

APPENDIX F – PREVENTIVE MAINTENANCE SPECIFICATIONS FOR ESCALATORS

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. Step Rollers
 2. Belts and chains
 3. Controller Components: resistors, timers, fuses, overloads, minor contacts, wiring
 4. Brake: pads, lining, discs, or shoes
 5. Comb plates
 6. Demarcation lights.
 7. Escalator machine
 8. Handrail, handrail drive chains
 9. PC Boards, solid state devices, contactors
 10. Sprockets, step chains
 11. Stop switch
- B. The Contractor shall keep the truss and other structural members free of rust. Renew step rollers as required to insure smooth and satisfactory operation.
- C. Contractor shall be responsible for keeping the exterior of the escalator 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.
- D. 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.

Monthly Preventive Maintenance

1. Ride each escalator checking for unusual noise or operation.
2. Hold the handrails for the entire travel, and verify they move smoothly without stuttering and that they move at the same speed as the steps.
3. Firmly grip the handrail at several points during the ride and verify the handrail does not stall.
4. Inspect comb plates at all landings.
5. Inspect for proper operation of escalator lighting at landing plate.
6. Inspect demarcation lights at entrance and egress. Verify lights are operating properly, of uniform color and intensity.
7. Inspect skirt panels/balustrade panels to verify seams are flush and properly attached with no damaged, jagged, or sharp edges.
8. Inspect skirt panels for worn or detached skirt panel brushes.
9. Verify floor plates are firmly fastened and flush with floor and access treads.
10. Remove floor plate at lower end for access to step chains.
11. Use spray equipment or paint brush to lubricate as necessary.
12. Apply lubricant to step wheels.

APPENDIX F – PREVENTIVE MAINTENANCE SPECIFICATIONS FOR ESCALATORS

13. Run escalator and visually inspect step wheels and chains for proper tension and tracking.
14. Mark location of handrail with chalk and check each handrail for a complete revolution.
15. Inspect each handrail for cuts, cracks, gouges, and excessive wear. Inspect underside of handrails for pinch points.
16. Mark a step with chalk and inspect all steps through a complete revolution of the escalator.
17. Inspect steps for cracks and chips, damaged or broken step demarcation segments or damaged risers.
18. Check condition of control boards and circuits.
19. Check mainline fuses for heating.
20. Check setting of broken chain switch, steps, and skirt safety switches.
21. Check operation of emergency stop switch by activating the switch. Verify unit stops within 18” to 32” of travel.

Quarterly Preventive Maintenance

1. Perform all monthly maintenance items.
2. Clean motor commutators, renew or reseat brushes.
3. Check condition of the track, wear joints, wheel clearances both laterally and vertically.
4. Check step chain for wear and lubrication of side bars and pin connector holes.
5. Check operation of tension carriage, condition of the track and clearances, lubricate rollers and pivots.
6. Check condition and lubrication of main bearings.
7. Check tightness of main sprockets on shaft.
8. Check setting and wear of tangential and step chain guides, adjust and lubricate as necessary.
9. Seal any leaks on motors, gearboxes, etc.
10. Clean contactors, check alignment of switches, and operation of overloads.
11. Check all other contactor equipment.
12. Check all safeties for proper operation.

Annual Preventive Maintenance

1. Perform all monthly maintenance items.
2. Remove comb plates and 50% of the steps, check stair welds.
3. Check condition of step rollers and axles.
4. Clean truss, incline pan, and underside of steps.
5. Clean armature and motor with blower and vacuum.
6. Check armature and rotor clearances.
7. Check motor connections and bearings.
8. Clean and check fuse holders and contactors and check all other connections.
9. Check all safety devices and tighten all connections, clean, and lubricate as necessary.
10. Lubricate intermediate bearings, motor bearing and worm shaft bearing.
11. Lubricate pinion gears, ring gear and main shaft bearing.
12. Check and lubricate handrail guide wheels.
13. Check surface of handrail tension rollers.
14. Check any additional items required by the State of New York for the annual inspection.
15. Perform annual step index test and provide to Authorized User.

III. ESCALATOR INSPECTION AND TESTING SERVICE

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

APPENDIX F – PREVENTIVE MAINTENANCE SPECIFICATIONS FOR ESCALATORS

SEMI-ANNUAL INSPECTION SERVICE

1. The Contractor shall examine and test all safety devices, handrails, comb plates, pressure switches, etc. as required and outlined in the current adopted edition of ASME A17.1.
2. The Contractor shall notify the Authorized User of any noted deficiencies and furnish a test and condition report for each escalator to the Authorized User after the inspection using the Checklist for Inspection of Escalators (Exhibit B).

ANNUAL INSPECTION TESTING SERVICE – CAT-1

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 Elevator Inspector. It is the CONTRACTOR's responsibility to ensure the presence of the QEI at the Annual tests.
5. Tests performed on 1-year intervals will be scheduled to comply with the 1-year interval specified in ASME A17.1 Appendix N, which has been adopted by NY State.
6. The Contractor shall furnish test and condition reports to the Authorized User after each test using the Checklist for Inspection of Escalators (Exhibit B).
7. After tests have been performed, all loading devices, etc. shall be checked and adjusted as required to meet manufacturer's recommendations. **Escalators shall not be placed in service until all tests, checks and adjustments are completed and the escalators are in proper working condition.** The Contractor will not be held responsible for any damage to the building and equipment (excluding escalator and related escalator 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.
9. The Contractor shall furnish and install, at no additional cost to the Authorized User, any missing code data plates and signage 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 escalator, such escalator fails, Contractor shall continue the inspection/testing procedure with other escalators so as not to delay the overall inspection/testing process.
11. The Contractor shall provide a separate crew to repair deficiencies.

APPENDIX F – PREVENTIVE MAINTENANCE SPECIFICATIONS FOR ESCALATORS

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. Comb plates.
 4. Motor brushes and hardware.
 5. Handrail guides.
 6. Brush guards.
 7. Step rollers and minor component parts.
 8. All required lubricants, cleaning agents, compounds and other materials and equipment required for preventive maintenance procedures specified herein.
 9. 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. Emergency Stop Switch
 2. Handrails as required

APPENDIX F – PREVENTIVE MAINTENANCE SPECIFICATIONS FOR ESCALATORS

EXHIBIT B – CHECKLIST FOR INSPECTION OF ESCALATORS

ASME A17.2-2017

Checklist and Report for Inspection of Escalators

GENERAL NOTES:

- (a) See ASME A17.2 for detailed Code requirements. Numbering is tied to the numbering of A17.2 Items.
- (b) OK – meets requirements; NG – insert number to identify comment on back of this checklist; N/A – not applicable.

Address: _____ ID No: _____ <input type="checkbox"/> Passenger Rated load: _____ lb or kg Width: _____ in. or m Speed: _____ ft/min or m/s	<input type="checkbox"/> Routine inspection and test <input type="checkbox"/> Periodic inspection and test <input type="checkbox"/> Acceptance inspection and test Code Edition: _____ (from Code data plate) Inspected by: _____ Signature: _____ Date: _____ Certification No. _____ Certifying organization: _____
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	OK	NG	N/A		OK	NG	N/A
7 ESCALATOR — EXTERNAL				8 ESCALATOR — INTERNAL			
7.1 General fire protection	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	8.1 Machinery space access, lighting, receptacle, and condition	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7.2 Geometry	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	8.2 Machinery space stop switches and inspection control	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7.3 Handrails	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	8.3 Controller and wiring	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7.4 Entrance and egress ends	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	8.4 Drive machine and brake	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7.5 Lighting	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	8.5 Speed governor	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7.6 Caution signs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	8.6 Broken drive chain device and disconnected motor safety device	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7.7 Combplate and comb step impact device	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	8.7 Reversal stop switch	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7.8 Deck barricades and antislide devices	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	8.8 Broken stop chain device	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7.9 Steps and upthrust device	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	8.9 Stop upthrust device	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7.10 Operating and safety devices	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	8.10 Missing step device	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7.11 Skirt-obstruction device	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	8.11 Step level device	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7.13 Egress restriction (rolling shutter) device	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	8.12 Steps, stop chains, and trusses	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7.14 Speed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	8.13 Handrail systems and safety devices	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7.15 Balustrades	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	8.14 Code data plate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7.16 Ceiling intersection guards	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	8.15 Response to smoke detectors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7.17 Step/skirt clearances, panels, and performance index	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	8.16 Step lateral displacement device	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7.18 Outdoor protection	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	8.17 Inspection control	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7.19 Maintenance records	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	8.18 Earthquake inspection and tests (seismic risk zone 2 or greater)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7.20 Earthquake inspection and tests (seismic risk zone 2 or greater)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				