

**REPORT OF INSPECTION
FOR
ASBESTOS-CONTAINING BUILDING MATERIALS
HELENA HOUSING AUTHORITY, STEWART HOUSING COMPLEX
HELENA, MONTANA**



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Prepared for:

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WTR Project # 07912-1.1

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EXECUTIVE SUMMARY

From June 18 to June 29, 2007, WTR Consulting Engineers, LLC (WTR) completed an asbestos inspection of the Stewart Housing Complex operated by the Helena Housing Authority (HHA) located in Helena, Montana. The asbestos inspection was completed to identify and sample all suspect asbestos-containing building materials (ACBM) that may be impacted during proposed renovation or demolition of the buildings.

A total of 46 buildings were included in the inspection. The buildings are comprised of 132 apartment units housed in approximately 44 buildings, one administration building, and one daycare facility. In order to isolate suspect ACBM, the apartments were sampled independently. WTR personnel were escorted by HHA staff, which allowed for a thorough visual assessment of all interior spaces in the complex including crawlspaces and attics in the eight building styles present.

In the 132 apartment units, 31 HA's of suspect ACBM were sampled; 13 materials tested positive for asbestos (concentrations greater than one percent). Two of the 13 ACBM are currently regulated by the EPA and State of Montana Department of Environmental Quality - Asbestos Control Program (MDEQ). The two regulated asbestos-containing materials (RACM) include surfacing materials and thermal system insulation (TSI) (M1.2; TS11.1); the remaining 11 ACBM (F2.2; F3.2; F3.3; F3.4; F3.6; F3.7; F3.8; F3.10; F3.11; F3.12; and, F3.15) are considered Category I non-friable asbestos-containing materials (ACM).

In the administration building, 28 HA's of suspect ACBM were identified and sampled; three HA's tested positive for asbestos. Two of the three are currently regulated by the EPA and MDEQ. RACM include surfacing materials and TSI (M1.1; TSI); the remaining material (F2.1) is considered Category I non-friable ACM.

In the daycare facility, 11 HA's of suspect ACBM were identified whereby only 5 HA's were sampled do to their similarity to materials already sampled in the administration building; three HA's tested positive for asbestos. One of the three is currently regulated by the EPA and MDEQ. RACM include surfacing materials (M1.1); the remaining materials (F2.3; F2.4) are considered Category I non-friable ACM.

WTR recommends three abatement strategies: (1) complete demolition; (2) complete removal of ACM; and, (3) encapsulation of various ACM as well as partial removal in specific areas.

1.0 INTRODUCTION

WTR Consulting Engineers, LLC, (WTR), was retained by the Helena Housing Authority, on behalf of Dowling Sandholm Architects, P.C. to perform an asbestos inspection to identify the presence or absence of asbestos in building materials that may be impacted during the planned renovation and/or demolition of the complex. WTR's point of contact during the project was Ms. Mary Kay Holbrook of the HHA. The inspection was conducted between June 18 and 29, 2007, by Mr. Tim Roberts and Mr. David Gillett who are State of Montana accredited asbestos inspectors, in accordance with Environmental Protection Agency (EPA) regulations 40 Code of Federal Regulation (CFR) 763 and 40 CFR 61, which require proper asbestos inspections prior to demolition or renovation of a building. Accreditation documents are located in Appendix A of this report.

WTR personnel completed the asbestos inspection in general accordance with the 2005 Montana Asbestos Work Practices and Procedures Manual, adopted and incorporated by reference in the Administrative Rules of Montana (ARM) Title 17, Chapter 74, Subchapter 3, and EPA regulation 40 CFR 763, "Asbestos Hazards and Emergency Response Act" (AHERA) for inspections of schools (K-12), which governs proper material identification, sample collection, chain-of-custody protocols, and analytical procedures for building materials suspect for containing asbestos. The asbestos inspection was also completed in accordance with EPA regulation 40 CFR 61, "National Emission Standard for Hazardous Air Pollutants" (NESHAP), governing mandatory asbestos inspections of commercial or public buildings prior to renovation or demolition within a facility. Samples were shipped under chain-of-custody protocol to Carolina Environmental, Inc. (CEI) in Cary, North Carolina for laboratory analysis. The scope of this inspection included:

1) Pre-Survey Tasks

- Develop a sample plan and assign HA numbers to each building material to display on the chain-of-custody and for laboratory identification.

2) Asbestos Inspection

- Complete a visual inspection of each apartment, the administration building, and the daycare facility to identify the number of homogeneous areas (HA) of building materials suspect for containing asbestos.

- Complete sample collection and chain-of-custody paperwork for "bulk" material analysis of building materials for the presence of asbestos.

3) Reporting

- Prepare an inspection report (this document), describing sample collection procedures, regulatory standards, chain-of-custody procedures, and recommendations for future inspections, or abatement procedures deemed necessary to expedite renovations.

APARTMENTS

Apartments at the Stewart Housing Complex are one and two-story, wood-framed units configured into eight different styles of floor plan layouts which can be found in appendix B of this report. The styles are identified as: A, B, C, D, E, F, G, and H. Housing units are further delineated by a numerical series of 100, 200, 300, and 400. Units numbered from 101-146 and 201 to 226 were built in 1939; units numbered 301-324 and 401-436 were built in 1952. By date of their construction, the units appear to be very consistent in building components and finishes.

Interior finishes in Series 100 and 200 apartments include painted plaster walls and ceilings over wood stud framing. Living room, hallways, and bedrooms have wood floors. Kitchens, stairs, and some hallways are tiled. Series 300-400 walls are painted gypsum wall board (GWB) over wood framing. All floors in these units contain various types of 12"x12" vinyl floor tile (VFT) on kitchen, living room, hallway, stairs, and bedrooms floors. Kitchen floors may contain multiple layers of older 12"x12" VFT and sheet flooring. A number of these units received kitchen renovations approximately 10 years ago, where one to two layers of VFT were installed over two or more layers of asbestos-containing VFT and sheet flooring. Bathroom floors consist of 2"x2" ceramic tiles and utility room floors have 9"x9" ceramic tiles. Bathroom walls around the bathtub and shower are partially covered by 4"x4" ceramic tiles along with kitchen walls between countertops and cabinets.

WTR's focus was to visually inspect and sample apartment interiors, crawlspaces, and attics for the presence of ACBM. Exterior siding and roofing materials were not incorporated into the sampling plan and were not disturbed during this phase of the project. It is our understanding from the staff the metal siding was replaced in the late 1980's where the original siding (assumed to be asbestos transite) was completely removed. The asphalt shingles and associated roofing materials were installed in the late 1990's.

Series 100 and 200 units are heated by individual boiler systems with piping runs located in their crawlspaces. The boiler systems are located in the utility room of each apartment. Radiant baseboard heaters are located in each room of the housing units. While no pipe insulation was visible from the interior, signs of asbestos pipe insulation and mudded asbestos containing material (ACM) fittings were identified in the crawlspaces during the inspection. Thermal system insulation (TSI) may still be present in inaccessible areas (e.g. pipe chases, behind walls and above plaster ceilings).

Series 300 and 400 units are heated by forced air furnace systems. Ducting to each room extends from a furnace located in each unit's utility room. No suspect ACBM was found to be associated with these systems.

ADMINISTRATION BUILDING

The administration building consists of one main level containing HHA offices, a partial daylight basement containing a maintenance shop and storage areas, and a split-level addition providing conference room, kitchen, and common areas for seminars and other activities. The original building was constructed in the early 1950's and is comprised of the same building materials found in Series 300-400 apartments, except in areas where renovations have been completed over the years.

Interior walls are GWB, and plaster with lay-in ceiling panels. Floors consist of various types of carpet throughout offices and hallways on the main level, with VFT, linoleum sheet flooring (LSF), and associated mastics in some hallway sections, bathrooms, janitor closets, and the staff kitchen. Floors in the addition are all VFT, with painted GWB walls and ceilings. The basement floor is concrete, with GWB, and concrete walls. Pipe runs and heating ventilating and air-conditioning (HVAC) ducts are located behind walls and the sub-floor.

DAYCARE FACILITY

The daycare facility is one level with a small office loft upstairs. The building was constructed in the early 1950's and is comprised of building materials similar to the administration building. Interior finishes are GWB walls with lay-in ceiling panels, carpeted floors in playrooms, common areas and offices, with VFT, sheet flooring, and associated mastic in kitchen, storage, and bathroom spaces.

The HVAC system is accessed via a built-in ladder in the ceiling. The forced air system is mounted in the attic with ductwork extending out to various rooms. WTR did not observe any suspect ACBM in the attic area; however, ACM may exist in non-accessible areas of the ceiling.

2.0 ASBESTOS INSPECTION

Asbestos is a naturally occurring, fibrous mineral used in building materials for its ability to bind, resist chemicals, insulate, and fireproof. An asbestos-containing building material (ACBM) is defined as any building material containing greater than one percent (>1%) asbestos. Building materials which contain asbestos are regulated by several agencies, including the EPA, MDEQ, OSHA, and the Montana Department of Transportation (MDT). See Appendix E for an asbestos regulatory overview.

The inspection consisted of a detailed visual survey and identification of building materials generally considered suspect for containing asbestos. Each building material was identified and categorized according to the AHERA guidelines, which include placing the building material into one of the three AHERA categories identified below.

Friable Surfacing Material

- A minimum of three bulk samples from each homogeneous material that is 1,000 square feet or less.
- A minimum of five bulk samples from each homogeneous material that is greater than 1,000 square feet but less than or equal to 5,000 square feet.
- A minimum of seven bulk samples from each homogeneous material that is greater than 5,000 square feet.

Thermal System Insulation

- A minimum of three bulk samples, collected in a randomly distributed manner, from each homogeneous material of thermal system insulation not assumed to contain asbestos.
- One bulk sample from each homogeneous material of patched thermal system insulation not assumed to contain asbestos.
- Generally three bulk samples were collected from an insulated mechanical boiler system not assumed to be an ACBM where cement or plaster was used on fittings such as tees, elbows, or valves.
- Bulk samples were not collected from any homogeneous material where the inspector determined that the thermal system insulation is fiberglass, foam glass, rubber, or other non-asbestos-containing building material.

Miscellaneous Material

- Generally three bulk samples collected from each area of homogeneous miscellaneous material that was not assumed to be ACBM.

Sample locations were selected in a random fashion with emphasis placed on obtaining samples of each type of suspect material. Samples were placed in pre-labeled plastic containers for transport to the laboratory for analysis.

APARTMENT SAMPLING

During the asbestos inspection of the apartments, WTR personnel identified and sampled 31 HA's of building materials suspect for containing asbestos, including:

- 12"x12" Vinyl floor tile (VFT), white with beige streaks and mastic – (F3.1)
- Beige tile grout from 9"x9" ceramic floor tiles – (FX.1)
- Plaster wall – (M2.1)

- Brown wall coating – (MX.1)
- Grey tile grout from 2"x2" ceramic floor tiles – (FX.2)
- White tile grout from 4"x4" ceramic wall tiles – (FX.3)
- Grey sink coating – (MX.2)
- 12"x12" VFT, Grey with brown spotting and mastic – (F3.2)
- Linoleum sheeting flooring (LSF), green with yellow swirls and mastic – (F2.1)
- LSF, unknown color with fabric backing and mastic – (F2.2)
- VFT, unknown size, dark grey/brown and mastic – (F3.3)
- Gypsum wall board (GWB), white wallboard, tape, and joint compound – (M1.1) (Apt. 109 only)
- Thermal system insulation (TSI), pipe insulation, friable – (TS1.1)
- Grey blown-in insulation, friable – (TX.1)
- Pink textured seal-coat on insulation, friable – (TX.2)
- 12"x12" VFT, grey with brown streaks and mastic – (F3.4)
- 12"x12" VFT, beige marbled and mastic – (F3.5)
- VSF, yellow with textured surface and mastic – (F2.3)
- 12"x12" VFT, beige with red brown mottling and mastic – (F3.6)
- 12"x12" VFT, grey with long white smears and mastic – (F3.7)
- GWB, white wallboard, tape, and joint compound – (M1.2) (Throughout Apts. 301-436)
- 2x4' Acoustic ceiling tile, 1/4" fissure with pinhole – (S3.1)(S3.1 on analytical report)
- 2x4' Acoustic ceiling tile, 1/8" fissure with pinhole – (S3.2)(S3.2 on analytical report)
- 12"x12" VFT, white with long beige streaks and mastic – (F3.8)
- 12"x12" VFT, pink with white marbling and mastic – (F3.9)
- 12"x12" VFT, bold brown/white/beige stripes and mastic – (F3.10)
- 12"x12" VFT, reddish brown with white marbling and mastic, friable – (F3.11)
- Black flooring underlay tarpaper – (FX.4)
- 12"x12" VFT, bluish grey marbling and mastic – (F3.12)
- 12"x12" VFT, pink with grey/white/brown mottling and mastic – (F3.13)
- Plaster behind M1.1 – (M1.3)
- 12"x12" VFT, green with mastic – (F3.15)

ADMINISTRATION BUILDING SAMPLING

WTR personnel identified and sampled twenty-eight (28) HA's of building materials suspect for containing asbestos. Due to variations in construction materials and previous renovations, all previously identified HA's and new HA's identified in the building were sampled, including:

- Gypsum Wallboard, Tape, Joint Compound – (M1.1)
- Wall/Ceiling Plaster Materials – (M2.1)
- Victorian Style Wallpaper – (M3.2)
- Green/Pink Flowers Wallpaper – (M3.3)
- Shell Pattern Wallpaper – (M3.4)
- Adhesive of 4' White Wainscott – (M6.1)
- Popcorn Ceiling Texture – (S1.1)
- 12"x12" White Ceiling Tiles – (S2.1)
- 12"x12" White Ceiling Tiles – (S2.2)
- Multicolor Carpet Speckled w/Blue Base – (F1.1)
- Multicolor Carpet w/ Brown Base – (F1.2)
- Brown Carpet w/ Blue Streaks – (F1.3)
- Multicolor Carpet w/ Blue Border – (F1.4)
- Burgundy Carpet – (F1.5)
- Yellow Leaf Pattern Linoleum and Mastic – (F2.1)
- Yellow w/ Brown Linoleum and Mastic – (F2.2)
- 12"x12" Peach VFT and Mastic – (F3.14)
- 12"x12" Green VFT and Mastic – (F3.15)
- Large Cut Pink VFT and Mastic – (F3.16)
- 4" White Cove Base and Adhesive – (E1.2)
- 2" Rust Color Cove Base and Adhesive – (E1.3)

DAYCARE FACILITY SAMPLING

- 4" Suede Cove Base and Adhesive – (E1.4)
- 4" Black Cove Base and Adhesive – (E1.5)
- 4" Cream Cove Base and Adhesive – (E1.6)
- Tape Cloth – (TAP)
- Putty – (GAS)
- Chimney Grout – (GRO)
- TSI Pipe Wrap – (TSI)

During the asbestos inspection of the Daycare facility, WTR personnel identified 11 HA's whereby only 5 were sampled due to similarities between HA's previously sampled in the Administration building or Apartments. Samples collected in the Daycare facility are listed in italics, materials not in italics are those identified and sampled in the Administration building.

- Gypsum Wallboard, tape, joint compound – (M1.1)
- Popcorn Ceiling Texture – (S1.1)
- LSF, dark brown with little squares and mastic – (F2.3)
- LSF, light brown with little squares and mastic – (F2.4)
- 12"x12" Peach VFT and mastic – (F3.13)
- 12"x12" gray w/ brown spotting VFT and Mastic – (F3.2)
- Multicolor carpet w/Blue Base and Mastic – (F1.1)
- 2'x4' Ceiling Panel w/ ¼ fissures – (S3.1)
- 4" Black Wall base Molding – (E1.5)
- 12"x12" VFT, bold brown/white/beige stripes and mastic – (F3.10)
- 12"x12" VFT, grey with long white smears and mastic – (F3.7)

Sample locations for this inspection are located in Appendix B and D.

Laboratory Analysis

Samples were shipped under chain-of-custody protocol to Carolina Environmental, Inc. (CEI), in Cary, North Carolina. Samples were analyzed in accordance with the EPA Interim Method EPA/600/M4-82/020 and procedures described in EPA 600/R-93/116, which employs stereoscopic and polarized light microscopy (PLM) coupled with dispersion staining for identification of mineral forms of asbestos with a detection limit of 0.1% (trace amount). Copies of the laboratory analytical reports are presented in Appendices F, G, and H.

3.0 SAMPLING RESULTS

Interpretation of laboratory results shows that ACM was found in nearly every building in the complex. Tables 1, 2, and 3 below identify the HA type, description of the material, and whether it is RACM or Category I non-friable ACM. During the inspection, WTR discovered that some of the flooring in the apartments contains multiple layers of VFT, LSF, and other materials that tested positive for asbestos. Appendices I, J, and K identify the percentages of floor coverage and type of ACM in each room of the apartments. In Series 300 and 400 apartments,

TABLE 1
SUMMARY OF ASBESTOS-CONTAINING BUILDING MATERIALS
APARTMENTS

Sample No.	Homogeneous Material Description	**NESHAP Category	*Recommended Response Action
M1.2	Gypsum wallboard/joint compound	RACM	Operations & Maintenance (O & M)
TS11.1	TSI pipe insulation	RACM	O & M
F2.2	LSF -yellow with textured surface and mastic	Category I - Non-Friable	O & M
F3.2	Mastic under 12"x12" VFT-grey with brown spotting	Category I - Non-Friable	O & M
F3.3	12"x12" VFT-dark grey/brown, mastic, and felt underlay	Category I - Non-Friable	O & M
F3.4	12"x12" VFT-grey with brown streaks	Category I - Non-Friable	O & M
F3.6	Mastic under 12"x12" VFT-beige with reddish brown mottling	Category I - Non-Friable	O & M
F3.7	Mastic under 12"x12" VFT-grey with long white smears	Category I - Non-Friable	O & M
F3.8	Mastic under 12"x12" VFT-white with long beige streaks	Category I - Non-Friable	O & M
F3.10	Mastic under 12"x12" VFT-bold w/brown/white/beige stripes	Category I - Non-Friable	O & M
F3.11	12"x12" VFT-reddish brown with white marbling and mastic	Category I - Non-Friable	O & M
F3.12	Mastic under 12"x12" VFT-bluish grey marbling	Category I - Non-Friable	O & M
F3.15	12"x12" VFT-yellowish speckled green and mastic	Category I - Non-Friable	O & M

Please see Appendix F for HA description and laboratory analytical report.
 * If these building materials are scheduled to be impacted by the Project, the materials should be scheduled for work to be performed by a licensed asbestos abatement contractor or competent person, with proof of accreditation by MDEQ. See Tables 4 and 5.
 ** See page 8 for NESHAP Categorization

TABLE 2
SUMMARY OF ASBESTOS-CONTAINING BUILDING MATERIALS
ADMINISTRATION BUILDING

Sample No.	Homogeneous Material Description	**NESHAP Category	*Recommended Response Action
M1.1	Gypsum Wallboard /Joint compound	RACM	O & M
TSI	Thermal system insulation	RACM	O & M
F2.1	LSF -yellow with leaf texture and mastic	Category I – Non-Friable	O & M

Please see Appendix G for HA description and laboratory analytical report.

* If these building materials are scheduled to be impacted by the Project, the materials should be scheduled for work to be performed by a licensed asbestos abatement contractor or competent person, with proof of accreditation by MDEQ.

** See NESHAP Categorization below

TABLE 3
SUMMARY OF ASBESTOS-CONTAINING BUILDING MATERIALS
DAYCARE FACILITY

Sample No.	Homogeneous Material Description	**NESHAP Category	*Recommended Response Action
M1.1	Gypsum Wallboard /Joint compound	RACM	O & M
F2.3	Linoleum sheet flooring, dark brown with little squares pattern	Category I – Non-Friable	O & M
F2.4	Linoleum sheet flooring, light brown with little squares pattern	Category I – Non-Friable	O & M

Please see Appendix H for HA description and laboratory analytical report.

* If these building materials are scheduled to be impacted by the Project, the materials should be scheduled for work to be performed by a licensed asbestos abatement contractor or competent person, with proof of accreditation by MDEQ.

** See NESHAP Categorization below

NESHAP Categories are defined as:

Building materials confirmed for containing asbestos in concentrations \geq 1% are placed into one of the three following NESHAP categories, based on the type of building material, as follows:

Category I - non-friable asbestos-containing packings, gaskets, resilient floor covering, and asphalt roofing products containing more than one percent asbestos.

Category II - non-friable ACBM excluding Category I non-friable ACBM, containing more than one percent asbestos.

Regulated Asbestos-Containing Materials (RACM) - friable materials; Category I non-friable materials that will or may be subjected to sanding, grinding, cutting, or abrading; or Category II non-friable materials that have a high probability of becoming or have become crumbled, pulverized, or reduced to powder by forces expected to act on the material in the course of demolition or renovation operations.

Presumed Asbestos-Containing Materials (PACM) - applies to thermal system insulation, sprayed-on or troweled-on surfacing material and debris where such material is present, roofing materials, and any other building material not sampled during the inspection, which meets the requirements under AHERA.

Gypsum Wallboard Composite Guidelines – The gypsum wallboard joint compound (M1.1), which tested positive for asbestos with a concentration of greater than 1% asbestos is, by itself, considered as ACBM by EPA and MDEQ regulations; however, when combined with the wallboard and taping materials as a composite under current NESHAP regulations, the concentration of the wallboard wall system is less than 1% asbestos which is not considered as an ACBM by EPA and MDEQ. The Occupational Safety and Health Administration (OSHA), however, takes on a different approach when dealing with wallboard wall systems where the joint compound has tested positive for asbestos in concentrations $>$ 1%. OSHA requires general contractor's follow general guidelines in accordance with the current Asbestos in Construction Rule 29 CFR 1926.1101.

4.0 RECOMMENDATIONS

Asbestos

Working with HHA and the Project Architect to determine future plans for the complex, WTR developed three strategies for asbestos abatement and management prior to demolition, or remodeling of the units. The strategies are: (1) abatement of ACM prior to a complete demolition of the structures, (2) removal of all ACM in effort to transport or sell the structures and (3) encapsulation and enclosure of ACM prior to remodeling with area specific remodel. Each of the three strategies is described in the following tables.

TABLE 4
 ABATEMENT COST ESTIMATE (Abatement of ACM prior to a complete demolition of the structures)
 APARTMENT UNITS, DAYCARE & ADMINISTRATION FACILITIES

Building Type	Material Description	Quantity	Abatement & Removal Cost	Design, Observation & Monitoring	Project Cost Per Unit
Unit Style A (5 Units)	12"x12" VFT & Mastic + TSI	120 sf VFT/Mastic + 16 lf TSI	120sf @ \$10.00sf + \$100.00 lf	Approximately 20% of abatement cost	\$3,360.00 Removal & Design Observation & Monitoring
Unit Style B (1 Unit)	12"x12" VFT & Mastic	240 sf VFT/Mastic	240sf @ \$10.00sf	Approximately 20% of abatement cost	\$2,880.00 Removal & Design Observation & Monitoring
Unit Style C (4 Units)	12"x12" VFT & Mastic + TSI	995 sf VFT/Mastic + 12 lf TSI	995sf @ \$5.00sf + \$100.00 lf	Approximately 20% of abatement cost	\$7,410.00 Removal & Design Observation & Monitoring
Unit Style D (23 Units)	12"x12" VFT & Mastic + TSI	52 sf VFT/Mastic + 8 lf TSI	52sf @ \$25.00sf + \$100.00 lf	Approximately 20% of abatement cost	\$2,520.00 Removal & Design Observation & Monitoring
Unit Style E (12 Units)	12"x12" VFT & Mastic + Linoleum & Mastic	1,225 sf VFT/Linoleum & Mastics	1,225sf @ \$5.00sf	Approximately 20% of abatement cost	\$7,350.00 Removal & Design Observation & Monitoring
Unit Style F (28 Units)	12"x12" VFT & Mastic + Linoleum & Mastic	1,512 sf VFT/Linoleum & Mastics	1,512sf @ \$5.00sf	Approximately 20% of abatement cost	\$9,072.00 Removal & Design Observation & Monitoring
Unit Style G (16 Units)	12"x12" VFT & Mastic + Linoleum & Mastic	1,592 sf VFT/Linoleum & Mastics	1,592sf @ \$5.00sf	Approximately 20% of abatement cost	\$9,552.00 Removal & Design Observation & Monitoring Only
Unit Style H (4 Units)	12"x12" VFT & Mastic + Linoleum & Mastic	1,910 sf VFT/Linoleum & Mastics	1,910sf @ \$5.00sf	Approximately 20% of abatement cost	\$11,460.00 Removal & Design Observation & Monitoring
Daycare Facility	Linoleum & Mastic	50 sf Lino./Mastic	50 sf	Lump Sum	\$3,000.00 Removal & Design Observation & Monitoring
Admin. Facility	Linoleum & Mastic + TSI	20 sf Lino./Mastic .5lf TSI	20 sf + .5lf	Lump Sum	\$5,500.00 Removal & Design Observation & Monitoring

TABLE 4 - Continued
TOTALS FOR ABATEMENT COST ESTIMATE (Abatement of ACM prior to a complete demolition of the structures)
 Estimated Project Cost

Building Type	Material Description	Quantity	Abatement & Removal Cost	Design, Observation & Monitoring, Demo Personnel Time & Materials	Overall Project Cost
Apartment (132 Units)	All ACM	7,526 sf of VFT/Linoleum & Mastic + 36 lf of TSI	= \$518,534.00	Approximately 20% of abatement cost	\$648,168.00 Removal & Design Observation & Monitoring
Daycare Facility	All ACM	50 sf of Linoleum & Mastic	= \$2,500.00	Lump Sum	\$3,000.00 Removal & Design Observation & Monitoring
Administration Facility	All ACM	20 sf of Linoleum & Mastic + .5 lf of TSI	= \$5,000.00	Lump Sum	\$5,500.00 Removal & Design Observation & Monitoring
All Buildings	All Segregated ACM & General Waste	1,649.5 Tons	@ \$100.00 Per Ton = \$164,950.00	3 Personnel & 3 Trucks = \$25,000.00	\$189,950.00 Removal / Design / Observation & Monitoring / Demolition

TABLE 5
ABATEMENT COST ESTIMATE (Removal of all ACM in effort to transport or sell the structures)
 Total Estimated Project Cost

Building Type	Material Description	Quantity	Abatement & Removal Cost	Design, Observation & Monitoring, Demo Personnel Time & Materials	Overall Project Cost
Apartment (132 Units)	All Flooring & All TSI	7,526 sf of VFT/Linoleum & Mastic + 36 lf of TSI	= \$518,534.00	Approximately 20% of abatement cost	\$648,168.00 Removal & Design Observation & Monitoring
Daycare Facility	All ACM	50 sf of Linoleum & Mastic	= \$2,500.00	Lump Sum	\$3,000.00 Removal & Design Observation & Monitoring
Administration Facility	All ACM	20 sf of Linoleum & Mastic + .5 lf of TSI	= \$5,000.00	Lump Sum	\$5,500.00 Removal & Design Observation & Monitoring
All Apartments and Daycare and Admin. Building	All Wall Board to be Removed	-	Lump Sum = \$5,000.00 each Building	= \$70,000.00	\$770,000.00** Removal & Monitoring

No costs are associated with disposal by the Owner - others will provide transport, disposal or moving
 **Removal of wall board may be completed by others (the building buyer or mover).

TABLE 6
ABATEMENT COST ESTIMATE (Encapsulation and enclosure of ACM prior to remodeling with area specific remodel)
 Estimated Project Cost

Building Type	Material Description	Quantity	Abatement, Removal Cost & Design, Observation & Monitoring	Overall Project Cost
Apartment	TSI	N/A	N/A	Provide O&M
All	VFT/Linoleum	N/A	N/A	Provide O&M

Lead-Based Paint Testing

HUD requires a LBP risk assessment in general accordance with U.S. Department of Housing and Urban Development (HUD) *Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing*, and the regulations incorporated by the EPA in Title 40, Code of Federal Regulations (40 CFR), Part 745 (*Lead-Based Paint Poisoning Prevention in Certain Residential Structures*). The work consists of a detailed visual inspection and surface-by-surface investigation utilizing HUD approved, X-Ray Fluorescence (XRF) analyzing equipment. WTR's EPA accredited lead risk assessor would use the XRF to test all painted, varnished, shellacked, and stained representative building components in interior rooms, on exterior walls, and on surfaces in other exterior areas, including fences, playground equipment, and garages of the housing complex. The visual inspection will determine the condition and deterioration of LBP surfaces, if any.

If the project outcome includes complete demolition of the complex all that is required for disposal is a Toxicity Characteristic Leaching Procedure (TCLP) test for the each building scheduled for demolition.

5.0 LIMITATIONS

This asbestos inspection report and cost estimate was prepared based on information gathered during our site visits to complete the inspections, conversations with HHA maintenance and administrative staff, and interpretations of laboratory analytical results of building materials collected during the inspection. The report is intended for use in identifying potential asbestos hazards within the Stewart Housing Complex Apartments, Administration Building, and Daycare facility. While the inspection did involve destructive procedures to obtain samples of suspect building materials, WTR repaired and patched all holes, gouges, and tiling removed during sample collection. It is possible that ACM may be present in inaccessible areas, such as walls, pipe chases, and sub-floor fenestrations in multi-story buildings.

The opinions and recommendations expressed herein are intended exclusively for use by the Helena Housing Authority, and their clients. The report is not intended for use in project bidding for abatement or to be used by a contractor in providing a design for abatement of the ACBM. The scope of services performed by WTR may not be appropriate to satisfy the needs of other users, and any use or re-use of this document, or the findings presented herein, is at the sole risk of the Helena Housing Authority.

6.0 REFERENCES

- 2005 Montana Asbestos Work Practices Manual, Title 17, Chapter 74, Subchapter 3, Administrative Rules of Montana (ARM).
- Code of Federal Regulations (CFR), Title 40, Part 61, National Emission Standards for Hazardous Air Pollutants; Asbestos (NESHAPS), November 20, 1990.
- Code of Federal Regulations (CFR), Title 40, Part 763, Asbestos Hazard Emergency Response Act (AHERA).
- Code of Federal Regulations (CFR), Title 29, Parts 1910 and 1926, Occupational Exposure to Asbestos, Tremolite, Anthophyllite and Actinolite, as amended by Code of Federal Regulations (Vol. 51, #119), June 20, 1986.
- Code of Federal Regulations (CFR), Title 29, Part 1926.1101, Occupational Standards for Construction Industry, Asbestos Standards, April 10, 1994.
- Code of Federal Regulations (CFR), Title 40, Part 763, Asbestos Model Accreditation Plan, February 3, 1994.
- Environmental Protection Agency (EPA), Asbestos School Hazard Abatement Reauthorization Act (ASHARA)

Asbestos Inspector Accreditation and Certifications

Appendix A

ASBESTOS CONSULTING AND MONITOR

Certificate of Completion

NAME: *David B. Gillett*

CERT. NO: *3-12-07 95-DG*

ADDRESS *930 1/2 W. Rodney*

CITY: *Helena* ST: *MT* ZIP: *59601*

SSN: *538-94-9951*

REFRESHER COURSE FOR ASBESTOS ABATEMENT SUPERVISOR REQUIRED TRAINING FOR ASBESTOS ACCREDITATION, TSCA TITLE II

3-12-07

COURSE DATE

3-12-08

EXPIRATION DATE

INSTRUCTOR

John Lang

SIGNATURE

ACM
BOX 324
EAST HELENA, MT 59635
406-431-4757

DEPARTMENT OF I
ASBESTOS CONTR
BOX 200901
HELENA, MT. 5960

DAVID B GILLETT
has met the requirements of Title 17, Chapter 74.3,
Subchapter 3, of the Administrative Rules of Montana
for accreditation in the following asbestos-type
occupation(s) as indicated by an expiration date(s).

CS MTA-3226 PD IN
03/12/2008 07/14/2007
WK

TIMOTHY D ROBERTS
 has met the requirements of Title 17, Chapter 74.3, Subchapter 3, of the Administrative Rules of Montana for accreditation in the following asbestos-type occupation(s) as indicated by an expiration date(s).

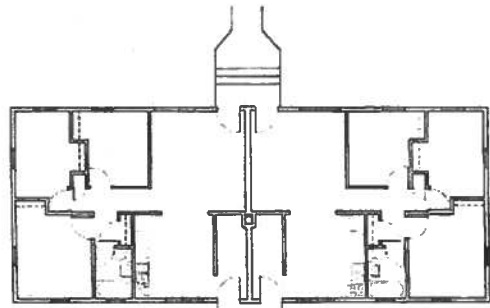
CS	MP	PD	IN
04/13/2008			02/20/2008
WK	<i>Robertson</i>		
MTA-3171			

MT DEQ Asbestos Control Program

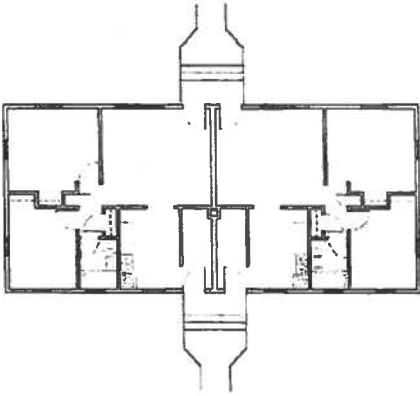
Asbestos Sample Location Maps for Apartments

Appendix B

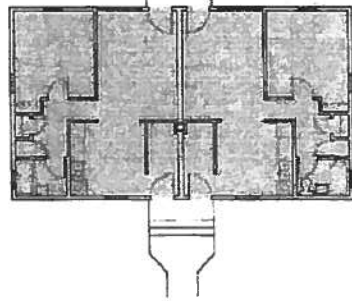
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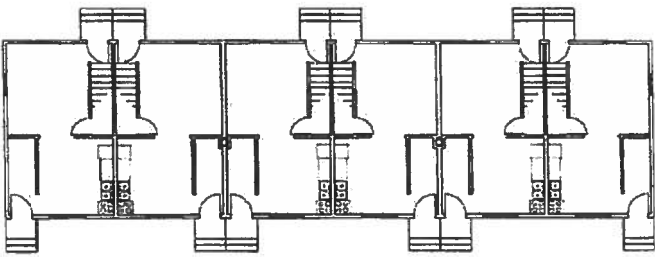
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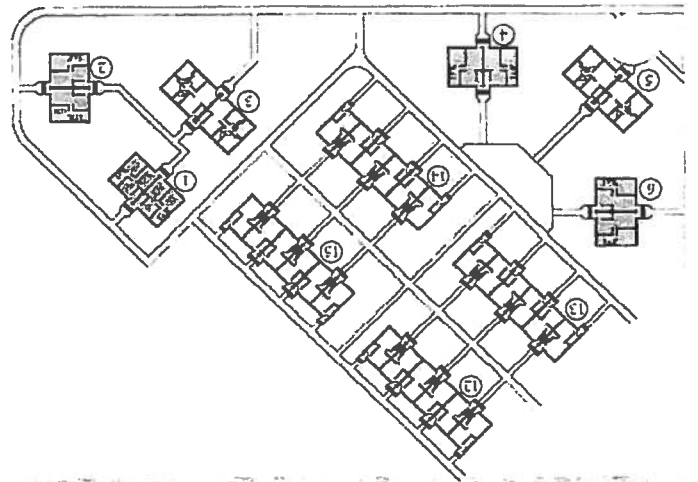
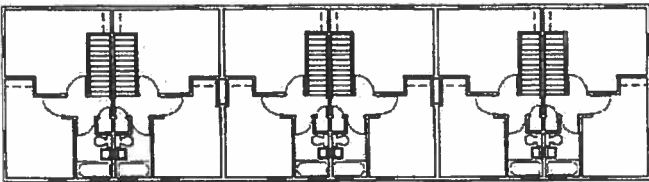
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FIRST FLOOR PLAN 4-1 "D"

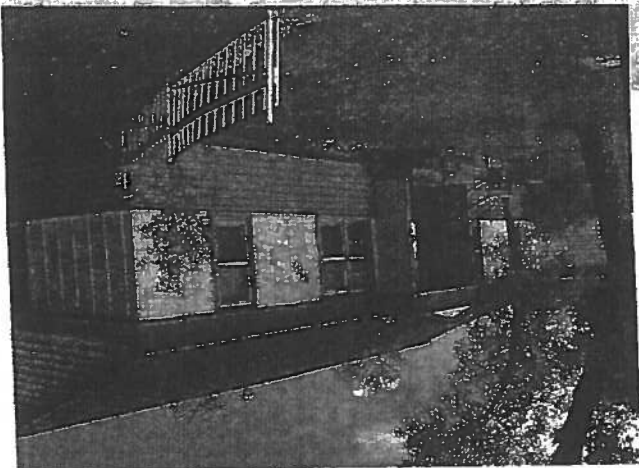


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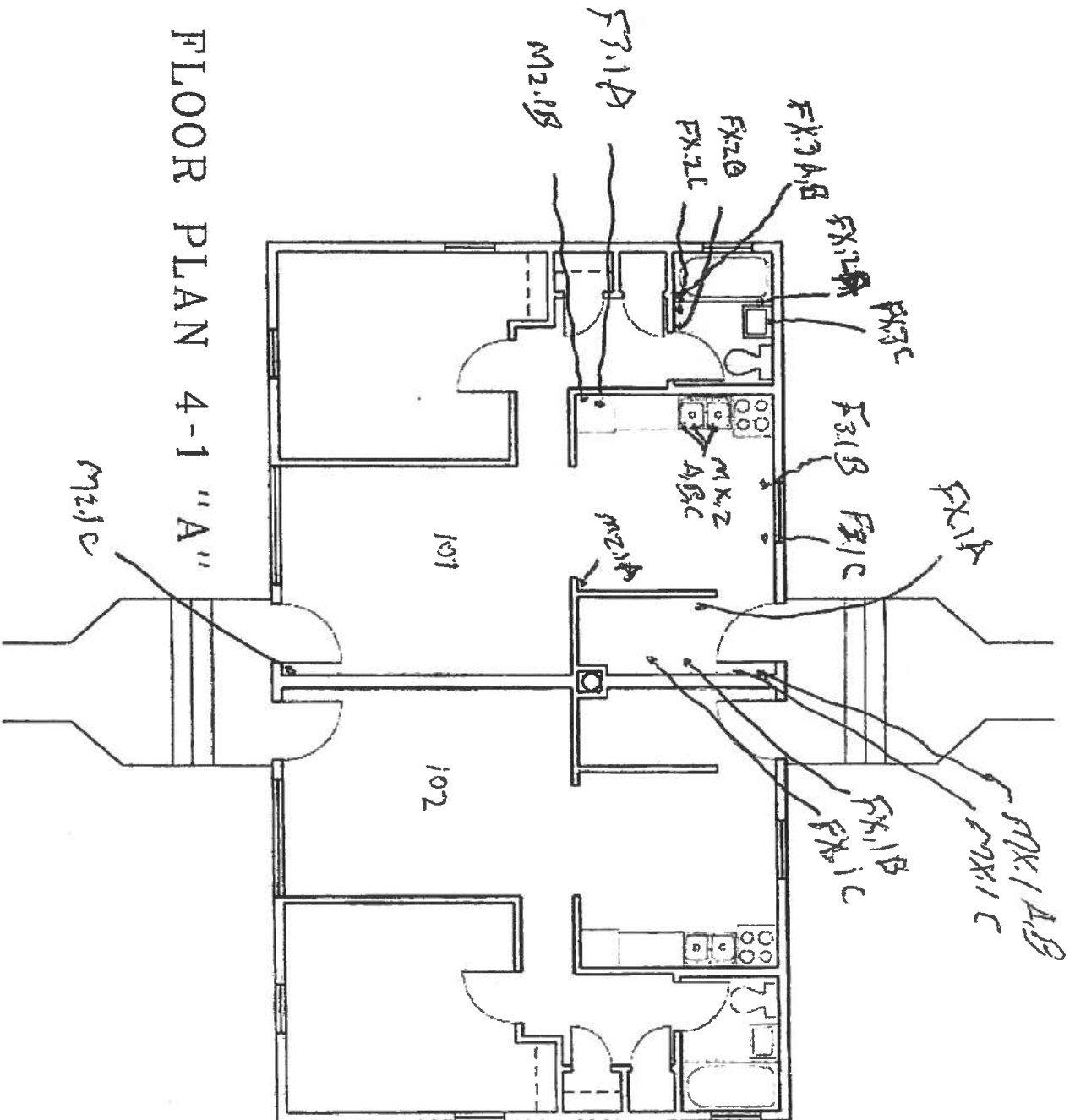


MT004001 S 01 Quadrant B

SITE PLAN 4-1 ND 4-8 PROJECTS



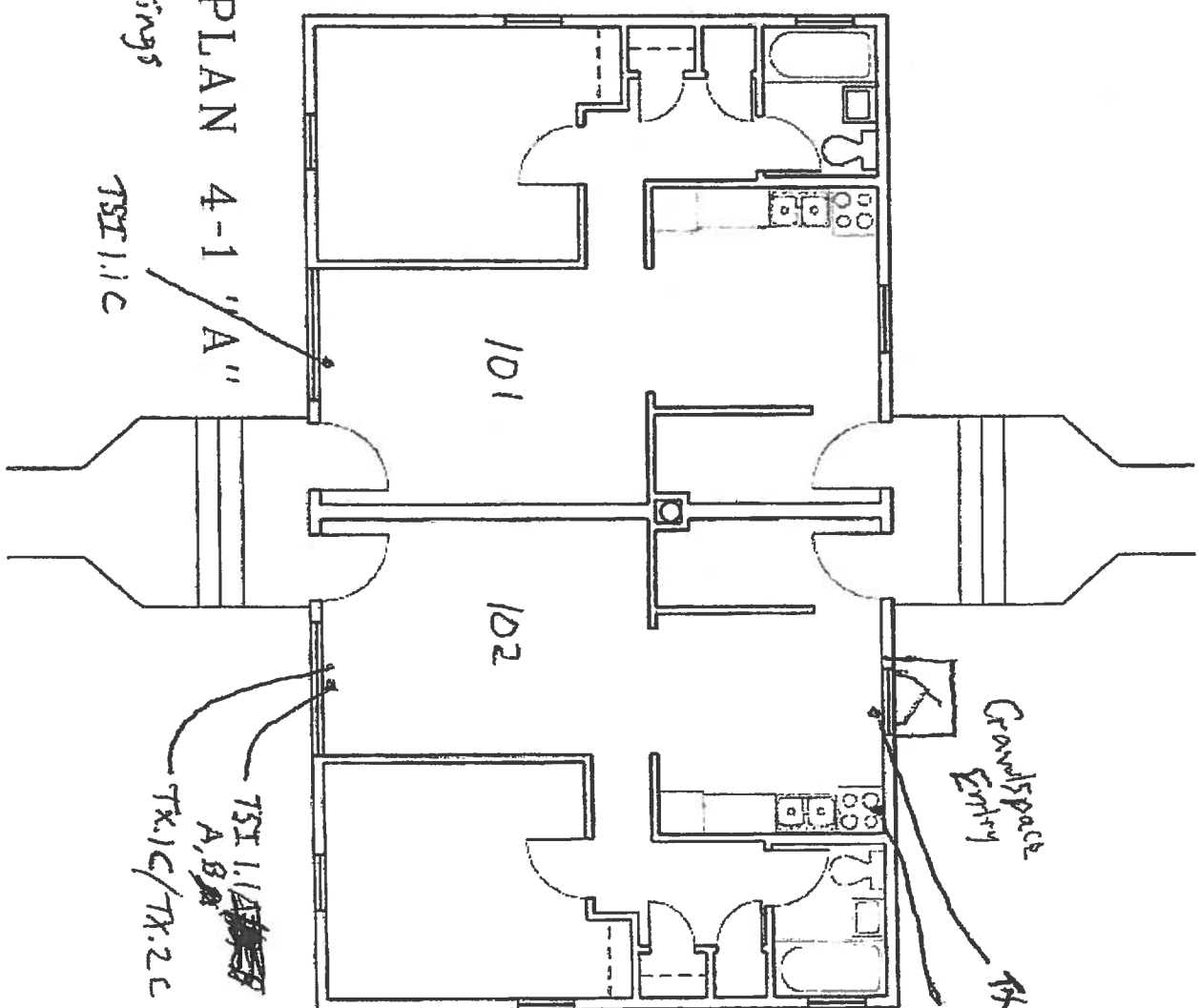
FIRST FLOOR PLAN 4-1 "A"



101, 102 Crawl Space

FIRST FLOOR PLAN 4-1 "A"

Qty: 8 TSI Fillings



TSI 1.1C

101

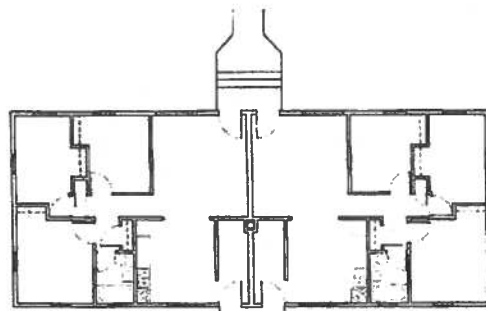
102

TSI 1.1A, B, C
TK.1C/TK.2C

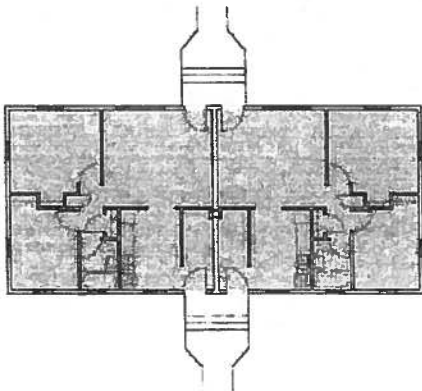
Crawlspace Entry

TK.1A/TK.2A
TK.1B/TK.2B

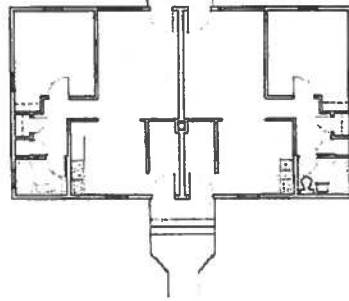
FIRST FLOOR PLAN 4-1 "C"



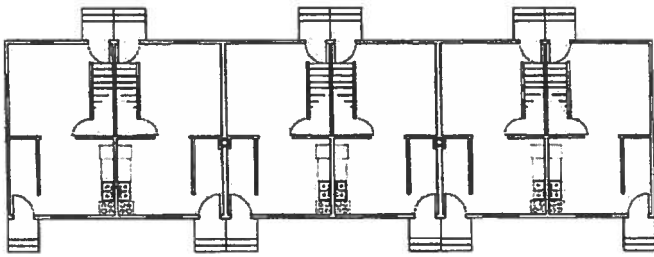
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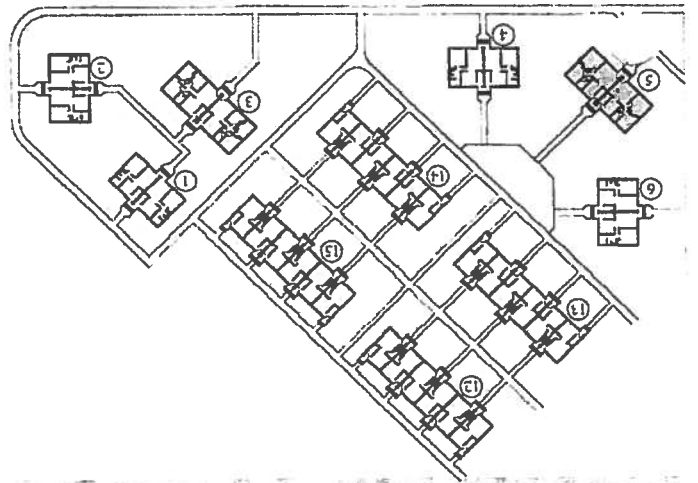
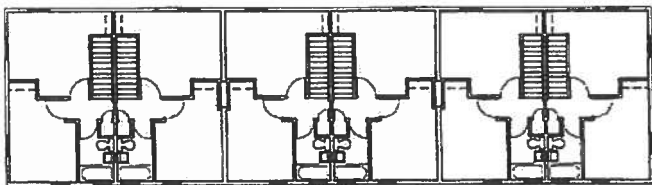
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FIRST FLOOR PLAN 4-1 "D"



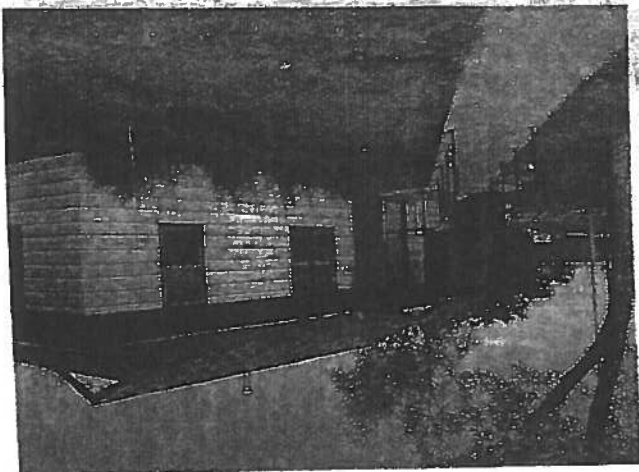
SECOND FLOOR PLAN 4-1 "D"

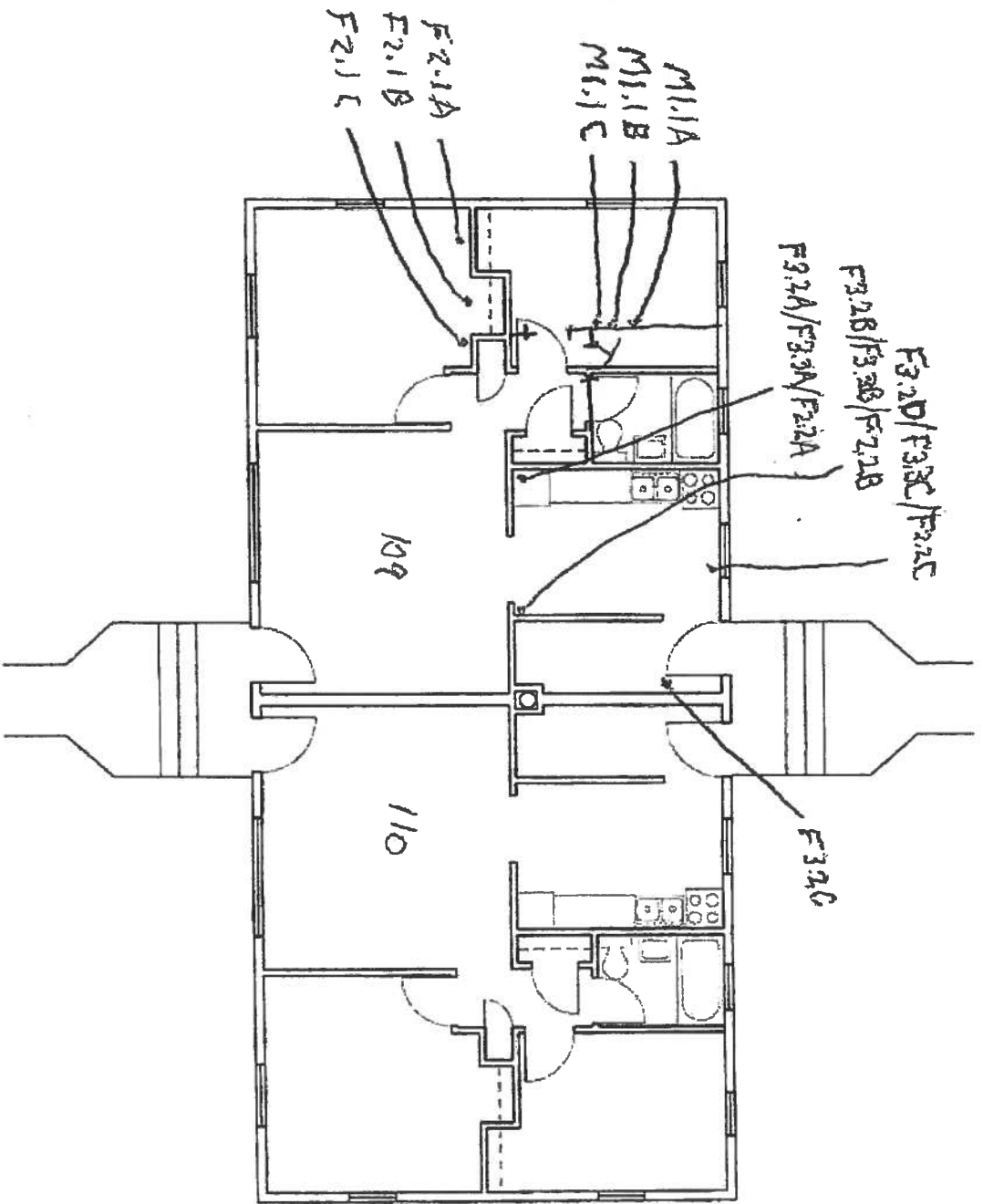


MT004001 S.01

Quadrant B

SITE PLAN 4-1 AND 4-2 PROJECTS





FIRST FLOOR PLAN 4-1 "B"