

## SECTION 14420

### WHEELCHAIR LIFTS

#### PART 1 GENERAL

##### 1.1 SECTION INCLUDES

- A. Inclined wheelchair platform lifts for interior installation, including:
  - 1. Driving machine housed in a locked cabinet.
  - 2. Platform.
  - 3. Guide rails.
  - 4. Control system, signals, electrical wiring, and devices necessary to provide specified or code-required performance, operation, safety, and security to complete lift assembly.
  - 5. Support towers.
  - 6. Handrails and infill panels.
  
- B. Inclined wheelchair platform lifts for exterior installation, including:
  - 1. Driving machine housed in a locked cabinet.
  - 2. Platform.
  - 3. Guide rails.
  - 4. Control system, signals, electrical wiring, and devices necessary to provide specified or code-required performance, operation, safety, and security to complete lift assembly.
  - 5. Support towers.
  - 6. Handrails and infill panels.
  
- C. Emergency Evacuation Chairs.
  
- D. Products Furnished but Not Installed:
  - 1. Sleeves, inserts and anchoring devices required for the attachment to substrate surfaces.

##### 1.2 RELATED SECTIONS

- A. Division 16 - Electrical service to each lift drive cabinet, including fused disconnect switch.
  - 1. Power supply of 208 or 240 volt AC, single phase.
  - 2. Control voltage circuit breaker rating 20 amps.

##### 1.3 REFERENCES

- A. ADAAG - Americans with Disabilities Act, Accessibility Guidelines.

- B. ANSI A117.1 - Providing Accessibility and Usability for Physically Handicapped People.
- C. ASME/ANSI A17.1 - Safety Code for Elevators and Escalators.
- D. ASTM A 312 - Standard Specification for Seamless and Welded Austenitic Stainless Steel Pipe.
- E. CAN/CSA-B355-M92 - Lifts for Persons with Physical Disabilities.
- F. NFPA 70 - National Electrical Code.

#### 1.4 SUBMITTALS

- A. Product Data: Submit manufacturer's product data and installation instructions for the type of wheelchair lift system required. Include the following:
  - 1. Each item, accessory and option required.
  - 2. Equipment capacity, performance, operation and finishes.
  - 3. Controls, safety features and similar information.
  - 4. Drive system and components.
- B. Shop Drawings: Submit shop drawings for the type of wheelchair lift system required. Show the following:
  - 1. Dimensioned drawings including plans, elevations and sections to show equipment locations, interfaces with stairway and adjacent substrates, landings served and travel distances.
  - 2. Details of assembly, erection, anchorage and clearance requirements.
  - 3. Loads imposed on building structure at points of support and other similar considerations for the installation of the lift.
- C. Samples for Color Selection: Submit manufacturer's color charts showing full range of available colors and finishes for initial color and finish selection of exposed materials.
- D. Samples for Verification: When requested, submit samples for verification of selected material colors and finishes for platforms, guide-rails, drive cabinets, signal devices and control stations.

- E. Certificates and Permits: Submit inspection/acceptance certificates and operating permits required by governing authorities to allow normal unrestricted use of wheelchair lifts.
- F. Operation and Maintenance Manuals: Submit bound manuals for the type of wheelchair lift required, with operating and maintenance instructions, parts listing with sources indicated, recommended parts inventory listing, emergency instructions, warranty duration and similar information.
- G. Warranty: Submit manufacturer's standard wheelchair lift warranty.

#### 1.5 QUALITY ASSURANCE

- A. Manufacturers Qualifications: A company with not less than twenty (20) years of experience in the design, fabrication, installation and maintenance of inclined wheelchair platform lifts of the type, quality and character required.
  - 1. Manufacturer shall have a service office and warehouse of parts within a \_\_\_\_\_ mile radius of project site.
- B. Installer Qualifications: The lift manufacturer or a qualified, authorized agent of the lift manufacturer with not less than ten (10) years of experience installing and servicing inclined wheelchair platform lifts of the type required.
- C. Design Requirements: Wheelchair lift systems shall be certified by a licensed Professional Engineer experienced in the design of inclined wheelchair platform lifts in accordance with applicable codes.
- D. Regulatory Requirements: Materials and construction shall comply with the current edition of the following codes, standards and guidelines.
  - 1. ASME/ANSI A17.1 "Safety Code for Elevators and Escalators", Part XX (Commercial and Public Buildings).
  - 2. CAN/CSA-B355-M92 "Lifts for Persons with Physical Disabilities."
  - 3. ANSI A117.1, "Providing Accessibility and Usability for Physically Handicapped People."
  - 4. NFPA No 70, National Electric Code.

5. ADAAG Americans with Disabilities Act Accessibility Guidelines.
6. Provide CSA or UL tested and labeled mechanical and electrical equipment.
7. \_\_\_\_\_ Building Code.

#### 1.6 DELIVERY, STORAGE AND HANDLING

- A. Provide wheelchair lift materials, components and equipment wrapped, boxed, or crated to protect factory finishes.
- B. Deliver, store, protect and handle wheelchair lift materials and components in accordance with the manufacturer's recommendations to prevent damage, soiling or deterioration.

#### 1.7 PROJECT CONDITIONS

- A. Field verify installation dimensions and conditions. Show modifications required to accommodate the required wheelchair lift on shop drawings.
- B. Arrange for required inspections and tests. Obtain inspection/acceptance certificates and initial operating permits required by local governing authorities and turn over to the Owner upon acceptance of the work.
  1. Costs of inspections, tests and permits will be paid for by Owner.
  2. Costs of inspections, tests and permits will be paid for by installer.

#### 1.8 WARRANTY

- A. Warranty: Manufacturer shall warrant the wheelchair lift materials and workmanship for one year following completion of the installation. Warranty shall include replacement of defective parts not due to ordinary wear during use or improper use.
- B. Extended Warranty: Manufacturer shall warrant the wheelchair lift materials and workmanship for five years following completion of the installation and execution of a preventative maintenance program agreement for five years. Warranty shall include replacement of defective parts not due to ordinary wear during use or improper use.

## 1.9 OWNER'S INSTRUCTIONS

- A. Upon completion of the installation, instruct Owner's designated personnel in the proper use, operation and daily maintenance requirements of wheelchair lifts. Review emergency provisions, including access and provisions to be followed in operation or other building emergency conditions. Train Owner's personnel in procedures to follow in identifying sources of operational failures or malfunctions.
- B. Coordinate preventative maintenance program service schedule and requirements with Owner's designated personnel.

## 1.10 MAINTENANCE

- A. Preventative Maintenance Program: Provide preventative maintenance of wheelchair lift units. Maintenance service shall be carried out not less than every six months. Correct operational imperfections and restore or replace defective or deteriorated components and finishes. Use only genuine parts, components, and supplies as used in the manufacture and installation of original equipment.
  - 1. Maintenance program period: 12 months following completion of the installation.
  - 2. Maintenance program period: 36 months following completion of the installation.
  - 3. Maintenance program period: 60 months following completion of the installation.
  - 4. Include the following services:
    - a. Clean and lubricate as required. Supply required lubricants and touch-up paint.
    - b. Check electrical and mechanical operation and make minor adjustments as necessary.
    - c. Recommend repairs or replacement of parts needed to ensure reliable operation.
    - d. Test operation and safety systems.
    - e. Other services as required.
  - 5. Provide regular and 24 hour emergency callback service as part of the maintenance service.
- B. Maintenance service shall be performed solely by the manufacturer or an authorized manufacturer's representative and shall not be assigned or transferred to any other agent, party or subcontractor.

## PART 2 PRODUCTS

### 2.1 MANUFACTURERS

- A. Provide products manufactured by Garaventa, P.O. Box 1769, Blaine WA 98231-1769; or 7505-134A Street, Surrey, BC V3W7B3; ASD. Tel: (800) 663-6556 or (604) 594-0422, Fax: (604) 594-9915, E-mail: bbell@garaventa.com.

### 2.2 WHEELCHAIR LIFTS

- A. General: Provide manufacturer's standard pre-engineered lift system that complies with specified requirements. Provide Garaventa Stair-Lift products as indicated in Garaventa "Design and Planning Guide" and as specified for complete inclined stairway wheelchair lift systems.
- B. Wheelchair Lift: Garaventa Stair-Lift Model GSL-1:
  - 1. Configuration: An inclined turning wheelchair platform lift that travels on tubes along the inside radius of straight and turning stairways.
  - 2. Operation: Independent or attendant operation, keyed controlled constant pressure switches at platform controls and landing call stations.
  - 3. Rated load: 495 lbs (225 kg); limited to one person, with minimum five times safety factor.
  - 4. Rated speed: 20 ft (6 meters) per minute, slowing in corners for turning stairways.
  - 5. Number of Stops: \_\_\_\_\_ .
  - 6. Incline: As indicated on drawings.
  - 7. Incline: \_\_\_\_\_ degrees.
  - 8. Power supply: 200-250 volt AC, single phase, 50 hertz.
  - 9. Power supply: 208 volt AC, single phase, 60 hertz.
  - 10. Power supply: 240 volt AC, single phase, 60 hertz.
  - 11. Operating controls voltage: 24 volt DC.
  - 12. Provide all modifications recommended by the manufacturer for reliable performance in the outdoor climate at the project site.
- C. Platform: "Type S"; manual folding and unfolding platform and loading ramps.
- D. Platform: "Type SP"; electrically operated folding and unfolding platform and ramps.
- E. Platform: "Type SPC"; electrically operated folding and unfolding platform, ramps and safety arms.

1. Width: 30 inches (760 mm).
2. Width: \_\_\_\_\_.
3. Platform length:
  - a. 1220 Platform: 48 inches (1220 mm).
  - b. 1050 Platform: 41 inches (1050 mm).
  - c. 900 Platform: 35.4 inches (900 mm).
4. Provide non-slip platform deck and ramp surfaces.
5. Ramps: Provide loading ramps 6 inches (150 mm) high, when folded, to prevent accidental wheelchair roll-off.
  - a. Loading ramps shall be mechanically and electrically interlocked during travel, to prevent lift travel unless ramps are raised and to prevent lowering ramps during lift travel.
  - b. Ramps: Loading ramps raised and lowered electrically, only when platform is unfolded and at rest at a landing.
  - c. Ramps: Loading ramps raised and lowered electrically, operated in sequence with the correct safety arm, only when the platform is unfolded and at rest at a landing.
  - d. Side-load platform: Provide 6 inch (150 mm) high side loading ramp for passenger loading access from virtually any direction. Sideload ramp motor shall not be mounted on platform surface area.
6. Kick-plate: 6 inches (150 mm) high, functions as vandal resistant cover to protect platform control switches when in folded position.
7. Safety arms: "Bar-Guard" manually operated safety arms at each end of the platform.
8. Safety arms: Provide electrically operated safety arms at each end of the platform.
9. Grab-rails: Provide passenger grab-rail installed on the platform.
10. Clearances - direct mounted: The folded platform shall not protrude more than 13.5 inches (341 mm) from inner wall. (Variations may apply when technically infeasible). When unfolded and in use, platform shall not protrude more than 39.5 inches (1005 mm) from inner wall.
11. Carriages: Provide upper and lower carriages for supporting the platform on the guide-rails and guiding the platform up and down the guide-rail tube system.
12. Platform operation:

- a. A smooth start/stop shall be provided when entering/departing landing zone.
  - b. Platform shall negotiate vertical and horizontal bends and transitions smoothly with one unit, without transfer.
  - c. Platform carriages shall be equipped with nylon rollers that permit the carriage to run smoothly on the guide-rail.
13. Platform travel safeties: Stop the lift when travelling in folded or unfolded position and an obstruction causing four pounds or more pressure is met. Provide the following sensing devices:
    - a. Under-platform touch-sensitive plate.
    - b. Under-hanger touch-sensitive plate.
    - c. Multi-directional touch-sensitive ramps.
  14. Platform parking: When the lift is not being used, the platform shall be parked in the folded position away from the stairway at the lower landing.
  15. Platform parking: When the lift is not being used, the platform shall be parked in the folded position away from the stairway at the \_\_\_\_\_ floor landing.
  16. Security platform lock: Manual security lock utilizing operation key provided by the manufacturer to prevent unauthorized unfolding of platform.
  17. Security platform lock: Solenoid security lock operated from the call station to prevent unauthorized unfolding of platform. Automatically unlocks platform when unfolding platform from the call station.
  18. Fold-down seat: Manual fold-down seat complete with armrests and safety belt mounted upon the platform.
  19. Platform light: Deck light platform area illumination. An integral lamp which activates automatically when the platform is in the unfolded position. Provided in combination with the fold-down seat.
  20. Platform storage: Platform shall be able to be stored in the "park beyond" position at the upper landing.

### 2.3 OPERATING CONTROLS AND SIGNALS

- A. Control System: Provide key-operated switch at each control station that permits "up" and "down" switches to become effective only when the key is in the "on" position. Controls shall comply with requirements of ANSI A117.1 and ASME/ANSI A17.1.

1. Provide weatherproofing sealant on control boards.
2. Platform controls:
  - a. Key switch, constant pressure directional paddle switch, emergency stop button, and plug-in extension control for attendant or passenger operation.
  - b. Safe-to-go Ready Lamp indicating safety circuits are clear and lift is ready to operate.
3. Call station controls: Provide at each landing where wheelchair lift may be boarded or exited:
  - a. Upper landing: Mounted on tubular guide-rails adjacent to Drive Cabinet.
  - b. Upper landing: Wall mounted.
  - c. Upper landing: Tower mounted.
  - d. Upper landing: Mounted on Drive Cabinet.
  - e. Lower landing: Wall mounted in surface-mounted fitting as indicated.
  - f. Lower landing: Wall mounted in recessed flush-mount fitting as indicated.
  - g. Lower landing: Free-standing as indicated.
  - h. "Power-on" lamp, key switch, "station-activated" lamp, "fault" lamp, constant pressure platform call/send paddle switch, "lift-location" lamp.
  - i. Constant pressure switch to fold and unfold the platform and to operate loading ramps.
  - j. Constant pressure switch to fold and unfold the platform and to operate the loading ramps and safety arms.
4. Call station control options:
  - a. Constant pressure attendant call switch in call station.
  - b. Constant pressure emergency stop switch in call station.
5. Attendant operation: Provide manufacturer's standard plug-in, hand-held attendant control unit with each wheelchair lift required.
  - a. Key switch, constant pressure directional paddle switch and emergency stop button.
  - b. Provide a removable lockout cover on the platform control station directional paddle switch when required by local governing authorities.
6. Leveling tolerance: Provide terminal stopping system at each extreme of travel and adjust to maintain level tolerance within 1/2 inch (13 mm) regardless of load size or direction of travel.
7. Limit switches: Provide at both top and bottom extremes of travel.

8. Obstruction sensors: Provide sensors to cut power and stop unit in the event of contact with foreign object within pathway of travel. Comply with applicable codes.
  9. Safety device: Provide safety device to stop platform in event of overspeed condition or breakage or slackening of suspension of support means.
  10. Manual lowering: Provide means to manually lower platform in case of malfunction or power loss.
  11. Manual folding: Provide means to manually fold platform in case of malfunction or power loss.
- B. Provide weatherproof cap on extension control socket.
- C. Safety Signal Options:
1. Audio-Visual Alert (AV): Provide wall-mounted Audio-Visual Pedestrian Alert devices within designated stairways to alert stairway pedestrians that the wheelchair lift is being operated. Device shall contain a tri-octave audio chime and flashing amber strobe which is activated when the platform is in motion or unfolded in a stationary position.
  2. Local Emergency Alarm (LEA): Provide an emergency alarm system from the platform for emergency assistance for the passenger. Pressing the platform control emergency stop button shall sound an audible signal in the vicinity of the drive box and at a receiver console. Include backup battery operation to ensure help is summoned in a power outage.
  3. Emergency Remote Alarm (ERA) - radio transmitted: Provide an emergency remote alarm system from the platform for emergency assistance for the passenger. Pressing the platform control emergency stop button shall transmit a signal to a receiver console, which shall provide an audible alarm and a visible light indicator that help is needed. Include backup battery operation to ensure help is summoned in a power outage.
    - a. Locate receiver console where indicated.
    - b. Locate receiver console at \_\_\_\_\_.
- D. Fire Service Controls: Provide fire service to ensure lift is not used for emergency egress and does not impede emergency egress stairway traffic.
1. When fire alarm is activated, lift shall not operate if platform is folded and key is turned off.
  2. If the lift is in use when fire alarm is activated, the lift shall travel only in one direction - towards the landing that is designated as the emergency exit.

## 2.4 DRIVE SYSTEM

- A. Drive System Components: Provide wheelchair drive system components, including the motor, gearbox and controller, contained within a locked drive system cabinet.
  - 1. Drive system cabinet: Steel cabinet, 42 inches (1050 mm) high x 20 inches (520 mm) wide x 11 inches (270 mm) deep. Located at the top landing of the wheelchair lift system; locked to prevent unauthorized access.
  - 2. Drive system motor: 1 HP, direct current, 180 volts.
  - 3. Drive system motor: 1.5 HP, direct current, 180 volts.
    - a. Fit motor with an electrically released spring-set brake to stop automatically at designated landings.
  - 4. Provide ratchet wrench for emergency drive system operation during power failure.
  - 5. Gearbox: Drive system features a toothed belt drive from the motor to a sealed lubrication gearbox with 64:1 reduction. The gearbox output shaft drives the cog which engages the steel crimps on the wire haul rope.
  - 6. Power supply: As indicated above. Locate disconnect and thermal overload device on the side of the drive cabinet.

## 2.5 RAIL SYSTEM

- A. Support Tower: Structural steel, self-supporting, free-standing support structure.
- B. Support Tower: Stainless steel, self-supporting, free-standing support structure.
  - 1. Provide tower framing that requires vertical-load support only at base and lateral support only at landing levels.
- C. Guide-Rails: Tubular steel.
- D. Guide-Rails: Tubular stainless steel, ASTM A 312, Grade 316, electro-polished finish.
  - 1. Two 2-inch (50 mm) OD steel tubes spaced 28 inches (711 mm) apart vertically. The height of the lower tube varies with the slope of stairway and the size of the platform. Upper tube slotted on the underside to allow platform carriage attachment to the wire haul rope inside.

2. Tubes shall run parallel to stair flights and horizontal landings throughout the length of travel.
  3. Provide a third horizontal stabilizer tube to guide and stabilize the platform, when the platform must travel horizontally or on inclined sections of less than 20 degrees to the horizontal. Provide stabilizer tube slotted on the side to engage a roller on the platform and provide a triangle of support.
  4. Provide direct mount vertical steel distance struts, spaced as required, to maintain vertical separation distance of guide-rail tubes. Weld guide-rails to distance struts.
- E. Wire Haul Rope: Contained within tubular guide-rails. Galvanized steel core, 8 mm diameter with breaking strength 9460 pounds (4300 kg) with steel crimps. Delrin plastic spheres are molded over the crimps and hold the rope in place within the tubes. Three crimps engage the drive cog at the same time. Plastic "knuckles" threaded over the lower portion of the rope perform the overspeed brake function.
- F. Overspeed Safety: Provide an overspeed safety, located at the bottom of the guide-rail assembly, containing a mechanical overspeed sensor and lock, with electrical drive cut-out protection.
- G. Handrails: Provide additional handrails in compliance with code at the standard handrail height for pedestrian use, in same plane as guide-rail tubes. Match material and finish of guide-rail tube.
- H. Matching Handrails: Provide matching handrails at opposite side of stairway and for other areas of the building where indicated. Match material and finish of guide-rail tube.
- I. Infill panels: Provide infill panels at locations indicated.
1. Panels: Woven wire mesh, 2 inch (50 mm) square, welded to a 1 inch (25 mm) angle frame. Painted finish matching guide-rail system.
  2. Panels: Design indicated, painted finish matching guide-rail system.
  3. Panels: \_\_\_\_\_

## 2.6 FINISHES

- A. All Exposed Steel Members: Electrostatically applied baked powder coating.
  - B. All Exposed Steel Members: Electrostatically applied baked powder coating paint finish, unless otherwise indicated.
    - 1. Color: As selected by the Architect from manufacturer's full range, standard and non-standard.
    - 2. Color: Custom color to be selected from Garaventa.
    - 3. Color: Cool Grey.
    - 4. Color: Sahara Sand.
    - 5. Color: Evening Rose.
    - 6. Color: Teal Green.
    - 7. Color: Pacific Blue.
  - C. All Exposed Steel Members: Electro-polished finish stainless steel.
  - D. Zinc-Plated Finish: Hot-dipped galvanized; use for the following components:
    - 1. Drive cabinet.
    - 2. Platform.
    - 3. Platform control panel hood.
  - E. Stainless Steel Finish: Electro-polished; use for the following components:
    - 1. Drive cabinet.
    - 2. Under-platform touch sensitive plate.
    - 3. Guide-rail distance struts.
    - 4. Towers.
    - 5. Call stations.
    - 6. Call station pedestals.
    - 7. Audio/visual alert signals.
  - F. Fasteners for Exterior Use: Stainless steel or hot-dipped zinc-plated.
  - G. Provide a vinyl platform cover.
- 2.7 EMERGENCY EVACUATION CHAIRS

- A. Emergency Evacuation Chairs: Housed in steel storage cabinet located adjacent to each landing floor above ground level. Comply with the following:
  - 1. Type: Garaventa Evacu-Trac.
  - 2. Capacity: 1 person, 360 pounds (163 kg) with minimum 1.5 times safety factor.
  - 3. Approval: Tested and approved by recognized independent testing lab.
  - 4. Maximum stair angle: 40 degrees.
  - 5. Descending speed: Maximum 4 feet (1.2 m) per second.
  - 6. Speed governor: Piston brake.

7. Stop brake: Manual mechanical brake, attendant must release for descent.
8. Storage: Steel cabinet, Plexiglass door panel.
9. Cabinet dimensions (approximate): 21.5 inches (545 mm) wide x 11 inches (275 mm) high x 44.5 inches (275 mm) deep.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Before starting wheelchair lift installation, inspect substrates and supporting structures as constructed, verify critical dimensions, and examine conditions under which wheelchair lift work is to be installed.
- B. Do not proceed with wheelchair lift installation until unsatisfactory conditions have been corrected in a manner acceptable to the installer.
- C. Installation constitutes acceptance of existing conditions and responsibility for satisfactory performance.

### 3.2 INSTALLATION

- A. General: Comply with manufacturer's instructions and recommendations for work required during installation.
  1. Comply with requirements of ASME/ANSI A17.1 for inclined wheelchair platform lift design, materials, methods of construction and installation.
  2. Comply with requirements of CAN/CSA-B355-M92 for inclined wheelchair platform lift design, materials, methods of construction and installation.
  3. Comply with the National Electrical Code for electrical work required during installation.
  4. Perform work with competent, skilled workers under the direct control and supervision of the wheelchair lift installer's experienced foreman.
- B. Supply in ample time for installation by other trades, inserts, anchors, bearing plates, brackets, supports, and bracing including all setting templates and diagrams for placement.

- C. Coordination: Coordinate wheelchair lift work with the work of other trades, for proper time and sequence to avoid construction delays.
- D. Operation: Install drive machines, guide-rails, controls, car operating controls and all equipment and accessories to provide a quiet, smoothly operating installation, free from side sway, oscillation or vibration.
- E. Alignment: Coordinate platform travel and positioning, for accurate alignment and minimum clearance between platform and floor level at each stop and landing served.
- F. Leveling: Adjust stops for accurate leveling at each landing, within specified tolerances.
- G. Lubricate operating parts of each lift, including drive system mechanisms, guide-rail systems, platform ramps, safety devices, and hardware.

### 3.3 FIELD QUALITY CONTROL

- A. Acceptance Testing: Upon completion of the wheelchair lift installation and before permitting use of lift system, perform acceptance tests as required and recommended by code and governing authorities.
  - 1. Advise Owner and governing agencies in advance of dates and times tests are to be performed on the wheelchair lift.
- B. Cycle Testing: Test operate unloaded lift, continuously between lowest and highest landings served. Perform complete lift operation cycles, including ramp operation from the platform controls and call stations for a minimum period of 30 minutes. Adjust controls, stops and other devices for accurate landings and operation of system after completion of test.
- C. Make necessary adjustments of operating devices and equipment to ensure wheelchair lift operates smoothly and accurately.

### 3.4 CLEANING

- A. Before final acceptance, remove protection from finished surfaces and clean surfaces in accordance with

manufacturer's recommendations for type of material and finish provided.

- B. At completion of wheelchair lift work, remove tools, equipment, and surplus materials from site. Clean work areas. Remove trash and debris.

END OF SECTION