NARRATIVE REPORT

1.0 **BUILDING INFORMATION**

Engineering and Technology was originally constructed in 1913; although specific information is unavailable, several renovations are evident.

Engineering and Technology is a two-story, 8,840 ft² building which primarily serves as office areas and classroom areas for social science personnel.

The interior floor finishes included carpet, floor tile, linoleum, stone flooring, and ceramic tile; the interior ceiling finishes included plaster, ceiling tile, and concrete; and the interior wall finishes included plaster, concrete, gypsum wallboard, and wood paneling. The roofing system is a flat rubber-membrane roof and the exterior of the structure is brick.

The piping systems were insulated; fiberglass insulation (with and without hard fittings) and aircell insulation (with hard fittings) are located in the building. Steam and domestic water enter the building in a pit in room 105. HVAC systems located in the building consisted of steam radiators and forced air furnaces equipped with heating/cooling coils.

2.0 ASBESTOS SURVEY INFORMATION

Engineering and Technology was surveyed as part of a larger project on NDSU's Fargo, ND Campus. This report is part of "Volume 2" of a nine volume series. This report includes building specific information only; please refer to the opening section of "Volume 2" for methodologies, definitions, and other pertinent supporting information.

A total of 75 samples were collected from suspect asbestos-containing materials (ACM) from Engineering and Technology on June 18, 2007, an additional 9 samples were collected on May 13, 2008, and an additional 3 samples were collected on May 16, 2008. Laboratory analysis results indicate **13 of these samples tested positive for asbestos**.

2.1 Suspect Materials Identified and Sampled

Floor Tile (6 types) Linoleum Floor Filler Material Wall Patch Material Concrete Hard Plaster- Monocoat Joint Compound Sink Undercoating (2 types) Baseboard Adhesive Hard Fitting on Fiberglass Insulation Stair Tread Adhesive Exterior Window Glazing Exterior Building Seam Caulk (2 types) Exterior Window Caulk (3 types)

Floor Tile Mastic (6 types) Underlayment Paper for Linoleum Ceiling Tile (4 types) Textured Paint Gypsum Wallboard Wall Texture (4 types) Tar Paper (under floor tile) Carpet Mastic Encapsulant on Fiberglass Insulation Aircell Pipe Insulation Ceiling Texture Exterior Door Caulk Exterior Penetration Putty

The Asbestos Bulk Sample Results Table includes asbestos sampling data.

2.2 Asbestos Containing Materials

12" Peach Floor Tile with Brown and White Marks and Mastic Underlayment Paper for Green and White Square Pattern Linoleum Mastic for 12" Gray Floor Tile with White/Dark Gray Marks Mastic for 12"Gray/Green Floor Tile with White/Black Marks Gritty Wall Texture Black Sink Undercoating Aircell Pipe Insulation Hard Fitting on Aircell Pipe Insulation (assumed) 9" Floor Tile and Mastic (assumed)

The ACM Locations/ Friable Materials Assessments Table include ACM locations data.

2.3 Cost Estimates

Legend Technical Services Inc. estimates abatement costs (removal & disposal) of ACM for Engineering and Technology as follows:

ACM	QUANTITY	UNIT COST	TOTAL COST
Asbestos Floor Tile and/or Mastic	3,711 ft²	\$4.00/ft ²	\$14,844.00
Asbestos Underlayment Paper for Linoleum	235 ft ²	\$4.00/ft ²	\$940.00
Asbestos Sink Undercoating	2 ea	\$150.00/ea	\$300.00
Asbestos Wall Texture	6,280 ft ²	\$7.50/ft ²	\$47,100.00
Asbestos Aircell Pipe Insulation	214 ft	\$25.00/ft	\$5,350.00
Asbestos Hard Fitting on Aircell Insulation	25 ea	\$60.00/ea	\$1,500.00
Total Estimated Abater	ment Costs:		\$70,034.00

2.4 Survey Notes

LEGEND identified and sampled 4 separate types (homogeneous areas) of wall texture in Engineering & Technology; 1 type, a Gritty Wall Texture, tested positive for asbestos. LEGEND noted several walls in the building with multiple wall textures applied over each other. For example, the north wall in room 103 has 3 layers of wall texture applied; the different layers are readily identified by looking above the ceiling tile. The bottom layer of texture, a texture paint, is visible all the way up to the ceiling; the middle layer, the ACM gritty wall texture, is visible as overspray as far up as approx. 1' from the ceiling tile; and the top layer, a heavy wall texture, is visible below the ceiling tile only. The middle layer is ACM, LEGEND has identified this material on the ACM Locations Diagrams and the ACM Locations Tables.

LEGEND No. 0700048 (NDSU) ENGINEERING AND TECHNOLOGY (A017)

ROOM/ ACM	ASBESTOS TYPE	EST. QUANTITY	ACM TYPE	MATERIAL CONDITION	DAMAGE 다 전 비유 POTENTIAL ^{또 한 한} 한 바	ASSESS. CAT. ¹	NOTES
Room 101 Now 199	M Abated Marc	h 2020					
Underlayment Paper for Square Pattern Linoleum	30% Chrysotile	110 ft ²	Non-Friable Miscellaneous	N/A*	N/A*	N/A*	The asbestos underlayment paper is under the green and white square pattern linoleum.
Aircell Pipe Insulation	50% Chrysotile	12 ft	Friable TSI	Damaged	Physical■Air Erosion■Vibration■	1	The asbestos aircell pipe insulation is above the ceiling tile along the west wall.

Room 102 Abated March 2020

Mastic for 12" Gray Floor Tile with Dark Gray Marks	8% Chrysotile	253 ft ²	Non-Friable Miscellaneous	N/A*	N/A*	¢	N/A*	The mastic for the 12" gray floor tile contains asbestos, only.
Aircell Pipe Insulation	50% Chrysotile	30 ft	Friable TSI	Damaged	Physical Air Erosion Vibration		1	The asbestos aircell pipe insulation is above the ceiling tile along the north and west walls.
Hard Fitting on Aircell Insulation	Assumed	1 fitting	Friable TSI	Damaged	Physical Air Erosion Vibration		1	None

Room 103 Abated April 2011

Aircell Pipe Insulation	50% Chrysotile	26 ft	Friable TSI	Damaged		1	The asbestos aircell pipe insulation is above the ceiling tile along the north wall.
Hard Fitting on Aircell Insulation	Assumed	3 fittings	Friable TSI	Damaged	Physical Air Erosion Vibration	1	None
Gritty Wall Texture	<1-3% Chrysotile	816 ft ²	Friable Surfacing	Good	Physical Air Erosion Vibration	7	The asbestos wall texture is on the north, south, and west walls.

LEGEND No. 0700048 (NDSU) ENGINEERING AND TECHNOLOGY (A017)

ROOM/ ACM	ASBESTOS TYPE	EST. QUANTITY	ACM TYPE	MATERIAL CONDITION	DAMAGE POTENTIAL	HIGH MOD	ASSESS. CAT. ¹	NOTES
Room 104 Abated A	April 2011							
Aircell Pipe Insulation	50% Chrysotile	40 ft	Friable TSI	Damaged	Physical Air Erosion Vibration		1	The asbestos aircell pipe insulation is above the ceiling tile along the north and east walls.
Hard Fitting on Aircell Insulation	Assumed	6 fittings	Friable TSI	Damaged	Physical Air Erosion Vibration		1	None
Gritty Wall Texture	<1-3% Chrysotile	600 ft ²	Friable Surfacing	Good	Physical Air Erosion Vibration		7	The asbestos wall texture is on the north, south, and east walls.

Room 107 Abated April 2011

Aircell Pipe Insulation	50% Chrysotile	45 ft	Friable TSI	Damaged	Air Erosion	1	The asbestos aircell pipe insulation is above the ceiling tile along the south and east walls.
Hard Fitting on Aircell Insulation	Assumed	5 fittings	Friable TSI	Damaged	Physical Air Erosion	1	None
Gritty Wall Texture	<1-3% Chrysotile	792 ft ²	Friable Surfacing	Good	Air Erosion	7	The asbestos wall texture is on the north, south, and east walls.

Room 107A Abated March 2020

Gritty Wall Texture <1-3% Chrysotile 150 ft ² Friable Good Physical ■□□ 7 The asbestos wall texture is behind the g									
	/psum	The asbestos wall texture is behind the gypsur	7	Physical	Good	Friable	150 ft ²	<1-3% Chrysotile	Gritty Wall Texture
Surfacing Air Erosion 🗖 🗌 wallboard in the southeast corner of the	oom	wallboard in the southeast corner of the room		Air Erosion		Surfacing			
Vibration Vibration (visible above the ceiling tile).		(visible above the ceiling tile).		Vibration					

Room 108 Abated April 2011

Aircell Pipe Insulation	50% Chrysotile	16 ft	Friable	Damaged	Physical	1	The asbestos aircell pipe insulation is above the
			TSI		Air Erosion		ceiling tile along the south and west walls.
					Vibration		

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ROOM/ ACM	ASBESTOS TYPE	EST. QUANTITY	ACM TYPE	MATERIAL CONDITION	DAMAGE POTENTIAL	LOM MOD HIGH	ASSESS. CAT. ¹	NOTES
Hard Fitting on Aircell Insulation	Assumed	3 fittings	Friable TSI	Damaged	Physical Air Erosion Vibration		1	None
Gritty Wall Texture	<1-3% Chrysotile	672 ft ²	Friable Surfacing	Good	Physical Air Erosion Vibration		7	The asbestos wall texture is on the north, south, and west walls.

Room 109 Abated March 2020

Mastic fo	л 12″	8% Chrysotile	267 ft ²	Non-Friable	N/A*	N/A*	N/A*	The mastic for the 12" gray/green floor tile
Gray/Gre	en Floor Tile			Miscellaneous				contains asbestos, only.
	ite & Black							

Room 109A Abated March 2020

9" Floor Tile and Mastic	Assumed	128 ft ²	Non-Friable Miscellaneous	N/A*	N/A*	N/A*	The 9" floor tile and mastic are assumed ACMs.
Aircell Pipe Insulation	50% Chrysotile	14 ft	Friable TSI	Significantly Damaged	Physical Air Erosion Vibration	1	The asbestos aircell pipe insulation is above the ceiling tile, wrapped in fiberglass insulation along the west wall.

Room 109B Abated March 2020

Mastic for 12" Gray/Green Floor Tile with White & Black	8% Chrysotile	267 ft ²	Non-Friable Miscellaneous	N/A*	N/A*	:	N/A*	The mastic for the 12" gray/green floor tile contains asbestos, only.
Black Sink Undercoating Abat	3-5% Chrysotile ted Fall 2014	1 ea	Non-Friable Miscellaneous	N/A*	N/A*	:	N/A*	The asbestos undercoating is on a sink along the east wall.
Aircell Pipe Insulation	50% Chrysotile	30 ft	Friable TSI	Damaged	Physical Air Erosion Vibration		1	The asbestos aircell pipe insulation is above the ceiling tile along the south and west walls.

LEGEND No. 0700048 (NDSU) ENGINEERING AND TECHNOLOGY (A017)

ROOM/ ACM	ASBESTOS TYPE	EST. QUANTITY	ACM TYPE	MATERIAL CONDITION	DAMAGE POTENTIAL	HIGH MOD	ASSESS. CAT. ¹	NOTES
			[L .			-	
Hard Fitting on Aircell	Assumed	5 fittings	Friable	Damaged	Physical		1	None
Insulation			TSI		Air Erosion			
					Vibration			

Hallway 188 Abated March 2020

12" Peach Floor Tile with Brown & White Marks and Mastic	,	243 ft ²	Non-Friable Miscellaneous	N/A*	N/A*	N/A*	The 12" floor tile and mastic contain asbestos and is on the west end of the building, only.
Gritty Wall Texture	<1-3% Chrysotile	348 ft ²	Friable Surfacing	Good	Physical Air Erosion Vibration	7	The asbestos wall texture is in the east end of the hallway (visible above the ceiling tile; refer to the ACM Locations Diagrams.

Hallway 188A Abated March 2020

9" Floor Tile and	Assumed	60 ft ²	Non-Friable	N/A*	N/A*	N/A*	The 9" floor tile and mastic are assumed ACMs.
Mastic			Miscellaneous				

Room 201 Abated March 2020

9" Floor Tile and	Assumed	236 ft ²	Non-Friable	N/A*	N/A*	N/A*	The 9" floor tile and mastic are assumed ACMs;
Mastic			Miscellaneous				they are under the carpet.

Room 202 Abated March 2020

	Assumed	149 ft ²	Non-Friable	N/A*	N/A*	N/A*	The 9" floor tile and mastic are assumed ACMs;
Mastic			Miscellaneous				they are under the carpet.

Room 203 Abated March 2020

9" Floor Tile and	Assumed	91 ft ²	Non-Friable	N/A*	N/A*	N/A*	The 9" floor tile and mastic are assumed ACMs;
Mastic			Miscellaneous				they are under the carpet.

LEGEND No. 0700048 (NDSU) ENGINEERING AND TECHNOLOGY (A017)

ROOM/ ACM	ASBESTOS TYPE	EST. QUANTITY	ACM TYPE	MATERIAL CONDITION	DAMAGE 등 종 프 POTENTIAL 등 양 위	ASSESS. CAT. ¹	NOTES
Room 204 Abated	March 2020						
9" Floor Tile and Mastic	Assumed	88 ft ²	Non-Friable Miscellaneous	N/A*	N/A*	N/A*	The 9" floor tile and mastic are assumed ACMs; they are under the carpet.
Room 205 Abated	March 2020						
9 " Floor Tile and Mastic	Assumed	130 ft ²	Non-Friable Miscellaneous	N/A*	N/A*	N/A*	The 9" floor tile and mastic are assumed ACMs; they are under the carpet.
Room 206 Abated	March 2020		1	1		1	1
9" Floor Tile and Mastic	Assumed	160 ft ²	Non-Friable Miscellaneous	N/A*	N/A*	N/A*	The 9" floor tile and mastic are assumed ACMs; they are under the carpet.
Room 206A Abate	ed March 2020		I				
9" Floor Tile and Mastic	Assumed	262 ft ²	Non-Friable Miscellaneous	N/A*	N/A*	N/A*	The 9" floor tile and mastic are assumed ACMs; they are under the carpet.
Room 206B Abate	d March 2020		I		I		
9" Floor Tile and Mastic	Assumed	115 ft ²	Non-Friable Miscellaneous	N/A*	N/A*	N/A*	The 9" floor tile and mastic are assumed ACMs; they are under the carpet.
Room 207 Now 2	99W Abated Ma	arch 2020	1				
Underlayment Paper for Square Pattern Linoleum		125 ft ²	Non-Friable Miscellaneous	N/A*	N/A*	N/A*	The asbestos underlayment paper is under the green and white square pattern linoleum.
Gritty Wall Texture	<1-3% Chrysotile	460 ft ²	Friable Surfacing	Good	Physical Air Erosion Ubration	7	The asbestos wall texture is on all the walls.

* = Non-Friable materials were not assessed

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ROOM/ ACM	ASBESTOS TYPE	EST. QUANTITY	ACM TYPE	MATERIAL CONDITION	DAMAGE G 전 전 전 전 전 전 전 전 전 전 전 전 전 전 전 전 전 전	ASSESS. CAT. ¹	NOTES
Room 208 Abated	March 2020						
9" Floor Tile and Mastic	Assumed	161 ft ²	Non-Friable Miscellaneous	N/A*	N/A*	N/A*	The 9" floor tile and mastic are assumed ACMs.

Room 208A Abated March 2020

9" Floor Tile and	Assumed	36 ft ²	Non-Friable	N/A*	N/A*	N/A*	The 9" floor tile and mastic are assumed ACMs.
Mastic			Miscellaneous				

Room 209 Abated March 2020

9" Floor Tile and Mastic	Assumed	253 ft ²	Non-Friable Miscellaneous	N/A*	N/A*	N/A*	The 9" floor tile and mastic are assumed ACMs; they are under the carpet and on the west end of the room, only.
Gritty Wall Texture	<1-3% Chrysotile	680 ft²	Friable Surfacing	Good	Physical Air Erosion Vibration	7	The asbestos wall texture is on the north, south, east, and west walls.

Room 209A Abated March 2020

Black Sink Undercoating	3-5% Chrysotile	1 ea	Non-Friable Miscellaneous	N/A*	N/A*	:	N/A*	The asbestos undercoating is on a sink along the east wall.
Gritty Wall Texture	<1-3% Chrysotile	520 ft ²	Friable Surfacing	Good			1	The asbestos wall texture is on the north, south, east, and west walls.

Room 209B Abated March 2020

Gritty Wall Text	are <1-3% Chrysotile	210 ft ²	Friable	Good	Physical	7	The asbestos wall texture is on the north and
			Surfacing		Air Erosion		east walls.
					Vibration		

LEGEND No. 0700048 (NDSU) ENGINEERING AND TECHNOLOGY (A017)

ROOM/ ACM	ASBESTOS TYPE	EST. QUANTITY	ACM TYPE	MATERIAL CONDITION	DAMAGE POTENTIAL	HIGH MOD	ASSESS. CAT. ¹	NOTES
Room 209C Abate	d March 2020							
Gritty Wall Texture	<1-3% Chrysotile	240 ft ²	Friable Surfacing	Good	Physical Air Erosion Vibration		7	The asbestos wall texture is on the south and east walls.
Room 209D Abate	d March 2020							
Gritty Wall Texture	<1-3% Chrysotile	80 ft ²	Friable Surfacing	Good	Physical Air Erosion Vibration		7	The asbestos wall texture is on the south wall.
Room 209E Abated	d March 2020					<u>.</u>		
Gritty Wall Texture	<1-3% Chrysotile	80 ft²	Friable Surfacing	Good	Physical Air Erosion Vibration		7	The asbestos wall texture is on the south wall.
Room 209F Abated	March 2020					-	1	
9" Floor Tile and Mastic	Assumed	188 ft ²	Non-Friable Miscellaneous	N/A*	N/A'	k	N/A*	The 9" floor tile and mastic are assumed ACMs; they are under the carpet.
Gritty Wall Texture	<1-3% Chrysotile	210 ft ²	Friable Surfacing	Good	Physical Air Erosion Vibration		7	The asbestos wall texture is on the west end of the north wall and the south wall.

Room 209G Abated March 2020

9" Floor Tile and Mastic	Assumed	171 ft ²	Non-Friable Miscellaneous	N/A*	N/A*	N/A*	The 9" floor tile and mastic are assumed ACMs; they are under the carpet.
Gritty Wall Texture	<1-3% Chrysotile	340 ft ²	Friable Surfacing	Good	-	7	The asbestos wall texture is on the north, south, and west walls.

LEGEND No. 0700048 (NDSU) ENGINEERING AND TECHNOLOGY (A017)

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Room 210 Abated March 2020

		. 1				 	
9" Floor Tile and	Assumed	159 ft²	Non-Friable	N/A*	N/A*	N/A*	The 9" floor tile and mastic are assumed ACMs;
Mastic			Miscellaneous				they are under the carpet.
Gritty Wall Texture	<1-3% Chrysotile	350 ft²	Friable Surfacing	Good	Air Erosion	7	The asbestos wall texture is on the south, east, and west walls.

Room 211 Abated March 2020

9" Floor Tile and Mastic	Assumed	140 ft ²	Non-Friable Miscellaneous	N/A*	N/A*	¢	N/A*	The 9" floor tile and mastic are assumed ACMs; they are under the carpet.
Gritty Wall Texture	<1-3% Chrysotile	290 ft ²	Friable Surfacing	Good	Physical Air Erosion Vibration		7	The asbestos wall texture is on the north, east, and west walls.

2nd Floor Hallway (hallway by rooms 209C-209F) Abated March 2020

9" Floor Tile and Mastic	Assumed	30 ft ²	Non-Friable Miscellaneous	N/A*	N/A*	:	N/A*	The 9" floor tile and mastic are assumed ACMs (they are under the carpet); refer to ACM Locations Map for further information.
Gritty Wall Texture	<1-3% Chrysotile	350 ft ²	Friable Surfacing	Good	Physical Air Erosion Vibration		7	The asbestos wall texture is on the west end of the north wall and the south wall; refer to ACM Locations Map for further information.

Hallway 288A Abated March 2020

	9" Floor Tile and	Assumed	124 ft ²	Non-Friable	N/A*	N/A*	N/A*	The 9" floor tile and mastic are assumed ACMs;
	Mastic			Miscellaneous				they are under the carpet.
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LEGEND No. 0700048 (NDSU) ENGINEERING AND TECHNOLOGY (A017)

ROOM/ ACM	ASBESTOS TYPE	EST. QUANTITY	ACM TYPE	MATERIAL CONDITION	DAMAGE 등 록 표 POTENTIAL ^중 응 단	ASSESS. CAT. ¹	NOTES
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¹Assessment Categories:

1) Damaged or Significantly Damaged TSI ACM

2) Damaged Friable Surfacing ACM

3) Significantly Damaged Friable Surfacing ACM

4) Damaged or Significantly Damaged Friable Miscellaneous ACM

End

5) ACM with Potential for Damage

6) ACM with Potential for Significant Damage

7) Any Remaining Friable ACM or Friable Suspected ACM