

Martin Hi-Tensile Steel Sectional Doors

SECTION 08360

PART 1 – GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. Upward-acting steel sectional garage doors.
 - 2. Tracks configured for a [standard clearance] [low clearance] [high clearance (Hi-Lift)] [roofline] [vertical-lift] lift type.
 - 3. Electric Motor Operators.
- B. Related Sections: Other specification sections which may relate to the work of this Section include, but are not limited to, the following:
 - 1. Section 16100 – Electrical wiring.
 - 2. Section 05500 – Miscellaneous Metal; metal framing and supports.
 - 3. Section 08710 – Finish Hardware for lock cylinders and keying.
 - 4. Section 09900 – Painting for field applied paint finish customizing.
 - 5. Section 08300 – Specialty Doors; Matching Martin Garage Entry Doors.

1.02 DEFINITIONS

- A. Operation Cycle: One complete cycle of a door begins with the door in the closed position. The door is then moved to the open position and back to the closed position.
- B. Measurements are in feet and inches followed by measurements in millimeters found in parentheses.

1.03 SUBMITTALS

- A. Submit shop drawings for approval prior to fabrication. Include detailed plans, elevations, and details of the door opening framing members, required clearances, anchors, and accessories. Include relationship with adjacent materials.
- B. Submit Martin product literature for each type of sectional door. Include both published data and any specific data prepared for this project.

1.04 QUALITY ASSURANCE

- A. Single source responsibility: Provide the sectional doors, tracks, and accessories for each type of model specified.
- B. Installer: Only authorized representatives of Martin Door Mfg. shall perform installation of sectional doors.
- C. Operation-Cycle: Design standard sectional door components and operator to operate for not less than 20,000 cycles.
- D. Electrical: Shall be UL compliant electric operator. Provide electrically operated fixtures specified in this section that are listed and labeled.

1.05 WARRANTIES

- A. Limited Lifetime Warranty on residential HT Steel Sectional Doors except for 40 year rated torsion springs.
- B. Commercial and Rental Properties: 5-Year limited warranty on the door and hardware except for the regular 20,000-cycle torsion spring(s). (Note: Optional higher cycle springs are available.)
- C. Martin Residential Door Openers: Limited Lifetime Motor and 5 years on parts.

PART 2 – PRODUCTS

2.01 ACCEPTABLE MANUFACTURER

- A. Provide “Martin Finger Shield”™ steel sectional [Commercial Hi-Tensil™ Ribbed Section] model garage doors as manufactured by Martin Door Mfg. of Salt Lake City, Utah U.S.A; Telephone 800-388-9310, 801-973-9310; Fax 801-688-8182. (Note: All Martin Door models are furnished with the same finger, hand, and arm patented (patents pending) safety features.)

2.02 DOOR AND SECTION GENERAL

- A. Door Sizes: Hi-Tensil™ available in sizes up to 24'2" wide by 20'0" high.
- B. Door Section Thickness: 2" (51)
- C. Door Section Width: 2" (51) wider than finished opening. (I.e. A standard 16'0" wide garage opening should use a standard 16'2" wide Martin Door.)
- D. Steel: High Tensile 0.021" (0.533) thick Steel (equivalent to mild 0.026" (0.66) thick steel) for dent resistance. [Optional Series II Steel-Back Cover 0.017" (0.43) thick.]
- E. Standard Springs: 30,000 cycles on doors up to 9' (2739) high, 20,000 cycles above 9' (2739) high.
- F. Wind Load Design: Uniform pressure (velocity pressure) on a Martin Series II approx. 15 lbs. per sq. ft., acting inward and outward. (All size doors shall meet or exceed static pressure and design loads of ANSI/DASMA (American National Standards Institute)/(Door & Access Systems Manufacturers Assoc.) - 1021996. [Optional additional reinforcement on all doors for specified high wind loads or hurricane areas.]
- G. Reinforced bottom section: A continuous angle conforming to the bottom section profile and which also fastens the bottom weatherseal. Strength is adequate to act as a full-length step plate on non-insulated doors.

2.03 STEEL SECTIONAL DOOR ASSEMBLY

- A. Exterior Surface: Ribbed
- B. Optional Partial Glazing of Steel Sections: Designer window frames are double fused, high-impact polymers (color coordinated to door), with acrylic panes.
- C. Center and End Stiles: End and center stiles shall have rolled edges for reinforcement and safety. Stiles shall be made from 0.051" (1.30) hot dipped G90 galvanized steel. Holes in the stiles for hardware fastening shall be extruded. The hardware fastening system shall trap and mechanically hold the inside section panel flange between the stiles and the hinges without relying on insulation, glue, spot welds, or rivets for support of the section assembly.

- D. **Door Section Assembly:** Hot-dipped galvanized, structural-quality carbon-steel sheets complying with ASTM A 653 (ASTM A 653M), commercial quality, with a minimum yield strength of 33,000 psi (225 MPa) and a minimum G60 coating.
- E. **Fabricated steel door sections:** A single sheet is used to provide sections not more than 24" (600) high, wood grain embossed, and nominally 2" (51) deep. Roll horizontal meeting edges to a tongue-in-groove drip resistant weather resistant seal, with a 1.5" (38) reinforcing inside flange return. Door sections shall be dent repairable as well as replaceable.
- F. **Enclose open section ends** with 0.051" (1.3) G90 hot dipped galvanized steel end stiles, fastened to the door section with rivets and hardened fasteners. Provide 0.051" (1.3) G90 hot dipped galvanized intermediate stiles, formed to door section profile, spaced at 48, 51, or 54 inches (1220, 1300, or 1370) o.c. depending on door width, and fastened to the door section with adhesive and hardened fasteners.
- G. **Door Sections:** Depending on door section height one, two, or three 0.375" deep (10) by 1" (25) wide ribs and 1.5" (38) wide inside return flanges with formed rolled edge wide flanges inside add reinforcement and safety to each door section.
- H. **Insulation (Optional):** Insulate interior of steel sections with Martin Door's standard, hard poly-backed rigid cellular, with maximum flame-spread and smoke-developed indices of 75 and 450, respectively, according to ASTM E 84. Rigid cellular polystyrene shall have a U value of 0.125 and an R value of 8 tested at low temperatures, passing smoke and flame spread tests, UBC-26-8. Secure insulation to door section with insulation exposed to interior view.
 - 1. Insulation shall give support, but shall not act as the structure for support of the door section.
 - 2. Insulation shall be removable, if necessary for dent repairs.
 - 3. Environment considerations: All components including insulation may be easily separated for future disposal and recycling.
- I. **Optional Steel Back (Series II) Inside Face:** Enclose insulation completely, with a continuous inside sheet of woodgrain embossed, standard white painted, .017" (0.43) thick average high tensile G60 hot dipped galvanized steel so that no exposed insulation material is evident.
 - 1. Steel back and insulation shall be removable, if necessary for dent repairs.
 - 2. Environment considerations: all components including insulation may be easily separated for future disposal and recycling.
- A. **Finish and Color:** Two coats baked-on enamel, inside and outside, one to serve as primer and the other to serve as finish, factory-applied baked-on high flexible polyester [White mist][Light Almond][Dark Brown][Adobe Stone] paint. [Field painted according to Martin Door Instruction Manual (also see section 09900-Painting), over Martin Door's baked-on enamel paint, to any color as selected by Architect]

2.04 TRACKS, SUPPORTS, AND SAFETY FEATURES

- A. **Tracks and Reinforcement:** Standard G90 hot dipped galvanized steel reverse angle shield and 2" (51) vertical track assembly. The vertical track includes a rolled safety edge. All steel in compliance with ASTM A 643 (ASTM A 653M), for minimum G90 hot dipped galvanizing. Vertical track assembly includes track brackets and reverse angle shield with rolled leading edge for safety and strength. The vertical track also has a rolled protecting edge for rigid support of ball bearing roller guides provided accordingly to correct size of the door. The reverse angle shield shall mount to the door jamb providing a continuous steel to steel door weather protection seal while the door is in the closed position. This assembly, which includes the vertical track, shall not have unshielded holes or slots exceeding 0.350" (9) diameter to reduce the risk of child finger breaking, severing, or entrapment. Horizontal tracks shall be fully adjustable and able to line up

with the vertical tracks even if they are required to be fastened out of plumb. This design ensures a tight closure at the jambs when door is in the closed position. Horizontal tracks shall be bolted, not riveted to the horizontal track angles. Bolts and nuts allow adjustability through the horizontal track slots. The vertical tracks shall be bolted to the standard reverse angle shields/ track bracket assemblies. During the installation the vertical tracks are bolted to the horizontal track. Normal clearance shall be 12" (306) above the door for residential sizes and 14" (356) for commercial sizes.

- B. **Opening Jamb Preparation:** There is no additional wood framing necessary around the finished jambs and header; the standard reverse angle shield can be directly mounted to most all flush surfaces. The track assembly requires a minimum of 3" (76) clearance beyond the width of the door on each side. Jambs and header should be flush and jambs should be flush all the way to the floor. (Including concrete footings)
- C. **Fasten the vertical tracks** to opening jambs with continuous angle fastened to tracks and fastened to wall. Support horizontal tracks with horizontal track angle bolted to track [and supported by laterally braced fastening to overhead (ceiling) structural members at end of tracks].
- D. **Safety Features:** Martin Door's standard exterior Finger Shields™ on doors up to 9'(2739) high (above 9' (2739) Finger Shields™ are optional) and interior Low Profile Hinges shall reduce the risk of finger entrapment in the door section joint. Reverse angle shields shall reduce the risk of child arm, hand, and finger severing, breaking, or entrapment.
- E. **Optional 3", 5", 7" (76,127, 178) Track Extension:** Provide extra lift for sectional garage door. (Also requires extra 3", 5", 7" (76,127, 178) additional clearance.)

2.05 ACCESSORIES AND OTHER OPTIONS

- A. **Weatherseals:** A 1" (25) [optional 3" (76)] weather seal shall be fastened to the bottom door section, held in place by a full door width reinforcing steel galvanized angle. (Other perimeter seal is not recommended for garages with autos emitting noxious fumes.) Check local codes for non-restrictive air venting into garage.
- B. **Optional Glazing:** Narrow Security Windows. All windows shall be made from double fused, high-impact polymer (color coordinated to door), with safer acrylic window panes. Window panes and the designer frame shall be mounted to the sectional door with an integral bolt and nut system for easy cleaning.
 1. **Size:** 25"x 6.25" (635 x 159).
 2. **Clear Acrylic Plastic:** 0.125" (3) clear, transparent acrylic, smooth or polished, formulated with ultraviolet absorber.
 3. **Optional:** [smoked] [obscure] acrylic window panes.
- C. **Optional Power Arm Angle:** Vertical reinforcement for door and electric opener
- D. **Optional Deluxe Vinyl Weatherseal:** [white] [almond] [dark brown] perimeter weatherseal. (Colors are similar but are not Martin baked-on enamel colors equivalent.)
- E. **Optional Door Bumper Spring:** Required for manually operated High Clearance (Hi-Lift) and Vertical-lift Doors.

2.06 HARDWARE AND SAFETY

- A. **General:** All hardware shall be heavy-duty, corrosion-resistant hardware, with hot-dipped galvanized steel, corrosion-resistant, zinc-plated, hardened fasteners. Exposed edges of hardware parts shall be rolled, rounded, or de-burred for finger protection.

- B. Hinges shall be heavy duty galvanized low profile steel hinges, of not less than 0.07" (2) thick uncoated steel combined with 0.1292" (3.2) roller bracket, fastened together totaling 0.1992" (5.2) thick hinge/roller assembly at each end stile and only at each intermediate stile. Fasten hinges to door sections through stiles and rails with hardened threaded forming screws. Provide double-end hinges, where required, for doors exceeding 20'2" (6510) in width, unless otherwise recommended by door Martin Door or as specified for high wind loads.
- C. Rollers shall be heavy-duty galvanized steel rollers, with 11 steel ball bearings in case-hardened steel races packed in hi/low temperature grease, with nylon tires for quietness. Roller shaft shall be extended through both hinges (where double hinges are required). Roller Shields™ shall be fastened to the first five rollers on each side. Sectional door's vertical tracks shall have a rolled edge, with no holes larger than 0.30" (8) diameter. This system reduces the risk of child finger severing, breaking, or entrapment.
- D. Lift cables shall be inside mounted only and a minimum 0.125" (3) diameter aircraft quality.
- E. Lift Handles: Standard on insulated doors only. Lift handles provided shall be zinc-plated steel for the side of door specified and are not necessary on non-insulated doors.
- F. Optional Inside Side Latch Lock: Fabricate with side locking bolts to engage through knock-out slots in vertical tracks which also may be locked by padlock, located on one or both sides of the door, operable from inside only. Child latch hole shield(s) included with inside latch to cover knock-out hole in vertical track while lock is disengaged.
- G. Optional Outside lock system includes: keys, plastic coated steel cables, swivel, and spring-loaded latches with strikers locking both sides of the door.

2.07 COUNTERBALANCING MECHANISM/ SAFETY SPRING ASSEMBLY

- A. Torsion Spring: Operation by torsion-spring counterbalance mechanism consisting of adjustable-tension torsion springs, fabricated from zinc-tempered, galvanized steel wire meets or exceeds ASTM A 229 (ASTM A 229M), Class II mounted on a cross-header tube or steel shaft. Connect to door with galvanized aircraft-type lift cables with cable safety factor of at least 5 to 1. Thimble/duplex ferrule assembly shall be installed where lift cable meets lock-on bottom bracket to distribute weight equally and prevent cable from fraying, lengthening lift cable life. Standard torsion spring life for residential door up to 9' (2739) shall be calibrated for 20,000 to 30,000 cycles. (Optional higher cycle springs available.) Torsion tube or shaft shall be galvanized. Spring mounting and door lifting bottom roller brackets shall lock-on while springs are under tension, reducing the risk of accidental injury. 2" Springs shall include flush, hex head set screws and gray stealth caps, hiding crucial spring tension fasteners from home owner's view. Red caps shall cover spring winding cone set screws. (On larger commercial doors requiring four springs, the two center springs are not locked on to the track assembly. Extra warning tags are provided where cover spring pad screws or bolts.) A warning tag shall be fastened to each spring to alert inadvertent tampering. Cables shall be of the "inside-type" only for all regular, low, or high clearance installations.
- B. Cable Drums: Cable drums shall be cast aluminum grooved to receive cable. Counterbalance mechanism shall have lock-on side bearing brackets with spring anchor brackets at each end of torsion shaft. There shall be 1 additional midpoint center-breaking bracket provided. For doors requiring four springs there shall be center spring brackets.
- C. Side Spring Anchor Brackets: Side spring anchor brackets shall fasten and lock-on to the side bearing brackets which lock-on to track assembly while springs are under tension. Former wood center spring pad is not required for one and two torsion spring doors.

- D. Optional spring bumper shall be provided at each horizontal track to cushion door at end of opening operation. Normally for non-electric, hand operated Hi-Lift doors.

2.08 MANUAL DOOR OPERATORS

- A. Chain Hoist: 3 to 1 Ratio

2.09 ELECTRIC DOOR OPERATORS

- A. Provide Martin Door DC 3700 UL listed electric operator, size and type as manufactured or recommended by Martin Door Mfg. to move door in either direction at not less than 5" (152) per second.

1. Entrapment Protection: [UL 325 Photoelectric eyes, instant reverse, fail-safe electronics for residential doors.] [Pneumatic sensing edge up to 18' (5489) wide.][Electric sensing edge.][Photoelectric safety sensors for commercial doors.]
2. Operation Controls: Standard residential includes 2-button transmitter operation and 3-function indoor wall console. Commercial standard includes 3-button operated control station(s) with open, close and stop buttons for [flush][surface] mounting, for [interior][exterior][both interior and exterior location].
3. Special Operation: [Pull-rope release (against the law on residential)] [Automatic opening device] [Vehicle detector operation][As specified by architect].

PART 3 – EXECUTION

3.01 PREPARATION

- A. Take Field Dimensions and examine conditions of substrates, supports and other conditions affecting performance of work to be performed.

Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION

- A. General: Install door, track, and operating equipment complete with necessary hardware, anchors, inserts, hangers, equipment supports, safety labels, and safety devices if provided according to shop drawings, Martin Door's written instructions, and as specified.
- B. Fasten vertical track assembly to framing at not less than 24" (600) height increments. Hang horizontal track from structural overhead framing with steel punched angle welded or bolt fastened in place. Provide sway bracing, diagonal bracing, and reinforcement as required for rigid installation of track and door-operating equipment.

3.03 ADJUSTING

- A. Lubricate hinges and adjust doors to operate free and easy fitting properly for entire perimeter. Other perimeter seal is not necessary for Martin Sectional Doors. It is not recommended to seal garages with combustible fuel that also emits noxious fumes.

END OF SECTION