

CONSTRUCTION DOCUMENTS – MARCH 21, 2022

SECTION 142100 - ELECTRIC TRACTION ELEVATOR MODERNIZATIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions in all Divisions of the Specification apply to this Section.

1.2 SUMMARY

- A. Section includes the modernization of two (2) existing electric traction elevators utilizing overhead machines. Both elevators, 10,000# freight (State # 34219) and 4000# simplex passenger (State Number 44641), are Vintage Otis Elevators.
 - 1. Complete commercial pre-engineered overhead traction elevator system that complies with the elevator standards of Indiana University:
 - a. Microprocessor Motion Controller: Smartrise Only
 - b. Overhead Machine: Hollister Whitney Only
 - c. GAL Manufacturing Corporation high speed door operator and equipment for Passengers Only
 - d. Freight Door Equipment: Peelle Equipment Only
 - e. Freight Door Controller: Peelle
 - f. Standard IU Standards for Elevators Apply to this project.

1.3 DEFINITIONS

- A. Definitions in ASME A17.1/CSA B44—2007 or latest Indiana adopted edition apply to work of this Section.
- B. Defective Elevator Work: Operation or control system failures; performances below specified ratings; excessive wear; unusual deterioration or aging of materials or finishes; unsafe conditions; the need for excessive maintenance; abnormal noise or vibration; and similar unusual, unexpected, and unsatisfactory conditions.
- C. AHJ: Authority Having Jurisdiction, in this case the Division of Elevator Safety, State of Indiana.
- D. Substantial Completion: That day the last elevator is restored to public service and all punch list items have been corrected.

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- E. COP: Car Operating Panel
- F. CDI: Car Direction Indicator
- G. MCP: Maintenance Control Program as described in A17.1—2016
- H. CP: Capitol Projects

1.4 ACTION SUBMITTALS

A. Product Data:

1. Include capacities, sizes, performances, operations, safety features, finishes, and similar information. Include product data for car enclosures, hoistway entrances, hoistway door equipment and operation, control, and signal systems. Also supply hoist motor HP, voltage type and FLA.

B. Shop Drawings:

1. Show plans, elevations, sections, and large-scale details indicating a machine room layout, coordination with building structure, and relationships with the locations of machine room equipment, car & Hall fixtures, GAL and Peelle door equipment and cab interiors and any other such equipment.

C. Samples:

1. For exposed finishes signal equipment; 3-inch- (75-mm-) square samples of sheet materials; and 4-inch (100-mm) lengths of running trim members.

D. Shop Drawings/Submittals:

1. Include plans and large-scale details indicating the machine space layout, control space layout, coordination with building structure, relationships, and locations of equipment.
2. Include large-scale layout of car-control stations, lobby fixtures operation control panel.
3. The electronic version of the submittal package shall be sent to Tony Stuard, tony@elevatorinspection.com of Stuard & Associates, Inc. Elevator Consulting Services for review
4. Provide BTU output of machine room equipment.

E. Samples for Verification:

1. For exposed car, hoistway door and frame, and signal equipment finishes; 3-inch- (75-mm-) square Samples of sheet materials; and 4-inch (100-mm) lengths of running trim members.

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F. Manufacturer/Installer Certificates:

1. Signed by elevator manufacturer/installer certifying that hoistway, pit, and machine room layout and dimensions, as shown on Drawings, and electrical service, including emergency generator if provided, as shown, and specified, are adequate for elevator system being provided.

G. Contractor Licenses:

1. The Contractor shall show proof of licensing for the company and any personnel working on the project.

1.5 CLOSEOUT SUBMITTALS

A. Maintenance (Owner's) Manuals:

1. Provide a bound or binder filled Owner's Manuals at the end of the installation. Send an electronic draft copy to Tony Stuard, Stuard & Associates, Inc., tony@elevatorinspection.com for review and approval. Following approval, one (1) bound set shall be submitted for project closeout to the Owner.
2. Include diagnostic and repair information available to manufacturer's and Installer's maintenance personnel including all inputs as well as outputs which are to be included on the "as-built" drawings.
3. Upon acceptance, provide the remaining two copies to the Owner.

B. Maintenance Control Program:

1. Before Substantial Completion, submit one (1) initial electronic draft copy of the (Rule 8.6.1.2.1) MCP to Tony Stuard, tony@elevatorinspection.com for review and approval.
 - a. The Maintenance Control Program shall consist of but not be limited to examinations, maintenance, and tests of equipment at scheduled intervals to ensure that the installation conforms to the requirements of 8.6.
2. At Substantial Completion and the approval of the initial MCP, provide three hard copies to the Owner.

C. Inspections, Acceptance Tests, Certificates, Operating Permits, Annual Tests:

1. Apply and pay for all new Installation Permits.
 - a. Upon receipt, provide copy of Installation Permits to the Owner.
 - b. Upon project mobilization, post original or copy of Installation Permits in elevator machine room spaces.

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2. Pay for the initial operating permits for all vertical transportation equipment specified.
3. Coordinate and pay for each final elevator inspections.
4. Perform Code required Annual Tests on all vertical transportation equipment during the 12th and 24th month of the warranty period.

D. Project Electrical Drawing:

1. Supply all updated electrical drawings.

1.6 QUALITY ASSURANCE

A. Installer Qualifications:

1. Elevator manufacturer or an experienced installer who has completed elevator installations similar in material, design, and extent to that indicated for this Project and with a record of successful service and installation performance with Indiana University.

2. Installer Residency:

- a. Unless an installer has been previously approved for IU projects, the installer shall have had an established presence in the Indianapolis area for a period of not less than 5 years prior to the bid date.

3. Regulatory Requirements:

- a. In addition to local governing Building Codes and regulations, comply with applicable provisions in ASME A17.1—2007 editions including adopted supplements or newly adopted versions, "Safety Code for Elevators and Escalators", ASME A17.5—Electrical Equipment for Elevators and Escalators, NEII-1-2000, "Building Transportation Standards and Guidelines, current adopted edition of the NEC, "National Electrical Code."

4. Accessibility Requirements:

- a. Use current ADA Standards for Accessible Design.

5. Product Options:

- a. Information on Drawings and in Specifications establishes requirements for aesthetic effects and performance characteristics of elevator. Aesthetic effects are indicated by dimensions and arrangements as they relate to pit, hoistway, and machine room requirements and to adjoining construction.
- b. Do not revise intended aesthetic effects, as judged solely by Architect, except with Architect's approval. If revisions are proposed, submit comprehensive explanatory data to Architect for review.

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- c. Physical, electrical, and mechanical characteristics of elevator specified for this Project are based on requirements indicated in Contract Documents. Contractor shall coordinate all changes to the Project required by use of equipment on Project. All coordination with and changes to Contract Documents, including but not limited to hoistway, pit, machine room, building electrical system, and building mechanical system shall be included in Base Bid. All costs shall be borne by Contractor. No additional costs to Owner or other contractors will be accepted.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, and handle materials, components, and equipment in manufacturer's protective packaging.
- B. Store materials, components, and equipment off ground, under cover, and in a dry location. Handle according to manufacturer's written recommendations to prevent damage, deterioration, or soiling.
- C. Elevator Contractor will be responsible for removal of all discarded materials, trash and other related items not needed for the completion of the project scope of work.

1.8 COORDINATION

- A. Coordinate locations and dimensions of other work relating to each elevator including pit ladders and electrical service, electrical outlets, lights, switches in pits, machine rooms, and conductors from the fire control panel to the elevator equipment rooms.
- B. The Contractor shall provide the Owner 14 days' notice before mobilizing and removing either elevator from service.
- C. Use only "Rigid Galvanized Steel" conduit in elevator machine rooms.
- D. Coordinate sequence of elevator installation with other work to avoid delaying the Work.
- E. Coordinate locations and dimensions of other work relating to traction elevators including electrical service, electrical outlets, lights, and switches in pits and machine rooms.
- F. Coordinate final inspection with the AHJ, Stuard & Associates, Inc., and Owner's Project Manager.

1.9 WARRANTY

- A. Warranty Period: Twenty-four (24) months from date of Substantial Completion.

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1. The substantial completion will be that date at which any passenger elevator is restored to public service. It is understood that the warranty will have different starting dates.
2. Prior to placing the elevator into service, IU Elevator Consultant will schedule a final inspection of the equipment. The final inspection will include representatives of the Elevator Contractor, the A/E, the General Contractor, and IU Elevator Maintenance Staff. A State of Indiana operating permit for the elevator must be issued before the elevator can be used by any General Contractor, Sub-Contractor, or Owner.

1.10 MAINTENANCE SERVICE

A. Initial Maintenance:

1. At the time of either Substantial Completion, the Contractor shall provide twenty-four (24) months of what is commonly referred to in the elevator industry as full maintenance service using skilled, licensed employees of the Contractor. Include preventive maintenance examinations, common repairs and/or typical replacement of worn or defective components. Provide routine lubrication, cleaning, and adjusting as required for proper elevator operation. Provide parts and supplies as used in the manufacture and installation of original equipment.
 - a. Perform no less than MONTHLY routine maintenance and include emergency callback service during normal working hours. Requests for any service made outside of normal hours shall be provided by the Contractor upon request. The Owner shall be responsible for only the bonus portion of the hourly rate should overtime callbacks be requested. Callbacks made necessary because of vandalism or other causes beyond the control of the Contractor shall be billed at the Contractor's regular rates.
 - 1) Emergency service requests for service shall be initiated by the IU Elevator Maintenance Staff which will verify the condition of the elevator and will communicate to the Elevator contractor the status of the elevator by fax or email.
 - 2) Response Time Routine Callback: Within 24 hours.
 - 3) Check in Procedure: Following any routine service, a response to a callback, repair, and/or test, the Contractor shall be required to provide the IU Bloomington elevator shop Service Manager a copy of any/all work done.
 - 4) The IU Elevator Shop will initially respond to elevator related issues. Once having determined a problem exists, the contractor will be called to dispatch a technician. The Elevator Shop will not service or repair elevators during warranty.

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2. The Contractor shall maintain a log within each elevator machine room. All service examinations, callbacks, repairs, replacements, Fire Service tests, and safety tests shall be recorded. At the end of the warranty, provide a complete copy of the log for the Owner.
3. The Contractor shall be required to perform an Annual during the 12th and 24th (final) month of the warranty. All tests shall be recorded in the machine room log.
4. The Contractor shall perform and record the Fire Service testing monthly. A log shall be kept in the machine room.

1.11 IU APPROVED ELEVATOR CONTRACTORS

A. Elevator Contractors:

1. American Elevator, 2067 600 S, Anderson, IN 46017, 765-374-0429, www.americanelevatorinc.com
2. KONE Elevators, 5201 Park Emerson Dr., Suite E, Indianapolis, IN 46203 (317) 788-0061, www.kone.com
3. Murphy Elevator Co. Inc., 2525 N Shadeland Ave, B12, Bldg 30, Indianapolis, IN 46219, 317-247-9690, www.murphyelevator.com
4. Oracle Elevator Company, 6242 La Pas Trail, Indianapolis, IN 46268, www.oracleelevator.com
5. ThyssenKrupp Elevator, 7217 East 87th Street, Indianapolis, IN 46256, (317) 595-1125, www.thyssenkruppelevator.com
6. DC Elevator Co., 140 E. Woodlawn Avenue, Louisville, KY 40214 (502) 363-5961, www.dcelevator.com.

B. Source Limitations: Use only equipment as specified.

1.12 PERFORMANCE REQUIREMENTS

- A. Regulatory Requirements: Comply with ASME A17.1/CSA B44—2007 or current Indiana adopted edition.
- B. Accessibility Requirements: Comply with Section 407 in the U.S. Architectural & Transportation Barriers Compliance Board's ADA-ABA Accessibility Guidelines and with ICC A117.1.

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PART 2 - PRODUCTS

2.1 ELEVATORS

A. Passenger Elevator Description:

- | | | |
|-----|-------------------------------|---|
| 1. | State of Indiana Number: | 44641 |
| 2. | IU Elevator Asset Number: | 63626 |
| 3. | Type: | Geared Overhead Traction |
| 4. | Capacity: | 4000# |
| 5. | Speed: | 200 fpm |
| 6. | Stops: | 4 |
| 7. | Openings: | 4 – In Line |
| 8. | Operation: | Retain Simplex Selective Collective Operation |
| 9. | Door Equipment: | Replace with GAL |
| 10. | Door Protection: | Replace Light Curtains |
| 11. | Guide Rails: | Retain |
| 12. | Guide Shoes: | Replace Both Car/CW - New ElSCO |
| 13. | Hoist Ropes: | Replace with 4 - 5/8 size cables – Use Only Bethlehem Wire Rope |
| 14. | Governor Rope: | Replace with New Governor |
| 15. | Buffers: | Retain |
| 16. | Counterweights: | Retain |
| 17. | Safeties: | Replace with Hollister Whitney |
| 18. | Governors: | Replace with Hollister Whitney |
| 19. | Car Frame & Platforms: | Retain |
| 20. | Compensation: | Retain |
| 21. | Machines: | Replace with Hollister Whitney |
| 22. | Deflector Sheave | Replace with New Machine |
| 23. | Unintended Movement Device: | Add with New Machine |
| 24. | Controller: | Replace with Smartrise Solid State |
| 25. | Motor: | Replace with AC Motor |
| 26. | Car Operating Panels: | Replace with Code Compliant C.O.P from Innovation |
| 27. | Hall Button Stations: | Replace with Innovation Combination Button, Lantern & PI |
| 28. | Hall Position Indicator | Remove and Replace Void with Stainless Steel Plate |
| 29. | Hall Lanterns: | Remove and Replace Void with Stainless Steel Plate |
| 30. | Wiring: | Replace |
| 31. | Exhaust Fan: | Replace |
| 32. | Hoistway Entrances: | Retain and Wrap with Stainless Steel |
| 33. | Key Operated Hoistway Access: | Replace Current Fixture |
| 34. | Auxiliary Operations: | |

a. Fire Fighters Service

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- b. Load Weighing
 - c. Independent Service.
 - d. Hoistway Access.
 - e. Standby Emergency Power – For Future Use
35. Security: None
36. Cab Enclosure:
- a. Inside Width: 77.25"
 - b. Inside Depth: 59"
 - c. Inside Height: 96"
 - d. Cab Return/Strike Jamb: Provide new satin stainless steel, No. 4 finish.
 - e. Car Fixtures: Stainless steel 300 series.
 - f. Side and Rear Wall Panels: Removable, wrapped edges with 5WL textured.
 - g. Reveals: Stainless steel 300 series
 - h. Door Faces (Interior): Satin stainless steel, No. 4 finish.
 - i. Door Sills: Extruded Aluminum.
 - j. Ceiling: New down lighting with LED.
 - k. Floor: TBD.
 - l. Provide blanket hooks and complete set of full-height protective blankets.
37. Hoistway Entrances:
- a. Reuse Existing.
 - 1) Width: 36 inches.
 - 2) Height: 84 inches.
 - 3) Type: LH Two Speed Side Sliding
 - 4) Frames: Wrap any non stainless frames.
 - a) Use satin stainless steel, No 4 finish.
38. Hall Fixtures:
- a. Replace the first-floor existing lobby pushbuttons with all new vandal resistant as specified. Also supply code compliant fire service phase 1&2 key switch in the face plate. Supply an Emergency Power Jewel that will illuminate when the elevator is on emergency power and extinguish when the elevator returns to normal building power.
 - b. Add a new set of vandal resistant lobby buttons at each elevator lobby. Also incorporate a car direction and position indicator within lobby button fixture.
 - c. Replace hall position indicator with a blank stainless steel cover plate. Plate shall cover entire void.
 - d. Replace hall position indicator with a blank stainless steel cover plate. Plate shall cover entire void.
 - e. Satin stainless steel, No. 4 finish.

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f. Remove all hall direction indicators.

1) Patch all holes and match existing wall finish.

B. Freight Elevator Description:

1.	State of Indiana Number:	34219
2.	IU Elevator Asset Number:	63627
3.	Type:	Geared Overhead Traction
4.	Capacity:	10,000#
5.	Speed:	125 fpm
6.	Stops:	8
7.	Openings:	Front (8), Rear (2)
8.	Operation:	Retain Simplex Operation and Selective Collective Operation.
9.	Machine Location:	Retain Overhead Machine Room
10.	Door Operation:	Replace with Peelle Bi-Parting
11.	Door Size:	Retain W80"x 84"H
12.	Car Gates	Replace Front & Rear Single Panel
13.	Door Panels	Replace with Peelle
14.	Door Protection:	Add light curtain
15.	Guide Rails:	Retain
16.	Guide Shoes:	Retain
17.	Hoist Ropes:	Replace with 6 - 5/8 size cables. Use Only Bethlehem Wire Rope
18.	Governor Rope:	Replace
19.	Buffers:	Retain
20.	Counterweights:	Retain
21.	Safeties:	Replace – Use 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 Relay Logic with Solid State
28.	Peelle Door Controller:	Replace Relay Logic with Solid State
29.	Motor:	Replace DC Hoist Motor with new AC Type
30.	Car Operating Panels:	Replace with Code Compliant C.O.P
31.	Hall Button Stations:	Replace with Innovation Combination Button, Lantern & PI
32.	Wiring:	Replace
33.	Car Enclosure:	Replace
34.	Exhaust Fan:	Replace
35.	Hoistway Entrances:	Retain
36.	Hall Pull Stations	Add to every floor

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37. Key Operated Hoistway Access: Add to Terminal Floors.
38. Auxiliary Operations:
 - a. Fire Fighters Service
 - b. Load Weighing
 - c. Independent Service.
 - d. Hoistway Access.

39. Security: None
40. Cab Enclosure:
 - a. Inside Width: Field Verify
 - b. Inside Depth: Field Verify
 - c. Inside Height: Field Verify
 - d. Car Fixtures: Stainless steel 300 series.
 - e. Side and Rear Wall Panels: 14-gauge standard steel.
 - f. Ceiling: New down lighting with LED.
 - g. Floor: Retain and Paint
 - h. Provide blanket hooks and complete set of full-height protective blankets.

41. Hoistway Entrances:
 - a. Reuse Existing.
 - 1) Width: 80 inches.
 - 2) Height: 84 inches.
 - 3) Type: Bi-Parting

42. Hall Fixtures:
 - a. Replace the first-floor existing lobby pushbuttons with all new vandal resistant as specified. Also supply code compliant fire service phase 1&2 key switch in the face plate. Supply an Emergency Power Jewel that will illuminate when the elevator is on emergency power and extinguish when the elevator returns to normal building power.
 - b. Add a new set of vandal resistant lobby buttons at each elevator lobby. Also incorporate a car direction and position indicator within lobby button fixture.
 - c. Replace hall position indicator with a blank stainless steel cover plate. Plate shall cover entire void.
 - d. Replace hall position indicator with a blank stainless steel cover plate. Plate shall cover entire void.
 - e. Satin stainless steel, No. 4 finish.
 - f. Remove all hall direction indicators.
 - 1) Patch all holes and match existing wall finish.

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2.2 TRACTION SYSTEMS AND COMPONENTS

- A. Indiana University relies on the IU Elevator Shop to maintain elevators and perform State required testing. For this reason, it is important that ***only IU approved, and non-proprietary elevator control equipment be installed*** when specified and that all required tools, passwords, equipment and training necessary to service the conveying equipment be provided by the Elevator Contractor.
- B. Elevator Machines:
1. Replace existing drive machine.
 2. Replace existing motor with new AC type.
 3. Replace hoist cables.
 - a. Use only wire ropes supplied by Wire Rope Works Inc. – Bethlehem Wire Rope.
- C. Overhead Deflector Sheave:
1. Provide New.
- D. Car Safety:
1. Replace Existing
 2. Perform a Category 5 safety test the device following the completion of Work.
- E. Governor:
1. Replace Elevator Speed Governor
 - a. Provide a new speed governor, cable, and tension device.
 - b. Provide an overspeed switch on the governor.
 - c. Test governor in both directions of travel.
 - d. Seal all adjustments following testing.
 - e. Furnish and install a new governor rope.
 - f. Supply Approved cable tags as required by Code.
- F. Ascending Car Overspeed/Unintended Movement:
1. The elevator shall be equipped with a new ascending car overspeed and unintended movement device.
 - a. The elevator shall be equipped with an unintended movement and ascending car overspeed device as prescribed by A17.1. Use only Hollister Whitney “Rope Gripper” product sized suitably for the duty of each elevator.
 - b. Follow the Hollister Whitney recommendations regarding installation. Expansion anchors embedded in concrete shall not be used.

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- c. Provide Acceptance Testing in the presence of the AHJ

G. Car Frame and Platform:

1. Reuse existing.
2. Provide a new code compliant toe (apron) guard.
3. Replace car sill with new extruded aluminum.

H. Guide Rails:

1. Reuse existing.
 - a. Check alignment of existing rails and adjust if necessary to ensure that they are straight and plumb within 1/16" per 100'.
 - b. File all rail joints to a smooth and seamless condition.

I. Car and Counterweight Roller Guides:

1. Supply new ElSCO roller guide assemblies for both car and counterweights.
2. Follow Manufacturer's recommended sizes for each elevator's duty, speed, and capacity.

J. Top of Car Equipment:

1. A car top light and GFCI outlet shall be permanently mounted at the crosshead.
 - a. The light shall be provided with a protective cover.
2. Provide a secondary car top lighting source attached to a cable of suitable length to allow elevator personnel to operate the device from various locations on the car top.
 - a. Light shall be provided with a protective cover.
3. Car top illumination shall be no less than 100 lx
4. Emergency escape hatch shall be supplied with an electrical switch in which the contacts are closed in normal operation.

K. Hoistway Limit Switches:

1. Provide new directional and final limit switches, cams, brackets, and hardware.

L. Pit Equipment:

1. Pit Stop Switch

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- a. Locate a new pit stop switch adjacent to each pit ladder in accordance with ASME A-17.1-2007
 2. Pit Ladders:
 - a. Reuse existing.
 - b. Ensure ladder is code compliant.
 3. Elevator Pit Lights
 - a. Provide adequate LED pit lighting to provide no less than 100 lx across the pit floor. Provide a GFCI outlet in the pit adjacent to a light. Locate an on/off switch near/at the pit ladder accessible from the floor landing.
 4. Clean and dry each pit at the conclusion of the Work.
- M. Wiring:
1. Furnish and install all wiring, conduit, traveling cables and hardware necessary to complete the Work as specified.
 2. All traveling cables shall have low voltage wiring for in-car communications and future card reader access. There shall be no less than 5 shielded pairs within the traveling cable.
 3. Traveling cables shall maintain a minimum of 5% spare wires.
 4. All mechanical space requires Rigid conduit according to University Standards.
 5. Where appropriate, existing conduit and duct “may” be reused provided they meet or exceed NEC standards and requirements as published in the latest edition.
 6. NONE of existing elevator control wiring including traveling cables is to be reused.
 7. Coordinate the wiring of smoke detectors and card readers. Provide information to other disciplines as to required signal needs of the elevator controller.
 8. Provide car light disconnects, pit GFCI’s and switches, pit lights, secondary lighting and GFCI, and specified.
 9. Main line disconnect may be use if code compliant

2.3 OPERATION SYSTEMS

- A. Non-Proprietary Elevator Controller Passenger & Freight:
1. Product Type
 - a. Smartrise Only
 2. Provide a simplex selective/collective, solid state starting, microprocessor-based control system requiring no external tools or computers.

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- a. Controller shall provide for on-board programming of basic functions with alphanumeric keypad and digital display.
- b. Controller shall be equipped in on-board diagnostics.
- c. Controller requiring removable service tool or hand-held computer for diagnostic, adjusting, or set-up shall be permanently mounted within elevator controller and shall be included as an integral part of controller provided as work of this Section. All such equipment and devices shall become property of Owner, have permanently based system memory, and shall not require licensing. Device shall provide unrestricted access to all parameters, flags, inputs, and outputs for maintenance and troubleshooting of controller.
- d. Service and diagnostic tools may be programmed to work specifically/only for elevator system included in Work of this Section.
- e. Should tool be stolen, lost, damaged, or cease to function, a replacement shall be provided by manufacturer at listed/published replacement cost.
- f. Software:
 - 1) Software shall have permanent memory, shall not expire over time, nor shall system require special passwords or key unknown to Owner. No licensing agreement shall be required.
 - 2) Should controller software suffer memory loss or become corrupted, new software shall be provided to Owner at listed/published replacement cost.
 - 3) Owner shall be notified of software updates and recalls that may be developed. Changes directly related to safety shall be provided to Owner at no charge.
- g. Training:
 - 1) If requested by Owner, the Contractor shall provide a four-hour training session for Owner and Owner's elevator service provider's representative within first 30 days of warranty. The Contractor shall instruct Owner's representatives on the way any service tool or diagnostic device is accessed and utilized. The Contractor shall discuss and identify the contents of the Owner's Manuals at this time with Owner personnel present. Parameters and capabilities of device shall be demonstrated.
- h. Technical Support:
 - 1) Should Owner require telephone or on-Site technical support or product assistance, the Contractor shall provide support at current field labor rates for an individual/single service technician and within a reasonable time as determined by Owner.
 - 2) Project manuals, wiring diagrams, and prints shall be provided as full and complete set with circuitry information for all systems and components. Information required for troubleshooting, maintenance, and repair of entire system shall be included. Updates, field notifications, and modifications shall be provided for each elevator controller system.

B. Landing System:

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- a. Provide controller manufacturer's standard landing system. Use vanes, magnets, and necessary hardware.
 - b. The elevator shall be capable of stopping level (1/8" maximum) with any floor regardless of load and/or direction of travel.
- C. Motor Requirements:
1. Limit total harmonic distortion of regenerated power to 5 percent per IEEE 519.
 2. Provide line filters or chokes to prevent electrical peaks or spikes from feeding back into building power system.
- D. Auxiliary Operations:
1. In addition to primary operation system features, provide the following operational features for elevators where indicated:
 - a. Elevator Recall:
 - 1) Provide Phase I and Phase II firefighter's service. Use FEO-K1 keys.
 - b. Independent Service:
 - 1) Provide a rocker switch in the Service Compartment that removes the car from group operation and allows it to respond only to car calls.
 - 2) When in independent service, doors close only in response to door close button.
 - c. Hoistway Access:
 - 1) By use of a Hoistway Enable switch located within a Service Cabinet located in each COP, provide Hoistway Access.
 - 2) Seven pin Best Lock interchangeable systems shall be required at all terminal landings.
 - 3) Owner will supply cores.
 - 4) Utilize a separate fixture located adjacent to the lobby entrance.
 - d. Top-Of-Car Operation:
 - 1) Provide a new top of car operating station.
 - 2) Included all the normal code required operating features.
 - 3) The operating device shall be secured to a flexible cord that allows the unit to be safely stored near the door operator and accessible from the lobby entrance.

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- a) The cable shall be long enough to allow usage at the rear of the elevator from a standing position.
- e. Standby Emergency Power:
 - 1) Passenger Elevator Only
 - a) The elevator shall be capable of emergency power operation. Provide a knockout and plug where jewel would be designated.
- B. Freight Door Operation:
 - 1. Power Operated Front Doors and Gates.
 - a. A control panel shall be furnished to govern the opening and closing of doors and gates as well as retiring cam operation, reopening device function and sequence operation.
 - b. Control shall be factory wired to operate for an input voltage ranging between 208VAC to 600VAC, 3 phase, 50/60 cycle and come equipped with transformer integrated into door control cabinet. Control shall be automatically operational upon application of power.
 - c. Control shall always monitor the position of doors and gates throughout the entire door and gate travel. Deceleration points shall be automatically adjusted by the control so that final open and final closed positions are reached smoothly without shock or jarring of doors or gate and without stopping 'short' of fully open or closed position.
 - d. Initial setting and adjusting of fully open and closed positions shall be established through operation of 'open', 'close', and 'stop' push buttons inside car or toggle switches on the control. After automatic safety shut down, control shall restart upon pressing 'Door Stop' push button in car.
 - e. Initial setting and adjusting of fully open and closed positions shall be established through operation of 'open', 'close', and 'stop' push buttons inside car or toggle switches on the control. After automatic safety shut down, control shall restart upon pressing 'Door Stop' push button in car.
 - f. Control shall be designed to provide Fireman's Phase I, II and Fireman's hold door operation in accordance with national and local codes. 'Constant Pressure' close, 'Momentary Pressure' close or 'Timed Automatic' closing shall be field selectable.
 - g. Hold down feature to re-open the doors if they should try to bounce closed during trucking across the lower door panel shall be field activated by simple code sequence.
 - h. Retiring cam operation is to be silent, without bounce and without the use of dampening devices. Cam 'drop' is to be powered down with cam motor, not by gravity alone.
 - i. All control components are to be commercially available and nonexclusive to control supplier.

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- j. Control is to be completely front wired, to have clear sight line to terminal strips for field connections and mounted in NEMA 1 cabinet with hinged swing door. Control assembly to bear label of approved testing facility such as Underwriters Laboratories or Canadian Standards Association.
2. Operation:
- a. Opening is to be automatic upon car arrival or in response to momentary pressure push button. Closing is to be by momentary pressure push button. An audible alarm must sound five seconds prior to the start of closing and during the closing cycle, as well as “sequence” closing. Release of push button while doors are closing will cause doors to stop and reopen.
3. Manual Rear Doors
- a. Rear doors and gates will be of manual operation.
 - b. Manual doors are to be arranged for future power operation.

2.4 CAR DOOR EQUIPMENT

A. Passenger Car Door Equipment

- 1. Replace operator including interlocks, closures, clutch, gate switches, restrictors, closures, guides, restraints, hanger tracks, hangers, and rollers.
- 2. Replace door operator with GAL solid state MOFVR type high speed systems.
- 3. See 2.7.C for hoistway door equipment requirements.
- 4. Upon completion of each elevator, the door operator and lobby doors shall be adjusted for smooth and quiet operation and attain a full open.

B. Freight Car Gate Equipment:

- 1. Gate panel shall be 6'0” high #10-gauge woven steel wire with structural steel frame and reinforcing. Panel to slide vertically to open on steel tracks. Panel guide shoes shall have milled grooves and be adjustable, ductile iron and completely replaceable. Nylon or other composite material guide shoes with or without sheet metal shell are not permissible. Panels to be hung on steel roller chain and fully counterweighted for ease of operation. If a single counterweight is used to support the car gate, then a minimum of two chains must connect independently and directly to the gate counterweight. Each chain is to be individually adjustable for length at connection to car gate panel. If required by restricted overhead, gate to be furnished with double panel sections.
- 2. Power operated gates are to have both reopening devices (2.B.a & 2.B.b) which causes gate to stop and reopen if it should meet with an obstruction while closing, as well as sequence gate and door operation.
 - a. Shall provide a fully enclosed infrared light beam mounted vertically inside the car gate track

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- b. Shall provide a reversing edge safety device on gate.
- 3. Manually operated gate is to be arranged for future power operation on rear openings only.

2.5 DOOR REOPENING DEVICES

- A. Device in "Infrared Array" Paragraph below is standard with most manufacturers; delete paragraph and insert another if required.
- B. Infrared Array:
 - 1. Provide door reopening device with uniform array of microprocessor-controlled, infrared light beams projecting across car entrance. Interruption of one or more light beams shall cause doors to stop and reopen. Use Adams Equipment reopen devices.
- C. Nudging Feature:
 - 1. After car doors are prevented from closing for predetermined adjustable time, through activating door reopening device, a loud buzzer shall sound, and doors shall begin to close at reduced kinetic energy.

2.6 HOISTWAY ENTRANCES

- A. Hoistway Entrance Assemblies:
 - 1. Reuse all existing.
 - a. Passenger Frames Only
 - 1) Wrap all existing baked enamel hoistway frames with stainless steel #4 satin finish skins.
 - 2) Provide braille plates and raised numerals on both sides of jambs.
 - a) 60" to center line
 - b) Characters shall be 2" inches minimum height
 - b. Retain all existing hoistway sills.
 - 1) Clean and paint all sills.

2.7 HOISTWAY DOORS & EQUIPMENT

- A. Passenger Hoistway Doors:

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1. Replace all existing.
 - a. Provide new stainless steel #4 satin finish type doors.
 - b. Each door panel shall have a UL label.

- B. Freight Hoistway Doors:
 1. Replace all existing doors with Peelle Bi-Parting Panels
 - a. The upper and lower panels of biparting landing doors counterbalance each other. The leading (bottom) edge of the upper panel shall be equipped with a fire resistant Peelle Resilient Astragal. The leading (upper) edge of the lower panel shall be equipped with a Peelle Truckable Sill designed to meet code (A17.1) requirements for the loading class specified. An Automatic Stay Closed (ASC) device (dual-side tension latches) shall be provided to minimize separation of the panel meeting edges when closed. A hinged fire lintel shall be provided at the top of the upper panel of each pass-type door.
 - 2) All doors are to have a 4" X 10" clear wire glass vision panel at approximately 5'0" above floor, as permitted by door construction. Vision panel glass is to be covered with perforated steel plate containing 3/4" holes on 1" centers.
 - 3) Panel guide shoes shall have milled grooves and be adjustable, ductile iron and completely replaceable. Nylon or other composite material guide shoes with or without sheet metal shell are not permissible. Minimum of four guide shoes per door panel with a minimum of 2 1/2" lateral contact per shoe.
 - b. Door tracks shall be minimum #7 gauge formed steel fastened to entrance jambs. Door stops to transmit panel sill loads to the building sill structure.
 - c. Manual doors are to be arranged for future power operation.

- C. Passenger Hoistway Door Equipment:
 1. Replace all existing passenger elevator door equipment.
 - a. Use only GAL type.
 - b. Required replacements includes:
 - 1) hanger tracks
 - 2) hangers, rollers
 - 3) relating cables
 - 4) interlocks
 - 5) door retainers
 - 6) pick-up rollers and linkage.

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- d. The header can remain if found to be appropriate and can work in conjunction with the new GAL equipment.

2. Freight Door Equipment

a. Landing Door Interlock

- 1) Each hoistway landing door assembly shall be equipped with an approved interlock. Each interlock shall bear a certifying label. A side opposite lock, a second lock per landing door, may be supplied as an option. A motor-operated retiring cam shall be provided for each line of landing door interlocks. Retiring cams shall be mounted on car sides, facing the interlocks. The retiring cam and interlock shall work in conjunction with the elevator control, to prevent normal operation of the elevator/ lift unless all doors are closed and locked.

b. Power Door Motor

- 1) Each door shall be electrically operated with two power door operators mounted on either side of the door assembly. Each motor shall be two-speed. Door travel shall be determined by proximity sensor actuation, motor speed controlled for consistent smooth door closing and opening and shall be designed to ensure full opening and full closing. An Automatic Stay Open (ASO) feature, if provided, ensures that the door panels stay fully open. All operating mechanisms shall be entirely within the elevator/lift shaft. Manual operation shall be available in the event of power failure.

c. Manual Access

- 1) Pull chain unlocking device under hinged lockable cover to be provided for all floors.

2.8 CAR ENCLOSURES

A. Passenger Car Enclosure:

- 1. Replace the car enclosure with following materials & finishes.
 - a. Replace existing cab return, strike column and transom with new stainless steel #4 satin finish.
 - b. Replace all existing interior hang on panels with new 5WL stainless steel finish panels.
 - 1) Provide design samples to owner during submittals

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- 2) Stainless-Steel Wall Panels: Removable 5WL stainless (as by Rigidized Metals) steel MDF core, with wrapped edges and ends.
 - c. Provide two (2) separate matching sets of handrails on each side wall and back wall for both elevators.
 - 1) Mounting height shall be 34 inches and 7 inches above finished floor to centerline
 - d. Provide new stainless steel #4 polish finish cab ceiling with LED can/down lighting.
 - 1) Include an emergency exit
 - 2) There shall be a minimum of 100 lx across the cab floor.
 - 3) Provide design samples to owner during submittals
 - e. Provide low-voltage lighting.
 - 1) Black, cast metal housing, 3" diameter.
 - 2) Lamps: LED, 3500K color temperature with aluminum reflector and code compliant rubber coated lens.
 - f. Provide new two-speed exhaust fans.
 - 1) Mounted on cartop
 - a) On isolation pads
 - g. Provide a new extruded aluminum car sill.
 - h. Provide a new car door panel.
 - 1) Door should be made of 16-gauge type 304 stainless steel, #4 finish
 - i. Provide new elevator flooring.
 - 1) Subfloor: Reuse Existing
 - 2) Floor Finish: Superflor, carpet tiles – color, 603059 Anthracite.
- D. Freight Car Enclosure:
1. Replace the car enclosure with following materials & finishes.
 - a. Shell:
 - 1) Flush wall construction with 14ga. standard steel walls.
 - 2) Formed panel construction with site guards at each panel connection.

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- 3) Walls to be thoroughly cleaned, degreased, and receive one heavy coat of factory applied baked powder coat finish.

b. Ceiling:

- 1) Ceiling: Construction with 14ga. standard steel and to have a heavy gauge tube or angle header at cab entrance.
- 2) Ceiling to be fitted with a hinged exit hatch with latch and electric contact to prevent movement of the car when hatch is open.
- 3) Ceiling to be thoroughly cleaned, degreased, and receive one heavy coat of factory applied baked powder coat finish.

c. Lighting:

- 1) LED light fixtures are to have lamps that are easily accessible from inside the car.
- 2) Fixture cutouts are to be provided as required for the car operating panel.

d. Bumper Rails:

- 1) Install 2"x12" oak bumper rails on both side walls.
- 2) Bumper rails to start 4" up from platform.

e. Flooring:

- 1) Retain and paint checker plate flooring with similar type and color of existing paint.

2.9 SIGNAL EQUIPMENT

- A. Retain one of two "General" paragraphs below. First is for all but destination-based systems; second is for destination-based systems.

B. General:

1. Supply only Innovation Products Only.
2. Provide vandal-resistant hall-call and car-call buttons that light when activated and remain lit until call has been fulfilled.
3. Fabricate lighted elements with LED lamps.

C. Car Operating Panel:

1. Provide recessed car-operating stations.

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- a. Mark buttons and switches with standard identification and Braille for required use or function that complies with ASME A17.1-2007. Use both tactile symbols and Braille.
 - b. Provide "No Smoking" sign matching car control station, either integral with car control station or mounted adjacent to it, with text and graphics as required by authorities having jurisdiction.
 - c. Provide Owner's standard language indicating permit is on file at Physical Plant.
 - d. Provide "Emergency Stop" rocker switch in Service Cabinet.
 - e. Provide digital-type car position indicator near upper end of car control panel.
 - f. Provide emergency light located near upper end of car control station.
 - g. Provide Service Cabinet within car control panel.
 - h. Use only Best Lock system cylinder to secure cabinet door.
 - i. Owner will furnish core for elevator company installation.
 - j. Locate within cabinet:
 - 1) Locate the hoistway enable
 - 2) stop switch
 - 3) independent service
 - 4) light and fan rockers
 - 5) emergency light test switch
 - 6) GFI outlet within the cabinet
2. Provide Code-required firefighter's service control cabinet.
 - a. Provide Code-required functions with instructions on inside of cabinet door.
 3. Where non-Best Lock cylinders are provided, supply Owner with no less than 3 keys per cylinder.
- D. Emergency Communication System:
1. Provide system that complies with ASME A17.1 and the U.S. Architectural & Transportation Barriers Compliance Board's "Americans with Disabilities Act (ADA), Accessibility Guidelines for Buildings and Facilities (ADAAG).
 - a. On activation, system dials preprogrammed number of monitoring station and identifies elevator location to monitoring station.
 - b. System shall provide two-way voice communication without using a handset and shall provide visible signals that indicate when system has been activated and when monitoring station has responded.
 - c. System shall be contained in flush-mounted cabinet, with identification, instructions for use, and battery backup power supply.
- E. Car Position Indicator:

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1. Provide illuminated, digital-type car position indicator, located above car control station.
 - a. Also provide audible signal to indicate to passengers that car is either stopping at or passing each of the floors served.

 - F. Lobby Position Indicator:
 1. Remove any existing position indicators.
 - a. Cover entire void with a stainless-steel plate.

 - G. Lobby Car Direction Indicators:
 1. Remove any existing indicators.
 - a. Cover entire void with a stainless-steel plate.

 - H. Hall Push-Button Stations:
 1. Provide only vandal-resistant fixtures.
 - a. Provide units with surface mounted faceplates.
 - b. Fixtures shall incorporate hall CDI's and Pls in face plate.
 - c. utilizing LED lighting.

 - I. Provide new emergency pictorial signs
- 2.10 FINISH MATERIALS
- A. General: Provide the following materials for exposed parts of elevator car enclosures, car doors, hoistway entrance doors and frames, and signal equipment as indicated.
 - B. Cold-Rolled Steel Sheet: ASTM A 1008/A 1008M, commercial steel, Type B, exposed, matte finish.
 - C. Hot-Rolled Steel Sheet: ASTM A 1011/A 1011M, commercial steel, Type B, pickled.
 - D. Stainless-Steel Sheet: ASTM A 240/A 240M, Type 304.
 - E. Stainless-Steel Bars: ASTM A 276, Type 304.
 - F. Stainless-Steel Tubing: ASTM A 554, Grade MT 304.

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PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine elevator areas, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work. Examine hoistways, hoistway openings, pits, and machine rooms as constructed; verify critical dimensions; and examine supporting structure and other conditions under which elevator work is to be installed.
- B. Prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. ONLY one elevator shall be removed from service at a time.
- B. Comply with manufacturer/installer's written instructions.
- C. Welded Construction: Provide welded connections for installing elevator work where bolted connections are not required for subsequent removal or for normal operation, adjustment, inspection, maintenance, and replacement of worn parts. Comply with AWS standards for workmanship and for qualifications of welding operators.
- D. Sound Isolation: Mount rotating and vibrating equipment on vibration-isolating mounts to minimize vibration transmission to structure and structure-borne noise due to elevator system.
- E. Lubricate operating parts of systems, including ropes, as recommended by manufacturers.
- F. Leveling Tolerance: 1/8 inch, up or down, regardless of load and travel direction.
- G. Completely clean all hoistways, pits, and sill areas upon completion.

3.3 FIELD QUALITY CONTROL

- A. Acceptance Testing: On completion of each elevator installation and before permitting public use, perform acceptance tests as required and recommended by ASME A17.1/CSA B44 and by governing regulations and agencies. Contact Stuard & Associates, Inc. prior to scheduling.

3.4 PROTECTION

- A. Entrances: Keep each elevator lobby entrance totally closed and always locked when no workers are present.

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- B. Keep large toolboxes and tools away from walkways and areas accessible to the public.
- C. Remove trash and debris as created and keep all public areas clear and clean.

3.5 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to operate, adjust, and maintain elevators.
- B. Check operation of each elevator with Owner's personnel present before date of Substantial Completion and again not more than one month before end of warranty period. Determine that all operation systems and devices are functioning properly.

END OF SECTION 142100