

## **PART 1 - GENERAL**

### **1.1 SUMMARY**

- A. This Section includes wheelchair/platform lifts.

### **1.2 DEFINITIONS**

- A. Definitions in the latest version of ASME A17.1 apply to work of this Section.
- B. Defective Work: Operation or control system failure, including excessive malfunctions; performances below specified ratings; excessive wear; unusual deterioration or aging of materials or finishes; unsafe conditions; need for excessive maintenance; abnormal noise or vibration; and similar unusual, unexpected, and unsatisfactory conditions.
- C. Reference to a device or a part of the equipment applies to the number of devices or parts required to complete the installation.

### **1.3 QUALITY ASSURANCE**

- A. Regulatory agencies: lift design, materials, construction clearances, workmanship, and tests shall conform to the requirements of the codes and regulations listed in Section 14 20 00, Vertical Transportation, General.
- B. Welding: Welding shall be performed in accordance with the requirements of AWS or CWB. Welders shall produce evidence of current certification by AWS or CWB.
- C. Requirements of Regulatory Agencies
  1. Installer shall obtain and pay for all necessary permits, and perform such tests as may be required for acceptance and approval of lifts by jurisdictional agencies.
  2. Installer shall notify the proper inspectors to witness required testing.

### **1.4 SUBMITTALS**

- A. Refer to Section 14 20 00, Vertical Transportation, General.
- B. Product Data:
  1. Submit manufacturer's product data for each product and material.
  2. Indicate manufacturer, trade names, and model numbers, components, arrangement, optional and accessories being provided.
  3. Include applicable literature, catalog material or technical brochures.

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4. Include material and equipment specifications, sizes, types, dimensions, weights, rated capacities, and performance curves.
  5. Include utility requirements for wiring, piping, and service connection data, motor sizes complete with electrical characteristics.
- C. Shop Drawings:
1. Include plans, elevations, sections, and large-scale details indicating openings at each landing, machine room/equipment space layout, coordination with building structure, relationships with other construction, and locations of equipment.
  2. Include cab and entrance drawings, including dimensions, finishes and details.
  3. Include large-scale layout of car operating panels and hall fixtures.
  4. Indicate maximum dynamic and static loads imposed on building structure at points of support and maximum and average power demands.
  5. Power Confirmation Information: Include motor horsepower, code letter, starting current, full-load running current, and demand factor.
  6. All shop drawings submitted must be signed and sealed by an Engineer licensed in the state of Washington.
- D. Samples for Initial Selection: For finishes, including finished metals, materials with involving surface treatments, paint, and color selection.
- E. Maintenance Control Programs: within sixty (60) days after notice to proceed, and prior to installation, Installer shall submit detailed equipment specific interim and revenue service Maintenance Control Programs, showing functions to be performed and their scheduled frequency.
- F. Operating and Maintenance Manuals:
1. Description and sequence of operation of all equipment installed, including operating use for Building Personnel and tenants, as well as system troubleshooting manuals for technicians.
  2. Maintenance instructions and procedures of all vertical transportation equipment installed, including parts lists, for each Wheelchair Lift system.
  3. Lubrication charts indicating all lubricating points and type of lubricant recommended for all equipment.
  4. Complete parts catalogs for all replaceable parts.

## 1.5 JOB CONDITIONS

- A. General: Refer to Section 14 20 00, Vertical Transportation, General.

## 1.6 DELIVERY, STORAGE, AND HANDLING

- A. General:
1. The protection of all equipment and exposed finishes is the responsibility of the Wheelchair Lift Contractor during delivery, handling, and installation until final acceptance of Wheelchair Lift equipment.

2. The Wheelchair Lift Contractor replaces damaged materials with new, at no additional cost for material and labor.

- B. Delivery and Storage: It is the responsibility of the Wheelchair Lift Contractor to properly store and protect all materials in space provided or designated by the Contractor against damage, stains, scratches, corrosion, weather, construction debris and environmental conditions.
- C. Hoisting: All required hoisting and movement of equipment is the responsibility of the Wheelchair Lift Contractor.

#### 1.7 COORDINATION

- A. General: Refer to Section 14 20 00, Vertical Transportation, General.
- B. Coordinate installation of VT equipment with integral anchors, and other items that are embedded in concrete or masonry for VT equipment. Furnish templates, sleeves, escalator equipment with integral anchors, and installation instructions and deliver to Project site in time for installation.
- C. Coordinate sequence of VT installation with other work to avoid delaying the Work.

#### 1.8 WARRANTY

- A. Manufacturer's Warranty: Manufacturer agrees to repair, restore, or replace Wheelchair Lift equipment that fails due to defective materials or poor workmanship within specified warranty period.
- B. Warranty Period: Twelve (12) months from date of Substantial Completion:
  1. The Wheelchair Lift Contractor guarantees that the materials and workmanship of the apparatus installed by them and any subcontractor, under this contract, is first class in every respect and that they will make good on any defects not due to ordinary wear and tear or improper use, which may develop within one year from the date of final acceptance of all equipment.
  2. Manufacturer's warranty to repair or replace defective products or their components in the event of defects within a specified period.
  3. Neither the final payment nor any provisions of the contract documents relieve the Wheelchair Lift Contractor of any obligation provided by law. They shall remedy any defects and pay all expenses for any damage to other work.
  4. The warranty as outlined above, for all devices, starts from the date of final acceptance of each device, by the Owner, of all work specified and intended under these contract documents.
  5. All other services as required by Section 14 20 00, Vertical Transportation, General.

#### 1.9 MAINTENANCE

- A. General:

1. All maintenance is performed according to the guidelines stated in manufacturer's Maintenance and Operations manuals.
  2. Maintenance records for each device, including lubrication logs, check charts, are provided in each control room.
- B. Construction Maintenance:
1. Upon substantial completion of a device, after receiving sign-off from the governing authorities and acceptance from Consultant and/or Contractor, the device may be accepted for service before completion of the entire project.
  2. During the Construction Maintenance period, the necessary preventive maintenance is performed on a scheduled basis.
  3. Provide the necessary protection of the hoistway entrances and sills, hoistway fixtures, cab interiors and fixtures and car door sills.
  4. Replacement or repair of components, due to misuse by others, is the responsibility of the Contractor/Owner.
  5. Perform emergency callback service during normal working hours.
  6. Include 24-hour-per-day, 7-day-per-week emergency callback service with response time of sixty minutes or less.

#### 1.10 WARRANTY MAINTENANCE:

- A. Upon final acceptance of each device, subsequent to receiving acceptance and sign-off from the governing authorities and final acceptance, each device is accepted for full operation.
- B. The warranty maintenance period begins for each device when all conditions in the above paragraph are met and will continue for a specified period.
1. Warranty Maintenance Period may begin at different times for each Wheelchair Lift.
- C. The warranty maintenance program includes the following:
1. Monthly examinations, including adjustments, cleaning, and lubrication of equipment.
  2. 24-hour Emergency Call back service is provided at no additional cost to Owner.
  3. Replacement of components as required, using only components produced by the original manufacturer.
  4. Each control room is equipped with a lockable storage cabinet to contain the necessary spare parts. See Specification 01 79 00 for spare parts list.

## PART 2 - PRODUCTS

### 2.1 GENERAL

- A. Installer shall furnish and install lifts that shall comply with the following requirements: All lifts supplied under this contract shall be the product of a single manufacturer.
- B. Subject to compliance with the requirements of the Section, Lift Platform design shall be per Contract Drawings.

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2.2 MATERIALS

- A. Except where product conformance to specific standards is indicated on the Contract Drawings and in ASME/ANSI A17.1, OEM's standard materials and equipment may be used in lift construction, subject to approval. Materials cited below are intended to establish the standard of quality for comparable materials used by the manufacturer.
- B. Structural Shapes, Plates, Sheets, and Tubing: ASTM A36 Steel.
- C. Sheet Steel: ASNI/ASTM A446, Grade B.
- D. Stainless Steel: ASTM A167, Type 316L
  - 1. Stainless steel with embossed texture to be rolled into exposed surface.
  - 2. Type 316L, match specified color/finish in drawings.
  - 3. No. 4: Directional polish (satin finish). Graining directions as shown or, if shown, in longest dimension
  - 4. No. 8: Reflective polish (mirror finish).
  - 5. Textured: 5WL or 4LB as manufactured by Rigidized Metals or Windsor pattern 5-SM as manufactured by Rimex Metals or approved equal with .050-inch mean pattern depth with bright directional polish (satin finish).
  - 6. Burnished: Non-directional, random abrasion pattern.
- E. Aluminum: ASTM B211 or ASTM B221, Alloy 6061, T6.
- F. Flooring:
  - 1. Passenger Units: As specified.
  - 2. Service Units: Stainless steel checker.
- G. Plastic Laminate: ASTM E84 Class A and NEMA LD3.1, Fire-Rated Grade (GP-50), Type 7, 0.050-inch plus or minus .005-inch thick, color, and texture as follows:
  - 1. Exposed Surfaces: Color and texture selected by Architect.
  - 2. Concealed Surfaces: Provider's standard color and finish.
- H. Fire-Retardant Treated Particle Board Panels: Minimum 3/4-inch thick backup for natural finished wood and plastic laminate veneered panels, edged and faced as shown, provided with suitable anti-warp backing; meet ASTM E84 Class "I" rating with a flame-spread rating of 25 or less, registered with Local Authorities for lift finish materials.
- I. Natural Finish Wood Veneer: Standard thickness, 1/40-inch thoroughly dried conforming to ASME/HPMA HP-1983, Premium Grade. Place veneer, tapeless spliced with grain running in direction shown, belt and polish sanded, book-matched. Species and finish designated and approved by Architect.
- J. Paint: Clean exposed metal parts and assemblies of oil, grease, scale, and other foreign matter and factory paint one shop coat of standard rust-resistant primer. After erection, provide one finish coat of industrial enamel paint. Galvanized metal need not be painted.

- K. Prime Finish: Clean all metal surfaces receiving a baked enamel paint finish of oil, grease, and scale. Apply one coat of rust-resistant primer followed by a filler coat over uneven surfaces. Sand smooth and apply final coat of primer.
- L. Baked Enamel Finish: Prime finish per above. Unless specified “prime finish” only, apply and bake three (3) additional coats of enamel in the selected solid color.
- M. Glass: Laminated safety glass, minimum 9/16-inch thick, conforming to ANSI Z97.1 and CPSC 16 CFR Part 1201.

## 2.3 SUMMARY OF FEATURES

- A. Vertical Wheelchair Lift:
  - 1. Quantity:
  - 2. Location:
  - 3. Type: Semi-Enclosed Vertical Wheelchair Lift
  - 4. Capacity: 750 Pounds
  - 5. Speed: 17 FPM
  - 6. Stops and Openings:
  - 7. Gates:
    - a. Side:
    - b. Front:
  - 8. Travel: Per architectural drawings.
  - 9. Drive: 1 inch O.D. Acme Screw, Class 2G, 5 pitch
  - 10. Horsepower: Min. - 3/4 HP
  - 11. Platform Size: 35 inches x 55 inches
  - 12. Control: Constant Pressure Type
  - 13. Finish: Baked Enamel, color to be selected by Architect
  - 14. Miscellaneous Items:
    - a. Emergency Communications
    - b. Permit Frame
    - c. Retractable ramp, pit-less installation
    - d. Heavy-duty application

## 2.4 OPERATION

- A. General: Provide control system to perform the functions of motion and platform operation. The entire system is to be self-contained.
- B. Provide a continuous pressure operation. Operation shall be by means of pressure type paddle switches in the car and at the landings, any one of which may be used to control the movement of the car as long as the switch is manually maintained in the activating position.

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## 2.5 GATE OPERATION

- A. Provide 42-inch-high self-closing and locking gates at the top landing level and lower landing side of the platform.
  - 1. Equip each gate with a tamper-proof interlock which shall prevent operation of the platform until the gates are locked in the "closed" position; and
  - 2. Shall prevent opening of the gate at a landing unless the platform is at rest at that landing.

## 2.6 EQUIPMENT

- A. General: Provide equipment which fits space and structural conditions as shown and specified.
  - 1. Drive: Acme screw type with secondary safety nut.
  - 2. Ball Safety: Ball nut provided with integral safety to prevent uncontrolled descent in the event of ball nut failure.
  - 3. Motor: Manufacturer's standard acceptable instant reversing type and shall be a minimum of 3/4 HP.
  - 4. Brake: Spring actuated, electrically released type; mounted directly on ball screw shaft. Brake sets automatically upon release of control switches or loss of main power.
  - 5. Platform: Provide a platform which is 39 inches by 51 inches with non-skid surface. Platform to be constructed of 12-gauge minimum zinc clad steel.
  - 6. Platform Sensors: Provide with safety sensors to stop downward movement, should obstruction be encountered.
  - 7. Limit Switches: Provide with final limit to deactivate lift in the event of control limit failure.
  - 8. Platform and Landing Controls: Constant pressure paddle type; activation of switch operates lift in direction desired.
  - 9. Gate Lock: Provide, at upper landings, electric or mechanical locks to prevent movement of platform should gate be in "open" position.
  - 10. Enclosure: Provide 42 inches high side guard enclosure. Provide an access door, hinge and lock on the outside face (opposite side from platform) of the motor and control housing to provide easy access to that area. Housing to be constructed of 18-gauge zinc clad steel.
  - 11. Automatic Lowering Device: Provide an emergency battery powered device which will lower the platform in the event of a system failure. Unit shall be capable of providing not less than five complete cycles while operating under battery power.
  - 12. Wiring: Provide electrical wiring and all optional components in the vertical wheelchair lift.
  - 13. Signage: The complete unit shall have all necessary signs, capacity plates, and data signs per Code and per Owner Construction guidelines.
  - 14. Emergency Communications: Provide an ADA compliant device and remote signaling device (bell). Locate devices per Owner.
  - 15. Elevator Contractor shall:
    - a. Provide all specified wire and cabling from machine room to all hall call signal fixture locations. See Architects drawings for final position and installation requirements.
    - b. Provide and execute interfacing with elevator controls and installation in elevator machine room as directed by Architect.

- c. Final connections in machine room and testing by Elevator Contractor with assistance provided by Owner's personnel.

## 2.7 CONTROLLER

### A. General:

1. The lift control equipment shall contain diagnostic capabilities as required for the ease of complete maintenance. The diagnostic system shall be an integral part of the controller and provide user-friendly interaction between the service person and the controls. All such systems shall be free from decaying circuits that must be periodically reprogrammed by the manufacturer.
2. Switch gear shall be mounted in cabinets and labeled terminal strips.
3. The Main controller shall be a non-proprietary programmable automation controller (PAC).

## 2.8 WIRING AND ELECTRICAL INSTALLATION

### A. Conduit and Wiring:

1. Unless otherwise specified, all electrical conductors in the pits and hoistways, except traveling cable connections to the car shall be provided in rigid zinc-coated steel conduit with steel outlet boxes, except that a small amount of flexible conduit may be used where conduit is not subject to moisture or embedded in concrete. Terminal boxes and other similar items shall be of approved construction, thoroughly reinforced, and in no case less than number 12 USSG. All electrical boxes exceeding 150 cubic inches shall be supported independently of the conduits. The rigid conduit shall conform to the specifications here in before specified. All raceway shall be threaded rigid steel conduit. Flexible heavy-duty service cord, type SO, may be used between fixed car wiring and switches on car doors for door reversal devices.
2. All conduits terminating in steel cabinets, junction boxes, wire-ways, switch boxes, outlet boxes and similar locations shall have approved insulation bushings. If the bushings are constructed completely of insulation material, a steel locknut shall be installed under the bushing. At ends of conduits not terminating in steel cabinets or boxes, the conductors shall be protected by terminal fittings having an insulated opening for the conductors.
3. Conduit fittings and connections using set screws or indentations as a means of attachment are not permitted.
4. Connect motors and other components subject to movement or vibration, to the conduit systems with flexible conduit.
5. The Contractor shall furnish all materials and completely wire all parts of the electrical equipment of the lifts including electrical devices on hatch doors.
6. The conduits shall be of such size that the wires or cables can be readily installed and replaced, if necessary. No conduit or raceway shall be less than 3/4-inch trade size, except that for small devices such as door switches, interlocks, etc., 1/2-inch conduit may be used. The total overall cross sectional area of the wires contained in any conduit shall not exceed 40 percent of the internal area of the conduit.
7. Conduits shall be neatly and systematically run. All exposed conduit and boxes shall be supported by approved and substantial straps, hangers or clamps to the structural steel,



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- reinforced concrete, or other approved supports. Riser conduits in hoistway shall be supported at each floor level.
  - 8. All screws used for terminal connections of all wiring (control room, machine area, hoistway and pit) shall be provided with “star washers” of proper size and type.
  - B. Conductors:
    - 1. No joints or splices shall be permitted in wiring except at outlets. Tap connectors may be used in wire-ways provided they meet all UL requirements.
    - 2. All wiring shall test free from short circuits or grounds. Insulation resistance between individual external conductors and between conductors and ground shall be not less than one meg-ohm.
    - 3. Provide all necessary conduit and wiring between all remote control rooms, machine areas and hoistway.

### **PART 3 - EXECUTION**

#### **3.1 EXAMINATION**

- A. Prior to commencing with the installation of lift equipment, examine the following and verify that no irregularities exist that would affect the quality of execution of work specified.
  - 1. Hoistway size and Plumbness.
  - 2. Anchor brackets.
  - 3. Sill Support.
  - 4. Pit depth.
  - 5. Overhead clearance.

#### **3.2 INSTALLATION**

- A. Install lift in accordance with the OEM’s installation procedures and approved Shop Drawings. Install equipment so it may be easily removed for maintenance and repair. Install all equipment to afford maximum accessibility, safety, and continuity of operation.
- B. Verify that electrical wiring installation is in accordance with the OEM’s submittal.
- C. Erect all items square, plumb, straight and accurately fitted with tight joints and intersections.
- D. Coordinate with the General Contractor to ensure that the installation of the lifts is not in conflict with the work performed of other trades.
- E. Isolate non-compatible, dissimilar materials from each other by providing vibration isolation, gaskets or insulating compounds.
- F. Provide protective coverings for finished surfaces.

- G. Upon completion, touch up and restore damaged or defaced factory finished surfaces. Touch up any marred finishes and replace as directed.
- H. Remove protective coverings and clean exposed surfaces after completion.
- I. Welding shall comply with AWS D1.1. Identify field welds with welder's identification stamp.

### 3.3 FIELD TESTING

- A. General: After installation, the Installer shall inspect and test each lift and related equipment to Owner's satisfaction that operation of every part of the equipment complies with this specification and with applicable requirements of ANSI A18.1 including sound level criteria specified herein. Lift will be inspected in accordance with the following:
  - 1. Installer shall notify Owner seven (7) days prior to each scheduled test Installer shall perform testing in the presence of the Owner's representative.
  - 2. Installer shall notify the appropriate local authorities having jurisdiction a minimum of seven (7) days in advance of final acceptance tests.
  - 3. Installer shall provide all instruments, materials, and labor required for tests specified herein.
- B. Acceptance Testing:
  - 1. Inspect and test the lift and related equipment to the Owner's satisfaction that operation of every part of equipment complies with applicable requirements of ASME/ANSI A18.1 and local codes.
  - 2. Notification Requirements: Coordinate with the Owner a minimum of five (5) working days prior to each scheduled test.
  - 3. Full Load Run Test: Run lift continuously without fault a minimum of four (4) hours with full specified rated load, during which time car shall be stopped at each landing and doors shall be opened and closed.
  - 4. Speed Test: Make tests before and after full load tests. Determine actual speed of car in both directions of travel, both with full-specified rated load and no load in car. Tolerances for determining if car speeds meet the specified requirements are as follows:
    - a. Ascending and Descending Car Speed not more than 10 percent above or more than 10 percent below required speed.
    - b. Car Leveling Test: Determine accuracy of floor landing tests both before and after full load run tests. Minimum of 1/4 inch leveling must be maintained. Test accuracy of landing at all floors with full load and no load in car, in both directions of travel.
    - c. Electrical Tests: Ensure lift wiring system is free of short circuits and accidental grounds. Test ground resistance of lift structure, equipment, and raceways for continuity. Using meg ohm-meter, determine that insulation resistance of each circuit is more than one (1) meg ohm or higher as required by the cable manufacturer. Insulation resistance for motors shall be determined under actual conditions after installation.
  - 5. Acceptance: Lift acceptance will be based upon lifts meeting requirements of Contract Documents and upon evidence of passing specified acceptance tests and inspections. Final testing will be after lifts are connected to permanent power.

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6. Test Reports: Within five (5) days after completion of a test, submit a test report stating type of test, test requirements, failures, or problems, and name of certifying Engineer and Title. Safety device failure or defective equipment shall be identified, with description of cause and corrective action taken.
  7. Failures for any reasons shall be identified with cause(s) and corrective action taken.
- C. Re-Inspection: If any equipment is found to be damaged or defective, or if the performance of the lifts does not conform to the requirements of the contract specifications or the Safety Code, no approval or acceptance of lifts shall be issued until all defects have been corrected. When the repairs and adjustments have been completed and the discrepancies corrected, the Owner and Owner's representative shall be notified and the lifts will be re-inspected. Rejected lifts shall not be used until they have been re-inspected and approved.
- D. The certificate of inspection for operational use will be issued to Port of Seattle by the enforcing inspection agency. The certificate shall be posted in the lift control room and in the car operating station.

#### 3.4 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Port of Seattle's maintenance personnel to operate, adjust, and maintain lifts. Provide a minimum of 8 hours of training for 3 shifts.
- B. Check operation of lifts with Port of Seattle's personnel present and before date of Completion. Determine that operation systems and devices are functioning properly.
- C. Check operation of lifts with Port of Seattle personnel present not more than one month before end of warranty period. Determine that operation systems and devices are functioning properly.

**END OF SECTION 14 42 00**