

Fort Valley State University: Miller Hall



Thomas F. Little, AIA

Senior Associate

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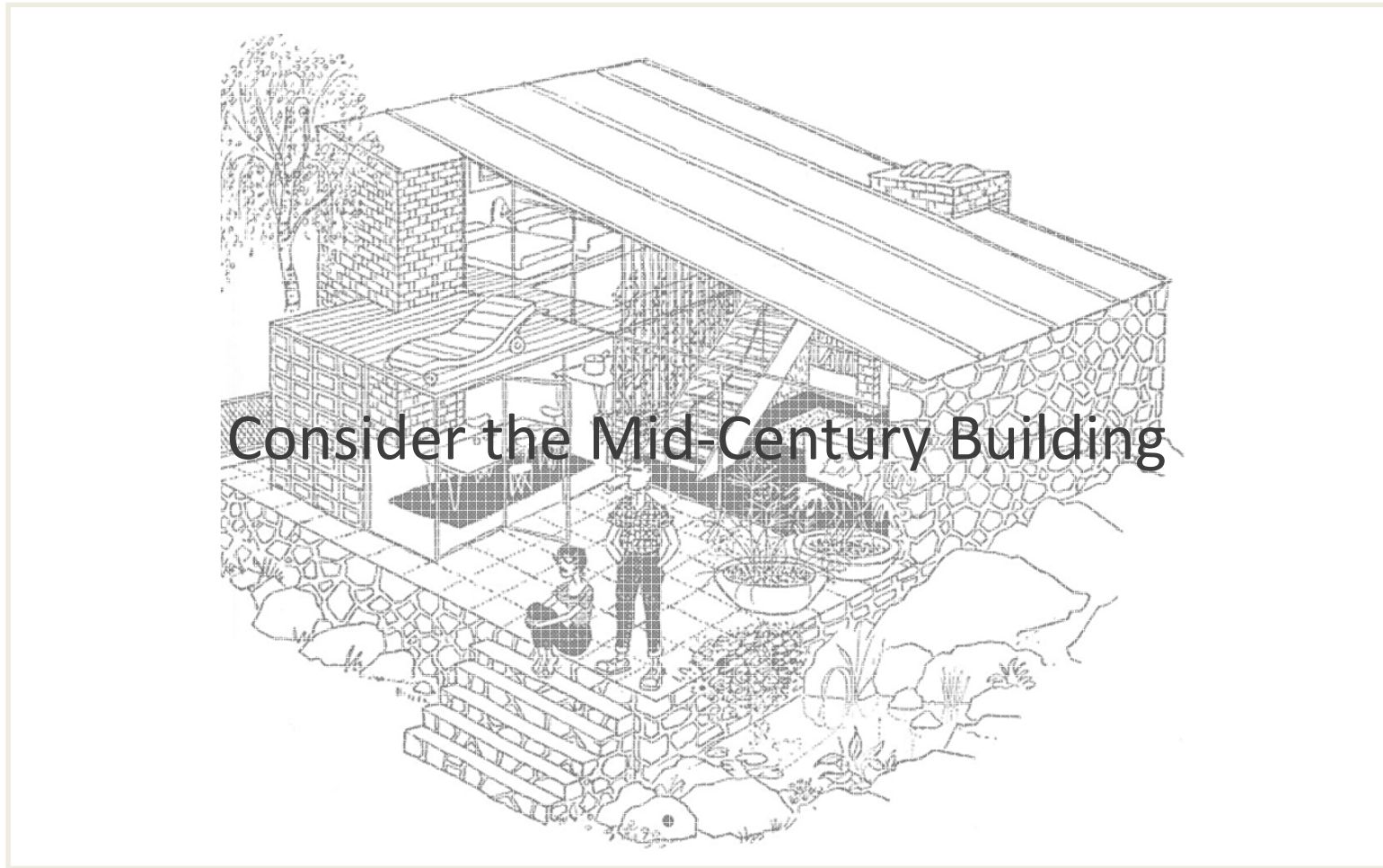
Surber Barber Choate & Hertlein Architects, P.C.



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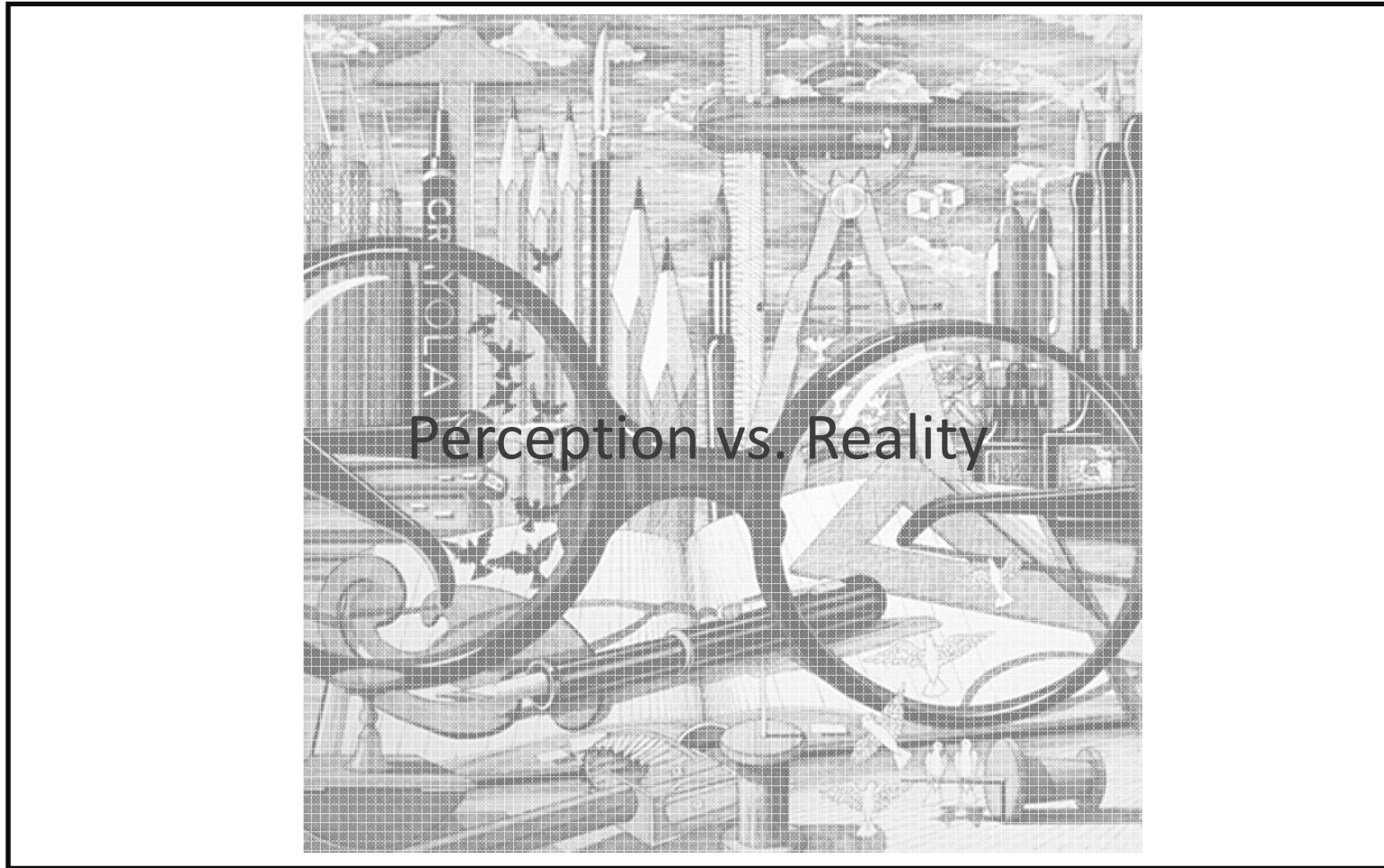
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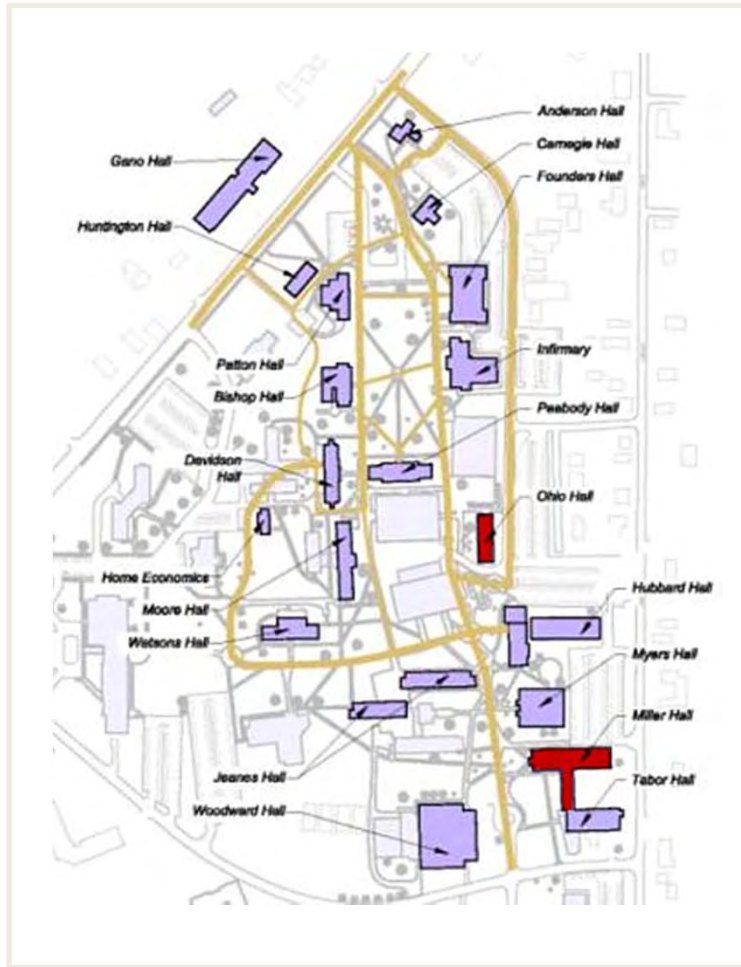
Campus Map



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Site Plan



Miller Hall



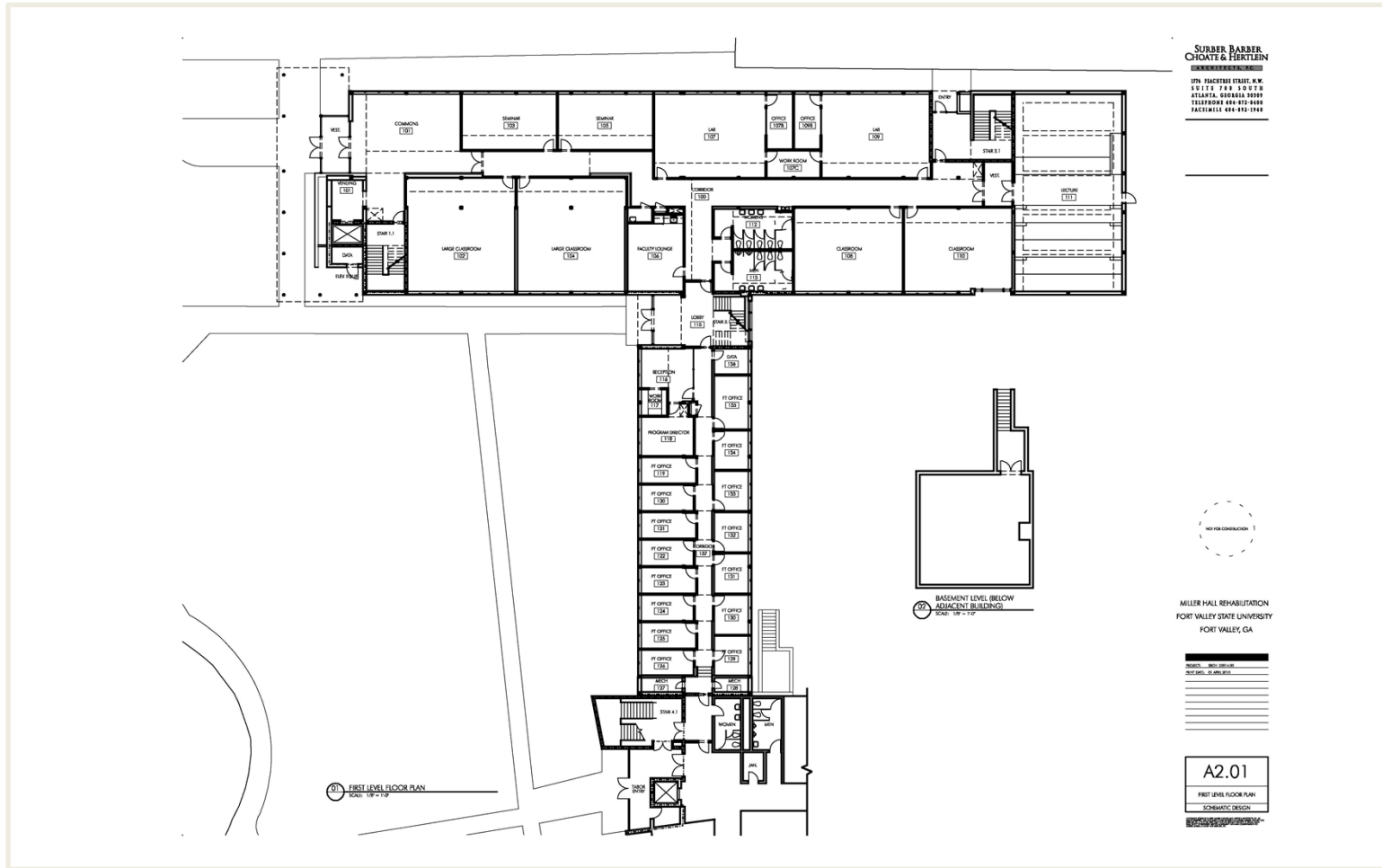
Ohio Hall



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Main Floor Plan



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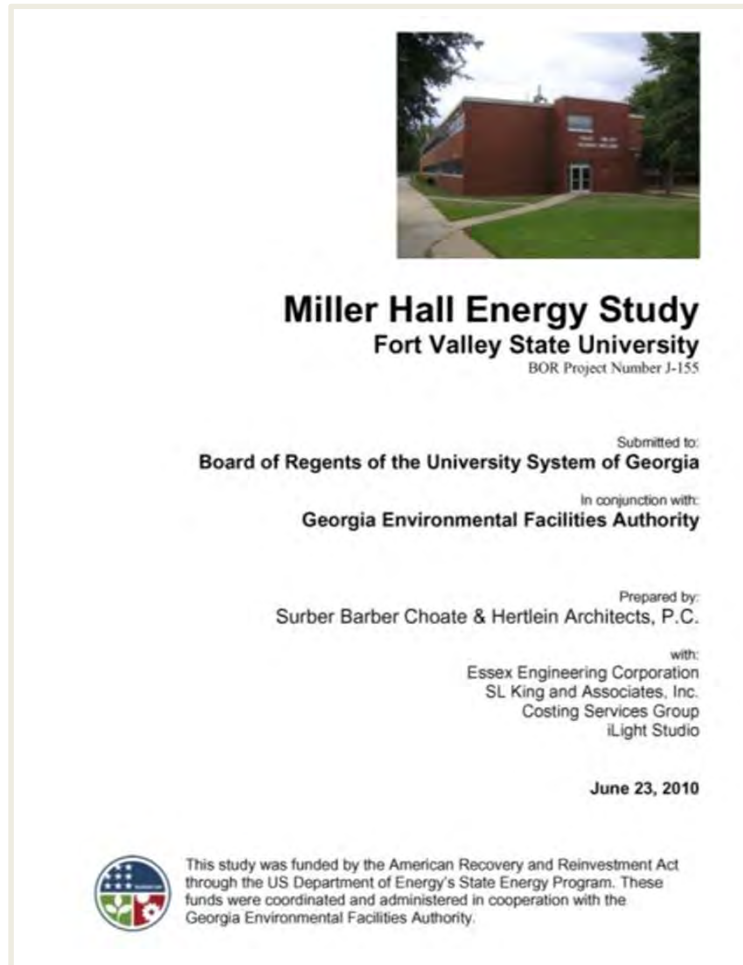
Miller Hall Energy Study



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Miller Hall Energy Study

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Miller Hall Energy Study



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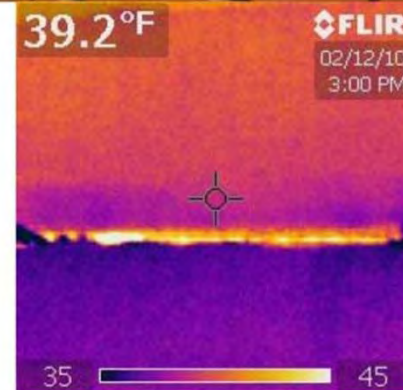
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Miller Building - labs steel windows from inside view



Typical Window

Miller Building – crack on the outside wall from outside



Window Sill



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Table 1. Comparison of Current Building, Proposed building and Further Energy Conservation Opportunities.

Project Run	ECO Description	Electricity		Natural Gas		Total Energy		Total Yearly Cost	
		Usage (x1,000) kWh	Savings	Usage (x1,000,000) Btu	Savings	Usage (x1,000,000) Btu	Savings	Cost (\$)	Savings
Current Building		515.3		648.1		2406.8		\$66,781	
Baseline	renovation baseline	401.9		928.46		2300.1	4.4%	\$54,210	18.8%
Reduced Lighting	F28T8 vs F32T8	385.5	4.1%	933.5	-0.5%	2249.2	2.2%	\$52,233	3.6%
R30 Roof	R30 roof insulation	402.7	-0.2%	925.09	0.4%	2297.4	0.1%	\$54,222	0.0%
PVC Roof	PVC membrane on 2-inch It wt concrete	399.36	0.6%	966.66	-4.1%	2330	-1.3%	\$54,014	0.4%
Operable Windows	Keep operable windows	400.61	0.3%	971.83	-4.7%	2339.1	-1.7%	\$54,183	0.0%
Insulating Glass	insul glass in current window frame	402.18	-0.1%	897.41	3.3%	2270	1.3%	\$54,154	0.1%
Aluminum Frame	New alu frame window	401.5	0.1%	886.99	4.5%	2257	1.9%	\$54,042	0.3%
Vinyl Frame	New vinyl frame window	401.52	0.1%	882.99	4.9%	2253.4	2.0%	\$54,033	0.3%
Daylighting	Daylighting Controls	385.69	4.0%	932.66	-0.5%	2249	2.2%	\$52,253	3.6%
VAV	VAV HVAC System	526.04	-30.9%	68.77	92.6%	1864.1	19.0%	\$66,708	-23.1%
DCV*	DCV estimate					2242.6	2.5%		
VRFZ*	Estimate of VRFZ system instead of 4-pipe HVAC system.					2019.12	12.2%		

*savings for these ECO are estimates only, as they could not be accurately modeled in eQUEST

Comparison of Existing Building to Proposed Work



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Table 2. Payback and Energy Saved per Investment for each Energy Conservation Opportunity

Project Run	ECO Description	Total Energy		Total Yearly Cost		Installation Cost	Payback (years)	Energy Saved per Investment (MBtu/ 1,000 dollars)
		Usage (x1,000,000) Btu	Savings	Cost (\$)	Savings			
Current Building		2406.8		\$66,781				
Baseline	renovation baseline	2300.1	4.4%	\$54,210	18.8%			
Reduced Lighting	F28T8 vs F32T8	2249.2	2.2%	\$52,233	3.6%	\$20,499	10.5	2.5
R30 Roof	R30 roof insulation	2297.4	0.1%	\$54,222	0.0%	\$31,706	none	0.1
PVC Roof	PVC membrane on 2-inch lt wt concrete	2330	-1.3%	\$54,014	0.4%	Not Price		
Operable Windows	Keep operable windows	2339.1	-1.7%	\$54,183	0.0%	\$0	0.0	
Insulating Glass	insul glass in current window frame	2270	1.3%	\$54,154	0.1%	\$131,381	none	0.2
Aluminum Frame	New alu frame window	2257	1.9%	\$54,042	0.3%	\$164,226	none	0.3
Vinyl Frame	New vinyl frame window	2253.4	2.0%	\$54,033	0.3%	\$65,690	none	0.7
Daylighting	Daylighting Controls	2249	2.2%	\$52,253	3.6%	\$40,998	21.0	1.2
VAV	VAV HVAC System	1864.1	19.0%	\$66,708	-23.1%	\$25,184	none	17.3
DCV*	DCV estimate*	2242.6	2.5%			\$12,885		4.5
VRFZ*	Estimate of VRFZ system instead of 4-pipe HVAC system.	2019.12	12.2%			\$126,748		2.2

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Payback and Energy Saved



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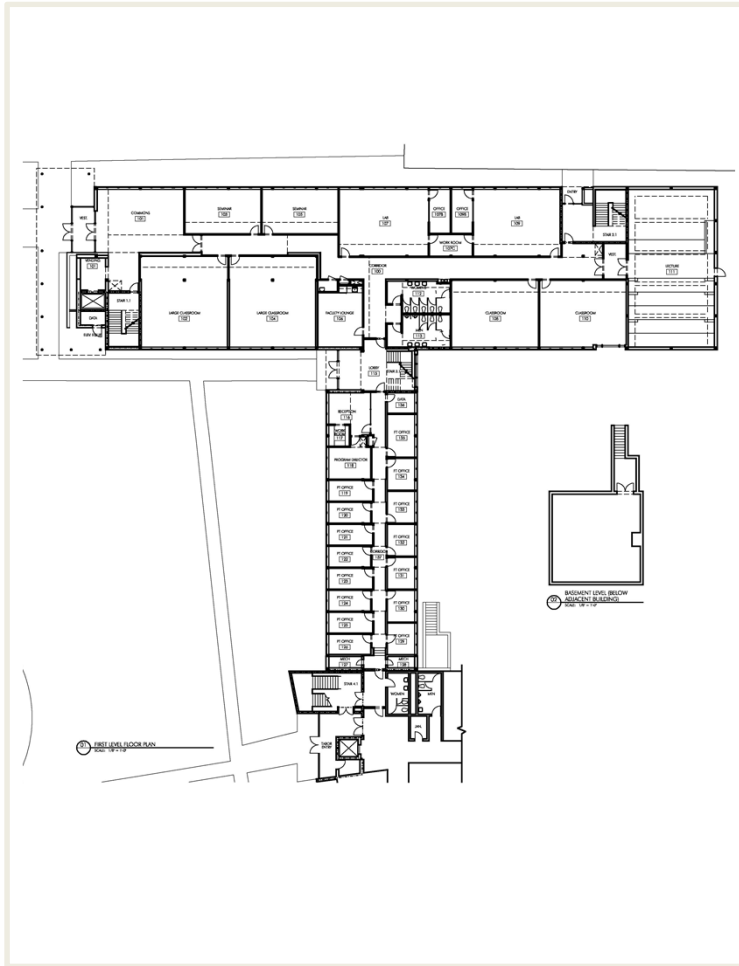
Miller Hall: Programmatic Issues



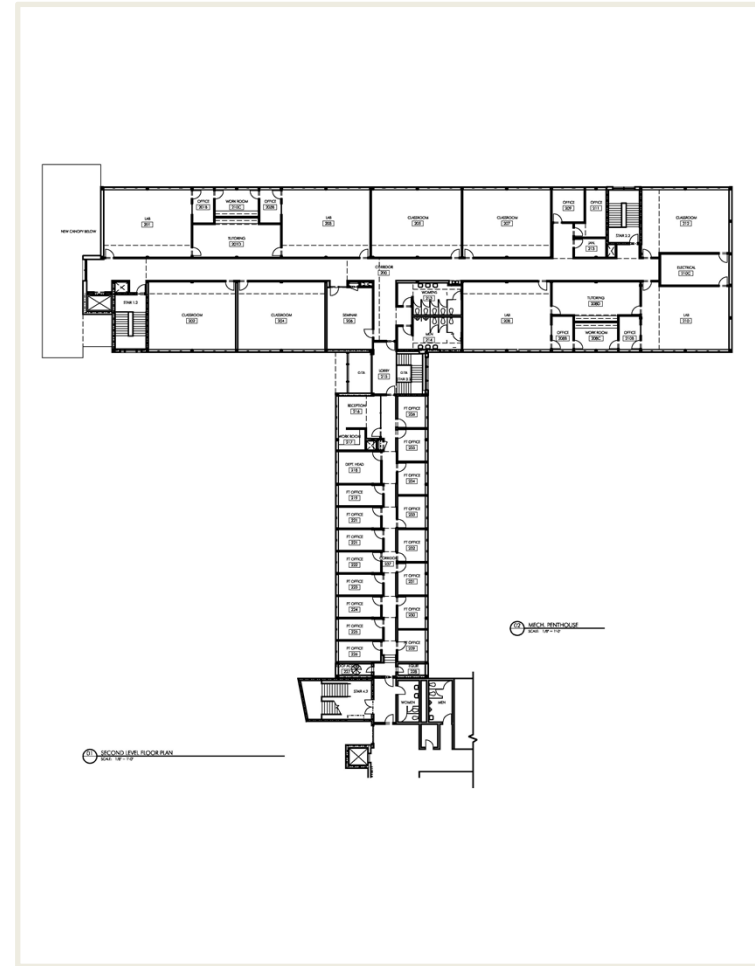
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Main Floor



Upper Floor



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Classrooms



Offices



Public Spaces



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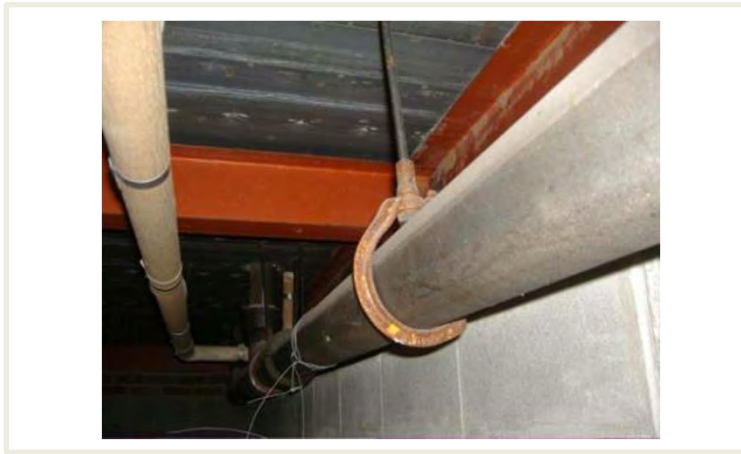
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Steel Structure with CMU Shear Walls; Low ceiling heights



Systems shared with adjacent buildings



Window and masonry rehabilitation



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Implementation



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Miller Hall \$150/square foot (estimated)

vs.

New Construction @ \$180-\$240/square foot



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