

## CONTRACTOR'S CHECKLIST

As a courtesy to our Customer's, Delaware Elevator provides this Contractor's Checklist, which is a list of the most often overlooked items necessary for elevator inspection and certification of the elevator(s). This list is to be used as a general guideline only, and **MAY NOT** include all items required in order to certify the elevator(s). The items below are **NOT** provided by Delaware Elevator.

**REFERENCE:** ASME A17.1b-2009 - American Society of Mechanical Engineers:  
Safety Code for Elevators and Escalators  
NFPA 70 / NEC-2008 - National Electrical Code  
NFPA 72 - 2007 - National Fire Alarm Code  
NFPA 13 - 2007 - Installation of Sprinklers

### MACHINE ROOM / MACHINE SPACE or CONTROL ROOM / CONTROL SPACE

Item  
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(Check Off)

- A. ASME A17.1 & NEC 620.51: Main line disconnecting means. The disconnecting means shall be an enclosed externally operable fused motor circuit switch or **Circuit Breaker** (with side mounted lever handle) capable of being locked in the OPEN (off) position **ONLY**, and must be labeled as to the function and source. The disconnecting means shall be located (ideally on the lock jamb side of door) where it is readily accessible to qualified persons.
- (1) In Maryland Jurisdictions: The disconnecting means shall be an enclosed externally operable fused motor circuit switch or **Circuit Breaker** (MUST HAVE SIDE MOUNTED LEVER HANDLE) capable of being locked in the OPEN (off) position **ONLY**, and must be labeled as to the function and source, and it **MUST** mounted within 24" (610mm) of the strike side of door. Reference the Maryland Field Directive 02-1 effective 4/1/02
- B. NEC 620.22, 620.53: 110 VAC Car Light Disconnect. The disconnecting means shall be an enclosed externally operable fused motor circuit switch or circuit breaker capable of being locked in the OPEN (off) position **ONLY**, and must be labeled as to the function and source. Disconnecting means is required for each elevator. The disconnecting means shall be located (ideally on the lock jamb side of door) where it is readily accessible to qualified persons.
- C. NEC 620.55: If specified for project Oil Coolers, Freight Door Controllers and any additional Auxiliary/Optional equipment are also required to have a disconnecting means. The disconnecting means shall be an enclosed externally operable fused motor circuit switch or circuit breaker capable of being locked in the OPEN (off) position, and must be labeled as to the function and source. Disconnecting means is required for each elevator. The disconnecting means shall be located (ideally on the lock jamb side of door) where it is readily accessible to qualified persons. Please verify with Delaware Elevator Engineering or Field Supervisor if additional disconnects are required.
- D. ASME A17.1 [8.6.1.6.5]: Class "ABC" fire extinguisher mounted on the strike side of door.
- E. NEC, 620.23: 110 VAC/20 Amp Ground-Fault Circuit Interrupter duplex outlet.

## MACHINE ROOM / SPACE or CONTROL ROOM / SPACE CONTINUED

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- F. ASME A17.1 [2.7.9.1]: Permanent light fixture(s) with guard and switch. Light switch to be located on strike side of door. Minimum light level in machine room to 19 foot candles measured at the machine room/space or control room/space floor.
- \*G. ASME A17.1 [2.8.3.3.2]: If Fire Marshall requires sprinkler heads there must be a heat sensor a **maximum** of 24" (610mm) of each head or a dedicated sprinkler flow switch to activate shunt trip breaker to remove power from elevator prior to the application of water (reference Note 2 below).
- H. ASME A17.1 [2.27.3.2.1]: For Fire Recall, there must be an initiating device (NFPA 72) in the machine room/space or control room/space that will furnish dry contacts\*\* brought to elevator controller for recall and second set of dry contacts for annunciation.
- \*\*Dry contacts for elevator recall must be 115VAC with a 10MA contact rating and should be arranged as follows:
- Normally open (close to indicate fire) for annunciator from hoistway & machine room/space or control room/space
- Normally closed (open to indicate fire) from hatch, machine room/space or control room/space, lobbies
- (Arrangement shown above is typical, VERIFY with Field Supervisor is this is applicable for your project.)
- I. ASME A17.1 [2.7.1.1.2 & 2.7.3.4.1]: Door must be fire rated commensurate with wall, self closing and self locking. Must not be able to be left unlocked - always keyed entry - keyless exit.
- J.NEC 620.21: All wiring in elevator machine room/space or control room/space must be in conduit, including phone wires.
- K. ASME A17.1 [2.8.1]: Equipment, pipe, conduit, etc. not directly related to the elevator are not allowed in elevator areas including hoistway and machine room/space or control room/space.
- L. ASME A17.1 [2.7.9.2]: Machine rooms/spaces or control rooms/spaces shall be provided with natural or mechanical means to keep the ambient air temperature and humidity in the range specified by the elevator equipment manufacturer to ensure safe and normal operation of the elevator. The temperature and humidity range shall be permanently posted in the machine room. HVAC Equipment **MUST NOT** be mounted above ANY elevator equipment. **Temp. Range 60 F. – 90 F. Humidity Max: 90% (Non-condensing)**
- \*M. If elevator is to run on emergency power – it must be tested on emergency power. Machine room/space or control room/space lights, HVAC, elevator car lights, & pit lights must also be on generator (reference Note 3 below).
- N. ASME A17.1 [2.27.1.1]: General Contractor to provide dedicated analog telephone line (1 for each elevator) in conduit to elevator controller.
- O. ASME A17.1 [2.7.8.4]: If Applicable, General Contractor must provide a means to facilitate two-way communication between elevator and remote machine or control rooms (See ASME A17.1, Section 1.3 for definition of "Remote").
- P. ASME A17.1 [2.7.3]: Permanent and unobstructed means of access shall be provided to machine rooms, machine spaces, control rooms, and control spaces.

## MACHINE ROOM / SPACE or CONTROL ROOM / SPACE CONTINUED

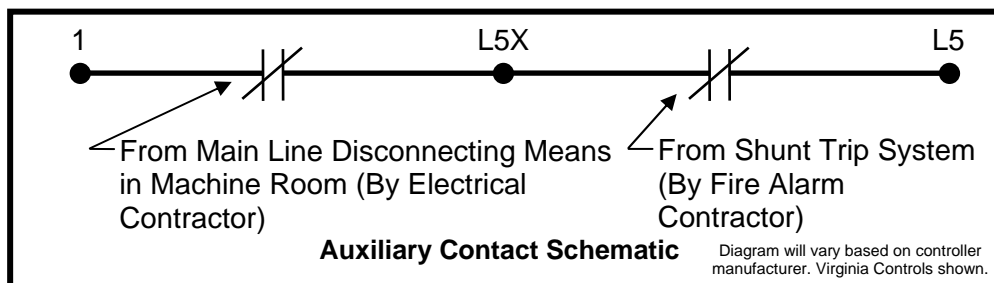
Item Complete (Check Off)

- Q. ASME A17.1 [2.27.1.1.4]: If the elevator travel is 60'-0" or greater General Contractor must provide a means to facilitate two-way communication accessible to emergency personnel between each elevator and machine room/space or control room/space.
- R. ASME A17.1 [2.8.1]: Equipment not directly related to the elevator is NOT permitted to be in the elevator machine room/space or control room/space.
- \*S. ASME A17.1 [3.26.10 & 2.27.2]: If Battery Lowering Emergency Power is supplied; General Contractor must provide a means for elevator controller to determine the difference between PLANNED & UNPLANNED POWER OUTAGES (reference Note 1 below).
- \*T. ASME A17.1 [2.27.2]: If an Emergency Power Generator supplied, General Contractor must provide an Automatic Transfer Switch with contacts (reference Note 3 below).
- U. Traction Elevators: Install properly sized steel hoisting beam in machine room/space. Hoist beam to be located over each traction machine (reference elevator layout drawings).

**\*NOTES:**

1. The Main Disconnecting means located in the elevator machine room MUST be equipped with Auxiliary Contacts with wiring brought to the elevator controller by the Electrical Contractor and/or Fire Alarm Contractor. The purpose of these contacts is to tell the elevator control system the difference between a Planned and an Unplanned power outage. Auxiliary contacts must work the same as disconnecting means contacts (i.e. Disconnecting Means Closed = Auxiliary Contacts CLOSED / Disconnecting Means Open = Auxiliary Contacts OPEN). Applies to Hydraulic Elevators only with Battery Lowering.
2. The Shunt Trip Breaker (if supplied) MUST also have Auxiliary Contacts. The Auxiliary Contacts indicate a "Shunt Trip", (Shunt Trip "OFF" = Auxiliary Contacts OPEN / Shunt Trip "ON" = Auxiliary Contacts CLOSED). These contacts are to be supplied with wiring brought to the elevator controller by the Electrical Contractor.
  - NFPA 72 [6.15.4.4]: Control circuits to shut down elevator power shall be monitored for presence of operating voltage. Loss of voltage to the control circuit for the disconnecting means shall cause a supervisory signal to be indicated at the control unit and required remote annunciators.
3. In the event an Emergency Back-Up Power Generator is provided the following additional items must be provided.
  - Two Conductors from Auxiliary Contact (Normally Closed) on the generator automatic power transfer switch MUST be brought to the elevator controller located in the elevator machine room (Work to be performed by Electrical Contractor).
  - A Pre-Transfer Contact (Normally Open) is also required for testing of elevator emergency power. An additional two conductors from this contact MUST also be brought to the elevator controller located in the elevator machine room (Work to be performed by Electrical Contractor).
  - A 30 second MINIMUM time delay required before transfer of "Normal" to "Generator" power occurs. This delay is required during elevator testing only, and prevents both the "Grid" and "Generator" power from occurring at the same time.

### Battery Lowering Auxiliary Contact Schematic



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## ELEVATOR OVERHEAD

- \*A. ASME A17.1 [2.8.3.3.2]: If sprinkler is required by the Fire Marshall there must be a means to disconnect the main line power supply prior to the application of water to the affected elevator. An initiating device (**See NFPA 72 Section 6.15.3**) with dry contacts to elevator controller for recall and second set of dry contacts for annunciation. Sprinkler head must have guard.

\*\*Dry contacts for elevator recall must be 115VAC with a 10MA contact rating and should be arranged as follows:

Normally open (close to indicate fire) for annunciator from hoistway & machine room

Normally closed (open to indicate fire) from hatch, machine room, lobbies

(Arrangement shown above is typical, VERIFY with Field Supervisor if this is applicable for your project.)

- B. ASME A17.1 [2.1.4]: Ventilation as per local building code.
- C. ASME A17.1 [2.4.7]: Equipment must not encroach on 43" (1092mm) clearance space with elevator at its maximum upward travel.
- D. ASME A17.1 [2.7.6.3.4]: Governor access door, code compliant stairs, ladders, and work platforms for access to the governor area as required.
- E. Install properly sized hoisting beam the overhead of each elevator. Hoist beam MUST run side to side in the hoistway and be centered over the main guide rails (reference elevator layout drawings).

### \*NOTES:

1. One method of disconnecting power is the use of a heat sensor within 24" (610mm) to activate the shunt trip breaker, thus removing power from the elevator.

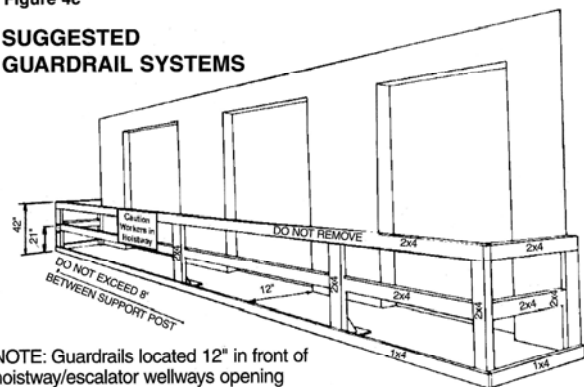
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## ELEVATOR LOBBIES (Each Floor)

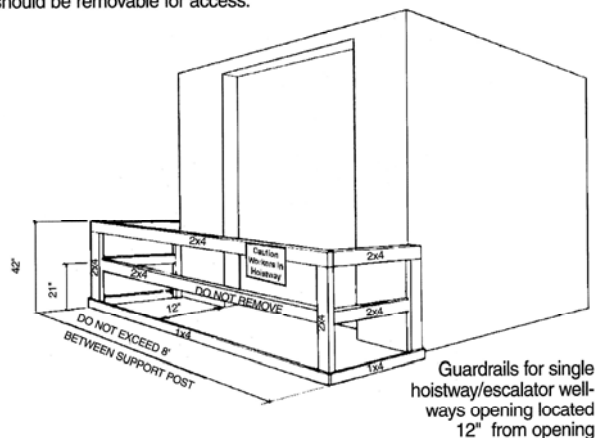
- A. ASME A17.1 [2.11.10.2]: Permanent lighting with a MINIMUM illumination of 10 foot candles measured at the landing sill with elevator door closed.
- B. Finished flooring level to elevator sill.
- C. ASME A17.1 [2.27.3.2.1]: For Phase 1 Fire Recall, there must be an initiating device (NFPA 72) in each elevator lobby that will furnish dry contacts\*\* brought to elevator controller for recall.
  - \*\*Dry contacts for elevator recall must be 115VAC with a 10MA contact rating and should be arranged as follows:
    - Normally open (close to indicate fire) for annunciator from hoistway & machine room
    - Normally closed (open to indicate fire) from hatch, machine room, lobbies
  - (Arrangement shown above is typical, VERIFY with Field Supervisor if this is applicable for your project.)
- D. OSHA compliant Removable Guardrail Systems at each landing. Reference examples below.
- E. OSHA Protection from falling objects: [29CFR1926.502(j)(4)] Where tools, equipment, or materials are piled higher than the top edge of a toeboard, paneling or screening shall be erected from the walking/working surface or toeboard to the top of a guardrail system's top-rail or mid-rail, for a distance sufficient to protect employees below.

Figure 4c

### SUGGESTED GUARDRAIL SYSTEMS



NOTE: Guardrails located 12" in front of hoistway/escalator wellways opening and flush with side walls. One part should be removable for access.

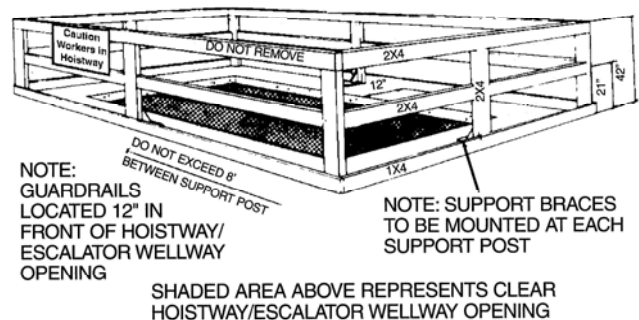


Guardrails for single hoistway/escalator wellways opening located 12" from opening

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Figure 4d

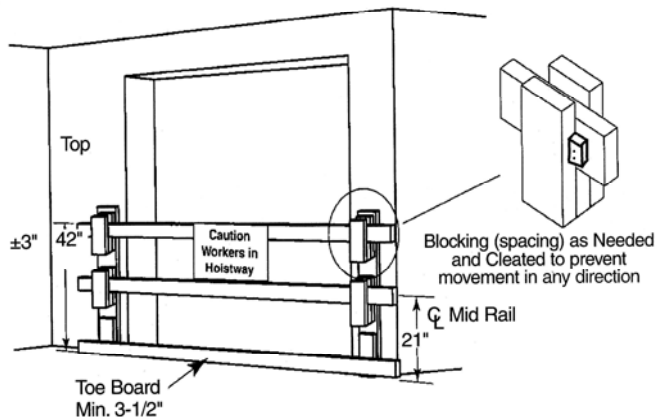
### SUGGESTED GUARDRAIL SYSTEMS



NOTE: GUARDRAILS LOCATED 12" IN FRONT OF HOISTWAY/ ESCALATOR WELLWAY OPENING

NOTE: SUPPORT BRACES TO BE MOUNTED AT EACH SUPPORT POST

SHADED AREA ABOVE REPRESENTS CLEAR HOISTWAY/ESCALATOR WELLWAY OPENING



Removable Guardrails:

Space out from walls to permit Entrance Frame Installation.

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Item  
Complete  
(Check Off)

## ELEVATOR HOISTWAY

- A. ALL holes and penetrations MUST be patched, filled, and fire stopped in order to maintain the required fire rating of the hoistway enclosure.
- B. Hoistway Entrance walls and finished floor at entrance are NOT to be installed until after door frames are completely installed and aligned. Please reference elevator layout drawings for size and location of minimum permissible rough openings. Minimum permissible rough opening is 12" wider and 8" higher than clear door opening (i.e. 3'-6" Wide x 7'-0" High Clear Opening would require a Rough Opening of 4'-6" Wide x 7'-8" High).
- C. Corridor lines and finish floor height at each landing MUST be marked in order to install hoistway entrances.
- D. ALL elevator door frames to be grouted in place and fire stopped.
- E. ALL elevator door sills to be grouted the full length of sill.
- F. ASME A17.1 [2.1.4]: Ventilation as per local building code.
- G. ASME A17.1 [2.1.6]: Inside of the hoistway shall have flush surfaces. Unavoidable projections, recesses, and/or setbacks in excess of 4" MUST be beveled at an angle not less than 75 degrees with horizontal or covered/screened with wire material with a minimum thickness of 0.0437" (1.11mm) with openings less than 1" (25mm) and is supported so that it will not deflect more than 1" (25mm) when 100 pound force is applied horizontally at any point.
- H. ASME A17.1 [2.8.1]: Equipment not directly related to the elevator is NOT permitted to be in the elevator hoistway.
- I. ASME A17.1 [2.8.1]: Equipment, pipe, conduit, etc. not directly related to the elevator are not allowed in elevator areas including hoistway and machine room. This includes Sprinkler Lines, Risers, and Returns.
- J. Hoistway to be plumb with a Maximum Variation of 1" over the entire height of hoistway.

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## ELEVATOR PITS

- A. ASME A17.1 [2.2.4]: There shall be installed in the pit of each elevator, where the pit extends more than 35 inches (900 mm) below the sill of the pit access door, a fixed vertical ladder of noncombustible material, located within reach of the access door. The ladder shall extend not less than 48 inches (1200 mm) above the sill of the access door. The rungs, cleats, or steps shall be a MINIMUM of 16 inches (400 mm) wide on 12 inch (305 mm) centers. Rungs shall have a MINIMUM of 4 1/2 inches (115 mm) from center of rung to the wall or obstruction.
- B. NEC 620.24, ASME A17.1 [2.2.5]: 110 VAC/20 Amp Ground-Fault Circuit Interrupter duplex outlet located so that it is accessible with elevator on compressed buffers. Outlet to be NEMA 4 rated.
- C. NEC 620.24, ASME A17.1 [2.2.5]: Permanent NEMA 4 rated light fixture and switch to be furnished. Light to be located below elevator when on compressed buffers. Minimum acceptable light level is 10 foot candles measured at the pit floor. Light bulbs shall be externally guarded to prevent contact and accidental breakage. Light switch to be located on the ladder side, so it is readily accessible from the pit access door.
- D. ASME A17.1 [2.8.3], NFPA 13: If a sprinkler system is required by the Fire Marshall; the sprinkler head(s) must be side spray type, guarded and within 24" of pit floor.
- E. ALL holes and penetrations MUST be patched, filled, and fire stopped in order to maintain the required fire rating of the hoistway enclosure.
- F. ASME A17.1 [2.2.2.4]: Drains and sump pumps, where provided, shall comply with the applicable plumbing code, and they shall be provided with a positive means to prevent water, gases, and odors from entering the hoistway and shall not be connected to sewers.
- ASME A17.1 [2.2.2.5]: In elevators provided with Firefighters' Emergency Operation, a drain or sump pump shall be provided. Sump pump/Drain shall have the capacity to remove a minimum 3000 gallons per hour per elevator.
- ASME A17.1 [2.2.2.6]: Sumps and sump pumps in pits, where provided, shall be covered. The cover shall be secured and level with the pit floor.
- Refer to Local Plumbing Code for Oil / Water Separator (Oil Minder) requirements
- G. All electrical equipment located less than 4 feet (1219 mm) above the pit floor shall be weatherproof (NEMA 4).
- Exception: Earthquake protective devices conforming to the requirements of ASME A17.1 [8.4.10.1.1]
- H. Wiring shall be identified for use in wet locations in accordance with the requirements in ASME/NFPA 70.
- I. All wiring (All Trades) run between elevator pit and machine room MUST be in conduit.

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(Check Off)

## ELEVATOR CAB

- \*A. ASME A17.1 [2.14.2]: Finish flooring level with elevator car door sill, and any cab interior finishes must comply with the requirements stated below.
- B. ASME A17.1 [2.27.1.1]: Two-way communication between elevator car and a location staffed by authorized personnel shall be provided. Reference Item N under Machine Room section above.

### \*NOTES:

1. Flooring material and adhesives MUST meet the requirements below as stated in A17.1. Proper documentation showing compliance with the requirements below MUST be readily available for the Elevator Inspector.

### **2.14.2 Passenger-Car Enclosures**

#### **2.14.2.1 Material for Car Enclosures, Enclosure Linings, and Floor Coverings.**

All materials exposed to the car interior and the hoistway shall be metal, glass, or shall conform to 2.14.2.1.1 through 2.14.2.1.6.

**2.14.2.1.1:** Materials in their end-use configuration, other than those covered by 2.14.2.1.2 through 2.14.2.1.6 shall conform to the following requirements, based on the tests conducted in accordance with the requirements of ASTM E 84, ANSI/UL 723, NFPA 252, or CAN/ULC-S102.2, whichever is applicable:

- (a) flame spread rating of 0 to 75
- (b) smoke development of 0 to 450

~~**2.14.2.1.2:** In jurisdictions enforcing the NBCC, where the building is designated by the building code as a high building, materials in their end-use configuration shall have:~~

- ~~(a) a flame spread rating for walls and ceiling of 0 to 25 with smoke development of 0 to 100 based on the test conducted in accordance with the requirements of CAN/ULC-S102~~
- ~~(b) a flame spread rating for floor surfaces of 0 to 300 with smoke development of 0 to 300, based on the test conducted in accordance with the requirements of CAN/ULC-S102.2~~

**2.14.2.1.3:** Napped, tufted, woven, looped, and similar materials in their end-use configuration on car enclosure walls shall conform to 8.3.7 or the NBCC and NFCC, whichever is applicable. The enclosure walls to which this material is attached shall conform to 2.14.2.1.1.

**2.14.2.1.4:** Padded protective linings, for temporary use in passenger cars during the handling of freight, shall be of materials conforming to either 2.14.2.1.1 or 2.14.2.1.3, whichever is applicable. The protective lining shall clear the floor by not less than 100 mm (4 in.).

**2.14.2.1.5:** Floor covering, underlayment, and its adhesive shall have a critical radiant flux of not less than 0.45 W/cm<sup>2</sup>, as measured by ASTM E 648 or conform to the requirements of the NBCC and ULC standard CAN/ULC-S102.2, whichever is applicable.



## ADDITIONAL ITEMS THAT NEED TO BE COORDINATED BY OTHERS

(If Applicable)

Item Complete (Check Off)
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- A. Remote conduits from machine rooms/spaces or control rooms/spaces to any location for items such as Fire Alarm Systems, Emergency Power Systems, Communication or PA Systems or Remote Control of any type.
- B. Channel type Door Frames and Sills for freight elevator vertical bi-parting type hoistway doors.
- C. Auxiliary disconnect switches for tandem/multiple motor hydraulic elevator power units and/or remote disconnect switch(es) if required.
- D. Any charges for overburden for drilling well hole from any elevation above pit floor level. Reference Contractor's Checklist for Cylinder Hole Drilling for additional information/site requirements.
- E. ASME A17.1 [2.1.6]: Any cants or guards to correct set backs, projections, and/or offsets in the hoistway, if necessary.
- F. Governor access doors, code compliant stairs, ladders, and work platforms for access to the governor area as required.
- G. Glass walls or panels in the elevator hoistway and/or car MUST to ASME A17.1 [2.14.1.8] and MUST be marked in accordance with ANSI Z97.1, 16 CFR Part 1201 (sections 1201.1 & 1202.2), or CAN/CGSB-12.1, whichever is applicable.
- H. Sprinkler lines, risers, and returns **MAY NOT** be run inside of the elevator hoistway.
- I. A 20' x 25' secured dry storage area in close proximity to the elevator hoistway(s) to be provided for tool and elevator material storage.

Dear General Contractor:

Due to the high costs associated with the elevator inspections and mobilization of field personnel, the inspection will not be requested until this list has been completed in its entirety. Please return this list via fax to (410) 749-7444 when completed in order to coordinate the inspection date.

**This list is to be used as a general guideline only, and MAY NOT include all items required in order to certify the elevator(s).**

Please do not hesitate to contact us at (410) 749-3489 extension 107 or 158 with any questions.

Your cooperation is greatly appreciated in order to complete your project on time and in a satisfactory manner.

Contractor:		Contractor:	Delaware Elevator
Received by:	(Please Print)	Delivered by:	(Please Print)
Sign:		Sign:	
Date:		Date:	

Original: Customer / Copy: Delaware Elevator Salisbury Office with Pre-Adjusting Check List