



Third Party State Inspections
Equipment Evaluation
Maintenance Performance
Maintenance Specifications
Modernization Analysis
Modernization Specifications
Accident Review

Acceptance Inspections

NAESA
Indiana Certification 10002
Illinois Certification 6010
QEI Certification 5045
IEC

March 9, 2021

Mr. Dan Backler
Indiana University Architect
1800 N. Range Road
Bloomington, IN 47408

Re: BL071Chemistry -20200445,
20200448 & 20200449
Elevator Assessment Report

Dear Mr. Backler,

On February 1, 2021 Stuard & Associates, along with Kirk Lowery of the IU Elevator Shop made a site visit to the Chemistry Building on the IU Bloomington Campus. The Purpose of this evaluation is to provide a professional opinion of current elevator conditions, along with providing recommendations for improvements and estimates of their costs. Also provided below are the necessary building, electrical, mechanical and fire alarm enhancements that will need upgraded in conjunction with any future elevator modernization.

The report will be based on visual inspections that were non-invasive and non-forensic in nature and may require assumptions to be made of underlying conditions that cannot be readily verified without extensive, sometimes destructive, testing.

Elevator Histories

All four (4) elevators assessed were installed by Otis Elevator Company at different times throughout the building's history. The oldest two of the four are a freight and traction elevator both installed in 1962, with a third passenger traction elevator installed in 1982. The newest elevator is a 2 stop hydraulic elevator installed in 1988 that is utilized by Building Staff. All four elevators

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use outdated and obsolete relay logic technology with major components and parts that are no longer available for direct replacement. These types of issues can lead to lengthy elevator down times while replacement parts are being made or repaired.

Modernization Recommendations

With the overall age of two of the systems being nearly 60 years of age and the other two at the end of their respective life cycles, we feel a full system modernization is warranted at this time. We have listed in red the individual elevator components that should be considered for replacements. We have also categorized the different areas of project work needed and their respective cost estimates.

Asset - 63627
State Number - 34219

Current Elevator Conditions

1. Type:	Geared Overhead Traction
2. Capacity:	10,000#
3. Speed:	125 fpm
4. Stops:	8
5. Openings:	Front (7), Rear (1)
6. Operation:	Retain Simplex Operation
7. Machine Location:	Retain Overhead Machine Room
8. Door Operation:	Replace with Peelle Bi-Parting
9. Door Size:	Retain W80"x 84"H
10. Car Gates	Replace Front & Rear Single Panel
11. Door Panels	Replace with Peelle
12. Door Protection:	Add light curtain
13. Guide Rails:	Retain
14. Guide Shoes:	Retain
15. Hoist Ropes:	Replace with 6 - 5/8 size cables
16. Governor Rope:	Replace
17. Buffers:	Retain
18. Counterweights:	Retain
19. Safeties:	Replace – Use Hollister Whitney
20. Governors:	Replace with Hollister Whitney
21. Car Frame & Platforms:	Retain
22. Compensation:	Retain
23. Machines:	Replace with Hollister Whitney.
24. Unintended Movement Device:	Add with New Machine
25. Controller:	Replace Relay Logic with Solid State

26. Peelle Door Controller:	Replace Relay Logic with Solid State
27. Motor:	Replace DC Hoist Motor
28. Car Operating Panels:	Replace with Code Compliant C.O.P
29. Hall Button Stations:	Replace with Innovation
30. Hall Position Indicator	Replace with Innovation
31. Hall Lanterns:	None
32. Handicap Requirements:	None
33. Wiring:	Replace
34. Car Enclosure:	Retain
35. Exhaust Fan:	Replace
36. Hoistway Entrances:	Retain
37. Hall Pull Stations	Add
38. Key Operated Hoistway Access:	Add
39. Card Reader:	None

Estimated New Equipment Cost: \$354,000.00

Code Enhancements Requirements for Modernization

- Replace window air conditioner in machine room with a exhaust fan controlled by a thermostat.
- Enhance Machine Room lighting to 200lx
- Enhance Lighting in pit to 100lx
- Change outlet in machine room and pit to a GFI
- Add ground wire to current mainline disconnect
- Add 100volt disconnect
- Add fire hat relay for elevator recall.

Estimated Cost: **\$20,000.00**

IU Standards for Elevators

- The addition of hoistway lighting will need to add inside the shaft at each floor level for elevator maintenance safety.

Estimated Cost **\$7,000.00**

Estimated Budget Total for Elevator Work

Equipment, Code & Standards Work	\$381,000.00
Consulting Fees	\$15,000.00
A/E Fees	<u>\$8,000.00</u>
Total	\$404,000.00

Please Note: The above total is not reflective of the entire project budget total. It strictly represents the elevator portion of the budget.

Asset - 63626
State Number - 44641

Current Elevator Conditions

1. Type:	Geared Overhead Traction
2. Capacity:	4000#
3. Speed:	200 fpm
4. Stops:	4
5. Openings:	Front - 4
6. Operation:	Retain Simplex Operation
7. Machine Location:	Retain Overhead Machine Room
8. Door Operation:	Retain LH 2 Speed Side Sliding
9. Door Size:	Retain 36"
10. Door Panel Type:	Replace Baked Enamel with Stainless
11. Door Equipment:	Replace with GAL
12. Door Protection:	Replace Light Curtains
13. Guide Rails:	Retain
14. Guide Shoes:	Replace Both Car/CW - New Elasco
15. Hoist Ropes:	Replace with 4 - 5/8 size cables
16. Governor Rope:	Replace with New Governor
17. Buffers:	Retain
18. Counterweights:	Retain
19. Safeties:	Replace with Hollister Whitney
20. Governors:	Replace with Hollister Whitney
21. Car Frame & Platforms:	Retain
22. Compensation:	Retain
23. Machines:	Replace with Hollister Whitney
24. Deflector Sheave	Replace with Machine
25. Unintended Movement Device:	Add with New Machine
26. Controller:	Replace with Solid State
27. Motor:	Replace with AC Motor

28. Car Operating Panels:	Replace with Code Compliant C.O.P
29. Hall Button Stations:	Replace with Innovation
30. Hall Position Indicator	Replace with Innovation
31. Hall Lanterns:	Replace with Innovation
32. Handicap Requirements:	OK
33. Wiring:	Replace
34. Car Enclosure:	Replace – W77.25" x D59" x 96H"
35. Down Lighting	Replace with New Cab
36. Exhaust Fan:	Replace
37. Hoistway Entrances:	Retain and Wrap with Stainless
38. Key Operated Hoistway Access:	Replace Current Fixture
39. Card Reader:	None

Estimated New Equipment Cost: \$270,000.00

Code Enhancement Requirements for Modernization

- Add self-closing self-locking gate.
- Enhance Machine Room lighting to 200lx
- Enhance Lighting in pit to 100lx
- Add a handhold to pit ladder at 48" above the bottom finished floor.

Estimated Cost: **\$13,000.00**

IU Standards for Elevators

- The addition of hoistway lighting will need to add inside the shaft at each floor level for elevator maintenance safety.
- Wrap current lobby frames with stainless steel.

Estimated Cost **\$15,000.00**

Estimated Budget Total for Elevator Work

Equipment, Code & Standards Work	\$298,000.00
Consulting Fees	\$11,900.00
A/E Fees	<u>\$8,000.00</u>
Total	\$317,900.00

Please Note: The above total is not reflective of the entire project budget total. It strictly represents the elevator portion of the budget.

Asset - 63630
State Number - 34218

Current Elevator Conditions

1. Type:	Geared Overhead Traction
2. Capacity:	2500#
3. Speed:	250 fpm
4. Stops:	7
5. Openings:	Front (6) Rear (1)
6. Operation:	Retain Simplex Operation
7. Machine Location:	Retain Overhead Machine Room
8. Door Operation (Front):	Center Opening
9. Door Operation (Rear):	Retain LH 2 Speed Side Sliding
10. Door Size (Front):	Retain 42"
11. Door size (Rear):	Retain 36"
12. Door Panel Type:	Replace Baked Enamel with Stainless
13. Door Equipment:	Replace with GAL
14. Door Protection:	Replace Light Curtains
15. Guide Rails:	Retain
16. Guide Shoes:	Replace Both Car/CW - New Elasco
17. Hoist Ropes:	Replace with 5 - 5/8 size cables
18. Governor Rope:	Replace with New Governor
19. Buffers:	Retain
20. Counterweights:	Retain
21. Safeties:	Replace with Hollister Whitney
22. Governors:	Replace with Hollister Whitney
23. Car Frame & Platforms:	Retain
24. Compensation:	Retain
25. Machines:	Replace with Hollister Whitney
26. Unintended Movement Device:	Add with New Machine
27. Controller:	Replace with Solid State
28. Motor:	Replace with AC Motor
29. Car Operating Panels:	Replace with Code Compliant C.O.P
30. Hall Button Stations:	Replace with Innovation
31. Hall Position Indicator	Replace with Innovation
32. Hall Lanterns:	Replace with Innovation
33. Handicap Requirements:	OK
34. Wiring:	Replace
35. Car Enclosure:	Replace – W81" x D49" x96 H"

36.	Down Lighting	Replace with New Cab
37.	Exhaust Fan:	Replace
38.	Hoistway Entrances:	Retain and Wrap with Stainless
39.	Key Operated Hoistway Access:	Replace Current Fixture
40.	Card Reader:	None

Estimated New Equipment Cost: **\$285,000.00**

Code Enhancement Requirements for Modernization

- Enhance Machine Room lighting to 200lx
- Enhance Lighting in pit to 100lx
- Add ground wire to current mainline disconnect
- Add 100volt disconnect

Estimated Cost: **\$15,000.00**

IU Standards for Elevators

- The addition of hoistway lighting will need to add inside the shaft at each floor level for elevator maintenance safety.
- Wrap current lobby frames with stainless steel.

Estimated Cost **\$24,500.00**

Estimated Budget Total for Elevator Work

Equipment, Code & Standards Work	\$324,500.00
Consulting Fees	\$13,000.00
A/E Fees	<u>\$8,000.00</u>
Total	\$345,500.00

Please Note: The above total is not reflective of the entire project budget total. It strictly represents the elevator portion of the budget.

Asset - 63628
State Number - 44622

Current Elevator Conditions

1. Type:	Conventional Bored Hole Hydraulic
2. Capacity:	1500#
3. Speed:	100 fpm
4. Stops:	2
5. Openings:	Front - 2
6. Operation:	Retain Simplex Operation
7. Machine Location:	Retain Adjacent
8. Door Operation:	Retain RH 2Speed Side Slide
9. Door Size (Front):	Retain 36"
10. Door Panel Type:	Replace Baked Enamel with Stainless
11. Door Equipment:	Replace with GAL
12. Door Protection:	Replace Light Curtains
13. Guide Rails:	Retain
14. Guide Shoes:	Retain Slide guides
15. Buffers:	Retain Spring
16. Car Frame & Platforms:	Retain
17. Hydraulic Tank:	Replace with Dry Type
18. Control Valve:	Use EECO Type
19. Controller:	Replace with Solid State
20. Motor:	Replace with Tank
21. Pump:	Replace with Tank
22. Car Operating Panels:	Replace with Code Compliant C.O.P
23. Hall Button Stations:	Replace with Innovation
24. Hall Position Indicator	Replace with Innovation
25. Hall Lanterns:	Replace with Innovation
26. Handicap Requirements:	OK
27. Wiring:	Replace
28. Car Enclosure:	Replace – W53" x D48.25" x96 H"
29. Down Lighting	Replace with New Cab
30. Exhaust Fan:	Replace
31. Hoistway Entrances:	Retain and Wrap with Stainless
32. Key Operated Hoistway Access:	Replace Current Fixture
33. Card Reader:	None

Estimated New Equipment Cost: \$145,000.00

Code Enhancement Requirements for Modernization

- Enhance Lighting in pit to 100lx
- Add ground wire to current mainline disconnect

Estimated Cost: \$1,500.00

IU Standards for Elevators

- The addition of hoistway lighting will need to add inside the shaft at each floor level for elevator maintenance safety.
- Wrap current lobby frames with stainless steel.

Estimated Cost	\$6,000.00
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Estimated Budget Total for Elevator Work

Equipment, Code & Standards Work	\$152,500.00
Consulting Fees	<u>\$9,000.00</u>
Total	\$161,500.00

Emergency Power/Switch Gear Capabilities.

The current switch gear is over 30 years of age and does not have the capabilities to address the current code and IU standards for elevator requirements. IU will be responsible for this upgrade and will need to be completed prior to or in conjunction with the elevator modernization/s. We received the following cost estimate from Lynn Vornheder, Sr. Electrical Engineer of the University's Architects Office.

Estimated Cost	\$30,000.00
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The cost estimates below represent the total of all four (4) elevators

Asset (63627) Freight Elevator Equipment -	\$381,000.00
Asset (63626) Passenger Elevator Equipment -	\$298,000.00
Asset (63630) Passenger Elevator Equipment -	\$324,500.00
Asset (63628) Passenger Elevator Equipment -	\$161,500.00
Switch Gear Upgrade	
Consulting Fees -	\$46,600.00
A/E Fees for Electrical -	<u>\$24,000.00</u>
Total Elevator Project Cost -	\$1,265,000.00

If you have any questions, please contact this office for clarification.

Sincerely,

Stuard & Associates, Inc.

Heather Stuard Roberts

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