CITY OF FAIRBANKS

REQUEST FOR PROPOSALS

CITY HALL HEATING UPGRADE PROJECT
RFP-24-03

PROFESSIONAL CONSULTING SERVICES

PROJECT MANAGER / JEFF WHIPPLE
PHONE: 907-459-6743 / EMAIL: jwhipple@fairbanks.us

CITY ENGINEER / ROBERT PRISTASH P.E.
PHONE: 907-590-3703 / EMAIL: rpristash@fairbanks.us

PROPOSAL SUBMITTAL – DATE/TIME: October 1, 2024, 2:00PM
CITY CLERKS OFFICE, CITY OF FAIRBANKS
800 CUSHMAN STREET, FAIRBANKS, AK 99701

REQUEST FOR PROPOSAL

CITY OF FAIRBANKS
PROFESSIONAL CONSULTING SERVICES
RFP-24-03

Sealed proposals for providing Professional Consulting Services to Design a 100% complete bid package consisting of plans, specification, and construction cost estimate for the CITY HALL HEATING UPGRADE PROJECT will be received by the City Clerks, City Hall, 800 Cushman Street, Fairbanks, Alaska 99701 no later than 2:00 P.M, October 1st, 2024.

It is your **Mandatory** responsibility to register as an RFP Plan Holder by contacting Jeff Whipple, Project Manager Phone: (907) 459-6743, Email: jwhipple@fairbanks.us or Robert Pristash P.E., City Engineer Phone: (907) 590-3703, Email: rpristash@fairbanks.us. Only RFP registered holders will be allowed to propose, or will receive addenda to the RFP, if any.

A **Mandatory** pre-proposal conference will be held on Tuesday, September 10, 2024, at 10:00 A.M. at the project site, Fairbanks City Hall, Engineering Conference Room, 800 Cushman Street, Fairbanks, AK 99701 for all prospective proposers. Contact Jeff Whipple at jwhipple@fairbanks.us or Robert Pristash at rpristash@fairbanks.us. to confirm attendance. **Proposals will only be accepted from Proposers in attendance.**

RFP Documents: Interested firms may obtain RFP documents online at
The Associated General Contractors http://www.agcak.org,
The Plans Room LLC http://www.theplansroom.com and
The City of Fairbanks https://www.fairbanksalaska.us/rfps

Submittal Deadline: Sealed proposals for providing Professional Consulting Services for RFP-24-03 CITY HALL HEATING UPGRADE PROJECT shall be received by the City Clerks, City Hall, 800 Cushman Street, Fairbanks, Alaska 99701 no later than 2:00 P.M, October 1, 2024.

The City reserves the right to waive informalities not inconsistent with law and to reject any or all proposals.

Selection Process: This RFP is a single step process to select the highest scoring/best cost technical proposal. The City intends to award the Professional Services Contract to the highest scoring proposal.

Project: The RFP documents identify the Scope of Work in greater detail. This 21-page Request for Proposal titled RFP-24-03 CITY HALL HEATING UPGRADE PROJECT, is to be known as "Attachment A".

PUBLISH: FAIRBANKS DAILY NEWS MINER, August 30th, September 1st & 3rd, 2024

Jeff Whipple
Project Manager
City of Fairbanks

CITY OF
FAIRBANKS

REQUEST FOR PROPOSAL
COVER SHEET

PROPOSAL DEADLINE

Date: October 1, 2024
Time: 2:00pm

ADVERTISE DATE:
August 30th, September 1st & 3rd, 2024

PROJECT NO: RFP-24-03
FAIRBANKS CITY HALL

DELIVER PROPOSALS TO:
Office of the City Clerk
City of Fairbanks
800 Cushman Street
Fairbanks, Alaska 99701

Proposals Delivered to Another Location Will Not Be Considered.

PROJECT MANAGER

JEFF WHIPPLE
City of Fairbanks Engineering Dept.
800 Cushman St., Fairbanks, AK 99701
Office: (907) 459-6743
Cell: (907) 888-5593
Email: jwhipple@fairbanks.us

SECTION FOR VENDOR USE: RETURN THIS ORIGINAL, COPY FOR YOUR FILES

PROJECT:_____
DATE OF PROPOSAL:_____
BUSINESS NAME: _____
BUSINESS LICENSE NUMBER:_____
MAILING ADDRESS:_____
PHYSICAL ADDRESS:_____
TELEPHONE NUMBER:
_____FAX:_____

BY:_____TITLE:_____
(signature)

THIS IS NOT AN ORDER. THE ATTACHED TERMS AND CONDITIONS SHALL BECOME PART OF ANY CONTRACT RESULTING FROM THIS REQUEST FOR PROPOSAL. PROPOSALS SHALL BE SUBMITTED IN THE INDICATED FORMAT; ORIGINAL SIGNATURES MUST BE SUBMITTED ON THE FORM PROVIDED

TABLE OF CONTENTS

Announcement	2
RFP Cover Sheet	3
Table of Contents	4
INFORMATION FOR PROPOSERS	
Mandatory Pre-proposal Conference	5
Contract Documents	5
Contract Price Submittal	5
Proposal Format	5
Quantity & Delivery	6
Proposal Questions	6
Proposal Due Date	6
Selection Procedure	7
Rejection of Proposals	7
Contractural Requirements	7
Insurance	7
Lobbying	8
Disclaimer	8
Taxes	8
Local Preference	8
Addendum Acknowledgement	8
PROPOSED SCOPE OF WORK	
General Specifications	9
Scope of Work – Overview / Tasks / Design Considerations / Work Schedule	9
Final Design	10
Tasked Deliverables	10
Tasked Deliverables Schedule Dates	12
BACKGROUND INFORMATION	12
ENERGY SOURCE UTILITY LOCATIONS	12
CITY HALL FLOOR PLAN DIAGRAMS	13
DEMOLITION AND HAZARDOUS MATERIALS	13
CITY HALL REFERENCE PROJECTS	14
EXHIBIT "A" EVALUATION FORM	15
EXHIBIT "B" CONTRACT FORM	16
EXHIBIT "C" CONTRACT PRICE SUBMITTAL	18
EXHIBIT “D” NON-COLLUSION AFFIDAVIT	21
APPENDIX “A” SITE PLANS WITH UTILITY LOCATIONS	
APPENDIX “B’ CITY HALL FLOOR PLAN DIAGRAMS	
APPENDIX “C” CITY HALL DEMOLITION & HAZARDOUS MATERIALS	
APPENDIX “D” CITY HALL REFERENCE PROJECTS	

INFORMATION FOR PROPOSERS
RFP-24-03

1. **MANDATORY PRE-PROPOSAL CONFERENCE:** A Mandatory pre-proposal conference will be held on Tuesday, September 10, 2024, at 10:00 A.M. at the project site, Fairbanks City Hall, Engineering Conference Room, 800 Cushman Street, Fairbanks, AK 99701 for all prospective proposers. Contact Jeff Whipple at jwhipple@fairbanks.us to confirm attendance. **Proposals will only be accepted from Proposers in attendance.**

2. **CONTRACT DOCUMENTS:** The "Request for Proposal", the "Information for Proposers", "Specifications", and the "City of Fairbanks Professional Services Contract", attached, and modified appropriately to fit this project, shall form the contract. Vendors must examine each of the contract documents, inform themselves of the conditions and make their own estimate of any or all difficulties attendant upon furnishing the equipment as desired.

3. **CONTRACT PRICE SUBMITTAL:** The Contract Price Submittal shall be submitted concurrently on the Proposal Price Form, included in Exhibit C, in a separate sealed envelope. Provide summary of labor and expenses with "Tasked Deliverables by Specialty and Associated Hourly Fees". State on the Proposal Price Form the lump sum price in both figures and words. The words shall prevail. The proposal must be signed by an authorized agent of the proposer.

4. **FORMAT:** Proposals shall have a maximum of 20 pages, excluding resumes, cover sheet, letter of transmittal, dividers, table of contents, evidence of Alaska Business License or Professional Registrations. The use of lay-flat binders is encouraged. The proposal shall be printed on 8-1/2" X 11" sheets using standard type size. All entries and required signatures on Proposal and Contract Documents must be completed either typewritten or in BLACK INK.

   Proposals shall contain the following information:

   A. Present proposed project manager and staff, including their detailed qualifications and experience. Identify key team members by name. Clearly indicate the degree of actual project participation by each identified team member and the work location.

   B. Provide the business history of your firm, particularly with similar projects. Indicate current workload and list all primary projects your firm is presently working on or will be working on during the design of this project. Provide references for each of these projects and most similar past projects. Provide your firm's qualifications and experience. Include cold climate engineering and design experience.

   C. Provide a breakdown, illustrating man-hours applied to the Tasked Deliverables by specialty. Categorize by Deliverables, 35%, 65%, 95% and 100% Design.

   D. Describe your proposed plan/work schedule for accomplishing the objectives of this project. Indicate ability to perform the contract within specified time without delay or interference. Review your methodology and management, including organizational structure of the proposed project staff and / or sub consultants.
   E. Demonstrate the financial resources of the firm are adequate to perform the contract.

F. Indicate employment practices of the firm with regard to women and minorities.

G. Provide a list of any subcontractors planned to be used. The list shall include the location of the place of business for each subcontractor and evidence of their valid Alaska business license and registration as required.

H. Cost. Provide the City with your proposed payment schedule, and method for compensation within the Contract Price Submittal.

I. Any additional information which may warrant special consideration.

5. **QUANTITY AND DELIVERY:** Deliver six (6) proposal copies to the address below before the submittal deadline. Package(s) containing proposals must be sealed, marked, and addressed as shown in the example below. NO PROPOSALS SHALL BE ACCEPTED BY FAX. Neither the City nor their officers, agents or employees shall be responsible for the premature opening of, or failure to open any proposal not properly addressed and identified.

Proposer's Return Address: _____
_____

City Clerk RFP-24-03
Fairbanks City Hall
800 Cushman Street
Fairbanks, Alaska 99701-4615

RFP Title: **City Hall Heating Upgrade Project**

Submittal Date: October 1, 2024

6. **PROPOSAL QUESTIONS:** Shall be in writing and received by the Project Manager no later than seven calendar days prior to proposal submittal date so that any necessary amendments or clarification can be published and distributed to all known proposers. Address all questions, objections or comments to Jeff Whipple, Project Manager, Engineering Department, City of Fairbanks, 800 Cushman Street, Fairbanks, Alaska 99701-4615. Office: (907) 459-6743, Email: jwhipple@fairbanks.us

The City of Fairbanks Project Manager shall provide all such corrections and any supplemental instructions in the form of addenda electronically to:

- http://www.agcak.org
- http://www.theplansroom.com
- https://www.fairbanksalaska.us/rfps

7. **PROPOSAL DUE DATE:** Proposals shall be due at the **City Clerk Office at 800 Cushman Street, Fairbanks, Alaska, 99701-4615 by October 1, 2024 at 2:00 PM.** Proposals shall be considered proprietary and confidential information, until completion of the Design Consultant Selection Procedure. Upon completion of the Selection Procedure, the written proposals submitted by all interested firms shall be considered the property of the City. The City of

Fairbanks reserves the right to postpone the submittal date of proposals and will give written notice of any such postponement to all known holders of the contract documents.

8. **SELECTION PROCEDURE:** The selection of a Firm for the proposed project shall be based upon a thorough and subjective consideration of each firm's ability to perform the services described in the RFP. The following procedure will be observed in the selection of the Firm for the project:

Qualifications, Technical Proposal and Fixed Price Proposal.

THE CITY's selection team will evaluate each responsive proposal submitted.

9. **REJECTION OF PROPOSALS:** The City reserves the right to reject any and all proposals in response to this RFP that are deemed not to be in its best interest. The City further reserves the right to cancel or amend this RFP at any time and will notify all registered Proposers accordingly.

10. **CONTRACTURAL REQUIREMENTS:** A binding contract between the successful Proposer and the City is subject to approval by the City Council. The rights and obligations of the contract shall become effective and binding upon the contracting parties only after the "City of Fairbanks Professional Services Contract", is signed by the Consultant and City Mayor. No other act, oral, written, or implied, shall constitute acceptance of a proposal.

The consultant chosen will be expected to comply with all Federal, State, Borough and City laws and statutes. Sections from State of Alaska Statutes and City of Fairbanks Code of Ordinances are listed, for your reference, because of their particular applicability to this project.

A. Alaska Professional Registration Requirements - AS 08.48.

B. Alaska Employee Preference Requirements - AS 36.10.010 through 36.10.125.

C. City of Fairbanks Purchasing Ordinance, particularly - Fairbanks General Code Section 54.201 - 54.208: Competitive Sealed Proposals.

D. City of Fairbanks Business License, State of Alaska Business License.

11. INSURANCE:

Consultant shall maintain throughout the period of this contract, insurance in the following minimum requirements:

A. Comprehensive Automobile Liability Insurance: The Consultant shall cover all owned, hired, and non-owned vehicles with coverage limits not less than $500,000 single limit per occurrence for bodily injury and property damage.
B. Workers' Compensation and Employers' Liability Insurance: Statutory requirements by the applicable state law or regulation. Employers' Liability insurance shall be $100,000 each

accident for bodily injury, $500,000 policy limits for bodily injury by disease, $100,000 per employee for bodily injury by disease.

C. Professional Liability Coverage: In the amount of $500,000, or the contract ceiling price, whichever shall be greater. A payment bond maybe required in lieu of professional liability coverage.

D. Without limiting its indemnification, the Consultant shall maintain, until acceptance of the project by the Owner, all insurance specified, and minimum limits set forth. All insurance limits are minimums and if Consultant's policies contain higher limits, the Owner shall be entitled to such limits. The Owner, at its sole discretion may raise or lower the above limits.ional Liability Coverage: In the amount of $500,000, or the contract ceiling price, whichever shall be greater. A payment bond maybe required in lieu of professional liability coverage.

12. **LOBBYING:** The RFP selection process shall not be compromised or distorted by private lobbying outside the procedures designated to award the best proposal for the City and the public. No proposer may disclose his / her proposal to members of the City Council or City Employees prior to the date and time when all such proposals are to be submitted. After the proposals are submitted, the City shall select those proposals which are responsive and which merit further evaluation through the Selection Process. Any person whose proposal is selected for further discussion shall confine all contacts with the City representatives to those permitted by the formal selection procedures. Any person whose proposal is not selected must not discuss the matter with City employees or City Council members, but may file a protest under the City procurement code, FGC Chapter 54, Article V.

13. **DISCLAIMER:** The City assumes no responsibility for any interpretation or representations made by any of its officers, agents, or employees unless interpretations or representations are incorporated in a written amendment to the RFP.

14. **TAXES:** The City of Fairbanks does not pay excise tax and will furnish the successful proposer with Exemption Certificates upon request.

15. **LOCAL PREFERENCE:** Local Preference will be used in selecting the consultant.

16. **ADDENDUM ACKNOWLEDGEMENT:** Proposer acknowledges receipt of the following Addendums (give number and date of each). Incomplete Proposals will not be accepted.

Addenda #	Date Issued	Addenda #	Date Issued

CITY OF FAIRBANKS
RFP-24-03 CITY HALL HEATING UPGRADE
PROFESSIONAL SERVICES

GENERAL SPECIFICATIONS:

The City of Fairbanks is seeking qualified consulting firms for performing Architectural and Engineering Design to analyze, propose and design heating system upgrades to the Historic Patrick B. Cole City Hall located at 800 Cushman Street in downtown Fairbanks, Alaska.

1. SCOPE OF WORK

Overview:

The City of Fairbanks requires the steam heating system at City Hall, 800 Cushman St. Fairbanks, AK 99701, be upgraded and the construction be architecturally designed to serve the needs of City Hall administration and staff. The design contract will be for all services required for the following:

The project will include evaluating the exiting steam heat system and proposing renovation / upgrade of the building heating system infrastructure. Upgrades within the 66,500 square-foot City Hall Building shall include but may not be limited to heat source, service to building, interior piping in building, unit heaters in rooms, type of controls and future capacity for the Air Handling System. Plans to include phasing or sequencing of new heating system into building areas. City Hall will be occupied and in use at all times.

Development of a comparative analysis of system requirements for installation, maintenance and operational cost parameters for steam, hot water or natural gas energy sources will dictate the type of heat exchanger, boiler and related components required for the system.

Results from the comparative analysis shall be utilized for the design of the energy source (steam, hot water or natural gas) external service lines connecting to the interior heating system upgrade.

Tasks include:

1. Comparative analysis of steam, hot water and natural gas energy sources.
2. Development of a heating system upgrade design (in coordination with the City Engineer) and preparation of budget estimates to design successive phases of the proposed renovation.
3. Production of plans, specifications, and engineer's estimate.
4. Construction Administration support from the contractor bidding phase to project completion.

A. The scope of work will include:

1. Selection and justification of heat source including cost comparisons for design, construction and operating. Heat sources available are hot water or steam from Aurora Energy Solutions, LLC, or natural gas from Interior Alaska Natural Gas Utility. Once a heat source is identified and mutually agreed upon, the chosen firm will proceed with next following scope of work.
2. Produce ready to advertise Construction Plans, Specifications, Submittal Register and Construction Cost Estimate for the proposed City of Fairbanks City Hall Heating Upgrade Project. In addition, the Consultant will provide construction administration during the bidding, award and construction process consisting of but not limited to; bidders questions, addendums, submittal review and approval, DCVRs, RFPs, re-issued plan sheets, etc. The Consultant will be required to provide all materials and personnel necessary to complete the required work and to pursue the project vigorously with relative independence within the limitations of the contract and the law. The consultant will work with the City of Fairbanks City Engineer and Building Department for approval of design.
3. Remove or seal in place hazardous materials that may be present and only those associated with the heating upgrades.

B. Design Requirements:

1. Building access during construction.
2. Building to be accessed by public and staff continuously through the year.
3. Phasing or sequencing new heating system into building areas to avoid disruptions of building uses during business hours.
4. Evaluate installation of a parallel heating system.
5. Seasonal construction only.
6. Maintain heat to City Hall.

C. Work Schedule:

1. Consultant may schedule site visits Monday-Friday, between 9:00 AM – 3:00 PM with the City's project manager.

2. FINAL DESIGN

Final 100% design submittal will include plans, specifications, submittal register and engineer's estimate, ready to advertise for construction. Consultant shall provide a final design report of all criteria, calculations, controlling assumptions made (as with alternate heating systems), and considerations used to derive operational, maintenance, and life cycle costs.

3. TASKED DELIVERABLES

A. Status Reports (written):

1. 1 each (due 1st of each month).
2. Consultants number of hours by individuals to complete this task.

3. All Plans shall be submitted in color.

B. 35% Design Submittal & Construction Estimate:
   1. 4 bound copies with 11" x 17" plan drawings and electronic PDF copy.
   2. (Allow two weeks for review).
   3. Consultants number of hours by individuals to complete this task.

C. 65% Design Submittal, Submittal Register & Construction Estimate:
   1. 4 bound copies with 11" x 17" plan drawings and electronic PDF copy.
   2. (Allow two weeks for review).
   3. Consultants number of hours by individuals to complete this task.

D. 95% Design Submittal, Submittal Register & Construction Estimate:
   1. 4 bound copies with 11" x 17" plan drawings and electronic PDF copy.
   2. (Allow one week for review).
   3. Consultants number of hours by individuals to complete this task.

E. Final 100% Design Submittal, Documents, Submittal Register & Construction Estimate:
   1. 2 full size 24” x 36” plan drawings
   2. 4 bound copies with 11" x 17" plan drawings.
   3. Consultant shall also provide text documents on CD rom computer disk in Microsoft Word and Excel.
   4. Drawings shall be submitted on CD rom computer disk PDF copies and Auto-Cad Release 2023 files.
   5. Consultants number of hours by individuals to complete this task.

F. Construction Administration:
   1. The City Engineering Department will provide Construction Administration.
   2. The Consultant will provide support during the bidding, award and construction process to project completion consisting of but not limited to; bidders questions, addendums, submittal review and approval, DCVRs, RFPs, re-issued plan sheets, etc. as requested by the Engineer.
   3. Consultants number of hours by individuals to complete this task.

G. Within Contract Price Submittal, identify Consultant’s individual hourly rates for this project. The total number of hours to complete each Tasked Deliverables. The total final dollar amount for all tasks.

H. Additional design subprojects may be assigned in accordance with available funding.

4. TASKED DELIVERABLES SCHEDULED DATES

A.	Advertise for Proposals	August 30, September 1 & 3, 2024
B.	Mandatory Pre-proposal Meeting	September 10, 2024
C.	Request for Proposals Due	October 1, 2024 2:00 PM
D.	Selection Committee Evaluations	October 1 to October 11, 2024
E.	Notice of Intent to Award.	October 15, 2024
F.	City Council Authorization	October 28, 2024
G.	Notice of Award	October 30, 2024
H.	Notice to Proceed	Flexible Dates
I.	35% Submittal	December 6, 2024
J.	Review Period	December 6– December 13, 2024
K.	65% Submittal	January 10, 2025
L.	Review Period	January 10 – January 17, 2025
M.	95% Submittal	February 7, 2025
N.	Review Period	February 7– February 14, 2025
O.	Final 100% Design Documents	March 4, 2025

The City reserves the right to modify Scheduled dates.

5. BACKGROUND INFORMATION

The City Hall site is located on Block 104A, Fairbanks Townsite, Plat 2001-51, and is located at 800 Cushman Street, Fairbanks, Alaska 99701. City Hall is a reinforced concrete structure dating to the thirties originally constructed as a school. Two major additions have been added to this structure. Heat was originally suppplied by on-site steam boilers. Currently, district heat steam provides the heat source.

6. ENERGY SOURCE UTILITY LOCATIONS

Energy source utility locations include the existing district heat steam provided by Aurora Energy and water service provided by Golden Heart Utilities enter the north side of the city hall building from 8th Avenue. Interior Gas Utility (IGU) has a gas main stubbed onto 8th Avenue from Cushman Street. Aurora Energy's district hot water mains are located within the intersection of 10th Avenue and Turner Street near the Fairbanks Police Department parking lot. Additional utility information can be referenced in:

APPENDIX "A" SITE PLANS WITH UTILITY LOCATIONS:

- Old Main Utility Connections_Original H2O & Steam (1940+/- No Date)
- Cushman Complete Street As-built Sheet 8.03 Steam-Cond-Gas (Feb 2018)
- District Heat 10th & Turner / Steam at Cushman_Aurora Energy (Jan 2018)
- City Hall Piping - Hot Water - Aurora Energy (Sept 2021)
- Aurora Energy & COF Heating Cost Analysis (June 2022)
- IGU City Hall 8th Ave Gas Line (June 2022)

- IGU City Hall 8th Ave Gas Service (June 2022)

7. CITY HALL FLOOR PLANS

City Hall floor plan exhibits for the Basement Level, First Floor Level, Second Floor Level and Boys & Girls Club Lease Area can be referenced in:

APPENDIX "B" CITY HALL FLOOR PLAN DIAGRAMS:

- BOYS & GIRLS CLUB LEASE_200504 B&GC LEASE AREA (May 2020)
- City Hall - BASEMENT LAYOUT_11X17 (October 2019)
- City Hall - 1ST FLOOR LAYOUT_11X17_Areas & Dimensions (Oct. 2019)
- City Hall - 1ST FLOOR LAYOUT_11X17_Classrooms_Areas & Dimensions (Oct. 2023)
- City Hall - 2ND FLOOR LAYOUT_11X17_Areas & Dimensions (Oct. 2019)

8. DEMOLITION AND HAZARDOUS MATERIALS

Design parameters may require demolition and removal of both existing non-functioning steam boilers with related components as well as existing steam system components for installation of the new heating system. Sequence demolition and installation activities to minimize disruptions of building uses.

The City has not performed a recent Hazardous Materials Survey specific to this project. However, previous work in various areas of the building have identified, abated and encapsulated hazardous materials within specific areas of city Hall.

Additional Demolition and Hazardous Materials information can be referenced in:

APPENDIX "C" CITY HALL DEMOLITION AND HAZARDOS MATERIALS

- Main School Asbestos Report 1989
- ENG 1 2 Main School City Hall 1 (2nd Floor Asbestos Survey July 1985)
- ENG 2 Main School City Hall 1 (Basement Asbestos Survey July 1985)
- City Mech Repairs_ Drawings_FB-10-16 (Feb 2010)
- City Hall HM Assess v5. w attached pdf (Mar 2017)
- Demo Fig 1-12, Demo Fig 13-23, Demo Fig 24-26 (2021)
- City Hall Child Care Facility HAZ Report w-att (Aug 2023)

9. CITY HALL REFERENCE PROJECTS

A. A 2005 City Hall Mechanical and Electrical Report completed by ASCG provides an in-depth building investigation with a Summary of Recommendations for both mechanical and electrical systems. The Summary of Recommendations for Mechanical Systems includes Heating, Ventilation, Air Conditioning and Fire Protection systems.

B. A City Hall Heating Upgrade Cost Evaluation of steam, hot water and natural gas energy sources with data for 2021, 2022 and 2023 was partially completed. Additional specifics to cost of heat system components and construction are needed. Aurora Energy provided building energy consumption and energy cost data (MMBTU) for City Hall Steam and Class "C" Hot Water for both the Fairbanks Fire Department and Fairbanks Police Department. Aurora Energy provided an incentive of change from Class "C" Rates to Class "D" Rates for Hot Water based on the increased volume of City Hall. The down side was the construction cost to get the hot water service from 10th Avenue to City Hall.

Additional research results include:

1. A change from indirect billing to direct billing for the City owned Fairbanks Parking Garage utilizing Aurora Energy's hot water heat, provided the additional volume necessary to meet the threshold necessary to upgrade from Class "C" Rates to Class "D" Rates for Hot Water, without City Hall.

2. Energy costs for both Aurora Energy's Class "C" Rates and Class "D" Rates for Hot Water were subject to annual increases comparable to market driven fuel prices. IGU's Natural Gas rates for were also subject to annual increases.

3. Energy costs for Aurora Energy's Steam did not change. Aurora Energy's Steam rate has been capped at the current rate since 12/29/2016 by the Regulatory Commission of Alaska (RCA).

Additional information on City Hall Reference Projects is located in:

APPENDIX "D" CITY HALL REFERENCE PROJECTS:

- City Hall Mech & Elec Report 2005 ASCG Inc_FB-05-09 (November 2005)
- Aurora Energy Rate Change & COF Savings (May 2023)
- RCA_Aurora Energy Rate Change Email (May 2023)
- RCA_ Aurora Energy_Tarriff Sheet No 35 (May 2023)
- RCA_ Aurora Energy_Tarriff Sheet No 36 (June 2023)
- Rate Change Email (June 2023)
- Existing Building Code Reference Email (October 2023)

EXHIBIT "A" REQUEST FOR PROPOSAL EVALUATION FORM

FIRM: _____

REVIEWER:_____ DATE:_____

Evaluation Criteria **Points x Weight = Product**

		Point	Weight	Product
1.	Objectives & Services: Determine how well the proposer understands the objectives of the project and the services required for each phase. How well does the proposer show how the services meet the objectives? Have design considerations and alternatives been addressed? Has the proposer identified problems and opportunities?	0-5	15	
2	Qualifications & Experience: FIRM & STAFF, How well has the firm demonstrated that it has the qualifications and experience to complete the required services on time, within budget and with quality results?	0-5	15	
3	Qualifications & Experience: PROJECT MANAGER, Evaluate the qualifications and experience the Project Manager brings to the project, and individual's ability to complete project on time and in a professional manner.	0-5	15	
4	Qualifications & Experience: Evaluate special knowledge of large-scale heating upgrade design indicated by the proposer and / or Proposer's sub consultants, including cold climate design and construction considerations.	0-5	20	
5	Location: PROJECT MANAGER, A Project Manager based in the Fairbanks North Star Borough will be awarded 5 points and a Project Manager based inside Alaska will be awarded 2 points.	0-5	5	
6	Location: FIRM, A firm with an office in the Fairbanks North Star Borough will be awarded 5 points and a firm with an office inside Alaska will be awarded 2 points.	0-5	5	
7	Methodology and Management: Evaluate the Proposer's descriptive approach to performing the project, considering Proposer's detailed description of services to be provided. Review and evaluate the Proposer's management plan and organization and coordination of joint proposals.	0-5	15	
8	Quality of Proposal and Conformance to RFP: Assess the overall quality and effort evident in preparing and submitting the proposal, review and evaluate conformance to the RFP format requirements	0-5	10	
9	Workload and Resources: Evaluate the current and pending time commitments of the proposer, staff and sub consultants and Proposer's adequacy of personnel, facilities, and other resources necessary to perform the services.	0-5	5	
10	Business History and References: Consider the length of time the proposer has been in business under the current name or prior names. Evaluate the number of prior projects performed by the proposer that are similar to the services under this RFP. Review business and project references.	0-5	5	
11	Manhour Effort and Task Breakdown: Review and evaluate the Proposer's explanation of manhours and costs applied to the Tasked Deliverables by team member, and the logical flow of task breakdown.	0-5	20	

TOTAL: _____

EXHIBIT "B"

CITY OF FAIRBANKS
ENGINEERING DEPARTMENT

CITY HALL HEATING UPGRADE PROJECT
RFP-24-03
PROFESSIONAL SERVICES CONTRACT

THIS AGREEMENT, made at Fairbanks, Alaska, this _____ day of _____ 2024, by and between the City of Fairbanks, a municipal corporation of the State of Alaska, hereinafter referred to as the "City," and _____ of _____, hereinafter referred to as "Consultant."

WHEREAS, the City has requested bids for professional consulting services for engineering expertise on the requisite specifications for the RFP-24-03 CITY HALL HEATING UPGRADE PROJECT.

NOW, THEREFORE, the City and Consultant mutually agree as follows:

1. Scope of Services. The scope of work will be set forth in the scope of services which is attached to and made a part of this contract as Attachment A.

2. Compensation. The City agrees to compensate Consultant for all services necessary to perform all tasks listed in Attachment A for the total price of $XXX.XX (XX thousand XX hundred and XX dollars and XX cents). Any future purchases and or contract renewals are subject to the availability and appropriation of City or Federal funds.

3. Time Required to Perform the Scope of Services. Consultant agrees to begin work immediately following the date of written notice to proceed by the City and according to the terms described in Attachment A. Such work shall be conducted in accordance with the schedule described in Attachment A.

4. Project Organization. This project shall be the direct responsibility of the Consultant's Principal, NAME, who will participate in key elements of the project.

5. Contract Administration. Consultant shall be responsible to, and under the control of, the City Engineer, Robert Pristash, in the performance of its obligations under this agreement. Consultant shall communicate with the City through Jeff Whipple as manager of the project for the City.

6. Delegation/Assignment. The services and duties to be performed by Consultant are mutually agreed to be unique and personal, and neither party shall assign rights nor delegate any duties under this agreement without the written consent of the other.

7. Equal Opportunity Employers. The City and Consultant are both Equal Opportunity Employers and, as such, agree they will not discriminate against any employee or applicant for employment because of race, religion, color, national origin, sex, sexual orientation or gender identity or expression, age, marital status, pregnancy, parenthood, physical or mental handicap, or political affiliation.

8. Termination. The obligation to provide further services under this agreement may be terminated, (a) by the City with or without cause upon seven (7) days' notice to Consultant and, (b) by Consultant for cause upon seven (7) days written notice to the City. In the event of termination by the City for cause, Consultant will be paid for services rendered and expenses incurred as of the date of notification. In the event of termination by Consultant for cause or by the City without cause, Consultant will be paid for services rendered and expenses incurred as of the date of notification plus reasonable demobilization expenses not to exceed ten percent (10%) of the portion of the ceiling or lump sum price allocated to the task or phase in progress when termination occurs. In such case, Consultant shall provide to the City any partially completed information, data, results, computations preliminary information, draft reports or similar partially completed work which are in the possession of Consultant and for which Consultant claims any payment from the City. City acknowledges it may not treat such partially completed work as final. In no case will the total compensation exceed the total ceiling price in effect at the time of termination unless mutually agreed in writing.

9. Jurisdiction: Choice of Law. Any civil action arising from this contract shall be brought in the Superior Court, Fourth Judicial District, for the State of Alaska, at Fairbanks, or in the United States District Court, for the District of Alaska at Fairbanks. The law of the State of Alaska shall govern the rights and duties of the parties under this contract.

10. Entire Agreement. This contract and any writings incorporated by reference herein embody the entire agreement of the parties. This contract shall supersede all previous communications, representations or agreements, whether oral or written, between parties.

CONSULTANT FIRM:	CITY OF FAIRBANKS:
_____	_____
By: PROJECT MANAGER	By: David Pruhs
Title: _____	Title: Mayor
Date: _____	Date: _____
APPROVED AS TO FORM:	APPROVED AS TO CONTENT:
_____	_____
By: Thomas A. Chard II	By: Robert Pristash, P.E.
Title: City Attorney	Title: City Engineer
Date: _____	Date: _____

EXHIBIT "C" **FIXED PRICE PROPOSAL FORM**

Place: Fairbanks, Alaska

Date: _____, 2024

Project: CITY HALL HEATING UPGRADE PROJECT

Project No.: RFP-24-03

Proposal from _____(hereinafter called the PROPOSER), a corporation, organized and existing under the laws of the State of _____, a partnership, or an individual doing business as _____, to the **City of Fairbank**, **Alaska** (hereinafter called Owner).

Gentlemen:

A. The PROPOSER, in compliance with your Request for Consulting Proposals (RFP) for the design of the Project indicated above, having examined the RFP and the related documents and the site of the proposed work, and being familiar with all of the conditions surrounding the design of the proposed project, including the availability of materials and labor, hereby proposes to furnish all professional design services, labor, materials, and supplies to design the Project in accordance with the Contract Documents, within the time set forth therein, and for the price stated below.

B. The PROPOSER hereby agrees to commence work under the Contract on a date to be specified in the written Notice of Award of the Owner and to fully complete the Project within the time stipulated in the Contract Documents. The PROPOSER further agrees to pay all applicable liquidated damages in the sums as set forth in the Contract Documents.

C. The PROPOSER acknowledges receipt of the following addenda:

Addendum No. 1. dated _____

Addendum No. 2 dated _____

Addendum No. 3 dated _____

Addendum No. 4 dated _____

D. FIXED PRICE PROPOSAL AMOUNT:

CITY HALL HEATING UPGRADE PROJECT,

SUMARY OF TASKED DELIVERABLES MAN-HOUR BREAKDOWN AND COST

	TASK	HOURS	RATE/HR	SUBTOTAL	EXPENSES	TOTAL
A	Monthly Status Report					
B	35% Design Submittal					
C	65% Design Submittal					
D	95% Design Submittal					
E	100% Design Submittal					
F	Construction Administration Support					

TOTAL $_____

ALL REQUIRED.

_____ Dollars ($_____)

(In words) (In figures)

E. This proposal shall remain subject to acceptance for 60 days after the deadline of Receipt of Proposals indicated in the RFP Project Schedule. The acceptance date may only be extended by written consent of the Proposer.

F. The PROPOSER understands that the Owner reserves the right to reject any or all Proposals and to waive any informalities in the solicitation.

Within ten (10) days from date of written Notice of Intent to Award, the PROPOSER agrees to provide the required insurance, performance, and payment bonds, and execute the formal Agreement Between Owner and Design-Builder.

G. THIS PROJECT IS SUBJECT TO THE EQUAL EMPLOYMENT OPPORTUNITY (EEO) REQUIREMENTS OF EXECUTIVE ORDERS 11246 AND 11625. THE PROPOSER IS ADVISED THAT IN SIGNING THIS BID FORM HE IS MAKING CERTIFICATIONS REGARDING HIS EQUAL EMPLOYMENT OPPORTUNITY PRACTICES.

H. The PROPOSER certifies that it possesses the following valid license and registration and submits the corresponding numbers as evidence. The PROPOSER also agrees to provide copies of each within five working days of Owner's identification of PROPOSER as apparent successful PROPOSER.

Alaska Business License No.: _____

Contractor Registration (AS 08.18) No: _____

Respectfully submitted,

_____

By: _____

Typed Name and Title:

_____

(Seal if bid by Corporation)

Date: _____

Mailing Address: _____

_____

_____

Telephone: _____

Fax: _____

END, Price Proposal Form

EXHIBIT D **NON-COLLUSION AFFIDAVIT**

(To be executed prior to and submitted with the bid)

STATE OF ALASKA)
)SS
FOURTH JUDICIAL DISTRICT)

I, _____ of _____
(printed/typed name) *(firm name)*

being duly sworn, do depose and state that I (or the firm, association, or corporation of which I am a member), as a bidder on the contract to be awarded by the CITY OF FAIRBANKS for the design of that certain construction project designated:

RFP-24-03 CITY HALL HEATING UPGRADE PROJECT

in the Fairbanks North Star Borough, have not, either directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of free competitive bidding in connection with such contract.

_____
Contractor

_____ _____
By: (*signature*) (*date*)

_____
Title

(SEAL)

SUBSCRIBED AND SWORN TO before me this _____ day of _____, 2024.

_____ Notary Public in and for the State of _____.
(signature)

My commission expires:_____

CITY OF FAIRBANKS
RFP-24-03 CITY HALL HEATING UPGRADE

APPENDIX "A"

SITE PLANS WITH UTILITY LOCATIONS:

- Old Main Utility Connections_Original H2O & Steam (1940+/- No Date)
- Cushman Complete Street As-built Sheet 8.03 Steam-Cond-Gas (Feb 2018)
- District Heat 10th & Turner / Steam at Cushman_Aurora Energy (Jan 2018)
- City Hall Piping - Hot Water - Aurora Energy (Sept 2021)
- Aurora Energy & COF Heating Cost Analysis (June 2022)
- IGU City Hall 8th Ave Gas Line (June 2022)
- IGU City Hall 8th Ave Gas Service (June 2022)

EXISTING 2" STEAM, 1" COND.

MAIN SCHOOL

A/16

INSTALL HYDRANT & TIE INTO 6" W.S.P. WATER MAIN

25'

PROPERTY LINE

SIDEWALK

6" W.S.P. WATER

A/21

POINT OF ENTRY IN SCHOOL BASEMENT

EXISTING 5" STEAM, 2½" COND. 3" WATER

INSTALL 5" STEAM 2½" COND

7'

INSTALL 2" WATER LINE

8" W.S.P. SEWER

INSTALL ANCHOR

A/14

℄ 8TH AVE

GRAVEL STREET SURFACE

78.5'

78.5'

SIDEWALK

PROPERTY LINE

SIDEWALK

PROPERTY LINE

INSTALL ANCHOR

D

C

D

C

32'

17'

5'

2½'

F.H.

ASPHALT PAVEMENT

EXISTING 2" STEAM 1½" COND, 1½" WATER

PLAN

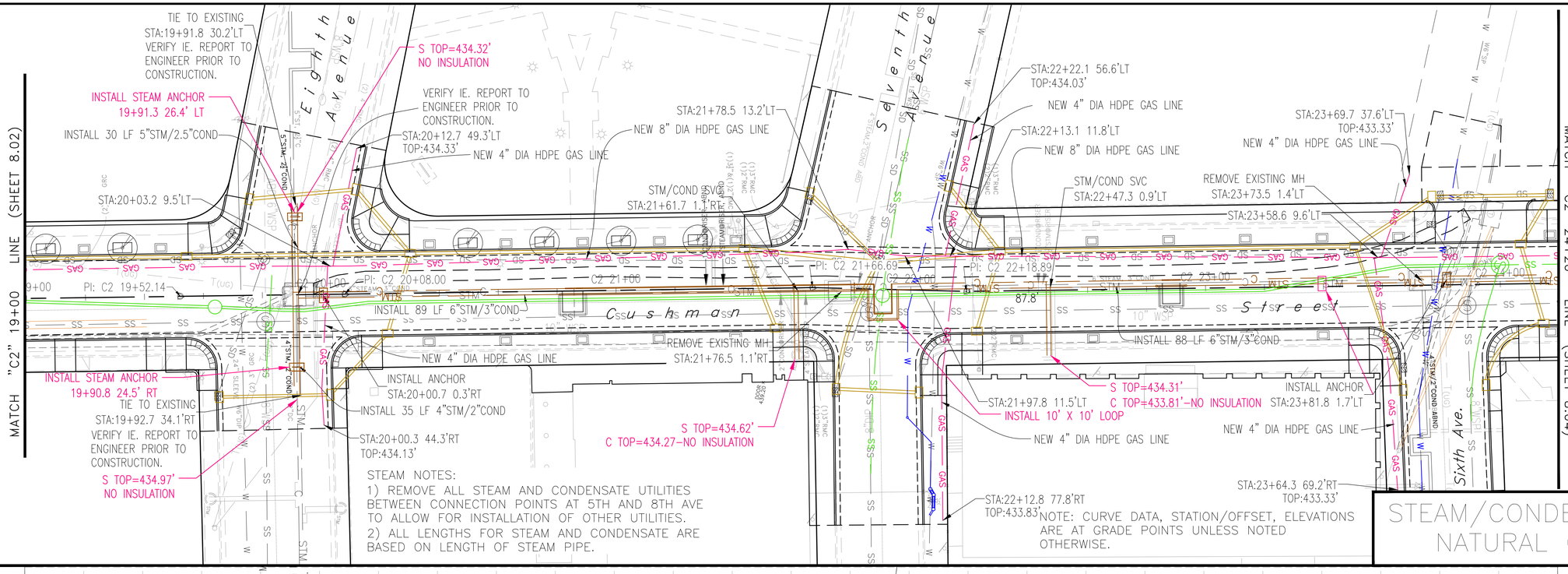
SCALE 1" = 20'

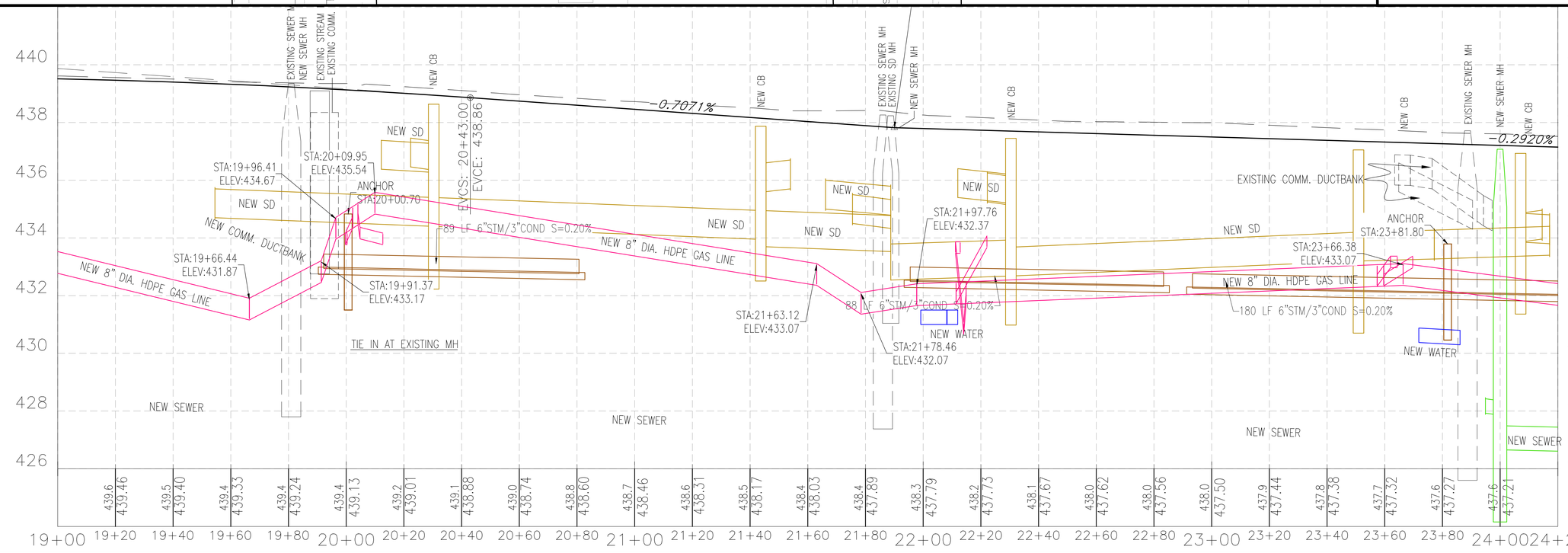
EXISTING STREET GRADE

GRAVEL STREET SURFACE

CURB

OLD MAIN UTILITY CONNECTIONS





DATE	REVISION	BY
07/22/15	RFP 2 – MODIFIED GAS MAIN	STC

SCALE: 1" = 20' HORIZ.
1" = 2' VERT.
0 20 40 60
Scale (Feet)

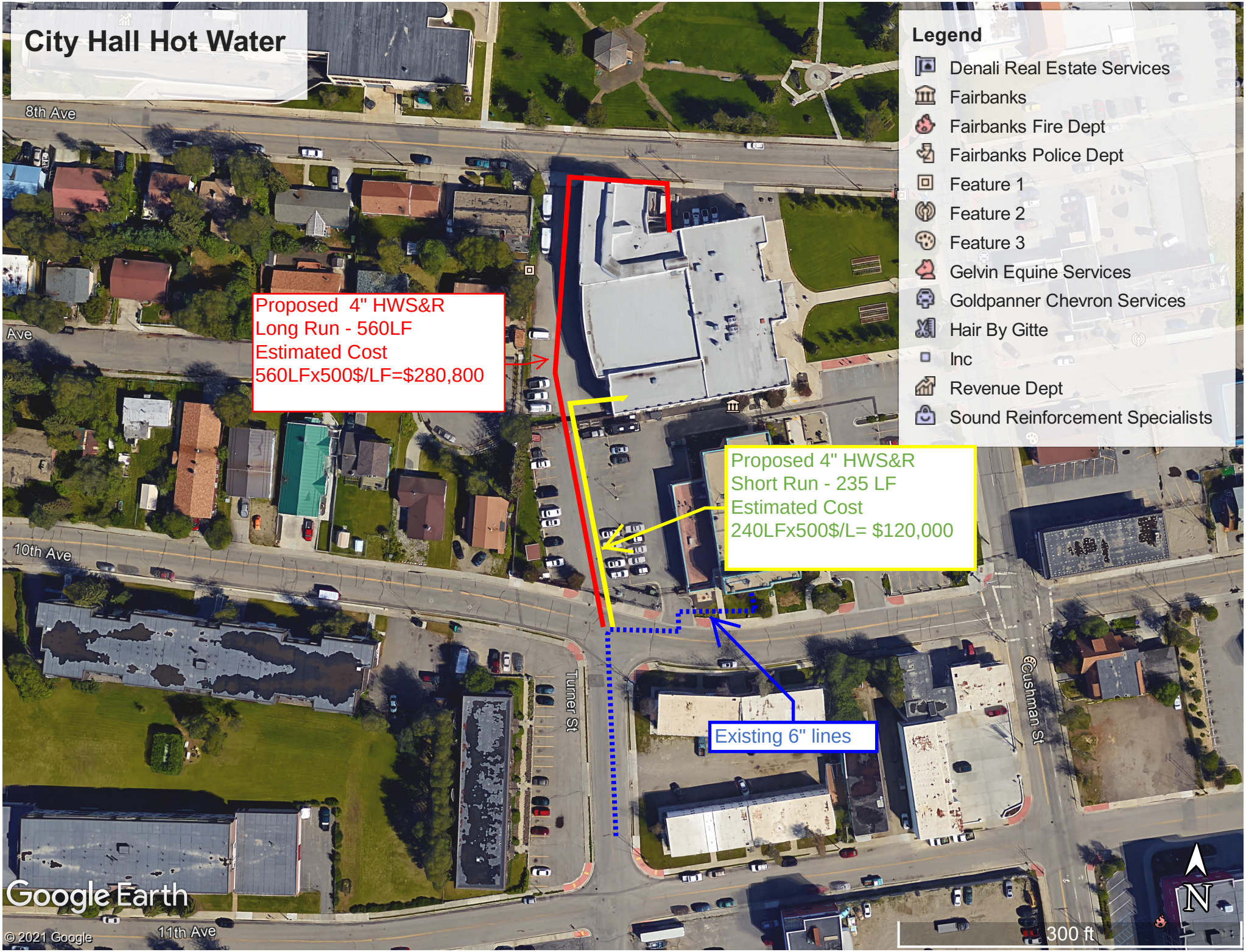
DESIGNED: C.O.F. STAFF
DRAWN: C.O.F. STAFF
CHECKED: R.H.P.
DATE: 04/22/15

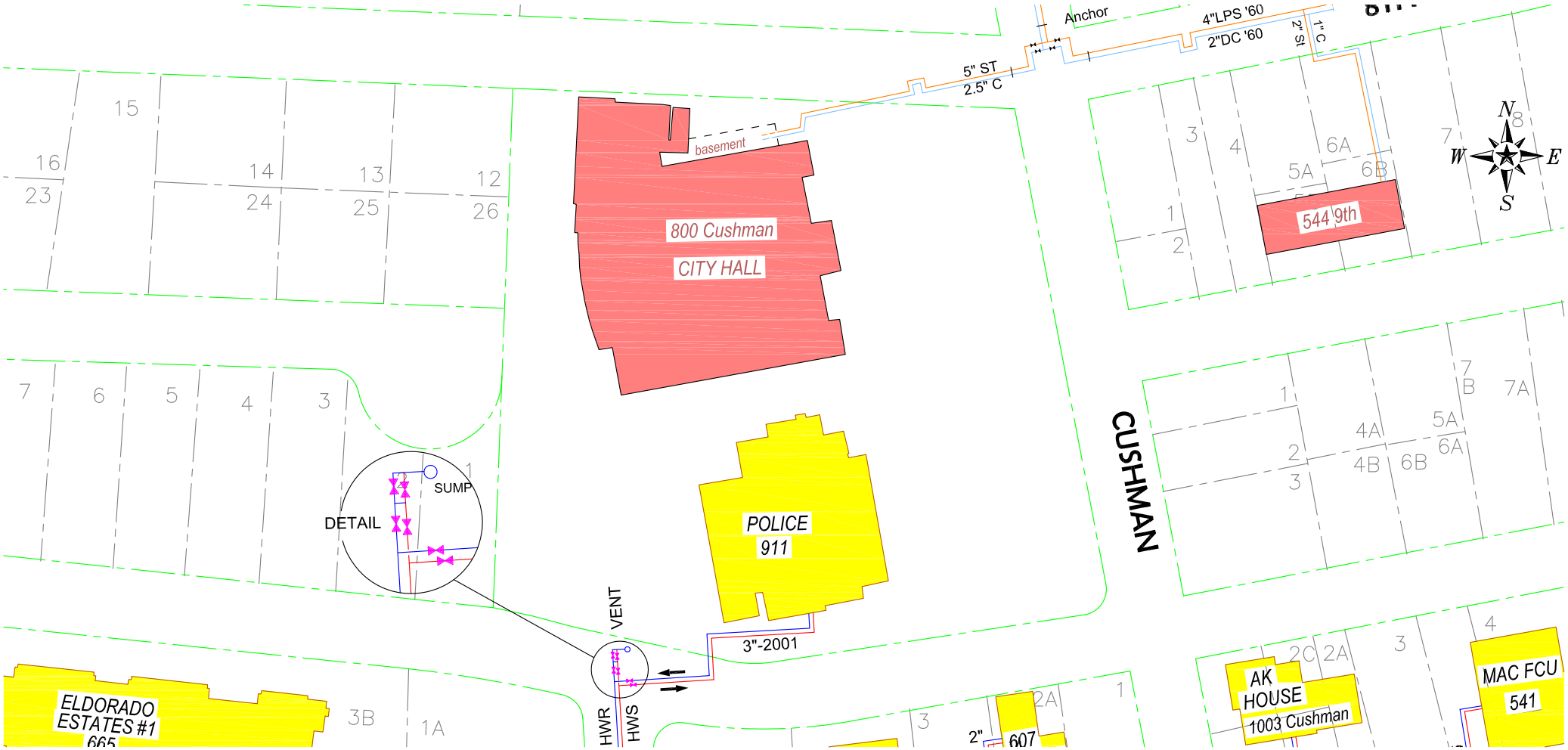
APPROVED
CITY ENGINEER
DATE

Cushman Complete Streets
PLAN AND PROFILE

CITY OF FAIRBANKS, ALASKA
Engineering Department
Project FB-15-07/77194

8.03
OF 173 SHEETS


City Hall Hot Water
8th Ave
Ave
10th Ave
11th Ave
Turner St
Cushman St
Proposed 4" HWS&R
Long Run - 560LF
Estimated Cost
560LFx500$/LF=$280,800
Proposed 4" HWS&R
Short Run - 235 LF
Estimated Cost
240LFx500$/L= $120,000
Existing 6" lines
Legend
Denali Real Estate Services
Fairbanks
Fairbanks Fire Dept
Fairbanks Police Dept
Feature 1
Feature 2
Feature 3
Gelvin Equine Services
Goldpanner Chevron Services
Hair By Gitte
Inc
Revenue Dept
Sound Reinforcement Specialists
Google Earth
© 2021 Google
300 ft
N


Anchor
4"LPS '60
2"DC '60
2" St
1" C
5" ST
2.5" C
basement
800 Cushman
CITY HALL
544 9th
N
W
E
S
CUSHMAN
POLICE
911
DETAIL
SUMP
VENT
3"-2001
HWR
HWS
ELDORADO
ESTATES #1
665
AK
HOUSE
1003 Cushman
MAC FCU
541
607
2"

AURORA ENERGY

City of Fairbanks
Heating Upgrade Cost Summary

02-Jun-22

Construction cost

DH water extension from 10th street to the north side of the building

Two (2) 6" main	**680** *ft.*	
Cost	**500** *$/ft.*	
Estimated Construction Cost	**$340,000**	

Current Rates

Class **C** Rates	(Hot Water for Police &Fire)	**$27.46** *$/mmbtu*
Projected Class **D** Rates		**$21.44** *$/mmbtu*
Steam Rates	(Steam for City Hall)	**$19.59** *$/1k pounds*

Heating Cost Comparison

Building	Usage (MMBTU)	2021 Actual Class "C" rates	2021 Projected Class "D" rates	Estimated Savings
Fire Department	3,251	$89,272.46	$69,701.44	$19,571.02
Police	3,579	$98,279.34	$76,733.76	$21,545.58
City Hall	3,438	$67,350.42	$73,710.72	($6,360.30)
Total all buildings		**$254,902.22**	**$220,145.92**	***$34,756.30***
		Hypothetical Savings %		**14%**

Additional Billing Info

Meter Charge for HW	**$10.00**	*per month*
Meter Charge for Steam	**$19.50**	*per month*

Veteran's
Memorial Park
8th Ave
8th Ave
8th Ave
8th Ave
Cushman St
FBKS City Hall
9th Ave
9th Ave
IGU Gas Line
Cushman St
FPD
10th Ave
10th Ave
10th Ave
10th Ave
Cushman St

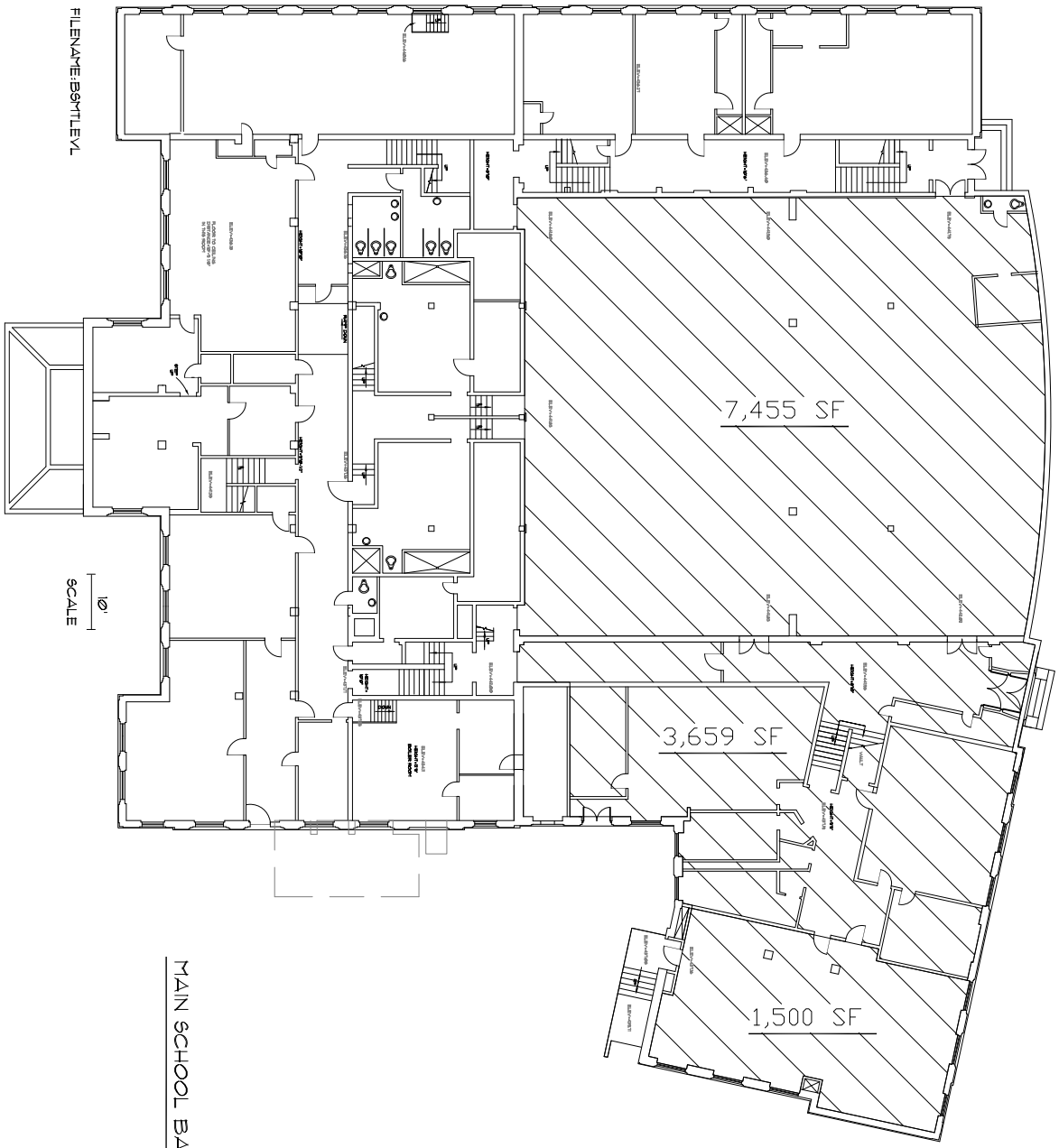
8th Ave
8th Ave
8th Ave
8th Ave
Cushman St
Cushman St
Cushman St
9th Ave
45’
Property Line
Meter location
Microsoft | State of Alaska, © OpenStreetMap, Microsoft, Esri, HERE, Garmin, SafeGraph, METI/NASA, USGS, EPA, NPS, US Census Bu

CITY OF FAIRBANKS
RFP-24-03 CITY HALL HEATING UPGRADE

APPENDIX "B"

CITY HALL FLOOR PLAN DIAGRAMS:

- BOYS & GIRLS CLUB LEASE_200504 B&GC LEASE AREA (May 2020)
- City Hall - BASEMENT LAYOUT_11X17 (October 2019)
- City Hall - 1ST FLOOR LAYOUT_11X17_Areas & Dimensions (Oct. 2019)
- City Hall - 1ST FLOOR LAYOUT_11X17_Classrooms_Areas & Dimensions (Oct. 2023)
- City Hall - 2ND FLOOR LAYOUT_11X17_Areas & Dimensions (Oct. 2019)



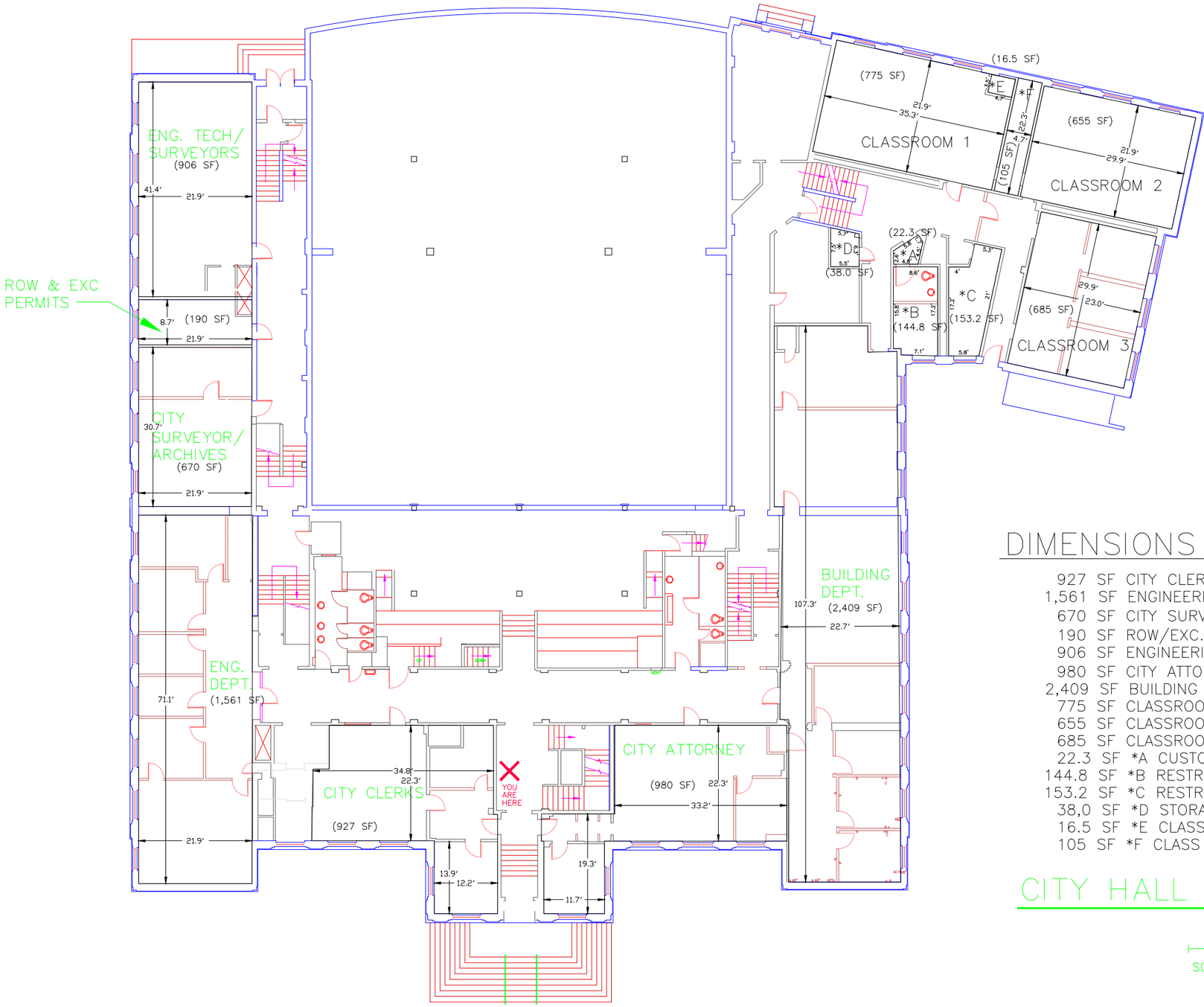
MAIN SCHOOL BASEMENT LEVEL

ATTACHMENT 1
TO
BOYS AND GIRLS LEASE

FILENAME:BSMTLEVL

EMERGENCY EXIT ROUTE
CITY HALL BASEMENT

10'
SCALE

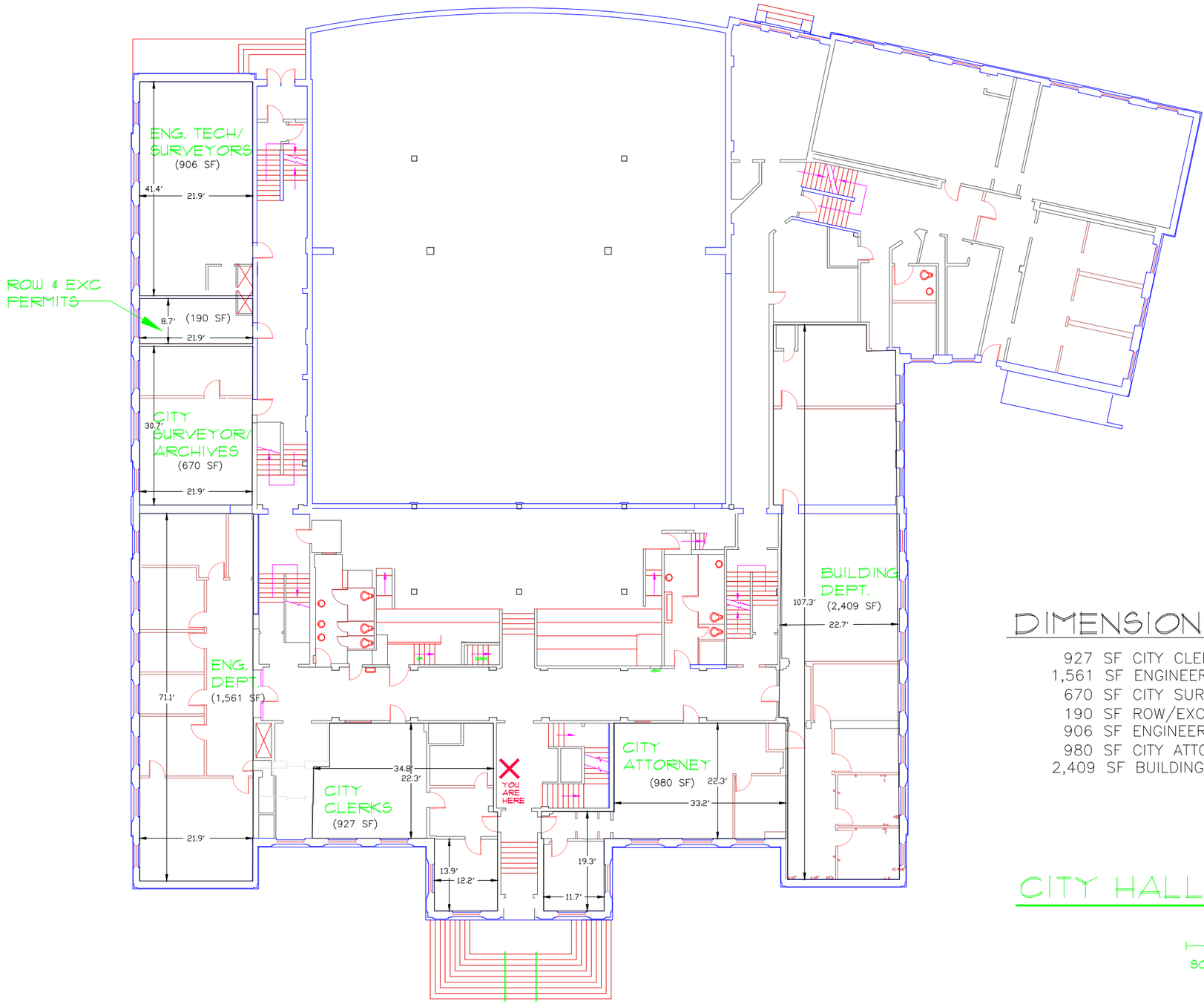


DIMENSIONS & AREA

927 SF CITY CLERK'S OFFICE
1,561 SF ENGINEERING DEPT.
670 SF CITY SURVEYOR/ARCHIVES
190 SF ROW/EXC. PERMITS
906 SF ENGINEERING TECH
980 SF CITY ATTORNEY'S OFFICE
2,409 SF BUILDING DEPT.
775 SF CLASSROOM 1
655 SF CLASSROOM 2
685 SF CLASSROOM 3
22.3 SF *A CUSTODIAN CLOSET
144.8 SF *B RESTROOM 1
153.2 SF *C RESTROOM 2
38,0 SF *D STORAGE CLOSET
16.5 SF *E CLASS RM 1 CLOSET
105 SF *F CLASS RM 2 CLOSET

CITY HALL FIRST FLOOR

10'
SCALE



DIMENSIONS & AREA

927 SF CITY CLERK'S OFFICE
1,561 SF ENGINEERING DEPT.
670 SF CITY SURVEYOR/ARCHIVES
190 SF ROW/EXC. PERMITS
906 SF ENGINEERING TECH
980 SF CITY ATTORNEY'S OFFICE
2,409 SF BUILDING DEPT.

CITY HALL FIRST FLOOR

10'
SCALE

DIMENSIONS & AREA

974	SF MAYOR'S OFFICE
486	SF CHIEF OF STAFF OFFICE
1,527	SF COUNCIL CHAMBERS
198	SF HOUSING AND HOMELESS COORDINATOR
416	SF VISTA
444	SF FELIX PEDRO CONFERENCE ROOM
334	SF VICTIMS FOR JUSTICE ADVOCATE
906	SF ENVIRONMENTAL MANAGER
739	SF HUMAN RESOURCES OFFICE
2,313	SF FINANCE DEPARTMENT
684	SF RISK MANAGEMENT/PURCHASING

CITY HALL SECOND FLOOR

10'
SCALE

CITY OF FAIRBANKS
RFP-24-03 CITY HALL HEATING UPGRADE

APPENDIX "C"

CITY HALL DEMOLITION AND HAZARDOS MATERIALS

- Main School Asbestos Report 1989
- ENG 1 2 Main School City Hall 1 (2nd Floor Asbestos Survey July 1985)
- ENG 2 Main School City Hall 1 (Basement Asbestos Survey July 1985)
- City Mech Repairs_ Drawings_FB-10-16 (Feb 2010)
- City Hall HM Assess v5. w attach pdf (Mar 2017)
- Demo Fig 1-12, Demo Fig 13-23, Demo Fig 24-26 (2021)
- City Hall Child Care Facility HAZ Report w-att (Aug 2023)

SCHOOL MANAGEMENT PLAN

ASBESTOS HAZARDS EMERGENCY RESPONSE ACT

MAIN SCHOOL BUILDING

Including
Fairbanks North Star Borough School District Administrative Offices
and
Fairbanks Alternative High School

FAIRBANKS, ALASKA

PREPARED BY
FACILITIES MANAGEMENT DIVISION
DEPARTMENT OF PUBLIC WORKS
FAIRBANKS NORTH STAR BOROUGH

March 31, 1989

INDEX

TAB 1	General Data and Signatures
TAB 2	LEA Designated Person Training Documentation
TAB 3	School Buildings
TAB 4	Prior Inspections
TAB 5	Building Inspection under EPA 40 CFR 763
TAB 6	Recommended Response Actions by Management Planner
TAB 7	Response Actions Selected by LEA
TAB 8	Statement of Sufficient Resources
TAB 9	Periodic Surveillance
TAB 10	Reinspections
TAB 11	Operations and Maintenance
TAB 12	Medical Surveillance and Employee Protection
TAB 13	Training
TAB 14	Plan Distribution and Notification
TAB 15	Record Keeping
TAB 16	Statement of Review

FAIRBANKS NORTH STAR BOROUGH SCHOOL DISTRICT

P.O. Box 71250 Fairbanks, Alaska 99707-1250 (907) 452-2000

December 10, 1990
D2:L121090A

Carol Evans, President
Fairbanks Education Association
2118 Cushman
Fairbanks, AK 99701

TO WHOM IT MAY CONCERN:

The Asbestos Hazard Emergency Response Act (AHERA) Federal Law requires annual notifications regarding asbestos to be forwarded to parent groups, teacher associations, and other employee organizations. Accordingly, this letter is forwarded to you as the representative teachers in the Fairbanks North Star Borough School District.

Asbestos Management Plans have been prepared for all of our school buildings, Old Main Administrative Center and the Physical Plant Building. The Management Plans were prepared as a result of a survey of the buildings conducted to determine the location and condition of asbestos containing materials. The plans indicate the preventive measures and response actions we have and will be implementing to make our schools as safe as possible. The Management Plans are updated as necessary. The plans for each school are available for review at each school administrative office and at our Physical Plant Office, 1300 Minnie Street. The plans may be reviewed during normal business hours at each facility.

If a personal copy of a plan is desired, please notify me and it will be available for the cost of reproduction ($10 per school) in 5 working days. Asbestos containing materials in our schools is a top priority and we are doing everything possible to ensure the well-being of the occupants.

I am available to answer any of your questions.

Sincerely,

Len Mackler
Director
Physical Plant Department

LM/js

cc: Principals
Mike Taylor
Plan Files

FAIRBANKS NORTH STAR BOROUGH SCHOOL DISTRICT

P.O. Box 71250 Fairbanks, Alaska 99707-1250 (907) 452-2000

December 10, 1990
D2:L1210908

Susan Annis, President
Education Support Staff Association
2118 Cushman
Fairbanks, AK 99701

TO WHOM IT MAY CONCERN:

The Asbestos Hazard Emergency Response Act (AHERA) Federal Law requires annual notifications regarding asbestos to be forwarded to parent groups, teacher associations, and other employee organizations. Accordingly, this letter is forwarded to you as the ESSA representative for the Fairbanks North Star Borough School District.

Asbestos Management Plans have been prepared for all of our school buildings, Old Main Administrative Center and the Physical Plant Building. The Management Plans were prepared as a result of a survey of the buildings conducted to determine the location and condition of asbestos containing materials. The plans indicate the preventive measures and response actions we have and will be implementing to make our schools as safe as possible. The Management Plans are updated as necessary. The plans for each school are available for review at each school administrative office and at our Physical Plant Office, 1300 Minnie Street. The plans may be reviewed during normal business hours at each facility.

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I am available to answer any of your questions.

Sincerely,

Len Mackler
Director
Physical Plant Department

LM/js

cc: Principals
Mike Taylor
Plan Files

FAIRBANKS NORTH STAR BOROUGH SCHOOL DISTRICT

P.O. Box 71250 Fairbanks, Alaska 99707-1250 (907) 452-2000

MEMORANDUM

TO: Chuck Elliott, Principal, Hutchison Career Center

FROM: Len Mackler, Director, Physical Plant Department

DATE: December 10, 1990
D2:M121090A

SUBJECT: Management Plan for Asbestos Containing Materials (ACBM) at Hutchison Career Center

* *

The Asbestos Hazard Emergency Response Act (AHERA) requires annual notification letters to parent, teacher and employee organizations. The general notification letters reiterate the availability of a copy of the Management Plan for ACBM at your school building, and other asbestos activities that have or will occur. Copies of letters being sent to your PTA, the FEA and the ESSA are herewith attached. Please insert this memo and the attached letters in Tab 14 of your copy of the Management Plan. As a reminder, your copy of the plan must be kept current, at the school, and be accessible as required.

In addition to this notification, information regarding the location of ACBM must be provided for all short term workers not covered by the listed employee groups and who come into the building. This can be accomplished by requiring all workers to report to the School Administrative Office, review the plan and sign a statement to that effect. A sample sign-in form is included. Examples of short term workers are telephone repairmen working on lines through the building or other non-district workers who may go into ACBM spaces.

If you have any questions regarding this subject, do not hesitate to contact us.

LM/js

Attachments

cc: Mike Taylor
Plan Files

FAIRBANKS NORTH STAR BOROUGH SCHOOL DISTRICT

P.O. Box 71250 Fairbanks, Alaska 99707-1250 (907) 452-2000

December 10, 1990
D2:L121090C

Debbie Hall, President
Council of PTA's
1110 Nenana
Fairbanks, AK 99701

SUBJECT: Hutchison Career Center and Howard Luke Alternative

TO WHOM IT MAY CONCERN:

A survey of our school buildings has been conducted to determine the location and condition of asbestos containing materials. Management plans were then developed to reflect the conditions encountered. The Plan indicates the preventive measures and response actions we have and will be implementing to make our schools as safe as possible. The Management Plans are updated as necessary.

Federal Law mandates annual notification of parent, teacher and employee organizations regarding the existence and availability of the Management Plans. Accordingly, plans for all schools are available for review at our Physical Plant Office, 1300 Minnie Street, and for individual schools during normal office hours, at each school administrative office.

If a personal copy is desired, please notify me and it will be available for the cost of reproduction ($10 per school) in 5 working days.

Asbestos containing materials in our schools is a top priority and we are doing everything possible to ensure the well-being of the occupants.

I am available to answer any of your questions or concerns.

Sincerely,

Len Mackler
Director
Physical Plant Department

LM/js

cc: Principal
Mike Taylor
Plan Files

FAIRBANKS NORTH STAR BOROUGH SCHOOL DISTRICT

P.O. Box 71250 Fairbanks, Alaska 99707-1250 (907) 452-2000

MEMORANDUM

TO: Bud Kuenzli, Principal, Howard Luke

FROM: Len Mackler, Director, Physical Plant Department

DATE: December 10, 1990
D2:M121090A

SUBJECT: Management Plan for Asbestos Containing Materials (ACBM) at Howard Luke

* *

The Asbestos Hazard Emergency Response Act (AHERA) requires annual notification letters to parent, teacher and employee organizations. The general notification letters reiterate the availability of a copy of the Management Plan for ACBM at your school building, and other asbestos activities that have or will occur. Copies of letters being sent to your PTA, the FEA and the ESSA are herewith attached. Please insert this memo and the attached letters in Tab 14 of your copy of the Management Plan. As a reminder, your copy of the plan must be kept current, at the school, and be accessible as required.

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LM/js

Attachments

cc: Mike Taylor
Plan Files

FAIRBANKS NORTH STAR BOROUGH SCHOOL DISTRICT

P.O. Box 71250 Fairbanks, Alaska 99707-1250 (907) 452-2000

December 10, 1990
D2:L121090C

Debbie Hall, President
Council of PTA's
1110 Nenana
Fairbanks, AK 99701

SUBJECT: Hutchison Career Center and Howard Luke Alternative

TO WHOM IT MAY CONCERN:

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Asbestos containing materials in our schools is a top priority and we are doing everything possible to ensure the well-being of the occupants.

I am available to answer any of your questions or concerns.

Sincerely,

Len Mackler
Director
Physical Plant Department

LM/js

cc: Principal
Mike Taylor
Plan Files

FAIRBANKS NORTH STAR BOROUGH SCHOOL DISTRICT

P.O. Box 1250 Fairbanks, Alaska 99707-1250 (907) 452-2000 FAX (907) 451-6160

MEMORANDUM

TO: ALL ~~PRINC~~IPALS
FRUM: Len Mackler, Director, Physical Plant Department
Michael S. Taylor, Asbestos Plan Manager Fairbanks North Star Borough MST

DATE: January 29, 1990
D2:M012990A

SUBJECT: Inspection and Management Plans
Asbestos Hazard Emergency Control Act (AHERA)

* *

Enclosed is a copy of the AHERA inspection and management plan for your facility. Under EPA regulations (40 CFR 763) we must maintain a reference copy of the plan in the school office. The plan is to be available to staff, custodial and maintenance workers, contract personnel, utility workers, and the general public, during normal business hours. An additional copy of each plan is on file at the School District Physical Plant Department, 1300 Minnie Street. Any person desiring their own copy of the plan may purchase one at the Physical plant.

Schools with asbestos materials have plans with 16 TAB sections. Those without asbestos generally do not have sections 6-13. Regardless of whether or not your school contains asbestos materials, these plans must be maintained.

TAB 5 of the plan contains the inspection report. At the end of the report text is a brief summary of the findings.

TAB 6 contains the management planner's recommendations to correct any asbestos problems noted in TAB 5.

TAB 7 contains records of asbestos projects completed since the survey.

TAB 11 indicates the management planner's recommendation for maintenance of asbestos containing materials in the facility.

Please maintain your plan in an accessible location within the school office. Inform your staff of its availability and make it available to custodial, maintenance and repair workers so that they can check for the presence of asbestos hazards when they work in the facility.

From time to time, we will send out updates to the plan with instruction for filing. If you have any questions about the plan or about materials in your building, please contact Len Mackler at the Physical Plant, 452-4461.

LM/MST/js

Enclosure

cc: Unions and PTA Presidents
Betty Farni
Jerry Hartsock
Anita Gallentine

SCHOOL MANAGEMENT PLAN

ASBESTOS HAZARDS EMERGENCY RESPONSE ACT

MAIN SCHOOL BUILDING

Including
Fairbanks North Star Borough School District Administrative Offices
and
Fairbanks Alternative High School

FAIRBANKS, ALASKA

PREPARED BY
FACILITIES MANAGEMENT DIVISION
DEPARTMENT OF PUBLIC WORKS
FAIRBANKS NORTH STAR BOROUGH

March 31, 1989

INDEX

TAB 1	General Data and Signatures
TAB 2	LEA Designated Person Training Documentation
TAB 3	School Buildings
TAB 4	Prior Inspections
TAB 5	Building Inspection under EPA 40 CFR 763
TAB 6	Recommended Response Actions by Management Planner
TAB 7	Response Actions Selected by LEA
TAB 8	Statement of Sufficient Resources
TAB 9	Periodic Surveillance
TAB 10	Reinspections
TAB 11	Operations and Maintenance
TAB 12	Medical Surveillance and Employee Protection
TAB 13	Training
TAB 14	Plan Distribution and Notification
TAB 15	Record Keeping
TAB 16	Statement of Review

SCHOOL MANAGEMENT PLAN

ASBESTOS HAZARD EMERGENCY RESPONSE ACT
(AHERA)

TAB 1 - GENERAL DATA AND SIGNATURES

DATES:

SUBMISSION	March 31, 1989
DEADLINE	May 9, 1989

DISTRICT DATA

NAME	Fairbanks North Star Borough School District
ADDRESS	800 Cushman St. PO Box 1250 Fairbanks, Alaska 99707
PHONE	(907) 452-2000
TYPE	Public

SCHOOL DATA

NAME	Main School (including District Administrative Offices and Fairbanks Alternative High School)
ADDRESS	PO Box 1250 800 Cushman St. Fairbanks, Alaska 9977
PHONES	(907) 452-2000 (District Administration) (Alternative School)
STUDENTS	140
FACULTY/ADMIN	96
CUSTODIAL	10
MAINTENANCE	0

KEY PERSONNEL

SUPERINTENDENT	Richard S. Cross PO Box 1250 Fairbanks, AK 99707 (907) 452-2000
PRINCIPAL	Mike Thibodeau PO Box 1250 Fairbanks, AK 99707 (907) 452-2615
LEA DESIGNATE	Michael S. Taylor Facilities Management Division Department of Public Works Fairbanks North Star Borough PO Box 1267 Fairbanks, AK 99707 (907) 452-4761

INSPECTOR AND MANAGEMENT PLANNER

NAME	Michael S. Taylor Facilities Management Division Department of Public Works Fairbanks North Star Borough PO Box 1267 Fairbanks, AK 99707 (907) 452-4761
ACCREDITATIONS:	Asbestos Inspector #HKIS0443 August 3, 1988 Asbestos Management Planner #HKP80349 August 5, 1989 Asbestos Project Designer #HKD90360 EPA Approved Courses: Yes State of Alaska Asbestos Worker Certification #0805

SIGNATURES

SUPERINTENDENT _____
Richard S. Cross

DESIGNATED PERSON _____
Michael S. Taylor

INSPECTOR AND
MANAGEMENT PLANNER _____
Michael S. Taylor

CERTIFICATION STATEMENT

For persons who perform(ed) inspections, and recommend(ed) design, or carry out response actions (except for operations and maintenance) the local education agency used or will use persons who have been accredited by a state which has adopted a contractor accreditation plan under section 206(b) of Title II of the Act or is accredited by an EPA-approved course under section 206(c) of Title II of the Act. In addition, the LEA has considered whether any conflict of interest may arise from the interrelationship among accredited personnel, such as abatement activities performed by an inspector or management planner, and whether that should influence the selection of accredited personnel to perform activities under this AHERA program.

The signatories below certify that the general local education agency responsibilities, as stipulated by Part 763.84 have been or will be met.

Signature: _____ Date: 3-31-89
Michael S. Taylor
LEA AHERA Designee

Signature: _____ Date: 4-17-89
Richard S. Cross
LEA Superintendent

LEA DESIGNATE

Michael S. Taylor
Facilities Management Division
Department of Public Works
Fairbanks North Star Borough
PO Box 1267
Fairbanks, AK 99707
(907) 452-4761

ASBESTOS TRAINING

Mr. Taylor is has been an industrial hygienist for four years. He is a member of The American Conference of Governmental Industrial Hygienists and The American Industrial Hygiene Association. He is an approved instructor for State of Alaska Asbestos Worker Certification Courses. He has taken the following asbestos training courses:

Supervision of Asbestos Abatement Projects
Georgia Institute of Technology
Department of Continuing Education
Sept 17-20, 1985
Anchorage, Alaska
Certificate #1392

State of Alaska Asbestos Worker Certification
Polytechnic, Inc.
April 19, 1986
Fairbanks, Alaska
Certification #0805

EPA Asbestos Inspector Accreditation Course
Hall-Kimbrell Environmental Services
August 1-3, 1988
Lawrence, Kansas
Accreditation #HKI80443

EPA Asbestos Management Planner Accreditation Course
Hall-Kimbrell Environmental Services
August 4-5, 1988
Lawrence, Kansas
Accreditation #HKP80349

EPA Asbestos Abatement Designer
Hall-Kimbrell Environmental Services
February 20-22, 1989
Portland, Oregon
Accreditation #HKD90360

TAB 3 - SCHOOL BUILDING DATA

NAME	Main School
ADDRESS	PO Box 1250 800 Cushman St. Fairbanks, Alaska 99707
GRADE SPAN	9-12 (currently)
CONSTRUCTED	1933
ADDITION	1948
RENOVATION	None
CONSTRUCTION	Concrete
AREA	66,238 square feet
PRINCIPAL	Mike Thibodeau (Fairbanks Alternative School)
BUILDING PHONE	(907) 452-2000 Administration (907)-452-2615 Fairbanks Alternative School

FRIABLE ASBESTOS BUILDING MATERIALS FOUND IN BUILDING--*YES*

NON-FRIABLE ASBESTOS BUILDING MATERIALS FOUND IN BUILDING--*YES*

A REPORT

PREPARED FOR THE

FAIRBANKS NORTH STAR BOROUGH

THIS REPORT SUMMARIZES THE FINDINGS OF A SURVEY OF SIXTEEN FAIRBANKS NORTH STAR BOROUGH SCHOOL BUILDINGS FOR THE PRESENCE OF MATERIALS CONTAINING ASBESTOS. THIS SURVEY CONSISTED OF A VISUAL INSPECTION OF EACH FACILITY AND THE LABORATORY ANALYSIS OF MATERIALS SUSPECTED OF CONTAINING ASBESTOS. THIS REPORT CONTAINS AN EVALUATION OF THE EXTENT OF ASBESTOS CONTAINING MATERIALS AND A COST ESTIMATE FOR THEIR REMOVAL.

VOLUME I

METHOD AND ANALYSIS

Prepared by

Swearingen Associates
Box 7364 Jamie Drive
Eagle River, Alaska 99577

SCHOOL FACILITY SURVEY
ASBESTOS CONTROL PROGRAM

FOR

FAIRBANKS NORTH STAR BOROUGH

FAIRBANKS ALASKA

DECEMBER 1983

PREPARED BY

SWEARINGEN ASSOCIATES

ANCHORAGE ALASKA

Main School has been inspected for asbestos in 1983 by Thomas Swearingen, PE, and by Ocean Technology (OceanTech Ltd., now Arctic Slope Consulting Corp.) Copies of those reports are included in this TAB.

APPENDIX A

FACILITY SURVEY SHEETS

FAIRBANKS NORTH STAR BOROUGH

FACILITY *MAIN JUNIOR HIGH SCHOOL*

ASBESTOS MATERIALS SURVEY DATA SHEET

DATE OF SURVEY *Nov. 8, 1983* ,PAGE *17* OF *36*

BY *Swearingen, David* (Swearingen Associates)

ROOM OR AREA *Gym and Locker Rooms*: (X) INSULATION & LAGGING, ( ) SPRAYED ON MATERIAL, ( ) TROWELED ON MATERIAL, ( ) OTHER APPLICATION

ASBESTOS CONTENT: *50* % CHRYSOTILE, ___ % AMOSITE, ___ % _____

RECOMMENDED ABATEMENT: ( ) NONE, (X) REMOVAL, ( ) ENCAPSULATION

SAMPLE IDENTIFICATION: *308A,D* _____ _____ _____ _____

_____ _____ _____ _____ _____

EXTENT OF MATERIAL: *31 Fittings* SQUARE FEET, _____ LINEAR FEET

REMARKS (CONDITION, LOCATION, ETC)
Insulation on pipe fittings in Locker rooms badly damaged & friable.
Insulation on gym radiator pipes also damaged.
Due to student contact in these areas this is an immediate hazard
Photographs: D-39, D-40

ROOM OR AREA *Boiler Rm Transformer Vault Generator Room*: (X) INSULATION & LAGGING, ( ) SPRAYED ON MATERIAL, ( ) TROWELED ON MATERIAL, ( ) OTHER APPLICATION

ASBESTOS CONTENT: *60* % CHRYSOTILE, *20* % AMOSITE, ___ % _____

RECOMMENDED ABATEMENT: ( ) NONE, (X) REMOVAL, ( ) ENCAPSULATION

SAMPLE IDENTIFICATION: *313A* *310A* *308C* _____ _____

_____ _____ _____ _____ _____

EXTENT OF MATERIAL: *165* SQUARE FEET, *1624* LINEAR FEET

REMARKS (CONDITION, LOCATION, ETC)
Pipe and boiler insulation is damaged
Ceiling insulation is asbestos sprayed on top of plastic foam
Photographs: D-35, D-36, D-37, D-38

ROOM OR AREA *Basement Off.*: (X) INSULATION & LAGGING, ( ) SPRAYED ON MATERIAL, ( ) TROWELED ON MATERIAL, ( ) OTHER APPLICATION

ASBESTOS CONTENT: *90* % CHRYSOTILE, *10* % AMOSITE, ___ % _____

RECOMMENDED ABATEMENT: ( ) NONE, (X) REMOVAL, ( ) ENCAPSULATION

SAMPLE IDENTIFICATION: *311A,B* *308A* *312A* _____ _____

_____ _____ _____ _____ _____

EXTENT OF MATERIAL: *282 Fittings* SQUARE FEET, *1495* LINEAR FEET

REMARKS (CONDITION, LOCATION, ETC)
Asbestos in office areas in good condition.
Damaged material in corridor, some repair noted.
Photographs: D-33, D-34, D-43, D-44, D-45, D-46

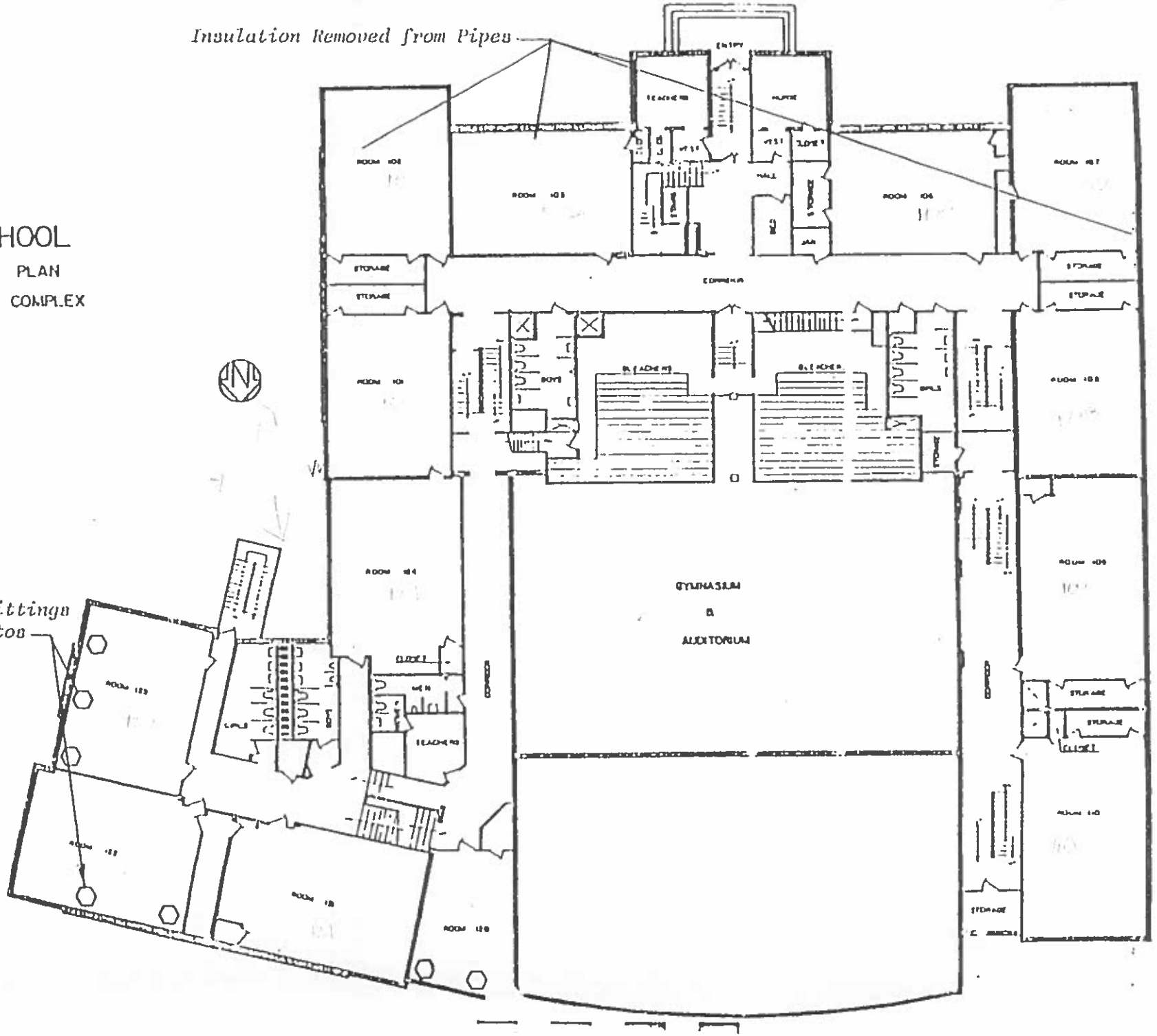
Insulation Removed from Pipes

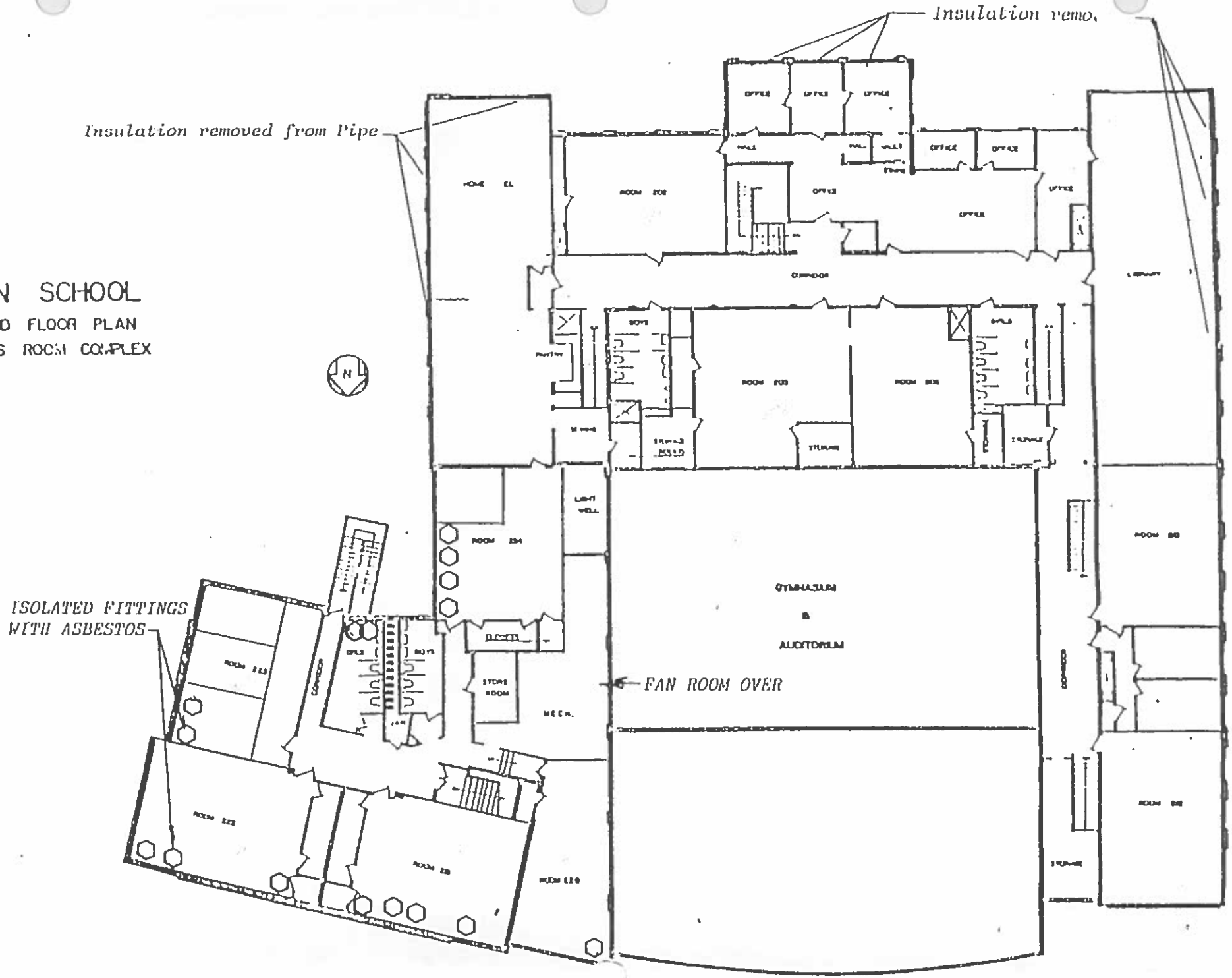
MAIN SCHOOL

FIRST FLOOR PLAN

CLASS ROOM COMPLEX

Isolated Fittings With Asbestos

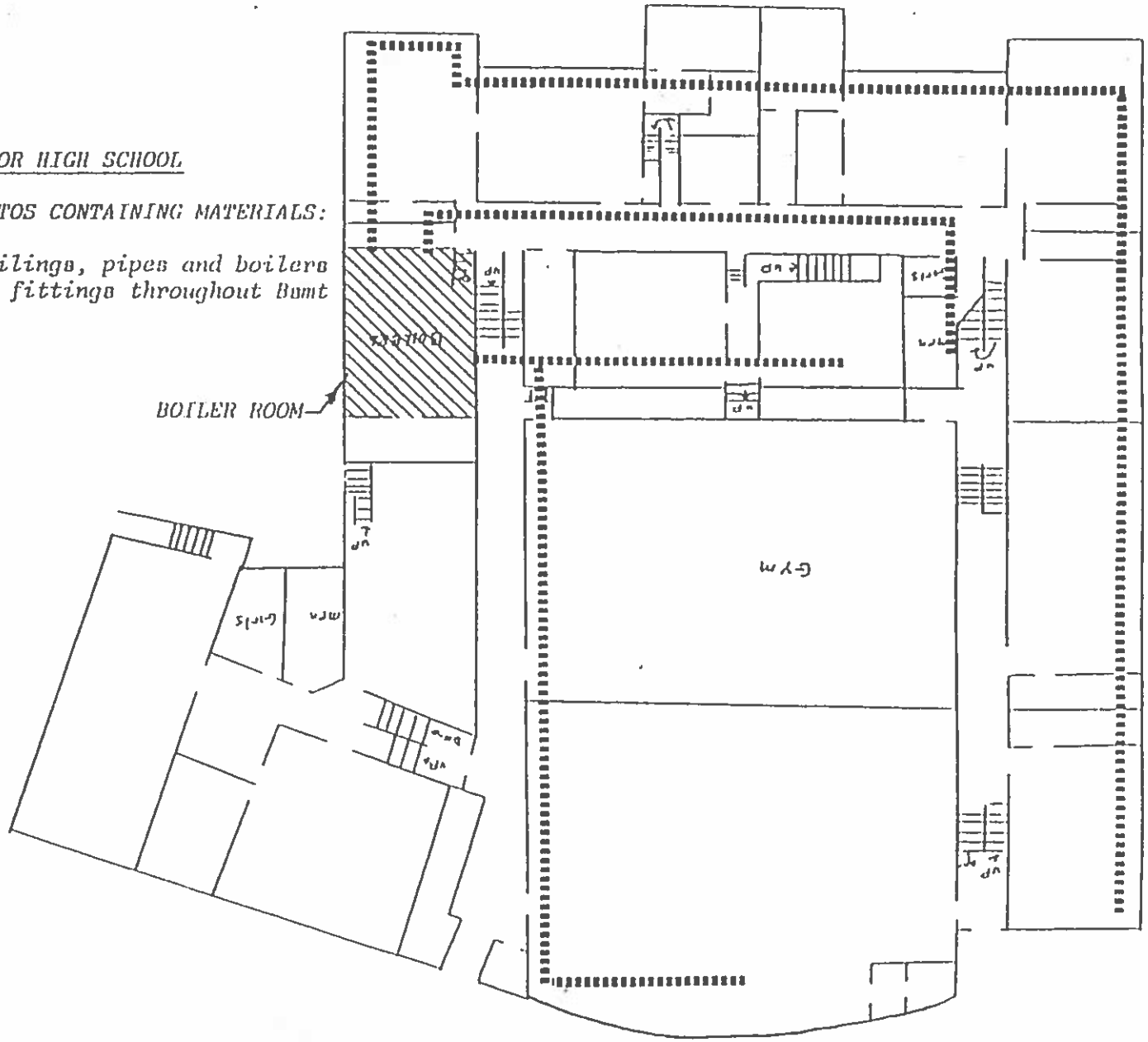



Insulation remo.
Insulation removed from Pipe
MAIN SCHOOL
SECOND FLOOR PLAN
CLASS ROOM COMPLEX
N
ISOLATED FITTINGS WITH ASBESTOS
FAN ROOM OVER
GYMNASIUM & AUDITORIUM
OFFICE
CORRIDOR
STORE ROOM
MECH.

MAIN JUNIOR HIGH SCHOOL

LOCATION OF ASBESTOS CONTAINING MATERIALS:

1. *Boiler room ceilings, pipes and boilers*
2. *Pipes and pipe fittings throughout Bsmt*
3. *Ductwork*



pK

ENVIRONMENTAL SURVEY
ASBESTOS CONTAINING MATERIALS
FAIRBANKS NORTH STAR BOROUGH
MAIN SCHOOL

JUNE 1985

Prepared by:
Ocean Technology Ltd., Inc.
2120 South Cushman, Suite 203
Fairbanks, Alaska 99701

I. EXECUTIVE SUMMARY

OceanTech conducted an asbestos survey of the Main School at the request of the Fairbanks North Star Borough. The building was examined for the presence and extent of asbestos containing material. During the course of the survey representative bulk and air sampling was performed and results are tabulated in Appendix 3.

The building has three floors: basement, first and second. Located between floors are landings at the north and south ends of the structure. The building contains several vertical airshafts continuous through the entire elevation, one vertical 40 foot pipe chase, many access doors and crawl spaces, catwalks, attics, and unutilized vacant spaces. There are three primary mechanical rooms: two in the basement and one on the second floor.

Asbestos, friable and cementitious (non-friable), was found on all three floors. Friable asbestos is easily crushed and, in such condition, will release fibers into the air. Non-friable asbestos exists in cement-like compounds that are not as prone to releasing fibers.

The majority of Asbestos Containing Material (ACM) was found on the basement level. The basement boiler room should be posted with asbestos marking signs, and entry limited until an abatement program is initiated, because ACM is in an exposed condition on boilers, piping, valves, and fittings.

Some ACM has sustained damage in several locations, possibly releasing friable asbestos to the atmosphere (see photographs; Appendix 5). The copying room (on the basement level) contains a short section of air duct covered with unprotected asbestos insulation (see photograph 27; Appendix 5), which requires attention since the ACM is in a loose, degenerative condition. Mechanical Room No. 2, located next to the women's shower (basement level), contains several pipes with damaged ACM. In one instance this material was removed from a fitting, and left on the floor next to the water heater (see photograph 17; Appendix 5). These areas are hazardous to maintenance and custodial personnel whose job duties require frequent use of these areas, increasing exposure. There is also risk of fiber migration to other areas.

In the custodial room of the Alternate High School (basement level), a vertical pipe chase extends the entire height of the building. This area contains approximately 300 linear feet (LF) of ACM on pipe and fittings, but is not an urgent hazard because the ACM is contained in an enclosed area. Removal of this material will require considerable time and effort because of the limited space.

The first and second floors have small amounts of ACM located on accessible air distribution ducting, and steam/condensate piping. The ducts are insulated with ACM in exposed areas and uninsulated in concealed spaces such as suspended ceilings. ACM is found in abundance above basement hallways, and inside Mechanical Room 21 (See Architectural Plans; Appendix 4).

Although there is a large quantity of ACM in this building, the majority is readily accessible. There are several methods which may be utilized to decrease hazards associated with asbestos fiber exposure. These methods include removal of the asbestos-containing material, sealing or encapsulating the ACM to prevent fiber release, or enclosing and barricading the ACM containing area to limit physical contact (See Appendix 1). The latter two methods, encapsulating and

enclosing, require continuous record keeping and inspections. In keeping with FNSB School District Policy, and because of the straight forward building construction, complete removal is the preferred abatement method. The first costs are higher than the alternatives, but the potential for future asbestos exposure is absent, as are the record-keeping and inspection costs.

The preliminary estimated cost for complete asbestos removal and disposal, insulation replacement, health monitoring equipment and analysis, preparation of bid documents, contractor performance inspections, and project management is $509,740.00. If the removal of ACM is accomplished as part of a full scale renovation of the mechanical systems, the above cost for removal is expected to be reduced by approximately 40% (This assumes replacement insulation for a new system is part of the cost for that system).

The Summary Table, Appendix 2, and the Data Tables, Appendix 3, tabulate the ACM located and sampled during the survey. All damage caused by bulk sampling was sealed with tape and tagged with a distinctive label (blue in color). 8 1/2" x 11" Architectural plan views, Appendix 4, show the general location of ACM by floor. Additionally, as part of this survey, 24" x 36" plans were prepared which show pipe runs, vent systems and locations of ACM by floor using conventional drafting notations. The photographs, Appendix 5, show general conditions and provide pictorial reference for examples cited in this report.

II. HISTORY AND PURPOSE

During the summer of 1906 a $19,000, two story wooden structure was built on the site presently occupied by Main School. It included four classrooms, a principal's office, and a library containing more than 1,000 books. A gymnasium, additional classrooms, and a small shed to house manual arts classes were added over the years. Fire destroyed this "Old Main School" one Friday night in December, 1932.

From 1932 to 1934, classes were held in the Eagles Hall, Moose Hall, and the Presbyterian Church. After much community discussion, Fairbanksans decided to build a permanent school that would stand the test of time, and a new Main School took shape.

On February 12, 1934, the new Main School building was dedicated. This structure consisted of the center section only. The north and south wings were added later.

Until 1951, Main School housed the entire student population of Fairbanks. Denali Elementary School was opened in 1952, followed by Nordale Elementary in 1953. Separate high school facilities were constructed in 1955, leaving only kindergarten through eighth grades at Main School. By 1959, Main was exclusively a junior high school as new elementary schools were added in the growing community.

Today classes are still conducted in Main School for students of the Fairbanks Alternative High School. The facility also houses School District offices.

III. INTRODUCTION

On June 4, 1985, a detailed inspection survey for asbestos containing material, ACM, at Main School was initiated. The survey was requested by Memo dated May 23, 1985 from Dave Dobberpuhl, Borough Engineer to Bob Perkins, Area Manager, Ocean Technology Ltd., Inc., Fairbanks. The survey performed over the next two-weeks included: a study of as-built drawings, visual inspections, field measurement, identification, photographs, air sampling, bulk material sampling, and recording locations of asbestos-containing material on architectural drawings provided by a technical drafting class at Hutchison Career Center.

The primary purpose of the survey was to provide the building owner with accurate information on:

1. Possible existence of ACM in the building.
2. Extent of ACM in the building.
3. Condition of the material.
4. Safety precautions and recommendations.

From the information gathered, cost estimates and alternative handling proposals were developed to identify and subsequently eliminate the hazard posed by ACM.

V. TECHNICAL ASPECTS

Asbestos is a term used for a variety of naturally occurring mineral silicates. The silicates can be separated into constituent fibers, microscopic in size, and in several cases lighter than air, making them susceptible to air-suspension. Asbestos has been used quite extensively in commercial and industrial applications because it is essentially fire resistant and serves as an excellent thermal and electrical insulator, and possesses high abrasive properties. This material has high tensile strength, and relatively strong chemical resistance. Asbestos material is used for roofing, siding, flooring, piping material, and has wide insulation applications. It serves as an excellent fire-proofing material and acoustical lining.

In 1971, an appreciable amount of data was obtained concerning exposure to asbestos, particularly airborne asbestos fibers that led to high incidences of lung disorders and cancer of the lungs and pleural cavity. The use of asbestos has been reduced and in some instances, banned by Federal, State and Local institutions in many applications.

Main School was found to contain three general categories of material that normally contain asbestos:

1. Sprayed on material on ceilings.
2. Troweled on substances at boilers and pipe runs.
3. Prefabricated materials for pipe and ducting applications.

Specific investigation of these categories revealed:

1. Sprayed on material was found on the Boiler Room ceiling, located on the basement level. Laboratory analysis of the bulk sample showed no ACM (See Data Tables; Appendix A). This material is a cellulose, fire-proofing compound over-laying a polyurethane foam. Although this material looks like ACM sprayed on insulation, it does not contain asbestos.

2. Troweled on materials were found to contain a mix of two types of asbestos: chrysotile and amosite. They are bound in a cementitious, non-friable combination. These compounds were commonly found at pipe elbows, tees and valves. This material was frequently used on pipe fittings in conjunction with fiberglass that is used on pipe runs. On the first and second floors, it appears, the original ACM at all floor convectors has been replaced with fiberglass. Evidence of previous selective partial removal of ACM is apparent on these floors. In many locations, traces of ACM on the steam and condensate piping (See photographs 12 & 14; Appendix 5) is apparent. These same substances can be found on the unused boilers, located in the basement Boiler Room on fittings in pipe chases and on joints through the building; This non-fibrous ACM was usually covered with a painted fabric for added protection. The fabric is damaged in several locations (See photographs 4, 5, 8, 9, 11, 18, 21, 23 & 31; Appendix 5).

3. A corrugated paper (air-cell ACM) insulating material was found on pipe runs and air distribution ducting. The basement area consists of approximately 3484 square feet of "air-cell" ACM on ductwork. This material was sampled and found to contain asbestos. It contains two common forms of asbestos:

chrysotile and amosite (See Data Tables; Appendix 3). This occurs as a prefabricated insulation, covered with a cotton fabric jacket. Numerous locations have been damaged, with the "air-cell" insulation left hanging or partially intact supported by the existing cover (See photographs 21, 22, 24, 27, 29, & 34; Appendix 5). The possibility of asbestos fibers becoming airborne in these locations is very high, being greatest in areas where exposed "air-cell" is near a window or doorway.

For this report, asbestos insulation on pipe segments and fittings is expressed in linear feet (LF). On boilers and air distribution ductwork, this material quantity is stated in square-feet (SF). The following is a quantity breakdown, floor by floor of asbestos, containing material found.

	Linear Feet (LF) (pipe and fittings)	Square Feet (SF) (ductwork and boilers)
Basement	2756	3484
First Floor	630	65
Second Floor	225	526
TOTAL	3611	4075

As indicated, the majority of asbestos material exists on the basement level of Main School. This is largely concentrated on the basement's east floor, and south landing. With the exception of two to three confined areas, the majority of ACM in these areas is readily accessible.

A systematic set of air quality samples were collected throughout Main School using portable air pumps and a filter collecting system. These were taken at various independent locations. The filters were prepared and analyzed using the phase-contrast miscroscope/membrane filter method. Fifteen samples were collected, each over a two hour interval, located at average chest height (54" above the floor). Laboratory analysis of the samples did not indicate hazardous conditions except in the old boiler room. The total fiber count was generally well below the OSHA (Occupational Safety and Health Act, 1971) limit, however, in some instances it was slightly above the 0.01 fiber/cc limit for schools occupied by children, as establisned by the Fairbanks North Star Borough. The old boiler room had air samples greater than 1 fiber/cc; personnel precautions are warranted in this room

Bulk material samples were obtained from several areas throughout the school building. Thirty-five individual samples were collected and tested for ACM. The origin of these specimens were sealed with duct tape, and marked with blue labels containing the sample number, date, and OceanTech logo. Samples of ACM from piping (air-cell) typical of that found in mechanical rooms, classrooms, and offices were analyzed. Chrysotile and amosite are the two chief asbestos types identified. The air distribution ducting on the basement level is largely a cardboard, air-cell substance. Testing for ACM on the old (unused) coal fired boilers (basement) was positive. The boiler doors are lined inside and out, with ACM. Additionally, any material used in the construction of Main School and selected equipment commonly found in the facility was sampled. This included:

ceiling and floor tiles, plaster, partitions, and chalk boards. The general results of analysis of all samples are included at Appendix 2 and specific results at Appendix 3.

VI. CONCLUSIONS AND RECOMMENDATIONS

Main School had considerable asbestos containing material used in the initial construction. Some of this material has been handled, painted, and removed over the years, but the facility has a great deal of ACM still present. This material is predominate as insulation on pipes, fittings, and ventilation systems, and is generally accessible.

Some of the ACM has been damaged or is in a friable condition, but there are only two immediately potentially hazardous areas in the facility. They are: (1) the old boiler room and (2) a short segment of ducting in the Copying (Xerox) room. Air sampling and inspection of the rest of the facility reveals acceptable conditions for the occupancy and present use of the facility. The ACM found and tabulated can be expected to deteriorate, and will require the caution and attention of maintenance workers and occupants who are required to work near it.

It is recommended that:

FOR THE IMMEDIATE,

1. The old boiler area be posted with asbestos warning signs and entry limited to respirator equiped personnel who are knowledgeable of asbestos hazards.

2. The short section of exposed air cell insulation in the copying room of the basement (See Photograph 27, Appendix 5) be removed by qualified personnel, and the duct sprayed with encapsulant.

3. The maintenance personnel working in the Main School be made aware of the asbestos contained in the facility and the hazards associated with it.

FUTURE RECOMMENDATIONS,

1. An asbestos abatement program consisting of total removal be implemented in the near future.

2. In the interest of economy, the removal program be planed with any renovation projects programmed for the facility.

3. If a full renovation program is not anticipated, a removal/reinsulation project for asbestos be programed within the priorities of the School District for this facility.

VII. COST ESTIMATE

Attached as Appendix 1 is a brief synopsis of the four most common methods of abatement. Each have their relative merits and relative costs. Removal is the most complete and permanent solution, but is usually the most expensive. All four systems of abatement could be applied to Main School, but at this time only

- The FNSBSD prefers to address the most permanent abatement solution.
- If the other renovation work is programed, asbestos removal may be more economically included with the other work. (Removal should be addressed in the design stage of the renovation).
- A cost estimate for removal and replacement of insulation provides a complete and finished facility.
- Using a removal (worse case) estimate, convenient percent adjustments can be applied for preliminary estimates for other abatement methods.
- Some areas of Main School are congested and access difficult, but no asbestos was found that was believed impossible to remove and replace.

The below cost estimate, by floors, includes set-up, removal, re-insulation, disposal, health monitoring and preparation of bid documents and inspection.

ASBESTOS QUANTITIES AND PRELIMINARY REMOVAL ESTIMATE

GENERAL LOCATION	TOTAL ASBESTOS QUANTITIES	COST*
BASEMENT:	2756 LF (pipe & fittings)	$151,580
	3484 SF (ductwork & boilers)	191,620
FIRST FLOOR:	630 LF (pipe & fittings)	34,650
	65 SF (ductwork)	3,575
SECOND FLOOR:	225 LF (pipe & fittings)	12,375
	526 SF (ductwork)	28,930
BASIC REMOVAL ESTIMATE:		$422,730
PLUS 15% CONTINGENCY:		63,410
TOTAL BASIC REMOVAL ESTIMATE:		$486,140
PREPARATION OF DOCUMENTATION (From Present Available):		4,000
MONITORING & MANAGEMENT:		19,600
I.	TOTAL REMOVAL & REINSULATION	$509,740

II. If reinsulation was not accounted for because the heating, ventilating, and plumbing systems were up graded and replaced the asbestos abatement costs would approximate 60% of the above or.....$305,844

* Using 1985 average removal costs of $55.00/asbestos unit. - NOTE: This could change with (1) Current Draft Certification Laws and (2) Changing Insurance Requirements.

ASBESTOS SUMMARY TABLE

	Asbestos		Percent Asbestos
	Yes	No	
Pipe Insulation	X		10-75% Chrysotile, 5-10% Amosite
Pipe Fitting Insulation	X		20-30% Chrysotile, 5-7% Amosite
Boiler Insulation	X		10-40% Chrysotile, 10-20% Amosite
Duct Insulation, Basement	X		65-75% Chrysotile
Duct Insulation, Mech. Rm 21	X		60-70% Chrysotile
Ceiling Tiles		X	None
Floor Tiles	X		Trace Amounts of Chrysotile
Chalkboard Material		X	None
Folding Partition, Rm 209		X	None
Spray applied Ceiling Material, Basement Boiler Room		X	None
Plaster Material, Wall of Mechanical Room No. 1		X	None
Black Fibrous Material Ceiling Mechanical Rm 2		X	None

Oceantech

ASBESTOS CONTAINING MATERIALS

MAIN SCHOOL BUILDING

FAIRBANKS NORTH STAR BOROUGH SCHOOL DISTRICT
FAIRBANKS, ALASKA
JULY 1985

DESCRIPTION/LOCATION	SAMPLE NO.	SAMPLE TYPE	PHOTO NO.	GENERAL APPEARANCE CONDITION	*APPROXIMATE AMOUNT OF EACH	SAMPLE RESULTS % OF ASBESTOS/FIBERS>5 μ/CC	ACCESS TO ACM RECOMMENDATIONS
1. Boiler Room	A1	Air	----	----------	----------	1.08 (2)	1, C.
2. 4" LPS, Boiler Room	B1	Bulk	19, 25	Aircell, gray	----------	65-75% Chrysotile	1, C.
3. Ceiling Sprayed Material, Boiler Room**	B2	Bulk	----	Gray foam	1200 SF	No Asbestos (1)	1, C.
4. 8" LPS, Boiler Room	B3	Bulk	----	White powder	----------	10-20% Amosite (1) 5 - 10% Chrysotile	1, C.
5. Ceiling Sprayed Material	B4	Bulk	----	Gray foam	1200 SF	No asbestos (1)	1, C.
6. Rigid Boiler Insulation	B5	Bulk	----	White powder	----------	35-45% Chrysotile (1)	1, C.
7. Boiler Insulation, (inside door)	B14	Bulk	----	Black/gray solid	----------	35-40% Chrysotile (1)	1, C.
8. 6" Pipe above Boiler	B15	Bulk	----	Gray/white powder	----------	10-20% Chrysotile (1)	1, C.
9. Insulation off electrical conduit, Boiler Room stairs	B17	Bulk	----	Gray/white solid	----------	40-50% Chrysotile (1)	1, C.

COMMENTS:

* These are approximate, see cost estimate for exact figures.
** 3. Ceiling sprayed on material could be fire retardant material to inhibit polyurethane fire spread (toxic substance).

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APPENDIX 3
MAIN SCHOOL SURVEY
DATA TABLE

Oceanïech

ASBESTOS CONTAINING MATERIALS

MAIN SCHOOL BUILDING

FAIRBANKS NORTH STAR BOROUGH SCHOOL DISTRICT
FAIRBANKS, ALASKA
JULY 1985

DESCRIPTION/LOCATION	SAMPLE NO.	SAMPLE TYPE	PHOTO NO.	GENERAL APPEARANCE CONDITION	APPROXIMATE AMOUNT OF EACH	SAMPLE RESULTS % OF ASBESTOS/FIBERS>5μ/CC	ACCESS TO ACM RECOMMENDATIONS
10. 2 1/2" above boiler (Boiler Room)	B12	Bulk	----	Gray aircell	----------	70-80% Chrysotile (1)	1, C.
11. 4" above boiler (Boiler Room)	B13	Bulk	----	Gray aircell	----------	70-80% Chrysotile (1)	1, C.
12. Boiler Room	A13	Air	----	Set at breath height	----------	0.01 (1)	1, C.
13. Boiler Room	A14	Air	----	Set at breath height	----------	0.02 (1)	1, C.
14. 4" HW	B6	Bulk	----	Gray aircell	----------	65-75% Chrysotile (1)	1, C.
15. Ceiling Sprayed Material, Mechanical Room No. 1	B7	Bulk	----	Gray foam	----------	No Asbestos (1)	1, C.
16. Off mesh material on wall, Mechanical Room No. 1	B18	Bulk	----	Gray cement - solid	----------	No Asbestos (1)	1, C.
17. 1 1/2" CW 45 ELL (Transformer Room)	B11	Bulk	----	White powder	----------	40-50% Amosite (1) 20-30% Chrysotile (1)	1, C.
18. Cement off conduit (Transformer Room)	B16	Bulk	----	Gray powder	----------	No ACM (1)	1, C.

COMMENTS:

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OceanTech

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19. 4" HW (Emerg. Generator Room)	B8	Bulk	----	White powder	----------	35-45% Amosite (1) 15-25% Chrysotile (1)	1, C
20. 4" LPS Riser (Emerg. Generator Room)	B9	Bulk	----	White powder	----------	10-20% Amosite (1) 10-20% Chrysotile (1)	1, C
21. 1 1/2" HW (Emerg. Generator Room)	B10	Bulk	----	Gray aircell	----------	70-80% Chrysotile (1)	1, C
22. Stairwell, next to Boiler Room	---	----	----	Aircell, H.F.	15 LF	----------	1, C
23. Floor tile, Basement walkway, next to Boiler Room entrance*	B1CC	Bulk	----	Dark gray VAT	10,000 SF	Trace amounts of Chrysotile (1)	1, C
24. Mechanical Room No. 2	A1S1	Air	----	Set at breath height	----------	0.01 (2)	1, C.
25. Mechanical Room No. 2	---	----	13,17	Pipe with HF	141 LF	----------	1, C
26. Mechanical Room No. 2 ***	A2	Air	----	----------	----------	0.03 (2)	1, C.

COMMENTS:
*** 26. All air samples were run for two hours.
Pump Calibration: 2 liters/min set at breath-height.
Air Samples (baseline) are taken before bulk sampler to eliminate any bias.
* Not recommended for removal

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DATA TABLE

Oceanitech

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27. Ceiling of Mechanical Room No. 2 (air mixing box)	824	Bulk	----	Black hair substance 2 pieces of cement	----------	Negative for ACM (1)	1, C.
28. Mechanical Room No. 2 4" Steam	825	Bulk	18	White aircell .	----------	50-60% Chrysotile (1)	1, C.
29. Crawl space next to Mechanical Room No. 2	826	Bulk	----	White solid	----------	30-40% Chrysotile (1)	1, C.
30. Men's Shower Room	---	----	----	Aircell, presently encapsulated	50 LF	----------	1, C
31. Hallway between Shower and Gym	---	----	----	Aircell piping	4 LF	----------	1, C
32. Ladies Shower Room	---	----	----	Aircell presently encapsulated	55 LF	----------	1, C
33. Storage Room behind Men's Shower	---	----	---	Aircell	25 LF	----------	1, C
34. West N-S run, hallway, 1 1/2"	---	----	----	Aircell, gray	205 LF	----------	1, C

COMMENTS:

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DATA TABLE

Oceaniech

ASBESTOS CONTAINING MATERIALS

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FAIRBANKS, ALASKA
JULY 1985

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35. Ducting N-end of east hallway to partition, basement	---	----	29	Aircell, gray with white coating	1264 SF	----------	1, C
36. Xerox Room/Office #2 (piping 1 1/2", & 4")	---	----	----	Aircell, gray	27 LF	----------	1, C
37. Xerox Room/ducting**	---	----	27	Aircell, gray	32 SF	----------	1, C
38. Hall Room: 4" LPS	---	----	----	Aircell, gray	60 LF	----------	2, C
1 1/4" riser's	---	----	----	Aircell, gray	25 LF	----------	1, C
39. Ante Room: ducting	---	----	----	Aircell, gray	108 SF	----------	1, C
40. Loading Ramp, 4" LPS	---	----	----	Aircell, gray	10 LF	----------	1, C
41. Room 4A, 4" LPS	---	----	----	Aircell, gray	10.5 LF	----------	1, C
42. Room 4B, 4" LPS	---	----	----	Aircell, gray	11 LF	----------	1, C
43. Stairwell, 4" LPS	---	----	----	Aircell, gray	10 LF	----------	1, C
44. Room 5A, 4" LPS	---	----	33	Aircell with HF	20 LF	----------	1, C
2" CR	---	----	33	Aircell with HF	32 LF	----------	1, C
1 1/4" CR	---	----	33,34	Aircell with HF	14 LF	----------	1, C

COMMENTS:

All gray aircell is coated with a white sealant compound. At the ends of several risers the aircell insulation is circumferentially exposed to the atmosphere, (see photographs).
** 37. Recommend immediate attention.

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Oceanïech

ASBESTOS CONTAINING MATERIALS

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FAIRBANKS NORTH STAR BOROUGH SCHOOL DISTRICT
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45. Room 6 (Film Room)	---	----	----	Ductwork aircell	112 SF	----------	1, C
46. Room 6A	---	----	----	Aircell, piping	55 LF	----------	1, C
47. Storeroom No. 5	---	----	----	Piping, HF	29 LF	----------	1, C
48. Women's Restroom, Basement	---	----	36	Aircell, HF	45 LF	----------	1, C
49. His-Hers-Ours Restroom Basement	---	----	----	Aircell, HF and piping	31 LF	----------	1, C
50. Room 7, Media Room	---	----	14,35	Piping	165 LF	----------	1, C
51. Copying Room **	---	----	27	Bare aircell	23.5 SF	----------	1, C
52. Pipe insulation off 4" LPS (Room 5A Storage)	B21	Bulk	9	Aircell	-------	50-60% Chrysotile (1)	1, C.
53. Duct sample, outside media room, backside	B22	Bulk	----	Light gray	-------	75% Chrysotile (1)	1, C.

COMMENTS:

Some gray aircell is coated with a white sealant compound. At the ends of several risers the aircell insulation is circumferentially exposed to the atmosphere, (see photographs).

** 51. Requires special abatement precaution.

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OceanTech

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MAIN SCHOOL BUILDING

FAIRBANKS NORTH STAR BOROUGH SCHOOL DISTRICT
FAIRBANKS, ALASKA
JULY 1985

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54. Hall Room **	A3	Air	30	----------	----------	0.20 (2)	1, C.
55. Room No. 4**	A4	Air	----	----------	----------	0.02 (2)	1, C.
56. Room No. 6**	A5	Air	----	----------	----------	0.03 (2)	1, C.
57. North end of East Wing**	A6	Air	----	----------	----------	0.01 (2)	1, C.
58. North/Middle of East Wing**	A7	Air	----	----------	----------	0.02 (2)	1, C.
59. South/Middle of East Wing**	A8	Air	----	----------	----------	0.03 (2)	1, C.
60. South end of East Wing**	A9	Air	----	----------	----------	0.02 (2)	1, C.
61. Hard fittings, hallway outside his/hers/ours restroom	B20	Bulk	----	Non-fibrous	----------	60-70% Chrysotile (1)	1, C.
62. Riser, Hall Room North outside wall in cabinet	B19	Bulk	----	Aircell	----------	70-80% Chrysotile (1)	1, C.

COMMENTS:
** 54 thru 60. All air samples were run for two hours.
Pump calibration: 2 liters/min set at breath-height.
Air Samples (baseline) are taken before bulk samples to eliminate any bias.

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DATA TABLE

OceanTech

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FAIRBANKS NORTH STAR BOROUGH SCHOOL DISTRICT
FAIRBANKS, ALASKA
JULY 1985

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63. Middle of North Hallway	A10	Air	----	----------	----------	0.03 (2)	1, C.
64. Duct sample, Copy Room	B23	Bulk	27	Aircell, cardboard	----------	65-70% Chrysotile (1)	1, C.
65. Gymnasium	---	----	3	Aircell	104 LF	----------	1, C
66. Chalkboard in gymnasium	B1BB	Bulk	----	Brown inside (1) black outside (1)	28 SF	No Asbestos (1)	1, C.
67. Records Storage	---	----	----	Aircell	116 LF	----------	1, C
68. Breakroom	---	----	7,8,10,11	Aircell	36 LF	----------	1, C
69. Storage Room No. 1	---	----	----	Aircell	10 LF	----------	1, C
70. Room No. 10, Storage Closet	---	----	----	Ducting & Piping	43 SF 4.5 LF	----------	1, C
71. Alt. High School Custodial Room	A11	Air	22	Mid height level	----------	0.01 (2)	5, C.
72. Alt. High School, above Coke Machine	A12	Air	----	Mid height level	----------	0.01 (2)	1, C.

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73. Crawl Space No. 1	---	----	----	Aircell piping with HF mixed with fiberglass	107 LF	----------	1, C
74. Crawl Space No. 2	---	----	----	HF	6 LF	----------	1, C
75. Room 1 H	---	----	----	Aircell piping	33 LF	----------	1, C
76. Large Room, RHS Alternate High School	---	----	----	Aircell	92 LF	----------	1, C
77. Photo Lab	---	----	----	Mixed aircell/HF	29 LF	----------	1, C
78. Custodial Room, pipe chase area, Basement	---	----	15,16	Mixed aircell/HF	140 LF	----------	5, C
79. Corridor, Large Room, RHS Alternate High School	---	----	----	Aircell	5 LF	----------	1, C
80. Men's Room	---	----	----	Aircell pipe riser	8 LF	----------	1, C
81. Rear side, large office	---	----	----	Pipe/HF	94 LF	----------	1, C
82. Back wall, large office	---	----	----	HF	1 LF	----------	1, C
83. Ceiling, concealed pipe & HF	---	----	----	Pipe/HF	62 LF	----------	1, C

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84. Room 1E, (above ceiling)	---	----	----	Pipe/HF	36 LF	----------	2, C
85. Snack Room	---	----	----	HF	10 LF	----------	1, C
86. Room 1C	---	----	----	HF	39 LF	----------	1, C
87. Outside Room 1C between room and stairs	---	----	----	Pipe/HF	78 LF	----------	1, C
88. Room 1A	---	----	----	HF	6 LF	----------	1, C
89. Alternate High School Storage Room	---	----	----	Pipe (aircell)	20 LF	----------	1, C
90. Duct Insulation, Basement East & South hallways per plans	---	----	6,32	Painted aircell peeled off in several locations	1393 SF	----------	1, C

COMMENTS:

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91. Cardboard insulation off ducting outside Room No. 5, by Special Education	B27	Bulk	----	Aircell cardboard material	----------	Gray corrg - 80-90% Chrysotile (1) Loose gray - 65-75% Chrysotile (1) Thin white - 5-10% Amosite (1) 5-10% Chrysotile (1)	1, C.
92. Alternate High School pipe insulation concealed in ceiling space:	---	----	----	Aircell/HF	66 LF	----------	2, C
93. Room 8	---	----	31	Aircell	25 LF	----------	1, C
94. Room 9	---	----	----	Aircell	27 LF	----------	1, C
95. Room 9, Storage Closet	---	----	----	Ducting and Piping insulation (aircell)	32.2 SF 4.5 LF	----------	1, C

COMMENTS:

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96. Room 10	---	----	----	Aircell	44 LF	----------	1, C
97. North end of hallway	---	----	----	Painted, aircell	35 SF	----------	1, C
98. South end of hallway	---	----	----	Painted, aircell	30.2 SF	----------	1, C
99. Room 102	---	----	----	Aircell	90 LF	----------	1, C
100. Room 103	---	----	21	Aircell	90 LF	----------	1, C
101. Room 101A	---	----	----	Aircell	22 LF	----------	1, C
102. Room 101B	---	----	----	Aircell	26 LF	----------	1, C
103. Room 101C	---	----	----	Aircell/HF	28 LF	----------	1, C
104. Custodial Pipe Chase Area, 1st floor	---	----	20	Aircell/HF	90 LF	----------	5, C
105. Women's Restroom, 1st floor	---	----	4	Aircell/HF	60 LF	----------	1, C
106. Men's Restroom, 1st floor	---	----	----	Aircell/HF	42 LF	----------	1, C
107. Room 105	---	----	----	Aircell	78 LF	----------	1, C

COMMENTS:

KEY:

SAMPLE TYPE - (1) Applies to Bulk Sampling B = Bulk
(2) Applies to Air Sampling A = Air

GENERAL:
ACM = Asbestos Containing Material
CR = Condensate Return
CW = Cold Water
FG = Fiberglass
HF = Hard Fitting (Cementitious ACM)
HW = Hot Water
LF = Linear Feet
LPS = Low Pressure Steam
SF = Square Feet
VAT = Vinyl Asbestos Tile

ACCESS - 1 = OPEN
2 = BEHIND CEILING
3 = BEHIND WALL(S)
4 = DEMOLITION REQUIRED
5 = CLOSE QUARTERS

RECOMMENDATIONS - C = REMOVE
D = ENCAPSULATE
E = ENCLOSE
F = OTHER (SPECIFY)

APPENDIX 3
MAIN SCHOOL SURVEY
DATA TABLE

ASBESTOS CONTAINING MATERIALS

MAIN SCHOOL BUILDING

FAIRBANKS NORTH STAR BOROUGH SCHOOL DISTRICT
FAIRBANKS, ALASKA
JULY 1985

Oceanlech

DESCRIPTION/LOCATION	SAMPLE NO.	SAMPLE TYPE	PHOTO NO.	GENERAL APPEARANCE CONDITION	APPROXIMATE AMOUNT OF EACH	SAMPLE RESULTS % OF ASBESTOS/FIBERS>5μ/CC	ACCESS TO ACM RECOMMENDATIONS
108. Room 104	---	----	----	----------	60 LF	----------	1, C
109. Boy's Restroom, East hallway North end	---	----	----	----------	26 LF	----------	1, C
110. Girl's Restroom, East hallway South end	---	----	----	----------	18 LF	----------	1, C
111. 1st Floor, North end of East hallway	B1B	Bulk	----	----------	------	75-80% Chrysotile (1)	1, C.
112. Room 201	---	----	12	Aircell	3 LF	----------	1, C
113. Room 202	---	----	----	Aircell	12 LF	----------	1, C
114. Room 203	---	----	----	Aircell	9 LF	----------	1, C
115. Room 204	---	----	----	Aircell	8 LF	----------	1, C
116. Custodial Pipe Chase Area, 2nd floor	---	----	23	Aircell/HF	90 LF	----------	5, C
117. Mechanical Room No. 21, 2nd floor	---	----	----	Aircell/HF	95LF	----------	1, C

COMMENTS:

KEY:

SAMPLE TYPE - (1) Applies to Bulk Sampling B = Bulk
(2) Applies to Air Sampling A = Air

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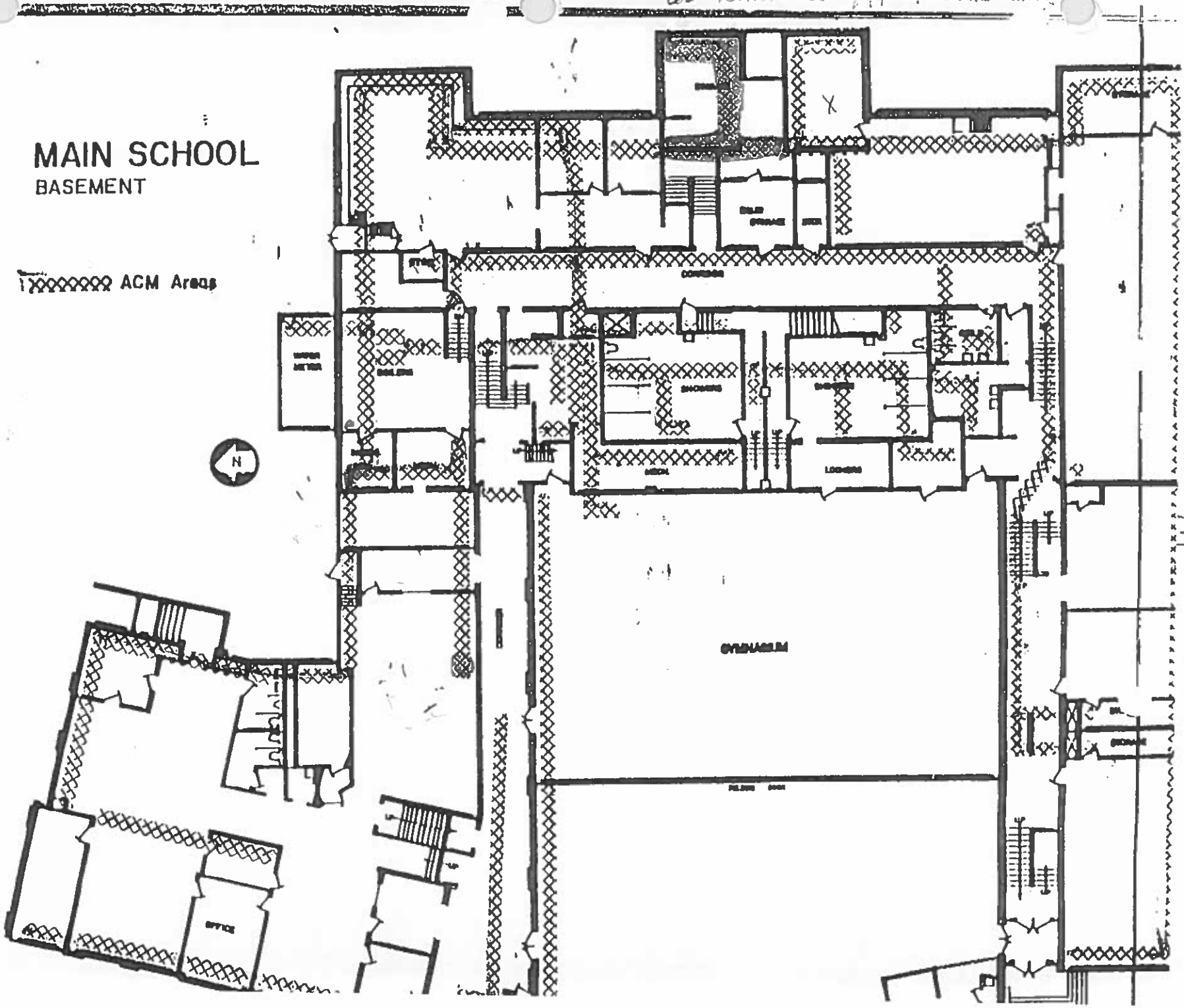
APPENDIX 3
MAIN SCHOOL SURVEY
DATA TABLE

603' Removed 11/94 by Steam + Wate...

MAIN SCHOOL
BASEMENT

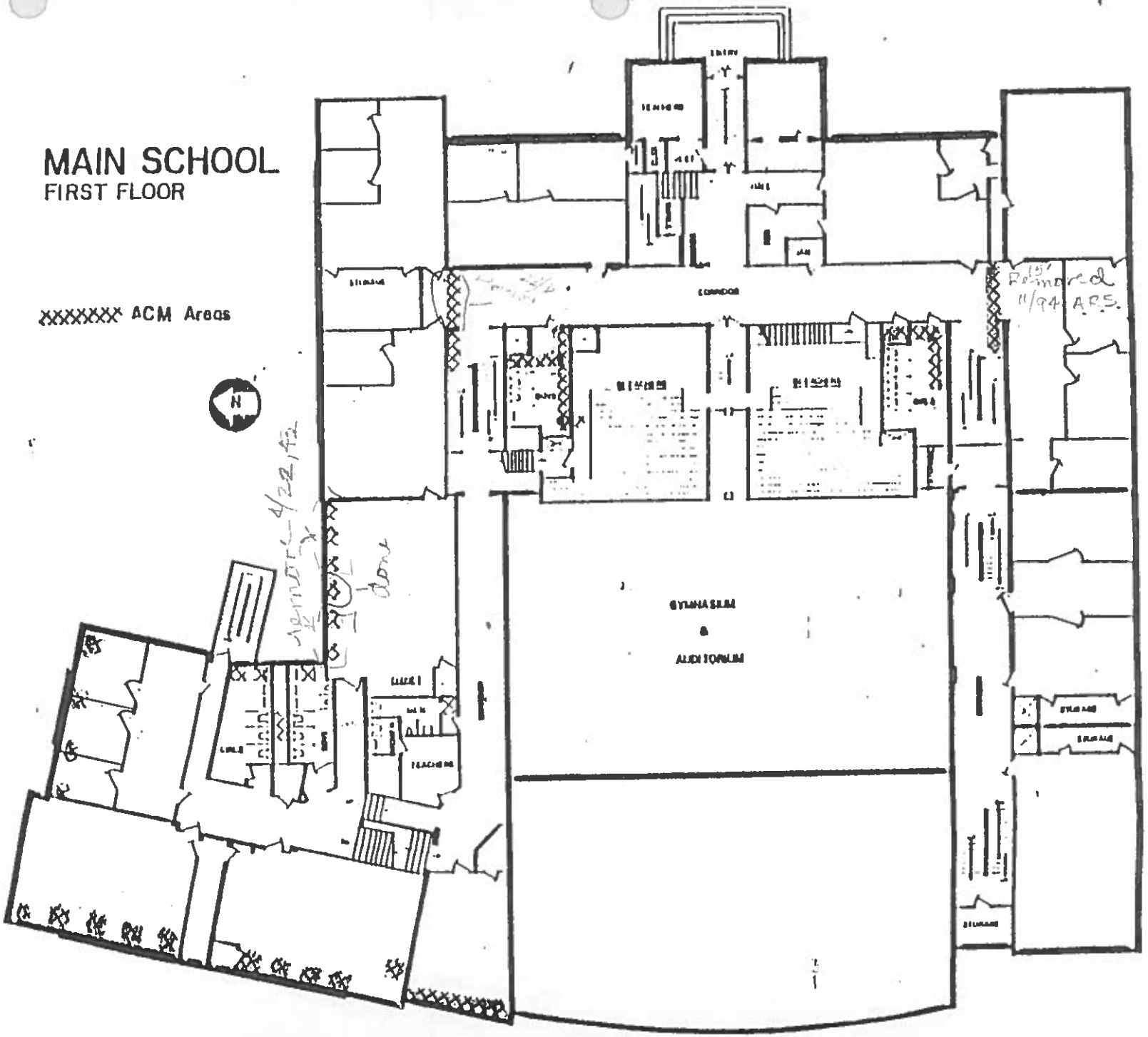
ACM Areas



11/94

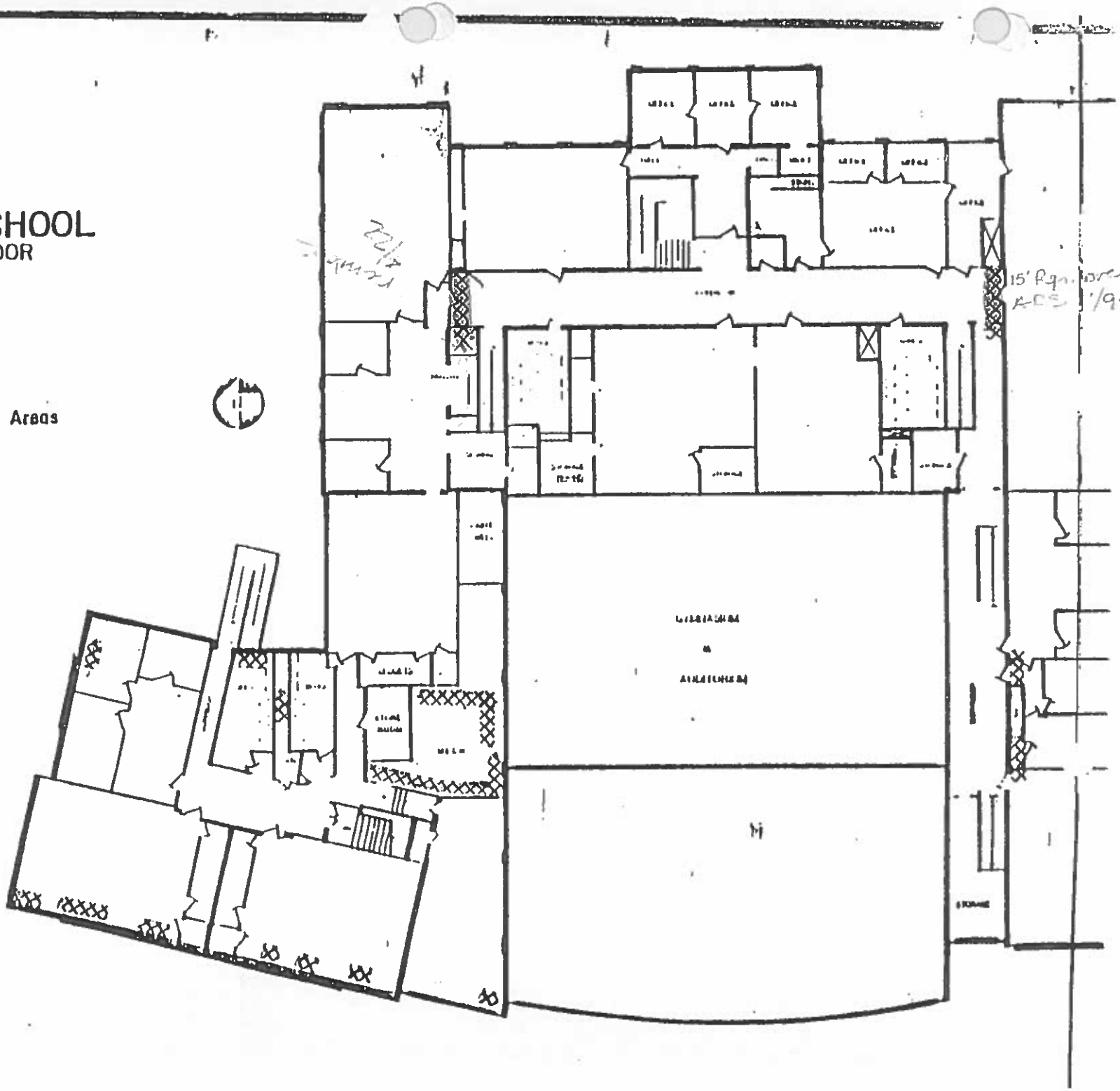
MAIN SCHOOL
FIRST FLOOR

XXXXXXX ACM Areas



MAIN SCHOOL
SECOND FLOOR

ACM Areas



TAB 5 - BUILDING INSPECTION UNDER EPA 40 CFR 763

INTRODUCTION

During the period November 15-December 30, 1988, a survey of Main School was conducted as required by the Asbestos Hazard Emergency Response Act EPA regulation 40 CFR 763. The accredited inspector was Michael S. Taylor, EPA Accreditation #HKP80443. A copy of his accreditation certificate is included in TAB 1.

METHODS

Document Review. Prior inspection reports included in Tab 4 and building drawings available from the School District Physical Plant were reviewed. The building was divided into functional areas by room number or other description (i.e. "Girls' Room" or "2nd floor hall") where room numbers were not assigned. In some cases groups of rooms were treated as functional areas when the only suspected asbestos containing building materials (ACBM) were floor tiles. Functional spaces include ceiling spaces and crawl spaces above and below the actual room unless otherwise indicated.

Visual Inspection. All accessible spaces inside the building were inspected. AHERA regulations do not require inspection of the building exterior. Where floor tile is covered with glued carpet, the tile type was assumed from small areas which could be exposed.

In each functional space an inventory was made of suspect materials. Where prior inspectors had sampled materials and determined them to contain asbestos, the materials were usually assumed to contain asbestos without additional sampling. Suspect materials which had not previously been sampled, or had been reported as negative, were resampled according to AHERA standards and analyzed by an EPA accredited laboratory. Previous surveys had identified some asbestos containing floor tiles. All floor tiles were assumed to contain asbestos for the purposes of this survey. Materials which were obviously not asbestos containing such as fiberglass pipe insulation were ignored.

Homogeneous sampling areas were identified which included materials of similar appearance, type and texture. Many of these materials occurred throughout the building. Each such sampling area was given a code number such as SUR-1 (for Surface 1).

Bulk Sampling. Samples of suspect materials (except for some materials which were assumed to be asbestos containing) were taken by an accredited inspector, Michael S. Taylor, of the Fairbanks North Star Borough, Facilities Management Division, Department of Public Works, PO Box 1267 Fairbanks, AK 99707. Samples were taken where the materials were accessible, and usually where they were damaged. Sufficient samples were taken to characterize the materials. Samples of a homogeneous sampling area material were numbered by the area code followed by a dash and a digit such as SUR-1-1 (the first sample of Surface 1). Sample analysis was by two accredited laboratories: Polytechnic, Inc, 3538 International Way, Fairbanks, AK 99701, Tom Benjamin, Microscopist, and Northern Testing Laboratories, Inc., 600 University Plaza West, Suite A, Fairbanks, AK 99709, Linda Hendershot, Microscopist. Copies of signed laboratory result sheets are found at the end of this TAB. Also included are certificates of accreditation for the two laboratories.

Homogeneous sampling area materials which were proven or assumed positive for asbestos were assessed and categorized as required by AHERA (40 CFR 763.88) according to type, condition and potential for disturbance and were quantified. The quantity of each material (each homogeneous sampling area) occurring in each functional space was entered on a spreadsheet. Requirements for initial cleaning and for immediate preventative repairs were also noted for each functional area.

Air Monitoring. Although not required by AHERA, air samples were collected for assessment purposes in portions of the building where there was significantly damaged thermal system insulation (TSI). Sampling was conducted in the mechanical rooms numbered 1, 2 and 21, in the Records Storage area, and in the Gym. Samples were taken either with high speed pumps or with Dupont Alpha 1 personal sampling pumps run on chargers. Sample volumes ranged from 1020 to over 1200

liters. Sample cassettes were standard 25 millimeter 0.4 micron cellulose ester filter cassettes for TEM analysis. Analysis was by AIHA accredited EMS Laboratories of South Pasadena CA. This air monitoring preceded an emergency asbestos repair and encapsulation project in Mechanical room 2 and an asbestos removal project in Mechanical room 21, in December, 1988.

Labeling. Friable asbestos containing materials in routine maintenance areas were labeled with bright yellow, 3"x5", AHERA required stickers reading: "CAUTION ASBESTOS HAZARD DO NOT DISTURB WITHOUT PROPER TRAINING AND EQUIPMENT."

SURVEY RESULTS

HOMOGENEOUS SAMPLING AREAS - SURFACING MATERIALS

Four surfacing materials were identified:

SUR-1 is a friable cementitious material, troweled on over a steel wire grid with a paper backing behind the grid. (The paper backing is MISC-1 below). The material occurs in the work/storage room of Mechanical Room 1 above the entry door. It also occurs in Mechanical Room 2 as a short, 56 square foot, partition in the low overhead area under the stairs. It is in heavily damaged condition in the latter area. Samples SUR-1-1, SUR-1-2, and SUR-1-3 were taken at the left, middle and right thirds of the partition in Mechanical Room 2 where the material was damaged. All SUR-1 samples were negative for asbestos.

SUR-2 is a friable plaster applied to concrete walls throughout the building. Much of the building has little or no plaster as the concrete walls were directly painted. The plaster was applied thickly in some locations where the concrete wall was irregular. The material is water damaged in local areas, particularly in the halls and the Gym. Sample SUR-2-1 was taken from the damaged area under the exit sign in the first floor hall opposite the entry to the basement near room 106. Sample SUR-2-2 was taken from a damaged area in the second floor hall by Custodial 22. Sample SUR-2-3 was taken the hall wall at a crack directly across from room 215. Sample SUR-2-4 was taken from the edge of a hole in the hall wall between the two entries to Room 113. All SUR-2 samples were negative for asbestos.

SUR-3 is a friable plaster applied to repaired areas of the south wall of the Gym. Sample SUR-3-1 was taken from a damaged area above and to the right of the punch bag frame. SUR-3-2 was taken from a damaged area under the scoreboard. All SUR-3 samples were negative for asbestos.

SM-1 is a friable spray applied fireproofing on the ceilings of the Mechanical Room 1 suite. There is a large amount of overspray on the boilers, walls and other equipment in the rooms. It was tested by OceanTech in 1985 and found to be negative for asbestos. In this survey, sample SM 1-1 was taken from the generator room ceiling. SM-1-2 was taken from the overspray on a pipe over the door to Boiler #1. SM-1-3 was taken from the boiler room ceiling over the entry door to the generator room. All SM-1 samples were negative for asbestos.

HOMOGENEOUS SAMPLING AREAS - THERMAL SYSTEMS INSULATION

TSI-1 is a friable, white, treated lagging, over fiberglass insulation on ductwork in the mezzanine area of Mechanical Room 21. It was determined by OceanTech in 1985 to contain asbestos. Sample TSI-1-1 was taken from a damaged area immediately to the left of the ladder. Sample TSI-1-2 was taken from a damaged spot on the mezzanine just before the duct bend. Sample TSI-1-3 was taken from a damaged area at the damper plate on the last branch drop at the end of the ductwork. All damaged areas of this ductwork were repaired and encapsulated in December, 1988. All three TSI-1 samples were positive for asbestos. TSI-1 is assessed as ACBM with potential for significant damage.

TSI-2 is friable aircell insulation (corrugated paper typically with asbestos) on ductwork at various non-continuous locations throughout the original 1933 structure. There is a damaged, exposed portion of several square feet in the hall outside room 214. In the basement the material was never

properly encapsulated along the wall side of the duct in the hall outside rooms 3, 4 and 5. Perhaps 100 square feet of aircell is exposed in the latter location. The material was sampled by OceanTech in 1985 and found to contain asbestos. In the present survey all TSI-2 is assumed to contain asbestos without further sampling. TSI-2 is assessed as damaged or significantly damaged thermal system insulation ACM.

TSI-3 is a friable, hard matrix, boiler insulation, about 2.5 inches thick covering the two boilers in Mechanical Room 1. A similar material is found on the inside of the boiler doors. The material is damaged in a few locations. The edges of the insulation were never properly encapsulated. There is a damaged area less than one square foot in area on the inside of one door. In the present survey all TSI-3 is assumed to contain asbestos without further sampling. TSI-3 is assessed as damaged or significantly damaged thermal system insulation ACM.

TSI-4 is friable aircell insulation on heating system and water pipes throughout the structure. Experience indicates that this material invariably contains asbestos. Samples of aircell insulation taken by OceanTech in 1985 were positive. Where this material is quantified in this study, the lineal footage includes the associated hard fittings (TSI-5, below) for simplicity. In the present survey all TSI-4 is assumed to contain asbestos without further sampling.

TSI-5 is a friable hard matrix insulation on fittings of pipes otherwise insulated with aircell (TSI-4, above). Experience indicates that this material invariably contains asbestos. Samples of hard fittings taken by OceanTech in 1985 were positive. TSI-5 was quantified where it occurs as an estimated number of hard matrix insulated fittings. In the present survey all TSI-5 is assumed to contain asbestos without further sampling. TSI-5 is assessed as damaged or significantly damaged thermal system insulation ACM.

TSI-6 is a friable hard matrix pipe insulation with associated hard matrix fitting insulation on steam supply pipes in the 1948 addition. Experience indicates that such material generally contains asbestos. TSI-6 is quantified in this report as the estimated total lineal feet of pipe and fittings. In the present survey all TSI-6 is assumed to contain asbestos without further sampling. TSI-6 is assessed as damaged or significantly damaged thermal system insulation ACM.

TSI-7 is a friable hard matrix fitting insulation on fiberglass insulated water pipes throughout the structure. Experience indicates such materials often contain asbestos. In the present survey all TSI-7 is assumed to contain asbestos without sampling. TSI-7 is assessed as damaged or significantly damaged thermal system insulation ACM.

TSI-8 is friable debris remaining from incomplete prior removal work on pipe fittings that previously were insulated with hard matrix insulation. In the present survey all TSI-8 is assumed to contain asbestos without sampling. TSI-8 is assessed as damaged or significantly damaged thermal system insulation ACM.

HOMOGENEOUS SAMPLING AREAS - MISCELLANEOUS MATERIALS

FD-1 is a fire door with a wood veneer over a friable white, fibrous hard matrix insulation core at the entry to Mechanical Room 1. The door is in poor condition with the veneer peeling off the insulating core. The interior is also exposed at the jam where hinges have been moved. Sample FD-1-1 was found to be 95% chrysotile asbestos. FD-1 is assessed as damaged or significantly damaged friable miscellaneous ACM.

FD-2 is a metal fire door with unknown core construction. It is the entry door for the Main Electrical Supply room in the Mechanical Room 1. It is in excellent condition. FD-2 was not sampled and is assumed to be asbestos for the purposes of this survey. FD-2 is assessed as ACBM with potential for damage.

MISC-1 is the friable paper backing, with a printed Pittsburgh Steel label, used behind the steel wire grid onto which was sprayed the cementitious material designated SUR-1 in the Mechanical Rooms 1 and 2. Sample MISC-1-1, taken from the partition in Mech 2, was negative for asbestos.

GB-1 is a friable gypsum board on both sides of a partition between the emergency generator room and a work/storage room in the Mechanical Room 1 suite. Sample GB-1-1, from the generator room side was negative.

GB-2 is a friable gypsum board on the walls and ceiling of the mezzanine area of Mechanical Room 21. Sample GB-1-1 from the corner just to the right of the top of the ladder was negative for asbestos.

CT-1 is a friable, glued on 12"x12" white ceiling tile present throughout the building. In some rooms it has been removed and in others it remains above lay in ceiling tile. Sample CT-1-1 taken from a dislodged tile in Room 7 was negative for asbestos.

CT-2 is a friable, lay in ceiling tile, 24"x48", found throughout remodeled areas of the building. Sample CT-2-1 taken from the ceiling of the Alternative School, was negative for asbestos.

CT-3 is a friable, glued on ceiling tile, 24"x48", on the ceiling of the Gym. It is significantly water damaged. Sample CT-3-1 taken from the north end of the ceiling to the right of the back board was negative.

CT-4 is a friable, glued on 12"x12" acoustical tile on ceiling and walls of the Records Storage area. CT-4-1 from the SW corner was negative.

HOMOGENEOUS SAMPLING AREAS - NON-FRIABLE SUSPECTED ACBM

FT-1 through FT-13 are floor tiles. FT-1 through FT-12 are vinyl; FT-13 appears to be asphalt. All are non-friable miscellaneous materials in good condition where they are visible. A description of each homogeneous floor tile type is given in the TABLE 1 below. Quantities of these materials are given by functional area in the summary tables at the end of this TAB. OceanTech sampled some of these tiles in 1985 and found traces of asbestos. All FT-1 through FT-13 are assumed to contain asbestos for the purposes of this survey. All FT-1 through FT-13 are assessed as ACBM with potential for damage.

TABLE 1. Floor Tile Homogeneous Areas in Main School.

Number	Color	Size	Location
FT-1	Dark gray, mottled	9x9	Halls
FT-2	Light gray, mottled	9x9	Work areas
FT-3	White	12x12	Rm 203 closet patch,
FT-4	Brown	12x12	Rm 202 closet patch,
FT-5	Gray	9x9	Rm 206, Harrison's
FT-6	Green	9x9	Rm 210, patch in 211
FT-7	Red, mottled	9x9	Rms 6-10
FT-8	Beige	9x9	Records Storage
FT-9	Green	9x9	Rms 3,4 under carpet
FT-10	Gray	12x12	Rm 8, patch in entry
FT-11	Red	Unknown	Alt. School under carpet
FT-12	Red	Unknown	109 under carpet
FT-13	Brown	Unknown	109-110 Hall under carpet

FUNCTIONAL AREAS - SUMMARY OF MATERIALS

TABLE 2 indicates the amount of each assumed or proven asbestos containing material by homogeneous sampling area found in each functional space. The column headed FT-SUM indicates

the total area of floor tile in the functional space. Also indicated are the areas, or number of locations within an area, where initial cleaning and initial preventative repairs are required.

AIR MONITORING

TABLE 3 summarizes the air monitoring results. Sample numbers include the date of sampling. The sampling rate is indicated in liters per minute (lpm). The volume sampled is given in liters (l). The resulting asbestos air concentrations are given in asbestos structures per cubic centimeter of air (s/cc). Structures greater than five microns (u) in length are indicated for each sample followed by total structures. Recent research suggests that dangerous asbestos health effects are associated with fibers greater than five microns long. OSHA regulations currently ignore fibers less than five microns.

TABLE 3. AIR MONITORING RESULTS FOR MAIN SCHOOL

SAMPLE #	LOCATION	TIME (min)	VOLUME (l)	ASBESTOS AIR CONCENTRATIONS (s/cc>5u)	(s/cc total)
12-16-88-1	MECH 1	600	1020	<0.003*	0.012
12-16-88-2	MECH 1	600	1020	<0.003	0.006
12-16-88-3	MECH 2	600	1020	<0.003	0.003
12-16-88-4	MECH 2	600	1020	0.003	0.006
12-16-88-5	MECH 21	600	1020	0.006	0.012
12-19-88-1	MECH 2	126	1260	<0.003	0.029
12-19-88-2	MECH 2	126	1260	<0.003	0.006
12-19-88-3	MECH 21	124	1240	0.002	0.055
12-20-88-1	MECH 21	128	1248	0.007	0.040
12-20-88-2	MECH 1	127	1238	0.022	0.20
12-20-88-3	MECH 1	127	1143	0.028	0.18
1-5-89-1	RECORDS	720	1174	<0.005	<0.005
1-9-89-1	RECORDS	720	1224	<0.005	<0.005
1-10-89-1	GYM	720	1224	<0.005	<0.005
1-11-89-1	GYM	720	1224	<0.005	<0.005

* Results preceded by "<" indicate that there were no fibers of that size detected by the lab. Therefore, the actual concentration is something less than the detection limit which is stated instead.

SURVEY CONCLUSIONS

The inspection of Main School confirmed the presence of both friable and non-friable asbestos. The friable materials consist of thermal systems insulations (TSI) on pipes, boilers, ductwork, and in fire doors. The TSI is assessed as damaged or significantly damaged thermal systems insulation ACM. One fire door is significantly damaged also. These materials will require response actions to bring them up to minimum AHERA standards. The non-friable materials consist entirely of floor tiles which are in good condition requiring only periodic surveillance. Air monitoring indicates the presence of asbestos fibers at low concentrations in areas with large amounts of damaged asbestos materials. The highest air concentrations were in Mechanical Room 1. Air concentrations were determined as general area airborne asbestos and do not reflect conditions under which asbestos is being disturbed. Maintenance operations which disturb asbestos may generate higher personal exposures.

TABLE 2. ASBESTOS MATERIALS IN MAIN SCHOOL

FUNCTIONAL AREA	CLEAN	REPAIR	TSI-1	TSI-2	TSI-3	TSI-4	TSI-5	TSI-6	TSI-7	TSI-8	FD-1	FD-2	FT-1	FT-2	FT-3	FT-4	FT-5	FT-6	FT-7	FT-8	FT-9	FT-10	FT-11	FT-12	FT-13	FT-SUM
Room # or disc.	#	# or lf	sq.ft.	sq.ft.	sq.ft.	lf	#	lf	#	#	#	#	sq.ft.	sq.ft.	sq.ft.	sq.ft.	sq.ft.	sq.ft.	sq.ft.	sq.ft.	sq.ft.	sq.ft.	sq.ft.	sq.ft.	sq.ft.	sq.ft.
BASEMENT																										
Mech 1, boiler	All	100			380	140	35			6	1	1														0
Mech 1, store	All	15				100	16		3																	0
Generator rm	All	33				67	16																			0
Transformer	All	10				44	7																			0
Mech 2, suite	none																									0
His/Hers/Ours	All	7				28	4																			0
Hall Entry	All					7															56					56
Hall-Main	All	132		1800		142	2						1550													1550
2	All	1				25	4																			0
3	All	7		70		81	7														630					630
crawl space	All					100	4																			0
4	All			10																	484					484
4A	All	2				11															inc'd					0
4B	All	2				11	1														inc'd					0
5A	All	1								1				220												220
5 Storage	All	28			REMOVED 5/17/95 BK	(43)	10																			0
6A Computer	All	10				51	5												260							260
6	All	14		65		71	8												880							880
Store 5-6	All																									0
7	All	26			75' 90		7						38	82					1200							1320
7A	All	2				59	9												220							220
8	All	4				27	3												430			14				444
9	All	10		30		28	5												420							420
10	All	12		34		78	15												900							900
Mech 3	All																									0
Store 5 (Boys)	All	4				27	6						50													50
Girls	All	13				37	6																			0
Gym	N wall	8				58	8																			0
Bleachers	N end	6				5	1																			0
Locker halls	none	3				6	1																			0
Men's Lockers	none	6				36	5																			0
Women's Locker	none	3				45	12																			0
Storage adj	All	3				20	3																			0
Record Storage	3	7				135	10		15										3000							3000
Custodial 1	3	4				18	1																			0
Storage 1	none					16																				0
Hall by Storage 1	none					3							550													550
Alt. School																										
1A crawl space	Half	17				20	8	56	5																	4100
1H crawl space	none								3																	0
1H & open area	Ceil.	27				63	11	56																		0
1A	none																									0
1B	Ceil.					10	10	15	1																	0
Open 1B-1C	Ceil.	3				27	11	18																		0
1C	Ceil.	3				18		18																		0
1D	Ceil.	1					4																			0
1E	Ceil.	2				20	5	11																		0
Open 1C-1D	Ceil.	3				24	4	19																		0
Open 1E-1F	Ceil.	5				14	4	38																		0
1F	Ceil.	2				30	3	40																		0
Soffett 1F-Men's	none					10		10																		0
Men's	none																									0
Women's	none																									0

FUNCTIONAL AREA	CLEAN	REPAIR	TSI-1	TSI-2	TSI-3	TSI-4	TSI-5	TSI-6	TSI-7	TSI-8	FD-1	FD-2	FT-1	FT-2	FT-3	FT-4	FT-5	FT-6	FT-7	FT-8	FT-9	FT-10	FT-11	FT-12	FT-13	FT-SUM
Room # or desc.	#	# or lf	sq.ft.	sq.ft.	sq.ft.	lf	#	lf	#	#	#	#	sq.ft.	sq.ft.	sq.ft.	sq.ft.	sq.ft.	sq.ft.	sq.ft.	sq.ft.	sq.ft.	sq.ft.	sq.ft.	sq.ft.	sq.ft.	sq.ft.
Custodial	none																									0
Pipe Chase	none																									0
FIRST FLOOR																										0
101	none													660												660
101A	2													inc'd												0
101B	2													inc'd												0
101C	2													inc'd												0
102	6										1			660												660
103	6										1			781												781
Girl's	none														12											0
Boy's	none														8	13										0
Custodial	none																									0
Pipe Chase	none																									0
104	none													450												450
Storage 11	none																									0
Teacher's	none																									0
Women	none																									0
Men	none	2						6	5																	0
105	none	6						41	5	38		6		782												782
106-108	none													1972												
109	none																							110		110
110	none													1170										35		110
111-113	none													1117												1117
Custodial 12	none																									0
Custodial 13	none							11	1																	0
Women by C.13	none							10	3																	0
114 A-118	none													2531												2531
Hallway	none					180																				2950
SECOND FLOOR																										0
Hall	none	5			150									1550	1450											3000
Custodial 22	none				55									16												16
201A	4										1															0
201B	2										2															0
201C	none																									0
201	none																									0
202	none																									0
203	1										1				18											18
204	6										1					18										18
Boy's	none																									0
Girl's	none													720												720
205, 206A	4										1															0
206	none													690												690
206 Harrison	none															150										150
206C	2										1															0
207	none													936												836
208	none																									0
209	none													900					7							907
210-210C	none													15						650						665
211	none													675												675
212	none													518												518
213	none													198												198
214	none													1560												1560
215	none													650												650
216	none													400					70							400

FUNCTIONAL AREA	CLEAN	REPAIR	TSI-1	TSI-2	TSI-3	TSI-4	TSI-5	TSI-6	TSI-7	TSI-8	FD-1	FD-2	FT-1	FT-2	FT-3	FT-4	FT-5	FT-6	FT-7	FT-8	FT-9	FT-10	FT-11	FT-12	FT-13	FT-SUM
Room # or disc.	#	# or lf	sq.ft.	sq.ft.	sq.ft.	lf	#	lf	#	#	#	#	sq.ft.	sq.ft.	sq.ft.	sq.ft.	sq.ft.	sq.ft.	sq.ft.	sq.ft.	sq.ft.	sq.ft.	sq.ft.	sq.ft.	sq.ft.	sq.ft.
217	none													700												700
Boy's & Girl's	none																									0
Custodial 13	none					11	1																			0
Storage 12	none																									0
Mech 21	none		830																							0
Totals	43	547	830	2490	380	1949	286	349	27	22	1	1	6704	18677	18	18	150	657	4310	3000	1170	14	4100	110	35	38928

TAB 6 - RECOMMENDED RESPONSE ACTIONS BY MANAGEMENT PLANNER

INTRODUCTION

The purpose of this TAB is to plan response actions to correct asbestos problems noted in the inspection report (TAB 5). Each numbered RECOMMENDATION which follows identifies the MATERIALS requiring response actions, the LOCATIONS included in the response action, the QUANTITIES involved, and the CONDITION of the materials involved.

INITIAL PREVENTATIVE MEASURES are actions required to block the release of asbestos fibers and to bring the friable asbestos containing materials in the building up to minimum AHERA standards These measures include repair and encapsulation or isolation of materials where appropriate. Removal is required where localized materials are unsuited for repair and sealing due to condition, location, or potential for disturbance.

FINAL ABATEMENT MEASURES are response actions which must ultimately be taken to rid the building of friable asbestos. They are required by EPA regulations prior to renovation or demolition. Final abatement means removal of all of the friable asbestos containing materials. When asbestos is removed the workers must isolate the work to prevent the contamination of adjacent areas.

A SCHEDULE indicates the recommended timetable for the response actions in the recommendation.

Some general notes apply to all or most recommendations:

NOTE 1. The District may elect to bypass the initial preventative measures and complete the final abatement measures if the final abatement can be funded and scheduled immediately.

NOTE 2. The actual final abatement methods used will depend on the future use of the area, which is unknown as this plan is written. The response action may be completed early with the present use continuing after a temporary disruption for the abatement of ACM, or the action may be delayed until the complete renovation of the building. Different methods would be appropriate for the two situations. Indeed, if the building is renovated and no longer used as a school facility, AHERA will no longer apply (unless the law is expanded to include the new use).

NOTE 3. Asbestos response actions must be individually specified by an EPA accredited Asbestos Project Designer. Hence the details of each response action are not outlined in the recommendations that follow.

NOTE 4: Abatement of floor tile is required only in the unlikely event that the materials become friable. According to the EPA's published "One Hundred Commonly Asked Questions About the New AHERA Asbestos-in-Schools Rule," removal of floor tile is not a "response action" under AHERA unless the material becomes friable before or in the removal process. Accredited designers and workers are not required unless the material becomes friable. The district may wish to use an accredited designer to insure that the materials do not become friable, however. *Removal of floor tile is not included in the estimates below.*

NOTE 5: Until removal, all asbestos containing materials, friable and non-friable, must be included in the Periodic Surveillance Program, TAB 10 and maintained according to the Operations and Maintenance Plan, TAB 11.

NOTE 6: "Full isolation procedures" means the methods outlined in Alaska Department of Labor Asbestos Construction Standard, 8 AAC 05.045, Appendix F, Work Practices and Engineering Controls for Major Asbestos Removal, Renovation, and Demolition Operations.

NOTE 7: "Small-scale procedures" means the methods outlined in the EPA AHERA regulations, 40 CFR 763 subpart E, Appendix B, Work Practices and Engineering Controls for Small-Scale, Short-Duration Operations Maintenance and Repair (O&M) Activities Involving ACM. These methods include the use of glove bags and minienclosures.

NOTE 8: "PCM" means phase contrast microscopy. It is an analytical method for asbestos air samples using a light microscope. The method is allowed only for smaller jobs. PCM clearance standards are detailed in the AHERA regulations.

NOTE 9: "TEM" means transmission electron microscopy. It is an analytical method of asbestos air samples using an electron microscope. The method is allowed for clearance of any size abatement project, but is approximately ten times more expensive than PCM. TEM clearance standards are detailed in the AHERA regulations.

MATERIALS AND RECOMMENDED RESPONSE ACTIONS:

RECOMMENDATION: 1.

MATERIAL: TSI-1. ACM lagging on fiberglass duct insulation

LOCATION: Mechanical room 21

QUANTITY: 830 square feet

CONDITION: Good, repaired and encapsulated 12/88

INITIAL PREVENTATIVE MEASURES: NONE

FINAL ABATEMENT MEASURES: Remove all insulating material (including the fiberglass), using full isolation procedures. If the ductwork is to remain in use, reinsulate with a non-asbestos containing material such as fiberglass. Clean the entire area with HEPA vacuums and wet methods to dust free conditions. Conduct clearance monitoring by TEM to AHERA standards.

ESTIMATED COST OF FINAL ABATEMENT MEASURES: $16,000. (Includes project monitoring, clearance by TEM, and reinsulation.)

SCHEDULE: Initial Preventative Measures--Spring 1989
Final Preventative Measures--Upon renovation or by 1992

RECOMMENDATION: 2.

MATERIAL: TSI-2. Aircell duct insulation

LOCATION: First and second floors (see material summary table for five specific functional areas)

QUANTITY: 481 square feet total

CONDITION: Good except for hall area outside Room 214 where it is loose and sagging from ductwork

INITIAL PREVENTATIVE MEASURES: Repair and encapsulate the damaged end outside Room 214 using small-scale procedures.

ESTIMATED COST OF INITIAL PREVENTATIVE MEASURES: S100

FINAL ABATEMENT MEASURES: Remove all duct insulation using full isolation procedures. In some cases the designer may specify small-scale minienclosures. Clean surfaces to dust free condition and apply a lock down coating. Clear each removal site, analyzing air samples by PCM, prior to removal of the enclosure. Reinsulation is optional.

ESTIMATED COST OF FINAL ABATEMENT MEASURES: S4000

SCHEDULE: Initial Preventative Measures--Spring 1989
Final Preventative Measures--Upon renovation or by 1992

RECOMMENDATION: 3.

MATERIAL: TSI-2 aircell insulation on ductwork
TSI-4 aircell insulation on pipes
TSI-5 hard matrix insulation on fittings on aircell runs
TSI-7 hard matrix insulation on fittings on fiberglass runs

LOCATION: Basement hall and associated rooms (but not including: Mechanical Rooms 1 and 2, the Alternative School, Gym, and Record Storage).

QUANTITIES: TSI-1 2010 square feet
TSI-4 916 lineal feet
TSI-5 96 fittings
TSI-7 3 fittings

CONDITION: TSI is poor to fair.

INITIAL PREVENTATIVE MEASURES: The basement is unused except for access to the mechanical rooms. The damaged ductwork insulation outside Rooms 3, 4, and 5 is not repairable, but elsewhere is in good condition. The pipe insulation is mostly repairable, but small removals will be required where damage is excessive. Until a final abatement can be scheduled, the unused area may be isolated and left as is.

Construct a partition down the center of the hall from Room 2 (old copy room) to just past the "His/Hers/Ours" restroom and then at a right angle to the wall by the restroom. This will provide an access route to the mechanical rooms and washroom. Seal the pipe penetrations through the partition. Seal the entrance to Room 2 with plastic sheeting and duct tape. Include in the partition an emergency access door to the closed area. Post a notice on the door indicating that the area beyond does not meet AHERA standards and that entry is restricted to authorized maintenance personnel only. Maintain the previously sealed entries behind the receptionist and near Room 114 in their present sealed state.

Repair and encapsulate the pipe insulation within this entry corridor. Clean the entire entry corridor using HEPA vacuums and wet methods and lock down all surfaces after cleaning. Seal all ventilation return grilles in the closed area. This work must be completed in conjunction with abatement measures recommended (#4, below) for Mechanical Room 1.

ESTIMATED COST OF INITIAL PREVENTATIVE MEASURES: $2500.

FINAL ABATEMENT MEASURES: Preclean and remove all carpets and drapes. Remove all friable asbestos containing material using full isolation procedures. Clean the basement area thoroughly using HEPA vacuums and wet methods and clear by TEM to AHERA standards. This work should be completed in conjunction with a renovation or demolition.

ESTIMATED COST OF FINAL ABATEMENT MEASURES: $100,000.

SCHEDULE: Initial Preventative Measures--Spring 1989
Final Preventative Measures--Upon renovation or by 1992

RECOMMENDATION: 4.

MATERIAL: TSI-3 hard matrix boiler insulation
TSI-4 aircell insulation on pipes
TSI-5 hard matrix insulation on fittings on aircell runs
TSI-7 hard matrix insulation on fittings on fiberglass runs
FD-1, FD-2, fire doors

LOCATION: Mechanical Room 1 (Suite)

QUANTITY: TSI-3 380 square feet
TSI-4 351 lineal feet
TSI-5 74 fittings
TSI-7 3 fittings
FD-1 1 door
FD-2 1 door

CONDITION: Fair

INITIAL PREVENTATIVE MEASURES: Remove all extraneous equipment, junk, and asbestos debris. Remove asbestos debris from electrical conduits by steps. Repair and encapsulate the exposed edges of boiler insulation. Remove or repair and encapsulate damaged, exposed pipe insulation at approximately 45 locations throughout the suite. Remove and replace the damaged wood veneer fire door. Clean up debris piles under damaged pipe insulation. Clean all surfaces to dust free condition and apply a lockdown spray to all surfaces. Final air clearance will be by TEM.

ESTIMATED COST OF INITIAL PREVENTATIVE MEASURES: $13,000 (with TEM)

FINAL ABATEMENT MEASURES: Remove all ACM, debris and fire doors using full isolation procedures. Demolition of the non-ACM ceiling fireproofing during the abatement is optional. Clean to dust free conditions using HEPA vacuums and wet methods. Apply a lock down spray to all surfaces. Clearance will be by TEM.

Note: Asbestos abatement in the Main Electrical Supply Room will require that the power be shut down for several hours.

ESTIMATED COST OF FINAL ABATEMENT MEASURES: $38,000

SCHEDULE: Initial Preventative Measures--Spring 1989
Final Preventative Measures--Upon renovation or by 1992

RECOMMENDATION: 5.

MATERIAL: TSI-4 aircell insulation on pipes
TSI-5 hard matrix insulation on fittings on aircell runs
TSI-6 hard matrix insulation on pipes
TSI-8 hard matrix insulation debris on pipe fittings

LOCATION: First floor including hall to Alternative School, and second floor. Not included are the Gym, Record Storage area and Alternative School.

QUANTITY:

TSI-4	141 lineal feet
TSI-5	15 fittings
TSI-6	58 lineal feet
TSI-8	15 fittings

CONDITION: TSI is in fair to good condition.

INITIAL PREVENTATIVE MEASURES: Repair and encapsulate approximately 24 locations, including 15 where old hard matrix insulation debris remains on fittings from incomplete removal in the past. Use small-scale procedures. Refer to the survey report summary chart for functional areas where repairs are required. Clean minor asbestos contamination from floors in 37 locations as noted in the summary chart. Cleaning is to be by HEPA vacuum and/or wet methods to dust free conditions. Clearance air monitoring is not required.

ESTIMATED COST OF INITIAL PREVENTATIVE MEASURES: $2000

FINAL ABATEMENT MEASURES: Remove ACM pipe insulation using full containment methods. These pipes are mostly short vertical runs serving radiators along the exterior walls. If abatement is to be completed within the context of continued present use, the work may be completed room by room with minimal disruption. Minienclosures and glove bags would be adequate for many pipe runs. The abatement design will reflect the specific conditions. Clean using HEPA vacuum and/or wet methods to dust free conditions. Apply a lockdown to the uninsulated structures. Clearance air monitoring will be specified by the designer according to the specific abatement conditions.

ESTIMATED COST OF FINAL ABATEMENT MEASURES: $10,000 (more if done piecemeal).

SCHEDULE: Initial Preventative Measures--Spring 1989
Final Preventative Measures--Upon renovation or by 1992

RECOMMENDATION: 6.

MATERIAL: TSI-4 aircell insulation on pipes
TSI-5 hard matrix insulation on fittings on aircell runs
TSI-7 hard matrix insulation on fittings on fiberglass runs

LOCATION: Gym, locker rooms, gym storage, and records storage room.

QUANTITY: TSI-4 305 lineal feet
TSI-5 40 fittings
TSI-7 15 fittings

CONDITION: TSI is in fair condition.

INITIAL PREVENTATIVE MEASURES: Repair and encapsulate damaged pipe insulation. Remove the aircell insulation on the 6 ft long pipe section above the bleachers. Clean debris piles under damaged fittings in the Record Storage area, particularly in the southeast corner where the large steam line ends and at the last unit heater. Clean the radiators, the mat, and a strip of floor ten feet wide along the north wall of the Gym to remove any debris from the damaged steam line above. Repair and encapsulate approximately nine minor locations in the two locker rooms. Clean the debris from the storage area under the bleachers and repair and encapsulate the damaged insulation there. These scattered repairs are small-scale, short-duration jobs. The clearance inspector must be satisfied that there is no evidence of asbestos debris, dust or other contamination. Clearance air monitoring with analysis by TEM is not strictly required, but is recommended if the space is to be reoccupied.

The locker room repairs indicated above will bring those spaces up to AHERA standards, but the showers should not be used unless the asbestos insulation on pipes in the showers is removed.

ESTIMATED COST OF INITIAL PREVENTATIVE MEASURES: $6,500

FINAL ABATEMENT MEASURES: Remove all stored materials in the Gym, locker rooms, Gym Storage, and Records Storage . Preclean using wet methods and/or HEPA vacuum any areas or materials visibly contaminated with insulating debris or suspect dust. This is most likely to be required along the outer walls of the Record Storage and in the Gym storage area under the bleachers. Remove all asbestos containing pipe insulation using full isolation procedures. Clean using wet methods and HEPA vacuum all spaces to dust free conditions. Apply lock down spray to all structure surfaces previously insulated with ACM. Clearance air monitoring analysis will be by TEM to AHERA standards.

ESTIMATED COST OF FINAL ABATEMENT MEASURES: $25,000

SCHEDULE: Initial Preventative Measures--Spring 1989
Final Preventative Measures--Upon renovation or by 1992

RECOMMENDATION: 7.

MATERIAL: TSI-4 aircell insulation on pipes
TSI-5 hard matrix insulation on fittings on aircell runs
TSI-6 Hard matrix pipe insulation and associated fitting insulation
TSI-7 hard matrix insulation on fittings on fiberglass runs

LOCATION: Alternative High School (Rooms 1A-1F)

QUANTITY: TSI-4 236 lineal feet
TSI-5 59 fittings
TSI-6 891 lineal feet
TSI-7 24 fittings

CONDITION: TSI is in fair to poor condition, but most is above the suspended ceiling.

INITIAL PREVENTATIVE MEASURES: At end of this school year the Alternative School will move out of this space. The primary area of concern is the crawl space off room 1A where school equipment and furnishings are stored. This area has about four feet overhead clearance and the pipe insulation in the space is badly damaged. There may be some minor contamination of the stored items.

The preventative measures for the Alternative School consist of abandonment and isolation of the space. Remove all stored items from the crawlspace, cleaning them at it does not meet AHERA standards.

ESTIMATED COST OF INITIAL PREVENTATIVE MEASURES: $2,000

FINAL ABATEMENT MEASURES: Remove all asbestos pipe insulation using full isolation procedures. The suspended ceiling tiles are contaminated in localized areas. Treatment of the ceiling tiles, drapes and carpet will depend upon whether the space will be renovated following the abatement. Clean to dust free conditions after removal of insulation and debris. Clearance air monitoring analysis will be by TEM due to the size of project and potential for interference by non-asbestos fibers.

ESTIMATED COST OF FINAL ABATEMENT MEASURES: $75,000

SCHEDULE: Initial Preventative Measures--Spring 1989
Final Preventative Measures--Upon renovation or by 1992

TAB 7 - RESPONSE ACTIONS SELECTED BY THE LEA

The Fairbanks North Star Borough School District accepts the response actions, methods and locations exactly as recommended in TAB 6 by the management planner. Initial preventative measures will be completed in Spring or Summer of 1989. Final abatement response actions will be completed when the building is renovated. This is expected to occur in 1990. This course of action is chosen because it will bring the utilized portion of the building up to AHERA standards, protect the health of building users, and defer the disruption and expense of final abatement to the scheduled renovation. This schedule will allow the most efficient use of the limited asbestos abatement funds available to the District.

Upon completion of abatement actions, a complete description of the actions, including the locations of any remaining ACM will be included in this section of the management plan.

FAIRBANKS NORTH STAR BOROUGH
RECORD OF ASBESTOS ABATEMENT PROJECT

PROJECT NUMBER: 89-MAB-1

PROJECT TITLE: Asbestos Hazards Abatement in Main School Building

IFB NUMBER: 890056

PO NUMBER: 061575

PROJECT COST:

Contractor:	$15,630.00
Air Sample Analysis:	1361.50
Contract Administration:	2,500.00
Electrical Disconnect:	443.00
Advertising:	92.00
Total:	$20,026.50

SCHOOL FACILITY: Main School Administrative Building

ADDRESS: 800 Cushman St, Fairbanks, AK

DATES:
START: 12/11/89
FINISH: 12/19/89
CLEARANCE: 12/19/89

PROJECT MANAGER: Steve Titus, PE

PROJECT DESIGNER: Robert Perkins, PE, CIH

CONTRACTOR: Asbestos Removal Specialists of Alaska

ADDRESS: 1896 Marika Road #3, Fairbanks, AK 99701

PHONE: (907) 451-8550

PURPOSE: The purpose of this project was to bring selected areas of the building up to minimum standards under the Asbestos Hazard Emergency Control Act regulations. The regulations require that friable asbestos materials be sealed, enclosed or removed as necessary to block the release of asbestos fibers into the air under normal activities. Utilization of this building by the District was expected to be short. The requirements were met by repair, encapsulation, enclosure and limited removal, rather than by total removal of the materials.

LOCATIONS:

Basement Rooms: 1, 2, 3, 4, 5, Hall, Restroom, Gym, and Record storage.

First floor rooms: Custodial 1, Room 105 and Men's Room by Room 105.

Second floor: Hall outside Room 214.

MATERIALS: Hard matrix boiler and pipe insulation, aircell pipe and duct insulation and a fire door with hard matrix insulation.

METHODS: Methods included repair, encapsulation, enclosure, and localized removal. Controls included full containment, a mini-enclosure and glove bags as described below.

ENGINEERING CONTROLS: For the basement the crew set up a decontamination unit at the base of the stairs next to Mech Room 1. They sealed the basement hall at the end of the work area just beyond Room 5 and the stairway up to the main building entry with poly barriers. Ventilation grilles were sealed. Two ventilating machines drew air through ducts that could be extended to individual work areas and exhausted to the outdoors from Room 2, Electricians shut down the power for encapsulation work in the electrical transformer room.

On the second floor, workers constructed a mini-enclosure outside Room 214 to seal off the entrance to room 214 and to span the length of the ductwork (22 feet) in the hall. They installed a double flapped entry at one end of the structure and an exhaust ventilation machine at the other end. There was a strong movement of air into the enclosure through the flapped entry.

WORK PRACTICES: The work began in the Mech Room 1 suite. Both inlet ventilation ducts were extended into the space through a flapped entry, making the room negative relative to the hall and other basement rooms. Workers encapsulated all damaged or non-sealed pipe and boiler insulation in the suite, using cloth lagging and a latex based encapsulant. They cleaned all debris and dust using HEPA filtered vacuums, wet mopping and wiping. The non-asbestos spray applied ceiling fireproofing was not treated in this project.

When Mech Room 1 was finished, it was sealed off and the inlet ducts to the ventilation machines then drew air from Room 4 and the hallway space. Workers encapsulated the minor damage locations in rooms 2-5, using cloth lagging and encapsulants as necessary. They vacuumed and/or wet mopped all horizontal surfaces to remove any stray debris. As the crew finished the rooms they sealed them from the hall and the ventilation machines drew air only from the hall. The pipe insulation along the hall ceiling and in the restroom was encapsulated locally using cloth lagging and latex based encapsulant. The insulation on the duct work had been mostly encapsulated in the past, but the surfaces against the wall and ceiling had been left untreated. In this project workers bridged the gaps between the encapsulated surface and the adjacent wall or ceiling with a broad, sturdy, lagging treated with an encapsulant. This effectively enclosed the unencapsulated surfaces against the wall and ceiling. Finally, the crew cleaned the hall to remove any remaining dust and debris.

Workers then moved to the Gym and removed two damaged fittings on a radiator along the North wall and six feet of air cell insulation on a pipe over the bleachers by glove bag. They encapsulated the steamline near the ceiling along the north wall and cleaned all surfaces along

that wall to any remove dust and debris. The gym floor was wet mopped out ten feet from the north wall after the repair work.

In the Record Storage area workers then encapsulated small cracks in the insulation on the overhead steam line. They removed damaged insulation from two fittings on a unit heater by glove bag. They repaired and encapsulated a damaged fitting on the end of the steam line and cleaned up and a debris pile under the fitting. The plywood storage floor over the old kitchen was thoroughly cleaned using a HEPA vacuum due to the presence of the debris pile in one corner.

In the mini-enclosure outside the Room 214 workers removed the duct insulation using wet methods. They scrubbed the duct surface and applied a latex based encapsulant to lock down fibers.

The crew repaired and encapsulated pipe insulation in Custodial Room 1, Room 105 and in the Men's Room entry near 105 using cloth lagging and latex based encapsulant. They removed damaged insulation from a fitting on the radiator in the custodian's room by glove bag. Following repairs, they cleaned all adjacent surfaces.

EPA APPROVED LANDFILL (RECEIPT ATTACHED): Fairbanks North Star Borough Landfill.

CLEARANCE INSPECTOR: Michael S. Taylor

INSPECTION DATES: The inspector checked the project areas as they were finished on December 12, 15, 16, and 17. The Project Manager, inspector and Contractor made a final inspection on 12/20/89.

INSPECTION RESULTS: Work was complete in all areas except that minor cleaning was necessary on the radiators along the north wall of the Gym. The inspector required minor encapsulation to be completed in the Men's room next to Room 105.

CLEARANCE AIR MONITORING BY: Michael S. Taylor.

CLEARANCE METHOD: Initial clearance sampling with local analysis by PCM was conducted in the basement areas and in the mini-enclosure on the second floor. Clearance air monitoring was not conducted in the Gym and the Records storage due to the small-scale nature of the repair work. Clearance air monitoring was conducted in the basement rooms 1-5 and hall with analysis by TEM when this entire section had been completed. Except within the mini-enclosure, the samples were run using Dupont Alpha 1 personal sampling pumps. In the mini-enclosure, two high speed pumps borrowed from the contractor were used. Mr. Taylor pre- and post-calibrated the pumps.

LABORATORY: Northern Testing Laboratories

LAB ADDRESS: 600 University Plaza West Suite A, Fairbanks, AK

ANALYSIS METHOD: Phase Contrast Microscopy (PCM)

LABORATORY: EMS Laboratories

LAB ADDRESS: 507 Mission St., South Pasadena, CA 91030-3035.

ANALYSIS METHOD: Transmission Electron Microscopy (TEM)

SAMPLE RESULTS (SEE ALSO ATTACHED LAB SHEET): The lab reported all PCM sample air concentrations to be less than the detection limit, 0.01 f/cc. Four of the five samples taken in the basement spaces for TEM analysis detected no asbestos. One filter contained 77 structures per square millimeter on the filter. When averaged, the five samples contained only 15.4 structures per square millimeter. Under the AHERA regulations, a project may be cleared if the average structure density on all five filters is less than 70 structures per square millimeter. Therefore, these sample results confirm clearance of the project. Incidentally, the one sample filter that had traces of asbestos on it was taken at the intake to the negative air machine in Room 2. The abatement crew moved the sample pump shortly before the pump timed out. It is possible that the filter was contaminated by that action. The samples taken in the boiler room where the worst conditions existed and the most significant work had been completed detected no asbestos.

COMMENTS: This project has brought all asbestos containing materials up to minimum AHERA standards within the spaces addressed. The remaining rooms (6-10, etc.) and hall beyond Room 5 do not meet standards and must remain closed off until the next project (currently under design) is completed. The 1947 addition basement space formerly occupied by the Alternative School also does not meet standards, and must remain closed.

FILE: MAB1REPT

SIGNED: Michael S. Taylor DATE: January 22, 1990
Michael S. Taylor
Asbestos Plan Manager

CC: EPA, Region 10, Seattle, with Accredited Worker list, dump receipt and air sample results.
Facilities Support Division, Department of Education, Juneau, with Accredited Worker list, dump receipt and air sample results.

NORTHERN TESTING LABORATORIES, INC.

600 UNIVERSITY PLAZA WEST, SUITE A, FAIRBANKS, ALASKA 99709, 907-479-3115
2505 FAIRBANKS STREET, ANCHORAGE, ALASKA 99503, 907-277-8378

FAIRBANKS NORTH STAR BOROUGH
P.O.Box 71267
Fairbanks, AK 99707

Date Arrived: December 15, 1989
Time Arrived: 1905
Date Sampled: December 15, 1989
Time Sampled: Various
Date Completed: December 15, 1989
Time Completed:

Attention: Mike Taylor
Project: Main School Basement 89-HAB-2
SATURDAY RUSH

Sample ID #	Filter #	# Fibers Counted	# Fields Counted	Sample Time (minutes)	Flow Rate (l/m)	Fibers/cc	TWA	Fibers/cc2	Lower Limit of Detection (LLD), Fibers/cc
111689-1	12-15-89-1	5.5	100	480	1.5	.005	0.000	7.3	.006
111689-2	12-15-89-2	3.5	100	480	1.5	.003	0.000	4.6	.003
111689-3	12-15-89-3	3.5	100	480	1.5	.003	0.000	4.6	.005
111689-4	12-15-89-4	3	100	480	1.5	.003	0.000	3.9	.003
111689-5	12-15-89-5	4.5	100	480	1.5	.003	0.000	5.7	.003

MD

Reported By: P Kobart-Massey Date: December 15, 1989

Patricia Kobart-Massey, Environmental Analyst

NORTHERN TESTING LABORATORIES, INC.

600 UNIVERSITY PLAZA WEST, SUITE A — FAIRBANKS, ALASKA 99709 — 907-479-3115
2505 FAIRBANKS STREET — ANCHORAGE, ALASKA 99503 — 907-277-6378

[illegible]
[illegible]
[illegible]

Date Arrived: December 17, 1999
Time Arrived: 1910
Date Sampled: December 16, 1999
Time Sampled: [illegible] Arrive
Date Completed: December 17, 1999
Time Completed: [illegible]

[illegible]
Project Mine Survey
Study Site

Sample ID #	Filter #	# Fibers Counted	# Fields Counted	Sample Time (minutes)	Flow Rate (l/m)	Fibers/cc	TWA	Fibers/cc2	Lower Limit of Detection (LLOD), fibers/cc
[illegible]	[illegible]	5	[illegible]	[illegible]	1.5	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	7	[illegible]	[illegible]	1.5	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	15	[illegible]	[illegible]	1.5	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	1	[illegible]	[illegible]	1.5	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	0	[illegible]	[illegible]	1.5	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	1	[illegible]	[illegible]	10	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	15	[illegible]	[illegible]	10	[illegible]	[illegible]	[illegible]	[illegible]

Reported By: P Kobart-Massey Date: December 17, 1999

Patricia Kobart-Massey, Environmental Analyst

NORTHERN TESTING LABORATORIES, INC.

600 UNIVERSITY PLAZA WEST, SUITE A, FAIRBANKS, ALASKA 99709, 907-479-3115
2505 FAIRBANKS STREET, ANCHORAGE, ALASKA 99503, 907-277-8378

F.N.S.B. PUBLIC WORKS
DEC 21 1989
RECEIVED

FAIRBANKS NORTH STAR BOROUGH
P.O.Box 71267
Fairbanks, AK 99707
Phone: 452-4761

Attention: Mike Taylor
Project: Main School Assesment

Date Arrived: December 18, 1989
Time Arrived: 1030
Date Sampled: December 17, 1989
Time Sampled: Various
Date Completed: December 18, 1989
Time Completed: 1425

Sample ID #	Filter #	# Fibers Counted	# Fields Counted	Sample Time (minutes)	Flow Rate (l/m)	Fibers/cc	TEM	Fibers/mm2	Lower Limit of Detection (LLD), Fibers/cc
121889-2	12-17-89-1	5.5	100	460	2.5	0.008	0.000	5.5	.008
121889-3	12-17-89-2	1	100	460	2.5	0.008	0.000	1.0	.008
121889-4	12-17-89-3	1	100	460	2.5	0.008	0.000	1.3	.008

Reported By: P. Konart Massey Date: December 17, 1989

Patricia Konart-Massey, Environmental Analyst

LTS OF AIR FILTER ANALYSIS *By TEM for As tos ures*

boratory No. T-2088 ►Date Sampled
Fairbanks North Star Borough ►Date Received 12/21/89 ►Verbal Results
►Date Analyzed 1/3/90 ►Fax Results

DIRECT PREP [x]
INDIRECT PREP [ ]

LEVEL I [ ]
LEVEL II [ ]

ASPECT RATIO
3:1 [ ]
5:1 [x]

STRUCTURE SIZE
All Sizes EPA [ ]
≥0.5 µm Length [x]
≥5 µm Length [ ]
≥5 µm Length [ ]
PCM Range [ ]

Location	Volume L	Mass ng	Structures/cm²	Structure ∞	Detection Limit	95% CONFIDENCE LEVELS Lower Limit	Upper Limit	
-18-89-1	1319		77	0.02	0.004			
-18-89-2	1296	N.D.	N.D.	N.D.	0.005			
-18-89-3	1296	N.D.	N.D.	N.D.	0.005			
-18-89-4	1296	N.D.	N.D.	N.D.	0.005			
-18-89-5	1296	N.D.	N.D.	N.D.	0.005			

stos-Containing Materials in Schools," U.S. EPA final rule, 40 CFR Part 763, October 30, 1987 (AHERA) counting rules.
odology for the Measurement of Airborne Asbestos by Electron Microscopy," USEPA 1984 (Yamate, et al.)
omia Assembly Bill 2509.

ments:

Santa Barbara, CA 91030-3035 / 818-441-2393

1-12-90

Corinne Mauy

Darlene Lagesquit, Notary

My Commission Expires July 29, 1991

F. N. S. B. BALER/LANDFILL FACILITY

455 SANDURI ROAD, FAIRBANKS, AK 99701

ACCOUNT NO.	ACCOUNT NAME	ACCOUNT TYPE	INVOICE NO
1333	ASBESTOS REMOVAL SPEC.	CREDIT	18611

TRUCK NO. 367

FROM MAIN SCHOOL, 89-MAIS-1

PRODUCT ID. 21

PRODUCT NAME: ASBESTOS INSIDE BOROUGH

Rate: ~~999.99 per ton~~ 50¢ per pound

	TIME	DATE	WEIGHT
GROSS	12:39	01/10/90	11860
TARE	12:49.	01/10/90	11420

20 bags

TAL COST ~~$439995.60~~ 220.00

440 NET LBS

GNATURE: M Carman

OPERATOR: - CM

TAB 8 - STATEMENT OF SUFFICIENT RESOURCES

The management planner has reviewed the resources of the Fairbanks North Star Borough School District and has determined that sufficient funds are available in existing asbestos abatement grants to complete the initial preventative measures recommended in TAB 6 and accepted in TAB 7. Funding for final abatement will depend upon resources allocated by the State Legislature for the renovation of Main School. It is anticipated that if such funding is not forthcoming, the District will abandon the building and the facility will no longer require AHERA compliance.

Initial training of custodial and maintenance personnel was completed in October 1988. The Asbestos Plan Manager will train these employees on an annual basis at the start of each school year and as necessary in between to pick up new hires. Video tapes and other teaching materials are on hand. No additional funds need to be budgeted for this training.

Emergency response actions under $10,000 required to conduct routine maintenance repairs of building mechanical systems can be provided within the existing maintenance budget of the District.

Training to maintain the required State and EPA certifications of the Asbestos Plan Manager and general funding for the position are included in the budget of the Facilities Management Division, Department of Public Works, Fairbanks North Star Borough.

Funding for air monitoring by PCM and TEM and for bulk sampling by PLM are included in the budget of the Facilities Management Division.

TAB 9 - PERIODIC SURVEILLANCE

The Asbestos Plan Manager (AHERA Designated Person) will conduct a periodic surveillance of all the asbestos containing materials identified in this plan in June and December of each year until such time as all asbestos containing materials have been removed from the building.

TAB 10 - REINSPECTIONS

A reinspection of the Main School Facility will be conducted by the Asbestos Plan Manager or other accredited inspector after renovation of the facility or no later than December 1992.

RECORD OF PERIODIC SURVEILLANCE
FAIRBANKS NORTH STAR BOROUGH SCHOOL DISTRICT

SCHOOL FACILITY: MAIN

INSPECTOR: MIKE TAYLOR

DATE: NOV 29, 1989

DID CONDITION OF ANY MATERIALS CHANGE? YES___ NO ✓

COMMENTS:

TAB 11 - OPERATIONS AND MAINTENANCE

Initial cleaning requirements are included in the initial preventative measures recommendations of the management planner in TAB 6. These cleaning requirements are accepted by the District and will be completed by contractors hired to complete the initial preventative response actions.

The continued presence of friable asbestos containing materials in Main School will require special operations and maintenance (O&M) activities. From time to time it will be necessary to repair or encapsulate damaged ACM. Small spills from damaged pipe insulation are expected. Occasionally it will be necessary to remove asbestos insulation from a structure in order to repair or replace that structure.

It is the current policy of the District to contract out all asbestos work. When either planned or unplanned maintenance requirements dictate the disturbance, clean-up or repair of asbestos materials, the work will be coordinated by the Asbestos Plan Manager who is also an industrial hygienist and EPA accredited asbestos abatement designer. The Plan Manager will isolate the area as required, determine the needs, and specify the methods required of the selected contractor. Contractor employees will be State certified Asbestos Workers as required by 8 AAC 61.600. Methods will at least meet the requirements of the AHERA regulations for Operations and Maintenance (40 CFR 763.91) and for Small-Scale, Short-Duration Operations as recommended in Appendix B of the standard. These methods are in accord with the requirements of the State of Alaska Construction Safety Standard for Asbestos, 8 AAC 05.045. The Plan Manager will inspect the work to insure that the area has been adequately isolated and entry controlled. Upon completion the Plan Manager will inspect to determine that the work has been completed to AHERA standards and will be empowered to require rework if necessary to meet clearance standards.

Custodial and maintenance personnel will be instructed about ACM in floor tile and fire doors. Floor tile will not be abraded and will be maintained with a coat of wax at all times. Tile and fire doors will not be cut, drilled or otherwise rendered friable or exposed without instructions and supervision from the Asbestos Plan Manager.

TAB 12 - MEDICAL SURVEILLANCE/EMPLOYEE PROTECTION

Neither School District not Fairbanks North Star Borough employees are expected to be conducting any asbestos abatement work in Main School which will expose them above the Alaska Department of Labor action level. No employees will be assigned to wear negative pressure respirators. Hence no medical surveillance program is required.

TAB 13 - TRAINING

The Asbestos Plan Manager will provide asbestos awareness training to custodial and maintenance employees at the start of each school year. Additional training will be scheduled as necessary to pick up new employees during the year. Initial training of these employees was completed in October, 1988. The next scheduled training is in August 1989.

The Asbestos Plan Manager who is also the AHERA Designated Person, has received the training required for EPA accreditation as Asbestos Inspector, Management Planner and Project Designer. He is also a State of Alaska Certified Asbestos Worker. He will attend update training for these accreditations as required.

TRAINING RECORD

LAST NAME	FIRST NAME	SCHL/DEPT	SUBJECT	DATE	LOCATION
Ferrell	Kathy	AJS	Asb Aware	890810	RJH
Ferrell	Kathy	AJS	Asb Aware	900820	WVH
Hunt	Mike	AJS	Asb Aware	900821	HUN
Miller	Kevin	AJS	Asb Aware	900821	HUN
Kea	Kelly	AJS/UPN	Asb Aware	900820	WVH
Brennan	Barbara	AND	Asb Aware	900822	NPH
Brennan	Barbara	AND	Asb Aware	880815	NPH
Krepps	Bob	AND	Asb Aware	880815	NPH
Krepps	Robert	AND	Asb Aware	890808	NPE
Krepps	Robert	AND	Asb Aware	901112	LHS
Suomi	Dale	AND	Asb Aware	880815	NPH
Suomi	Dale	AND	Asb Aware	890808	NPE
Suomi	Dale	AND	Asb Aware	900822	NPH
Smith	Rosetta	AND/PEN	Asb Aware	890808	NPE
Horner	Carl	AUR	Asb Aware	880816	TJH
Horner	Carl	AUR	Asb Aware	890810	RJH
Schander	Karin	AUR	Asb Aware	900820	WVH
Cleland	Ken	AUR/FTW	Asb Aware	900821	HUN
Brazier	Yong	AUR/TJH	Asb Aware	900820	WVH
Balcher	Kevin	BAR	Asb Aware	881010	TJH
Balcher	Kevin	BAR	Asb Aware	890809	HUN
Balcher	Kevin	BAR	Asb Aware	900821	HUN
Cofey	Dan Jr	BAR	Asb Aware	900820	WVH
Hall	BRJH	BAR	Asb Aware	880817	RJH
Mulcahy	Don	BAR	Asb Aware	880817	RJH
Mulcahy	Don	BAR	Asb Aware	890809	HUN
Mulcahy	Don	BAR	Asb Aware	900821	HUN
Rangapan	Ricardo S.	BAR	Asb Aware	880816	TJH
Popovic	Toma	BCH	Asb Aware	880816	TJH
Popovic	Toma	BCH	Asb Aware	890810	RJH
Popovic	Toma	BCH	Asb Aware	900820	WVH
Jenney	Jill	BCH(sub)	Asb Aware	880816	TJH
Bogan	Robert	BDG	Asb Aware	880815	NPH
Bogan	Robert	BDG	Asb Aware	890808	NPE
Bogan	Robert	BDG	Asb Aware	900822	NPH
Boyd	Raymond	BDG	Asb Aware	900821	HUN
Fielder	C. Don	BDG	Asb Aware	881010	TJH
Holliway	Clyde	BDG	Asb Aware	900822	NPH
Medley	Art	BDG	Asb Aware	900822	NPH
Smalls	Theodore	BDG	Asb Aware	890808	NPE
Smalls	Theodore	BDG	Asb Aware	900821	HUN
Smalls	Theodore	BDG	Asb Aware	880815	NPH
Whiteshield	Steve	BDG	Asb Aware	890808	NPE
Whiteshield	Steve	BDG	Asb Aware	881010	TJH
Ayala	Juan	BEH	Asb Aware	881010	TJH
Buck	Bernyce	BEH	Asb Aware	890808	NPE
Buck	Bernyce	BEH	Asb Aware	900822	NPH
Buck	Birdie	BEH	Asb Aware	890808	NPE
Burr	William	BEH	Asb Aware	900820	WVH
Cleland	Ken	BEH	Asb Aware	890808	NPE

LAST NAME	FIRST NAME	SCHL/DEPT	SUBJECT	DATE	LOCATION
Davis	Felicia	BEH	Asb Aware	880815	NPH
Dittman	Max	BEH	Asb Aware	900822	NPH
Hall	Eugene	BEH	Asb Aware	890808	NPE
Hall	Eugene	BEH	Asb Aware	890808	NPE
Jenny	Jill	BEH	Asb Aware	890808	NPE
Kruger	Sharon	BEH	Asb Aware	880815	NPH
Layton	Clifton	BEH	Asb Aware	900822	NPH
McCarty	Jim	BEH	Asb Aware	890808	NPE
Mullins	Weldon	BEH	Asb Aware	900822	NPH
Pak	Kyong AE	BEH	Asb Aware	900820	WVH
Sabala	Jo	BEH	Asb Aware	900820	WVH
Sikma	Roderic	BEH	Asb Aware	880815	NPH
Davis	Felicia	BEH/NPH	Asb Aware	890808	NPE
McKieman	Willa	BRN	Asb Aware	880816	TJH
McKiernan	Willa	BRN	Asb Aware	900822	NPH
Paskvan	George	BRN	Asb Aware	880815	NPH
Paskvan	George	BRN	Asb Aware	890809	HUN
Senra	Maria	BRN	Asb Aware	900821	HUN
Smith	Tay	BRN	Asb Aware	890809	HUN
Smith	Toyoko	BRN	Asb Aware	880815	NPH
Smith	Toyoko	BRN	Asb Aware	901112	LHS
Wason	Mike	BRN	Asb Aware	880815	NPH
Wason	Mike	BRN	Asb Aware	890809	HUN
Wason	Mike	BRN	Asb Aware	900821	HUN
McIntyre	Cathy	BRN/MAB	Asb Aware	900821	HUN
Brand	Mike	CHE	Asb Aware	900820	WVH
Bratten	Jackie	CHE	Asb Aware	900821	HUN
Ham	Terry	CHE	Asb Aware	900219	TJH
Napier	Susan	CHE	Asb Aware	880816	TJH
Napier	Susan	CHE	Asb Aware	890810	RJH
Williamson	Ok Chin	CHE	Asb Aware	880816	TJH
Woods	Michael	CHE	Asb Aware	890810	RJH
Ham	Terry	CHE/BCH	Asb Aware	900821	HUN
Cofey, Sr	Dan	DEN	Asb Aware	880817	RJH
Cofey, Sr	Dan	DEN	Asb Aware	890809	HUN
Cofey, Sr	Dan	DEN	Asb Aware	900821	HUN
Lessiter	Bob	DEN	Asb Aware	900820	WVH
Meyer	Chris	DEN	Asb Aware	881010	TJH
Schrefler	August	DEN	Asb Aware	890809	HUN
Shrefler	August	DEN	Asb Aware	880817	RJH
Stanton	Steve	DEN	Asb Aware	890809	HUN
Cofey	Michael	FTW	Asb Aware	881010	TJH
Martin	Gina	FTW	Asb Aware	880816	TJH
Martin	Gina	FWE	Asb Aware	900820	WVH
Hearns	Rufus	FWE/DEN	Asb Aware	900821	HUN
Lawson	Ronald	HSP/RJH	Asb Aware	900820	WVH
Balcer	Ellen	HUN	Asb Aware	900821	HUN
Miller	Kevin	HUN	Asb Aware	890809	HUN
Riddle	Gary	HUN	Asb Aware	901112	LHS
Senra	Maria I.	HUN	Asb Aware	880817	RJH
Shepard	Doris	HUN	Asb Aware	881010	TJH
Shepard	Doris	HUN	Asb Aware	890809	HUN
Shepard	Doris	HUN	Asb Aware	900821	HUN
Tomany	Jennifer	HUN	Asb Aware	880817	RJH

LAST NAME	FIRST NAME	SCHL/DEPT	SUBJECT	DATE	LOCATION
Savallos	Juan	HUN/UPE	Asb Aware	881010	TJH
Bingaman	Judy	HUT	Asb Aware	900822	NPH
Keller	James	HUT	Asb Aware	881010	TJH
Keller	James	HUT	Asb Aware	890810	RJH
Keller	Jim	HUT	Asb Aware	901112	LHS
Luckey	Kevin	HUT	Asb Aware	900820	WVH
McArdle	Mike	HUT	Asb Aware	880817	RJH
McArdle	Mike	HUT	Asb Aware	900821	HUN
Parks	Bobby	HUT	Asb Aware	880817	RJH
Parks	Bobby	HUT	Asb Aware	890810	RJH
Parks	Bobby	HUT	Asb Aware	900820	WVH
Johnson	Kenn	JOY	Asb Aware	900821	HUN
Makim	Nak	JOY	Asb Aware	881010	TJH
Martinez	Debbie	JOY	Asb Aware	900820	WVH
Mullins	Weldon	JOY	Asb Aware	890810	RJH
Reynolds	Albin	JOY	Asb Aware	880816	TJH
Smith	Jon	JOY	Asb Aware	900821	HUN
Stanton	Steve	JOY	Asb Aware	900821	HUN
Martinez	Debbie	JOY/CHE	Asb Aware	880816	TJH
Albert	Kenn	JOY/PRC	Asb Aware	890809	HUN
Barnes	Frank H.	LHS	Asb Aware	880815	NPH
Brimmer	Brian	LHS	Asb Aware	900219	TJH
Brimner	Brian	LHS	Asb Aware	900821	HUN
Chang	Yong	LHS	Asb Aware	900821	HUN
Chang	Yong S	LHS	Asb Aware	890809	HUN
Davenport	O.D.	LHS	Asb Aware	880817	RJH
Holliway	Clyde	LHS	Asb Aware	880815	NPH
Holliway	Clyde	LHS	Asb Aware	890809	HUN
Iverson	Susan	LHS	Asb Aware	900820	WVH
Joens	Steven	LHS	Asb Aware	890809	HUN
Joens	Steven	LHS	Asb Aware	900821	HUN
Kim	Byong	LHS	Asb Aware	880815	NPH
Kim	Byong	LHS	Asb Aware	900821	HUN
Kim	Byong S	LHS	Asb Aware	890809	HUN
Kincaid	Valarie	LHS	Asb Aware	900821	HUN
Kincaid	Valerie	LHS	Asb Aware	890809	HUN
Kiser	Donald	LHS	Asb Aware	890809	HUN
Matthew	Stephen	LHS	Asb Aware	900219	TJH
Matthew	Steve	LHS	Asb Aware	900820	WVH
McDougal	Ron	LHS	Asb Aware	900219	TJH
McNiven	Patricia	LHS	Asb Aware	880817	RJH
McNiven	Patricia	LHS	Asb Aware	890810	RJH
McNiven	Patricia	LHS	Asb Aware	900821	HUN
Morun	Urszula	LHS	Asb Aware	900821	HUN
Patterson	Gary	LHS	Asb Aware	880817	RJH
Popovic	Zofia	LHS	Asb Aware	880817	RJH
Popovic	Zofia	LHS	Asb Aware	890809	HUN
Popovic	Zofia	LHS	Asb Aware	900820	WVH
Smith	Lillie	LHS	Asb Aware	880817	RJH
Smith	Lillie	LHS	Asb Aware	890809	HUN
Smith	Lillie	LHS	Asb Aware	900821	HUN
Yong	Chang	LHS	Asb Aware	880815	NPH
McDougal	Ronald W.	LHS	Asb Aware	880815	NPH
Lessiter	Bob	LHS/RJH	Asb Aware	890809	HUN

LAST NAME	FIRST NAME	SCHL/DEPT	SUBJECT	DATE	LOCATION
Buchanan	Hiltrud	MAB	Asb Aware	880816	TJH
Buchanan	Hiltrud	MAB	Asb Aware	890809	HUN
Buchanan	Hiltrud	MAB	Asb Aware	900821	HUN
Leavy	Fennel	MAB	Asb Aware	901112	LHS
Leavy	Fennell	MAB	Asb Aware	880817	RJH
Ramos	Cecilia	MAB	Asb Aware	881010	TJH
Ramos	Cecilia	MAB	Asb Aware	890810	RJH
Ramos	Cecilia	MAB	Asb Aware	900822	NPH
Slentz	Sally	NOR	Asb Aware	880816	TJH
Smith	Charles	NOR	Asb Aware	890810	RJH
Smith	Charles	NOR	Asb Aware	900822	NPH
Smith	Charles A.	NOR	Asb Aware	880816	TJH
Williams	Joe	NOR	Asb Aware	890810	RJH
Williams	Joe	NOR	Asb Aware	900820	WVH
Williams	Joseph	NOR	Asb Aware	880816	TJH
Fletcher	Donna	NPE	Asb Aware	880815	NPH
Hall	Eugene	NPE	Asb Aware	881010	TJH
Hollenbeck	Cindy	NPE	Asb Aware	900822	NPH
Konichek	Steve	NPE	Asb Aware	900822	NPH
Napier	Susan	NPE	Asb Aware	900821	HUN
Reynolds	Marian E.	NPE	Asb Aware	880816	TJH
Reynolds	Marian E.	NPE	Asb Aware	900822	NPH
Singh	Michael	NPE	Asb Aware	880815	NPH
Singh	Michael	NPE	Asb Aware	890808	NPE
Slentz	Joe	NPE	Asb Aware	890808	NPE
Woods	Mike	NPE	Asb Aware	900820	WVH
Beauchamp	Mickey	NPH	Asb Aware	900822	NPH
Buck	Bernyce	NPH	Asb Aware	880815	NPH
Byrd	Donna	NPH	Asb Aware	880815	NPH
Byrd	Donna	NPH	Asb Aware	890809	HUN
Byrd	Donna	NPH	Asb Aware	900822	NPH
Chandler	Janice	NPH	Asb Aware	880815	NPH
Davis	Felicia	NPH	Asb Aware	900822	NPH
Eddy	Ray	NPH	Asb Aware	900822	NPH
Ferrell	Kathy	NPH	Asb Aware	880815	NPH
Fish	Bea	NPH	Asb Aware	880816	TJH
Fish	Bea	NPH	Asb Aware	890808	NPE
Fish	Bea	NPH	Asb Aware	901112	LHS
Ham	Rusty	NPH	Asb Aware	890808	NPE
Kim	Chin	NPH	Asb Aware	880815	NPH
Kim	Chin	NPH	Asb Aware	900822	NPH
Kim	Chin H.	NPH	Asb Aware	890808	NPE
McHenry	Mary	NPH	Asb Aware	881010	TJH
McHenry	Mary	NPH	Asb Aware	890809	HUN
McHenry	Mary	NPH	Asb Aware	900822	NPH
Peoples	Joan	NPH	Asb Aware	890808	NPE
Peoples	Joan	NPH	Asb Aware	900822	NPH
Silas-Lewis	Mickey	NPH	Asb Aware	880815	NPH
Sullivan	Denise	NPH	Asb Aware	880815	NPH
Turco	Denna	NPH	Asb Aware	900822	NPH
Woods	Mike	NPH/NPE	Asb Aware	880815	NPH
Chang	Hyo	NPM	Asb Aware	880815	NPH
Chang	Hyo	NPM	Asb Aware	900822	NPH
Chang	Hyo Y.	NPM	Asb Aware	890808	NPE

LAST NAME	FIRST NAME	SCHL/DEPT	SUBJECT	DATE	LOCATION
Claassen	Warren	NPM	Asb Aware	890808	NPE
Claassen	Warren	NPM	Asb Aware	900822	NPH
Kiser	Donald	NPM	Asb Aware	881010	TJH
Kiser	Donald	NPM	Asb Aware	900820	WVH
Medley	Art	NPM	Asb Aware	881010	TJH
Sand	Chrya	NPM	Asb Aware	880815	NPH
Schieber	David	NPM	Asb Aware	900822	NPH
Slater	Ron	NPM	Asb Aware	890808	NPE
Slentz	Joe	NPM	Asb Aware	880815	NPH
Storlie	Missy	NPM	Asb Aware	880815	NPH
Storlie	Yi Hi	NPM	Asb Aware	900822	NPH
Storlie	Yi U	NPM	Asb Aware	890808	NPE
Titus	Bill	NPM	Asb Aware	880815	NPH
Titus	Bill	NPM	Asb Aware	890808	NPE
Titus	Bill	NPM	Asb Aware	900820	WVH
Williamson	Michael	NPM/WSP	Asb Aware	900822	NPH
Jordan	Dave	PEN	Asb Aware	901112	LHS
Murray	Marilyn	PEN	Asb Aware	880815	NPH
Murray	Marilyn	PEN	Asb Aware	890808	NPE
Sand	Chyra	PEN	Asb Aware	900822	NPH
Hunt	William	PEN/AND	Asb Aware	881010	TJH
Jordon	Dave	PEN/AND	Asb Aware	900820	WVH
Kruger	Sharon	PEN/TAY	Asb Aware	900822	NPH
Ayala	Juan	PRC	Asb Aware	890810	RJH
Ayala	Juan	PRC	Asb Aware	900820	WVH
Churchill	Don W.	PRC	Asb Aware	900820	WVH
Kreiser	Carmelita	PRC	Asb Aware	880816	TJH
Kreiser	Carmelita	PRC	Asb Aware	890810	RJH
Krieser	Carmelita	PRC	Asb Aware	900820	WVH
McGee	Karen	PRC	Asb Aware	900820	WVH
Miller	Kevin	PRC	Asb Aware	881010	TJH
Taaffe	Jamie	PRC	Asb Aware	880816	TJH
Taaffe	Jamie	PRC	Asb Aware	900820	WVH
Trontvet	Judy	PRC	Asb Aware	890810	RJH
Whithan	Judy	PRC	Asb Aware	880816	TJH
Bates	Billy	RJH	Asb Aware	880817	RJH
Bates	Billy	RJH	Asb Aware	890809	HUN
Bates	Billy	RJH	Asb Aware	901112	LHS
Dickey	Kenneth	RJH	Asb Aware	880817	RJH
Dickey	Kenneth	RJH	Asb Aware	900821	HUN
Ginn	Curtis	RJH	Asb Aware	900820	WVH
Ha	Un Son	RJH	Asb Aware	890810	RJH
Ha	Un Son	RJH	Asb Aware	900820	WVH
Ha	Un Son	RJH	Asb Aware	880817	RJH
Ki	Mun Duk	RJH	Asb Aware	880817	RJH
Lawson	Ronald	RJH	Asb Aware	900219	TJH
McCoy	Bill	RJH	Asb Aware	901112	LHS
McCoy	William	RJH	Asb Aware	880817	RJH
McCoy	William	RJH	Asb Aware	890810	RJH
Medley	Art	RJH	Asb Aware	900219	TJH
Savallos	Juan	RJH	Asb Aware	890810	RJH
Savallos	Juan	RJH	Asb Aware	900820	WVH
Mullins	Weldon	RJH/HSP	AsbAware	881010	TJH
Boyd	Bobby	SAL	Asb Aware	900822	NPH

LAST NAME	FIRST NAME	SCHL/DEPT	SUBJECT	DATE	LOCATION
Cofey, Jr	Dan	SAL	Asb Aware	890808	NPE
Cofey, Jr	Dan	SAL	Asb Aware	880815	NPH
Hinkle	Bonnie	SAL	Asb Aware	881010	TJH
Hinkle	Bonnie	SAL	Asb Aware	900821	HUN
Albert	Mark	SPP	Asb Aware	880816	TJH
Albert	Mark	SPP	Asb Aware	900219	TJH
Albert	Mark	SPP	Asb Aware	900821	HUN
Ares	Thomas M.	SPP	Asb Aware	880816	TJH
Bell	Lloyd	SPP	Asb Aware	880816	TJH
Bell	Lloyd	SPP	Asb Aware	900219	TJH
Bell	Lloyd	SPP	Asb Aware	900821	HUN
Bidwell	Scott	SPP	Asb Aware	880816	TJH
Bidwell	Scott	SPP	Asb Aware	900219	TJH
Bidwell	Scott	SPP	Asb Aware	900821	HUN
Bingaman	Harold	SPP	Asb Aware	880817	RJH
Bodiker	Frank	SPP	Asb Aware	881010	TJH
Boyd	Raymond	SPP	Asb Aware	890810	RJH
Boyd	Rick	SPP	Asb Aware	901112	LHS
Boyd	Ricky	SPP	Asb Aware	881010	TJH
Boyd	Rudy	SPP	Asb Aware	890808	NPE
Brand	Mike	SPP	Asb Aware	880816	TJH
Brown	Jerry	SPP	Asb Aware	890809	HUN
Brown	Larry	SPP	Asb Aware	880816	TJH
Brown	Samuel	SPP	Asb Aware	880817	RJH
Brown	Samuel	SPP	Asb Aware	900821	HUN
Burn	Wesley M.	SPP	Asb Aware	880816	TJH
Burnett	Rob	SPP	Asb Aware	880817	RJH
Burnett	Rob	SPP	Asb Aware	890809	HUN
Burnett	Rob	SPP	Asb Aware	900821	HUN
Burno	Wes	SPP	Asb Aware	890809	HUN
Burno	Wesley	SPP	Asb Aware	880816	TJH
Burr	Bill	SPP	Asb Aware	881010	TJH
Burr	William	SPP	Asb Aware	890810	RJH
Crouder	Larry	SPP	Asb Aware	881010	TJH
Davenport	John	SPP	Asb Aware	881010	TJH
Davis	Leah	SPP	Asb Aware	890808	NPE
Dittman	Henry	SPP	Asb Aware	881010	TJH
Dittman	Max	SPP	Asb Aware	890810	RJH
Dumas	Andre	SPP	Asb Aware	880815	NPH
Dumas	Andre	SPP	Asb Aware	900821	HUN
Eberhart	Stan	SPP	Asb Aware	901112	LHS
Estabrook	Glen	SPP	Asb Aware	900820	WVH
Estabrook	Glenn	SPP	Asb Aware	880816	TJH
Estabrook	Glenn	SPP	Asb Aware	900219	TJH
Ferree	Dave	SPP	Asb Aware	901112	LHS
Ferree	David	SPP	Asb Aware	880816	TJH
Ganley	Michael	SPP	Asb Aware	900820	WVH
Gasaway	Mike	SPP	Asb Aware	900219	TJH
Gasaway	Mike	SPP	Asb Aware	900820	WVH
Gillen	John	SPP	Asb Aware	880815	NPH
Gillen	John	SPP	Asb Aware	890809	HUN
Ginley	Keven	SPP	Asb Aware	900219	TJH
Ginley	Kevin	SPP	Asb Aware	900820	WVH
Harris	Lynn	SPP	Asb Aware	881010	TJH

LAST NAME	FIRST NAME	SCHL/DEPT	SUBJECT	DATE	LOCATION
Harris	Samuel	SPP	Asb Aware	881010	TJH
Harris	Samuel	SPP	Asb Aware	890809	HUN
Harris	Virgil	SPP	Asb Aware	881010	TJH
Harris	Virgil	SPP	Asb Aware	890809	HUN
Hermes	Bob	SPP	Asb Aware	880817	RJH
Hermes	Bob	SPP	Asb Aware	900219	TJH
Holden	Robert	SPP	Asb Aware	880816	TJH
Holden	Robert	SPP	Asb Aware	890810	RJH
Holden	Robert	SPP	Asb Aware	900822	NPH
Hull	Lowell	SPP	Asb Aware	880816	TJH
Hull	Lowell	SPP	Asb Aware	890809	HUN
Hull	Lowell	SPP	Asb Aware	900821	HUN
Isgrigg	Larry	SPP	Asb Aware	901112	LHS
Johnson	Paul	SPP	Asb Aware	881010	TJH
Johnston	Emmett	SPP	Asb Aware	890810	RJH
Johnston	Emmett	SPP	Asb Aware	900821	HUN
Kerzykowski	Dan	SPP	Asb Aware	880817	RJH
Kerzykowski	Dan	SPP	Asb Aware	890810	RJH
Lessiter	Robert	SPP	Asb Aware	881010	TJH
McKiernan	Dale	SPP	Asb Aware	890809	HUN
McKiernan	Dale	SPP	Asb Aware	900820	WVH
Mcklernan	Dale	SPP	Asb Aware	880816	TJH
McNiel	Andy	SPP	Asb Aware	890810	RJH
McNiel	Andy	SPP	Asb Aware	901112	LHS
Metz	Charles	SPP	Asb Aware	901112	LHS
Moody	Dan	SPP	Asb Aware	890810	RJH
Nelson	Cecil A.	SPP	Asb Aware	880817	RJH
Nichols	Tom	SPP	Asb Aware	900219	TJH
Nicholson	Michael	SPP	Asb Aware	881010	TJH
Nicholson	Michael	SPP	Asb Aware	890808	NPE
Nicholson	Mike	SPP	Asb Aware	901112	LHS
Parker	Don	SPP	Asb Aware	880817	RJH
Parker	Don	SPP	Asb Aware	900219	TJH
Parker	Don	SPP	Asb Aware	900821	HUN
Patterson	Gary	SPP	Asb Aware	890810	RJH
Patterson	Gary	SPP	Asb Aware	900820	WVH
Radar	Robin	SPP	Asb Aware	890810	RJH
Rader	Robin	SPP	Asb Aware	880817	RJH
Rader	Robin	SPP	Asb Aware	900821	HUN
Ramos	Luciano	SPP	Asb Aware	880816	TJH
Ramos	Luciano	SPP	Asb Aware	900219	TJH
Ramos	Luciano	SPP	Asb Aware	900821	HUN
Riddle	Bruce	SPP	Asb Aware	880816	TJH
Riddle	Bruce	SPP	Asb Aware	900219	TJH
Riddle	Bruce	SPP	Asb Aware	901112	LHS
Rizer	Kenneth	SPP	Asb Aware	880816	TJH
Rodgers	Larry	SPP	Asb Aware	880817	RJH
Rowe	Steve	SPP	Asb Aware	900821	HUN
Rowe	Steven	SPP	Asb Aware	900219	TJH
Sain	Jerry	SPP	Asb Aware	881010	TJH
Sanborn	Bill	SPP	Asb Aware	880816	TJH
Sanborn	Bill	SPP	Asb Aware	890810	RJH
Sanborn	Bill	SPP	Asb Aware	901112	LHS
Schmauss	Julie	SPP	Asb Aware	890808	NPE

LAST NAME	FIRST NAME	SCHL/DEPT	SUBJECT	DATE	LOCATION
Shepard	George	SPP	Asb Aware	900219	TJH
Shepard	George	SPP	Asb Aware	901112	LHS
Siegler	David	SPP	Asb Aware	880817	RJH
Siegler	David	SPP	Asb Aware	900219	TJH
Siegler	David	SPP	Asb Aware	900820	WVH
Simmons	Dave	SPP	Asb Aware	901112	LHS
Simmons	David	SPP	Asb Aware	880816	TJH
Simmons	David	SPP	Asb Aware	890810	RJH
Skilbred	Phil	SPP	Asb Aware	890810	RJH
Slater	Ron	SPP	Asb Aware	900821	HUN
Smith	Rosetta	SPP	Asb Aware	881010	TJH
Sperl	Roger	SPP	Asb Aware	890809	HUN
Sperl	Roger	SPP	Asb Aware	900820	WVH
Stroh	Kevin	SPP	Asb Aware	881010	TJH
Stroh	Kevin	SPP	Asb Aware	890810	RJH
Van Hove	Dick	SPP	Asb Aware	880817	RJH
VanHove	Dick	SPP	Asb Aware	901112	LHS
Yocum	Greg	SPP	Asb Aware	880816	TJH
Yocum	Greg	SPP	Asb Aware	890808	NPE
Yocum	Greg	SPP	Asb Aware	900820	WVH
Brown	Jerry	SPP-Temp	Asb Aware	880817	RJH
Cayne	Marcia R.	SPP-Temp	Asb Aware	880815	NPH
Claassen	Warren	SPP-Temp	Asb Aware	880815	NPH
Cleland	Ken	SPP-Temp	Asb Aware	880815	NPH
Davis	Mark E.	SPP-Temp	Asb Aware	880817	RJH
Joens	Steve	SPP-Temp	Asb Aware	880817	RJH
Neil	Kathy L.	SPP-Temp	Asb Aware	880817	RJH
Webster	Mark	SPP-Temp	Asb Aware	880815	NPH
Burno	Wesley	SSP	Asb Aware	900820	WVH
Nichols	Tom	SSP	Asb Aware	900820	WVH
Bowers	Robert	Sub	Asb Aware	900821	HUN
Davenport	John	Sub	Asb Aware	890808	NPE
Robertson	Joyce	Sub	Asb Aware	900822	NPH
Butler	Kevin	Sub-Cust.	Asb Aware	901112	LHS
Cortez	Ramon	Sub-Cust.	Asb Aware	901112	LHS
Eagleson	Diane	Sub-Cust.	Asb Aware	901112	LHS
Kascur	Richard	Sub-Cust.	Asb Aware	901112	LHS
Leberman	Kerry	Sub-Cust.	Asb Aware	901112	LHS
McDaniel	Jody	Sub-Cust.	Asb Aware	901112	LHS
McFarlane	Chong	Sub-Cust.	Asb Aware	901112	LHS
Peterman	Ken	Sub-Cust.	Asb Aware	901112	LHS
Soland	Norma	Sub-Cust.	Asb Aware	901112	LHS
Lawson	Ronald	Sub.	Asb Aware	880816	TJH
Pak	Jung Soon	Sub.	Asb Aware	900820	WVH
Hastings	Ralph	TAY	Asb Aware	880815	NPH
Hastings	Ralph	TAY	Asb Aware	890808	NPE
Hastings	Ralph	TAY	Asb Aware	900822	NPH
Raess	Sally	TAY	Asb Aware	900821	HUN
Bratten	Jackie	TJH	Asb Aware	880816	TJH
Bratten	Jackie	TJH	Asb Aware	890809	HUN
Castillo	Gil	TJH	Asb Aware	880816	TJH
Castillo	Gil	TJH	Asb Aware	900820	WVH
Castilly	Gil	TJH	Asb Aware	890809	HUN
Gardner	Ko	TJH	Asb Aware	880816	TJH

LAST NAME	FIRST NAME	SCHL/DEPT	SUBJECT	DATE	LOCATION
Gardner	Ko	TJH	Asb Aware	890809	HUN
Gardner	Ko	TJH	Asb Aware	900821	HUN
Horner	Carl	TJH	Asb Aware	900821	HUN
Senra	Maria	TJH	Asb Aware	900219	TJH
Todd	Ron	TJH	Asb Aware	880816	TJH
Todd	Ron	TJH	Asb Aware	890809	HUN
Todd	Ron	TJH	Asb Aware	900821	HUN
Tomay	Jennifer	TJH	Asb Aware	900821	HUN
Uribe	Pedro	TJH	Asb Aware	880816	TJH
Uribe	Pedro	TJH	Asb Aware	890809	HUN
Young	Rosetta	TJH	Asb Aware	900821	HUN
Peoples	Joan	TWO	Asb Aware	880816	TJH
Skilbred	Phil	TWO	Asb Aware	900822	NPH
Vorhies	Carolyn	TWO	Asb Aware	900821	HUN
Wilks	Robin	TWO	Asb Aware	880816	TJH
Barnes	Kevin	UPE	Asb Aware	880817	RJH
Barnes	Kevin	UPE	Asb Aware	890809	HUN
Hunt	Freda	UPE	Asb Aware	880817	RJH
Hunt	Freda	UPE	Asb Aware	890810	RJH
Kim	Nak Mi	UPE	Asb Aware	890810	RJH
Marshall	John	UPE	Asb Aware	880817	RJH
Harris	Lynn	UPN	Asb Aware	900820	WVH
Hunt	Freda	UPN	Asb Aware	901112	LHS
Marshall	John	UPN	Asb Aware	890809	HUN
Marshall	John	UPN	Asb Aware	900820	WVH
Pennington	Rick	UPN	Asb Aware	900821	HUN
Paskvan	George	UPN/JOY	Asb Aware	900821	HUN
Brand	Mike	WDR	Asb Aware	890810	RJH
Chang	Charles	WDR	Asb Aware	880817	RJH
Chang	Charles	WDR	Asb Aware	890810	RJH
Chang	Charles	WDR	Asb Aware	900820	WVH
Davenport	John	WDR	Asb Aware	900820	WVH
Denney	Mae	WDR	Asb Aware	880817	RJH
Modene	Melinda	WDR	Asb Aware	880817	RJH
Modene	Melinda	WDR	Asb Aware	900822	NPH
Morun	George	WDR	Asb Aware	900820	WVH
Gronewald	Ncoc Dung	WDR/WVH	Asb Aware	880817	RJH
Ares	Thomas	WEL	Asb Aware	901112	LHS
Bingaman	Judy	WEL	Asb Aware	880816	TJH
Jones	Raymond	WEL	Asb Aware	901112	LHS
Kim	Jong Ok	WEL	Asb Aware	880816	TJH
Kim	Jong Ok	WEL	Asb Aware	890809	HUN
Kim	Jong Ok	WEL	Asb Aware	900821	HUN
Morris	Mark	WEL	Asb Aware	880816	TJH
Morris	Mark	WEL	Asb Aware	890809	HUN
Morris	Mark	WEL	Asb Aware	901112	LHS
Reynolds	Albin	WEL	Asb Aware	890809	HUN
Schandler	Karin	WEL	Asb Aware	881010	TJH
Apling	Kevin	WVH	Asb Aware	880817	RJH
Apling	Kevin	WVH	Asb Aware	890810	RJH
Bradley	Versie	WVH	Asb Aware	880817	RJH
Bradley	Versie	WVH	Asb Aware	890810	RJH
Bradley	Versie	WVH	Asb Aware	900820	WVH
Fisher	Euncha	WVH	Asb Aware	880816	TJH

LAST NAME	FIRST NAME	SCHL/DEPT	SUBJECT	DATE	LOCATION
Kim	Yong	WVH	Asb Aware	880817	RJH
Kim	Yong	WVH	Asb Aware	890810	RJH
Kincaid	Valerie	WVH	Asb Aware	880816	TJH
Mitchell	Joan	WVH	Asb Aware	900820	WVH
Rangdapan	R. S.	WVH	Asb Aware	890810	RJH
Reynolds	Albin	WVH	Asb Aware	900820	WVH
Sayne	Marcia	WVH	Asb Aware	890810	RJH
Sayne	Marcia	WVH	Asb Aware	900820	WVH
Singh	Michael	WVH	Asb Aware	900820	WVH
Traylor	Scott	WVH	Asb Aware	880817	RJH
Traylor	Scott	WVH	Asb Aware	890810	RJH
Traylor	Scott	WVH	Asb Aware	900820	WVH

TAB 14 - PLAN DISTRIBUTION AND NOTIFICATION

Copies of this AHERA Management Plan will be available for review by the public and officials of local, State and federal agencies during normal business hours at the following locations:

Fairbanks North Star Borough School District Administrative Offices
Main School Building
800 Cushman Street
PO Box 1250
Fairbanks, AK 99707

Fairbanks North Star Borough School District Physical Plant
PO Box 1250
1300 Minnie St
Fairbanks, AK 99707

Copies are available at the Physical Plant on Minnie St. within five days of request, for $10.00 to cover the reproduction cost.

Parents of Alternative High School Students and employees of the District will be notified of the availability of by plan by letter to the following addresses

Central PTA Council
Rich Musick
733 Six Infantry Division Loop
Ft. Wainwright AK 99703

Claudia Douglas
Fairbanks Education Association
2118 Cushman
Fairbanks, AK 99701

Frank Belts
Business Manager
Education Support Staff Association
2118 Cushman
Fairbanks, AK 99701

Notices will be sent to these organizations at least annually reminding them of the availability of the plan and providing updated information on surveillance, inspections, and response actions undertaken during the past year. The PTA will not receive updates after May, 1989 because the Alternative School will be relocating to a new building at that time.

Copies of the dated letters for the initial announcement are included in this TAB.

TAB 15 RECORD KEEPING

The working copy of this plan is maintained in Microsoft Word (TM) and Microsoft Excell (TM) on computer disk in the office of the Asbestos Plan Manager, Facilities Management Division, Department of Public Works, Fairbanks North Star Borough, 809 Pioneer Road, Fairbanks, Alaska. Additional documentation of response actions and any related materials are maintained in paper files in the same office. It is the responsibility of the Asbestos Plan Manager to maintain these files.

TAB 16 - STATEMENT OF REVIEW

The Fairbanks North Star Borough School District has utilized an EPA accredited inspector and management planner to develop this management plan. The District has complied with 40 CFR Part 763 in the development of this plan and will continue to comply as the plan is implemented.

Signed Michael S Taylor Date 3-31-09

Michael S. Taylor
AHERA Designated Person
Fairbanks North Star Borough School District

FAIRBANKS NORTH STAR BOROUGH
RECORD OF ASBESTOS ABATEMENT PROJECT

PROJECT NUMBER: 89-MAB-1

PROJECT TITLE: Asbestos Hazards Abatement in Main School Building

IFB NUMBER: 890056

PO NUMBER: 061575

PROJECT COST:

Contractor:	$15,630.00
Air Sample Analysis:	1361.50
Contract Administration:	2,500.00
Electrical Disconnect:	443.00
Advertising:	92.00
Total:	$20,026.50

SCHOOL FACILITY: Main School Administrative Building

ADDRESS: 800 Cushman St, Fairbanks, AK

DATES:
START: 12/11/89
FINISH: 12/19/89
CLEARANCE: 12/19/89

PROJECT MANAGER: Steve Titus, PE

PROJECT DESIGNER: Robert Perkins, PE, CIH

CONTRACTOR: Asbestos Removal Specialists of Alaska

ADDRESS: 1896 Marika Road #3, Fairbanks, AK 99701

PHONE: (907) 451-8550

PURPOSE: The purpose of this project was to bring selected areas of the building up to minimum standards under the Asbestos Hazard Emergency Control Act regulations. The regulations require that friable asbestos materials be sealed, enclosed or removed as necessary to block the release of asbestos fibers into the air under normal activities. Utilization of this building by the District was expected to be short. The requirements were met by repair, encapsulation, enclosure and limited removal, rather than by total removal of the materials.

LOCATIONS:

Basement Rooms: 1, 2, 3, 4, 5, Hall, Restroom, Gym, and Record storage.

First floor rooms: Custodial 1, Room 105 and Men's Room by Room 105.

Second floor: Hall outside Room 214.

MATERIALS: Hard matrix boiler and pipe insulation, aircell pipe and duct insulation and a fire door with hard matrix insulation.

METHODS: Methods included repair, encapsulation, enclosure, and localized removal. Controls included full containment, a mini-enclosure and glove bags as described below.

ENGINEERING CONTROLS: For the basement the crew set up a decontamination unit at the base of the stairs next to Mech Room 1. They sealed the basement hall at the end of the work area just beyond Room 5 and the stairway up to the main building entry with poly barriers. Ventilation grilles were sealed. Two ventilating machines drew air through ducts that could be extended to individual work areas and exhausted to the outdoors from Room 2, Electricians shut down the power for encapsulation work in the electrical transformer room.

On the second floor, workers constructed a mini-enclosure outside Room 214 to seal off the entrance to room 214 and to span the length of the ductwork (22 feet) in the hall. They installed a double flapped entry at one end of the structure and an exhaust ventilation machine at the other end. There was a strong movement of air into the enclosure through the flapped entry.

WORK PRACTICES: The work began in the Mech Room 1 suite. Both inlet ventilation ducts were extended into the space through a flapped entry, making the room negative relative to the hall and other basement rooms. Workers encapsulated all damaged or non-sealed pipe and boiler insulation in the suite, using cloth lagging and a latex based encapsulant. They cleaned all debris and dust using HEPA filtered vacuums, wet mopping and wiping. The non-asbestos spray applied ceiling fireproofing was not treated in this project.

When Mech Room 1 was finished, it was sealed off and the inlet ducts to the ventilation machines then drew air from Room 4 and the hallway space. Workers encapsulated the minor damage locations in rooms 2-5, using cloth lagging and encapsulants as necessary. They vacuumed and/or wet mopped all horizontal surfaces to remove any stray debris. As the crew finished the rooms they sealed them from the hall and the ventilation machines drew air only from the hall. The pipe insulation along the hall ceiling and in the restroom was encapsulated locally using cloth lagging and latex based encapsulant. The insulation on the duct work had been mostly encapsulated in the past, but the surfaces against the wall and ceiling had been left untreated. In this project workers bridged the gaps between the encapsulated surface and the adjacent wall or ceiling with a broad, sturdy, lagging treated with an encapsulant. This effectively enclosed the unencapsulated surfaces against the wall and ceiling. Finally, the crew cleaned the hall to remove any remaining dust and debris.

Workers then moved to the Gym and removed two damaged fittings on a radiator along the North wall and six feet of air cell insulation on a pipe over the bleachers by glove bag. They encapsulated the steamline near the ceiling along the north wall and cleaned all surfaces along

that wall to any remove dust and debris. The gym floor was wet mopped out ten feet from the north wall after the repair work.

In the Record Storage area workers then encapsulated small cracks in the insulation on the overhead steam line. They removed damaged insulation from two fittings on a unit heater by glove bag. They repaired and encapsulated a damaged fitting on the end of the steam line and cleaned up and a debris pile under the fitting. The plywood storage floor over the old kitchen was thoroughly cleaned using a HEPA vacuum due to the presence of the debris pile in one corner.

In the mini-enclosure outside the Room 214 workers removed the duct insulation using wet methods. They scrubbed the duct surface and applied a latex based encapsulant to lock down fibers.

The crew repaired and encapsulated pipe insulation in Custodial Room 1, Room 105 and in the Men's Room entry near 105 using cloth lagging and latex based encapsulant. They removed damaged insulation from a fitting on the radiator in the custodian's room by glove bag. Following repairs, they cleaned all adjacent surfaces.'

EPA APPROVED LANDFILL (RECEIPT ATTACHED): Fairbanks North Star Borough Landfill.

CLEARANCE INSPECTOR: Michael S. Taylor

INSPECTION DATES: The inspector checked the project areas as they were finished on December 12, 15, 16, and 17. The Project Manager, inspector and Contractor made a final inspection on 12/20/89.

INSPECTION RESULTS: Work was complete in all areas except that minor cleaning was necessary on the radiators along the north wall of the Gym. The inspector required minor encapsulation to be completed in the Men's room next to Room 105.

CLEARANCE AIR MONITORING BY: Michael S. Taylor.

CLEARANCE METHOD: Initial clearance sampling with local analysis by PCM was conducted in the basement areas and in the mini-enclosure on the second floor. Clearance air monitoring was not conducted in the Gym and the Records storage due to the small-scale nature of the repair work. Clearance air monitoring was conducted in the basement rooms 1-5 and hall with analysis by TEM when this entire section had been completed. Except within the mini-enclosure, the samples were run using Dupont Alpha 1 personal sampling pumps. In the mini-enclosure, two high speed pumps borrowed from the contractor were used. Mr. Taylor pre- and post-calibrated the pumps.

LABORATORY: Northern Testing Laboratories

LAB ADDRESS: 600 University Plaza West Suite A, Fairbanks, AK

ANALYSIS METHOD: Phase Contrast Microscopy (PCM)

LABORATORY: EMS Laboratories

LAB ADDRESS: 507 Mission St., South Pasadena, CA 91030-3035.

ANALYSIS METHOD: Transmission Electron Microscopy (TEM)

SAMPLE RESULTS (SEE ALSO ATTACHED LAB SHEET): The lab reported all PCM sample air concentrations to be less than the detection limit, 0.01 f/cc. Four of the five samples taken in the basement spaces for TEM analysis detected no asbestos. One filter contained 77 structures per square millimeter on the filter. When averaged, the five samples contained only 15.4 structures per square millimeter. Under the AHERA regulations, a project may be cleared if the average structure density on all five filters is less than 70 structures per square millimeter. Therefore, these sample results confirm clearance of the project. Incidentally, the one sample filter that had traces of asbestos on it was taken at the intake to the negative air machine in Room 2. The abatement crew moved the sample pump shortly before the pump timed out. It is possible that the filter was contaminated by that action. The samples taken in the boiler room where the worst conditions existed and the most significant work had been completed detected no asbestos.

COMMENTS: This project has brought all asbestos containing materials up to minimum AHERA standards within the spaces addressed. The remaining rooms (6-10, etc.) and hall beyond Room 5 do not meet standards and must remain closed off until the next project (currently under design) is completed. The 1947 addition basement space formerly occupied by the Alternative School also does not meet standards, and must remain closed.

FILE: MAB1REPT

SIGNED: Michael S. Taylor DATE: January 22, 1990
Michael S. Taylor
Asbestos Plan Manager

CC: EPA, Region 10, Seattle, with Accredited Worker list, dump receipt and air sample results.
Facilities Support Division, Department of Education, Juneau, with Accredited Worker list, dump receipt and air sample results.

NORTECH

ENVIRONMENTAL & ENGINEERING CONSULTANTS

2400 College Road, Fairbanks, AK 99709 (907) 452-5688 Fax (907) 452-5694

Rufus—
Please put
in O&M manual
BK

March 20, 1995

Ms. Bartly Kleven, Environmental Officer
Municipal Utilities System
1204 First Avenue
Fairbanks, Alaska 99701

Re: Asbestos Monitoring in the Old Main School Building

Dear Ms. Kleven:

Thank you for contacting ***NORTECH*** regarding your need for asbestos monitoring in the Old Main School Building, presently serving as the new City Hall. This letter report will confirm ***NORTECH***'s findings and recommendations from the sample results.

FIELD ACTIVITIES SUMMARY

On four separate days, ***NORTECH*** conducted a sampling effort as directed by you in the Old Main School Building at 7th and Cushman in downtown Fairbanks. On the first day, Friday March 3, background area samples were taken to determine the asbestos exposure level prior to commencing the abatement project of approximately 62 feet of thermal system insulation (TSI) in Room 5, located in the basement floor of the building.

The abatement work began on Tuesday, March 7. Two MUS employees, Howard Burton and Bert Amick were monitored by personal samplers as they worked in the exclusion area of room 5 removing TSI by using a glovebag method. Duane Smith of MUS, assisted in the support zone. The sampling effort was repeated on Wednesday, March 8, and the same employees were monitored as they continued the same type of work.

On Thursday, March 9, the employees monitored were Howard Burton and Duane Smith. Mr. Amick remained out of the exclusion zone and assisted in the support zone. The employees in the exclusion zone were monitored as they performed their abatement work, and the monitoring continued as they performed the clean-up work and completed their project.

Upon completion of the project and final clean-up, ***NORTECH*** performed final clearance sampling.

FIELD ACTIVITIES AND RESULTS

On Friday, March 3, ***NORTECH*** arrived on site at 1 pm and were met by Bartly Kleven, Environmental Coordinator for MUS. The background sampling effort was conducted by placing two sample cassettes in the north and south ends of Room 5. A high volume pump was calibrated to 10 liters per minute (l/m) for each sample. The sampling was conducted to allow a minimum of 1200 liters of air to be drawn through each sample cassette. At the completion of the sampling effort the pump calibration was checked to ensure an accurate air flow was maintained. The analysis of the background samples revealed an exposure of 0.032 fibers per cubic centimeter (f/cc) in the north end of the room, and 0.034 f/cc at the south end. Though the results were below the permissible exposure limit of 0.1 f/cc, they were above the AHERA limit for clearance samples of 0.01 f/cc.

On Tuesday, March 7, ***NORTECH*** arrived on site at 8:30 am. The MUS crew was employed in preparing Room 5 for the abatement project. The room was divided into an exclusion area and support area, separated by plastic panels. Entrance and egress was through a two stage portable shower. The workers removed their contaminated clothing in the exclusion area and then showered before passing into the support area. All contaminated materials were double bagged in the exclusion area, washed in the shower, and bagged again before being placed and labelled in the support area prior to disposal. The exclusion area was also maintained under negative pressure, using High Efficiency Particulate Air (HEPA) filtration.

Personal pumps were calibrated prior to placing them in operation. Personal samplers were placed on Howard Burton and Bert Amick prior to their entering the exclusion zone. Duane Smith of MUS assisted in the support zone. Field blanks were prepared and labelled. Upon exiting the exclusion zone the samples were removed from each worker, the calibration of the pumps was checked, and the samples were placed with a chain of custody form and delivered to the lab for analysis. The analysis results indicated an exposure of 0.033 f/cc for Mr. Burton, and 0.037 f/cc for Mr. Amick. Both results were below the PEL of 0.1 f/cc.

On Wednesday, March 8, ***NORTECH*** arrived on site at 8:30 am. Personal pumps were calibrated and samplers were placed on Mr. Burton and Mr. Amick. Duane Smith again assisted in the support zone. During the lunch break, the sample cassettes were removed, the pump calibration was checked, and new sample cassettes were placed on each worker. At the end of the shift, the sample cassettes were removed, the pump calibration rechecked and, the samples were placed with a chain of custody form and delivered to the lab for analysis. The analysis results indicated an exposure for Mr. Burton of 0.052 f/cc during the morning shift and 0.038 f/cc during the afternoon shift. The analysis results indicated an exposure for Mr. Amick of 0.040 f/cc during the morning shift. The

afternoon results for Mr. Amick were not analyzed as the filter was saturated by liquid during the decontamination process.

On Thursday, March 9, ***NORTECH*** arrived on site at 8:30 am. Personal pumps were calibrated and samplers were placed on Mr. Burton and Mr. Smith. Bert Amick assisted in the support zone. At the lunch break, the sample cassettes were removed, the pump calibration was checked and new sample cassettes were placed on each worker. The workers completed the abatement/removal project during the morning shift and performed clean-up activities during the afternoon. The analysis results indicated an exposure for Mr. Burton of 0.069 f/cc during the morning shift, and 0.025 f/cc during the afternoon shift. His Time Weighted Average (TWA) was 0.048 f/cc. The analysis results for Mr. Smith indicated an exposure of 0.070 f/cc during the morning shift, and 0.071 f/cc during the afternoon shift. His TWA was 0.070 f/cc.

Upon completion of the clean-up task, ***NORTECH*** performed clearance sampling. The clearance sampling effort was conducted by placing two sample cassettes in the north and south ends of the exclusion area of Room 5. The room was maintained under negative air pressure to ensure an aggressive sampling effort was conducted. A high volume pump was calibrated to 10 liters per minute (l/m) for each sample. The sampling was conducted to allow a minimum of 1200 liters of air to be drawn through each sample cassette. At the completion of the sampling effort the pump calibration was checked to ensure an accurate air flow was maintained. The analysis results revealed a contamination level of 0.007 f/cc in the north side of the room, and 0.008 f/cc in the south side of Room #5. Both samples were below the clearance level of 0.01 f/cc.

RECOMMENDATIONS

The analysis results revealed that during the abatement/removal project the workers were not exposed to an asbestos contamination level above the PEL. Room #5 had a background contamination level of 0.033 f/cc, but upon completion of the project, the room was cleaned to an acceptable clearance level below the minimum standard of 0.01 f/cc. This may be attributed to proper preparation, adequate engineering controls, and good work practices.

As stated in 29 CFR 1926.1101 the analysis results from this project may be used as objective data to represent the exposure levels to be expected for work operations under workplace conditions "closely resembling" the processes, type of material, control methods, work practices, and environmental conditions. However, the work must be performed by employees whose training and experience is no less extensive then that of the employees who performed this job.

It is ***NORTECH***'s additional recommendation that provided all conditions, work practices, controls, and processes are similar, future projects may be performed using the minimum respiratory

protection of half-mask air purifying respirators equipped with high efficiency filters.

LIMITATIONS

NORTECH provides a level of service that is performed within the standard of care and competence found within this practice and the engineering profession. It must be recognized that limitations in a site sampling practice exist. The data presented in the report should be considered representative of only the time of our sampling. The result presented is from an analysis and observation of several samples of limited duration. Consequently, the result reported may not represent the highest level of contamination present or accurately represent the exposure level present in the building. In addition, changes in the condition of the facility can occur with the passing of time, due to natural processes and/or from human activities.

We trust that this information is sufficient for your needs at the present time. If you have any questions or comments, please contact *NORTECH*. We appreciate your continued confidence in our Firm.

Sincerely,
NORTECH

John Hargesheimer, PE, DEE
Principal

Ken Sather
Industrial Hygienist

Attachments: Sample Chart
Sample Request Forms

MUS OLD MAIN SAMPLING CHART

DATE	ID #	LOCATION	TIME ON	TIME OFF	PUMP #	TYPE OF WORK	ANALYSIS	RESULTS (f/CC)	COMMENTS
3/3/95	0303-01A	RM #5 N	1314	1514	1187	BACKGROUND	PCM	0.032	ABOVE CLEARANCE LEVEL
3/3/95	0303-02A	RM #5 S	1316	1516	1187	BACKGROUND	PCM	0.034	ABOVE CLEARANCE LEVEL
3/3/95	FIELD BLANK A	RM #5					PCM	0/100	<7f/100 FIELDS
3/3/95	FIELD BLANK B	RM #5					PCM	1.5/100	<7f/100 FIELDS
3/7/95	0307-01A	HOWARD BURTON	1320	1554	1	ABATEMENT	PCM	0.033	
3/7/95	0307-02A	BERT AMICK	1342	1555	2	ABATEMENT	PCM	0.037	
3/7/95	FIELD BLANK A	HALLWAY					PCM	1/100	<7f/100 FIELDS
3/7/95	FIELD BLANK B	HALLWAY					PCM	3/100	<7f/100 FIELDS
3/8/95	0308-01A	BERT AMICK	900	1100	1	ABATEMENT	PCM	0.04	
3/8/95	0308-02A	HOWARD BURTON	906	1100	2	ABATEMENT	PCM	0.052	
3/8/95	FIELD BLANK A	HALLWAY					PCM	3/100	<7f/100 FIELDS
3/8/95	FIELD BLANK B	HALLWAY					PCM	0/100	<7f/100 FIELDS
3/8/95	0308-03A	BERT AMICK	1301	1547	1	ABATEMENT	PCM	****	LIQUID DAMAGED FILTER
3/8/95	0308-04A	HOWARD BURTON	1255	1556	2	ABATEMENT	PCM	0.038	TWA 0.043
3/9/95	0309-01A	HOWARD BURTON	839	1133	1	ABATEMENT	PCM	0.069	
3/9/95	0309-02A	DUANE SMITH	851	1133	2	ABATEMENT	PCM	0.07	
3/9/95	0309-03A	HOWARD BURTON	1319	1515	1	CLEANING	PCM	0.025	TWA 0.048
3/9/95	0309-04A	DUANE SMITH	1311	1515	2	CLEANING	PCM	0.071	TWA 0.070
3/9/95	FIELD BLANK A	HALLWAY					PCM	4/100	<7f/100 FIELDS
3/9/95	FIELD BLANK B	HALLWAY					PCM	1/100	<7f/100 FIELDS
3/9/95	0309-05A	ROOM #5	1540	1740	1187	CLOSURE	PCM	0.007	WITHIN ACCEPTABLE LIMITS
3/9/95	0309-06A	ROOM #5	1540	1740	1187	CLOSURE	PCM	0.008	WITHIN ACCEPTABLE LIMITS
3/9/95	FIELD BLANK C	ROOM #5					PCM	.5/100	<7f/100 FIELDS
3/9/95	FIELD BLANK D	ROOM #5					PCM	1/100	<7f/100 FIELDS

NORTECH

Sample Transmittal Form

Company: Rocktech
Address: 2400 College Rd.
Fairbanks, AK 99709
Attn: Ken Sabol
Phone: 452-8688 FAX: 452-5694
Special Instructions:

Analysis Type: PCM AIR
BLANKS REQ: 1

Turn Around: [ ] 8 Hours [ ] 24 Hours [ ] 48 Hours [ ] 72 Hours

P.O. No.: JOB No.: 95108 95115
Project Name/Location: Old Main
Sampled By: Ken Sabol Date: 3/3/95

Date	Client Sample Number	Sample Type	Time	Flow Rate: 1.0 L/m	Calculated Volume	Other Information
3/3/95	0303-01A	[ ] Removal [X] Area [ ] Personal [ ] Clearance [ ] Blank	Start 1314 Stop 1514 Total 120		1200L	74/100 .032 f/cc
Description/Location: Aside Room #5						
3/3/95	0303-02A	[ ] Removal [X] Area [ ] Personal [ ] Clearance [ ] Blank	Start 1316 Stop 1516 Total 120		1200L	83/100 .034 f/cc
Description/Location: S side Room #5						
3/3/95	Field Blank A	[ ] Removal [ ] Area [ ] Personal [ ] Clearance [X] Blank	Start Stop Total			9/100
Description/Location:						
3/3/95	Field Blank B	[ ] Removal [ ] Area [ ] Personal [ ] Clearance [X] Blank	Start Stop Total			1.5/100
Description/Location:						
		[ ] Removal [ ] Area [ ] Personal [ ] Clearance [ ] Blank	Start Stop Total			
Description/Location:						
		[ ] Removal [ ] Area [ ] Personal [ ] Clearance [ ] Blank	Start Stop Total			
Description/Location:						

Chain of Custody

Date	Time	Relinquished By	Received By	Received By	Comments
3/3/95	1615	Ken Sabol	1615		

Sample Transmittal Form

NORTECH

Company: NorTech
Address: 2300 College Rd.
Fairbanks AK 99709
Attn: Ken Sabol
Phone: 452-5688 FAX: 452-5694
Special Instructions:

Analysis Type: PCM AIR
Blank A49 = 2

Turn Around Time:
( ) < 8 Hours
( ) 24 Hours
( ) 48 Hours
( ) 72 Hours

P.O. No.:
JOB No.: 95105 extension
95115
Project Name/Location: Old Blair
Sampled By: Ken Sabol
Date:

Date	Client Sample Number	Sample Type	Time	Flow Rate	Calculated Volume	Other Information
3/7/95	0307-01A Description/Location: Howard Backen	( ) Removal ( ) Area (X) Personal ( ) Clearance ( ) Blank	Start 1320 Stop 1554 Total 154 min	Start Stop Total 1.9	2 L/m 1.8 L/m Pump #1	293 L 21.5/100 .033 F/cc
3/7/95	0307-02A Description/Location: Burt Amick	( ) Removal ( ) Area (X) Personal ( ) Clearance ( ) Blank	Start 1342 Stop 1555 Total 133 min	Start Stop Total 1.2	1.3 L/m 1.1 L/m Pump #2	160 L 14/100 .037 F/cc
3/7/95	Field Blank A Description/Location:	( ) Removal ( ) Area ( ) Personal ( ) Clearance (X) Blank	Start 1325.00 Stop 1325.30 Total .30	Start Stop Total	1/100	
3/7/95	Field Blank B Description/Location:	( ) Removal ( ) Area ( ) Personal ( ) Clearance (X) Blank	Start 1327.00 Stop 1327.30 Total .30	Start Stop Total	3/100	
	Description/Location:	( ) Removal ( ) Area ( ) Personal ( ) Clearance ( ) Blank	Start Stop Total	Start Stop Total		
	Description/Location:	( ) Removal ( ) Area ( ) Personal ( ) Clearance ( ) Blank	Start Stop Total	Start Stop Total		

Chain of Custody:

Date	Time	Relinquished By	Company	Received By	Company
3/7/95	1200	Ken Sabol		Kim Gleason	

Sample Transmittal Form

NORTECH

Company: Rockford
Address: 2400 College Rd.
Fbks. AK 99709
Attn: Ken Lobb
Phone: 907-452-5688 FAX: 452-5694
Special Instructions:

Analysis Type: PCM AIR

Turn Around Time:
- [ ] ≤ 8 Hours
- [ ] 24 Hours
- [ ] 48 Hours
- [ ] 72 Hours

P.O. No.: JOB No.: 95108 95115
Project Name/Location: Old Mails
Sampled By: Date: 3/8/95

Date	Client Sample Number	Sample Type	Time	Flow Rate	Calculated Volume	Other Information
3/8/95	0308-01-A Description/Location: Bert Amick	[ ] Removal [ ] Area [X] Personal [ ] Clearance [ ] Blank	Start: 0900 Stop: 1100 Total: ~~2120~~ 120 min	Start: ____ Stop: ____ #1 2 L/m 1.8 L/m		1.9 L/m 0.040 F/cc
3/8/95	0308-02-A Description/Location: Howard Burton	[ ] Removal [ ] Area [X] Personal [ ] Clearance [ ] Blank	Start: 0906 Stop: 1100 Total: ~~114~~ 114 min	Start: ____ Stop: ____ #2 1.3 L/m 1.2 L/m		1.25 L/m 0.052 F/cc
3/8/95	Field Blank A Description/Location:	[ ] Removal [ ] Area [ ] Personal [ ] Clearance [X] Blank	Start: 0904 Stop: 0904.30 Total: 30	Start: ____ Stop: ____ 3/100		
3/8/95	Field Blank B Description/Location:	[ ] Removal [ ] Area [ ] Personal [ ] Clearance [X] Blank	Start: 0908 Stop: 0908.30 Total: 30	Start: ____ Stop: ____ 0/100		
3-8-95	0308-03-A Description/Location: Bert Amick	[ ] Removal [ ] Area [X] Personal [ ] Clearance [ ] Blank	Start: 1301 Stop: 1547 Total: 167 min	Start: ____ Stop: ____ 2 L/m #1 1.8 L/m		1.9 L/m No Readings
3-8-95	0308-04-A Description/Location: Howard Burton	[ ] Removal [ ] Area [X] Personal [ ] Clearance [ ] Blank	Start: 1255 Stop: 1556 Total: 181 min	Start: ____ Stop: ____ 1.1 L/m #2 1.1 L/m		1.1 L/m 0.038 F/cc

Chain of Custody

Date	Time	Relinquished By	Company	Received By	Company
3/8/95	0830	Ken Lobb	Rockford	[signature]	TEC

Sample Transmittal Form

Company: NORTECH Address: 2400 College Road Fairbanks, AK 99709 Attn: KEN SATHER Phone: (907) 452-5688 FAX: 452-5694 Special Instructions:	Analysis Type PCM AIR	Turn Around Time [ ] ≤ 8 Hours [ ] 24 Hours [ ] 48 Hours [ ] 72 Hours

P.O. No.: _____ JOB No.: 9510B extension 9515

Project Name/Location: Old Main

Sampled By: _____ Date: 3/9/95

Date	Client Sample Number	Sample Type	Time	Flow Rate	Calculated Volume	Other Information	
3/9/95	0309-01A	Removal / Area / X Personal / Clearance / Blank	Start 0839 Stop 1133 Total 174 m	Start 2 L/m Stop 1.8 L/m Avg 1.9	330 L	Pump # 1 Lot # 1516	0.069 f
Description/Location: Howard Burton							
3/9/95	0309-02A	Removal / Area / X Personal / Clearance / Blank	Start 0851 Stop 1133 Total 162 m	Start 1.3 L/m Stop 1.1 L/m Avg 1.2	194 L	Pump # 2 Lot # 1516	0.020 f
Description/Location: Duane Smith							
3/9/95	0309-03A	Removal / Area / X Personal / Clearance / Blank	Start 1319 Stop 1515 Total 154 m	Start 2 L/m Stop 1.9 Avg 1.95	300 L	Pump # 1 Lot # 1516	0.055 f TWA 0.028 f
Description/Location: Howard Burton							
3/9/95	0309-04A	Removal / Area / X Personal / Clearance / Blank	Start 1311 Stop 1515 Total 146 m	Start 1.1 L/M Stop 1.0 Avg 1.05	153 L	Pump #2 Lot # 1516	0.021 f TWA 0.020 f
Description/Location: Duane Smith							
		Removal / Area / Personal / Clearance / Blank	Start Stop Total				
Description/Location:							
		Removal / Area / Personal / Clearance / Blank	Start Stop Total				
Description/Location:							

Chain of Custody

Date	Time	Relinquished By	Company	Received	Company
3/10/95	0908	Ken Sather		Diane Johnson	

NORTECH

Sample Transmittal Form

Company: NORTECH
Address: 2400 College Rd.
Fairbanks, AK 99709
Attn: KEN SATHER
Phone: (907) 452-5688 FAX: 452-5694
Special Instructions:

Analysis Type	Turn Around Time
PCM AIR	( ) ≤ 8 Hours ( ) 24 Hours ( ) 48 Hours ( ) 72 Hours

P.O. No.:
JOB No.: 95108 ~~extension~~ 95115
Project Name/Location: Old Main
Sampled By: Dan Jones
Date: 3/9/95

Date	Client Sample Number	Sample Type	Time	Flow Rate	Calculated Volume	Other Information
3/9/95	Field Blank A Description/Location: Background, Support Zone	( ) Removal ( ) Area ( ) Personal ( ) Clearance (X) Blank	Start 1233 Stop 1233.30 Total 30 secs	Start ___ l/m Stop ___ l/m Total ___ l/m	4/100	Lot # 1690
3/9/95	Field Blank B Description/Location: Background/Support Zone	( ) Removal ( ) Area ( ) Personal ( ) Clearance (X) Blank	Start ___ Stop ___ Total ___	Start ___ l/m Stop ___ l/m Total ___ l/m	1/100	Lot # 1690
3/9/95	0309-05A Description/Location: Closure, Room 5	( ) Removal ( ) Area ( ) Personal (X) Clearance ( ) Blank	Start 1540 Stop 1740 Total 120m	Start 10 l/m Stop 10 l/m Total 10 l/m	1200L	0.007 f/cc Lot # 1690
3/9/95	0309-06A Description/Location: Closure, Room 5	( ) Removal ( ) Area ( ) Personal (X) Clearance ( ) Blank	Start 1540 Stop 1740 Total 120 m	Start 10 l/m Stop 10 l/m Total 10 l/m	1200L	0.005 f/cc Lot # 1690
3/9/95	Field Blank C Description/Location: Background, Room 5	( ) Removal ( ) Area ( ) Personal ( ) Clearance (X) Blank	Start 1528 Stop 1528.30 Total 30 secs	Start ___ l/m Stop ___ l/m Total ___ l/m	.5/100	Lot # 1690
3/9/95	Field Blank D Description/Location: Background, Room 5	( ) Removal ( ) Area ( ) Personal ( ) Clearance (X) Blank	Start ___ Stop ___ Total ___	Start ___ l/m Stop ___ l/m Total ___ l/m	1/100	Lot # 1690

Chain of Custody

Date	Time	Relinquished By	Company	Received By	Company
3/10/95	0908	Ken Sather		Kim Johnson	

SUMMARY

BASEMENT: THE FOLLOWING QUANTITIES OF ASBESTOS CONTAINING INSULATION WERE FOUND AND RECORDED.

2756 LF (PIPE & FITTINGS)
3484 FT^2 (DUCTWORK AND BOILERS)

NOTES

A. This area requires special abatement precaution.

B. Only pipes and ducting that have ACM are shown on this drawing.

C. The quantity of ACM on pipe fittings is consolidated with ACM quantities on straight pipe runs. See summary item, "Pipe & Fittings".

D. All Asbestos on air distribution ducting and boilers is expressed in square feet.

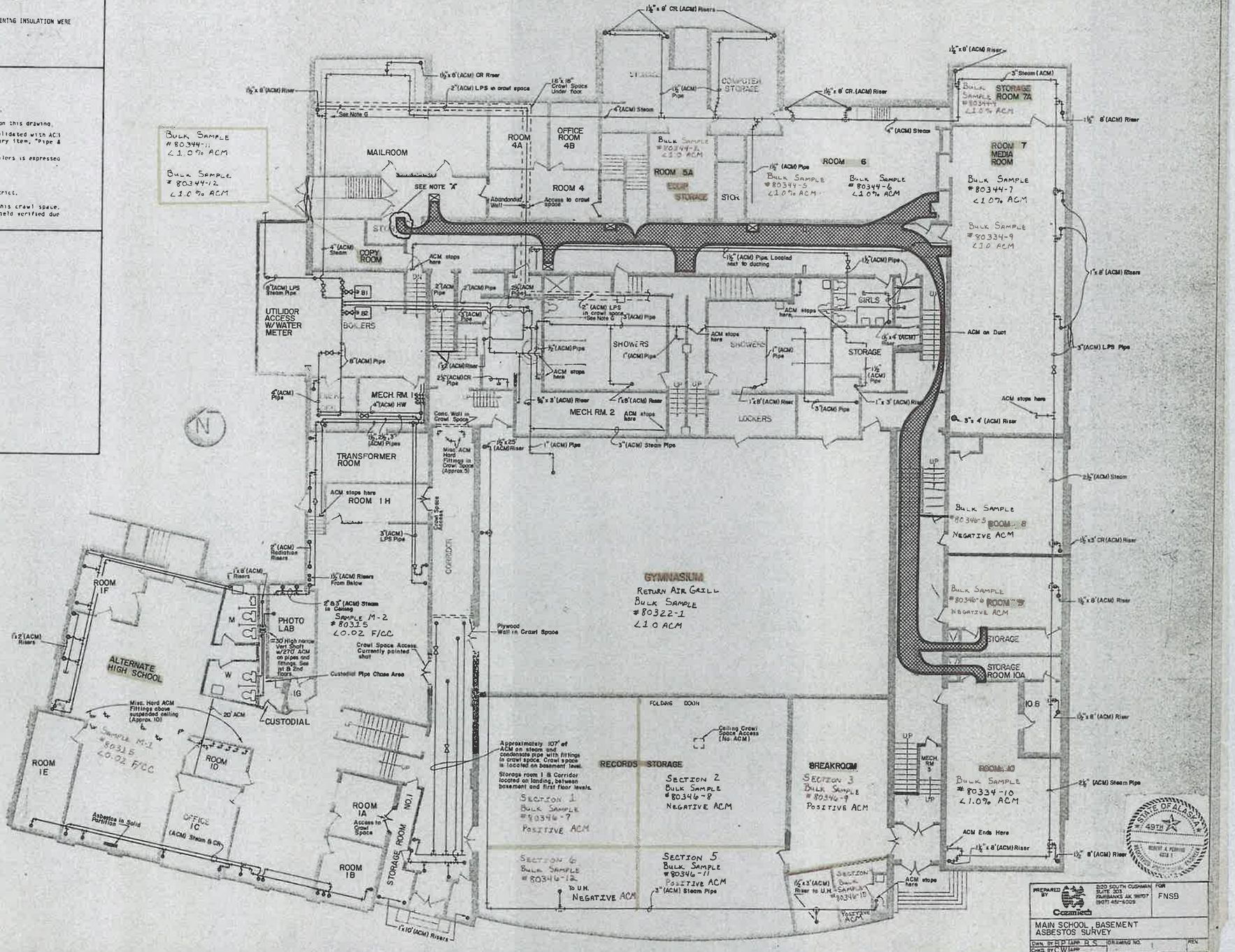
E. These drawings are not to scale.

F. Base as-built plans supplied by FNSB School District.

G. Estimate assumed 100 LF of 2" ACM pipe in this crawl space. Dashed lines and termination points were not field verified due to inaccessibility.

LEGEND

	Air Distribution Ducting
—o	90° Riser Up
—→	90° Riser Down
—⌋	90° Elbow
—⟋	45° Elbow
—◇—	Bell Reducer
—⊤	Tee
—⋈—	Valve
ACM	Asbestos Containing Material
B1 & B2	Boiler with ACM
UH	Unit Heater
CR	Condensate Return
LPS	Low Pressure Steam
HW	Hot Water



PREPARED BY Cezmtech, 3200 SOUTH CUSHMAN SUITE 203 FAIRBANKS AK 99707 (907) 452-5009

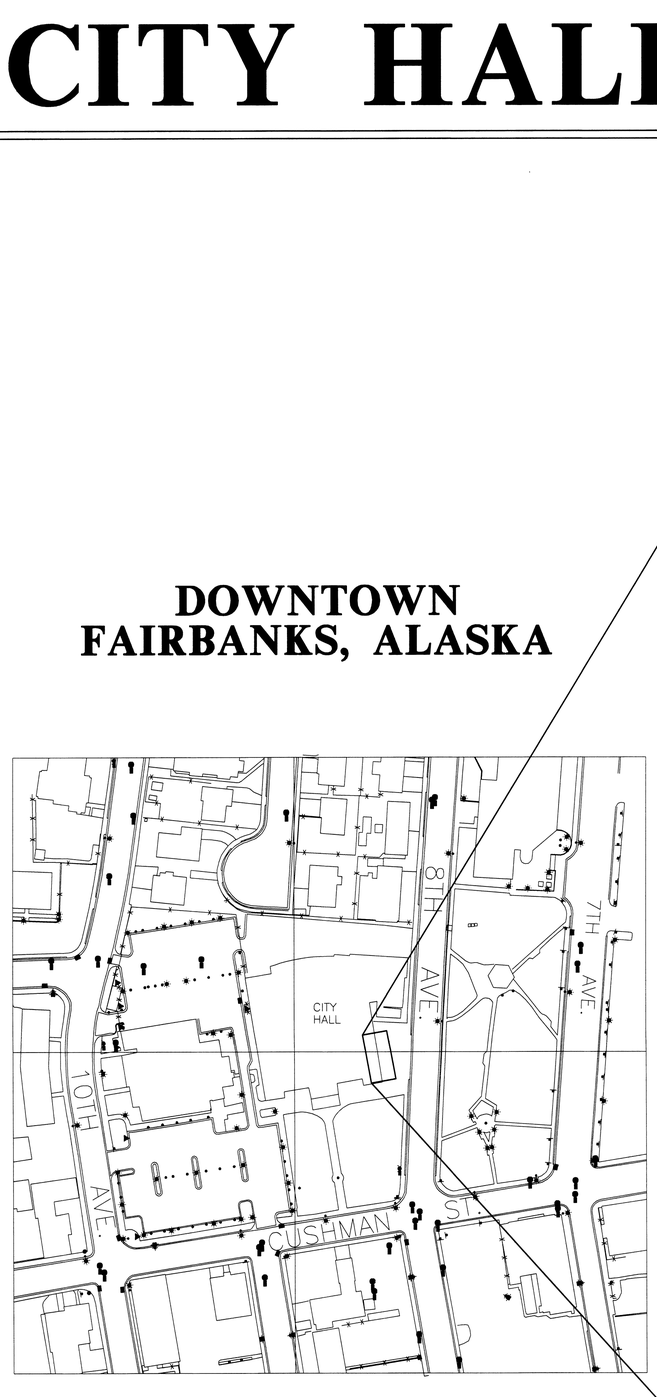
FOR FNSB

MAIN SCHOOL, BASEMENT
ASBESTOS SURVEY

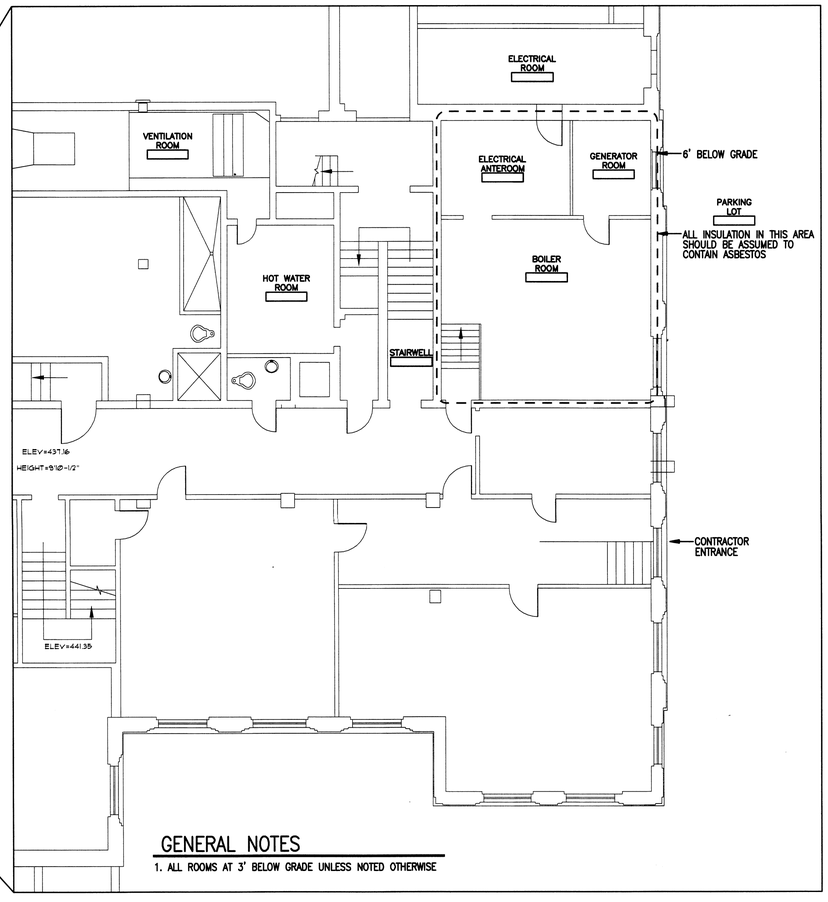
DWN. BY H.P. TAPP R.S. | DRAWING NO. | REV.
CHKD. BY C.W. TAPP

CITY HALL MECHANICAL REPAIRS

DOWNTOWN FAIRBANKS, ALASKA



1 SITE PLAN
T1.1 NO SCALE



GENERAL NOTES

1. ALL ROOMS AT 3' BELOW GRADE UNLESS NOTED OTHERWISE

CITY HALL DRAWING INDEX

GENERAL
T1.1 TITLE SHEET
HAZMAT
HM1.0 HAZMAT REMOVAL PLAN
MECHANICAL
M1.1 MECHANICAL DEMOLITION PLAN
M2.1 MECHANICAL PIPING PLAN
M3.1 MECHANICAL DETAILS

Revision Date No.

CITY HALL MECHANICAL REPAIRS

Design Alaska
Architects Engineers Surveyors
601 College Road Fairbanks, Alaska 99701
Telephone 907 452 1241

TITLE SHEET

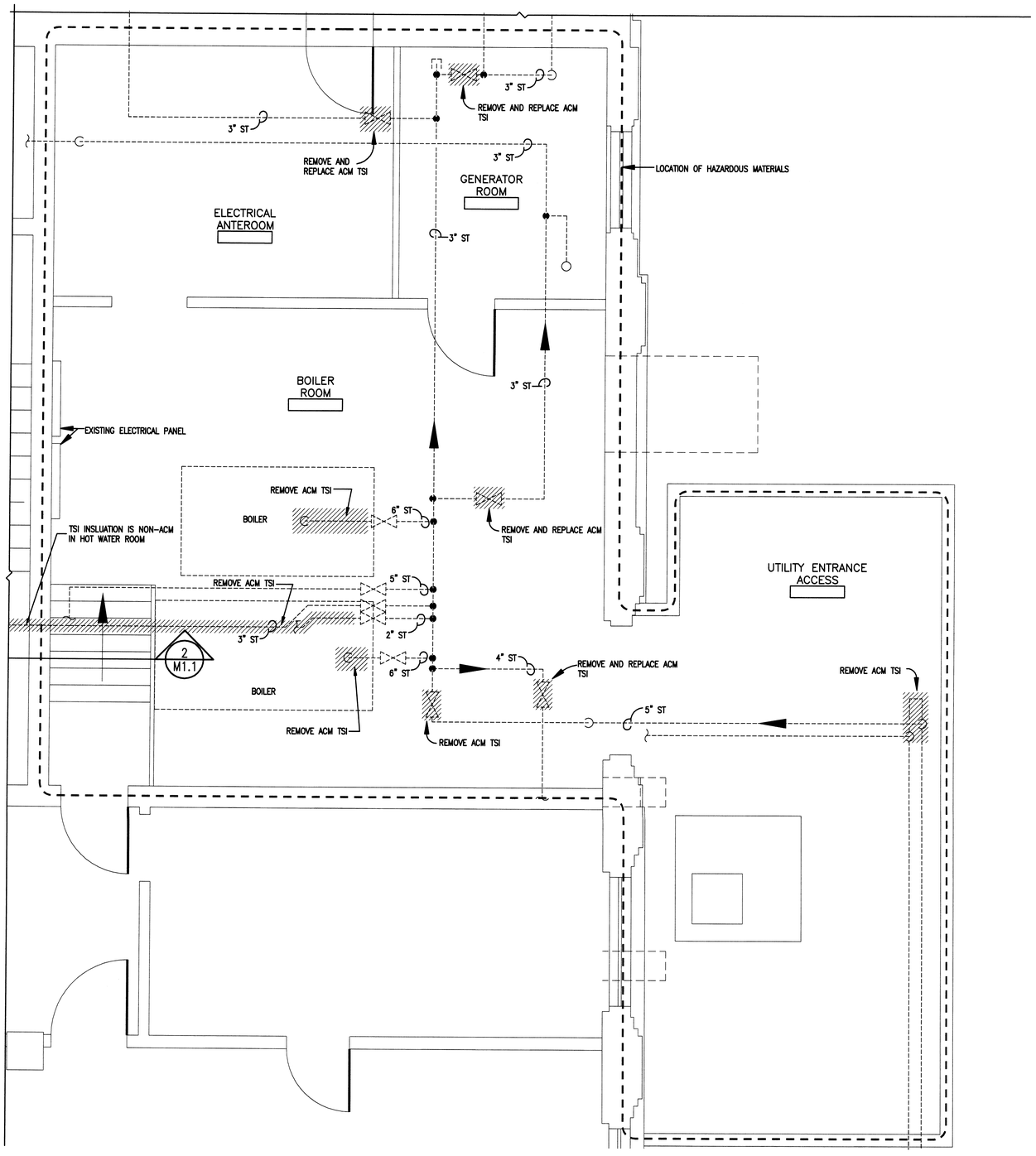
STATE OF ALASKA 49th CHRIS H. MILLER No. ME 10172 REGISTERED PROFESSIONAL ENGINEER 2/11/10

Date 11 FEB 2010 Comm. No. 200901
In Charge CHM
Drawn By JBR
Checked By CHM

T1.1

3" 1"=1' 1/2"=1' 3/8"=1' 1/8"=1' 0" 1"=100' 1" 1"=40' 2" 1"=60' 3"
1-1/2"=1' 3/4"=1' 1/4"=1' 1"=10' 1"=20' 1"=30'

2/11/2010 2:01 PM
200901 T1.1.DWG



1 HAZMAT REMOVAL PLAN
HM1.0 1" = 30'

EXISTING HAZARDOUS MATERIALS

1.) ASBESTOS CONTAINING THERMAL SYSTEM INSULATION (TSI) IS LOCATED ON ALL OF THE MECHANICAL PIPING AND VALVES ASSOCIATED WITH THIS PROJECT. (EXCEPTION NOTED FOR 3" STEAM LINE FROM THE BOILER SOUTH TO THE (E) HOT WATER HEATER. THIS TSI IS KNOWN TO BE FIBERGLASS.

2.) ASBESTOS CONTAINING MATERIALS (ACM) INCLUDING INSULATION AND VALVES TO BE REMOVED AND OR REPLACED FOR THIS PROJECT ARE THE FOLLOWING QUANTITIES:

TSI = 12 LINEAR FEET

VALVES = 5 COUNT

3.) ANY TSI NOT FULLY REMOVED DURING THIS PROJECT MUST BE ENCAPSULATED.

4.) PIPING IN THE ELECTRICAL ROOM IS ABS PLASTIC. IT DOES NOT CONTAIN ANY ACM AND IS NOT SHOWN ON THIS SHEET.

5.) PIPING IN THE HOT WATER ROOM DOES NOT CONTAIN ACM TSI. PIPE INSULATION IN THE HOT WATER ROOM IS FIBERGLASS AND IS NOT SHOWN ON THIS SHEET..

MECHANICAL SYMBOLS

THERMOSTAT	PIPE CONNECTION
DRAIN VALVE	ELBOW TURNED DOWN
PRESSURE RELIEF VALVE	ELBOW TURNED UP
THERMOMETER	BALANCING COCK
PRESSURE GAUGE	CHECK VALVE
	ISOLATION VALVE
	CONNECTION TO EXISTING

PIPING SYMBOLS

SYMBOL	ABBREV	SYSTEM
	CW	COLD WATER
	HW	HOT WATER
	RHW	RECIRCULATED HOT WATER
	RL	RAIN LEADER
	ST	LOW PRESSURE STEAM
	CR	CONDENSATE RETURN
		EXISTING PIPING/DUCTWORK/ EQUIPMENT
		EXISTING PIPING/DUCTWORK/ EQUIPMENT TO BE REMOVED

Revision Date No.

CITY HALL MECHANICAL REPAIRS

STATE OF ALASKA 49th Linda L. Taylor No. CE 10383 REGISTERED PROFESSIONAL ENGINEER
2/10/2010

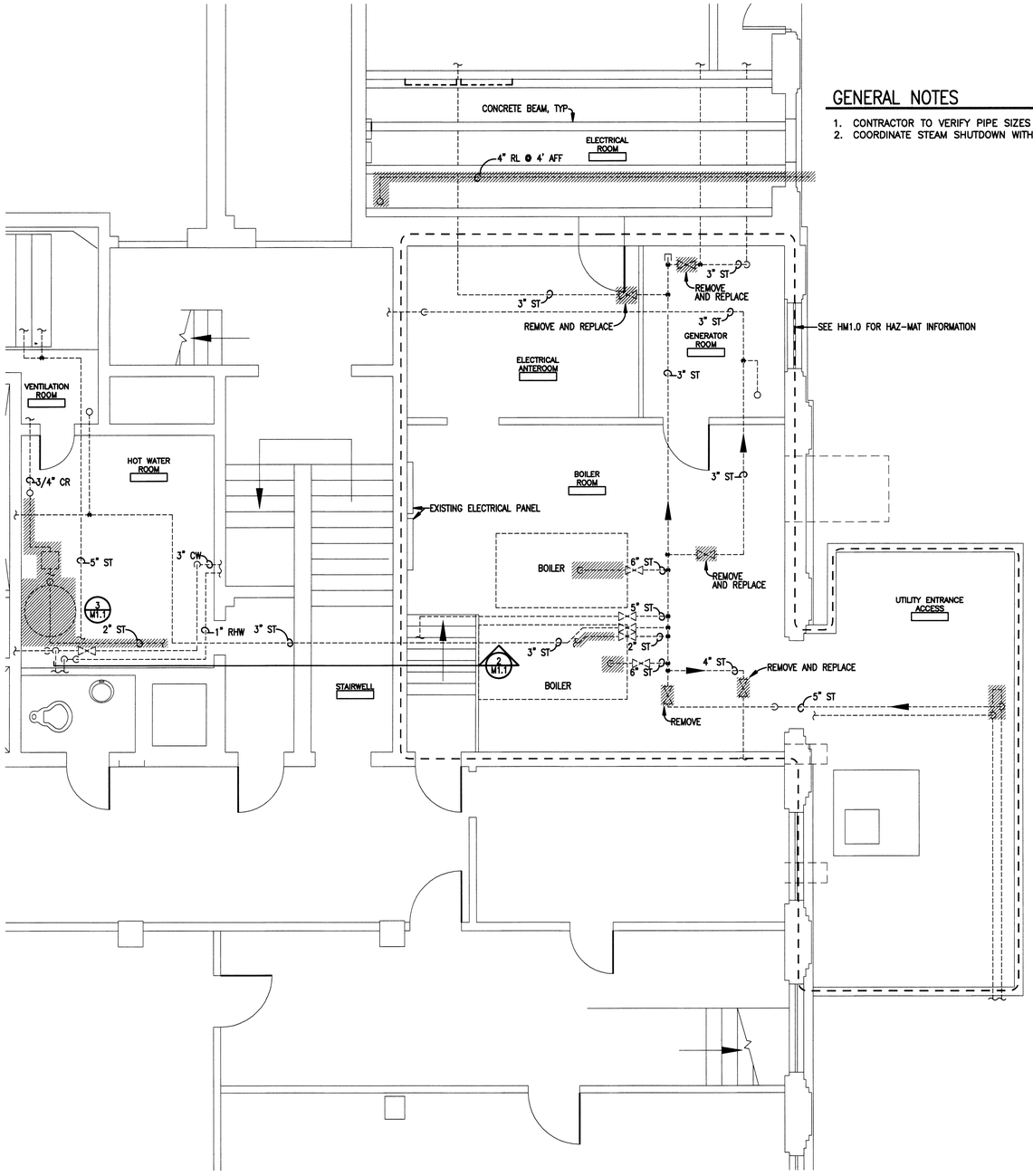
Design Alaska
Architects Engineers Surveyors
601 College Road Fairbanks, Alaska 99701
Telephone 907 452 1241

HAZARDOUS MATERIALS PLAN

3" 1"=1' 1/2"=1' 3/8"=1' 1/8"=1' 0" 1"=100' 1" 1"=40' 2" 1"=60' 3"
1-1/2"=1' 3/4"=1' 1/4"=1' 1"=10' 1"=20' 1"=30'

Date 10 FEB 10 Comm. No. 200901
In Charge CHM
Drawn By CGW
Checked By LLT

HM1.0

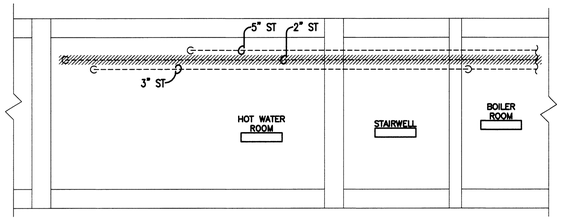


1 M1.1 MECHANICAL DEMOLTION PLAN

1/4"=1'-0"

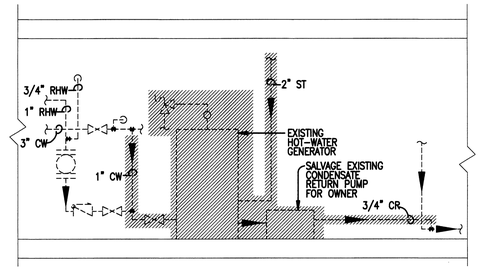
GENERAL NOTES

1. CONTRACTOR TO VERIFY PIPE SIZES IN THE FIELD.
2. COORDINATE STEAM SHUTDOWN WITH AURORA ENERGY



2 M1.1 STEAM PIPE ELEVATION

NO SCALE



3 M1.1 EXISTING HOT WATER PIPING DIAGRAM

NO SCALE

MECHANICAL SYMBOLS

- DRAIN VALVE
- PRESSURE RELIEF VALVE
- THERMOMETER
- PRESSURE GAUGE
- PIPE CONNECTION
- ELBOW TURNED DOWN
- ELBOW TURNED UP
- CHECK VALVE
- ISOLATION VALVE
- CONNECTION TO EXISTING

PIPING SYMBOLS

SYMBOL	ABBREV	SYSTEM
	CW	COLD WATER
	HW	HOT WATER
	RHW	RECIRCULATED HOT WATER
	RL	RAIN LEADER
	ST	LOW PRESSURE STEAM
	CR	CONDENSATE RETURN
		EXISTING PIPING/DUCTWORK/ EQUIPMENT
		EXISTING PIPING/DUCTWORK/ EQUIPMENT TO BE REMOVED

Revision Date No.

CITY HALL MECHANICAL REPAIRS

Design Alaska
Architects Engineers Surveyors
601 College Road Fairbanks, Alaska 99701
Telephone 907 452 1241

STATE OF ALASKA 49th
CHRIS H. MILLER
No. ME 10172
REGISTERED PROFESSIONAL ENGINEER

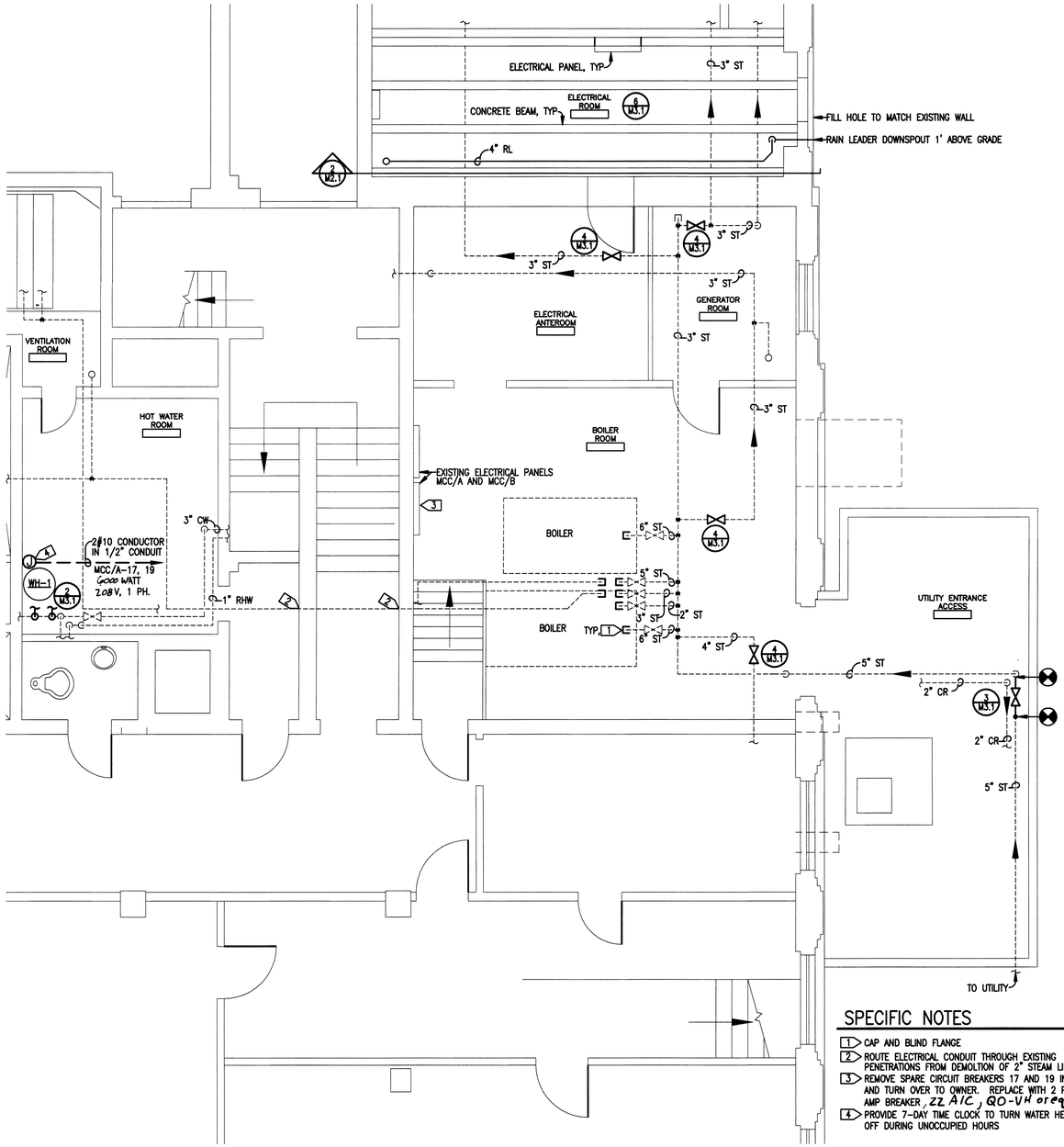
MECHANICAL DEMOLITION PLAN

3" 1"=1' 1/2"=1' 3/8"=1' 1/8"=1' 0" 1"=100' 1" 1"=40' 2" 1"=60' 3"
1-1/2"=1' 3/4"=1' 1/4"=1' 1"=10' 1"=20' 1"=30'

Date 11 FEB 2010 Comm. No. 200901
In Charge CHM
Drawn By JBR
Checked By

M1.1

2/11/2010 8:24 AM
200901 M1.1.DWG



SPECIFIC NOTES

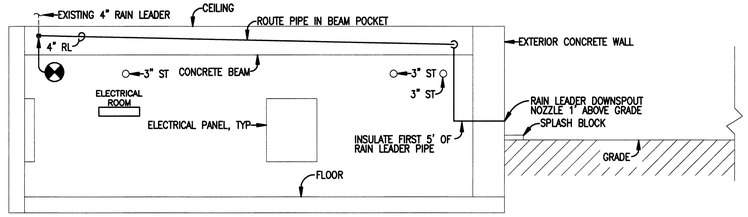
1. CAP AND BLIND FLANGE
2. ROUTE ELECTRICAL CONDUIT THROUGH EXISTING PENETRATIONS FROM DEMOLTION OF 2" STEAM LINE
3. REMOVE SPARE CIRCUIT BREAKERS 17 AND 19 IN MCC/A AND TURN OVER TO OWNER. REPLACE WITH 2 POLE 40 AMP BREAKER, ZZ AIC, QO-VH orequal.
4. PROVIDE 7-DAY TIME CLOCK TO TURN WATER HEATER OFF DURING UNOCCUPIED HOURS

1 / M2.1 MECHANICAL PIPING PLAN
1/4"=1'-0"

MISCELLANEOUS EQUIPMENT SCHEDULE

SYMBOL	ITEM	CAPACITY / SIZE	MOTOR DATA V/Hz/Ph	OPERATING {1} WEIGHT (LB)	BASIS OF DESIGN	REMARKS
WH-1	ELECTRIC DOMESTIC WATER HEATER	21 GPH RECOVERY @ 90F RISE 80 GALLON STORAGE CAPACITY	208/60/1 40 AMP.	845	RHEEM 6000 WATTS	POWER FROM PANEL MCC/A SIMULTANEOUS OPERATION
ET-1	DOMESTIC WATER EXPANSION TANK	4.4 GALLON DIAPHRAM TANK 2.4 GALLON ACCEPTANCE	-----	46	AMTROL THERM-X-TROL ST-12	-----
TV-1	TEMPERING VALVE	16 GPM	-----	25	ARMSTRONG RADA 320R	-----

{1} OPERATING WEIGHT INDICATED PLUS 10%. IS MAXIMUM ALLOWED WEIGHT IF USING A SEISMIC DETAIL PROVIDED AS PART OF CONTRACT DOCUMENTS.



2 / M2.1 RAIN LEADER ELEVATION
NO SCALE

Revision Date No.

CITY HALL MECHANICAL REPAIRS

Design Alaska
Architects Engineers Surveyors
601 College Road Fairbanks, Alaska 99701
Telephone 907 452 1241

STATE OF ALASKA 49th CHRIS H. MILLER No. ME 10172 REGISTERED PROFESSIONAL ENGINEER 2/10

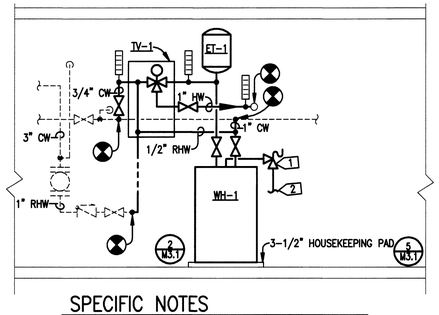
MECHANICAL PIPING PLAN

3" 1"=1' 1/2"=1' 3/8"=1' 1/8"=1' 0" 1"=100' 1" 1"=40' 2" 1"=60' 3"
1-1/2"=1' 3/4"=1' 1/4"=1' 1"=10' 1"=20' 1"=30'

Date 11 FEB 2010 Comm. No. 200901
In Charge CHM
Drawn By JBR
Checked By

M2.1

2/11/2010 3:33 PM
200901 M2.1.DWG

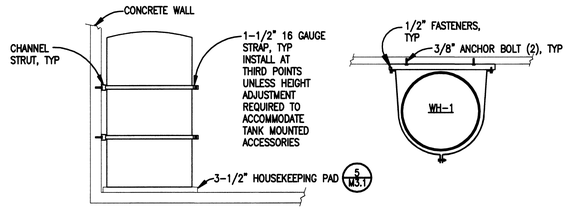


SPECIFIC NOTES

1. T&P RELIEF VALVE SIZED FOR WATER HEATER CAPACITY, TYP
2. LINE SIZE RELIEF PIPING. PIPE TO WITHIN 6" OF FLOOR, TYP

1 M3.1 PLUMBING PIPING DIAGRAM, WH-1

NO SCALE

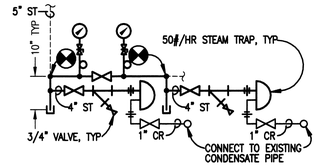


BOLT DIAMETER	EMBED DEPTH	MIN BOLT SEPARATION DISTANCE	MINIMUM EDGE DISTANCE	ALLOWABLE TENSION (LB) IN 3000 PSI CONCRETE	ALLOWABLE SHEAR (LB) IN 3000 PSI CONCRETE
3/8"	2"	2 1/2"	4 3/8"	1,102	999

BASIS OF DESIGN, HILTI KWIK BOLT TZ EXPANSION ANCHOR

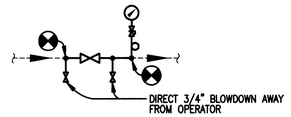
2 M3.1 WH-1 SEISMIC RESTRAINT

NO SCALE



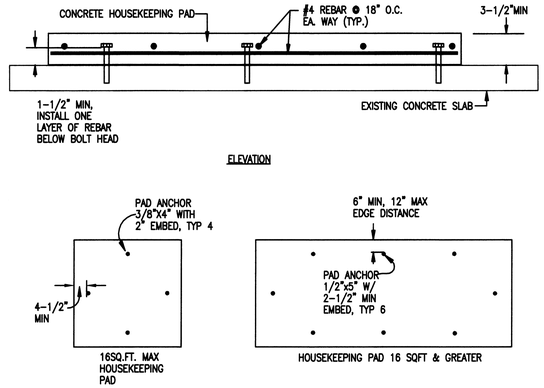
3 M3.1 MAIN STEAM ISOLATION VALVE PIPING DIAGRAM

NO SCALE



4 M3.1 BRANCH STEAM VALVE PIPING DIAGRAM

NO SCALE

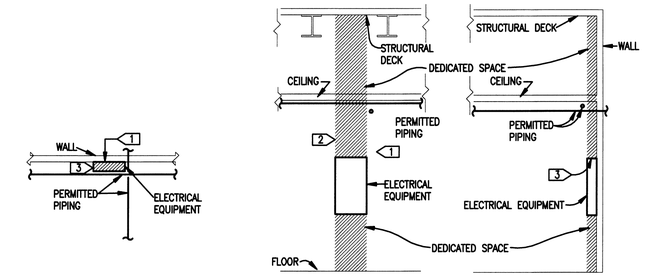


NOTES:

1. PAD ANCHOR BOLT BASIS OF DESIGN, POWERS FASTENER – WEDGE BOLT.
2. PROVIDE A 6" MIN EDGE SEPARATION DISTANCE BETWEEN PAD ANCHORS AND EQUIPMENT ANCHORS. INCREASE EDGE OR SEPARATION DISTANCE OF EQUIPMENT ANCHORS AS REQUIRED BY ICBO REPORT OR OTHER THIRD PARTY LISTING.

5 M3.1 HOUSE KEEPING PAD DETAIL

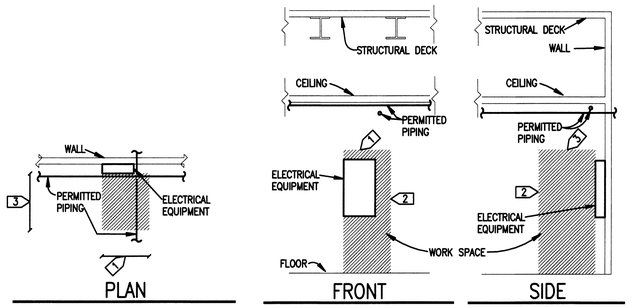
NO SCALE



DEDICATED SPACE

SPECIFIC NOTES

1. WIDTH OF THE EQUIPMENT
2. FROM FLOOR TO 6' ABOVE EQUIP OR STRUCTURAL DECK, WHICHEVER IS LOWER
3. DEPTH OF THE EQUIPMENT



WORK SPACE

SPECIFIC NOTES

1. 30" OR WIDTH OF EQUIPMENT, WHICHEVER IS GREATER; NEED NOT BE CENTERED ON EQUIPMENT
2. 6'6" OR HEIGHT OF EQUIPMENT, WHICHEVER IS GREATER
3. FOR 208Y/120 VOLT AND 120/240 VOLT, DEPTH = 3'; FOR 480Y/277 VOLT, DEPTH = 36", 42" OR 48" DEPENDING ON CONDITIONS. SEE NEC 110.26(A)(1).

6 M3.1 ELECTRICAL DEDICATED & WORK SPACE

NO SCALE

Revision Date No.

CITY HALL MECHANICAL REPAIRS

Design Alaska
Architects Engineers Surveyors
601 College Road Fairbanks, Alaska 99701
Telephone 907 452 1241

STATE OF ALASKA 49th
CHRIS H. MILLER
No. ME 10172
REGISTERED PROFESSIONAL ENGINEER

MECHANICAL DETAILS

Date 11 FEB 2010 Comm. No. 200901
In Charge CHM
Drawn By JBR
Checked By

M3.1

3" 1"=1' 1/2"=1' 3/8"=1' 1/8"=1' 0" 1"=100' 1" 1"=40' 2" 1"=60' 3"
1-1/2"=1' 3/4"=1' 1/4"=1' 1"=10' 1"=20' 1"=30'

2/11/2010 1:39 PM
200901 M3.1.DWG

SUMMARY

SECOND FLOOR: THE FOLLOWING QUANTITIES OF ASBESTOS CONTAINING INSULATION WERE FOUND AND RECORDED.

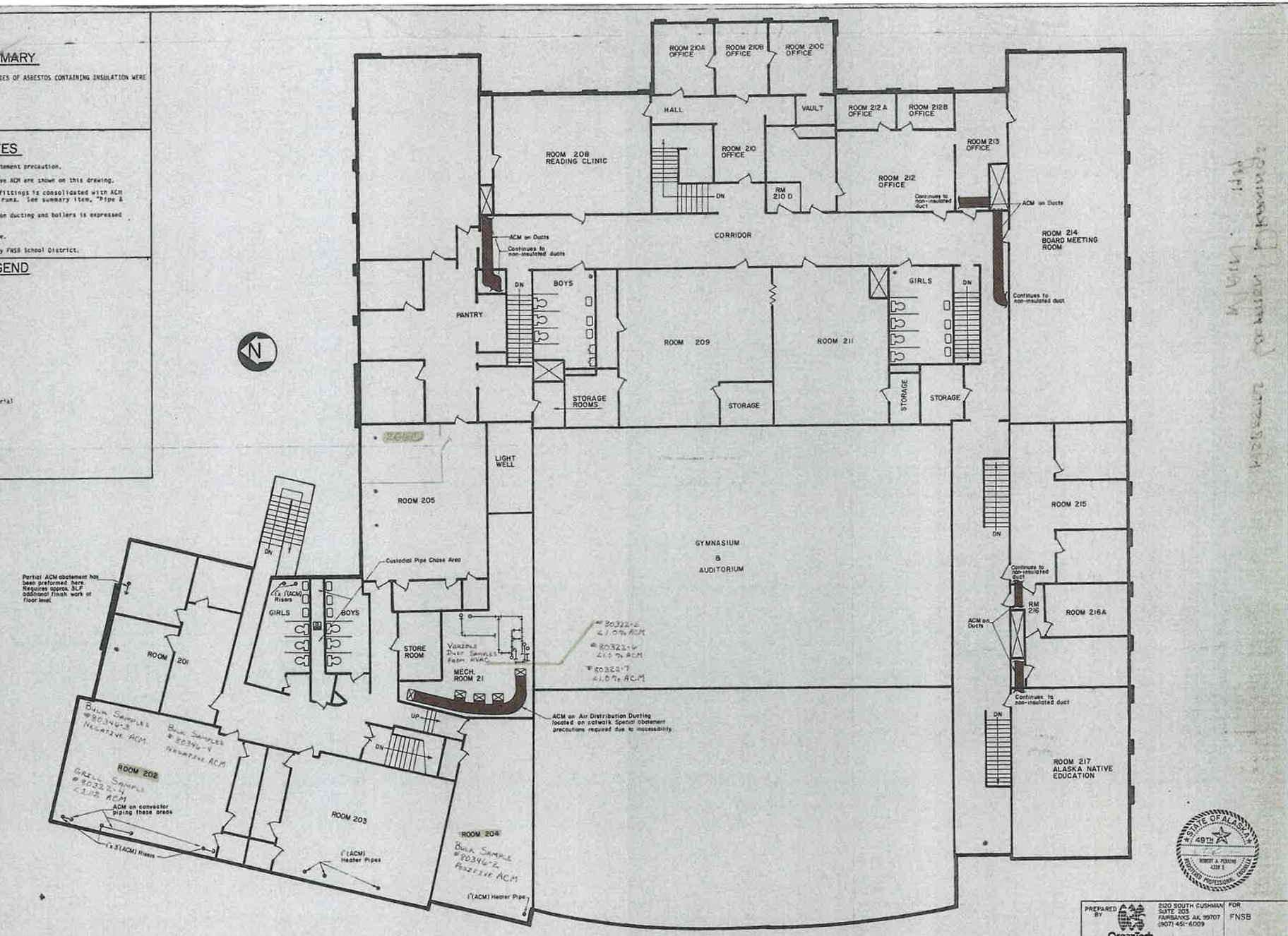
225 LF (PIPE & FITTINGS)
526 FT² (DUCTWORK)

NOTES

A. This area requires special abatement precaution.
B. Only pipes and ducting that have ACM are shown on this drawing.
C. The quantity of ACM on pipe fittings is consolidated with ACM quantities on straight pipe runs. See summary item, "Pipe & Fittings".
D. All Asbestos on air distribution ducting and boilers is expressed in square feet.
E. These drawings are not to scale.
F. Base as-built plans supplied by FNSB School District.

LEGEND

- Air Distribution Ducting
- 90° Riser Up
- 90° Riser Down
- 90° Elbow
- 45° Elbow
- Bell Reducer
- Tee
- Valve
- ACM: Asbestos Containing Material
- B1 & B2: Boiler with ACM
- UH: Unit Heater
- CR: Condensate Return
- LPS: Low Pressure Steam
- HW: Hot Water



STATE OF ALASKA 49TH
ROBERT A. PERKINS
REGISTERED PROFESSIONAL ENGINEER

PREPARED BY OceanTech
2120 SOUTH CUSHMAN SUITE 203 FAIRBANKS AK 99707 (907) 451-6009
FOR FNSB

MAIN SCHOOL, SECOND FLOOR
ASBESTOS SURVEY

DWN. BY R.P.	APP R.S.	DRAWING NO. 3	REV
CHKD. BY C.W.	APP.		
DATE JULY 1985	SCALE NTS	SHEET 3 of 3	

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SUSTAINABLE ENVIRONMENT, ENERGY, HEALTH & SAFETY PROFESSIONAL SERVICES

March 22, 2017

Risk Manager
800 Cushman Street
Fairbanks, Alaska 99701

ATTN: Tom Borce

RE: **Limited Hazardous Material Assessment**
Fairbanks City Hall, Fairbanks, Alaska

Dear Mr. Borce:

NORTECH *Environment, Energy, Health & Safety Consultants* (***NORTECH***) is pleased to provide you with this limited Hazardous Material Assessment of select areas in Fairbanks City Hall, a 68,100-square foot facility in the City of Fairbanks. The following is a brief synopsis of the background, scope of work, methodology, field activities, sampling results with discussion including conclusions and recommendations.

Background and Scope of Work
The main portion of the building serves as the City Hall Administration Building for the City of Fairbanks. It houses the Mayor's Office, Finance, Legal, Engineering, Human Resources and Property Management Departments. The City rents some of the gym and basement space to the Fairbanks Boys and Girls Club and the Fairbanks Boxing Club.

The City has requested a limited hazardous material assessment of selected areas that may be disturbed by workers performing maintenance work in these areas. The areas and materials requested for assessment are listed below:

- Second floor Mechanical Room
  - Thermal System Insulation (TSI) covering the duct work
  - Gypsum wall board and joint compound samples
- Carpenter Shop
  - Ceiling Tile and Mastic
- Coal Fired Boiler Room
  - Ceiling fireproofing
- Hallway near wood shop in the basement
  - TSI on duct work

Methodology
The assessment involved a review of available records, a site inspection and sampling of conditions present in an effort to identify, quantify and determine the condition of hazardous materials. All project efforts were completed in accordance with ***NORTECH's*** Hazardous Material Assessment Methodology (v13) attached. Field project staff was an EPA certified AHERA asbestos inspector and is an Alaska Department of Environmental Conservation (ADEC) qualified sampler. All work was overseen by an Environmental Professional Engineer and/or Certified Industrial Hygienist (CIH).

Additional information regarding experience and references are available upon request and can be found on our web site at www.nortechengr.com.

Field Activities
Doug Dusek of ***NORTECH*** mobilized to the Site on October 4, 2016 and met Tom Borce, the City of Fairbanks Risk Manager who pointed out the locations and building materials that required assessment. Asbestos sample locations and results are presented in attached Figure 1 and 2.

Building materials suspected of containing asbestos, included Thermal System insulation (TSI), mastics, gypsum wallboard and joint compound. A total of eight samples were collected and submitted for laboratory analysis to determine the percent content of asbestos by the polarized light microscopic (PLM) method.

Asbestos labeling was observed on TSI covering the ductwork in several locations in the building including TSI that was collected (Sample A-8) from the ductwork in the hallway near the wood shop.

On January 24, 2017 personnel returned to collect an additional sample of the duct work TSI near the wood shop and additional samples of the ceiling spray on insulation coating the ceiling in the coal boiler room. The samples were collected to provide additional information regarding conflicting results from the TSI insulation on the duct work and vermiculite in the ceiling insulation.

Results with Discussion
The summary of ACM samples, description, location and results are presented in Figure 1. A copy of the laboratory report is also attached
ACM materials identified during this assessment are listed below with approximate quantities:

- Friable (Category 1)
  - TSI on 2" by 4' ductwork in second floor mechanical room — 720 sq. ft.
  - TSI on 2" by 4' ductwork near wood shop in basement — 100 sq. ft.
- Non-Friable (Category 1) — None
- Non-Friable (Category 2) — None

Sample results from A-1 and A-2 (25% and 23% asbestos) indicate the TSI covering the duct work in the mechanical room is a regulated asbestos containing material (RACM). Sample A-8 was collected from TSI coating the ductwork located in the hallway near the wood shop whose results indicate the material is non-ACM. However, existing labels on the ductwork designate the TSI as ACM. Based on this conflict, this material was resampled on January 24, 2017. The results (30% asbestos) indicate the TSI covering the duct work is a RACM.

RACM is any asbestos-containing material that contains more than 1% asbestos, and that when dry, can be crumbled or reduced to powder by hand pressure. If it can be crumbled it is called "friable".

RACM requiring removal prior to renovation must be disposed at a landfill permitted to accept RACM wastes if the volume exceeds EPA National Emissions Standards for Hazardous Air Pollutants (NESHAP) guidance. However, if the total amount of regulated asbestos to be removed or disturbed is less than 260 linear feet, 160 square feet, or 35 cubic then the NESHAP does not require regulated asbestos-containing material to be removed before demolition or renovation activities occur. Based on the amount of RACM identified on the

ductwork in the mechanical room, the total amount of asbestos exceeds the NESHAP exception rule, therefore all regulated material would require removal prior to any planned demolition activities of the duct work.

Alternatively, the RACM may be managed in place. The EPA has guidance to develop and maintain an Operations and Maintenance (O&M) plan that consists of training, cleaning, work practices, and surveillance to maintain ACM in good condition within buildings. Encapsulation, encasement, enclosure, or repair are viable alternatives to removal. In-place management techniques should be considered before deciding to remove the undamaged ACM. When ACM is properly managed, release of fibers into the air is prevented or minimized, and the risk of asbestos related disease can be reduced to a negligible level. The one peril to managing ACM in place is that despite good intentions, asbestos documentation ends up being neglected and forgotten. Buildings often require resampling because people have left and documents were lost. This permits future workers to unknowingly use work practices that may cause asbestos exposure.

In this case, the TSI on the ductwork in both areas has been encapsulated by a coating of latex paint that is in generally good condition. Some localized areas were in fair condition and an additional coat of an encapsulant and/or repair in these areas is required. Additionally, re-encapsulating all the sampled ductwork and providing an enclosure that would eliminate unintended disturbance of the materials should be considered.

Vermiculite was identified in the TSI fireproofing (A-7) coating the ceiling in the coal boiler room at 10 percent of the TSI mass. No asbestos was detected in the sample. Laboratory detection of asbestos in vermiculite has often been associated with inconclusive results and has caused confusion when interpreting these results. To provide additional information about the material, two additional samples were collected on January 24, 2017 and sent to the lab for analysis. Both samples were non-detect for asbestos and did not contain vermiculite. The State of Alaska and the EPA does not provide guidance on vermiculite incorporated in TSI fireproofing. However, the state of New York has published guidance documents regarding vermiculite used in the matrix of TSI materials. This guidance and further consultation with the EPA representatives in Anchorage and local OSHA was used to provide the following determination. Since vermiculite's asbestos contamination typically ranges from 1% to 5%, vermiculite's contribution to asbestos content of vermiculite materials used for the TSI/fire proofing may be assumed to be less than 1% if the vermiculite is not greater than 10% of the total material (from 0 to 10 % in the samples), therefore the TSI/fireproofing is considered non-ACM (less than 1%).

This limited hazardous building materials assessment was executed to assist in identifying the potential hazards and associated regulatory constraints associated with the assessed materials prior to disturbing materials for maintenance or prior to selective demolition and/or involvement with management, abatement and disposal of materials identified. Specific renovation or abatement work practices may require additional sampling to comply with OSHA worker exposure regulatory guidelines. All information about hazardous materials associated with the building should be made available to employees, contractors and/or abatement/demolition contractors.

Conclusions and Recommendations

Based on the findings of the hazardous material assessment, the following conclusions and recommendations have been developed:

Based on asbestos labeling observed throughout the building, the ACM in the building may be Managed in Place under an existing O&M. Review of City documents should be undertaken to

determine if an existing O&M is in effect and current and understood by maintenance personnel. It there is not an O&M, one should be developed.

Friable ACM was identified in TSI covering the ductwork in the second-floor mechanical room and ductwork near the wood shop. Recommend the TSI be given another coat of encapsulant and be provided structural protection so workers cannot damage the TSI coating. If adequate protection cannot be provided, the material should be abated using a contractor employing asbestos trained workers using appropriate OSHA Class I methods and be disposed of in a landfill permitted to accept RACM materials. If material is to be MIP, then the O&M should be updated if one exists.

The TSI/fireproofing coating the ceiling in the coal boiler room is considered non-ACM (less than 1%) because no asbestos was detected in the samples and vermiculite is less than 10% of the matrix.

If you have any questions or require additional professional services or advice, please let us know. We thank you for the opportunity to work with you on this project and appreciate your confidence in our Firm.

Sincerely,
NORTECH

Doug Dusek
Environmental Specialist

John Hargesheimer, CIH, PD, CSBA
President and CEO

Attachments: Photo Page
Figures
Table of Results
Methodology
Laboratory Results

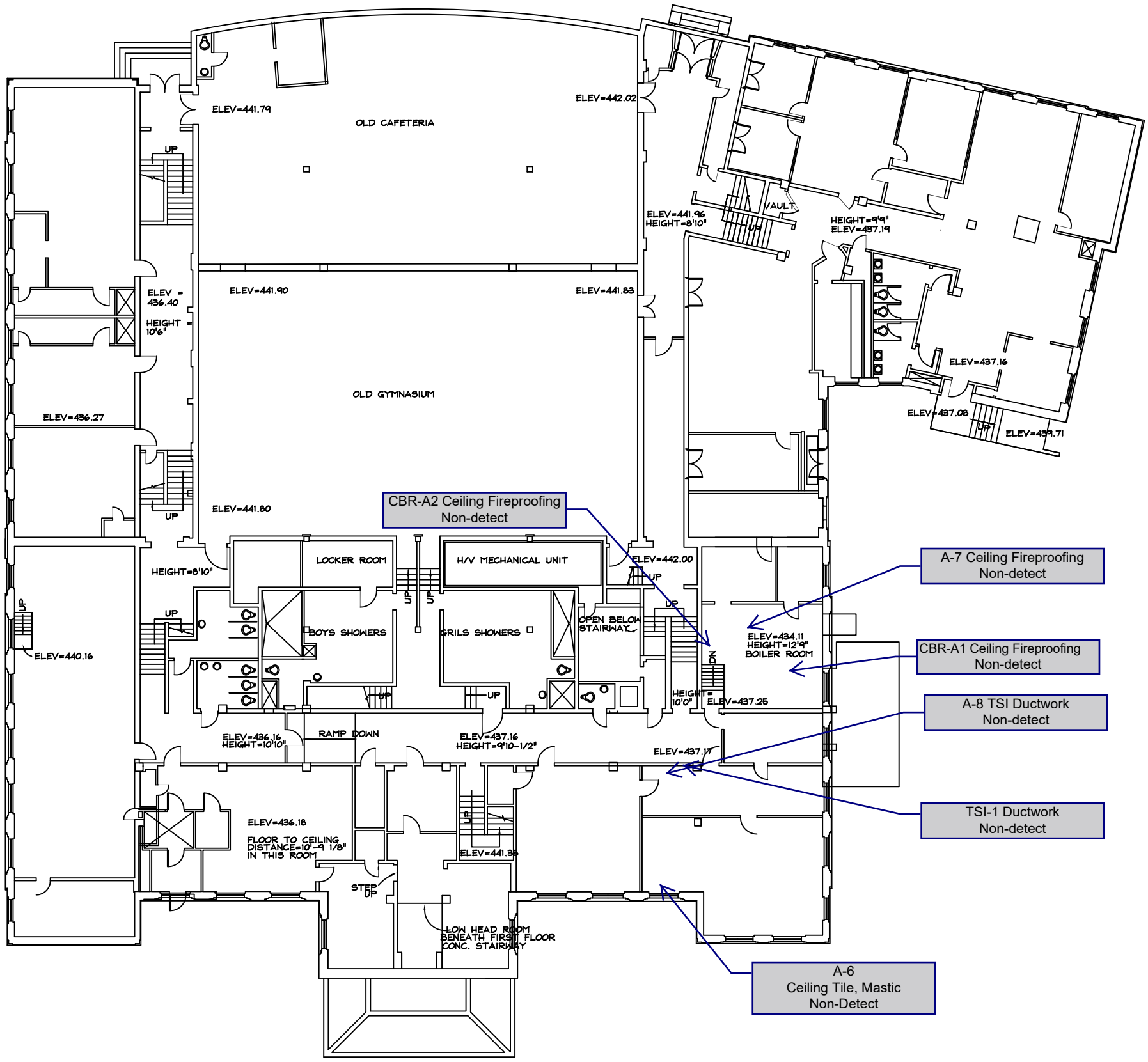
Photo 1: *A-1 and A2 was taken from TSI on ductwork in the second floor mechanical room*

Photo 2: *Sample A-4 collected from Ceiling GWB and Joint Compound*

Photo 3: *Carpenter shop in basement. Collected sample A-6 of ceiling tile and mastic*

Photo 4: *Sample A-7 was collected from fireproofing sprayed on the ceiling in the old coal boiler room*

AS BUILT
GROUND LEVEL FLOOR PLAN
1/8" = 1'-0"

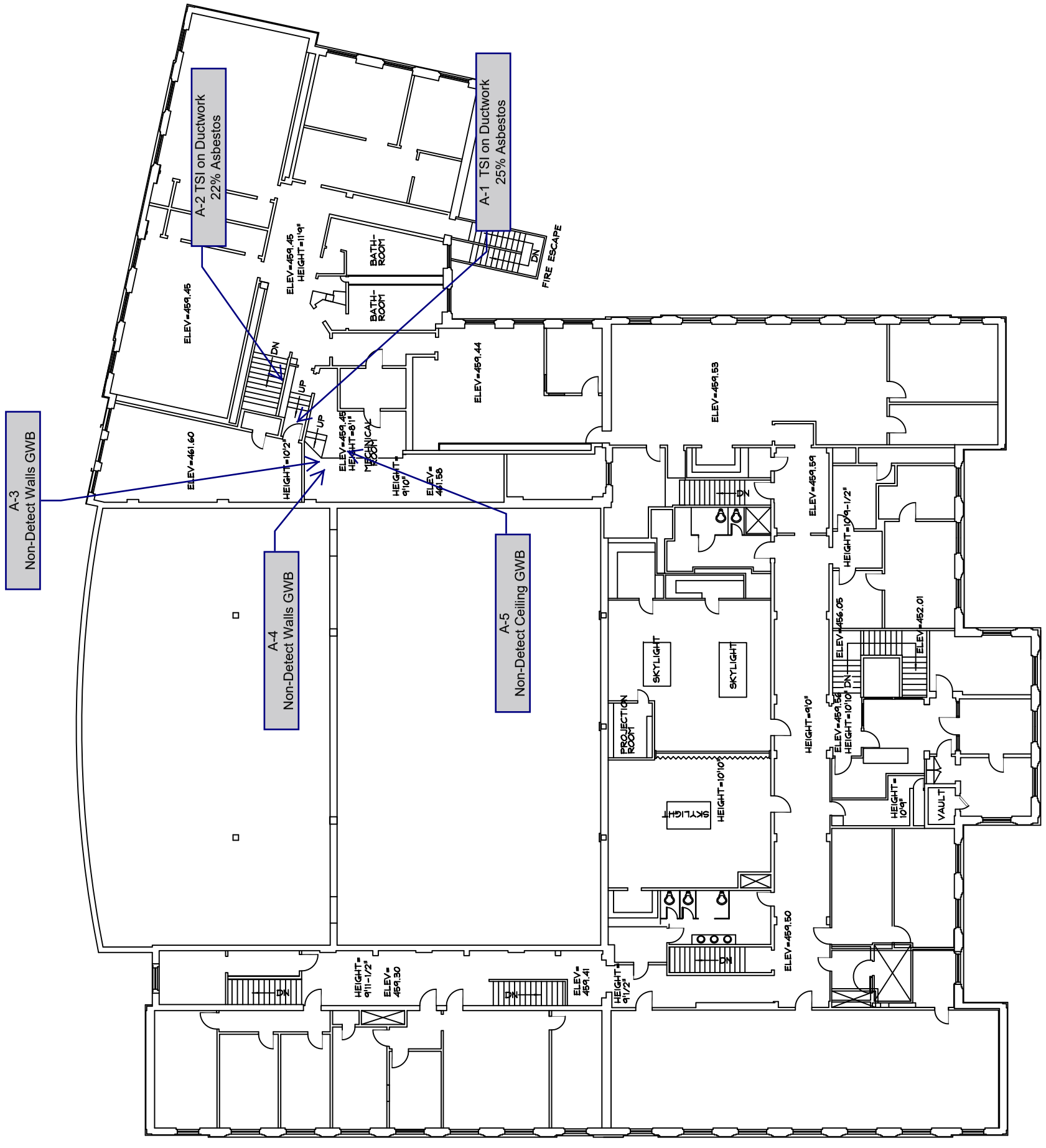


NOTE:
AS-BUILT INFORMATION PROVIDED BY OWNER.

AS-BUILT
GROUND LEVEL FLOOR PLAN

A0.1

2-26-96



AS BUILT SECOND FLOOR PLAN
1/8" = 1'-0"

AS-BUILT
SECOND FLOOR PLAN

NOTE:
AS-BUILT INFORMATION PROVIDED BY OWNER.

A0.3

2-26-96

Asbestos Results

Sample ID	Location	Discription	Results
A-1	City Hall 2nd Floor Mechanical Room	Duckwork TSI	25%
A-2	City Hall 2nd Floor Mechanical Room	Duckwork TSI	22%
A-3	City Hall 2nd Floor Mechanical Room	GWB Wall	Non-Detect
A-3	City Hall 2nd Floor Mechanical Room	Joint Compound Wall	Non-Detect
A-4	City Hall 2nd Floor Mechanical Room	GWB Ceiling	Non-Detect
A-4	City Hall 2nd Floor Mechanical Room	Joint Compound Ceiling	Non-Detect
A-5	City Hall 2nd Floor Mechanical Room	GWB Ceiling	Non-Detect
A-5	City Hall 2nd Floor Mechanical Room	Joint Compound Ceiling	Non-Detect
A-6	Carpenter Shop	Ceiling Tile	Non-Detect
A-6	Carpenter Shop	Mastic	Non-Detect
A-7	Fire Prrofing	Ceiling Tile	Non-Detect
A-8	Halll near Carpenter Shop	Duckwork TSI	Non-Detect

EMSL Analytical, Inc.

200 Route 130 North Cinnaminson, NJ 08077
Tel/Fax: (800) 220-3675 / (856) 786-5974
http://www.EMSL.com / cinnasblab@EMSL.com

EMSL Order:	041627633
Customer ID:	NORT69
Customer PO:	
Project ID:	

Attention:	Doug Dusek	**Phone:**	(907) 452-5688
	Nortech Environmental & Engineer Cnslt.	**Fax:**	(907) 452-5694
	2400 College Road	**Received Date:**	10/05/2016 9:40 AM
	Fairbanks, AK 99709	**Analysis Date:**	10/11/2016
		Collected Date:	10/04/2016
Project:	16-1109		

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

			Non-Asbestos		Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**	**% Type**
A-1 *041627633-0001*	2nd Floor Mechanical Room - Duct Work TSI	Tan/White Fibrous Homogeneous	40% Min. Wool 5% Glass	30% Non-fibrous (Other)	25% Chrysotile
A-2 *041627633-0002*	2nd Floor Mechanical Room - Duct Work TSI	White Fibrous Homogeneous	60% Glass	18% Non-fibrous (Other)	2% Amosite 20% Chrysotile
A-3-Wall GWB *041627633-0003*	2nd Floor Mechanical Room - Wall GWB	White Fibrous Homogeneous	5% Cellulose	95% Non-fibrous (Other)	None Detected
A-3-Joint Compound *041627633-0003A*	2nd Floor Mechanical Room - Joint Compound				Not Submitted
A-4-Ceiling GWB *041627633-0004*	2nd Floor Mechanical Room - Ceiling GWB	Brown/White Fibrous Homogeneous	20% Cellulose	80% Non-fibrous (Other)	None Detected
A-4-Joint Compound *041627633-0004A*	2nd Floor Mechanical Room - Joint Compound	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
A-5-Ceiling GWB *041627633-0005*	2nd Floor Mechanical Room - Ceiling GWB	Brown/White Fibrous Homogeneous	10% Cellulose	90% Non-fibrous (Other)	None Detected
A-5-Joint Compound *041627633-0005A*	2nd Floor Mechanical Room - Joint Compound	Tan Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
A-6-Ceiling Tile *041627633-0006*	Carpenter Shop - Ceiling Tile	Brown Fibrous Homogeneous	90% Cellulose	10% Non-fibrous (Other)	None Detected
A-6-Mastic *041627633-0006A*	Carpenter Shop - Mastic	Brown Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
A-7 *041627633-0007*	Coal Boiler Room - Ceiling Spray on Fire	Gray Fibrous Homogeneous	25% Cellulose 10% Glass	10% Vermiculite 55% Non-fibrous (Other)	None Detected
A-8 *041627633-0008*	Carpenter Room Hallway - Duct Work TSI	Gray Fibrous Homogeneous	50% Cellulose 30% Synthetic	20% Non-fibrous (Other)	None Detected

Initial report from: 10/11/2016 10:26:20

EMSL Analytical, Inc.

200 Route 130 North Cinnaminson, NJ 08077
Tel/Fax: (800) 220-3675 / (856) 786-5974
http://www.EMSL.com / cinnasblab@EMSL.com

EMSL Order:	041702171
Customer ID:	NORT69
Customer PO:	
Project ID:	

Attention:	Doug Dusek	**Phone:**	(907) 452-5688
	Nortech Environmental & Engineer Cnslt.	**Fax:**	(907) 452-5694
	2400 College Road	**Received Date:**	01/26/2017 9:30 AM
	Fairbanks, AK 99709	**Analysis Date:**	01/27/2017
		Collected Date:	01/24/2017
Project:	15-1120		

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

			Non-Asbestos		Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**	**% Type**
CBR-A1 *041702171-0001*	Coil Boiler Room - Fireproofing	Gray/White Fibrous Homogeneous	55% Cellulose	45% Non-fibrous (Other)	None Detected
CBR-A2 *041702171-0002*	Coil Boiler Room - Fireproofing	Gray/White Fibrous Homogeneous	5% Cellulose 20% Glass	75% Non-fibrous (Other)	None Detected
TSI-1 *041702171-0003*	Duct Work TSI - TSI	Brown/Gray Fibrous Homogeneous		70% Non-fibrous (Other)	30% Chrysotile

Analyst(s)

Alexis Kum (2)
Daniel Fricker (1)

Benjamin Ellis, Laboratory Manager
or Other Approved Signatory

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Samples analyzed by EMSL Analytical, Inc. Cinnaminson, NJ NVLAP Lab Code 101048-0, AIHA-LAP, LLC-IHLAP Lab 100194, NYS ELAP 10872, NJ DEP 03036, PA ID# 68-00367

Initial report from: 01/27/2017 09:37:49

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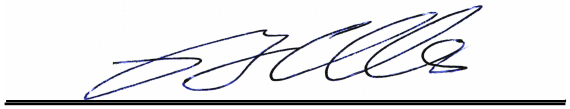
EMSL Order:	041627633
Customer ID:	NORT69
Customer PO:	
Project ID:	

Analyst(s)

Dave Poitras (3)
Juli Patel (8)



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Initial report from: 10/11/2016 10:26:20

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HAZARDOUS MATERIAL STANDARIZED METHODOLOGY (Version 13) April 2015

Objective and Management

NORTECH hazardous materials assessment methodologies are developed to comply with currently applicable regulations utilizing standard industrial hygiene practices designed for the anticipation, recognition, evaluation, and control of those factors or stressors arising in or from the workplace that may cause sickness, impaired health and well-being, or significant discomfort among workers or citizens of the community. Qualified personnel with current certifications and experience conduct field assessment inspection and sampling efforts. All work completed is managed, reviewed, and signed off on by a board Certified Industrial Hygienist (CIH) or Professional Engineer.

Scope of Work

NORTECH provides a variety of hazardous material services as necessary to meet project specific needs cost effectively. In order to minimize costs, ***NORTECH*** has developed the following standardized hazardous material assessment scopes of work.

Limited Hazardous Material Assessment: The assessment scope of work is limited to specifics as specified by the client in the written contract and/or project communications. Limitations may include/exclude contaminants, destructive testing, costs, and/or areas to be assessed.

Pre Renovation Hazardous Material Assessment: The assessment is limited to a specific project renovation scope.

Pre-Demolition Hazardous Material Assessment: The assessment is in preparation for a entire building demolition.

Hazardous materials included in this standard are:

- Asbestos Containing Materials (ACM)
  - Building Materials
  - Naturally Occuring Asbestos (NOA)
- Lead Based Paint (LBP)
- Universal Wastes
- Poly Chlorinated Byphenyls (PCB)
- RCRA Eight Heavy Metals
- Other Wastes Requiring Special Handling

Definition of Hazardous Materials

Hazardous materials are defined as any material requiring special handling or disposal during demolition or renovation. Of particular interest are asbestos containing building materials (ACBM), lead based paint (LBP), RCRA eight heavy metals and other hazardous materials including polychlorinated biphenyls (PCBs), radioactive materials in smoke detectors & self

illuminating exit signs, lead-acid batteries, wastewater, water intrusion fungal amplification, petroleum oils and lubricants (POLs) mercury containing equipment (switches, bulbs etc.) and other chemical and biological contaminants.

Universal Waste
EPA's universal waste regulations set forth in 40 CFR part 273 streamline hazardous waste management standards for federally designated "universal wastes," which include:

- Batteries
- Paints & pressurized containers
- Chemicals & pesticides
- Mercury in switches and fluorescent light tubes

The regulations govern the collection and management of these widely generated wastes. These regulations are designed to improve hazardous material handling and disposal of universal wastes by easing the regulatory burden on generators and facilitating disposal program development.

Regulatory
The hazardous material surveys are conducted to comply with the asbestos survey requirements of the Occupational Safety and Health Administration (OSHA) found in 29 CFR 1926. These regulations state that before authorizing or allowing any construction, demolition, renovation, or remodeling, the owner, owner's agent, or employer, must notify contractors or other persons of the location and quantities of ACM within the work area.

U.S. Environmental Protection Agency National Emissions Standards for Hazardous Air Pollutants (NESHAP) requires a thorough inspection for friable and non-friable ACM by an accredited Asbestos Hazard Emergency Response Act (AHERA) inspector prior to any renovation or demolition activity (40 CFR 61.145). NESHAP also requires notification for removal or abatement of regulated quantities of ACM (>260 square feet, >160 linear feet, or >35 cubic feet of regulated asbestos containing material (RACM)).

Asbestos Containing Materials
The asbestos sampling collection technique used during the survey generally follows the AHERA method as defined in 40 CFR 763. Laboratory analysis of samples are completed by a laboratory certified through the National Voluntary Laboratory Accreditation Program (NVLAP) to perform asbestos analysis by polarized light microscopy (PLM) according to EPA method 600/R/93/116 to determine the percent concentration by weight as required by the current OSHA standard. Building material containing 1% or greater asbestos content is considered asbestos containing material. Suspect material with less than 5% asbestos is point counted by 400 count method for greater accuracy.

Asbestos in Dusts
Protocol for determining asbestos containing material (ACM) in dust collection requires analysis by TEM (Transmission Electron Microscopy) by a laboratory certified through the National Voluntary Laboratory Accreditation Program (NVLAP) to perform TEM analysis. Dust collection for lab testing may either involve dust wipe collection using a laboratory supplied “Ghostwipe”™

and sized template, or by utilizing a laboratory supplied 37 mm TEM air cassette inline with a pump and plastic tubing and vacuuming a known amount of surface area coated in dust.

With regard to lab analysis of samples collected, there are no standards for asbestos in settled dust against which one can compare results. However, the literature (Millett and Hays) has provided some general conclusions regarding interpretation of sampling data on the level of asbestos in settled dust and is based on extensive field data, observation, and experience. They report that a level of less than 1,000 asbestos structures/cm^2 is low, while levels above 10,000 s/cm^2 are considered generally above background. Levels greater than 100,000 s/ cm^2 are indicative of elevated concentrations of asbestos fibers with significant risk of exceeding the OSHA permissible exposure level (PEL) for most work tasks.

Lead Based Paint (LBP)
Quantification of lead-based paint is performed according to NIOSH 7702, using a Thermo Fisher NITON XLp-303A (XRF), x-ray fluorescent spectrum analyzer, providing EPA accepted real-time, on-site sample results. A Performance Characteristics Sheet (PCS), that routinely accompanies the NITON analyzer, provides supplemental information to be used in conjunction with Chapter 7 of the HUD guidelines. The PCS indicates that substrate corrections are not required for this instrument when operated in accordance with the manufacturer's instructions and HUD guidelines. Environmental Protection Agency/Department of Housing and Urban Development (EPA/HUD) protocol for the inspection of LBP in residential structures is generally followed.

Lead analysis of paint may also be determined by scrape sample and lab analysis. Representative paint scrape samples of the building's construction materials are collected from each representative paint type and color. Paint scrapes are collected within a 10 cm^2 area and sent to lab for analysis by percentage of lead per weight of paint collected.

All paint contains a measurable amount of lead, however, EPA and HUD consider paint containing 1.0 mg/cm^2 (XRF analysis) or 0.5 percent (5,000 ppm) by weight (lab analysis) and higher to be LBP. These guidelines may not be directly applicable to this project, but are a good reference for evaluating the investigation's sample results. Paint with lower concentrations of lead than these thresholds may still pose an OSHA health hazard if mishandled. The LBP assessment is completed by qualified personnel with current EPA lead inspector certification.

Poly Chorlinated Byphenyls (PCB)
Quantification for PCB contamination on structural and various non-porous construction materials (structural members, construction materials, equipment, and flooring) is performed utilizing lab provided wipe sampling materials. Upon selecting a sampling site, a 100 square centimeter (cm2) sample is typically collected using a template (i.e. 10 cm by 10 cm). Throughout the process the sampler remains aware of the sampling area and the possibility of cross contamination during all stages of the sampling activity. All surfaces are wiped with a uniform pressure. Wiping proceeds from left to right in rows from the top to the bottom of the sampling area. The sampling area is wiped again with the same uniform pressure in columns from the top to the bottom from the left side to the right side of the entire sampling area. It is not critical whether wiping starts at the top left or with rows first and then columns. The objective is to systematically, thoroughly, and consistently wipe the entire sampling area twice, each time from a different direction and orientation.

Wipe sample clearance criteria for PCB contamination ranges, based on intended use, from 10 ug/cm2 for indoor high contact residential areas up to 100 ug/100 cm2 for indoor low contact (porous surface option).

PCB concentrations are based on a weight-per-weight basis (such as ppm or mg/kg) within a known area of concentration. In the State of Alaska,[1] EPA considers construction materials containing >1 ppm (mg/kg) to be PCB contaminated but acceptable for disposal at permitted landfills with a liner and leachate program, and >50 ppm (mg/.kg) PCB to be a hazardous material requiring out of state disposal. Lower 48 states in the US that do not have authorized landfills permitted to accept PCB contaminated waste must differ to a nearest permitted landfill in another State.

RCRA Eight Heavy Metals

Determination of the demolition waste toxicity for the RCRA eight heavy metals (Arsenic, Barium, Cadmium, Chromium, Lead, Mercury, Selenium and Silver) is based on a certified lab performing the Toxicity Characteristic Leaching Procedure (TCLP) (EPA SW846, Method-1311) analysis of a representative composite sample of the structure's building materials.

During the field effort, a visual inspection is conducted to identify the presence of each of the RCRA eight heavy metals and approximate percent by weight of each expected to be in the building debris waste stream. A representative sample of the entire waste stream, including the RCRA metals present, is collected and homogenized into a composite sample of the entire project's debris/waste stream and then analyzed at a certified lab in accordance with TCLP procedure. The TCLP test measures the potential for the eight metals identified in the Resource Conservation and Recovery Act (RCRA) to leach from a representative composite sample of the debris/waste stream under simulated landfill conditions. RCRA regulations allow for calculating the TCLP result from a composite sample with total metals using the "20:1 Rule" that account for the dilution of metals concentrations during the analysis.

Another alternative method is to calculate a Theoretical TCLP based on the observed quantities of construction materials with regard to potential heavy metals. Assuming all paint associated with the structure is lead-based paint, a theoretical calculation of the ratio between paint to construction debris waste can be used in place of a representative waste stream (TCLP) sampling to determine whether the project waste stream will be hazardous for lead and heavy metals in accordance with hazardous waste standard. This method involves using project specific knowledge to calculate the concentration of lead in the entire quantity of debris as follows:

If a waste is 100% solid, as defined by the TCLP method, then the results of the total constituent analysis may be divided by twenty to convert the total results into the maximum leachable concentration. This factor is derived from the 20:1 liquid-to-solid ratio employed in the TCLP. If a waste has filterable liquid, then the concentration of the analyte in each phase (liquid and solid) must be determined.

[1] **January 2009 Version, Revisions to the EPA PCB Questions and Answer Manual**

The following equation may be used to calculate this value:

$$\frac{[A \times B] + [C \times D]}{B + [20\ (L/kg) \times D]} = E$$

Where:

A = Concentration of the analyte in liquid portion of the sample (mg/L)
B = Volume of the liquid portion of the sample (L).
C = Concentration of the analyte in solid portion of the sample (mg/kg)
D = Weight of the solid portion of the sample (kg)
E = Maximum theoretical concentration in leachate (mg/L)

The value obtained (E) can be used to show that the maximum theoretical concentration in a leachate from the waste could not exceed the concentration specified in the toxicity characteristic (TC) (40 CFR 261.24).

In addition, if the total constituent analysis results themselves are below the TC limits without dividing by 20, then the same argument holds true, i.e., the maximum theoretical concentration in the leachate could not exceed the TC limits.

The 100 milligrams per kilogram value used in the determination is based on the 20:1 rule which represents the lowest possible mass analysis concentration, which could leach out greater than 5.0 milligrams per liter in a TCLP test. This is due to the 20:1 dilution ratio of the TCLP test protocol and also assumes that 100% of the lead in the sample will leach out. In most circumstances, 100% of the lead would rarely leach out. However, this assumption must be made in the place of actual TCLP laboratory results. This "worst-case" assumption adds a "safety factor" to compensate for errors in the data or in calculating the mass of the structure. If the initial test results show that the average weight percent of lead in the lead-based paint, the average paint thickness, or the average paint density varies widely from one part of the structure to another, it may be better to do separate "mass of lead-based paint" or "mass of lead in the lead-based paint" calculations for each part of the structure with similar values. The individual results for the different parts of the structure can then be summed before dividing by the mass of the entire structure.

The presence or absence of suspect RCRA 8 hazardous metals is verified by visually inspecting the structure, testing multiple like components with a NITON XRF, or collecting paint chip samples for laboratory analysis during the investigation. If no RCRA 8 suspect materials or suspect conditions are observed, the total lead in milligrams (mg) can be calculated for the materials in which LBP concentrations are assumed to be greater than EPA/HUD’s standard of <1.0% limit for what can be considered non-lead based paint. The calculations use the highest average theoretical value (1.0 or greater) for each painted surface. Not all surfaces of the structure are painted, nor are openings & voids accounted for in the square footages calculated. Multiplying the average value of LBP (in mg/cm^2) by the total square footage area (in cm^2) of all painted surfaces (including void spacing), a total amount of milligrams of lead in the paint is estimated. A total (minimum) expected mass of kilograms of painted demolition debris is then

calculated for the waste stream. The final calculation of the theoretical TCLP then uses the total of milligrams of paint divided by the kilograms of painted demolition debris which equals the mass (mg/kg) of lead in the demolition waste stream. If the mass concentration of lead is less or more than the 20:1 rule criteria of 100 mg/kg, the debris waste stream is considered either non-hazardous or hazardous for leachable lead.

Other Hazardous Materials
Determination of other hazardous materials involves the processes described by EPA as follows:

- Is the material a solid waste? (See: 40 CFR Part 261.2)
- Is the waste specifically excluded from RCRA? (See: 40 CFR Part 261.4)
- Is the waste a listed hazardous waste? (See: 40 CFR Part 261.30)
- Does the waste exhibit a characteristic of hazardous waste? (See: 40 CFR Part 261.20)

During structure investigation other hazardous materials posing an environmental concern or health risk are watched for and where visually observed are noted in the report findings. Determinations of other hazardous materials were based on the above EPA guidelines. These other hazardous materials include:

- Mastics
- Caulks
- Lead building materials
- Stored chemicals, heating oils, hydraulic oils, automotive fuel products & lubricants
- Radioactive materials in smoke detectors & self illuminating emergency exit signs
- Lead-acid batteries in emergency lighting and emergency exit signs
- Mercury in thermostats, fluorescent light tubes & HID mercury vapor lighting
- PCB containing power transformers & PCB containing fluorescent light ballasts
- Stored, unidentified or flammable liquids, paints or pressurized containers
- Freon gas canisters
- Fire extinguishers & HALON fire suppression systems.

Limitations
NORTECH provides a level of service that is performed within the standard of care and competence found within this practice and the engineering profession. It must be recognized that limitations in a hazardous material inspection and assessment exist. The data presented should be considered representative of only the time and observances of our inspection. In addition, changes in the condition of the materials within the facility can occur with the passing of time, due to natural processes and/or from human activities. ***NORTECH*** has performed the work, made the findings, and proposed recommendations in accordance with generally accepted environmental engineering practices using the best technology available at the time the work was performed.

NORTECH has based its conclusions and recommendations on our current understanding of regulatory policies. The regulations concerning hazardous materials are constantly changing, including the interpretations of regulating agencies. If changes in regulations or their interpretation occur, then ***NORTECH*** reserves the right to amend or revise conclusions and/or recommendations.

CITY HALL HEATING UPGRADE PROJECT, RFP-24-03

EXHIBIT 1

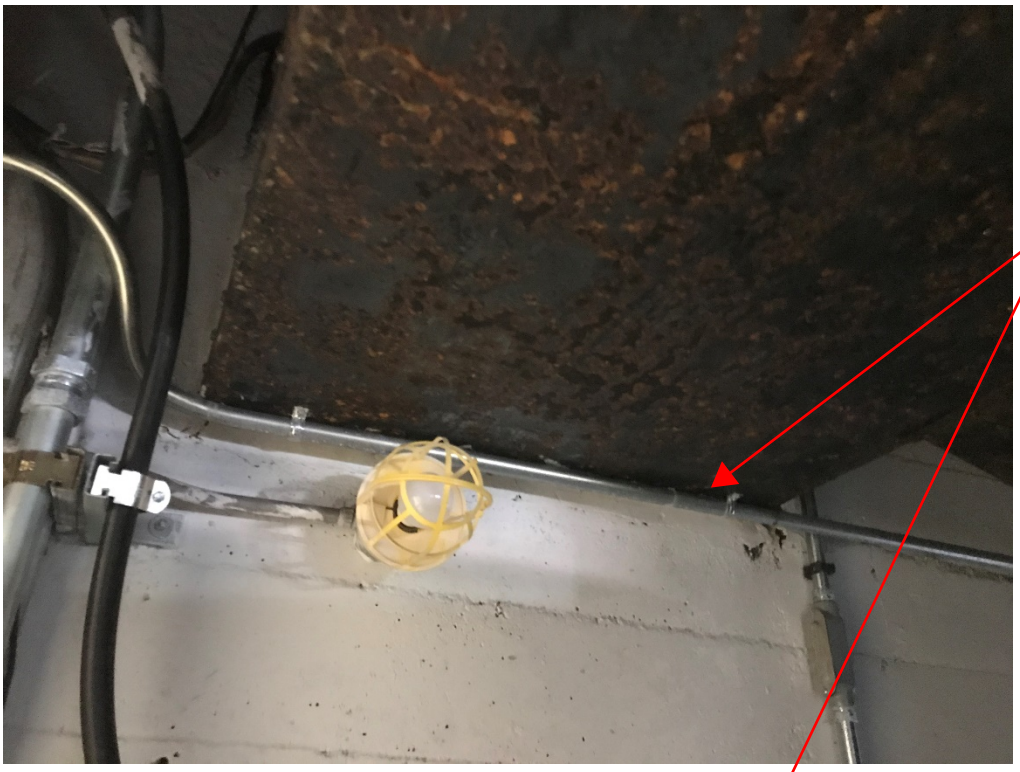

Figure 1 Duct at wall

Figure 2 Duct at wall

Figure 3 East Boiler

Figure 4 East Boiler

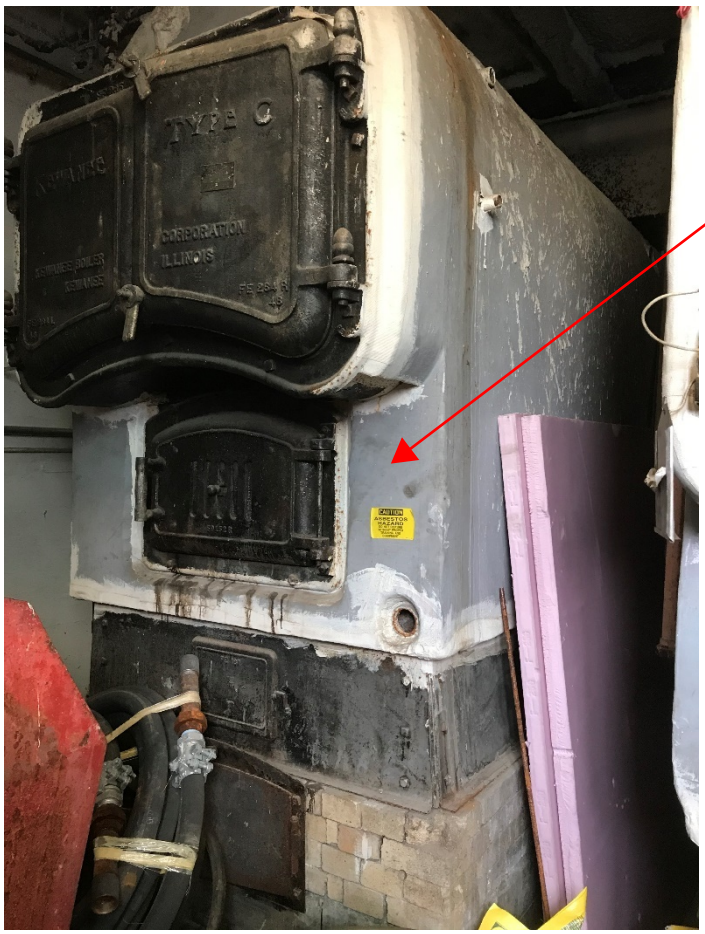

Figure 5 East Boiler

Figure 6 East Boiler

Figure 7 West Boiler

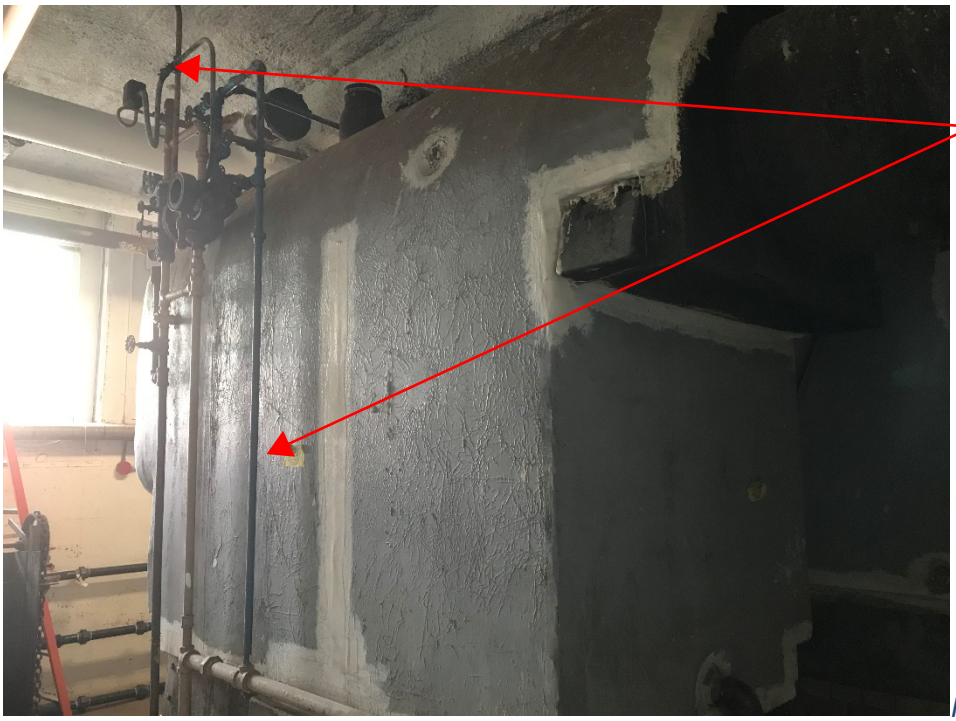

Figure 8 West Boiler

DEMO AND REMOVE EXISTING WEST BOILER IN ITS ENTIRETY. DEMO AND REMOVE ASSOCIATED PIPING, ELECTICAL, AND DUCTING. THE DEMO OF THESE ITEMS IS TO BE TO THE FURTHEST POINT IN THE BOILER ROOM AND TERMINATED. EXISTING BOILERS ARE ASBESTOS WRAPPED.

Figure 9 West Boiler

REMOVE AND DISPOSE OF EXISTING WEST SHOOT / HOPPER IN ITS ENTIRITY.

Figure 10 Shoot/Hopper

Figure 11 Electrical Conduit from West Boiler

Figure 12 Electrical & Piping, East Boiler

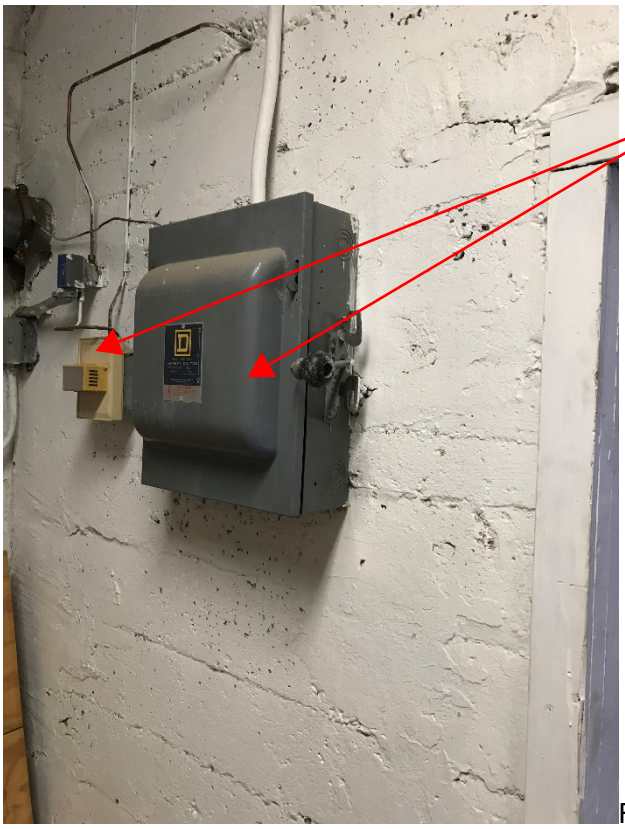

Figure 24 Square D Box and Conduit

Figure 25 Square D Box

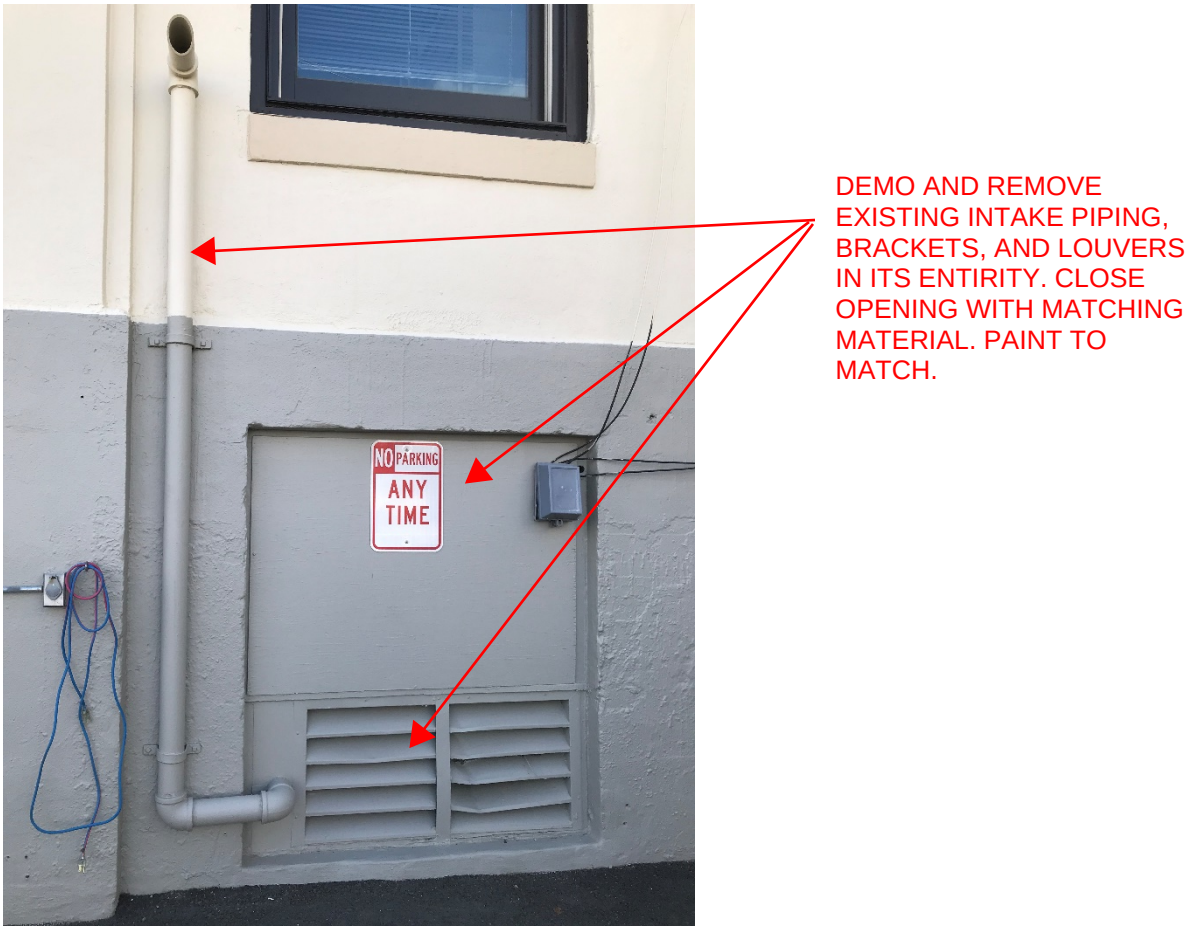

Figure 26 Fan Air Intake Outside of Building

Figure 13 Under Stairs

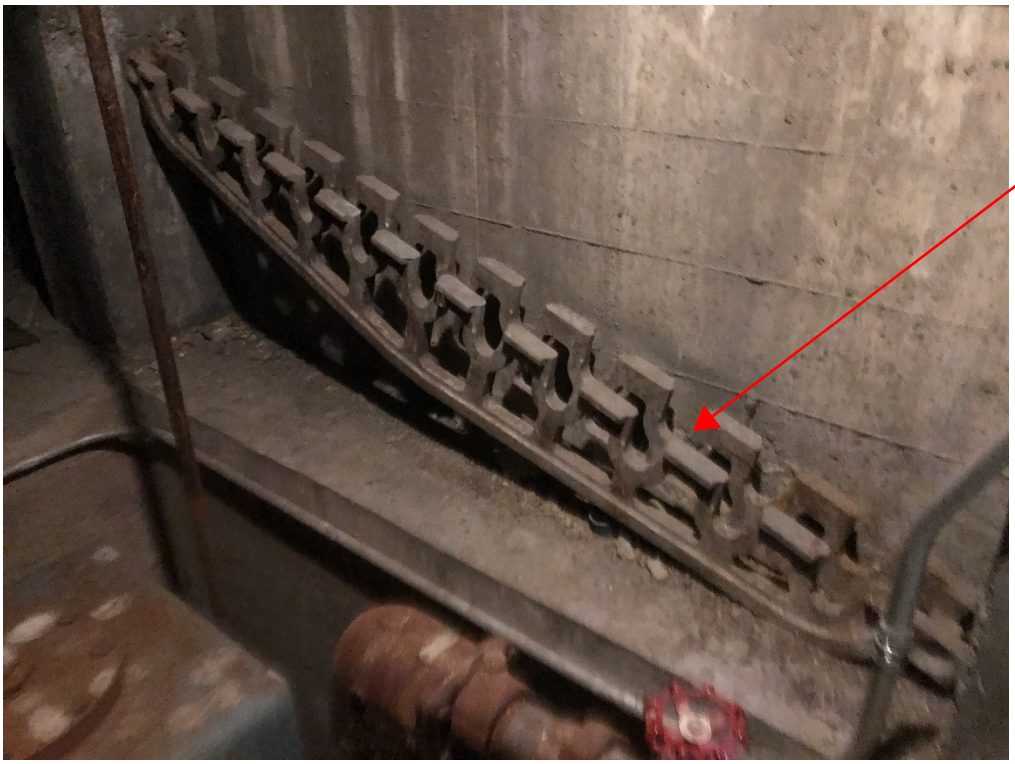

Figure 14 Brackets in Crawl Ares

Figure 15 Green Hopper

Figure 16 Motor

Figure 17 Shaft

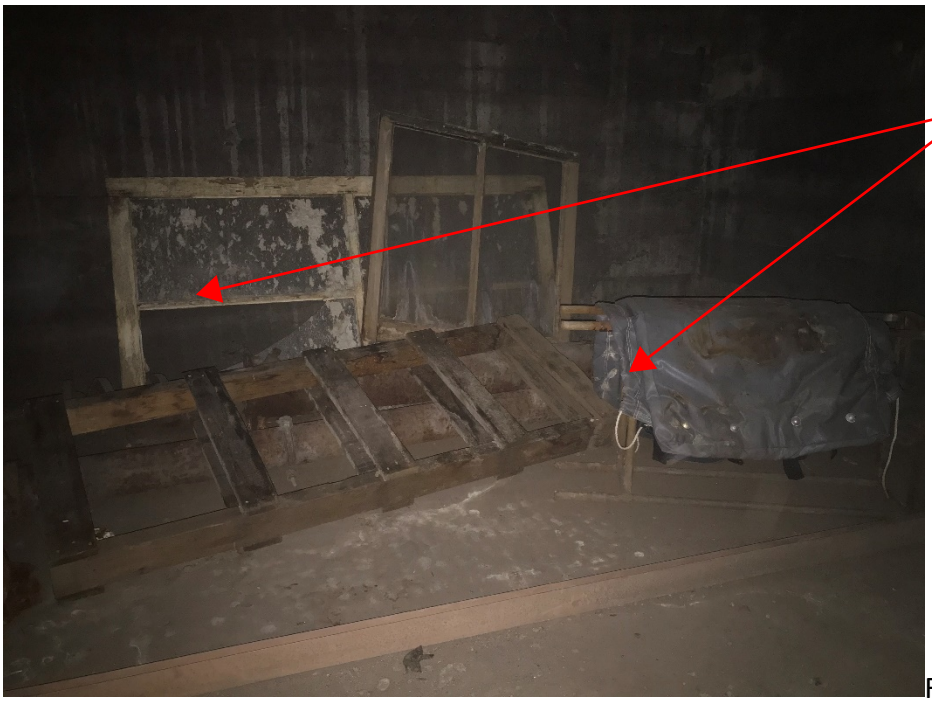

Figure 18 Crawl Space

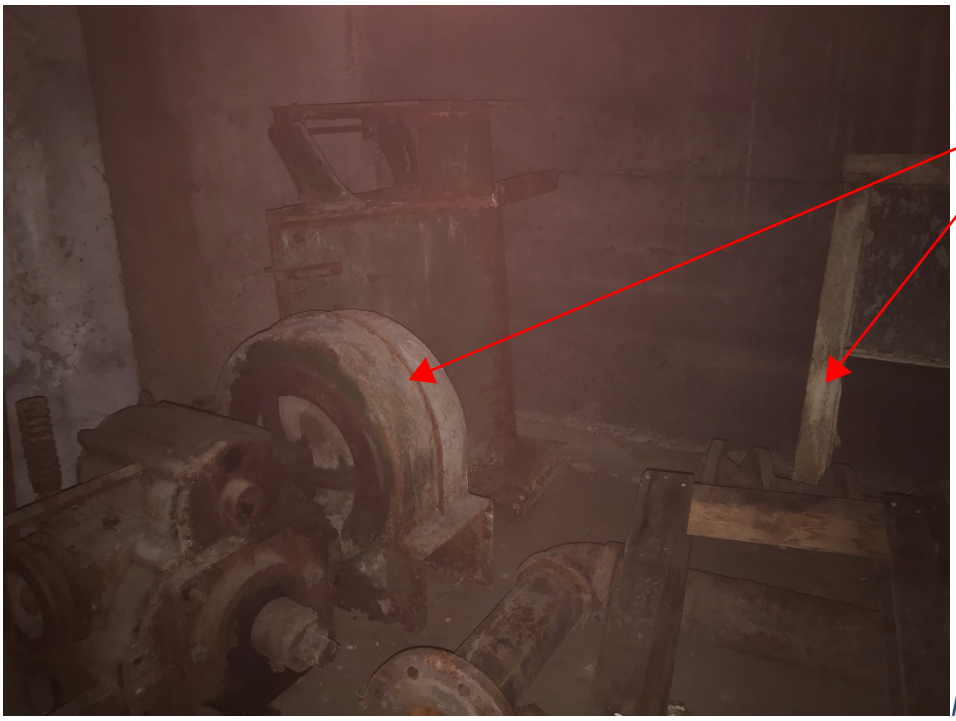

Figure 19 Crawl Space

DEMO AND REMOVE EXISTING BOILER MANIFOLD IN ITS ENTIRETY. DEMO AND REMOVE ASSOCIATED PIPING, ELECTICAL, AND DUCTING. THE DEMO OF THESE ITEMS IS TO BE TO THE FURTHEST POINT IN THE BOILER ROOM AND TERMINATED.

Figure 20 Manifold Between Boilers

DEMO AND REMOVE EXISTING FAN SYSTEM IN ITS ENTIRETY. DEMO AND REMOVE ASSOCIATED PIPING, ELECTICAL, AND DUCTING. THE DEMO OF THESE ITEMS IS TO BE TO THE FURTHEST POINT IN THE ROOM AND TERMINATED.

Figure 21 Fan System in West Room

Figure 22 Fan System in West Room

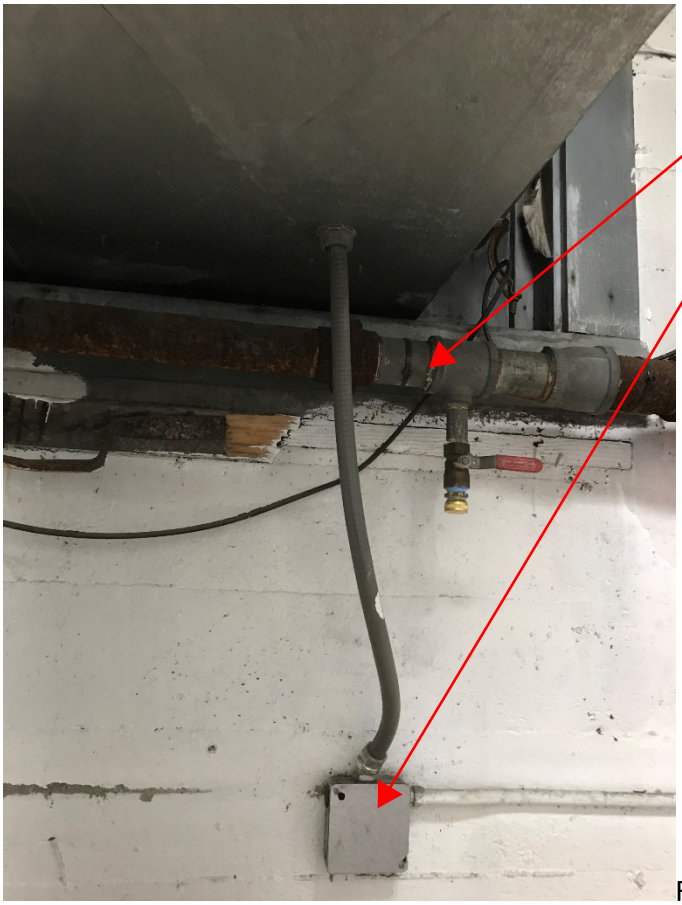

Figure 23 Fan System in West Room

***NORTECH*, Inc.**

♦

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SUSTAINABLE ENVIRONMENT, ENERGY, HEALTH & SAFETY PROFESSIONAL SERVICES

August 15, 2023

Sent via email to:
jobrien@fairbanks.us

City of Fairbanks
Engineering Department
800 Cushman Street
Fairbanks, AK 99701

ATTN: John O'Brien

RE: Limited Hazardous Materials Testing – HUD Compliant Lead Survey
Child Care Renovations at City Hall - Fairbanks, Alaska

John:

NORTECH Sustainable Environment, Energy, Health & Safety Professional Services is pleased to provide the City of Fairbanks with this limited hazardous materials survey results summary for the survey we performed as part of the proposed renovations to the classrooms on the first floor of City Hall. The report provides a synopsis of the background, scope of work, methodology, field activities, sampling results with discussion, including conclusions and recommendations.

Background

The area of proposed renovation at City Hall is approximately 3,500 square-feet, and includes three classrooms, two bathrooms, a janitor's closet, and a storage closet. The Main school building was built in 1934 and enlarged in 1939 and again in 1948. The building was used as a school until the early 1970s. The building has housed city offices since 1994. In addition to city offices, the former school gymnasium is home to the Fairbanks Boys and Girls Club.

Scope of Work

The City of Fairbanks requested a hazardous materials survey of the facility be performed on the first floor of the northwest wing of City Hall as part of a renovation project to convert the area into a licensed childcare facility. ***NORTECH***'s scope of work was to provide a hazardous materials survey to identify potential hazardous items to human health or the environment and require special handling or disposal during renovation of the facility.

Methodology

The Pre-Demolition Hazardous Materials Assessment involved a review of available records, interviews with knowledgeable individuals, a site inspection, and sampling of conditions present to identify, quantify, and determine the condition of hazardous materials. Project efforts were completed in accordance with ***NORTECH***'s Hazardous Material Assessment Methodology (v19) available upon request. The field project sampling staff were EPA-certified AHERA asbestos inspectors. An Environmental Professional Engineer oversaw the assessment work.

Field Activities

Danielle Frick and Janine Way of ***NORTECH*** completed the hazardous materials inspection of the facility on July 26, 2023.

The northwest first floor wing of the building includes three classrooms, women's and men's restrooms, a janitor's closet, and a storage closet. These areas were sampled for suspect asbestos and lead in paint. PCB samples were collected from materials set for demolition and disposal. Asbestos samples were taken from flooring, mastic, base trim, joint compound, ceiling tile and thermal system insulation (TSI) on piping. Most of the walls in the area are stucco with joint compound texture. In Classroom 3, the dividing walls are wood framed with unpainted sheetrock and wood paneling. There is a drop ceiling with grid in Classroom 3. The flooring in the main corridor connecting the classrooms and bathrooms has an epoxy coating that acts as an encapsulant for assumed asbestos containing tiles.

Asbestos Containing Material
A total of 28 bulk samples of suspect asbestos materials were collected and submitted to EMSL Analytical Inc. in Cinnaminson, New Jersey, for analysis by EPA 600/R-93/116 using Polarized Light Microscopy (PLM). EMSL is certified through the National Voluntary Laboratory Accreditation Program (NVLAP). Samples considered non-organically bound (mastics, glues, and tarry substances), were analyzed by PLM with gravimetric reduction to determine asbestos content more accurately, if present.

Following the receipt of lab results additional samples were taken of possible ACM around ceiling tiles in Classroom. Sample locations and results are presented in Figures 3 and 4 and the laboratory report is included in Attachment 3.

Lead-Based Paint
A total of 37 paint locations/materials were analyzed for lead content using a handheld NITON XLP-303A X-Ray Fluorescence (XRF) instrument providing real-time EPA approved results. Samples were taken in all proposed renovation areas. Painted building components included walls, trim, painted floors, and doors. Interior sample locations and results are presented on Figures 5, 6, and 7.

PCBs in Paint
Five paint chip samples were collected and submitted to EMSL Analytical Inc. in Cinnaminson, New Jersey, for PCB analysis by EPA Method SW3540C/8082A PCBs. PCBs are quantified as "Aroclors" in analytical work. Aroclor was the tradename for PCB mixtures manufactured by the Monsanto Chemical Company. EMSL reports nine Aroclors in the units of milligrams per kilogram (mg/Kg, or parts per million [ppm]). The sample locations are shown in Figure 8 and the laboratory report is included in Attachment 3.

Other Materials Requiring Special Handling
The areas sampled were inspected for other materials that may require special handling during the renovation work including fluorescent lamps, thermostats, portable fire extinguishers, lead-acid batteries, and other potentially hazardous materials.

Sample Results and Discussion

Asbestos Containing Material

Twenty-eight bulk samples were sent to EMSL with a total of 41 layers analyzed. The asbestos containing materials are summarized below:

- Friable (RACM)
  - TSI on bathroom heating pipes — 48 Linear feet
- Non-Friable (Category I)
  - Flooring tiles — Approximately 2500 sq ft
  - Black Mastic — Approximately 2500 sq ft
- Non-Friable (Category II)
  - None Detected

Unlabeled thermal systems insulation (TSI) was found in both Restroom 1 and 2 and was positive for asbestos. TSI covers radiator supply and return piping from ceiling to near ground level. TSI with greater than 1% asbestos is considered a Regulated Asbestos-Containing Material (RACM). RACM is any asbestos-containing material that when dry, can be crumbled or reduced to powder by hand pressure. If it can be crumbled it is called “friable”. Friable ACM requires abatement by certified asbestos abatement workers using OSHA Class I methods. Friable asbestos that is damaged or severely damaged, or found as debris, presents a high potential for possible exposures above the Occupational Safety and Health Administration (OSHA) permissible exposure limit (PEL) of 0.1 fibers per cubic centimeter (f/cm^3).

RACM requiring removal must be disposed at a landfill permitted to accept RACM wastes if the volume exceeds EPA National Emissions Standards for Hazardous Air Pollutants (NESHAP) guidance. If the total amount of regulated asbestos to be removed or disturbed exceeds 260 linear feet, 160 square feet, or 35 cubic feet then the NESHAP requires regulated asbestos-containing material to be removed from the waste stream before renovation activities occur. Based on the amount of RACM observed in the vicinity of the project work area, the total amount of RACM is not expected to exceed the NESHAP threshold.

Non-friable ACM is divided into Category I and Category II materials. Category 1 asbestos present includes flooring tiles and mastic under carpet throughout the classrooms. If removed non-friable Category I asbestos will require demolition/abatement by certified asbestos workers using Class II OSHA methods and disposal as ACM debris. Any abatement or demolition activities should be completed under a project-specific work plan developed by the contractor to meet state and federal requirements.

The laboratory reported one sample layer taken from the ceiling tiles in Classroom 2 as asbestos containing glazing. The area was reinspected for the suspect ACM and several additional samples were taken from the area to verify the presence of ACM. Based on the additional lab analysis, sample C2-BA-10 has been removed from the data tables and laboratory report because it was not reproducible.

Alternatively, ACM materials may be managed in place (MIP). The EPA has guidance for facilities that choose to develop and maintain an Operations and Maintenance (O&M) plan that consists of training, cleaning, work practices, and surveillance to maintain ACM in good condition within buildings. Encapsulation, encasement, enclosure, or repair are viable alternatives to removal. MIP approaches should be considered before deciding to abate and

remove the currently undamaged ACM. When ACM is properly managed, release of fibers into the air is prevented or minimized, and the risk of asbestos related disease can be reduced to a negligible level. Managing ACM in place has an ongoing maintenance cost in addition to the eventual abatement costs. Required asbestos MIP maintenance and documentation must not be neglected or forgotten to ensure future workers do not unknowingly use work practices that result in potential asbestos disturbance and exposure.

In the event that a new (untested) suspect ACM is encountered during the project, the material must be tested to determine the appropriate handling and disposal methods or assumed to be ACM.

Lead-Based Paint
Three lead results were above the HUD threshold of 1 mg/cm^2, with a high of 2.1 mg/cm^2 indicating lead paint is present in this wing of the building. A light green primer appeared to be the lead containing paint. This is visible in some locations and has been painted over with other colors in other locations. The green primer was found primarily in the hallway and not in the classrooms.

City Hall was built before 1978 and will require a HUD compliant lead survey prior to the facility being used as a childcare facility. The HUD Compliant assessment will look for lead-based paint in areas potentially disturbed by the proposed renovations. The assessment must be conducted by an EPA certified Lead Inspector and will follow Chapter 4 of the HUD Guidelines, 40 CFR Part 745 Subpart E, and 29 CFR 1926-6. The report for the HUD compliant survey will be separate from this report.

PCBs in Paint
Five paint chip samples were collected and submitted for PCB analysis. Five samples were reported positive for PCBs and are listed as the following:

- C2-PCB-1 – white with yellow layers paint on stucco wall
  - Aroclor-1254 5.2 mg/kg
  - Aroclor-1262 0.85 mg/kg
  - Total Aroclor count 6.05 mg/kg
- BC-PCB-2 – tan/ green/ blue on wood bathroom stalls
  - Aroclor-1254 3.3 mg/kg
  - Aroclor-1260 0.40 mg/kg
  - Total Aroclor count 3.7 mg/kg
- BB-PCB-3 – white paint on wood bathroom stalls
  - Aroclor-1254 2.1 mg/kg
  - Aroclor-1262 0.33 mg/kg
  - Total Aroclor count 2.43 mg/kg
- JC-PCB-4 – Orange over green paint janitors closet door
  - Aroclor-1254 2.1 mg/kg
  - Aroclor-1260 0.24 mg/kg
  - Total Aroclor count 2.34 mg/kg
- JC-PCB-5 – white paint on janitor closet door
  - Aroclor-1254 5.6 mg/kg
  - Aroclor-1260 1.2 mg/kg
  - Total Aroclor count 6.8 mg/kg

These lab results indicate that levels of PCBs above 1 mg/kg are present on the bathroom stalls, doors, and walls in the proposed renovation area. Within Alaska PCB concentration between 1 ppm and 50 ppm are treated as “polluted soil”. Per regulation, Alaska landfills currently will not accept any PCB material > 1 ppm. While the official regulations do allow disposal of materials with a PCB concentration <1 ppm, most disposal facilities in Alaska have reportedly refused to accept materials containing any detectable PCBs. The contractor is required to verify with the chosen disposal landfill operator that the landfill permit accepts PCB waste below 1 ppm prior to disposal of the waste stream to avoid any potential regulatory concerns. Segregation of unpainted wastes is recommended to minimize the quantity of material that requires disposal outside the State of Alaska.

PCB related demolition activities pose a health risk to workers. EPA warns metals coated with paints containing PCBs should not be cut with flame, as the temperatures produced by the cutting may produce highly toxic polychlorinated dibenzofurans (PCDFs) that can be up to 100 times more toxic than certain PCBs. Other activities that may also be considered high risk include welding, sandblasting, burning, grinding, and sanding, which may elevate the temperature of the paint to unsafe levels or cause significant dusting. Planned demolition activities must be done in accordance with a project specific plan that minimizes potential worker exposure and provides the public with confidence that PCBs are not being released from the demolition activities.

Other Materials Requiring Special Handling
The area was inspected for other items and components that may require special handling during the renovation work a summary table is provided below:

- Mercury Containing Fluorescent Lamps (T-12 Tube 4’) 48 ea.

Consider reusing the identified hazardous items/materials. If not reused, the items require proper disposal at an approved facility according to local, state, and federal requirements. If exit signs are removed as part of the project, they should be inspected for labeling that indicates the presence of a radioactive source. If the signs contain tritium, they must be disposed of at a facility with proper licensing. Two light fixtures were inspected for PCB containing ballasts. Both ballasts were labeled “no PCBs”. All fixtures that will be removed should be inspected prior to disposal.

Conclusions and Recommendations

NORTECH completed a Hazardous Materials Survey of the northwest first floor wing and City Hall as part of a potential renovation project for a licensed childcare facility. Based on this inspection, ***NORTECH*** has the following conclusions and recommendations for renovation activities at the facility:

- Asbestos containing materials were identified in this area and an asbestos work plan is necessary for renovation activities.
    - Friable ACM (RACM) requires abatement by certified asbestos abatement workers using OSHA Class I methods
    - Category II ACM requires abatement by certified asbestos abatement workers using OSHA Class II methods
    - Management in place (MIP) requires City Hall to maintain an Operations and Maintenance (O&M) plan that consists of training, cleaning, work practices, and surveillance to maintain ACM in good condition within buildings.
- Lead above the HUD limit was found in the green paint in the storage closet
    - Lead based paint was identified in this work area
    - A HUD compliant lead survey is required for childcare facilities that were built before 1978
- PCBs were detected in paint on the bathroom stalls, doors and walls of the renovation area.
    - Concentrations of the bulk samples were above 1 mg/kg
    - The coatings are considered PCB waste and should be disposed of outside the State of Alaska
    - Workers and contractors performing work on these materials should have appropriate PCB training and certifications for the type of work
    - The contractor is required to verify with the chosen disposal landfill operator to avoid regulatory concerns
- Project design documents should require the contractor to submit a work plan prior to renovations detailing the following:
    - Asbestos work plan and disposal methods
    - Lead based paint work plan
    - PCB handling and disposal methods
- Other potential hazardous items observed include the fluorescent lighting
    - These should be reused to the extent practical
    - Each ballast must be inspected for PCB labeling
    - Items designated as wastes must be removed from the building before renovation activities and disposed of properly

This information should be incorporated into the renovation design documents, which should include specific directions to the bidders as to whether the materials will be reused as part of the project or may be salvaged by the contractor. These design documents should require a demolition/renovation work plan for all planned abatement and/or demolition activities. This work plan should identify salvageable items, address hazardous material to be handled and disposed of, address all non-hazardous waste streams, identify work practices methods, and means, and identify disposal locations for all waste streams.

All information about hazardous materials associated with the facility should be made available to employees, contractors, and/or abatement/demolition contractors bidding on the expected renovation on the facility. This hazardous materials assessment report is intended for informational purposes only. Specific abatement work practices may require additional sampling to comply with OSHA worker exposure regulatory guidelines.

If you have any questions or require additional professional services or advice, please let us know. We thank you for the opportunity to work with you on this project and appreciate your confidence in our Firm.

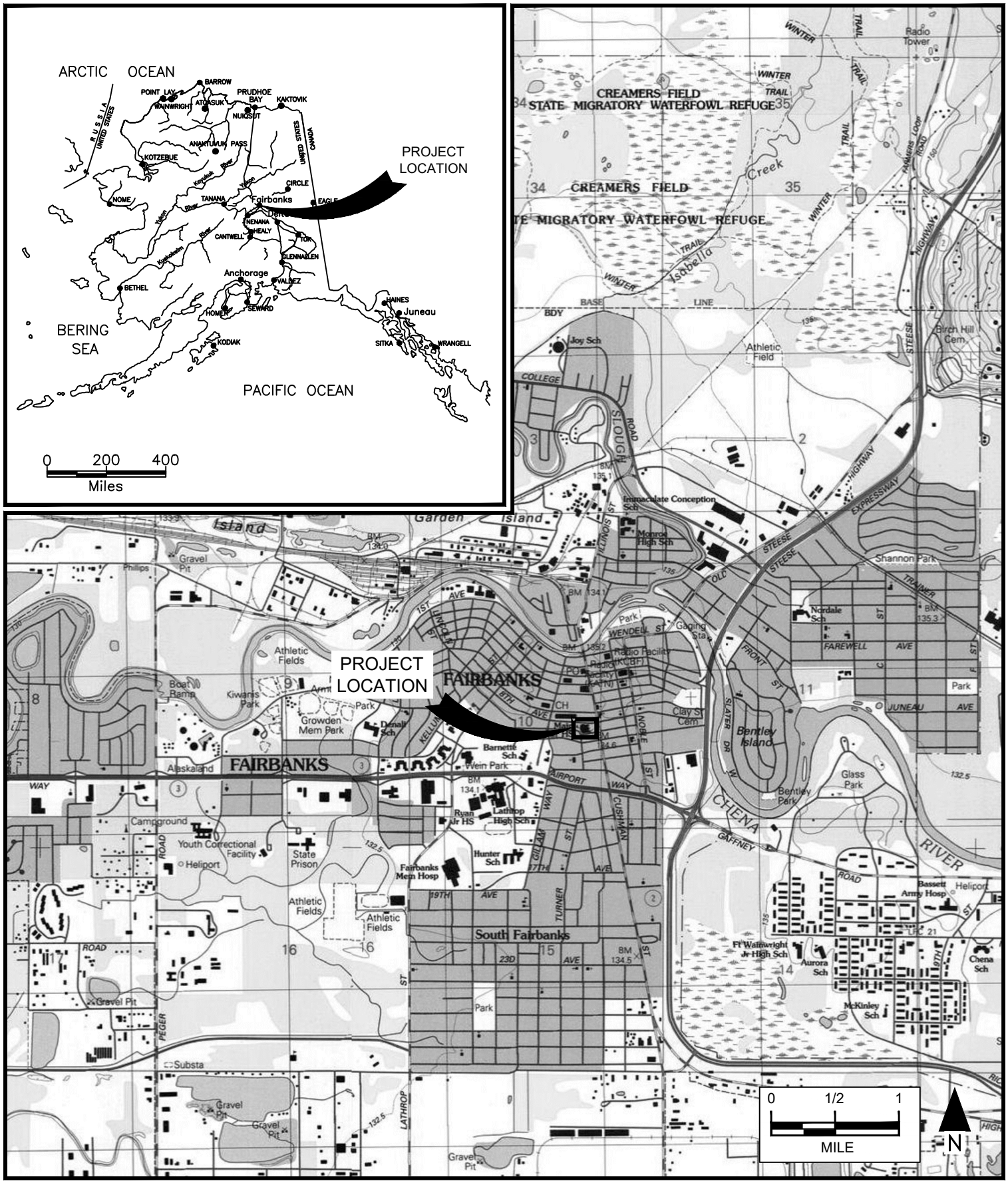
Sincerely,
NORTECH

Danielle Frick
AHERA Inspector

Peter Beardsley, PE
President and CEO, Environmental Engineer

Attachments: 1) Figures
2) Photo Pages
3) Laboratory Reports (Asbestos and PCBs in Paint)

Attachment 1
Figures



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Location Map
Child Care Renovation - Hazardous Materials Assessment
City Hall, Fairbanks, Alaska

SCALE: As Shown	FIGURE: 1
DESIGN: DSF	
DRAWN: SPH	
PROJECT NO: 23-1058	
DWG: 231058a	
DATE: 08/15/2023	

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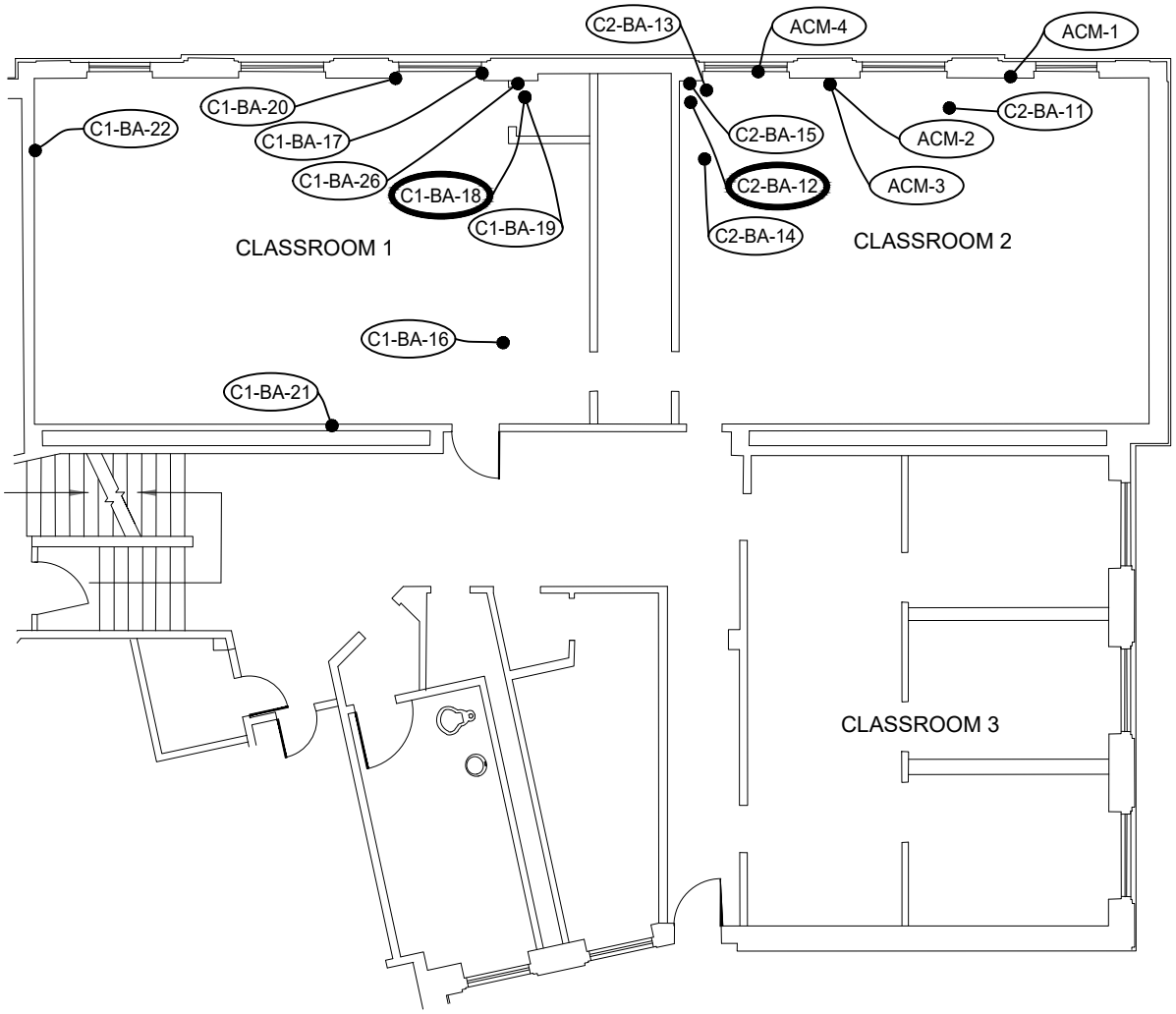
Area Map

Child Care Renovation - Hazardous Materials Assessment

City Hall, Fairbanks, Alaska

SCALE:	As Shown	FIGURE: 2
DESIGN:	DSF	
DRAWN:	SPH	
PROJECT NO:	23-1058	
DWG:	231058a	
DATE:	08/15/2023	



Asbestos Sample Results		
Asbestos Sample Results (Method EPA 600/R-93/116)		
Sample ID	**Description**	**Result**
C1-BA-16	brown/white ceiling tile	ND
C1-BA-17	white/yellow pipe insulation & mastics	ND
C1-BA-18	**gray floor tile**	**7.2% Chrysotile**
C1-BA-18	black & yellow mastic	ND
C1-BA-19	black & yellow mastic	ND
C1-BA-20	tan/white joint compound	ND
C1-BA-20	white caulk	ND
C1-BA-21	white wall texture	ND
C1-BA-22	white tall texture	ND
C1-BA-26	gray/white stucco	ND

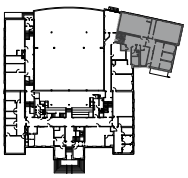
Asbestos Sample Results		
Asbestos Sample Results (Method EPA 600/R-93/116)		
Sample ID	**Description**	**Result**
C2-BA-11	brown/white ceiling tile	ND
C2-BA-12	**gray floor tile**	**6.6% Chrysotile**
C2-BA-12	black mastic	<0.25% Chrysotile
C2-BA-13	black caulk	ND
C2-BA-14	orange carpet & yellow mastics	ND
C2-BA-15	yellow pipe insulation & mastics	ND
ACM-1	white sealant	ND
ACM-2	white mastic	ND
ACM-3	white sealant	ND
ACM-4	white patch sealant	ND

LEGEND

ABC — ASBESTOS BULK SAMPLE LOCATIONS NEGATIVE (<1% ASBESTOS)

ABC — ASBESTOS BULK SAMPLE LOCATIONS POSITIVE (≥1% ASBESTOS)

SEE ASBESTOS TABULATED RESULTS FOR ACM SAMPLE NUMBER



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Classroom 1 & 2
Asbestos Sample Locations & Results
Child Care Renovation - Hazardous Materials Assessment
City Hall, Fairbanks, Alaska

SCALE:	As Shown	FIGURE: 3
DESIGN:	DSF	
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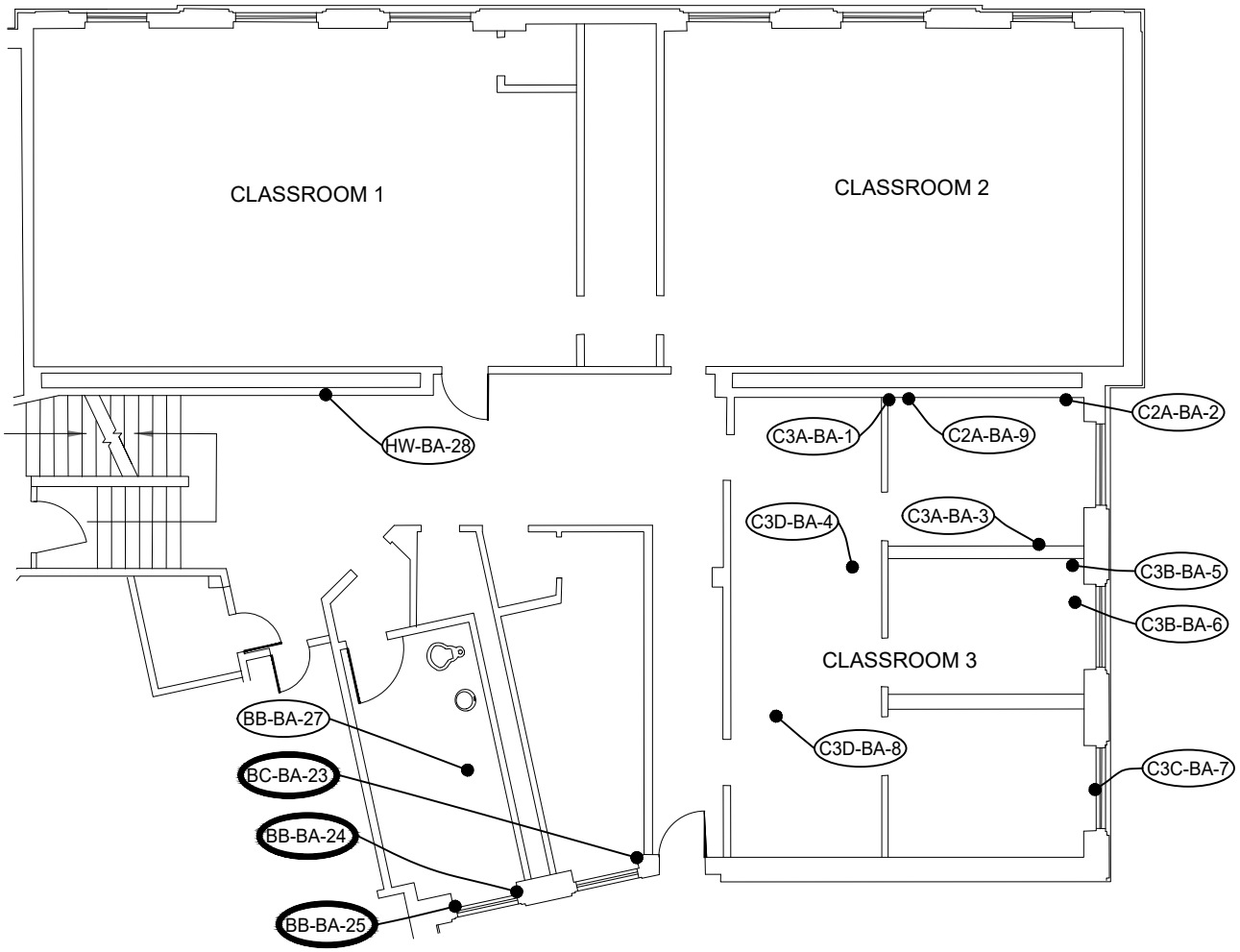
PROJECT NO:	23-1058	
DWG:	231058a	
DATE:	08/15/2023	



Asbestos Sample Results		
Asbestos Sample Results (Method EPA 600/R-93/116)		
Sample ID	**Description**	**Result**
BC-BA-23	**white/green TSI**	**30% Amosite, 8% Chrysotile**
BB-BA-24	**brown/gray/tan TSI**	**50% Chrysotile**
BB-BA-25	**white TSI**	**30% Amosite, 10% Chrysotile**
BB-BA-27	beige cove base & yellow mastic	ND
HW-BA-28	white texture	ND

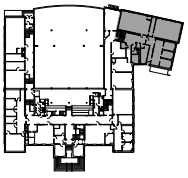
Asbestos Sample Results		
Asbestos Sample Results (Method EPA 600/R-93/116)		
Sample ID	**Description**	**Result**
C3A-BA-1	brown cove base	ND
C3A-BA-2	gray/white ceiling tile - Type 1	ND
C3A-BA-3	gray/white ceiling tile - Type 2	ND
C3D-BA-4	gray/white ceiling tile - Type 3	ND
C3B-BA-5	yellow pipe insulation & mastics	ND
C3B-BA-6	**gray floor tile**	**5.5% Chrysotile**
C3B-BA-6	**black mastic**	**2.3% Amosite, 3.4% Chrysotile**
C3C-BA-7	brown carpet & yellow mastic	ND
C3D-BA-8	**gray floor tile**	**5.8% Chrysotile**
C3D-BA-8	black mastic	<0.25% Chrysotile
C3A-BA-9	white/black mastic	ND

LEGEND

ABC — ASBESTOS BULK SAMPLE LOCATIONS NEGATIVE (<1% ASBESTOS)

ABC — ASBESTOS BULK SAMPLE LOCATIONS POSITIVE (≥1% ASBESTOS)

SEE ASBESTOS TABULATED RESULTS FOR ACM SAMPLE NUMBER



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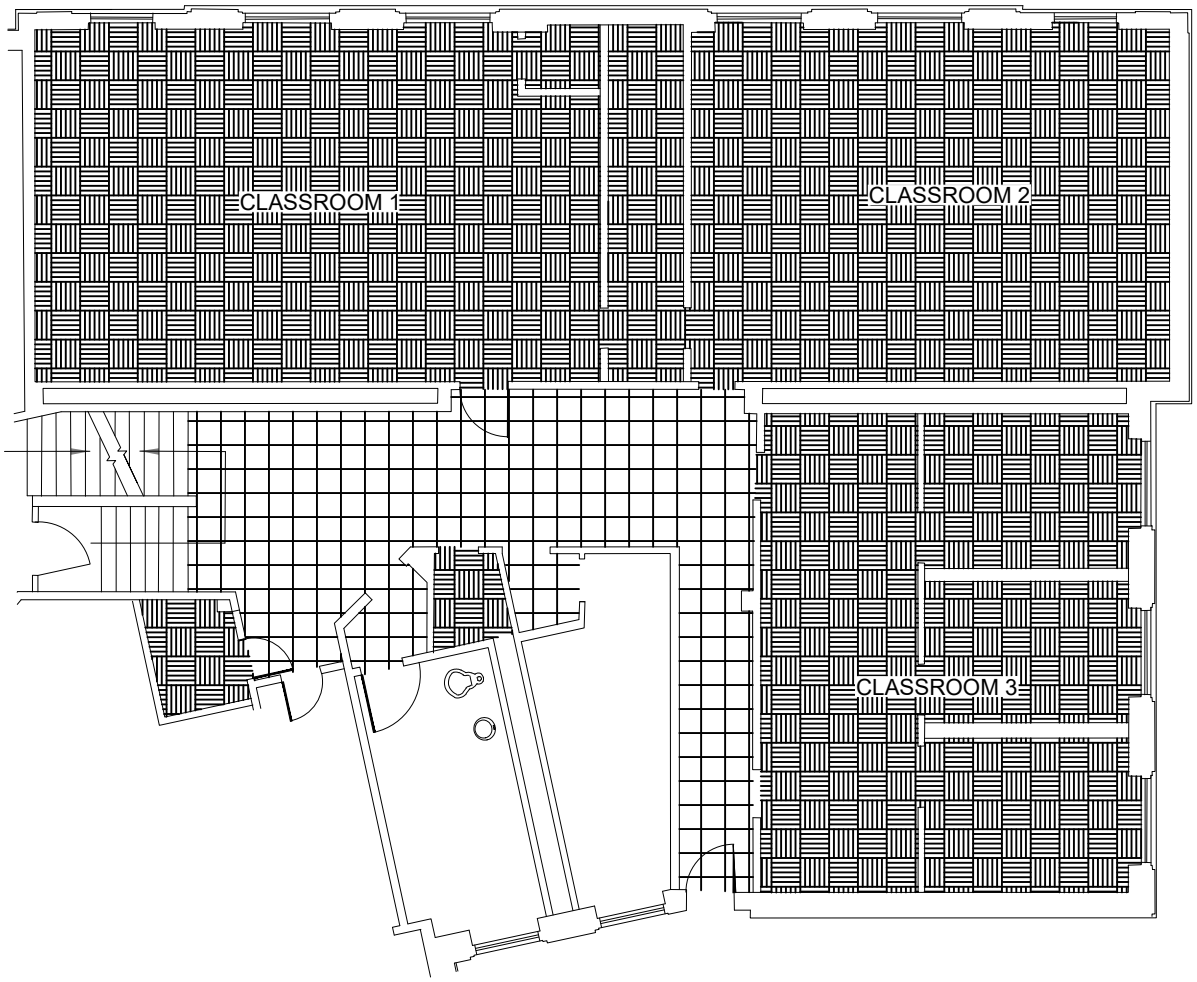
Classroom 3 & Other Areas
Asbestos Sample Locations & Results
Child Care Renovation - Hazardous Materials Assessment
City Hall, Fairbanks, Alaska

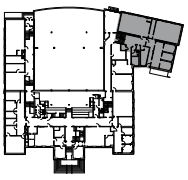
SCALE:	As Shown	FIGURE: 4
DESIGN:	DSF	
DRAWN:	SPH	
PROJECT NO:	23-1058	
DWG:	231058a	
DATE:	08/15/2023	



LEGEND

ASBESTOS CONTAINING FLOOR TILE UNDER EPOXY

ASBESTOS CONTAINING FLOOR TILE UNDER CARPET



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Classroom 1, 2, 3, & Other Areas
Asbestos Containing Material Locations
Child Care Renovation - Hazardous Materials Assessment
City Hall, Fairbanks, Alaska

SCALE:	As Shown	FIGURE: 5
DESIGN:	DSF	
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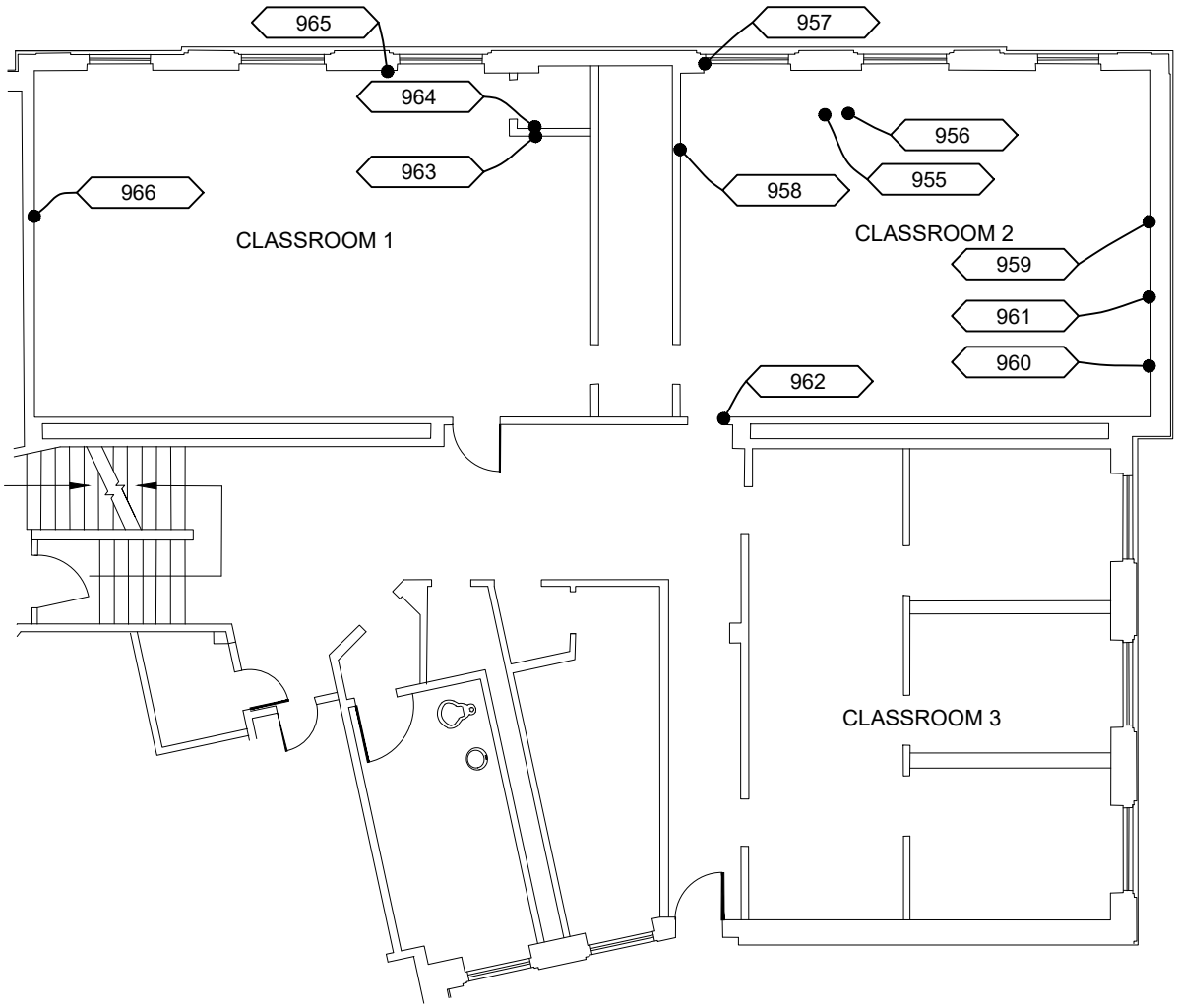
PROJECT NO:	23-1058	
DWG:	231058a	
DATE:	08/15/2023	



Lead Sample Results				
Number	**Color**	**Surface**	**Substrate**	**Result (mg/cm²)**
963	black	wall	gwb	0.00
964	pink	wall	stucco	0.18
965	white	wall	stucco	0.00
966	white	wall	stucco	0.00

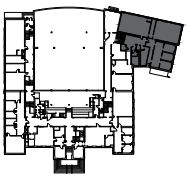
Lead Sample Results				
Number	**Color**	**Surface**	**Substrate**	**Result (mg/cm²)**
955	white	ceiling tile	MDF	0.00
956	gray	floor	concrete	0.6
957	white	wall	stucco	0.5
958	white	wall	stucco	0.01
959	green	chalkboard	slate	0.06
960	gray	trim	metal	0.3
961	white	wall	particle board	0.8
962	white over green	door	wood	0.7

LEGEND

0123 — LEAD BASED PAINT SAMPLE (<1mg/cm sq)(HUD)

0123 — LEAD BASED PAINT SAMPLE (≥1mg/cm sq)(HUD)

SEE LEAD BASED PAINT TABULATION RESULTS FOR CONCENTRATION FOR LEAD SAMPLE NUMBER



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Classroom 1 & 2
Lead Sample Locations & Results
Child Care Renovation - Hazardous Materials Assessment
City Hall, Fairbanks, Alaska

SCALE:	As Shown	FIGURE: 6
DESIGN:	DSF	
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PROJECT NO:	23-1058	
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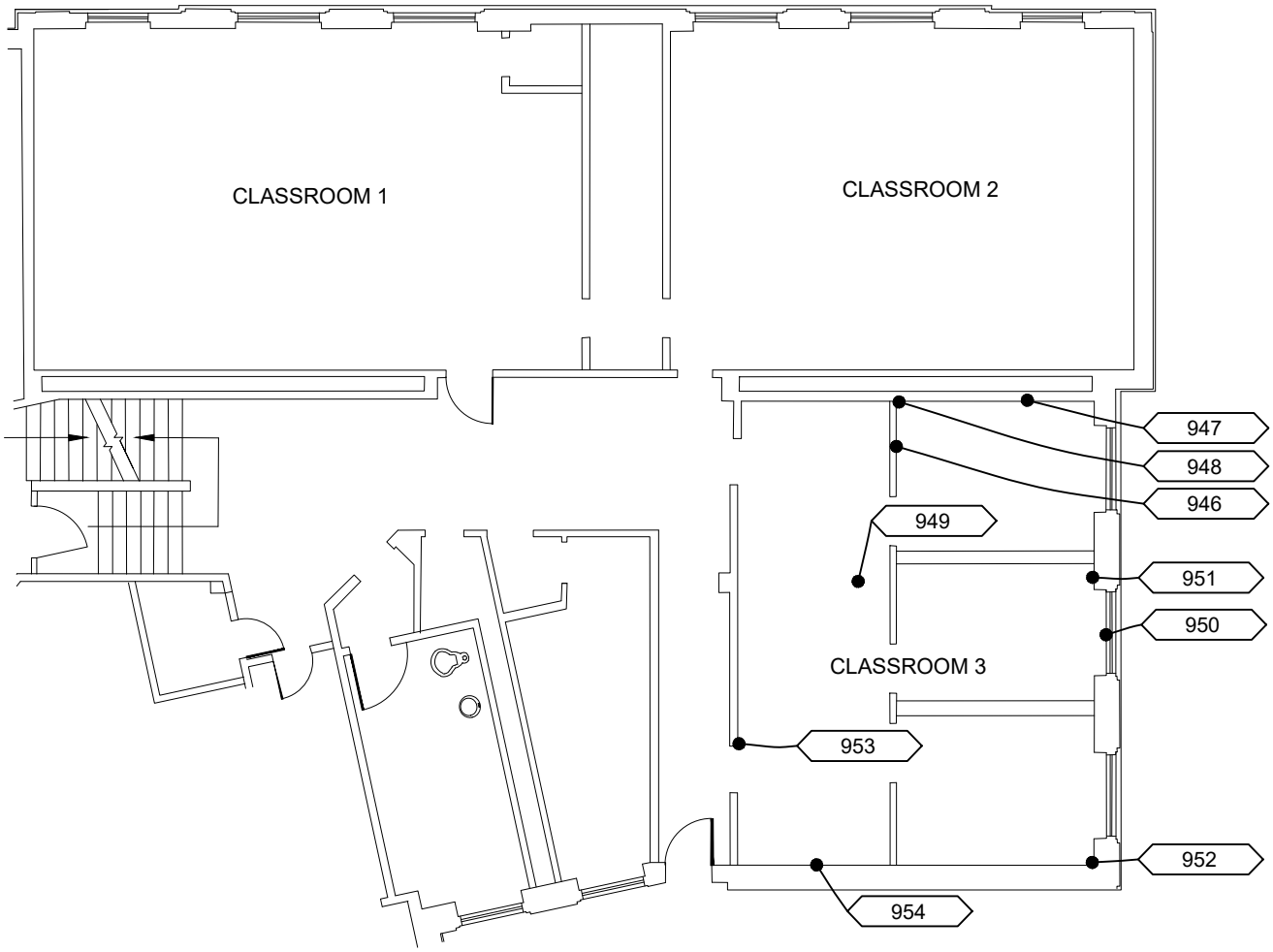


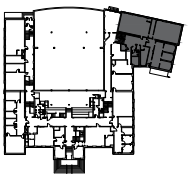
Lead Sample Results				
Number	**Color**	**Surface**	**Substrate**	**Result (mg/cm²)**
946	stain	panel	wood	0.00
947	tan	wall	stucco	0.00
948	yellow	trim	wood	0.3
949	beige	floor	concrete	0.08
950	white	heat register	metal	0.22
951	white	wall	stucco	0.29
952	light brown	wall	stucco	0.28
953	blue	wall	stucco	0.00
954	white	wall	particle board	0.01

LEGEND

0123 — LEAD BASED PAINT SAMPLE (<1mg/cm sq)(HUD)

0123 — LEAD BASED PAINT SAMPLE (≥1mg/cm sq)(HUD)

SEE LEAD BASED PAINT TABULATION RESULTS FOR CONCENTRATION FOR LEAD SAMPLE NUMBER



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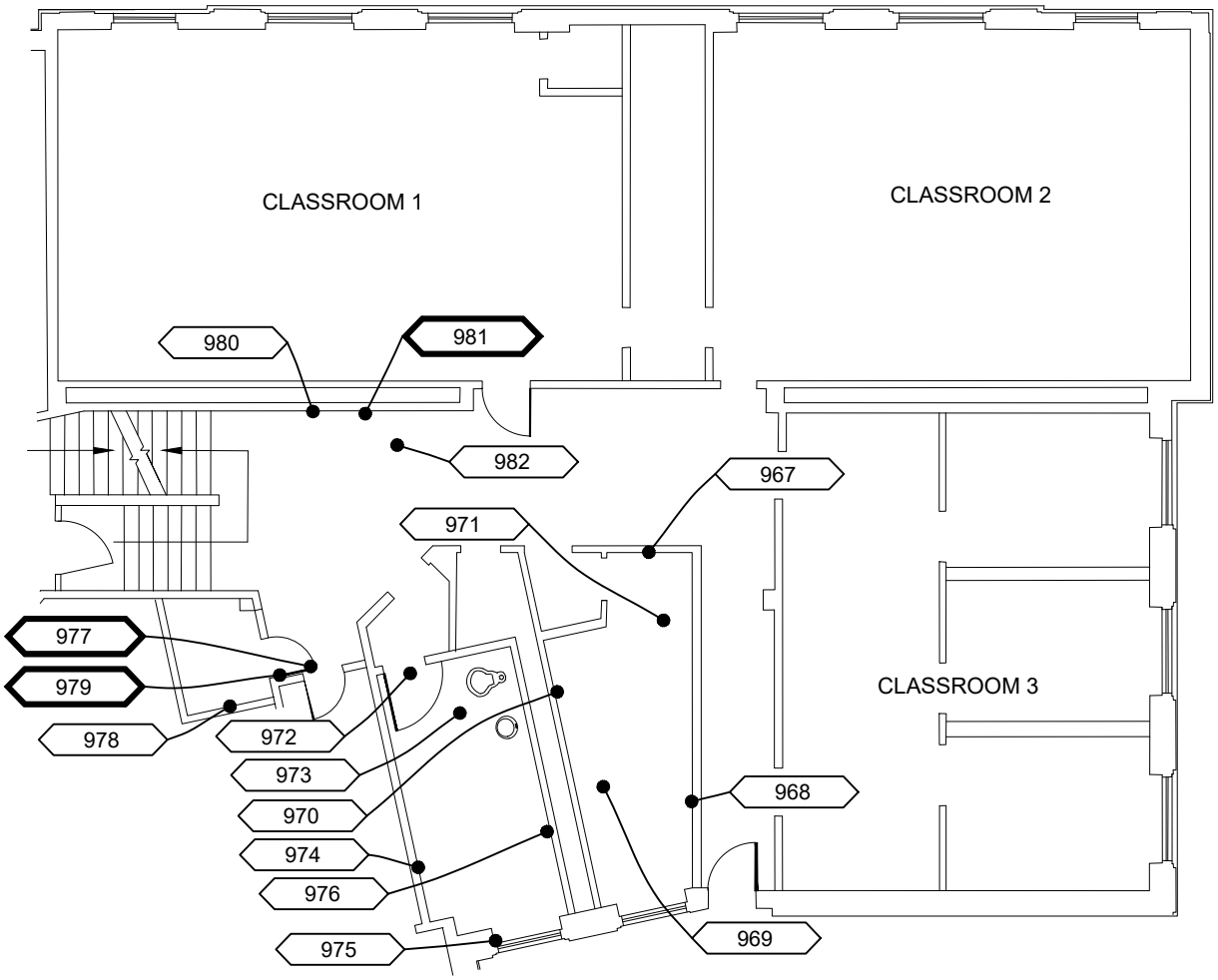
Classroom 3
Lead Sample Locations & Results
Child Care Renovation - Hazardous Materials Assessment
City Hall, Fairbanks, Alaska

SCALE:	As Shown	FIGURE: 7
DESIGN:	DSF	
DRAWN:	SPH	
PROJECT NO:	23-1058	
DWG:	231058a	
DATE:	08/15/2023	



Lead Sample Results				
Number	**Color**	**Surface**	**Substrate**	**Result (mg/cm²)**
967	blue	wall	stucco	0.29
968	green over blue	wall	stucco	0.5
969	tan	bathroom stall	wood	0.22
970	white	wall	stucco	0.00
971	gray	floor	concrete	0.27
972	tan	floor	concrete	0.5
973	white	bathroom stall	wood	0.00
974	white	wall	stucco	0.9

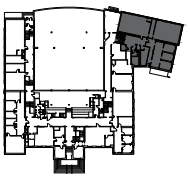
Lead Sample Results				
Number	**Color**	**Surface**	**Substrate**	**Result (mg/cm²)**
975	white	wall	stucco	0.7
976	white	wall	stucco	0.00
977	**green**	**door**	**wood**	**2.1**
978	green	wall	stucco	0.4
979	**green**	**trim**	**wood**	**1.0**
980	brown	molding	plastic	0.4
981	**white over green**	**wall**	**stucco**	**1.0**
982	epoxy on gray	floor tile	vinyl	0.00

LEGEND

0123 — LEAD BASED PAINT SAMPLE (<1mg/cm sq)(HUD)

0123 — LEAD BASED PAINT SAMPLE (≥1mg/cm sq)(HUD)

SEE LEAD BASED PAINT TABULATION RESULTS FOR CONCENTRATION FOR LEAD SAMPLE NUMBER



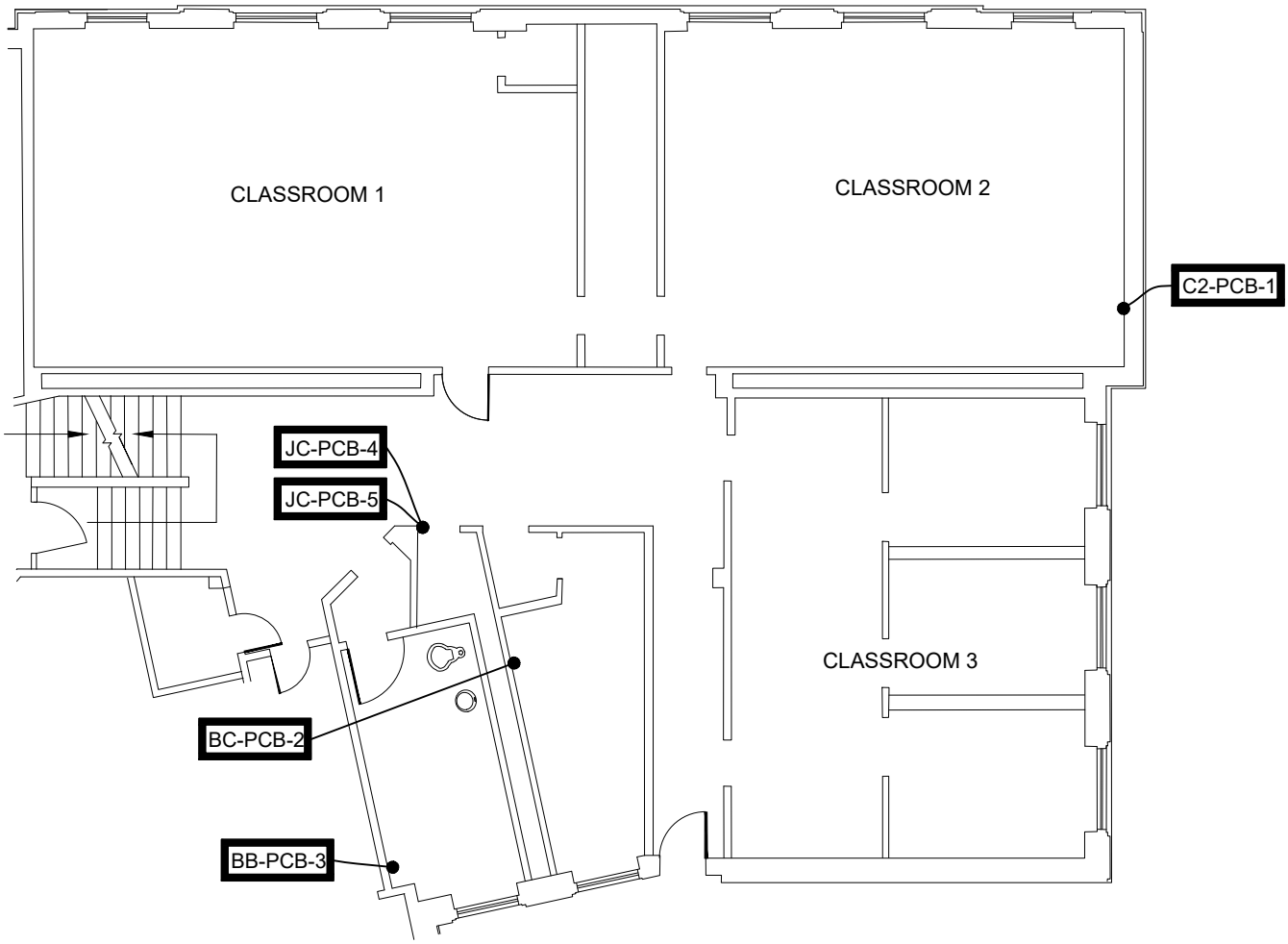
0 6 12
FEET

N

NORTECH
ENVIRONMENT, ENERGY, HEALTH & SAFETY CONSULTANTS
2400 College Road, Fairbanks, AK. 99709, 907-452-5688
3105 Lakeshore Dr., Anchorage, AK. 99517 907-222-2445
5438 Shaune Dr., Juneau, AK. 99801 907-586-6813

Other Areas
Lead Sample Locations & Results
Child Care Renovation - Hazardous Materials Assessment
City Hall, Fairbanks, Alaska

SCALE:	As Shown	FIGURE: 8
DESIGN:	DSF	
DRAWN:	SPH	
PROJECT NO:	23-1058	
DWG:	231058a	
DATE:	08/15/2023	



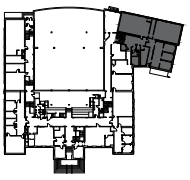
PCB Sample Results					
PCB Bulk by 3540/8082A (mg/kg)					
Sample ID	**C2-PCB-1**	**BC-PCB-2**	**BB-PCB-3**	**JC-PCB-4**	**JC-PCB-5**
Color	**white/yellow over gray**	**tan over green over blue**	**white**	**orange over green**	**white over green**
Aroclor-1016	**ND**	**ND**	**ND**	**ND**	**ND**
Aroclor-1221	**ND**	**ND**	**ND**	**ND**	**ND**
Aroclor-1232	**ND**	**ND**	**ND**	**ND**	**ND**
Aroclor-1242	**ND**	**ND**	**ND**	**ND**	**ND**
Aroclor-1248	**ND**	**ND**	**ND**	**ND**	**ND**
Aroclor-1254	**5.2**	**3.3**	**2.1**	**2.1**	**5.6**
Aroclor-1260	**ND**	**0.40**	**ND**	**0.24**	**1.2**
Aroclor-1262	**0.85**	**ND**	**0.33**	**ND**	**ND**
Aroclor-1268	**ND**	**ND**	**ND**	**ND**	**ND**

LEGEND

01234 — PCB PAINT SAMPLE LOCATIONS NEGATIVE (NO PCBs DETECTED)

01234 — PCB PAINT SAMPLE LOCATIONS POSITIVE (PCBs DETECTED)

SEE TABULATED RESULTS FOR SAMPLE NUMBER & RESULTS



0 6 12
FEET

N

NORTECH
ENVIRONMENT, ENERGY, HEALTH & SAFETY CONSULTANTS
2400 College Road, Fairbanks, AK. 99709, 907-452-5688
3105 Lakeshore Dr., Anchorage, AK. 99517 907-222-2445
5438 Shaune Dr., Juneau, AK. 99801 907-586-6813

Class 2 & Other Areas
PCB Sample Locations & Results
Child Care Renovation - Hazardous Materials Assessment
City Hall, Fairbanks, Alaska

SCALE: As Shown		FIGURE: 9
DESIGN: DSF		
DRAWN: SPH		
PROJECT NO: 23-1058		
DWG: 231058a		
DATE: 08/15/2023		

Attachment 2
Photo Pages

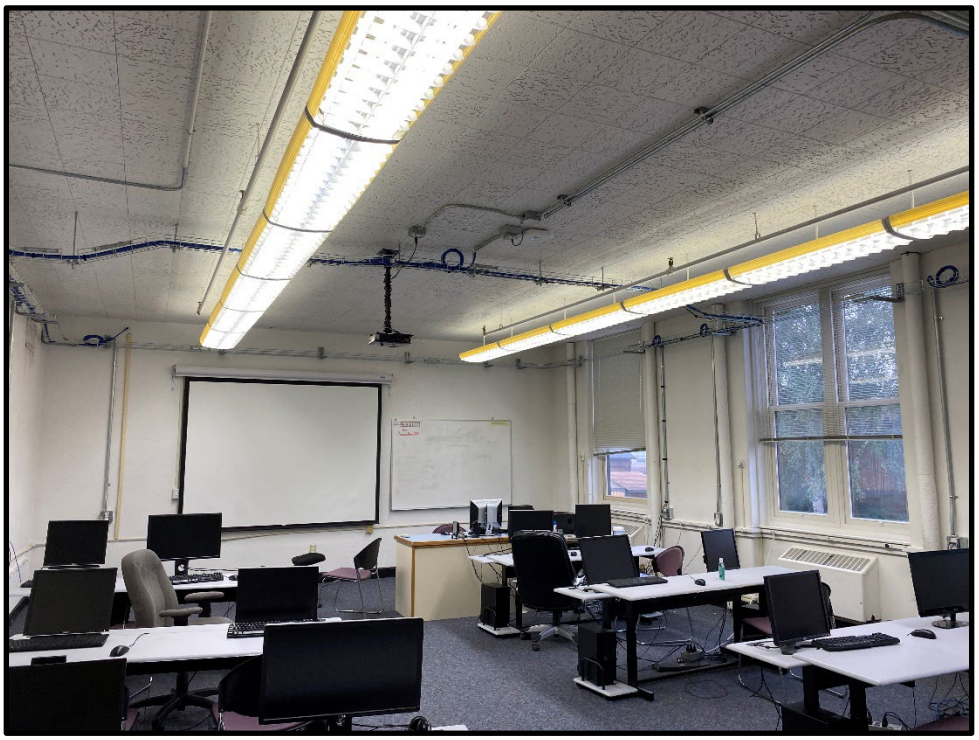


Photo 1: *Classroom 1 has two layers of carpet over ACM flooring tiles*

Photo 2: *Classroom 2 has one layer of carpet over ACM flooring tiles*

Photo 3: *Asbestos containing TSI in restroom 2 on heat piping*

Photo 4: *Asbestos containing TSI in restroom 1 on heat piping*

Photo 5: *PCB containing paint was found on the interior and exterior of the janitor closet door. Assume all doors are PCB containing.*

Photo 6: *PCB containing paint found on the divider stalls in restroom 2. Assume at restroom dividers are PCB containing.*

Attachment 3
Laboratory Reports

EMSL Analytical, Inc.
200 Route 130 North Cinnaminson, NJ 08077
Tel/Fax: (800) 220-3675 / (856) 786-5974
http://www.EMSL.com / cinnasblab@EMSL.com

EMSL Order: 042319893
Customer ID: NORT69
Customer PO:
Project ID:

Attention: Danielle Frick
Nortech Environmental & Engineer Cnslt.
2400 College Road
Fairbanks, AK 99709

Project: 23-1058

Phone: (907) 452-5688
Fax: (907) 452-5694
Received Date: 08/11/2023 9:40 AM
Analysis Date: 08/13/2023 - 08/14/2023
Collected Date: 08/11/2023

Test Report: Asbestos Analysis of Non-Friable Organic Bulk Materials via AHERA Method 40CFR 763 Subpart E Appendix E supplemented with EPA 600/R-93/116 using Polarized Light Microscopy

Sample ID	Description	Appearance	% Matrix Material	% Non-Asbestos Fibers	Asbestos Types
ACM-1 *042319893-0001*	Classroom 3 Above Windows - White Sealant	White Non-Fibrous Homogeneous	99.3 Other	0.66 Fibrous_Other	No Asbestos Detected
ACM-2 *042319893-0002*	Classroom 3 Behind Tile - Mastic / Sealant	White Non-Fibrous Homogeneous	100 Other	<0.25 Fibrous_Other	No Asbestos Detected
ACM-3 *042319893-0003*	Classroom 3 Above Windows - White Sealant	White Non-Fibrous Homogeneous	100 Other	None	No Asbestos Detected
ACM-4 *042319893-0004*	Classroom 3 Above Windows - Patch Sealant	White Non-Fibrous Homogeneous	100 Other	None	No Asbestos Detected

Analyst(s)

Michael Bocchicchio (3)
Michelle Quach (1)

Samantha Rundstrom, Laboratory Manager
or other approved signatory

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Samples analyzed by EMSL Analytical, Inc. Cinnaminson, NJ PA ID# 68-00367, NVLAP Lab Code 101048-0

Initial report from: 08/14/2023 08:51:04

EMSL Analytical, Inc.

200 Route 130, Cinnaminson, NJ, 08077
Telephone: 856-858-4800 Fax:856-786-5974
EMSL-CIN-01

EMSL Order ID: 012359529
LIMS Reference ID: AB59529
EMSL Customer ID: NORT69

August 04, 2023

Danielle Frick
Nortech Environmental & Engineer Cnslt. [NORT69]
2400 College Road
Fairbanks, AK 99709

The following analytical report covers the analysis performed on samples submitted to EMSL Analytical, Inc. on 7/28/2023. The results are tabulated on the attached pages for the following client designated project:

23-1058

The reference number for these samples is EMSL Order #: AB59529 . Please use this reference when calling about these samples. If you have any questions, please do not hesitate to contact the lab at 856-858-4800.

Owen McKenna Laboratory Manager or other approved signatory

Table of Contents

Cover Letter	1
Sample Condition on Receipt	3
Samples in Report	4
Positive Hits Summary	5
Sample Results	6
Quality Assurance Results	11
Certified Analyses	12
Certifications	12
Qualifiers, Definitions and Disclaimer	13
Chain of Custody PDF	14

EMSL Analytical, Inc.

200 Route 130, Cinnaminson, NJ, 08077
Telephone: 856-858-4800 Fax:856-786-5974
EMSL-CIN-01

EMSL Order ID: 012359529
LIMS Reference ID: AB59529
EMSL Customer ID: NORT69

Attention: Danielle Frick
Nortech Environmental & Engineer Cnslt. [NORT69]
2400 College Road
Fairbanks, AK 99709
(907) 687-1227
danielle.frick@nortechengr.com

Project Name: 23-1058
Customer PO:
EMSL Sales Rep: Stefan Wiersgalla
Received: 07/28/2023 09:30
Reported: 08/04/2023 13:35

Sample Condition on Receipt

Cooler ID: Default Cooler **Temperature: 21.7 °C**

Custody Seals	Y
Containers Intact	Y
COC/Labels Agree	Y
Preservation Confirmed	Y

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Telephone: 856-858-4800 Fax:856-786-5974
EMSL-CIN-01

EMSL Order ID: 012359529
LIMS Reference ID: AB59529
EMSL Customer ID: NORT69

Attention: Danielle Frick
Nortech Environmental & Engineer Cnslt. [NORT69]
2400 College Road
Fairbanks, AK 99709
(907) 687-1227
danielle.frick@nortechengr.com

Project Name: 23-1058
Customer PO:
EMSL Sales Rep: Stefan Wiersgalla
Received: 07/28/2023 09:30
Reported: 08/04/2023 13:35

Samples in this Report

Lab ID	Sample	Matrix	Date Sampled	Date Received
AB59529-01	C2-PCB-1	Solid	07/26/2023	07/28/2023
AB59529-02	BC-PCB-2	Solid	07/26/2023	07/28/2023
AB59529-03	BB-PCB-3	Solid	07/26/2023	07/28/2023
AB59529-04	JC-PCB-4	Solid	07/26/2023	07/28/2023
AB59529-05	JC-PCB-5	Solid	07/26/2023	07/28/2023

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Telephone: 856-858-4800 Fax:856-786-5974
EMSL-CIN-01

EMSL Order ID: 012359529
LIMS Reference ID: AB59529
EMSL Customer ID: NORT69

Attention: Danielle Frick
Nortech Environmental & Engineer Cnslt. [NORT69]
2400 College Road
Fairbanks, AK 99709
(907) 687-1227
danielle.frick@nortechengr.com

Project Name: 23-1058
Customer PO:
EMSL Sales Rep: Stefan Wiersgalla
Received: 07/28/2023 09:30
Reported: 08/04/2023 13:35

Positive Hits Summary

Lab ID	Client ID				Sampled
AB59529-01	C2-PCB-1				07/26/23 10:35
Method	Analyte	Result	Qualifier	Unit	Analyzed
SW 846-8082A	**Aroclor-1254**	**5.2**		**mg/kg**	**07/31/2023 13:40**
SW 846-8082A	**Aroclor-1262**	**0.85**		**mg/kg**	**07/31/2023 13:40**
Lab ID	**Client ID**				**Sampled**
AB59529-02	BC-PCB-2				07/26/23 11:30
Method	Analyte	Result	Qualifier	Unit	Analyzed
SW 846-8082A	**Aroclor-1254**	**3.3**		**mg/kg**	**07/31/2023 12:57**
SW 846-8082A	**Aroclor-1260**	**0.40**		**mg/kg**	**07/31/2023 12:57**
Lab ID	**Client ID**				**Sampled**
AB59529-03	BB-PCB-3				07/26/23 12:15
Method	Analyte	Result	Qualifier	Unit	Analyzed
SW 846-8082A	**Aroclor-1254**	**2.1**		**mg/kg**	**07/31/2023 14:01**
SW 846-8082A	**Aroclor-1262**	**0.33**		**mg/kg**	**07/31/2023 14:01**
Lab ID	**Client ID**				**Sampled**
AB59529-04	JC-PCB-4				07/26/23 12:20
Method	Analyte	Result	Qualifier	Unit	Analyzed
SW 846-8082A	**Aroclor-1254**	**2.1**		**mg/kg**	**07/31/2023 14:22**
SW 846-8082A	**Aroclor-1260**	**0.24**		**mg/kg**	**07/31/2023 14:22**
Lab ID	**Client ID**				**Sampled**
AB59529-05	JC-PCB-5				07/26/23 12:30
Method	Analyte	Result	Qualifier	Unit	Analyzed
SW 846-8082A	**Aroclor-1254**	**5.6**		**mg/kg**	**07/31/2023 14:43**
SW 846-8082A	**Aroclor-1260**	**1.2**		**mg/kg**	**07/31/2023 14:43**

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EMSL Analytical, Inc.

200 Route 130, Cinnaminson, NJ, 08077
Telephone: 856-858-4800 Fax:856-786-5974
EMSL-CIN-01

EMSL Order ID: 012359529
LIMS Reference ID: AB59529
EMSL Customer ID: NORT69

Attention: Danielle Frick
Nortech Environmental & Engineer Cnslt. [NORT69]
2400 College Road
Fairbanks, AK 99709
(907) 687-1227
danielle.frick@nortechengr.com

Project Name: 23-1058
Customer PO:
EMSL Sales Rep: Stefan Wiersgalla
Received: 07/28/2023 09:30
Reported: 08/04/2023 13:35

Sample Results

Sample: C2-PCB-1
AB59529-01 (Solid)

Analyte	Result	Q	DF	RL	Units	Prepared Date/Time	Analyzed Date/Time	Prep/Analyst Initials	Prep Method	Analytical Method
GC-SVOA										
Aroclor-1016	ND		1	0.24	mg/kg	07/28/23 11:27	07/31/23 13:40	MS/TL1	SW846 3546	SW 846-8082A
Aroclor-1221	ND		1	0.24	mg/kg	07/28/23 11:27	07/31/23 13:40	MS/TL1	SW846 3546	SW 846-8082A
Aroclor-1232	ND		1	0.24	mg/kg	07/28/23 11:27	07/31/23 13:40	MS/TL1	SW846 3546	SW 846-8082A
Aroclor-1242	ND		1	0.24	mg/kg	07/28/23 11:27	07/31/23 13:40	MS/TL1	SW846 3546	SW 846-8082A
Aroclor-1248	ND		1	0.24	mg/kg	07/28/23 11:27	07/31/23 13:40	MS/TL1	SW846 3546	SW 846-8082A
Aroclor-1254	**5.2**		1	0.24	mg/kg	07/28/23 11:27	07/31/23 13:40	MS/TL1	SW846 3546	SW 846-8082A
Aroclor-1260	ND		1	0.24	mg/kg	07/28/23 11:27	07/31/23 13:40	MS/TL1	SW846 3546	SW 846-8082A
Aroclor-1262	**0.85**		1	0.24	mg/kg	07/28/23 11:27	07/31/23 13:40	MS/TL1	SW846 3546	SW 846-8082A
Aroclor-1268	ND		1	0.24	mg/kg	07/28/23 11:27	07/31/23 13:40	MS/TL1	SW846 3546	SW 846-8082A
Surrogate(s)	**Recovery**	**Q**		**Limits**						
Surrogate: Tetrachloro-m-xylene	*61%*			*21-123*		07/28/23 11:27	07/31/23 13:40	MS/TL1	SW846 3546	*SW 846-8082A*
Surrogate: Decachlorobiphenyl	*90%*			*17-128*		07/28/23 11:27	07/31/23 13:40	MS/TL1	SW846 3546	*SW 846-8082A*

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Telephone: 856-858-4800 Fax:856-786-5974
EMSL-CIN-01

EMSL Order ID: 012359529
LIMS Reference ID: AB59529
EMSL Customer ID: NORT69

Attention: Danielle Frick
Nortech Environmental & Engineer Cnslt. [NORT69]
2400 College Road
Fairbanks, AK 99709
(907) 687-1227
danielle.frick@nortechengr.com

Project Name: 23-1058
Customer PO:
EMSL Sales Rep: Stefan Wiersgalla
Received: 07/28/2023 09:30
Reported: 08/04/2023 13:35

Sample Results
(Continued)

Sample: BC-PCB-2
AB59529-02 (Solid)

Analyte	Result	Q	DF	RL	Units	Prepared Date/Time	Analyzed Date/Time	Prep/Analyst Initials	Prep Method	Analytical Method
GC-SVOA										
Aroclor-1016	ND		1	0.24	mg/kg	07/28/23 11:27	07/31/23 12:57	MS/TL	SW846 3546	SW 846-8082A
Aroclor-1221	ND		1	0.24	mg/kg	07/28/23 11:27	07/31/23 12:57	MS/TL	SW846 3546	SW 846-8082A
Aroclor-1232	ND		1	0.24	mg/kg	07/28/23 11:27	07/31/23 12:57	MS/TL	SW846 3546	SW 846-8082A
Aroclor-1242	ND		1	0.24	mg/kg	07/28/23 11:27	07/31/23 12:57	MS/TL	SW846 3546	SW 846-8082A
Aroclor-1248	ND		1	0.24	mg/kg	07/28/23 11:27	07/31/23 12:57	MS/TL	SW846 3546	SW 846-8082A
Aroclor-1254	**3.3**		1	0.24	mg/kg	07/28/23 11:27	07/31/23 12:57	MS/TL	SW846 3546	SW 846-8082A
Aroclor-1260	**0.40**		1	0.24	mg/kg	07/28/23 11:27	07/31/23 12:57	MS/TL	SW846 3546	SW 846-8082A
Aroclor-1262	ND		1	0.24	mg/kg	07/28/23 11:27	07/31/23 12:57	MS/TL	SW846 3546	SW 846-8082A
Aroclor-1268	ND		1	0.24	mg/kg	07/28/23 11:27	07/31/23 12:57	MS/TL	SW846 3546	SW 846-8082A
Surrogate(s)	**Recovery**	**Q**		**Limits**						
Surrogate: Tetrachloro-m-xylene	*56%*			*21-123*		07/28/23 11:27	07/31/23 12:57	MS/TL	SW846 3546	*SW 846-8082A*
Surrogate: Decachlorobiphenyl	*59%*			*17-128*		07/28/23 11:27	07/31/23 12:57	MS/TL	SW846 3546	*SW 846-8082A*

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200 Route 130, Cinnaminson, NJ, 08077
Telephone: 856-858-4800 Fax:856-786-5974
EMSL-CIN-01

EMSL Order ID: 012359529
LIMS Reference ID: AB59529
EMSL Customer ID: NORT69

Attention: Danielle Frick
Nortech Environmental & Engineer Cnslt. [NORT69]
2400 College Road
Fairbanks, AK 99709
(907) 687-1227
danielle.frick@nortechengr.com

Project Name: 23-1058
Customer PO:
EMSL Sales Rep: Stefan Wiersgalla
Received: 07/28/2023 09:30
Reported: 08/04/2023 13:35

Sample Results
(Continued)

Sample: BB-PCB-3
AB59529-03 (Solid)

Analyte	Result	Q	DF	RL	Units	Prepared Date/Time	Analyzed Date/Time	Prep/Analyst Initials	Prep Method	Analytical Method
GC-SVOA										
Aroclor-1016	ND		1	0.24	mg/kg	07/28/23 11:27	07/31/23 14:01	MS/TL1	SW846 3546	SW 846-8082A
Aroclor-1221	ND		1	0.24	mg/kg	07/28/23 11:27	07/31/23 14:01	MS/TL1	SW846 3546	SW 846-8082A
Aroclor-1232	ND		1	0.24	mg/kg	07/28/23 11:27	07/31/23 14:01	MS/TL1	SW846 3546	SW 846-8082A
Aroclor-1242	ND		1	0.24	mg/kg	07/28/23 11:27	07/31/23 14:01	MS/TL1	SW846 3546	SW 846-8082A
Aroclor-1248	ND		1	0.24	mg/kg	07/28/23 11:27	07/31/23 14:01	MS/TL1	SW846 3546	SW 846-8082A
Aroclor-1254	**2.1**		1	0.24	mg/kg	07/28/23 11:27	07/31/23 14:01	MS/TL1	SW846 3546	SW 846-8082A
Aroclor-1260	ND		1	0.24	mg/kg	07/28/23 11:27	07/31/23 14:01	MS/TL1	SW846 3546	SW 846-8082A
Aroclor-1262	**0.33**		1	0.24	mg/kg	07/28/23 11:27	07/31/23 14:01	MS/TL1	SW846 3546	SW 846-8082A
Aroclor-1268	ND		1	0.24	mg/kg	07/28/23 11:27	07/31/23 14:01	MS/TL1	SW846 3546	SW 846-8082A

Surrogate(s)	Recovery	Q	Limits					
Surrogate: Tetrachloro-m-xylene	*54%*		*21-123*	07/28/23 11:27	07/31/23 14:01	MS/TL1	SW846 3546	*SW 846-8082A*
Surrogate: Decachlorobiphenyl	*56%*		*17-128*	07/28/23 11:27	07/31/23 14:01	MS/TL1	SW846 3546	*SW 846-8082A*

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EMSL Analytical, Inc.

200 Route 130, Cinnaminson, NJ, 08077
Telephone: 856-858-4800 Fax:856-786-5974
EMSL-CIN-01

EMSL Order ID: 012359529
LIMS Reference ID: AB59529
EMSL Customer ID: NORT69

Attention: Danielle Frick
Nortech Environmental & Engineer Cnslt. [NORT69]
2400 College Road
Fairbanks, AK 99709
(907) 687-1227
danielle.frick@nortechengr.com

Project Name: 23-1058
Customer PO:
EMSL Sales Rep: Stefan Wiersgalla
Received: 07/28/2023 09:30
Reported: 08/04/2023 13:35

Sample Results
(Continued)

Sample: JC-PCB-4
AB59529-04 (Solid)

Analyte	Result	Q	DF	RL	Units	Prepared Date/Time	Analyzed Date/Time	Prep/Analyst Initials	Prep Method	Analytical Method
GC-SVOA										
Aroclor-1016	ND		1	0.23	mg/kg	07/28/23 11:27	07/31/23 14:22	MS/TL1	SW846 3546	SW 846-8082A
Aroclor-1221	ND		1	0.23	mg/kg	07/28/23 11:27	07/31/23 14:22	MS/TL1	SW846 3546	SW 846-8082A
Aroclor-1232	ND		1	0.23	mg/kg	07/28/23 11:27	07/31/23 14:22	MS/TL1	SW846 3546	SW 846-8082A
Aroclor-1242	ND		1	0.23	mg/kg	07/28/23 11:27	07/31/23 14:22	MS/TL1	SW846 3546	SW 846-8082A
Aroclor-1248	ND		1	0.23	mg/kg	07/28/23 11:27	07/31/23 14:22	MS/TL1	SW846 3546	SW 846-8082A
Aroclor-1254	**2.1**		1	0.23	mg/kg	07/28/23 11:27	07/31/23 14:22	MS/TL1	SW846 3546	SW 846-8082A
Aroclor-1260	**0.24**		1	0.23	mg/kg	07/28/23 11:27	07/31/23 14:22	MS/TL1	SW846 3546	SW 846-8082A
Aroclor-1262	ND		1	0.23	mg/kg	07/28/23 11:27	07/31/23 14:22	MS/TL1	SW846 3546	SW 846-8082A
Aroclor-1268	ND		1	0.23	mg/kg	07/28/23 11:27	07/31/23 14:22	MS/TL1	SW846 3546	SW 846-8082A

Surrogate(s)	Recovery	Q	Limits					
Surrogate: Tetrachloro-m-xylene	*25%*		*21-123*	07/28/23 11:27	07/31/23 14:22	MS/TL1	SW846 3546	*SW 846-8082A*
Surrogate: Decachlorobiphenyl	*41%*		*17-128*	07/28/23 11:27	07/31/23 14:22	MS/TL1	SW846 3546	*SW 846-8082A*

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Project Name: 23-1058
Customer PO:
EMSL Sales Rep: Stefan Wiersgalla
Received: 07/28/2023 09:30
Reported: 08/04/2023 13:35

Sample Results
(Continued)

Sample: JC-PCB-5
AB59529-05 (Solid)

Analyte	Result	Q	DF	RL	Units	Prepared Date/Time	Analyzed Date/Time	Prep/Analyst Initials	Prep Method	Analytical Method
GC-SVOA										
Aroclor-1016	ND		1	0.23	mg/kg	07/28/23 11:27	07/31/23 14:43	MS/TL1	SW846 3546	SW 846-8082A
Aroclor-1221	ND		1	0.23	mg/kg	07/28/23 11:27	07/31/23 14:43	MS/TL1	SW846 3546	SW 846-8082A
Aroclor-1232	ND		1	0.23	mg/kg	07/28/23 11:27	07/31/23 14:43	MS/TL1	SW846 3546	SW 846-8082A
Aroclor-1242	ND		1	0.23	mg/kg	07/28/23 11:27	07/31/23 14:43	MS/TL1	SW846 3546	SW 846-8082A
Aroclor-1248	ND		1	0.23	mg/kg	07/28/23 11:27	07/31/23 14:43	MS/TL1	SW846 3546	SW 846-8082A
Aroclor-1254	**5.6**		1	0.23	mg/kg	07/28/23 11:27	07/31/23 14:43	MS/TL1	SW846 3546	SW 846-8082A
Aroclor-1260	**1.2**		1	0.23	mg/kg	07/28/23 11:27	07/31/23 14:43	MS/TL1	SW846 3546	SW 846-8082A
Aroclor-1262	ND		1	0.23	mg/kg	07/28/23 11:27	07/31/23 14:43	MS/TL1	SW846 3546	SW 846-8082A
Aroclor-1268	ND		1	0.23	mg/kg	07/28/23 11:27	07/31/23 14:43	MS/TL1	SW846 3546	SW 846-8082A

Surrogate(s)	Recovery	Q	Limits					
Surrogate: Tetrachloro-m-xylene	*47%*		*21-123*	07/28/23 11:27	07/31/23 14:43	MS/TL1	SW846 3546	*SW 846-8082A*
Surrogate: Decachlorobiphenyl	*55%*		*17-128*	07/28/23 11:27	07/31/23 14:43	MS/TL1	SW846 3546	*SW 846-8082A*

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EMSL-CIN-01

EMSL Order ID: 012359529
LIMS Reference ID: AB59529
EMSL Customer ID: NORT69

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Project Name: 23-1058
Customer PO:
EMSL Sales Rep: Stefan Wiersgalla
Received: 07/28/2023 09:30
Reported: 08/04/2023 13:35

Quality Control

GC-SVOA

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch: BBG0552 - SW846 3546										
Blank (BBG0552-BLK1)					Prepared: 7/28/2023 Analyzed: 7/31/2023					
Aroclor-1016	ND		0.25	mg/kg						
Aroclor-1221	ND		0.25	mg/kg						
Aroclor-1232	ND		0.25	mg/kg						
Aroclor-1242	ND		0.25	mg/kg						
Aroclor-1248	ND		0.25	mg/kg						
Aroclor-1254	ND		0.25	mg/kg						
Aroclor-1260	ND		0.25	mg/kg						
Aroclor-1262	ND		0.25	mg/kg						
Aroclor-1268	ND		0.25	mg/kg						
Surrogate(s)										
Surrogate: Tetrachloro-m-xylene					*0.5000*		*63*	*21-123*		
Surrogate: Decachlorobiphenyl					*0.5000*		*71*	*17-128*		
LCS (BBG0552-BS1)					Prepared: 7/28/2023 Analyzed: 7/31/2023					
Aroclor-1016	2.86		0.25	mg/kg	5.000		57	37-120		
Aroclor-1260	3.14		0.25	mg/kg	5.000		63	45-121		
Surrogate(s)										
Surrogate: Tetrachloro-m-xylene					*0.5000*		*57*	*21-123*		
Surrogate: Decachlorobiphenyl					*0.5000*		*66*	*17-128*		
Matrix Spike (BBG0552-MS1)		**Source: AB59529-02**			Prepared: 7/28/2023 Analyzed: 7/31/2023					
Aroclor-1016	2.66		0.24	mg/kg	4.878	ND	54	30-133		
Aroclor-1260	3.01		0.24	mg/kg	4.878	0.384	54	30-134		
Surrogate(s)										
Surrogate: Tetrachloro-m-xylene					*0.4878*		*50*	*21-123*		
Surrogate: Decachlorobiphenyl					*0.4878*		*54*	*17-128*		
Matrix Spike Dup (BBG0552-MSD1)		**Source: AB59529-02**			Prepared: 7/28/2023 Analyzed: 7/31/2023					
Aroclor-1016	3.37		0.23	mg/kg	4.651	ND	73	30-133	24	28
Aroclor-1260	3.71		0.23	mg/kg	4.651	0.384	72	30-134	21	28
Surrogate(s)										
Surrogate: Tetrachloro-m-xylene					*0.4651*		*63*	*21-123*		
Surrogate: Decachlorobiphenyl					*0.4651*		*67*	*17-128*		

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danielle.frick@nortechengr.com

Project Name: 23-1058
Customer PO:
EMSL Sales Rep: Stefan Wiersgalla
Received: 07/28/2023 09:30
Reported: 08/04/2023 13:35

Certified Analyses included in this Report

Analyte	CAS #	Certifications
SW 846-8082A in Solid		
Aroclor-1016	12674-11-2	NJDEP,NYSDOH,PADEP,California ELAP
Aroclor-1221	11104-28-2	NJDEP,NYSDOH,PADEP,California ELAP
Aroclor-1232	11141-16-5	NJDEP,NYSDOH,PADEP,California ELAP
Aroclor-1242	53469-21-9	NJDEP,NYSDOH,PADEP,California ELAP
Aroclor-1248	12672-29-6	NJDEP,NYSDOH,PADEP,California ELAP
Aroclor-1254 [2C]	11097-69-1	NJDEP,NYSDOH,PADEP,California ELAP
Aroclor-1260	11096-82-5	NJDEP,NYSDOH,PADEP,California ELAP
Aroclor-1260 [2C]	11096-82-5	NJDEP,NYSDOH,PADEP,California ELAP
Aroclor-1262	37324-23-5	NJDEP,NYSDOH,PADEP
Aroclor-1262 [2C]	37324-23-5	NJDEP,NYSDOH,PADEP
Aroclor-1268	11100-14-4	NJDEP,NYSDOH,PADEP

List of Certifications

Code	Description	Number	Expires
MADEP	Massachusetts Department of Environmental Protection	M-NJ337	06/30/2023
California ELAP	California Water Boards	1877	06/30/2024
A2LA	A2LA Enivronmental Certificate	2845.01	07/31/2024
AIHA LAP	EMSL Analytical, Inc. Cinnaminson, NJ AIHA-LAP, LLC-ELLAP Accredited	100194	01/01/2025
NJDEP	New Jersey Department of Environmental Protection	03036	06/30/2023
PADEP	Pennsylvania Department of Environmental Protection	68-00367	11/30/2023
NYSDOH	New York State Department of Health	10872	04/01/2024
CTDPH	Connecticut Department of Public Health	PH-0270	06/23/2023

Please see the specific Field of Testing (FOT) on www.emsl.com <http://www.emsl.com> for a complete listing of parameters for which EMSL is certified.

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danielle.frick@nortechengr.com

Project Name: 23-1058
Customer PO:
EMSL Sales Rep: Stefan Wiersgalla
Received: 07/28/2023 09:30
Reported: 08/04/2023 13:35

Notes and Definitions

Item	Definition
[2C]	Reported from the second channel in dual column analysis.
DF	Dilution Factor
MDL	Method Detection Limit.
ND	Analyte was NOT DETECTED at or above the detection limit.
Q	Qualifier
RL	Reporting Limit
%REC	Percent Recovery
RPD	Relative Percent Difference
Source	Sample that was matrix spiked or duplicated

Measurement of uncertainty and any applicable definitions of method modifications are available upon request. Per EPA NLLAP policy, sample results are not blank corrected.

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Environmental Chemistry Chain of Custody

EMSL ANALYTICAL, INC.
LABORATORY • PRODUCTS • TRAINING

EMSL Order Number / Lab Use Only: AB59529

200 Route
Cinnaminson, NJ 08077
PHONE: 1-800-220-3675
EMAIL: c@emsl.com

Customer Information

Customer ID:	
Company Name:	Nortech
Contact Name:	Danielle Frick
Street Address:	2400 College Rd
City, State, Zip:	Fairbanks AK 99709
Country:	US
Phone:	9074525688
Email(s) for Report:	danielle.frick@nortechengr.com

Billing Information

Billing ID:	
Company Name:	Nortech Environmental & Engineer Cnslt.
Billing Contact:	Danielle Frick
Street Address:	2400 College Road
City, State, Zip:	Fairbanks AK 99709
Country:	US
Phone:	907-452-5688
Email(s) for Invoice:	

Project Name/No: 23-1058
Purchase Order:

EMSL LIMS Project ID: (If applicable, EMSL will provide)
US State where samples collected: AK
State of Connecticut (CT) must select project location: ☐ Commercial (Taxable) ☐ Residential (Non-Taxable)

Samples for Compliance? ☑ Yes ☐ No
If Yes, for NPDES? ☐ Yes ☑ No
Other (Specify)
PWS ID:
State Reporting Required? ☐ Yes ☑ No

Samples Collected by (Check One): ☐ EMSL ☑ CLIENT
Samples Received Chilled? ☐ Yes ☑ No
Sample(s) Temperature Upon Receipt (LAB ONLY)

Sampled By Name: Danielle Frick
Sampled By Signature:
No. of Samples in Shipment: 5

Turn-Around-Time (TAT) Standard Turn-Around-Time: ☐ 2 Weeks
The following TAT's are subject to Lab approval. Call lab to confirm TAT before submittal: ☑ 1 Week ☐ 4 Days ☐ 3 Days ☐ 2 Days ☐ 1 Day

	Client Sample ID	Comp	Grab	Date / Time Collected	Matrix (W=Water S=Soil A=Air SL=Sludge O=Other)	Preservative (1 HCL 2 HNO3 3 H2SO4 4 ICE 5 Other — Describe below in Special Instructions)	Test 1: 3540C/3546//8082A	Test 2:	Test 3:	Test 4:	Test 5:	Test 6:	Test 7:	Test 8:	Comments
1	C2-PCB-1	☐	☐	7/26/23 1035	Paint		☑	☐	☐	☐	☐	☐	☐	☐	white/ yellow/ gray
2	BC-PCB-2	☐	☐	7/26/23 1130	Paint		☑	☐	☐	☐	☐	☐	☐	☐	tan/ green/ blue
3	BB-PCB-3	☐	☐	7/26/23 1215	Paint		☑	☐	☐	☐	☐	☐	☐	☐	white/ blue
4	JC-PCB-4	☐	☐	7/26/23 1220	Paint		☑	☐	☐	☐	☐	☐	☐	☐	orange/ green

Special Instructions and/or Regulatory Requirements (Sample Specifications, Processing Methods, Limits of Detection, etc.)

Reporting Requirements: ☑ Results Only ☐ Results and QC ☐ Reduced Deliverables ☐ Hzresults EDD ☐ Excel ☐ Other (Describe Above)

Method of Shipment: Fed Ex
Sample Condition Upon Receipt:

Relinquished by:	Danielle Frick	Date/Time: 7/27/23 0900	Received by:
Relinquished by:		Date/Time:	Received by:

Date/Time
Date/Time: 7/28/23 9:30am

21.7°C Rec'd in Plastic

☐ AGREE TO ELECTRONIC SIGNATURE (By checking, I consent to signing this Chain of Custody document by electronic signature.)

EMSL ANALYTICAL, INC.
LABORATORY • PRODUCTS • TRAINING

Environmental Chemistry Chain of Custody

EMSL Order Number / Lab Use Only

AB59529

EMSL Al
200 Route 130 North
Cinnaminson, NJ 08077
PHONE: 1-800-220-3675
EMAIL: c@emsl.com

Additional Pages of the Chain of Custody are only necessary if needed for additional sample information

Special Instructions and/or Regulatory Requirements (Sample Specifications, Processing Methods, Limits of Detection, etc.)

Client Sample ID	Comp	Grab	Date / Time Collected	Matrix (W=Water, S=Soil, A=Air, SL=Sludge, O=Other)	Preservative (1 HCL, 2 HNO3, 3 H2SO4, 4 ICE, 5 Other — Describe in Special Instructions)	List Test(s) Needed (*Write in test below, then check on sample line:*) Test 1: 3540C/3546//8082A	Test 2:	Test 3:	Test 4:	Test 5:	Test 6:	Test 7:	Test 8:	Comments
5 JC-PCB-5	☐	☐	7/26/23 1230	Paint		☑	☐	☐	☐	☐	☐	☐	☐	white/ green
	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	
	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	
	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	
	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	
	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	
	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	
	☐	☐				☑	☐	☐	☐	☐	☐	☐	☐	

Method of Shipment: FedEx

Sample Condition Upon Receipt:

Relinquished by:	Date/Time:	Received by:	Date/Time
Danielle Frick	7/27/23 0900		

Controlled Document - COC-07 Chemistry R11 02/26/2021

☐ AGREE TO ELECTRONIC SIGNATURE (By checking, I consent to signing this Chain of Custody document by electronic signature.)

EMSL Analytical, Inc.'s Laboratory Terms and Conditions are incorporated into this Chain of Custody by reference in their entirety. Submission of samples to EMSL Analytical, Inc. constitutes acceptance and acknowledgment of all terms and conditions by Customer.

EMSL Analytical, Inc.

200 Route 130 North Cinnaminson, NJ 08077
Phone/Fax: (800) 220-3675 / (856) 786-5974
http://www.EMSL.com / cinnasblab@EMSL.com

EMSL Order ID: 042318539
Customer ID: NORT69
Customer PO:
Project ID:

Attn: Janine Way
Nortech Environmental & Engineer Cnslt.
2400 College Road
Fairbanks, AK 99709

Phone: (907) 452-5688
Fax: (907) 452-5694
Collected:
Received: 7/28/2023
Analyzed: 8/07/2023

Proj: CIty Hall / 23-1058

Summary Test Report for Asbestos Analysis of Bulk Material

Client Sample ID: C3A-BA-1 ***Lab Sample ID:*** **042318539-0001**
Sample Description: Classroom 3A/Brown Cove Base

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	8/04/2023	Brown	0.0%	100%	None Detected	

Client Sample ID: C3A-BA-2 ***Lab Sample ID:*** **042318539-0002**
Sample Description: Classroom 3A/2'x4' Ceiling Tiles Type 1

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	8/05/2023	Gray/White	80.0%	20.0%	None Detected	

Client Sample ID: C3A-BA-3 ***Lab Sample ID:*** **042318539-0003**
Sample Description: Classroom 3A/2'x4' Ceiling Tiles Type 2

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	8/05/2023	Gray/White	80.0%	20.0%	None Detected	

Client Sample ID: C3D-BA-4 ***Lab Sample ID:*** **042318539-0004**
Sample Description: Classroom 3D/2'x4' Ceiling Tiles Type 3

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	8/05/2023	Gray/White	80.0%	20.0%	None Detected	

Client Sample ID: C3B-BA-5-Insulation ***Lab Sample ID:*** **042318539-0005**
Sample Description: Classroom 3B/TSI Piping with Insulation Jacket

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	8/05/2023	Yellow	95.0%	5.0%	None Detected	

Client Sample ID: C3B-BA-5-Mastic ***Lab Sample ID:*** **042318539-0005A**
Sample Description: Classroom 3B/Mastic

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	8/04/2023	White/Silver/Yellow	8.4%	91.6%	None Detected	

Client Sample ID: C3B-BA-6-Floor Tile ***Lab Sample ID:*** **042318539-0006**
Sample Description: Classroom 3B/Floor Tile

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	8/04/2023	Gray	0.0%	94.5%	**5.5% Chrysotile**	

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http://www.EMSL.com / cinnasblab@EMSL.com

EMSL Order ID: 042318539
Customer ID: NORT69
Customer PO:
Project ID:

Summary Test Report for Asbestos Analysis of Bulk Material

Client Sample ID: C3B-BA-6-Mastic ***Lab Sample ID:*** **042318539-0006A**

Sample Description: Classroom 3B/Black Mastic

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	8/04/2023	Black	0.0%	94.3%	**2.3% Amosite**	
					3.4% Chrysotile	

Client Sample ID: C3C-BA-7-Carpet ***Lab Sample ID:*** **042318539-0007**

Sample Description: Classroom 3C/Brown Carpet

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	8/05/2023	Brown	85.0%	15.0%	None Detected	

Client Sample ID: C3C-BA-7-Mastic ***Lab Sample ID:*** **042318539-0007A**

Sample Description: Classroom 3C/Mastic

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	8/04/2023	Yellow	0.0%	100%	None Detected	

Client Sample ID: C3D-BA-8-Floor Tile ***Lab Sample ID:*** **042318539-0008**

Sample Description: Classroom 3D/Floor Tile

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	8/04/2023	Gray	0.0%	94.2%	**5.8% Chrysotile**	

Client Sample ID: C3D-BA-8-Mastic ***Lab Sample ID:*** **042318539-0008A**

Sample Description: Classroom 3D/Black Mastic

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
400 PLM PtCt Grav. Red.	8/04/2023	Black	0.0%	100%	**<0.25% Chrysotile**	

Client Sample ID: C3A-BA-9 ***Lab Sample ID:*** **042318539-0009**

Sample Description: Classroom 3A/White Paint

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	8/04/2023	White/Black	0.0%	100%	None Detected	

SAMPLE RESULT INVALIDATED THROUGH RESAMPLING

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Summary Test Report for Asbestos Analysis of Bulk Material

Client Sample ID: C2-BA-11 ***Lab Sample ID:*** **042318539-0011**

Sample Description: Classroom 2/White Ceiling Tile (1'x1)

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	8/06/2023	Brown/White	95.0%	5.0%	None Detected	

Client Sample ID: C2-BA-12-Floor Tile ***Lab Sample ID:*** **042318539-0012**

Sample Description: Classroom 2/Floor Tile

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	8/04/2023	Gray	0.0%	93.4%	**6.6% Chrysotile**	

Client Sample ID: C2-BA-12-Mastic ***Lab Sample ID:*** **042318539-0012A**

Sample Description: Classroom 2/Mastic

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
400 PLM PtCt Grav. Red.	8/04/2023	Black	0.0%	100%	**<0.25% Chrysotile**	

Client Sample ID: C2-BA-13 ***Lab Sample ID:*** **042318539-0013**

Sample Description: Classroom 2/Black Caulk

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	8/04/2023	White/Black	0.0%	100%	None Detected	

Client Sample ID: C2-BA-14-Carpet ***Lab Sample ID:*** **042318539-0014**

Sample Description: Classroom 2/Orange Carpet

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	8/05/2023	Orange	85.0%	15.0%	None Detected	

Client Sample ID: C2-BA-14-Mastic ***Lab Sample ID:*** **042318539-0014A**

Sample Description: Classroom 2/Yellow Mastic

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	8/06/2023	Yellow	0.0%	100%	None Detected	

Client Sample ID: C2-BA-15-Insulation ***Lab Sample ID:*** **042318539-0015**

Sample Description: Classroom 2/TSI Piping with Insulation Jacket

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	8/05/2023	Yellow	95.0%	5.0%	None Detected	

Client Sample ID: C2-BA-15-Mastic ***Lab Sample ID:*** **042318539-0015A**

Sample Description: Classroom 2/Mastic

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	8/06/2023	White/Silver/Yellow	6.2%	93.8%	None Detected	

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Summary Test Report for Asbestos Analysis of Bulk Material

Client Sample ID: C1-BA-16 ***Lab Sample ID:*** **042318539-0016**
Sample Description: Classroom 1/Ceiling Tile (1'x1')

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	8/05/2023	Brown/White	90.0%	10.0%	None Detected	

Client Sample ID: C1-BA-17-Insulation ***Lab Sample ID:*** **042318539-0017**
Sample Description: Classroom 1/TSI Piping with Insulation Jacket

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	8/06/2023	White/Yellow	95.0%	5.0%	None Detected	Result includes a small amount of inseparable attached material

Client Sample ID: C1-BA-17-Mastic ***Lab Sample ID:*** **042318539-0017A**
Sample Description: Classroom 1/Mastic

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	8/06/2023	White/Silver/Yellow	8.7%	91.3%	None Detected	

Client Sample ID: C1-BA-18-Floor Tile ***Lab Sample ID:*** **042318539-0018**
Sample Description: Classroom 1/Floor Tile

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	8/06/2023	Gray	0.0%	92.8%	**7.2% Chrysotile**	

Client Sample ID: C1-BA-18-Mastic 1 ***Lab Sample ID:*** **042318539-0018A**
Sample Description: Classroom 1/Mastic

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	8/06/2023	Black	0.0%	100%	None Detected	

Client Sample ID: C1-BA-18-Mastic 2 ***Lab Sample ID:*** **042318539-0018B**
Sample Description: Classroom 1/Floor Tile

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	8/06/2023	Yellow	0.0%	100%	None Detected	

Client Sample ID: C1-BA-19 ***Lab Sample ID:*** **042318539-0019**
Sample Description: Classroom 1/Uncovered Floor Mastic

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	8/06/2023	Black/Yellow	0.90%	99.1%	None Detected	

Client Sample ID: C1-BA-20-GWB ***Lab Sample ID:*** **042318539-0020**
Sample Description: Classroom 1/GWB

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	8/06/2023				Layer Not Present	

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Summary Test Report for Asbestos Analysis of Bulk Material

Client Sample ID: C1-BA-20-Joint Compound **Lab Sample ID:** **042318539-0020A**
Sample Description: Classroom 1/J.C

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	8/06/2023	Tan/White	0.0%	100.0%	None Detected	Inseparable paint / coating layer included in analysis

Client Sample ID: C1-BA-20-Caulking **Lab Sample ID:** **042318539-0020B**
Sample Description: Classroom 1/Caulking

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	8/06/2023	White	0.0%	100%	None Detected	

Client Sample ID: C1-BA-21 **Lab Sample ID:** **042318539-0021**
Sample Description: Classroom 1/Wall Textured J.C

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	8/06/2023	White	0.0%	100.0%	None Detected	

Client Sample ID: C1-BA-22 **Lab Sample ID:** **042318539-0022**
Sample Description: Classroom 1/Wall Textured J.C

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	8/07/2023	White	0.0%	100.0%	None Detected	

Client Sample ID: BC-BA-23 **Lab Sample ID:** **042318539-0023**
Sample Description: Bathroom C/Friable TSI Pipe Insulation

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	8/06/2023	White/Green	40.0%	22.0%	**30% Amosite**	Inseparable paint / coating layer included in analysis
					8% Chrysotile	Inseparable paint / coating layer included in analysis

Client Sample ID: BB-BA-24 **Lab Sample ID:** **042318539-0024**
Sample Description: Bathroom B/Friable TSI Pipe Insulation

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	8/06/2023	Brown/Gray/Tan	20.0%	30.0%	**50% Chrysotile**	

Client Sample ID: BB-BA-25 **Lab Sample ID:** **042318539-0025**
Sample Description: Bathroom B/Friable TSI Pipe Insulation

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	8/07/2023	White	0.0%	60.0%	**30% Amosite**	
					10% Chrysotile	

Client Sample ID: C1-BA-26 **Lab Sample ID:** **042318539-0026**
Sample Description: Classroom 1/Stucco Walls

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	8/06/2023	Gray/White	0.0%	100.0%	None Detected	Result includes a small amount of inseparable attached material

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Summary Test Report for Asbestos Analysis of Bulk Material

Client Sample ID: BB-BA-27-Cove Base ***Lab Sample ID:*** **042318539-0027**
Sample Description: Bathroom B/Cove Base

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	8/06/2023	Beige	0.0%	100%	None Detected	

Client Sample ID: BB-BA-27-Mastic ***Lab Sample ID:*** **042318539-0027A**
Sample Description: Bathroom B/Mastic

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	8/06/2023	Yellow	0.0%	100%	None Detected	

Client Sample ID: HW-BA-28 ***Lab Sample ID:*** **042318539-0028**
Sample Description: Hallway/Surface Texture

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	8/06/2023	White	0.0%	100.0%	None Detected	

Analyst(s):

Gregory Barry	400 PLM PtCt Grav. Red (2) PLM Grav. Reduction (9)
Keishla Vazquez Caraballo	PLM (10)
Michael Bocchicchio	PLM (8) PLM Grav. Reduction (10)
Michelle Quach	PLM (2)

Reviewed and approved by:

Samantha Rundstrom, Laboratory Manager
or Other Approved Signatory

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Samples analyzed by EMSL Analytical, Inc. Cinnaminson, NJ PA ID# 68-00367, NVLAP Lab Code 101048-0

Initial report from: 08/07/202309:53:25

CITY OF FAIRBANKS
RFP-24-03 CITY HALL HEATING UPGRADE

APPENDIX "D"

CITY HALL REFERENCE PROJECTS:

- City Hall Mech & Elec Report 2005 ASCG Inc_FB-05-09 (November 2005)
- Aurora Energy Rate Change & COF Savings (May 2023)
- RCA_Aurora Energy Rate Change Email (May 2023)
- RCA_ Aurora Energy_Tarriff Sheet No 35 (May 2023)
- RCA_ Aurora Energy_Tarriff Sheet No 36 (June 2023)
- Rate Change Email (June 2023)
- Existing Building Code Reference Email (October 2023)

CITY HALL MECHANICAL AND ELECTRICAL UPGRADE DESIGN

CITY OF FAIRBANKS

ENGINEERING DIVISION, PUBLIC WORKS DEPARTMENT
PROJECT NO: FB-05-09

ASCG, Inc
November 30, 2005

CONTENTS

SUMMARY

Introduction 1
Summary of Recommendations 1
Mechanical
Heating System 1
Ventilation Systems 2
Air Conditioning/Climate Control 2
Fire Protection 3
Electrical
Improve Electrical Service and Main Distribution 4
Replace Panelboards 4
Lighting Upgrade 5
Provide New Fire Alarm System 6

BUILDING SURVEY

Mechanical
Background 7
Existing Systems 7
Heating Systems 7
Ventilation 8
Fire Protection 10
Plumbing 10
Discussion of Climate Control Options 10
Interim Projects 12
Electrical
Electrical Service Entrance 12
Load Analysis 14
Electrical Distribution 14
Branch Panelboards 15
Lighting 17
Fire Alarm System 18

APPENDIX

Tables 21
Photos 22
Cost Estimates
Drawings

SUMMARY

SUMMARY

Introduction

ASCG investigated the mechanical and electrical systems in the Fairbanks City Hall building on October 5, 2005. The quality, service capacity, maintainability, obsolescence, code deficiencies, and unusual or unsafe conditions of all equipment were noted. Peak district heat and electrical demand were obtained from the utility companies to determine whether service connections and equipment were of adequate size.

The mechanical systems investigation included the heating, ventilation, fire protection and plumbing. The electrical systems inspected included fire alarm, electrical service, main distribution, branch panelboards, branch circuits, general lighting, emergency lighting and exit signs.

This report lists observations, notes deficiencies, and recommends improvements by introducing several projects to upgrade systems. The Summary (first section of the report) includes a synopsis of recommended projects with costs to improve mechanical and electrical systems. The Building Survey (second section) describes systems and observed conditions. The Appendix (final section) contains supportive material including tabular information, calculations, cost estimates for recommended projects, and drawings. Cost estimates have been projected for construction year 2007 and include estimated design fees.

Summary of Recommendations

Mechanical

Heating System:

Estimated project cost to convert to hydronic heat-only system: $2,054,000

- Convert steam system to hydronic. Install steam to hot water heat exchanger in boiler room, route hydronic mains (6" approx) around building perimeter in basement. Install hydronic pump (approx 600 gpm), expansion tank, and associated trim.
- Demolish existing steam and condensate piping when conversion is complete.
- If air conditioning is not installed, replace steam radiators with convectors sized to compensate for the 40% loss of capacity when converting to a hot water system. See discussion of air condition under Climate Control Options.

Sequence of Work

A parallel system of heating mains can be installed without affecting the existing system. Terminal units can be replaced on a room by room basis while the building is occupied, preferably in the summer.

Ventilation Systems:

Estimated cost: $454,000

- Put all air handling units on time clocks and sequence occupied/unoccupied modes of operation.
- Recalibrate pneumatic controls for AHU-1 or upgrade to electronic.
- The AHU-1 fan room is used as a return plenum, remove all combustibles or connect the return duct to the unit.
- Install duct smoke detectors on AHU-1 and AHU-2.
- Refurbish AHU-1 and AHU-2 including cleaning and replacing bearings, belts, and motors with premium efficiency models.
- Replace steam coils with hydronic coils on AHU-1 and AHU-2. Install cooling coils for tempering ventilation air.
- Replace AHU-3 with unit sized for area served. Include cooling coil and remote condenser. Install ducted return/relief ductwork in attic space, and replace flexible supply duct with rigid ductwork.
- Rebalance AHU-1, AHU-2, and AHU-3 ductwork. Verify balance on AHU-4.
- Provide mechanical ventilation to the transformer vault. Install supply and exhaust ducts to the building exterior with a fan controlled by a thermostat.

Sequence of Work

Most projects recommended are minimally disruptive and can be performed while the building is occupied. Installing coils and replacing AHU-3 ductwork could be performed on extended weekends with proper preparation. Use of operable windows will meet code requirements for exterior rooms.

Air Conditioning/Climate Control:

Estimated cost for 4-pipe fan coil system w/ chiller: $2,663,000

Estimated cost for heat pump system w/ drycooler: $2,445,000

- The peak cooling load of the entire building is approximately 90 tons (1,000,000 btuh). Existing airflow is not adequate to provide air conditioning if cooling coils are installed in the air handlers or ductwork. See discussion in Climate Control Options for merits of specific projects. The fan coil and heat pump systems provide both heating and cooling.
- Replace radiators and convectors in exterior rooms with fan coil units (4-pipe system) OR water source heat pumps (2-pipe system)
- Install heat rejection equipment: dry cooler, chiller, or groundwater source.
- Install cooling mains for 4-pipe system.

Sequence of Work

The mains and cooling equipment can be installed without disruption to the existing system while the building is occupied. Terminal units can be connected room by room, preferably during the summer.

Fire Protection

- Remove metal foil from sprinkler heads.
- Remove combustibles in concealed spaced created by lowering ceilings.

Plumbing

- Repair/replace freeze damaged rain leader piping to storm drain and reconnect roof drainage system to storm drain.
- For groundwater cooling source, obtain permits, drill well, and connect discharge to storm drain system.
- Remove copper piping with lead solder joints.
- Install modern fixtures complying with current water conservation requirements.
- Remove plumbing piping from transformer vault and reroute as required.

Sequence of Work

Install the water heater in parallel with the existing unit, and decommission it with the rest of the steam system. The three bathroom stack groups can be renovated one stack at a time.

Electrical

Improve Electrical Service and Main Distribution

Estimated Cost of Improvements - $121,000

Recommended Improvements (See Sheets E-4 and E-5)

- Remove the abandoned generator system including generator set, transfer switches, and standby power panelboard.
- Install a new 600 ampere main distribution panel (MDP) section, equipped with 600 ampere main circuit breaker, in the generator room. Feeder circuit breakers in the new MDP section replace all of the main disconnect switches in the transformer vault.
- Provide a new 600 ampere rated feeder from the transformer secondary terminals, through the GVEA current transformer cabinet to the new MDP section.
- Reconnect feeder to existing MDP sections 1 and 2 from a 400 ampere, 3-pole circuit breaker in new MDP section.
- Reconnect all of the feeder circuits that originate in the vault to feeder circuit breakers in the new MDP section.
- Remove all disconnect switches in the vault.
- Reconnect branch circuits and QO circuit breakers from the MDP subsections and branch panelboard in the vault and reconnect branch circuits to circuit breakers in a new branch panelboard located in the generator room.
- Provide a new ventilation system to control the temperature in the transformer vault.
- Reroute the PVC drain line and other plumbing so piping no longer passes through the vault.

Sequence of Work

After removing the generator and associated equipment, the new MDP section and branch panelboard would be installed and interconnected. After this installation, the changeover, which requires a building wide power outage, can be accomplished in a single evening with minor disruption of business.

Replace Panelboards, Feeders, Old Branch Circuit Conductors and Provide Additional Receptacles Where Needed

Cost Estimate of Panelboard and Branch Circuit Improvements - $333,000

Recommended Improvements

- Replace panelboards BFL/B, BFL/C, CAF/C, 2/A and 2/E with panelboards with additional pole spaces.
- Replace feeders to these panelboards.
- Mount new panel 2/A on the opposite side of the wall from its existing location (facing into the larger room) to provide code required working space.
- Trace branch circuits and revise panel schedules.
- Replace branch circuit conductors that have tar-impregnated fabric or rubber type insulation.
- Inspect all receptacles and install bonding jumpers at all locations.
- Add new branch circuits and receptacles where needed.

Sequence of Work

Each panel could be replaced individually. Outage on each panel would require approximately one day of work during which time power would be out to all circuits originating from the panel. After installation of each new panel, other work including tracing circuits, replacing branch circuit conductors, receptacles, and installing bonding jumpers could be accomplished with only minor disruption to normal business.

Lighting Upgrade – Replace Fluorescent Fixtures, Exit Signs, Emergency Lights

Estimated Cost of Lighting Upgrade – $1,124,000

Recommended Improvements

- Replace all lighting fixtures, except in the youth program area (gymnasium and adjacent auditorium) with, fluorescent fixtures with T-5 high output lamps and energy efficient electronic ballasts.
- Provide multi-level lighting with additional light switches in administrative and assembly areas so that reduced lighting levels can be selected to save energy.
- Replace exit signs except those that have been recently installed.
- Add additional exit signs where required.
- Provide emergency lighting by furnishing selected fluorescent lighting fixtures in egress routes with emergency battery ballasts.

- Provide additional wall mounted emergency light fixtures where required in non-public areas and utility rooms.

Sequence of Work

Replacement of lighting would be conducted room-by-room and would require coordination with occupants and activities in each area. The proposed work would require patching and repair of finishes or installation using surface raceway. Disruption to business may be minimized by use of temporary lighting and temporary relocation of staff. Adding and replacing exit signs would primarily occur in hallways and for the most part could proceed during the working day with minimal disruption.

Provide a New Manual Fire Alarm System with Code Required Automatic Detection

Estimated Cost - $364,000

Recommended Improvements

- Replace the fire alarm system in its entirety.
- Provide a manual fire alarm system with automatic detectors in elevator lobbies, elevator machine room, air supply ducts where required, and at the fire alarm control panel.
- Replace fire alarm interface modules at sprinkler flow switches, valve tamper switches, elevator shunt trip, and to shut down air handlers where required.
- Remove all interior fire bells and provide horn-strobe notification appliances throughout the building interior and at several exterior locations.
- Provide a fire alarm annunciator panel inside the main entrance or an alternative location as coordinated with the Fire Chief.

Sequence of Work

The replacement of the fire alarm system would require new conduit runs for the most part although it may be possible to utilize existing conduits to a limited extent. New conduit runs could be run exposed in the ground floor level to serve devices in the first floor, and in the attic space above the second floor ceiling to serve devices in the second floor. Routing main conduits in non-public areas would minimize disruption to normal business in the first and second floors.

BUILDING SURVEY

BUILDING SURVEY

Mechanical

Background

The facility was constructed in three phases. The west end and gymnasium were constructed in 1932. By 1936 the three levels of classrooms were completed on the south side of the gym. In 1948 the North Wing (slightly askew) was built. The building originally served as a K-12 school designed for seasonal use. While some features allow for natural cooling in the shoulder season, it was not designed to maintain a comfortable indoor environment during the summer.

The heating system was conventional for its era. Two coal-fired steam boilers located in the basement were the original source of heat. A two pipe system distributed heat throughout the building from mains routed in the basement. The steam piping was routed at the ceiling, while the gravity condensate return was routed in a trench below the basement floor. Cast iron radiators were located below exterior windows with steam and condensate risers located between every other window.

Ventilation was provided by central air handlers. The first two phases were served by AHU-1 located in the basement. In addition to operable windows, AHU-1 provides fresh air to the classrooms. Bathrooms were ventilated by a central exhaust fan. Three shafts connect the floors and allow air relief through the roof. Manual dampers originally controlled the airflow. The gymnasium was ventilated by unit heaters drawing part of the air from the outside and recirculating the balance. Interior hallways had no direct ventilation, and relied on air migrating from the classrooms to the bathrooms and back to AHU-1. AHU-2, located on the top floor, serves the 1948 addition. AHU-2 includes supply and relief fans and steam coils for tempering the outside air. AHU-3 is located in the attic space and dates from the 1970s. It has been extensively modified and its original purpose is unknown. It has six branch ducts; five are capped and the other serves the office adjacent to the IT Room. AHU-4, located in the attic, was installed in 2002 to serve the IT Room and is the only unit to have mechanical cooling.

The plumbing system connects to the public water and sewer system. The original domestic water piping was galvanized. Waste and vent piping was cast-iron hub-and-spigot. The original roof drainage system connected to a storm sewer. A tank-type water heater with steam coil provides domestic hot water to the facility.

Existing Conditions

Heating System

Many alterations have made over the years. The boilers were decommissioned in the late 1960's and replaced with district steam from the MUS power plant (now Aurora Energy) to

heat the building. Returning condensate is metered and is the basis for billing. No pressure gauges, pressure reducing valves, or safety valves were observed in the boiler room. This indicates the entire building steam system is under the full distribution pressure of 50 psi. Similar systems are normally designed to operated around 2-10 psi steam. The original boilers were rated at 15 psi. The increased pressure and temperature raise inherent safety concerns. (Steam temperature is proportional to pressure.) The radiators also have a greater output than designed, compounding the overheating problems.

Following a freeze-up in the trench condensate line, a condensate pump was installed under the southwest staircase and an above grade line was installed. The receiver dates from the 1970's and a set of failed pumps are discarded next to the unit. A steam main in the 1948 Wing basement froze and was replaced by a 4" line routed 7' above the floor, below the lay-in ceiling.

In 1985 an asbestos abatement project encapsulated insulation on the boilers and water heater, and removed insulation on much of the piping. This results in the piping radiating heat continuously to the space, see photo 37. Some piping had been reinsulated using a cellular glass product.

The radiators and convectors have either pneumatic or self-contained thermostatic valves (also called wireless or self-acting). The pneumatic controllers in the 1948 wing had failed into the open position and the radiators were running wild, resulting in overheating.

The rest of the building used self-contained valves. The valves were checked randomly, and all provided steam shut off. The valves were placed on the inlet side of the radiator just below the window sill. When a window is open, cool air washes over the unit and it senses the outside air temperature causing the valve to remain open. The cast iron radiators are a high-mass appliance and continue radiating heat long after shutdown. These factors exacerbate overheating.

A significant number of the original radiators have been replaced with finned convectors. See photo 36. The galvanized branch piping to the radiators has been replaced with copper at approximately 1/4 to 1/3 of the installations as it developed leaks. Along the north wall in the second floor, the radiators were replaced with baseboard, which is very prone to waterhammer.

Windows are typically 8 feet tall, double hung, single pane. A retrofit project installed glazing with superior thermal properties in some areas. Coverings that would reduce the immense solar gain, such as curtains or blinds were generally absent.

Ventilation

General

- The air handlers have the capacity to provide ventilation rates per IMC 403.
- As the rooms were rearranged, the ductwork was modified to serve the new spaces. The outlets should be rebalanced to ensure proper air distribution.

- A few rooms, particularly on the north end of the building are not served by the air handlers and rely on operable windows for ventilation. The ductwork should be extended to serve these spaces.

- Smoke detectors are required on the return air duct for AHUs with a capacity greater than 2,000 cfm by IMC 606. Detectors were not present on AHU-1 and AHU-2. An exception allows the detectors to be omitted if the building is protected by a full coverage smoke detection system that will shut down the AHU.

- The air handlers are not on time clocks and run 24 hrs a day. Shutting down AHU-1, AHU-2, and AHU-3 while the building is unoccupied will realize savings in heating and electricity. AHU-4 must run continuously to control the temperature in the IT room.

- AHU-1 and AHU-2 have steam coils to temper the outside air before delivering it to occupied spaces. These coils must be replaced when the steam system is converted to hydronic.

AHU-1

- Access to the unit is inadequate. The concrete fan room has a single 32" mandoor. To service the fan and motor a technician must squeeze down a two foot wide passage with piping lining the floor and enter a 14" x 36" removable panel on the unit.

- The fan room is a return air plenum, and contains dimensional lumber and a wooden door, in violation of the IMC's prohibition of combustibles in these spaces. The existing steam piping interferes with connecting the existing return duct to the return damper on the top of the unit.

- The steam coil is still active and the air discharge temperature was 90 F. Pneumatic controls with an outdoor reset are installed, however they were not functional.

AHU-2

- See general ventilation comments.

AHU-3

- This unit's airflow is significantly reduced from the original installation. The main duct is 21" x 21", four branch ducts are capped and unused flex duct is abandon in place. The remaining duct is 10" round flex serving the office adjacent to the IT room.

- The return path is unducted, and passes through the attic which contains dimensional lumber rafters. Combustible material in a return air plenum is a code violation.

- This unit serves office space accessible only through the air conditioned IT space. Since no cooling provisions are in place, the offices overheat and put additional load on the IT cooling system.

AHU-4

- This unit performs satisfactorily and only needs to stay on a routine preventive maintenance schedule.

Fire Protection

A wet pipe sprinkler system is installed throughout the building. The utility provides a dedicated water supply at an elevated pressure. Static pressure on the sprinkler system is 100 psi, while the domestic water supply is 50 psi. Metal foil was noted over sprinkler heads in the basement which violates their listing. Staff indicated that this was to protect the heads during painting. The foil should be removed as soon as possible. In many areas, a lay-in tile ceiling is installed below the original. Sprinkler heads were relocated below, and no coverage was provide above. This is acceptable where the spaces do not exceed 1,000 cubic feet and there are no combustibles in the unprotected space. No combustibles were identified in spot checks above the ceiling, however, light fixtures and conduit were abandoned in place in these spaces.

Plumbing

Some of the galvanized piping has been replaced with copper. Joints should be checked for lead based solder and removed where found. After the storm drain system froze and broke, the roof drains were daylighted out of the side of the building with ABS pipe, or connected to the sanitary sewer.

A water heater with a steam coil should be retained after the building is converted to hydronic heat. While Amtrol, Superstor, and others manufacture indirect water heaters, their output will be adversely impacted by any setback strategy employed.

Discussion of Climate Control Options

Recommendations put forth consider the following constraints.

- Construction cost is the primary constraint as the City of Fairbanks has limited financial resources to allocate to renovating the building. Projects recommended must be small or able to be implemented in phases as funding becomes available.

- Operating costs are also important. At this time no target was set for reduction in energy usage. With the addition of air conditioning energy usage in the summer will increase over current levels.

- The maintenance effort required for the new system must be considered in the context of total cost and cost relative to enhanced performance. Providing mechanical cooling will increase system complexity and routine service tasks over the existing system.

- The space for installing new mechanical equipment and routing pipes and ductwork is limited. The concrete construction further impedes installation where existing openings do not exist.

- The building is on the National Register of Historic Places (AHRS Site No. FAI-244) with historic significance placed on its Architecture. Any renovations must not detract from its character, particularly on the building exterior.

There are four basic strategies for providing mechanical cooling to the building: 1) install cooling coils in the existing AHUs 2) replace the existing constant air volume system with a variable air volume (VAV) system 3) install 4-pipe fan coil units in each room 4) install water source heat pumps in each room.

Retrofitting the existing AHUs with cooling coils has several shortcomings. First there is a limited ability to zone the cooling. Next, the airflow is not adequate for a conventional system, however low-temperature (40 F) supply air could be used. This is not compatible with using groundwater as a source of cooling. The ducts would need to be completely insulated to maintain the supply temperature and prevent condensation. Much of the ductwork is concealed and difficult to access. Then fan powered boxes acting as air blenders are needed discharge the air at a comfortable temperature into the occupied space. New ductwork, designed to distribute cooling air, is required in every room. The ceiling should be lowered to conceal the boxes and ducts.

Installing a VAV system requires the complete removal and replacement of the air handlers and ductwork. This work cannot be phased, and there are significant space limitations. To conceal the VAV boxes and duct all ceilings would be lowered. Installing a replacement AHU-1 would be very difficult through the existing doorway.

Both the heat fan coil and heat pump systems provide heating and cooling from a single cabinet that would replace the radiators, and are compatible with a phased installation once the piping mains and head end equipment are installed. Condensation from the cooling coils would drain to a new waste pipe routed adjacent to the new mains in the basement.

The 4-pipe system utilizes separate heating and cooling mains. Internally, the fan coil unit is much simpler than a heat pump and contains a fan, filter, heating coil, cooling coil, and controls. Two heating lines (supply/return) and two cooling (supply/return) lines will result in a higher cost installation cost for the front-end piping. While some existing penetrations can be reused, many more will be required for the additional piping. The Old City Hall utilizes a 4-pipe system.

The 2-pipe system has a single heating/cooling main and heat pumps located in each room. Heat is extracted from or rejected to the mains as required by the room conditions. Since a compressor is located in each unit, equipment costs will be higher, and maintenance, when

required will be more complex than the fan coil unit. Forgoing a second set of mains, pumps, and literally hundreds of new penetrations through the concrete structure will provide cost savings on the piping installation, which must be complete prior to installing any terminal units. This system does offer the potential of heat recovery, by transporting heat from the sunny south side of the building, to the shaded north. The system can also operate with a higher fluid temperature, 100 F, allowing the use of a dry cooler, instead of groundwater or a chiller. The Federal Building utilizes a 2-pipe heat pump system.

Groundwater is a potential source of cooling. It would involve filing for water rights, discharge permit, drilling a well on site, and connecting to the storm sewer, or making other disposal provisions. Historic information indicates that Fairbanks ground water is in the 40's, well within typical chilled water operating temperatures of 45-50 F. The well would need to produce about 450 gpm to satisfy the peak cooling load. If groundwater isn't available or adequate to meet the peak cooling load, a chiller could be used.

Interim Projects

These interim projects will enhance occupant comfort. This equipment would be demolished or abandon when the entire building is converted over to a hydronic heating system.

- Install steam pressure reducing station. Steam temperature is proportional to its temperature. The building appears to utilize 50 psi steam, though the original boilers were rated for 15 psi steam. Adjusting the PRS would provide whole building setback and allow the terminal unit output to more closely match the heating load. As a temporary installation, the PRS could be adjusted manually on a monthly basis or to compensate for cold/warm snaps during the heating season.
- Repair the pneumatic controls in the 1948 Wing or replace with self-activated wireless valves

Electrical

Electrical Service Entrance

A 15 kV underground feeder, connected to a Golden Valley Electric Association (GVEA) aerial line on Eighth Avenue, supplies primary power to the City Hall. The primary feeder consists of three, non-jacketed, concentric neutral conductors that feed 3, 50 kVA, pole mount type transformers that sit on the floor of a transformer vault, near the northeast corner of the building (photos 30 through 33). The transformers are protected by three ceramic (cabinet style) fused cutouts mounted on the west wall of the transformer vault. A 500 kcmil, four-wire service lateral, feeds secondary power at 208Y/120 volts, three-phase, four-wire, from the transformers through a GVEA metering system, to the electrical distribution system.

In addition to the GVEA equipment, the transformer vault also houses the following City owned distribution equipment (Sheet E-4 & E-5):

1. 600 ampere fused disconnect switch (350 amps as fused) serves as main disconnect to the two-section, main distribution panel (MDP).

2. 400 ampere fused disconnect switch (250 amps as fused) serves as main disconnect to "1st floor panel in NW wing".
3. 30 ampere fused disconnect switch labeled "Fire Alarm".
4. Three-pole, 200 ampere fused disconnect switch (no identification).
5. 100 ampere fused disconnect switch labeled "Panel S Air Handlers 2nd Floor."
6. 60 ampere fused disconnect switch that supplied utility power to the old generator automatic transfer switch and is assumed to be abandoned.
7. 30 ampere fused disconnect switch (no identification).
8. 100 ampere, 12-pole, Square D, Type QO panelboard (No identification, no panel schedule).

The transformer vault is enclosed by concrete walls, ceiling and floor with access from a ladder through an elevated steel door secured by a GVEA padlock. Two sprinkler heads protect the interior of the vault and the transformers are located within a 4" high oil containment curb. Several piping systems enter the transformer vault. A plastic line suspended approximately five-foot above the floor, running the length of the room is believed to be a roof drain line. Steel piping along the north wall of the vault is believed to be steam lines.

A generator room next to the transformer vault houses a gasoline fueled generator set with standby and emergency transfer switches, and emergency panelboard. The standby and emergency system was upgraded by a Lake and Boswell project in 1981. Since the 1981 project, the transfer switches and emergency panel have been disconnected and abandoned rendering the system inoperable. The fire alarm control panel, emergency lighting and standby equipment, once served by the transfer switches, was reconnected through disconnect switches and the branch circuit panel located in the transformer vault.

Observed Deficiencies of the Transformer Vault

- There is no fresh air supply or other means of providing ventilation to the transformer vault. The NEC requires an opening of three square inches per each kVA of transformer rated capacity (in this case, 450 square inches) for natural air circulation. At the time of observation, the recorded instantaneous current feeding the MDP was approximately 150 to 190 amperes which is 50% to 70% of historic peak load (Appendix, Table 1) and at that time the vault did not seem excessively warm.

- The sewer line and other piping that enters the transformer vault is a code violation. In accordance with article 450 of the NEC, no piping or components of water, sewer or other foreign systems shall pass through the transformer vault.

- The door to the vault is locked with a GVEA padlock and therefore is not accessible by City personnel. The main disconnect switches located in this room are not in a "readily accessible location" as required by article 230.70 (A) (1) of the NEC.

- The transformers and cutouts in the vault have exposed live primary and secondary connections. This equipment is effectively guarded by a plywood barrier. This installation is apparently acceptable but could constitute a hazard to unauthorized personnel.

Load Analysis

Average demand of the building recorded in the previous 12 months, is 50 kW (139 amperes) (See Appendix, Table 1). Historic peak demand during the same period was 103 kW (286 amperes) which is approximately 80% of the rated ampacity of the service and distribution equipment.

Electrical Distribution

Main Distribution Panel

The main distribution panel (MDP) is a two-section panelboard, consisting of two Square D, type HCN I-Line panelboards, populated with "K" frame feeder circuit breakers (see Appendix, Table 3 and photos 1, 2, 3 and 4). The rated asymmetrical interrupt current (AIC) ratings of the feeder circuit breakers are 65,000 amperes. Two, six-pole, Square D type QO circuit breaker subsections, with six, QO circuit breakers in each section, have also been installed in the MDP to provide additional branch circuits. The interrupt ratings of the QO circuit breakers are 10,000 AIC.

The MDP was installed in the 1981 Lake and Boswell project and is in very good maintainable condition. It is apparent that some of the feeder conductors to various panelboards have been replaced. The newer conductors have modern thermoplastic insulation whereas the older feeder conductors have insulation composed of tar-impregnated, fabric (fabric insulation).

According to GVEA, the available asymmetrical fault current at the connection to the utility primary is 5000 amperes. Based on this value, the calculated AIC at the MDP is 24,000 amperes (See Appendix, Table 3).

Remaining space for mounting new circuit breakers in both sections of the MDP is very limited, consisting of one, 4-1/2" space and one, 1-1/2" space. The 4-1/2" space would allow the addition of a three-pole feeder circuit breaker (see Appendix, Table 2).

Section 1 is furnished with sub-feed lugs that would allow an additional 400 ampere rated MDP section to be connected.

Observed Deficiencies

- The calculated AIC at the MDP is 24,000 amperes which exceeds the 10,000 ampere rating of the QO circuit breakers mounted in the MDP. These circuit breakers are potentially subjected to fault currents that exceed their safe interrupt ratings.
- The fabric insulated conductors in the MDP are obsolete and have exceeded their expected service lives.
- The panelboard identifications, as listed in the MDP feeder circuit breaker schedules, do not match the identifications on the panelboards served and it is therefore uncertain which feeder circuit breaker feeds which panel. Since plans and other documentation

were apparently lost in the flood of 1967, there is a lack of information to re-establish an accurate MDP feeder schedule.

- The existing main distribution panelboard (MDP) is virtually filled to capacity with no additional space for expansion.

Branch Panelboards

The original building plans show four original branch panelboards - panels A, B, C and D:

- Panel A and B in the basement were at the same locations as existing panels BFLB (photos 7 and 8) and 1/H (photos 13 and 14) respectively.

- Panel C on the first floor was at the same location as existing panel 1/D (photos 20 and 21).

- Panel D on the second floor was at the same location as existing panel 2/A (photos 24 and 25).

All of the original panels have been replaced and numerous additional panels have been added over the history of the building. Most panelboards are Square D, type NQO, a type that was introduced in the middle 1950's.

Branch circuit panelboards that have been added in new locations since the original construction include:

- Basement panels CAF/A (photo 17), CAF/B (photo 17), CAF/C Photos 15 and 16), BFL/A (photos 5 and 6), BFL/C (photos 9 and 10), and BFL/D

- First floor panels 1/B (photo 18), 1/C (photos 18 and 19), and 1/F (photos 22 and 23).

- Second floor panels 2/B (photos 26 and 27), 2/C, 2/D, and 2/E (photos 28 and 29). See Appendix, Table 2 and Sheets E-1, E-2 and E-3.

Observed Conditions

- Instantaneous current measurements recorded at the feeder connections to each panelboard showed that rated current of each panel was probably adequate to safely support the existing loads with moderate future load increases.

- Panelboards CAF/C, 2/A, BFL/B, BFL/C and 2/E are served by feeder conductors with obsolete, fabric type insulation. Panel 1/H feeder conductors have either thermoplastic or rubber insulated feeder conductors that appear old and possibly compromised by surface cracking. Feeder phase conductors of panel 1/D were apparently replaced with thermoplastic insulated conductors; however the neutral conductor to this panel is an older fabric insulated type.

- Branch circuit panels BFL/A, CAF/C and 1/H appear to be older panels than others and have obsolete circuit breakers.

- Many fabric type branch circuit conductors remain in panels that also contain modern thermoplastic insulated type conductors.

- Panel 2/A faces into a two-foot wide passageway and lacks the 36 inch working clearance required in the NEC.

- An inventory of the branch circuit panelboards (Appendix, Table 2) indicates that 253 branch circuits are served from all panels inventoried with 308 total pole spaces. 55 spare pole spaces, for adding future branch circuits (18%) remain.

Receptacles

Receptacles on all three floors were randomly inspected. Receptacles in restrooms have been replaced by ground fault circuit interrupter (GFCI) types as required by the NEC. All convenience receptacles observed are of the 2-pole, 3-wire grounding type, either NEMA type 5-15R or 5-20R.

Observed Conditions

- Of the receptacles inspected, approximately 30% were bonded by a ground conductor with a connection back to the branch panelboard. The remainder had neither a ground conductor nor a bonding jumper connected between the receptacle yoke and outlet box, a condition which is a code deficiency.

- Tests at the receptacle outlet boxes indicated that the conductive path provided by the metal raceway is adequate to satisfy equipment bonding requirements at the locations inspected.

- In conversations with personnel in various administrative areas there seemed to be few reported problems of nuisance tripping of circuit breakers. Where nuisance tripping was reported, it was usually due to the use of portable heaters, the need for which should be eliminated with mechanical upgrades. One exception was the area in the first floor Youth Court administrative suite, where a copier at the east wall of the suite, sharing a circuit with other appliances, seemed to be the cause of breaker trips. The problem may be alleviated by replacing the circuit breaker (if defective), relocating appliances, or by adding a dedicated circuit to the copier or other high load equipment on the same circuit. Numerous receptacles have been added to the building and their general distribution seems adequate.

Lighting

General Lighting

The original incandescent lighting fixtures in most areas were replaced with the present fluorescent fixtures that have T12, 40 watt lamps and magnetic ballasts. These fluorescent

fixtures are probably 20 to 40 years old. High intensity discharge (HID) lighting fixtures in the youth programs auditorium, adjacent to the gymnasium, have been more recently replaced with highly efficient, cable suspended, direct/indirect fluorescent fixtures with T8 lamps and electronic ballasts (photo 35).

The area of the building illuminated predominantly by the older fluorescent lighting fixtures (entire floor area less the area of the gymnasium and adjacent auditorium) is approximately 60,000 square feet. Based on an estimated average lighting load of two watts per square foot, the total lighting load of this portion of building is 120 kW, consuming an estimated 24,000 kWh per month (based on 10 hours of use per working day). If the existing light fixtures were replaced with state-of-the-art fluorescent fixtures with T-5 and/or T-8 lamps and electronic ballasts, energy consumption would be reduced by 15 percent to 20 percent (20 kW to 40 kW) or 4,000 to 4,800 kWh ($400 to $480) monthly.

Emergency Lighting and Exit Signs

By direct observation and from accounts of employees occupying the building, there are areas that have either inadequate or non-existent emergency lighting. Originally, egress lighting and exit sign circuits were connected to the emergency transfer switch backed up by generator power. Therefore the original exit signs, many of which are still present, were not equipped with emergency battery power supplies.

Since abandonment of the standby/emergency generator system, wall mounted emergency lighting fixtures furnished with battery back-up supplies and some of the original exit signs have been replaced with emergency battery types. In the ancillary halls and stair wells however, the original exit signs typically remain and emergency egress lighting is deficient. In common areas within office suites, there are typically neither emergency lights nor exit signs. These latter conditions are violations of NFPA 101. Exterior emergency egress lighting, currently required in the IBC, also does not exist.

In association with a major lighting upgrade, it is recommended that new fluorescent lighting fixtures in selected locations, be furnished with ballasts with integral emergency battery power supplies. In non-public and/or utility spaces, wall mounted emergency lighting units should be added.

Deficiencies of Lighting Systems

- General lighting fixtures are old technology fluorescent fixtures with T-12 lamps and magnetic ballasts and are less efficient than state-of-the-art fixtures with T-5 or T-8 lamps.
- Some fixtures appear to be inoperable.
- Some fixtures have lamps removed to save energy cost.
- Exit signs do not provide full coverage along egress routes as required in NFPA 101.
- Many exit signs lack the code required emergency battery power supplies.

- Many locations lack emergency lighting coverage per NFPA 101 requirements.
- Exterior, emergency egress light fixtures, required by the IBC do not exist.

Fire Alarm System

The existing fire alarm system is an obsolete Honeywell zone type system with a Silent Night telephonic alarm transmitter. Smoke detectors are distributed in most areas of the building and manual pull stations are located at exits and elsewhere in halls. Locations of detectors seem to have been inconsistently applied relative to present NFPA 72 requirements. Manual pull stations are typically mounted at a height of 56 inches.

Existing fire alarm notification consists primarily of fire bells installed in main hallways. Several horn strobes have been added in the main north-south corridor of the second floor. The gymnasium and children's program area lacks fire alarm notification. It has been reported that the fire alarm system is not dependable.

Building occupancy classification per chapter 3 of the 2003 edition of the IBC, is as follows:

1. Group A Occupancy – City Council assembly room and Youth Court assembly area.
2. Group B Occupancy – Business and administrative Areas.
3. Group E Occupancy – Youth programs area.

A full coverage, automatic fire detection system is not required in these occupancies. The minimum requirement is a manual system with automatic detection at the fire alarm control panel, in elevator lobbies, elevator machine room, and supply air ducts where required by the IMC. Fire alarm interface devices are required to shunt trip the elevator, monitor sprinkler position and water flow, and shut down large air handlers.

Deficiencies of Existing Fire Alarm System

- The fire alarm system is an obsolete, zone type system with documented problems.
- Fire alarm notification devices are primarily bells which are no longer code compliant for interior use.
- The gym and other areas occupied by the children's programs have no fire alarm notification.
- Manual pull stations are mounted too high to meet ADA recommendations.

APPENDIX

APPENDIX

TABLES

Table 1 – GVEA Electrical Billing Data, 12 Months

Billing Period (Month-Yr)	Energy Billed (kWh)	Peak Demand (kW)	Average Demand (kW)	Peak Demand (Amps)	Billing Period (Days)	Daily Avg. Use (kWh)
Oct -2005	32,040	93	46	258	29	1,105
Sep-2005	40,060	92	49	256	34	1,179
Aug-2005	32,520	90	50	250	27	1,204
Jul-2005	39,240	91	51	253	32	1,226
Jun-2005	36,000	91	47	253	32	1,125
May-2005	32,280	91	46	253	29	1,113
Apr-2005	39,880	102	49	283	33	1,178
Mar-2005	34,920	99	52	275	28	1,247
Feb-2005	38,640	103	56	286	29	1,332
Jan-2004	39,720	102	53	283	31	1,281
Dec-2004	39,120	103	51	286	32	1,223
Nov-2004	33,480	102	48	283	29	1,154
Oct -2004	32,640	97	47	269	29	1,126
Averages	36,195	97	50	269	30	1,192

Table 2 – Panelboard Inventory

Panel	Manufacturer	Model	Rating	Location	Total # Poles	# Spare Ckt Brkrs	# Spaces
MDP/1	Square D	HCN	400 A	Basement	63"*	0	4-1/2"*
MDP/2	Square D	HCN	400 A	Basement	45"*	0	1-1/2"*
CAF/C	Square D	NQO	100 A	Gym	30	0	0
CAF/A	Square D	QO	100 A	Gym	12	0	5
CAF/B	Square D	QO	100 A	Gym	12	0	6
BFL/A	Trumbull (GE)	TP12	100 A	Basement	12	0	3
BFL/B	Square D	NQO	100 A	Basement	20	0	3
BFL/C	Square D	NQO	100 A	Basement	20	2	0
BFL/E	Square D	NQO	100 A	Basement	30	0	7
1/H	Square D	NQO	100 A	Basement	14	0	6
1/A	Square D	NQO	100 A	1st Floor	14	0	0
1/B	Square D	QO	100 A	1st Floor	8	0	0
1/C	Square D	QO	100 A	1st Floor	12	2	0
1/D	Square D	NQO	100 A	1st Floor	20	0	1
1/F	Square D	QO	100 A	1st Floor	8	0	0
2/A	Square D	NQO	100A	2nd Floor	30	0	0
2/B	Square D	NQO	100 A	2nd Floor	12	3	6
2/C	Square D	NQOB	100 A	2nd Floor	24	6	2
2/D	Square D	NQOB	100 A	2nd Floor	12	2	1
2/E	Square D	NQO	100 A	2nd Floor	30	0	2

* Bus/circuit breaker mounting space

Table 3 – Calculated Asymmetrical Short Circuit Current at the MDP

					X (ohms)	R (ohms)	Z (ohms)
1.	Utility Service Parameters						
	Volts	Ph.		#Cond.			
	12,470 Y/ 7,200 V,	3 Ph,		4 W			
2.	Available Fault Current at Primary						
	Isc at Primary (From GVEA Information) =			5,000 Amps			
	Isc at Secondary =			299,760 Amps			
3.	Secondary Service Impedance						
	Volts						
	208 Y/ 120 V,	3 Ph,		4 W			
	Source Impedance Reflected at Secondary:				0.00040	0.00000	0.00040
4.	Service Transformer Impedance						
	Type (from Xfmr Data):			3-150			
	kVA:			150	0.00288	0.00192	0.00346
	%X:			0.9985			
	%R:			0.6657			
	%Z:			1.2000			
5.	Service Lateral Impedance						
	AWG or kcmil	Length		# of Runs			
	500kcmil	15		1	0.00072	0.00044	0.00075
	X/kft:			0.04800			
	R/kft:			0.02900			
	Z/kft:			0.05000			
6.	Current Transformer Impedance						
	Ratio:	400	:5		0.00017	0.00000	0.00017
7.	Main Protective Device						
	Main Fused Switch Rating:			NA	0	0.00000	0.00000
	Main Circuit Breaker:			400	0.00039	0.00031	0.00050
8.	Total Impedance at 'MDP'				0.00456	0.00267	0.00528
9.	Symmetrical RMS Short Circuit Current				22,736 Amperes		
10.	Symmetrical Motor Contribution						
	Total RLA of all Motors				100 Amps		
	Sym Motor Contribution				500 Amps		
11.	Symmetrical Short Circuit Current				**23,236 Amperes**		
	System X/R Ratio			1.7111			
13.	Asymmetrical Factor			1.0260			
14.	Asymm. Short Circuit Current				**23,840 Amperes**		

PHOTOS

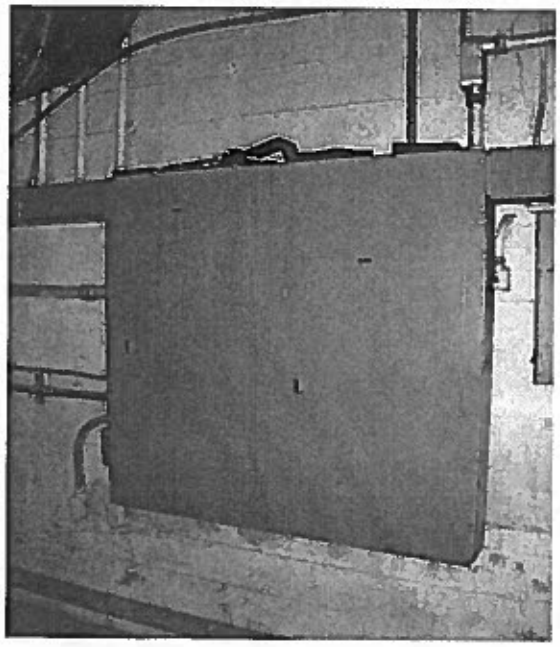


Photo 1 - MDP/1 &MDP/2

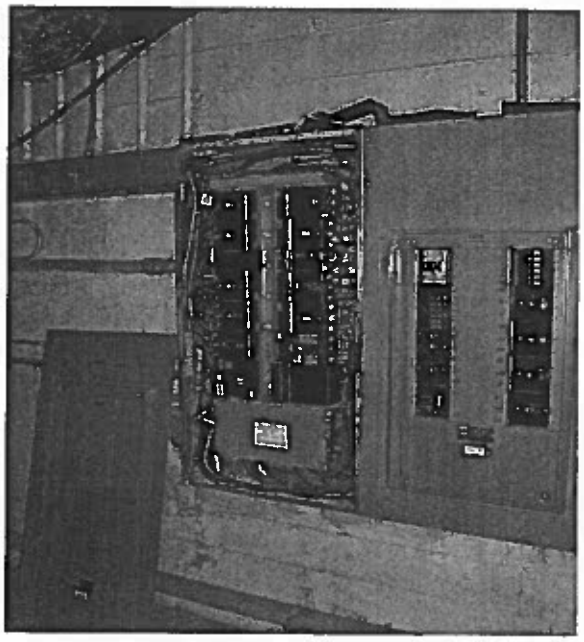


Photo 2 – MDP/1 & MDP/2

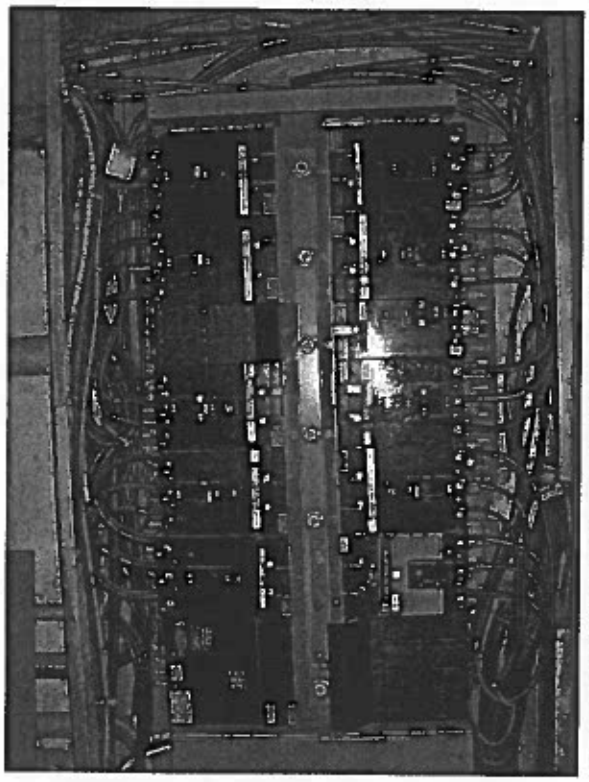


Photo 3 – MDP/1 Interior

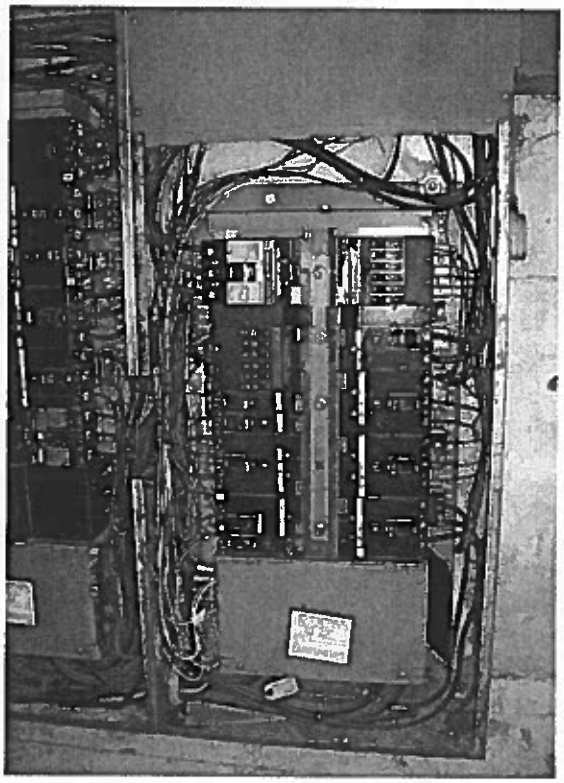


Photo 4 – MDP/2 Interior

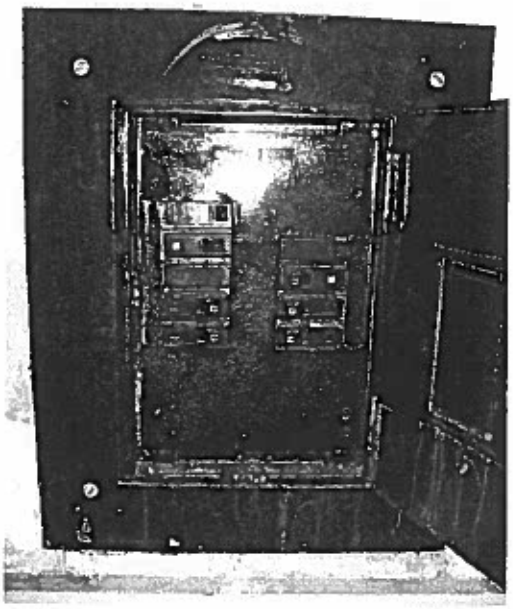


Photo 5 – Basement Panel BFL/A

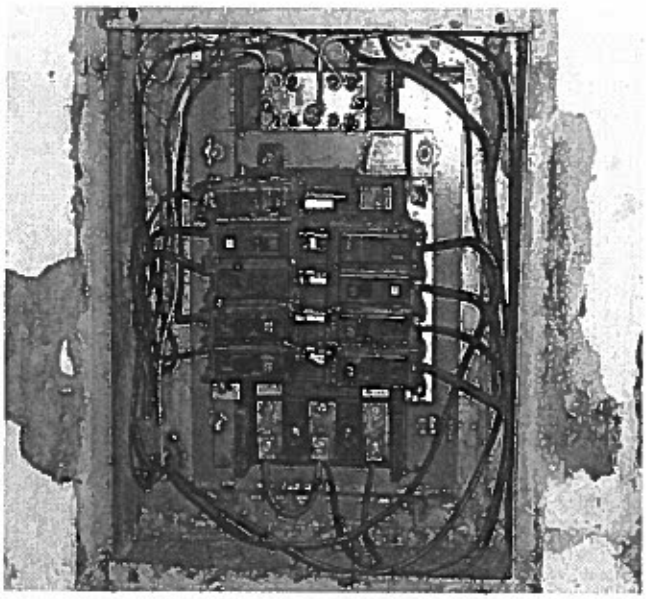


Photo 6 – Panel BFL/A Interior

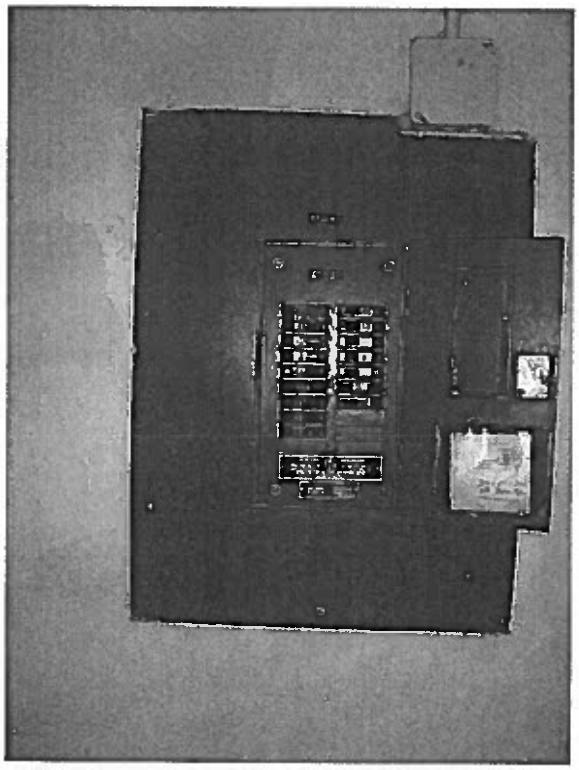


Photo 7 – Basement Panel BFL/B

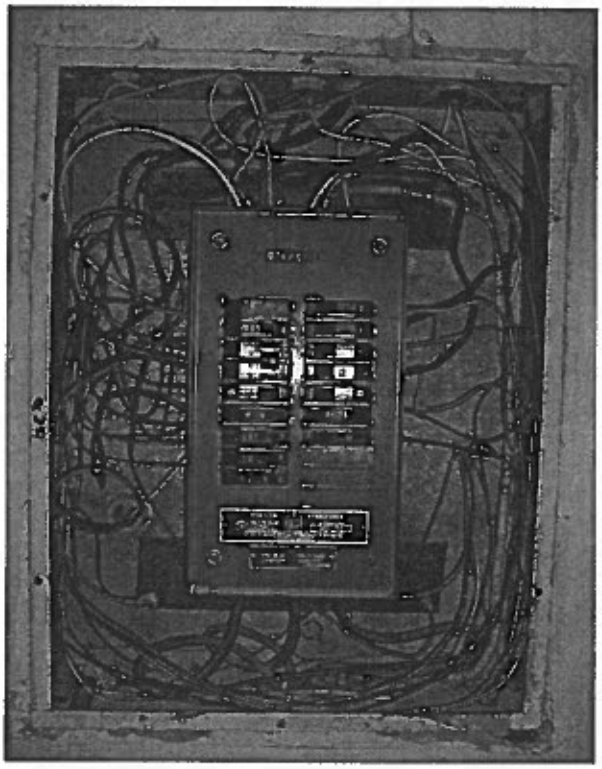


Photo 8 –Panel BFL/B Interior

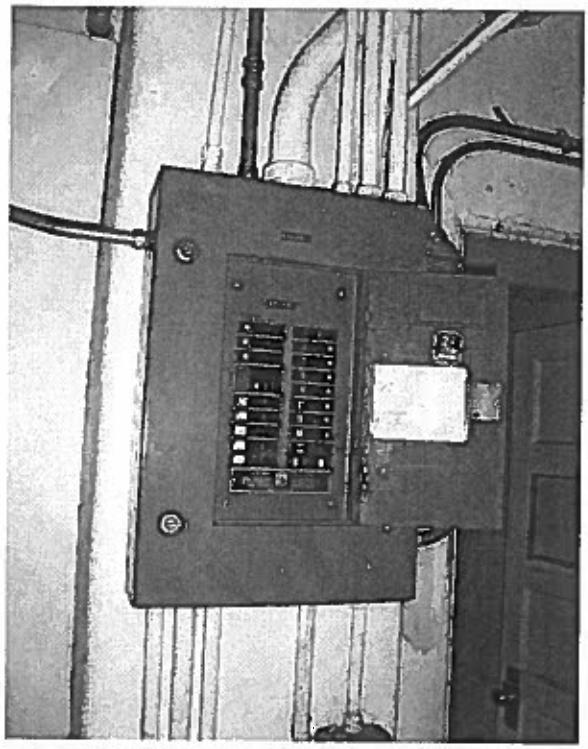


Photo 9 – Basement Panel BFL/C

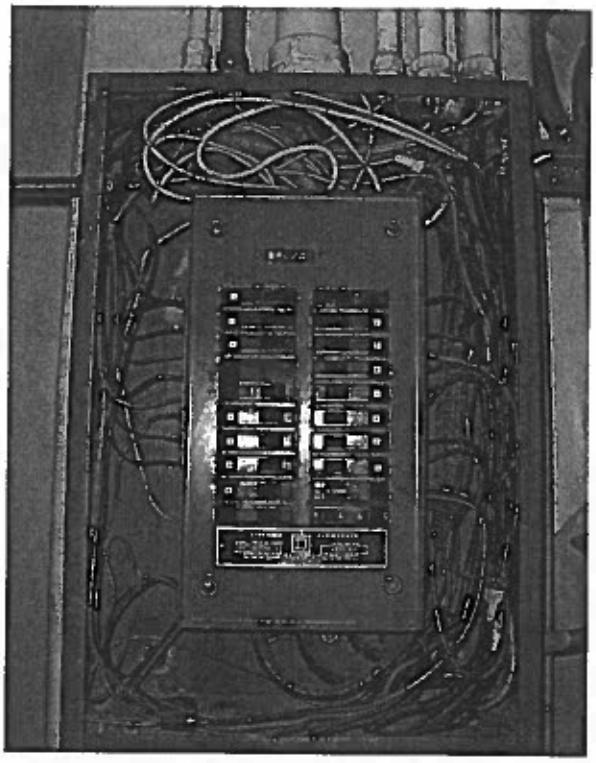


Photo 10 – Panel BFL/C Interior

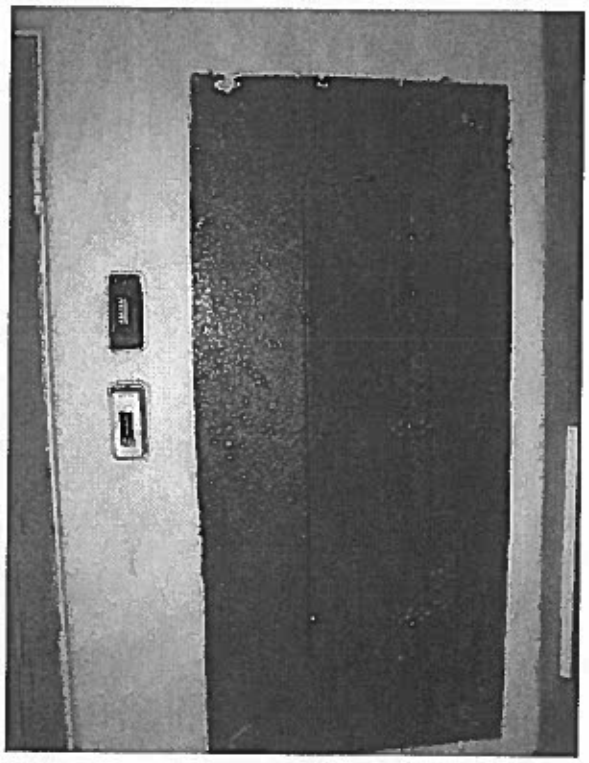


Photo 11 – Basement Panel BFL/E

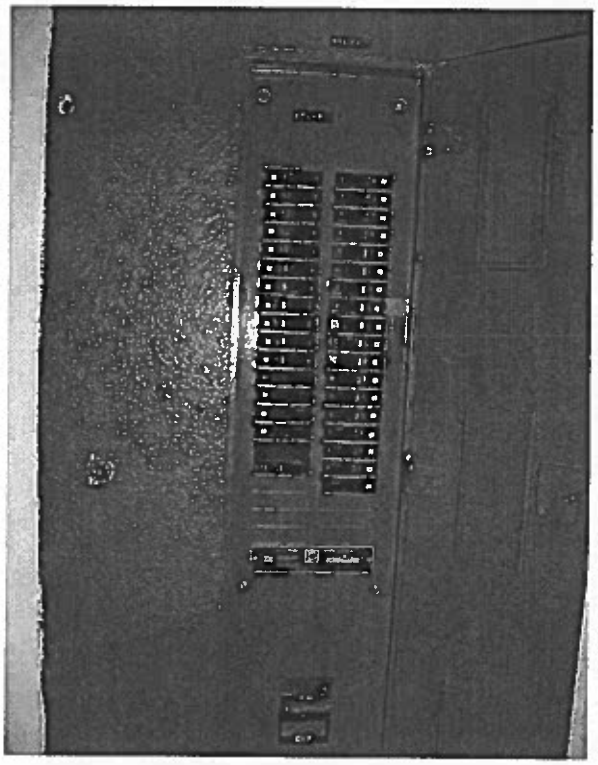


Photo 12 – Panel BFL/E Interior

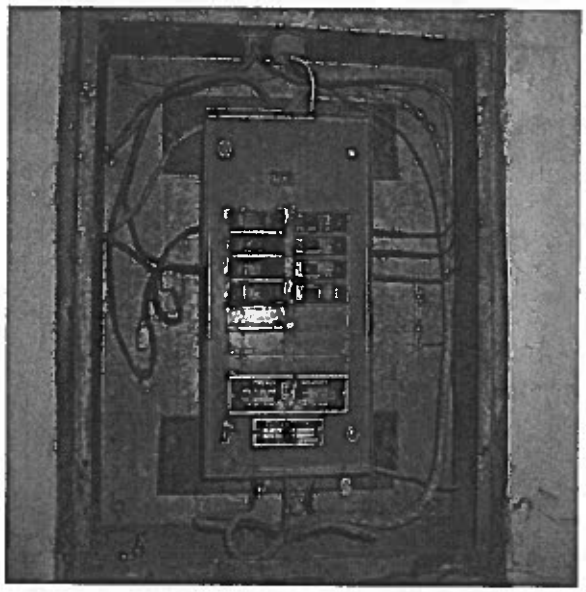


Photo 13 – Basement Panel 1/H

Photo 14 – Basement Panel 1/H

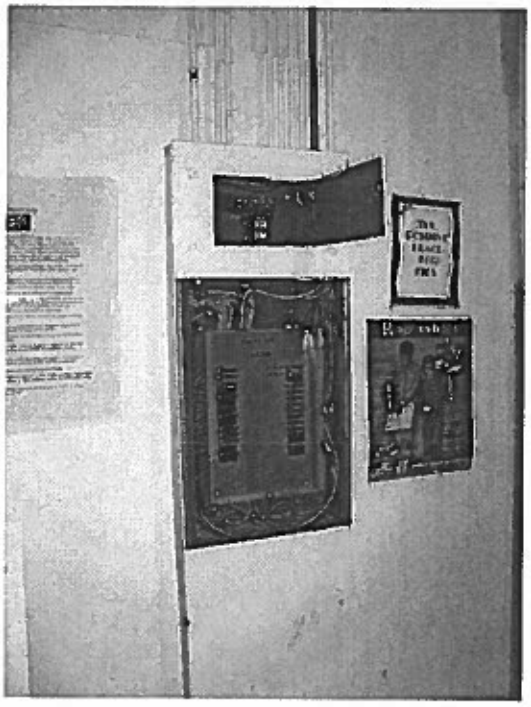


Photo 15 – Gym Panel CAF/C

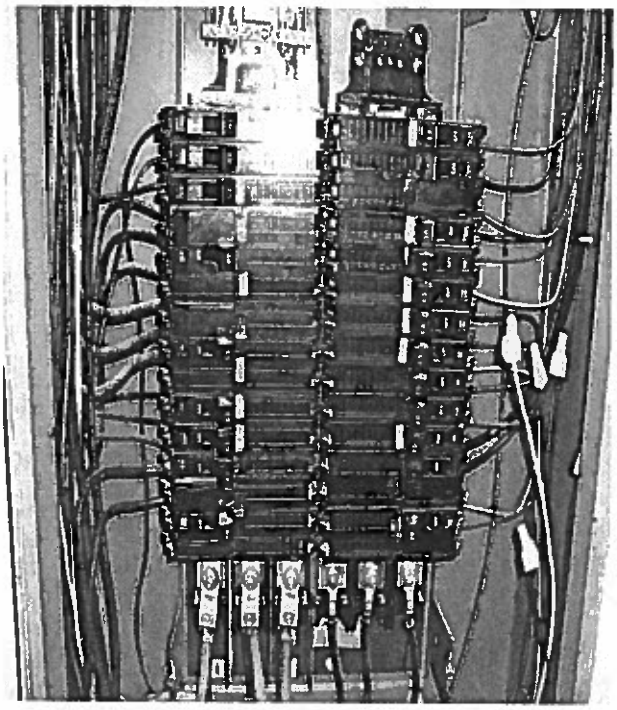


Photo 16 – Panel CAF/C Interior

Photo 17 – Gym Panels CAF/A and CAF/B

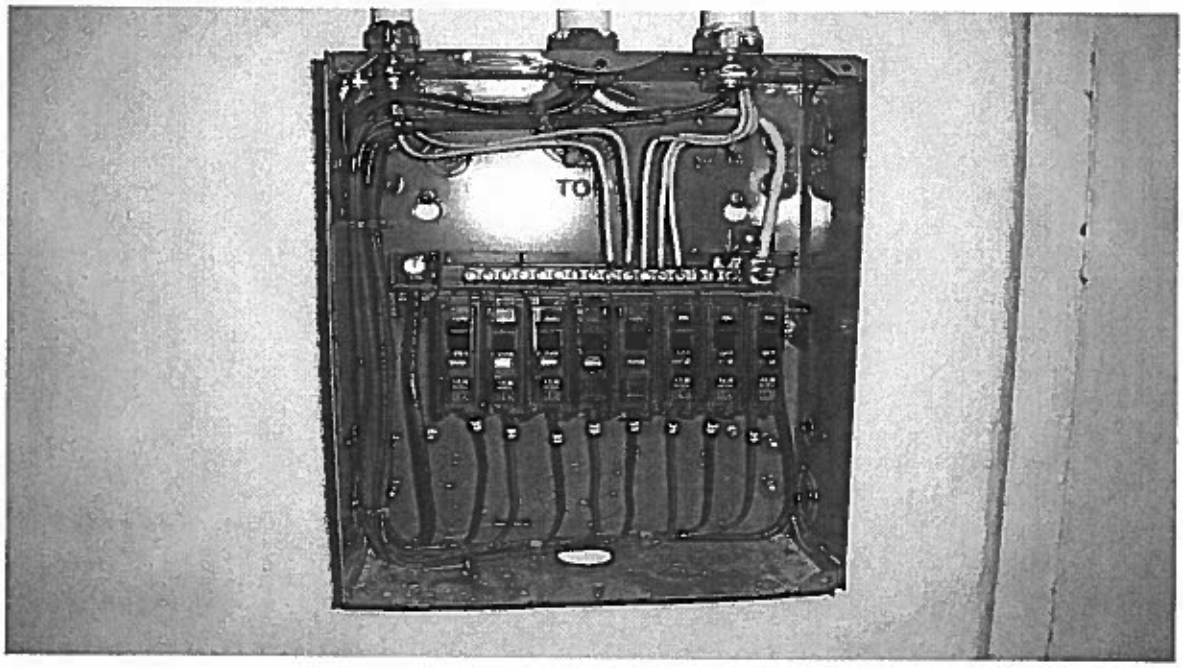


Photo 18 – 1st Floor Panel 1/B

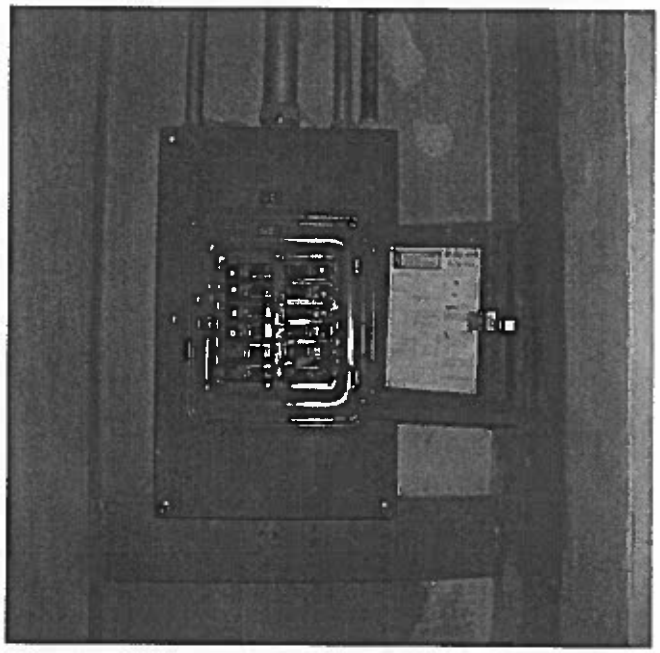


Photo 18 – 1st Floor Panel 1/C

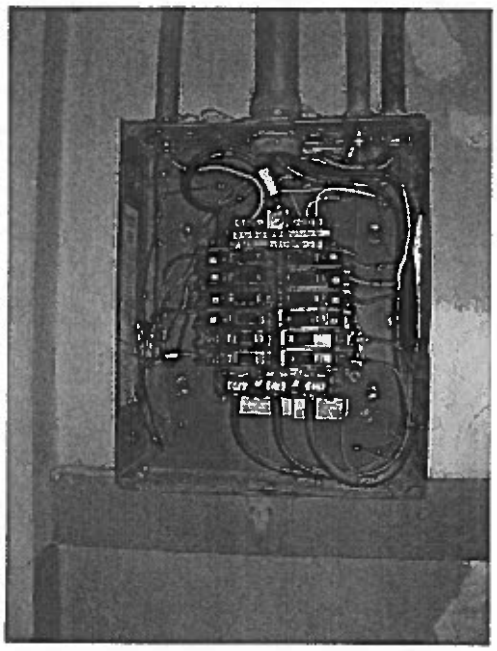


Photo 19 – Interior Panel 1/C

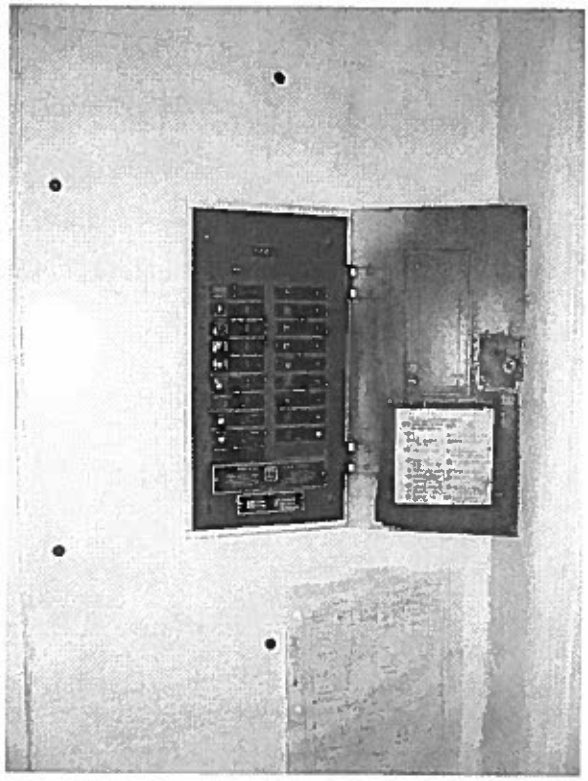


Photo 20 – 1st Floor Panel 1/D

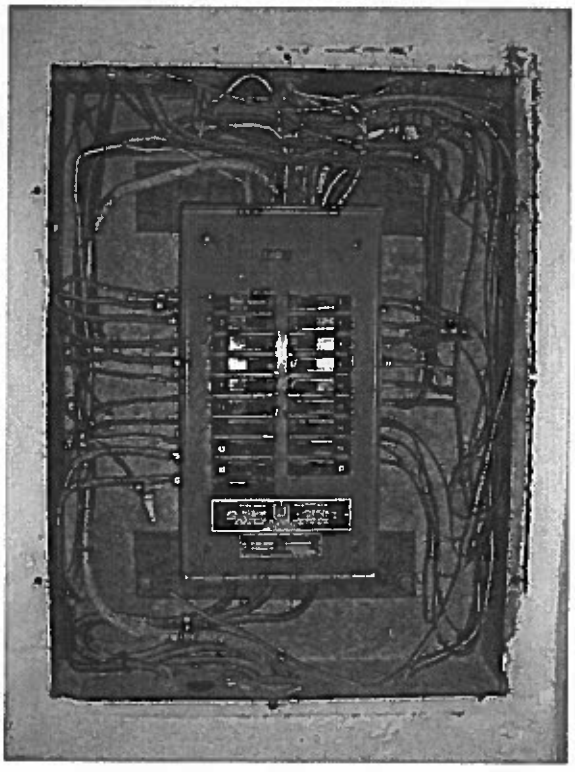


Photo 21 – Interior Panel 1/D

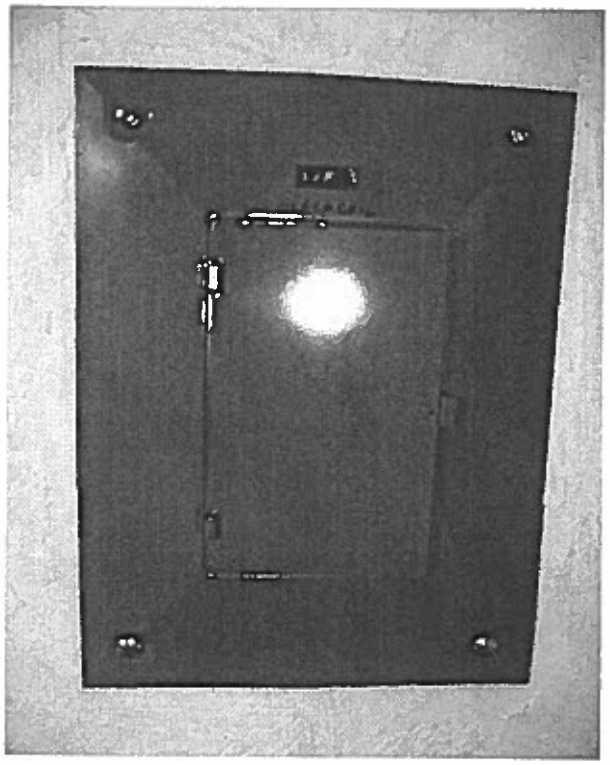


Photo 22 – 1st Floor Panel 1/F

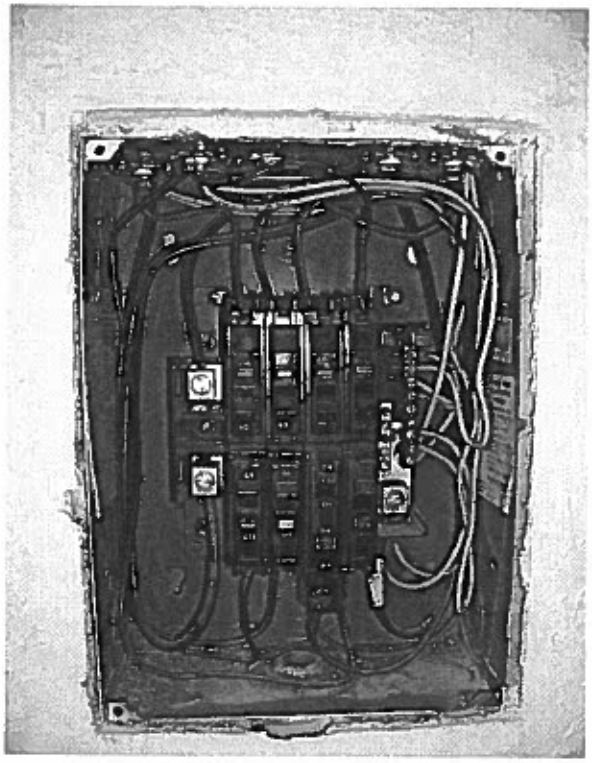
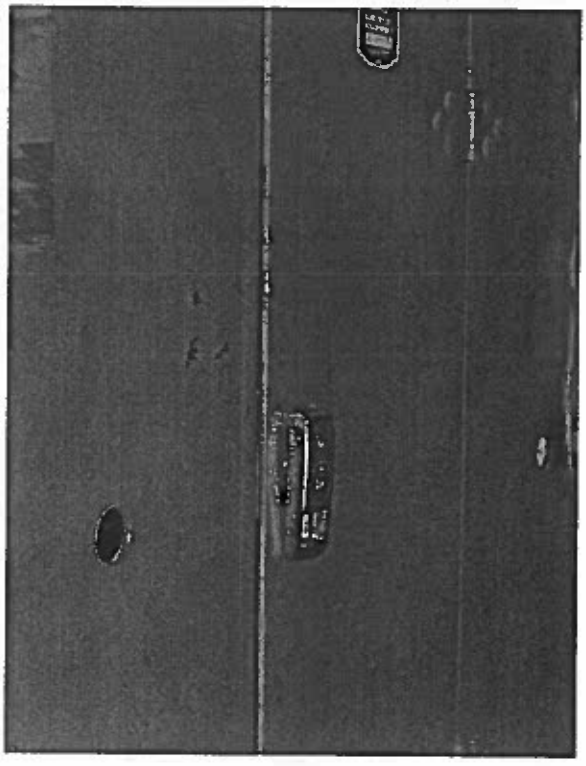


Photo 23 – Interior Panel 1/F



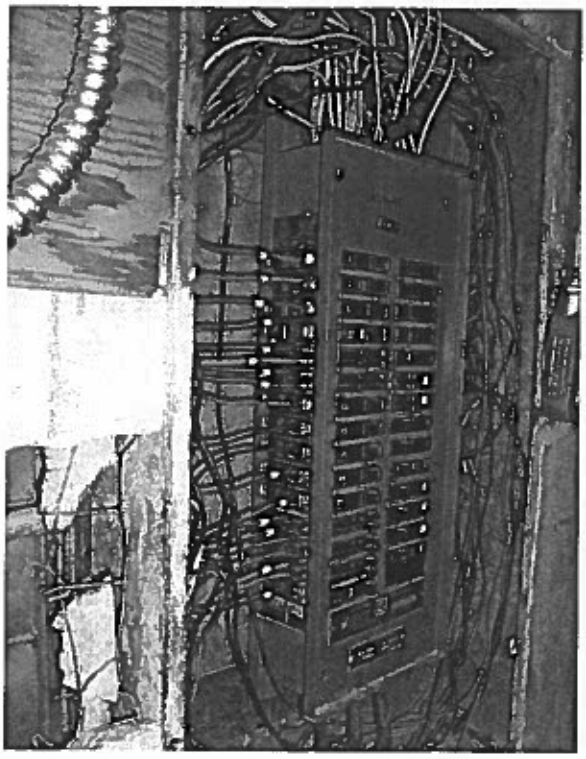


Photo 24 – 2nd Floor Panel 2/A

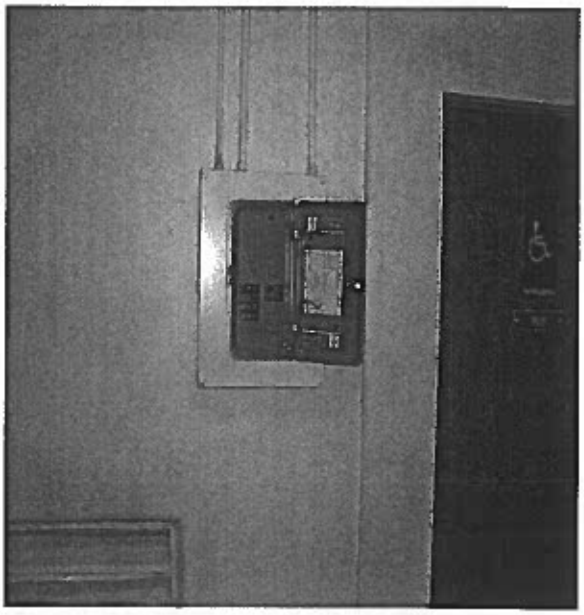


Photo 25 – Interior Panel 2/A

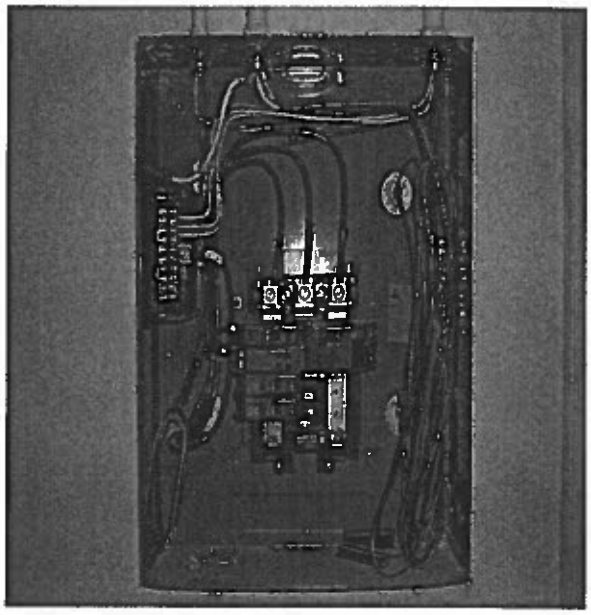


Photo 26 – 2nd Floor Panel 2/B

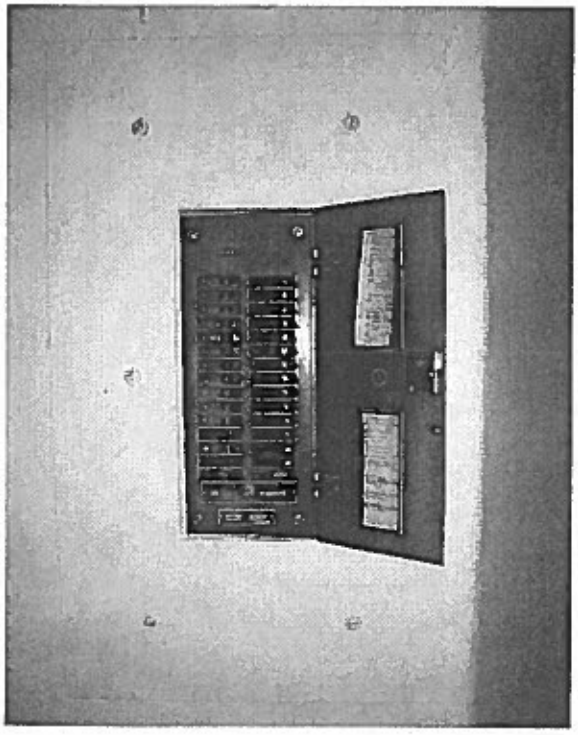


Photo 27 – Interior Panel 2/B

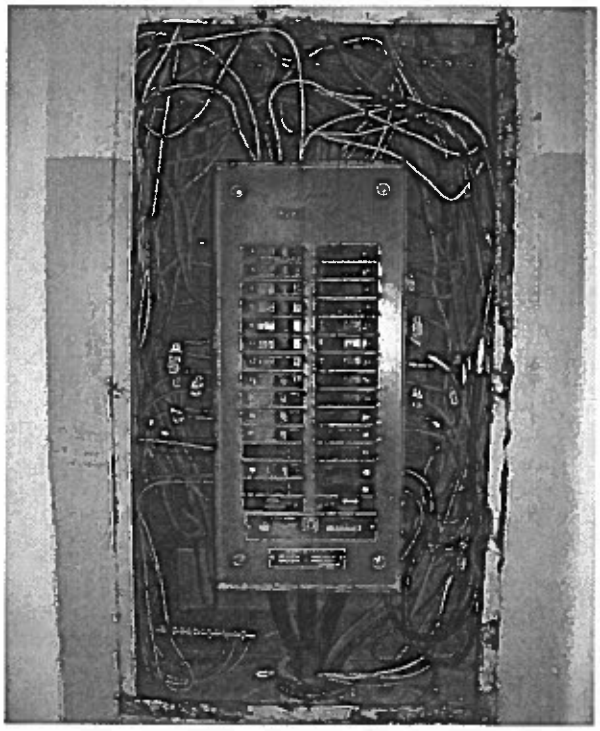


Photo 28 – 2nd Floor Panel 2/E

Photo 29 – Interior Panel 2/E

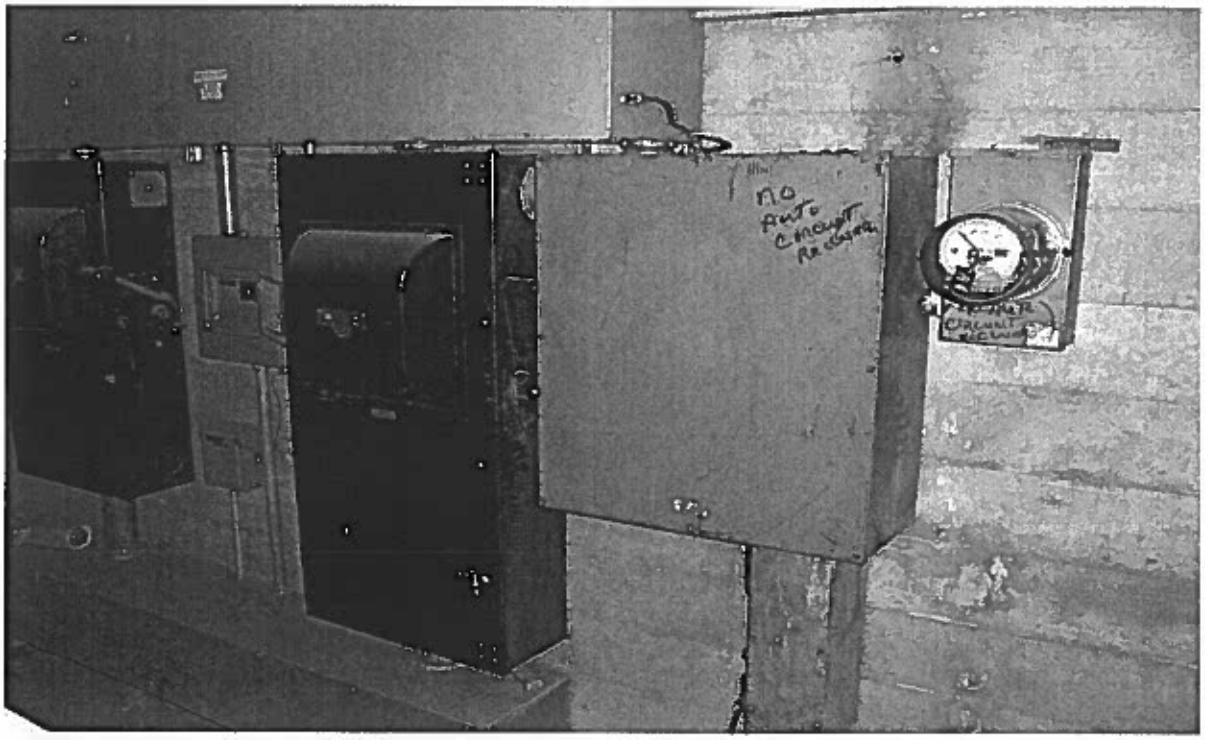


Photo 30 – West Wall of Transformer Vault - far left to right, 400 amp disconnect, QO branch panel (above), 100 amp disconnect (below), 600 amp disconnect, CT cabinet, watt-hr meter

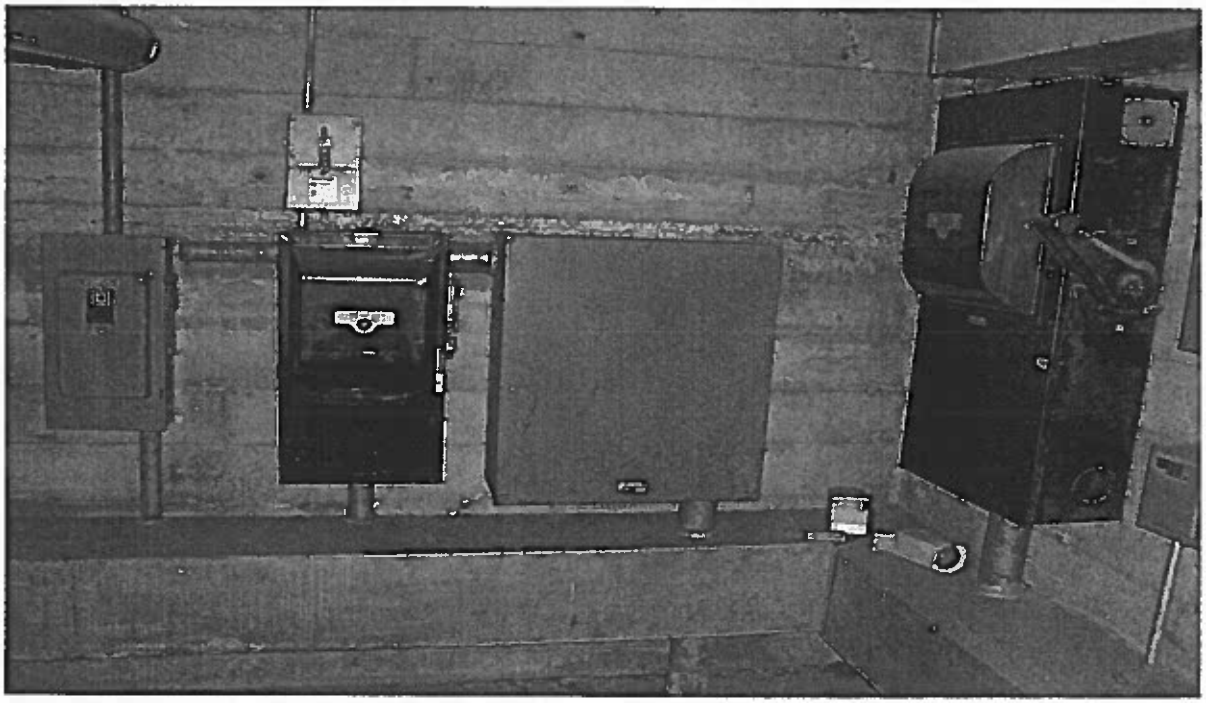


Photo 31 – South Wall of Transformer Vault, left to right, 100 amp disconnect, 200 amp disconnect, 30 amp disconnect (above), junction box

Photo 32 – Transformer Vault Pipes and plywood barricade

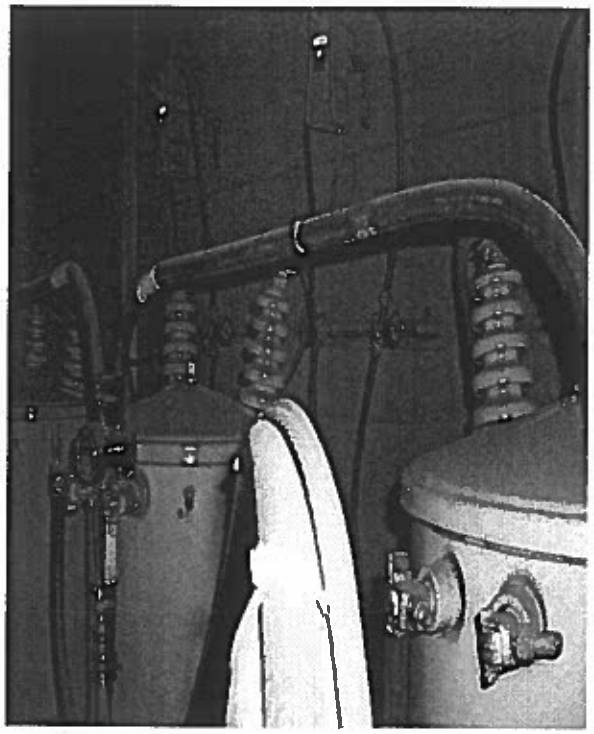


Photo 33 – Service Transformers & cutouts behind plywood barricade

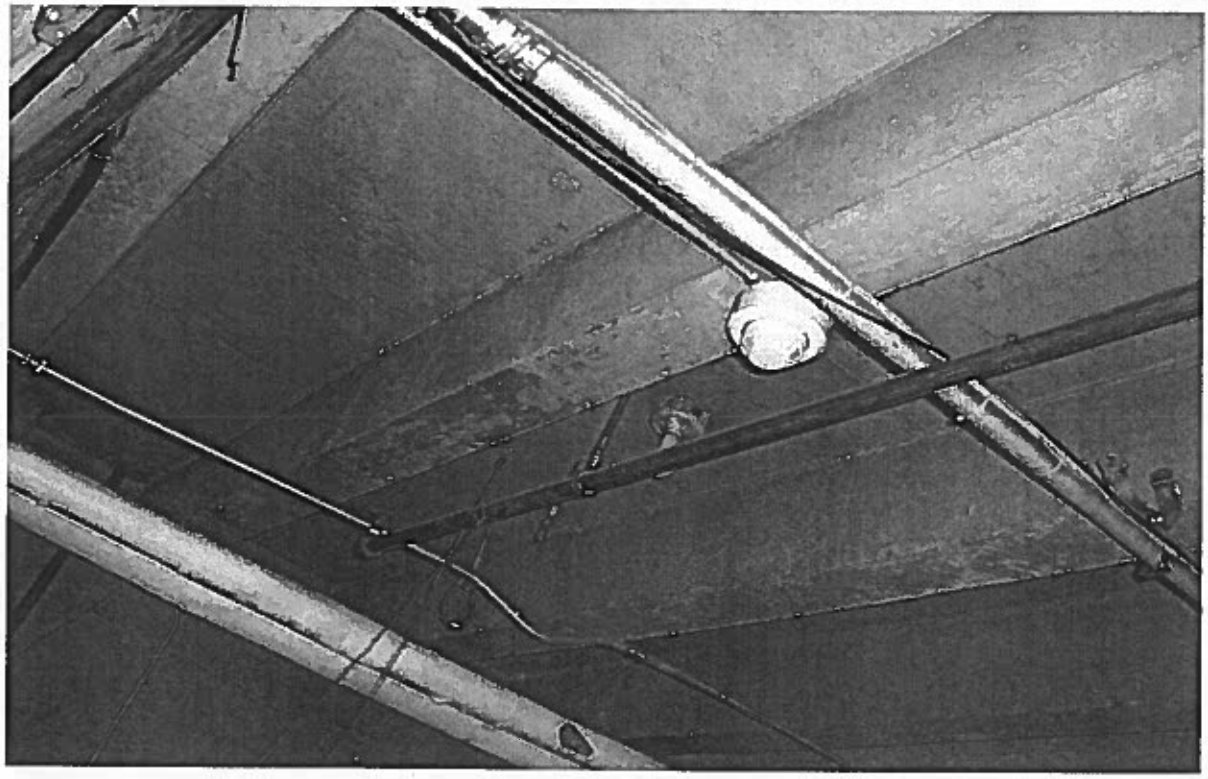


Photo 34 – Transformer Vault – Sprinkler head, Smoke detector, Concrete Ceiling

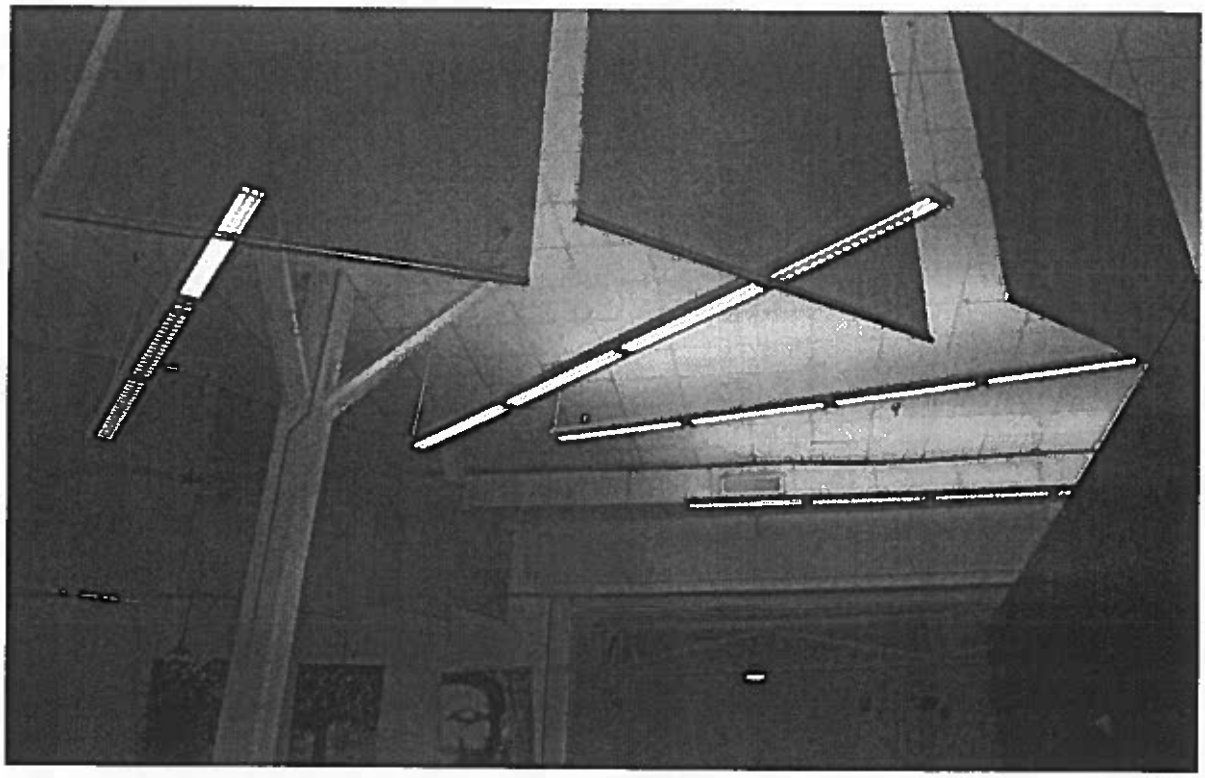


Photo 35 – T8 Direct/Indirect Fluorescent Lighting Fixtures in Youth Programs Auditorium

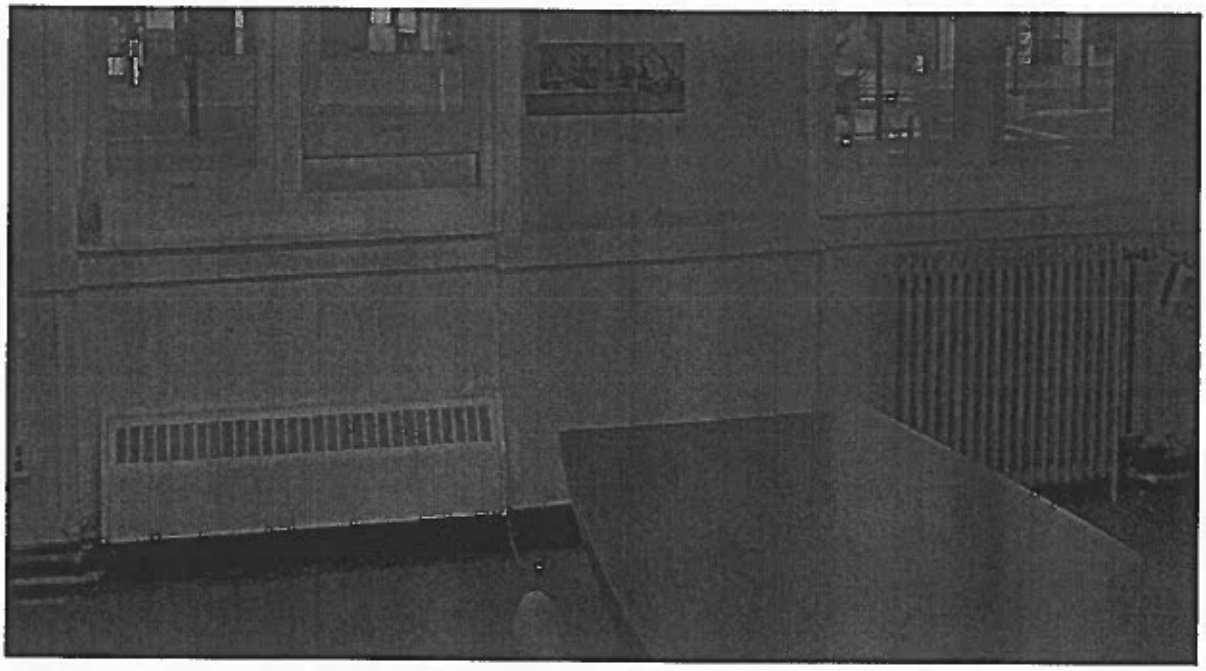


Photo 36 – Variety of terminal units installed. Finned convector on left, cast iron radiator on right. Radiator self-contained thermostatic valve is located just below window sill.

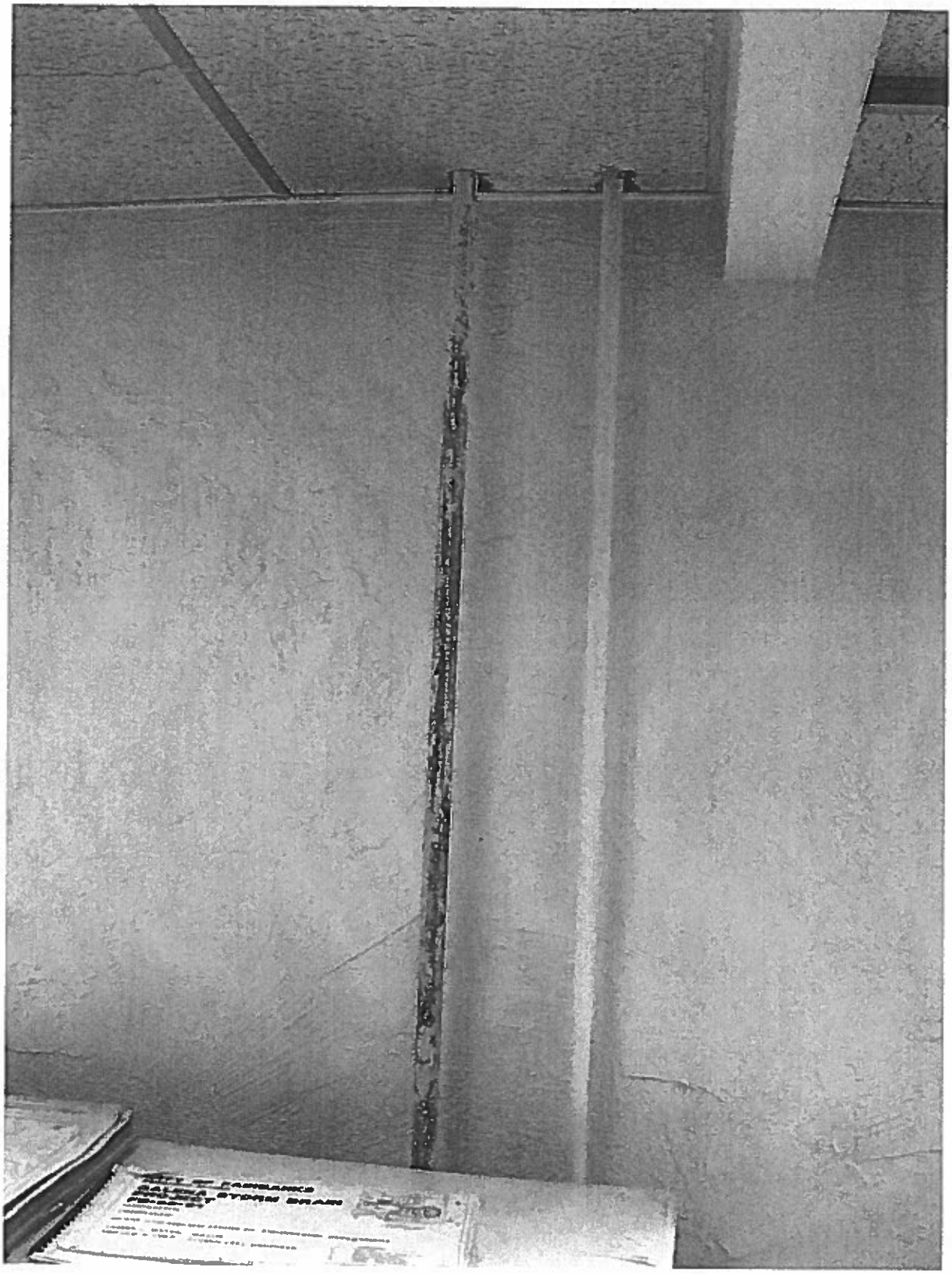


Photo 37 - Uninsulated steam and condensate return piping routed through occupied space.

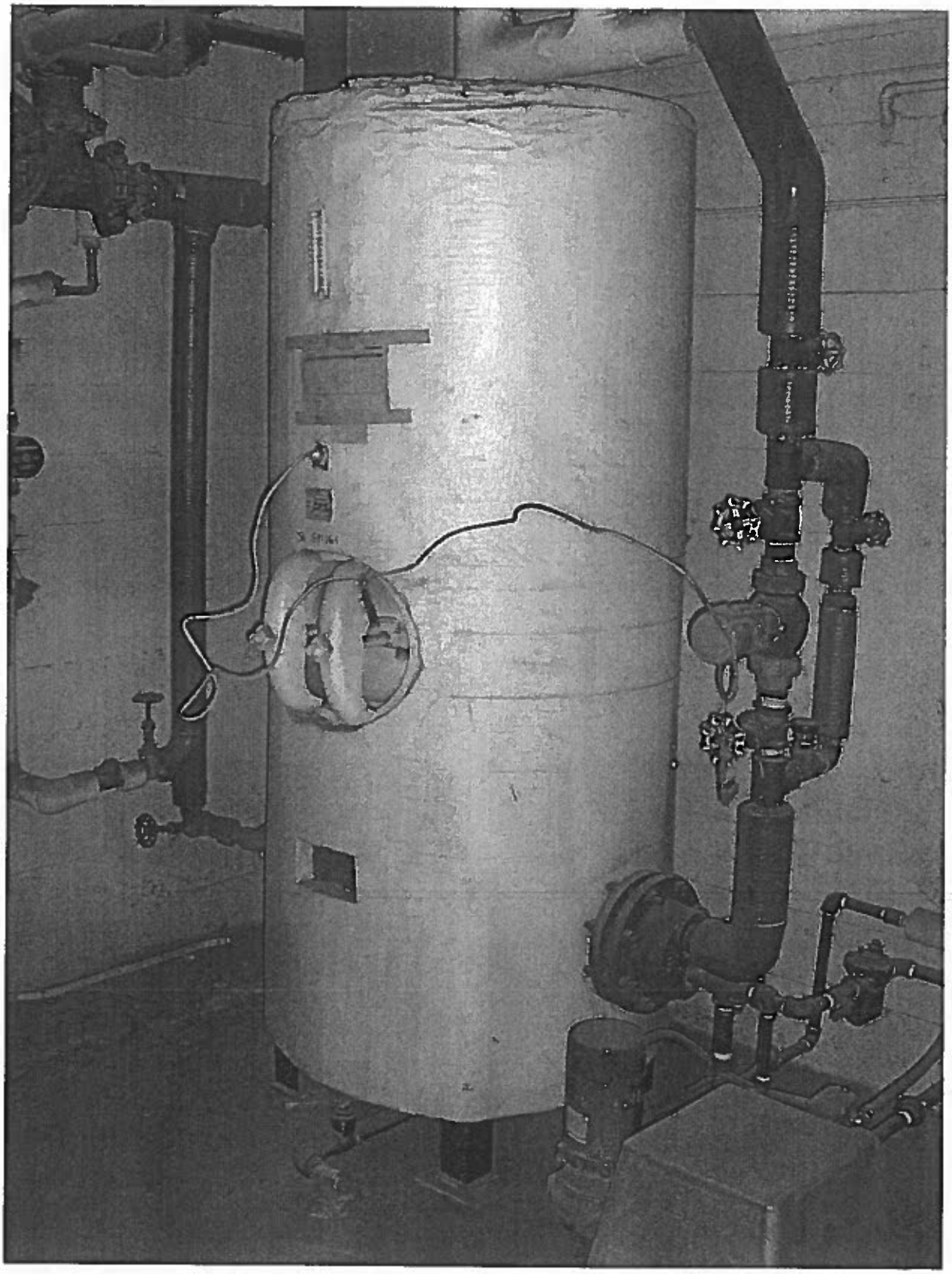


Photo 38 - Tank type water heater with steam coil.

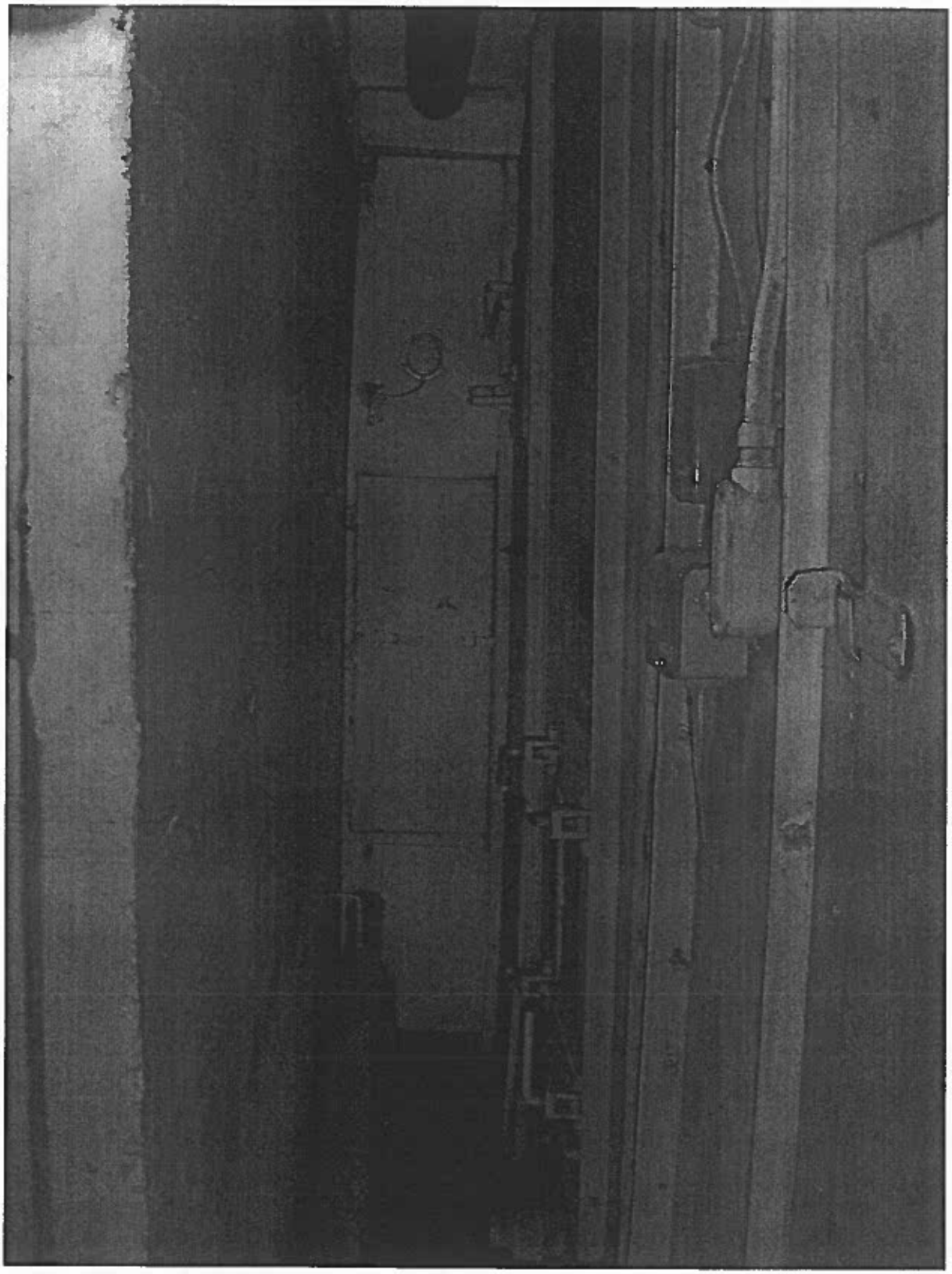


Photo 40 - Access to AHU-1

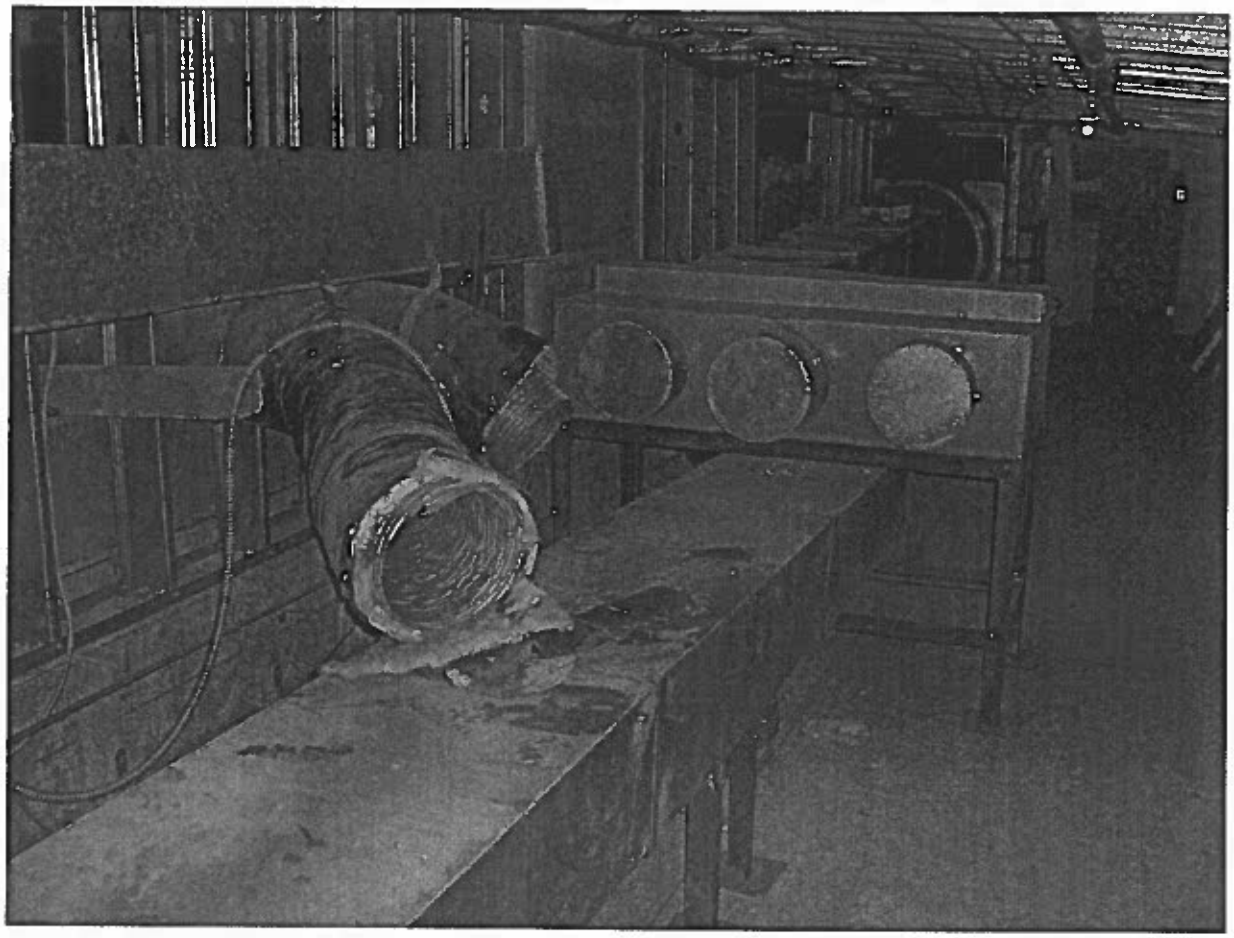


Photo 41 – AHU-3 with capped branches, abandoned ductwork and exposed wood in the attic.

ASCG, INC.

CONSTRUCTION COST ESTIMATE

PROJECT: Fairbanks City Hall M&E Upgrades — PREPARED BY: JLR — 1-Dec-05

LOCATION: Fairbanks, AK

JOB: **HEATING ONLY SYSTEM** — CHECKED BY: JLR — Project No: 4846

DESCRIPTION	QUANTITY		EQUIPMENT		MATERIAL		LABOR					TOTAL	
MECHANICAL	No. UNITS	UNITS	UNIT PRICE	EQUIP COST	UNIT PRICE	COST	HRS/ UNIT	UNITS	TOTAL HRS.	RATE	COST	UNIT COST	MATERIAL & LABOR
TOTAL DIRECT COST, MATL & LAB.						640,130.00			4,420		$220,982		$861,112
FREIGHT	10.0%					64,013.00							
SUBTOTAL						704,143.00					$220,982		$925,125
CONTRACTOR'S OVERHEAD	30.0%					211,242.90					$66,295		
SUBTOTAL						915,385.90					$287,276		$1,202,662
CONTRACTOR'S PROFIT	15.0%												$180,399
SUBTOTAL													$1,383,062
INFLATION 2007 CONSTRUCTION	8.0%												$110,645
CONTINGENCY	35.0%												$484,072
MECHANICAL CONTRACT TOTAL													$1,867,133
DESIGN FEE	10.0%												$186,713
PROJECT TOTAL													**$2,053,846**

ASCG, INC.

CONSTRUCTION COST ESTIMATE

PROJECT: Fairbanks City Hall M&E Upgrades — PREPARED BY: JLR — 1-Dec-05

LOCATION: Fairbanks, AK

JOB: **HEATING ONLY SYSTEM** — CHECKED BY: JLR — Project No: 4846

DESCRIPTION	QUANTITY		EQUIPMENT		MATERIAL		LABOR					TOTAL	
MECHANICAL	No. UNITS	UNITS	UNIT PRICE	EQUIP COST	UNIT PRICE	COST	HRS/ UNIT	UNITS	TOTAL HRS.	RATE	COST	UNIT COST	MATERIAL & LABOR
DIVISION 15 - MECHANICAL													
DEMOLITION													
PIPING DEMO	2,250	lin. Ft	$0		0.00		0.16		360.0	$50.00	18,000	$8.00	$18,000
RADIATOR & MISC DEMO	35	ton	$0		0.00		17.78		622.2	$50.00	31,112	$888.90	$31,112
HEATING SYSTEM													
PLATE HEAT EXCHANGER	1	EA	$0	$55,500.00	55,500.00		48.00		48.0	$50.00	2,400	$57,900.00	$57,900
CIRCULATOR PUMP, 15 HP	1	EA	$0	$7,990.00	7,990.00		40.00		40.0	$50.00	2,000	$9,990.00	$9,990
STEAM TRAP	2	EA	$0	$450.00	900.00		1.33		2.7	$50.00	133	$516.50	$1,033
EXPANSION TANK	1	EA	$0	$3,970.00	3,970.00		4.00		4.0	$50.00	200	$4,170.00	$4,170
AIR SEPARATOR	1	EA	$0	$3,460.00	3,460.00		7.06		7.1	$50.00	353	$3,812.95	$3,813
AIR VENTS	30	EA	$0	$140.00	4,200.00		0.67		20.0	$50.00	1,001	$173.35	$5,201
6" STEEL PIPE - MAINS	1,250	lin. Ft	$0	$40.20	50,250.00		0.77		967.5	$50.00	48,375	$78.90	$98,625
2" STEEL PIPE - BRANCHES	1,000	lin. Ft	$0	$7.70	7,700.00		0.25		250.0	$50.00	12,500	$20.20	$20,200
2" PIPE INSULATION - MAINS	1,250	lin. Ft	$0	$10.00	12,500.00		0.16		200.0	$50.00	10,000	$18.00	$22,500
1" PIPE INSULATION - BRANCHES	1,000	lin. Ft	$0	$2.50	2,500.00		0.08		80.0	$50.00	4,000	$6.50	$6,500
FAN COIL UNITS	141	EA	$0	$1,520.00	214,320.00		2.67		376.0	$50.00	18,802	$1,653.35	$233,122
STRAINERS	282	EA	$0	$28.00	7,896.00		0.62		173.4	$50.00	8,672	$58.75	$16,568
CONTROL VALVES	282	EA	$0	$51.00	14,382.00		0.40		112.8	$50.00	5,640	$71.00	$20,022
CONTROLS (SUBCONTRACTOR PRICE)													
FAN COIL UNITS	141	EA	$0	$1,650	232,650.00		8.00		1128.0	$50.00	56,400	$2,050.00	$289,050
HEAT EXCHANGER	1	EA	$0	$3,130	3,130.00		27.90		27.9	$50.00	1,395	$4,525.00	$4,525
BALANCING (SUBCONTRACTOR PRICE)													
FAN COIL UNITS	141	EA	$0	$130	18,330.00		0.00		0.0	$50.00	0	$130.00	$18,330
HEAT EXCHANGER	1	EA	$0	$135	135.00		0.00		0.0	$50.00	0	$135.00	$135
PUMP	1	EA	$0	$317	317.00		0.00		0.0	$50.00	0	$317.00	$317

ASCG, INC.

CONSTRUCTION COST ESTIMATE

PROJECT: Fairbanks City Hall M&E Upgrades — PREPARED BY: JLR — 1-Dec-05

LOCATION: Fairbanks, AK

JOB: **VENTILATION SYSTEMS** — CHECKED BY: JLR — Project No: 4846

DESCRIPTION	QUANTITY		EQUIPMENT		MATERIAL		LABOR					TOTAL	
MECHANICAL	No. UNITS	UNITS	UNIT PRICE	EQUIP COST	UNIT PRICE	COST	HRS/ UNIT	UNITS	TOTAL HRS.	RATE	COST	UNIT COST	MATERIAL & LABOR
TOTAL DIRECT COST, MATL & LAB.						155,498.00			493		$24,636		$180,134
FREIGHT	10.0%					15,549.80							
SUBTOTAL						171,047.80					$24,636		$195,684
CONTRACTOR'S OVERHEAD	30.0%					51,314.34					$7,391		
SUBTOTAL						222,362.14					$32,027		$254,389
CONTRACTOR'S PROFIT	15.0%												$38,158
SUBTOTAL													$292,547
INFLATION 2007 CONSTRUCTION	8.0%												$23,404
SUBTOTAL													$315,951
CONTINGENCY	35%												$102,392
MECHANICAL CONTRACT TOTAL													$394,939
DESIGN FEE	15.0%												$59,241
PROJECT TOTAL													**$454,180**

ASCG, INC.

CONSTRUCTION COST ESTIMATE

PROJECT: Fairbanks City Hall M&E Upgrades — PREPARED BY: JLR — 1-Dec-05

LOCATION: Fairbanks, AK

JOB: VENTILATION SYSTEMS — CHECKED BY: JLR — Project No: 4846

DESCRIPTION	QUANTITY		EQUIPMENT		MATERIAL		LABOR					TOTAL	
MECHANICAL	No. UNITS	UNITS	UNIT PRICE	EQUIP COST	UNIT PRICE	COST	HRS/ UNIT	UNITS	TOTAL HRS.	RATE	COST	UNIT COST	MATERIAL & LABOR
DIVISION 15 - MECHANICAL													
DEMOLITION													
AHU-3 DEMO	1	EA	$0		0.00		8.00		8.0	$50.00	400	$400.00	$400
DUCTWORK DEMO	200	lin. Ft	$0		0.00		0.12		23.8	$50.00	1,190	$5.95	$1,190
INSTALL/REPLACE COILS													
HEATING COIL 24"X48" - 4000 CFM	10	EA	$0	$1,800.00	18,000.00		5.33		53.3	$50.00	2,665	$2,066.50	$20,665
COOLING COIL- 24"X48 - 4000 CFM	10	EA	$0	$1,800.00	18,000.00		8.00		80.0	$50.00	4,000	$2,200.00	$22,000
CONTROL VALVES	6	EA	$0	$51.00	306.00		0.40		2.4	$50.00	120	$71.00	$426
STRAINERS	6	EA	$0	$28.00	168.00		0.62		3.7	$50.00	186	$59.00	$354
4" STEEL PIPE	400	lin. Ft	$0	$20.00	8,000.00		0.44		176.0	$50.00	8,800	$42.00	$16,800
2" PIPE INSULATION	400	lin. Ft	$0	$10.00	4,000.00		0.16		64.0	$50.00	3,200	$18.00	$7,200
REPLACE AHU-3													
AHU - 1000 CFM	1	EA	$0	$4,370.00	4,370.00		13.33		13.3	$50.00	667	$5,036.50	$5,037
DX COIL	1	EA	$0	$5,177.00	5,177.00		8.00		8.0	$50.00	400	$5,577.00	$5,577
HEATING COIL	1	EA	$0	$1,800.00	1,800.00		5.33		5.3	$50.00	267	$2,066.50	$2,067
REMOTE cONDENSER 2 TON	1	EA	$0	$1,130.00	1,130.00		5.00		5.0	$50.00	250	$1,380.00	$1,380
STRAINERS	1	EA	$0	$28.00	28.00		0.44		0.4	$50.00	22	$50.00	$50
CONTROL VALVES	1	EA	$0	$51.00	51.00		0.40		0.4	$50.00	20	$71.00	$71
DUCT - 16" ROUND	500	LB	$0	$1.90	950.00		0.10		49.0	$50.00	2,450	$6.80	$3,400

ASCG, INC.

CONSTRUCTION COST ESTIMATE

PROJECT: Fairbanks City Hall M&E Upgrades — PREPARED BY: JLR — 1-Dec-05

LOCATION: Fairbanks, AK

JOB: **VENTILATION SYSTEMS** — CHECKED BY: JLR — Project No: 4846

DESCRIPTION	QUANTITY		EQUIPMENT		MATERIAL		LABOR					TOTAL	
MECHANICAL	No. UNITS	UNITS	UNIT PRICE	EQUIP COST	UNIT PRICE	COST	HRS/ UNIT	UNITS	TOTAL HRS.	RATE	COST	UNIT COST	MATERIAL & LABOR
CONTROLS (SUBCONTRACTOR PRICE)													
AHU DAMPERS (OA/RA)	3	EA		$0	$9,769.00	29,307.00			0.0	$50.00	0	$9,769.00	$29,307
NIGHT SETBACK	3	EA		$0	$7,231.00	21,693.00			0.0	$50.00	0	$7,231.00	$21,693
HEATING COILS	3	EA		$0	$2,960.00	8,880.00			0.0	$50.00	0	$2,960.00	$8,880
SMOKE DETECTORS	3	EA		$0	$2,960.00	8,880.00			0.0	$50.00	0	$2,960.00	$8,880
TRANSFORMER VAULT COOLING													
DUCT, FAN, CONTROLS	1	LOT		$0	$6,000.00	6,000.00			0.0	$50.00	0	$6,000.00	$6,000
BALANCING (SUBCONTRACTOR PRICE)													
HEATING/COOLING COILS	6	EA		$0	$135	810.00			0.0	$50.00	0	$135.00	$810
AHU FANS	3	EA		$0	$408	1,224.00			0.0	$50.00	0	$408.00	$1,224
EXHAUST FANS	3	EA		$0	$408	1,224.00			0.0	$50.00	0	$408.00	$1,224
RESISTERS- SA/RA/EA	100	EA		$0	$125	12,500.00			0.0	$50.00	0	$125.00	$12,500
BRANCH DUCTS	24	EA		$0	$125	3,000.00			0.0	$50.00	0	$125.00	$3,000

ASCG, INC.

CONSTRUCTION COST ESTIMATE

PROJECT: Fairbanks City Hall M&E Upgrades — PREPARED BY: JLR — 1-Dec-05

LOCATION: Fairbanks, AK

JOB: **FAN COIL SYSTEM** — CHECKED BY: JLR — Project No: 4846

DESCRIPTION	QUANTITY		EQUIPMENT		MATERIAL		LABOR					TOTAL	
MECHANICAL	No. UNITS	UNITS	UNIT PRICE	EQUIP COST	UNIT PRICE	COST	HRS/ UNIT	UNITS	TOTAL HRS.	RATE	COST	UNIT COST	MATERIAL & LABOR
TOTAL DIRECT COST, MATL & LAB.						819,786.00			5,954		$297,680		$1,117,466
FREIGHT	10.0%					81,978.60							
SUBTOTAL						901,764.60					$297,680		$1,199,444
CONTRACTOR'S OVERHEAD	30.0%					270,529.38					$89,304		
SUBTOTAL						1,172,293.98					$386,984		$1,559,278
CONTRACTOR'S PROFIT	15.0%												$233,892
SUBTOTAL													$1,793,169
INFLATION 2007 CONSTRUCTION	8.0%												$143,454
													$1,936,623
CONTINGENCY	35.0%												$627,609
MECHANICAL CONTRACT TOTAL													$2,420,779
DESIGN FEE	10.0%												$242,078
PROJECT TOTAL													**$2,662,857**

ASCG, INC.

CONSTRUCTION COST ESTIMATE

PROJECT: Fairbanks City Hall M&E Upgrades — PREPARED BY: JLR — 1-Dec-05
LOCATION: Fairbanks, AK
JOB: FAN COIL SYSTEM — CHECKED BY: JLR — Project No: 4846

DESCRIPTION	QUANTITY		EQUIPMENT		MATERIAL		LABOR					TOTAL	
MECHANICAL	No. UNITS	UNITS	UNIT PRICE	EQUIP COST	UNIT PRICE	COST	HRS/ UNIT	UNITS	TOTAL HRS.	RATE	COST	UNIT COST	MATERIAL & LABOR
DIVISION 15 - MECHANICAL													
DEMOLITION													
PIPING DEMO	2,250	lin. Ft	$0			0.00	0.16		360.0	$50.00	18,000	$8.00	$18,000
RADIATOR & MISC DEMO	35	ton	$0			0.00	17.78		622.2	$50.00	31,112	$888.90	$31,112
HEATING SYSTEM													
PLATE HEAT EXCHANGER	1	EA	$0		$55,500.00	55,500.00	48.00		48.0	$50.00	2,400	$57,900.00	$57,900
CIRCULATOR PUMP, 15 HP	1	EA	$0		$7,990.00	7,990.00	40.00		40.0	$50.00	2,000	$9,990.00	$9,990
STEAM TRAP	2	EA			$450.00	900.00	1.33		2.7	$50.00	133	$516.50	$1,033
EXPANSION TANK	1	EA			$3,970.00	3,970.00	4.00		4.0	$50.00	200	$4,170.00	$4,170
AIR SEPARATOR	1	EA	$0		$3,460.00	3,460.00	7.06		7.1	$50.00	353	$3,812.95	$3,813
AIR VENTS	30	EA	$0		$140.00	4,200.00	0.67		20.0	$50.00	1,001	$173.35	$5,201
6" STEEL PIPE - MAINS	1,250	lin. Ft	$0		$40.20	50,250.00	0.77		967.5	$50.00	48,375	$78.90	$98,625
2" STEEL PIPE - BRANCHES	1,000	lin. Ft	$0		$7.70	7,700.00	0.25		250.0	$50.00	12,500	$20.20	$20,200
2" PIPE INSULATION - MAINS	1,250	lin. Ft			$10.00	12,500.00	0.16		200.0	$50.00	10,000	$18.00	$22,500
1" PIPE INSULATION - BRANCHES	1,000	lin. Ft			$2.50	2,500.00	0.08		80.0	$50.00	4,000	$6.50	$6,500
FAN COIL UNITS	141	EA	$0		$1,520.00	214,320.00	2.67		376.0	$50.00	18,802	$1,653.35	$233,122
STRAINERS	282	EA	$0		$28.00	7,896.00	0.62		173.4	$50.00	8,672	$58.75	$16,568
CONTROL VALVES	282	EA	$0		$51.00	14,382.00	0.40		112.8	$50.00	5,640	$71.00	$20,022
COOLING SYSTEM													
CIRCULATOR PUMP	1	EA	$0		$7,990	7,990.00	40.00		40.0	$50.00	2,000	$9,990.00	$9,990
EXPANSION TANK	1	EA	$0		$3,970	3,970.00	4.00		4.0	$50.00	200	$4,170.00	$4,170
AIR SEPARATOR	1	EA	$0		$3,460	3,460.00	7.06		7.1	$50.00	353	$3,813.00	$3,813
AIR VENTS	30	EA	$0		$140	4,200.00	0.67		20.1	$50.00	1,005	$173.50	$5,205
4" STEEL PIPE - MAINS	1,250	lin. Ft	$0		$20	24,625.00	0.44		555.0	$50.00	27,750	$41.90	$52,375
2" STEEL PIPE - BRANCHES	1,000	lin. Ft	$0		$8	7,700.00	0.25		250.0	$50.00	12,500	$20.20	$20,200
2" PIPE INSULATION - MAINS	1,250	lin. Ft	$0		$10	12,500.00	0.16		200.0	$50.00	10,000	$18.00	$22,500
1" PIPE INSULATION - BRANCHES	1,000	lin. Ft	$0		$3	2,500.00	0.08		80.0	$50.00	4,000	$6.50	$6,500
CHILLER, 90 TON w/ CONTROLS	1	EA	$0		$97,200	97,200.00	320.00		320.0	$50.00	16,000	$113,200.00	$113,200
COOLING TOWER, 90 TON	1	EA	$0		$11,200	11,200.00	22.00		22.0	$50.00	1,100	$12,300.00	$12,300

ASCG, INC.

CONSTRUCTION COST ESTIMATE

PROJECT: Fairbanks City Hall M&E Upgrades — PREPARED BY: JLR — 1-Dec-05

LOCATION: Fairbanks, AK

JOB: **FAN COIL SYSTEM** — CHECKED BY: JLR — Project No: 4846

DESCRIPTION	QUANTITY		EQUIPMENT		MATERIAL		LABOR					TOTAL	
MECHANICAL	No. UNITS	UNITS	UNIT PRICE	EQUIP COST	UNIT PRICE	COST	HRS/ UNIT	UNITS	TOTAL HRS.	RATE	COST	UNIT COST	MATERIAL & LABOR
CONTROLS (SUBCONTRACTOR PRICE)													
FAN COIL UNITS	141	EA		$0	$1,650	232,650.00	8.00		1128.0	$50.00	56,400	$2,050.00	$289,050
HEAT EXCHANGER	1	EA		$0	$3,130	3,130.00	27.90		27.9	$50.00	1,395	$4,525.00	$4,525
COOLING TOWER	1	EA		$0	$2,912	2,912.00	35.80		35.8	$50.00	1,790	$4,702.00	$4,702
BALANCING (SUBCONTRACTOR PRICE)													
CHILLER	1	EA		$0	$613	613.00	0.00		0.0	$50.00	0	$613.00	$613
FAN COIL UNITS	141	EA		$0	$130	18,330.00	0.00		0.0	$50.00	0	$130.00	$18,330
HEAT EXCHANGER	1	EA		$0	$135	135.00	0.00		0.0	$50.00	0	$135.00	$135
PUMP	2	EA		$0	$317	634.00	0.00		0.0	$50.00	0	$317.00	$634
COOLING TOWER	1	EA		$0	$469	469.00			0.0	$50.00	0	$469.00	$469

ASCG, INC.

CONSTRUCTION COST ESTIMATE

PROJECT: Fairbanks City Hall M&E Upgrades — PREPARED BY: JLR — 1-Dec-05

LOCATION: Fairbanks, AK

JOB: **WATER SOURCE HEAT PUMPS** — CHECKED BY: JLR — Project No: 4846

DESCRIPTION	QUANTITY		EQUIPMENT		MATERIAL		LABOR					TOTAL	
MECHANICAL	No. UNITS	UNITS	UNIT PRICE	EQUIP COST	UNIT PRICE	COST	HRS/ UNIT	UNITS	TOTAL HRS.	RATE	COST	UNIT COST	MATERIAL & LABOR
TOTAL DIRECT COST, MATL & LAB.						752,735.00			5,467		$273,343		$1,026,078
FREIGHT	10.0%					75,273.50							
SUBTOTAL						828,008.50					$273,343		$1,101,351
CONTRACTOR'S OVERHEAD	30.0%					248,402.55					$82,003		
SUBTOTAL						1,076,411.05					$355,346		$1,431,757
CONTRACTOR'S PROFIT	15.0%												$214,763
SUBTOTAL													$1,646,520
INFLATION 2007 CONSTRUCTION	8.0%												$131,722
													$1,778,242
CONTINGENCY	35%												$576,282
MECHANICAL CONTRACT TOTAL													$2,222,802
DESIGN FEE	10%												$222,280
PROJECT TOTAL													**$2,445,082**

ASCG, INC.

CONSTRUCTION COST ESTIMATE

PROJECT: Fairbanks City Hall M&E Upgrades — PREPARED BY: JLR — 1-Dec-05

LOCATION: Fairbanks, AK

JOB: **WATER SOURCE HEAT PUMPS** — CHECKED BY: JLR — Project No: 4846

DESCRIPTION	QUANTITY		EQUIPMENT		MATERIAL		LABOR					TOTAL	
MECHANICAL	No. UNITS	UNITS	UNIT PRICE	EQUIP COST	UNIT PRICE	COST	HRS/ UNIT	UNITS	TOTAL HRS.	RATE	COST	UNIT COST	MATERIAL & LABOR
DIVISION 15 - MECHANICAL													
DEMOLITION													
PIPING DEMO	2,250	lin. Ft	$0			0.00	0.16		360.0	$50.00	18,000	$8.00	$18,000
RADIATOR & MISC DEMO	35	ton	$0			0.00	17.78		622.2	$50.00	31,112	$888.90	$31,112
HEATING SYSTEM													
PLATE HEAT EXCHANGER	1	EA	$0		$55,500.00	55,500.00	48.00		48.0	$50.00	2,400	$57,900.00	$57,900
CIRCULATOR PUMP, 15 HP	1	EA	$0		$7,990.00	7,990.00	40.00		40.0	$50.00	2,000	$9,990.00	$9,990
STEAM TRAP	2	EA			$450.00	900.00	1.33		2.7	$50.00	133	$516.50	$1,033
EXPANSION TANK	1	EA			$3,970.00	3,970.00	4.00		4.0	$50.00	200	$4,170.00	$4,170
AIR SEPARATOR	1	EA	$0		$3,460.00	3,460.00	7.06		7.1	$50.00	353	$3,812.95	$3,813
AIR VENTS	30	EA	$0		$140.00	4,200.00	0.67		20.0	$50.00	1,001	$173.35	$5,201
6" STEEL PIPE - MAINS	1,250	lin. Ft	$0		$40.20	50,250.00	0.77		967.5	$50.00	48,375	$78.90	$98,625
2" STEEL PIPE - BRANCHES	1,000	lin. Ft	$0		$7.70	7,700.00	0.25		250.0	$50.00	12,500	$20.20	$20,200
2" PIPE INSULATION - MAINS	1,250	lin. Ft			$10.00	12,500.00	0.16		200.0	$50.00	10,000	$18.00	$22,500
1" PIPE INSULATION - BRANCHES	1,000	lin. Ft			$2.50	2,500.00	0.08		80.0	$50.00	4,000	$6.50	$6,500
CONSOL HEAT PUMP	141	EA	$0		$3,924.00	553,284.00	17.78		2507.0	$50.00	125,349	$4,813.00	$678,633
STRAINERS	141	EA	$0		$28.00	3,948.00	0.62		86.7	$50.00	4,336	$58.75	$8,284
COOLING SYSTEM													
6" STEEL PIPE - MAINS	200	lin. Ft	$0		$40	8,040.00	0.77		154.0	$50.00	7,700	$78.70	$15,740
2" PIPE INSULATION - MAINS	200	lin. Ft	$0		$10	2,000.00	0.16		32.0	$50.00	1,600	$18.00	$3,600
COOLING TOWER	1	EA	$0		$11,200	11,200.00	22.00		22.0	$50.00	1,100	$12,300.00	$12,300
CONTROLS (SUBCONTRACTOR PRICE)													
HEAT EXCHANGER	1	EA	$0		$3,130	3,130.00	27.90		27.9	$50.00	1,395	$4,525.00	$4,525
COOLING TOWER	1	EA	$0		$2,912	2,912.00	35.80		35.8	$50.00	1,790	$4,702.00	$4,702
BALANCING (SUBCONTRACTOR PRICE)													
HEAT PUMP	141	EA	$0		$130	18,330.00	0.00		0.0	$50.00	0	$130.00	$18,330

ASCG, INC.

CONSTRUCTION COST ESTIMATE

PROJECT: Fairbanks City Hall M&E Upgrades — PREPARED BY: JLR — 1-Dec-05

LOCATION: Fairbanks, AK

JOB: **WATER SOURCE HEAT PUMPS** — CHECKED BY: JLR — Project No: 4846

DESCRIPTION	QUANTITY		EQUIPMENT		MATERIAL		LABOR					TOTAL	
MECHANICAL	No. UNITS	UNITS	UNIT PRICE	EQUIP COST	UNIT PRICE	COST	HRS/ UNIT	UNITS	TOTAL HRS.	RATE	COST	UNIT COST	MATERIAL & LABOR
HEAT EXCHANGER	1	EA		$0	$135	135.00	0.00		0.0	$50.00	0	$135.00	$135
PUMP	1	EA		$0	$317	317.00	0.00		0.0	$50.00	0	$317.00	$317
COOLING TOWER	1	EA		$0	$469	469.00	0.00		0.0	$50.00	0	$469.00	$469

ASCG, INC.

CONSTRUCTION COST ESTIMATE

PROJECT: Fairbanks City Hall M&E Upgrades — PREPARED BY: RCK — 29-Nov-05

LOCATION: Fairbanks, AK

JOB: **UPGRADE ELECTRICAL SERVICE & MAIN DISTRIBUTION EQUIPMENT** — CHECKED BY: RCK — Project No: 4846

DESCRIPTION	QUANTITY	EQUIPMENT	MATERIAL	LABOR					TOTAL	
ELECTRICAL	No. UNITS	UNIT EQUIP PRICE COST	UNIT PRICE	COST	HRS/ UNIT	UNITS	TOTAL HRS.	RATE	COST	UNIT COST	MATERIAL & LABOR
TOTAL DIRECT COST, MATL & LAB.				22,376.50			465		$23,531		$45,908
FREIGHT	10.0%			2,237.65							
SUBTOTAL				24,614.15					$23,531		$48,146
SUBCONTRACTOR'S OVERHEAD	30.0%			7,384.25					$7,059		
SUBTOTAL				31,998.40					$30,591		$62,589
SUBCONTRACTOR'S PROFIT	12.5%										$7,824
SUBTOTAL											$70,413
INFLATION 2007 CONSTRUCTION	8.0%										$5,633
SUBTOTAL											$76,046
CONTINGENCY	35.0%										24,645
ELECTRICAL SUBCONTRACT TOTAL											$100,691
DESIGN FEE	20.0%										$20,138
PROJECT TOTAL											**$120,829**

ASCG, INC.

CONSTRUCTION COST ESTIMATE

PROJECT: Fairbanks City Hall M&E Upgrades — PREPARED BY: RCK — 29-Nov-05

LOCATION: Fairbanks, AK

JOB: **UPGRADE ELECTRICAL SERVICE & MAIN DISTRIBUTION EQUIPMENT** — CHECKED BY: RCK — Project No: 4846

DESCRIPTION	QUANTITY	EQUIPMENT		MATERIAL		LABOR					TOTAL	
ELECTRICAL	No. UNITS UNITS	UNIT PRICE	EQUIP COST	UNIT PRICE	COST	HRS/ UNIT	UNITS	TOTAL HRS.	RATE	COST	UNIT COST	MATERIAL & LABOR
DIVISION 16 - ELECTRICAL												
CONDUIT - R.S.C.												
1-1/2" R.S.C.	50 Lin.Ft	$0	$0	$9.50	475.00	8.00	100	4.0	$50.57	202	$13.55	$677
FITTINGS & ASSEMBLY	100% Matl	$0	$0		475.00	100% Lab		4.0	$50.57	202	$13.55	$677
2-1/2" R.S.C	100 Lin.Ft	$0	$0	$15.15	1,515.00	15.00	100	15.0	$50.57	759	$22.74	$2,274
FITTINGS & ASSEMBLY	50% Matl	$0	$0		757.50	100% Lab		15.0	$50.57	759	$15.16	$1,516
3-1/2" R.S.C.	100 Lin.Ft	$0	$0	$25.00	2,500.00	30.00	100	30.0	$50.57	1,517	$40.17	$4,017
FITTINGS & ASSEMBLY	50% Matl	$0	$0		1,250.00	100% Lab		30.0	$50.57	1,517	$27.67	$2,767
CONDUIT - E.M.T.												
1/2" E.M.T	500 Lin.Ft	$0	$0	$0.36	180.00	4.50	100	22.5	$50.57	1,138	$2.64	$1,318
FITTINGS & ASSEMBLY	100% Matl	$0	$0		180.00	100% Lab		22.5	$50.57	1,138	$2.64	$1,318
3/4" E.M.T.	250 Lin.Ft	$0	$0	$0.58	145.00	5.00	100	12.5	$50.57	632	$3.11	$777
FITTINGS & ASSEMBLY	100% Matl	$0	$0		145.00	100% Lab		12.5	$50.57	632	$3.11	$777
1" E.M.T.	150 Lin.Ft	$0	$0	$0.75	112.50	5.00	100	7.5	$50.57	379	$3.28	$492
FITTINGS & ASSEMBLY	100% Matl	$0	$0		112.50	100% Lab		7.5	$50.57	379	$3.28	$492
CONDUCTORS												
#12 AWG THHN	1,500 Lin.Ft	$0	$0	$0.15	225.00	0.60	100	9.0	$50.57	455	$0.45	$680
#10 AWG THHN	750 Lin.Ft	$0	$0	$0.22	165.00	0.75	100	5.6	$50.57	284	$0.60	$449
#2 AWG THHN	450 Lin.Ft	$0	$0	$1.35	607.50	1.80	100	8.1	$50.57	410	$2.26	$1,017
250 kcmil THHN	400 Lin.Ft	$0	$0	$2.69	1,076.00	2.90	100	11.6	$50.57	587	$4.16	$1,663
500 kcmil THHN	400 Lin.Ft	$0	$0	$4.75	1,900.00	4.50	100	18.0	$50.57	910	$7.03	$2,810
#3 AWG BARE COPPER	50 Lin.Ft	$0	$0	$0.65	32.50	4.50	100	2.3	$50.57	114	$2.93	$146
#6 AWG BARE COPPER	50 Lin.Ft	$0	$0	$0.35	17.50	4.50	100	2.3	$50.57	114	$2.63	$131

ASCG, INC.

CONSTRUCTION COST ESTIMATE

PROJECT: Fairbanks City Hall M&E Upgrades
LOCATION: Fairbanks, AK
JOB: **UPGRADE ELECTRICAL SERVICE & MAIN DISTRIBUTION EQUIPMENT**

PREPARED BY: RCK 29-Nov-05
CHECKED BY: RCK Project No: 4846

DESCRIPTION	QUANTITY	EQUIPMENT		MATERIAL		LABOR					TOTAL	
ELECTRICAL	No. UNITS UNITS	UNIT PRICE	EQUIP COST	UNIT PRICE	COST	HRS/ UNIT	UNITS	TOTAL HRS.	RATE	COST	UNIT COST	MATERIAL & LABOR
BRANCH PANELBOARDS												
NEW PNL 'BFL/D'	1 Each	$0	$0	$1,784	1,783.50	16.0	1.0	16.0	$50.57	809	$2,593	$2,593
NEW PANL 'MDP/3'	1 Each	$0	$0	$6,512	6,512.00	32.0	1.0	32.0	$50.57	1,618	$8,130	$8,130
DISCONNECT SWITCH												
400 AMP MAIN DISCONNECT	1 Each	$0	$0	$2,075	2,075.00	16.00	1.0	16.0	$50.57	809	$2,884.12	$2,884
FUSES	3 Each	$0	$0	$45.00	135.00	0.50	1.0	1.5	$50.57	76	$70.29	$211
DEMOLITION												
GENERAL DEMO	1 Allow	$0	$0	$0.00	0.00	160.00	1.0	160.0	$50.57	8,091	$8,091	$8,091

ASCG, INC.

CONSTRUCTION COST ESTIMATE

PROJECT: Fairbanks City Hall M&E Upgrades — PREPARED BY: RCK — 29-Nov-05

LOCATION: Fairbanks, AK

JOB: **REPLACE PANELS CAF/C, BFL/B, BFL/C, 2/A, & 2/E, UPGRADE BRACH CKTS & DEVICES** — CHECKED BY: RCK — Project No: 4846

DESCRIPTION	QUANTITY	EQUIPMENT	MATERIAL	LABOR				TOTAL	
ELECTRICAL	No. UNITS UNITS	UNIT EQUIP PRICE COST	UNIT PRICE COST	HRS/ UNIT	TOTAL UNITS HRS.	RATE	COST	UNIT COST	MATERIAL & LABOR
TOTAL DIRECT COST, MATL & LAB.			$32,350		1,868		$94,484		$126,834
FREIGHT	10.0%		$3,235						
SUBTOTAL			$35,585				$94,484		$130,069
SUBCONTRACTOR'S OVERHEAD	30.0%		$10,676				$28,345		
SUBTOTAL			$46,261				$122,829		$169,089
SUBCONTRACTOR'S PROFIT	12.5%								$21,136
SUBTOTAL									$190,226
INFLATION 2007 CONSTRUCTION	8.0%								$15,218
									$205,444
CONTINGENCY	35.0%								$71,905
SUBTOTAL, ELECTRICAL SUBCONTRACTOR									$277,349
DESIGN FEE	20.0%								$55,470
PROJECT TOTAL									**$332,819**

ASCG, INC.

CONSTRUCTION COST ESTIMATE

PROJECT: Fairbanks City Hall M&E Upgrades — PREPARED BY: RCK — 29-Nov-05

LOCATION: Fairbanks, AK

JOB: **REPLACE PANELS CAF/C, BFL/B, BFL/C, 2/A, & 2/E, UPGRADE BRACH CKTS & DEVICES** — CHECKED BY: RCK — Project No: 4846

DESCRIPTION	QUANTITY		EQUIPMENT		MATERIAL		LABOR					TOTAL	
ELECTRICAL	No. UNITS	UNITS	UNIT PRICE	EQUIP COST	UNIT PRICE	COST	HRS/ UNIT	UNITS	TOTAL HRS.	RATE	COST	UNIT COST	MATERIAL & LABOR
DIVISION 16 - ELECTRICAL													
CONDUIT - R.S.C.													
1-1/2" I.M.C.	1,000	Lin.Ft	$0	$0	$3.30	3,300.00	8.00	100	80.0	$50.57	4,046	$7.35	$7,346
FITTINGS & ASSEMBLY	100%	Matl	$0	$0		3,300.00	100%	Lab	80.0	$50.57	4,046	$7.35	$7,346
CONDUIT - E.M.T.													
1/2" E.M.T	750	Lin.Ft	$0	$0	$0.36	270.00	7.50	100	56.3	$50.57	2,845	$4.15	$3,115
FITTINGS & ASSEMBLY	100%	Matl	$0	$0		270.00	100%	Lab	56.3	$50.57	2,845	$4.15	$3,115
CONDUCTORS													
#12 AWG THHN	7,500	Lin.Ft	$0	$0	$0.15	1,125.00	0.60	100	45.0	$50.57	2,276	$0.45	$3,401
#10 AWG THHN	5,000	Lin.Ft	$0	$0	$0.22	1,085.00	0.75	100	37.5	$50.57	1,896	$0.60	$2,981
#8 AWG THHN	1,250	Lin.Ft	$0	$0	$0.35	437.50	0.95	100	11.9	$50.57	601	$0.83	$1,038
#2 AWG THHN	1,000	Lin.Ft	$0	$0	$0.90	900.00	1.80	100	18.0	$50.57	910	$1.81	$1,810
#1/0 AWG THHN	4,000	Lin.Ft	$0	$0	$2.69	10,760.00	2.90	100	116.0	$50.57	5,866	$4.16	$16,626
RECEPTACLES													
NEMA 5-20R DUPLEX	150	Each	$0	$0	$12.90	1,935.00	1.0	1.0	150.0	$50.57	7,586	$63.47	$9,521
INSPECT RECEPTACLES	1,500	Each	$0	$0	$0.00	0.00	0.5	2.0	375.0	$50.57	18,964	$12.64	$18,964
BOND RECEPTACLES	1,050	Each	$0	$0	$0.00	0.00	0.5	2.0	262.5	$50.57	13,275	$12.64	$13,275
BRANCH PANELBOARDS													
NEW PANELS	5	Each	$0	$0	$1,784	8,917.50	24.0	1.0	120.0	$50.57	6,068	$2,997	$14,986
CUT, PATCH PAINT													
NEW PANEL LOCATIONS	5	Each	$0	$0	$10	50.00	4.0	1.0	20.0	$50.57	1,011	$212	$1,061

ASCG, INC.

CONSTRUCTION COST ESTIMATE

PROJECT: Fairbanks City Hall M&E Upgrades — PREPARED BY: RCK — 29-Nov-05

LOCATION: Fairbanks, AK

JOB: **REPLACE PANELS CAF/C, BFL/B, BFL/C, 2/A, & 2/E, UPGRADE BRACH CKTS & DEVICES** — CHECKED BY: RCK — Project No: 4846

DESCRIPTION	QUANTITY	EQUIPMENT		MATERIAL		LABOR					TOTAL	
ELECTRICAL	No. UNITS UNITS	UNIT PRICE	EQUIP COST	UNIT PRICE	COST	HRS/ UNIT	UNITS	TOTAL HRS.	RATE	COST	UNIT COST	MATERIAL & LABOR
MISC.												
TRACE BRANCH CIRCUITS	1 Allow	$0	$0	$0	0.00	360.0	1.0	360.0	$50.57	18,205	$18,205	$18,205
DEMOLITION												
GENERAL DEMO	5 Each	$0	$0	$0.00	0.00	8.00	1.0	80.0	$50.57	4,046	$809	$4,046

ASCG, INC.

CONSTRUCTION COST ESTIMATE

PROJECT: Fairbanks City Hall M&E Upgrades — PREPARED BY: RCK — 29-Nov-05

LOCATION: Fairbanks, AK

UPGRADE GENERAL LIGHTING, PROVIDE EMERG BALLASTS & EXIT SIGNS — CHECKED BY: RCK — Project No: 4846

DESCRIPTION	QUANTITY	EQUIPMENT	MATERIAL	LABOR				TOTAL	
ELECTRICAL	No. UNITS / UNITS	UNIT PRICE	EQUIP COST	UNIT PRICE	COST	HRS/ UNIT	UNITS	TOTAL HRS.	RATE	COST	UNIT COST	MATERIAL & LABOR
TOTAL DIRECT COST, MATL & LAB.					169,870.00			6,357		$321,473		$491,343
FREIGHT	10.0%				16,987.00							
SUBTOTAL					186,857.00					$321,473		$508,330
SUBCONTRACTOR'S OVERHEAD	30.0%				56,057.10					$96,442		
SUBTOTAL					242,914.10					$417,916		$660,830
SUBCONTRACTOR'S PROFIT	12.5%											$82,604
SUBTOTAL												$743,433
INFLATION 2007 CONSTRUCTION	8.0%											$59,475
SUBTOTAL												$802,908
CONTINGENCY	35.0%											$260,202
ELECTRICAL SUBCONTRACT TOTAL												$1,003,635
DESIGN FEE	12.0%											$120,436
PROJECT TOTAL												**$1,124,071**

ASCG, INC.

CONSTRUCTION COST ESTIMATE

PROJECT: Fairbanks City Hall M&E Upgrades — PREPARED BY: RCK — 29-Nov-05

LOCATION: Fairbanks, AK

UPGRADE GENERAL LIGHTING, PROVIDE EMERG BALLASTS & EXIT SIGNS — CHECKED BY: RCK — Project No: 4846

DESCRIPTION	QUANTITY		EQUIPMENT		MATERIAL		LABOR					TOTAL	
ELECTRICAL	No. UNITS	UNITS	UNIT PRICE	EQUIP COST	UNIT PRICE	COST	HRS/ UNIT	UNITS	TOTAL HRS.	RATE	COST	UNIT COST	MATERIAL & LABOR
DIVISION 16 - ELECTRICAL													
CONDUIT - E.M.T.													
1/2" E.M.T	10,000	Lin.Ft	$0	$0	$0.36	3,600.00	7.50	100	750.0	$50.57	37,928	$4.15	$41,528
FITTINGS & ASSEMBLY	100%	Matl	$0	$0		3,600.00	100%	Lab	750.0	$50.57	37,928	$4.15	$41,528
CONDUIT - FLEX													
1/2" FLEX	7,500	Lin.Ft	$0	$0	$0.42	3,150.00	4.00	100	300.0	$50.57	15,171	$2.44	$18,321
FITTINGS & ASSEMBLY	100%	Matl	$0	$0		3,150.00	100%	Lab	300.0	$50.57	15,171	$2.44	$18,321
SURFACE RACEWAY													
2000 WM OR EQUAL	2500	Lin.Ft	$0	$0	$1.25	3,125.00	9.00	100	225.0	$50.57	11,378	$5.80	$14,503
	100%	Matl	$0	$0		3,125.00	100%	Lab	225.0	$50.57	11,378	$5.80	$14,503
CONDUCTORS													
#12 AWG THHN	32,000	Lin.Ft	$0	$0	$0.15	4,800.00	0.80	100	256.0	$50.57	12,946	$0.55	$17,746
#10 AWG THHN	15,000	Lin.Ft	$0	$0	$0.22	3,300.00	0.80	100	120.0	$50.57	6,068	$0.62	$9,368
SWITCHES													
SPST SWITCH	40	Each	$0	$0	$9.75	390.00	1.50	1.0	60.0	$50.57	3,034	$85.61	$3,424
3-WAY	28	Each	$0	$0	$13.75	385.00	1.50	1.0	42.0	$50.57	2,124	$89.61	$2,509
LIGHTING													
3-LAMP FLUOR PREMIUM FIXTURE	450	Each	$0	$0	$140.00	63,000.00	1.50	1.0	675.0	$50.57	34,135	$215.86	$97,135
2-LAMP FLUOR FIXTURE	360	Each	$0	$0	$75.00	27,000.00	1.50	1.0	540.0	$50.57	27,308	$150.86	$54,308
SPECIALTY LIGHT FIXTURES	60	Each	$0	$0	$125.00	7,500.00	1.50	1.0	90.0	$50.57	4,551	$200.86	$12,051
EXIT SIGNS	110	Each	$0	$0	$150.00	16,500.00	2.00	1.0	220.0	$50.57	11,125	$251.14	$27,625
EMERG. BALLASTS/LIGHTS	120	Each	$0	$0	$200.00	24,000.00	0.25	1.0	30.0	$50.57	1,517	$212.64	$25,517
EMERG. EGRESS LIGHTS	6	Each	$0	$0	$250.00	1,500.00	8.00	1.0	48.0	$50.57	2,427	$654.56	$3,927

ASCG, INC.

CONSTRUCTION COST ESTIMATE

PROJECT: Fairbanks City Hall M&E Upgrades
LOCATION: Fairbanks, AK
UPGRADE GENERAL LIGHTING, PROVIDE EMERG BALLASTS & EXIT SIGNS

PREPARED BY: RCK 29-Nov-05
CHECKED BY: RCK Project No: 4846

DESCRIPTION	QUANTITY		EQUIPMENT		MATERIAL		LABOR					TOTAL	
ELECTRICAL	No. UNITS	UNITS	UNIT PRICE	EQUIP COST	UNIT PRICE	COST	HRS/ UNIT	UNITS	TOTAL HRS.	RATE	COST	UNIT COST	MATERIAL & LABOR
CUT, PATCH, PAINT													
ADDITIONAL SWITCHES	68	Each	$0	$0	$5.00	340.00	4.00	1.0	272.0	$50.57	13,755	$207.28	$14,095
NEW LIGHT LOCATIONS	250	Each	$0	$0	$5.00	1,250.00	4.00	1.0	1000.0	$50.57	50,570	$207.28	$51,820
NEW EXIT SIGN LOCATIONS	25	Each	$0	$0	$5.00	125.00	4.00	1.0	100.0	$50.57	5,057	$207.28	$5,182
EMERG. EGRESS LIGHTS	6	Each	$0	$0	$5.00	30.00	4.00	1.0	24.0	$50.57	1,214	$207.28	$1,244
DEMOLITION													
GENERAL DEMO LIGHTS	1,000	Each	$0	$0	$0.00	0.00	0.33	1.0	330.0	$50.57	16,688	$16.69	$16,688

ASCG, INC.

CONSTRUCTION COST ESTIMATE

PROJECT: Fairbanks City Hall M&E Upgrades — PREPARED BY: RCK — 29-Nov-05

LOCATION: Fairbanks, AK

NEW FIRE ALARM SYSTEM - MANUAL SYSTEM — CHECKED BY: RCK — Project No: 4846

DESCRIPTION	QUANTITY	EQUIPMENT	MATERIAL	LABOR				TOTAL	
ELECTRICAL	No. UNITS UNITS	UNIT EQUIP PRICE COST	UNIT PRICE COST	HRS/ UNIT	TOTAL UNITS HRS.	RATE	COST	UNIT COST	MATERIAL & LABOR
TOTAL DIRECT COST, MATL & LAB.			$46,780		1,848		$93,428		$140,208
FREIGHT	10.0%		$4,678						
SUBTOTAL			$51,458				$93,428		$144,886
SUBCONTRACTOR'S OVERHEAD	30.0%		$15,437				$28,028		
SUBTOTAL			$66,895				$121,456		$188,352
SUBCONTRACTOR'S PROFIT	12.5%		$8,362				$15,182		$23,544
SUBTOTAL			$75,257				$136,639		$211,896
INFLATION 2007 CONSTRUCTION	8.0%								$16,952
									$228,848
CONTINGENCY	35.0%		$26,340				$47,823		$74,164
ELECTRICAL SUBCONTRACT TOTAL									$303,011
DESIGN FEE	20.0%								$60,602
PROJECT TOTAL									**$363,613**

ASCG, INC.

CONSTRUCTION COST ESTIMATE

PROJECT: Fairbanks City Hall M&E Upgrades
LOCATION: Fairbanks, AK
NEW FIRE ALARM SYSTEM - MANUAL SYSTEM

PREPARED BY: RCK 29-Nov-05
CHECKED BY: RCK Project No: 4846

DESCRIPTION	QUANTITY		EQUIPMENT		MATERIAL		LABOR					TOTAL	
ELECTRICAL	No. UNITS	UNITS	UNIT PRICE	EQUIP COST	UNIT PRICE	COST	HRS/ UNIT	UNITS	TOTAL HRS.	RATE	COST	UNIT COST	MATERIAL & LABOR
DIVISION 16 - ELECTRICAL													
CONDUIT - E.M.T.													
3/4" E.M.T	7,500	Lin.Ft	$0	$0	$0.58	4,350.00	7.50	100	562.5	$50.57	28,446	$4.37	$32,796
FITTINGS & ASSEMBLY	100%	Matl	$0	$0		4,350.00	100%	Lab	562.5	$50.57	28,446	$4.37	$32,796
CONDUCTORS													
12 AWG THHN	500	Lin.Ft	$0	$0	$0.15	75.00	0.60	100	3.0	$50.57	152	$0.45	$227
FA SYSTEM													
FIRE ALARM CONTROL PANEL	1	Each	$0	$0	$6,500	6,500.00	48.00	1.0	48.0	$50.57	2,427	$8,927	$8,927
FIRE ALARM ANNUNCIATOR PNL	1	Each	$0	$0	$2,500	2,500.00	48.00	1.0	48.0	$50.57	2,427	$4,927	$4,927
EXTENDER PANEL	5	Each	$0	$0	$1,500	7,500.00	8.00	1.0	40.0	$50.57	2,023	$1,905	$9,523
NEW MANUAL PULL STN	18	Each	$0	$0	$95.00	1,710.00	1.50	1.0	27.0	$50.57	1,365	$170.86	$3,075
NEW HORN/STROBE	115	Each	$0	$0	$95.00	10,925.00	1.50	1.0	172.5	$50.57	8,723	$170.86	$19,648
NEW PHOTO DETECTOR W/BASE	8	Each	$0	$0	$125.00	1,000.00	1.50	1.0	12.0	$50.57	607	$200.86	$1,607
NEW HEAT DETECTOR	3	Each	$0	$0	$125.00	375.00	1.50	1.0	4.5	$50.57	228	$200.86	$603
DUCT DETECT. HOUS. AD-3RI	3	Each	$0	$0	$215.00	645.00	1.50	1.0	4.5	$50.57	228	$290.86	$873
TRI-R	5	Each	$0	$0	$125.00	625.00	1.50	1.0	7.5	$50.57	379	$200.86	$1,004
TRI-D	4	Each	$0	$0	$125.00	500.00	1.50	1.0	6.0	$50.57	303	$200.86	$803
16/2 F/A Cable	5,000	Lin.Ft	$0	$0	$0.35	1,750.00	1.50	100.0	75.0	$50.57	3,793	$1.11	$5,543
#12 F/A Cable	5,500	Lin.Ft	$0	$0	$0.25	1,375.00	1.50	100.0	82.5	$50.57	4,172	$1.01	$5,547
NFPA 72 TESTING	1	Each	$0	$0	$100.00	100.00	24.00	1.0	24.0	$50.57	1,214	$1,314	$1,314
MISC (CUT, PATCH, PAINT)	1	Allow	$0	$0	$2,500	2,500.00	96.00	1.0	96.0	$50.57	4,855	$7,355	$7,355
DEMOLITION													
GENERAL DEMO	1	Each	$0	$0	$0.00	0.00	72.00	1.0	72.0	$50.57	3,641	$3,641	$3,641

ASCG, INC.

CONSTRUCTION COST ESTIMATE

PROJECT: Fairbanks City Hall M&E Upgrades
LOCATION: Fairbanks, AK
NEW FIRE ALARM SYSTEM - MANUAL SYSTEM

PREPARED BY: RCK 29-Nov-05
CHECKED BY: RCK Project No: 4846

DESCRIPTION	QUANTITY	EQUIPMENT	MATERIAL	LABOR				TOTAL	
ELECTRICAL	No. UNITS UNITS	UNIT PRICE	EQUIP COST	UNIT PRICE	COST	HRS/ UNIT	UNITS TOTAL HRS.	RATE	COST	UNIT COST	MATERIAL & LABOR
TOTAL DIRECT COST, MATL & LAB.					$46,780		1,848		$93,428		$140,208
FREIGHT	10.0%				$4,678						
SUBTOTAL					$51,458				$93,428		$144,886
SUBCONTRACTOR'S OVERHEAD	30.0%				$15,437				$28,028		
SUBTOTAL					$66,895				$121,456		$188,352
SUBCONTRACTOR'S PROFIT	12.5%				$8,362				$15,182		$23,544
SUBTOTAL					$75,257				$136,639		$211,896
INFLATION 2007 CONSTRUCTION	8.0%										$16,952
											$228,848
CONTINGENCY	35.0%				$26,340				$47,823		$74,164
ELECTRICAL SUBCONTRACT TOTAL											$303,011
DESIGN FEE	20.0%										$60,602
PROJECT TOTAL											**$363,613**

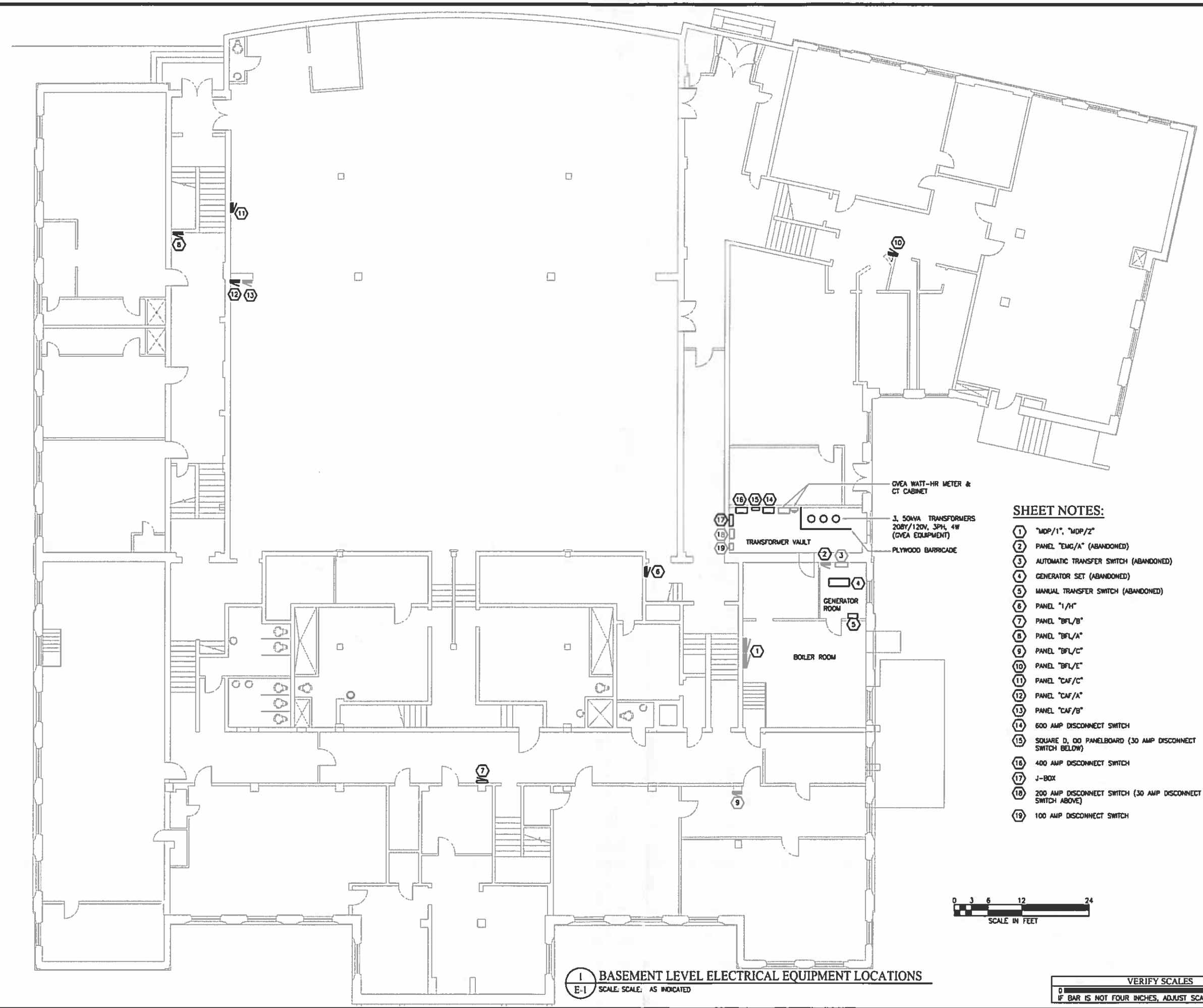
ASCG, INC.

CONSTRUCTION COST ESTIMATE

PROJECT: Fairbanks City Hall M&E Upgrades
LOCATION: Fairbanks, AK
NEW FIRE ALARM SYSTEM - MANUAL SYSTEM

PREPARED BY: RCK 29-Nov-05
CHECKED BY: RCK Project No: 4846

DESCRIPTION	QUANTITY		EQUIPMENT		MATERIAL		LABOR					TOTAL	
ELECTRICAL	No. UNITS	UNITS	UNIT PRICE	EQUIP COST	UNIT PRICE	COST	HRS/ UNIT	UNITS	TOTAL HRS.	RATE	COST	UNIT COST	MATERIAL & LABOR
DIVISION 16 - ELECTRICAL													
CONDUIT - E.M.T.													
3/4" E.M.T	7,500	Lin.Ft	$0	$0	$0.58	4,350.00	7.50	100	562.5	$50.57	28,446	$4.37	$32,796
FITTINGS & ASSEMBLY	100%	Matl	$0	$0		4,350.00	100%	Lab	562.5	$50.57	28,446	$4.37	$32,796
CONDUCTORS													
12 AWG THHN	500	Lin.Ft	$0	$0	$0.15	75.00	0.60	100	3.0	$50.57	152	$0.45	$227
FA SYSTEM													
FIRE ALARM CONTROL PANEL	1	Each	$0	$0	$6,500	6,500.00	48.00	1.0	48.0	$50.57	2,427	$8,927	$8,927
FIRE ALARM ANNUNCIATOR PNL	1	Each	$0	$0	$2,500	2,500.00	48.00	1.0	48.0	$50.57	2,427	$4,927	$4,927
EXTENDER PANEL	5	Each	$0	$0	$1,500	7,500.00	8.00	1.0	40.0	$50.57	2,023	$1,905	$9,523
NEW MANUAL PULL STN	18	Each	$0	$0	$95.00	1,710.00	1.50	1.0	27.0	$50.57	1,365	$170.86	$3,075
NEW HORN/STROBE	115	Each	$0	$0	$95.00	10,925.00	1.50	1.0	172.5	$50.57	8,723	$170.86	$19,648
NEW PHOTO DETECTOR W/BASE	8	Each	$0	$0	$125.00	1,000.00	1.50	1.0	12.0	$50.57	607	$200.86	$1,607
NEW HEAT DETECTOR	3	Each	$0	$0	$125.00	375.00	1.50	1.0	4.5	$50.57	228	$200.86	$603
DUCT DETECT. HOUS. AD-3RI	3	Each	$0	$0	$215.00	645.00	1.50	1.0	4.5	$50.57	228	$290.86	$873
TRI-R	5	Each	$0	$0	$125.00	625.00	1.50	1.0	7.5	$50.57	379	$200.86	$1,004
TRI-D	4	Each	$0	$0	$125.00	500.00	1.50	1.0	6.0	$50.57	303	$200.86	$803
16/2 F/A Cable	5,000	Lin.Ft	$0	$0	$0.35	1,750.00	1.50	100.0	75.0	$50.57	3,793	$1.11	$5,543
#12 F/A Cable	5,500	Lin.Ft	$0	$0	$0.25	1,375.00	1.50	100.0	82.5	$50.57	4,172	$1.01	$5,547
NFPA 72 TESTING	1	Each	$0	$0	$100.00	100.00	24.00	1.0	24.0	$50.57	1,214	$1,314	$1,314
MISC (CUT, PATCH, PAINT)	1	Allow	$0	$0	$2,500	2,500.00	96.00	1.0	96.0	$50.57	4,855	$7,355	$7,355
DEMOLITION													
GENERAL DEMO	1	Each	$0	$0	$0.00	0.00	72.00	1.0	72.0	$50.57	3,641	$3,641	$3,641



SHEET NOTES:

1. "MDP/1", "MDP/2"
2. PANEL "EMG/A" (ABANDONED)
3. AUTOMATIC TRANSFER SWITCH (ABANDONED)
4. GENERATOR SET (ABANDONED)
5. MANUAL TRANSFER SWITCH (ABANDONED)
6. PANEL "1/H"
7. PANEL "BFL/B"
8. PANEL "BFL/A"
9. PANEL "BFL/C"
10. PANEL "BFL/E"
11. PANEL "CAF/C"
12. PANEL "CAF/A"
13. PANEL "CAF/B"
14. 600 AMP DISCONNECT SWITCH
15. SQUARE D, QO PANELBOARD (30 AMP DISCONNECT SWITCH BELOW)
16. 400 AMP DISCONNECT SWITCH
17. J-BOX
18. 200 AMP DISCONNECT SWITCH (30 AMP DISCONNECT SWITCH ABOVE)
19. 100 AMP DISCONNECT SWITCH

1 / E-1 BASEMENT LEVEL ELECTRICAL EQUIPMENT LOCATIONS
SCALE: SCALE: AS INDICATED

VERIFY SCALES
0 4"
IF BAR IS NOT FOUR INCHES, ADJUST SCALES ACCORDINGLY

ASCG INCORPORATED
ENGINEERS · ARCHITECTS · SURVEYORS · PLANNERS
3900 C Street, Suite 301 Anchorage, Alaska 99503-5987
PH: (907) 339-6500, FAX: (907) 339-5331

FAIRBANKS CITY HALL
ANCHORAGE ALASKA

M& E UPGRADE PROPOSAL

REVISIONS

NUMBER:	DATE:

JOB NO.:	4846
DATE:	08-05-2005
DRAWN BY:	
CHECKED BY:	
SHEET NO.:	E-1

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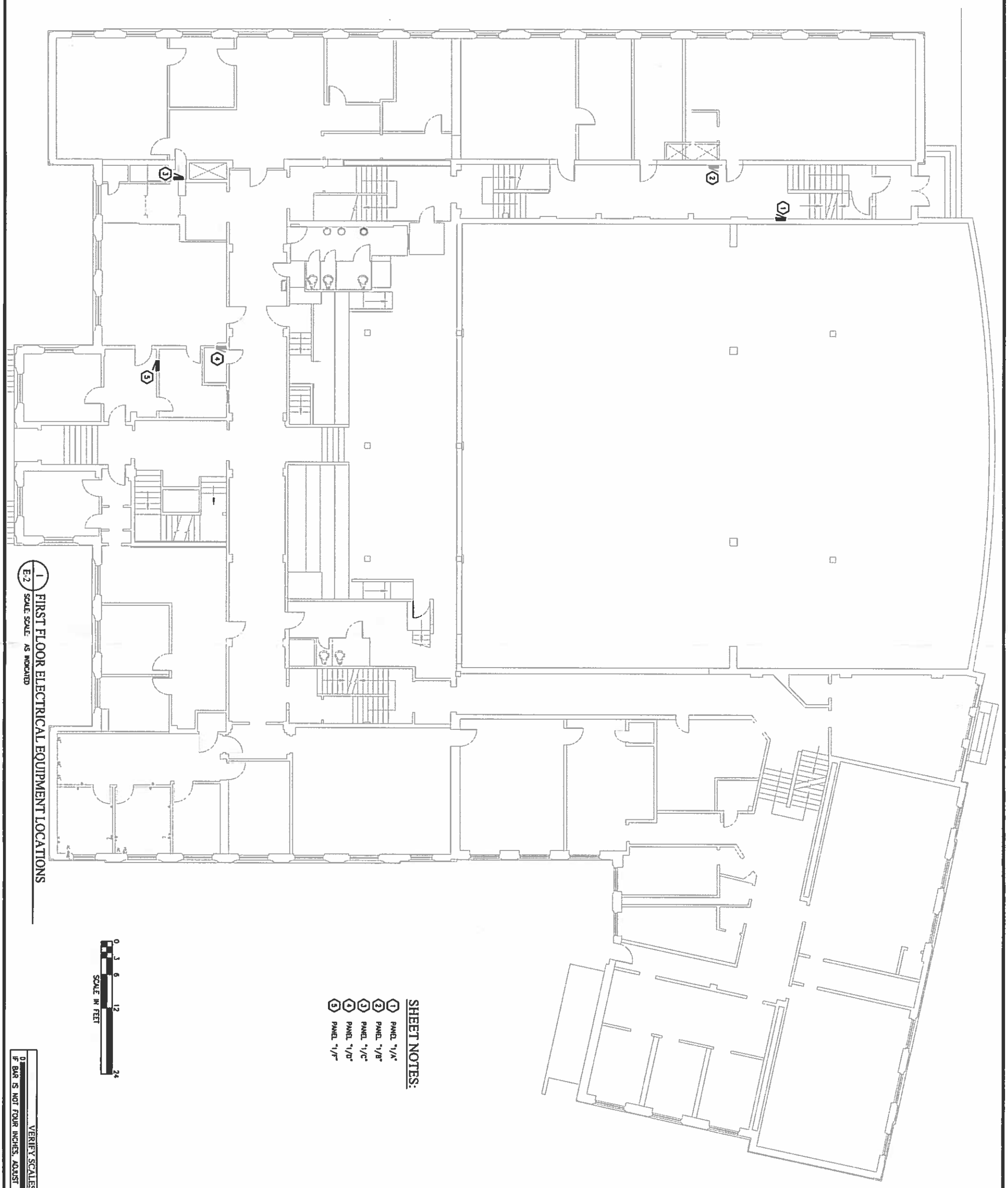

1/E-2 FIRST FLOOR ELECTRICAL EQUIPMENT LOCATIONS
SCALE: SCALE: AS INDICATED

SHEET NOTES:

1. PANEL "1/A"
2. PANEL "1/B"
3. PANEL "1/C"
4. PANEL "1/D"
5. PANEL "1/F"

0 3 6 12 24
SCALE IN FEET

VERIFY SCALES
0 IF BAR IS NOT FOUR INCHES, ADJUST SCALES ACCORDINGLY 4"

JOB NO.: 4846
DATE: 08-05-2005
DRAWN BY:
CHECKED BY:
SHEET NO.: E-2

REVISIONS
NUMBER DATE

FAIRBANKS CITY HALL

ANCHORAGE ALASKA

M& E UPGRADE PROPOSAL

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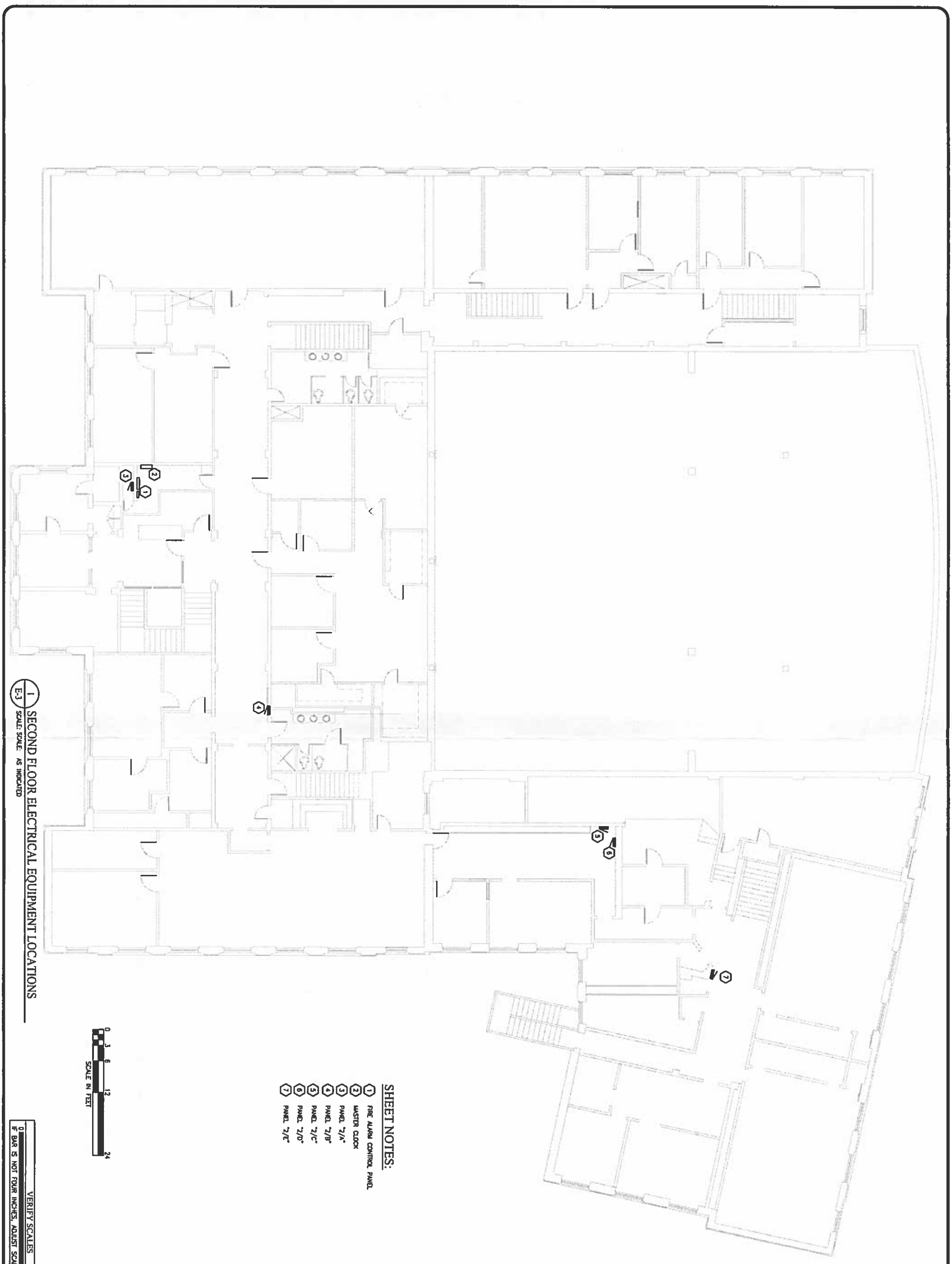
INCORPORATED
ENGINEERS · ARCHITECTS · SURVEYORS · PLANNERS
3900 C Street, Suite 501 Anchorage, Alaska 99503-5967
PH: (907) 339-6500, FAX: (907) 339-5331



1 / E-3 SECOND FLOOR ELECTRICAL EQUIPMENT LOCATIONS

SCALE: SCALE: AS INDICATED

VERIFY SCALES
0 IF BAR IS NOT FOUR INCHES, ADJUST SCALES ACCORDINGLY 4"

REVISIONS	
NUMBER:	DATE:

JOB NO:	4846
DATE:	08-05-2005
DRAWN BY:	
CHECKED BY:	
SHEET NO:	E-3

FAIRBANKS CITY HALL

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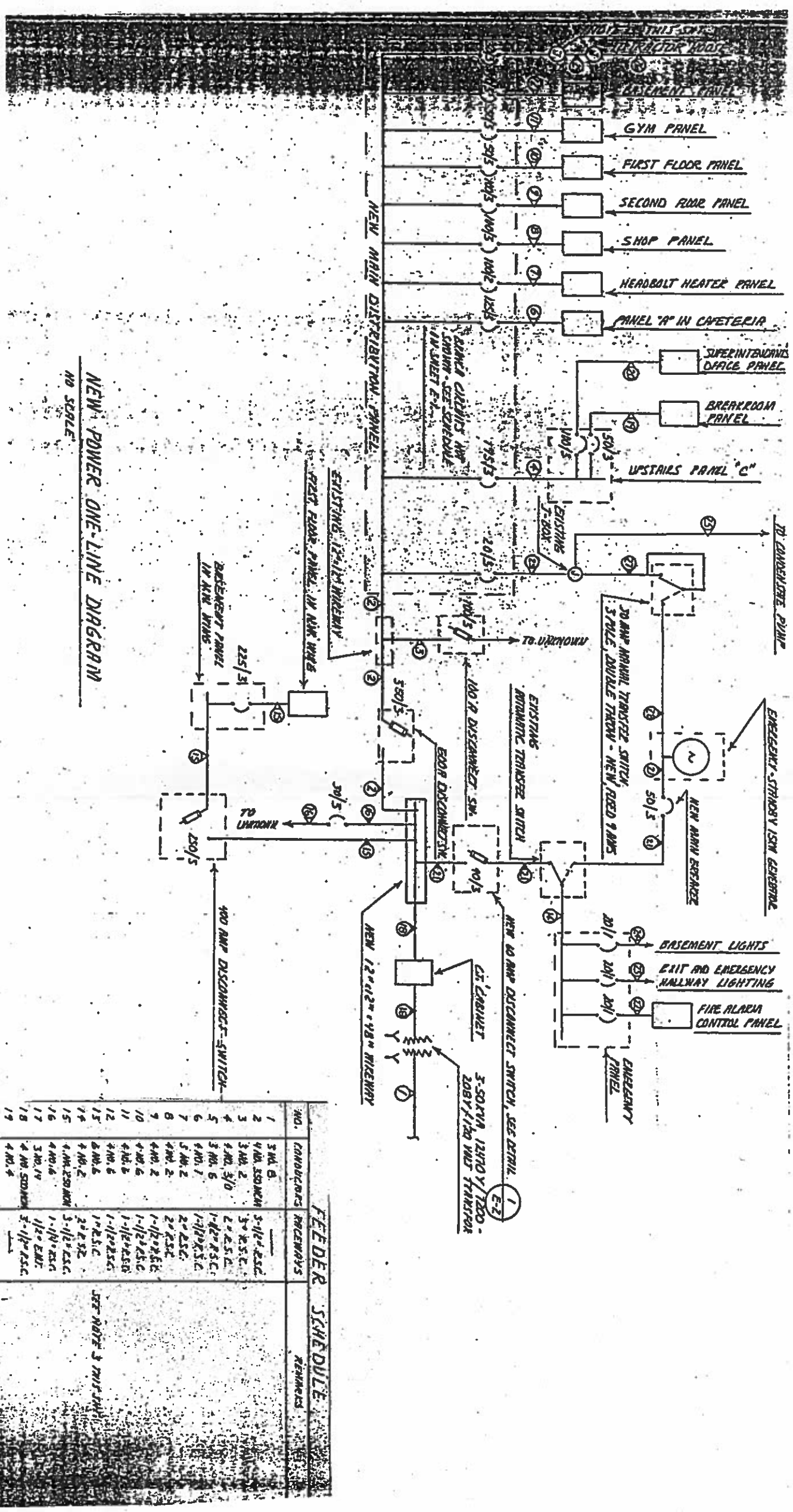
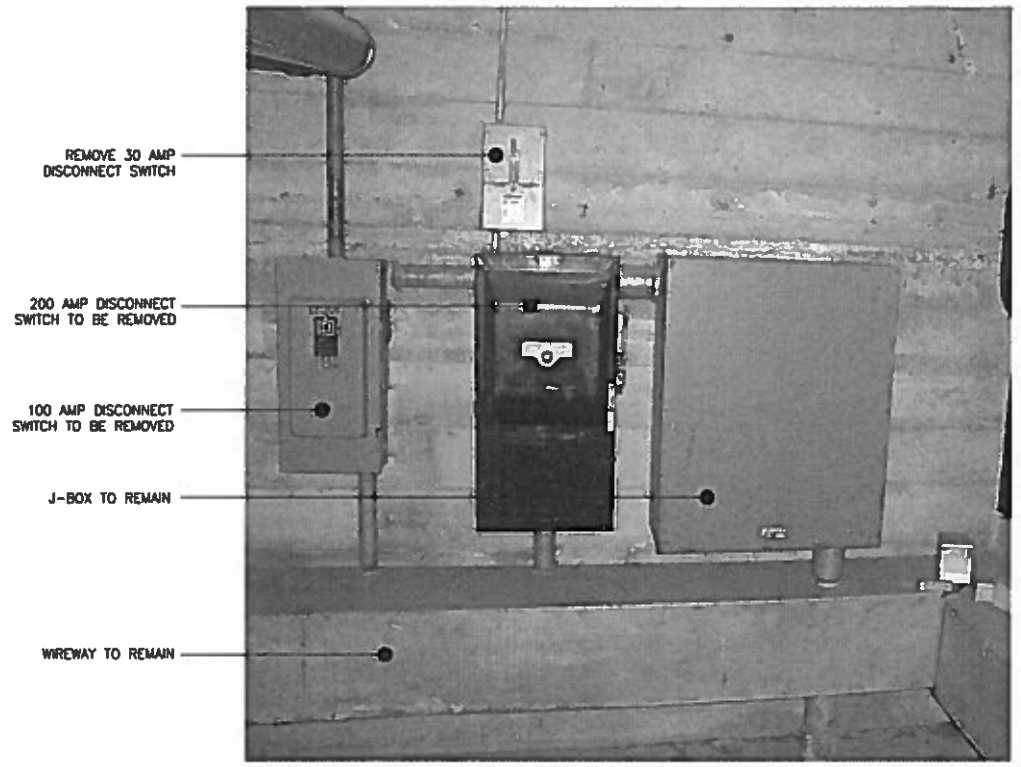
1 / E-4 SCALE: NTS

EXISTING POWER RISER DIAGRAM (EXTRACTED FROM LAKE AND BOSSWELL - 1981 PROJECT)

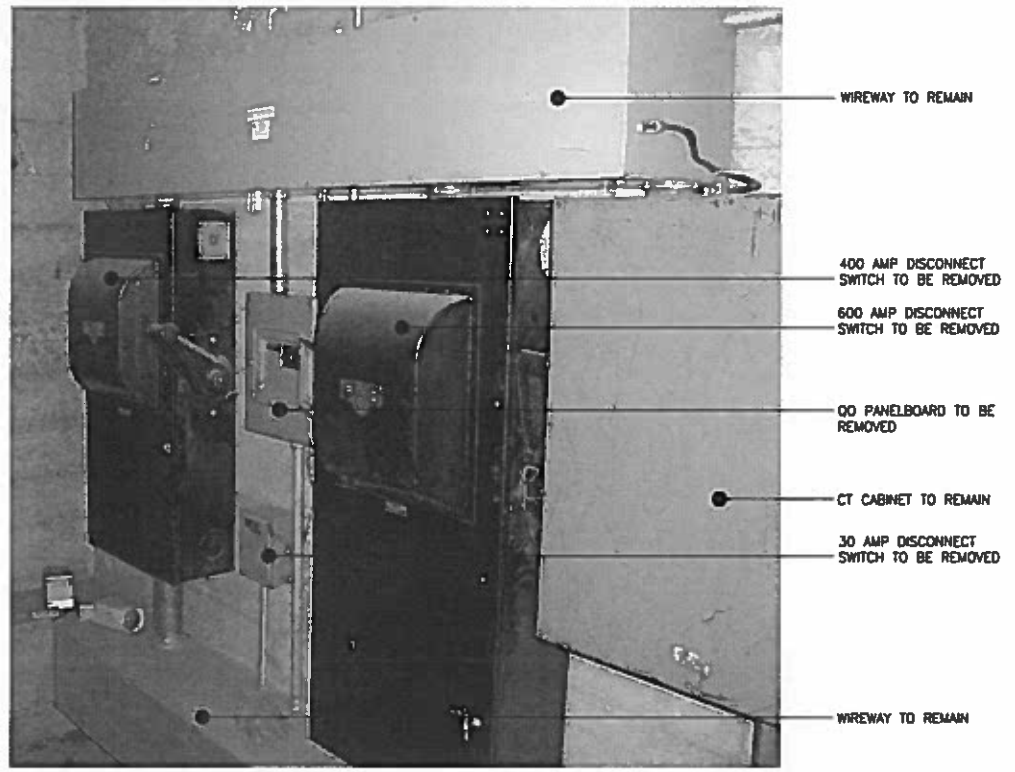


FEEDER SCHEDULE

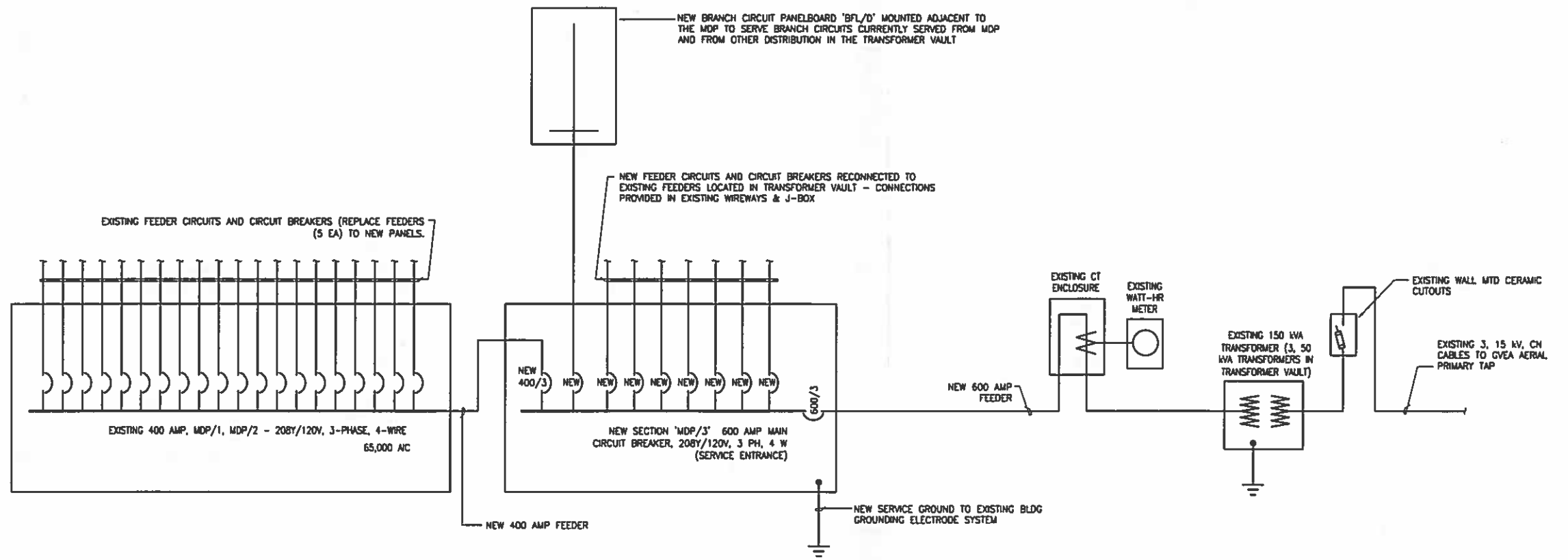
NO.	CONDUCTORS	RACEWAYS	REMARKS
1	3 NO. 8 4 NO. 550 MCM	3-1½" E.M.C. 3" P.V.C.	
2	3 NO. 2 1 NO. 3/0	3" P.V.C. 2" E.M.C.	
3	3 NO. 6 1 NO. 1	2" E.M.C. 1-1½" P.V.C.	
4	1 NO. 2	2" P.V.C.	
5	4 NO. 2	2" E.M.C.	
6	4 NO. 2	2" P.V.C.	
7	4 NO. 6	1-1½" P.V.C.	
8	4 NO. 2	1-1½" E.M.C.	
9	4 NO. 6	1-1½" P.V.C.	
10	4 NO. 2	1" E.M.C.	
11	4 NO. 2	2" P.V.C.	
12	4 NO. 1/0 4 NO. 250 MCM	3-1½" P.V.C.	
13	4 NO. 4	1-1½" P.V.C.	
14	3 NO. 4 1 NO. 4	1½" E.M.C.	
15	4 NO. 4	1" P.V.C.	
16	4 NO. 4	1" E.M.C.	
17	3 NO. 4 1 NO. 6	1" P.V.C.	
18	4 NO. 4	1" P.V.C.	
19	4 NO. 4	1" P.V.C.	
20	4 NO. 4	1" P.V.C.	
21	4 NO. 4	1" P.V.C.	
22	3 NO. 12 1 NO. 12	1" P.V.C.	
23	8 NO. 12 1 NO. 12	1" P.V.C.	
24	3 NO. 10 1 NO. 12	3/4" P.V.C.	
25	3 NO. 4 1 NO. 10	1" P.V.C.	
26	3 NO. 6 1 NO. 10	1" P.V.C.	
27	4 NO. 10 1 NO. 12	3/4" P.V.C.	
28	3 NO. 6 1 NO. 8	3/4" P.V.C.	
29	4 NO. 10 1 NO. 12	3/4" P.V.C.	
30	4 NO. 10 1 NO. 12	3/4" P.V.C.	
31	4 NO. 10 1 NO. 12	3/4" P.V.C.	



1 / E-5 TRANSFORMER VAULT, SOUTH WALL
SCALE: NTS



2 / E-5 TRANSFORMER VAULT, WEST WALL
SCALE: NTS



3 / E-5 PROPOSED POWER RISER DIAGRAM
SCALE: NTS

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FAIRBANKS CITY HALL
ANCHORAGE ALASKA
M& E UPGRADE PROPOSAL

REVISIONS
NUMBER: DATE:

JOB NO.: 4846
DATE: 08-05-2005
DRAWN BY:
CHECKED BY:
SHEET NO.: E-5

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CITY HALL HEATING UPGRADE - COST EVALUATION

25-May-23

CURRENT RATES			(11/2/21 SUMMARY)	(6/2/22 SUMMARY)	(1/1/23 SUMMARY)	$/UNIT	EQUIVALENT UNITS	RATE DATE
CLASS C RATES	(HOT WATER FOR POLICE & FIRE)		$23.33	$27.46 (+17.7% INCR)	$34.15 (+24.4% INCR)	$/MMBTU		6/2/2022 & 6/29/22
PROJECTED CLASS D RATES (HOT H20)		(FFD, FPD & CITY HALL)	$14.71	$21.44 (+45.8% INCR)	$26.86 (+25.3% INCR)	$/MMBTU		6/2/2022 & 6/29/22
STEAM RATES	(STEAM FOR CITY HALL)		$19.59	$19.59 (+0% INCR)	$19.59 (+0% INCR)	$/1K POUNDS	(1 MMBTU / 1K POUNDS)	12/29/2016 THRU 12/29/22
NATURAL GAS RATES				$2.18	$2.18	$/CCF	(100,000 BTU's/CCF -IGU)	7/1/2022 - Current
	USAGE	**2021 ACTUAL**	**2021 PROJECTED**	**2022 PROJECTED**	**2023 PROJECTED**	**2022 - 2023 PROJECTED**	**2023 PROJECTED**	**2023 PROJECTED FPD/FFD**
BUILDING	**(MMBTU)**	**CLASS "C" RATES**	**CLASS "D" RATES**	**CLASS "D" RATES**	**CLASS "D" RATES**	**NATURAL GAS RATES**	**CLASS "C"& STEAM CITY**	**CLASS "D"& CITY HALL STEAM**
FIRE DEPARTMENT	3,251	$75,845.83	$47,822.21	$69,701.44	$87,321.86	$70,871.80	$111,021.65	$87,321.86
POLICE	3,579	$83,498.07	$52,647.09	$76,733.76	$96,131.94	$78,022.20	$122,222.85	$96,131.94
CITY HALL	3,438	$67,350.42	$50,572.98	$73,710.72	$92,344.68	$74,948.40	$67,350.42	$67,350.42
SUB-TOTAL	10,268	$226,694.32	$151,042.28	$220,145.92	$275,798.48	$223,842.40	$300,594.92	$250,804.22
SERVICE INSTALLATION TO BUILDING								
FIRE DEPARTMENT		$0.00	$0.00	$0.00	$0.00	350.00	0.00	$0.00
POLICE		$0.00	$0.00	$0.00	$0.00	350.00	0.00	$0.00
CITY HALL		$0.00	$340,000.00	$340,000.00	$340,000.00	350.00	0.00	?
SUB-TOTAL		$0.00	$340,000.00	$340,000.00	$340,000.00	1,050.00	0.00	
BOILER OR HEAT EXCHANGER								
FIRE DEPARTMENT		$0.00	$0.00	$0.00	$0.00	??	$0.00	0.00
POLICE		$0.00	$0.00	$0.00	$0.00	??	$0.00	0.00
CITY HALL		$0.00	??	??	??	??	??	??
SUB-TOTAL		$0.00	$0.00	$0.00	$0.00	$0.00		
BUILDING REQUIREMENTS								
FIRE DEPARTMENT		$0.00	$0.00	??		$0.00	$0.00	$0.00
POLICE		$0.00	$0.00	??		$0.00	$0.00	$0.00
CITY HALL		$0.00	SAME	SAME		SAME	?	?
SUB-TOTAL		$0.00	$0.00	$0.00		$0.00		
TOTAL ANNUAL		**$226,694.32**	**$491,042.28**	**$560,145.92**	**$615,798.48**	**$224,892.40**	**$300,594.92**	**$250,804.22**

NOTE - CITY HALL INTERIOR BUILDING REQUIREMENT COSTS (EXCEPT BOILER OR HEAT EXCHANGER) WILL BE SAME REGARDLESS OF FUEL SOURCE

NOTE - AURORA ENERGY STEAM RATE HAS BEEN CAPPED AT CURRENT RATE ($19.59/1000LBS) SINCE 12/29/2016

NOTE - AURORA ENERGY'S CLASS "D" RATE THRESHOLD IS 7,001 MMBTU'S PER YEAR OR GREATER - CURRENT FPD & FFD COMBINED USAGE IS 6,830 MMBTU'S PER YEAR (171 MMBTU'S /YEAR NEEDED FOR RATE CHANGE)

NOTE - COF OWNED - FAIRBANKS PARKING GARAGE ALSO W/ DISTRICT HEAT H20 (2021 USAGE 850 MMBTU'S & 2022 USAGE 716 MMBTU'S) - CHANGE PASS THROUGH BILLING TO DIRECT BILLING?

Jeff Whipple

From: Duplessis, Caleb S (RCA) <caleb.duplessis@alaska.gov>
Sent: Thursday, May 18, 2023 1:22 PM
To: Jeff Whipple
Cc: RCA Consumer Protection
Subject: Aurora Energy Rate Information

CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Dear Mr. Whipple,

Thank you for contacting the Regulatory Commission of Alaska (RCA) Consumer Protection Unit (CP) regarding the rate cap for steam heat service with Aurora Energy, LLC. (Aurora Energy). When talking on the phone, you also inquired about the rate cap for hot water through Aurora Energy, the most recent rate cap increase history for steam heat service with Aurora Energy, and how the RCA rate approval process works.

Regarding the rate cap for hot water through Aurora Energy, you may review Aurora Energy's current Tariff (CPCN 119). Please review Sheet No. 35 for Rate Schedule #1 (Steam heat) and Sheet No. 36 for Rate Schedule #2 (Hot Water). Regarding the rate cap increase history for steam heat service with Aurora Energy, CP recommends that you review Matter Number: U-14-004. This Matter number contains information regarding the establishment of a rate cap for steam heat provision within Aurora Energy's Tariff. This matter was opened in January 2014, and closed February 2015. By navigating to the Documents tab, CP found correspondence in which the Commission provides a validated copy of Aurora Energy's Tariff Sheet No. 35, Rate Schedule #1. As Aurora Energy's rate is currently the same as its rate cap, Aurora Energy would need to submit filings and receive RCA approval before increasing its steam heat rate any further.

Utility companies such as Aurora Energy submit filings that are subject to RCA approval. RCA approval is based upon several factors such as, but not limited to; increases in costs of operations, infrastructure maintenance, capital investment costs, and revenue requirement studies. The RCA has the option to approve, amend, suspend, or reject applicable components of a utilities Tariff through the review process. Each component of a utility company's filing is typically assessed and addressed on a point-by-point basis. The Commission reviews documents submitted by the utility to determine the reasonableness and propriety of the filing. As per 3 AAC 48.371, a utility must abide by its RCA approved tariff.

I hope this information has been helpful.

Best,

Caleb Duplessis
Consumer Protection and Information Officer I
Regulatory Commission of Alaska
701 West Eighth Avenue, Suite 300
Anchorage, AK 99501
Tel: 907-263-2104

STATE OF ALASKA
DEPARTMENT OF
COMMERCE
COMMUNITY AND
ECONOMIC DEVELOPMENT

Bill Walker, Governor
Fred Parady, Acting Commissioner
Robert M. Pickett, Chairman

Regulatory Commission of Alaska

February 13, 2015

In reply refer to: Tariff Section
File: U-14-004

A.L. Buki Wright, Jr.
President
Aurora Energy, LLC
100 Cushman Street, Suite 210
Fairbanks, AK 99701-4659

Dear Mr. Wright:

Pursuant to Order No. 11 in Docket U-14-004, enclosed is a validated copy of Tariff Sheet No. 35, filed on February 5, 2015, by Aurora Energy, LLC. The effective date of the sheet is February 23, 2015.

Please note that the phrase "Pursuant to U-14-004(11)" has been added to the bottom left corner of the tariff sheet. In addition please note the margin notations have been relocated from the left side to the right side of the tariff sheet.

Sincerely,

REGULATORY COMMISSION OF ALASKA

Tyler Clark
Finance Section Manager

Enclosure

701 West 8th Avenue, Suite 300, Anchorage, Alaska 99501-3469
Telephone: (907) 276-6222 Fax: (907) 276-0160 Text Telephone: (907) 276-4533
Website: http://rca.alaska.gov/RCAWeb/home.aspx

RCA No. 119 Second Revision Sheet No. 35

Cancelling First Revision Sheet No. 35

RECEIVED
FEB 05 2015
STATE OF ALASKA
REGULATORY COMMISSION OF ALASKA

Aurora Energy, LLC

RATE SCHEDULE #1
STEAM HEAT

AVAILABILITY

All customers receiving Steam Heat.

RATES

Rate cap $19.59 per 1,000 pounds. I

Current rate $16.58 per 1,000 pounds. N

MINIMUM MONTHLY CHARGE

$19.50 per month per service.

Pursuant to U-14-004(11) Effective: February 23, 2015

Issued By: Aurora Energy, LLC

By: _____ Title: President

RCA No. 119 Seventy-first Revision Sheet No. 36

Cancelling Seventieth Revision Sheet No. 36

INFORMATIONAL FILING ONLY

RECEIVED 11/28/22

Aurora Energy, LLC

RATE SCHEDULE #2
HOT WATER

AVAILABILITY

All customers receiving Hot Water.

MONTHLY SERVICE CHARGE

$10.00 per month per meter.

RATES

BTU Charge – Customers shall pay the following BTU charges based upon the annual volume of BTUs purchased:

For customers who purchase fewer than 1,000 million BTUs per year, the rate shall be $34.80 per million BTUs. FAIRBANKS PARKING GARAGE

For customers who purchase between 1,001 and 4,000 million BTUs per year, the rate shall be $34.70 per million BTUs. I

For customers who purchase between 4,001 and 7,000 million BTUs per year, the rate shall be $34.15 per million BTUs. FPD & FFD I

For customers who purchase 7,001 million BTUs per year or greater, the rate shall be $26.86 per million BTUs. I

Tariff Advice No. TA104-119 Effective: December 29, 2022

Date Issued: November 23, 2022
Issued By: Aurora Energy, LLC

By: Rob & Ben Title: President

Jeff Whipple

From: Jeff Whipple
Sent: Friday, June 23, 2023 2:40 PM
To: Margarita R. Bell
Cc: Robert H. Pristash; David Pruhs; Michael Sanders
Subject: RE: Thank you!

Margarita,

Glad I was able to help. The rate change with existing Hot Water facilities from Class "C" rates to Class "D" rates may also impact the energy source choice for the City Hall Heating Upgrade project with a potential $350,000 savings for construction costs of hot water service lines from 10th Ave to 8th Ave.

Thanks

Jeff Whipple
City of Fairbanks Engineering Dept.
800 Cushman Street
Fairbanks, AK 99701
Office: (907) 459-6743
Cell: (907) 888-5593

From: Margarita R. Bell <MBell@fairbanks.us>
Sent: Friday, June 23, 2023 11:48 AM
To: Jeff Whipple <JWhipple@fairbanks.us>
Cc: Robert H. Pristash <RPristash@fairbanks.us>; David Pruhs <DPruhs3@fairbanks.us>; Michael Sanders <MSanders@fairbanks.us>
Subject: Thank you!

Jeff:

Thank you for saving the city $7.29 per BTU on our Aurora Energy bill!

With the information you provided, we were able to combine the parking garage with our other facilities to receive the lower fee.

Again, thanks,
Margarita

Jeff Whipple

From: Christoph Falke
Sent: Tuesday, October 31, 2023 9:49 AM
To: Jeff Whipple
Subject: RE: Existing Building Code Snipit

Little commentary included for what its worth. -Christoph

SECTION 807
MECHANICAL

807.1 Reconfigured or converted spaces.
Reconfigured spaces intended for occupancy and spaces converted to habitable or occupiable space in any *work area* shall be provided with natural or mechanical ventilation in accordance with the International Mechanical Code.
Exception: Existing mechanical ventilation systems shall comply with the requirements of Section 807.2.

❖ This Section is consistent with the basic premise for new building elements and materials given in Chapter 7, Section 702—that replacing elements is required to comply with the applicable code for new construction. The amount of mechanical ventilation must be provided in accordance with the IMC as required for new construction. This could be that air-moving equipment would need to be altered as well. The exception, however, allows special minimum provisions for existing mechanical equipment that would not require increasing the capacities for existing air-moving equipment, as long as minimum ventilation rates are provided.

807.2 Altered existing systems.
In mechanically ventilated spaces, existing mechanical ventilation systems that are altered, reconfigured or extended shall provide not less than 5 cubic feet per minute (cfm) (0.0024 m^3/s) per person of outdoor air and not less than 15 cfm (0.0071 m^3/s) of ventilation air per person, or not less than the amount of ventilation air determined by the Indoor Air Quality Procedure of ASHRAE 62.1.

❖ This Section essentially gives alternative minimum requirements to the IBC for ventilation in work areas of Level 2 or 3 alterations; however, this does not really reduce the amount of engineering work that needs to be done in an altered space. The referenced ASHRAE 62.1 must be consulted for the overarching ventilation requirements, and then the minimums stated in this Section must be provided; therefore, even in a situation where the intent was not to change the air-moving equipment, but only the configuration of the ductwork or air channels, the minimum requirements could necessitate changes to air-moving equipment capabilities.

807.3 Local exhaust.
Newly introduced devices, equipment or operations that produce airborne particulate matter, odors, fumes, vapor, combustion products, gaseous contaminants, pathogenic and allergenic organisms, and microbial contaminants in such quantities as to affect adversely or impair health or cause discomfort to occupants shall be provided with local exhaust.

❖ This is a straightforward, common-sense requirement that will readily be observed and probably already dealt with in the manufacturer's installation instructions for mechanical equipment; however, the code official should carefully review the particular details for all such equipment to ensure that appropriate measures are taken for local exhaust.

From: Christoph Falke
Sent: Tuesday, October 31, 2023 9:43 AM
To: Jeff Whipple <JWhipple@fairbanks.us>
Subject: Existing Building Code Snipit

Here you go. Link and snipit below from the section we looked at yesterday.

-Christoph

https://codes.iccsafe.org/content/IEBC2018P5/chapter-8-alterations-level-2#IEBC2018P5_Ch08_Sec808

SECTION
MECHANI

808.1 Reconfigured or converted spaces.

Reconfigured spaces intended for occupancy and spaces converted to habitable or occupiable spa
the *International Mechanical Code*.

Exception: Existing mechanical ventilation systems shall comply with the requirements of Sectic

808.2 Altered existing systems.

In mechanically ventilated spaces, existing mechanical ventilation systems that are altered, reconf
person of outdoor air and not less than 15 cfm (0.0071 m^3/s) of ventilation air per person; or not les
62.1.

808.3 Local exhaust.

Newly introduced devices, equipment, or operations that produce airborne particulate matter, o
organisms, and microbial contaminants in such quantities as to affect adversely or impair health or c