



## **ELEVATOR MODERNIZATION REPORT**

**Yakima City Hall  
129 North 2<sup>nd</sup> Street  
Yakima, WA**

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## Section I – Executive Summary

This report was commissioned to inspect and analyze the existing elevator equipment at Yakima City Hall to determine its' current condition, compliance with current code and safety requirements, and to identify and recommend options for an elevator modernization. During our on-site audit we inspected each elevator component to determine whether it should be reused, refurbished or replaced with new equipment with much improved technology as part of an elevator modernization.

### Audit Findings

The two (2) Otis elevators were installed in 1949 and have been in service for 66 years with no major equipment upgrades. The elevators are geared traction (cabled) elevators with the machine room located overhead of the hoistway. It is generally considered that the expected useful life for this type of equipment is 25-30 years. These elevators have lived double the normal life expectancy.

The elevator controllers, hoist machines, hoist motors, generator sets, and car door operators have been surpassed by several generations of technological change. Installing new equipment would not only improve the operation, reliability and safety of the elevators, but also reduce significantly the amount of energy required to operate the elevators. Structural and steel equipment such as the door headers, tracks, rail splice plates, and roller guides are also dated and need to be replaced. The existing hoistway doors are also out dated and possibly contain asbestos therefore they should be replaced with new. Over all, these elevators need a full modernization of all critical components, and all work by others such as fire recall systems, machine room, and pit lighting / receptacles, machine room HVAC and hoistway venting all need to be upgraded.

### Elevator Safety and Code Compliance

While the elevators do comply with the code that was in effect at the time of installation, they do not comply with the current 2010 ASME A17.1 Safety Code for Elevators and Escalators currently in effect in the State of Washington. While there are many code compliance issues with this elevator there are several that pose **life safety issues** such as:

1. Does not comply with current code related to firefighter's service.
  - It appears the elevators were never upgraded to include firefighter's emergency operation. A modernization would include the latest firefighter's service features.
2. Does not comply with current code related to seismic protection.
  - Current code requires seismic guide rail and additional guide rail brackets that are designed to keep the car secured in the hoistway during a seismic event.
3. Does not comply with current code related to in car phone and intercom system.
  - Current code requires an intercom system that meets ADA requirements. Currently there is no intercoms in the elevators. In the event someone is trapped in the elevator there is currently no means to contact the entrapped passenger by building or onsite elevator personnel to ensure that the assistance provided is safe for the entrapped passenger.
4. Hall and Car operating Panels do not comply with latest codes.
  - The hall fixtures are not at code height and the car operating panels do not have the current dedicated firefighter's lockable panel.

5. Entrance doors are not fire rated.
  - The doors in the elevator lobbies do not contain a fire rating. There is also a strong possibility they contain asbestos.
6. Cab enclose not per current code.
  - The cab shells are ok to retain, but the interior finishes do not meet today's smoke and flame spread requirements, therefore the interiors should be replace with more current fire and smoke safe products.

## **Conclusions & Recommendations**

The elevators have reached the end of their designed useful life. Several major components should be replaced with new components that comply with current safety requirements, improve the operation and reliability of the elevators and reduce the energy consumed by the elevator. Additionally, modernization of the elevators will reduce significantly the maintenance required on elevator control, hoist machine, DC motor and motor generator sets. This will allow elevator service personnel to spend more time on areas that, to this day, require diligent maintenance such as hoistway door equipment.

As a result, it is our recommendation that these elevators be modernized as soon as possible with upgraded and more reliable control equipment, energy reducing hoist equipment, upgraded safety enhancements and improved quality of life enhancements. Although a modernization of the elevator system is a large expenditure, the advantages are many, including:

1. Building & Personal Safety & Code Requirements
  - Fire safety
  - Seismic safety
  - Passenger protection
2. Operation & Performance
  - More efficient handling of traffic
  - Reduced maintenance to keep obsolete equipment functioning and more maintenance on the proper areas
  - Savings on electrical power
  - Longer life of retained equipment
3. Appearance and Quality of Life
  - New cab interior and fixtures
  - New elevator lobby fixtures
4. Increased Value of the Building
5. Reduced Owner Liability
6. Reduced Environmental Risks



**Cost Estimates**

We estimate the cost to modernize the existing elevators as outlined below would cost between \$250,000 and \$260,000 per elevator. If you choose to not replace the old geared machines and just place new AC motors on them the modernization cost will be approximately \$240,000 to \$250,000 per elevator. This does not include any ancillary work required by other trades that would be required as part of an elevator modernization such as fire recall system upgrades, fire rating the machine room, ventilating shaft, electrical upgrades Ancillary costs could be as high as \$175,000 per elevator. These elevators were installed at the same time, are in very similar condition and both are in need of an immediate modernization. Because they are not grouped together for dispatching there is really no preference or recommendation on which elevator should be modernized first. As part of the specification and bid package we would request a base bid based on utilization of a single crew and an alternate bid based on utilization of two crews. With that information one can easily evaluate the cost / benefit of a shorter modernization period. The specific items we recommend as part of a modernization are detailed in Section IV and a list of the ancillary work is outlined in Section V.

**Section II – Existing Equipment**

**Car#2**

Type:	Geared Traction Elevator
Washington ID Numbers	0533PC
Year Installed:	1949
Manufacturer:	Otis Elevator Company
Control System:	Simplex Selective Collective
Controller/Selector:	Otis Composite
Machine:	Otis
Motor Generator:	Otis
Door Equipment:	Otis
Door Size:	3'-4" x 7'-0"
Door Type:	Two Speed / side opening
Door Operation:	Automatic
Landings/Openings-per car:	5 landings all front opening
Floor Designation:	B,*1,2,3,4
Capacity:	3500 pounds
Speed:	150 FPM
Machine Location:	Overhead
Disconnect	208 3phase



**Car#1**

Type:	Geared Traction Elevator
Washington ID Numbers	0532PC
Year Installed:	1949
Manufacturer:	Otis Elevator Company
Control System:	Simplex Selective Collective
Controller/Selector:	Otis Composite
Machine:	Otis
Motor Generator:	Otis
Door Equipment:	Otis
Door Size:	3'-6" x 7'-0"
Door Type:	Single Speed / Center opening
Door Operation:	Automatic
Landings/Openings-per car:	5 landings all front opening
Floor Designation:	B, *1,2,3,4
Capacity:	2500 pounds
Speed:	200 FPM
Machine Location:	Overhead
Disconnect	208 3phase

**Section III: Modernization Audit Evaluation**

To evaluate the need for an elevator modernization, Elevator Consulting Services examines the elevators based on the following 8 key categories to calculate the Elevator Profile Factor. The Elevator Profile Factor is then used to determine when an elevator modernization should be considered

1. Age of Equipment
2. Code Compliance
3. Preventive Maintenance
4. Operation and Performance
5. Frequency of Use
6. Energy Efficiency
7. Environmental Conditions
8. Design and Installation

**1. Age of Equipment**

If any factor drives the need for an elevator modernization, it is age of the equipment. Even with proper preventive maintenance, elevator equipment will not last forever, and substandard preventive maintenance can drastically reduce the life expectancy. With proper preventive maintenance elevator equipment should be expected to last 20-25 years.

- The elevators at Yakima City hall are 66 years old and there have been no major upgrades since the initial installation. The elevator controllers, hoist machines, hoist motors, motor generators and door operator equipment are operating beyond their useful life and in some cases replacement parts are no longer available. Additionally technology has significantly improved on the energy efficiency and maintenance requirements of some of the major elevator equipment. The largest concern to the owner should be the fact that many major components on this equipment are considered obsolete and can no longer be purchased. If a major machine, controller, or door equipment component fails, getting replacement parts could be impossible and the elevator would be out of service for a great deal of time.

## **2. Code Compliance**

Codes are evolutionary by design. New technology and better designs provide for safer equipment. Thus, an elevator can comply with the code under which it was installed, but not have any of the latest safety features now required on new equipment.

- The elevators at Yakima City Hall do comply with a 66-year old standard that was in effect at the time of installation but do not comply with the current (ASME 17.1 2010) mandated code enforced by the State of Washington. There are many items that are building related that will need to be upgraded as well that coincide with elevator modernizations. These items are listed in section V.

## **3. Preventive Maintenance**

Preventive maintenance is the activity of performing systematic periodic checks, tests and service on elevator equipment to ensure that it operates safely and within design parameters. Its goal is to ensure that the equipment will last and operate safely for its anticipated life cycle. Indicators of poor preventive maintenance are repetitive shut downs and trouble calls, unscheduled repairs, poor adjustment, poor ride quality, accumulation of dirt and debris, and improper or lack of lubrication.

- At Yakima City Hall the level of required preventive maintenance to maintain this vintage elevator equipment is very high. The high level of required maintenance is primarily due to the use of outdated DC motor drives, geared machines, motor generators, relay logic controllers and cable driven electrical mechanical selectors. These elevators are being maintained by Kone Elevator.

## **4. Operation & Performance**

Operation and performance of the elevator refers to how each component and the overall elevator system performs. It's directly related to the riders experience with waiting for and riding the elevator. Elevator operation during starting, acceleration, deceleration, leveling, and door operation can give good indications of the quality of operation and performance. Continuous operation without numerous mechanical problems can also be a good indicator of operation and performance.

- The existing elevators operation and performance is not acceptable based primarily on the age of the equipment. The existing components rely on outdated technology which

cannot provide acceptable reliability, power efficiency, leveling accuracy, response to traffic demands, and ride quality.

## **5. Frequency of Use**

The frequency of use illustrates how often demand is placed on the elevator equipment. More use results in more wear on the controls and mechanical components of an elevator. For example, office buildings will typically use elevators less than facilities that are active 24-hours per day such as airports, hospitals, apartments and condominiums.

- The frequency of use at Yakima City Hall appears to be about average.

## **6. Energy Efficiency**

Today's technology is seeking ways to make elevator equipment perform better while using less energy. New systems today take advantage of PMSM (Permanent Magnet Synchronous Motors), which consume less energy than previous AC and generator control systems. Door operators are using this technology also and it provides for a more efficient door operation with better control and safer operation; all while using less energy. Operating fixtures are beginning to use LED lamps that consume less power and reduce overall fixture maintenance. Regenerative power is being provided on some systems that allow power to be fed back to the grid, thus reducing overall elevator energy costs to the building. Of course energy savings is unique to each building; however, generally a modernization can be expected to yield annual energy savings of 20% to 40%.

- The existing equipment at Yakima City hall relies on 66 year-old technology and includes motor generators and DC Motors. This outdated equipment requires large amounts of energy and generates a great deal of heat.

## **7. Environmental Conditions**

Environmental conditions such as heat, moisture, salt water, caustic materials, and many other types of conditions contribute to the degradation of elevator equipment. Equipment installed in an enclosed, controlled environment tends to have the least impact from these environmental conditions. Equipment exposed to the outside environment will be more prone to deterioration that will contribute to more unscheduled shutdowns and requires more intense preventive maintenance. Environment can also include the locality of operation and the clientele that will normally use the equipment.

- The elevator equipment at Yakima City hall is fairly well protected from the environment. It was noticed that the machine room was not ventilated or air-conditioned. This is not good for the elevator equipment old or new. This will have to be addressed during the elevator up grade.



## 8. Design & Installation

The engineering design and installation of elevators incorporates strength and durability, operational and performance standards, professional craftsmanship, adherence to code requirements, proper installation, and ease of maintenance and repairs. Strength of components and structural equipment is important to ensure that the guide rails, car platform, machines and overhead and pit structures do not shift during building settling or during normal operation and will also withstand the loads imposed on the equipment. Field installation is a critical component of design. A poor installation will lead to continuous maintenance and repair problems and an earlier than expected life cycle. One factor that often lacks attention in some designs is the ease at which equipment can be maintained and repaired. Designs that allow for the quick exchange of parts and reduced lubrication requirements are desired.

- The design and installation of the elevators at Yakima City Hall was acceptable based on the technology and standards when it was installed. After the passage of 66 years, a large portion of the existing equipment needs to be replaced as part of an elevator modernization to meet today's technological and safety requirements.

## Elevator Consulting Services Elevator Equipment Profile

Customer / Job Site: The Yakima City Hall  
Equipment: Car #2 Otis Overhead Geared

	Age	Code Compliance	Preventive Maintenance	Performance & Operation	Frequency Of Use	Environmental Conditions	Energy Efficiency	Design & Installation	TOTAL
5 Extreme	5	5	5	5			5	5	30
4 High					4	4			8
3 Moderate									0
2 Low									0
1 Minimal									0
<b>TOTAL</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>4</b>	<b>4</b>	<b>5</b>	<b>5</b>	<b>38</b>

- = Critical conditions.
- = Moderate conditions.
- = Acceptable conditions.

**Profile Score = 38**

Profile Factor	Description	Time frame to replace
Greater than 30	Equipment condition is extreme. Major components expected to fail. Proper maintenance is difficult and parts are or will become, obsolete. Multiple safety and code concerns. Modernize immediately	Immediate
25 – 30	Equipment is nearing end of expected life. Potential failure of major components. Proper maintenance is becoming difficult and parts are becoming obsolete. Potential safety and code issues. Begin planning for modernization	2 to 5 years
17 – 24	Equipment shows normal wear based on current age. Update and improve maintenance program. Include modernization in long term planning	6 to 9 years
Less than 16	Equipment shows normal wear based on current age. Maintain existing maintenance program. Modernization should not be needed for 10+ years	10 + years



Elevator Consulting Services Elevator Equipment Profile									
Customer / Job Site: The Yakima City Hall Equipment: Car #1 Otis Overhead Geared									
	Age	Code Compliance	Preventive Maintenance	Performance & Operation	Frequency Of Use	Environmental Conditions	Energy Efficiency	Design & Installation	TOTAL
5 Extreme	5	5	5	5	4	4	5	5	30
4 High					4	4			8
3 Moderate									0
2 Low									0
1 Minimal									0
<b>TOTAL</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>4</b>	<b>4</b>	<b>5</b>	<b>5</b>	<b>38</b>

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Less than 16	Equipment shows normal wear based on current age. Maintain existing maintenance program. Modernization should not be needed for 10+ years	10 + years

**Section IV: Elevator Modernization**

The following paragraphs detail the equipment for the elevators. Pictures were taken of the machine room, hoistway, pit and interior. The condition of the overall installation is not acceptable by today's elevator standards. It may be desirable to replace some components to provide operational and safety refinements available with today's equipment design and to comply with all current codes.

**A. Machine Room Equipment**

***Existing Controller/Selector:***



<b>CONTROLLER / SELECTOR</b>	<b>NEW</b>
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The existing controllers and selectors is much outdated relay logic technology and require very high levels of maintenance. We recommend the existing elevator controller and selector be replaced with a new solid state unit with a solid state VVVF drive unit that will significantly improve: 1) the operation of the elevator; 2) the floor leveling accuracy and; 3) the energy efficiency of the elevators. Additionally, the new controllers will be compliant with the firefighter's emergency operation and seismic operation required by current code. The new controller will also be equipped with a Regenerative drive that actually induces power back into the building power grid that creates savings on the power bill.

***Existing Geared Traction Machine, Hoist Motor, Brake Assembly and Drive Sheave:***



<b>HOIST MACHINE, HOIST MOTOR, BRAKE ASSEMBLY &amp; DRIVE SHEAVE</b>	<b>NEW</b>
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The geared machines have been well maintained however it has been in continual service for 66 years. The machine is leaking oil but the ring gear seems to be in ok condition despite its age. The modernization would replace the geared hoist machine with new gearless permanent magnet AC machines.

***Existing Motor Generator Set:***



<b>MOTOR GENERATOR</b>	<b>REMOVE</b>
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The existing DC motor generator is outdated technology, requires continuous maintenance and generates carbon dust. It will no longer be required and will be replaced with a new solid state motor drive unit when a new AC hoist motor is installed. Its replacement will contribute towards dramatic energy savings, heat reduction, reduced maintenance with greater reliability.

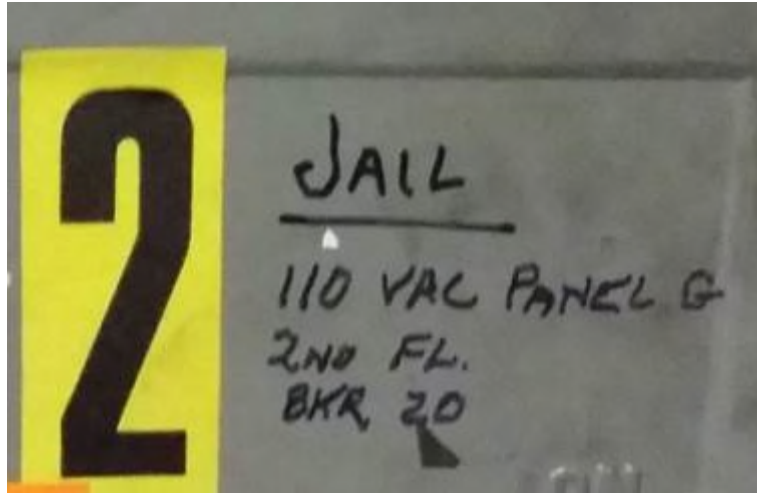
**Existing Elevator Main Disconnect:**



<b>ELEVATOR MAIN DISCONNECT/GROUND</b>	<b>NEW</b>
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Occasionally, new equipment will create increased demands on electrical feeders. This would require the installation of new electrical feeder wires and a new main line electrical disconnect. Or, in some cases the current code requirements will require changing of the disconnect. The elevator main line disconnects at Yakima City Hall are old and outdated. The wiring in disconnects are old and the insulation is starting to dry crack and fray. It is time for new feeder wires and a dedicated ground wire in conjunction with a new disconnect.

Existing cab lights:



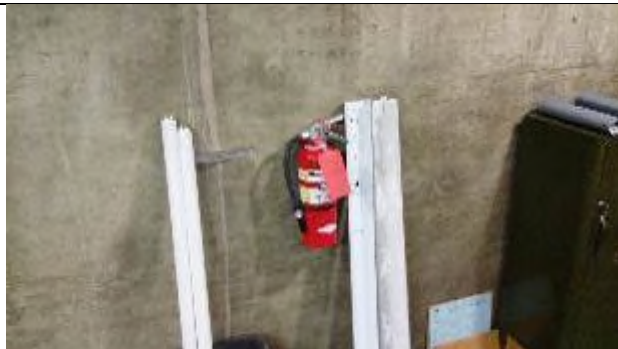
<b>CAR LIGHTING DISCONNECT</b>	<b>NEW</b>
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ASME Code A17.1 requires a lockable type disconnect for the car lighting circuit be installed in the elevator machine room. The existing car lighting disconnect is lockable and can be retained as part of the elevator modernization.

<b>MACHINE ROOM &amp; ENCLOSED LOBBY SMOKE DETECTORS</b>	<b>NEW</b>
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The elevator machine room and the enclosed landings on various levels do not currently contain Fire recall initiation devices. Current code requires detectors in the machine room and enclosed landings, and that they be tied into firefighter's emergency service. Adding the detectors would be the building's responsibility and would not be performed by the elevator contractor as part of their modernization work. The systems must interface with the elevator controllers in the elevator machine room.

<b>MACHINE ROOM FIRE EXTINGUISHER</b>	<b>RETAIN</b>
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The fire extinguisher will need to be relocated over by the new Machine room door that will be installed.

***Existing machine room lights and receptacles;***



<b>MACHINE ROOM/LIGHTING/ELECTRICAL OUTLET</b>	<b>NEW</b>
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The machine room is of adequate size to accommodate the new elevator equipment. Illumination levels must be a minimum of 200 lx (19 fc) measured at floor level. New light will not be required as the room appeared to have sufficient lighting. The machine room electrical outlet will be replaced with a GFCI outlet as required by code. The existing bulbs will have to have guards or sleeves placed over the bulbs.

<b>MACHINE ROOM WIRING</b>	<b>NEW</b>
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Any new wiring provided shall comply with National Electrical Code (NEC). New electrical feeders, including an electrical ground will be installed from the new main line disconnect switch to the new controller.

<b>FIRE FIGHTERS SERVICE:</b>	<b>NEW</b>
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The existing elevator controls do not comply with "New" Firefighters' Service requirements; however, they will be upgraded, with the new controls, to include all features of the current ASME A17.1-Firefighters' Service requirements.



***Existing Overspeed Governors:***



<b>OVERSPEED GOVERNOR</b>
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<b>NEW</b>
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The existing over-speed governors and tail sheaves would be replaced as part of an elevator modernization.

**B. Hoistway Equipment**

***Existing Hoistway Doors, Headers, Tracks, Struts and Interlocks:***



<b>HOISTWAY DOORS, HEADERS, TRACKS &amp; INTERLOCKS</b>	<b>NEW</b>
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The hoistway doors are not fire rated, are in poor condition and should be replaced. The door headers and tracks, interlocks, upthrusts, hangers and rollers would be replaced with new. The tracks and hangers are old Otis chain driven type and severely outdated.



<b>HOISTWAY DOOR SILLS</b>	<b>REFURBISH</b>
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The hoistway door sills will be thoroughly cleaned.

<b>HOISTWAY DOOR FRAMES</b>	<b>REFURBISH</b>
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The existing hoistway door frames are suitable for re-use. Should be repainted on lobby sides.

<b>HOISTWAY WIRING</b>	<b>NEW</b>
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All new electrical wiring will be provided. All existing conduit (EMT) will be retained if it complies with the NEC.

**C. Car and Counterweight Equipment**

***Existing Car Door Operators:***



<b>CAR DOOR OPERATORS</b>	<b>NEW</b>
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The existing car door operators will be replaced with new solid state drive door operators. The new car door operators will be adjusted for a full open position of doors. All new cams and micro switches will be adjusted for correct operation. The door operator will be provided with the latest Code requirements relating to closing force during normal closing cycle and the reduced closing force during the nudging mode.

**Existing Car & Counterweight Roller Guides:**



<b>CAR &amp; COUNTERWEIGHT ROLLER GUIDES</b>	<b>NEW</b>
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The existing car (left picture) and counterweight (right picture) roller guide assemblies will be replaced with new heavier duty roller guides that provide a smoother car ride.

<b>CAR GUIDE RAILS AND BRACKETS</b>	<b>RETAIN</b>
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The existing guide rails and brackets are suitable for reuse. All fastenings will be checked for tightness. Any missing bolts, nuts, washers, etc. will be replaced. All rail joints will be checked. Any rough areas or burrs on the rails and joints will be filed smooth.

**Existing fish plates:**



<b>CAR GUIDE RAIL FISHPLATES</b>	<b>NEW</b>
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New seismic rated fishplates will be installed to meet current seismic code requirements.

***Existing underside of Cars:***



<b>PLATFORM, STILES, CROSSHEAD, SAFETY</b>	<b>RETAIN</b>
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The car sling (the structural members which support the platform) is suitable for reuse. All bolts will be checked for tight and ensure sound isolation in good and intact.

***Existing Suspension:***



<b>SUSPENSION MEANS AND ATTACHMENTS</b>	<b>NEW</b>
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The old hoist ropes and babbitt type shackles will be removed. New hoist ropes or other suspension means will be installed on all cars with new wedge type shackles or other new suspension.

<b>CAR TOP INSPECTION STATION, ELECTRICAL OUTLET &amp; WORK LIGHT</b>	<b>NEW</b>
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A new car top inspection will be provided for the safety of elevator maintenance personnel and elevator inspectors performing work that requires the car to be operated from the car top. This device is also required by ASME A17.1 Code.

<b>CAR LANDING LEVELING DEVICES</b>	<b>NEW</b>
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New devices will be installed to insure the elevator stops consistently level with the landings regardless of the load in the elevator car. A new computer controller floor leveling system will be installed.

**Existing car doors:**



<b>CAR DOORS</b>	<b>NEW</b>
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New car doors with vandal resistant stainless steel finish will be provided. New car door hangers, hanger rollers, upthrusts and gate switches will be installed.

<b>CAR DOOR SILL</b>	<b>RETAIN</b>
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Car sills will be retained and cleaned.

<b>CAR DOOR RE-OPENING DEVICE</b>	<b>NEW</b>
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<b>TRAVELING CABLES</b>	<b>NEW</b>
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New electrical traveling cables will be provided. These cables supply the car with the electrical power to operate the door operator, car station, car lights, car lantern, car top station, car exhaust fan, all car safety switches, load weighing and all other car electrical devices. All new wiring shall comply with current NFPA-70 requirements. Additional traveler cable wiring will be provided for future considerations such as security cameras and other security features as may be deemed necessary by the Owner.

<b>SNAG GUARDS</b>	<b>NEW</b>
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**Existing counterweights:**



<b>COUNTERWEIGHT:</b>	<b>RETAIN</b>
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The counterweight frames is in good shape and can be retained. All fasteners will be checked for tight.

<b>COUNTERWEIGHT GUIDE RAILS AND BRACKETS:</b>	<b>RETAIN</b>
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The existing steel guide rails and brackets are suitable for reuse. All fastenings will be checked for tightness. Any missing bolts, nuts, washers, etc. will be replaced. All rail joints will be checked. Any rough areas or burrs on the rails and joints will be filed smooth. Additional intermediate brackets will be provided as required by seismic code.

**Existing Fish plates:**



<b>COUNTERWEIGHT GUIDE RAIL FISHPLATES/INTERMEDIATE BRACKETS:</b>	<b>NEW</b>
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New seismic rated fishplates will be installed to meet current seismic code requirements.

**D. Pit and Pit Equipment**

**Existing Pit equipment:**



<b>PIT</b>	<b>NEW</b>
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The existing buffers and tail sheaves will be replaced. The elevator pit will be cleaned and painted

<b>COUNTERWEIGHT GUARD</b>	<b>NEW</b>
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<b>PIT LIGHTING &amp; ELECTRICAL OUTLET</b>	<b>NEW</b>
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Additional lighting will be installed to provide 10-foot candles at any pit area. Guards will be provided on all pit light bulbs. The NEC requires a GFCI on all outlets.



**Existing Pit ladders:**



<b>PIT LADDER:</b>	<b>NEW</b>
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The pit ladders will be replaced to meet the current code requirements for safety.

**E. Cab enclosure, Interior and Fixtures**

**Cab Enclosure:**



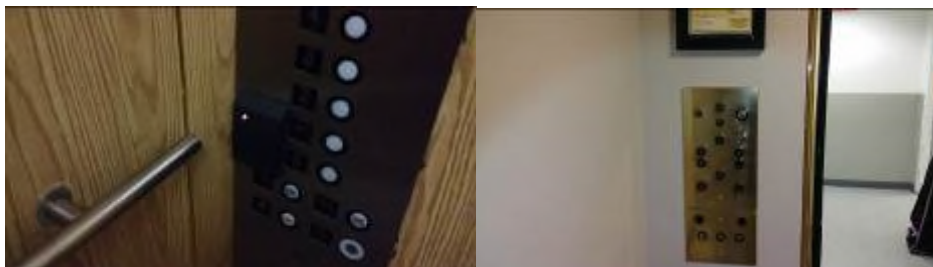
<b>CAB ENCLOSURE</b>	<b>RETAIN</b>
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Cab enclosures will be retained. There will be a \$20,000 per car cab finish allowance carried in bids so interiors can be refinished for a better appearance.

<b>CAB WIRING:</b>	<b>NEW</b>
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All cab wiring will be replaced. All new electrical wiring shall comply with current NEC Code requirements.

**Existing Car Operating Panel (COP):**



<b>CAR OPERATING FIXTURES</b>	<b>NEW</b>
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New Vandal Resistant Car Operating Fixtures will be provided including a new car station and traveling lanterns to comply with the ADA Requirements. A new digital car position indicator will be incorporated into the new car panel along with the emergency light similar to that shown

<b>INTERCOM IN-CAR TO MACHINE ROOM</b>	<b>NEW</b>
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An in-car-to-machine room intercom will be provided to allow an elevator serviceperson, in the machine room, to speak to a person trapped in the elevator cab. This feature is a safety related item that assures the trapped passenger will be released safely and in a timely manner. The person in the cab is not required to activate the intercom, as the on-off switch is in the machine room.

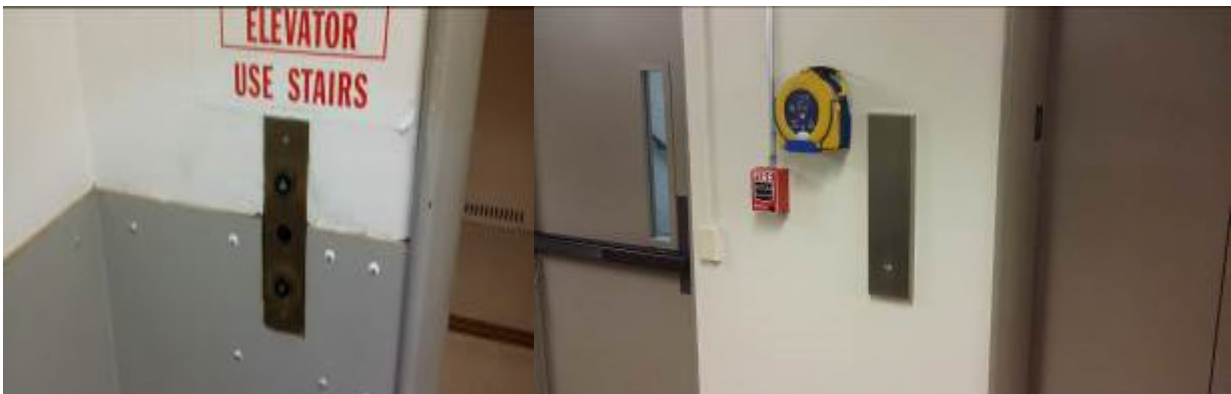
<b>INTERCOM IN-CAR TO MAIN (RECALL) FLOOR</b>	<b>NEW</b>
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A car to main floor intercom will be provided to allow a person at the Main Floor level to speak to a person trapped in the elevator cab. The person in the cab is not required to activate the intercom. The on-off switch shall be located in the new main floor hall station.

<b>IN-CAR ADA EMERGENCY COMMUNICATIONS</b>	<b>NEW</b>
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An ADA approved in-car emergency communication device will be provided.

***Existing hall Stations;***



<b>HALL CALL STATIONS</b>	<b>NEW</b>
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New vandal resistant Surface mount hall call stations will be provided to comply with the ADA Requirements.

**Existing Hall Position Indicators**



<b>LOBBY POSITION INDICATOR</b>	<b>NEW</b>
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A new surface mount digital lobby position indicator will be installed at the main lobby floor.

**F. OTHER WORK REQUIRED BY ELEVATOR CONTRACTOR**

**The supporting work identified below is not performed by the elevator contractor; for commercial buildings we generally suggest the owner to obtain a General Contractor to price and manage the following work:**

- Install machine room lighting of a minimum of 19 ftc and GFCI electrical outlet **Retain existing OK**
- Machine room has to be completely dry walled in with a 2 hr. fire rated wall.
- Machine room will need 2h fire rated machine room door assembly installed. The door also has to be self-closing and self-locking.
- All machine room receptacle's have GFCI's installed on them
- Install pit Lighting of 10 ftc and GFCI electrical outlet.
- All pit receptacles' have GFCI's installed on them.
- Car lights will have a dedicated breaker or disconnect with proper overcurrent protection installed in Machine room.
- New Pit ladder installed per code.
- NFPA 72 2002 Section 6.15.3 requires new fire recall initiation devices detectors to be installed in the machine room and all elevator lobbies. Modernize the building's fire alarm system as needed.
- We recommend the building contact the current fire alarm service provider to determine if additional sensors can be added in the lobby and elevator machine room and tied into the building's main fire alarm panel
- Elevator Machine room HVAC system will need to be installed to a thermostatically controlled Split pump system to maintain the machine room at the appropriate temperatures required by elevator controller manufacturer.



- Hoistway shafts will have to have ventilation added to them. This is typically a 3' by 3' cutout at top of shafts with louvers installed.
- Cutting, patching, and fire sealing
- All Barricades minimum of 8ft tall with a 8'X8' lay down area in front of each elevator entrance at every landing. Each barricade assembly will have a lockable door on it to keep pedestrians out of work space and danger area.
- Provide all signage and traffic re-routing as needed.
- Provide all floor and roof protection inside of barricades and role way areas where elevator contractor will be moving heavy equipment in and out of the building.
- New elevator flooring will need to be installed in each car.
- Hoistway jambs and new doors will need to be repainted on site.
- Final paint Machine room floor with epoxy sealer. Light gray color
- Final paint Elevator pit floor with light gray floor epoxy sealer.

**END OF REPORT**