

DIVISION 14 - CONVEYING SYSTEMS

Section 14000 - General Discussion

Introduction

The size, number, and location of elevators must be addressed at the earliest stages of the design, to ensure that neither the overall function of the facility nor the optimum configuration of elevators is compromised. A minimum of two elevators serving all floors must be provided. Elevators shall be provided separate independent power source to allow either elevator to operate when power is shut down to the other unit. Elevators shall be powered from the emergency power system. Each unit shall have a dedicated ATS to allow either elevator to operate when emergency power is shut down to the other unit. Battery lowering shall be provided to activate in the event of a total power failure and shall be interconnected with the shunt system to prevent operation during a shunt event. The size and location of the machine room is similarly critical.

Provide a minimum elevator machine room size of 100 square feet per elevator, exclusive of the area above the hoistway (for traction elevators), and without any odd corners, narrow passages, or structural interferences.

Consultant shall design elevators to comply with current ASME A117.1, ASME A117.2, IBC, and NEC codes.

When new elevators are being installed into existing buildings where elevators do not currently exist (as opposed to elevator modernization) comply with the criteria for new elevators to the most practical degree (extent) possible.

The Consultant is expressly responsible for incorporating these overall requirements into the project, and for ensuring that all sub-consultants are aware of the requirements and incorporate them into their designs as well.

Reliance on "after-the-fact" equipment selections to compensate for a problematic design decision is unacceptable.

Consultant is encouraged to develop the basic building design so that stairs are the naturally preferred mode of vertical travel.

Service elevators shall be located near the loading dock.

Basic Elevator Selection

Hydraulic elevators are generally used in low-rise buildings with two to three floors. Electric traction elevators are generally used in buildings over three stories. Machine Room-less Elevators are not allowed. Noncircular elastomeric-coated steel suspension members are not allowed. Combination hydraulic/traction elevators are not allowed. Consultant shall coordinate the electrical requirements as well as the code requirements for the pit, overhead clearance, shaft ventilation, pit ladder, light (with switch adjacent to ladder) and electrical duplex 120 VAC outlet in pit, equipment room and phone in cab.

In addition to this general discussion section refer to the following applicable sections:

- Section 14210 – Electric Traction Elevators
- Section 14240 – Hydraulic Elevators
- Section 14440 – Stair Lifts
- Section 16175- Elevator Power and Controls

Elevator Emergency Communication Systems

- **1.0 Summary**
- 1.1 A RATH Elevator Unit (P/N: 7200 or 7200M), remotely viewable Camera, and dedicated Yes / No buttons are to be installed in each elevator with a corresponding Machine Room Unit (P/N: 7100) installed in the machine room. The built-in display is to be mounted on the same COP as the emergency phone call button along with the Yes / No buttons. The camera may be built into the 7200,

externally mounted in the COP, or externally corner mounted.

- 1.2 The Yes / No buttons will be interfaced with the Elevator panel. The Elevator unit will also act as the Elevator Emergency Phone for off-site calling capabilities and verbal communication between monitoring and an elevator passenger if an external phone is not being utilized in the elevator.
- 1.3 Each elevator unit must have a unique SmartView ID to allow for secure access by authorized personnel and location identification. This ID is to be recorded into the location message of the built-in or external emergency phone located in the elevator or noted in the account by the “monitoring” company.
- 1.4 When the elevator phone is activated the operator must be able to view the camera in the car to verify if it is occupied and be able to send a message to the display if the occupant is deaf, has difficulties hearing, or is experiencing an event causing them not to be able to respond verbally. The occupant can respond Yes or No using the dedicated buttons.
- 1.5 For all buildings with an elevator a central control point must be installed within the building that allows for both verbal and visual communication back to each elevator car.
- 1.6 The SmartView 2 System must be plugged into an APC ups connected to a 120v emergency power source.

- **2.0 Definitions**
 - 2.1 RATH SmartView 2 System: A two-way elevator communication system providing an improved method for communicating with rescue services.
 - 2.2 RATH Machine Room Unit: A device installed in the machine room. Acts as the power and network interface module for the SmartView 2 system.
 - 2.3 RATH SmartView Elevator Unit: A device installed in the elevator car. Contains built-in display and integrated or external camera. Shows text-based emergency messages to occupants in the elevator and provides emergency personnel live video of the inside of the elevator car. The Elevator unit will also act as the Elevator Emergency Phone an external phone is not being utilized in the elevator as described in section 1.2.
 - 2.4 Built-in or External Camera: A device located in the elevator that provides emergency personnel live video of the inside of an elevator car.
 - 2.5 RATH SmartView ID: Unique numeric or alpha-numeric identifier to allow secure access on the SmartView viewing website (<https://www.smartviewhub.com>) to authorized personnel only.
 - 2.6 Integrated or External Elevator Emergency Phone: A device located in the elevator for contacting emergency response personnel.

- **3.0 Submittals**
 - 3.1 Submit product data sheets. Include operation manuals and network security information.
 - 3.2 Wiring or shop diagrams detailing wiring schematics, cabling.

- **4.0 Construction**
 - 4.1 The Elevator unit with integrated display shall have input connections for a Camera, Yes / No buttons, and the Machine Room unit. The Machine Room unit shall have input connections for power, Internet, telephone line, and Elevator unit.
 - 4.1.1 The SmartView 2 system and buttons shall operate in a minimum temperature range of 32°F to 122°F (0°C to 50°C).
 - 4.2 The display shall have black text on a white background.
 - 4.2.1 The display shall have a minimum text height of 4.8mm.
 - 4.3 The Yes and No buttons shall require no more than 5 lbs. of force to activate.

- **5.0 Mounting**
 - 5.1 The Elevator unit with integrated display is to be mounted in the COP.
 - 5.2 If using an external camera, it is to be mounted in the COP or corner mounted.
 - 5.2.1 When mounted in the COP the camera shall be located between 55” and 60” with a bracket allowing for up to 30 degrees of downward viewing.
 - 5.3 The Machine Room unit shall be mounted in an area with restricted access. It should not be mounted more than 6’56” off of the ground.

- **6.0 Electrical**
 - 6.1 The Machine Room unit must have a primary and a backup power source.
 - 6.2 An APC ups shall be provided and shall be sized for one (1) of operation.

- 6.3 The Elevator unit shall be powered by the Machine Room unit.
- 6.4 The external Camera (if used) shall be powered by the Elevator unit.

- **7.0 Communications**
- 7.1 The built-in or external elevator emergency phone shall be activated when the emergency phone push button is pressed on the elevator panel.
- 7.2 The elevator emergency phone shall include the unique SmartView ID in its prerecorded message. The message should play when the operator answers the call.
- 7.3 Once the SmartView ID for the applicable elevator is accessed by authorized personnel, the Camera and integrated Display will be activated and begin to transmit data.
- 7.3.1 An open message input field shall be available to the call center personnel to allow for adaptive messaging.
- 7.3.2 In the same view port the camera shall be viewable to allow for messages and camera viewing to be done simultaneously.
- 7.4 Occupant responses shall be displayed to authorized personnel and the occupant.
- 7.5 If the authorized personnel dispatches assistance, a message shall be sent stating, "Help is on the way" to notify the occupant in the elevator.
- 7.6 Messages sent by authorized personnel must be in a simple format where a Yes or No response can be given by the occupant.
- 7.7 Once the call has been made (button pushed). The call, camera stream, and display stream can only be terminated by the called party.
- 7.8 The RATH SmartView 2 system must be capable of being activated on-site and remotely. Activating the system will enable the camera and display as described in section 1.4.
- 7.9 Communication must also be available through a central control point when required due to building having over 60; of rise as mentioned in section 1.5.
- 7.10 A network connection with unrestricted access to the Internet must be provided (Unrestricted access can come from the RATH Cellular Gateway) for communication to the monitoring of the system.

- **8.0 Graphics**
- 8.1 Yes and No response buttons shall be properly identified in the COP panel.
- 8.2 The RATH display shall remain off or show a black screen in an idle state when not being used for emergency communication.

- **9.0 Product Substitutions**
- 9.1 As the University of Arizona has standardized on the SmartView system no substitutions are allowed.

- **10.0 Warranty**
- 10.1 The two-way visual communication systems shall be warranted for a period of two years.

- **11.0 Manufacturer**
- The manufacturer shall be:
- RATH by Avire
- N56 W24720 North Corporate Circle
- Sussex, WI 53089
- www.avire-global.com/en-us/

Fire Alarms and Protection

Elevator hoistways, lobbies, and machine rooms shall be provided with fire sprinklers, heat detectors, and smoke detectors.

Smoke / heat detectors in the hoistways will be required in association with required sprinklers as stated above and applied per NFPA 72 and ASME A 17.1. Supplemental heat detectors are required within 24 inches of each required sprinkler head for activation of a shunt trip circuit. The shunt trip circuit will shut off elevator equipment power prior to the discharge of water from the sprinkler system.

Pits for hydraulic elevators are required to be fire sprinkled per the State Elevator Inspector. Code compliant fluid does not create an exception. Sprinklered pits require a heat detector.

NFPA 13 & 72, ASME A 17.1 and the IBC will dictate the balance of sprinkler and initiating device application throughout the related elevator spaces.

University Checklist

The following checklist is used by the University when reviewing elevator drawings and specifications. The Consultant is encouraged to review this against his specifications to insure completeness at the time of submittal.

Motion Control Engineering Controls	Motion control performance
Modem and connections	ADA phone and make connections
Shunt trip breaker w/ heat detector	GFI breakers on 120 V. circuits, M/R and hoistway
Sump pump in elevator pit	Run phone wires for emergency phone and modem
Fire Service	Vent and cool M/R
Mount controller on M/R wall to prevent vibration	Lockable car light switch in M/R
Oil return pump	Submersible pump on hydraulic pump units
Pit depth	Duplex receptacle in pit
Pit stop switch next to ladder	Pit ladder
Sump pump in pit	Pit light switch next to ladder
Vent hoistway (unobstructed)	Hoist way overhead clearance
Paint fascia	PVC casing around jack assembly
Car control station shall be hinged and swing for easy access	Emergency light located in car control station
COP Maintenance panel key to (Northeast J200)	Car position indicator
Hall lanterns (directional arrows)	Hall position indicator at main lobby only
All fixtures illuminated by LED's	2-way voice emergency communication required for bldg. height > 60'
Stop switch keyed to EPCO-1	Tamper resistant fixtures by EPCO
Independent service keyed to EPCO-1	Meet ADA requirements (Braille & audible signals)
Smoke detectors to be compatible with and tie into building system	Light & fan switches keyed to EPCO-1
S.S. Handrails	Fire service switch keyed to AZFS
Squirrel cage fan single speed	Provide emergency access in all hall hoist way doors
Photo curtain (Gatekeeper 2000 by Adams)	Provide protective cab blankets & hooks
Instruct University	Engrave bldg. name and elevator # in car control panel
As-built drawing, parts list, instructions (in triplicate)	GAL door equipment
Key lock out to be mortised and accept Sargent & Medico cylinders	Nudging
Self-closing self-latch machine room doors	Test equipment
	12 mo. warranty and maintenance w/24 hour coverage at no added cost
	Verify M/R access, slope ships ladder to be less than 60°
	Fire extinguisher in all machine rooms
	Elevator shutdown (shunt trip)
	Shunt trip control circuits monitored

- Ancillary electrical elevator equipment shall be fed from a separate, solely dedicated, elevator electrical LOAD CENTER. This elevator load center shall only be used for elevator related equipment and devices. It will provide the required means to lock out the equipment for service. Required characteristics of elevator electrical Load center are surface mounted, copper bus, no door, dead front, 14 inches wide, lockable (lockout) breakers and a maximum size of 12 full size breaker spaces. Additional spaces are authorized only where the number of elevator related loads increases above 12 spaces. Unused breaker spaces shall not have any spare breakers installed. Ancillary elevator equipment to be fed from this panel may be, but is not limited to, the following:

- Shunt trip control feed
- Machine room lights/receptacles
- Elevator car lights
- Elevator pit lights/GFI receptacle
- Elevator pit sump pump
- Machine room A/C
- Elevator Fan (A/C)
- Hydraulic oil cooler
- Main electrical elevator feed should employ a molded case shunt trip breaker and a suitably sized enclosure. Larger enclosures for electronic type breakers are to be avoided as they take up too much room in an already cramped service space. Requirements for electrical coordination to be accomplished upstream of the main elevator feed.

Refer to attached pages 14000-4 through 14000-13 for “Construction Guidelines For Elevators”, “Firefighters Service/Shutdown Requirements” and “Inspection Requirements Checklist” presented by The Industrial Commission of Arizona.

ICA/ADOSH-ELEVATOR SECTION - PHOENIX (602) 542-3313 TUCSON (520) 320-4236, 37, or 48



CONSTRUCTION GUIDELINES FOR ELEVATORS

(Per ASME A17.1-2007' Elevator Safety Code and other applicable codes)



HOISTWAY / HOISTWAY MACHINERY SPACE/ PIT

pg.1 3-10

- 1) Sec. 2.1/2.7 - Provide hoistway enclosure conforming to all applicable codes. Fire-resistance ratings of hoistways and machinery spaces shall conform to the building code. Seal all gaps and penetrations.
- 2) Rule 2.1.1.2.2(c) - Where applicable, hoistway glass shall be laminated and each piece visibly marked as per ANSI 297.1 or 16 CFR Part 1201. Windows are prohibited in hoistways.
- 3) Rule 2.1.4 - Hoistway ventilation to the outer air shall be provided, per the building code, for elevators penetrating more than three floors. The area of the hoistway vent shall not be less than 3 ½ percent of the area of the hoistway nor less than 3 square feet for each elevator car.
- 4) Rule 2.1.6 - Projections, ledges, or recesses more than 4 inches shall be beveled not less than 75 degrees.
- 5) Sec. 2.2 - Pit floors shall be approximately level and be provided with a sump for a drain or sump pump and have a sump cover that is flush with the floor. Drains or sump pumps shall remove a minimum of 50 GPM per elevator. Exposed discharge lines shall be of metal. Discharge lines shall be provided with a check valve installed close to the drain or pump. Shut-off valves in discharge lines and oil sensing equipment to stop fluid removal are not allowed.
- 6) Rule 2.2.4 - Access to pits shall be by a ladder extending to at least 48 ins. above the lowest landing or by a separate pit access door, where required. Ladders shall be within reach from the lowest landing door.
- 7) Rule 2.2.5 - Pits shall be provided with a minimum of 10 foot candle lighting with light guard. The light switch shall be located on the pit ladder side and within easy reach from the pit access door.
- 8) Rule 2.2.8 - Where applicable, provide a permanent means to access the underside of the car (i.e., working platform) if the distance from the pit floor to the underside of the plank channels or slings exceeds 83 inches.
- 9) Rule 2.7.3.4.3 - Where applicable, hoistway access doors of secondary and overhead machinery spaces shall be a minimum of 29 ½ inches in width and height and shall be self-closing and self-locking using a spring-type lock.
- 10) Rule 2.7.3.4.6 - Where applicable, hoistway access doors necessary for access to an MRL elevator emergency brake shall be a maximum of 24 inches in width and height and shall be self-closing and self-locking using a spring-type lock. Keys to unlock the access doors shall be Group I Security (restricted to elevator personnel only).
- 11) Rule 2.7.4 - Where applicable, headroom in secondary and overhead machinery spaces shall be a minimum of 42 inches without a governor and 53 inches with a governor.
- 12) Rule 2.8.3.3.4 - If sprinklered, all electrical equipment in the pit within 48 inches above the pit floor shall be weatherproof (NEMA 4 rated) and wiring identified for use in wet locations per NFPA 70.
- 13) Rule 2.4.12 - The minimum vertical distance in the refuge area between the car top and the overhead structure or other obstruction shall not be less than 43 in. when the car has reached maximum upward travel.
- 14) Rule 2.7.9.1 - Where applicable, hoistway machinery spaces shall be provided with a minimum of 19 foot candle lighting with light guard. The light switch shall be located within easy reach of access to such space.
- 15) Rule 2.7.9.2 - Where applicable, hoistway machinery spaces shall be provided with means, mechanical if necessary, to keep the temperature and humidity in the range specified by the elevator equipment manufacturer.
- 16) Rule 2.8.1&2 - Machinery and equipment or electrical equipment and wiring that does not pertain to the elevator is prohibited.
- 17) Rule 2.8.3.3 - Sprinkler protection shall supply only branch lines at not more than one floor level (see drawing). Sprinkler lines running up the hoistway are prohibited. Pit sprinkler heads shall be within 24 inches of the pit floor.
- 18) Rule 2.8.3.3.2 - When sprinklered, a main power shunt-trip disconnect, and heat detector(s) is required. Heat detectors shall be within 2 feet of each sprinkler head at the top of the hoistway. No heat detectors in sprinklered pits.
- 19) Rule 2.8.3.4 - Pipes or ducts conveying gases, vapors, or liquids that do not pertain to the elevator are prohibited.
- 20) Rule 2.27.3.2.1 - Provide smoke detector(s) in the top of hoistways that are sprinklered.
- 21) NFPA 70 - 620.23 - Where applicable, secondary, and overhead machinery spaces shall be provided with a GFCI protected duplex receptacle. Machinery space lighting (see #14) and receptacle shall be on a separate branch circuit.
- 22) NFPA 70 - 620.24 - Pits shall be provided with a GFCI protected duplex receptacle. A single non-GFCI receptacle shall be provided for the sump pump. Pit lighting and receptacles (see #7 and 12) shall be on a separate branch circuit.

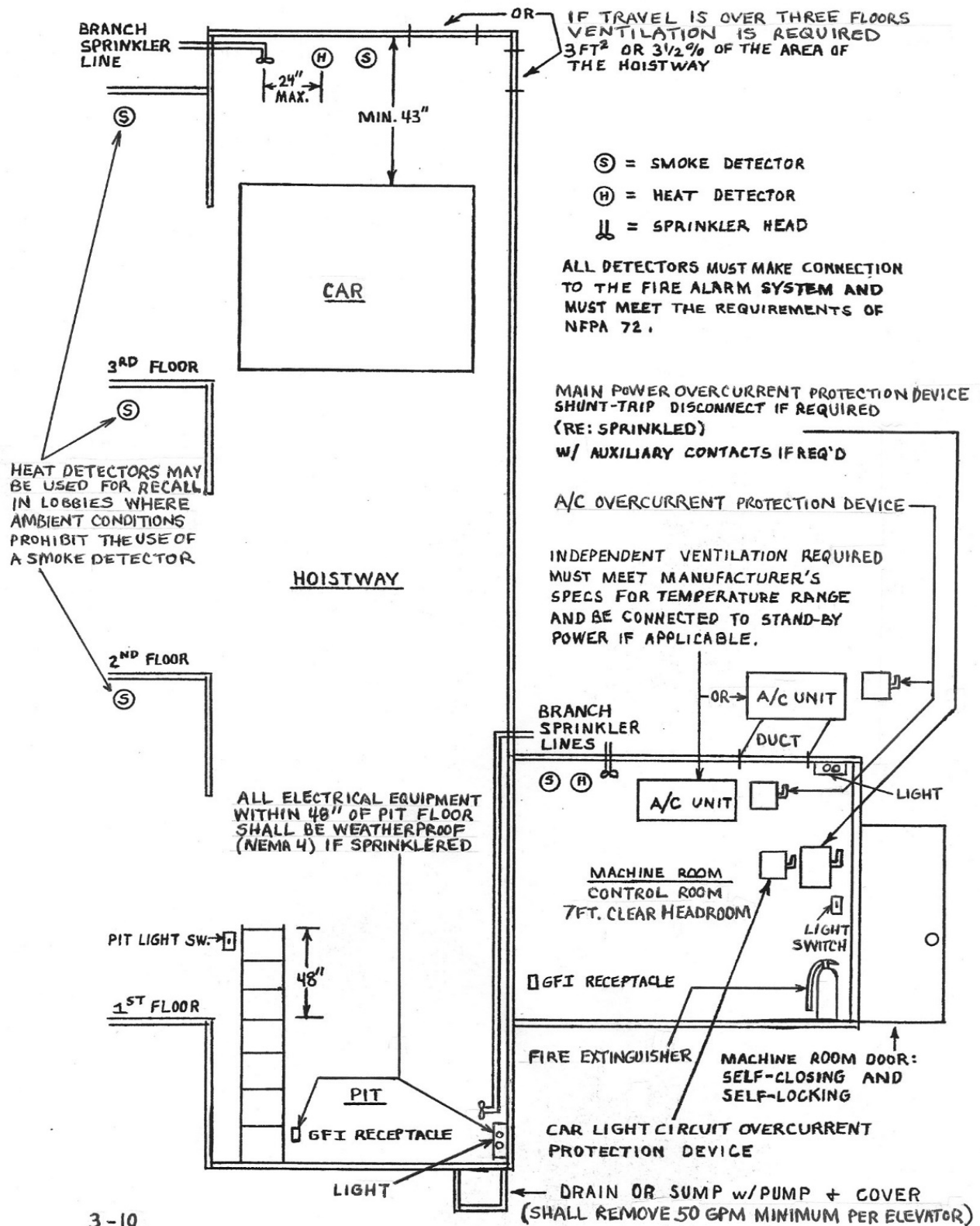
MACHINE ROOM/ CONTROL ROOM/ CONTROL SPACE

pg.2 3-10

- 23) **Sec. 2.7** - Provide machine room (control room/control space, if applicable) enclosure conforming to all applicable codes. Fire-resistance rating shall conform to the building code. Seal all gaps and penetrations.
- 24) **Rule 2.7.2** - A minimum of 18 inches around equipment for maintenance path and clearance shall be provided.
- 25) **Rule 2.7.3.1.1** - Safe, permanent, and unobstructed access to these rooms/spaces shall be provided.
- 26) **Rule 2.7.3.3** - Stairs provided for access to or in machine/control rooms or control spaces shall be a minimum of 60 degrees from the horizontal, have handrails, and have a platform, at the access-door sill level. Platform length shall permit full swing of the door plus 2 feet for doors that swing out and platform length for doors that swing in shall be not less than the width of the door. Ships ladders are not acceptable as stairs. OSHA standards if applicable will apply.
- 27) **Rule 2.7.3.4** - Access doors to machine rooms, control rooms, and control spaces shall be self-closing and self-locking using a spring-type lock. Doors to machine and control rooms shall be not less than 29 ½" wide and 80" high.
- 28) **Rule 2.7.4** - Machine/control rooms shall have a clear headroom of not less than 84 inches. Control spaces, where applicable, shall have a clear headroom of not less than 78 inches or the height of the equipment, whichever is greater.
- 29) **Rule 2.7.6** - Machine rooms and control rooms, where provided, shall not be located in the hoistway.
- 30) **Rule 2.7.8** - Where applicable, remote machine rooms and/ or control rooms of electric elevators shall be provided with a permanent means of communication between the elevator car and remote machine room and / or control room.
- 31) **Rule 2.7.9.1** - Machine rooms, control rooms, and control spaces shall be provided with a minimum of 19 foot candle lighting (see #43) with light guard. Light switch shall be within reach from the door and on the lock-jamb side.
- 32) **Rule 2.7.9.2** - Machine rooms, control rooms, and control spaces shall be provided with independent ventilation means to keep the air temperature and humidity in the range specified by the elevator equipment manufacturer.
- 33) **Rule 2.8.1&2** - Machinery, equipment, electrical equipment, or wiring not pertaining to the elevator is prohibited.
- 34) **Rule 2.8.3.3** - Sprinkler protection shall supply only branch lines into the machine/control room or control space.
- 35) **Rule 2.8.3.3.2** - When sprinklered, a shunt-trip disconnect for the main power supply and heat detector(s) is required. Heat detector(s) shall be within 2 feet of each sprinkler head in the machine/control room or control space.
- 36) **Rule 2.8.3.4** - Pipes or ducts conveying gases, vapors, or liquids that do not pertain to the elevator are prohibited.
- 37) **Rule 2.8.3.5** - Pipes (i.e., sprinkler) or similar equipment that contains liquid shall not be located directly above elevator or electrical equipment. Pipes shall not encroach upon any required clearances.
- 38) **Rule 2.8.5** - Air conditioning equipment and condensate drains shall not be installed directly above elevator or electrical equipment. Condensate drain lines shall not be connected directly to sewers. Safe and convenient access for servicing and maintenance of air conditioning equipment shall be provided.
- 39) **Rule 2.27.3.2.1** - Smoke detection shall be provided in machine/control rooms and control spaces for fire recall.
- 40) **Rule 8.6.1.6.5** - A class "ABC" fire extinguisher shall be provided in machine/control rooms and control spaces.
- 41) **NFPA 70-620.21** - All wiring shall be installed in metal conduit, box, or wireway.
- 42) **NFPA 70-620.22** - A separate branch circuit shall supply the car lights.
- 43) **NFPA 70-620.23** - A separate branch circuit shall supply the machine/control room or control space lighting and receptacle. A duplex GFCI receptacle in the machine/control room or control space shall be provided.
- 44) **NFPA 70-620.25** - A separate branch circuit shall supply the machine/control room or control space air conditioning equipment. A disconnect with overcurrent protection and lockable in the open position shall be provided.
- 45) **NFPA 70-620.51** - A single means of disconnect, with overcurrent protection and lockable in the open position, shall be provided for the main power supply (see #35). Per NFPA 70-620.91(c) - The main power disconnect shall be provided with an auxiliary contact for use on hydraulic elevators with battery lowering.
- 46) **NFPA 70-620.51(d)** - All disconnecting means shall be provided with identification and power feed locations.
- 47) **NFPA 70-620.53** - A car light disconnect, with overcurrent protection and lockable in the open position, shall be provided in the machine/ control room or control space (see #42).
- 48) **IBC-3006.6** - Plumbing systems (i.e., floor drains) shall not be located in machine/control rooms or spaces.
- 49) **NFPA 72-4.4.6** - Fire alarm annunciator panels shall not be installed in elevator machine/control rooms or spaces.

MISCELLANEOUS

- 50) **Rule 2.27.1** - Where elevator rise is 60 feet or more, a two-way communications means within the building and accessible to emergency personnel to speak with persons in each elevator car individually shall be provided. Operating instructions shall be incorporated with or adjacent to the two-way communication means outside the elevator car.
- 51) **Rule 2.27.3.2.1** - Smoke detectors shall be installed at each floor (lobby) served by the elevator. Heat detectors may be permitted where ambient conditions prohibit the use of a smoke detector (see **drawing**).
- 52) **IBC-3002.4** - Buildings four or more stories above or below grade plane shall be provided with an elevator capable of transporting a 24" by 84" open ambulance stretcher and be identified on the hoistway door frame for such use.
- 53) **IBC-3003.1** - In buildings or structures where standby power is required (i.e., 75 feet of rise or more) or provided for elevator(s), all electrical circuits required for elevator(s) shall be connected to the standby power source.



ICA/ADOSH-ELEVATOR SECTION -PHOENIX (602) 542-3313, TUCSON (520) 320-4236,4237



ELEVATOR SECTION
FIREFIGHTERS' SERVICE/ ELEVATOR SHUTDOWN
GENERAL REQUIREMENTS

(Per ASME A17.1-2000' and NFPA 72-current edition)

General Note:

The following requirements are only a guideline for Firefighters' Service ("elevator recall") and Elevator Shutdown. See the above listed code books for complete requirements. These two operations are separate and work independently of each other. Smoke detectors are used to "recall" an elevator for Firefighters' Service (takes it out of normal service) and heat detectors are used for Elevator Shutdown (main power removal) via the "Shunt-Trip" disconnect.

(A) Fire Alarm Panel requirements:

- 1) The Fire Alarm Panel shall not be located in the elevator machine room.
- 2) The Fire Alarm Panel, or where required - "remote annunciator-fire alarm panel", must be located in an area where an alarm will be readily noticed. If that is not possible, the Fire Alarm Panel, wherever its building location, must be remotely monitored.
- 3) The Fire Alarm Panel and when required - "remote annunciator-fire alarm panel" must identify the type of device activated and its location. Example: "smoke detector - top of elevator shaft (hoistway)"

(B) Detector requirements with no sprinklers in the hoistway or machine room:

- 1) A smoke detector is required in the elevator machine room. Activation of this device shall recall the elevator to the alternate floor, unless the machine room is remotely located, and must cause the "Fire Hat" light in the elevator car station to flash.
- 2) Smoke detectors are required in all enclosed (not open to the outside) elevator lobbies. The detector at the designated (egress) floor level must recall the elevator to the alternate floor and all other lobby detectors must recall the elevator to the designated level.
- 3) No detectors are allowed in the hoistway.

(C) Detector and other requirements with sprinkler in the machine room:

Same requirements as **(B) plus:**

- 1) Heat detector(s) required and shall be located within 24 inches of each sprinkler head. Heat detector(s), when activated, must "Shunt-Trip" the mainline disconnect before the activation of the any sprinkler head.
- 2) If at any time, the power source to operate "Shunt-Trip" is not present, the Fire Alarm Panel and required annunciator panels must indicate a supervisory signal for "loss of elevator shunt-trip power".
- 3) If the mainline disconnect in the machine room is manually turned "off" or its been Shunt-Tripped "off" from a heat detector activation, the Fire Alarm Panel must **NOT** indicate a supervisory signal for "loss of elevator shunt-trip power".

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cont'd

(D) Detector and other requirements with sprinkler at the top of the hoistway:

Same requirements as (B) number 1) and 2) plus:

- 1) A smoke detector is required at the top of the hoistway. Activation of this device shall recall the elevator to the designated level and must cause the "Fire Hat" light in the elevator car station to flash.
- 2) A heat detector is required at the top of the hoistway within 24 inches of the sprinkler head. Activation of this device must "Shunt-Trip" the mainline disconnect prior to the activation of the sprinkler head.
- 3) All electrical equipment within 48 inches of the pit floor must be weatherproof and NEMA 4 rated (must provide protection from the water spray of a sprinkler head).

(E) Detector and other requirements with sprinkler at the bottom of the hoistway:

Same requirements as (B) number 1) and 2) plus:

- 1) A smoke detector is required at the top of the hoistway. Activation of this device shall recall the elevator to the designated level and must cause the "Fire Hat" light in the elevator car station to flash.
- 2) A heat detector is not required in the pit within 24 inches of the sprinkler head if the sprinkler head can be located within 24 inches of the pit floor. If the sprinkler head is over 24 inches above the pit floor, a heat detector will be required and must meet the weatherproof NEMA 4 rating.
- 3) All electrical equipment within 48 inches of the pit floor must be weatherproof and NEMA 4 rated (must provide protection from the water spray of a sprinkler head).
- 4) A smoke detector is not advisable in the elevator pit (possibility for false alarms).

(F) Firefighters' Service Indication requirements:

- 1) Upon activation of any smoke detectors in any affected elevator spaces, or when the affected elevator Phase I Fire Service recall key switch is turned to the "on" position, an indicator light, on or at, the Phase I Fire Service recall key switch located at the designated level shall illuminate to indicate that the affected elevator(s) is on Firefighters' Service. Activation of any affected elevator lobby smoke detector shall illuminate the "Fire Hat" symbol located inside the elevator. Activation from a hoistway or machine room smoke detector shall illuminate a "flashing Fire Hat" symbol inside the elevator.

(G) Hydraulic Elevator Auxiliary (battery) Lowering with a Shunt-Trip disconnect req's:

- 1) An auxiliary contact on the mainline disconnect must be provided to disable the battery lowering function (elevator cannot move) if the mainline disconnect is manually turned "off" or if it has shunt-tripped "off". Battery lowering can only occur if the normal building power that feeds the mainline disconnect is not present.

(H) Sprinkler Line general requirements:

- 1) Only branch sprinkler lines are allowed in elevator spaces. Branch lines must terminate once they enter a space. Branch sprinkler lines entering the hoistway must enter only from the floor they are to serve. A branch sprinkler line that enters the hoistway at the first landing to sprinkle the pit, can only sprinkle the pit. The branch sprinkler line for the pit cannot extend up to sprinkle the top of the hoistway. That branch line must enter at the top landing. Branch sprinkler lines entering the hoistway at the top floor to sprinkle the top of the hoistway may not extend to other parts of the building. A branch sprinkler line entering the machine room shall only sprinkle the machine room, or it can be allowed to extend to the hoistway only if it will branch sprinkle at that level.

(2)

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THE INDUSTRIAL COMMISSION OF ARIZONA
DIVISION OF OCCUPATIONAL SAFETY & HEALTH
ELEVATOR SECTION
P.O. BOX 19070
PHOENIX, ARIZONA 85005-9070

**REQUIREMENTS FOR ELEVATOR COMPANIES PRIOR TO CALLING
TO CONFIRM ACCEPTANCE INSPECTION**

MACHINE ROOM

Check Box When Completed

- 1) ☐ (IBC) Machine room fire rating must match hoistway fire rating
- 2) ☐ (IBC) Machine room door fire rating must match hoistway door fire rating
- 3) ☐ (A17.1) Machine room door must have the proper lock set and must self close
- 4) ☐ (IBC) Penetrations are to be sealed.
- 5) ☐ (NFPA & A17.1) An ABC fire extinguisher must be provided
- 6) ☐ (A17.1) No foreign electrical conduits may be run through the machine room
- 7) ☐ (A17.1) No plumbing allowed other than that required for the machine room A/C unit
- 8) ☐ (A17.1) No access panels in the ceiling or roof access hatches are allowed.
- 9) ☐ (A17.1) Overhead clearance 7' minimum
- 10) ☐ (NFPA) Smoke detector required. Heat detector required within 24" of each sprinkler head
- 11) ☐ (A17.1) Shunt trip breaker required if machine room or top of hoistway has a sprinkler
- 12) ☐ (A17.1) Shunt breaker must have an auxiliary contact to disable battery lowering, if provided, when the disconnect is either shunted off or turned off.
- 13) ☐ (NFPA) Shunt power must be monitored for power loss
- 14) ☐ (A17.1 & NFPA) All fire recall and shunt trip devices must be pre tested and panel labels checked for proper description.
- 15) ☐ (A17.1) Fire alarm panel is not allowed in the machine room
- 16) ☐ (NFPA) If fire alarm panel is not located in an area of general activity a remote annunciator must be in an area of general activity or the panel must have off site monitoring.
- 17) ☐ (NFPA) Off site monitoring of fire alarm devices must receive the device identification ie: 'machine room smoke detector Elevator #4'
- 18) ☐ (A17.1) PVC conduit or pipe is not allowed in the machine room
- 19) ☐ (A17.1) Code data tag required ie: 'built under ASME A17.1-2000 Code'
- 20) ☐ (A17.1) Temperature and humidity data tag required
- 21) ☐ (IBC) Independent ventilation required. Must not be connected to any other building supply or return.
- 22) ☐ (NEC) Machine room ventilation air handler must have a lockable disconnect switch and be on a dedicated circuit.
- 23) ☐ (NEC) Machine room lighting and GFCI receptacle must be on a dedicated circuit. Test for circuit separation before inspection.
- 24) ☐ (NEC) Car lighting circuit must have a current interrupting, lockable, externally operable disconnect switch.
- 25) ☐ (NEC) Car light circuit must be on a dedicated breaker. Test for circuit separation before inspection.

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JOB NAME _____

ADDRESS _____

Check Box When Completed

- 26) ☐ (NEC) All disconnect switches must have permanent labels noting device being disconnected and panel /breaker number for their power source. Breaker panels must have circuits identified.
- 27) ☐ (NEC) Proper electrical clearances per NFPA 70 must be verified. Low voltage (151 VAC on any leg to ground) to any grounded object must have 36" clearance. High voltage (over 151 VAC to ground) must have 42" clearance.
- 28) ☐ (NEC) Any Hot device to Hot device must have 48" clearance.
- 29) ☐ (A17.1) Emergency brakes (ie: rope grippers, sheave jammers), must be pre tested for empty car up direction unintended motion, 125% full load down direction unintended motion and empty car up direction over speed to insure that they will work correctly during the acceptance inspection.
- 30) ☐ (A17.1) Car safeties must be pre tested with rated load at governor jaw trip speed to ensure that the car safeties will stop and hold the car with the correct slide for this overspeed test during during the acceptance inspection.
- 31) ☐ (A17.1) All equipment must be properly identified (#1, #2 etc.)
- 32) ☐ (A17.1) All machine guards must be in place.
- 33) ☐ (A17.1) If seismic is required, all required anchors, rope retainers etc. must be in place.

PIT

- 1) ☐ (A17.1) Pit ladder must extend to 48" above the landing with handhold across the top. Pit ladder must be within 39" on a horizontal plane of the hoistway door release mechanism. Pit light and pit switch must be on the side that the ladder is on and be within easy reach from the hoistway entrance.
- 2) ☐ (A17.1) Second pit switch is required if the pit is over 67" deep.
- 3) ☐ (NEC) Pit light and GFCI receptacle must be on a dedicated circuit. Test for circuit separation before inspection.
- 4) ☐ (NEC) Duplex GFCI receptacle must be provided.
- 5) ☐ (NEC) Simplex non GFCI receptacle for the sump pump must be provided. This may be on the pit light/receptacle dedicated circuit or on it's own dedicated circuit. Test to ensure that it is not fed from the load side of the pit GFCI if on the same circuit.
- 6) ☐ (NEC & A17.1) If the hoistway is sprinkled , than all electrical conduits, boxes etc. must be NEMA 4 rated within 48" of the pit floor. Sump pump receptacle must have a cover that allows the cord to be plugged in and the cover closed.
- 7) ☐ (NFPA) If the pit has a sprinkler that is within 24" of the pit floor no fire alarm device is required in the pit.
- 8) ☐ (A17.1) A sump pump with a cover flush with the pit floor is required. The cover must be substantial enough to support a person's weight. Backflow prevention is required. A shutoff valve is not allowed in the discharge line. In lieu of a sump pump, a drain with backflow prevention is allowed.
- 9) ☐ (A17.1) The pit sump pump must be tested to ensure that it will keep up with the flow of water from a 3/4" hose.
- 10) ☐ (AHJ) No PVC conduit or piping is allowed in the pit.

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 ADDRESS _____

Check Box When Completed

- 11) ☐ (A17.1) No oil sensors /separators are allowed in the elevator pit to prevent the sump pump from activating.
- 12) ☐ ***** As a courtesy to the building owner, if an oil separator is provided outside the pit have the contractor check that the separator is sized at least as large as the sump pump discharge capacity.
- 13) ☐ (A17.1) Pit lighting must be a minimum of 10 foot candles at all points of the pit floor.
- 14) ☐ (A17.1) Counterweight guards if required must extend from the lowest part of the counterweight when it is resting on it's fully compressed buffer to a point not less than 83" and not more than 96" above the pit floor.
- 15) ☐ (A17.1) Counterweight guards must be permanently labeled with the designed minimum counterweight runby.
- 16) ☐ (A17.1) If seismic is required, hydraulic over speed rupture valves must be provided on hydraulic elevators, properly located and pre tested.
- 17) ☐ (A17.1) If seismic is required provide required hydraulic feed line support spacing.
- 18) ☐ (A17.1) For a hydraulic elevator, verify that when the elevator is resting on it's fully compressed buffer that the hydraulic piston still has over travel available.
- 19) ☐ (A17.1) All hydraulic oil collection containers must be in place and all covers must be installed.
- 20) ☐ (A17.1) All hydraulic piston to platen head retainer bolts must be safety wired.
- 21) ☐ (IBC) Any conduit or pipe penetrations must be sealed.
- 22) ☐ (A17.1) Bottom floor hoistway access key switch if required must be pre tested. The bottom of the car platform apron should be level with the bottom of the hoistway door head jamb when the car is on the access upper limit.

HOISTWAY

- 1) ☐ (IBC) Venting required if over three floors. Verify that vent is equal to at least 3 ½ % of the area of the hoistway or 3 square feet, whichever is larger.
- 2) ☐ (IBC) All penetrations are to be sealed.
- 3) ☐ (IBC) All hoistway doors are to be sealed around door jambs and headers.
- 4) ☐ (A17.1) All ledges over 4" are to be beveled
- 5) ☐ (A17.1) No foreign piping or wiring is allowed in the hoistway.
- 6) ☐ (A17.1) Electrical feeders may not be run through the hoistway.
- 7) ☐ (A17.1) Fire alarm device wiring and conduits may not be run through the hoistway except to devices in the hoistway.
- 8) ☐ (NFPA) If the hoistway is sprinkled a smoke detector is required at the top of the hoistway. If sprinkled at the top a heat detector is required within 24" of the sprinkler head.
- 9) ☐ (NFPA) If the hoistway has beam pockets over 12" deep a smoke detector if required must be on the ceiling in each beam pocket.
- 10) ☐ (NFPA) Sprinklers if required must penetrate the hoistway only at the floor being sprinkled.
- 11) ☐ Sprinklers must only branch into the hoistway. They cannot then go out to another place in the building.

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- 12) ☐ (A17.1) All hoistway door retainers must be in place.
- 12) ☐ (A17.1) All hoistway doors must be numbered.
- 13) ☐ (A17.1) If seismic is required, all safety retaining devices and counterweight displacement devices must be installed and tested.
- 14) ☐ (A17.1) If elevator is the MRL type, a work light with bulb protection, a light switch on a dedicated circuit, and a stop switch must be provide in the vicinity of the drive machine.
- 15) ☐ (A17.1) If elevator is the MRL type and an access panel is provide for the brake release mechanism, this panel must have a self closing and self locking door with Group 2 security, a light switch for the work light located in the vicinity of the drive machine and have expanded metal on the inside of the hoistway to prevent reaching into the hoistway through this panel.
- 16) ☐ (A17.1) Top floor access switches must be provide if the distance from the top landing to the top of the car is over 35" when the car is level with the landing directly below the top landing.
- 17) ☐ (A17.1) Temperature and humidity data tags shall be provided on equipment located in the hoistway for MRL elevators.
- 18) ☐ (A17.1) Means to maintain manufacturer's recommended temperature and humidity in the hoistway of MRL elevators shall be provided and it must be independent of other building supplies and returns.
- 19) ☐ (A17.1) Terminal limit switches must be pre tested to ensure they operate properly and are properly located.
- 20) ☐ (A17.1) Glass in hoistways shall meet the requirements of ANSI Z97.1 or CFR Part 1201 and must be laminated. Each piece must be permanently and legibly marked (ie:, ANSI Z97.1, CFR Part 1201 Laminated)

CAR (all items on this page A17.1)

- 1) ☐ Cartop railing must be installed if clearance to the hoistway exceeds 12"
- 2) ☐ Cartop work lights must have bulb protection.
- 3) ☐ Emergency exit must be locked and electrical contact working.
- 4) ☐ Door operator closing speed data tags must be provided and completed.
- 5) ☐ Hoist and governor data tags must be installed and completed.
- 6) ☐ Hoist rope anti rotation devices must be installed.
- 7) ☐ Telephones must be working properly.
- 8) ☐ Alarm and emergency lighting must be working.
- 9) ☐ Car flooring must be installed to eliminate a tripping hazard.
- 10) ☐ Car door closing speed must be within the parameters set by the door operator data tag.
- 11) ☐ Ceiling panels must be in place.
- 12) ☐ Capacity plates must be installed.
- 13) ☐ Car and counterweight safety data plates must be installed.
- 14) ☐ Car door restrictor devices must be working.
- 15) ☐ Car enclosures constructed of glass panels must be laminated and meet the requirements of CFR Part 1201, Sections 1201.1 and 1202. Each panel must be permanently and legibly marked (ie: CFR Part 1201, Section 1201.1, 1202 Laminated)

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- 16) ☐ Glass used for lining cab walls or ceilings shall be laminated or may be tempered glass provided that it conforms to ANSI Z97.1, 16 CFR Part 1201, Sections 1201.1 and 1201.2. and the glass is bonded to a nonpolymeric coating, sheeting, or film backing having a physical integrity to hold the fragments when the glass breaks and the glass is tested and conforms to the acceptance criteria for laminated glass as specified in ANSI Z 97.1, or CFR Part 1201, section 1201.4. Each piece shall be permanently and legibly marked, (ie:., ANSI Z97.1, CFR Part 1201, Sections 1201.1 and 1202 Tempered).

GENERAL REQUIREMENTS

- 1) ☐ Lobby flooring must be flush with hoistway sills to eliminate trip hazards.
- 2) ☐ Standby power if supplied to a common car group must have all cars in that group supplied with standby power.
- 3) ☐ If all elevators in a group supplied with standby power cannot be run simultaneously than a selection switch must be provided in sight of the elevator group at the designated level.
- 4) ☐ Standby power selection switches must be keyed the same as fire service (AZFS)
- 5) ☐ If all elevators in a group can be run on standby power, than the standby power source must be tested with all elevators running at the same time with rated load.
- 6) ☐ All lighting circuits, air conditioning circuits, etc. feeding the elevator must continue to be powered while on standby power.
- 7) ☐ Lobby ceilings must be in place with smoke detectors attached to the completed ceilings.
- 8) ☐ Flexible hydraulic lines may not penetrate a wall or be in the hoistway
- 9) ☐ All new technology ropes not meeting the prescriptive code must have rope maintenance guidelines on the jobsite and must remain in the machine or control room.
- 10) ☐ Written guidelines for the performance of all required Acceptance and Periodic tests must be maintained in the machine room or control room.
- 11) ☐ Multiple elevators in a building must be identified at the designated level and inside each elevator.
- 12) ☐ Fire service key switches must be AZFS

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ANY OF THESE ITEMS FOUND NOT TO HAVE BEEN CHECKED PRIOR TO CONFIRMING A SCHEDULED ACCEPTANCE INSPECTION IS CAUSE FOR THE INSPECTOR TO LEAVE THE JOBSITE AND A REINSPECTION TO HAVE TO BE SCHEDULED.

ALL OF THESE ITEMS MUST BE CONFIRMED TO BE COMPLETED PRIOR TO CALLING TO CONFIRM THE INSPECTION.

FAX OR E-MAIL THIS COMPLETED FORM TO OUR OFFICE AS PART OF THE CONFIRMATION PROCESS

Phoenix:
(602) 542-3313 (main #)
(602) 642-1642 (fax #)
ksturtevant@ica.state.az.us
j.sargent@ica.state.az.us
TSoltz@ica.state.az.us

Tucson:
(520) 325-3192 (fax #)
Respective Inspector:
Don Jimenez: (520) 320-4237 / (520) 404-9266 / DJimenez@ica.state.az.us
Bill Eley: (520) 320-4247 / (520) 404-9267 / welev@ica.state.az.us
Galen Williams: (520) 320-4248 / (520) 870-7739 / GWilliams@ica.state.az.us