

DIVISION 8 – OPENINGS
SECTION 08.34.16
HORIZONTAL ROLLING STEEL DOORS
UNIDIRECTIONAL DOOR CONFIGURATION

GENERAL

Drawings and general provisions of the Contract, including General and Supplementary Conditions may apply to this Section.

1. Door description

- a. Provide a horizontal rolling door for a clear opening Wide by High.
- b. Door configuration shall be **“Unidirectional”**.
- c. Hangar door opens from one side only. [For example visit our website](#)
- d. Refer to door drawings for direction of travel.
- e. Refer to door drawings for door leaf quantity.
- f. Refer to door drawings for quantity and placement of door motor operators.

2. Performance requirements

- a. American Institute of Steel Construction (AISC): Manual of Steel Construction, latest edition.
- b. National Electrical Manufacturer's Association.
- c. Door manufacturer shall furnish, and warranty horizontal rolling door and all required accessories as specified.
- d. Design horizontal rolling door including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria included.
- e. Structural performance: Provide horizontal rolling door capable of withstanding effects of gravity loads and the following loads and stresses without evidence of permanent deformation of door components.

3. Wind loads and design data

- a. MPH Ultimate
- b. ASCE 7-16
- c. Exposure C
- d. Risk Category II
- e. Enclosure classification +0.18/-0.18 (GC pi)

4. Door manufacturer and installer

- a. Basis of design shall be:
AeroDoor International
www.aero-door.com
Phone: 866.226.3667
Point of Contact: Paul Blake
- b. Approved equal: Door to be manufactured, installed, and warranted by a single company with at least 15-years' experience in horizontal rolling doors of this nature.
- c. Metal building manufacturers are not an acceptable choice of hangar door manufacturer.
- d. Door shall be built in a factory environment and with the highest level of quality control.

5. Delivery, storage, and handling

- a. Deliver materials which are not shop installed in original rolls, packages, contains, boxes, or crates bearing the manufacturers name, brand, and model number.
- b. Materials must be stored in dry locations with adequate ventilation, free from dust and water, and permit access for inspections and handling.

- c. Items must be handled with due care and attention to prevent damage.
- d. Damage must be reported in writing to AeroDoor with adequate photos.

6. Submittals

- a. Drawings show detailed construction of the framing including bottom rail, top guide rails, structural door framing, wheels, top guide rollers, weather seal and any extras.
- b. All structural drawings and calculations will be signed and sealed by a registered PE in North America. Charges may apply for certain US states.
- c. Engineering calculations for choice of top guide rail must be provided.
- d. Provide mill certifications for structural steel.
- e. Drawings shall denote weld identifications, connection hardware and any electrical door opener and panel locations.
- f. Wiring schematics shall include field wiring, location of junction boxes and physical locations of devices.
- g. Provide a product data manual for components within any electrical door opener and control panel.
- h. Provide a owner's manual covering operation of the door, trouble shooting and general maintenance.
- i. Provide a manufacturer warranty certificate in owner's name.

7. Warranty

- a. 25-year warranty on hangar door top guide rollers, entire structural door frame, workmanship, and bottom wheel housing, and axle.
- b. 1-year warranty on bearings in the bottom wheel. They require annual grease to prolong life.
- c. 1-year warranty on weather seal.
- d. 1-year warranty on all electrical components, motor operator and control panel.
- e. Warranty excludes damage caused by acts of nature and environmental corrosion.
- f. Warranty excludes damage caused by neglect or misuse.
- g. Warranty document online <https://hangardoors.aero/aerodoor-warranty>
- h. 3rd party features such as a tail door will be warranted by respected manufacturer.

8. Bottom rail, levelling angle and anchor bolts

- a. Levelling angles and double nut anchor bolts provided and shall be every 5ft on center.
- b. Rail shall be mounted on levelling angles and tack welded to ensure level installation.
- c. Rail provided shall be ASCE type and per the size requirements of the door.

9. Structural door frame

- a. Main members both vertical and horizontal shall be continuous sections of new hot rolled structural steel, equal to or exceeding ASTM-A-36/A992 and comply with AISC specifications.
- b. Bolts will be high strength, ASTM A325X – Black.
- c. Angles and plates: ASTM A36.
- d. Welds will be ground smooth and buffed.
- e. Cold formed C-shapes shall be used only for girts and interior bracing and not as structural framing members. These will be spaced horizontally every 5ft on center.
- f. All framing members shall be true to dimension and square without warping or being more than 1/8" in twenty feet.
- g. Diagonal bracing shall be provided so the completed door leaf will be adequately braced to withstand design loads.
- h. For any door member, the deflection due to design wind load shall not exceed the members length divided by 120.

10. Top guide rail, also known as top track

- a. Top guide rails provided will be a hot rolled I beam shape and shall conform to ASTM specification A992 Grade 50 or better. Size, weight, and length shall be as required for door design, wind loads and building requirements.
- b. The bottom flange shall act as a retainer in conjunction with the doors top guide rollers to prevent the doors from disengagement.
- c. Top guide rails shall be mounted to the building structure by welding or bolting.
- d. End of travel bumpers provided at the end of door travel.
- e. Supports for the top track every 10ft on center by others.
- f. Top track supports should be spaced no wider than 10' across the opening. Additionally, top track supports need to be located at each jamb column and within 1/4" plus or minus of elevation.

11. Top guide rollers ([learn more](#))

There are 2 choices of top guide roller, select one and delete the other:

- Telescoping type: Designed to move up and down within the specified live loading deflection of the roof, within the vicinity of the door opening.
- Provide a minimum of 2 rollers per door leaf.
- Include both horizontal and vertical steel rollers built into a frame which is connected in such a manner as to transmit the specified wind loads from the door to the building structure and to prevent disengagement of the door from the top guide rail.
- Wheels must include bronze bushings impregnated with lubrication for lifetime, maintenance free operation. No other type accepted.
- 25-year warranty on hangar door top guide rollers

Or

- Fixed roller type: A fixed deflection limit, typically of less than 3.5-inches.
- Provide a minimum of 2 rollers per door leaf.
- Include both horizontal and vertical steel rollers built into a frame which is connected in such a manner as to transmit the specified wind loads from the door to the building structure and to prevent disengagement of the door from the top guide rail.
- Wheels must include bronze bushings impregnated with lubrication for lifetime, maintenance free operation.
- 25-year warranty on hangar door top guide rollers

12. Bottom Wheels ([learn more](#))

- a. A minimum of two wheels per door leaf shall be provided.
- b. Size and weight of the door shall determine wheel diameter.
- c. Wheels to be sized to correctly fit the ASCE bottom rail.
- d. Wheels shall be manufactured from steel plates, having a minimum tread diameter as required for the actual wheel loading. Treads must be machined concentric with the bearing seats.
- e. Wheel bearings shall be internal tapered roller type, arranged so that both horizontal and vertical loads shall be transferred to the rail through only the bearing.
- f. Bearings must be equipped with dust seals and high-pressure grease pins.
- g. Wheels shall be removeable from the housing without the need to remove the door.
- h. Wheels 18-inch or greater in diameter can be heat treated to obtain a rim hardness of 320 Brinell.
- i. 25-year warranty on bottom wheel housing, and axle.
- j. 1-year warranty on bearings in the bottom wheel. They require annual grease to prolong life.

13. Weather stripping

- a. Weather stripping shall be 1/8-inch two ply cloth inserted neoprene.
- b. Vertical seals between the door leaves shall be flap type, full height of the door.
- c. Vertical seals between door and building jambs shall be flap type, full height of the door.
- d. Vertical seals on leading edge leaves shall be bulb seal, full height of the door.
- e. Horizontal seal on sill shall be flap type, full width of the door.
- f. Telescoping top guide rollers that use a drop down soffit will include a brush that is secured to the building, extending horizontally until it creates a seal with the exterior of the door leaf. On buildings where there is no drop down soffit a floating weather seal design may be used.
- g. Fixed top guide rollers will include a brush seal that is secured to the door structure, extending vertically upward until it creates a seal with the top guide structure.
- h. Brush seal shall be provided to clear debris from the ASCE rail head as the door moves.
- i. Weather seal shall be held in place by metal retaining strips with rust resistant fasteners.
- j. Any rub plates shall be by others.

14. Electrical Motor Operator ([learn more](#))

There are 2 choices of motor operator, delete one.

Internal type: A motor drives the doors steel wheel.

- A complete system mounted internally within the door framing.
 - Unit shall consist of gear head motor operator, gear reducer, sprockets, chains, and electrical material for a complete operable system.
 - Helical bevel type motor.
 - Hinged steel cover.
 - Design operating unit to move its lead leaf at a minimum speed of approximately 45-feet / 60-feet per minute in zero wind load conditions.
 - Rubber tire or solid tire operators are not acceptable.
- UL Listed control panel.
 - VFD type for ramp up starting.
 - Drive and motor protection.
 - Heavy duty buttons located in oil tight enclosures with mushroom head buttons.
 - Push button controls are by constant pressure. (open, close)
 - Warning horn installed, not less than 45DB, automatically signals movement of the door and sounds continuously throughout operation of the door.
- Limit switches provided to stop the travel of the door in their fully open and closed positions.

Or

Surface mounted type: Motor drives rubber tire in contact with the floor.

- The complete system is housed within a self-contained steel box. Box is surface mounted to the leading-edge door leaf.
 - Box shall consist of gear head motor operator, gear reducer, sprockets, chain, and electrical material for a complete operable system.
 - Right angle worm type motor.
 - Typical box depth 12-inches.
 - Hinged steel cover.
 - Design operating unit to move its lead leaf at a speed of approximately 45-feet / 60-feet per minute at zero wind load conditions.
- UL Listed control panel.
 - VFD type for ramp up starting.

- Drive and motor protection.
- Heavy duty buttons located in oil tight enclosures with mushroom head buttons.
- Push button controls are by constant pressure. (open, close)
- Warning horn installed, not less than 45DB, automatically signals movement of the door and sounds continuously throughout operation of the door.
- Limit switches provided to stop the travel of the door in their fully open and closed positions.

15. Overhead Power ([learn more](#))

There are 2 choices of overhead power, delete one.

Overhead trolley type.

- Furnish track-supported tandem trolley or self-supporting collector as required by the door configuration, complete with spring-loaded brush contacts. Provide trolley pulling brackets and corrosion-protected chains attached from each side of the pulling bracket to each side of the tandem trolley or support bracket for self-supporting collectors.
- Provide the required number of sections of straight track, a section of dropout track, feed boxes, end caps, couplings, hangers, and other accessories to make the system complete and workable. If required, provide expansion tracks in each run where the system crosses a building expansion joint in the roof construction and in the top guides.
- Adequate clearance in the doors top guide system must be provided for ducts.

Or

SOOW Cable type.

- Provide sufficient draped cable as required by the door configuration.
- Include eye bolts and strain reliefs.
- SOOW cable must not be designed to interfere with door operation or pickup brackets.

16. Conduit & Wiring

- a. All non-explosion proof conduits, wires, flexible multi-conductor cables, junction boxes, and all labor to wire and connect to and between all electrical equipment on or for the doors shall be furnished under this scope of work.
- b. If permanent electrical power is not available when the doors are installed, the general contractor shall make provision for and obtain a temporary source of electrical power so the doors may be tested and adjusted under power.

17. Emergency Operation

- a. Motorized doors shall be constructed and equipped so they can be operated manually by tractors or a tug from ground level.
- b. In the event of a power failure, the electrical motor operator must be capable of being disconnected and operated manually without damage to the motor and gearbox.
- c. Provide tractor pulls so a door leaf can be towed by a tractor or similar equipment in the event of a power failure.

18. Locking Pins

- a. Provide locking pins on manual doors only.

19. Door Handles

- a. Provide door handles on manual doors only.

20. Interconnection of door leaves

- a. Pickup brackets will be designed and furnished to accept the operational loads imparted by the door leaf.
- b. Provide door spacing sufficient to allow overlap of pickup brackets not less than 1/2 inch to prevent brackets from inadvertently passing each other.
- c. Provide cushion on brackets to reduce noise and impact load on the doors.

21. Finishes

- a. Structural door framing members shall be thoroughly cleaned to a minimum of SSPC-SP-3. All loose scale, dust, or other objectionable materials, which would otherwise bond with the paint will be removed.
- b. All structural framing shall be shop primed with one coat of Sumter coatings heavy duty inhibitive primer, 100R9913 Red or 100D9914 Gray.
- c. Cold formed C shapes shall be galvanized or baked on red finish.
- d. All shop painting shall be done in dry weather, under cover and free from moisture.

22. Installation

- a. Hangar door installation will be by hangar door manufacturer.
- b. Installation shall include:
 - i. ASCE bottom rail and levelling angles.
 - ii. Top guide rails.
 - iii. Door leaves and interconnection pickup brackets.
 - iv. Complete weather seals, not partial.
 - v. Motor operators, control panels, limit switches.
 - vi. Overhead power.
 - vii. Conduit and wiring, non-explosion proof.
 - viii. Locking pins.

23. Owner Training

- a. After installation is complete, the door manufacturer shall perform a complete operating test in the presence of the owner and architect.
- b. Correct defects disclosed by the test. Retest the doors and adjust them until the entire installation is fully operational and acceptable to the owner and architect.

24. Work By Others

- a. Foundation: Anchor bolts are supplied, but installation is not included.
- b. Foundation: Excludes concrete work and finishing around our ASCE Rail.
- c. Foundation: Excludes any rail drainage or deicing system.
- d. Building: Excludes vertical and horizontal supports for carrying our doors' top guide rails (maximum spacing 10ft on center).
- e. Door: Excludes walk/access doors, windows, exit signs, lights, vents, and signage.
- f. Door: Excludes exterior sheeting, insulation, interior liner panels, perimeter trim, rub plates, studs, or flashing.
- g. Door: Excludes soffit closure plate.
- h. Powered Doors: Service power must be provided to a junction box at the end of the doors top track.
- i. Powered Doors: Excludes explosion-proof classifications.
- j. Paint: Excludes field paint, finish painting, specialist coatings, or sandblasting.
