

DIVISION 12 - FURNISHINGS (NOT USED)

DIVISION 13 - SPECIAL CONSTRUCTION (NOT USED)

DIVISION 14 - CONVEYING EQUIPMENT

SECTION 14 21 00 - ELECTRIC TRACTION ELEVATORS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes: Provide electric gearless traction type elevator system that requires no equipment room, including equipment and accessories as required for complete operational installation.

B. Related Sections:
1. Section 05 50 00: Metal fabrications such as elevator pit ladders, pit grating, sill angle supports, and metal fabrications sized on Architectural Drawings.
2. Division 22: Pit drainage.
3. Division 26: Electrical power including main switch, breaker and lighting.

1.2 REFERENCES
A. American National Standards Institute, ANSI A17.1: Safety Code for Elevators, Dumbwaiters and Escalators, and Moving Walks.
B. ANSI C11NFPA 70: National Electrical Code.
C. ANSI A17.2: Practice for the Inspection of Elevators, Escalators and Moving Walks.

1.3 ADMINISTRATIVE REQUIREMENTS

A. Delegated Design Services: Provide special elevator design and engineering to ensure compliance with applicable codes and Contract Documents.
B. Coordination: Coordinate elevator work with other work to ensure full compliance with applicable codes and Contract Documents by work performed by others.

1. Review construction documents to assure spaces and materials necessary for legal elevator service are being provided under other sections.
2. Ensure proper fused disconnect switches, hoistway, pits, lighting, communications, ventilation, and services are being provided under other sections.
3. Inform Architect of discrepancies and omissions during bid period.

4. Work of the section shall include furnishing items necessary for a complete operational elevator system and not provided elsewhere.
C. Pre-Installation Meeting: Convene not less than one week prior to commencing work of this Section. Require attendance of those directly affecting work of this Section.
1. Review installation procedures and coordination required with related work.

1.4 SUBMITTALS

A. Product Data: Submit descriptive brochures or detail drawings of landing buttons, hall fixtures, car position indicators, car operating panels, car interior and hoistway doors and frames for review.
1. Wiring Diagrams: Provide complete diagrams for elevator system.
B. Shop Drawings: Indicate space requirements, general arrangement of elevator equipment, and material being supplied.

1. Show connections, attachments, reinforcing, anchorage and location of associated fasteners, and location and amount of loads and reactions to be carried on the building structure.
C. Samples: Submit samples of finishes, operating and signal system fixtures, samples of each type of sign or graphics provided, and finish of hoistway entrances and doors.

D. Delegated Design Certificates: Submit certification signed by manufacturer indicating design-build compliance with Contract Documents and code requirements.
1.5 QUALITY ASSURANCE
A. Installer Qualifications: Elevator manufacturer or firm approved by elevator manufacturer in writing and with minimum five years successful experience installing elevators similar to those required for Project.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver items and materials to site only after area in which they are to be installed is ready to receive them in their place of final installation.
B. Store materials in storage area allotted.
C. Fully protect movable and operating equipment from weather.

1.7 WARRANTY

A. Warranties: Provide coincidental product warranties, where available, for major components of elevator work.

PART 2 - PRODUCTS

2.1 SYSTEMS MANUFACTURERS

A. KONE Inc./Kiva System; ThyssenKrupp Elevators/ISIS System.

2.2 MATERIALS

A. System Description: Provide electric gearless traction type elevator system that requires no equipment room, including guide rails and brackets, hoisting cables and counterweights; pit buffers, and required hardware and fittings.
1. Provide motors, controls, and wiring to main switch.
2. Provide hoistway doors, frames, and sills.
3. Provide passenger cars and car doors.

B. Regulatory Requirements: General: Comply with applicable codes and regulations for elevator work and including to ANSI A17.1 Safety Code for Elevators, Dumbwaiters and Escalators, and Moving Walks.

1. Earthquake Requirements: Provide as required by applicable codes and regulations.
2. Fire Emergency Service: Where applicable comply with provisions of applicable codes; provide required dual egress routes and egress requirements.
3. Medical Emergency Operation: Provide as required by applicable codes and regulations.

C. Regulatory Requirements: Arrangements: Provide as required by applicable codes and regulations for persons with disabilities; comply with applicable regulations.
D. Elevator Capacity: Provide as required by applicable codes and regulations.
1. Capacity: 3500 lbs unless otherwise indicated.
2. Speed: 150 fpm unless otherwise indicated.

4. Door: Provide opening size 3'-4" wide by 8'-0" high unless otherwise indicated.
5. Door: Provide single speed with openings as indicated.
6. Operator: Manufacturer's selective collective control approved by Architect and designed for minimal waiting time for persons using elevators; provide complete acoustic isolation materials.

7. Machine: Gearless traction machine located in shaft.
8. Sound Isolation: For machine and generator or SICR.
9. Drive Operation: High-speed direct current master operators.
10 Home Landing: Ground floor.
E. Rolled Steel Sections, Shapes, and Rods: ANSI A17.1; ASTM A324 and A653, G90 galvanized coating.
F. Sheet Steel: ASTM A653, G90 coating designation, stretcher leveled, commercial grade.
G. Stainless Steel: ASTM A696, Type 304.
H. Aluminum: ASTM B221 - anodizing or anodizing quality as applicable.
I. Plywood: PS 1, fire retardant treated.
J. Sills: Extruded aluminum.

2.3 FABRICATION

A. Machines and Equipment: Types specifically designed for traction elevator service without machine room, with equipment designed for minimal noise generation; with acoustical encasing for noise generating equipment.
B. Guide Shoes: Roller guides for cars and counterweights.
C. Elevator Car: Sheet steel enclosure with structural steel frame and bracing, 3/4" fire retardant treated plywood floor and wall cladding fastened with hidden mechanical fasteners.

D. Doors: Power operated stainless steel hollow metal doors with track, rollers and frame; two-point suspension, nonmetallic sheaves; minimum 3" diameter for car doors, 2-1/2" diameter for hoistway doors.
1. Finish: Stainless steel unless otherwise indicated.
E. Hoistway Entrances: Provide formed metal entrance with slats, tongue handles, fascia plates, toe guards, and Underwriters' Laboratory labels.

1. Finish: Match doors.
2. Floor Graphics: Provide 2" high (exact) raised characters, with Contracted Grade 2 Braille immediately left of numeral, on each side of each door frame center at 8'-0" above floor. Characters to be white on black background.
a. Provide medical emergency symbol at medical emergency elevator.
b. Provide star symbol at grade level in accordance with applicable codes.
c. Star symbol shall be raised, 2" diameter with points equal length.

3. Entrance Protection: Provide infrared door detectors complying with applicable codes and regulations, including requirements for access for persons with disabilities.
F. Car Finishes: Finishes as indicated, as selected by Architect from manufacturer's full range of standard car finishes where not otherwise indicated.
1. Provide inset buttons, swing return panels.
2. Side and Back Wall Panels: Removable.
3. Lighting: LED.
4. Railings: Stainless steel tubular rail.

5. Pads: Provide wall attachment buttons and protective pads.
G. Operating Fixtures and Signals: Comply with requirements for providing access for persons with disabilities; comply with applicable codes and regulations; stainless steel face panels unless otherwise indicated.
1. Car Control Station: Provide one car station with illuminated mechanical fasteners, with hands free emergency communication but requiring voice communication, and service cabinet. Provide door hold open button.
2. Hall Call Station: Provide one hall station risers with illuminated mechanical hall buttons at each elevator lobby.

3. Landers: Provide landers with audible signal, one for up travel, two for down travel.
4. Signs in Lobbies: 1/2" letters to read "IN CASE OF FIRE USE STAIRWAY FOR EXIT - DO NOT USE ELEVATOR"; sign to be approved by Architect and applicable authorities; stainless steel.
5. Provide elevator lobby graphics conforming to applicable code requirements.
H. Miscellaneous Items: Provide as required by applicable codes and as follows:
1. Battery operated emergency car lighting.
2. Two-speed fan.
3. Convenience outlet in service cabinet.

3. REFERENCES

A. ANSI A17.1: Safety Code for Elevators, Dumbwaiters and Escalators, and Moving Walks.
B. ANSI A17.2: Practice for the Inspection of Elevators, Escalators, and Moving Walks.
C. ANSI C11NFPA 70: National Electrical Code.
D. AWS D1.1: Structural Welding Code.

1.3 ADMINISTRATIVE REQUIREMENTS

A. Delegated Design Services: Provide special escalator design and engineering to ensure compliance with applicable codes and Contract Documents.
B. Coordination: Coordinate escalator work with other work to ensure full compliance with applicable codes and Contract Documents by work performed by others.

1. Review construction documents to assure spaces and materials necessary for legal escalator service are being provided under other sections.
2. Ensure proper fused disconnect switches, hoistway, pits, lighting, and services are being provided under other sections.
3. Inform Architect of any discrepancies during bid period.
4. Work of this Section shall include furnishing items necessary for complete operational escalator system and not provided elsewhere.

1.4 SUBMITTALS

A. Product Data: Submit for complete system, and for each component or part used in system.
1. Include complete listing and description of performance and operating characteristics.
2. Show maximum dynamic and static loads imposed on building structure at all points of support for work.
3. Show maximum and average power demands.
B. Shop Drawings: Indicate typical details of assembly, erection and anchorage drawn at large scale.
a. Clients: Manufacturer's standard type.
b. Space clearances: so side clearances are flush with side of steps.
c. Provide adjustable skirt guards to keep clearance at side of steps between cleats and skirt guards to minimum.
d. Design steps and various adjustments to permit ready removal of steps without disturbing balustrades or dismantling any part of chain.

2.3 FABRICATION

A. General Construction: Self-contained unit consisting of truss, tracks, drive unit or units, steps, comb plates, handrails, handrail drive, controller, safety devices, balustrades, decks and accessories.
B. Truss: Design and construct structural steel truss in safety carry entire load of escalator together with full capacity load and including weight of motor balustrade and truss covering.
1. Arrange truss to carry drive machine and controller.
C. Sprocket Assemblies: Attached to truss at both sides to ensure and maintain proper alignment.
D. Steps:
1. Step Frames: Steel or aluminum suitably reinforced and braced to carry step treads and maximum load per step under dynamic loading conditions.
2. Step Wheels: Design for quiet operation and of type which will insure rotation and prevent hot spots, mount to prevent tilting and rocking of steps.
a. Provide for retention of ample lubricant to insure satisfactory operation without frequent lubrication.
3. Step Treads: Non-corrosive white metal, steel type, designed to insure secure foothold and comfortable tread surface.

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E. Escalator Maintenance Period: Maintain entire escalator installation 12 months after date of Substantial Completion of Work.
1. Include systematic examination, adjustment and lubrication of escalator equipment. Repair or replace worn electrical and mechanical parts of escalator equipment, using parts produced by manufacturer of equipment.

2. Perform work without removing escalators during peak traffic periods.
3. Provide 24 hour emergency call-back service during maintenance period.
4. Ensure competent personnel handle maintenance service; maintain locally an adequate stock of parts for replacement or emergency purposes.
5. Have qualified personnel available at such places to ensure fulfillment of this service without unreasonable loss of time.
B. Extended Maintenance Proposal: Submit proposal for maintenance of installed escalator work for a period of three years after termination of regular maintenance required at end of this section.

3.2 INSTALLATION

A. Install in accordance with manufacturer's instructions, applicable codes, and standards to provide a quiet, smoothly operating installation, free from sideways oscillation or vibration.
1. Work shall be by mechanics skilled in this work and under direct control and supervision of elevator manufacturer's experienced supervisor.
B. Set hoistway entrances in alignment with car openings and true with plumb sill lines.
C. Mount machine in accordance with approved shop drawings, isolate and dampen machine vibration with properly sized sound-reducing anti-vibration pads.
D. Erect hoistway sills, headers and frames prior to erection of rough walls and doors; erect fascias and toe guards after rough walls are finished.
E. Grout sills and hoistway entrance frames.
F. Make necessary adjustments of equipment to ensure elevator operates smoothly and accurately.
G. Locate and protect or lock movable equipment and controls in such a way that they can be operated only by authorized persons.

3.3 FIELD QUALITY CONTROL

A. Inspections and Permits: Obtain and pay for necessary inspections and permits and make such tests as are required by regulations and authorities.
1. Final inspection shall be after elevator installation and hoisting enclosure are complete.
2. Inspect installation in accordance with ANSI A17.2.
3. Deliver test certificates and permits to Architect.

3.4 MAINTENANCE

A. Elevator Maintenance Period: Maintain elevator installation 12 months after date of Substantial Completion of Work.
1. Include systematic examination, adjustment and lubrication of elevator equipment.
2. Repair or replace worn electrical and mechanical parts of elevator equipment, using parts produced by manufacturer of equipment.
3. Perform work without removing cars during peak traffic periods.
4. Provide 24 hour emergency call-back service during maintenance period.
5. Ensure competent personnel handle maintenance service; maintain locally an adequate stock of parts for replacement or emergency purposes.
a. Have qualified personnel available at such places to ensure fulfillment of this service without unreasonable loss of time.

B. Extended Maintenance Proposal: Submit proposal for maintenance of installed elevator work for a period of three years after termination of regular maintenance required at end of this section.
1. Proposal shall include stipulated sum for time period stated, with premiums due annually.
2. Extended maintenance proposal shall include requirements specified at end of section for first year maintenance agreement.

C. System Description: Provide electric gearless traction type elevator system that requires no equipment room, including guide rails and brackets, hoisting cables and counterweights; pit buffers, and required hardware and fittings.
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A. Install in accordance with manufacturer's instructions, applicable codes, and standards to provide a quiet, smoothly operating installation, free from sideways oscillation or vibration.
1. Work shall be by mechanics skilled in this work and under direct control and supervision of elevator manufacturer's experienced supervisor.
B. Set hoistway entrances in alignment with car openings and true with plumb sill lines.
C. Mount machine in accordance with approved shop drawings, isolate and dampen machine vibration with properly sized sound-reducing anti-vibration pads.
D. Erect hoistway sills, headers and frames prior to erection of rough walls and doors; erect fascias and toe guards after rough walls are finished.
E. Grout sills and hoistway entrance frames.
F. Make necessary adjustments of equipment to ensure elevator operates smoothly and accurately.
G. Locate and protect or lock movable equipment and controls in such a way that they can be operated only by authorized persons.

3.3 FIELD QUALITY CONTROL

A. Inspections and Permits: Obtain and pay for necessary inspections and permits and make such tests as are required by regulations and authorities.
1. Final inspection shall be after elevator installation and hoisting enclosure are complete.
2. Inspect installation in accordance with ANSI A17.2.
3. Deliver test certificates and permits to Architect.

3.4 MAINTENANCE

A. Escalator Maintenance Period: Maintain entire escalator installation 12 months after date of Substantial Completion of Work.
1. Include systematic examination, adjustment and lubrication of escalator equipment. Repair or replace worn electrical and mechanical parts of escalator equipment, using parts produced by manufacturer of equipment.

2. Perform work without removing escalators during peak traffic periods.
3. Provide 24 hour emergency call-back service during maintenance period.
4. Ensure competent personnel handle maintenance service; maintain locally an adequate stock of parts for replacement or emergency purposes.
5. Have qualified personnel available at such places to ensure fulfillment of this service without unreasonable loss of time.
B. Extended Maintenance Proposal: Submit proposal for maintenance of installed escalator work for a period of three years after termination of regular maintenance required at end of this section.

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