



## STEEL SLIDING HANGAR DOORS

*Hangar Door systems shall be Bi Parting, One way, or Floating System. Hangar doors in general are considered a product that is customized for each application. Well Bilt Industries offers a wide array of options and modifications for each application. Well Bilt Industries will take the time to explain the options to help guide for quality, value and extended service life. Call Well Bilt Industries today to discuss the many options and benefits that make Well Bilt Industries a leader in sliding doors for over three decades. 1-800-940-BILT*

### PART 1 - GENERAL

#### 1.01 References

Listed below are publications that contain reference material that are applicable to portions of the hangar doors. Sliding hangar doors specifications vary from door to door depending upon geographic location so these references shall be used for basic design criteria only.

- A. AISI SG-973 Cold Form Design Manual
- B. ASTM A366/A 36M Commercial Steel Sheet, Carbon Cold Rolled
- C. ASTM A569/A 569M Commercial Steel Sheet and strip Hot Rolled
- D. ASTM A36 36M Carbon Structural Steel
- E. NEMA ICS 1 Industrial Control and Systems
- F. NEMA ICS 6 Industrial Controls and Systems Enclosures
- G. NFPA 70 National Electric Code
- H. SSPC Primers and paint, Gray and Red Oxide primers

#### 1.02 DESIGN REQUIREMENTS

##### A. Hangar Door / Horizontal Sliding Door Design

The design of the Sliding Hangar Doors shall be designed by Well Bilt Industries in accordance with the specified criteria to insure that the hangar doors shall operate as specified and not interfere with the structure or operating leafs of the horizontal sliding system. The doors shall fit tightly and be built without warping or sagging of members. Deflection of cold form material is permitted, however installers are to adjust all members prior to fastening the exterior cladding.

##### B. Wind Loads

The horizontal sliding hangar doors shall be designed per the geographic regions external wind pressures. Design pressures shall be based upon the governing authority or specified by the lead design engineer for each project as it may apply.

##### C. Deflection

Hangar Door systems shall be designed with maximum deflections:

Positive upward deflection of 3"

Negative downward deflection of 8"



**E. Cold Form Members**

Cold Form members shall be not less than 6” and no more than 10” with a closed “C” shape. Member size shall be designed to meet the applicable wind load and spacing. Cold Form shall be fastened with no less than four (4) mounting bolts per clip.

**F. Hardware**

Fastening hardware shall conform to domestic hardware and provide markings to the grade of hardware on the head of the fastener for visual identification.

**1.03 SUBMITTALS**

Approval of the shop drawings is required prior to fabrication of the horizontal sliding hangar door systems.

**A. Shop Drawings**

- a. Hangar Doors operations and general maintenance manuals
- b. Fabrication drawings showing detailed construction of the framing including bottom rails, top rails, wheel housings, top guide bearing assemblies, telescopic guides, cable and/or rod bracing, door locations and framing, stiles, top and bottom frames, cold form materials and mounting clips.
  - i. Details in shop drawings shall denote weld identifications, connection hardware, and drive system locations
- c. Wiring schematics information including field wiring, location of junction boxes, physical locations of devices.

**B. Design Data**

- a. Submit design data structural and mechanical calculations
- b. Miscellaneous weather seals and accessories

**1.04 QUALITY ASSURANCES**

**A. Manufacture’s Qualifications:**

The hangar Door manufacture shall be one who is regularly engaged in the production of horizontal steel sling doors of the type and size associated for the project. The manufacture shall have experience with the installation and have qualified representatives that can field visit the site if issues arise. The Manufacturer shall a certification program for installers to attend to receive training for the correct installation of the hangar door and the operator systems.

**B. Installers Qualifications:**

Installers shall have experience in installing horizontal sliding doors and the knowledge and equipment to handle the members safely without warping or bending the materials during installation.

**C. Delivery, Storage and Handling**

All materials that are not shop installed shall be placed in dry storage. Structural steel shall be stored on blocking above the earth pavement to prevent damage.

Hangar door materials to be checked off on the bill of lading sign off and accepted or noted as missing or damaged.



## **PART 2 – PRODUCT SCOPE**

### **2.01 HORIZONTAL SLIDING HANGAR DOORS**

Hangar Door sections shall be manufactured by Well bilt Industries USA, LLC in accordance with the shop drawings and specifications and options denoted by the owner or architect.

- A. Door Manufacture to provide trained personnel to oversee the fabrication of the hangar door system. The supervision will insure that the door system is manufactured in strict accordance with the approved shop drawings.
- B. Hardware (Mounting)  
Provide hangar door hardware that meets the design criteria and the actual loads including dead load and wind loads as specified for the project.
- C. Bottom Roller Wheels  
Bottom rolling wheel assemblies shall be manufactured from plate steel, containing a diameter capable of handling the actual load.  
Wheels shall be removable from the housing without the need to remove the door from its position on the rail.  
Wheels may or may not be adjustable depending on the owners' requirement.  
Wheels to be fitted with tapered bearings with a fit that is removable from the hub for maintenance of the wheel bearing without heating the wheel.  
Provide grease fitting to lubricate the wheel as needed.  
Wheels greater than 18" in diameter shall be heat treated to obtain a 300 Brinell.
- D. Telescopic Top Guides
  - a. Top Bearing Housing  
Provide a two piece system to enable removal of one side for maintenance of the top guide roller bearings.  
Provide a minimum of two bearings per side of the housing to allow the guide assembly to roll in a straight direction  
Provide a minimum of at least one roller bearing for the housing to ride on the top rail.  
Bearings shall be angled to allow the bearing to ride flat on the top beam that has a taper that is not able to be adjusted.
  - b. Telescopic tube  
The telescopic system shall be two piece inner and outer, the outer housing that the inner rides in shall be free from welds and be smooth, as the telescoping portion shall be smooth and unpainted. The unpainted shall be lubricated and wrapped for shipping.
- E. Weather Stripping  
Provide weather stripping that is easily replaceable on the horizontal bottom and vertical edges of the door. Material shall be EPDM with cloth insertion and be attached 12" O.C.



- F. Head Flashing  
Provide an adjustable head flashing with floating seals attached to the telescopic guides to provide a seal at the head of the door when requested. Seal size may be adjusted using brush seals to create tighter seals.
- G. Primer:  
Red Oxide, Gray industrial primer, SSPC 25 over prepared surface by means of blasting or surface wire wheel depending on the quality of steel.
- H. Electric Operators of Hangar Doors:
  - a. Electrical Distribution: provide a source of power to the leading hangar door via a trolley duct or an armored SO cable that is mounted on each door panel in a drape or by use of festoon. If SO cable is used provide cable pulls for each end.
  - b. Enclosures: Control panels shall be enclosed a NEMA 4 boxes to allow for water tight enclosure; installers of the electrical connections shall note to not drill into the top of the enclosure to prevent water infiltration. All conduit runs should come from the bottom of the enclosure when practical.
  - c. Contactors and Controls: Each system to be designed for the application and size of the horizontal hangar door system. Systems shall include reversing contactors, operation control buttons that open, close and stop the system. System will allow for contactors to be interlocked with limit switches for opening limits and closing limits. Interlocks for personnel door when applicable.
  - d. Motors: Electric Motors will be sized according and power systems requirements shall match the architects phasing of the electrical system. Fusing of the system will be at the discretion of the design professional.

## 2.02 MANUFACTURING & ASSEMBLY

- A. Hangar Door Panels:
  - a. Door leaves shall be a combination of bolted and welded connection to allow for a knocked down system for shipping. All connections shall be designed to provide a one hundred percent of the strength of the framing members. Stiles of the frame to be continuous members without splices unless materials are of such size that splices are required. Said splices are to be prepared per the hangar door manufactures best practices. All framing to be square and true without warping or bending an average of 1/8" in twenty feet. Diagonal bracing shall be supplied in cable, rod or by use of truss design at the option of the manufacture. All welds exposed to the elements shall be ground smooth and buffed.
  - b. Wind and Locking Pins  
Each door panel shall be fitted with two (2) locking pins that can be dropped into the finished floor to secure the door from being opened. Drop in locks shall be located along the bottom of the door and mount in such allocation that it does not interfere with the bottom guide rail.
  - c. Tractor Pulls:  
Provide a tractor pull on the lead leaves in standard construction. Additional may be added as requested.



- d. Track Cleaners  
Provide brush style track cleaners to the bottoms of each stile.
- e. Wheel & housing:  
Wheel housings shall be constructed from plate steel and mounted in line with framing true. Housings are to be fixed and standard design of the housing is non adjustable. Wheel diameter to be based upon the weight of the system. All wheels to be based upon fitting to the correct rail size that the panels will ride on. Tread width shall conform to the rail and be tapered flanges with no less than 1/8" at the toe of the flange.
- f. Telescopic systems:  
The telescopic top guides to be designed for the loads of the geographic region loading. Guides to be fitted in opening and located in the top of the door system on each end of the panels.
- g. Top Guide Rails:  
Guide shall be hot sections mounted to the building structure by welding, or bolting. Steel hot rolled sections shall be butted to each section and aligned prior to welding.
- h. Bottom Rail:  
ASCE rail shall be used per the size requirements of the panels. Unless otherwise requested 20lb rails shall be used. Rails to be mounted on leveling plated prior to back pour and tack welded to insure level installation.

### 2.03 OPERATION OF PANELS

Hangar Door system may operator in one of three ways:

- Bi Parting
- One way
- Floating

#### A. Motor operation of Horizontal Sliding Hangar Doors

- a. Electric motors:  
Motors shall be sized in accordance and configuration of the power supply from 120v, 208v, 230, or 460v in single and 3 phase.
- b. Pendant mounted stations or remote automatic systems are available.
- c. Operated panels:  
Each system shall have an operator leave that is the lead door panel. Door panel shall be fitted with a traction drive bottom roller or a solid rubber tire friction operator.
  - 1. Traction Drive unit shall be a double flange wheel with a direct drive sprocket attached to the wheel connected to a reversible gear reducer sized to allow the door to opened in the event of power failure.
  - 2. Rubber friction operators shall be sprocket driven with a gear reducer that is not reversible and that is mounted on an adjusting handle that maintains pressure against the floor surface. This handle can release pressure to allow for operation in the event of power failure.



- d. Operating Speed  
Door systems to provide for a operating range of +/-60 lineal feet per minute.
  - e. Controls:  
Hangar doors shall be controlled by means of constant pressure push buttons mounted on the interior of the door panel or coil cord and pendant mount. Push buttons shall stop the movement of the door when pressure is release. The Control Boxes shall be NEMA ICS 6 type 4 boxes in the interior.
  - f. Limit Switches:  
Each hangar door operator shall be contain control limit switches fixed to the top of the door. Limits shall be set to stop the door in the full open position as well as the closed position. Limit switches shall be filed wired by a certified electrician and adjusted by the installer. Limit switch ramp rails will be provided to be installed along the header for the switch to ride into the closed position.
  - g. Bumpers:  
Top guide rail bumpers shall be supplied and fitted at the top portion of each hangar door panel to provide a permanent stopping location. Bumper to be formed from solid rubber with a steel mounting plate is to be welded or bolted in place at discretion of the installer.
- B. Accessories
- a. Safety Edge  
Safety edge shall be provided as an option to the door system, Safety edge shall be mounted 1" from the finished floor to the top of the door. Alternate configurations may be included. Safety edge may be configured to be a 1.5" wide to full width of the stile at discretion of the design professional.
  - b. Warning Devices:  
Warning devices such as bells, horns and strobes may be added to the operation of the controls to notify the area of the movement of the Door Panels. Devices are to be located on the operation hangar door panel.

## **PART 3 – EXECUTION**

### **3.01 ERECTION & INSTALLTION**

- A. Inspection of the existing conditions prior to installation of the door system. Installer should review the structure insuring the top rail supporting members are installed in accordance with the design. The opening shall be square and plumb. The door should not be installed until the primary structure is correctly installed and all trades have completed the sequences of work.
- B. Door Panels shall be installed in a workman like manner and assembly shall be in accordance with the shop drawings and installation manuals. Top guide rails shall be fully installed prior to erection of the panels.
- C. Clean any surfaces abraded, bolts and field welds and field coat surfaces with primer.



### **3.02 QUALITY CONTROL FIELD TESTING**

- A. Test the door upon completion to insure proper operation. Owner's representative shall be present to approve the installation of door systems. Adjust door as required to provide the correct operation if necessary. Provide written report to Owner and door manufacture stating door was successfully operational.
- B. Manufacture Representative Commissioning.  
At the Owners discretion additional commissioning inspection may be performed by Well Bilt Industries to inspect the overall operation and installation of the door system. The commissioning shall include a written report as well as photographic evidence of the correct installation.
- C. Warranty  
Owner shall be provided a Standard one year warranty for the door system by Well Bilt Industries. Warranty shall be warranting the hangar door free from defects of materials and labor for a period of one year. Warranty shall be transferable for up to one year.

Extended Warranties are available and must be agreed to in writing at time of purchase.

**END OF SECTION**