8. Operator shall be equipped with an emergency manual chain hoist assembly that safely cuts operator power when engaged. A disconnect chain shall not be required to engage or release the manual chain hoist.
9. Operator drive and door-driven sprockets shall be sized for #50 roller chain.
10. Provide an integral motor mounted interlock system to prevent damage to door and operator when mechanical door locking devices are provided.
11. Operator shall be capable of driving the door at a speed of up to 9" per second or as recommended for door size.
12. Fully adjustable, driven linear screw-type cam limit switch mechanism shall synchronize the operator with the door.
13. The electrical contractor shall mount the control station(s) and supply the appropriate disconnect switch, all conduit and wiring per the motor operator wiring instructions.
14. Acceptable product: Model MG (Industrial Duty Gear Head) Operator.
15. Location of motor mount to be chosen by Architect in shop drawings.

J. Control Stations:
1. Surface mounted: "Open/Close/Stop" push buttons; NEMA 1 (standard)
2. Surface mounted: "Open/Close" key switch with "Stop" push button; NEMA 3R.
3. Locations of each type as indicated on Drawings.

K. Control Operation:
1. Momentary Contact to Close: Fail-safe, UL325-2010 Compliant Entrapment Protection for Motor Operation.
2. Continuously monitored, wireless sensing/weather edge seal extending full width of door bottom bar. Contact before door fully closes shall cause door to immediately stop downward travel and reverse direction to the fully opened position.

L. Basis-of-Design Product and Manufacturer: Model ESD30 Thermiser Max by CornellCookson.
1. Other acceptable products and manufacturer: Model EPI 300 by Cornell.

2.4 COILING GRILLES

A. Aluminum Curtain:
1. ESG12 Brick Pattern
2. Horizontal Rods: Solid 5/16 inch (8 mm) diameter, 5056 H32 aluminum alloy sleeved with horizontal aluminum tube spacers to separate vertical links.
   a. Vertical Spacing 2 inches (51 mm)
3. Vertical Links: Heavy duty aluminum links, 3/4 inch (19mm) wide, positioned by tube spacers on 9 inch (229 mm) staggered centers. End links to be held in place by self-locking retaining rings.
4. Bottom bar: 2 x 3-1/2 inch (51 x 89 mm) extruded aluminum tubular section reinforced with 3 x2 x 3/16 inch (76 x 51 x 5 mm) aluminum angle(s).

B. Guides, Wall Mounted:
1. Heavy duty extruded aluminum sections with snap-on cover to conceal fasteners and polypropylene pile runners on both sides of curtain.
2. Provide steel mounting angle as required for face of wall installation.

C. Brackets: Manufacturer's standard design, 3/16 inch (5 mm) steel plate with bell mouth guide groove for curtain.

D. Barrel and Counterbalance Mechanisms:
   1. Barrel: Fabricate from hot-formed structural-quality carbon steel, welded or seamless pipe, of sufficient diameter and wall thickness to support roll-up of curtain without distortion of slats and to limit barrel deflection to not more than 0.03 inch per foot (.75 mm per 300 mm) of span under full load.
   2. Provide spring balance of adjustable steel helical torsion springs.
      a. Size springs to counterbalance weight of curtain, with uniform adjustment accessible from outside barrel. Provide springs as required to comply with cycles of operation requirements.
      b. Provide cast steel barrel plugs to secure ends of springs to barrel and shaft.
   3. Fabricate torsion rod for counterbalance shaft of cold-rolled steel in size required to hold fixed spring ends and carry torsional load.
   4. Use grease-sealed bearings or self-lubricating graphite bearings for rotating members.

E. Hood: 0.040 inch (1.016 mm) aluminum with reinforced top and bottom edges. Provide minimum 1/4 inch (6 mm) steel intermediate support brackets as required to prevent excessive sag.

F. Finishes:
   1. Clear anodized finish.

G. Locking Mechanism:
   1. Provide manufacturer's standard cylinder locking mechanism, operable from inside only, to provide positive locking of doors.
   2. Devices to be provided less cylinders; provide cylinders keyed to building masterkey system as specified in Section 087100 DOOR HARDWARE.

H. Manual Push-Up: Provide pole with hook. Suitable for aluminum grilles up to 14 feet (4.27 M) wide and up to 10 feet (3.05 M) high.

I. Acceptable Product and Manufacturer: Equivalent to Model ESG12 VisionAire by CornellCookson.

2.5 COILING COUNTER DOORS

A. Curtain:
   1. Slats:
      a. 6105-T5 extruded aluminum; mill finished. Gauge as required to meet performance requirements.
   2. Provide molded nylon endlocks as required to comply with structural requirements.
   3. Provide bottom bar for curtain reinforcement.
      a. Material: Structural steel angles.

B. Guides:
   1. Heavy-duty extruded aluminum sections with snap-on cover to conceal fasteners. Provide polypropylene pile runners on both sides of curtain to elmininate metal-to-metal contact between guides and curtain.

a. Extend wall angles above door opening head to support coil brackets, unless otherwise indicated.
b. Provide removable stops on guides to prevent over-travel of curtain and a continuous bar for holding endlocks.

2. Provide required fasteners to attach at jambs.
3. Provide with endlock bars as required to fulfill performance requirements.
4. Finish: Clear anodized.

C. Brackets: Manufacturer's standard design, reinforced steel plate with bearings at rotating support points to support counterbalance shaft assembly and form end closures.

D. Barrel and Counterbalance Mechanisms:
1. Barrel: Fabricate from hot-formed structural-quality carbon steel, welded or seamless pipe, of sufficient diameter and wall thickness to support roll-up of curtain without distortion of slats and to limit barrel deflection to not more than 0.03 inch per foot (.75 mm per 305 mm) of span under full load.
2. Provide spring balance of adjustable steel helical torsion springs.
a. Size springs to counterbalance weight of curtain, with uniform adjustment accessible from outside barrel. Provide springs as required to comply with cycles of operation requirements.
b. Provide cast steel barrel plugs to secure ends of springs to barrel and shaft.
3. Fabricate torsion rod for counterbalance shaft of cold-rolled steel in size required to hold fixed spring ends and carry torsional load.
4. Use grease-sealed bearings or self-lubricating graphite bearings for rotating members.

E. Hood:
1. Fabricate from same material and finish as curtain, minimum 24 gage, reinforced as required for length of run.
2. Provide intermediate support brackets as required.

F. Finish: Mill

G. Operation: Manual with pull down pole.

H. Locking Mechanism:
1. Provide manufacturer's standard cylinder locking mechanism, operable from inside only, to provide positive locking of doors.
2. Devices to be provided less cylinders; provide cylinders keyed to building masterkey system as specified in Section 087100 DOOR HARDWARE.

I. Acceptable Product and Manufacturer: Equivalent to Model ESC10 by CornellCookson.

2.6 ACCESSORIES

A. Provide anchors, inserts and other miscellaneous accessories as required for complete installation.

B. For each door and each grille, provide tamper-proof counter to record number of cycles of operation.

C. Provide sloping bottom bars where sill is sloped.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and adjoining construction, and conditions under which Work is to be installed. Do not proceed with Work until unsatisfactory conditions are corrected.

3.2 INSTALLATION

A. Erect coiling doors as complete units in accordance with final Shop Drawings and manufacturer's instructions.

B. Install plumb, level and true to established building lines.

3.3 ADJUSTING AND CLEANING

A. Upon completion of each installation, test operation to demonstrate satisfactory operation, including security operation, acceptable to Architect.

B. Reset fire shutters after authorities having jurisdiction have tested building fire alarm and smoke alarm systems.

C. Repair damaged galvanized coating in accordance with ASTM A780.

D. Adjust as required for proper operation.

E. Clean surfaces and lubricate joints and bearings in accordance with manufacturer's instructions.

3.4 PROTECTION

A. Protect doors from weathering, deterioration or damage until acceptance.

3.5 DEMONSTRATION AND TRAINING

A. Manufacturer’s training personnel to provide operations and maintenance training to the Owner’s maintenance personnel. Instruction to include all standard operating and maintenance procedures for adjustment, assembly, disassembly, general, and scheduled maintenance of the overhead coiling doors and grilles.

END OF SECTION