SteelForm™ S-16

SECTIONAL OVERHEAD DOORS

**** NOTE TO SPECIFIER ** Raynor; commercial sectional overhead doors.**
This section is based on the products of Raynor, which is located at:
1101 East River Rd. P. O. Box 448
Dixon, IL 61021-0448
Toll Free Tel: 800-4-RAYNOR
Tel: 815-288-1431
Fax: 888-598-4790
Email: request info (thegarage@raynor.com)
Web: www.raynor.com
[Click Here] for additional information.
For more than 60 years, architects and construction specifiers have counted on Raynor for doors and electric operators that meet the harshest environment and application demands. For your convenience, additional Raynor commercial specifications and drawings can be downloaded from www.raynor.com .
Raynor has more than 800 professional installing distributors in the United States and throughout 54 nations around the world. They pride themselves in excellent product knowledge, installations and service after the sale. Earn CE units and receive valuable knowledge about commercial doors by participating in an AIA/CES course. If you would like a Raynor Representative to contact you about presenting an AIA/CES course to your company, fill out an online form at www.raynor.com, or contact us at 1-800-4-RAYNOR.
Refer to specifications in this section for the following types of Raynor Overhead Doors: Commercial Sectional Doors: TC200, ThermaSeal, SteelForm, AlumaView, and DesignForm, StyleForm.

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Commercial sectional doors.

1.2 RELATED SECTIONS

**** NOTE TO SPECIFIER ** Delete any sections below not relevant to this project; add others as required.**

A. Section 05500 - Metal Fabrications: Miscellaneous for steel supports.

B. Section 08710 - Door Hardware: Hardware, locks, access panels.

C. Section 09900 - Painting: Field painting.

D. Section 11150 - Parking Control Equipment: Parking control equipment for remote door controls.

E. Section 16050 - Basic Electrical Materials and Methods: Electrical connections and service for powered door operators.

1.3 REFERENCES

**** NOTE TO SPECIFIER **** Delete references from the list below that are not actually required by the text of the edited section.**

A. American Society for Testing and Materials (ASTM) A 653/A 653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

B. American Society for Testing and Materials (ASTM) C 518 - Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus.

C. American Society for Testing and Materials (ASTM) E 283 - Standard Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.

1.4 SUBMITTALS

A. Submit under provisions of Section 01300.

B. Product Data: Manufacturer's data sheets on each product to be used, including:
1. Preparation instructions and recommendations.
2. Storage and handling requirements and recommendations.
3. Installation methods.

C. Shop Drawings:
1. Provide drawings indicating track details, head and jamb conditions, spring shafts, anchorage, accessories, finish colors, patterns and textures, operator mounts and other related information.
2. Regulatory Requirements and Approvals: Provide shop drawings in compliance with local Authority having Jurisdiction (AHJ).

D. Certifications:
1. Submit manufacturer's certificate that products meet or exceed specified requirements.
2. Submit installer qualifications.

**** NOTE TO SPECIFIER **** Delete selection samples if colors have already been selected.**

E. Selection Samples: For each finish product specified, two complete sets of color chips representing manufacturer's full range of available colors and patterns.

F. Verification Samples: For each finish product specified, two samples, minimum size 6 inches (150 mm) square, representing actual product, color, and patterns.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: Utilize an installer having demonstrated experience on projects of similar size and complexity, and trained and authorized by the door manufacturer to perform the work of this section.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Store products in manufacturer's unopened packaging until ready for installation.

1.7 PROJECT CONDITIONS

A. Maintain environmental conditions (temperature, humidity, and ventilation) within

limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's recommended limits.

1.8 WARRANTY

A. Provide manufacturer's standard warranty against defects in material and workmanship, as further described in Part 2 of this Section.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturer: Raynor, which is located at: 1101 East River Rd. P. O. Box 448 ; Dixon, IL 61021-0448; Toll Free Tel: 800-4-RAYNOR; Tel: 815-288-1431; Fax: 888-598-4790; Email: request info (thegarage@raynor.com); Web: www.raynor.com

**** NOTE TO SPECIFIER **** Delete one of the following two paragraphs; coordinate with requirements of Division 1 section on product options and substitutions.**

B. Substitutions: Not permitted.

C. Requests for substitutions will be considered in accordance with provisions of Section 01600.

**** NOTE TO SPECIFIER **** Revise paragraph below to suit project requirements. If a reader of this section could reasonably expect to find a product or component specified in this section, but it is actually specified elsewhere, then the related section number(s) should be listed in the paragraph below. Delete door product if not required.**

2.2 SECTIONAL RIBBED PAN DOOR

A. SteelForm as manufactured by Raynor Garage Doors:
1. Doors:
a. Operation:

**** NOTE TO SPECIFIER **** Delete door operation not required. There are restrictions on size of door for manual or hand chain operation.**

1) Provide doors designed for manual operation.
2) Provide doors designed for hand chain operation.
3) Provide doors designed for electric motor operation.

b. Jamb Construction:

**** NOTE TO SPECIFIER **** Delete jamb not required.**

1) Steel jambs with self-tapping fasteners.
2) Wood jambs with lag screw fasteners.
3) Masonry jambs with anchor bolt fasteners.

c. Structural Performance Requirements:

**** NOTE TO SPECIFIER **** Insert required wind load p.s.f.**

1) Wind Loads: Uniform pressure of: _____ psf.

2. Sections:

**** NOTE TO SPECIFIER **** Delete door model SteelForm Optima (S16), SteelForm Standard (S20), SteelForm Standard (S24) or SteelForm Basic (S24C) if not required.**

a. SteelForm S16 (Optima):
1) Section end stiles to be 13 gauge galvanized steel. Center stiles to be a minimum 16 gauge thickness. End stiles and center stiles to be riveted to outside face with stainless steel rivets and resistance welded to interior rail.
2) Material: Steel pan construction, 2 inches (51mm) thick, roll

formed from 16 gauge draw-quality, hot-dipped galvanized (G90) steel complying with ASTM A 653. Exterior of door to have flush face and roll-formed tongue and groove joints for weathertight closure.

3) Finish: Exterior skin to have two coats of paint, one primer coat and one finish coat.

a) Color: White polyester paint.

b. Insulation:

**** NOTE TO SPECIFIER ** Delete insulation and back covers not required.**

1) Expanded polystyrene with R-value of 7.70 with white impact-resistant textured covers.

2) Expanded polystyrene with R-value of 7.70 with 26 gauge hot-dipped galvanized steel covers, stucco embossed and painted gray.

3) Expanded polystyrene with R-value of 7.70 with 24 gauge hot-dipped galvanized steel covers, painted gray.

4) Expanded polystyrene with R-value of 7.70 with 20 gauge hot-dipped galvanized steel covers, painted gray.

c. Seals: Bottom of door to have flexible U-shaped vinyl seal retained in aluminum rail. Optional blade seal on top section to prevent airflow above header

d. Trussing: Doors designed to withstand specified windload. Deflection of door in horizontal position to be maximum of 1/120th of door width.

**** NOTE TO SPECIFIER ** Some restrictions may apply based on door height. Actual window width may vary slightly based on door width. Delete if not required.**

3. Windows: Locations to comply with door elevation drawings.

**** NOTE TO SPECIFIER ** Delete window not required.**

a. 24 inches by 8 inches (610 mm by 203 mm) rectangular window encased in a two-piece black frame.

b. Full-view window consisting of aluminum stile and rail construction and color matched to door exterior with powdercoat paint.

**** NOTE TO SPECIFIER ** Door sections without insulation are only available with single pane glass. Retain, edit or delete paragraphs below to suit project.**

4. Glazing: Windows to be provided as follows:

a. Glass consisting of one pane of 1/8 inch (3.2 mm) thick DSB glass.

**** NOTE TO SPECIFIER ** Door sections with insulation are available glazed with insulating glass. Retain, edit or delete paragraphs below to suit project.**

5. Glazing: Windows to be provided with insulated glazing units as follows:

a. Glass consisting of two panes of 1/8 inch (3.2 mm) thick DSB glass.

6. Glazing: Full View to be provided as follows:

a. Impact Rated Glazing : Provide as follows:

**** NOTE TO SPECIFIER ** Delete types not required.**

a) 11/32 inch (8.37mm) Clear Impact Glass

b) 11/32 inch (8.7mm) Tinted Bronzer Impact Glass

c) 11/32 inch (8.7mm) Tinted Bronzer Impact Glass

d) 11/32 inch (8.7mm) Tinted Green Impact Glass

e) 11/32 inch (8.7mm) White Interlayer Impact Glass

b. Non-Impact Rated Glazing: Provide as follows:

**** NOTE TO SPECIFIER ** Delete types not required.**

a. 1/8 inch (3.2mm) Clear Glass consisting of one pane of 1/8 inch (3.2mm) DSB non-insulated glass.

b. 3/16 inch (4.8mm) Clear Glass consisting of one pane of 3/16 inch (4.8mm) non-insulated glass.

c. 1/4 inch (6.4mm) Clear Glass consisting of one pane of

1/4 inch (6.4mm) non-insulated glass.

d. 1/8 inch (3.2mm) Clear Tempered Glass consisting of one pane of 1/8 inch (3.2mm) non-insulated glass.
e. 1/4 inch (6.4mm) Clear Tempered Glass consisting of one pane of 1/4 inch (6.4mm) non-insulated glass.
f. 3/16 inch (4.88mm) Clear Tempered Glass consisting of one pane of 3/16 inch (4.88mm) non-insulated glass.
g. 1/4 inch (6.4mm) Clear Laminated Glass consisting of one pane of 1/4 inch (6.4mm) non-insulated glass.
h. 1/4 inch (6.4mm) Clear Wire Glass consisting of one pane of 1/4 inch (6.4mm) non-insulated glass.
i. 1/8 inch (3.2mm) Tinted Glass consisting of one pane of 1/8 inch (3.2mm) non-insulated glass.
j. 1/4 inch (6.4mm) Tinted Glass consisting of one pane of 1/4 inch (6.4mm) non-insulated glass.
k. 1/8 inch (3.2mm) Tinted Tempered Glass consisting of one pane of 1/8 inch (3.2mm) non-insulated glass.
l. 1/4 inch (6.4mm) Tinted Tempered Glass consisting of one pane of 1/4 inch (6.4mm) non-insulated glass.
m. 1/2 inch (12.69mm) Insulated Clear Glass consisting of two panes of 1/8 inch (3.2mm) DSB insulated glass.
n. 1/2 inch (12.69mm) Insulated Clear Tempered Glass consisting of two panes of 1/8 inch (3.2mm) Tempered insulated glass.
o. 1/2 inch (12.69mm) Insulated Low E DSB Glass consisting of two panes of 1/8 inch (3.2mm) DSB insulated glass.
p. 1/2 inch (12.69mm) Insulated Low E Tempered Glass consisting of two panes of 1/8 inch (3.2mm) Tempered insulated glass.
q. 1/8 inch (3.2mm) Clear Acrylic consisting of one pane of 1/8 inch (3.2mm) Acrylic glazing.
r. 1/8 inch (3.2mm) Clear Lexan consisting of one pane of 1/8 inch (3.2mm) Lexan glazing.
s. 1/4 inch (6.4mm) Clear Acrylic consisting of one pane of 1/4 inch (6.4mm) Acrylic glazing.
t. 1/4 inch (6.4mm) Clear Lexan consisting of one pane of 1/4 inch (6.4mm) Lexan glazing

7. Mounting: Sections mounted in door opening using:

**** NOTE TO SPECIFIER ** Delete mounting not required.**

a. Between-Jamb Bracket Mounting: sections mounted between door jambs, seal against exterior perimeter seal installed along vertical and top horizontal edges of jambs.
b. Lap Jamb Angle Mounting: section overlap door jambs by 1 inch (25 mm) on each side of door opening.

8. Track:
   a. Material: Hot-dipped galvanized steel (ASTM A 653), fully adjustable for adequate sealing of door to jamb or weatherseal.
   b. Configuration Type:

**** NOTE TO SPECIFIER ** Delete configuration type not required.**

1) Configuration Type: Normal Headroom.
2) Configuration Type: Low Headroom.
3) Configuration Type: Vertical Lift.
4) Configuration Type: Lift-Clearance.
5) Configuration Type: Incline.

6) Configuration Type: Contour.

c. Track Size:

**** NOTE TO SPECIFIER ** Delete track size not required.**

1) Size: 2 inches (51 mm).
2) Size: 3 inches (76 mm).

**** NOTE TO SPECIFIER ** Some restrictions apply based on Configuration Type and Size. The only mounting available on 3-inch lift-clearance is Floor-to-Shaft Angle-Mount. Refer to manufacturer's literature for other restrictions. Delete mounting not required.**

d. Mounting:

1) Bracket-Mount using adjustable track brackets for use on 2-inch track with wood jambs.
2) Floor-to-Header Angle-Mount consisting of continuous angle extending from the floor up to the door header for use with steel, wood, or masonry jambs. Continuous angle size not less than 2-5/16 inches by 4 inches by 3/32 inch (59 by 102 by 2.5 mm) on 2-inch track and 3-1/2 inches by 5 inches by 1/8 inches (89 by 127by 3.2 mm) on 3-inch track.
3) Floor-to-Shaft Angle-Mount consisting of continuous angle extending from the floor, past header, completely up to door shaft for use with steel, wood, or masonry jambs. Continuous angle size not less than 2-5/16 inches by 4 inches by 3/32 inch (59 by 102 by 2.5 mm) on 2-inch track and 3-1/2 inches by 5 inches by 1/8 inches (89 by 127by 3.2 mm) on 3-inch track.

e. Finish:

**** NOTE TO SPECIFIER ** Delete finish not required.**

1) Galvanized.
2) White Powdercoat.

9. Counterbalance:

a. Counterbalance System: Provided with aircraft-type, galvanized steel lifting cables with minimum safety factor of 5. Torsion Springs consisting of heavy-duty oil-tempered wire torsion springs on a continuous ball-bearing cross-header shaft.

**** NOTE TO SPECIFIER ** Delete one of the following two paragraphs. For high cycle insert the required cycle life (15,000 - 200,000),**

1) Spring Cycle Requirements: Standard 10,000 cycles.
2) Spring Cycle Requirements: High cycle: _____ cycles.

10. Hardware:

a. Hinges and Brackets: Fabricated from galvanized steel.

**** NOTE TO SPECIFIER ** Delete track size not required.**

b. Track Rollers: 2 inches (50.8 mm) diameter consistent with track size, with hardened steel ball bearings.
c. Track Rollers: 3 inches (76.2 mm) diameter consistent with track size, with hardened steel ball bearings.

**** NOTE TO SPECIFIER ** Door may be provided with perimeter seal for jambs. Delete if not required.**

d. Perimeter Seal: Provide complete weather stripping system to reduce air infiltration. Weather stripping shall be replaceable.

1) For bracket mounted doors provide climate seal or vinyl seal with aluminum retainer.
2) For angle mounted doors provide angle clip-on seal.

**** NOTE TO SPECIFIER ** Door may be provided with exterior or interior locking device. Retain or delete paragraph below to suit project.**

e. Furnish door system with locks: Exterior lock with five-pin tumbler cylinder, night latch and steel bar engaging track.

f. Furnish door system with locks: Interior lock with dead bolt provided with hole to receive padlock provided by Owner.

11. SteelForm Limited Warranty: Raynor warrants the door sections against defects in material and workmanship, and deterioration due to rust-through for ten years from date of delivery to the original purchaser. Window components are warranted against defects in material and workmanship for one year from date of delivery to the original purchaser. Raynor warrants all hardware and spring components against defects in material and workmanship for one year (or cycle life of the springs) from date of delivery to the original purchaser. Additional Limited Warranty requirements in accordance with manufacturer's full standard limited warranty documentation.

**** NOTE TO SPECIFIER ** ControlHoist (solid state) operators. Delete if not required.**

B. ControlHoist as manufactured by Raynor Garage Doors:

1. Model:

**** NOTE TO SPECIFIER ** ControlHoist Optima operators (solid state) feature a heavy-duty gear drive running in oil for high reliability and efficient operation. They are designed for larger sectional doors and higher cycle applications. Delete if not required.**

a. Raynor ControlHoist Optima:

1) Type: Jackshaft with manual chain hoist.
2) Type: Trolley.

**** NOTE TO SPECIFIER ** Delete rating not required.**

3) Motor Horsepower Rating: Continuous 1/2 HP.
4) Motor Horsepower Rating: Continuous 3/4 HP.
5) Motor Horsepower Rating: Continuous 1 HP.
6) Motor Horsepower Rating: Continuous 1-1/2 HP.
7) Motor Horsepower Rating: Continuous 2 HP.

**** NOTE TO SPECIFIER ** Delete electrical not required.**

8) Electrical Requirements: 115 volt single phase.
9) Electrical Requirements: 230 volt single phase.
10) Electrical Requirements: 208-230 volt three phase.
11) Electrical Requirements: 460 volt three phase.
12) Duty Cycle: 30 cycles/hour or 300 cycles/day.
13) Control Wiring: Solid state circuitry with provisions for connection of safety edge to reverse, external radio control hook-up and maximum run timer. Provisions for timers to close, monitored reversing devices, mid stop and lock bar sensor capability.

**** NOTE TO SPECIFIER ** Delete if custom wiring not required. For custom wiring contact manufacturer.**

a) Provide three button momentary contact "open-stop", constant pressure on close (can be changed to momentary to close).
b) Custom wiring.

**** NOTE TO SPECIFIER ** ControlHoist Standard belt-drive operators are designed for medium- to high-cycle applications and for normal- to large-size sectional doors. Delete if not required.**

b. Raynor ControlHoist Standard:

**** NOTE TO SPECIFIER ** Delete types not required.**

1) Type: Jackshaft.
2) Type: Jackshaft with manual chain hoist.
3) Type: Trolley.

**** NOTE TO SPECIFIER ** Delete rating not required.**

4) Motor Horsepower Rating: Continuous 1/3 HP.
5) Motor Horsepower Rating: Continuous 1/2 HP.

6) Motor Horsepower Rating: Continuous 3/4 HP.
7) Electrical Requirements: 115 volt single phase.
8) Electrical Requirements: 230 volt single phase.
9) Electrical Requirements: 208-230 volt three phase.
10) Electrical Requirements: 460 volt three phase.
11) Duty Cycle: 30 cycles/hour or 300 cycles/day.
12) Control Wiring: Solid state circuitry with provisions for connection of safety edge to reverse, external radio control hook-up and maximum run timer. Provisions for timers to close, monitored reversing devices, mid stop and lock bar sensor capability.
a) Provide three button momentary contact "open-stop", constant pressure on close (can be changed to momentary to close).

**** NOTE TO SPECIFIER **** Delete if custom wiring not required. For custom wiring contact manufacturer.**

b) Custom wiring.

**** NOTE TO SPECIFIER **** ControlHoist Basic belt drive operators are designed for operating sectional doors up to 14 feet high in light duty applications. Delete if not required.**

c. Raynor ControlHoist Basic:

**** NOTE TO SPECIFIER **** Delete types not required.**

1) Type: Jackshaft.
2) Type: Jackshaft with manual chain hoist.
3) Type: Trolley.
4) Motor Horsepower Rating: Intermittent 1/2 HP.
5) Electrical Requirements: 115 volt single phase.
6) Duty Cycle: 10 cycles/hour.
7) Control Wiring: Solid state circuitry with provisions for connection of safety edge to reverse, external radio control hook-up and maximum run timer. Provisions for timers to close, monitored reversing devices, mid stop and lock bar sensor capability.
a) Provide three button momentary contact "open-stop", constant pressure on close (can be changed to momentary to close).

2.3 EXECUTION

2.4 EXAMINATION

A. Do not begin installation until substrates have been properly prepared. Verify that site conditions are acceptable for installation of doors, operators, controls and accessories. Ensure that openings are square, flush and plumb.

B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

2.5 PREPARATION

A. Clean surfaces thoroughly prior to installation.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

2.6 INSTALLATION

A. General: Install door, track and operating equipment complete with all necessary

accessories and hardware according to shop drawings, manufacturer's instructions.

B. Lubricate bearings and sliding parts, and adjust doors for proper operation, balance, clearance and similar requirements.

2.7 PROTECTION

A. Clean installed products in accordance with manufacturer's instructions prior to Owner's acceptance. Remove and legally dispose of construction debris from project site.

B. Remove temporary coverings and protection of adjacent work areas. Repair or replace installed products damaged prior to or during installation.

C. Lubricate bearings and sliding parts, assure weather tight fit around door perimeter and adjust doors for proper operation, balance, clearance and similar requirements. Protect installed products until completion of project.

D. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION