SECTION 14200

ELEVATORS

PART 1 - GENERAL

1.1 SUMMARY

A. This section provides standards for elevator equipment but it is not intended to cover all aspects of design, but rather to act as a minimum standard for use by qualified independent professionals.

1.2 REFERENCES

1.3 SYSTEM PERFORMANCE REQUIREMENTS

A. Non-proprietary Design:

1. Equipment design shall be non-proprietary. The final elevator installation shall be a design that is able to be maintained by any licensed elevator maintenance company without the need to purchase or lease diagnostic devices or special tools or software from the original equipment manufacturer.

B. Elevator Type, Quantity of, Configuration and Construction:

1. Elevator capacity, speed, car size, construction and door configuration shall be appropriate for the specific location and uses anticipated and other potential uses.

2. Each building or area shall have a quantity of elevators that is adequate to properly serve each level with the building at maximum occupancy by currently accepted architectural standards. Each area serviced shall have an alternative elevator where feasible to be used in cases of maintenance and unscheduled service outages.

3. Type of each elevator (Hydraulic, Roped Hydraulic, Machine Room Less, Geared Traction or Gearless Traction) shall be determined appropriately by accepted standards based on worst case maximum occupancy, usage, passenger and or freight traffic density, duty cycle to provide good performance, long life, low maintenance and excellent customer service for the life of the building.

C. Control Systems:

1. Controller shall be microprocessor-based and housed in an enclosed cabinet with hinged access doors. It shall include enhanced diagnostic capability to monitor, store and recall elevator malfunctions. It shall be field programmable having operation features such as adjustable door hold open times, motor-generator shutdown timer, and other industry standard and appropriate features and adjustments.

2. The manufacturer of the elevator control system shall make available to local service companies or to the UC Denver for use by service organizations of their choice, test, diagnostic and service tools necessary for programming, monitoring, trouble shooting, technical support and servicing.

3. Manufacturers of elevator control systems that will not provide diagnostic tools as described above shall not be permitted to bid those types of systems. Instead, they shall be required to provide elevator control systems which incorporate an on board diagnostic station which requires no extra equipment for programming, servicing and troubleshooting.
such as made by Motion Control Engineering Model HMC-1000 (PHC) or VVMC-1000 or equal.

4. For both types of systems include the following features and options - secured access to computer diagnostic use, modem communication link with controller, UL and CSA labels, motor limit timer, valve limit timer and solid state with reduced voltage starting.

D. Door Operators:

1. New and retrofit operators shall be closed-loop, high speed, heavy-duty master door operator with heavy-duty linkage, drive blocks and components complying with all appropriate codes and requirements and shall include the following features and options - ball bearing, belt driven, solid state controller, control of operator from car top, adjustable closing torque, speed and timing to meet code requirements, nudging and reduced speed closing.

E. Handicapped Standards/Other Uses:

1. Elevators shall comply with the Americans with Disabilities Act (ADA) and other appropriate and applicable codes or requirements.

2. At least one elevator shall be for moving freight or configured for combination freight/passenger.

F. Special Mechanical Traits:

1. An override of the alarm to accommodate cleaning with "door hold key" switch.

2. All keyed controls shall have Best Peak keyway 7 Pin cylinders. All elevators will be keyed alike. Coordinate with UC Denver Fac. Ops., through the UC Denver Project Manager, for codes.

3. All elevators shall have vandal-resistant buttons, indicators and panels. All indicator lights shall be long life, ease of maintenance design.

1.4 DEFINITIONS

1.5 SUBMITTALS

A. Product Documentation:

1. Operating and Maintenance Manuals: Four (4) each Operating and Maintenance Manuals that will include a thorough explanation of each operating feature, all operating instructions and emergency and safety information. Included will be recommended inspection, preventative maintenance, lubrication and adjustment schedules and instructions, identification of and sources for any special or unusual tools or materials, a list and specifications for each recommended lubricant and where, when and how each is to be used and any other information appropriate for operation, inspection, service and maintenance for optimum performance.

2. Wiring and Schematic Drawings: Four (4) sets of “as installed” straight line wiring and schematic drawings showing electrical connections of all new and/or existing equipment. Drawings shall name, symbol and locate each relay, switch, contact and other component and apparatus. One set shall be reproducible mylars or equivalent. One set shall be installed in the elevator machine room in permanent protective covering.
3. Parts Catalogs: Four (4) sets of complete parts catalogs including manufacturer’s recommended spare parts lists. Parts catalogs will include clear identification and illustration of each functional part, exploded parts views, identification of part numbers and assembly numbers including replaceable electrical and electronic parts and circuit boards.

B. Before final acceptance of the installation, Contractor shall submit the following to the UC Denver Project Manager:

1. Records: All Product Documentation, completed punch list, inspection and correction records. Acceptance inspection will be by an inspector Certified as meeting the requirements of ASME QEI-1 as required by ANSI/ASME A17.1.

2. Service Keys:
   a. All elevators will be keyed alike with Best Peak keyway 7 Pin cylinders.
   b. Contractor shall provide ten (10) sets of keys to the UC Denver Project Manager.

3. Diagnostic Test Equipment with Instructions: Necessary diagnostic test devices with complete documentation and supporting information for effective use of and interpretation of data and troubleshooting and adjustment of the systems.

1.6 QUALITY ASSURANCE

A. Quality Assurance shall be provided in accordance with Division 1, including the following:


1.7 DELIVERY, STORAGE, AND HANDLING

A. Delivery, storage, and handling shall be provided in accordance with Division 1.

1.8 WARRANTY

A. Product and system warranties shall be provided in accordance with Division 1, including the following:

1. Warranty: Warrant equipment material and workmanship for one year from date of acceptance of the completed installation.

2. Maintenance: Include one year new installation full maintenance service in tender (to run concurrently with warranty period).

1.9 TEMPORARY USE

A. When one or more elevators are near completion and ready for use, the General Contractor may accept elevators for interim use and place in service prior to substantial completion of project and acceptance by Owner.

B. During this period the General Contractor is responsible for all protection of elevator finishes and for monthly preventative maintenance.
C. General Contractor may pay elevator contractor a mutually agreed upon monthly amount per elevator for temporary use and preventive maintenance of elevators.

D. Use by General Contractor shall not diminish UC Denver one year warranty period.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

2.2 MATERIALS, GENERAL

A. Hydraulic Elevator Equipment:

1. Operation: Microprocessor based operation shall be provided. Simplex operation shall be provided for a single car. Duplex operation shall be provided for a two car group. Group operation shall be provided for a group of three or more cars.

   a. Performance Requirements:

    1) Speed: Provide contract speed, ±10%, under any loading condition or direction of travel.

    2) Stopping accuracy: Provide stopping accuracy of ±¼” under any loading condition or direction of travel.

    3) Door operating times: Provide minimum door operating times allowable by code. Base door operating times on high-speed, heavy-duty door operating equipment.

    4) Floor to Floor performance time: Provide the following floor to floor performance times, from the instant the car doors begin to close on one floor, until elevator is stopped level with the next successive floor, up or down, with the doors about ¾ open, (based on 125 FPM elevator speed).


<table>
<thead>
<tr>
<th>Floor Height</th>
<th>Center Opening 4'-0&quot; Doors</th>
<th>Side Opening 4'-0&quot; Doors</th>
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<tbody>
<tr>
<td>12'-0&quot;</td>
<td>15.0 sec.</td>
<td>17.0 sec.</td>
</tr>
<tr>
<td>12'-6&quot;</td>
<td>15.5 sec.</td>
<td>17.5 sec.</td>
</tr>
<tr>
<td>13'-0&quot;</td>
<td>16.0 sec.</td>
<td>sec.</td>
</tr>
</tbody>
</table>

   5) Provide Horizontal Acceleration within the car during all riding and door operating conditions of not more then 15 mg peak to peak measured in the 1 - 10 Hz range.

   6) Provide constant acceleration and deceleration of not more than 3 feet/second², with an initial ramp between 0.5 and 0.75 second.

   7) Provide sustained jerk of not more than 6 feet/second³.

2. Machine Room and Equipment: Machine Room shall be located at the lowest hoistway level directly adjacent to or as near as possible to the hoistway. Room shall meet or exceed all code requirements for safety, access and convenience.

   a. Pump Unit: Provide the following features:
1) Positive displacement pump.
2) Induction Motor.
3) Master type control valve.
4) Oil reservoir with protected vent opening, oil gage and outlet strainer.
5) Shut off valve.
6) Provide means to maintain oil at operating temperature.
7) Provide removable sound isolating enclosure and drip pan. Mount entire unit on isolating pads.

b. Controller: Provide the following features:
   1) Microprocessor based controller with noise suppression devices.
   2) Provide reduced voltage starting circuits.
   3) Isolate inputs from external devices (such as push buttons) with opto-isolation modules.
   4) Securely mount all assemblies on a substantial, self-supporting steel frame. Completely enclose equipment with covers and provide means to prevent overheating.

c. Muffler: Design to dampen and absorb pulsation and noise in the flow of hydraulic fluid. Mount in discharge oil line near pump unit.

d. Shut off valve: Provide manual valve in line adjacent to pump unit.

e. Piping: Provide piping with victaulic couplings between pump unit and cylinder.

3. Hoist Way and Pit Equipment:
   a. Guide Rails: Provide guide rails, with brackets for attachment to building structure. Design system to be suitable for class of elevator, car weight, seismic requirements and application.
   b. Cylinder: Seamless steel pipe with unit type packing and oil collection means. Wrap cylinder with protective wrapping.
   c. Plunger: Polished seamless steel tubing or pipe. Isolate from car frame.
   d. Well Hole and Casing: Elevator contractor to be responsible for well hole and casing. Provide steel casing, as required to maintain hole. Install PVC inner casing inside of steel casing. Fill area between inner and outer casings with loose, clean sand. Install wrapped cylinder inside PVC casing. Fill space between PVC casing and cylinder with Union-Gard 160.
   e. Jack Support: Provide steel channels to support jack unit and buffers and transfer loads to building structure.
   f. Buffers: Spring type, meeting code requirements.
g. Roped Hydraulic Equipment: Roped hydraulic equipment may be provided if performance criteria is met. Provide 8 X 19 hoist ropes, sheaves with roller bearings and adjustable shackles.

h. Provide effective system of recycling hydraulic oil leakage.

4. Corridor Entrances:
   a. Provide complete entrance at each landing with doors, sill, hangars, tracks, locks, drive pickup system and linkage. Entrance assemblies to bear 1 1/2 hour Underwriter's Laboratory fire rated label. Provide two gibs per door pane.

5. Car Equipment:
   a. Provide welded or bolted rolled or formed steel channel construction.
   b. Guides: Provide 4 sets of roller guides for passenger and service elevators.
   c. Platform: Provide isolated type constructed of steel, or wood which is fireproofed on the underside.
   d. Car Doors: Provide as specified for corridor entrances. Provide two gibs per door panel.
   e. Door Operator: Provide high-speed, heavy-duty, closed-loop master door operator with heavy duty linkage, drive blocks and components.
   f. Door Reopening Device: Infrared screen detector device, extending full height of door panels.

6. Car Enclosure:
   a. Car Shell: Provide steel shell with minimum clear interior height of 8'-0".
   b. Provide stainless steel, satin finish car front panels, door panels and transom.
   c. Design interior finish to be serviceable for elevator use. Passenger elevators should provide serviceable finishes in keeping with other building finishes. Service elevators should have finishes to assure utility and low maintenance is provided.

7. Signals:
   a. Corridor Push Buttons: Provide illuminating push buttons with stainless steel, satin finish faceplates, at each landing with engraved fire fighters’ instructions and fire exiting instructions. Illumination to extinguish when elevator call has been answered. Provide a single push button riser for a group of one or two elevators. Provide two push buttons risers for a group of three or more elevators. Buttons, switches, indicators, signals and signage to meet ADA and any other appropriate requirements.
   b. Car Panels: Provide one car panel, at each entrance, for elevators with side opening doors. Provide two car panels, at each entrance, for elevators with center opening doors. Car panels to contain illuminating push buttons for each floor served, plus operating controls and switches required for lights, fan, special operating modes, etc. Buttons, switches, indicators, signals and signage to meet
ADA and any other appropriate requirements. Include hands-free two-way communication device.

c. Hall Lanterns: Provide a hall lantern at each landing entrance of each elevator, to indicate elevator travel direction. Illuminate lantern and sound gong a minimum of 4 seconds prior to elevator arrival at floor. Lantern to stay illuminated until elevator doors begin to close. Indicators, signals and signage to meet ADA and any other appropriate requirements.

B. Geared Traction Elevator Equipment:

1. Operation: Microprocessor based operation shall be provided. Simplex operation shall be provided for a single car. Duplex operation shall be provided for a two car group. Group operation shall be provided for a group of three or more cars.

   a. Performance requirements:

      1) Speed: Provide contract speed, ±3%, under any loading condition or direction of travel.

      2) Stopping Accuracy: Provide stopping accuracy of ±¼” under any loading condition or direction of travel.

      3) Door Operating Times: Provide minimum door operating times allowable by code. Base door operating times on high-speed, heavy-duty door operating equipment.

      4) Floor to Floor Performance Time: Provide the following floor to floor performance times, from the instant the car doors begin to close on one floor, until elevator is stopped level with the next successive floor, up or down, with the doors about ¾ open, (based on 350 FPM elevator speed). Performance time shall be appropriately adjusted for other speeds.

       | Floor | Center Opening 4'-0” Door | Side Opening Height 4'-0” |
       |-------|---------------------------|---------------------------|
       | 12'-0”| 8.5 sec.                  | 10.5 sec.                 |
       | 12'-6 | 9.0 sec.                  | 11.0 sec.                 |
       | 13'-0”| 9.5 sec.                  | 12.0 sec.                 |

      5) Provide Horizontal Acceleration within the car during all riding and door operating conditions of not more then 15 mg peak to peak measured in the 1 - 10 Hz range.

      6) Provide constant acceleration and deceleration of not more than 5 feet/second² with an initial ramp between 0.5 and 0.75 second.

      7) Provide sustained jerk of not more than 8 feet/second³.

2. Machine Room and Equipment: Machine Room shall be located directly above the top of the hoistway and meet or exceed all code requirements for safety, access and convenience.

   a. Hoist Machine: Provide the following features:

      1) Worm geared traction type, with isolated bed plate.

      2) Motor designed for elevator operation, (high torque, low RPM).
3) D. C. Brake.
4) Direct drive, digital, closed-loop velocity encoder.

b. Controller: Provide the following features:
1) Microprocessor based controller with noise suppression devices.
2) Provide AC VVVF motor control.
3) Isolate inputs from external devices (such as push buttons) with opto-isolation modules.
4) Securely mount all assemblies on a substantial, self-supporting steel frame. Completely enclose equipment with covers and provide means to prevent overheating.

c. Solid State Power Conversion and Regulation Unit: Provide the following features:
1) Design unit to limit current, suppress noise and prevent transient voltage feedback into building power supply.
2) Isolate unit to minimize noise and vibration transmission.
3) Provide isolation transformers, filter networks and choke inductors.

d. Governor: Provide centrifugal type with bi-directional electrical shutdown switches.

3. Hoist Way and Pit Equipment:

a. Guide Rails: Provide guide rails, with brackets for attachment to building structure. Design system to be suitable for class of elevator, car weight, seismic requirements and application.

b. Buffers: Oil type with blocking and support. Provide switch on buffer to limit elevator speed if buffer is compressed.

c. Counterweight: Steel frame with metal filler weights, guided by roller guides.

d. Compensation: (If required). Encapsulated chain type with pit guide.

e. Hoist and Governor Ropes: 8 X 19 or 8 X 25 Seale construction, traction steel type. Governor rope to suit manufacturer’s specification.

4 Corridor Entrances:

a. Provide complete entrance at each landing with doors, sill, hangars, tracks, locks, drive pickup system and linkage. Entrance assemblies to bear 1 1/2 hour Underwriter's Laboratory fire rated label. Provide two gibs per door panel.

5. Car Equipment:

a. Provide welded or bolted rolled or formed steel channel construction.
b. Guides: Provide 4 sets of roller guides for passenger and service elevators. Provide slide guides with replaceable liners for goods elevators.

c. Platform: Provide isolated type constructed of steel, or wood which is fireproofed on the underside.

d. Safety Device: Flexible Guide Clamp type B only.

e. Car Doors: Provide as specified for landing entrances. Provide two gibs per door panel.

f. Door Operator: Provide high-speed, heavy-duty, closed-loop master door operator with heavy duty linkage, drive blocks and components.

g. Door Reopening Device: Infrared screen detector device, extending full height of door panels.

6. Car Enclosure:

a. Car Shell: Provide steel shell with minimum clear interior height of 8'-0" minimum.

b. Provide stainless steel, satin finish car front panels, door panels and transom.

c. Design interior finish to be serviceable for elevator use. Passenger elevators should provide serviceable finishes in keeping with other building finishes. Provide removable panels for easy replacement. Service and goods elevators should have finishes to assure utility and low maintenance is provided.

7. Signals:

a. Corridor Push Buttons: Provide illuminating push buttons with stainless steel, satin finish faceplates, at each landing with engraved fire fighter's instructions and fire exiting instructions. Illumination to extinguish when corridor call has been answered. Provide a single push button riser for a group of one or two elevators. Provide two push buttons risers for a group of three or more elevators. Buttons, switches, indicators, signals and signage to meet ADA and any other appropriate requirements.

b. Car Panels: Provide one car panel, at each entrance, for elevators with side opening doors. Provide two car panels, at each entrance, for elevators with center opening doors. Car panels to contain illuminating push buttons for each floor served, plus operating controls and switches required for lights, fan, special operating modes, etc. Buttons, switches, indicators, signals and signage to meet ADA and any other appropriate requirements. Include hands-free two-way communication device.

c. Hall Lanterns: Provide a hall lantern at each landing entrance of each elevator, to indicate elevator travel direction. Illuminate lantern and sound gong a minimum of 4 seconds prior to elevator arrival at floor. Lantern to stay illuminated until elevator doors begin to close. Indicators, signals and signage to meet ADA and any other appropriate requirements.

B. Gearless Traction Elevator Equipment:
1. Operation: Microprocessor based operation shall be provided. Simplex operation shall be provided for a single car. Duplex operation shall be provided for a two car group. Group operation shall be provided for a group of three or more cars.

   a. Performance requirements:

   1) Speed: Provide contract speed, ±3%, under any loading condition or direction of travel.

   2) Stopping Accuracy: Provide stopping accuracy of ±¼” under any loading condition or direction of travel.

   3) Door Operating Times: Provide minimum door operating times allowable by code. Base door operating times on high-speed, heavy-duty door operating equipment.

   4) Floor to Floor Performance Time: Provide the following floor to floor performance times, from the instant the car doors begin to close on one floor, until elevator is stopped level with the next successive floor, up or down, with the doors about ¾ open, (based on 500 FPM elevator speed). Performance time shall be appropriately adjusted for other speeds.

   | Floor Doors | Center Opening 4'0" Doors | Side Opening Height 4'0"
   |-------------|---------------------------|---------------------------
   | 12'-0"      | 8.0 sec.                  | 10.0 sec.                 |
   | 12'-6"      | 8.5 sec.                  | 10.5 sec.                 |
   | 13'-0"      | 9.0 sec.                  | 11.0 sec.                 |

   5) Provide Horizontal Acceleration within the car during all riding and door operating conditions of not more then 15 mg peak to peak measured in the 1 - 10 Hz range.

   6) Provide constant acceleration and deceleration of not more than 5 feet/second² with an initial ramp between 0.5 and 0.75 second.

   7) Provide sustained jerk of not more than 8 feet/second³.

2. Machine Room and Equipment: Machine Room shall be located directly above the top of the hoistway and meet or exceed all code requirements for safety, access and convenience.

   a. Hoist Machine: Provide the following features:

   1) Gearless traction type, with isolated bed plate.

   2) Motor designed for elevator operation, (high torque, low RPM).

   3) D. C. Brake.

   4) Direct drive, digital, closed-loop velocity encoder.

   b. Controller: Provide the following features:

   1) Microprocessor based controller with noise suppression devices.

   2) Provide static conversion DC or AC VVVF motor control.
3) Isolate inputs from external devices (such as push buttons) with opto-isolation modules.

4) Securely mount all assemblies on a substantial, self-supporting steel frame. Completely enclose equipment with covers and provide means to prevent overheating.

c. Solid State Power Conversion and Regulation Unit: Provide the following features:

1) Design unit to limit current, suppress noise and prevent transient voltage feedback into building power supply.

2) Isolate unit to minimize noise and vibration transmission.

3) Provide isolation transformers, filter networks and choke inductors.

d. Governor: Provide centrifugal type with bi-directional electrical shutdown switches.

3. Hoist Way and Pit Equipment:

a. Guide Rails: Provide guide rails, with brackets for attachment to building structure. Design system to be suitable for class of elevator, car weight, seismic requirements and application.

b. Buffers: Oil type with blocking and support. Provide switch on buffer to limit elevator speed if buffer is compressed.

c. Counterweight: Steel frame with metal filler weights, guided by roller guides.

d. Compensation: Wire rope type with pit guide sheave.

e. Hoist and Governor Ropes: 8 X 19 or 8 X 25 Seale construction, traction steel type. Governor rope to suit manufacturer’s specification.

4. Corridor Entrances:

a. Provide complete entrance at each landing with doors, sill, hangars, tracks, locks, drive pickup system and linkage. Entrance assemblies to bear 1-1/2 hour Underwriter's Laboratory fire rated label. Provide two gibs per door panel.

5. Car Equipment

a. Provide welded or bolted rolled or formed steel channel construction.

b. Guides: Provide 4 sets of 6” roller guides for passenger and service elevators. Provide slide guides with replaceable liners for goods elevators.

c. Platform: Provide isolated type constructed of steel, or wood which is fireproofed on the underside.

d. Safety Device: Flexible Guide Clamp type B only.

e. Car Doors: Provide as specified for landing entrances. Provide two gibs per door panel
f. Door Operator: Provide high-speed, heavy-duty, closed-loop master door operator with heavy duty linkage, drive blocks and components.

g. Door Reopening Device: Infrared screen detector device, extending full height of door panels.

6. Car Enclosure:
   a. Car Shell: Provide steel shell with minimum clear interior height of 8'-0" minimum.
   b. Provide stainless steel, satin finish car front panels, door panels and transom.
   c. Design interior finish to be serviceable for elevator use. Passenger elevators should provide serviceable finishes in keeping with other building finishes. Provide removable panels for easy replacement. Service and goods elevators should have finishes to assure utility and low maintenance is provided.

7. Signals:
   a. Corridor Push Buttons: Provide illuminating push buttons with stainless steel, satin finish faceplates, at each landing with engraved firefighter's instructions and fire exiting instructions. Illumination to extinguish when corridor call has been answered. Provide a single push button riser for a group of one or two elevators. Provide two push buttons risers for a group of three or more elevators.
   b. Car Panels: Provide one car panel, at each entrance, for elevators with side opening doors. Provide two car panels, at each entrance, for elevators with center opening doors. Car panels to contain illuminating push buttons for each floor served, plus operating controls and switches required for lights, fan, special operating modes, etc. Include hands-free two-way communication device.
   c. Hall Lanterns: Provide a hall lantern at each landing entrance of each elevator, to indicate elevator travel direction. Illuminate lantern and sound gong a minimum of 4 seconds prior to elevator arrival at floor. Lantern to stay illuminated until elevator doors begin to close.

PART 3 - EXECUTION

3.1 EXAMINATION
   A. Examination of the condition of the substrate to receive the work shall be done in accordance with Division 1.

3.2 INSTALLATION, GENERAL
   A. Installation Requirements:
      1. Hydraulic oil in reservoir shall be drained, filtered and replaced in reservoir.
      2. New in-line shut-off valve shall be installed between reservoir and new control valve whenever control valve is replaced.
      3. Control valve shall be capable of controlling elevator to a stopping/starting and leveling accuracy of 1/8 inch.
4. Pressure relief setting shall be 125 percent of working pressure.

5. The hydraulic line system including plunger and cylinder shall be pressure tested following adjustment of pressure relief valve.

6. Installer shall be required to repair or replace parts and/or materials that fail as a result of pressure testing.

7. Control valves must be equal to Maxton Type UC1A of EECO Type UV7.

B. Installation:

1. Provide complete installation, testing and appropriate inspections and reports by trained and experienced professionals.

2. Provide proof of appropriate insurance coverage.

3. Provide coordination with and guarantee timetable and completion and acceptance dates to the UC Denver, with penalties as provided in the contract.

3.3 TESTING, CLEANING, AND CERTIFICATION

3.4 COMMISSIONING (DEMONSTRATION)

3.5 SCHEDULES

END OF SECTION
SECTION 14400

LIFTS

PART 1 - GENERAL

1.1 SUMMARY
A. This section provides standards for lifts.

1.2 REFERENCES

1.3 SYSTEM PERFORMANCE REQUIREMENTS
A. Wheelchair Lifts:
   1. The use of wheelchair lifts at certain locations are only acceptable if no other means of access is available. Approval of the system is required by the UC Denver Fac. Ops. and CBO through the UC Denver Project Manager

1.4 DEFINITIONS

1.5 SUBMITTALS

1.6 QUALITY ASSURANCE
A. Quality Assurance shall be provided in accordance with Division 1, including the following:
   1. Regulatory Requirements: Design layout, equipment, and installation must comply with ANSI/ASME A17.1 and ADA.

1.7 DELIVERY, STORAGE, AND HANDLING
A. Delivery, storage, and handling shall be provided in accordance with Division 1.

1.8 WARRANTY
A. Product and system warranties shall be provided in accordance with Division 1.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

2.3 MATERIALS, GENERAL

PART 3 - EXECUTION

3.1 EXAMINATION

3.2 INSTALLATION, GENERAL

3.3 TESTING, CLEANING, AND CERTIFICATION

3.4 COMMISSIONING (DEMONSTRATION)

3.5 SCHEDULES
END OF SECTION