

SECTION 14600 - DUMBWAITERS
CONSTRUCTION STANDARD

PART 1: GENERAL

1.01 Summary

Section Includes:

1. Electric traction Dumbwaiter system.
2. Cab, interior finishes, control panel and facings including cab doors.
3. Fire rated hoistway doors, sills, and frames.
4. Guide rails and brackets, hoisting cables, brake, safety and governor, and counterweights.
5. Pit buffers.
6. Motors, variable voltage variable frequency drive, microprocessor type control system, power supply, and accessories.

Related Sections:

1. Construction Facilities and Temporary Controls: Temporary power supply.
2. Cast-in-Place Concrete: Reinforced concrete shafts.
3. Unit Masonry System: Masonry for fire rated shafts and hoistway openings.
4. Structural Steel: Structural hoist, divider, and sheave beams and other steel items.
5. Metal Fabrications: Pit ladder and accessories.
6. Plumbing Fixtures: Pit drainage.
7. Panelboards: Electrical power to the machine room including main switch and breaker. Heat and smoke sensing devices.

Work Required by Other Sections:

1. The contractor shall coordinate all work required by applicable codes including fire and smoke rated hoistway enclosures, pits, shaft venting, operable fire alarm systems, etc.

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2. The machine room shall be enclosed and conditioned per the elevator manufacturer's required tolerances and have temporary power available for installation work.
3. Crane service shall be provided for the hoisting of the machine room equipment.
4. All structural beams and rails shall be in place.
5. The dumbwaiter pit shall include, guarded light, GFI receptacle and emergency stop switch to prevent the elevator from descending.

1.02 References:

1. American Architectural Manufacturers Association (AAMA):
 - a. AAMA 607.1: Voluntary Guide Specification and Inspection Methods for Clear Anodic Finishes for Architectural Aluminum.
2. American Society of Mechanical Engineers (ASME):
 - a. A17.1: Safety Code for Elevators.
 - b. A17.2.1: Inspector's Manual For Elevators.
3. American Plywood Association (APA): Product Guide-Grades and Specifications.
4. American Society for Testing and Materials (ASTM):
 - a. A36: Structural Steel.
 - b. A167: Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet and Strip.
 - c. A325: High Strength Bolts for Structural Steel Joints.
 - d. A446: Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process, Structural (Physical) Quality.
 - e. A480: General Requirements for Flat-Rolled Stainless and Heat-Resisting Steel Plate, Sheet and Strip.
 - f. A490: Quenched and Tempered Alloy Steel Bolts for Structural Steel Joints.
 - g. A500: Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Round and Shapes.
 - h. A501: Hot-Formed Welded and Seamless Carbon Steel Structural Tubing.
 - i. A525: Steel Sheet, Zinc Coated (Galvanized) by Hot Dip Process, General Requirements.
 - j. B138: Manganese Bronze Rod, Bar, and Shapes.
 - k. B209: Aluminum-Alloy Sheet and Plate.

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- l. B221: Aluminum-Alloy Extruded Bars, Rods, Wire, Shapes and tubes.
 - m. C1048: Heat Treated Flat Glass-Kind HS, Kind FT, Coated and Uncoated Glass.
5. National Electrical Manufacturer's Association (NEMA):
- a. FS L-P-508: Plastic Sheet, Laminated, Decorative, and Nondecorative.
 - b. LD-3: High Pressure Decorative Laminates.
 - c. MG1: Motors and Generators.
 - d. PS-1: Construction and Industrial Plywood.
6. National Fire Protection Association (NFPA):
- a. NFPA 70: National Electrical Code.
 - b. NFPA 80: Fired Doors and Windows.
7. Other:
- a. MIL-L-1914: Lumber and Plywood, Fire Retardant Treated.
 - b. AWS D1.1: Structural Welding Code.
 - c. AISC-Specification for the Design, Fabrication, and Erection of Structural Steel for Buildings.
 - d. ANSI/IEEE 519: Electrical harmonic requirements.

1.03 System Description:

1. Characteristics of Dumbwaiter as follows:
 - a. Type: Electric Dumbwaiter.
 - b. Capacity: _____ lbs.
 - c. Nominal travel distance: _____ ft, _____ in.
 - d. Number of stops: _____.
 - e. Number of openings: _____ front, _____ rear.
 - f. Speed: _____ fpm.
 - g. Car size: _____ wide X _____ deep X _____ high.
 - h. Hoistway and Cab Entrance Frame opening size: 24 X 36 in. (nominal).
 - i. Door Type: Center opening vertical bi-parting. (Manual), (Power).
 - j. Machine Location: _____.
 - k. Operation: (Electric traction machine with counterweights), (Drum Machine).
 - l. Controls: Self-maintained, 3-button momentary contact.
 - m. Accessories: Approach ramp.

1.04 Operation:

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1. Provide single automatic call and send operation with full bank of operating buttons at each landing numbered to correspond to landing.
2. Call or dispatch car to various landings by momentary pressure of respective buttons when landing doors are closed.
3. Indicate arrival of car at landings by light and audible bell at landing.
4. Inactivate buttons while car is in motion and for several seconds after arrival at landing to allow time to open door.
5. Interlocks: Electrically interlock gates to prevent a gate from being opened unless dumbwaiter is at that level and to prevent dumbwaiter movement if one of gates is not fully closed.
6. Program doors to open automatically when car arrives at the counter landing and level to the opening
7. If doors are prevented from closing for approximately ten seconds because of an obstruction, automatically disconnect door control device, and sound alarm.

1.05 Call and Send Operation:

1. Initiate call with momentary pressure on buttons at each landing labeled to bring car to that labeled landing. Provide lighted and numbered landing level buttons for floors served at each landing.
2. Dispatch car to desired landing by momentary pressure on button of the floor level desired when the doors are closed.
3. Include a two-bank light identifying the following condition-"Car Here" and "In Use".

1.06 Submittals:

1. Submit under provisions established in the project specifications, Division One requirements.
2. Shop Drawings - Indicate the following information:
 - a. Driving machine, controller, selector, governor and other component locations.
 - b. Car, sheaves, machine and sheave beams, guide rails, buffer, ropes, and other components in hoistway.
 - c. Rail bracket spacing; maximum loads imposed on guide rails requiring load transfer to building structural framing.

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- d. Individual weight of principal components; load reaction at points of support.
- e. Loads on beams and supports.
- f. Clearances and over travel of car.
- g. Locations in hoistway and machine room of traveling cables.
- h. Location and size of access doors and frames.
- i. Expected heat dissipation of equipment in machine room.
- j. Electrical characteristics and connection requirements.
- k. Show arrangement of equipment in machine room so rotating elements, sheaves, and other equipment can be removed for repairs or replaced without disturbing other components. Arrange equipment for clear passage through access door.

3. Product Data:

- a. Signal and operating fixtures, operating panels, indicators.
- b. Cab design, dimensions, layout, and components.
- c. Cab and hoistway door and frame details.
- d. Electrical characteristics and connection requirements.

1.07 Project Record Documents:

1. Submit under provisions established in the project specifications, Division One requirements.
2. Accurately record actual locations of concealed items, conduit, and locations of components.

1.08 Operation and Maintenance Data:

1. Submit under provisions established in the project specifications, Division One requirements.
2. Include a parts catalog with complete list of equipment replacement parts; identify each entry with equipment description and identifying code.
3. Provide technical information for servicing operating equipment.
4. Include legible schematic wiring diagrams of installed electrical equipment, and changes made in the Work. List symbols corresponding to identity or markings on machine room and hoistway apparatus.
5. Provide two copies of master schematic and one copy of lubrication chart, To Owner.

1.09 Quality Assurance:

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1. Perform Work in accordance with ASME A17.1, ASME B20.1, AWS D1.1, and IEEE C1.

1.10 Qualifications:

1. Manufacturer: Company specializing in manufacturing the Products specified in this section with minimum ten years documented experience.
2. Installer: Company specializing in performing the work of this section and approved by lift equipment manufacturer.
 - a. Maintain service facility locally, within 50 miles of project site.

1.11 Field Measurements:

1. Verify that field measurements are as indicated on shop drawings.

1.12 Warranty:

1. Provide one-year warranty under provisions established in the project specifications, Division One requirements.
2. Warranty: Include coverage for dumbwaiter system, operating equipment, and devices. The dumbwaiter manufacturer and installer shall guaranty the materials and workmanship of the system provided under these specifications and will repair or replace any defects which may develop.

1.13 Maintenance Service:

1. Furnish service and maintenance of dumbwaiter system and components for Ninety- (90) Days from date of Substantial Completion.
2. Examine monthly, clean, adjust, and lubricate all equipment.
3. Repair or replace parts whenever required. Use parts produced by the manufacturer of the original equipment.
4. Provide emergency call back service during working hours during this maintenance period.
5. Perform maintenance work using competent personnel, under the supervision of the Straddle Lift installer.

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6. Maintenance service shall not be assigned or transferred to any agent or Subcontractor.

PART 2: PRODUCTS

2.01 Manufacturers:

1. D A Matot, St. Paul, Minnesota, "Ambassador DM Model-Series 100".
2. Substitutions: Under provisions of Section 01600.

2.02 Materials:

1. Structural Mast: Rolled Steel Sections, Shapes, Rods: ASTM A36.
2. Sheet Steel: ASTM A446 Grade B, zink coated to G90.
3. Stainless Steel: ASTM A167 Type, 304, No. 4 brushed finish.
4. Aluminum: ASTM B221, extruded 6063 alloy with T6 temper, satin finish.
5. Shop and Touch-up Primer: Red Oxide. (NO LEAD)

2.03 Equipment:

1. Motor, Controller, Controls, Buttons, Wiring and Devices, Indicators: Required by NFPA 70.
2. Guide Rails, Wire Ropes, Counterweights, Sheaves, Attachment Brackets and Anchors: Purpose designed, sized according to code with safety factors.
3. Guide rails shall be the manufacturer's standard "Tee" shape, secured to the floor slab, upper floor/ceiling slab and hoistway walls with steel brackets. Coordinate with the structural concrete framing. Guide shoes shall be adjustable with replaceable gibs.
4. Machine: Winding drum type; single speed motor; high starting torque and low starting capacity circuitry; machine shall be located at the bottom of the hoistway with a door in the hoistway for access, with cylinder keyable to the building's master key system.
5. Brakes: Manufacturer's standard type with spring-applied and electrically-released type.

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6. Controller: UL listed; wall mounted type with lockable door, recessed into the wall adjacent to the hoistway; controller must be in sight of the access door.
7. Hoistway Ropes: As required by manufacturer; Shall comply with ASME A17.1.

2.04 Electrical Characteristics and Components:

1. Electrical Characteristics:
 - a. Motor: ____ HP.
 - b. ____ AMP; ____ AMP. full load.
 - c. Voltage: 460/208.
 - d. 80+ percent minimum power factor at rated load.
2. Motors: NEMA MG1.
3. Disconnect Switch: Factory mount disconnect switch on equipment under provisions of Division 16.

2.05 Electrical Components:

1. Boxes, Conduit, Wiring, and Devices: Required by NFPA 70.
2. Fittings: Steel compression type for electricalmetallic tubing. Fittings with set screws are acceptable only when a separate grounding conductor is also installed across the joint.
3. Do not use armored flexible metal conduit as a grounding conductor.
4. Provide additional components and wiring to suit machine layout.

2.06 Lubrication:

1. Grease Fittings: For lubricating bearings requiring periodic lubrication.
2. Lubrication Points: Visible and easily accessible.

2.07 Car Fabrication:

1. Walls and Ceiling: 16 gauge stainless steel.
2. Flooring: Stainless steel. Provide one removable shelf unit.
3. Car Gates/Doors: 16 gage thick stainless steel, flush design, rigid construction, welded corner design, smooth joints; vertical bi-parting to

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match the hoistway doors. Hoistway and car doors shall open simultaneously.

4. Car Light: Provide electric light fixture recessed in the ceiling panels.

2.08 Hoistway Landing Entrances:

1. Landing Doors:
2. Landing Door Frames: 16 Gauge thick stainless steel; welded single unit design with smooth joints and welded corners.
3. Door and Frame Construction: UL 10B 2 hour B-label fire rated, with applicable 1 1/2 hour fire rating; insulated sandwich panel construction.

2.09 Machine Access Entrances

1. Machine Access Door and Frames: Size, 24 X 24 inches; 16 gauge; self-closing and locking, of the same construction as landing doors and frames.
2. Door and Frame Construction: UL 10B 2 hour B-label fire rated, with applicable 1 1/2 hour fire rating; insulated sandwich panel construction.

2.09 Finishes And Signs:

1. Metal Surfaces: Clean surfaces of rust, oil or grease; wipe clean with solvent; prime one coat of Manufacturer's standard high solids industrial enamel.
2. Machine Room Components: Clean and degrease; prime and paint one coat.
3. Galvanized Surfaces: Clean with neutralizing solvent; prime one coat.
4. Enamel on steel: Clean and degrease metal surface; apply one coat of primer, two coats of enamel; sprayed and baked; color as selected.

2.10 Operational Controls:

1. Control Panel: Stainless steel face plates with brushed finish, mounted on the doorframe or adjacent to the door.
2. Landing Call/Send Buttons: Clear illuminating type acrylic actuators with raised landing identification (numerals).

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3. Signal Devices: Door open call buzzer to sound when the hoistway or car door is open and actuator is pushed; Chime and light indicating car arrival; Combination Door Open and In-Use light will illuminate when car is in transit and when a pushbutton (actuator) is pressed and a hoistway door or car gate is open.
4. Mount landing controls at ADA accessible height, 48 inches AFF for the highest actuator. All buttons, actuators, or other devices shall have raised Braille identifying labeling per the Elevator Code ASME A17.3 and ASME A17.1.

PART 3: EXECUTION

3.01 Examination:

1. Verify site conditions under provisions of section 01005.
2. Verify that hoistway, and machine areas are of correct dimension.
3. Verify location and layout of hoistway, guides, and position of machine.
4. Verify that electrical power is available and have correct characteristics.

3.02 Preparation:

1. Arrange for temporary electrical power for installation work and testing of dumbwaiter components.

3.03 Installation:

1. Install system and components in accordance with ASME A17.1, ASME B20.1
 - a. Bolt machine directly to structural concrete slab.
2. Arrange equipment in room so equipment can be removed for repairs or replaced without dismantling or removing other equipment components.
3. Connect equipment to building utilities.
4. Provide conduit, boxes, wiring and accessories within room, hoistway and signal outlets.
5. Field Welds: Chip and clean away oxidation and residue, wire brush and apply two coats of primer and paint.

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3.04 Adjustments:

1. Adjust work under provisions established in the project specifications, Division Three requirements.
2. Adjust for smooth acceleration and deceleration of Lift.
3. Adjust feature at each landing.

3.05 Cleaning:

1. Project Closeout: Cleaning installed work.
2. Remove protective coverings from finished surfaces.
3. Clean surfaces and components ready for inspection.

3.06 Protection of Finished Work:

1. Project Closeout: Protecting installed work.
2. Do not permit construction traffic within lift after cleaning.

3.07 Demonstration and Instructions:

1. Project Commissioning: Demonstrating installed work.
2. Demonstrate equipment operation in presence of Owner's representative.

END OF STANDARD 14600