

2004 FM APPROVAL GUIDE

Consolidated Systems, Inc.

Box 1756 Columbia, SC 29202

Deck: Type A
Max Spans: 4 ft 10 in. (1.5 m) for 22 ga. [0.0295 in. (0.75 mm)]
5 ft 3 in. (2.0 m) for 20 ga. [0.0358 in. (0.91 mm)]
6 ft 0 in. (2.3 m) for 18 ga. [0.0474 in. (1.20 mm)]

Deck: Type F
Max Spans: 4 ft 11 in. (1.5 m) for 22 ga. [0.0295 in. (0.75 mm)]
5 ft 5 in. (1.7 m) for 20 ga. [0.0358 in. (0.91 mm)]
6 ft 3 in. (2.0 m) for 18 ga. [0.0474 in. (1.20 mm)]

Deck: Types B, BI
Max Spans: 6 ft 0 in. (1.8 m) for 22 ga. [0.0295 in. (0.75 mm)]
6 ft 6 in. (2.0 m) for 20 ga. [0.0358 in. (0.91 mm)]
7 ft 5 in. (2.3 m) for 18 ga. [0.0474 in. (1.20 mm)]

Construction #1: Decking is secured to the structural supports spaced at the maximum center to center spans shown above with fasteners or min 0.5 in. (13 mm) diameter puddle welds for Class 1-60 or 5/8 in. (16 mm) diameter puddle welds for Class 1-90 placed at alternating bottom ribs [average 12 in. (305 mm) o.c.] and at supports where deck sides lap. Deck side laps are secured with Hilti S-MD 10-16x7/8 HHWH Stitch, S-MD 12-14x1 HHWH Stitch, ITW Buildex Tekes 1, ICH Traxx/1 or Construction Fasteners 14x7/8 HWH Lap-SD, 10x1/2 HWH S/D or 12x3/4 HWH SP Stitch or SFS Intec (all fasteners for use with 20 and 22 ga. [0.0358 and 0.0295 in. (0.91 and 0.75 mm)] thick deck) SL2-4.8x20, SL2-S-4.8x20, SL2-H15-6.3x22, SXL2-5.5x22, SD2-4.8x20 or Textron Fastening System 10-16x3/4 in. HWH Type 3 Drilltite®, 12-14x3/4 in. HWH Type 3 Drilltite®, 10-16x3/4 in. HWH Type 1 fasteners for use with 18, 20 and 22 ga. (MSG) [0.0474, 0.0358, and 0.0295 in. (1.2, 0.91, and 0.75 mm) thick], fasteners spaced at max 36 in. (914 mm) o.c. An insulation and roof covering is then applied per proprietary listings. Refer to the use of steel roof decks throughout listings for details. Meets Class 1-60/1-90 per deck securement and above deck components.

Fasteners: 1) Construction Fasteners 12x3/4 HWH Impax (meets Class 1-75 at spans greater than 7 ft [2.1 m]), 12-24x7/8 HWH SD, 12-24x11/4 HWH Impax 45, 12x11/4 HWH Impax 5 S/D. 2) Hilti ENK 14 S12, ENK 16 S12, ENKK, X-EDN 19-THQ12, ENP 2K-20-L15, X-EDNK 22-THQ12, EDN 16 P8, EDS 19 P10, EDS 22 P10, ENPH2-21-L-15, EDNK 20 P8TH, SDM 14 MX, EDN 19 MX, X EDNK 22 THQ12, EDN 16 MX, ENP 3-21 D12, ENS 21 D15, ESD 16 P8T, ESD 19 P8T, ENP 2-21 L-15, ENP 3-21 L-15, X EDN19 THQ 12. 3) ITW Buildex Tekes 4, Tekes 5, ICH Traxx/4, ICH Traxx/5, BX 12, BX 14. 4) Pneutek 31062, 31075, 32075, K31075, SDK32075, SDK42075, 32050, K33050, 42050, K43050, 32062, SD32062, SDK33062, 42062, SSSDK44062, SSSD44062, SDK32062, SDK42062, K32062, K42062, SDK43062, SDK44075, SDK44062, 65056, 65062, R65056, R65062, K65056, K65062, KR65056, KR65062, K45056, SDK61075, SDK63075, K64062, K64075, K66062, K66075, K66082. 5) SFS Intec SD5-5.5x25 (meets Class 1-75 at spans greater than 7 ft [2.1 m]), SD5-H15-5.5x22, SD12-5.5x36, SD12-H15-5.5x32, SD8-5.5x25, SD4-5.5x25. 6) Textron Fastening System 12 24 HWH Type 5 Drilltite®, 12 24 HWH Type 4 point, 12 24 HWH Type 5 point.

Deck: Versa-Dek® 3.5LS
Max Spans: 16 ft 6 in. (5.0 m) for 20 ga. (0.0358 in. [0.91 mm])
21 ft 0 in. (6.4 m) for 18 ga. (0.0474 in. [1.20 mm])
23 ft 0 in. (7.0 m) for 16 ga. (0.0598 in. [1.52 mm])

Construction #1: Decking is secured to the structural supports spaced at the maximum center to center spans shown above with min 7/8 in. (22 mm) diameter puddle welds for 20 gauge (0.0358 in. [0.91 mm]), ¾ in. (19 mm) diameter puddle welds for 18 gauge (0.0474 in. [1.20 mm]) and ¾ in. (19 mm) puddle welds for 16 gauge (0.0598 in. [1.52 mm]), placed at the bottom of each rib at average 8 in. (203 mm) o.c. Deck side laps are secured with ITW Buildex Tekes 1 or ICH Traxx/1 fasteners or Construction Fasteners 14x7/8 HWH Lap-SD, 10x1 .2 HWH S/D or 12x3/4 HWH SP Stitch or SFS Stadler SL2-4.8x20, SL2-S-4.8x20, SL2-H15-6.3x22, SXL2-5.5x22, SD2-4.8x20 (for use with max 20 ga. [0.0358 in. (0.91 mm) thick] deck only) placed at all supports and at max. 36 in. (914 mm) o.c. Minimum 2 in. (50 mm) thick polyisocyanurate insulation boards are placed over the deck with insulation board edges bearing along the centerline of the deck top flange. Insulation is fastened to the deck using Approved fasteners applied at the Approved density as

specified in the proprietary listings. This deck is provided with a 8 in. (203 mm) rib module. Consideration of this module must be given. Roof covering is then applied per proprietary listings. The minimum thickness insulation is based on the greater of 1) the min thickness listed for this deck, or 2) the minimum thickness as described in the proprietary listings for the intended wind uplift rating. Approved above-deck systems are generally targeted to be used with Approved steel decks of 1.5 in. (40 mm) depth and their related 6 in. (152 mm) rib modules. Therefore, when utilizing an Approved above-deck system with a mechanically fastened cover, select one with a cover fastener spacing greater than the 8 in. (203 mm) rib module, and reduce this fastener spacing to coincide with placement of the fastener into the deck top flanges (e.g., Approved 12 in. (305 mm) spacing is reduced to 8 in. (203 mm) spacing; Approved 18 in. (457 mm) spacing is reduced to 16 in. (406 mm) spacing). Refer to the use of steel roof decks throughout listings for details. Meets max Class 1-90 per deck securement and above deck components.

Deck: Versa-Dek® 3.5LS Acoustical Max Spans: 15 ft 8 in. (6.0 m) for 20 ga. (0.0358 in. [0.91 mm]) 19 ft 11 in. (6.0 m) for 18 ga. (0.0474 in. [1.20 mm]) 21 ft 10 in. (6.7 m) for 16 ga. (0.0598 in. [1.52 mm])

Construction #1: Decking is secured to the structural supports spaced at the maximum center to center spans shown above with min 7/8 in. (22 mm) diameter puddle welds for 20 gauge (0.0358 in. [0.91 mm]), ¾ in. (19 mm) diameter puddle welds for 18 gauge (0.0474 in. [1.20 mm]) and ¾ in. (19 mm) puddle welds for 16 gauge (0.0598 in. [1.52 mm]) placed at the bottom of each rib at average 8 in. (203 mm) o.c. Deck side laps are secured with ITW Buildex Tek 1 or ICH Traxx/1 fasteners or Construction Fasteners 14x7/8 HWH Lap-SD, 10x1/2 HWH S/D or 12x3/4 HWH SP Stitch or SFS Stadler SL2-4.8x20, SL2-S-4.8x20, SL2-H15-6.3x22, SXL2-5.5x22, SD2-4.8x20 (for use with max 20 ga. [0.0358 in. (0.91 mm) thick] deck only) placed at all supports and at max. 36 in. (914 mm) o.c. Nominal 3.0 pcf (48 kg/m³) fiberglass insulation, 5.5 in. (140 mm) wide x 2.0 in. (50 mm) thick is placed over continuous expanded metal mesh spacers within each rib opening. Minimum ½ in. (13 mm) Dens Deck is loose laid. Minimum 2.0 in. (50 mm) thick polyisocyanurate insulation are placed over the deck with insulation board edges bearing along the centerline of the deck top flange. Insulation is fastened to the deck using Approved fasteners applied at the Approved density as specified in the proprietary listings. This deck is provided with a 8 in. (203 mm) rib module. Consideration of this module must be given. Roof covering is then applied per proprietary listings. The minimum thickness insulation is based on the greater of 1) the min thickness listed for this deck, or 2) the minimum thickness as described in the proprietary listings for the intended wind uplift rating. Approved above-deck systems are generally targeted to be used with Approved steel decks of 1.5 in. (40 mm) depth and their related 6 in. (152 mm) rib modules. Therefore, when utilizing an Approved above-deck system with a mechanically fastened cover, select one with a cover fastener spacing greater than the 8 in. (203 mm) rib module, and reduce this fastener spacing to coincide with placement of the fastener into the deck top flanges (e.g., Approved 12 in. (305 mm) spacing is reduced to 8 in. (203 mm) spacing; Approved 18 in. (457 mm) spacing is reduced to 16 in. (406 mm) spacing). Refer to the use of steel roof decks throughout listings for details. Meets max Class 1-90 per deck securement and above deck components.

Deck: Versa-Dek® S and LS

Max Spans: 8 ft 3 in. (2.5 m) for 22 ga. (0.0295 in. [0.75 mm])
9 ft 4 in. (2.8 m) for 20 ga. (0.0358 in. [0.91 mm])
10 ft 10 in. (3.3 m) for 18 ga. (0.0474 in. [1.20 mm])
12 ft 3 in. (3.7 m) for 16 ga. (0.0598 in. [1.50 mm])

Deck: Versa-Dek® S and LS Acoustical

Max Spans: 8 ft 3 in. (2.5 m) for 22 ga. (0.0295 in. [0.75 mm])
9 ft 2 in. (2.8 m) for 20 ga. (0.0358 in. [0.91 mm])
10 ft 7 in. (3.2 m) for 18 ga. (0.0474 in. [1.20 mm])
11 ft 11 in. (3.6 m) for 16 ga. (0.0598 in. [1.50 mm])

Construction #1: Deck is secured to the structural supports spaced at the max center to center spans shown above, with the end joints butted, using the fasteners shown below or with minimum 5/8 in. (16 mm) diameter puddle welds placed at each bottom rib [average 6 1/8 in. (156 mm) o.c.]. Deck side laps are secured with ITW Buildex Tek 1, ICH Traxx/1 or Construction Fasteners 14x7/8 HWH Lap-SD, 10x1/2 HWH S/D or 12x3/4 HWH SP Stitch or SFS Stadler (all fasteners for use with 20 and 22 ga. [0.0358 and 0.0295 in. (0.91 and 0.75 mm)] thick deck) SL2-4.8x20, SL2-S-4.8x20, SL2-H15-6.3x22, SXL2-5.5x22, SD2-4.8x20 fasteners spaced at max 36 in. (914 mm) o.c. Side lap fasteners are offset approximately 0.5 in. (13 mm) from the centerline of the top rib so as not to interfere with the placement of the roof insulation screws. Min 2 in. (50 mm) thick polyisocyanurate insulation boards are placed over the deck with insulation

board edges bearing along the centerline of the deck top flange. To accomplish this the boards must be trimmed as follows: When 48x48 in. (1220x1220 mm) boards are used, each board must be saw trimmed to provide for a board size of approximately 48x42 – 7/8 in. (1220x1090 mm) and when 48x96 in. (1220x2440 mm) boards are used, each board must be saw trimmed to provide for a board size of approximately 48x91-7/8 in. (1220x2330 mm). The board is secured to the deck with the trimmed edge and its opposite parallel edge centered above and parallel to the top flange of the deck. Insulation is applied to the deck per proprietary using the same number of Approved fasteners as specified for the untrimmed board.

Fasteners: 1) Construction Fasteners 12x3 .4 HWH Impax (meets Class 1-75 at spans greater than 7 ft [2.1 m]), 12-24x7 .8 HWH SD, 12-24x1 1 .4 HWH Impax 45, 12x1 1 .4 HWH Impax 5 S/D. 2) Hilti ENK 14 S12, ENK 16 S12, ENKK, X-EDN 19-THQ12, ENP 2K-20-L15, X-EDNK 22-THQ12, EDN 16 P8, EDS 19 P10, EDS 22 P10, ENPH2-21-L-15, EDNK 20 P8TH, SDM 14 MX, EDN 19 MX, X EDNK 22 THQ12, EDN 16 MX, ENP 3-21 D12, ENS 21 D15, ESD 16 P8T, ESD 19 P8T, ENP 2-21 L-15, ENP 3-21 L-15, X EDN19 THQ 12. 3) ITW Buildex Teks 4, Teks 5, ICH Traxx/4, ICH Traxx/5, BX 12, BX 14. 4) Pneutek 31062, 31075, 32075, K31075, SDK32075, SDK42075, 32050, K33050, 42050, K43050, 32062, SD32062, SDK33062, 42062, SSSDK44062, SSSD44062, SDK32062, SDK42062, K32062, K42062, SDK43062, SDK44075, SDK44062, 65056, 65062, R65056, R65062, K65056, K65062, KR65056, KR65062, K45056, SDK61075, SDK63075, K64062, K64075, K66062, K66075, K66082. 5) SFS Stadler SD5-5.5x25 (meets Class 1-75 at spans greater than 7 ft [2.1 m]), SD5-H15-5.5x22, SD12-5.5x36, SD12-H15-5.5x32, SD8-5.5x25, SD4-5.5x25.

Construction #1a: Versa-Dek® 2.0 S and LS – A roof cover Approved for use with the insulation and steel deck is applied per proprietary listings. Meets Class 1-60/1-75/1-90 per deck securement and securement of the above deck components.

Construction #1b: Versa-Dek® 2.0 S and LS Acoustical –Nominal 3.0 pcf (48 kg/m³) fiberglass insulation, 4.5 in. (114 mm) wide x 2.0 in. (50 mm) thick is placed over continuous expanded metal mesh spacers within each rib opening. Minimum ½ in. (13 mm) Dens Deck is loose laid. Minimum 2.0 in. (50 mm) thick polyisocyanurate insulation Approved by FM Approvals are installed per construction #1, Insulation is fastened to the deck using Approved fasteners applied at the Approved density as specified in the proprietary listings. A single ply roof covering or a BUR roof covering, Approved for use with the insulation and steel deck is then applied per proprietary listings. Meets Class 1-60/1-75/1-90 per deck securement and securement of the above deck components.