



National Reach. Local Service.

Section 144216

## SHAFTWAY VERTICAL WHEELCHAIR LIFTS

### PART 1 GENERAL

#### 1.01 SECTION INCLUDES:

A. SL – Shaftway.

#### 1.02 RELATED SECTIONS:

- A. Section 00 33 00 - Cast-in-Place Concrete: Concrete shaftway and anchor placement.
- B. Section 04 22 00 – Concrete Unit Masonry: Masonry shaftway and anchor placement.
- C. Section 06 10 00 - Rough Carpentry: Blocking in framed construction for lift attachment.
- D. Section 09 21 00 - Gypsum Board Assemblies: Gypsum shaft walls.
- E. Division 16 – Electrical: Dedicated telephone service and wiring connections.
- F. Division 16 – Electrical: Lighting and wiring connections at top of shaft.
- G. Division 16 – Electrical: Electrical power service and wiring connections.

#### 1.03 REFERENCES:

- A. American Society of Mechanical Engineers (ASME) A18.1 – Safety Standard for Platform Lifts and Stairway Chairlifts
- B. American Society of Mechanical Engineers (ASME) A17.1 – Safety Code for Elevators and Escalators
- C. American Society of Mechanical Engineers (ASME) A17.5 – Elevator and Escalator Safety Equipment
- D. American National Standards Institute (ANSI) A117.1 – Accessible and Usable Buildings and Facilities
- E. National Fire Protection Agency (NFPA) – NFPA 70 – National Electrical Code
- F. ANSI/BHMA A156.19-2002 American National Standard for Power Assist & Low-Energy Power Operated Doors.
- G. UL 325 – Standard for Door, Drapery, Gate, Louver and Window Operators and Systems.

#### 1.04 SUBMITTALS:

- A. Submit under provisions of Section 01 30 00 – Administrative Requirements.
- B. Product Data:
  - 1. Submit manufacturer's installation instructions including preparation and equipment handling requirements.
  - 2. Show maximum and average power requirements.
- C. Drawings shall include:
  - 1. Typical details of assembly, erection and anchorage.
  - 2. Wiring diagrams for power, control, and signal systems.
  - 3. Complete layout with location of equipment.
- D. Manufacturer's Certificates must certify products meet or exceed specified requirements.

#### 1.05 QUALITY ASSURANCE:



- A. Manufacturer: Company shall contain personnel with not less than ten (10) years of experience in the design and fabrication of vertical wheelchair lifts.
- B. Technical Services: Manufacturer and authorized dealer shall work with architects, engineers and contractors to adapt the vertical wheelchair lift to the design and structural requirements of the building, site, and code requirements.
- C. Unit must be assembled and tested in factory before shipment. Vertical Wheelchair Lift equipment shall meet or exceed the National and Local standards.
- D. All load ratings and safety factors shall meet or exceed those specified by all governing agencies with jurisdiction and shall be certified by a professional engineer.
- E. Installer Qualifications: Factory trained and licensed to install equipment of this scope, with evidence of experience with specified equipment. Installing company shall have qualified people available to ensure fulfillment of maintenance and callback service.

#### 1.06 REGULATORY REQUIREMENTS

- A. Provide Vertical Wheelchair Lift complying with:
  - 1. American Society of Mechanical Engineers (ASME) A18.1 – Safety Standard for Platform Lifts and Stairway Chairlifts
  - 2. American Society of Mechanical Engineers (ASME) A17.1 – Safety Code for Elevators and Escalators
  - 3. American Society of Mechanical Engineers (ASME) A17.5 – Elevator and Escalator Safety Equipment

#### 1.07 DELIVERY, STORAGE, AND HANDLING:

- A. Products to be stored in manufacturers unopened packaging until ready for installation.
- B. Components stored off the ground in a dry covered space, protected from weather conditions.

#### 1.08 PROJECT CONDITIONS:

- A. Vertical Wheelchair Lift shall not be used for hoisting materials or personnel during construction.

#### 1.09 WARRANTY:

- A. Unit shall have a FOUR (4) year limited parts warranty covering replacement of defective parts of the basic unit, including all electrical and drive system components, at no cost. Labor costs required to replace parts is not included. Preventative maintenance agreement required.

#### 1.10 MAINTENANCE

- A. Maintenance of the vertical wheelchair lift unit shall consist of regular cleaning, inspection, and adjustment of the unit at intervals not longer than every six (6) months. Rule 10.2.1 of ASME A18.1 requires all Vertical Wheelchair Lifts to be inspected every six (6) months. Provide maintenance contract for the following years:
  - 1. 4 years.

### PART 2 PRODUCT

#### 2.01 MANUFACTURER:

- A. Acceptable Manufacturer: Symmetry Elevating Solutions  
Email: [customerservice@symmetryelevator.com](mailto:customerservice@symmetryelevator.com)  
Toll Free: 877-568-5804  
Website: [www.symmetryelevators.com](http://www.symmetryelevators.com)
- B. U.S. OWNED AND OPERATED: Manufacturer must be a registered U.S. owned company with manufacturing operations located in the United States of America – America Owned, American Operated.
- C. No Substitutions Allowed.
- D. Request for substitutions will be considered in accordance with provisions of section 01600.

## 2.02 SHAFTWAY VERTICAL WHEELCHAIR LIFT:

- A. General Description: The Shaftway vertical platform lift (wheelchair lift) is installed in a shaftway or hoistway built by others. The lift platform and drive tower are located within the shaftway, while each landing consists of a door or gate, integral to the operation of the lift. At the uppermost landing, the shaftway can extend all the way to the ceiling or to a minimum of 42 inches beyond the upper landing, for a more “open inches application.
- B. Capacity:
  - 1. 750 lbs.
- C. Lifting Height
  - 1. Model SL-42, 45 inches maximum lift height.
  - 2. Model SL-60, 63 inches maximum lift height.
  - 3. Model SL-72, 75 inches maximum lift height.
  - 4. Model SL-96, 99 inches maximum lift height.
  - 5. Model SL-120, 123 inches maximum lift height.
  - 6. Model SL-144, 147 inches maximum lift height.
  - 7. Model SL-168, 171 inches maximum lift height.
  - 8. Model SL-196, 199 inches maximum lift height. (Using Hydraulic Drive only).
  - 9. Model SL-240, 243 inches maximum lift height. (Using Hydraulic Drive only).
- D. Clear Platform Size:
  - 1. 36 inches W x 48 inches D
  - 2. 36 inches W x 54 inches D
  - 3. 36 inches W x 60 inches D
  - 4. 42 inches W x 60 inches D
  - 5. Custom Size \_\_\_\_\_ W x \_\_\_\_\_ D
- E. Platform Configuration:
  - 1. Straight Through.
  - 2. Enter/Exit same side.
  - 3. 90 Degree.
- A. Lower Door/Gate Construction:
  - 1. Provide an 80 inch tall steel framed landing gate including a “D inches style pull handle and required interlock.
    - a. Gate Construction
      - 1. Solid 18 gauge galvanized steel fill panel
      - 2. 1/4 inch clear Plexiglas with 18 gauge galvanized steel kick panel
      - 3. 1/4 inch bronze Plexiglas with 18 gauge galvanized steel kick panel
      - 4. 1/4 inch clear laminated safety glass with 18 gauge galvanized steel kick panel
    - b. Opening / Closing Mechanism
      - 1. Self Closing Hinges
      - 2. Delayed Action Door Closer
      - 3. Low Energy Power Gate Operator
        - a. “Smart Operation inches Power Gate Operator: Allows operator to open, stop at obstruction, close and remain in NORMAL operation mode.
        - b. Opens automatically when platform arrives at landing, pressing the call button, or pulling on the gate.
        - c. ADA compliant.
        - d. Low voltage, 24 VDC.
    - 4. Low Energy Overhead Power Door Operator



- a. Operation: Electric power open with spring and power boost closing and holding; comply with ANSI A156.19-2002 and UL 325.
      - b. Close and center door against stop after each cycle, and hold against drafts, winds and stack pressure.
      - c. Manual opening force: not to exceed 15 pound of force.
      - d. The force required to prevent a stopped power operated swinging door from moving in the direction of closing shall not exceed a 15 pound force as measured 1 in. from the lock edge of the door at any point in the closing cycle.
    2. Fire Rated (B Label) flush mounted steel door and frame shall be provided. Door shall include wire mesh vision panel, dummy trim door handle and electric interlock.
      - a. Opening / Closing Mechanism
        1. Delayed Action Door Closer
        2. Low Energy Overhead Power Door Operator
          - a. Operation: Electric power open with spring and power boost closing and holding; comply with ANSI A156.19-2002 and UL 325.
          - b. Close and center door against stop after each cycle, and hold against drafts, winds and stack pressure.
          - c. Manual opening force: not to exceed 15 pound of force.
          - d. The force required to prevent a stopped power operated swinging door from moving in the direction of closing shall not exceed a 15 pound force as measured 1 in. from the lock edge of the door at any point in the closing cycle.
    3. Flush mounted, solid core oak laminated door and (oak) frame shall be provided. Door shall include mesh vision panel, dummy trim door handle, lock plate cover and electric interlock.
      - a. Opening / Closing Mechanism
        1. Self Closing Hinges
        2. Delayed Action Door Closer
        3. Low Energy Overhead Power Door Operator
          - a. Operation: Electric power open with spring and power boost closing and holding; comply with ANSI A156.19-2002 and UL 325.
          - b. Close and center door against stop after each cycle, and hold against drafts, winds and stack pressure.
          - c. Manual opening force: not to exceed 15 pound of force.
          - d. The force required to prevent a stopped power operated swinging door from moving in the direction of closing shall not exceed a 15 pound force as measured 1 in. from the lock edge of the door at any point in the closing cycle.
- B. Mid Door/Gate Construction:
1. Provide an 80 inch tall steel framed landing gate including a "D inches style pull handle and required interlock.
    - a. Gate Construction
      1. Solid 18 gauge galvanized steel fill panel
      2. 1/4 inch clear Plexiglas with 18 gauge galvanized steel kick panel
      3. 1/4 inch bronze Plexiglas with 18 gauge galvanized steel kick panel



4. 1/4 inch clear laminated safety glass with 18 gauge galvanized steel kick panel
- b. Opening / Closing Mechanism
  1. Self Closing Hinges
  2. Delayed Action Door Closer
  3. Low Energy Power Gate Operator
    - a. "Smart Operation inches Power Gate Operator: Allows operator to open, stop at obstruction, close and remain in NORMAL operation mode.
    - b. Opens automatically when platform arrives at landing, pressing the call button, or pulling on the gate.
    - c. ADA compliant.
    - d. Low voltage, 24 VDC.
  4. Low Energy Overhead Power Door Operator
    - a. Operation: Electric power open with spring and power boost closing and holding; comply with ANSI A156.19-2002 and UL 325.
    - b. Close and center door against stop after each cycle, and hold against drafts, winds and stack pressure.
    - c. Manual opening force: not to exceed 15 pound of force.
    - d. The force required to prevent a stopped power operated swinging door from moving in the direction of closing shall not exceed a 15 pound force as measured 1 in. from the lock edge of the door at any point in the closing cycle.
2. Fire Rated (B Label) flush mounted steel door and frame shall be provided. Door shall include wire mesh vision panel, dummy trim door handle and electric interlock.
  - a. Opening / Closing Mechanism
    1. Delayed Action Door Closer
    2. Low Energy Overhead Power Door Operator
      - a. Operation: Electric power open with spring and power boost closing and holding; comply with ANSI A156.19-2002 and UL 325.
      - b. Close and center door against stop after each cycle, and hold against drafts, winds and stack pressure.
      - c. Manual opening force: not to exceed 15 pound of force.
      - d. The force required to prevent a stopped power operated swinging door from moving in the direction of closing shall not exceed a 15 pound force as measured 1 in. from the lock edge of the door at any point in the closing cycle.
3. Flush mounted, solid core oak laminated door and (oak) frame shall be provided. Door shall include mesh vision panel, dummy trim door handle, lock plate cover and electric interlock.
  - a. Opening / Closing Mechanism
    1. Self Closing Hinges
    2. Delayed Action Door Closer
    3. Low Energy Overhead Power Door Operator
      - a. Operation: Electric power open with spring and power boost closing and holding; comply with ANSI A156.19-2002 and UL 325.



- b. Close and center door against stop after each cycle, and hold against drafts, winds and stack pressure.
  - c. Manual opening force: not to exceed 15 pound of force.
  - d. The force required to prevent a stopped power operated swinging door from moving in the direction of closing shall not exceed a 15 pound force as measured 1 in. from the lock edge of the door at any point in the closing cycle.
- C. Upper Door/Gate Construction:
1. Provide a 42 inch tall steel framed landing gate including a "D inches style pull handle and required interlock.
    - a. Gate Construction
      1. Solid 18 gauge galvanized steel fill panel
      2. 1/4 inch clear Plexiglas with 18 gauge galvanized steel kick panel
      3. 1/4 inch bronze Plexiglas with 18 gauge galvanized steel kick panel
      4. 1/4 inch clear laminated safety glass with 18 gauge galvanized steel kick panel
    - b. Opening / Closing Mechanism
      1. Self Closing Hinges
      2. Low Energy Power Gate Operator
        - a. "Smart Operation inches Power Gate Operator: Allows operator to open, stop at obstruction, close and remain in NORMAL operation mode.
        - b. Opens automatically when platform arrives at landing, pressing the call button, or pulling on the gate.
        - c. ADA compliant.
        - d. Low voltage, 24 VDC.
  2. Provide an 80 inch tall steel framed landing gate including a "D inches style pull handle and required interlock.
    - a. Gate Construction
      1. Solid 18 gauge galvanized steel fill panel
      2. 1/4 inch clear Plexiglas with 18 gauge galvanized steel kick panel
      3. 1/4 inch bronze Plexiglas with 18 gauge galvanized steel kick panel
      4. 1/4 inch clear laminated safety glass with 18 gauge galvanized steel kick panel
    - b. Opening / Closing Mechanism
      1. Self Closing Hinges
      2. Delayed Action Door Closer
      3. Low Energy Power Gate Operator
        - a. "Smart Operation inches Power Gate Operator: Allows operator to open, stop at obstruction, close and remain in NORMAL operation mode.
        - b. Opens automatically when platform arrives at landing, pressing the call button, or pulling on the gate.
        - c. ADA compliant.
        - d. Low voltage, 24 VDC.
      4. Low Energy Overhead Power Door Operator
        - a. Operation: Electric power open with spring and power boost closing and holding; comply with ANSI A156.19-2002 and UL 325.




- b. Close and center door against stop after each cycle, and hold against drafts, winds and stack pressure.
          - c. Manual opening force: not to exceed 15 pound of force.
          - d. The force required to prevent a stopped power operated swinging door from moving in the direction of closing shall not exceed a 15 pound force as measured 1 in. from the lock edge of the door at any point in the closing cycle.
  3. Fire Rated (B Label) flush mounted steel door and frame shall be provided. Door shall include wire mesh vision panel, dummy trim door handle and electric interlock.
    - a. Opening / Closing Mechanism
      1. Delayed Action Door Closer
      2. Low Energy Overhead Power Door Operator
        - a. Operation: Electric power open with spring and power boost closing and holding; comply with ANSI A156.19-2002 and UL 325.
        - b. Close and center door against stop after each cycle, and hold against drafts, winds and stack pressure.
        - c. Manual opening force: not to exceed 15 pound of force.
        - d. The force required to prevent a stopped power operated swinging door from moving in the direction of closing shall not exceed a 15 pound force as measured 1 in. from the lock edge of the door at any point in the closing cycle.
  4. Flush mounted, solid core oak laminated door and (oak) frame shall be provided. Door shall include mesh vision panel, dummy trim door handle, lock plate cover and electric interlock.
    - a. Opening / Closing Mechanism
      1. Self Closing Hinges
      2. Delayed Action Door Closer
      3. Low Energy Overhead Power Door Operator
        - a. Operation: Electric power open with spring and power boost closing and holding; comply with ANSI A156.19-2002 and UL 325.
        - b. Close and center door against stop after each cycle, and hold against drafts, winds and stack pressure.
        - c. Manual opening force: not to exceed 15 pound of force.
        - d. The force required to prevent a stopped power operated swinging door from moving in the direction of closing shall not exceed a 15 pound force as measured 1 in. from the lock edge of the door at any point in the closing cycle.
  5. Flush mounted, 42 inches high, solid core oak laminated gate and (oak) frame shall be provided at the upper landing. Gate includes spring hinges, dummy trim gate handle, lock plate cover, spring hinges and electric interlock.
- D. Drive System
  1. Standard Acme Screw Drive:
    - a. Travel speed: 10 fpm.
    - b. Motor: 1 ½ HP, 115 volt, 1 phase.
    - c. Power Supply:
      1. 115 VAC, 25 Amp, Single Phase.
      2. 230 VAC, 15 Amp, Single Phase.



- d. Battery Powered Emergency Lowering:
          1. Battery powered platform lowering device which automatically activates in the event of power failure.
          2. Capable of running lift up and down for a minimum of 5 trips with rated load at full speed.
        - e. The drive mechanism shall be a stationary nut on a rotating 1 inches diameter Acme screw with a secondary safety nut.
      2. Accelerated Acme Screw Drive:
        - a. Travel speed: 20 fpm.
        - b. Motor: 1 ½ HP, 115 volt, 1 phase.
        - c. Power Supply:
          1. 115 VAC, 25 Amp, Single Phase.
          2. 230 VAC, 15 Amp, Single Phase.
        - d. Battery Powered Emergency Lowering:
          1. Battery powered platform lowering device which automatically activates in the event of power failure.
          2. Capable of running lift up and down for a minimum of 5 trips with rated load at full speed.
        - e. The drive mechanism shall be a stationary nut on a rotating 1 inches diameter Acme screw with a secondary safety nut.
      3. Hydraulic Drive:
        - a. Travel speed: 17 to 20 fpm.
        - b. Motor: 3 HP, 24 VDC. AC powered primary drive.
        - a. Power Supply: 115 VAC, 20 Amp, Single Phase
          1. Powered by continuous building mains converted to 24 VDC equipped with auxiliary battery power system. Battery power system capable of running lift up and down for a minimum of 5 trips with rated load at full speed.
        - c. Drive mechanism shall be a 2:1 chain hydraulic equipped with a type A instantaneous slack chain safety device.
        - d. Hydraulic connections shall be metal and have rated pressure that withstands the working pressure with a 5 times safety factor.
        - e. Bi-directional leveling, factory supplied oil collection means as required by A18.1-8.1.4.7, Angled pressure gauge standard, roller bearing sprockets, vibration isolated hydraulic power unit.
- E. Lift Components:
  1. Symmetry Elevating Solutions PLC Controller with self diagnostics and digital display. A.W.A.R.E. System (Active Wiring, Accessories, Relay & Electronics Diagnosis) generates on-demand diagnostic codes identifying trouble codes.
  2. The Drive Tower support shall be a combination 7 gauge C Channel, 7 gauge interface plates and 16 gauge exterior skin.
  3. Platform shall be constructed of 12-gauge minimum hot rolled steel. If unit is not installed in a 3-inch pit, an auto-retracting ramp, or stationary ramp, shall be provided that extends to meet lower landing.
  4. Platform side panels shall be 42 inches high, side panel framework shall be a minimum of 1 inch x 1 ½ inch steel. Solid infill panels shall be a minimum of 18 gauge steel.
  5. Carriage platform supports shall be a minimum of ½ inch steel



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6. Nonmetallic rollers shall be used for axial carriage guidance and wear pads shall be used for horizontal stability.
  7. Loaded fasteners shall be grade eight or higher. Locking fasteners shall be used in all critical locations.
- F. Platform Base & Frame Installation:
1. Pit Mount: (recess application) Level pit floor slab recessed a minimum 3 inches by others as outlined on site specific drawings. This application does not require ramp and allows for smooth transition from landing into lifting equipment.
  2. Floor Mount: (non-recess application) If the unit is flush with the lower landing, a fixed ramp shall be provided with a slip resistant surface fabricated from 12 gauge galvanized steel plates; slip resistant surfaces.
- G. Platform Controls:
1. Constant pressure up/down control switches shall be installed on the platform. All switches meet IP66 requirements.
  2. An illuminated emergency stop switch shall be provided on the platform controls with an audible alarm as a means of signaling for assistance in the event of an emergency.
  3. Operation Type:
    - a. Keyless operation.
    - b. Keyed operation.
  4. Emergency Telephone:
    - a. None
    - b. Wiring Only.
    - c. Platform shall be equipped with a telephone meeting the following requirements:
      1. ADA compliant.
      2. Shall be operational in the event of power failure.
      3. Specified under Division 16 a telephone line shall be supplied to the lift.
- H. Landing Controls:
1. Constant pressure up/down control switch installed at each landing.
  2. Constant pressure, elevator-style, control switches provided at each landing.
  3. Operation Type:
    - a. Keyless operation.
    - b. Keyed operation.
  4. Landing Station Mounting:
    - a. Lower Landing Station:
      1. In-Frame.
      2. Surface Mount.
      3. Flush Mount.
    - b. Mid Landing Station:
      1. In-Frame.
      2. Surface Mount.
      3. Flush Mount.
    - c. Upper Landing Station:
      1. In-Frame.
      2. Surface Mount.
      3. Flush Mount.
- I. Safety Features/Devices:
1. Grounded electrical system with upper and lower limit switches.



2. Upper final limit switch (Standard and Accelerated Acme Screw Drive).
  3. A grab rail shall be provided on the platform.
  4. A gate with a minimum height of 42 inches and a combination mechanical lock with an electric contact shall be provided at the upper landing, the gate must be closed for the lift to move away from landing.
  5. At all landings, electromechanical interlocks shall be used to keep doors closed when lift is on another floor.
  6. Electrical disconnect which will shut off power to the lift.
  7. Pit stop switch mounted on Drive Tower.
- J. Finishes:
1. Finish shall be powder coating, oven baked.
  2. Color:
    - a. Ivory.
    - b. White.
    - c. Black.
    - d. Grey.
    - e. A selection from 213 RAL colors.
  3. Optional Protection
    - a. Outdoor Protection: The lift shall be primed with zinc rich primer prior to the final powder coat finish and all exposed fasteners or hinges will be made from stainless steel or hot dip galvanized.
    - b. Extreme Weather Package: The lift shall have a powder coat finish and the exposed components of the lift shall be fabricated from a combination of 304 stainless steel, galvanized steel, hot dip galvanized steel, and aluminum.

## PART 3 EXECUTION

### 3.01 ACCEPTABLE INSTALLERS:

- A. Subcontractor Qualifications: A company that is listed as an authorized Symmetry Elevating Solutions dealer. See [www.symmetryelevator.com](http://www.symmetryelevator.com) for details.
- B. Electrical devices, service and final connections shall be by a qualified electrician.

### 3.02 EXAMINATION:

- A. Preliminary work must be properly prepared, including hoistway construction (if needed), landings and machine space, before installation.
- B. Verify hoistway shaft (if needed) and machine space are the correct size and within acceptance.
- C. Verify required landings and openings are the correct size and within acceptance.
- D. When required verify machine room is provided with lighting, light switch, outlets and meets the clear space requirements of ASME A18.1.
- E. Verify electrical power is available and of within acceptance.
- F. Notify Architect of any inadequate preparation when preliminary work is the responsibility of another installer.

### 3.03 PREPARATION:

- A. Clean surfaces thoroughly prior to installation.
- B. Prepare surfaces and unit using the methods recommended by the manufacturer for achieving the optimum performance of vertical wheelchair lift.

### 3.04 INSTALLATION:

- A. Unit shall be installed and operated in accordance with the ICC/A117.1, NEC and ASME A18.1 Guidelines.

- B. A dedicated electrical supply provided to the disconnect shall be capable of supplying sufficient power.
  - C. GC to coordinate "work by others inches with lift contractor.
  - D. The installation of the vertical wheelchair lift shall be made in accordance with approved plans and specifications and the manufacturer's installation instructions.
  - E. Startup and test unit in accordance with manufacturer's instructions.
  - F. Adjust for smooth operation.
- 3.05 FIELD QUALITY CONTROL:
- A. Perform tests in compliance with ASME 17.1 or A18.1 and as required by authorities having jurisdiction.
  - B. Load the vertical lift to rated capacity and test for several cycles to insure proper operation. No mechanical failures shall occur and no wear that would affect the reliability of the unit shall be detected.
  - C. Schedule necessary tests with Architect, Owner, Contractor, and any authorities having jurisdiction.
- 3.06 PROTECTION:
- A. Protect installed products until completion of project.
  - B. Touch-up, repair or replace damaged products before Substantial Completion.
  - C. Clean unit prior to final inspection.

END OF SECTION