



Product Evaluation

GDR027 | 1014

Engineering Services Program

The following product has been evaluated for compliance with the wind loads specified in the International Residential Code (IRC) and the International Building Code (IBC).

This product evaluation is not an endorsement of this product or a recommendation that this product be used. The Texas Department of Insurance has not authorized the use of any information contained in the product evaluation for advertising, or other commercial or promotional purpose.

This product evaluation is intended for use by those individuals who are following the design wind load criteria in Chapter 3 of the IRC and Section 1609 of the IBC. The design loads determined for the building or structure shall not exceed the design load rating specified for the products shown in the limitations section of this product evaluation. This product evaluation does not relieve a Texas licensed engineer of his responsibilities as outlined in the Texas Insurance Code, the Texas Administrative Code, and the Texas Engineering Practice Act.

For more information, contact TDI Engineering Services Program at (800) 248-6032.

Evaluation ID: GDR-27

Effective Date: September 1, 2014

Revised: October 1, 2014

Re-evaluation Date: September 2017

Product Name: Series 100, 500, 400, and 3600 Wind-Rated, Residential, Steel Sectional Garage Doors, Non-impact Resistant

Manufacturer: doorLink Manufacturing, Inc.
1501 Taney Avenue
North Kansas City, MO 64116
(816) 474-3900

Product Description:

The doorLink Series 100, 500, 400, and 3600 Wind-Rated, Residential Garage Doors are constructed from galvanized steel sections textured with wood grain or stucco embossing rolls. The sections are coated with an epoxy primer and a baked-on polyester finish. Windows are optional. All doors are reinforced horizontally with roll-formed galvanized steel sections (U-bars) or strapped C-Channels. This evaluation includes individual, non-impact resistant garage doors based on the following tested series:

- **100 Series:** Pan-style, residential garage doors with tongue and groove meeting rails made from minimum 26-gauge (0.015" thick), hot-dipped galvanized steel construction with a hemmed inside return rail. The 100 Series includes Models 110 and 111. Model 111 is insulated with CFC-free expanded polystyrene with a high impact plastic back cover. Model 110 is non-insulated. The 100 Series is available with or without windows.
- **500 Series:** Pan-style, residential garage doors with tongue and groove meeting rails made from minimum 25-gauge (0.017" thick), hot-dipped galvanized steel construction with a hemmed inside return rail. The 500 Series includes Models 510, 511, 590, and 591. Models 511 and 591 are insulated with CFC-free expanded polystyrene with a high impact plastic back cover. Models 510 and 590 are non-insulated. The 500 Series is available with or without windows.

- **400 Series:** Pan-style residential garage doors with tongue and groove meeting rails made from minimum 24-gauge (0.019" thick), hot-dipped galvanized steel construction with a hemmed inside return rail. The 400 Series includes Models 410, 411, 430, 431, 450, 451, 470, 471, 490, and 491. Models 411, 431, 441, 451, 471, and 491 are insulated with CFC-free expanded polystyrene with a high impact plastic back cover. Models 410, 430, 440, 450, 470 and 490 are non-insulated. The 400 Series is available with or without windows.
- **3600 Series:** Insulated sandwich-style, 2" thick, residential garage doors. The 3600 Series includes Models 3610, 3630, 3640, 3650, and 3690. The doors are insulated with expanded polystyrene insulation that is bonded between two sheets of 26-gauge, hot-dipped galvanized steel. The 3600 Series is available with or without windows.

Hardware:

- **U-Bar Stiffeners:** Horizontal reinforcing U-shaped sections attached with two (2) 1/4" x 3/4" self-tapping screws per stile (or backer plate).
 - 2-1/4" deep, 20-gauge (0.035"), galvanized steel (50 ksi tensile strength)
 - 3" deep, 20-gauge (0.035"), galvanized steel (tensile strength varies from 33 ksi, 50 ksi and 80 ksi)
 - 3" deep, 16-gauge (0.057"), galvanized steel (33 ksi tensile strength)
- **C-Channel Stiffeners:** Horizontal reinforcing C-Channel sections (4" or 6" deep, 16-gauge, galvanized steel 50 ksi tensile strength) attached with 1-1/4" wide, galvanized steel straps (as shown in the referenced drawings).
- **End Hinges:** Napoleon 14-gauge steel hinges (or equivalent 14-gauge hinges) secured as shown in the referenced drawings.
- **Intermediate Hinges:** Napoleon 18-gauge steel hinges (or equivalent 18-gauge hinges) secured as shown in the referenced drawings.
- **Locks:** 1 or 2 Napoleon residential slide locks or electrical operator as shown in the referenced drawings.
- **Stiles:** 20-gauge galvanized steel, ends 0.038", centers 0.033".
- **Tracks:** Vertical tracks are made from 15- or 16-gauge, 2" wide, galvanized steel, as shown in the referenced drawings.
- **Track Brackets:** 12-gauge track brackets are required on each side of the door. Refer to the referenced drawings for the required number of track brackets.
- **Rollers:** 2" diameter, 7-ball steel rollers or 10-ball nylon rollers. Refer to the referenced drawings for the required type and number of rollers.

Product Identification:

The doors have a warranty/warning label applied during manufacturing that includes the manufacturers name and the series/model number for the door. The door will also have a second label, applied by the installer, that includes the manufacturers name and the design pressure rating for the door.

Limitations:

- The maximum height of each section shall not exceed 21".
- The standard door dimensions, design pressures, and reinforcing requirements are shown in Tables 1-4. The type, placement, and installation of horizontal reinforcing is shown on the approved drawings.

Impact Protection:

The manufacturer did not test these doors for windborne debris resistance. Provide an impact protective system for all doors that contain glazing in the Inland I zone. Provide an impact protective system to all doors installed in the Seaward zone.

Installation:

- Install doorLink 100, 500, 400, and 3600 Series wind-rated residential garage doors in accordance with the manufacturer's published installation instructions, engineering drawings (stamped and signed by John E. Scates, P.E., or Joseph H. Dixon), and this product evaluation report. Strictly adhere to the manufacturer's published installation instructions and this report, and maintain these instructions at all times the job site during installation. Use this report to resolve conflicts between the manufacturer's instructions and this report.
- Secure the 100 Series (9' x 7' door) steel track to a 2x6 wood jamb with four (4), 12-gauge track brackets (two (2) track brackets on each side). Fasten each bracket to the track with one (1), 1/4" x 5/8" bolt and nut (or two (2), 1/4" rivets). Fasten brackets to wood jamb with one (1), 5/16" x 1-5/8" wood lag screw per bracket. Use a minimum Southern Pine lumber for the 2x6 wood jamb as shown in the referenced drawings.
- Secure the 500, 400, and 3600 Series steel tracks to a 2x6 wood jamb. Table 1-4 referenced drawings indicates the placement for the track bracket and spacing requirements. Fasten each bracket to the track with one (1), 1/4" x 5/8" bolt and nut (or two (2), 1/4" rivets). Fasten brackets to the wood jamb with one (1), 5/16" x 1 5/8" wood lag screw per bracket. Use a minimum Southern Pine or Spruce-Pine-Fir lumber for the 2x6 wood jamb as shown in the referenced drawings.
- Attach the 2x6 wood jambs to substrate framing in accordance with the table below.

Maximum Jamb Fastener Spacing for Residential Doors

Drawing Number	Fastener A	Fastener B	Fastener C	Fastener D	Fastener E	Fastener F
R09A-120	18	24	24	24	24	24
R09B-130	15	24	24	24	24	24
R09C-130	13	24	24	24	24	24
R09A-140	11	21	24	24	24	24
R010A-120	13	23	24	23	24	24
R012A-120	9	16	19	16	24	24
R016A-120	10	19	23	18	24	24
R016B-120	10	19	23	18	24	24
R016C-120	10	19	23	18	24	24
R016D-120	9	16	19	16	24	24
R016B-130	9	16	19	16	24	24
R016C-130	9	16	19	16	24	24
R016D-130	7	14	16	13	24	23
R016A-150	6	12	14	11	24	20
R018A-120	9	17	20	16	24	24
R018B-120	9	17	20	16	24	24
R018B-130	8	14	17	14	24	24
R018C-130	8	14	17	14	24	24

Maximum Jamb Fastener Spacing for Residential Doors (Continued)

Drawing Number	Fastener A	Fastener B	Fastener C	Fastener D	Fastener E	Fastener F
R018A-140	N/A	10	12	10	24	18
R020A-130	6	11	14	11	24	20
RS9A-120	18	24	24	24	24	24
RS9A-130	15	24	24	24	24	24
RS10A-140	10	19	23	18	24	24
RS12A-130	10	19	23	18	24	24
RS16A-120	10	19	23	18	24	24
RS16A-130	9	19	19	15	24	24
RS16B-130	9	16	19	16	24	24
RS16C-130	8	14	17	14	24	24
RS18B-120	9	17	20	16	24	24
RS18B-130	8	14	17	14	24	24
RS20A-110	9	16	19	16	24	24

Fastener A: 1/4" x 3" long, self-tapping concrete anchors (154 lbs/anchor minimum) 1-1/2" embedment into grout-filled CMU block.

Fastener B: 1/4" x 3" long, self-tapping concrete anchors (280 lbs/anchor minimum) 1-1/2" embedment into 2000 psi minimum concrete.

Fastener C: 3/8" x 3" long, sleeve anchors (336 lbs/anchor minimum) 1-1/2" embedment into 2000 psi minimum concrete with Southern Pine or better jambs.

Fastener D: 3/8" x 3" long, sleeve anchors (274 lbs/anchor minimum) 1-1/2" embedment into 2000 psi minimum concrete with Spruce-Pine-Fir or better jambs.

Fastener E: 3/8" x 3" long, lag screws (565 lbs/anchor minimum) with 1-1/8" O.D. washers 1-1/2" embedment into Southern Pine or better framing members.

Fastener F: 3/8" x 3" long, lag screws (425 lbs/anchor minimum) with 1-1/8" O.D. washers 1-1/2" embedment into Spruce-Pine-Fir or better framing members.

Note: Have the manufacturer's installation instructions and the engineering drawings (stamped and signed by John E. Scates, P.E. or Joseph H. Dixon, P.E) available on the job site during installation. Use corrosion resistant fasteners as specified in the IRC and the IBC.

Table 1 –100 Series Overhead Garage Doors

Max. Width	Std. Heights	Sections	Horz. Reinforcement Pieces		# of Hinges	Intern. Stiles	Design Pressure	Drawing
			Qty	Description				
9'0"	6'6" - 7'0"	4	4	3" H 20-gauge 33 ksi U-bars	9	1	+22.9 psf -26.3 psf	RO9A-120 11-27-05 John Scates, P.E.

Table 2 –500 Series Overhead Garage Doors

Max. Width	Std. Heights	Sections	Horz. Reinforcement Pieces		# of Hinges	Interm. Stiles	Design Pressure	Drawing
			Qty	Description				
9'0"	6'6" - 7'0"	4	4	3" H 20-gauge 33 ksi U-bars	9	1	+22.9 psf -26.3 psf	RO9A-120 11-27-05 John Scates, P.E.
9'0"	6'6" - 7'0"	4	4	3" H 20-gauge 33 ksi U-bars	9	1	+26.9 psf -30.5 psf	RO9B-130 10-7-13 Joseph Dixon, Jr., P.E.
	7'6" - 8'0"	5	5		12			
9'0"	6'6" - 7'0"	4	5	3" H 20-gauge 33 ksi U-bars	9	1	+30.0 psf -31.0 psf	RO9C-130 10-7-13 Joseph Dixon, Jr., P.E.
	7'6" - 8'0"	5	6		12			
9'0"	6'6" - 7'0"	4	6	3" H 20-gauge 33 ksi U-bars	9	1	±35.2 psf	RO9A-140 10-7-13 Joseph Dixon, Jr., P.E.
	7'6" - 8'0"	5	8		12			
10'0"	6'6" - 7'0"	4	6	3" H 20-gauge 33 ksi U-bars	12	2	±28.5 psf	RO10A-120 10-7-13 Joseph Dixon, Jr., P.E.
	7'6" - 8'0"	5	8		16			
12'0"	6'6" - 7'0"	4	8	3" H 20-gauge 33 ksi U-bars	12	3	+34.3 psf -32.7 psf	RO12A-130 10-7-13 Joseph Dixon, Jr., P.E.
	7'6" - 8'0"	5	10		16			
16'0"	6'6" - 7'0"	4	8	3" H 20-gauge 50 ksi U-bars	15	5	+22.0 psf -24.5 psf	RO16A-120 11-27-05 John Scates, P.E.
16'0"	6'6" - 7'0"	4	5	3" H 16-gauge 33 ksi U-bars	15	5	+22.0 psf -24.5 psf	RO16B-120 10-7-13 Joseph Dixon, Jr., P.E.
	7'6" - 8'0"	5	6		20			
16'0"	6'6" - 7'0"	4	6	3" H 20-gauge 80 ksi U-bars	15	5	+22.0 psf -24.5 psf	RO16C-120 8-20-07 Joseph Dixon, Jr., P.E.
	7'6" - 8'0"	5	7		20			
16'0"	6'6" - 7'0"	4	8	3" H 20-gauge 33 ksi U-bars	15	5	+25.7 psf -24.5 psf	RO16D-120 8-20-07 Joseph Dixon, Jr., P.E.
	7'6" - 8'0"	5	10		20			
16'0"	6'6" - 7'0"	4	8	3" H 20-gauge 50 ksi U-bars	15	5	+25.8 psf -28.9 psf	RO16C-130 8-20-07 Joseph Dixon, Jr., P.E.
	7'6" - 8'0"	5	10		20			
16'0"	6'6" - 7'0"	4	8	3" H 20-gauge 50 ksi U-bars	15	7	±30.0 psf	RO16D-130 8-24-08 Joseph Dixon, Jr., P.E.
	7'6" - 8'0"	5	10		20			
16'0"	6'6" - 7'0"	4	4	4" H 16-gauge 50 ksi strapped C-Ch	21	5*	±35.0 psf	RO16A-150 8-24-08 Joseph Dixon, Jr., P.E.
	7'6" - 8'0"	5	5		28			
18'0"	6'6" - 7'0"	4	4	4" H 16-gauge 50 ksi strapped C-Ch	21	7	+22.0 psf -24.5 psf	RO18A-120 11-29-05 John Scates, P.E.
18'0"	6'6" - 7'0"	4	8	3" H 20-gauge 80 ksi U-bars	15	7	+22.0 psf -24.5 psf	RO18B-120 8-20-07 Joseph Dixon, Jr., P.E.
	7'6" - 8'0"	5	10		20			
18'0"	6'6" - 7'0"	4	8	3" H 16-gauge 33 ksi U-bars	15	7	+25.7 psf -28.7 psf	RO18C-130 8-20-07 Joseph Dixon, Jr., P.E.
	7'6" - 8'0"	5	10		20			
18'0"	6'6" - 7'0"	4	4	6" H 16-gauge 50 ksi strapped C-Ch	21	7*	±35.0 psf	RO18A-140 8-24-08 Joseph Dixon, Jr., P.E.
	7'6" - 8'0"	5	5		28			

* Double End Stiles

Table 3 –400 Series Overhead Garage Doors

Max. Width	Std. Heights	Sections	Horz. Reinforcement Pieces		# of Hinges	Interm. Stiles	Design Pressure	Drawing
			Qty	Description				
9'0"	6'6" - 7'0"	4	4	3" H 20-gauge 33 ksi U-bars	9	1	+22.9 psf -26.3 psf	RO9A-120 11-27-05 John Scates, P.E.
9'0"	6'6" - 7'0"	4	4	3" H 20-gauge 33 ksi U-bars	9	1	+26.9 psf -30.5 psf	RO9B-130 10-7-13 Joseph Dixon, Jr., P.E.
	7'6" - 8'0"	5	5		12			
9'0"	6'6" - 7'0"	4	5	3" H 20-gauge 33 ksi U-bars	9	1	+30.0 psf -31.0 psf	RO9C-130 10-7-13 Joseph Dixon, Jr., P.E.
	7'6" - 8'0"	5	6		12			
9'0"	6'6" - 7'0"	4	5	3" H 20-gauge 33 ksi U-bars	9	1	±35.2 psf	RO9A-140 10-7-13 Joseph Dixon, Jr., P.E.
	7'6" - 8'0"	5	6		12			
10'0"	6'6" - 7'0"	4	6	3" H 20-gauge 33 ksi U-bars	12	2	±28.5 psf	RO10A-120 10-7-13 Joseph Dixon, Jr., P.E.
	7'6" - 8'0"	5	8		16			
12'0"	6'6" - 7'0"	4	8	3" H 20-gauge 33 ksi U-bars	12	3	+34.3 psf -32.7 psf	RO12A-130 10-7-13 Joseph Dixon, Jr., P.E.
	7'6" - 8'0"	5	10		16			
16'0"	6'6" - 7'0"	4	8	3" H 20-gauge 50 ksi U-bars	15	5	+22.0 psf -24.5 psf	RO16A-120 11-27-05 John Scates, P.E.
16'0"	6'6" - 7'0"	4	5	3" H 16-gauge 33 ksi U-bars	15	5	+22.0 psf -24.5 psf	RO16B-120 10-7-13 Joseph Dixon, Jr., P.E.
	7'6" - 8'0"	5	6		20			
16'0"	6'6" - 7'0"	4	6	3" H 20-gauge 80 ksi U-bars	15	5	+22.0 psf -24.5 psf	RO16C-120 8-20-07 Joseph Dixon, Jr., P.E.
	7'6" - 8'0"	5	7		20			
16'0"	6'6" - 7'0"	4	8	3" H 20-gauge 33 ksi U-bars	15	5	+25.7 psf -24.5 psf	RO16D-120 8-20-07 Joseph Dixon, Jr., P.E.
	7'6" - 8'0"	5	10		20			
16'0"	6'6" - 7'0"	4	6	3" H 16-gauge 33 ksi U-bars	15	5	+25.7 psf -28.7 psf	RO16B-130 10-7-13 Joseph Dixon, Jr., P.E.
	7'6" - 8'0"	5	7		20			
16'0"	6'6" - 7'0"	4	8	3" H 20-gauge 50 ksi U-bars	15	5	+25.8 psf -28.9 psf	RO16C-130 8-20-07 Joseph Dixon, Jr., P.E.
	7'6" - 8'0"	5	10		20			
16'0"	6'6" - 7'0"	4	8	3" H 20-gauge 50 ksi U-bars	15	7	±30.0 psf	RO16D-130 8-24-08 Joseph Dixon, Jr., P.E.
	7'6" - 8'0"	5	10		20			
16'0"	6'6" - 7'0"	4	4	4" H 16-gauge 50 ksi strapped C-Ch	21	5*	±35.0 psf	RO16A-150 8-24-08 Joseph Dixon, Jr., P.E.
	7'6" - 8'0"	5	5		28			
18'0"	6'6" - 7'0"	4	4	4" H .057" thick 50 ksi strapped C-Ch	21	7	+22.0 psf -24.5 psf	RO18A-120 11-29-05 John Scates, P.E.
18'0"	6'6" - 7'0"	4	8	3" H 20-gauge 80 ksi U-bars	15	7	+25.7 psf -28.7 psf	RO18B-120 8-20-07 Joseph Dixon, Jr., P.E.
	7'6" - 8'0"	5	10		20			
18'0"	6'6" - 7'0"	4	8	3" H 16-gauge 33 ksi U-bars	15	5	+25.7 psf -28.7 psf	RO18B-130 10-7-13 Joseph Dixon, Jr., P.E.
	7'6" - 8'0"	5	10		20			
18'0"	6'6" - 7'0"	4	8	3" H 16-gauge 33 ksi U-bars	15	7	+25.7 psf -28.7 psf	RO18C-130 8-20-07 Joseph Dixon, Jr., P.E.
	7'6" - 8'0"	5	10		20			
18'0"	6'6" - 7'0"	4	4	6" H 16-gauge 50 ksi strapped C-Ch	21	7*	±35.0 psf	RO18A-140 8-24-08 Joseph Dixon, Jr., P.E.
	7'6" - 8'0"	5	5		28			
20'0"	6'6" - 7'0"	4	4	6" H 16-gauge 50 ksi strapped C-Ch	24	9*	±28.4 psf	RO20A-130 10-7-13 Joseph Dixon, Jr., P.E.
	7'6" - 8'0"	5	5		32			

* Double End Stiles

Table 4 –3600 Series Overhead Garage Doors

Max. Width	Std. Heights	Sections	Horz. Reinforcement Pieces		# of Hinges	Design Pressure	Drawing
			Qty	Description			
9'0"	6'6" - 7'0"	4	3	2-1/4" H 20-gauge 50 ksi U-bars	9	+22.9 psf -26.3 psf	RS9A-120 11-27-05 John Scates, P.E.
9'0"	6'6" - 7'0"	4	3	3" H 20-gauge 33 ksi U-bars	9	+26.9 psf -30.5 psf	RS9A-130 10-7-13 Joseph Dixon, Jr., P.E.
	7'6" - 8'0"	5	4		12		
10'0"	6'6" - 7'0"	4	6	3" H 20-gauge 50 ksi U-bars	12	+35.2 psf -39.2psf	RS10A-140 10-7-13 Joseph Dixon, Jr., P.E.
	7'6" - 8'0"	5	7		16		
12'0"	6'6" - 7'0"	4	6	3" H 20-gauge 50 ksi U-bars	12	+29.3 psf -32.7 psf	RS12A-130 10-7-13 Joseph Dixon, Jr., P.E.
	7'6" - 8'0"	5	7		16		
16'0"	6'6" - 7'0"	4	6	3" H 20-gauge 50 ksi U-bars	15	+22.0 psf -24.5 psf	RS16A-120 10-7-13 Joseph Dixon, Jr., P.E.
	7'6" - 8'0"	5	7		20		
16'0"	6'6" - 7'0"	4	8	3" H 20-gauge 50 ksi U-bars	15	+25.9 psf -28.8 psf	RS16A-130 11-27-05 John Scates, P.E.
16'0"	6'6" - 7'0"	4	6	3" H 20-gauge 80 ksi U-bars	15	+25.7 psf -28.7 psf	RS16B-130 10-7-13 Joseph Dixon, Jr., P.E.
	7'6" - 8'0"	5	7		20		
16'0"	6'6" - 7'0"	4	7	3" H 16-gauge 33 ksi U-bars	15	+28.9 psf -32.3 psf	RS16C-130 10-7-13 Joseph Dixon, Jr., P.E.
	7'6" - 8'0"	5	8		20		
18'0"	6'6" - 7'0"	4	7	3" H 20-gauge 50 ksi U-bars	15	+22.0 psf -24.5 psf	RO18A-120 11-29-05 John Scates, P.E.
	7'6" - 8'0"	5	8		20		
18'0"	6'6" - 7'0"	4	7	3" H 16-gauge 33 ksi U-bars	15	+25.7 psf -28.7 psf	RS18B-120 10-7-13 Joseph Dixon, Jr., P.E.
	7'6" - 8'0"	5	8		20		
20'0"	6'6" - 7'0"	4	7	3" H 16-gauge 33 ksi U-bars	18	+20.8 psf -23.2 psf	RO20A-110 10-7-13 Joseph Dixon, Jr., P.E.
	7'6" - 8'0"	5	8		24		