DIVISION 14 – CONVEYING EQUIPMENT

SECTION 14 2100 – ELECTRIC TRACTION ELEVATORS

1. General:
   a. Northwestern requires a third party, independent elevator consultant for assistance with the design and reviews related to elevators and conveying equipment.
   b. Elevators must be specified by a licensed engineer in compliance with all applicable codes.
   c. Elevator consultant to include Construction Administration during the construction phase. Services shall include a minimum of three (3) site meetings with report or ideally, bi-monthly site meetings throughout elevator construction.

1. Submittals:
   a. Maintenance Manuals: Three (3) Bound manuals with operating and maintenance instructions, parts listing, recommended parts inventory listing, purchase source listing for major and critical components, emergency instructions, and similar information.
   b. Provide complete wiring diagrams to be left on-site, secured in elevator machine room.
   c. Certificates and Permits: Provide University with copies of all inspection/acceptance certificates and operating permits as required by governing authorities to allow normal, unrestricted use of elevator.

2. Keys:
   a. Contractor to provide Northwestern with a minimum of three (3) sets of all keys at the time of acceptance.

3. Quality Assurance:
   a. Installer Qualifications: Elevator contractor must be member of Local 2 elevator union in good standing, and has completed several successful elevator installations similar in material, design, and extent as what is being specified for the Project.

4. Maintenance Service:
   a. Architect/Engineer shall review maintenance service agreements for existing and/or new elevators.
   b. Initial Maintenance Service: Elevator specification shall require the Contractor to provide full maintenance service by skilled, competent employees of the Elevator
Installer for period of twelve (12) months following Date of Substantial Completion.

i. Include monthly preventive maintenance performed during normal working hours.

ii. Include repair or replacement of worn or defective parts or components and lubricating, cleaning, and adjusting as required for proper elevator operation in conformance with specified requirements.

iii. Include 24 hours per day, 7 days per week emergency callback service.

iv. Exclude only repair or replacement due to misuse, abuse, accidents, or neglect caused by persons other than Installer's personnel.

5. Elevator Characteristics Summary:


   b. Rated Speed: Per elevator consultant specification, varies with size/use.

   c. Cab Inside Size: Minimum 6'-8" wide x 5'-5" deep.

   d. Cab Height: Minimum 7'-2"; preferred 8'-0", inside clear.

   e. Door Operation: Minimum Single slide, left hand opening, 3'-6" wide x 7'-0" high.

   f. Power Supply: 208 volts, 3 phase, 3 wires, 60 hz, 40 H.P., AC, verify with sources available.

   g. Lighting Supply: 120 volts, 15 amps, single phase 60 hz, AC.

   h. Lighting: LED.

   i. Microprocessor electronics.

   j. Controllers: Controllers shall be Galaxy (GAL), MCE, Otis and/or other non-proprietary manufacturer per review and approval by NU Project Manager.

   k. Cabling: Provide additional twisted pair and coax for future security or control use as per Project Manager. Millennium requires 5 sets twisted pair; cameras 1 coax each.

   l. Hoistway: Provide a sump pump and sump pump basin if required by applicable codes and/or engineer/architect/project manager review.

6. Signal Equipment:

   a. Telephone / Intercom: Provide rough in for “hands free” intercom in car, contained in flush mounted cabinet. Elevator contractor to set up phone to accept direct ring down to Northwestern University Police (NUPD). Northwestern will
provide correctly activated phone jack & patch cord. If required by applicable code, provide a fireman's telephone cabinet or fireman's telephone jack in main elevator lobby.

b. Alarm System: Provide security system as required per all applicable codes.

c. Vandal Resistant Signal Equipment: Adams Survivor Plus:
   i. Car control stations.
   ii. Car position indicators.
   iii. Hall push button stations.
   iv. Hall lanterns.

d. Hall Lanterns must be easily visible throughout the elevator lobby, as per code.

7. Personal Protective Devices:
   a. General: Provide personal protective devices as per all applicable codes and elevator consultant.
   b. Handrails: Coordinate installation of handrails with interior panels.
   c. Door Edge Protective Device: Provide retractable edge shoe on leading edges of elevator entrance doors that causes doors to stop and reopen upon contacting an obstruction in entrance, per all applicable codes.
   d. Photo Eye Detection Device: Provide electronic photo eye device with timed cutout, projecting dual light beams across car entrance at 5 inch and 29 inch heights, that when interrupted will cause closing doors to stop and reopen. Provide keyed switch in car operating panel or toggle switch in service cabinet for disconnecting photo eye protective device, per all applicable codes.

8. Passenger Hoistway Entrances:
   a. Enameled Frames: Formed steel with manufacturer's standard primed-for-paint finish.
   b. Stainless Steel Frames: Formed steel with brushed finish.
   c. Aluminum Sills: Extruded aluminum, with grooved surface, 1/4 inch thickness, mill finish.

9. Passenger Cab Details:
   a. General: Elevator cab to be specified to full compliance with all applicable codes.
b. Rubber flooring or terrazzo is preferred over carpet by Northwestern. Review options for carpet and associated replacement carpet or attic stock with NU Project Manager.

c. Ceilings must be completely accessible from the car top as per applicable codes.

d. Handrails to be removable (but tamper proof) from inside the cab.

e. Provide scratch and graffiti-proof wall panels. Review options that include stainless steel or plastic laminate with the NU Project Manager.

f. Provide passenger cab protection blankets for each side of elevator cab.

g. Provide blanket hooks at perimeter.

h. Provide convenience electrical outlet.

10. Field Quality Control:

a. Acceptance Testing: Elevator may not be turned over before passing acceptance tests as required and recommended by Code and by the authority having jurisdiction (AHJ).

b. Operating Tests: As required by the AHJ and all applicable codes.

11. Demonstration and Training:

a. Contractor shall instruct Northwestern personnel in proper use, operations, and daily maintenance of elevators. Review emergency provisions, including emergency access and procedures to be followed at time of failure in operation and other building emergencies. Train University's personnel in normal procedures to be followed in checking for sources of operational failures or malfunctions. Confer with Northwestern on requirements for a complete elevator maintenance program.

b. Contractor shall make a final check of each elevator operation with University's personnel present and just prior to date of Substantial Completion. Determine that control systems and operating devices are functioning properly. Contractor must provide Northwestern a copy of all inspection reports and complete paperwork to provide Northwestern the State Elevator tag before closing the project.

c. Contractor to check that software is updated at end of 12 month warranty period and also run diagnostics to check that no boards are failing. If needed, replace faulty boards under warranty.

END OF SECTION
DIVISION 14 – CONVEYING EQUIPMENT

SECTION 14 2400 – HYDRAULIC ELEVATORS

1. General:
   a. Northwestern requires a third party, independent elevator consultant for assistance with the design and reviews related to elevators and conveying equipment.
   b. Elevators must be specified by a licensed engineer in compliance with all applicable codes.
   c. Elevator consultant to include Construction Administration during the construction phase. Services shall include a minimum of three (3) site meetings with report or ideally, bi-monthly site meetings throughout elevator construction.

1. Submittals:
   a. Maintenance Manuals: Three (3) Bound manuals with operating and maintenance instructions, parts listing, recommended parts inventory listing, purchase source listing for major and critical components, emergency instructions, and similar information.
   b. Provide complete wiring diagrams to be left on-site, secured in elevator machine room.
   c. Certificates and Permits: Provide University with copies of all inspection/acceptance certificates and operating permits as required by governing authorities to allow normal, unrestricted use of elevator.

2. Keys:
   a. Contractor to provide Northwestern with a minimum of three (3) sets of all keys at the time of acceptance.

3. Quality Assurance:
   a. Installer Qualifications: Elevator contractor must be member of Local 2 elevator union in good standing, and has completed several successful elevator installations similar in material, design, and extent as what is being specified for the Project.

4. Maintenance Service:
   a. Architect/Engineer shall review maintenance service agreements for existing and/or new elevators.
   b. Initial Maintenance Service: Elevator specification shall require the Contractor to Provide full maintenance service by skilled, competent employees of the Elevator

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Installer for period of twelve (12) months following Date of Substantial Completion.

i. Include monthly preventive maintenance performed during normal working hours.

ii. Include repair or replacement of worn or defective parts or components and lubricating, cleaning, and adjusting as required for proper elevator operation in conformance with specified requirements.

iii. Include 24 hours per day, 7 days per week emergency callback service.

iv. Exclude only repair or replacement due to misuse, abuse, accidents, or neglect caused by persons other than Installer's personnel.

5. Elevator Characteristics Summary:


   b. Rated Speed: 125 fpm or as per elevator specification.

   c. Cab Inside Size: Minimum 6'-8" wide x 5'-5" deep.

   d. Cab Height: Minimum 7'-2"; preferred 8'-0", inside clear.

   e. Door Operation: Single slide, left hand opening, 3'-6" wide x 7'-0" high.

   f. Power Supply: 208 volts, 3 phase, 3 wires, 60 hz, 40 H.P., AC, verify with sources available.

   g. Lighting Supply: 120 volts, 15 amps, single phase 60 hz, AC

   h. Machine Location: Non-basement location preferred.

   i. Microprocessor electronics.

   j. Controllers: Controllers shall be Galaxy (GAL), MCE, Otis and/or other non-proprietary manufacturer per review and approval by NU Project Manager.

   k. Cabling: Provide additional twisted pair and coax for future security or control use as per Project Manager. Millennium requires 5 sets twisted pair; cameras 1 coax each.

   l. Hoistway: Provide a sump pump and sump pump basin if required by applicable codes and/or engineer/architect/project manager review.

6. Signal Equipment:

   a. Telephone / Intercom: Provide rough in for “hands free” intercom in car, contained in flush mounted cabinet. Elevator contractor to set up phone to accept direct ring down to Northwestern University Police (NUPD). Northwestern will
provide correctly activated phone jack & patch cord. If required by applicable code, provide a fireman's telephone cabinet or fireman's telephone jack in main elevator lobby.

b. Alarm System: Provide security system as required per all applicable codes.

c. Vandal Resistant Signal Equipment: Adams Survivor Plus:
   i. Car control stations.
   ii. Car position indicators.
   iii. Hall push button stations.
   iv. Hall lanterns.

d. Hall Lanterns must be easily visible throughout the elevator lobby.

7. Personal Protective Devices:
   a. Handrails: Coordinate installation of handrails with interior panels.
   b. Door Edge Protective Device: Provide as required per all applicable codes.
   c. Photo Eye Detection Device: Provide as required per all applicable codes.

8. Passenger Hoistway Entrances:
   a. Enameled Frames: Formed steel with manufacturer's standard primed-for-paint finish.
   b. Stainless Steel Frames: Formed steel with brushed finish.
   c. Aluminum Sills: Extruded aluminum, with grooved surface, 1/4 inch thickness, mill finish.

9. Passenger Cab Details:
   a. General: Elevator cab to be specified to full compliance with all applicable codes.
   b. Rubber flooring or terrazzo is preferred over carpet by Northwestern. Review options for carpet and associated replacement carpet or attic stock with NU Project Manager.
   c. Ceilings must be completely accessible from the car top as per applicable codes.
   d. Handrails to be removable (but tamper proof) from inside the cab.
   e. Provide scratch and graffiti-proof wall panels. Review options that include stainless steel or plastic laminate with the NU Project Manager.
f. Provide passenger cab protection blankets for each side of elevator cab for each elevator. Provide blanket hooks at perimeter of each elevator.

g. Provide convenience electrical outlet in each elevator.

10. Installation of Elevator System:

a. General: Provide “holeless” hydraulic system where possible. When not possible, provide as follows:

b. Excavation for Jack: Drill excavation in each elevator pit to accommodate installation of plunger cylinder unit; comply with applicable requirements of Division 2 “Excavation” section.

c. Install casings with waterproof seals at pit floor and with waterproof, high pressure seal at bottom of casings.

d. Provide a second (inner) casing with welded waterproof, high pressure seal at bottom and set inside outer (initial) casing.

e. Corrosion Protection: The inside of the cylinder shall be treated with rust preventative and the outside with a suitable heavy duty service bitumastic or tape wrap.

11. Field Quality Control:

a. Acceptance Testing: Elevator may not be turned over before passing acceptance tests as required and recommended by Code and by the authority having jurisdiction (AHJ).

b. Operating Tests: As required by the AHJ and all applicable codes.

12. Demonstration and Training:

a. Contractor shall instruct University personnel in proper use, operations, and daily maintenance of elevators. Review emergency provisions, including emergency access and procedures to be followed at time of failure in operation and other building emergencies. Train University's personnel in normal procedures to be followed in checking for sources of operational failures or malfunctions. Confer with University on requirements for a complete elevator maintenance program.

b. Contractor shall make a final check of each elevator operation with University’s personnel present and just prior to date of Substantial Completion. Determine that control systems and operating devices are functioning properly. Contractor must provide Northwestern a copy of all inspection reports and complete paperwork to provide Northwestern the State Elevator tag before closing the project.

c. Contractor to check that software is updated at end of 12 month warranty period and also run diagnostics to check that no boards are failing. If needed, replace faulty boards under warranty.
d. Hydraulic Elevators are included in the University's Spill Response Plan. All new elevators must be catalogued with the FMO Staff Engineer.

END OF SECTION