

Alamo Door Systems of Texas, Inc.

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**SECTION 08 36 16 – ONE-PIECE HYDRAULIC TILT DOORS**

1. **– General**
   1. **Related Documents**
      1. References: The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC)

AISC S335 (1989) Structural Steel Buildings Allowable Stress Design and Plastic Design

AMERICAN IRON AND STEEL INSTITUTE (AISI)

AISI SG-673 (1989: Errata 1990) Cold Formed Steel Design Manual

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM A36/A36M (1994) Carbon Structural Steel

ASTM A194/A194M (1996) Carbon and Alloy Steel Nuts for Bolts for High Pressure and High Temperature Service

ASTM A307 (1994) Carbon Steel Bolts and Studs, 60,000 psi Tensile Strength

ASTM A325 (1997) Structural Bolts, Steel, Heat Treated

ASTM A366/A366M (1991: R 1993) Steel, Sheet, Carbon, Cold-Rolled, Commercial Quality

ASTM A563 (1996) Carbon and Alloy Steel Nuts

ASTM A569/A569M (1991; Rev. A, R 1993) Steel, Carbon (0.15 Maximum, Percent), Hot-Rolled Sheet and Strip Commercial Quality

ASTM A653/A653M (1995) Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvanized) by the Hot-Dip Process

ASTM F436 (1993) Hardened Steel Washers

ASTM E84 (1995; Rev. A) Surface Burning Characteristics of Building Materials

AMERICAN WELDING SOCIETY, INC. (AWS)

AWS D14.1 (1985, R 1991) Welding of Industrial and Mill Cranes and Other Material Handling Equipment

NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA)

NEMA ICS 1 (1993) Industrial Control and Systems

NEMA ICS 2 (1993) Industrial Control and Systems Controllers, Contractors and Overload Relays, Rated Not More Than 2000 Volts AC or 750 Volts DC

NEMA ICS 6 (1993) Industrial Control and Systems Enclosures

NFPA 70 (1996) National Electrical Code

SSPC Paint 25 (1991) Red Iron Oxide, Zinc Oxide, Raw Linseed Oil and Alkyd Primer (Without Lead and Chromate Pigments)

* 1. **Summary**
     1. Sections Includes
        1. One-piece electric hydraulic operated \_\_\_\_\_\_ wide by \_\_\_\_\_\_ high Tilt-Over door by Alamo Door Systems.
     2. Scope of Work:
        1. Door consists of primary framing members, secondary members, truss, lift mechanism, bracing cables, lift cables, hydraulic cylinder and required hoses, and separate frame structure knock down construction ready for field assembly upon delivery.

Work Included:

1. Structural framework, including all brackets, bracing, and field fasteners.
2. Miscellaneous hardware, including wind locks
3. Flexible weathering for door head, jambs, and sills.
4. Electric hydraulic power unit and accessories
5. Electric control, warning devices and emergency safety devices.
   1. **Quality Assurance**
      1. Manufacturer’s Qualifications
         1. Only door manufacturers who have had at least 10 years of experience in the Manufacture of similar type doors.
         2. Doors supplied by metal building manufacturers are not acceptable.
         3. Acceptable Manufacturers
            1. Alamo Door Systems of Texas, Inc., 16358 Nacogdoches Rd., San Antonio, TX, 78247. Tel: (210) 657-1150. Fax: (210) 657-0327. <http://alamohangardoors.com/>
      2. Installer’s Qualifications

The installation supervisor shall be an authorized representative of the door manufacturer. Mechanics shall be skilled and experienced in the erection of doors of type and size required for this project.

* 1. **Submittals**
     1. Product data includes but not limited to the following:
        1. Submit Drawings showing details of construction, installation, and operation; Size, shape and thickness of materials; joints and connections; reinforcing; hardware; mechanical devices; electrical devices; and design and detail data for work of other trades affected by doors.
        2. Shop painting and finishing specifications.
        3. Submit complete schematic wiring diagram, with complete location of controls with the runs of conduit, location of junction boxes, and full details of control mountings.
        4. Submit complete manuals containing instructions for proper operation and maintenance of the doors to the owner.

They shall contain complete:

1. Operating Instructions
2. Maintenance & Lubrication Instructions
3. Suggested List of Spare Parts
4. Manufacturer’s Catalog for Each Component in or on the doors
   1. **Guarantee**

The equipment furnished under the specifications shall be guaranteed for a period of 2 years or 7,500 cycles, whichever occurs first, from date of shipment.

* 1. **Design Requirements**
     1. Door Design: The doors shall be designed by the manufacturer in accordance with the criteria specified.
     2. Loading: Design doors as a system to withstand an external load in accordance with Uniform Building Code design wind loads indicated for the building. An internal wind load of not less than one-half of the external wind load shall be used. Loads due to combined dead load and wind load shall not exceed the recommended yield strength for the material used and type of loading sustained.
     3. Cold-Formed Steel Members: Shall not be used as primary framing members.

1. **– Products**
   1. **One-Piece Hydraulic Doors**
      1. Size

\*\* NOTE TO SPECIFIER \*\* Choose either door clear or building clear. Delete other.

* + - 1. Door Clear Opening Width: \_\_\_\_\_\_\_\_\_\_
      2. Door Clear Opening Height: \_\_\_\_\_\_\_\_\_\_
      3. Building Clear Opening Width: \_\_\_\_\_\_\_\_\_\_
      4. Building Clear Opening Height: \_\_\_\_\_\_\_\_\_\_
    1. Door Truss

\*\* NOTE TO SPECIFIER \*\* Type 1 refers to door types within stock sizes found at alamohangardoors.com. Type 2 refers to doors taller or wider than stock sizes. Delete whichever is not applicable.

* + - 1. Type 1: Truss shall be located on exterior of door and within building in the open position.
      2. Type 2: Truss shall be located on exterior of door and outside building in the open position.
    1. Lift Cable: Lift cable to be steel internal wire rope core lubricated and of diameter to provide 3:1 minimum safety factor.
    2. Automatic Wind Lock and Latching System:
       1. Lower Wind Lock: Lower wind locks shall be lowered into field drilled holes in concrete at minimum depth and diameter specified by manufacturer. Holes to be drilled after door is installed and square in opening. See installation manual.
       2. Upper Wind Lock: Upper wind locks shall be vertically lowered by door motion into latches on frame header as door is fully closed. When opened, locks will raise vertically and disengage from frame header.
    3. Framework – Fabrication Requirements
       1. Door and frame shall be manufactured as factory welded assemblies to be field assembled and bolted at connections. For user convenience, some assemblies may be pre-assembled at factory.
       2. Door shall be of welded or bolted construction. Joints shall develop 100 percent of the strength of the frame members. Vertical members shall be continuous throughout the height of the door. When required, prepare splices to facilitate field assembly in accordance with standard practice. Frames and framing members shall be true to dimensions and square in all directions; no member shall be bowed, warped or out of line in the vertical or horizontal plane of the door opening by more than 1/8 inch in 20 feet. Provide diagonal bracing so that the completed panel assembly will be braced to withstand shipping, assembly, and operational loads. Exposed welds and welds which interfere with the installation of various parts such as cover sheets shall be ground smooth.
    4. Building Design Criteria
       1. The building shall be designed to accommodate horizontal, vertical, and distributed loads exerted by the door on the building. The building shall also reflect all required clearances for installation indicated by door manufacturer. The framed opening shall be designed within plus or minus 1/4” of indicated opening size.
       2. The front wall of the building must have drop down stub columns not to exceed 10’ on center for attachment of frame header to building.
       3. The finished floor of the building at the opening shall be designed to slope away from the opening to prevent water run-off under the door into the building.
    5. Electrical Requirements
       1. The contractor shall provide wire, wiring, and/or conduit for power and controls to location of electric hydraulic power unit.
    6. Electric Hydraulic Power Unit and Location
       1. Electric hydraulic operator shall have a continuous duty motor designed to operate the door.
       2. Motor Information

\*\* NOTE TO SPECIFIER \*\* Choose type of service provided or desired. Delete all other.

* + - * 1. Service: 120VAC, 1Ø, 60Hz
        2. Service: 220VAC, 1Ø, 60Hz
        3. Service: 208-230VAC, 3Ø, 60Hz
        4. Service: 460VAC, 3Ø, 60Hz
        5. Single speed, squirrel cage type of sufficient size to raise the door and not exceed more than 75 percent of motors rated capacity.

\*\* NOTE TO SPECIFIER \*\* Choose NEMA ratings for environmental applications required or desired. NEMA 1 for general purpose indoor. NEMA 12 for dust-tight indoor. NEMA 4 for water-tight outdoors Delete all other.

* + - * 1. Enclosure shall conform to NEMA 1 General Purpose / NEMA 4 Water-tight Dust-tight / NEMA 12 Drip-tight Dust-tight Electrical Enclosure Environmental Protection Ratings at minimum.
      1. Push Button Station (2 button Open / Close)
         1. Include one push button station per door.
         2. Constant pressure open / close.

\*\* NOTE TO SPECIFIER \*\* Choose NEMA ratings for environmental applications required or desired. NEMA 1 for general purpose indoor. NEMA 12 for dust-tight indoor. NEMA 4 for water-tight outdoors Delete all other.

* + - * 1. Enclosure shall conform to NEMA 1 General Purpose / NEMA 4 Water-tight Dust-tight / NEMA 12 Drip-tight Dust-tight Electrical Enclosure Environmental Protection Ratings.

\*\* NOTE TO SPECIFIER \*\* 3 button push station is optional upgrade. Delete if not required.

* + - 1. Option 1: Push Button Station (3 button Open / Close / Stop)
         1. Include one push button station per door.
         2. Momentary contact open. Constant pressure close / stop. Momentary close is not included in this option. To enable momentary close, safety device is required.
         3. Enclosure shall conform to NEMA 1 General Purpose / NEMA 4 Water-tight Dust-tight / NEMA 12 Drip-tight Dust-tight Electrical Enclosure Environmental Protection Ratings.

\*\* NOTE TO SPECIFIER \*\* Limit switch for use in momentary contact configuration. Only one type of limit switch may be used. Delete whichever option will not be used.

\*\* NOTE TO SPECIFIER \*\* Choose NEMA ratings for environmental applications required or desired. NEMA 1 for general purpose indoor. NEMA 12 for dust-tight indoor. NEMA 4 for water-tight outdoors Delete all other.

* + - * 1. Mechanical Lever Arm Limit Switch: To be used to limit the upper/lower most travel of the door panel.
        2. Photoelectric Sensor Limit Switch: To be used in diffuse mode to limit the upper/lower most travel of the door path.

\*\* NOTE TO SPECIFIER \*\* Keyed control switch is optional upgrade. Delete if not required.

* + - 1. Option 2: Keyed Control Switch
         1. Include one keyed control switch per door.

\*\* NOTE TO SPECIFIER \*\* Choose NEMA ratings for environmental applications required or desired. NEMA 1 for general purpose indoor. NEMA 12 for dust-tight indoor. NEMA 4 for water-tight outdoors Delete all other.

* + - * 1. Enclosure shall conform to NEMA 1 General Purpose / NEMA 4 Water-tight Dust-tight / NEMA 12 Drip-tight Dust-tight Electrical Enclosure Environmental Protection Ratings.

\*\* NOTE TO SPECIFIER \*\* Radio control is optional upgrade. Delete if not required.

* + - 1. Option 3: Radio Control
      2. Located to side closest to hydraulic cylinder. Anchored to finish floor through use of concrete wedge anchors. Required clearances provided by door manufacturer.
    1. Paint
       1. Before shipment all steel members and hardware shall be painted one (1) sprayed on coat of rust inhibitive red oxide primer. All steel shall be thoroughly cleaned prior to painting to remove all oil, rust and other foreign material. Machined surfaces and weather seals shall not be painted.
    2. Weather Seals
       1. Provide adjustable and readily replaceable material. Provide on vertical edges, sills and heads to afford a weather resistant installation.
       2. Top Weather Seals: Weather seal fabric shall be single or dual flap-type urethane coated polyester scrim reinforced material to be attached by self-drilling screws through a retainer at the top member. Shall not interfere with roof deflection requirements.
       3. Bottom Weather Seals: Rubber “U” shape with retainer to be fastened to bottom member of door by self-drilling screws at distance to ensure proper sealing with finish floor. Seal is not designed to provide water tight infiltration resistance. Weather seal shall not come in contact with finished door sheeting.
       4. Side Weather Seals: On vertical edges use extruded rubber “P” shape installed to jamb of building by retainer and self-drilling screws. Side seals shall not interfere with operation of door.

\*\* NOTE TO SPECIFIER \*\* Choose type of cladding chosen for door. Not supplied by door manufacturer. Delete if not required.

* + 1. Exterior Covering: See architectural drawings and exterior wall specification(s). Exterior cover not provided by door manufacturer.
       1. Metal Panels: See section 07 42 13 “Metal Wall Panels”.
       2. Woodwork: See section 06 40 23 “Exterior Architectural Woodwork” and section 07 42 33 “Wood Wall Panels”.
       3. Glass Glazing: See section 08 81 23 “Exterior Glass Glazing”.
    2. Insulation: See architectural drawings and wall specification(s). Insulation not provided by door manufacturer.
       1. Insulated Metal Panels: See section 07 42 13.19 “Insulated Metal Wall Panels”.
    3. Interior Liner Panel: See architectural drawings and interior wall specification(s). Interior liner panel not provided by door manufacturer.
       1. Woodwork: See section 06 40 23 “Interior Architectural Woodwork” and section 07 42 33 “Wood Wall Panels”.
       2. Metal Panels: See section 07 42 13 “Metal Wall Panels”.
       3. Glass Glazing: See section 08 81 26 “Interior Glass Glazing”.
    4. Access Doors: The door manufacturer shall provide structural frames and electrical interlock for personnel doors where indicated.
       1. Doors and Frames: Per Specification Section 08 31 13, “Access Doors and Frames”.
       2. Hardware for Personnel Doors: Per Specification Section 08 71 00, “Door Hardware”.

1. **– Execution**
   1. **Erection**

Assemble doors and accessories in accordance with approved shop drawings and installation manual. Do not erect door until the work of other trades in preparing the opening has been completed, the roof is under full dead load. After completing erection and before starting field painting, clean interior and exterior door surfaces. Clean abraded surfaces, field welds, and field bolts, and coat with priming paint. Field painting as specified per specification section \_\_\_\_\_\_\_\_, “Painting”.

* 1. **Field Quality Control**
     1. Manufacturer’s Field Services: Doors shall be erected by manufacturers authorized dealer.
     2. Acceptance Test
        1. Contractor shall perform complete operating tests for door. Perform no less than three complete opening and closing cycles, all safety controls, emergency closing procedure and such other tests as specified in the Contractor’s approved door test procedure plan.
        2. Any defects disclosed by the test shall be corrected, final adjustments of the doors and operating equipment shall be turned over to the Owner in a completely acceptable and proper operating conditions. Tests of previously defective items repaired or replaced by the Contractor shall be accomplished at no additional cost to the owner.

**END OF SECTION 08 36 16**