STELLAR-VATOR
SECTION 14205 RESIDENTIAL HYDRAULIC ELEVATORS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Residential Hydraulic Elevators.

1. These specifications are intended to cover the complete installation of one (1) SV-750 or SV-950 residential elevator. The lift is to be installed in a first class workmanlike manner and is to include all work and materials in accordance with specifications and installation drawings. The installation shall have a limited ten year warranty against defective mechanical components. It shall be in compliance with the applicable sections of the Safety Code for Elevators and Escalators ASME A17.1 and all local codes having jurisdiction.

1.2 RELATED SECTIONS

A. Section 03300 - Cast-in-Place Concrete: Concrete for elevator machine foundation and pit.

B. Section 06100 - Rough Carpentry: Hoistway framing, and building-in hoistway door frames.

C. Section 05500 - Metal Fabrications:

1. Miscellaneous guiderail and other supports.

2. Elevator pit ladder if pit is 36 inches deep or more.

3. Knockouts and sleeves from elevator hoistway to machine room for oil and electrical lines.

D. Section 07100 - Waterproofing and Damp proofing: Waterproof elevator pit.

E. Section 07724 - Roof Hatches: Smoke venting hatch at top of hoistway.

F. Section 08100 - Metal Doors and Frames: Hoistway doors.

G. Section 08210 - Wood Doors: Hoistway doors.

H. Section 08310 - Access Doors and Panels: Fire rated access doors into hoistway.

I. Section 08710-Door Hardware.

J. Section 09260 - Gypsum Board Assemblies: Gypsum shaft walls.

K. Section 09650 - Resilient Flooring: Floor finish in cab.

L. Section 09680 - Carpet: Floor finish in cab.

M. Section 09900 - Paints and Coatings: Interior transparent wood finish in cab.

N. Section 13850 - Detection and Alarm: Fire and smoke detectors and interconnecting devices.

O. Division 16-Electrical:

1. Electrical characteristics and wiring connections.

2. Electrical service to lockable fused disconnect in elevator machine room.

3. Electrical service for machine room, machine room convenience outlets, and lighting in elevator pit.

4. Telephone service to machine room.

1.3 REFERENCES

A. ASME A17.1 Part 5.3 - Safety Code for Elevators and Escalators, Private Residence elevators.

B. ASMEA17.2- Inspector's Manual for Electric Elevators.

C. (ANSI) American National Standards Institute

D. CSA B44.1/ASME A17.5, elevator and escalator electrical equipment requirements.

E. NFPA 70 - National Electric Code.

1.4 DESIGN / PERFORMANCE REQUIREMENTS

A. Conform with ASME A17.1 and to applicable code for manufacture and installation of elevator system.

B. Products Requiring Electrical Connection: Listed and classified by Underwriters Laboratories, Inc., as suitable for purpose specified and indicated.

C. Verify requirements of the local authority having jurisdiction, obtain and pay for necessary municipal and state permits and inspections as required, and make tests as called for by the regulations of such authorities.

1.5. WORK PERFORMED BY OTHERS

The following preparatory work that must be performed in conjunction with the elevator installation is to be done by others and is part of the work of other sections.

A. Hoistway

1. A suitable fire rated hoistway of proper size and construction conforming to the applicable building codes and elevator construction drawings.

2. Provide adequate guide rail supports able to withstand rail forces shown on layout drawings.

3. Provide waterproof pit of adequate design to withstand loads shown on layout drawings.

4. Provide adequate knockouts and sleeves from elevator hoistway to machine room for oil and electrical lines.

5. Provide knockouts for hall stations at each landing.

6. Provide all wall patching, painting and grouting required.

7. Provide finish painting of hoistway doors and frames.

8. Hoistway doors, frames and door hardware by others

1.6 SUBMITTALS

A. Submit under provisions of Section 01300.

B. Product Data: Manufacturer's data sheets on each product to be used, including:

1. Preparation instructions and recommendations.

2. Storage and handling requirements and recommendations.

3. Installation methods.

C. Shop Drawings: Indicate the following information:

1. Section view, floor heights, location of pit equipment, location and means for disconnect.

2. Motor and pump, valves, piping, controller, and other component locations.

3. Car, guide rails, and other components in hoistway.

4. Rail bracket spacing; maximum loads imposed on guide rails requiring load transfer to building structural framing.

5. Individual weight of principal components; load reaction at points of support.

6. Clearances and over travel of car.

7. Locations in hoistway and machine room of connections for car light and telephone.

8. Location and sizes of required access doors, doors, and frames.

9. Electrical characteristics and connection requirements.

10. Show arrangement of equipment in machine room if applicable so moving elements and other equipment can be removed for repairs or replaced without disturbing other components. Arrange equipment for clear passage through access door.

D. Selection Samples: For each finish product specified, two complete sets of color chips representing manufacturer's full range of available colors and patterns.

E. Verification Samples: For each finish product specified, two samples, minimum size 3 inches (76 mm) by 5 inches (127 mm), representing actual product, color, and patterns.

F. Manufacturer's Certificates: Certify products meet or exceed specified requirements.

G. Closeout Submittals: Provide manufacturer's maintenance instructions that include recommendations for periodic checking and adjustment and periodic cleaning and maintenance of all elevator components.

H. Layout drawings shall be submitted showing the general arrangement of the elevator equipment including dimensions, clearances, location of machine equipment, and all loads and reactions imposed on pit and building structure. The elevator contractor is to provide general arrangement drawings of the equipment showing the hoistway, pit, and machine room dimensions. Preliminary Drawings are to be properly approved before commencement of fabrication and/or installation. All surface finishes and colors to be selected and returned with approved drawings.

1.7 QUALITY ASSURANCE

A. Manufacturer Qualifications: A company with no less than (5) years of successful experience in the assembly and erection of similar type elevators and who has adequate product liability insurance shall perform the installation.

B. Installer Qualifications: Company specializing in performing Work of this section and approved by elevator manufacturer. he elevator installer shall verify requirements of the local authority having jurisdiction, obtain and pay for necessary municipal and state permits and inspections as required, and make tests as called for by the regulations of such authorities.

1.8 PRE-INSTALLATION MEETINGS

A. Convene minimum two weeks prior to start of work of this section.

B. Review pit, hoistway, electrical, fire alarm and other requirements with appropriate representatives.

1.9 DELIVERY, STORAGE, AND HANDLING

A. Store products in manufacturer's unopened packaging until ready for installation.

B. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.

1.10 SEQUENCING

A. Ensure that locating templates and other information required for installation of products of this section are furnished to affected trades in time to prevent interruption of construction progress.

B. Ensure that products of this section are supplied to affected trades in time to prevent interruption of construction progress.

1.11 PROJECT CONDITIONS

A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits

recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

1.12 WARRANTY

A. All materials furnished by elevator contractor shall be guaranteed for a period of TWO (2) year after certificate of occupancy against defects in workmanship, one year full labor warranty and TEN (10) year limited warranty on mechanical components only, excluding freight and installation labor. Please see manufacturer's Standard Terms and Conditions for details.

1.13 MAINTENANCE SERVICE

A. The elevator shall be maintained in accordance with the manufacturer's recommendations and all applicable codes, for one year as part of this contract.

B. Include systematic examination, adjustment, and lubrication of elevator equipment. Repair or replace parts whenever required. Use parts produced by manufacturer of original equipment. Replace wire ropes when necessary to maintain required factor of safety.

C. Provide emergency call back service for this maintenance period.

D. Perform maintenance work using competent and qualified personnel approved by elevator manufacturer or original installer.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturer: STELLAR-VATOR, which is located at: 1030 Arroyo St, San Fernando, CA 91340; Tel: 818-509-8228; Email: tom@tlshield.com: Web: www.stellarvator.com

B. Requests for substitutions will be considered in accordance with provisions of Section 01600.

C. Characteristics

1.	Type:	Roped 2:1 Hydraulic Residential
2.	Model:	SV-750 [SV-950]
3.	Capacity:	750 lbs [950 lbs]
4.	Operation:	Single Automatic Push Button [Single Button Collective]
5.	Speed:	40FPM
6.	Car Travel:	[ ] feet, [ ] inches

7. No. of Landings: [qty]
8. No. of Openings: [qty] Front, [qty] Rear, [qty] Side
9. Nominal Car Size: 3'-0" X 4'-0n [3'-0H x 5'-0"] [3'-4" x 4'-4"] clear

   Consult Stellar-Vator for Custom Sizes
10. Power Supply 220 VAC, Single Phase, 60 Hz

    [220 VAC, Single Phase 50 Hz]

    [208 VAC, 3ph, 60 Hz]

    [230/240 VAC, 3ph, 60 Hz]

    [460/480VAC, 3ph 60 Hz]

2.2 CAB LAYOUT AND DESIGN

A. Cab Design:

1. Cab Dome:

   a. Minimum 1 inch thick substrate material.

2. Entry Columns: Two for each cab entrance.

2.3 EQUIPMENT

A. Operation of the elevator shall be Single Automatic Push Button (SAPB) [Single Button Collective (SBC)] Momentary pressure on any call button will initiate a call or send command to the elevator to the corresponding landing providing all doors are properly closed.

B. Hydraulic Power Unit: Constant displacement rotary screw type pump, motor, oil reservoir, hydraulic control unit and oil level gauge.

1. Hydraulic control unit includes; a safety check valve, an UP direction valve with high pressure relief including UP leveling and soft stop features, a lowering valve including DOWN leveling and a manual lowering feature; all enclosed in a compact unit assembly.

2. Control valves are solenoid operated and designed to open and close gradually to for smooth starts and stops. All valves shall be readily accessible for adjustments.

3. Locate power unit near the hoistway at the lowest landing. Unit is contained in a metal cabinet with a lid with lock and key.

C. Plunger and Cylinder:

1. Plunger fabricated from accurately ground and polished seamless steel tubing. Fit the bottom of the plunger with a heavy steel disc welded in place and with a suitable extended edge to

provide a positive stop designed to prevent the plunger from leaving the cylinder in the up direction. Top of the plunger is provided with an internally welded steel disc drilled and tapped for fastening a U-groove sheave for 1:2 roping application

2. Cylinder fabricated from steel pipe with a steel flange at the upper end and a heavy steel bulkhead welded in the lower end. Provide cylinder with suitable steel fitting for connecting to the oil line with an air bleeder.

D. Pipe Rupture Valve: Provide an automatic shut-off valve in the oil supply line at the cylinder inlet. When there is a drop in no-load operating pressure or an over speed in the down direction, the automatic shut-off valve shall be actuated and immediately stop the elevator.

E. Car Frame and Platform: Car frame and integrated platform support shall be welded and bolted steel construction of cantilever design.

1. Platform constructed utilizing 10 gauge corrosion resistant steel pan with minimum 1-1/2 inch plywood subfloor.

2. Fit frame with the appropriate diameter polyurethane faced roller guide shoes. Solid guide shoes are not acceptable. Provide frame with an instantaneous broken rope car safety and slack cable switch which will cut off power to the control valve if a rope should become slack or broken.

F. Suspension: Steel car frame shall be attached to and suspended by two 3/8 inch diameter 6x19 traction steel cables.

1. Cables shall be fastened to the pit structure on one end and pass over the U groove sheave to shackles attached to the car frame and safety device.

2. Should one or more cables break or slacken, a broken rope safety mechanism shall apply two cams to wedge against the elevator guide rails and bring the car to a complete stop.

G. Guide Rails: Provide two machined steel "tee" sections, no less than 8 lbs. per foot, securely fastened to the hoistway structure with steel brackets. Ends of all guides shall be tongue and groove, forming matched joints and shall be connected with steel splice plates. Formed rails or channels are not acceptable.

H. Electric Wiring: Provide all wiring necessary for a complete installation commencing at the machine room disconnect switch and connecting the controller and power unit to all electrical devices. All wiring is to be in accordance with the requirements of the applicable building codes and the National Electric Code. Traveling cables between the car and the controller shall have a flame retarding and moisture resisting outer cover and be flexible and suitably suspended to relieve strain in the individual conductor.

1. A 220VAC, single phase service (or optional three phase,) with neutral, to a lockable safety

disconnect switch, fused with time delay fuses shall be furnished in the machine room in accordance with NFPA 70. A normally open electric interlock contact is required in the switch for battery isolate

2. A 120VAC, single phase, 15AMP service to a lockable fused disconnect switch, or circuit breaker, located in the machine room shall be provided for the cab lighting in accordance with NFPA 70.

I. Controller: UL or CSA laboratory tested and approved components assemblies enclosed in a NEMA 1 hinged lockable steel cabinet. Controller shall contain the following:

1. Power relays and overload device suitable for the size motor and power supply.
2. A heavy duty microprocessor controller specifically designed for use as elevator controls with all control safety circuits.
3. Relay redundancy circuits designed to prevent dangerous conditions that exist as a result of a single failure.
4. An emergency battery operated circuit to automatically provide emergency lighting and lower the lift in the event of an electric power failure.
5. Battery charging circuit to maintain a full charge on the batteries during normal operation.
6. All components to be protected by fused circuits.

J. Automatic Two-Way Leveling: Provide an automatic two-way leveling device so that the car will approach a landing stop at reduced speed from either direction of travel. Leveling device shall, within its zone, be entirely independent of the operating device and shall automatically stop and maintain the car approximately level, plus or minus 1/4 inch with the landing, regardless of the change in load.

K. Home Park Feature: Elevator shall automatically return to a field programmable designated landing after one minute without use.

L. Emergency Power Lowering and UPS Battery Backup: Provide an automatic emergency-lowering feature incorporated into the power unit and control system. In the event of the loss of normal power to the elevator, the car will return to the Home Park landing, wait 30 seconds, then proceed to the lowest landing and continue to monitor all safety circuits. Car will maintain 110 Volt power for approximately four hours (i.e. cab lighting, auto gate operator, etc.). Provide batteries with an automatic charging system. Power supply shall be arranged and sufficiently sized to illuminate cab lighting, operate power gate operator (if supplied), and power emergency alarm.

M. Low Oil Control: Provide a low oil control feature designed to automatically cause an up traveling car to descend to the lowest terminal landing if the system does not have a sufficient reservoir of

oil.

N. Operating Fixtures

1. Car Operating Panel shall consist of light-up floor call buttons, a red emergency stop button, an alarm button, a light switch, and a digital position indicator.

2. Hall stations will contain a call button with acknowledge light; one hall station shall be located adjacent to each landing hoistway door.

Faceplate Style	Standard
Faceplate GA	Minimum 1/8" thick
Fixture Finish	Brushed Stainless Steel
	[Polished Stainless Steel]
	[Brushed Bronze]
	[Polished Bronze]
	[[Light] [Medium] [Dark] Oxidized Bronze]
Phone:	Hinged Phone Cabinet with concealed fasteners with
	Trimline phone [Optional]
	[Integral phone device with Car Operating Panel]
Security:	[Keyed Car Station]
	[Keyed Hall Stations]
	[Keyless Entry Car Station

O. Door Locks: A combination unit system contact and lock shall be furnished for each hoistway entrance. The interlock device shall prevent elevator operation unless all doors are closed and locked and prevent opening of a door when the car is not at rest at that landing.

P. Hoistway Doors: The general contractor or owner is to furnish and install hoistway doors, frames, and hinges and passage sets at each landing. The type and installation of the doors and frames must comply with ASME A17.1, all local codes and as per manufacturer's layout drawings. Special attention should be given to ASME A17.1, Part 5.3., Para 1.7.2 requiring that for safety reasons the space between the hoistway door and the car gate does not exceed 5 inches, and that the clearance between the hoistway landing door and the edge of the landing sill does not exceed 2.5 inches.

Q. Cab Enclosure (Standard): The cab enclosure shall be constructed of %" substrate material. Cab floor to be prepared for floor covering to be supplied and installed by others. Each cab opening shall

be equipped with a horizontal sliding manually [power] operated accordion type folding gate.

Wall Finish:	Stain-grade Birch, sliced veneer.
	[Unfinished]
	[Faced with decorative plastic laminate]. Melamine finish on cab walls is not acceptable. Plastic laminate is to be chosen from the manufacturer's standard color selections.
Cab Dome:	Minimum 1" thick substrate material
Ceiling Finish:	Melanine
	[Plastic Laminate]
	[Veneer]
Cab Height:	6'-8 Clear
	[7'-4"]
	[8'-0"]
Cab Lighting:	(2) Incandescent downlights
	[Prepared for fixture by others]
Entry Columns:	Two (2) for each cab entrance
	(Not included with Oxidized Bronze finishes)
Cab Trim:	Brushed Stainless Steel
	[Polished Stainless Steel]
	[Brushed Bronze]
	[Polished Bronze]
	[[Light] [Medium] [Dark] Oxidized Bronze]
Car Sill:	Clear Anodized Extruded Aluminum
	[Extruded Bronze]

R. Machine Room

1. A suitable fire rated machine room of proper size with a lockable door, convenience outlet, and light switch.
2. Machine room temperature must be maintained between 60 degrees and 100 degrees F, with relative humidity not to exceed 95%.

3. Machine room must be in compliance with ASME A17.1, National Electric Code, applicable building codes, and elevator construction drawings.
4. Telephone connection in machine room connected to an outside central exchange where required.

PART 3 EXECUTION

3.1 EXAMINATION

A. Do not begin installation until preliminary work including hoistway, landings and machine space has been properly prepared.

B. Elevator installer shall verify dimensions of hoistway, pit, machine room, and inspect conditions of supports and structure prior to installation.

C. Verify hoistway shaft and openings are of correct size and within tolerance.

D. Verify electrical power is available and of correct characteristics.

E. If preliminary work is the responsibility of another installer, notify Architect/General Contractor of unsatisfactory preparation before proceeding.

3.2 PREPARATION

A. Clean surfaces thoroughly prior to installation.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.3 INSTALLATION

A. The elevator shall be installed in accordance with the manufacturer's instructions and shall conform to ASME A17.1 and all state and local code requirements.

B. Install system components. Connect equipment to building utilities.

C. Install guide rails using threaded bolts and lock washers under nuts.

D. Accurately align guide rails. Form smooth joints with machined splice plates.

E. Set entrances shall be in vertical alignment with car openings and aligned with plumb hoistway lines, by others.

F. Coordinate installation of hoistway door hardware. Install interlocks as required.

G. Adjust equipment for smooth and quiet operation.

H. Upon completion of the installation, the owner shall be instructed on the elevator's operation, safety

precautions, and maintenance requirements. The owner shall be supplied with an owner's manual to retain for reference.

3.4 FIELD QUALITY CONTROL

A. Perform tests required by ASME A17.2.1.

B. Provide two weeks written notice of date and time of tests.

C. Supply instruments and execute specific tests.

D. Perform following tests in presence of Architect:

1. Test elevator system by transporting the rated load up from main floor during five minute period.

2. At an agreed time during contract warranty period, and with building normally occupied using normal building traffic, conduct tests to verify performance.

3. Time elevator travel between typical floors at not more than rated travel time. Measure time from moment doors start to close until car has stopped level at next floor and doors are opening.

3.5 FIELD SERVICES

A. Obtain required permits to perform tests. Perform tests required by regulatory agencies.

B. Schedule tests with agencies and Architect and Contractor present.

C. Submit test and approval certificates issued by jurisdictional authorities.

3.6 ADJUSTING

A. Adjust for smooth acceleration and deceleration of car so not to cause passenger discomfort.

B. Adjust automatic floor leveling feature at each floor to provide stopping zone of ¼ inch (6 mm).

3.7 CLEANING

A. Remove protective coverings from finished surfaces.

B. Clean surfaces and components ready for inspection.

3.8 PROTECTION

A. Protect installed products until completion of project.

B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION