upon meeting the PCM Clearance requirements the work of Section 01711 - Project Decontamination, can continue.

AGGRESSIVE SAMPLING (Full Containment):

All Air Samples will be taken using aggressive sampling techniques as follows:

- Before sampling pumps are started, the exhaust from forced-air equipment (leaf blower with an approximately 1-horsepower electric motor) will be swept against all walls, ceilings, floors, ledges, and other surfaces in the room. This procedure will be continued for 5 minutes per 10,000 cubic feet of room volume.

- One 20-inch-diameter fan per 10,000 cubic feet of room volume will be mounted in a central location at approximately 2 meters above floor, directed toward ceiling and operated at low speed for the entire period of sample collection.

- Air samples will be collected in areas subject to normal air circulation away from room corners, obstructed locations, and sites near windows, doors or vents.

- After air sampling pumps have been shut off, fans will be shut off.

IN-PROGRESS CLEARANCE TESTING

In-Progress Clearance Testing will be conducted for glovebag removal areas, and removal of caulking, floor tile and mastic and transite.

SCHEDULE OF AIR SAMPLES:

General: The number and volume of air samples taken and analytical methods used by the Owner will be in accordance with the following schedule. Sample volumes given may vary depending upon the analytical instruments used.

PHASE-CONTRAST MICROSCOPY:

In each homogeneous Work Area after completion of all cleaning work, a minimum of 7 samples will be taken and analyzed as follows:

- Samples will be collected on 25-mm, 50-mm-extension cowling cassettes with the following filter media:

PCM: 0.8 um mixed cellulose ester in a cassette with a 50-mm conductive extension cowl.					
Location Sampled	Number of Samples	Analysis Method Fibers/cc.	Detection Limit (Liters)	Minimum Volume	Rate L/min.
Each Work Area (>1,000 ft^3)	5	PCM	0.01	1,200	1-10
Each Work Area (<1,000 ft^3)	2	PCM	0.01	1,200	1-10
In-Progress	2	PCM	0.01	1,200	1-10

Release Criteria: Decontamination of the work site is complete when every Work Area sample is at or below the Detection Limit above. If any sample is above the Detection Limit then the decontamination is incomplete and recleaning per Section 01711 - Project Decontamination, is required.

LABORATORY TESTING:

Phase-Contrast Microscopy: The services of a testing laboratory will be employed by the Owner to perform laboratory analysis of the air samples. A technician will be at the job site, and samples will be sent daily by overnight delivery, so that verbal reports on air samples can be obtained within 24 hours. A complete record, certified by the testing laboratory, of all air monitoring tests and results will be furnished to the Consultant, the Owner, Consultant and the Contractor.

The Owner shall employ the Consultant to perform 1 set of clearance sample collection and analysis per enclosure based on the contractors visual certification and guarantee that the work is complete. Should additional clearance testing be required due to failure to meet the clearance criteria established the contractor will be responsible for all labor, material, analysis and incidental costs associated with additional testing.

SUMMARY FOR LBP CLEARANCE:

Pre-Abatement: Surface lead dust testing will be performed by the Consultant in areas scheduled to be abated. These tests will determine degree of contamination that exists prior to abatement. These test will be done prior to the commencement of any abatement work to establish background levels.

During Abatement: The Consultant will perform daily area air monitoring during the abatement work and the Abatement Contractor will perform personnel air monitoring to determine the level of airborne lead and the adequacy of the respiratory protection required. Each active abatement worker should be monitored once a week. The highest reading of any man shall serve as the basis

of respirator protection. The Abatement Contractor shall supply the Consultant with results of the tests within 24 hours of testing. Federal, state or local regulations regarding occupational exposure monitoring should be followed if more stringent than the monitoring required herein. Laboratory Analysis must be performed by a HUD recommended testing laboratory.

Post-Abatement "Clearance" Testing: Final clearance testing shall be performed by the Consultant. Surface lead dust testing is to be performed in both abated area and in selected areas adjacent to where the abatement has been done. Visual inspection of the abated areas before surface lead dust testing shall be performed by the Consultant to determine that all LBP areas were abated as specified and that no visible dust or debris are present.

Standard for Clearance are:

Window Troughs	400 micrograms/sq. ft.
Interior Window Sills	250 micrograms/sq. ft.
Floors	40 micrograms/sq. ft.

Clearance Testing Guidelines:

Substrate removal and/or encapsulation in limited areas	1 wipe sample in each abated area, divided equally between window wells, window sills, and floor AND 1 wipe sample outside the containment area (within 10 feet)
Exterior Abatement	At least 1 wipe test on a horizontal surface in part of outdoor area

* Compare to pre-abatement wipe samples to determine if dust from the abatement process has contaminated nonabated areas. The abatement contractor will be required to clean up these areas if contamination from the abatement process occurs, or if such clean-up is otherwise in his/her scope of work.

Clearance Testing: If clearance testing results are above the standards, the contractor shall reclean the area and the clearance test shall be repeated. Payment for any retesting shall be the responsibility of the Abatement Contractor.

END OF SECTION 01714

ENVIRONMENTAL/ASBESTOS ABATEMENT
812 OLIVE STREET

SECTION 02081
REMOVAL OF ASBESTOS - CONTAINING MATERIALS

PART 1 - GENERAL

RELATED DOCUMENTS:

General provisions of Contract, including General and Supplementary Conditions and Division - 1 Specification Sections, apply to work of this section.

RELATED WORK SPECIFIED ELSEWHERE:

Installation of Critical and Primary Barriers, and Work Area Isolation Procedures are set forth in Section 01526 "Temporary Enclosures."

Project Decontamination procedures are specified in Section 01711 "Project Decontamination."

Disposal of asbestos-containing waste is specified in Section 02084 "Disposal of Asbestos-Containing Waste Material."

SUBMITTALS

Before Start of Work: Submit the following to the Consultant for review. Do not start work until these submittals are returned with Owner's Consultant's action stamp indicating that the submittal is returned for unrestricted use.

Surfactant: Submit product data, use instructions and recommendations from manufacturer of surfactant intended for use. Include data substantiating that material complies with requirements.

Removal Encapsulant: Submit product data, use instructions and recommendations from manufacturer of removal encapsulant intended for use. Include data substantiating that material complies with requirements.

NESHAP Certification: Submit certification from manufacturer of surfactant or removal encapsulant that, to the extent required by this specification, the material, if used in accordance with manufacturer's instructions, will wet ACM to which it is applied as required by the NESHAP Asbestos Regulations (40 CFR 61, Subpart M).

Material Safety Data Sheet: Submit the Material Safety Data Sheet, or equivalent, in accordance with the OSHA Hazard Communication Standard (29 CFR 1910.1200) for each surfactant, encapsulating material, and solvent proposed for use on the work.

Include a separate attachment for each sheet indicating the specific worker protective equipment proposed for use with the material indicated.

PART 2 - PRODUCTS:

Wetting Materials: For a wetting prior to disturbance of ACM, use either amended water or a removal encapsulant:

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

Removal Encapsulant: Provide a penetrating-type encapsulant designed specifically for removal of asbestos-containing material. Use a material which results in wetting of the asbestos-containing material and retardation of fiber release during disturbance of the material equal to or greater than that provided by water amended with a surfactant consisting of one ounce of a mixture of 50% polyoxyethylene ester and 50% polyoxyethylene ether in five gallons of water.

Polyethylene Sheet: Provide a single polyethylene film in the largest sheet size possible to minimize seams, 6 mil thick, clear, frosted, or black.

Duct Tape: Provide duct tape in 2" or 3" widths with an adhesive that is formulated to stick aggressively to sheet polyethylene.

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

Disposal Bags: Provide 6-mil-thick, leak-tight, polyethylene bags labeled as required by Section 02084, Disposal of Asbestos-Containing Waste Material.

Fiberboard Drums: Provide heavy-duty, leak-tight, fiberboard drums with tight-sealing, locking, metal tops.

Felt: Standard felt approximately 1/16" thick and 36" to 72" wide.

PART 3 - EXECUTION

Worker Protection: Before beginning work with any material for which a Material Safety Data Sheet has been submitted, provide workers with the required protective equipment. Require that appropriate protective equipment be used at all times.

Full Containment/Gross Removal Methods:

ENVIRONMENTAL/ASBESTOS ABATEMENT
812 OLIVE STREET

Work-Area Preparation:

- Post caution signs meeting the specifications of OSHA 29 CFR 1910.1001 (g) (1) (ii) at any location and approaches to a location where airborne concentrations of asbestos may exceed ambient background levels. Signs shall be posted to permit a person to read the sign and take the necessary protective measures to avoid exposure before entering the work area. Additional signs may need to be posted following construction of work-place enclosure barriers.

- Shut down and lock out electric power to all work areas. Provide temporary power and lighting and ensure safe installation of temporary power sources and equipment in accordance with the National Electrical Code (see Section 855.10 (c) (6). All power to work areas shall be brought in from outside the area through ground-fault circuit interrupters at the source.

- Shut down and isolate heating, cooling and ventilating air systems to prevent contamination and fiber dispersal to other areas of the structure.

- Pre-clean movable objects within the proposed work areas using HEPA filtered vacuum equipment and/or wet cleaning methods as appropriate and remove such objects from work areas to a temporary location.

- Pre-clean fixed objects and specific equipment items which will remain within the proposed work area, using HEPA filtered vacuum equipment or wet cleaning methods as appropriate and enclose with plastic sheeting sealed with tape.

- Clean the proposed work areas using HEPA filtered vacuum equipment and/or wet cleaning methods as appropriate. Methods that raise dust, such as dry sweeping or vacuuming with equipment not equipped with HEPA filters, shall be prohibited. Asbestos-containing materials shall not be disturbed during the pre-cleaning phase.

- Seal off all openings, including but not limited to windows, corridors, doorways, skylights, ducts, grills, diffuses and any other penetrations of the work areas with plastic sheeting sealed with tape. Also, seal all seams in system components that pass through the work area. Doorways and corridors which will not be used during work must be sealed with barriers.

- Cover floor and wall surfaces with plastic sheeting sealed with tape. Use a minimum of two layers of 6-mil plastic on floors and 4-mil on walls. Cover walls with plastic sheeting to the floor level, thus overlapping the floor material by a minimum of twelve inches. The plastic

shall be sized to minimize seams. Seams shall be staggered and separated by a distance of at least six feet.

- Remove and clean ceiling-mounted objects as necessary.
- Maintain emergency and fire exits from the work areas or establish alternative exits.

Wet Removal Methods:

Thoroughly wet to satisfaction of Consultant ACM to be removed prior to stripping and/or tooling to reduce fiber dispersal into the air. Accomplish wetting by a fine spray (mist) of amended water or removal encapsulant. Saturate material sufficiently to wet to the substrate without damaging the substrate or causing excess dripping. Allow time for amended water or removal encapsulant to penetrate material thoroughly. If amended water is used, spray material repeatedly during the work process to maintain a continuously wet condition. If a removal encapsulant is used, apply in strict accordance with manufacturer's written instructions.

Perforate outer covering of any installation that has been painted and/or jacketed in order to allow penetration of amended water or removal encapsulant or use injection equipment to wet material under the covering. Where necessary, carefully strip away while simultaneously spraying amended water or removal encapsulant on the installation to minimize dispersal of asbestos fibers into the air.

Amended water must be applied as a mist to the ACM. Copious water application by a hose, bucket, or other means resulting in water run-off or excessive dripping is not permitted. Removal of ACM by high-pressure water hose, jetting, or flooding is not permitted for this work.

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

Remove saturated ACM in small sections from all areas. Do not allow material to dry out. As it is removed, simultaneously pack material while still wet into disposal bags. Evacuate air from disposal bags with a HEPA-filtered vacuum cleaner before sealing. Twist, bend over, and seal neck of bags with a minimum of three wraps of duct tape. Clean the outside of the bags and move the bags to Wash Down Station adjacent to Material Decontamination Unit.

Pipe and Pipe Fitting Insulation: Spray with a mist of amended water or removal encapsulant. Allow amended water or removal encapsulant to saturate material to substrate. If a removal encapsulant is used, use in strict accordance with manufacturer's instructions. Cut bands holding preformed insulation, slit jackets or covers at seams, remove and hand-place in a disposal bag.

Remove job-molded fitting insulation in chunks and hand-place in a disposal bag. Do not drop to floor. Remove any residue on pipe or fittings with stiff bristle nylon hand brush. Vacuum surface area four inches deep or to hard pan stiff undisturbed soil.

Local Ventilation and Collection System:

Provide local ventilation and collection systems as described below for each area where asbestos is being removed or otherwise disturbed:

- Provide HEPA-filtered fan units, Temporary Pressure Differential and Air Circulation System, in the vicinity of the work. Arrange so that the units exhaust into the Work Area oriented in a direction away from the work. Extend a 12-inch-diameter flexible non-collapsing duct from the intake end to a point no more than 4' 0" from any scraping or wire brushing activity.

- Locate intake of duct so that air flow is horizontal and slightly downward into intake. Replace primary filters on HEPA-filtered fan units at an interval of no greater than 30 minutes. Allow no more than one scraping or wire brushing activity per fan unit.

- Attach a job-built 4' x 4' flared end piece on intake end of duct. Support end piece horizontally at a point 4' 0" below the work, so that airflow is downward into intake.

Floor Tile and Mastic:

Floor tile shall be thoroughly wetted prior to removal and maintained in a wet condition by misting with amended water. Tile surfaces shall be kept wet until all tiles are removed. Remove floor tile in intact sections as much as possible. Remove adhesive mastic with appropriate solvents, or other means approved by the Owner's Representative. All visible residue of mastic shall be removed. Floor tile mastic will be determined to be clean when a razor knife can be scraped across the substrate without any visible evidence of mastic on the blade. Petroleum staining and traces of mastic embedded in concrete pores will be allowed. Do not encapsulate floor substrate after removal of floor tile mastic or during cleaning of containment prior to clearance. Use a HEPA vacuum and wet wiping as required to clean the floor substrate. Solvents will be neutralized at the completion of abatement according to manufacturer's instructions. Any waste sludges or powders generated by the removal of mastics will be characterized as hazardous or nonhazardous - special waste according to guidelines established by the EPA. If the Contractor wishes to use chemical solvents, chemical removers, or any combination of chemical products in the work area, the Contractor shall conduct and document all required OSHA compliance monitoring for not only asbestos, but for any chemical used or any other type of "air contaminant" as defined in 29 CFR 1910, generated during the abatement project. The Contractor shall also increase the number of air changes to six air changes/hour instead of the current four air changes/hour.

Glove Bag Removal Methods:

ENVIRONMENTAL/ASBESTOS ABATEMENT
812 OLIVE STREET

Glove bag removal procedures for asbestos pipe insulation material shall be as follows:

- After pre-cleaning operations, place a layer of 6-mil clean plastic on the floor directly under the material to be removed.

- Place negative air machine(s) inside the general work area where glove bag removal will be performed. The negative air machine does not need to be vented to the outside.

- Carefully install glove bag to completely cover the pipe. The glove bag is attached to the pipe by folding the open edges together and securely sealing them with tape. All openings of the glove bag must be sealed with duct tape or equivalent material. The bottom seam of the glove bag must also be sealed with duct tape to prevent any leakage from the bag that may result from a defect in the bottom seal. The pipe insulation diameter worked shall not exceed one half the bag working length above the attached gloves.

- The integrity of the glove bag seal shall be checked by performing a smoke test. Any signs of leakage will be taped airtight.

- Thoroughly wet the pipe with a wetting agent that is applied through the pre-cut port provided in the glove bag or apply through a small hole in the bag.

- Once the material is thoroughly wetted, remove the pipe insulation material. Avoid creating dust.

- After removal of the layer of pipe insulation, the pipe surface from which asbestos has been removed must be thoroughly cleaned with a wire brush and wet wiped using wetting agents until all visible material has been removed.

- Any asbestos containing insulation edges that have been exposed as a result of the removal or maintenance activity must be encapsulated with bridging encapsulant to ensure the edges do not release asbestos fibers. **Under no circumstances will the same glove be used for removal of subsequent sections of pipe insulation.**

- When the asbestos removal and encapsulation have been completed, a vacuum hose from a HEPA filtered vacuum shall be inserted into the glove bag through the part to remove any air in the bag that may contain asbestos fibers. When the air has been removed from the bag, the bag should be squeezed tightly (as close to the top as possible), twisted and sealed with tape, to keep the asbestos materials safely in the bottom of the bag. The HEPA vacuum can then be removed from the bag and the

glove bag itself can be removed from the whole area and placed into a second labeled 6-mil polyethylene bag.

- The contractor shall provide a minimum of air purifying respirators with dual (HEPA) filters and in compliance with OSHA (29 CFR 1910.1101) and EPA (40 CFR 763, Subpart IV).

- Full personal protective equipment which includes approved disposable clothing, which covers the head, torso, arms, legs, and feet shall also be provided.

At locations where pipe fitting insulation is removed from pipe with straight runs insulated with fibrous glass or other non-asbestos containing fibrous material, remove fibrous materials.

The owners representative shall collect two air samples in the work area and one air sample at the exhaust of the negative pressure ventilation equipment during the glove bag removal phase of the project. The contractor is responsible for all OSHA Compliance Sampling.

Transite and Caulking:

Transite shall be removed with minimal breakage, wrapped with two layers of 6-mil polyethylene and labeled for disposal.

Caulking is to be removed where windows are scheduled to be removed and replaced. Contractor shall scrape all caulking from removed window frame prior to disposal and window opening prior to replacement.

Special Conditions:

If circumstances occur that prohibit the use of wet removal methods to reduce fiber concentration, and, therefore, that require dry removal of ACM, the contractor must acquire special approval and variance from the appropriate regulatory agencies.

END OF SECTION 02081

ENVIRONMENTAL/ASBESTOS ABATEMENT
812 OLIVE STREET

SECTION 02082
INTERIOR LEAD ABATMENT FOR BUILDING RENOVATION

PART 1 - GENERAL

Related Documents: Drawings, general provisions of contract, including general and supplemental conditions and other Division 1 specification sections apply to work of this section.

REMOVAL AND DISPOSAL LEAD BASED PAINT ITEMS

The abatement work will be as follows:

After setting up a physical boundary, lead control area, and wash station as described in the general specifications, the subsequent items will be abated as follows:

- Remove railings from the stairwells having lead-based paint.
- Remove radiator covers in stairwells having lead-based paint.

END OF SECTION - 02082

ENVIRONMENTAL/ASBESTOS ABATEMENT
812 OLIVE STREET

SECTION 02083
ENCAPSULATION OF LEAD CONTAINING MATERIAL

PART 1 - GENERAL

Related Documents: Drawings, general provisions of Contract, including General and Supplementary Conditions, and other Division - 1 Specification Sections, apply to work of this section.

ENCAPSULATION OF LEAD CONTAINING MATERIAL

Encapsulation procedures will be as follows:

After passing post abatement visual inspection and receiving written verification from the Consultant, encapsulation shall occur.

a. Encapsulant material shall be acrylic polymer and have superior adhesive strength to effectively encapsulate walls, ceilings, and other interior surfaces. Encapsulation must dry smooth have resilient finish that resists impact and degradation. It must be fire retardant, mildew an fungus resistant, and be non-toxic.

b. Encapsulant coatings shall be applied in accordance with the manufacturer's recommendations.

c. Encapsulation coating shall be applied to the substrate in a continuous system as to seal the surface being coated. The number of coats required and coverage rates shall be in accordance with the manufacturer's recommendations.

d. Areas that are lifted and peeling after the application of the coating shall be repaired by scrapping until should adhesion is obtained.

e. Obstacles in the surface to be coated such as electric receptacles, switches, exhaust fans, hardware, etc. are to be removed or covered so to prevent them from being coated.

END OF SECTION - 02083

ENVIRONMENTAL/ASBESTOS ABATEMENT
812 OLIVE STREET

SECTION 02084
DISPOSAL OF ASBESTOS - CONTAINING WASTE MATERIALS

PART 1 - GENERAL

RELATE DOCUMENTS:

General provisions of Contract, including General and Supplementary Conditions and Division-1 Specification Sections, apply to work of this section.

Section 01092 Codes and Regulations - Asbestos Abatement describes applicable federal, state and local regulations.

DESCRIPTION OF THE WORK

This section describes the disposal of ACM. Disposal includes packaging of asbestos-containing waste materials. Disposal shall be accomplished by landfilling.

SUBMITTALS:

Before Start of Work: Submit the following to the Consultant for review. Do not start work until these submittals are returned with Consultant's action stamp indicating that the submittal is returned for unrestricted use.

- Copy of state or local license for waste hauler.
- Name and address of landfill where asbestos-containing waste materials are to be buried. Include contact person and telephone number.
- Chain-of-Custody form and form of waste manifest proposed.
- Sample of disposal bag and any added labels to be used.

On a weekly basis submit copies of all manifests and disposal site receipts to Consultant.

PRODUCTS

Disposal Bags: Provide 6-mil-thick, leak-tight polyethylene bags labeled with three labels with text as follows:

First Label

CAUTION
CONTAINS ASBESTOS FIBERS
AVOID OPENING OR BREAKING CONTAINER
BREATHING ASBESTOS IS HAZARDOUS TO YOUR HEALTH

Second Label

Provide in accordance with 29 CFR 1910.1200(f) of OSHA's Hazard Communication standard:

DANGER
CONTAINS ASBESTOS FIBERS
AVOID CREATING DUST
CANCER AND LUNG DISEASE HAZARD
BREATHING AIRBORNE ASBESTOS, TREMOLITE, ANTHOPHYLLITE, OR
ACTINOLITE FIBERS IS HAZARDOUS TO YOUR HEALTH

Third Label

Provide in accordance with U.S. Department of Transportation regulation on hazardous waste marking. 49 CFR 171 and 172. Hazardous Substances: Final Rule, published November 21, 1986, and revised February 17, 1987:

RQ (Asbestos)
CLASS 9
NA 2212
P.G. 111
CONSIGNEE OR CONSIGNOR
NAME AND ADDRESS

Fourth Label

Provide Contractor and General information required by NESHAP.

EXECUTION

Comply with the following documents during all phases of this work:

Section 01560 Worker Protection - Asbestos Abatement
Section 01562 Respiratory Protection

ENVIRONMENTAL/ASBESTOS ABATEMENT
812 OLIVE STREET

GENERAL:

All waste is to be hauled by a waste hauler with all required licenses from all state and local authorities with jurisdiction.

Load all asbestos-containing waste material in disposal bags or leak-tight drums. All materials are to be contained in one of the following:

- Two 6-mil disposal bags, or
- Two 6-mil disposal bags and a fiberboard drum.

Protect interior of truck or dumpster with Critical and Primary Barriers as described in Section 1526 - "Temporary Enclosures".

Carefully load containerized waste in fully enclosed dumpsters for transport. Exercise care before and during transport to insure that no unauthorized persons have access to the material.

Do not store containerized materials outside of the Work Area. Take containers from the Work Area directly to a sealed truck or dumpster.

Do not transport disposal bagged materials on open trucks. Label drums with same warning labels as bags. Uncontaminated drums may be reused.

Treat drums that have been contaminated as asbestos-containing waste and dispose of in accordance with this specification.

Advise the landfill operator or processor, at least 1 day in advance of transport, of the quantity of material to be delivered.

At disposal site, carefully unload containerized waste from the truck.

Retain receipts from landfill or processor for materials disposed of.

Within 48 hours of hauling and document disposal of each load; submit copy of waste manifest, chain-of-custody form, and landfill receipt to Consultant.

Provide Owner with copies of landfill records as required by the USEPA documents EPA 34011-90-016, November 1990, "Reporting and Recordkeeping Requirements for Waste Disposal: A Field Guide."

END OF SECTION 02084

ENVIRONMENTAL/ASBESTOS ABATEMENT
812 OLIVE STREET

SECTION 02085
DISPOSAL OF LEAD CONTAINING WASTE MATERIAL

PART 1 - GENERAL

RELATE DOCUMENTS:

Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification Sections apply to work of this section.

Section 01094 Codes, Regulations and Standards - Lead Based Paint Abatement describes applicable federal, state and local regulations.

DESCRIPTION OF THE WORK

This section describes the disposal of Lead Containing Waste Material. Disposal includes packaging of lead-containing waste materials. Disposal shall be accomplished by landfilling.

SUBMITTALS:

Before Start of Work: Submit the following to the Consultant for review. Do not start work until these submittals are returned with Consultant's action stamp indicating that the submittal is returned for unrestricted use.

- Copy of state or local license for waste hauler.
- Name and address of landfill where lead-containing waste materials are to be buried. Include contact person and telephone number.
- Chain-of-Custody form and form of waste manifest proposed.
- Sample of disposal bag and any added labels to be used.

On a weekly basis submit copies of all manifests and disposal site receipts to Consultant.

EXECUTION

Comply with the following documents during all phases of this work:

Section 01561 Worker Protection - Lead Based Paint Abatement
Section 01564 Respiratory Protection - Lead Based Paint Abatement

ENVIRONMENTAL/ASBESTOS ABATEMENT
812 OLIVE STREET

GENERAL:

All waste is to be hauled by a waste hauler with all required licenses from all state and local authorities with jurisdiction.

Carefully load containerized waste in fully enclosed dumpsters for transport. Exercise care before and during transport to insure that no unauthorized persons have access to the material.

Do not store containerized materials outside of the Work Area. Take containers from the Work Area directly to a sealed truck or dumpster.

Do not transport disposal bagged materials on open trucks. Label drums with same warning labels as bags. Uncontaminated drums may be reused.

Treat drums that have been contaminated as lead-containing waste and dispose of in accordance with this specification.

Advise the landfill operator or processor, at least 1 day in advance of transport, of the quantity of material to be delivered.

At disposal site, carefully unload containerized waste from the truck.

Retain receipts from landfill or processor for materials disposed of.

Within 48 hours of hauling and document disposal of each load; submit copy of waste manifest, chain-of-custody form, and landfill receipt to Consultant.

Provide Owner with copies of landfill records as required by the USEPA documents EPA 34011-90-016, November 1990, "Reporting and Recordkeeping Requirements for Waste Disposal: A Field Guide."

END OF SECTION 02085

ENVIRONMENTAL/ASBESTOS ABATEMENT
812 OLIVE STREET

SECTION 02086
PCB BALLAST & FLUORESCENT LIGHT TUBE DISPOSAL

PART 1 – GENERAL

1.1 PCB LIGHT BALLAST IDENTIFICATION

A. The contractor shall assume that light ballast manufactured prior to 1979 contains PCBs. The release of one pound of PCBs may be subject to liability under CERCLA.

B. The contractor shall inspect each light fixture in the facility for labels identifying date of manufacture. If no date is available or "PCB Free" label is not found, ballasts shall be assumed to be PCB contaminated.

C. Contractor is responsible for identifying the disposal facility to be approved by the owner. A written disposal procedure will be submitted by the contractor describing the removal and disposal procedure. Packaging shall meet the requirement of the transporter, the receiving disposal facility and applicable regulations:

1.2 PCB CONTAINING FLUID IDENTIFICATION

A. The contractor shall assume that electrical transformers contain PCBs until representative sampling can confirm otherwise. It is the responsibility of the contractor to perform analytical testing to quantify the PCB fluids. The release of one pound of PCBs may be subject to liability under CERCLA.

B. It is the responsibility of the contractor to perform analytical testing to quantify the PCB fluids and any PCB-contaminated materials.

C. Contractor is responsible for identifying the disposal facility to be approved by the owner. A written disposal procedure will be submitted by the contractor describing the removal and disposal procedure. Packaging and labeling shall meet the requirement of the transporter, the receiving disposal facility and applicable regulations.

1.3 DRUM LABELING

A. Hazardous Waste Labels shall be completed as follows:
   1. Fill in date packed under Accumulation Start Date.
   2. DOT Proper Shipping Polychlorinated biphenyls U.N or N.A. No.: UN2315.

Generator Name and Address: Balke Brown Associates
1001 Highlands Plaza Drive
St. Louis, Missouri 63110

B. Affix the above label to the side of the drum.

C. Also, affix a PCB label to the side of each drum.

1.4 FLUORESCENT LIGHT TUBE REMOVAL

A. Fluorescent light tubes shall be removed without damage by the contractor and disposed of through a recycling facility identified by the contractor and approved by the consultant. The contractor shall provide personnel with Personal Protective Equipment sufficient to prevent hazardous material exposure and injury.

B. The contractor shall submit a Work Plan and a Health and Safety Plan to be approved by the consultant prior to hazardous material abatement. The Work Plan shall include any sampling the contractor may choose to conduct.

C. Fluorescent light tubes shall be assumed to contain mercury in excess of the TCLP limit of 0.2 mg/L. The hazardous waste code shall be designated as D009, pursuant to 40 CFR 261.24. The tubes shall be packaged and shipped according to the procedures identified by the transporter and receiving facility.

END OF SECTION 02086