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REPORT-

Characterization

April 2001

Final Report

Bldg. 100, 101 and 104 Characterization Report

Robert Bosch Corporation
South Bend, Indiana

April 2001

O'BRIEN & GERE
ENGINEERS, INC.

6407/27737

Final Report

Bldg. 100, 101 and 104
Characterization Report

Robert Bosch Corporation
South Bend, Indiana

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1. Introduction

O'Brien & Gere Engineers, Inc. (O'Brien & Gere) was retained by Robert Bosch Corporation (Bosch) to assist in the characterization and assessment of Buildings 100, 101 and 104 at the South Bend, Indiana complex. This chapter summarizes O'Brien & Gere's Scope of Work, work completed under this scope, and a brief history of Buildings 100, 101 and 104.

1.1. Objective

The overall project objective is to safely and cost-effectively decommission and demolish Building 104 and establish the environmental hazards in Buildings 100 and 101. To meet this objective, an environmental assessment and characterization phase was completed to evaluate current conditions, the need for decontamination, proper transport and disposal options, personnel monitoring requirements, and address possible construction related issues.

1.2. Scope of services

To meet the objective described in Section 1.1, a three part Scope of Work was developed and implemented.

- **Site visit.** An initial site visit was completed between October 31, 2000 through November 2, 2000. The purpose of the visit was to:
    - review site files and records to determine site history and past / current Building 100, 101 and 104 uses;
    - evaluate the current conditions of Buildings 100, 101 and 104; and
    - gather information to be used for the development of a sampling and analysis plan (SAP).

- **Develop and implement SAP.** Information obtained during the initial site visit was used in the development of a SAP. The SAP (text is attached as Appendix A) presents the proposed sampling locations and protocols, analytical procedures, and health and safety guidelines for the environmental assessment of Buildings 100, 101 and 104. The objective of the SAP was to characterize above-grade environmental areas of potential concern (APCs) to evaluate if decontamination or further investigation is warranted prior to demolition.

  Following delivery of the SAP to Bosch personnel, SAP implementation was performed between November 7 and 10, 2000. SAP implementation is discussed in Section 2 of this report.

- **Building characterization report.** Upon receipt of analytical results, a Building Characterization Report (this document) was prepared and presented to Bosch personnel.

1.3. Building 100, 101 and 104 Background

Buildings 100, 101 and 104 are part of the original Bendix Corporation industrial complex that began with construction of the first manufacturing building in 1923. In 1983, Allied Corporation purchased the Bendix Corporation. In 1987, Allied Corporation and Signal Corporation merged to form AlliedSignal Corporation. In 1996, the Robert Bosch Corporation purchased the Braking Systems Divisions of AlliedSignal, and the portion of the original Bendix Complex operated by Braking Systems was leased to Robert Bosch. In September 2000, the City of South Bend purchased the building from AlliedSignal (renamed Honeywell), and in turn leased those buildings back to Robert Bosch. Honeywell retains ownership of the property, and responsibility for remediation of soil and groundwater contamination present throughout the complex. As a result of that transaction, Robert Bosch is beginning a large-scale renovation of its buildings, which will include the demolition of Building 104. Building 100 contains areas that have recently been renovated. These areas were not sampled and are not included in the Characterization Report. Historically Buildings 100, 101 and 104 have been used for non-production operations.

1.4. Photographs

A photolog of typical APCs is included as Appendix B.

2. Sampling and analysis

During the sampling and analysis phase, 108 samples were collected to identify APCs in Buildings 100, 101 and 104. The sample breakdown is:

Building 100:
- Two wipe samples from equipment surfaces, piping and ductwork
- Twenty-nine bulk asbestos samples
- Four paint chip samples

Building 101:
- One wipe sample from equipment surface
- Nineteen bulk asbestos samples
- Two paint chip samples

Building 104:
- Five wipe samples from equipment surfaces, piping and ductwork
- Thirty-two bulk asbestos samples
- Nine paint chip samples
- Four grab samples (i.e., wood flooring, residual materials)

Sampling locations, shown on Figures 1, 2, 3, 4 and 5, are described in Table 1.

2.1. Sample collection methodology

The following methods outline the sample collection activities implemented during this assessment.

2.1.1. Wipe samples

Wipe samples for PCB, metal and cyanide analyses were collected from non-porous surfaces (e.g., inside ductwork, on equipment, on piping) throughout the building. In addition, wipe sampling was performed on surfaces where residue was suspected, but there was insufficient material to collect a grab sample.

Sampling procedures were as follows: Hexane-soaked gauze pads were utilized for PCB sampling, dry gauze pads were utilized for cyanide sampling. Samples were collected by wiping an area using a horizontal motion, and then flipping the gauze over and wiping the area with a vertical motion. Following sample collection, the gauze pad was placed into a laboratory-provided jar and the chain-of-custody form was filled out. Latex gloves were worn during sampling activities. Following collection of each sample, latex gloves were placed in a plastic trash bag that was tied closed.

2.1.2. Bulk asbestos samples

Bulk asbestos samples were collected by an Indiana accredited asbestos inspector from areas where presumed asbestos containing materials (PACMs) were identified during the initial site visit. PACM samples collected were placed in individual sample containers. Each container was labeled, recorded in a field log, and chain of custody forms were initiated. Samples were transported by ACM Environmental, Inc. to their South Bend, IN laboratory for analysis.

2.1.3. Grab samples

Grab samples of wood flooring and residual materials were collected to evaluate if PCBs are present.

- **Wood Flooring.** Three grab samples of wood flooring were collected in Building 104. The samples were collected using a hammer and prybar. The prybar was used to remove a portion of wood flooring. Using rubber gloves the piece of wood flooring was placed in a zip-lock bag and labeled with the proper sample identification number. The samples were placed in a cooler and transported to the laboratory via overnight delivery. Following sample collection, the sample location was recorded in the field log.
- **Residual Materials.** One grab sample was collected from below the raised floor located on the north side of Building 104 train bay. The material was retrieved using a long handled sampling device. The material was then placed into a laboratory-supplied container, labeled and recorded on the chain-of-custody. The sample location was then recorded in the field log book.

2.1.5. Paint chip samples

Fifteen paint chip samples were collected throughout the buildings to determine if the paint material contains lead. Paint chips on the floors, walls, windowsills and ceiling were collected. Each paint chip sample was a full-depth sample to represent layers present in that designated sample location. One paint chip sample was collected from each homogeneous material using a razor blade/utility knife. The utility knife was decontaminated using a wet-nap between uses. Following collection, the sample was placed directly into the laboratory-supplied container, the chain-of-custody record was initiated, and the sample location was recorded in the field log.

2.2. Sample analytical parameters

Following completion of the sampling activities, the wipe, grab and paint chip samples were placed into two coolers, packaged with the chain-of-custody forms, and sent via overnight delivery to Fire & Environmental Consulting Laboratories, Inc. (FECL).

Asbestos samples were collected and analyzed by ACM Environmental, Inc., South Bend, Indiana.

2.2.1. Wipe samples

Eight wipe samples were submitted for laboratory analysis. Seven wipe samples were analyzed for PCBs by EPA method 8082. One sample collected in Building 104 was analyzed for cyanide by EPA method 9020.

2.2.2. Bulk asbestos sampling

Eighty PACM samples were collected throughout the buildings and analyzed for the presence of asbestos containing materials (ACM) by standard polarized light microscopy (PLM) method (USEPA Method 600/R-93-116).

The roof of Building 101 was renovated in 2000, therefore no PACM samples were collected from this material.

2.2.3. Grab samples

Four grab samples were collected. Three samples were collected from wood flooring in Building 104 and were analyzed for PCBs by method 8082. One sample was collected from the material located under the steel plating in Building 104 train bay and analyzed for PCBs by method 8082.

2.2.4. Paint chip

Paint chips on the floors, walls, windowsills and slats, and ceiling were collected and analyzed for total lead by EPA method 6020.

2.3. Quality Assurance/quality control

Specific QA/QC procedures were followed during the assessment of Buildings 100, 101 and 104. These procedures are summarized below:

Sample preservation. Sample containers for the specific sample matrix and analytical procedures were prepared with the appropriate preservative by the laboratory prior to the fieldwork. Each sample collected for analysis was placed in an ice chest for delivery to a certified laboratory.

Sample shipping. Samples were transported to the laboratory within the standard holding times. A Chain-of-Custody record form was filled out and accompanied every sample shipment for analytical analysis.

Sample containers. Appropriate precleaned sample containers for the specific sample matrix and analytical procedures were supplied by the certified laboratory.

Certified laboratory. ACM Environmental, Inc. was used to analyze asbestos samples and FECL, Inc. was used for laboratory analysis on the remaining samples collected. Analytical procedures were conducted in accordance with USEPA methods. Data quality was assessed by method blanks, field duplicates, preparation blanks, and matrix spikes to evaluate potential interferences and laboratory repeatability.

3. Analytical results

The findings of the sampling activities are reported by parameter and cleanup criteria (as defined below) as follows:

- Polychlorinated Biphenyls
- Asbestos containing materials
- Lead based paint
- Cyanide

A complete copy of the laboratory results is included in Appendix C. Tables 2-4 summarize the analytical results, including comparison to the following criteria:

PCB wipe samples. Results were compared to TSCA-established cleanup levels of: <10 ug/100 cm^2 for equipment that will be sold or reused; 100 ug/100cm^2 for equipment that will be scrapped for smelting.

PCB grab samples. Results were compared to the decontamination waste and residues standard. For distillation bottoms, residues and filter media of <50 ppm for disposal at a municipal solid waste landfill, RCRA title C facility, or PCB disposal facility.

Asbestos containing materials. Samples were analyzed for the presence of ACMs. A material is considered to be an asbestos containing material if it has been demonstrated through approved laboratory procedures to contain asbestos in concentrations exceeding 1%.

Lead based paint. Samples were analyzed for the presence of lead based paint. Lead based paint is defined by the EPA (40 CFR Part 745, as published in the Federal Register, March 6, 1996) as a coating containing greater than 5000 ppm (0.5%) of lead by weight.

Cyanide wipe sample. The sample was analyzed for the presence of cyanide. No comparisons were made.

3.1. Polychlorinated biphenyls

Analytical results of the PCB wipe and grab samples and the applicable TSCA cleanup standards are summarized in Table 2.

3.1.1. Wipe samples

Analysis of PCB wipe samples indicate that PCBs were not present at locations sampled throughout Buildings 100, 101 and 104.

3.1.2. Grab samples

Analysis of four grab samples indicated that PCBs were not present in each of the three areas of wood flooring sampled in Building 104. Results also indicated that PCBs were not present in the area below the steel plating located in Building 104 train bay.

3.2. Asbestos containing materials

The results of PLM analyses indicate the presence of ACMs throughout Buildings 100, 101 and 104. Table 3 summarizes the sample locations, and analytical results. Estimated quantities of ACM pipe wrap, plaster pipe fitting insulation, floor tile, and sheet-type insulation (transite) are summarized in Table 5.

In general, ACM was found in:

- Roofing materials
- Roof flashing
- Floor tile
- Wallboard (Transite) – refer to Figure 1 for locations
- Pipe insulation and fittings
- Window caulking

In accordance with National Emission Standards for Hazardous Air Pollutants (NESHAP) 40 CFR Part 61, ACM that may become friable during demolition must be removed prior to demolition activities. At a minimum these items include:

- Pipe insulation and fittings
- Wallboard (Transite)
- Damaged floor tile

3.3. Lead-based paint

Fifteen paint chip samples of suspect lead-based paint from Buildings 100, 101 and 104 were collected and analyzed. These samples were located throughout the buildings, and were not isolated to specific areas or colors.

Ten samples yielded results below the 5,000 ppm by weight limit established by Housing and Urban Development (HUD). Based on analytical results, the ceiling paint located in the north end of Building 100 first floor yielded results greater than 5,000 ppm. One sample location in Building 101 yielded results greater than 5,000 ppm, and four samples locations in Building 104 were greater than 5,000 ppm. For sample locations and analytical results refer to Tables 1 and 4.

3.4 Cyanide

Analysis of one wipe sample indicates the presence of cyanide in Building 104. The purpose of this sample was to establish the presence of cyanide for two reasons:

1. Provide environmental/demolition contractors with a working knowledge of potential health and safety issues that may arise during the demolition activities
2. Make environmental/demolition contractors aware of permit requirements that may be exceeded by washwater discharged to the POTW.

For analytical result and sample location refer to Appendix C and Figure 1.

4. Field findings

This chapter provides a summary of environmental-related issues to be addressed prior to or during demolition or renovation activities. These issues include lighting fixtures/bulbs, lighting and ballasts, possible CFC containing equipment, electrical, HVAC and process equipment, radioactive materials (e.g., exit signs), and mercury containing switches/fuses. Table 5 summarizes field findings and provides recommendations on when materials should be removed. Figures 3 and 4 show the location of these items.

4.1. Lighting and ballasts

The following items are estimated quantities for lighting equipment identified in Building 100, 101 and 104.

Building 100:

- 1st Floor – 350 fluorescent light fixtures
- 2nd Floor – 500 fluorescent light fixtures
- 3rd Floor – 30 Fluorescent light fixtures
- 4th Floor – 55 Fluorescent light fixtures

Building 101:

- 1,350 Fluorescent light fixtures
- 50 Mercury Vapor

Building 104:

- 1st Floor – 160 Fluorescent light fixtures, 1 sodium vapor, 1 mercury vapor
- 2nd Floor – 325 Fluorescent light fixtures
- 3rd Floor – 200 Fluorescent light fixtures

4.2. Electrical, HVAC, and process equipment

There are numerous electrical busses, electrical switchgears, and capacitors located throughout Building 104 that, based on visual examinations, will require surficial decontamination prior to demolition. Oil filled electrical equipment will require removal prior to demolition.

Buildings 100 and 101 contain oil-filled equipment that is currently in use. This equipment is maintained and the oil is changed on a regular basis, therefore this equipment was not sampled.

4.3. Chlorofluorocarbons (CFCs)

Historically, drinking fountains, refrigerators and air conditioning (A/C) units have been a common source of CFCs. Buildings 100, 101 and 104 each contain drinking fountains that may contain CFCs; however, the drinking fountains are currently in use and therefore were not dismantled to confirm the absence or presence of CFCs. The following list summarizes the potential CFC containing equipment:

Building 100:
- Five drinking fountains
- Two A/C units
- Two refrigerators

Building 101:
- Four drinking fountains

Building 104:
- Ten A/C units
- Three drinking fountains

Drinking fountains and A/C units in Building 104 will be assumed to be CFC containing and will require removal.

4.4. Emergency lighting/exit signs

Buildings 100, 101 and 104 contain emergency lighting (with battery back-up units) and exit signs that may contain radioactive illumination throughout the building. The following list summarizes potential radioactive containing devices:

Building 100:
- Eleven emergency lights
- Thirty-four exit signs

Building 101:
- Twenty-seven exit signs
- Twenty-five emergency lights

Building 104:
- Seven emergency lights
- Fourteen exit signs

Emergency lighting and exit signs in Building 104 are assumed to be radioactive containing and will require removal prior to demolition. Emergency lighting and exit signs in Buildings 100 and 101 are currently in use and do not require removal.

4.5. Mercury switches

There are mercury containing devices located throughout Buildings 100, 101 and 104. The following list summarizes mercury containing switches:

Building 100:
- Three mercury thermostats

Building 101:
- Three mercury boiler switches
- Nineteen mercury thermostats

Building 104:
- Seven mercury thermostats

Mercury containing devices located in Building 104 will require removal prior to demolition. Mercury containing devices in Buildings 100 and 101 are currently in use and do not require removal.

4.6. Computer tape storage cabinets

Several computer tape storage cabinets are located on the second floor of Building 104. Insulating material from one of the units has leaked out of the unit and onto the surrounding floor. A sample of material was collected and sent to TriMatrix Laboratories in Grand Rapids, MI for analysis for hazardous waste characteristics. Specifically, the sample was analyzed for pH, VOCs, SVOCs, metals, flashpoint, cyanide reactivity, and sulfide reactivity. The sample had a pH of 7.22 and tested negative for VOCs, SVOCs, metals, flashpoint, cyanide reactivity, and sulfide reactivity. A copy of the analytical results have been included in Appendix C.

Analytical results indicate that the material does not display hazardous waste characteristics and can therefore be included with the general demolition debris.

5. Summary

Bosch retained O'Brien & Gere to assist in the characterization and assessment of Buildings 100, 101 and 104 prior to decommissioning and demolition. The site visit and sampling and analysis phases identified the following environmental issues that are to be addressed prior to demolition:

- ACM is located throughout Buildings 100, 101 and 104, primarily in pipe insulation and fittings, window caulking, wallboard, roof material and flashing. ACM roof material and flashing, and ACM window caulking was identified as non-friable. Fire doors are assumed to contain encapsulated ACM, allowing for the removal and disposal during demolition or renovation phases. ACM shall be properly abated prior to demolition / renovation.
- Lead-based paint was identified on walls, windowsills and slats, ceilings, and columns throughout the building. Lead paint that is loose, flaking, or has fallen on floors, ceilings, etc. should be abated prior to demolition or renovation.
- Analytical results indicate the presence of cyanide in Building 104 on the 1st floor.
- Other hazardous materials including, but not limited to, CFCs, mercury containing switches, fluorescent lights, mercury vapor lights, sodium vapor lights, radioactive devices etc. are located throughout the buildings. These items should be removed from the building prior to demolition or appropriately managed during renovation activities.

Table 5 summarizes the types of materials found at the site, estimated quantities (where applicable) of each material, and recommendations for addressing these materials (e.g., abatement, demolition, manage in-place).

Bosch Buildings 100, 101 and 104 Characterization Report
South Bend, Indiana
Sample Identification

Table 1

Sample ID	Location	Analytical Parameter
100-PACM-1	Roof material - Building 100 roof	Asbestos
100-PACM-2	Roof flashing - Building 100 roof	Asbestos
100-PACM-3	Roof material - Building 100 dock roof	Asbestos
100-PACM-4	Roof flashing - Building 100 dock roof	Asbestos
100-PACM-5	Roof material - Building 100 lower roof	Asbestos
100-PACM-6	Roof flashing - Building 100 lower roof (near walkway)	Asbestos
100-PACM-7	Plaster material - ceiling in Building 100 electrical room	Asbestos
100-PACM-8	Wallboard - Building 100 electrical room	Asbestos
100-PACM-9	Upper Ceiling tile (w/glue) - south end of Building 100	Asbestos
100-PACM-10	2'x2' interlocking ceiling tile - Building 100 1st floor	Asbestos
100-PACM-11	Ceramic tile and grout - Building 100 womens restroom 1st floor	Asbestos
100-PACM-12	9"x9" floor tile - Building 100 emergency shelter	Asbestos
100-PACM-13	Red floor tile - Building 100 mail room	Asbestos
100-PACM-14	Marble mastic - Building 100 lobby south of doors	Asbestos
100-PACM-15	Pipe wrap - Building 100 janitor closet	Asbestos
100-PACM-16	Duct insulation - Building 100 storage room south of the stairs	Asbestos
100-PACM-17	Pipe wrap - Building 100 north cube area	Asbestos
100-PACM-18	Plaster - Building 100 south end of 2nd floor	Asbestos
100-PACM-19	Plaster - Building 100 ceiling plaster above drop ceiling	Asbestos
100-PACM-20	Pipe wrap - Building 100 stairs to 3rd floor	Asbestos
100-PACM-21	Plaster - Building 100 south air handling room on 3rd floor	Asbestos
100-PACM-22	Pipe fitting - Building 100 north air handling room 3rd floor	Asbestos
100-PACM-23	Floor tile - Building 100 private bathroom 3rd floor	Asbestos
100-PACM-24	Floor tile - Building 100 janitors closet 4th floor	Asbestos
100-PACM-25	Ceiling plaster - Building 100 south corner 4th floor	Asbestos
100-PACM-26	Pipe wrap - Building 100 boiler room (near door to Bldg 103)	Asbestos
100-PACM-27	Tank insulation - Building 100 tank in boiler room	Asbestos
100-PACM-28	Roof material - Building 100 roof	Asbestos
100-PACM-29	Roof flashing - Building 100 roof	Asbestos
100-1	Brown paint located on column in Building 100 boiler room	Lead Paint
100-2	Yellow paint on guard rail in hallway of Building 100	Lead Paint
100-3	Gray and red paint on column post in Building 100 loading dock	Lead Paint
100-4	Ceiling paint Building 100 - north end of 1st floor	Lead Paint
100-5	Wipe sample - Building 100 - south end of 3rd floor	PCB
100-6	Wipe sample - Building 100 elevator house	PCB
101-PACM-1	Window caulking - Building 101 west side of office area	Asbestos
101-PACM-2	Building 101 black tar on duct insulation	Asbestos
101-PACM-3	Ceiling tile - Building 101 ceiling tile from upper level pipe chase	Asbestos
101-PACM-4	Insulation - Building 101 Blown in insulation from pipe chase	Asbestos
101-PACM-5	Floor tile - Building 101 Pipe chase/maintenance closet	Asbestos
101-PACM-6	Pipe fitting - Building 101 - east conference room	Asbestos
101-PACM-7	Floor tile grout and glue - Building 101 Bathroom floor	Asbestos
101-PACM-8	Floor tile grout and glue - Building 101 bathroom wall	Asbestos
101-PACM-9	Floor tile - Building 101 bathroom floor	Asbestos
101-PACM-10	Floor tile grout and glue - Building 101 lab area	Asbestos
101-PACM-11	Pipe fitting - Building 101 janitors closet/air handler	Asbestos
101-PACM-12	Ceiling tile and glue - Building 101 janitors closet/air handler	Asbestos
101-PACM-13	Dry wall - Building 101 janitors closet/air handler	Asbestos
101-PACM-14	Ceiling tile - Building 101 hallway	Asbestos
101-PACM-15	Window caulk - Building 101 garage area north wall	Asbestos
101-PACM-16	Window caulk - Building 101 - test stand area west wall	Asbestos
101-PACM-17	Floor tile - Building 101 mens restroom	Asbestos
101-PACM-18	Floor tile - Building 101 Dyno room	Asbestos

Bosch Buildings 100, 101 and 104 Characterization Report
South Bend, Indiana
Sample Identification

Table 1

Sample ID	Location	Analytical Parameter
101-PACM-19	12"x12" floor tile - Building 101 interior office area	Asbestos
101-1	Silver, orange and white paint on piping in Building 101	Lead Paint
101-2	Wipe sample - dynameter lab	PCB
101-3	Safety yellow paint in Building 101 garage	Lead Paint
101-4	Safety red paint in Building 101 garage	Lead Paint
104-PACM-1	Roof material - Building 104 train dock	Asbestos
104-PACM-2	Roof flashing - Building 104 train dock	Asbestos
104-PACM-3	Roof material - Building 104 center section of roof	Asbestos
104-PACM-4	Roof flashing - Building 104 center of roof	Asbestos
104-PACM-5	Roof material - Building 104 roof east section	Asbestos
104-PACM-6	Roof material - Building 104 roof west section	Asbestos
104-PACM-75	Pipe fitting located in Building 104 train bay	Asbestos
104-PACM-76	Pipe insulation located in Building 104 train bay	Asbestos
104-PACM-77	Pipe insulation - Building 104 train bay	Asbestos
104-PACM-78	Pipe fitting located in Building 104 train bay	Asbestos
104-PACM-79	Pipe fitting - Building 104 located at garage door area	Asbestos
104-PACM-80	Pipe insulation - Building 104 1st floor	Asbestos
104-PACM-81	Pipe insulation - Building 104 1st floor	Asbestos
104-PACM-82	Wall Board - Building 104 1st floor office area	Asbestos
104-PACM-83	Pipe insulation - Building 104 1st floor office area	Asbestos
104-PACM-84	Wall plaster - Building 104 south end of 1st floor	Asbestos
104-PACM-85	9"x9" floor tile - Building 104 maintenance office	Asbestos
104-PACM-86	Window Caulk - Building 104 2nd floor	Asbestos
104-PACM-87	12"x12" red floor tile - Building 104 2nd floor	Asbestos
104-PACM-88	12"x12" brown floor tile - Building 104 2nd floor	Asbestos
104-PACM-89	2'x4' ceiling tile - Building 104 2nd floor	Asbestos
104-PACM-90	12"x12" dark brown floor tile - Building 104 2nd floor	Asbestos
104-PACM-91	1'x1' ceiling tile with glue - Building 104 2nd floor	Asbestos
104-PACM-92	2'x4' ceiling tile - Building 104 2nd floor	Asbestos
104-PACM-93	Plaster wall - Building 104 2nd floor	Asbestos
104-PACM-94	Ceramic tile and grout - Building 104 2nd floor restroom	Asbestos
104-PACM-95	Ceramic wall tile - Building 104 2nd floor restroom	Asbestos
104-PACM-96	Ceiling tile - Building 104 2nd floor	Asbestos
104-PACM-97	Plaster wall - Building 104 2nd floor	Asbestos
104-PACM-98	Pipe fitting - Building 104 3rd floor	Asbestos
104-PACM-99	Insulation - Building 104 3rd floor expansion gasket	Asbestos
104-PACM-100	Wall plaster - Building 104 south end of 3rd floor	Asbestos
104-1	Lime green paint located in Building 104 3rd floor	Lead Paint
104-2	Brown paint in Building 104 3rd floor wood shop	Lead Paint
104-3	Red paint in Building 104 3rd floor wood shop	Lead Paint
104-4	Beige paint in Building 104 3rd floor in doorway to office area	Lead Paint
104-5	Off-white paint - east wall of Building104, 3rd floor computer room	Lead Paint
104-6	Brown paint in Building 104 stairwell in northeast corner	Lead Paint
104-7	Lime green paint in Building 104 stairwell	Lead Paint
104-8	Grab sample - Building 104 train bay under raised floor	PCB
104-9	Paint chip sample Building 104 train bay	Lead Paint
104-10	Wipe sample - Building 104 1st floor pump in southeast corner	PCB
104-11	Wipe sample - Building 104 train bay blower on top of restroom	PCB
104-12	Green paint in Building 104 stairwell in center of north wall	PCB
104-13	Wood flooring - Building 104 from under compressor on 1st floor	PCB
104-14	Wood flooring - Building 104 2nd floor	PCB

Bosch Buildings 100, 101 and 104 Characterization Report
South Bend, Indiana
Sample Identification

Sample ID	Location	Analytical Parameter
104-15	Wood flooring - Building 104 3rd floor	PCB
104-16	Wipe sample - Building 104 1st floor - by compressor	PCB
104-17	Wipe sample - Building 104 north side near former overhead door	Cyanide
104-18	Wipe sample - Building 104 Air handler in maintenance area	PCB
104-19	Grab sample - material from tape storage cabinet'	

South Bend, Indiana
Polychlorinated Biphenyls Analytical Data
USEPA-8082

Wipe Samples (by USEPA-8082)

LOCATION	100-5	100-6	101-2	104-10	104-11	104-16	TSCA Standard Limits
ANALYTICAL PARAMETER							
PCB-1016	<2	<5	<1	<5	<5	<2	10 / 100
PCB-1221	<2	<5	<1	<5	<5	<2	10 / 100
PCB-1232	<2	<5	<1	<5	<5	<2	10 / 100
PCB-1242	<2	<5	<1	<5	<5	<2	10 / 100
PCB-1248	<2	<5	<1	<5	<5	<2	10 / 100
PCB-1254	<2	<5	<1	<5	<5	<2	10 / 100
PCB-1260	<2	<5	<1	<5	<5	<2	10 / 100

Grab Samples (i.e., wood flooring, residual materials)

LOCATION	104-8	104-13	104-14	104-15	Criteria for oil reservoirs
ANALYTICAL PARAMETER					
PCB-1016	<2	<3	<3	<3	<50
PCB-1221	<2	<3	<3	<3	<50
PCB-1232	<2	<3	<3	<3	<50
PCB-1242	<2	<3	<3	<3	<50
PCB-1248	<2	<3	<3	<3	<50
PCB-1254	<2	<3	<3	<3	<50
PCB-1260	<2	<3	<3	<3	<50

NOTES:
1. Criteria and concentrations for wipe samples shown in ug / 100 cm2.
2. Criteria and concentrations for oil reservoir samples shown in mg/kg (ppm).
3. Bold type indicates exceedance of action level.
4. Due to matrix interference, method detection limits for samples 103-1, 103-2, and 103-42 were elevated. The detection limits are within the TSCA standard of 100 ug/100 cm2 for equipment that will be scrapped for smelting.

Bosch Buildings 100, 101 and 104 Characterization Report
South Bend, Indiana
Asbestos Analytical Data
USEPA-600/R-93-116

Table 3

Sample ID	Description	Analytical Result
100-PACM-1	Roof material - lower portion	N.D.
100-PACM-2	Roof flashing - Building 100 roof	Chrysotile 15%
100-PACM-3	Roof material - Building 100 dock roof	N.D.
100-PACM-4	Roof flashing - Building 100 dock roof	Chrysotile 10%
100-PACM-5	Roof material - Building 100 lower roof	N.D.
100-PACM-6	Roof flashing - Building 100 lower roof	Chrysotile 5%
100-PACM-7	Plaster material - ceiling in Building 100 electrical room	N.D.
100-PACM-8	Wallboard - Building 100 electrical room	N.D.
100-PACM-9	Ceiling tile - south end of Building 100 (w/glue)	N.D.
100-PACM-10	2'x2' ceiling tile - Building 100 1st floor	N.D.
100-PACM-11	Ceramic tile and grout - Building 100 womens restroom 1st floor	N.D.
100-PACM-12	9"x9" floor tile and mastic - Building 100 emergency shelter	Chrysotile 10%
100-PACM-13	Red floor tile and mastic - Building 100 mail room	Chrysotile 10%
100-PACM-14	Marble and mastic - Building 100 lobby	Chrysotile 10%
100-PACM-15	Pipe wrap - Building 100 janitor closet	Chrysotile 10%
100-PACM-16	Duct insulation - Building 100 storage room next to south stairs	Chrysotile 85%
100-PACM-17	Pipe wrap - Building 100 north cube area	Chrysotile 55%
100-PACM-18	Plaster - Building 100 south end of 2nd floor	N.D.
100-PACM-19	Plaster - Building 100 ceiling plaster above drop ceiling	N.D.
100-PACM-20	Pipe wrap - Building 100 stairs to 3rd floor	Chrysotile 60%
100-PACM-21	Plaster - Building 100 south air handling room on 3rd floor	N.D.
100-PACM-22	Pipe fitting - Building 100 north air handling room 3rd floor	N.D.
100-PACM-23	Floor tile - Building 100 private bathroom 3rd floor	N.D.
100-PACM-24	Floor tile - Building 100 janitors closet 4th floor	N.D.
100-PACM-25	Ceiling plaster - Building 100 south corner 4th floor	N.D.
100-PACM-26	Pipe wrap - Building 100 boiler room	Chrysotile 60%
100-PACM-27	Tank insulation - Building 100 tank in boiler room	N.D.
100-PACM-28	Roof material - Building 100 roof	N.D.
100-PACM-29	Roof flashing - Building 100 roof	N.D.
101-PACM-1	Window caulking - Building 101 west side of office area	Chrysotile 1%
101-PACM-2	Building 101 black tar on duct insulation	Chrysotile 10%
101-PACM-3	Ceiling tile - Building 101 ceiling tile from upper level pipe chase	N.D.
101-PACM-4	Insulation - Building 101 Blown insulation from pipe chase	N.D.
101-PACM-5	Floor tile and mastic - Building 101 Pipe chase room	Chrysotile 10%
101-PACM-6	Fiber glass fitting - Building 101 east conference room	Chrysotile 35%
101-PACM-7	Floor tile - Building 101 Bathroom floor	N.D.
101-PACM-8	Floor tile - Building 101 bathroom wall	N.D.
101-PACM-9	Floor tile - Building 101 bathroom floor	N.D.
101-PACM-10	Floor tile - Building 101 lab area	N.D.
101-PACM-11	Pipe fitting - Building 101 janitors closet/air handler	Chrysotile 30%
101-PACM-12	Ceiling tile - Building 101 janitors closet/air handler	N.D.
101-PACM-13	Dry wall - Building 101 janitors closet/air handler	N.D.
101-PACM-14	Ceiling tile - Building 101 hallway	N.D.
101-PACM-15	Window caulk - Building 101 garage area north wall	Chrysotile 5%
101-PACM-16	Window caulk - Building 101 teststand area west wall	Chrysotile 5%
101-PACM-17	Floor tile - Building 101 mens restroom	N.D.
101-PACM-18	Floor tile - Building 101 Dyno room	N.D.
101-PACM-19	12"x12" floor tile - Building 101 interior office area	N.D.
104-PACM-1	Roof material - Building 104 train dock roof	N.D.
104-PACM-2	Roof flashing - Building 104 roof flashing	Chrysotile 20%
104-PACM-3	Roof material - Building 104 center section of roof	N.D.
104-PACM-4	Roof flashing - Building 104 center of roof	Chrysotile 20%
104-PACM-5	Roof material - Building 104 roof east section	N.D.
104-PACM-6	Roof material - Building 104 roof west section	N.D.
104-PACM-75	Pipe fitting located in Building 104 train bay	N.D.
104-PACM-76	Pipe insulation located in Building 104 train bay	Chrysotile 65%

Bosch Buildings 100, 101 and 104 Characterization Report
South Bend, Indiana
Asbestos Analytical Data
USEPA-600/R-93-116

Sample ID	Description	Analytical Result
104-PACM-77	Pipe insulation sheet type located in Building 104 train bay	Chrysotile 20%
104-PACM-78	Pipe fitting located in Building 104 train bay	N.D.
104-PACM-79	Pipe fitting - Building 104 located at garage door area	Chrysotile 15%
104-PACM-80	Pipe wrap (round fibers) - Building 104 1st floor	Chrysotile 45%
104-PACM-81	Pipe wrap - Building 104 1st floor	Chrysotile 50%
104-PACM-82	Wall Board - Building 104 1st floor office area	N.D.
104-PACM-83	Pipe wrap (sheet type) - Building 104 1st floor office area	Chrysotile 25%
104-PACM-84	Wall plaster - Building 104 south end of 1st floor	N.D.
104-PACM-85	9"x9" floor tile - Building 104 office area	N.D.
104-PACM-86	Window Caulk - Building 104 2nd floor	N.D.
104-PACM-87	12"x12" red floor tile and mastic - Building 104 2nd floor	Chrysotile 10%
104-PACM-88	12"x12" brown floor tile and mastic - Building 104 2nd floor	N.D.
104-PACM-89	2'x4' ceiling tile - Building 104 2nd floor	N.D.
104-PACM-90	12"x12" dark brown floor tile and mastic - Building 104 2nd floor	Chrysotile 5%
104-PACM-91	1'x1' ceiling tile with glue - Building 104 2nd floor	N.D.
104-PACM-92	2'x4' ceiling tile - Building 104 2nd floor	N.D.
104-PACM-93	Plaster wall - Building 104 2nd floor	N.D.
104-PACM-94	Ceramic tile and grout - Building 104 2nd floor restroom	N.D.
104-PACM-95	Ceramic wall tile - Building 104 2nd floor restroom	N.D.
104-PACM-96	Ceiling tile - Building 104 2nd floor	N.D.
104-PACM-97	Plaster wall - Building 104 2nd floor	N.D.
104-PACM-98	Pipe fitting - Building 104 3rd floor	N.D.
104-PACM-99	Insulation - Building 104 3rd floor expansion gasket	N.D.
104-PACM-100	Wall plaster - Building 104 south end of 3rd floor	N.D.

Bosch Buildings 100, 101 and 104 Characterization Report
South Bend, Indiana
Lead Based Paint Analytical Data
USEPA-6020

SAMPLE IDENTIFICATION	RESULTS	ACTION LEVEL
100-1	379	5000 ppm
100-2	581	5000 ppm
100-3	679	5000 ppm
100-4	**16,300**	5000 ppm
101-1	2,700	5000 ppm
101-3	2.8	5000 ppm
101-4	**11,100**	5000 ppm
104-1	3,160	5000 ppm
104-2	678	5000 ppm
104-3	123	5000 ppm
104-4	**11,200**	5000 ppm
104-5	**6,320**	5000 ppm
104-6	881	5000 ppm
104-7	**5,360**	5000 ppm
104-8	2,060	5000 ppm
104-9	**6,630**	5000 ppm
104-12	3,310	5000 ppm

Notes:
1. Action level as listed in 40 CFR 475.
2. Criteria and results are shown in parts per million.
3. Samples collected on November 7 - 10, 2000.
4. Samples analyzed by FECL in East Lansing, Michigan
5. Bold type indicates exceedance of action level.

South Bend, Indiana
Material Summary

Material	Building 104 / Building 104 Train Bay / Building 100 and 101 (quantity if necessary)	Renovation Area (quantity)
ACM Roof Material / ACM Roof Flashing	Leave for demolition phase - demolish with rest of building, and dispose of with demolition debris and (as long as demolition doesn't include burning, sawing, or other means that could cause the material to become friable).	Manage in-place / remove if becomes friable. For future work: if removing existing roof - roofing contractor must be certified; if laying new roof over existing - roofing contractor must be notified of the presence of ACM.
ACM Window Caulking	Leave for demolition phase and remove window prior to demolition. Material can be handled the same as ACM roof material during demolition phase.	Manage in-place / remove if becomes friable
ACM Pipe Insulation and fittings	Remove during abatement phase (Bldg. 104 Total - 4,000 ln. ft.)	Remove exposed portions during abatement phase
ACM Floor Tile	Remove friable materials (100 sq. ft.) during abatement phase; remaining ACM floor tile removed during demolition.	Remove friable materials during abatement phase (none identified)
ACM Wallboard (Transite)	Remove during abatement phase (Bldg. 104)	Remove exposed portion during abatement phase
Lead Paint	Remove loose and flaking paint during abatement phase	Remove loose and flaking paint during abatement phase
CFC equipment	Remove during abatement phase (Bldg 104 - 3 drinking fountains, 10 A/C units)	Remove unused equipment during abatement phase (Bldg. 100 - 5 drinking fountains, 2 A/C, 3 refrigerators) (Bldg 101- 4 drinking fountains)
Mercury switches	Remove during abatement phase (7 identified)	Remove unused equipment during abatement phase (Bldg. 100 - 3) (Bldg. 101 - 22)
Fluorescent lights (w/ non-PCB ballast)	Remove during abatement phase (685 fixtures in three sizes)	Manage unused fixtures in-place, remove unused fixtures prior to renovation (Bldg. 100 - 935 fixtures) (Bldg. 101 - 1,350 fixtures)
Mercury vapor lights	Remove during abatement phase (1 light)	Manage unused fixtures in-place & remove prior to renovation (Bldg. 100 - none identified) (Bldg. 101 - 50 fixtures)
Sodium vapor lights	Remove during abatement phase (1 light)	Manage unused fixtures in-place & remove prior to renovation (none identified)
Emergency lighting / exit signs	Remove during abatement phase (7 emergency lights, 14 exit signs)	Manage unused fixtures in-place & remove prior to renovation (Bldg 100 - 11 emergency lights, 34 exit signs) (Bldg 101 - 27 emergency lights, 25 exit signs)

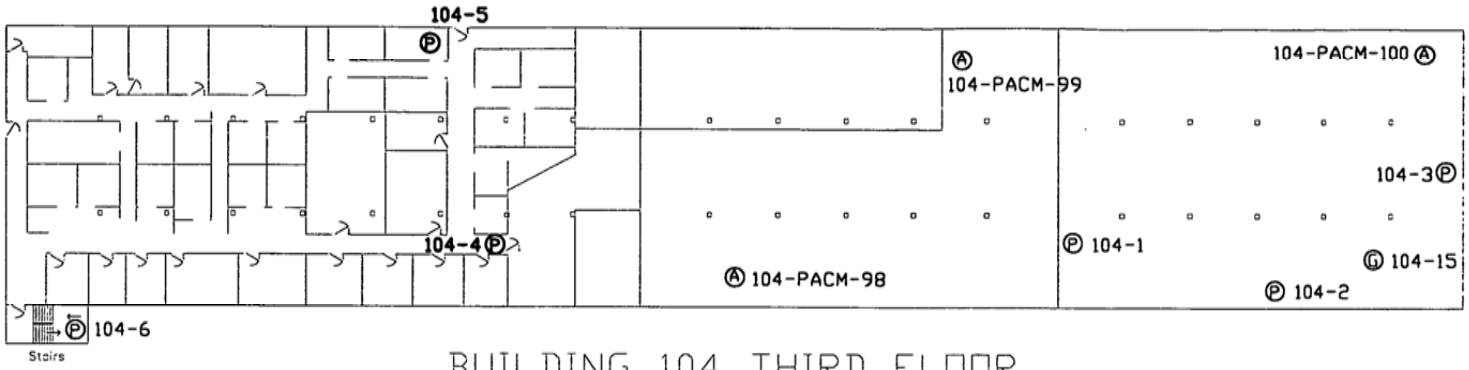
South Bend, Indiana
Material Summary

Material	Building 104 / Building 104 Train Bay / Building 100 and 101 (quantity if necessary)	Renovation Area (quantity)
Misc. equipment (motors, tanks, electrical equipment, etc.)	Clean and remove during abatement phase.	Clean and remove unused equipment during abatement phase.

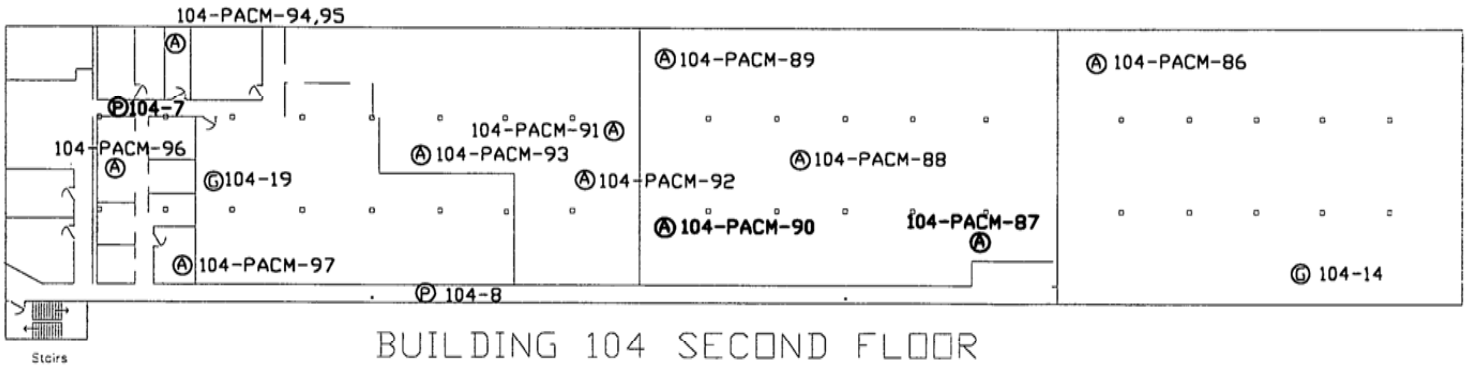
South Bend, Indiana
Material Summary

Material	Building 104 / Building 104 Train Bay / Building 100 and 101 (quantity if necessary)	Renovation Area (quantity)
ACM Roof Material / ACM Roof Flashing	Leave for demolition phase - demolish with rest of building, and dispose of with demolition debris and (as long as demolition doesn't include burning, sawing, or other means that could cause the material to become friable).	Manage in-place / remove if becomes friable. For future work: if removing existing roof - roofing contractor must be certified; if laying new roof over existing - roofing contractor must be notified of the presence of ACM.
ACM Window Caulking	Leave for demolition phase and remove window prior to demolition. Material can be handled the same as ACM roof material during demolition phase.	Manage in-place / remove if becomes friable
ACM Pipe Insulation and fittings	Remove during abatement phase (Bldg. 104 Total - 4,000 ln. ft.)	Remove exposed portions during abatement phase
ACM Floor Tile	Remove friable materials (100 sq. ft.) during abatement phase; remaining ACM floor tile removed during demolition.	Remove friable materials during abatement phase (none identified)
ACM Wallboard (Transite)	Remove during abatement phase (Bldg. 104)	Remove exposed portion during abatement phase
Lead Paint	Remove loose and flaking paint during abatement phase	Remove loose and flaking paint during abatement phase
CFC equipment	Remove during abatement phase (Bldg 104 - 3 drinking fountains, 10 A/C units)	Remove unused equipment during abatement phase (Bldg. 100 - 5 drinking fountains, 2 A/C, 3 refrigerators) (Bldg 101- 4 drinking fountains)
Mercury switches	Remove during abatement phase (7 identified)	Remove unused equipment during abatement phase (Bldg. 100 - 3) (Bldg. 101 - 22)
Fluorescent lights (w/ non-PCB ballast)	Remove during abatement phase (685 fixtures in three sizes)	Manage unused fixtures in-place, remove unused fixtures prior to renovation (Bldg. 100 - 935 fixtures) (Bldg. 101 - 1,350 fixtures)
Mercury vapor lights	Remove during abatement phase (1 light)	Manage unused fixtures in-place & remove prior to renovation (Bldg. 100 - none identified) (Bldg. 101 - 50 fixtures)
Sodium vapor lights	Remove during abatement phase (1 light)	Manage unused fixtures in-place & remove prior to renovation (none identified)
Emergency lighting / exit signs	Remove during abatement phase (7 emergency lights, 14 exit signs)	Manage unused fixtures in-place & remove prior to renovation (Bldg 100 - 11 emergency lights, 34 exit signs) (Bldg 101 - 27 emergency lights, 25 exit signs)
Misc. equipment (motors, tanks, electrical equipment, etc.)	Clean and remove during abatement phase.	Clean and remove unused equipment during abatement phase.

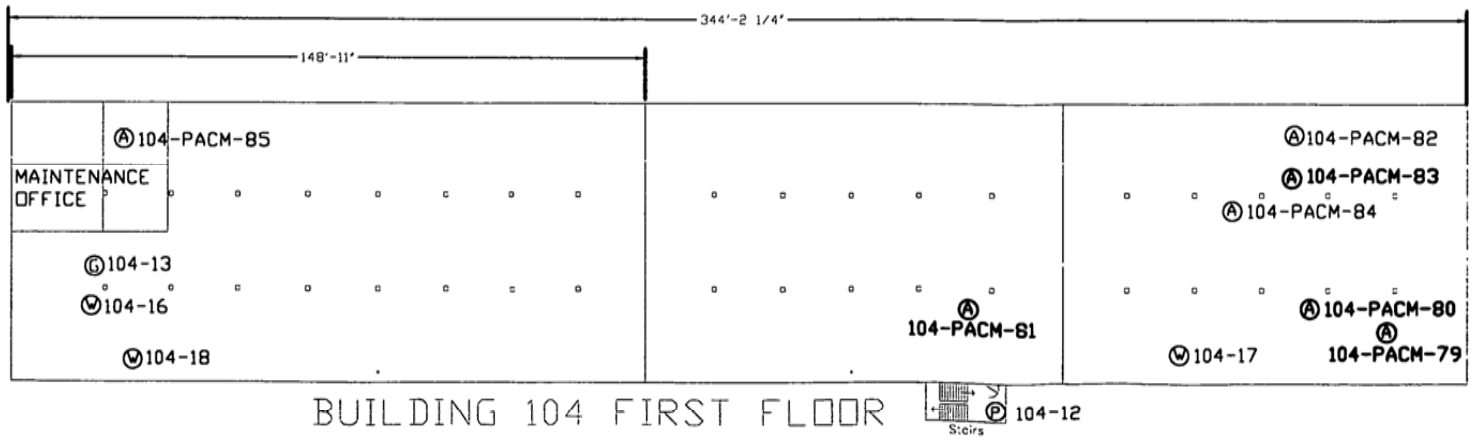
FIGURE 1



BUILDING 104 THIRD FLOOR



BUILDING 104 SECOND FLOOR



BUILDING 104 FIRST FLOOR

LEGEND

- (P) LEAD BASED PAINT SAMPLES
- (W) WIPE SAMPLES (PCBs, CYANIDE)
- (G) GRAB SAMPLE
- (A) SUSPECT ASBESTOS SAMPLES

NOTE: LOCATIONS IN BOLD ARE CONSIDERED TO BE ABOVE CRITERIA

ROBERT BOSCH CORP.
SOUTH BEND, IN
BUILDING
CHARACTERIZATION REPO

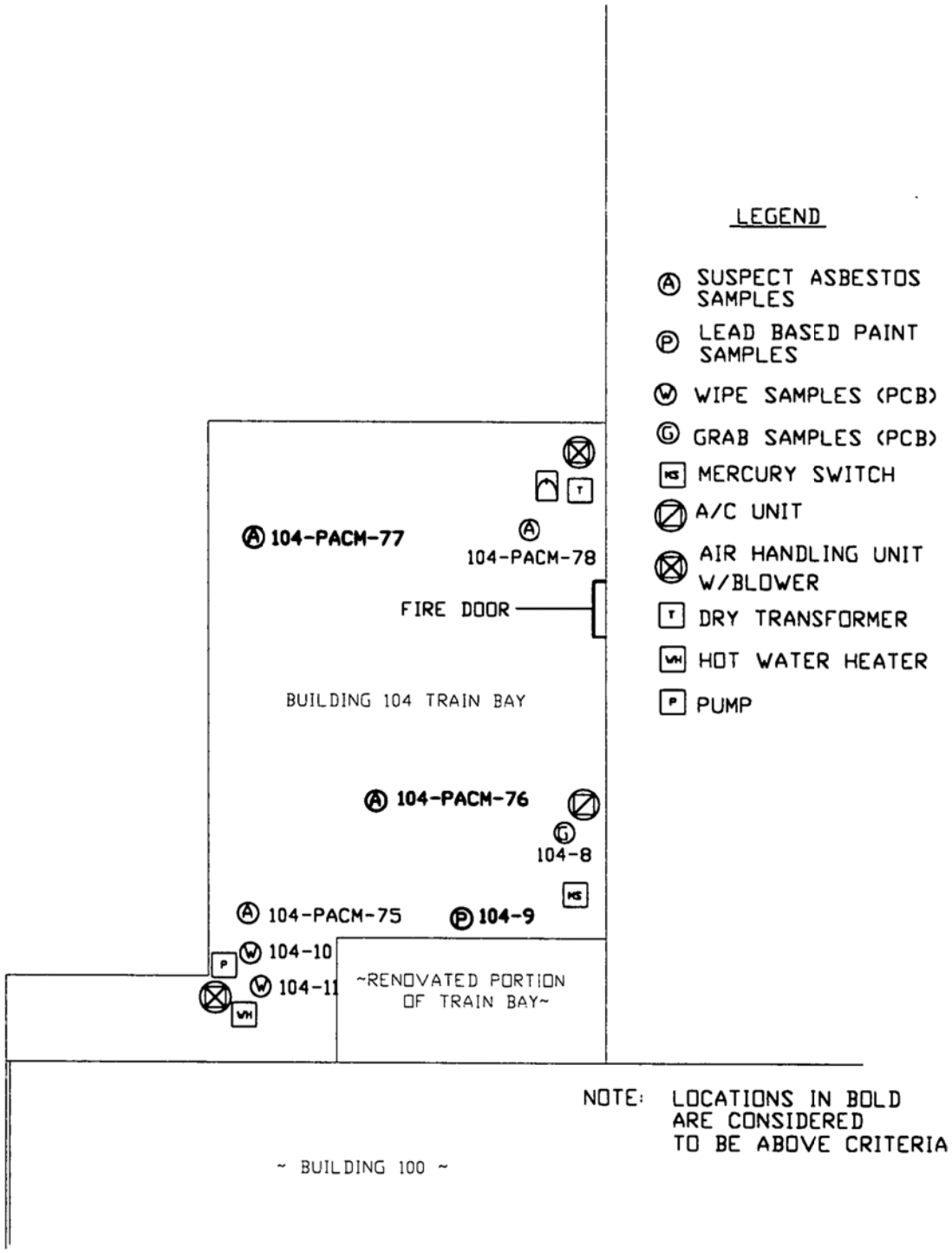
BUILDING 104
INTERIOR
SAMPLE LOCATIONS

FILE NO. 6407.27737
FEBRUARY 2001

OBRIEN&GERE
ENGINEERS INC.

DWG PATH: I:\NOVI\PROJECTS\6407\27737\DWGS\FIGURE2.DWG

FIGURE 2



ROBERT BOSCH CORP.
BLDG. CHARACTERIZATION REPORT
SOUTH BEND, IN

BLDG. 104 TRAIN BAY SAMPLE LOCATIONS

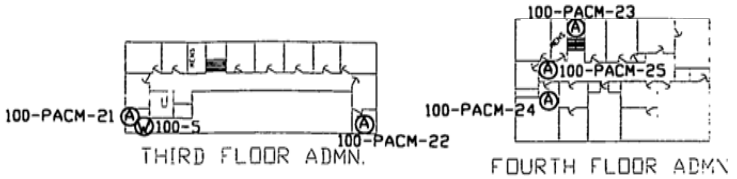
6407.27737
FEBRUARY 2001

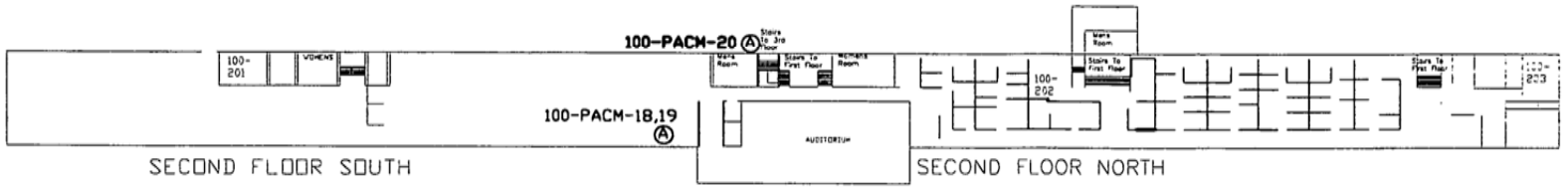
O'BRIEN & GERE ENGINEERS INC.

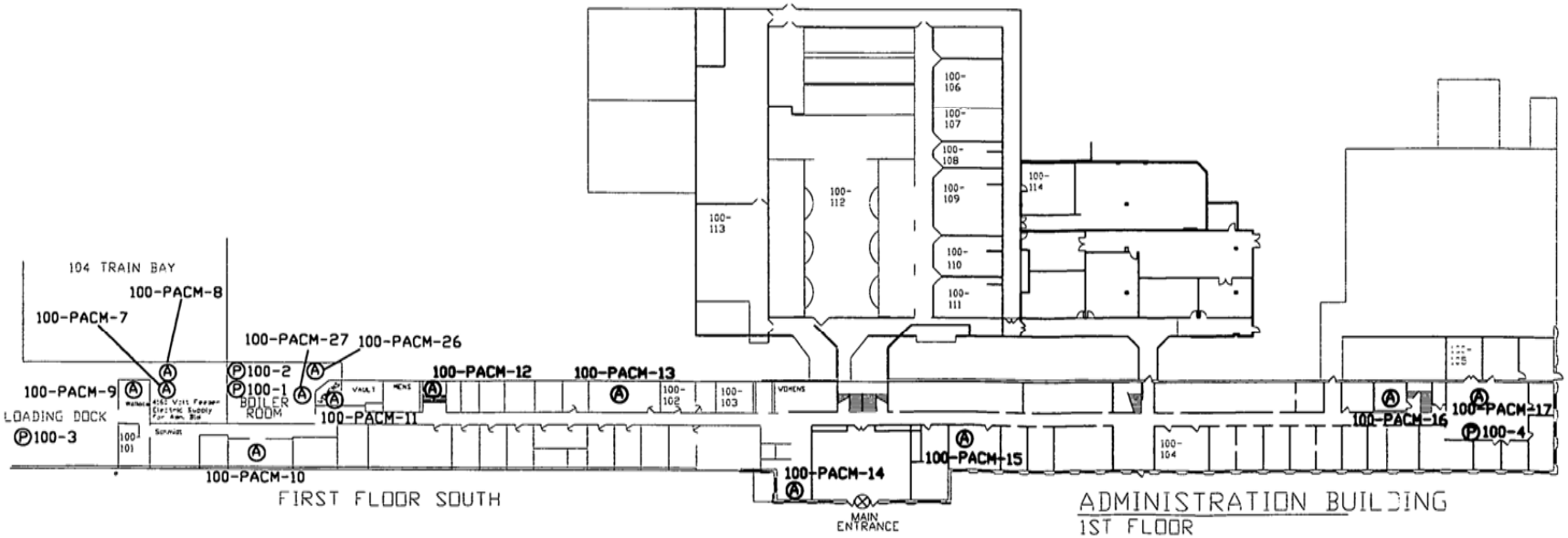
PLOT DATE: 02/09/01

FIGURE 3

NOTE: SAMPLE LOCATION NOT SHOWN:
100-6 (WIPE SAMPLE COLLECTED FROM ELEVATOR HOUSE ABOVE FOURTH FLOOR)







LEGEND

- (A) SUSPECT ASBESTOS SAMPLES
- (P) LEAD BASED PAINT SAMPLES
- (V) WIPE SAMPLE (PCB)

NOTE: LOCATIONS IN BOLD ARE CONSIDERED TO BE ACM

ROBERT BOSCH CORP.
SOUTH BEND, IN
BUILDING
CHARACTERIZATION REPO

BLDG. 100 INTERIOR
SAMPLE LOCATIONS

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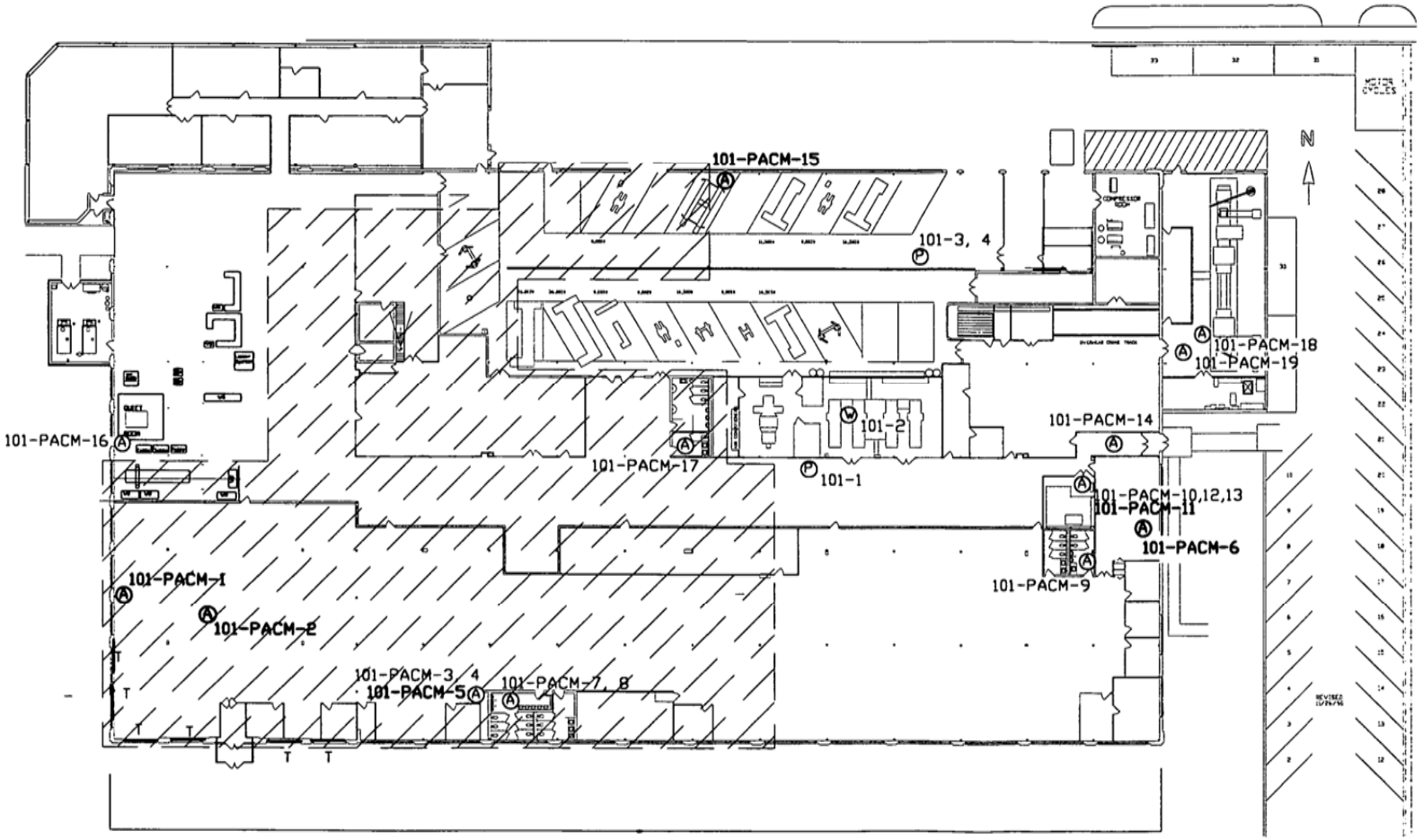
ENGINEERS INC.

FIGURE 4



LEGEND

Ⓐ SUSPECT ASBESTOS SAMPLES

Ⓟ LEAD BASED PAINT SAMPLES

T TRANSITE WALLBOAR

AREA W/ ACM PIPE INSULATION

NOTE: LOCATIONS IN BOLD ARE CONSIDERED TO BE ACM

ROBERT BOSCH CORPORAT
SOUTH BEND, IN.
BUILDING CHARACTERIZATI
REPORT

BUILDING 101
SAMPLE LOCATIONS

FILE NO. 6407.27737-FIG4
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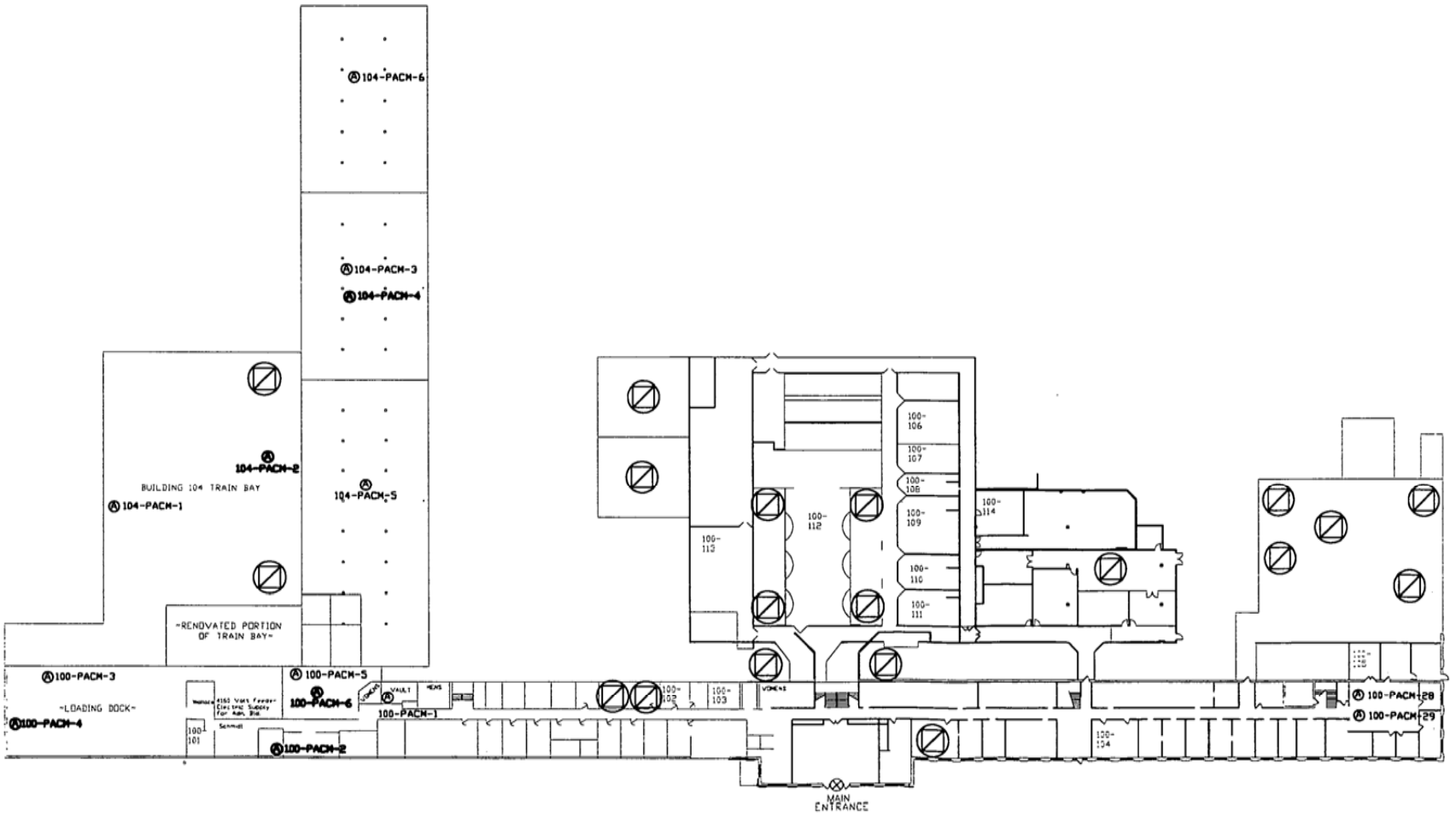
FIGURE 5



LEGEND

Ⓐ SUSPECT ASBESTOS SAMPLES

A/C UNITS

NOTE: LOCATIONS IN BOLD ARE CONSIDERED TO BE ACM

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SOUTH BEND, IN
BUILDING
CHARACTERIZATION REPO

BUILDING 100 & 10
ROOF SAMPLE LOCATIO
AND EQUIPMENT

FILE NO. 6407.27737
FEBRUARY 2001

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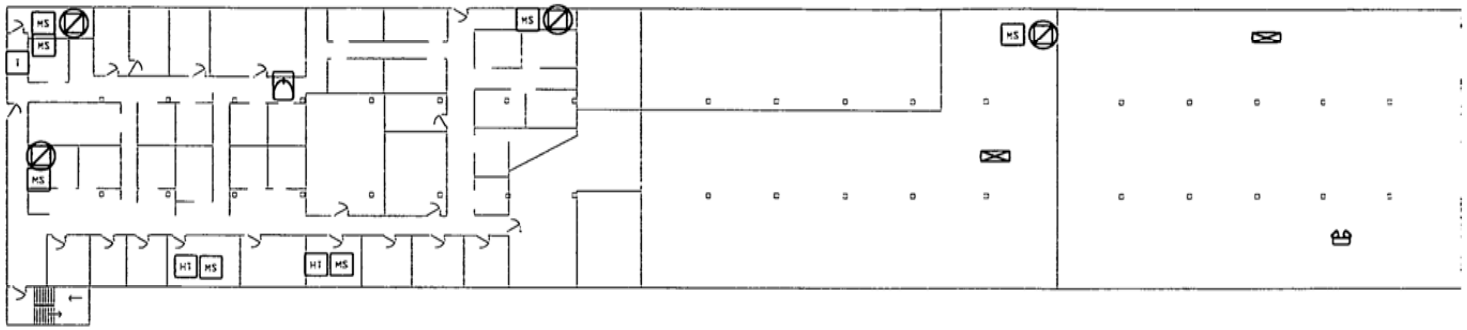
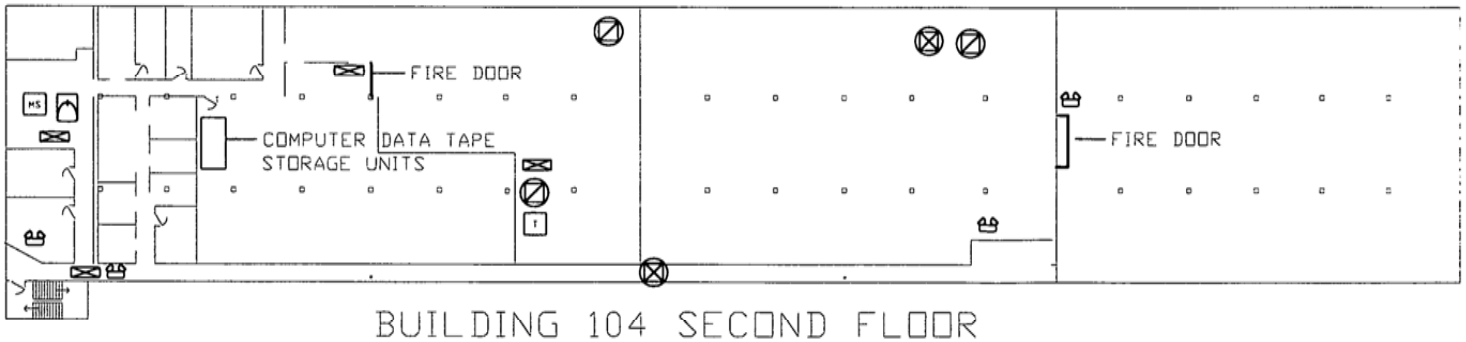
ENGINEERS INC.

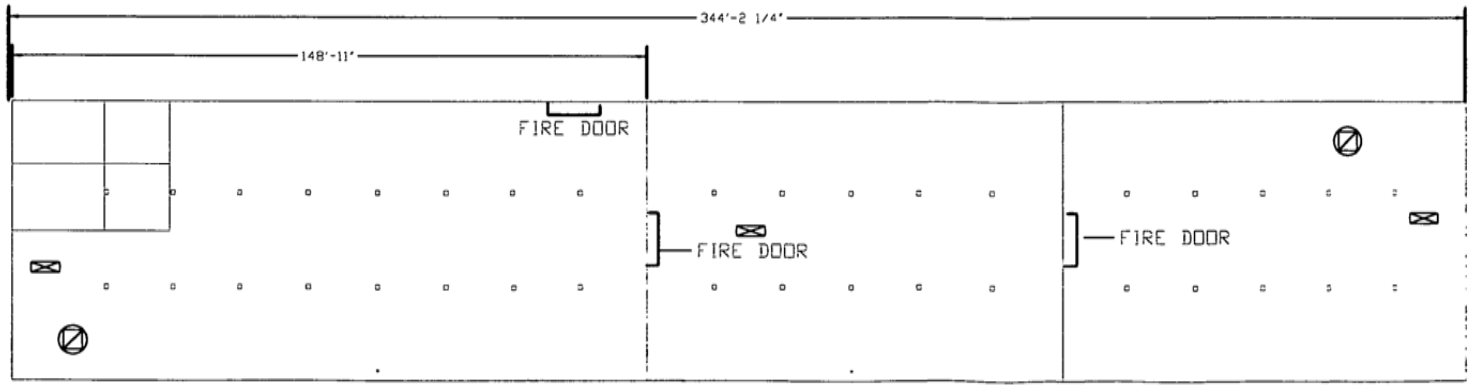
FIGURE 6



BUILDING 104 THIRD FLOOR



BUILDING 104 SECOND FLOOR



BUILDING 104 FIRST FLOOR

Stairs

LEGEND

- A/C UNIT
- DRINKING FOUNTAIN
- EMERGENCY LIGHTING
- MS MERCURY SWITCH
- EXIT SIGN
- AIR HANDLING UNIT
- HT HEATER W/SMALL DRY TRANSFORMER
- T DRY TRANSFORMER

ROBERT BOSCH CORP.
SOUTH BEND, IN
BUILDING
CHARACTERIZATION REPO

BUILDING 104
EQUIPMENT ITEMS

FILE NO. 6407.27737
FEBRUARY 2001

OBRIEN&GERE
ENGINEERS INC.

APPENDIX A

Sampling and Analysis Plan

6407/27635

Draft Report

Sampling & Analysis Plan

Robert Bosch Corporation
South Bend, Indiana

DRAFT

Scott L. Cormier, P.E.
Senior Manager

39830 Grand River Ave.
Suite B-2
Novi, Michigan 48375

Contents

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1. Introduction

This sampling and analysis plan (SAP) presents the proposed sampling locations and protocols, analytical procedures, and health and safety guidelines for the environmental assessment of Bosch complex located 401 N. Bendix Drive, South Bend, Indiana.

The overall project objective for the environmental assessment is to safely and cost-effectively deactivate and demo portions of the Bosch complex. To safely meet this objective the environmental assessment is being performed prior to deactivation and demolition.

The environmental assessment of Building 103, 104, 101 and 100 is to be completed in several phases: site visit/building inspection, sampling/analysis planning and implementation, and analytical results evaluation. The site visit/building inspection phase was completed during the week of November 1, 2000. The deactivation team reviewed files and drawings pertaining to these buildings and completed a detailed visual inspection of the above buildings. During this site visit/building inspection environmental Areas of Potential Concern (APCs) were identified.

The objective of this (SAP) is to characterize above grade environmental APCs to evaluate if decontamination or further investigation is warranted prior to demolition. The environmental APC's identified during the site visit/inspection phase were:

- presumed asbestos containing materials (PACM)
- possible lead-based paint
- floor staining
- lighting and ballasts
- possible CFC containing equipment
- oil filled equipment
- exhaust stacks
- mercury containing switches
- electrical equipment

Several APC's identified during the site visit/inspection are not anticipated to be sampled and are therefore, not included in this SAP. Those APC's are:

- lighting & ballasts
- possible CFC containing equipment
- electrical equipment
- mercury containing switches

Possible CFC containing equipment will be required to be handled properly during deactivation/demolition and will not be sampled under this program. Although the majority of transformers and capacitors were dry-type and do not require sampling, oil filled transformers are present and will be sampled to determine the potential presence of PCBs.

2. Project Schedule and Contact Information

Buildings will be sampled during the following dates and times:

- 11/7/00 On-site 11:00am-8:00pm Building 103,100
- 11/8/00 On-site 7:00am-8:00pm Building 103, 101
- 11/9/00 On-site 7:00am-4:00pm Building 103,104
- 11/10/00 On-site 7:00am-4:00pm Building 104

Time permitting on Friday November 10, 2000 a summary review meeting will be held to discuss project progress.

Field Team contact numbers (mobile)

Bill Clifford (248) 921-8013
Chad Krieter (248) 505-9617

Subcontractors

ACM Environmental, Inc.
229 S. Michigan
South Bend, IN 46601

Fire & Environmental Consulting Laboratories, Inc. (FECL)
1451 East Lansing Drive, Suite 222
East Lansing, MI 48823

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3. Sampling and analysis plan

Sampling and analysis will be performed to fill in data gaps remaining after completion of the site history review, file review and building inspection or to confirm the potential presence of materials, such as; PCBs, lead-based paint, asbestos, semi-volatile compounds and metals. The collection of samples will comply with O'Brien & Gere's Health and Safety Plan (HASP) attached as Appendix A.

The proposed above grade sampling and analyses efforts are detailed per sample type, such as: wipe samples (non-porous surfaces), paint chip samples, bulk asbestos samples, and grab samples (sediment, grease, oil reservoirs). General sampling protocols are also outlined in Section 3.1 and are intended to be followed during the sampling activities. Specific locations of materials and items to be sampled are shown on Figures 1-3. Table 1 provides a summary of the proposed sampling locations and analytical parameters and numbers.

3.1 Sampling protocols

This section documents the sampling protocols that will be used while collecting samples in the Bosch complex. The protocols described below outline procedures for sample numbering, sample preparation and preservation, sampling equipment decontamination, documentation and chain-of-custody preparation. Appropriate Quality Assurance/Quality Control (QA/QC) samples (field blanks and duplicates) will be collected and will accompany the samples to the laboratory. Approximately 5% of the number of samples collected per matrix (sample type) will be QA/QC samples.

3.1.1 Sample numbering

A sample numbering system will be used to identify each sample collected during the sampling program. This numbering system will uniquely identify each sample and will provide a tracking procedure to allow retrieval of information regarding particular samples. The sample team leader will maintain a listing of the sample identification numbers

3.1.2 Sample preparation and preservation

Immediately after collection, samples will be transferred to properly labeled sample containers and properly preserved, if appropriate (preservation materials provided by the laboratory). Samples requiring refrigeration for preservation will be immediately transferred to coolers packed with ice or ice packs. Samples will be shipped or transported within 48 hours of collection and will arrive at the laboratory no later than 72 hours after sample collection. Proper chain-of-custody documentation will be maintained and samples will be extracted and analyzed by the laboratory within the holding times specified by the USEPA.

3.1.3 Decontamination of sampling equipment

Reusable sampling equipment will be decontaminated as follows: equipment will be scrubbed with a solution of potable water and Alconox, or equivalent laboratory grade detergent, then rinsed with copious quantities of potable water and a distilled/deionized water rinse. Equipment used for sampling materials potentially containing polychlorinated biphenyls (PCBs) will then be rinsed with acetone. This equipment will then be rinsed with a final distilled/deionized water rinse and air-dried on a clean surface. Waste materials generated during decontamination activities will be containerized and will likely be able to be co-mingled with current waste streams from the facility following receipt of analytical results. Disposable sampling equipment will either be containerized and transported to the laboratory within the sample container, or properly disposed on-site.

3.1.4 Reporting and documentation

Field documentation is an essential component of the sampling program. The field crew will have an assigned team leader responsible for written documentation. Field logbooks will serve as permanent documentation for field sampling efforts. In addition, the team leader will summarize the events and conditions at the site in a field logbook. The logbook will contain information such as names of workers and other staff members, weather conditions, samples collected, measurements, and significant events, observations, or other pertinent data. Field logbooks will be kept neat and organized. Entries will be legible, factual, detailed and objective.

3.1.5 Chain-of-custody

The collection and handling of samples will be documented to demonstrate that appropriate sampling protocols were followed. A chain-of-custody form will be initiated when the sample is collected. As possession of the sample is relinquished by one individual and transferred to another, the chain-of-custody document will be revised to

reflect such transfers. The chain-of-custody form will contain the following information:

- client information
- required analysis (including analytical method)
- matrix type (e.g., wood or concrete)
- sampling technique (e.g., wipe or composite)
- location of sample collection
- date, time, and sampler's name (s)

3.1.6 Restoration of surfaces

The sampling activities may require destructive methods to obtain access to materials or to collect representative samples for analysis. Although care will be taken to minimize damage, it is likely that some damage will occur.

3.2 Wipe samples

Wipe samples for PCB analyses will be collected from non-porous surfaces. In addition, wipe sampling will be performed on surfaces where a residue is suspected but there is insufficient material to collect a grab sample.

Wipe samples will be collected utilizing hexane-soaked gauze pads for PCB sampling, distilled water-soaked gauze pads for metal sampling and either methanol or alcohol (painted surface) or methylene chloride (unpainted surface) for SVOC sampling. Samples will be collected using a 100-centimeter square disposable template. Following sample collection, the gauze pad will be placed into a laboratory-provided jar. Samples will then be submitted to a qualified laboratory for laboratory analysis of PCBs by EPA method 8082, metals by EPA method 6000/7000 series and semi-volatile organic compounds (SVOCs) by method 8270.

3.3 Concrete core samples

Core samples of stained concrete for PCB analysis will be collected due to the porous nature of masonry/concrete. Sampling of masonry and concrete building material (e.g., floors, walls and columns) will be conducted using a rotary hammer drill equipped with a 1-inch diameter pulverizing bit to core into the material. A collection template will be used to collect the resulting pulverized material sample. Depth of the

sample will be between 0 to 3 inches below the surface in accordance with current USEPA Mega-Rule characterization policy.

3.4 Bulk asbestos samples

Several PACMs such as; window caulking, roof material and flashing, fire doors, floor tile, wallboard and ceiling materials were identified during the site inspection. These materials must be sampled and analyzed for asbestos content such that appropriate removal is performed by trained personnel prior to deactivation and demolition.

PACM sample locations will be wetted down to reduce the possibility of generating fibers during collection. Friable samples will be collected using a cutter sleeve with a "T" handle and placed in individual plastic vials. The vials will be labeled with a unique identification number for each sample location. Non-friable samples will be collected in individual "Ziploc" type bags. PACM samples will be analyzed by standard polarized light microscopy (PLM) method (USEPA Method 600/R-93-116)

A certified Indiana asbestos building inspector will collect these samples. During analysis if one sample from a group of homogenous material be considered positive for asbestos (over 1%), the remaining samples in that group will not be analyzed and the material will be considered ACM.

3.5 Grab samples (sediment, grease, oil reservoirs)

Grab samples of residual sediment, grease, and oil reservoirs will be collected in various locations throughout the Bosch complex to evaluate if PCBs are present (SVOCs and metals will also be included in a residual sample from an exhaust stack). Residual material will be retrieved using a disposable scraper to gather the material. The material will then be placed in a laboratory-supplied jar. Oil reservoirs associated with equipment within the building will also be sampled. The sampled oil will be retrieved by accessing either fill ports or drain plugs. Once the reservoir is accessed the contents will be placed into a laboratory-supplied jar, labeled, placed in a cooler, and transported to the laboratory.

3.6 Paint chip samples

Paint chip samples will be collected throughout the complex to determine if the paint material is lead-based. There are several USEPA and HUD

protocols and guidelines for sampling and analyzing paint for lead content. Based on the small size of the project area, it will be more cost effective to collect paint chip samples for laboratory analysis than to complete on-site X-ray fluorescence detection with confirmatory analysis. Paint chips on the floors, walls, windowsills and slats and ceiling will be collected and analyzed for total lead by EPA method 6020. The paint chip sample will be a full-depth sample to represent layers present in that designated sample location. Based on the site visit/inspection it is estimated that several different types of paint exist. Therefore, one paint chip sample will be collected from each homogeneous material.

Under current federal regulations, lead-containing paint does not require removal prior to building demolition. However, if sampling indicates the presence of lead-containing paint, there are two regulatory requirements that must be addressed during demolition.

The first issue involves OSHA regulation 29 CFR 1926.62 that requires an employer to protect their personnel from exposure to lead during construction or demolition. This information needs to be conveyed to all parties who may be involved in disturbance of lead-containing paints during the demolition process.

The second issue related to disposal of building components potentially containing lead-based paint involves recycling, reusing, or landfilling. If Bosch allows lead-based paint containing debris to be recycled or reused, the recipients of the waste should be notified of the presence of lead-based paint. If Bosch requires lead based paint containing debris to be landfilled, a toxicity characteristic leaching procedure test (TCLP) should be performed to verify the allowable level of leachable lead (currently 5 parts per million of lead) will not be exceeded. This testing is most often performed by the demolition contractor prior to disposal and will be included as a requirement in the bid documents.

4. Evaluation of results

Following receipt of analytical results for each of the sample materials, a summary table will be prepared to outline detected concentrations for comparison with the respective regulatory action level. Based on this comparison the APCs will either have no environmental issues or will be considered a potential concern that will need to be addressed prior to or during the deactivation and demolition process. The summary analytical table will be included in a sampling report that will outline actual sample locations, analytical results, evaluation of the data and recommendations for further investigation (if warranted) or other additional activities prior to demolition.

6407/27635

Draft Report

Health & Safety Plan

Robert Bosch Corporation
South Bend, Indiana

DRAFT

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Senior Manager

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1. Introduction

This Health and Safety Plan (HASP) has been developed to provide both general procedures and specific requirements to be followed by O'Brien & Gere Engineers, Inc. (O'Brien & Gere) personnel while performing on site activities at the Bosch Corporation, South Bend, Indiana complex. In addition, O'Brien & Gere will comply with "Bosch Contractor Safety Declaration" attached as Appendix A. The area of the work is shown on Figure 1 of the Sampling and Analysis Plan (SAP). This HASP describes the responsibilities, training requirements, protective equipment, and standard operating procedures to be used by O'Brien & Gere personnel to address potential health and safety hazards that may develop while performing their on-site activities. This HASP specifies procedures and equipment to be used by O'Brien & Gere personnel during work activities and emergency response to minimize exposures of O'Brien & Gere personnel to hazardous materials.

1.1. Implementation of the HASP

The requirements and guidelines presented in this HASP are based on a review of available information and an evaluation of potential on-site hazards. This HASP incorporates by reference the applicable Occupational Safety and Health Administration (OSHA) requirements in 29 CFR Part 1910 and 29 CFR Part 1926. O'Brien & Gere personnel are required to read this HASP before beginning work on-site. This HASP will be available for inspection and review by O'Brien & Gere employees and contractor representatives while work activities are underway. When conducting the sampling activities listed in the Field Sampling Plan, O'Brien & Gere personnel will comply with this HASP. On-site O'Brien & Gere personnel will notify the O'Brien & Gere Site Safety and Health Coordinator (SSHC) of matters of health and safety. The SSHC is responsible to the Project Manager for monitoring activities, monitoring compliance with the provisions of this HASP, and for modifying this HASP to the extent necessary if site conditions change. This HASP is specifically intended for the conduct of activities in the scope of work defined in the Sampling and Analysis plan and in the areas of the Bosch site, specified for these work activities. Although this HASP can be made available to interested persons for informational purposes, O'Brien & Gere does not assume responsibility for the interpretations or activities of any persons or entities other than employees of O'Brien & Gere.

1.2. Project organization

Personnel involved in the activities at the Bosch complex, South Bend, IN implicitly have a part in implementing the HASP. Among them, the Project Officer, the Project Manager, the O'Brien & Gere Safety and Health manager, the SSHC, and the Field Leader have specifically designated responsibilities. Their names and telephone numbers are listed in Table 1-1.

Key project personnel and their responsibilities with regard to the Bosch Field Sampling Plan are discussed below.

1.2.1. Project Officer

Mr. Scott Cormier, PE, is the Project Officer. The Project Officer is responsible for the overall administration and technical execution of the project. The Project Officer is further responsible for the acquisition and delegation of resources necessary for project completion and HASP implementation.

1.2.2. Project Manager

Mr. William Clifford, PE, is the Project Manager. The Project Manager reports to the Project Officer and is directly responsible for the technical progress and financial control of the project.

1.2.3. O'Brien & Gere Safety and Health Manager

Mr. Saunders E. Wilson, CIH, CSP, is the O'Brien & Gere Safety and Health manager. Mr. Wilson will be responsible for implementation of this HASP. Mr. Wilson must approve procedural changes and modifications to this HASP.

1.2.4. Site Safety and Health Coordinator

Mr. William Clifford, or a designee, is the O'Brien & Gere Site Safety and Health Coordinator (SSHC). The O'Brien & Gere Safety and Health Manager, establishes operating standards, and coordinates overall project safety and health activities for the site. The SSHC reviews project plans and revisions to plans to verify that safety and health procedures are maintained during the on-site work. The SSHC audits the effectiveness of the HASP on a continuing basis and suggests changes, if necessary.

Specifically, the SSHC is responsible for the following actions:

- Providing a complete copy of the HASP at the site before the start of activities
- Familiarizing workers with the HASP
- Conducting on-site health and safety training and briefing sessions
- Documenting the availability, use, and maintenance of personal protective and other safety or health equipment
- Maintaining safety awareness among O'Brien & Gere employees on-site and communicating safety and health matters to them
- Reviewing field activities for performance in a manner consistent with O'Brien & Gere's policy and this HASP
- Monitoring health and safety conditions during field activities
- Coordinating with emergency response personnel and medical support facilities
- Notifying the Project Manager of the need to initiate corrective actions in the event of an emergency, an accident, or identification of a potentially unsafe condition
- Notifying the Project Manager of an emergency, an accident, the presence of a potentially unsafe condition, a health or safety problem encountered, or an exception to this HASP
- Recommending improvements in safety and health measures to the Project Manager
- Conducting safety and health performance and system audits.

The SSHC has the authority to recommend that the Project Manager take the following actions:

- Suspend field activities or otherwise limit exposures if the health or safety of any O'Brien & Gere employee appears to be endangered
- Notify O'Brien & Gere personnel to alter work practices that the SSHC deems to not protect them
- Suspend an O'Brien & Gere employee from field activities for violating the requirements of this HASP.

1.2.5. Field Leader

Mr. Chad Krieter, or a designee, will act as the Field Leader. The Field Leader will be responsible for overall site coordination including field sampling collection and chain-of-custody. The Field Leader will report directly to the Project Manager.

Table 1-1 - *Project Staffing*

Title and Name	*Location*	*Telephone*
Project Officer – Scott Cormier	Novi, MI	248-426-8970
Project Manager – William Clifford	Novi, MI	248-426-8970
Safety and Health Manager – Saunders Wilson	Syracuse, NY	315-437-6100
Site Safety and Health Coordinator – William Clifford	Novi, MI	248-426-8970
Field Leader – Chad Krieter	Novi, MI	248-426-8970

Source: O'Brien & Gere Engineers, Inc.

2. Hazard analysis

Based on the results of the site visit building inspection O'Brien & Gere has prepared a Sampling and Analysis plan. The Sampling and Analysis portion of this project will include sampling and analysis for the following activities: concrete core sampling, bulk sampling (potential asbestos and lead-containing materials) and grab or grime samples (dust, sediment, grease, oil reservoirs, residual materials).

2.1. Concrete core samples

The sampling for PCBs on porous surfaces (floors and walls) will be completed by using a rotary hammer drill for collection of bulk concrete samples between 0 to 3 inches below the surface in accordance with current USEPA Mega-Rule characterization policy.

2.1.1. Potential health hazards and hazardous constituents

Hazards generally associated with drilling operations include noise levels exceeding the OSHA PEL of 90 dBA that are both a hazard and a hindrance to communication. There may be underground or in wall utilities in the area where drilling is being performed.

2.1.2. Hazard and hazardous constituent control

Personnel must wear hard hats and ear muffs and/or earplugs when working near operating equipment.

During drilling, if wet methods are not used, air in the breathing zone of the worker will be sampled for respirable dust using a real time aerosol monitor (RAM) at approximately five-minute intervals. Air will be sampled for volatile organic vapors using a PID at approximately five-minute intervals.

To minimize exposure to volatiles during sample collection, a PID will be placed near the sample to monitor levels of volatile organic vapors. A CGM will be used to determine if there are elevated concentrations of explosive gases or vapors.

2.2. Bulk samples (potential asbestos and lead-containing materials)

2.2.1. Asbestos sampling

Thermal insulation was labeled as an asbestos containing material (ACM). Based on our experience at other similar sites we suspect that building materials, such as; window caulk, roof flashing, roof materials, fire doors, plaster etc. are PACMs. These materials will need to be evaluated prior to demolition. A certified asbestos building inspector will collect these bulk samples.

2.2.2. Lead-based paint

Due to the age of the building and several layers of paint identified during the walkthrough, paint on the floors, walls, windowsills and slats, and ceilings will be sampled. The number and location of samples to be collected will be in accordance with Federal guidelines. We have assumed that up to 100 paint chip samples will be collected from the building structures.

2.2.3. Potential health hazards and hazardous constituents

Hazards associated with collecting lead-based paint samples and asbestos samples are generally similar. Sample hazards include inhalation of asbestos fibers and lead, and contact with asbestos fibers and lead.

2.2.4. Hazard and hazardous constituent control

Personnel must wear hard hats during sampling. Initially, Modified Level C PPE will be worn. Chemical-resistant gloves will be worn during sampling. Cuttings and decontamination wastes will be collected, drummed, and disposed in accordance with the Field Sampling Plan.

2.3. Grab or grime samples (dust, sediment, grease, oil reservoirs, residual material)

2.3.1. Oil reservoirs

Oil reservoirs will be accessed by either fill ports or drain plugs to obtain representative samples from each reservoir (8 samples total). These samples will be evaluated for the potential presence of PCBs.

2.3.2. Metal, Semi-volatile organic compounds (SVOCs)

Several stained areas within the complex were noticed during the walkthrough and will be sampled to evaluate the presence of metals and SVOCs.

2.3.3. Potential health hazards and hazardous constituents

Hazards generally associated with collecting grab samples include contact with solvents, inhalation of solvent vapors and contact with dirt, surface chemicals and greases on the surface being wiped. The possibility exists for splashing of exposed subsurface materials onto the workers and release of dust and volatile materials onto workers bodies and into the workers breathing zones.

There is the potential for slipping on damp surfaces or falling from elevated surfaces.

2.3.4. Hazard and hazardous constituent control

Personnel must wear hard hats during sampling. Initially, Modified Level C PPE will be worn. Chemical-resistant gloves will be worn during sampling. Cuttings and decontamination wastes will be collected, drummed, and disposed in accordance with the Field Sampling Plan.

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3. Personnel training

3.1. Site workers

O'Brien & Gere employees performing the activities listed in the SAP must have completed a training course of at least 40 hours meeting the requirements of 29 CFR 1910.120(e) for safety and health at hazardous waste operations. If the initial course was completed more than 12 months before the date of site work, completion of an approved 8-hr refresher course on health and safety at hazardous waste operations during the last twelve months is required.

O'Brien & Gere employees must comply with the O'Brien & Gere Quality Assurance Manual. The respiratory protection program is specified in Section 004.2 of Vol. 3. The Hazard Communication Program is specified in Section 003 of Vol. 3. The Audit Program is specified in Section 019 of Vol. 3.

3.2. Management and leaders

In addition to the requirements described in section 3.1 for O'Brien & Gere site workers, O'Brien & Gere management personnel must have completed an off-site training course of at least 8 hours meeting the requirements of 29 CFR 1910.120(e) on supervisor responsibilities for safety and health at hazardous waste operations.

3.3. Emergency response personnel

O'Brien & Gere employees who respond as "Good Samaritans to emergency situations involving health and safety hazards must be trained in how to respond to such emergencies in accordance with the provisions of 29 CFR 1910.120(l). Skills such as cardiopulmonary resuscitation (CPR), mouth-to-mouth rescue breathing, avoidance of blood-borne pathogens, and basic first aid skills may be necessary.

3.4. Site-specific training

Site-specific training will be provided to each O'Brien & Gere employee and reviewed before assignment. O'Brien & Gere personnel will be briefed daily by the Field Leader or by the SSHC as to the potential hazards that may be encountered during that day. Topics will include:

- Availability of this HASP
- General site hazards and specific hazards in the work areas
- Selection, use, testing, and care of the body, eye, hand, foot, and respiratory protective equipment being worn and the limitations of each
- Decontamination procedures for O'Brien & Gere personnel, their personal protective equipment, and other equipment used on-site
- Emergency response procedures and requirements
- Emergency notification procedures and evacuation routes to be followed
- Procedures for obtaining emergency assistance and medical attention.

3.5. Training certification

A record of employee training completion will be maintained by the SSHC for each O'Brien & Gere employee who is trained. This record will include the dates of the completion of worker training, supervisor training, refresher training, emergency response training, and site-specific training for on-site O'Brien & Gere employees.

4. Personnel protection

The levels of PPE to be used during sampling activities at the Bosch site are modified level C & D. PPE may be upgraded based on air monitoring results or at the discretion of the Project Manager and based on the SSHC's recommendations. A downgrade of PPE must be approved by the SSHC.

If the SSHC verifies that field measurements or observations indicate that a potential exposure is greater than the protection afforded by the equipment or procedures specified in this or other sections of this HASP, the work will be stopped, and O'Brien & Gere personnel will be removed from the site until the exposure has been reduced or the level of protection has been increased.

O'Brien & Gere respirator users have been trained and medically approved to use respiratory protection. Respirators issued are approved for protection against dust and organic vapors by NIOSH. Respirators are issued for the exclusive use of one worker and will be cleaned and disinfected after each use by the worker. Respirator users must check the fit of the respirator before each day's use to see that it seals properly. The respirator must seal against the face so that the wearer receives air only through the air purifying cartridges attached to the respirator. No facial hair that interferes with the effectiveness of a respirator will be permitted on personnel required to wear respiratory PPE. Cartridges and filters for air-purifying respirators in use will be changed daily at a minimum. The user will inspect the integrity of air-purifying respirators daily.

4.1. Protective equipment description

The level of PPE is categorized as Level A, B, C, or D, based upon the degree of protection required. The following is a brief summary of the two levels that may be used on this site.

4.1.1. Level C

Level C is worn when the concentration(s) and type(s) of airborne substance(s) is known and the criteria for using air purifying respirators are met.

The following constitute Level C equipment:

- NIOSH-approved, full-face air purifying respirator with P100 particulate filters
- Particulate-resistant clothing with hood [chemical-splash suit, disposable chemical-resistant overalls (Tyvek® or equivalent)]
- Coveralls (optional)
- Gloves, outer, chemical-resistant (neoprene)
- Gloves, inner, chemical-resistant (neoprene or latex)
- Boots, outer, leather, with steel toe and shank
- Optional chemical resistant boot covers (neoprene or butyl rubber)
- Hard hat (Class B)
- Personal flotation device with rope when sampling in water greater than 24 inches deep
- Face shield and safety glasses when not wearing a full-face respirator.

Hearing protection when working in noise hazardous areas, as defined in the O'Brien & Gere Quality Assurance Manual.

4.1.2. Modified level C protection

Modified Level C protection, consisting of Level C protective equipment without the use of a respirator, will be worn initially **during asbestos and lead-based paint sampling**. However, respirators will be available for immediate use in the event that an upgrade to Level C protection, as specified by the action levels in Table 4-1 required. Modified Level C protection consists of the following:

- Chemical-resistant disposable coveralls. For this level of protection polyethylene-coated, Tyvek® suits will be required. Suits will be one piece with elastic wristbands. Hoods will be required at the discretion of the Health & Safety Coordinator
- Outer nitrile gloves (taped to the suit) and inner nitrile gloves
- Leather, steel-toe boots with rubber overboots (taped to suit)
- Eye protection (goggles, face shield or safety glasses)
- Hard hat
- Disposable outer boots
- Coveralls
- Escape mask.
- Hearing protection when working in noise hazardous areas, as defined in the O'Brien & Gere Quality Assurance Manual.

4.1.3. Modified level D

Modified Level D is worn when the concentration(s) and type(s) of airborne substance(s) is known and the criteria for not using air purifying respirators are met. A level of skin protection above Level D is required. Modified Level D protection will be worn initially during on-site sampling activities. The following constitute Modified Level D equipment:

- Chemical-resistant clothing [chemical-splash suit, disposable chemical- resistant overalls (polyethylene coated Tyvek® or equivalent)]
- Coveralls (optional)
- Gloves, outer, chemical-resistant (neoprene)
- Gloves, inner, chemical-resistant (neoprene or latex)
- Boots, outer, leather, with steel toe and shank
- Optional chemical resistant boot covers (neoprene or butyl rubber)
- Hard hat (Class B)
- Personal flotation device with rope when sampling in water greater than 24 inches deep
- Face shield and safety glasses
- Hearing protection when working in noise hazardous areas, as defined in the O'Brien & Gere Quality Assurance Manual.

4.1.4. Level D

A work uniform affording minimal protection, used for nuisance contamination only. Level D protection will initially be worn during on-site sampling activities. The following constitute Level D equipment:

- Overalls (cloth) or long sleeve shirts and long pants.
- Apron (plastic) for splash protection as necessary
- Gloves (neoprene or leather)
- Boots or shoes, leather, steel toe and shank
- Optional chemical resistant boot covers (neoprene or butyl rubber)
- Safety glasses or chemical splash goggles
- Hard hat (Class B)
- Personal flotation device with rope when sampling in water greater than 24 inches deep
- Escape mask (optional)
- Face shield when not wearing other eye protection
- Hearing protection when working in noise hazardous areas, as defined in the O'Brien & Gere Quality Assurance Manual.

4.2. Protective equipment selections

Initial levels of PPE will be as shown in the following figure:

Table 4-1 - *Protective Equipment Levels*

Activity	*Level B*	*Level C*	*Modified Level C*	*Level D*
Collecting wipe samples				skin
Chip or bulk samples				skin inhalation
Concrete core samples		skin, noise inhalation		
Grab or grime samples			skin, inhalation	
Bulk asbestos and lead-based paint samples		inhalation		

Source: O'Brien & Gere Engineers, Inc.

4.3. Protective equipment failure

If an individual experiences a failure or other alteration of PPE that may affect its protective ability, that person is to leave the work area immediately. The SSHC must be notified and, after reviewing the situation, is to evaluate the effect of the failure on the continuation of on-going operations. If the SSHC ascertains that the failure affects the safety of workers, the work site, or the surrounding environment, workers are to be evacuated until corrective actions have been taken. The SSHC will not allow re-entry until the equipment has been repaired or replaced and the cause of the failure has been identified.

5. Medical monitoring

5.1. Medical surveillance program

O'Brien & Gere has implemented a medical monitoring program in accordance with 29 CFR 1910.120. The O'Brien & Gere program is designed to monitor and reduce health risks to employees potentially exposed to hazardous materials and to provide baseline medical data for each employee involved in work activities. It is also designed to evaluate the employee's ability to wear PPE such as chemical-resistant clothing and respirators.

Medical examinations are administered on a post-hire and annual basis and as warranted by symptoms of exposure or specialized activities. The post-hire examination provides baseline data. The examining physician is required to make a report to O'Brien & Gere of any medical condition that would increase the employee's risk when wearing a respirator or other PPE. O'Brien & Gere maintains site personnel medical records as required by 29 CFR 1910.120 and by 29 CFR 1910.1020, as applicable.

O'Brien & Gere employees performing the activities listed in the Construction and Maintenance Plans or this document have or will receive medical tests as regulated by 29 CFR 1910.120. Where medical requirements of 29 CFR 1910.120 overlap those of 29 CFR 1910.134 or 29 CFR 1910.1025, the more stringent standard will be enforced.

5.2. Respirator certification

Employees who wear or may wear respiratory protection have been provided respirators as required by 29 CFR 1910.134. This standard requires that an individual's ability to wear respiratory protection be medically certified before performing designated duties.

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6. Site control

6.1. Site security

Site security will be monitored and controlled by the Field Leader and the SSHC. Their duties will include limiting access to the work area to authorized personnel, maintaining a sign-in roster, overseeing project equipment and materials, and overseeing work activities. The building will be considered the exclusion zone. Procedures will be taken to control access to each work site to prevent persons who may be unaware of site conditions from exposure to hazards. Work area control procedures may be modified as required by activity and site conditions. Site security will be established on a site- and activity-specific basis.

6.2. Site communications

A cellular telephone will be used during activities to facilitate communications for emergency response and other purposes and to serve as the primary off-site communication network. Telephones located at the Bosch site will provide back up for the portable phones.

6.3. Confined space entry

Entry of permit-required confined spaces are not anticipated during this project.

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7. Decontamination

7.1. Personnel decontamination procedures

Sampling activities will occur in widely separated locations. For this reason, equipment and personnel decontamination will be done at each sampling area, using temporary facilities. The SSHC will be responsible for supervising the proper use and decontamination of equipment and PPE.

Decontamination involves scrubbing with a soap and water solution followed by rinses with potable water. Decontamination will take place on a decontamination pad if necessary. Dirt, oil, grease, or other foreign materials that are visible will be removed from surfaces. Scrubbing with a brush may be required to remove materials that adhere to the surfaces. Splash protection garments will be washed with soap and potable water before removal. Non-disposable garments will be air-dried before storage. Waste waters from personnel decontamination will be disposed of with the waste waters from equipment decontamination. Respirators will be sanitized as well as decontaminated each day before re-use. The manufacturer's instructions will be followed to sanitize the respirator masks.

7.2. Sampling equipment decontamination procedures

Sampling equipment will be decontaminated as outlined in the SAP.

7.3. Decontamination supplies

The following supplies will be available on-site as needed for the decontamination of personnel and equipment:

- Plastic drop cloths
- Plastic wash tubs
- Soft bristled long-handle brushes
- Hand spray units for decontamination
- Soap, water, alcohol wipes, acetone and towels to wash hands, faces, and respirators.

7.4. Collection and disposition of impacted materials and refuse

Cuttings, purge waters, and field decontamination wastes will be collected at the point of generation and stored in temporary containers. PPE, solids, and liquids will be consolidated in separate bulk containers at a central area designated by Bosch. Bosch will be responsible for disposal of these materials.

8. Emergency response

8.1. Notification of site emergencies

In an emergency, site personnel will signal distress either verbally or with three blasts from a horn (vehicle horn, air horn, and so forth). The SSHC or Field Leader will immediately be notified of the nature and extent of the emergency.

Table 8-1 contains emergency telephone numbers. This table will be kept with the portable telephone and updated as needed by the SSHC. The portable telephone will be used to notify off-site personnel of emergencies. The operating condition of this telephone will be verified daily before initiation of activities.

Table 8-1 - *Emergency Response Telephone Numbers*

Location		*Telephone*
Fire Department	Emergency	911
Police Department	Emergency	911
Ambulance	Emergency	911
Poison Control Center		TBD
Hospital		TBD
Chemical Emergency Advice (Client is O'Brien & Gere Engineers)		TBD
National Spill Response Center		TBD
USEPA		TBD

Source: O'Brien & Gere Engineers, Inc.

Directions and a map showing the location and the route to the hospital will be obtained from Security upon arrival at the site.

If requested, a copy of this HASP will be provided, through the community relations staff for this project, to the hospital, and to the South Bend Fire and Police departments by the SSHC. Should someone be transported to a hospital or doctor other than at the local hospital, a copy of this HASP should accompany him/her.

8.2. Responsibilities

The SSHC is responsible for responding to, or coordinating the response of off-site personnel to emergencies. In the event of an emergency, the SSHC will direct notification and response, and will assist the Field Leader in arranging follow-up actions. Upon notification of an exposure incident, the SSHC will call 911 and request that hospital, fire, and police emergency response personnel as necessary recommend medical diagnosis, treatment if necessary, and provide transportation to the hospital. The Field Leader will contact local, state, and federal government agencies, as appropriate.

Before the start of on site activities at the Bosch site, the SSHC will:

1. Confirm that the following safety equipment is available: first aid supplies, air horn, and fire extinguisher.

2. Have a working knowledge of the O'Brien & Gere safety equipment.

3. Confirm that a map detailing the most direct route to the hospital is prominently posted with the emergency telephone numbers (Table 8-1).

4. Confirm that employees who will respond to emergencies have been appropriately trained.

5. Collect and maintain a file of Material Safety Data Sheets (MSDS) for materials used at the site during the remedial action activities.

Before work may resume following an emergency, used emergency equipment must be recharged, refilled, or replaced and government agencies must be notified as required.

The SSHC and the Field Leader must investigate the incident as soon as possible. The Project Manager will assess whether and to what extent exposure actually occurred, the cause of exposure, and the means to prevent similar incidents. The resulting report must be signed and dated by the SSHC and the Field Leader.

8.3. Accidents and injuries

In the event of an accident or injury, workers will immediately implement emergency isolation measures to assist those who have been injured or exposed and to protect others from hazards. Upon notification of an exposure incident, the SSHC will contact emergency response personnel who can provide medical diagnosis and treatment. If necessary, immediate medical care will be provided by personnel trained in first aid procedures. Other on-site medical or first aid response to an injury or illness will be provided only by personnel competent in such matters.

8.4. Safe refuge

Before commencing site activities, a place of refuge for O'Brien & Gere workers will be identified by the SSHC. For the purpose of this HASP, a location determined by Bosch will be selected as the place of safe refuge during a site evacuation. Following an evacuation, the SSHC will account for site personnel. If evacuation from the on-site refuge location is necessary, the project vehicles will be used to transport personnel to the place of refuge.

8.5. Fire fighting procedures

A fire extinguisher meeting the requirements of 29 CFR Part 1910 Subpart L, as a minimum, will be available in the building during on-site activities. This is intended to control small fires. When a fire cannot be controlled with the extinguisher, the work area will be evacuated, and the fire department will be contacted immediately. The SSHC or the Field Leader will decide when to contact the fire department.

8.6. Emergency equipment

The following equipment, selected based on potential site hazards, will be maintained in the support zone for safety and emergency response purposes:

- Fire extinguisher
- First aid kit
- Eye wash bottles.

8.7. Emergency site communications

Hand and verbal signals will be used at the Bosch complex for emergency communications

8.8. Security control

Work zone security and control during emergencies, accidents, and incidents will be monitored by the SSHC or the Field Leader. The duties of the SSHC or the Field Leader include limiting access to the work zones to authorized personnel and overseeing emergency response activities.

9. Special precautions and procedures

The activities listed in the SAP may expose personnel to both chemical and physical hazards. The potential hazards associated with specific site activities are discussed in Chapter 2. The potential for exposure to hazardous situations will be significantly reduced through the use of air monitoring, PPE, hazard awareness, training, and administrative and engineering controls. Other general hazards that may be present on a hazardous waste work site are discussed below.

9.1. Heat stress

The timing and location of this project may be such that heat stress could pose a threat to the health and safety of site personnel. The SSHC will have a dry bulb thermometer on site and use it to implement work and rest regimens so that O'Brien & Gere personnel do not suffer adverse effects from heat. Special clothing and an appropriate diet and fluid intake will be recommended to O'Brien & Gere personnel involved in the activities specified in Chapter 2 to further reduce this hazard. In addition, ice and fluids will be provided as appropriate.

9.2. Heavy machinery/equipment

O'Brien & Gere employees performing site activities may use or work near operating heavy equipment and machinery. Respiratory protection, hearing protection, and protective eyewear may be worn during portions of work activities. Since this protective equipment narrows the visual and acoustic environment of the wearer, O'Brien & Gere personnel should exercise extreme caution in the vicinity of operating equipment and machinery to avoid physical injury to themselves or others.

9.3. Additional safety practices

The following are important safety precautions that will be enforced during the completion of the activities listed in Chapter 2:

1. O'Brien & Gere will not conduct operations during severe weather. The Field Leader and the SSHC will decide when severe weather conditions exist or are forecast and take actions appropriate to the site and the anticipated severe weather to minimize the potential exposure of O'Brien & Gere employees.

2. O'Brien & Gere employees will refrain from unnecessary contact with plants, animals, and other biological hazards on the site. Should contact occur, the employee must report it to the Field Leader, the SSHC, and the Corporate Associate for Safety and Health, following the procedures in Vol. 3 of the O'Brien & Gere Quality Assurance Manual, Sections 001 and 017.

3. Eating, drinking, chewing gum or tobacco, smoking, or any practice that increases the probability of hand-to-mouth transfer and ingestion of material is prohibited in the work area.

4. Hands and face must be thoroughly washed when leaving the building and before eating or drinking.

5. Contact with potentially impacted surfaces should be avoided whenever possible. Workers should minimize walking through puddles, mud, or other discolored surfaces; kneeling on ground; and leaning, sitting, or placing equipment on drums, containers, vehicles, or the ground.

6. Medicine and alcohol can mask the effects of exposure to certain compounds. Consumption of prescribed drugs must be at the direction of a physician.

7. O'Brien & Gere personnel and equipment in the work areas will be minimized consistent with effective site operations.

8. Unsafe or inoperable equipment left unattended will be identified by a "DANGER, DO NOT OPERATE" tag.

9. Activities in the work area will be conducted using the "Buddy System."

The Buddy is another worker fully dressed in the appropriate PPE who can perform the following activities:

- Provide partner with assistance
- Observe partner for sign of chemical or heat exposure
- Periodically check the integrity of partner's PPE
- Notify others if emergency help is needed.

10. The HASP will be reviewed frequently for its applicability to the current and upcoming operations and activities.

9.4. Daily log contents

The SSHC will establish a system appropriate to the Bosch complex that will record, at a minimum, the following information:

1. O'Brien & Gere personnel and other personnel conducting the site activities, their arrival and departure times, and their destination at the site

2. Incidents and unusual activities that occur on the site such as, but not limited to, accidents, breaches of security, injuries, equipment failures, and weather related problems

3. Changes to the SAP and the HASP

4. Daily information such as:

- Work accomplished and the current site status
- Air monitoring equipment calibrations, repairs, and results.
- Site work zones.

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References

American Conference of Governmental Industrial Hygienists 1999, *1999 TLV's® and BEIs,® Threshold Limit Values for Chemical Substances and Physical Agents, Biological Exposure Indices,* Cincinnati, OH

Marlowe, Christopher CIH. Camp Dresser & McKee, May 1994. "Action Levels for Hazardous Waste Site Work."

NIOSH, OSHA, USCG, EPA Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities, DHHS (NIOSH) Publication No. 85-115. October 1985

O'Brien & Gere Engineers, Inc. 1999. *Field Sampling Plan, Reichold Area 1 Support Sampling Project, Reichold, Newark, NJ. , Volume 2.*

O'Brien & Gere Engineers, Inc. 1999. *Quality Assurance Project Plan, Reichold Area 1 Support Sampling Project, Reichold, Newark, NJ, Volume 2.*

United States Environmental Protection Agency, *Health and Safety Plan (HASP) Users Guide,* Publication EPA 9285.8-01, July 1993

United States Environmental Protection Agency, *Standard Operating Safety Guides*, Publication EPA 9285.1-03, June 1992

29 CFR 1910.120 Hazardous Waste Operations and Emergency Response

29 CFR 1910.146 Permit-Required Confined Spaces

APPENDIX B

Photographs

PHOTOGRAPH LOG
O'BRIEN & GERE ENGINEERS
NOVI, MICHIGAN

Client: Robert Bosch Corporation	Site: Building 104
Location: South Bend, IN	Taken By: WB Clifford - 11/01/00

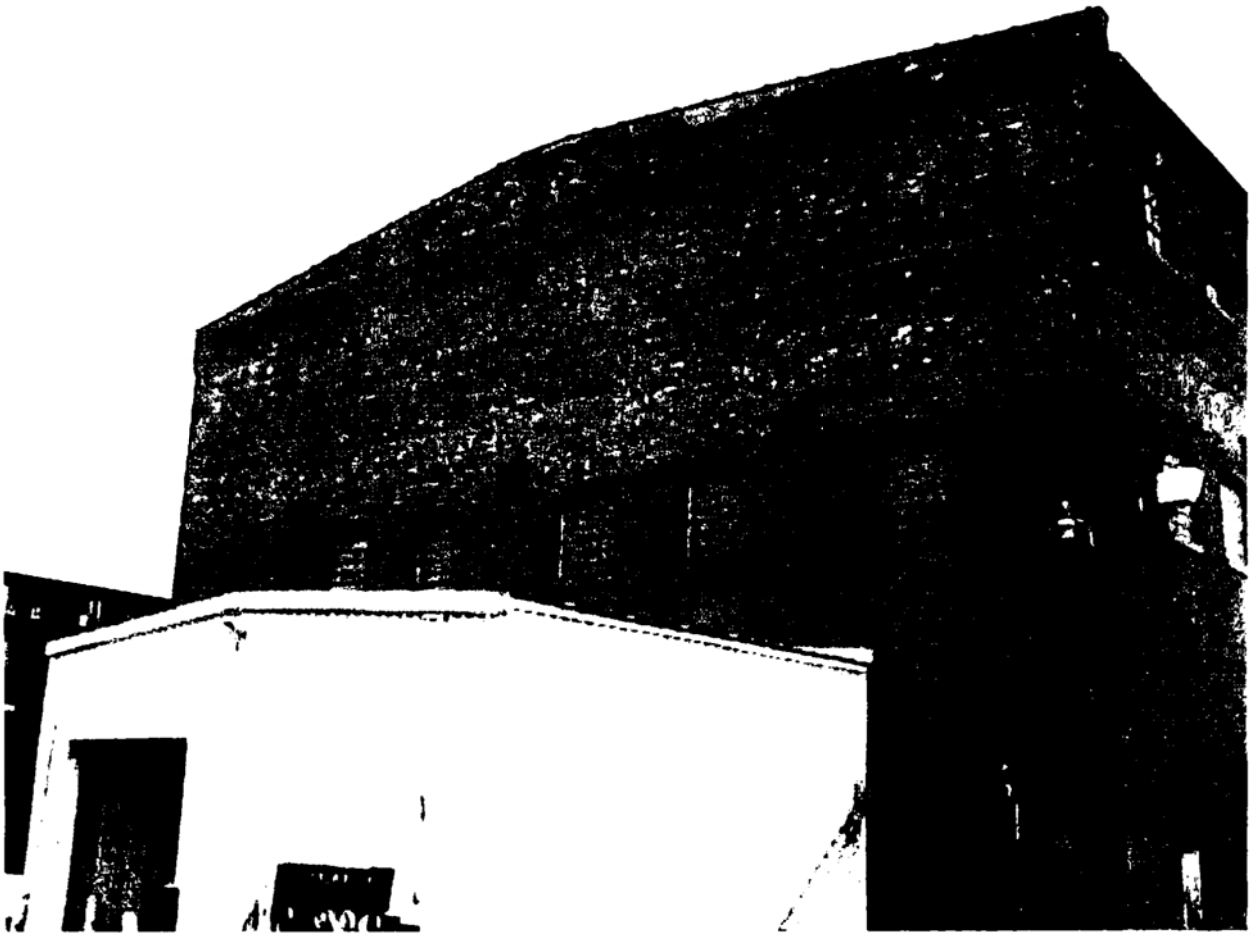


Photo #1 West side of Building 104

PHOTOGRAPH LOG
O'BRIEN & GERE ENGINEERS
NOVI, MICHIGAN

Client: Robert Bosch Corporation	Site: Building 104
Location: South Bend, IN	Taken By: WB Clifford - 11/01/00

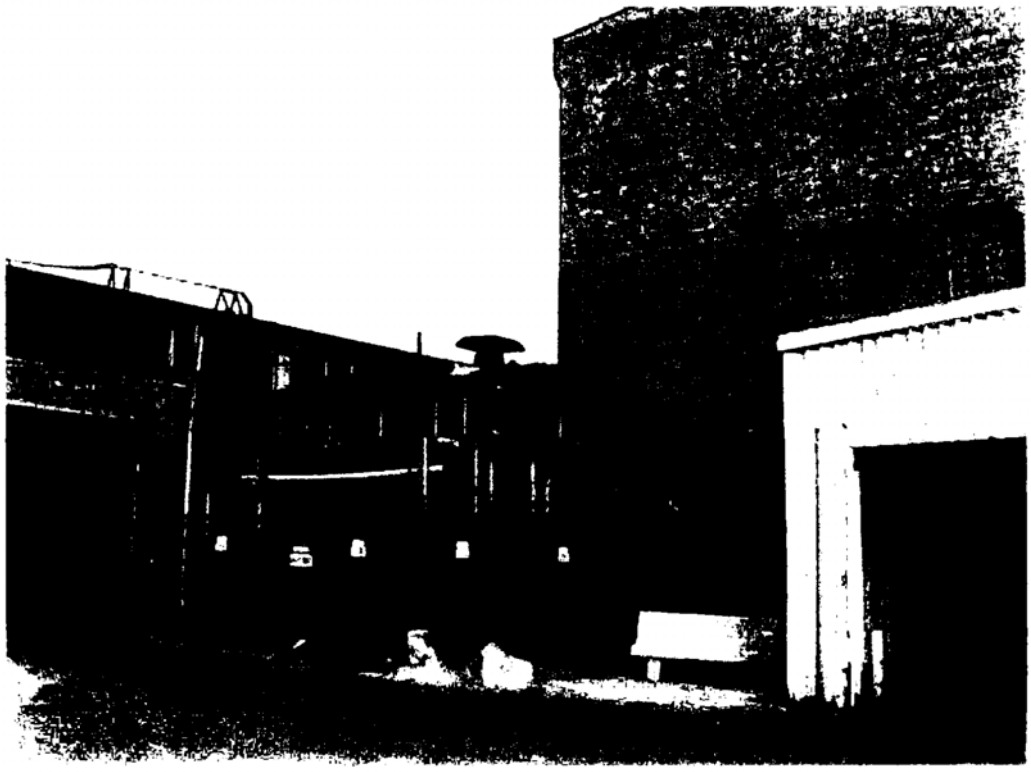


Photo #2: Transformer area outside the west side of Building 104 (Building 103 is located behind (to the north of) the transformer area). There are six transformers and related equipment located inside the area

PHOTOGRAPH LOG
O'BRIEN & GERE ENGINEERS
NOVI, MICHIGAN

Client: Robert Bosch Corporation	Site: Building 104
Location: South Bend, IN	Taken By: WB Clifford - 11/01/00

Photo #3 South side of Building 104

PHOTOGRAPH LOG
O'BRIEN & GERE ENGINEERS
NOVI, MICHIGAN

Client: Robert Bosch Corporation	Site: Building 104
Location: South Bend, IN	Taken By: WB Clifford - 11/01/00

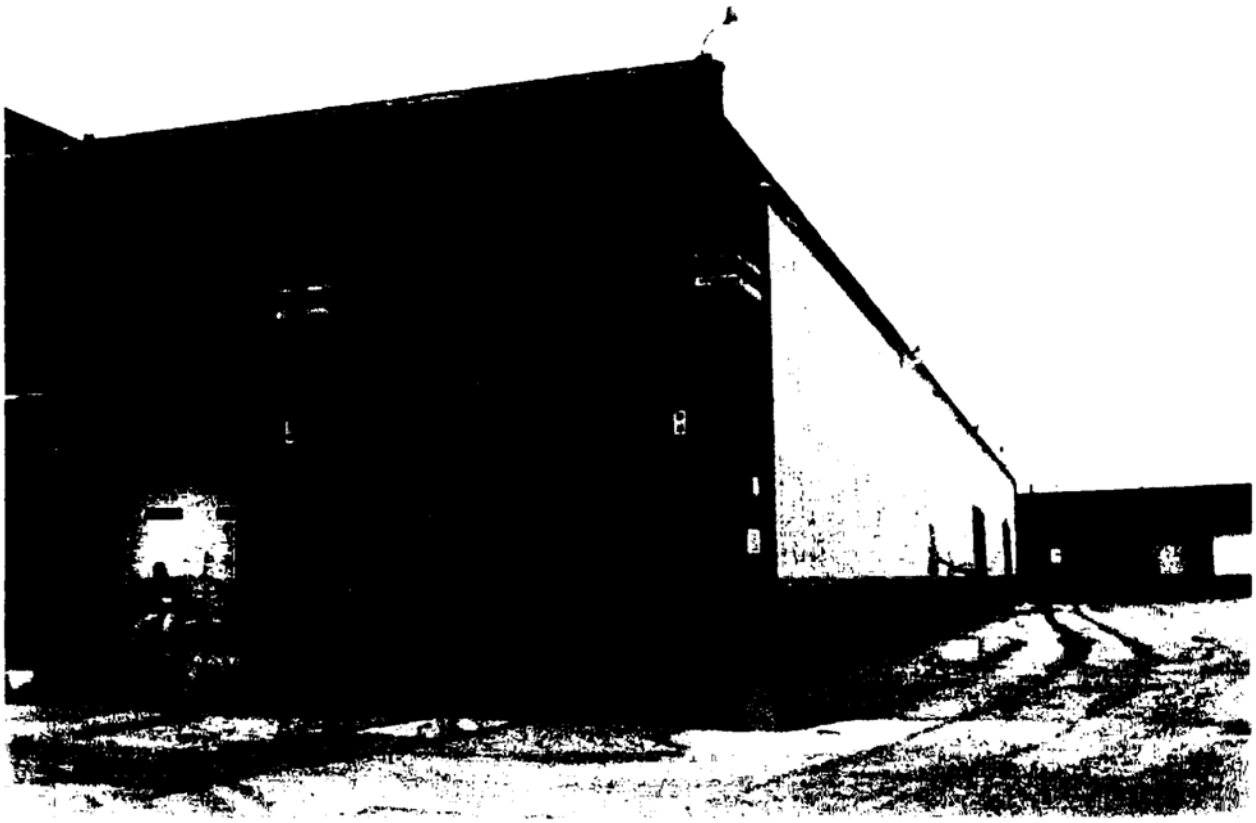


Photo #4 West and south sides of the Building 104 Train Bay The truck loading docks for the 104 Train Bay are can be seen to the right (or south) of the Train Bay

PHOTOGRAPH LOG
O'BRIEN & GERE ENGINEERS
NOVI, MICHIGAN

Client: Robert Bosch Corporation	Site: Building 104
Location: South Bend, IN	Taken By: WB Clifford - 11/01/00

Photo #5: First level of Building 104

PHOTOGRAPH LOG
O'BRIEN & GERE ENGINEERS
NOVI, MICHIGAN

Client: Robert Bosch Corporation	Site: Building 104
Location: South Bend, IN	Taken By: WB Clifford - 11/01/00

Photo #6 Former cyanide area on the north side of Building 104 (first floor)

PHOTOGRAPH LOG
O'BRIEN & GERE ENGINEERS
NOVI, MICHIGAN

Client: Robert Bosch Corporation	Site: Building 104
Location: South Bend, IN	Taken By: WB Clifford - 11/01/00

Photo #7 Stairwell on the north side of Building 104

PHOTOGRAPH LOG
O'BRIEN & GERE ENGINEERS
NOVI, MICHIGAN

Client: Robert Bosch Corporation	Site: Building 104
Location: South Bend, IN	Taken By: WB Clifford - 11/01/00

Photo #8: Released synthetic material from the computer tape storage units located on the second floor of Building 104

PHOTOGRAPH LOG
O'BRIEN & GERE ENGINEERS
NOVI, MICHIGAN

Client: Robert Bosch Corporation	Site: Building 104
Location: South Bend, IN	Taken By: WB Clifford - 11/01/00

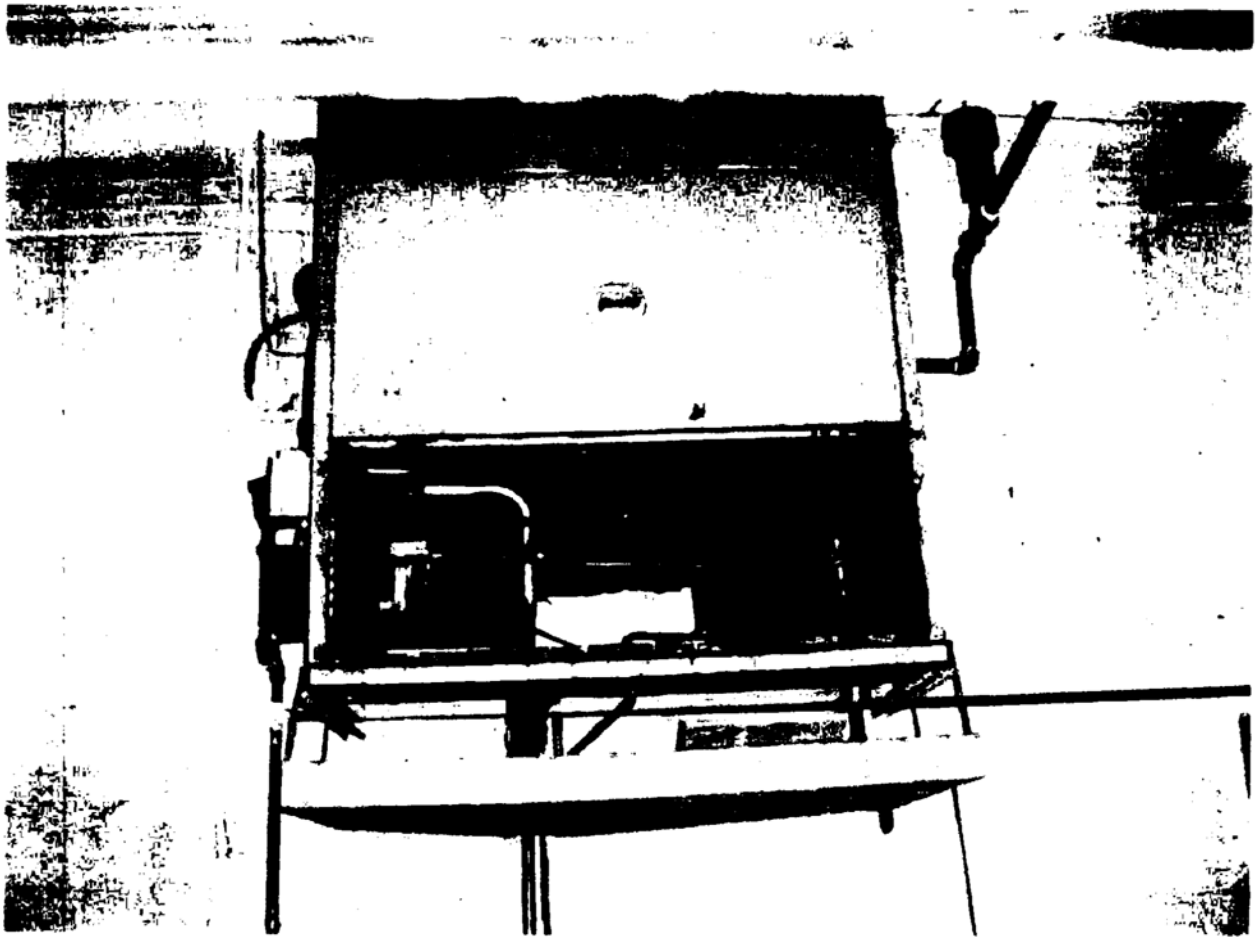


Photo #9 Typical heater unit located inside Building 104

PHOTOGRAPH LOG
O'BRIEN & GERE ENGINEERS
NOVI, MICHIGAN

Client: Robert Bosch Corporation	Site: Building 104
Location: South Bend, IN	Taken By: WB Clifford - 11/01/00

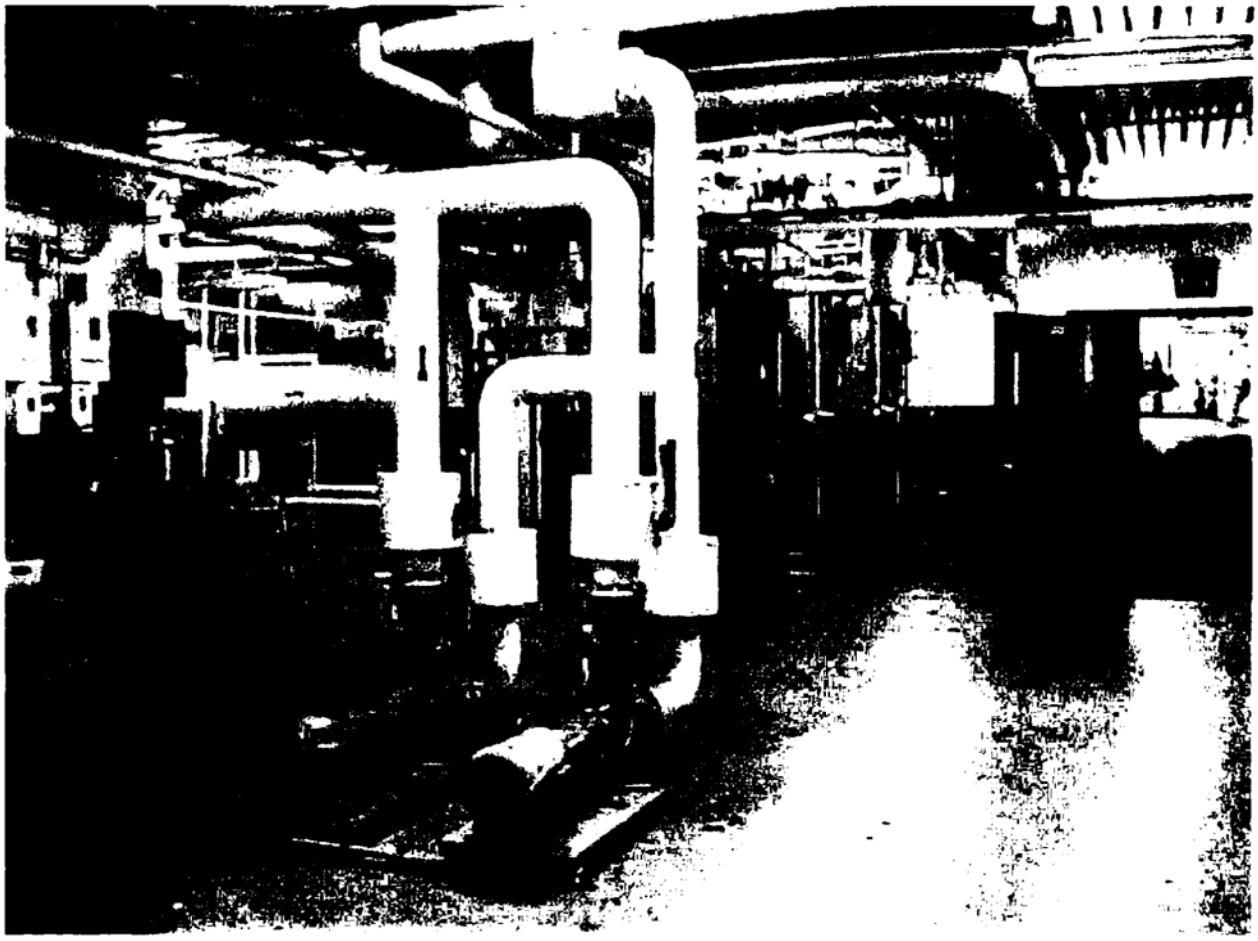


Photo #10 Boiler room located on the first floor of Building 100

APPENDIX C

Laboratory Analytical Data Sheets

ANALYSIS OF SUSPECT ASBESTOS CONTAINING BUILDING MATERIALS

FOR:

O'BRIEN & GERE ENGINEERS, INC.
34830 GRAND RIVER AVENUE
SUITE B-2
NOVI, MI 48375

LOCATION:

BOSCH BRAKING SYSTEMS
BUILDING 100

ACM ENVIRONMENTAL, INC.
PROJECT#: 6003

DATE OF REPORT:

NOVEMBER 11, 2000

PREPARED BY:

ACM ENVIRONMENTAL, INC.
229 S. MICHIGAN STREET
SOUTH BEND, IN 46601

NVLAP LAB CODE: 101977

INTRODUCTION:
In November 2000, ACM Environmental, Inc. received bulk samples of suspect asbestos containing building material from O'Brien & Gere Engineers, Inc. These were to be analyzed by ACM Environmental, Inc. for possible asbestos content.

THE REPORT:
The attached report quantities the fibrous materials found in each sample submitted for analysis. A complete fibrous analysis of samples is given for each sample followed by a break down analysis of any sub-samples for heterogeneous material.

The first column is the client sample identification.

The second column is the laboratory sample number. The laboratory number for the overall sample analysis is a digit number. The laboratory number followed by a letter designation (A,B,C, etc.) indicates a sub-sample analysis.

The third column is the sample identification which indicates whether the sample is homogeneous or heterogeneous, the color of the sample, and the physical description (cementitious, fibrous, cloth, etc.)

The fourth column indicates the types and percentages of asbestos identified in the sample of sub-sample.

The fifth column indicates the types and percentages of cellulose identified in the sample or sub-sample.

The sixth column indicates the types and percentages of non-asbestos non-fibrous material in the sample or sub-sample.

The seventh column indicates the types and percentages of non-asbestos fibrous material in the sample or sub-sample. Fibrous material will not necessarily total 100% of the sample.

There will be dashes **(----)** in each column when nothing is detected.

METHOD:
All analysis and quantification is performed in accordance with the U.S. Environmental Protection Agency's "Interim Method for the Determination of Asbestos in Bulk Insulation Samples", 40 CFR, Part 763, Sub-Part F, Appendix A, 1987.

The method utilizes stereoscopical examination of the bulk samples, as well as utilizing the polarized light microscope and the central stop dispersion staining method.

If applicable, please be advised that the Stereo Scope/PLM methods have limitations regarding floor tile analysis for asbestos content. Historically, the production of floor tile has included the grinding of asbestos into sub-microscopic portions. Therefore, this method of analysis may produce incorrect results for tests of floor tile which produce negative finding for asbestos.

Gross samples are examined under a 10X or 20X stereoscope where homogeneity (need for sub-samples), color, texture and/or any other distinguishing characteristics are determined.

Sub-samples are prepared if needed. Any fibrous material is mounted in high dispersion oil for further microscope examination utilizing polarized light microscopy. Any possible asbestos fibers area analyzed for morphology, color and pleochroism, index of refraction parallel and perpendicular to elongation, birefringence, extinction characteristic and sign of elongation, and any other distinguishing characteristics observed.

To determine the refractive index, the central stop dispersion staining method is used as well as matching with refractive index oil and using light matching the sodium D-line wavelength. Identification of non-asbestos species is less rigorous, as they are secondary interest.

The percentage of asbestos and other fibrous materials in then determined according to sample area coverage and thickness. The limit of qualification is one percent (1%). The above is recorded on the laboratory analysis sheet and maintained for three years.

The error involved for reported percentages of fibrous material is 100% error for 1% to 5%, 50% error for 5% to 20%, and 25% error for 20% to 100%. All percentages will be reported in a range indicating error, or as a single value in which case the above error should be applied. When the value 1% is reported this indicates asbestos or greater is present in the sample.

ASBESTOS CHARACTERIZATION:
The features of the various forms of asbestos area as follows:

CHRYSOTILE: Thin fibers and fiber bundles with both straight and wavy section. The ends of bundles tend to be frayed. Sign of elongation is positive, refractive indices are 1.493-1.560 (alpha) and 1.562 (gamma), with birefringence of 0.004-0.016. The fibers exhibit parallel extinction.

AMOSITE: Straight thin single fibers and bundles of such fibers usually with cleanly broken ends on individual fibers; positive sign of elongation, refractive indices of 1.653-1.696 (alpha) and 1.655-1.729 (gamma), birefringence of 0.020-0.033. Fibers exhibit parallel extinction.

CROCIDOLITE: Similar in morphology to amosite but is distinguished by negative sign of elongation, blue to blue-green pleochroic coloration, refractive indices of 1.654-1.701 (alpha) and 1.668-1.717 (gamma), and birefringence of 0.009-0.016. It is commonly referred to as blue asbestos.

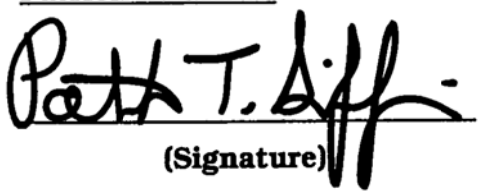
ANTHOPHYLITE: Similar in morphology to amosite but has refractive indices of 1.596-1.652 (alpha) and 1.615-1.676 (gamma), anthophylite fibers show parallel extinction and positive sign of elongation.

THEMOLITE/ACTINOLITE SERIES:
Transparent, elongated furrowed prisms, usually with uneven, jagged ends and smooth sides, with oblique (0-20 degree) to parallel extinction and positive elongation; refractive indices are 1.599-1.668 (alpha) and 1.622-1.688 (gamma) and birefringence is 0.020-0.028. They optically and grade into each other.

SAMPLE RETENTION:
Samples will be retained for 90 days unless other wise instructed. After this period, the sample(s) will be disposed of appropriately. Upon written request, the samples will be returned by mail or delivery for a nominal fee to cover postage and handling. There would be no charge for samples picked-up at ACM Environmental, Inc.

DISCUSSION AND RECOMMENDATIONS:
In order to reduce the risk of introducing asbestos fibers into the air, care should be taken not to disturb the asbestos containing building materials. If renovation, demolition or other activities might disturb known asbestos containing building materials, a reputable asbestos consultant should be contacted to help effectively design and implement an asbestos management program.

Report prepared by: **Patrick T. Griffin**



(Signature)

ACM Environmental, Inc.
President/CEO

Analysis of Suspect Asbestos Containing Building Materials

CLIENT: O'BRIEN & GERE ENGINEERS, INC.
34830 GRAND RIVER AVENUE, SUITE B-2
NOVI, MI 48375

ANALYTICAL METHOD: EPA/600/R-93/116

NVLAP LAB CODE #: 101977

CLIENT PROJECT: BOSCH

MATRIX: BULK

DATE OF SAMPLE: 11/7/00

DATE OF ANALYSIS: 11/11/00

SAMPLE SITE: BUILDING 100

ACM PROJECT #: 6003

CLIENT SAMPLE NUMBER	LAB SAMPLE NUMBER	SAMPLE IDENTIFICATION	ASBEST	CELL	NON FIB NON ACBM	FIB NON ACBM
100-PACM-01	008973	BROWN GRAINY & FIBROUS MATERIAL	-----	60%	40%	-----
100-PACM-02	008974	BLACK TAR & FIBROUS MATERIAL	15% C	20%	45%	20% G
100-PACM-03	008975	BLACK TAR & YELLOW FIBROUS MATERIAL	-----	15%	35%	50% G
100-PACM-04	008976	BLACK TAR MATERIAL	10% C	20%	45%	25% G
100-PACM-05	008977	BLACK TAR & BROWN FIBROUS MATERIAL	-----	40%	50%	10% G
100-PACM-06	008978	BLACK FIBROUS TAR MATERIAL	5% C	20%	65%	10% G
100-PACM-07	008979	GRAY GRAINY MATERIAL	-----	2%	98%	-----
100-PACM-08	008980	WHITE POWDERY & BROWN FIBROUS MATERIAL	-----	25%	75%	-----
100-PACM-09	008981	BROWN FIBROUS MATERIAL	-----	85%	15%	-----
100-PACM-10	008982	WHITE GRAINY MATERIAL	-----	3%	97%	-----
100-PACM-11	008983	GRAY CEMENTITOUS MATERIAL	-----	-----	100%	-----
100-PACM-12	008984	RED GRAINY MATERIAL	5% C	-----	95%	-----
100-PACM-12	008984-A	BLACK MASTIC MATERIAL	10% C	15%	75%	-----
100-PACM-13	008985	REDDISH BROWN GRAINY MATERIAL	10% C	-----	90%	-----
100-PACM-13	008985-A	BLACK MASTIC MATERIAL	5% C	10%	85%	-----
100-PACM-14	008986	WHITE GRAINY MATERIAL	-----	2%	98%	-----

MICROSCOPIST: _____ DATE: 11/11/00

Analysis of Suspect Asbestos Containing Building Materials

CLIENT: O'BRIEN & GERE ENGINEERS, INC.
34830 GRAND RIVER AVENUE, SUITE B-2
NOVI, MI 48375

ANALYTICAL METHOD: EPA/600/R-93/116

NVLAP LAB CODE #: 101977

CLIENT PROJECT: BOSCH

MATRIX: BULK

DATE OF SAMPLE: 11/7/00

DATE OF ANALYSIS: 11/11/00

SAMPLE SITE: BUILDING 100

ACM PROJECT #: 6003

CLIENT SAMPLE NUMBER	LAB SAMPLE NUMBER	SAMPLE IDENTIFICATION	ASBEST	CELL	NON FIB NON ACBM	FIB NON ACBM
100-PACM-14	008986-A	BLACK MASTIC MATERIAL	10% C	10%	80%	-----
100-PACM-15	008987	BLACK TAR & FIBROUS MATERIAL	10% C	10%	80%	-----
100-PACM-16	008988	WHITE FIBROUS MATERIAL	85% C	-----	15%	-----
100-PACM-17	008989	WHITE & GRAY FIBROUS MATERIAL	55% C	45%	-----	-----
100-PACM-18	008990	WHITE GRAINY MATERIAL	-----	-----	100%	-----
100-PACM-19	008991	WHITE & GRAY GRAINY MATERIAL	-----	5%	95%	-----
100-PACM-20	008992	WHITE POWDERY & FIBROUS MATERIAL	60% C	-----	40%	-----
100-PACM-21	008993	GRAY GRAINY MATERIAL	-----	-----	100%	-----
100-PACM-22	008994	WHITE GRAINY MATERIAL	-----	10%	55%	35% G
100-PACM-23	008995	REDDISH BROWN & GRAY CEMENTITIOUS MATERIAL	-----	-----	100%	-----
100-PACM-24	008996	REDDISH BROWN & GRAY CEMENTITIOUS MATERIAL	-----	-----	100%	-----
100-PACM-25	008997	WHITE GRAINY MATERIAL	-----	-----	100%	-----
100-PACM-26	008998	BROWN & WHITE FIBROUS MATERIAL	60% C	40%	-----	-----
100-PACM-27	008999	WHITE POWDERY MATERIAL	-----	15%	65%	20% G

MICROSCOPIST: _____ DATE: 11/11/00

Analysis of Suspect Asbestos Containing Materials

ACM ENVIRONMENTAL, INC. PROJECT NO.: 6003

DESCRIPTION OF ANY PROBLEMS ENCOUNTERED IN THE SAMPLE ANALYSIS: None

COMPONENTS DESCRIPTION:

ASBESTOS MATERIALS

C = CHRYSOTILE
A = AMOSITE
CR = CROCIDOLITE
AN = ANTHOPHYLITE
AC = ACTINOLITE
T = TREMOLITE

NON-ASBESTOS MATERIALS

CELL = CELLULOSE
G = FIBROUS GLASS
M = MINERAL WOOL
S = SYNTHETICS
H = HAIR
C = COTTON
O = OTHER
CF = CERAMIC FIBERS

NOTES: FIBROUS QUANTITIES DO NOT NECESSARILY ADD UP TO 100%, REMAINING QUANTITIES ARE COMPOSED OF NON-FIBROUS ROCKS, BINDERS AND FILTERS.

THIS REPORT MUST NOT BE USED BY THE CLIENT TO CLAIM PRODUCT ENDORSEMENT BY NVLAP OR ANY AGENCY OF THE U.S. GOVERNMENT.

THIS REPORT RELATES ONLY TO THE ITEMS ABOVE.

ACM ENVIRONMENTAL, INC. DOES NOT DEVIATE FROM THE TEST METHOD DESCRIBED IN THIS REPORT.

ANALYSIS OF SUSPECT ASBESTOS CONTAINING BUILDING MATERIALS

FOR:

O'BRIEN & GERE ENGINEERS, INC.
34830 GRAND RIVER AVENUE
SUITE B-2
NOVI, MI 48375

LOCATION:

BOSCH BRAKING SYSTEMS
BUILDING 101

ACM ENVIRONMENTAL, INC.
PROJECT#: 6004

DATE OF REPORT:

NOVEMBER 11, 2000

PREPARED BY:

ACM ENVIRONMENTAL, INC.
229 S. MICHIGAN STREET
SOUTH BEND, IN 46601

NVLAP LAB CODE: 101977

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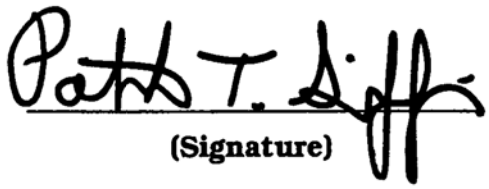
Report prepared by: **Patrick T. Griffin**



(Signature)

ACM Environmental, Inc.
President/CEO

Analysis of Suspect Asbestos Containing Building Materials

CLIENT: O'BRIEN & GERE ENGINEERS, INC.
34830 GRAND RIVER AVENUE, SUITE B-2
NOVI, MI 48375

ANALYTICAL METHOD: EPA/600/R-93/116

NVLAP LAB CODE #: 101977

CLIENT PROJECT: BOSCH

MATRIX: BULK

DATE OF SAMPLE: 11/7/00

DATE OF ANALYSIS: 11/11/00

SAMPLE SITE: BUILDING 101

ACM PROJECT #: 6004

CLIENT SAMPLE NUMBER	LAB SAMPLE NUMBER	SAMPLE IDENTIFICATION	ASBEST	CELL	NON FIB NON ACBM	FIB NON ACBM
101-PACM-01	009000	WHITE & BLACK GRAINY MATERIAL	1% C	-----	99%	-----
101-PACM-02	009001	BLACK TAR MATERIAL	10% C	15%	65%	10% G
101-PACM-03	009002	TAN FIBROUS MATERIAL	-----	55%	5%	40% G
101-PACM-04	009003	WHITE FIBROUS MATERIAL	-----	-----	-----	100% G
101-PACM-05	009004	GRAY GRAINY MATERIAL	10% C	-----	90%	-----
101-PACM-05	009004-A	BLACK MASTIC MATERIAL	10% C	5%	85%	-----
101-PACM-06	009005	WHITE POWDERY MATERIAL	35% C	20%	35%	10% G
101-PACM-07	009006	TAN & WHITE STONE & TAN FIBROUS MATERIAL	-----	15%	85%	-----
101-PACM-08	009007	WHITE GRAINY & YELLOW MASTIC MATERIAL	-----	-----	92%	8% G
101-PACM-09	009008	BROWN STONE & TAN FIBROUS MATERIAL	-----	20%	80%	-----
101-PACM-10	009009	REDDISH BROWN BRICK & GRAY CEM. MATERIAL	-----	5%	95%	-----
101-PACM-11	009010	WHITE FIBROUS & POWDERY MATERIAL	20% C 30% A	-----	50%	-----
101-PACM-12	009011	BROWN MASTIC & TAR FIBROUS MATERIAL	-----	30%	60%	10% G
101-PACM-13	009012	WHITE POWDERY & TAR FIBROUS MATERIAL	-----	20%	75%	5% G
101-PACM-14	009013	TAN FIBROUS & SILVER METALLIC MATERIAL	-----	15%	50%	35% G
101-PACM-15	009014	WHITE GRAINY MATERIAL	5% C	10%	80%	5% G

MICROSCOPIST: _____ DATE: 11/11/00

ACM ENVIRONMENTAL INC. 229 S MICHIGAN STREET, SOUTH BEND, INDIANA 46601
TELEPHONE (219) 234-8435 FAX (219) 234-6800

Analysis of Suspect Asbestos Containing Building Materials

CLIENT: O'BRIEN & GERE ENGINEERS, INC.
34830 GRAND RIVER AVENUE, SUITE B-2
NOVI, MI 48375

ANALYTICAL METHOD: EPA/600/R-93/116

NVLAP LAB CODE #: 101977

CLIENT PROJECT: BOSCH

MATRIX: BULK

DATE OF SAMPLE: 11/7/00

DATE OF ANALYSIS: 11/11/00

SAMPLE SITE: BUILDING 101

ACM PROJECT #: 6004

CLIENT SAMPLE NUMBER	LAB SAMPLE NUMBER	SAMPLE IDENTIFICATION	ASBEST	CELL	NON FIB NON ACBM	FIB NON ACBM
101-PACM-16	009015	TAN GRAINY MATERIAL	5% C	-----	95%	-----
101-PACM-17	009016	REDDISH BROWN STONE & BLACK MASTIC MATERIAL	-----	-----	98%	2% G
101-PACM-18	009017	REDDISH BROWN STONE & BLACK MASTIC MATERIAL	-----	-----	98%	2% G
101-PACM-19	009018	RED GRAINY & BLACK MASTIC MATERIAL	-----	20%	75%	5% G
101-PACM-20	009019	BLACK TAR & BROWN GRAINY MATERIAL	-----	25%	70%	5% G
101-PACM-29	009020	BLACK TAR & BROWN FIBROUS MATERIAL	-----	20%	75%	5% G

MICROSCOPIST: _____ DATE: 11/11/00

Analysis of Suspect Asbestos Containing Materials

ACM ENVIRONMENTAL, INC. PROJECT NO.: 6004

DESCRIPTION OF ANY PROBLEMS ENCOUNTERED IN THE SAMPLE ANALYSIS: None

COMPONENTS DESCRIPTION:

ASBESTOS MATERIALS

C = CHRYSOTILE
A = AMOSITE
CR = CROCIDOLITE
AN = ANTHOPHYLITE
AC = ACTINOLITE
T = TREMOLITE

NON-ASBESTOS MATERIALS

CELL = CELLULOSE
G = FIBROUS GLASS
M = MINERAL WOOL
S = SYNTHETICS
H = HAIR
C = COTTON
O = OTHER
CF = CERAMIC FIBERS

NOTES: FIBROUS QUANTITIES DO NOT NECESSARILY ADD UP TO 100%, REMAINING
QUANTITIES ARE COMPOSED OF NON-FIBROUS ROCKS, BINDERS AND FILTERS.

THIS REPORT MUST NOT BE USED BY THE CLIENT TO CLAIM PRODUCT ENDORSEMENT BY NVLAP OR ANY AGENCY OF THE U.S. GOVERNMENT.

THIS REPORT RELATES ONLY TO THE ITEMS ABOVE.

ACM ENVIRONMENTAL, INC. DOES NOT DEVIATE FROM THE TEST METHOD DESCRIBED IN THIS REPORT.

ANALYSIS OF SUSPECT ASBESTOS CONTAINING BUILDING MATERIALS

FOR:

O'BRIEN & GERE ENGINEERS, INC.
34830 GRAND RIVER AVENUE
SUITE B-2
NOVI, MI 48375

LOCATION:

BOSCH BRAKING SYSTEMS
BUILDING 104

ACM ENVIRONMENTAL, INC.
PROJECT#: 6006

DATE OF REPORT:

NOVEMBER 11, 2000

PREPARED BY:

ACM ENVIRONMENTAL, INC.
229 S. MICHIGAN STREET
SOUTH BEND, IN 46601

NVLAP LAB CODE: 101977

INTRODUCTION:
In November 2000, ACM Environmental, Inc. received bulk samples of suspect asbestos containing building material from O'Brien & Gere Engineers, Inc. These were to be analyzed by ACM Environmental, Inc. for possible asbestos content.

THE REPORT:
The attached report quantities the fibrous materials found in each sample submitted for analysis. A complete fibrous analysis of samples is given for each sample followed by a break down analysis of any sub-samples for heterogeneous material.

The first column is the client sample identification.

The second column is the laboratory sample number. The laboratory number for the overall sample analysis is a digit number. The laboratory number followed by a letter designation (A,B,C, etc.) indicates a sub-sample analysis.

The third column is the sample identification which indicates whether the sample is homogeneous or heterogeneous, the color of the sample, and the physical description (cementitious, fibrous, cloth, etc.)

The fourth column indicates the types and percentages of asbestos identified in the sample of sub-sample.

The fifth column indicates the types and percentages of cellulose identified in the sample or sub-sample.

The sixth column indicates the types and percentages of non-asbestos non-fibrous material in the sample or sub-sample.

The seventh column indicates the types and percentages of non-asbestos fibrous material in the sample or sub-sample. Fibrous material will not necessarily total 100% of the sample.

There will be dashes **(----)** in each column when nothing is detected.

METHOD:
All analysis and quantification is performed in accordance with the U.S. Environmental Protection Agency's "Interim Method for the Determination of Asbestos in Bulk Insulation Samples", 40 CFR, Part 763, Sub-Part F, Appendix A, 1987.

The method utilizes stereoscopical examination of the bulk samples, as well as utilizing the polarized light microscope and the central stop dispersion staining method.

If applicable, please be advised that the Stereo Scope/PLM methods have limitations regarding floor tile analysis for asbestos content. Historically, the production of floor tile has included the grinding of asbestos into sub-microscopic portions. Therefore, this method of analysis may produce incorrect results for tests of floor tile which produce negative finding for asbestos.

Gross samples are examined under a 10X or 20X stereoscope where homogeneity (need for sub-samples), color, texture and/or any other distinguishing characteristics are determined.

Sub-samples are prepared if needed. Any fibrous material is mounted in high dispersion oil for further microscope examination utilizing polarized light microscopy. Any possible asbestos fibers area analyzed for morphology, color and pleochroism, index of refraction parallel and perpendicular to elongation, birefringence, extinction characteristic and sign of elongation, and any other distinguishing characteristics observed.

To determine the refractive index, the central stop dispersion staining method is used as well as matching with refractive index oil and using light matching the sodium D-line wavelength. Identification of non-asbestos species is less rigorous, as they are secondary interest.

The percentage of asbestos and other fibrous materials in then determined according to sample area coverage and thickness. The limit of qualification is one percent (1%). The above is recorded on the laboratory analysis sheet and maintained for three years.

The error involved for reported percentages of fibrous material is 100% error for 1% to 5%, 50% error for 5% to 20%, and 25% error for 20% to 100%. All percentages will be reported in a range indicating error, or as a single value in which case the above error should be applied. When the value 1% is reported this indicates asbestos or greater is present in the sample.

ASBESTOS CHARACTERIZATION:
The features of the various forms of asbestos area as follows:

CHRYSOTILE: Thin fibers and fiber bundles with both straight and wavy section. The ends of bundles tend to be frayed. Sign of elongation is positive, refractive indices are 1.493-1.560 (alpha) and 1.562 (gamma), with birefringence of 0.004-0.016. The fibers exhibit parallel extinction.

AMOSITE: Straight thin single fibers and bundles of such fibers usually with cleanly broken ends on individual fibers; positive sign of elongation, refractive indices of 1.653-1.696 (alpha) and 1.655-1.729 (gamma), birefringence of 0.020-0.033. Fibers exhibit parallel extinction.

CROCIDOLITE: Similar in morphology to amosite but is distinguished by negative sign of elongation, blue to blue-green pleochroic coloration, refractive indices of 1.654-1.701 (alpha) and 1.668-1.717 (gamma), and birefringence of 0.009-0.016. It is commonly referred to as blue asbestos.

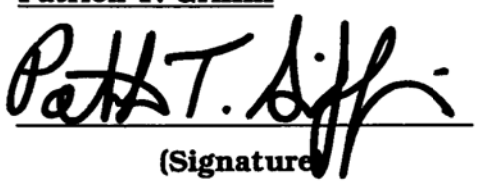
ANTHOPHYLITE: Similar in morphology to amosite but has refractive indices of 1.596-1.652 (alpha) and 1.615-1.676 (gamma), anthophylite fibers show parallel extinction and positive sign of elongation.

THEMOLITE/ACTINOLITE SERIES:
Transparent, elongated furrowed prisms, usually with uneven, jagged ends and smooth sides, with oblique (0-20 degree) to parallel extinction and positive elongation; refractive indices are 1.599-1.668 (alpha) and 1.622-1.688 (gamma) and birefringence is 0.020-0.028. They optically and grade into each other.

SAMPLE RETENTION:
Samples will be retained for 90 days unless other wise instructed. After this period, the sample(s) will be disposed of appropriately. Upon written request, the samples will be returned by mail or delivery for a nominal fee to cover postage and handling. There would be no charge for samples picked-up at ACM Environmental, Inc.

DISCUSSION AND RECOMMENDATIONS:
In order to reduce the risk of introducing asbestos fibers into the air, care should be taken not to disturb the asbestos containing building materials. If renovation, demolition or other activities might disturb known asbestos containing building materials, a reputable asbestos consultant should be contacted to help effectively design and implement an asbestos management program.

Report prepared by: **Patrick T. Griffin**



(Signature)

ACM Environmental, Inc.
President/CEO

Analysis of Suspect Asbestos Containing Building Materials

CLIENT: O'BRIEN & GERE ENGINEERS, INC.
34830 GRAND RIVER AVENUE, SUITE B-2
NOVI, MI 48375

ANALYTICAL METHOD: EPA/600/R-93/116

NVLAP LAB CODE #: 101977

CLIENT PROJECT: BOSCH

MATRIX: BULK

DATE OF SAMPLE: 11/7/00

DATE OF ANALYSIS: 11/11/00

SAMPLE SITE: BUILDING 104

ACM PROJECT #: 6006

CLIENT SAMPLE NUMBER	LAB SAMPLE NUMBER	SAMPLE IDENTIFICATION	ASBEST	CELL	NON FIB NON ACBM	FIB NON ACBM
104-PACM-01	009064	BLACK TAR & YELLOW FIBROUS MATERIAL	-----	30%	60%	10% G
104-PACM-02	009065	BLACK TAR & WHITE FIBROUS MATERIAL	20% C	-----	80%	-----
104-PACM-03	009066	BLACK TAR & BROWN FIBROUS MATERIAL	-----	25%	65%	10% G
104-PACM-04	009067	BLACK TAR & WHITE FIBROUS MATERIAL	20% C	-----	80%	-----
104-PACM-05	009068	BLACK TAR & BROWN FIBROUS MATERIAL	-----	25%	65%	10% G
104-PACM-06	009069	BLACK TAR & BROWN FIBROUS MATERIAL	-----	25%	65%	10% G
104-PACM-75	009070	WHITE POWDERY MATERIAL	-----	-----	80%	20% G
104-PACM-76	009071	WHITE FIBROUS MATERIAL	65% C	-----	35%	-----
104-PACM-77	009072	WHITE & BROWN FIBROUS MATERIAL	20% C	80%	-----	-----
104-PACM-78	009073	TAN POWDERY & FIBROUS MATERIAL	-----	10%	70%	20% G
104-PACM-79	009074	TAN FIBROUS MATERIAL	15% C	-----	55%	30% G
104-PACM-80	009075	TAN FIBROUS MATERIAL	45% A	-----	55%	-----
104-PACM-81	009076	TAN & WHITE FIBROUS MATERIAL	50% C	20%	30%	-----
104-PACM-82	009077	WHITE POWDERY MATERIAL	-----	-----	85%	15% G
104-PACM-83	009078	BROWN FIBROUS MATERIAL	25% C	75%	-----	-----
104-PACM-84	009079	TAN GRAINY MATERIAL	-----	5%	95%	-----

MICROSCOPIST: _____ DATE: 11/11/00

ACM ENVIRONMENTAL INC. 229 S MICHIGAN STREET, SOUTH BEND, INDIANA 46601
TELEPHONE (219) 234-8435 FAX (219) 234-6800

Analysis of Suspect Asbestos Containing Building Materials

CLIENT: O'BRIEN & GERE ENGINEERS, INC.
34830 GRAND RIVER AVENUE, SUITE B-2
NOVI, MI 48375

ANALYTICAL METHOD: EPA/600/R-93/116

NVLAP LAB CODE #: 101977

CLIENT PROJECT: BOSCH

MATRIX: BULK

DATE OF SAMPLE: 11/7/00

DATE OF ANALYSIS: 11/11/00

SAMPLE SITE: BUILDING 104

ACM PROJECT #: 6006

CLIENT SAMPLE NUMBER	LAB SAMPLE NUMBER	SAMPLE IDENTIFICATION	ASBEST	CELL	NON FIB NON ACBM	FIB NON ACBM
104-PACM-85	009080	WHITE GRAINY & BROWN FIBROUS MATERIAL	-----	15%	85%	-----
104-PACM-86	009081	RED & BROWN GRAINY MATERIAL	-----	5%	95%	-----
104-PACM-87	009082	RED GRAINY MATERIAL	5% C	-----	95%	-----
104-PACM-87	009082-A	BLACK MASTIC MATERIAL	10% C	15%	75%	-----
104-PACM-88	009083	BROWN GRAINY & BLACK MASTIC MATERIAL	-----	10%	90%	-----
104-PACM-89	009084	WHITE FIBROUS MATERIAL	-----	60%	40%	-----
104-PACM-90	009085	DARK BROWN GRAINY MATERIAL	5% C	2%	93%	-----
104-PACM-90	009085-A	BROWN POWDERY & BLACK MASTIC MATERIAL	5% C	5%	90%	-----
104-PACM-91	009086	BROWN FIBROUS & BROWN MASTIC MATERIAL	-----	90%	10%	-----
104-PACM-92	009087	TAR FIBROUS MATERIAL	-----	90%	10%	-----
104-PACM-93	009088	GRAY & WHITE GRAINY MATERIAL	-----	-----	97%	3% H
104-PACM-94	009089	TAN & WHITE GRAINY & BROWN FIBROUS MATERIAL	-----	15%	85%	-----
104-PACM-95	009090	WHITE GRAINY & BROWN MASTIC MATERIAL	-----	-----	100%	-----
104-PACM-96	009091	BEIGE FIBROUS MATERIAL	-----	85%	15%	-----
104-PACM-97	009092	WHITE & BEIGE GRAINY MATERIAL	-----	-----	99%	1% H
104-PACM-98	009093	GRAY POWDERY MATERIAL	-----	-----	50%	50% H

MICROSCOPIST: _____ DATE: 11/11/00

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Analysis of Suspect Asbestos Containing Building Materials

CLIENT: O'BRIEN & GERE ENGINEERS, INC.
34830 GRAND RIVER AVENUE, SUITE B-2
NOVI, MI 48375

ANALYTICAL METHOD: EPA/600/R-93/116

NVLAP LAB CODE #: 101977

CLIENT PROJECT: BOSCH

MATRIX: BULK

DATE OF SAMPLE: 11/7/00

DATE OF ANALYSIS: 11/11/00

SAMPLE SITE: BUILDING 104

ACM PROJECT #: 6006

CLIENT SAMPLE NUMBER	LAB SAMPLE NUMBER	SAMPLE IDENTIFICATION	ASBEST	CELL	NON FIB NON ACBM	FIB NON ACBM
104-PACM-99	009094	BROWN FIBROUS MATERIAL	-----	-----	2%	98% S
104-PACM-100	009095	GRAY & WHITE GRAINY MATERIAL	-----	-----	99%	1% H

MICROSCOPIST: _____ DATE: 11/11/00

ACM ENVIRONMENTAL INC. 229 S MICHIGAN STREET, SOUTH BEND, INDIANA 46601
TELEPHONE (219) 234-8435 FAX (219) 234-6800

Analysis of Suspect Asbestos Containing Materials

ACM ENVIRONMENTAL, INC. PROJECT NO.: 6006

DESCRIPTION OF ANY PROBLEMS ENCOUNTERED IN THE SAMPLE ANALYSIS: None

COMPONENTS DESCRIPTION:

ASBESTOS MATERIALS

C = CHRYSOTILE
A = AMOSITE
CR = CROCIDOLITE
AN = ANTHOPHYLITE
AC = ACTINOLITE
T = TREMOLITE

NON-ASBESTOS MATERIALS

CELL = CELLULOSE
G = FIBROUS GLASS
M = MINERAL WOOL
S = SYNTHETICS
H = HAIR
C = COTTON
O = OTHER
CF = CERAMIC FIBERS

NOTES: FIBROUS QUANTITIES DO NOT NECESSARILY ADD UP TO 100%, REMAINING QUANTITIES ARE COMPOSED OF NON-FIBROUS ROCKS, BINDERS AND FILTERS.

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Analytical Laboratory Report

Lab Sample ID: S03788.57
Sample Tag: 104-08
Collected Date/Time: 11/09/2000 09:55
Matrix: Sediment
COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz. Glass	none	Yes	RT	No Ice

Analysis	Results	Units	MDL	Method	Date Run	Analyst	CAS #	Flags
Organics								
Extraction, PCB	Completed			3550	11/17/00	SG		
PCB List								
PCB-1016	Not detected	mg/kg	2	8082	11/22/00	JANB	12674-11-2	M
PCB-1242	Not detected	mg/kg	2	8082	11/22/00	JANB	53469-21-9	M
PCB-1221	Not detected	mg/kg	2	8082	11/22/00	JANB	11104-28-2	M
PCB-1232	Not detected	mg/kg	2	8082	11/22/00	JANB	11141-16-5	M
PCB-1248	Not detected	mg/kg	2	8082	11/22/00	JANB	12672-29-6	M
PCB-1254	Not detected	mg/kg	2	8082	11/22/00	JANB	11097-69-1	M
PCB-1260	Not detected	mg/kg	2	8082	11/22/00	JANB	11096-82-5	M

M-Higher detection limit due to matrix interference.

Analytical Laboratory Report

Lab Sample ID: S03788.58
Sample Tag: 104-13
Collected Date/Time: 11/09/2000 15:11
Matrix: Wood
COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	Ziploc	none	Yes	RT	No Ice

Analysis	Results	Units	MDL	Method	Date Run	Analyst	CAS #	Flags
Organics								
Extraction, PCB	Completed			3550	11/17/00	SG		
PCB List								
PCB-1016	Not detected	mg/kg	3	8082	11/22/00	JANB	12674-11-2	M
PCB-1242	Not detected	mg/kg	3	8082	11/22/00	JANB	53469-21-9	M
PCB-1221	Not detected	mg/kg	3	8082	11/22/00	JANB	11104-28-2	M
PCB-1232	Not detected	mg/kg	3	8082	11/22/00	JANB	11141-16-5	M
PCB-1248	Not detected	mg/kg	3	8082	11/22/00	JANB	12672-29-6	M
PCB-1254	Not detected	mg/kg	3	8082	11/22/00	JANB	11097-69-1	M
PCB-1260	Not detected	mg/kg	3	8082	11/22/00	JANB	11096-82-5	M

M-Higher detection limit due to matrix interference.

Analytical Laboratory Report

Lab Sample ID: S03788.59
Sample Tag: 104-14
Collected Date/Time: 11/09/2000 15:11
Matrix: Wood
COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	Ziploc	none	Yes	RT	No Ice

Analysis	Results	Units	MDL	Method	Date Run	Analyst	CAS #	Flags
Organics								
Extraction, PCB	Completed			3550	11/17/00	SG		
PCB List								
PCB-1016	Not detected	mg/kg	0.33	8082	11/22/00	JANB	12674-11-2	
PCB-1242	Not detected	mg/kg	0.33	8082	11/22/00	JANB	53469-21-9	
PCB-1221	Not detected	mg/kg	0.33	8082	11/22/00	JANB	11104-28-2	
PCB-1232	Not detected	mg/kg	0.33	8082	11/22/00	JANB	11141-16-5	
PCB-1248	Not detected	mg/kg	0.33	8082	11/22/00	JANB	12672-29-6	
PCB-1254	Not detected	mg/kg	0.33	8082	11/22/00	JANB	11097-69-1	
PCB-1260	Not detected	mg/kg	0.33	8082	11/22/00	JANB	11096-82-5	

Analytical Laboratory Report

Lab Sample ID: S03788.60
Sample Tag: 104-15
Collected Date/Time: 11/09/2000 15:11
Matrix: Wood
COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	Ziploc	none	Yes	RT	No Ice

Analysis	Results	Units	MDL	Method	Date Run	Analyst	CAS #	Flags
Organics								
Extraction, PCB	Completed			3550	11/17/00	SG		
PCB List								
PCB-1016	Not detected	mg/kg	0.33	8082	11/22/00	JANB	12674-11-2	
PCB-1242	Not detected	mg/kg	0.33	8082	11/22/00	JANB	53469-21-9	
PCB-1221	Not detected	mg/kg	0.33	8082	11/22/00	JANB	11104-28-2	
PCB-1232	Not detected	mg/kg	0.33	8082	11/22/00	JANB	11141-16-5	
PCB-1248	Not detected	mg/kg	0.33	8082	11/22/00	JANB	12672-29-6	
PCB-1254	Not detected	mg/kg	0.33	8082	11/22/00	JANB	11097-69-1	
PCB-1260	Not detected	mg/kg	0.33	8082	11/22/00	JANB	11096-82-5	

Analytical Laboratory Report

Lab Sample ID: S03803.03
Sample Tag: 104-17
Collected Date/Time: 11/10/2000 08:11
Matrix: Sediment
COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz. Glass	none	Yes	RT	No Ice

Analysis	Results	Units	MDL	Method	Date Run	Analyst	CAS #	Flags
Inorganics								
Total Solids	29.8	%	1	160.3	11/13/00	TJG		
Cyanide	222	mg/kg	1	9010	11/21/00	JDP		

Analytical Laboratory Report

Lab Sample ID: S03803.17
Sample Tag: Dup 4
Collected Date/Time: 11/10/2000 :
Matrix: Paint Chip
COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	whirlpak	none	Yes	RT	No Ice

Analysis	Results	Units	MDL	Method	Date Run	Analyst	CAS #	Flag
Metals								
Digestion	Completed			varies	11/20/00	EMIL		
Lead	2,840	mg/kg	1.0	6020	11/21/00	EMIL	7439-92-1	

Analytical Laboratory Report

Lab Sample ID: S03803.16
Sample Tag: Dup 3
Collected Date/Time: 11/10/2000 :
Matrix: Paint Chip
COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	whirlpak	none	Yes	RT	No Ice

Analysis	Results	Units	MDL	Method	Date Run	Analyst	CAS #	Flags
Metals								
Digestion	Completed			varies	11/20/00	EMIL		
Lead	1,970	mg/kg	1.0	6020	11/21/00	EMIL	7439-92-1	

Analytical Laboratory Report

Lab Sample ID: S03803.11
Sample Tag: 104-18
Collected Date/Time: 11/10/2000 10:44
Matrix: Oil
COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz. Glass	none	Yes	RT	No Ice

Analysis	Results	Units	MDL	Method	Date Run	Analyst	CAS #	Flags
Miscellaneous								
No Analyses	Completed				11/15/00	PFQ		

Analytical Laboratory Report

Lab Sample ID: S03788.55
Sample Tag: Dup-2
Collected Date/Time: 11/07/2000 :
Matrix: Sediment/Wipe
COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz. Glass	none	Yes	RT	No Ice

Analysis	Results	Units	MDL	Method	Date Run	Analyst	CAS #	Flags
Metals								
Digestion	Completed			varies	11/22/00	EMIL		
Arsenic, wipe	Not detected	ug/100cm2	10	6020	11/22/00	EMIL		
Cadmium, wipe	27.3	ug/100cm2	5.0	6020	11/22/00	EMIL		
Chromium, wipe	2,000	ug/100cm2	50	6020	11/22/00	EMIL		
Lead, wipe	6,380	ug/100cm2	30	6020	11/22/00	EMIL		
Nickel, wipe	201	ug/100cm2	50	6020	11/22/00	EMIL		
Zinc, wipe	3,730	ug/100cm2	50	6020	11/22/00	EMIL		

Analytical Laboratory Report

Lab Sample ID: S03788.54
Sample Tag: Dup-1
Collected Date/Time: 11/07/2000 :
Matrix: Sediment/Wipe
COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz. Glass	none	Yes	RT	No Ice

Analysis	Results	Units	MDL	Method	Date Run	Analyst	CAS #	Flags
Metals								
Digestion	Completed			varies	11/22/00	EMIL		
Arsenic, wipe	90.5	ug/100cm2	10	6020	11/22/00	EMIL		
Cadmium, wipe	325	ug/100cm2	5.0	6020	11/22/00	EMIL		
Chromium, wipe	8,320	ug/100cm2	50	6020	11/22/00	EMIL		
Lead, wipe	3,040	ug/100cm2	30	6020	11/22/00	EMIL		
Nickel, wipe	987	ug/100cm2	50	6020	11/22/00	EMIL		
Zinc, wipe	10,600	ug/100cm2	50	6020	11/22/00	EMIL		

Analytical Laboratory Report

Lab Sample ID: S03788.22
Sample Tag: 100-1
Collected Date/Time: 11/07/2000 16:10
Matrix: Paint Chip
COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	whirlpak	none	Yes	RT	No Ice

Analysis	Results	Units	MDL	Method	Date Run	Analyst	CAS #	Flags
Metals								
Digestion	Completed			varies	11/20/00	EMIL		
Lead	379	mg/kg	1.0	6020	11/21/00	EMIL	7439-92-1	

Analytical Laboratory Report

Lab Sample ID: S03788.23
Sample Tag: 100-2
Collected Date/Time: 11/07/2000 16:25
Matrix: Paint Chip
COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	whirlpak	none	Yes	RT	No Ice

Analysis	Results	Units	MDL	Method	Date Run	Analyst	CAS #	Flags
Metals								
Digestion	Completed			varies	11/20/00	EMIL		
Lead	581	mg/kg	1.0	6020	11/21/00	EMIL	7439-92-1	

Analytical Laboratory Report

Lab Sample ID: S03788.24
Sample Tag: 100-3
Collected Date/Time: 11/07/2000 16:30
Matrix: Paint Chip
COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	whirlpak	none	Yes	RT	No Ice

Analysis	Results	Units	MDL	Method	Date Run	Analyst	CAS #	Flags
Metals								
Digestion	Completed			varies	11/20/00	EMIL		
Lead	679	mg/kg	1.0	6020	11/21/00	EMIL	7439-92-1	

Analytical Laboratory Report

Lab Sample ID: S03788.25
Sample Tag: 100-4
Collected Date/Time: 11/07/2000 17:35
Matrix: Paint Chip
COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	whirlpak	none	Yes	RT	No Ice

Analysis	Results	Units	MDL	Method	Date Run	Analyst	CAS #	Flag
Metals								
Digestion	Completed			varies	11/20/00	EMIL		
Lead	16,300	mg/kg	1.0	6020	11/21/00	EMIL	7439-92-1	

Analytical Laboratory Report

Lab Sample ID: S03788.14
Sample Tag: 101-01
Collected Date/Time: 11/08/2000 18:01
Matrix: Solid/Scrape
COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	whirlpak	none	Yes	RT	No Ice

Analysis	Results	Units	MDL	Method	Date Run	Analyst	CAS #	Flags
Metals								
Digestion	Completed			varies	11/20/00	EMIL		
Lead	2,700	mg/kg	1.0	6020	11/21/00	EMIL	7439-92-1	

Analytical Laboratory Report

Lab Sample ID: S03788.15
Sample Tag: 101-03
Collected Date/Time: 11/08/2000 18:57
Matrix: Solid/Scrape
COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	whirlpak	none	Yes	RT	No Ice

Analysis	Results	Units	MDL	Method	Date Run	Analyst	CAS #	Flags
Metals								
Digestion	Completed			varies	11/20/00	EMIL		
Lead	2.8	mg/kg	1.0	6020	11/21/00	EMIL	7439-92-1	

Analytical Laboratory Report

Lab Sample ID: S03788.16
Sample Tag: 101-04
Collected Date/Time: 11/08/2000 19:08
Matrix: Solid/Scrape
COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	whirlpak	none	Yes	RT	No Ice

Analysis	Results	Units	MDL	Method	Date Run	Analyst	CAS #	Flags
Metals								
Digestion	Completed			varies	11/20/00	EMIL		
Lead	11,100	mg/kg	1.0	6020	11/21/00	EMIL	7439-92-1	

Analytical Laboratory Report

Lab Sample ID: S03788.07
Sample Tag: 104-1
Collected Date/Time: 11/08/2000 14:47
Matrix: Solid/Scrape
COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	whirlpak	none	Yes	RT	No Ice

Analysis	Results	Units	MDL	Method	Date Run	Analyst	CAS #	Flag
Metals								
Digestion	Completed			varies	11/20/00	EMIL		
Lead	3,160	mg/kg	1.0	6020	11/21/00	EMIL	7439-92-1	

Analytical Laboratory Report

Lab Sample ID: S03788.08
Sample Tag: 104-2
Collected Date/Time: 11/08/2000 14:52
Matrix: Solid/Scrape
COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	whirlpak	none	Yes	RT	No Ice

Analysis	Results	Units	MDL	Method	Date Run	Analyst	CAS #	Flags
Metals								
Digestion	Completed			varies	11/20/00	EMIL		
Lead	678	mg/kg	1.0	6020	11/21/00	EMIL	7439-92-1	

Analytical Laboratory Report

Lab Sample ID: S03788.09
Sample Tag: 104-3
Collected Date/Time: 11/08/2000 14:56
Matrix: Solid/Scrape
COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	whirlpak	none	Yes	RT	No Ice

Analysis	Results	Units	MDL	Method	Date Run	Analyst	CAS #	Flags
Metals								
Digestion	Completed			varies	11/20/00	EMIL		
Lead	123	mg/kg	1.0	6020	11/21/00	EMIL	7439-92-1	

Analytical Laboratory Report

Lab Sample ID: S03788.10
Sample Tag: 104-4
Collected Date/Time: 11/08/2000 15:11
Matrix: Solid/Scrape
COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	whirlpak	none	Yes	RT	No Ice

Analysis	Results	Units	MDL	Method	Date Run	Analyst	CAS #	Flags
Metals								
Digestion	Completed			varies	11/20/00	EMIL		
Lead	11,200	mg/kg	1.0	6020	11/21/00	EMIL	7439-92-1	

Analytical Laboratory Report

Lab Sample ID: S03788.11
Sample Tag: 104-5
Collected Date/Time: 11/08/2000 15:14
Matrix: Solid/Scrape
COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	whirlpak	none	Yes	RT	No Ice

Analysis	Results	Units	MDL	Method	Date Run	Analyst	CAS #	Flags
Metals								
Digestion	Completed			varies	11/20/00	EMIL		
Lead	6,320	mg/kg	1.0	6020	11/21/00	EMIL	7439-92-1	

Analytical Laboratory Report

Lab Sample ID: S03788.12
Sample Tag: 104-6
Collected Date/Time: 11/08/2000 15:26
Matrix: Solid/Scrape
COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	whirlpak	none	Yes	RT	No Ice

Analysis	Results	Units	MDL	Method	Date Run	Analyst	CAS #	Flags
Metals								
Digestion	Completed			varies	11/20/00	EMIL		
Lead	881	mg/kg	1.0	6020	11/21/00	EMIL	7439-92-1	

Analytical Laboratory Report

Lab Sample ID: S03788.13
Sample Tag: 104-7
Collected Date/Time: 11/08/2000 15:34
Matrix: Solid/Scrape
COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	whirlpak	none	Yes	RT	No Ice

Analysis	Results	Units	MDL	Method	Date Run	Analyst	CAS #	Flag
Metals								
Digestion	Completed			varies	11/20/00	EMIL		
Lead	5,360	mg/kg	1.0	6020	11/21/00	EMIL	7439-92-1	

Analytical Laboratory Report

Lab Sample ID: S03803.18
Sample Tag: 104-8
Collected Date/Time: 11/10/2000 15:41
Matrix: Paint Chip
COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	whirlpak	none	Yes	RT	No Ice

Analysis	Results	Units	MDL	Method	Date Run	Analyst	CAS #	Flags
Metals								
Digestion	Completed			varies	11/20/00	EMIL		
Lead	2,060	mg/kg	1.0	6020	11/21/00	EMIL	7439-92-1	

Analytical Laboratory Report

Lab Sample ID: S03788.20
Sample Tag: 104-09
Collected Date/Time: 11/09/2000 10:10
Matrix: Solid/Scrape
COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	whirlpak	none	Yes	RT	No Ice

Analysis	Results	Units	MDL	Method	Date Run	Analyst	CAS #	Flags
Metals								
Digestion	Completed			varies	11/20/00	EMIL		
Lead	6,630	mg/kg	1.0	6020	11/21/00	EMIL	7439-92-1	

Analytical Laboratory Report

Lab Sample ID: S03788.21
Sample Tag: 104-12
Collected Date/Time: 11/09/2000 13:30
Matrix: Solid/Scrape
COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	whirlpak	none	Yes	RT	No Ice

Analysis	Results	Units	MDL	Method	Date Run	Analyst	CAS #	Flags
Metals								
Digestion	Completed			varies	11/20/00	EMIL		
Lead	3,310	mg/kg	1.0	6020	11/21/00	EMIL	7439-92-1	

Analytical Laboratory Report

Lab Sample ID: S03788.36
Sample Tag: 100-5
Collected Date/Time: 11/07/2000 18:40
Matrix: Sludge/Wipe
COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	4oz. Glass	none	Yes	RT	No Ice

Analysis	Results	Units	MDL	Method	Date Run	Analyst	CAS #	Flags
Organics								
Extraction, PCB	Completed			3550	11/15/00	JKB		
PCB Swab List								
PCB-1016	Not detected	ug/100cm2	2	8082	11/20/00	JANB	12674-11-2	M
PCB-1221	Not detected	ug/100cm2	2	8082	11/20/00	JANB	11104-28-2	M
PCB-1232	Not detected	ug/100cm2	2	8082	11/20/00	JANB	11141-16-5	M
PCB-1242	Not detected	ug/100cm2	2	8082	11/20/00	JANB	53469-21-9	M
PCB-1248	Not detected	ug/100cm2	2	8082	11/20/00	JANB	12672-29-6	M
PCB-1254	Not detected	ug/100cm2	2	8082	11/20/00	JANB	11097-69-1	M
PCB-1260	Not detected	ug/100cm2	2	8082	11/20/00	JANB	11096-82-5	M

M-Higher detection limit due to matrix interference.

Analytical Laboratory Report

Lab Sample ID: S03788.37
Sample Tag: 100-6
Collected Date/Time: 11/07/2000 19:30
Matrix: Sludge/Wipe
COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	4oz. Glass	none	Yes	RT	No Ice

Analysis	Results	Units	MDL	Method	Date Run	Analyst	CAS #	Flag
Organics								
Extraction, PCB	Completed			3550	11/15/00	JKB		
PCB Swab List								
PCB-1016	Not detected	ug/100cm2	5	8082	11/20/00	JANB	12674-11-2	M
PCB-1221	Not detected	ug/100cm2	5	8082	11/20/00	JANB	11104-28-2	M
PCB-1232	Not detected	ug/100cm2	5	8082	11/20/00	JANB	11141-16-5	M
PCB-1242	Not detected	ug/100cm2	5	8082	11/20/00	JANB	53469-21-9	M
PCB-1248	Not detected	ug/100cm2	5	8082	11/20/00	JANB	12672-29-6	M
PCB-1254	Not detected	ug/100cm2	5	8082	11/20/00	JANB	11097-69-1	M
PCB-1260	Not detected	ug/100cm2	5	8082	11/20/00	JANB	11096-82-5	M

M-Higher detection limit due to matrix interference.

Analytical Laboratory Report

Lab Sample ID: S03788.62
Sample Tag: 101-02
Collected Date/Time: 11/08/2000 18:05
Matrix: Solid/Scrape
COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	whirlpak	none	Yes	RT	No Ice

Analysis	Results	Units	MDL	Method	Date Run	Analyst	CAS #	Flags
Organics								
Extraction, PCB	Completed			3550	11/21/00	SG		
PCB Swab List								
PCB-1016	Not detected	ug/100cm2	1	8082	11/21/00	JANB	12674-11-2	
PCB-1221	Not detected	ug/100cm2	1	8082	11/21/00	JANB	11104-28-2	
PCB-1232	Not detected	ug/100cm2	1	8082	11/21/00	JANB	11141-16-5	
PCB-1242	Not detected	ug/100cm2	1	8082	11/21/00	JANB	53469-21-9	
PCB-1248	Not detected	ug/100cm2	1	8082	11/21/00	JANB	12672-29-6	
PCB-1254	Not detected	ug/100cm2	1	8082	11/21/00	JANB	11097-69-1	
PCB-1260	Not detected	ug/100cm2	1	8082	11/21/00	JANB	11096-82-5	

Analytical Laboratory Report

Lab Sample ID: S03788.47
Sample Tag: 104-10
Collected Date/Time: 11/07/2000 10:21
Matrix: Sediment/Wipe
COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz. Glass	none	Yes	RT	No Ice

Analysis	Results	Units	MDL	Method	Date Run	Analyst	CAS #	Flags
Organics								
Extraction, PCB	Completed			3550	11/15/00	JKB		
PCB Swab List								
PCB-1016	Not detected	ug/100cm2	5	8082	11/20/00	JANB	12674-11-2	M
PCB-1221	Not detected	ug/100cm2	5	8082	11/20/00	JANB	11104-28-2	M
PCB-1232	Not detected	ug/100cm2	5	8082	11/20/00	JANB	11141-16-5	M
PCB-1242	Not detected	ug/100cm2	5	8082	11/20/00	JANB	53469-21-9	M
PCB-1248	Not detected	ug/100cm2	5	8082	11/20/00	JANB	12672-29-6	M
PCB-1254	Not detected	ug/100cm2	5	8082	11/20/00	JANB	11097-69-1	M
PCB-1260	Not detected	ug/100cm2	5	8082	11/20/00	JANB	11096-82-5	M

M-Higher detection limit due to matrix interference.

Analytical Laboratory Report

Lab Sample ID: S03788.48
Sample Tag: 104-11
Collected Date/Time: 11/07/2000 10:39
Matrix: Sediment/Wipe
COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz. Glass	none	Yes	RT	No Ice

Analysis	Results	Units	MDL	Method	Date Run	Analyst	CAS #	Flag
Organics								
Extraction, PCB	Completed			3550	11/15/00	JKB		
PCB Swab List								
PCB-1016	Not detected	ug/100cm2	5	8082	11/20/00	JANB	12674-11-2	M
PCB-1221	Not detected	ug/100cm2	5	8082	11/20/00	JANB	11104-28-2	M
PCB-1232	Not detected	ug/100cm2	5	8082	11/20/00	JANB	11141-16-5	M
PCB-1242	Not detected	ug/100cm2	5	8082	11/20/00	JANB	53469-21-9	M
PCB-1248	Not detected	ug/100cm2	5	8082	11/20/00	JANB	12672-29-6	M
PCB-1254	Not detected	ug/100cm2	5	8082	11/20/00	JANB	11097-69-1	M
PCB-1260	Not detected	ug/100cm2	5	8082	11/20/00	JANB	11096-82-5	M

M-Higher detection limit due to matrix interference.

Analytical Laboratory Report

Lab Sample ID: S03803.09
Sample Tag: 104-16
Collected Date/Time: 11/10/2000 09:46
Matrix: Sediment/Wipe
COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz. Glass	none	Yes	RT	No Ice

Analysis	Results	Units	MDL	Method	Date Run	Analyst	CAS #	Flags
Organics								
Extraction, PCB	Completed			3550	11/15/00	JKB		
PCB Swab List								
PCB-1016	Not detected	ug/100cm2	2	8082	11/20/00	JANB	12674-11-2	M
PCB-1221	Not detected	ug/100cm2	2	8082	11/20/00	JANB	11104-28-2	M
PCB-1232	Not detected	ug/100cm2	2	8082	11/20/00	JANB	11141-16-5	M
PCB-1242	Not detected	ug/100cm2	2	8082	11/20/00	JANB	53469-21-9	M
PCB-1248	Not detected	ug/100cm2	2	8082	11/20/00	JANB	12672-29-6	M
PCB-1254	Not detected	ug/100cm2	2	8082	11/20/00	JANB	11097-69-1	M
PCB-1260	Not detected	ug/100cm2	2	8082	11/20/00	JANB	11096-82-5	M

M-Higher detection limit due to matrix interference.

TriMatrix Laboratories, Inc.

ANALYTICAL REPORT

O'Brien & Gere
Proj: Robert Bosch Corp.
Project 27737.006.610
Subm: March 14, 2001 Waste

Submittal Number: 35650- 1
Location:
Contact: Lisa M. Harvey
Phone: (616) 975-4500

	104-19	Quantitation Limit	Units
Lab Sample No:	274199		
Flash point, cl-cup	>200	68	deg. F
Cyanide Reactivity	ND	250	mg/kg
Sulfide Reactivity	ND	10	mg/kg
pH	* 7.22	1.00	pH Units
Arsenic, TCLP	ND	0.20	mg/L
Barium, TCLP	ND	0.20	mg/L
Cadmium, TCLP	ND	0.01	mg/L
Chromium, TCLP	ND	0.08	mg/L
Copper, TCLP	ND	0.02	mg/L
Lead, TCLP	ND	0.10	mg/L
Mercury, TCLP	ND	0.0004	mg/L
Selenium, TCLP	ND	0.20	mg/L
Silver, TCLP	ND	0.01	mg/L
Zinc, TCLP	ND	0.20	mg/L
TCLP Volatile Organics USEPA Method 8260B	Enclosed		
TCLP Semi-Volatiles USEPA Method 8270	Enclosed		

Sampled by: Clifford
Date Sampled: 03/14/01
Time Sampled: 00:00
Date Received: 03/20/01
Time Received: 08:45

* See attached Statement of Data Qualifications.

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TriMatrix Laboratories, Inc.

TCLP VOLATILE ORGANICS
USEPA METHOD 8260B

O'Brien & Gere
Proj: Robert Bosch Corp.
Project 27737.006.610
Subm: March 14, 2001 Waste
Sample: 104-19

Submittal Number 35650- 1
Date Sampled: 03/14/01 Time: 00:00
Date Received: 03/20/01 Time: 08:45
Analysis Date: 03/26/01
Lab Sample No: 274199

Parameter	Result mg/L	Quantitation Limit mg/L
Benzene	ND	0.10
Carbon Tetrachloride	ND	0.10
Chlorobenzene	ND	0.10
Chloroform	ND	0.10
1,2-Dichloroethane	ND	0.10
1,1-Dichloroethylene	ND	0.10
Methyl Ethyl Ketone	ND	5.0
Tetrachloroethene	ND	0.10
Trichloroethene	ND	0.10
Vinyl Chloride	ND	0.10

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TriMatrix Laboratories, Inc.

TCLP SEMI-VOLATILES
USEPA METHOD 8270

O'Brien & Gere
Proj: Robert Bosch Corp.
Project 27737.006.610
Subm: March 14, 2001 Waste
Sample: 104-19

Submittal Number 35650- 1
Date Sampled: 03/14/01 Time: 00:00
Date Received: 03/20/01 Time: 08:45
Analysis Date: 03/23/01
Lab Sample No: 274199

Parameter	Result mg/L	Quantitation Limit mg/L
1,4-Dichlorobenzene	ND	0.005
2,4-Dinitrotoluene	ND	0.005
Hexachlorobenzene	ND	0.005
Hexachlorobutadiene	ND	0.005
Hexachloroethane	ND	0.005
Nitrobenzene	ND	0.005
Pentachlorophenol	ND	0.005
2,4,6-Trichlorophenol	ND	0.005
2,4,5-Trichlorophenol	ND	0.005
2-Methylphenol	ND	0.005
3 & 4 Methylphenol	ND	0.005
Pyridine	ND	0.005

Page 3 - **End of Analytical Report**

TriMatrix Laboratories, Inc.

35650- 1

STATEMENT OF DATA QUALIFICATIONS

Analysis: pH
pH Electrometric Determination
WASTE USEPA-9045C

Qualification:

The analytical method for pH specifies to perform the test immediately after sample collection. As the pH of the sample was determined in the laboratory and not in the field, the reported pH result is considered estimated. The time and date of, and the sample temperature during analysis were:

Explanation for Sample(s) listed below:

pH analysis was completed by 8:35 AM on 3-21-01. The temperature of the sample was 25 degrees C.

Sample(s) Qualified: 274199 104-19

Page 1 - **End of Statement of Data Qualifications**

Note: This document is included as a part of the analytical report for the above referenced project and submittal, and should be retained as a permanent record thereof.

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TriMatrix Laboratories, Inc.

35650- 1

CASE NARRATIVE

Analysis: Cyanide Reactivity
Hydrogen Cyanide Released from Wastes
WASTE USEPA-7.3.3.2

Narrative:

The procedure for the analysis of Cyanide Reactivity was not performed on this sample because the corresponding Total Cyanide result is <250 mg/kg.

Sample(s) Narrated: 274199 104-19

Page 1 - End of Case Narrative

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