Client: Volpe
Project: Libby Asbestos
Project No. 2603.025.203.RADSN
Detail: Second Hand Store ACM Removal, Demolition and Reconstruction

By: A. Rassas 4/28/2003
Ck: B. Cotton 5/2/2003
Rev. By:

SDMS Document ID
2031305

ADMINISTRATIVE RECORD

Removal of asbestos containing materials

Crew:	1	site manager
	1	labor foreman
	4	laborers
	1	vacuum truck driver
Total	6	laborers

For PPE estimate use workers inside 5

Task Durations (assumed)

Containment and set-up	2.5 days
VCI Bulk removal	5 days
Inventory cleaning	7 days
detail cleaning, encapsulation	2 days
wall renovation	2
soil removal	1 days
Breakdown	2.5
Total	**22** days

Area of VCI Bulk Removal

	Width, ft	Height, ft	Area, SF
Attic floor	20	40	800
Walls	19	8	152
	60	8	480
	6	8	48
Total			1480
Add 10% safety factor			**1628**

Square footage-first floor

	Width, ft	Length, ft	Area, SF
Storage	18	20	360
	14	8	112
	14	8	112
	14	12	168
Stairs to attic area	14	12	168
Fire wood storage	10	10	100
Open Area	36	20	720
	25.5	30	765
Bathroom	10	10	100
Approx. desk area and entrance	30	20	600
Additions	35	5	175
	40	5	200
	40	10	400
	80	15	1200
			5,180

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Installation of containment barrier

	Width, ft	Height, ft	Area, SF
3 doors	2	7	42
15 windows	4	4	240
Total			282
Add 10 % safety factor			**310**

Removal of asbestos contaminated soil

Assume that removal of asbestos contaminated soil will have to be done aalong the perimeter of the N, W, and E sides of building (10' wide by 0.5" deep) and underneath the crawl space closest to the RR tracks (1/2 area of building x 1' deep). South side of building is paved

Along perimeter of building

erimeter, ft	Width, ft	Depth, ft	Volume, CF	Volume, CY
239	10	0.5	1195	44

Underneath crawl space

Area, SF	depth, ft		
5,180	0.5	2590	96
		Total:	**140**

Asbestos landfill disposal volumes

Assume 1/2' thick VCI matl.	Width, ft	Area, SF	Volume, SF	Volume, CY
VCI material	0.5	1628	814	30
Asbestos-contaminated soil				140
Total				170
15% expansion factor				196
10% Safety factor:				**215**
Vacuum boxes needed				
25 CY boxes				9

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Removal of asbestos containing materials

Crew:

	1	labor foreman
	5	laborers
	1	vacuum truck driver
Total	7	laborers

For PPE estimate use workers inside **6**

Task Durations (assumed)

VCI Bulk removal	14 days
detail cleaning	4 days
soil removal	1 days
wall renovation	10 days
Total	**29** days

Wall Cleaning

	width, ft	hight, ft	area, SF
Wood Shop Area	40	25	1000
	4	25	100
Original Structure	54	60	3240
	54	60	3240
	260	60	15600
	240	60	14400
Total			37580
Add 10% safety factor			41338

Floor Cleaning

260' x 54' + 40' x 40' 15,640

Total wall/floor cleaning **56,978**

Installation of containment barrier

2 doors	15	15	450
4 doors	10	10	400
2 doors	6	6	72
6 windows	4	4	96
Total			1018
Add 10 % safety factor			**1120**

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Removal of asbestos contaminated soil

Assume that removal of asbestos contaminated soil will have to be done around the North and East sides of building, the sides of the contaminated walls. Assume 1/2 of this area is paved, which will require only surficial vacuuming.

10 feet wide, 6 inches deep

Length, ft	Length, ft	Width, ft	Depth, ft	Area, SF	Volume, CF	Volume, CY
140	424	10	0.5	5640	2820	104
Assume 1/2 of area is soil				2820	1410	**52**

Asbestos landfill disposal volumes

Assume 1/2' thick VCI matl.				
VCI material	0.5	41338	20669	766
Asbestos-contaminated soil				52
lapboards - 1/2" thick	0.041	41338	1695	63
Total				881
15% Expansion factor:				
10% Safety factor:				**969**
# Vacuum boxes to be disposed				**1114**
25 CY boxes				**45**

Building Demolition

60' height of original structure. Assume the rest of the building is 25' high

	Length, ft	Width, ft	Height, ft	Volume, CF	Area, SF
Original Structure	260	54	60	842400	14040
Uninsulated area	115	64	25	184000	7360
e shop area and misc.	100	149	25	372500	14900
shop, offices and misc.	260	86	25	559000	22360
				1957900	58660
Assume 1/2 of volume for no interior walls				**978950**	**29330**

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Demo - Volume of material to be disposed

Assume all original structure walls and all other exterior walls, interior walls minimal.
Assume width of wall is 1/2" thick, exterior and interior. Assume studs spaced every 2'
Assume studs are 2x4's.

	Length, ft	Width, ft	Height, ft	Volume, CF
Stud Vol(60' high wall)	1/6	1/3	60	3.3
Stud Vol(25' high wall)	1/6	1/3	25	1.4

	Length, ft.
Perimeter distance of 60' high walls	260
	260
	54
	54
total 60' high walls:	628

Perimeter distance of exterior 25' high walls	164
	115
	64
	34
	360
	140
Total exterior 25' high walls:	2133

# of Studs-60' high	Total perimeter dist(ft):	628 ft	
	1 stud per 2 ft.	314	
	Stud volume(CF):		**1047**

# of Studs-25' high	Total perimeter dist(ft):	2133 ft	
	1 stud per 2 ft.	1067	
	Stud volume(CF):		**1481**

Walls	Length, ft	Height, ft	Width, ft.	Volume, CF
	260	60	0.042	655
	260	60	0.042	655
	54	60	0.042	136
	54	60	0.042	136
	164	25	0.083	340
	115	25	0.083	239
	64	25	0.083	133
	34	25	0.083	71
	360	25	0.083	747
	46	25	0.083	95
	40	25	0.042	42
			walls:	**3249**

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	Length, ft	Width, ft	Thickness, ft	Volume, CF
Ceiling	360	149	0.167	8958
	115	64	0.167	1229
			ceiling:	**10187**
		Total Vol. (CF, incl. studs)		**15,964**
		Total Vol. (CY, incl. studs)		591
		Add 50% expansion facto		887
		Add 10% safety factor:		**976**

Amount of insulation required (exterior walls only)

	Length, ft	Height, ft	area, SF
Wood Shop area	40	25	1,000
Original Structure	260	60	15,600
	54	60	3,240
		Total area:	**19,840**