
NAVFAC IGS-14210 (MAY 2002)

Preparing Activity: LANTNAVFACENGCOM Based on UFGS-14210N

ITALIAN GUIDE SPECIFICATIONS

Use for ITALIAN projects only

SECTION 14210

ELECTRIC TRACTION ELEVATORS

05/02

NOTE: This guide specification is issued by the
Atlantic Division, Naval Facilities Engineering
Command for regional use in Italy.

NOTE: This guide specification covers requirements
for electric passenger and freight elevators.

NOTE: All Navy facility designs which include
elevators shall comply with the "NAVFAC Elevator
Design Guide" located on the NAVFAC Criteria Home
page at web address
http://www.efdlant.navy.mil/lantops_15/home.htm
under the Interim Technical Guidance.

NOTE: Any editing of non-bracketed requirements in
this specification shall be approved through the
NAVFAC Elevator Program.

NOTE: The following items and fire protection do
not constitute elevator work and therefore are not
considered to be the elevator Contractor's work.
Basically the elevator Contractor provides all
components of the Firefighters' Service with the
exception of heat detectors, smoke detectors and
related conductor runs. The elevator Contractor
does connect the terminated conductor runs from the
heat detector and smoke detector loops to the
elevator control equipment. The electricians
provide the conductors for the heat detector and
smoke detectors. Seismic requirements of NAVFAC

P-355, and Section 15070, "Mechanical Sound, Vibration and Seismic Control." A registered structural engineer must determine seismic and structural requirements. While NAVFAC criteria does not speak to specific trades or subcontractors, ensure that the following listed work is included in the appropriate drawings and specifications other than elevator drawings and specifications in a manner consistent with ASME A17.1.

1. The hoistway, pit, and machine room:
 - a. Preparation of hoistway, pit, and machine room space for electric traction elevator machinery and controls.
 - b. Openings in hoistway wall for installation of hoistway doors.
 - c. Cutouts, supports, and patching in hoistway wall for landing push button stations and landing position indicators. Bevel projections, recesses, and setbacks in hoistways.
 - d. Stair access with hand rails to machine room.
 - e. Dry pit reinforced to sustain normal vertical forces from rails and impact loads from buffer. Access to elevator pit from lowest landing, including permanent ladder. Pit screens if required by local code or ASME A17.1.
 - f. Grouting of hoistway entrance frames and sills.
 - g. Installation of guide rail attachments provided in this section.
 - h. Providing adequate supports and divider beams for car guide rail brackets in hoistway.
 - i. Provide heating, ventilating and air conditioning to elevator machine room to maintain temperature limits between 10 to 32 degrees C 50 to 90 degrees F as recommended by elevator manufacturers. Air conditioning is required in most conditions, gravity ventilation is not acceptable.
 - j. Temporary barricades outside elevator hoistways as required by OSHA.
 - k. Permanent barricades in elevators hoistways as required by ASME A17.1.
 - l. Venting of hoistway as required by governing

code or authority.

m. Fire resistance ratings of hoistway and machine room enclosures not less than 2 hours.

n. Clear plumb hoistway wall with variations not to exceed 25 mm one inch at any point in first 18 meters 60 feet.

o. In seismic Zones 3 and 4, avoid use of tile or brick walls. Provide metal studs with drywall or concrete walls. In seismic zones where buildings are designed with expansion joints, locate machine room and hoistway on same side of expansion joint.

p. Drains shall not be installed in elevator pit. Provide an elevator pit sump with a pump. Sumps shall be covered and covers shall be level with pit floor. Pit floors shall be non-combustible. Pits at or below ground level shall be designed to prevent entry of water into pit. Discharge water from sump pump through an air gap to sanitary sewer or an oil/water separator, in accordance with discharge permits and regulations.

2. Electrical Work

a. A shunt trip circuit breaker for each individual elevator's main power will be provided, located in the elevator equipment room. Circuit breaker will be capable of being locked in the open position, and will serve the main power and control of the respective elevator. Each shunt trip circuit breaker will be served by another dedicated breaker in the main distribution electrical panel. Shunt trip breaker(s) will be operated by the sprinkler flow switch(s) to automatically open the power supply. Power will be restored manually.

b. Electric lighting and branch wiring circuits in elevator machine room and pit with lighting receptacles and convenience outlets per NFPA 70, as indicated by elevator supplier. Locate pit light not less than 1800 mm 6 feet above pit floor; provide minimum 108 lux 10 footcandles at floor surface of machine room and pit. Car requires car top lighting and GFCI convenience outlet. GFCI convenience outlets are required in machine room, pit, and car top.

c. Telephone and intercom conduit and wiring terminating to junction box in machine room. Intercom and telephone instrument and connection of both in machine room.

d. Smoke detectors for fire protection. Provide dual contact smoke detectors or addressable fire alarm smoke detectors at:

- (1) Each enclosed elevator lobby
- (2) Top of the hoistway (only if sprinklers are provided at the top of the hoistway).
- (3) Elevator machine room

e. Determine if the activity requires emergency use of the elevator and whether emergency power is available or to be provided. Coordinate requirements for elevator power and control.

f. Extra set of contacts on transfer switch (when emergency power is provided) and two-conductor 120-volt ac circuit in conduit from these contacts to junction box in machine room.

g. Elevator Firefighters' Service wiring, conduit and interconnections to automatic sprinkler systems provided by others to terminal points on elevator controllers.

h. Provide separate 120-volt ac, 20-ampere circuit terminating in fused disconnect or breaker for each elevator machine room. Provide separate 120-volt ac, 20-ampere circuit terminated in fused disconnect or breaker for each elevator. Elevator circuits shall provide power for lights, fans, alarm bells, and emergency lighting module.

NOTE: Comments and suggestion on this specification are welcome and should be directed to the technical proponent of the specification. A listing of the technical proponents, including their organization designation and telephone number, is on the Internet.

Use of electronic communication is encouraged.

Brackets are used in the text to indicate designer choices or locations where text must be supplied by the designer.

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME)

ASME A17.1 (1996; Addenda 1997) Safety Code for Elevators and Escalators

ASME/ANSI A17.2.1 (1996; Addendum 1997) Inspector's Manual for Electric Elevators

ARCHITECTURAL & TRANSPORTATION BARRIERS COMPLIANCE BOARD (ATBCB)

ATBCB ADA TITLE III (1990) Americans with Disabilities Act - Buildings and Facilities

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM E 152 (1981; Rev. A) Fire Tests of Door Assemblies

AMERICAN WELDING SOCIETY, INC. (AWS)

AWS D1.1 (1998) Structural Welding Code - Steel

BUILDING CODE

ICBO (1997) Uniform Building Code

CODE OF FEDERAL REGULATIONS (CFR)

29 CFR 1910.27 Fixed Ladders

NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA)

NEMA MG 1 (1993; Rev. 1-4) Motors and Generators

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 70 (1999) National Electrical Code

1.2 SUBMITTALS

NOTE:

Submittals must be limited to those necessary for adequate quality control. The importance of an item in the project should be one of the primary factors in determining if a submittal for the item is required.

A "G" following a submittal item indicates that the submittal requires Government approval. Some

submittals are already marked with a "G". Only delete an existing "G" if the submittal item is not complex and can be reviewed through the Contractor's Quality Control system. Only add a "G" if the submittal is sufficiently important or complex in context of the project.

For submittals requiring Government approval on Army projects, a code of up to three characters within the submittal tags may be used following the "G" designation to indicate the approving authority. Recommended codes for Army projects are "RE" for Resident Engineer approval, "ED" for Engineering approval, and "AE" for Architect-Engineer approval. Codes following the "G" typically are not used for Navy projects.

Submittal items not designated with a "G" are considered as being for information only for Army projects and for Contractor Quality Control approval for Navy projects.

Submit the following in accordance with Section 01330, "Submittal Procedures."

SD-02 Shop Drawings

- Elevator and accessories; G
- Supporting systems; G
- Machinery and controls; G
- Wiring diagrams; G
- Sequence of operations; G

SD-03 Product Data

- Elevator and accessories; G
- Elevator supporting systems; G
- Data sheets; G
- Maintenance and diagnostic tools; G
- Logic control; G

SD-05 Design Data

NOTE: Use ASME A17.1, Appendix F, for locations in seismic risk zone 3 or greater.

Reaction loads; G

SD-07 Certificates

Welders' qualifications; G

Year 2000 (Y2K) compliant warranty; G

SD-10 Operations and Maintenance Data

Elevator, Data Package 4; G

Maintenance and Repair Action Plan; G

1.3 QUALITY ASSURANCE

1.3.1 Qualification

Provide pre-engineered elevator system by a manufacturer regularly engaged in the manufacture of elevator systems. The manufacturer shall either install elevator system or shall provide letter of endorsement certifying that the elevator-system installer is acceptable to the manufacturer. An installer is required to be regularly engaged in the installation and maintenance of elevator system.

NOTE: Only in the State of Hawaii, use the following paragraph.

[Perform work involving the installation or repair of elevator equipment under the supervision of a person who is licensed in elevator repair in the State of Hawaii or who possesses the equivalent experience. Furnish data to the Contracting Officer for verification that such experience is possessed by the person exercising direct supervision of the work.]

1.3.2 Definitions

1.3.2.1 Year 2000 Compliant

Year 2000 compliant - means computer controlled facility components that accurately process date/time data (including, but not limited to, calculating, comparing, and sequencing) from, into, and between the twentieth and twenty-first centuries, and the years 1999 and 2000 and leap year calculations.

1.3.3 Shop Drawing Requirements

Provide assembly and arrangement of elevators, accessories, and supporting systems. Show location of machinery and controls in machine room. Provide details for materials and equipment, including but not limited to operating and signal fixtures, doors, door and car frames, car enclosure, controllers, motors, guide rails and brackets, layout of hoistway in plan

and elevation, and other layout information and clearance dimensions. Submit complete wiring diagrams and sequence of operations, which show electrical connections and functions of elevator systems, for the machine room, hall and in the hoistway. Provide one set of wiring diagrams in plastic or glass cover, framed and mounted in the elevator machine room. Deliver other sets to the Contracting Officer. Coded diagrams are not acceptable unless adequately identified.

1.3.4 Product Data Requirements

Include information on motor, hall station, and buffer on elevators and accessories. For elevator supporting systems, include information on car control [and emergency power] systems, and for data sheets, provide document identification number or bulletin number, published or copyrighted prior to the date of contract bid opening.

1.3.5 Design Data: Reaction Load Data Requirements

Provide calculations to the Contracting Officer for reaction loads imposed on building by elevator system. [Demonstrate calculations complying with ASME A17.1, Appendix F.] Provide calculations certified by a licensed structural engineer registered in any state. Do not fabricate materials nor perform construction until approved by the Contracting Officer.

1.3.6 Certificates: Welders' Requirements

Comply with AWS D1.1, Section 5. Include certified copies of welders' qualifications. List welders' names with corresponding code marks to identify each welder's welding work.

1.4 NEW INSTALLATION SERVICE

**NOTE: If elevator is located in remote location,
confirm the necessity for the 1 hour response time
required below with activity.**

Provide routine warranty service in accord with the manufacturer's warranty requirements, for a period of [12] [_____] months after the date of acceptance by Contracting Officer. [Perform this work during regular working hours]. Include 24-hour emergency service, with 1 hour response time, during this period without additional cost to the Government. Include adjustments, greasing, oiling, and cleaning. Provide routine inspection and tests of elevators in accordance with ASME A17.1 (Sections 1001 and 1002) and ASME/ANSI A17.2.1. Provide supplies and parts to keep elevator system in operation. Perform service only by factory trained personnel.

1.4.1 Special Operations

Every six months, test systems for [Emergency Power Operation,] [Earthquake Emergency Operation,] [Hospital Emergency Commandeering Service Operation] [and] Firefighters' Service. Schedule to not interfere with building operations. For Firefighter's Service, test monthly in accordance with ASME

A17.1, Rule 1206.7. Deliver written results of each test operation to the Contracting Officer.

1.4.2 Maintenance and Diagnostic Tools

Provide all special tools and software necessary to service and maintain each elevator; deliver at time of final acceptance. Provide one of each tool per group of elevators. Provide solid state or microprocessor diagnostic tools unavailable on the open market. Include necessary diagnostic software in cases where the solid state or microprocessor diagnostic tools are available on the open market.

1.4.3 Keys for Elevator Key Switches

Provide a minimum of twelve keys per unique cylinder used on all key switches for a single elevator. If there is more than one elevator, additional keys will not be required unless there are additional unique lock cylinders. Provide keys with brass or fiberglass tags marked "PROPERTY OF THE U.S. GOVERNMENT" on one side with function of key or approved code number on the other side.

1.5 FIRE PROTECTION SYSTEM

Additional fire protection requirements are located in; Division 13, Section [13852, "Interior Fire Alarm System";] [Section 13854, "Addressable Interior Fire Alarm system";] Section 13930, "Wet Pipe Sprinkler System"; and Division 16, Section 16402, "Interior Distribution System".

1.6 MAINTENANCE

1.6.1 Maintenance and Repair Action Plan

Provide plan of action by the Elevator Installation Contractor to provide emergency and routine maintenance in accordance with paragraph entitled "New Installation Services". In addition to Data Package SD-19 "Operation and Maintenance Manuals", provide a list of phone numbers, personnel contacts, and all tools to be provided to the Contracting Officer.

Submit elevator manuals in accordance with Section 01781, " Operation and Maintenance Data."

1.7 WARRANTY

1.7.1 Year 2000 (Y2K) Compliant Warranty

For each product, component and system specified as a "computer controlled facility component" in the specification sections, provide a statement of Y2K compliance warranty for the specific equipment. The contractor warrants that each hardware, software, and firmware product delivered under this contract shall be able to accurately process date/time data (including, but not limited to, calculating, comparing, and sequencing) from, into, and between the twentieth and twenty-first centuries, and the years 1999 and 2000 and leap year calculations to the extent that other computer controlled component, used in combination with the computer

controlled component being acquired, properly exchanges date/time data with it. If the contract requires that specific listed products must perform as a system in accordance with the foregoing warranty, then that warranty shall apply to those listed products as a system. The duration of this warranty and the remedies available to the Government for breach of this warranty shall be as defined in, and subject to, the terms and limitations of the contractor's standard commercial warranty or warranties contained in this contract, provided that notwithstanding any provision to the contrary in such commercial warranty or warranties, the remedies available to the Government under this warranty shall include repair or replacement of any listed product whose non-compliance is discovered and made known to the contractor in writing within one year (365 days) after acceptance. Nothing in this warranty shall be construed to limit any rights or remedies available to the Government may otherwise have under this contract with respect to defects other than Year 2000 performance.

PART 2 PRODUCTS

2.1 Y2K Compliant Products

NOTE: To ensure that buildings' systems continue to function beyond Year 2000, the following paragraph must be included when this section is part of a construction contract. For more information on Y2K, see these web sites on the Internet.
<http://www.doncio.navy.mil/y2k/year2000.htm>, the Year 2000 homepage of the Department of the Navy Chief Information Officer (DONCIO);
<http://www.itpolicy.gsa.gov/mks/yr2000.legal.htm>, the General Services Administration (GSA) Chief Information Officer (CIO) homepage for Y2K procurement, contracting, and legal issues;
<http://y2k.lmi.org/gsa/y2kproducts> contains information on vendor product compliance.

Provide computer controlled facility components, specified in this section, that are Year 2000 compliant (Y2K). Computer controlled facility components refers to software driven technology and embedded microchip technology. This includes, but is not limited to, telecommunications switches, elevator controllers, utility monitoring and control systems, fire detection and suppression systems, alarms, security systems, and other facilities control systems utilizing microcomputer, minicomputer, or programmable logic controllers.

2.2 ELEVATOR DESCRIPTION

NOTE: Indicate elevator performance in paragraphs below.

Provide elevator system that complies with ASME A17.1 in its entirety,

ASME/ANSI A17.2.1 in its entirety, and additional requirements specified herein. Provide the entire system to be Year 2000 (Y2K) compliant.

2.2.1 Passenger Elevators

NOTE: Only specify gearless traction elevators for buildings more than 10 stories tall and speeds of 500 fpm or more.

- a. Type: [Geared] [Gearless]
- b. Rated load: [_____] kg [_____] lb.
- c. Rated Speed: [_____] m/s [_____] fpm
- d. Travel Length: [_____] m [_____] ft.
- e. Number of Stops: [_____]
- f. Number of Hoistway Openings: [_____] Front; [_____] Rear
- g. Car Platform Dimensions: [_____] mm wide and [_____] mm deep [_____] ft.[_____] in. wide and [_____] ft. [_____] in. deep

NOTE: Provide all elevators of size to accommodate handicapped access as a minimum. For all buildings of four stories or more in height, provide at least one elevator of size to accommodate emergency medical services.

- h. Car Inside Dimensions: [_____] mm wide, [_____] mm deep and [_____] mm high [_____] ft. [_____] in. wide, [_____] ft. [_____] in. deep and [_____] ft. [_____] in. high

NOTE: For car door opening of passenger and service elevators, 1065 mm 3 ft. 6 in. is standard, except with 1800 kg 4000 lb. passenger cars, use 1200 mm 4 ft. 0 in.. For special purposes, 1525 mm 5 ft. 0 in. opening may be used.

- i. Car Door Opening: [_____] mm wide and [_____] mm high [_____] ft. [_____] in. wide and [_____] ft. [_____] in. high

NOTE: Use two speed center opening option restrictively for elevators where larger door opening is needed and hoistway space is not available for single speed. Otherwise, use single-speed side slide, single-speed center

opening, or two speed side slide.

- j. Car Door Types: [Single-speed side slide] [Single-speed Center opening] [Two-speed side slide] [Two-speed center opening] Horizontal sliding.

2.2.1.1 Cab Enclosures and Door Finishes

NOTE: Indicate finish colors of elevator materials in finish schedule on drawings.

NOTE: Use stainless steel side panels and wall trim in hospital cars.

Provide finishes [as indicated.][as listed below:

- a. Floor; [carpet][vinyl composition tile][vinyl sheet tile][_____].

- b. Walls; [prefinished steel][laminated plastic][stainless steel][_____].

Wall trim; [prefinished steel][stainless steel][_____].

Accessories; [hand rails][_____].

- c. Interior face of door(s); [prefinished steel panels][stainless steel][_____].

- d. Ceilings; [supported][prefinished steel panels][anodized aluminum][eggcrate][_____].

Ceiling frame; [prefinished steel][stainless steel][anodized aluminum][_____].

- e. Hoistway Doors and Frame Finishes

Provide finishes on exterior of hoistway as follows:

- (1). Frame; [prefinished steel][stainless steel][_____].

- (2). Exterior face of door; [prefinished steel][stainless steel][_____].

][2.2.2 Freight Elevators

- a. Type: [Geared] [Gearless]

- b. Rated Load: [_____] kg [_____] lb.

- c. Rated Speed: [_____] m/s [_____] fpm
- d. Travel Length: [_____] m [_____] ft.
- e. Number of Stops: [_____]
- f. Number of Hoistway Openings: [_____] Front; [_____] Rear
- g. Car Platform Dimensions: [_____] mm wide and [_____] mm deep
[_____] in. wide and [_____] ft. [_____] in. deep
- h. Car Inside Dimensions: [_____] mm wide [_____] mm deep and
[_____] mm high [_____] ft. [_____] in. wide, [_____] ft. [_____] in. deep and [_____] ft. [_____] in. high
- i. Hoistway Door Type & Size: [Manual] [Power operated] Vertical
[Rising] [Bi-Parting] [_____] mm wide and [_____] mm high [_____] ft. [_____] in. wide and [_____] ft. [_____] in. high
- j. Car Gate Type: [Manual] [Power operated] Vertical Rising

NOTE: Refer to ASME A17.1, Rule 207.2b for Classes of loading.

- k. Loading Type: Class [A] [B] [C]

2.2.2.1 Cab Enclosures and Door Frame Finishes

NOTE: Indicate finish colors of elevator materials in finish schedule on drawings.

NOTE: Use stainless steel side panels and wall trim in hospital cars.

Provide finishes [as indicated.][as listed below:

- a. Floor; [mill finish steel diamond plate][painted steel diamond plate][aluminum diamond plate][tongue and groove hardwood][_____] .
- b. Walls; [prefinished steel panels][stainless steel][_____] .
Wall trim; [prefinished steel][stainless steel][_____] .
Accessories; [handrail][_____] .
- c. Interior face of doors; [prefinished steel][stainless steel][_____] .
- d. Ceiling; [prefinished steel panels][stainless steel][anodized aluminum][_____] .

e. Hoistway Doors and Frame Finishes

Provide finishes on exterior of hoistway as follows:

- (1) Frame; [prefinished steel][stainless steel][_____].
- (2). Exterior face of door; [prefinished steel][stainless steel][_____].]

]2.3 SPECIAL OPERATION AND CONTROL

Provide all special operations and control systems in accordance with ASME A17.1. Provide special operation key switches with [5][6] pin cylinder locks with removable cores. Provide a key control lock for each operation system.

2.3.1 Firefighters' Service

NOTE: Firefighters' Service is required on all freight and passenger elevators.

ASME A17.1, Section 211, Rule 211.3. Provide equipment and signaling devices.

2.3.2 Smoke Detectors

Smoke detectors are specified in [Section 13852, "Interior Fire Alarm System"] [_____], including conduit and wiring from each detector to elevator machinery space control panel. Provide connections directly to elevator controls which will, when smoke is detected by any smoke detector, actuate Firefighters' Service and send each elevator to the correct floor as required by ASME A17.1. Provide dual-contact smoke detectors located in the elevator lobbies and the elevator machine room. If sprinkler is provided in the hoistway, provide dual-contact smoke detector at top of hoistway. The circuit for elevator controller actuation of Firefighters' Service shall include only these smoke detectors. In lieu of dual-contact smoke detectors, an addressable fire alarm system with listed smoke detectors can be used in the above stated locations. Ensure that all smoke detectors are mounted on finished ceiling. Smoke detector system must comply with ASME A17.1.

2.3.3 Fire Sprinklers

NOTE: Virtually all new elevator installations require fire sprinklers in each elevator machinery room. Electric traction elevators are required to have a 2 hour rated hoistway, which does not require sprinklers. If a 2 hour rated hoistway cannot be achieved, sprinklers are required and include the bracketed options for hoistway sprinklers in the

following paragraphs.

Provide fire sprinklers in accordance with Section 13930, "Wet-Pipe Fire Suppression Sprinklers"; providing dual contact flow switch, check valve, and shutoff valve in each sprinkler line immediately outside of each machine room [and hoistway] in accordance with ASME A17.1.

Provide electrical connection to fire sprinkler system in accordance with Section 16402, "Interior Distribution System". For each elevator, provide control wiring connecting the flow switch to the shunt trip equipped circuit breaker within the electrical panel serving the main line disconnect. Upon flow of water, flow switch shall instantaneously send a signal to cause opening of shunt-trip equipped mainline circuit breaker, in compliance with ASME A17.1, Rule 102.2(c)(4), and send a signal to fire alarm control panel to indicate water flow condition. Machine room sprinkler flow switch actuation shall shunt trip all elevators served by the machine room. [Hoistway sprinkler flow switch actuation shall shunt trip all elevators in the hoistway.]

2.3.4 Elevator Cab

Provide warning light and audible alarm in cab of each elevator. Warning light to be minimum 75 mm 3 inches in height and 100 mm 4 inches in width. Mount in, above or adjacent to operating panel. Light shall not be obscured by elevator's protective pads. Warning light to be unreadable when not illuminated. Legend on warning light when illuminated to be read:

"DANGER! FIRE!"
"EXIT THE ELEVATOR NOW"

Audible alarm shall be a separate bell, buzzer or electronic tone louder than any other audible signal being used in cab. Power source for both warning light and alarm to be supplied from elevator's main controller. Warning light and alarm to be simultaneously activated by the heat detectors specified below.

2.3.5 Heat Detectors

"Provide 57 degrees C/135 degrees F rate-compensated heat detectors. Requirements for heat detectors are specified in [Section 13852, "Interior Fire Alarm System"] [____], including conduit and wiring from each heat detector to elevator machinery space control panel.

Under the elevator work section, provide connections to elevator control so that heat detector will actuate elevator cab(s) warning light(s) and alarm(s)."

Mount heat detector adjacent to and level with each sprinkler head in machine room [and hoistway]. Heat detector shall not be connected to the elevator Firefighters' Services and shall not be connected to the building's fire alarm system. Provide permanently mounted waterproof sign adjacent to each heat detector indicating the following message: "Heat Detector Connected to Elevator Control Only." Where sprinkler heads are

equipped with head collection devices, similarly equip the head detectors.

2.3.6 Top-of-Car Operating Device

ASME A17.1, Section 306, Rule 306.2. Provide elevator with an operating device, mounted on or from the car crosshead, that will permit car operation at a speed not exceeding 0.75 mps 150 fpm for purposes of adjustment, maintenance, testing, and repair. Include an integral or remote safety device, "UP" and "DOWN" switches or buttons, an emergency stop switch, and inspection switch.

2.3.7 Hoistway Access Switches

ASME A17.1, Section 110, rule 111.9. Provide key-operated hoistway access switches that permit limited movement of the car at terminal floors for car door opening and car positioning, operative only when the "INSPECTION" switch in car operating panel is in inspection position. Locate switch 1800 mm 6 feet above floor level, with in 300 mm 12 inches of hoistway entrance frame of an elevator or with the ferrule exposed when located in entrance frame.

2.3.8 Independent Service

NOTE: Use the last sentence in brackets when there are two or more cars in group.

Provide exposed key-operated switch in car operating panel to enable independent service and simultaneously disable in-car signals and landing-call responses. Provide indicator lights that automatically illuminate during independent service. [If one car is removed from group, provide other car[s] responding to its hall calls.]

2.3.9 Elevator Operation

ASME A17.1, Introduction, Section 3, Definitions.

NOTE: Choose one of the following four types of operations: Single Two-Stop Automatic, Selective Collective Automatic, Duplex Selective Collective or Group Automatic

[2.3.9.1 Single, Two-Stop, Automatic Operation

NOTE: Specify for single, two-stop elevator only.

Provide Single Two-Stop Automatic Operation. Provide illuminating push buttons.

][2.3.9.2 Selective Collective Automatic Operation

NOTE: Specify for single elevator serving three or more landings.

Provide Selective Collective Automatic Operation. Provide illuminating push buttons.

][2.3.9.3 Duplex Selective Collective Automatic Operations

NOTE: Specify for two adjacent elevators.

Provide Duplex Selective Collective Automatic Operation. Provide a single push button for terminal landings and dual push buttons, up and down, at intermediate landings. In each car operating panel, provide push buttons numbered to correspond to each landing. If a car is taken out of service or fails to respond to a landing call within a predetermined adjustable time limit of approximately 40 to 180 seconds, transfer calls to the other car functioning as a single car Selective Collective elevator until the out-of-service car is returned to the system. Provide a push button riser adjacent to each elevator.

][2.3.9.4 Group Automatic Operation

NOTE: Specify for three or more adjacent elevators.

Provide Group Automatic Operation. Provide a single push button for terminal landings and dual push buttons, up and down at intermediate landings. In each car operating panel, provide push buttons numbered to correspond to each landing. If a car is taken out of service, or fails to respond to a landing call within a predetermined adjustable time limit of approximately 40 to 180 seconds, transfer calls to another car until out-of-service car is returned to the system. Provide a push-button riser adjacent to each elevator.

][2.3.10 Parking Switch

NOTE: Specify parking switch if there is a definite reason to change the parking station daily or for security purposes. For example, to provide night shut down of a car for security purposes.

ASME A17.1, Rule 111.8. Provide a two-position parking switch in the car station service cabinet. One position causes car to remain parked at the floor landing where last used; the other position causes car to park at [main] [_____] floor.

]2.3.11 Hospital Emergency Commandeering Service

Provide "ON-OFF" key switch and indicator light at [designated] [all] landings to cause one elevator to respond directly to the landing activated. Turning switch to "ON" position cancels previously registered "CAR" calls and requires car to bypass hall calls while in route to activated landing.

On arrival, car will remain at landing with hoistway and car doors open for predetermined time to permit car to be placed on emergency service. If the person decides not to use car during predetermined time period, car doors will close and car will automatically return to normal service. Indicator lights shall automatically illuminate during emergency service. Key shall be removable only in "OFF" position.

]2.4 ELEVATOR MACHINE

NOTE: Use geared traction machines up to nine floors with moderate-to-heavy traffic demand, generally not more than three or four cars in a group and for speeds not exceeding 1.75 mps 350 FPM. Use gearless traction for speeds beyond 1.75 to 2.00 mps 350 to 400 FPM, for ten floors or more and where intensive traffic is anticipated, i.e., high-rise hospitals, busy headquarters, office buildings. Gearless elevators are often used in large hospitals for six or more stops. However if 2.00 mps 400 FPM is required, the elevator industry usually supplies 2.50 mps 500 FPM as the standard entry for gearless traction machines. Use generator field control for all applications of gearless elevators and most geared elevators. For motors greater than 11 kw 15 hp, use power factor correcting capacitors to increase power factor to minimum 90 percent.

ASME A17.1, Section 208, [[worm] geared] [or] [gearless] traction, direct-drive machines . Paint or finish ferrous surfaces with minimum one coat of rust-inhibiting paint conforming to manufacturer's standard practice.

2.4.1 Direct Current Drive Motor

NEMA MG 1, Part 18, hoisting motor with separately excited direct current (dc) generator. Provide drive motor with Class F insulation, and rated for continuous duty.

2.5 CONTROL EQUIPMENT

2.5.1 Motor Control Equipment

NOTE: At sites where power fluctuations are routinely experienced, specify only variable-voltage with motor generator set.

ASME A17.1, Section 210. Provide variable-voltage with motor-generator set, variable voltage with silicon controlled rectifier (SCR), or variable-frequency alternating current (ac) drive control. Enclose control equipment in factory-primed and baked-enamel coated sheet-metal cabinets with removable or hinged doors with ventilation louvers.

2.5.1.1 Motor Generator Set

NEMA MG 1, Part 18. Provide motor-generator set with Class F insulation, and rated at 120 starts per hour for elevator service. Maximum acceptable generator voltage is 600 volts. Indicate direction of rotation by an arrow painted on the frame. Enclose electric connections at motor generator set in conduit boxes. Provide adjustable timing device which will automatically shut the set off at [20 to 30 seconds] [3-minute] predetermined time after the elevator has answered the last registered call.

2.5.1.2 SCR Control or Variable Voltage Variable Frequency (VVVF) AC Control

Provide individual isolation transformers and individual choke reactors for each individual hoist motor. Provide filtering to maintain harmonic distortion below IEEE standards as measured at the elevator machine room disconnect.

2.5.2 Logic Control

NOTE: Use microprocessors for elevator logic control. However, in a remote location where necessary diagnostic tools and qualified service personnel are not available in the immediate area, do not allow this type of equipment. In addition, solid state control is not desirable for any facility which is subject to an erratic building power supply. In either situation, specify an electromagnetic switch, relay logic controller. If a microprocessor is allowed, the mechanical design for the elevator machine room must include the HVAC recommended by the control system manufacturer.

[Provide solid-state microprocessor controller to enable programmable control of call allocation, logic functions, door control, speed sensing and car position. Provide a method of reprogramming adjustable parameters of computerized controls. Store all programming in non-volatile memory. The microprocessor control system is acceptable only if hardware and software required to maintain and utilize microprocessor is provided and training is provided to Government Personnel by the equipment manufacturer and supplier.]

[Provide electromagnetic switch, relay logic control.]

2.5.2.1 Repair Requirements

NOTE: When microprocessor control system is used, mechanical design for the project shall provide the HVAC heating and cooling required by control manufacturer for elevator machinery space.

For the repair of microprocessor control system, provide maintenance tools, supporting computer software, and software documentation required for complete maintenance of elevator system including diagnostics and adjustments. Tools may be hand-held or built into control system. Provide tools which do not require recharging to maintain their memory or authorization for use. Do not use software which requires periodic reprogramming, or reauthorization. Programs shall be stored in non-volatile memory. Tools and software may be factory programmed to operate only with this project's identification serial number.

2.6 OPERATING PANELS, SIGNAL FIXTURES, AND COMMUNICATIONS CABINETS

2.6.1 Capacity and Data Plates

ASME A17.1, Rule 207.3a, Rule 207.3b, and Rule 207.3c. Attach faceplates with spanner security screws. On car panel, provide stainless steel capacity and data plates, with name of elevator manufacturer.

2.6.2 Car and Hall Buttons

Provide recessed tamper-proof push buttons of minimum 20 mm 3/4 inch size satin-finish stainless steel with illuminated jewel center.

2.6.2.1 Hall Station Door Operating Buttons

NOTE: Use for freight elevators with power-operated bi-parting doors.

Identical in size and design to hall call buttons, but not illuminated.

2.6.3 Passenger Car-Operating Panel

NOTE: Use two panels for busy passenger elevators in hospital buildings and office buildings. Use one car operating panel for single or two elevator system where traffic is moderate such as in barracks, warehouses, clinics or shops. For front and rear openings at a floor, provide two floor

buttons marked "F" and "R" for operating door open and close.

ASME A17.1, Section 211 and 306. Provide each car with [one] [two] car operating panel that contains operation controls and communication devices.

Provide exposed, flush mounted buttons for the controls that must be passenger accessible. Provide service cabinet or keyed switches for those controls that should not be passenger accessible. Allow maximum 1200 mm 48 inches between car floor and center line of bottom button. Use engraving and backfilling or photo etching for button and switch designators. Do not use attached signs.

2.6.3.1 Passenger Controls

- a. Illuminated operating call buttons identified to correspond to landings served by elevator car. For two openings at a floor, provide two buttons marked "FRONT" and "REAR" above button location.
- b. "DOOR OPEN" and "DOOR CLOSE" buttons.
- c. Keyed "STOP" switch in accordance with ASME A17.1, rule 210.2(v).
- d. "ALARM" button in compliance with UFAS, ADA, and ASME A17.1, rule 211.1. Alarm button shall be red with engraved legend "ALARM." Alarm button shall illuminate when pushed. Locate "ALARM" button at panel bottom.
- e. "FIRE DEPARTMENT" key switch, with "OFF-HOLD-ON" positions, in that order with key to be removable in all positions. Provide fire sign or jewel and audible signal device, in accordance with ASME A17.1, Figure 211.3a. Both visual and audible signals are activated when Phase I key switch in hall is activated or when smoke detector activates return of elevator(s) to main fire response floor. Visual and audible signal shall remain activated until car has reached designated or alternate fire response floor. Upon arrival at fire response floor visual signal remains illuminated and audible signal becomes silent.
- f. Emergency two-way communication. Provide momentary pressure, single illuminating pushbutton operated communication device that complies with ASME A17.1, UFAS, and the Americans with Disabilities Act.
- [g. Key-operated on-off "HOSPITAL EMERGENCY COMMANDEERING SERVICE" switch.]

NOTE: Omit the following paragraph, "...phone jack," unless specifically requested by the activity.

- [h. Sound-actuated firefighter phone jack.]

2.6.3.2 Service Controls

- a. Inspection switch that transfers car control to top-of-car inspection operating controls and prevents car operation from in-car control panel.
- b. Independent service switch.
- c. Two car light switches, one for light in car and one for lights on top and bottom of car frame.
- d. Fan switch, two-speed.
- e. Infra-red curtain unit cutout switch.
- f. 120-volt ac 60 Hz single-phase duplex electrical outlet of ground-fault-circuit-interrupt (GFCI) design.
- g. Device for communication between car and elevator machine room.
- [h. Parking switch.]

2.6.3.3 Certificate Window

Provide a minimum 100 mm high by 150 mm wide 4 inch high by 6 inch wide certificate window in car operating panel for elevator inspection certificate.

[2.6.4 Freight Car-Operating Panel

ASME A17.1, Section 211 and 306. Provide 3 mm 1/8 inch thick stainless steel face plate with edges relieved. Provide each car with [one] [two] car operating panel that contains operation controls and communication devices. Provide exposed, flush mounted buttons for the controls that must be passenger accessible. Provide service cabinet or keyed switches for those controls that should not be passenger accessible. Allow maximum 1200 mm 48 inches between car floor and centerline of bottom button. Use engraving and backfilling or photo etching for button and switch designations. Do not use attached signs.

2.6.4.1 Passenger Controls

- a. Illuminated operating call buttons identified to correspond to landings served by elevator car. For two openings at a floor, provide two buttons, marked "FRONT" and "REAR" above the button location.
- b. Manual "STOP" switch in accordance with ASME A17.1, Rule 210.2 (e).
- c. "ALARM" button in compliance with UFAS, ADA, and ASME A17.1 Alarm button shall be red with engraved legend "ALARM." Alarm button shall illuminate when pushed. Locate "ALARM" button at panel bottom.

- d. "FIRE DEPARTMENT" key switch, with "OFF-HOLD-ON" positions, in that order with key removable in all positions. Provide fire sign or jewel and audible signal device, in accordance with ASME A17.1 Figure 211.3a. Both visual and audible signals are activated when Phase I key switch in hall is activated or when smoke detector activates return of elevator(s) to main fire response floor. Visual and audible signal shall remain activated until car has reached designated or alternate fire response floor. Upon arrival at fire response floor visual signal remains illuminated and audible signal becomes silent.
- e. Emergency two-way communication. Provide momentary pressure, single illuminating pushbutton operated communication device that complies with ASME A17.1, UFAS, and the Americans with Disabilities Act.
- [f. Key-operated on-off "HOSPITAL EMERGENCY COMMANDEERING SERVICES" switch.]

NOTE: Omit the following paragraph, "...phone jack," unless specifically requested by the activity.

[g. Sound-actuated firefighter phone jack.]

2.6.4.2 Service Controls

- a. Inspection switch that transfers car control to top-of-car inspection operating controls and prevents car operation from in-car control panel.
- b. Independent service switch.
- c. Two car light switches, one for light in car and one for lights on top and bottom of car frame.
- d. Fan switch, two-speed.
- e. Infra-red curtain unit cutout switch.
- f. 120-volt ac 60 Hz single-phase duplex electrical outlet of ground-fault-circuit-interrupt (GFCI) design.
- g. Communication device between car and elevator machine room.
- [h. Parking switch.]

NOTE: Use for power-operated doors and gate.

[i. "DOOR OPEN" and "DOOR CLOSE" buttons.]

2.6.4.3 Certificate Window

Provide a minimum 100 mm high by 150 mm wide 4 inches high by 6 inches wide, certificate window in car operating panel for elevator inspection certificate.

]2.6.5 Semi-Selective Door Operation

NOTE: Use semi-selective operation for elevators with rear openings but no landing with both front and rear openings. Use full selective if, at any floor, there are both front and rear openings. This applies to both passenger and freight elevators.

For elevator with rear opening at elevations differing from front opening, provide semi-selective door operation so that only car door or gate adjacent to hoistway door opens when car stops.

]2.6.6 Full-Selective Door Operation

For elevator with one or more rear openings at same level as front opening, provide full-selective operation with car and door operating buttons clearly marked for front and rear openings, front and rear car button for each such floor, and front and rear "DOOR OPEN" and "DOOR CLOSE" buttons. Only door for which the button was operated opens or closes.

]2.6.7 Switches and Devices

Provide elevator manufacturer's standard grade for switches and devices on car operating panel. Legibly and indelibly identify each device and its operating positions. Locate car dispatching buttons in identical positions in car operating panels for corresponding floors.

2.6.8 In-Car Position and Direction Indicator and Signal

In-car direction indicator shall be included in the in-car position indicator fixture.

2.6.8.1 In-Car Position Indicator and Signal

Provide horizontal electrical or electronic digital position indicator located minimum of 2135 mm 84 inches above car floor. Arrange indicator to show floor position of car in hoistway and its traveling direction. Indicate position by illumination of numeral or letter corresponding to landing at which car is passing or stopping. Provide audible signal to alert passenger that elevator is passing or stopping at a floor. Provide audible signals exceeding ambient noise level by at least 20 decibels with frequency not higher than 1500 Hz.

2.6.8.2 In-Car Direction Indicator and Signal

Provide visual and audible car direction indicators in car, indicating car traveling direction. For visual directional signal, provide arrow of minimum 65 mm 2 1/2 inches in size. Use equilateral triangles for arrows, green for upward direction and red for downward direction. Provide audible signal that sounds once for upward direction and twice for downward direction.

2.6.9 Landing Position and Direction Indicator and Signal

Provide a single fixture containing the landing position and direction indicators.

2.6.9.1 Landing Position Indicator and Signal

Provide an electrical or electronic digital position indicator similar to the car position indicator. Arrange position indicator in wall horizontally above the door frame or vertically at the side of the door frame. Indicators to show floor position of car in hoistway. Indicate position by illumination of numeral or letter corresponding to landing at which car is passing or stopping.

2.6.9.2 Landing Direction Indicator and Signal

Provide landing direction indicator with visual and audible signal devices. Provide single direction indicator at terminal floors; "UP" and "DOWN" direction indicator at intermediate floors. Provide equilateral triangles not less than 65 mm 2 1/2 inches in size, green for upward direction and red for downward direction. Provide electronic audible device that sounds once for upward direction and twice for downward direction. Provide audible signals exceeding ambient noise level by at least 20 decibels with frequency not higher than 1500 Hz.

2.7 HOISTWAY AND CAR EQUIPMENT

ASME A17.1, Parts I and II.

2.7.1 Car and Counterweight Guide Rails and Fastenings

ASME A17.1, Section 200. Paint rail shanks with one coat of black enamel. Provide pit channel for anchoring main guide-rail brackets and mounting buffers. Only T-section type guide rail is acceptable.

2.7.2 Car and Counterweight Buffers

NOTE: Use spring buffers for speeds up to and including 1.00 mps 200 fpm.

ASME A17.1, Section 201. Provide data plate on each buffer.

2.7.3 Pit Equipment

ASME A17.1, Section 106. Provide pit channel for anchorage of main guide

rail brackets and also for anchorage of counterweight guide rail brackets. Each channel shall span distance between guides. In addition, pit channel for main guide rails shall serve as mounting surface for car buffer(s). Pit channel for counterweight guide rails shall serve as mounting surface for counterweight buffer(s). Method of installation of channels, brackets and buffer mounts shall be such that pit waterproofing is not punctured. On completion of guide rail and buffer installation, both pit channels shall be fully grouted.

2.7.3.1 Pit "STOP" Switch

Provide push/pull type pit "STOP" switch for stopping elevator motor, independent of regular operating device. Locate switch on same side of hoistway as ladder.

2.7.3.2 Ladder

NOTE: Pits over 900 mm 3 feet deep require a ladder which is usually included in Section 05500, "Metal Fabrications." Use the second bracketed option in the following paragraph when Section 05500 is not included in project specification.

[Section 05500, "Metal Fabrications."] [Galvanized steel. Provide ladder in accordance with 29 CFR 1910.27 with 178 mm 7 inches distance between rung and wall.] Locate ladder on hoistway side wall closest to hoistway door opening.

2.7.3.3 Lighting of Pits

ASME A17.1, Rule 106e. Locate light not less than 1800 mm 6 feet above pit floor. Locate switch on same side of hoistway as ladder. Provide GFCI duplex receptacle in each pit.

2.7.4 Terminal Stopping Devices

ASME A17.1, Section 209.

2.7.5 Wiring and Traveling Cables

NFPA 70, Article 620 and Section 16402, "Interior Distribution System." Suspend traveling cables by means of self-tightening webbed devices.

2.7.6 Emergency Signaling Devices

Provide an audible signaling device, operable from the Car Operating Panel button marked "ALARM". The audible signaling device shall be mounted in the hoistway and shall conform to the requirements of ASME A17.1, Rule 211.1(a). [In addition, for freight elevators, operation of the EMERGENCY STOP button shall sound the audible signaling device.]

2.8 PASSENGER CAR AND HOISTWAY DOOR ACCESSORIES

ASME A17.1, Sections 111, 112, and 204. Provide infra-red curtain unit. Provide high-speed electric operator, safety interlocks for car and hoistway doors, and electric safety contact to prevent car operation unless doors are closed. [Provide electrical circuitry that restores car to service at specified time lapse with time out circuit as option for intensive service elevators.]

2.8.1 Infra-red Curtain Unit

Provide Infra-red Curtain Unit (ICU) with multiple infra-red beams that protect to the full height of the door opening. Minimum coverage shall extend from 50 mm 2 inches off the floor to 70 inches above floor level. Door operation must meet the requirements of ASME A17.1, Rule 211.3a(5) and 112.5.

2.9 PASSENGER ELEVATOR GUIDES, PLATFORM, AND ENCLOSURE

NOTE: User roller guide assemblies on all passenger elevators.

2.9.1 Roller Guides

ASME A17.1, Section 200. Provide roller guide assemblies in adjustable mountings on each side of car and counterweight frames in accurate alignment at top and bottom of frames.

2.9.2 Car Frame and Platform

ASME A17.1, Section 203, Rule 301.6.

2.9.3 Car Enclosure, Car Door, and Car Illumination

NOTE: For hospital service, consider providing separate elevators for routine hospital service and passenger service.

ASME A17.1, Section 204, and Rule 301.7. Provide natural and forced ventilation, emergency exit, and stainless-steel hooks with fire retardant protective pads. Carpeting shall comply with ASME A17.1, Rule 204.2a (2) and (4).

2.10 PASSENGER ELEVATOR HOISTWAY DOORS AND ENTRANCES

ASME A17.1, Sections 110 and 112. Provide hoistway entrance assemblies with a minimum 1-1/2 hour fire rating.

2.10.1 Hoistway Entrance Frames

NOTE: Coordinate materials with paragraph "ELEVATOR DESCRIPTION".

1.8 mm thick 14 gage 14 gage [stainless steel] [or] [prefinished carbon sheet steel]. Solidly grout uprights of entrance ways to height of 1500 mm 5 feet.

2.10.2 Hoistway Entrance Sills

Provide one-piece cast solid nickel entrance sills. After sill is set level and flush with finished floor height, solidly grout under full length of sill.

2.10.3 Hoistway Entrance Doors

ASME A17.1, Rule 110.11e, hollow metal non-vision construction with flush surfaces on car and landing sides.

2.10.4 Entrance Fascias

ASME A17.1, Rule 110.10a and Rule 110.11a.

2.10.5 Hoistway Ventilation

Provide hoistway ventilation directly to outside air by fixed louver through side wall of hoistway at highest possible point in hoistway. Net size of louver to be at least 3 1/2 percent of hoistway cross section.

2.11 FREIGHT ELEVATOR GUIDES, PLATFORM, AND ENCLOSURE

NOTE: User roller guide assemblies on all freight elevators.

2.11.1 Roller Guides

ASME A17.1, Section 200. Provide roller guide assemblies in adjustable mountings on each side of car and counterweight frames in accurate alignment to top and bottom of frames.

2.11.2 Car Frame and Platform

ASME A17.1, Section 203. Provide 1.8 mm thick 14 gage toe guard fascia on car entrance side of platform in accordance with ASME A17.1, Rule 203.9.

2.11.3 Car Enclosure

NOTE: Use tow-section car gate if headroom is insufficient for single section.

ASME A17.1, Rule 204.3. Complete with [two-section] [vertical rising] gate, power gate operator, emergency exit, emergency light, and lighting fixtures. Construct steel car top in accordance with ASME A17.1, Rule 204.1f. Paint interior and exposed surfaces of car enclosure with manufacturer's standard finish. Provide certificate frame and recessed car station.

2.12 FREIGHT ELEVATOR HOISTWAY DOORS AND ENTRANCES

NOTE: If hoistway doors are for exterior uses, weather stripping does not provide practical protection. In lieu of weather stripping, incorporate alcoves to protect edges and bottom surfaces of exterior doors from rain, snow, and ice.

ASME A17.1, Part I, Sections 110 and 111. Provide hoistway entrance with complete door assembly including door panels with truckable sill, frames, guide rails, and accessories. Provide hoistway entrance assemblies which have a minimum 1-1/2 hour fire rating.

2.12.1 Door Panel

ASTM E 152, fire rated door panel, with minimum 100 mm width by 225 mm height 4 inch width by 9 inch height vision panel at upper door section.

2.12.2 Door Operation

NOTE: Use semi-selective if only one opening at any floor; full-selective if two openings at any floor.

[Semi-selective] [Full-selective].

2.12.3 Door Guide Rails

ASME A17.1, Rule 110.12c, 110.12d, and 110.12e.

2.12.4 Door Interlocks

ASME A17.1, Rule 111.3 and 111.6.

2.13 HANDICAPPED AND MEDICAL SERVICES ACCESS

ATBCB ADA TITLE III, Sections 4.10 for Elevator, 4.30 for Signage, and 4.31 for Telephones.

2.13.1 Provision for Handicapped

NOTE: Use on all elevators.

2.13.2 Emergency Medical Services

NOTE: Use the following for buildings of four stories or more in height.

ICBO, Chapter 30 for elevators and sinage.

[2.14 EMERGENCY POWER OPERATION

NOTE: Use in hospitals and any building in which sufficient standby power is provided to operate one or more elevators.

Upon outage of normal power and initiation of emergency power, provide circuitry and wiring to operate elevator [,telephone] [and] [intercom] [and] to accomplish operation sequences. [In multiple elevator system, one elevator travels automatically to main floor, opens doors, and shuts down. Thereafter, each other elevator in group one at a time returns automatically to main floor. After all cars have returned to main floor, automatically provide one [passenger] [freight] car in regular service.] [For single elevator system, elevator travels automatically to main floor, opens doors, and automatically places itself in regular service.] For emergency power, operation, provide sign reading "EMERGENCY POWER" flashing in each car station. [At same time, provide operable Firefighters' Service.]

]2.15 PROVISIONS FOR EARTHQUAKE PROTECTION

NOTE: Use in seismic Zones 3 and 4. Provide seismic protection as covered by ASME/ANSI A17.1, Part XXIV. Provide fastenings, attachments, and restraints for prevention of seismic damage in detail by registered structural engineer and his seal applied to drawings or sketches. Use forces of 1.0 G horizontal and 1.0 G vertical or heavier.

ASME A17.1, Part XXIV. This facility is located in a seismic zone [3] [4], comply with all ASME A17.1, Part XXIV requirements.

]PART 3 EXECUTION

3.1 INSTALLATION

Install in accordance with manufacturer's instructions, ASME A17.1, ATBCB ADA TITLE III, and NFPA 70.

3.1.1 Traveling Cables

Do not allow abrupt bending of traveling cables.

3.1.2 Structural Members

Do not cut or alter. Restore any damaged or defaced work to original condition.

3.1.3 Safety Guards

Selector cables or tapes exposed to possibility of accidental contact in machine room shall be completely enclosed with 1.5 mm thick 16 gage sheet metal or expanded metal guards, both horizontally and vertically. Exposed gears, sprockets, tape or rope sheaves, floor controllers, or signal machines, and their driving ropes, chains or tapes, and selector drums shall be guarded from accidental contact in accordance with ASME A17.1.

3.1.4 Miscellaneous Requirements

Include recesses, cutouts, slots, holes, patching, grouting, and refinishing to accommodate elevator installation. Use core drilling to drill all new holes in concrete. Finish work to be straight, level, and plumb. During installation, protect machinery and equipment from dirt, water, or mechanical damage. At completion, clean all work, and spot paint.

3.1.5 Firefighters' Service

Firefighters' service shall be complete including installation and wiring of all smoke detectors in accordance with ASME A17.1, Rule 211.3b. Coordinate smoke detector installation for Firefighters' Service.

3.2 FIELD QUALITY CONTROL

After completing elevators system installation, notify Contracting Officer that elevator system is ready for final inspection and acceptance test. Contracting Officer will obtain services of Naval Facilities Engineering Command certified elevator inspector.

Contractor shall perform all required tests and demonstrate proper operation of each elevator system and prove that each system complies with contract requirements and ASME A17.1, including Section 01003, "Acceptance Inspection and Tests of Passenger and Freight Electric Elevators", and the applicable requirements of Part XI, "Engineering and Type Tests". Inspection procedures in ASME/ANSI A17.2.1 form a part of this inspection and acceptance testing. All testing and inspections shall be conducted in the presence of the elevator inspector. Demonstrate the proper operation of all equipment at various date settings, selected by the elevator inspector, ranging from the date of contract award through 1 January 2099.

Inspector shall complete, sign and post form NAVFACENGCOM 9-11014/23 (Rev. 7-88), Elevator Inspection Certificate, after successful completion of inspection and testing.

3.2.1 Testing Materials and Instruments

Furnish testing materials and instruments required for final inspection. Include calibrated test weights, tachometer, 600-volt megohm meter, volt meter and ammeter, three Celsius calibrated thermometers, door pressure gage, spirit level, stop watch, dynamometer, and 30 meter 100 foot tape measure.

3.2.2 Field Tests

3.2.2.1 Endurance Tests

Test each elevator for a period of one hour continuous run, with specified rated load in car. Restart the one hour test period from beginning, following any shutdown or failure. During test run, stop car at each floor in both directions of travel for standing period of 10 seconds per floor. The requirements for Rated Speed, Leveling, Temperature Rise and Motor Amperes Test specified herein are to be met throughout the duration of the Endurance Test.

3.2.2.2 Speed Tests

Determine actual speed of each elevator in both directions of travel with rated load and with no load in elevator car. Make Speed tests before and immediately after Endurance test. Determine speed by tachometer reading, excluding accelerating and slow-down zones per ASME/ANSI A17.2.1. Minimum acceptable elevator speed is the Rated speed specified. Maximum acceptable elevator speed is 110 percent of Rated speed.

3.2.2.3 Leveling Tests

Test elevator car leveling devices for landing accuracy of plus or minus 6 mm 1/4 inch at each floor with no load in car, symmetrical load in car, and with rated load in car in both directions of travel. Determine accuracy of floor landing both before and immediately after endurance tests. [For Class C2 landing, freight elevators shall comply with ASME A17.1, Rules 207.2b (3)(a), (b) and (c). The maximum load on car platform during loading or unloading shall not exceed 150 percent of rated load.]

3.2.2.4 Insulation Resistance Tests

Perform tests to ensure elevator wiring systems are free from short circuits and grounds. Minimum acceptable insulation resistance for electrical conductors is one megohm between each conductor and ground and between each conductor and other conductors. Prior to megohm meter test, make provisions to prevent damage to electronic devices.

3.2.2.5 Brake Test

Conduct brake test with 125 percent of rated load in elevator. Verify that brakes stop and hold elevator with 125 percent of rated load.

3.2.2.6 Buffer Tests

Test buffers for car and counterweight as outlined in ASME A17.1, Rule

1100.5.

3.2.2.7 Temperature Rise Tests

Determine temperature rise of elevator hoisting motor, motor-generator, exciter, and booster during full-load test run for one hour minimum. Under these conditions, maximum acceptable temperature rise shall not exceed acceptable temperature rise indicated on manufacturer's data plate. Start test only when equipment is within 5 degrees C of ambient temperature.

3.2.2.8 Balance Tests

Perform electrical and mechanical balance tests of car and counterweight.

3.2.2.9 Motor Ampere Tests

Measure and record motor amperage when motor is running and elevator is lifting at rated load and speed. Measure and record motor amperage at beginning and end of Endurance test.

[3.3 MAINTENANCE SERVICE TRAINING

NOTE: Specify elevator maintenance service instructions for projects at isolated locations.

Provide qualified representative of elevator manufacturer to instruct Government personnel in care, adjustment, and maintenance of elevator equipment for a period of not less than 5 working days immediately following acceptance of elevator system.

]

NOTE: Suggestions for improvement of this specification will be welcomed using the Navy "Change Request Forms" subdirectory located in SPECSINTACT in Jobs or Masters under "Forms/Documents" directory or DD Form 1426. Suggestions should be forwarded to:

Officer In Charge
Seabee Logistics Center
NAVFAC 15G/SLC 46
4111 San Pedro Street
Port Hueneme, CA 93043-4410

FAX: (805) 985-6465/982-5196 or DSN 551-5196

-- End of Section --