

**APPENDIX E – PREVENTIVE MAINTENANCE SPECIFICATIONS FOR TRACTION ELEVATORS  
(REVISED FEBRUARY 3, 2023)**

**I. FULL-SERVICE WARRANTY MAINTENANCE REQUIREMENTS**

- A. The Contractor shall examine, adjust, lubricate, clean, and when conditions warrant, repair or replace the following items and components thereof and all other mechanical or electrical equipment, including, but not limited to the following:
1. Entire machine, including housing, permanent magnet AC motor, sheave shaft and bearings, motor drive, deflector sheave, sheave shaft and bearings, machine brake and brake assembly, emergency brake/rope brake and component parts.
  2. Controller: All components including all relays, printed circuit boards, solid state starter, solid state components, resistors, condensers, transformers, leads, electrical timing devices, computer devices.
  3. Car Positioning System: Encoder, tape, reader, and ancillary equipment.
  4. Hoistway door interlocks, hoistway door hangers, hanger rollers, up-thrust rollers, tracks, bottom door gibs, and closers.
  5. Hoistway limit switches, slowdown switches, leveling switches and associated cams and vanes.
  6. Car and counterweight roller guide assemblies complete.
  7. Door operators including motors, operator linkage, door infrared protective devices, car hangers, hanger rollers, tracks, car door contact, and clutch.
  8. Traveling cables, and elevator control wiring in hoistway and machine room.
  9. Governor including governor sheave and shaft assembly bearings, contact jaw, over-speed switch, and governor tension assemblies.
  10. Car safety mechanism and load weighing equipment.
  11. Hoist cables, belts, governor cables. Including adjustment and shortening of same as required by code.
  12. Car and counterweight buffers.
  13. Fixture contacts, push buttons, key switches and locks, lamps and sockets of button stations (car and hall), hall lanterns, position indicators (car and hall), direction indicators, solid state components and LEDs.
- B. The Contractor shall keep the guide rails free of rust. Renew guide shoe rollers as required to insure smooth and satisfactory operation.
- C. Contractor shall also examine and make necessary adjustment or repair to the following accessory equipment including re-lamping of signal equipment: hall stations, car stations, and direction indicators.
- D. Contractor shall be responsible for keeping the exterior of the elevator machinery and any other parts of the equipment subject to rust, painted with heat resistant enamel and presentable at all times. The machine windings shall be treated as needed, with proper insulating compound as recommended by the machine manufacturer.
- E. Correct any deficiencies found. Contractor shall be responsible for the correction of deficiencies.

**II. ITEMS OF PREVENTATIVE MAINTENANCE WORK**

The preventive maintenance specified herein is considered the minimum for all equipment. If specific equipment covered by this Contract requires additional preventive maintenance for safe, reliable operation, as specified by the manufacturer, the Contractor shall perform the required additional preventive maintenance without added cost to the Authorized User.

## **APPENDIX E – PREVENTIVE MAINTENANCE SPECIFICATIONS FOR TRACTION ELEVATORS (REVISED FEBRUARY 3, 2023)**

### **Monthly Preventive Maintenance**

1. Perform general inspection of machine, sheaves, and brake. Lubricate as required.
2. Inspect interior of cab. Test telephone or intercommunication system, normal and emergency lights, fan, and emergency alarm. Make needed repairs.
3. Visually inspect controller. Verify cooling fan operation. Repair as necessary.
4. Ride car and observe operation of doors, leveling, reopening devices, pushbuttons, lights, etc.
5. Replace all burned out lamps in elevator cars, machine room, and pit.
6. Replace any defective LED indicators in car operating panel and hall fixtures.
7. Remove litter, dust, oil, etc. from the machine room.
8. Clean car sills.
9. Clean hoistway sills.
10. Check door operation and adjust as necessary.
11. Clean trash from pit.
12. Observe operation of signal and dispatching system.
13. Observe brake operation and adjust or repair if required.
14. Check oil level in car and counterweight oil buffers and add oil as required.

### **Quarterly Preventive Maintenance**

1. Perform Monthly Tasks.
2. Check leveling operation. Clean and adjust leveling switches, hoistway vanes, magnets, and inductors. Repair and/or adjust for proper leveling.
3. Clean, lubricate car door gate tracks, hangers, and up thrust eccentrics, linkages, and door gibs.
4. On hoistway doors, clean, lubricate as necessary, adjust tracks, hangers and eccentrics, linkages, door closers, clutch pick up rollers, gibs and interlocks.
5. Inspect all rope fastening. Clean governor, hoist ropes and lubricate hoist ropes if needed. Inspect all rope hitches and shackles and equalize rope tension.
6. Check adjustment of car and counterweight roller guides.
7. Inspect governor rope tension sheave fastenings and adjust as necessary.
8. Check Controller. Clean with blower. Check all resistance tubes and grids. Check operation of overloads. Clean and inspect fuses and holders and all controller connections. Check terminal connections for tightness.
9. In hoistway examine guide rails, cams and fastenings. Inspect and test limit and terminals switches.
10. Clean all dirt, dust, and debris from sheaves, landing sills, bottom of platform, car tops, counterweights and hoistway walls.
11. Inspect sheaves to ensure they are tight on shafts. Sound spokes and rim with hammer for cracks.
12. Examine all hoist ropes for wear, lubrication, and tension. Replace, lubricate, and adjust as required to meet code requirements.
13. Check hoistway tape hitches and broken tape switch.
14. Check car stile channels for bends or cracks; also, car frame, cams, supports, and car steadying plates.
15. Clean all parts of safeties and lubricate moving parts to assure their proper operation. Check and adjust clearance between safety jaws and guide rails. Visually inspect all safety parts.
16. Inspect machine, machine brake pads and disc, and drive sheave. Check for bearing wear. Inspect brake surface of emergency brake and clean deposits of brake pad powder. Ensure that faces of brake pads are parallel to hoist ropes.

### **Annual Preventive Maintenance**

1. **Perform Monthly Tasks.**
2. Thoroughly clean car and counterweight guide rails using a nonflammable or high flash point solvent to remove lint and dust. Vacuum down elevator hoistway.

## APPENDIX E – PREVENTIVE MAINTENANCE SPECIFICATIONS FOR TRACTION ELEVATORS (REVISED FEBRUARY 3, 2023)

3. Remove, clean, and lubricate brake cores on machine brakes, clean brake pads. if necessary and inspect for wear. Adjust brake for proper operation.
4. Four car group supervisory control system operations shall be checked. The systems, dispatching scheduling and emergency servicing shall be tested and adjusted in accordance with manufacturer's literature. The Contractor shall prove to the satisfaction of the Authorized User that the system functions properly. Checking out of the group supervisory system shall be performed during other than normal working hours with no inconvenience to the using public.
5. Additionally, car speeds shall be checked, and adjusted, to maintain contract speed. A report covering time intervals, dispatch times on various programs, door standing time and door opening and closing speeds, and car speeds shall be furnished to the Authorized User. Contractor shall be responsible to correct any and all deviations from specified operations.
6. Follow machine manufacturer's recommendation regarding type of grease to be used for the machine bearings. (If applicable).

### III. ELEVATOR INSPECTION AND TESTING SERVICE

As required by ASME A17.1, all elevators shall be appropriately inspected every six (6) months and tested annually. Additionally, all traction elevators shall be tested every five (5) years. The tasks are detailed below and on the ASME A17.1 Checklist for Inspection of Elevators (Exhibit B). The Contractor must complete this checklist and submit to the Authorized User upon completion of each inspection service performed.

#### SEMI-ANNUAL INSPECTION SERVICE

1. Perform the required Semi-Annual inspection and testing service for each elevator.
2. The Contractor shall examine and test all safety devices, governors, oil buffers, etc. as required and outlined in the current adopted edition of ASME A17.1.
3. The Contractor shall notify the Authorized User of any noted deficiencies and furnish a test and condition report for each elevator to the Authorized User after the inspection using the Checklist for Inspection of Elevators (Exhibit B).

#### ANNUAL TESTING SERVICE – CAT-1 & CAT-5

1. The Contractor shall provide any needed equipment to perform the pretest examinations and tests at no additional cost to the Authorized User.
2. The Contractor shall provide all necessary weights and testing equipment, an adequate quantity of qualified journeyman elevator mechanics familiar with the equipment to perform tests and assist the inspector at no additional cost to the Authorized User.
3. The Contractor shall make formal safety tests and inspections as required and outlined in the current adopted edition of ASME A17.1.
4. These tests shall be conducted in the presence of an Authorized User-selected and qualified Independent Elevator Inspector. It is the CONTRACTOR's responsibility to ensure the presence of the Independent Elevator Inspector at the Annual and Five-year tests.
5. Tests performed on 1 and 5-year intervals will be scheduled to comply with the 1 and 5-year interval specified in ASME A17.1 Appendix.
6. The Contractor shall furnish test and condition reports to the Authorized User after each test using the Checklist for Inspection of Elevators (Exhibit B).
7. After tests have been performed, all load weighing devices, etc. shall be checked and adjusted as required to meet manufacturer's recommendations. ***Cars shall not be placed in service until all tests, checks and adjustments are completed and the elevators are in proper working condition.*** The Contractor will not be held responsible for any damage to the building and equipment (excluding elevator and related elevator equipment) caused by these tests unless such damage is a result of negligence by the Contractor.
8. Failure to follow correct procedures to prevent damages and failure to perform pretest examination shall be considered negligence by the Contractor.

**APPENDIX E – PREVENTIVE MAINTENANCE SPECIFICATIONS FOR TRACTION ELEVATORS**  
**(REVISED FEBRUARY 3, 2023)**

9. The Contractor shall furnish and install, at no additional cost to the Authorized User, any missing code data plates as required by ASME A17.1. If necessary, the Authorized User will assist the Contractor in obtaining the data for the replacement code data plates.
10. If during the inspection/testing of a particular elevator, such elevator fails, Contractor shall continue the inspection/testing procedure with other elevators so as not to delay the overall inspection/testing process.
11. The Contractor shall provide a separate crew to repair deficiencies.

**APPENDIX E – PREVENTIVE MAINTENANCE SPECIFICATIONS FOR TRACTION ELEVATORS**  
**(REVISED FEBRUARY 3, 2023)**  
**EXHIBIT A - SPARE PARTS LIST**

- A. The Contractor shall maintain on-site, as a minimum, the following replacement parts:
1. Five (5) Fuses of each size, type and current rating.
  2. Adequate supply of replacement lamps.
  3. Four (4) each type of car and hoistway door hanger rollers
  4. One (1) each type of hoistway door interlock assembly, complete
  5. One (1) infrared door detector, receiver, and transmitter along with associated cables
  6. One (1) set of rollers for car and counterweight roller guide assemblies
  7. One (1) plug-in relay for each type used
  8. Two (2) replacement LED lamps for cab lights
  9. All required lubricants, cleaning agents, compounds and other materials and equipment required for preventive maintenance procedures specified herein.
  10. At the completion of the Mini-Bid Agreement, the above parts list is to be turned over to the Authorized User.
- B. The Contractor shall maintain at their local office, or have available within 24 hours of need, the following replacements parts:
1. Door operator motor
  2. Door clutch
  3. Printed circuit boards each type used, including power supplies
  4. Printed circuit boards for signal fixtures
  5. Transformers for each type and size used
  6. Motor Drive

# APPENDIX E – PREVENTIVE MAINTENANCE SPECIFICATIONS FOR TRACTION ELEVATORS

(REVISED FEBRUARY 3, 2023)

## EXHIBIT B – CHECKLIST FOR INSPECTION OF ELEVATORS

### CHECKLIST FOR INSPECTION OF ELECTRIC ELEVATORS

**GENERAL NOTES:**

(a) See ASME A17.2–2004 for detailed inspection information on each item number.

(b) OK = meets requirements; NG = insert number to identify comment on back of this Checklist; NA = not applicable.

Address: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

ID No: \_\_\_\_\_

Passenger Rated load: \_\_\_\_\_

Freight class \_\_\_\_\_ Speed: \_\_\_\_\_

- Routine inspection and test
- Periodic inspection and test
- Acceptance inspection and test

Code Edition: \_\_\_\_\_

Inspected by: \_\_\_\_\_

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

QEI No: \_\_\_\_\_ Certifying organization: \_\_\_\_\_

	OK	NG	NA		OK	NG	NA
<b>1 ELEVATOR — INSIDE OF CAR</b>				<b>2.21</b>			
1.1 Door reopening device	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2.22 Motor generator	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.2 Stop switches	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2.23 Absorption of regenerated power	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.3 Operating control devices	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2.24 AC drives from a DC source	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.4 Sills and car floor	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2.25 Traction sheaves	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.5 Car lighting and receptacles	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2.26 Secondary and deflector sheaves	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.6 Car emergency signal	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2.27 Rope fastenings	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.7 Car door or gate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2.28 Terminal stopping devices	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.8 Door closing force	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2.29 Car and counterweight safeties	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.9 Power closing of doors or gates	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2.39 Low oil protection	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.10 Power opening of doors or gates	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2.40 Inspection control	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.11 Car vision panels and glass car doors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2.41 Maintenance records	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.12 Car enclosure	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2.42 Static control	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.13 Emergency exit	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<b>3 ELEVATOR — TOP OF CAR</b>			
1.14 Ventilation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3.1 Top-of-car stop switch	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.15 Signs and operating device symbols	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3.2 Car top light and outlet	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.16 Rated load, platform area, and data plate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3.3 Top-of-car operating device	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.17 Standby power operation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3.4 Top-of-car clearance, refuge space, and standard railing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.18 Restricted opening of car or hoistway doors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3.5 Normal terminal stopping devices	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.19 Car ride	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3.6 Final and emergency terminal stopping devices	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>2 ELEVATOR — MACHINE ROOM</b>				3.7 Car leveling and anticreep devices	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.1 Access to machine space	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3.8 Top emergency exit	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.2 Headroom	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3.9 Floor and emergency identification numbering	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.3 Lighting and receptacles	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3.10 Hoistway construction	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.4 Machine space	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3.11 Hoistway smoke control	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.5 Housekeeping	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3.12 Pipes, wiring, and ducts	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.6 Ventilation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3.13 Windows, projections, recesses, and setbacks	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.7 Fire extinguisher	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3.14 Hoistway clearances	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.8 Pipes, wiring, and ducts	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3.15 Multiple hoistways	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.9 Guarding of exposed auxiliary equipment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3.16 Traveling cables and junction boxes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.10 Numbering of elevators, machines, and disconnect switches	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3.17 Door and gate equipment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.11 Disconnecting means and control	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3.18 Car frame and stiles	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.12 Controller wiring, fuses, grounding, etc.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3.19 Guide rails fastening and equipment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.13 Governor, overspeed switch, and seal	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3.20 Governor rope	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.14 Code data plate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3.21 Governor releasing carrier	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.15 Static control	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3.22 Wire rope fastening and hitch plate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.16 Overhead beam and fastenings	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3.23 Suspension rope	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.17 Drive machine brake	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3.24 Top counterweight clearance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.18 Traction drive machines	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3.25 Car, overhead, and deflector sheaves	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.19 Gears, bearings, and flexible couplings	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				
2.20 Winding drum machine and slack cable device	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				

