

Prepared for:

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WORK JUSTIFICATION:

In May 2013 Environmental Consulting & Technology, Inc. (ECT) performed an asbestos-containing material (ACM) and universal waste assessment of building structures of the former Rock-Tenn Paper Mill and Power Plant, hereafter referenced as the "facility" which is located at 431 Helen Ave., Otsego, Michigan. An engineer's cost estimate of \$892,023.08 was prepared in July 2013 to address the abatement and demolition of the Power House area of the site.

During March 2014, ECT staff was requested to prepare an engineer's cost estimate to address the abatement of the asbestos associated with the Power Plant and the Generator Room (portion of Room U as defined in May 2013). The major condition of March 2014 request was defined as asbestos abatement of the building without the physical demolition of the exterior portion of the structure so as to restore and renovate the building as a manufacturing facility.



Statement of Limitations

The Power House was boarded up (U.S. EPA), and labeled ASBESTOS Hazard in order to protect the public. The Power House is a two floor structure with the main floor supporting two coal fired boilers. There is supporting evidence that a third boiler may have existed in the past. Some of the supporting piping chases, concrete floors, walkways, I/H beams have been cut and removed rendering large sections of the building potentially structurally compromised as stated in the May 2013 ECT Report.



Therefore ECT recommends that before any restoration/renovation actions are considered that a structural engineer, conduct a full assessment of the building to define if the building has been rendered into a condition that may affect its potential for restoration. The ECT staff preparing this document with references to repair/modify portions to said structure so as to allow for the abatement of the building with attempting to keep the exterior walls and roof of the structure intact. The photographs below depict the demolition of a similar power plant. ECT managed the demolition activities that would be similar for the Rock-Tenn facility.

I. MAY 2013 ASBESTOS ABATEMENT OBJECTIVE (complete demolition of Power House)

- a) Remove the available friable asbestos materials
- b) Remove Common Wall of the Plant to Decommission the Boilers



c) Asbestos Suppression/Removal of Boilers



d) Demolition of Structure



e) Site Restoration



Summary of 2013 Initial Abatement Approach

The initial approach relied upon the building structures (exterior wall/basement/roof) as being barriers for the asbestos abatement, which would result in bulk management of the debris waste as asbestos-containing material, thereby eliminating the need to enter the building once the accessible friable asbestos had been removed. The remaining portion of the asbestos (encased in the boilers) would be abated using modified demolition methods, water suppression and air monitoring to control the project.

Project Budget Cost:	\$937,023.08
Salvage Recovery:	\$ -45,000.00
Total:	\$892,023.08

The asbestos abatement portion of this demolition cost is approximately \$333,000.

II. MARCH 2014 ASBESTOS ABATEMENT OBJECTIVE (abate asbestos in preparation for building restoration)

In order to abate the asbestos and maintain the building for restoration rather than demolition a number of building fortification activities need to be completed to ensure the building exterior structure isn't damaged or collapsed. These activities are necessary due to the steel salvaging actions taken by the previous owner. The cost for this objective includes these building fortification activities.

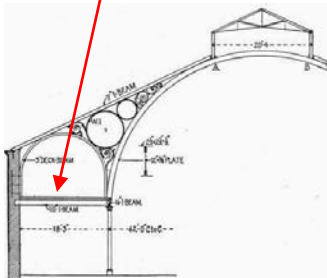
The Power House and Generator Room (Room U) are structurally adjoined by a common wall. Without the following activities it is suspected that the buildings/structures can't be detached;

- a) Basement Both Buildings (braced)
- b) Common Wall – Horizontal Supports

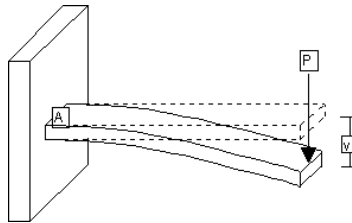
Generator Room (Room U)
Power House



Furthermore the building uses a cantilever frame system, the cross section I beams have been observed as removed from the fixed end of the cantilever.



This has resulted in cantilever beam deflection which in turn has caused cracks in the free wall.



Secondly, the cross members along the free wall have been removed.

Thirdly, +/- 25% of the concrete floor which support the fixed wall has collapsed or is structurally compromised:



As such before abatement staff can enter the building to remove the asbestos (i.e. remove the boilers and supporting equipment) the following actions will be required;

Task 1 Replace Structure Steel Supports

- Structural Steel (Fixed Wall)
- Steel Cross Members
- Steel Plating (Portion of Main Floor and Generator Room)

Task 2 Remove Concrete – Pour Foundations/Support (access ports) for Equipment (Rock-Tenn photo)



Task 3 Remove Stack (exterior removal) Supported by Boilers (Rock-Tenn photo)



Task 4 Enclose Structure and Negative Air Chamber Staging

Task 5 Physical Removal of Boilers/Asbestos (Rock-Tenn photo)



Task 6 Build Ramps into Basement after Boilers/Concrete Removal

Task 7 Removal all Basement Equipment/Contents (Rock-Tenn photo)



Task 8 Decontaminate Building Shell (Top to Bottom). Photo from another site.



The engineer's cost and project duration period are herein estimated to abate the asbestos from the Power House and the Generator Room.

Task	Description (RTD-R)	Units	# Units	Unit Rate	Sub Total
Task 1	Credit (Replace Structural Steel)	Ls	1	\$65,000	\$65,000
Task 2	Concrete Foundations	Ls	1	\$4,500	\$4,500
Task 3	Removal of Stack	Ls	1	\$6,000	\$6,000
Task 4	Enclose/Neg. Air	Day	73	\$1,100	\$80,300
Task 5 thru 7	Physical Abatement				
	Labor/PPE (6 @ \$55/hr. @ 8 hrs. Day)	Day	73	\$2,640	\$192,720
	Special Equip.	Day	73	\$1,200	\$87,600
	Waste Disposal	Ton	2,000	\$49	\$97,000
	Sand Backfill/Ramp	ton	80	\$12	\$960
Task 8	Decon. Building				
	Labor/PPE (3 @ \$65/hr. @ 8 hrs. Day)	Day	3	\$1,560	\$4,680
	Pow. Wash, Vac Truck & Treatment	Day	3	\$1,480	\$4,440
Total:					\$543,200

<u>Schedule Disc.</u>	Working Days (Mon-Fri) - On Site Activities
Fortification (Tasks 1 through 3)	5
Abatement (Tasks 4 through 8)	73

The asbestos abatement portion of the \$543,200 is \$467,700 (Tasks 4-8). This assumes the boilers need to come out as part of the restoration. As stated the building needs to be structurally inspected. Any recommendations made by said engineer will need to be followed. ECT added \$65,000 to the budget to cover said recommendations/ modifications. However, ECT does not warranty these costs.

ECT has performed the work highlighted herein in a manner which is consistent with appropriate and applicable industry standards. The information summarized herein is provided to ACBRA for their general use and distribution. ECT will not provide information contained herein to general inquirers without the express consent of ACBRA.

Should you have any questions, please call the undersigned.

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