ICC-ES Evaluation Report

ESR-5306

Reissued October 2024

This report also contains:

- CA Supplement

Subject to renewal October 2025

DIVISION: 03 00 00—CONCRETE Section: 03 41 00—Precast Structural Concrete	REPORT HOLDER: CLARK PACIFIC	EVALUATION SUBJECT: SPANCRETE PRESTRESSED DECK UNITS	

1.0 EVALUATION SCOPE

Compliance with the following codes:

- 2021, 2018, and 2015 *International Building Code*® (IBC)

Properties evaluated:

- Structural
- Fire resistance

2.0 USES

Spancrete Prestressed Deck Units are precast, hollow-core concrete sections designed in accordance with IBC Section 1901.2. The Spancrete units are intended to be used to form a continuous horizontal deck system for floors or roofs to resist vertical and horizontal loads.

3.0 DESCRIPTION

3.1 General:

Spancrete units are rectangular with multiple hollow cores extending the length of the unit. Two types of units are available, Standard and Ultralite. Ultralite units have larger open core areas compared to the Standard units. See Figures 1 and 2 for typical unit cross sections. The Standard unit is produced in thicknesses of 4, 6, 8, 10 and 12 inches (102, 152, 203, 254 and 305 mm), and the Ultralite in thicknesses of 8, 10 and 12 inches (203, 254 and305 mm). The 4-inch-thick (102 mm) units are available in widths of 40 and 48 inches (1016 and 1219 mm). All other thicknesses are available in widths of 40, 48 and 96 inches (1016, 1219 and 2438 mm).

3.2 Material:

Spancrete units are produced using zero-slump normalweight concrete mixtures and prestressing strands. The concrete is cast, extruded and cured at the manufacturing facility. After curing, the units are saw-cut to required lengths. Reinforcement consists entirely of longitudinal prestressing strands. The strands conform to ASTM A416 Grade 250 or Grade 270. The nominal strand diameters range from $^1/_4$ to $^1/_2$ inch (6 to 13 mm).

4.0 DESIGN AND INSTALLATION

4.1 Design:

4.1.1 General: Spancrete units for each individual project or use must be designed in accordance with the requirements of the project for span, dimension, loading and other conditions specific to the intended use. Design of Spancrete units must be according to rational methods of design and analysis of precast, prestressed concrete members in accordance with IBC Section 1901.2, which references ACI 318-19 (ACI 318-14 for the 2018 and 2015 IBC).

Spancrete elements are intended to be used to form a continuous horizontal deck system for floors or roofs to resist all applied vertical and horizontal loads, by grouting of keyways provided in the edge joints of the deck units. Suitably designed and detailed shear- and bearing-resisting elements must be used to prevent displacement in any direction, including separation or shearing at the joints along the edges of the units.

4.1.2 Vertical Loading:

4.1.2.1 With Bonded Topping Slab: The topping may be considered to act compositely with the Spancrete when designed in accordance with Section 16.4 of ACI 318. The nominal horizontal shear strength developed by the poured-in-place structural concrete topping and the Spancrete unit must be computed in accordance with Section 16.4.4 of ACI 318.

4.1.2.2 Without Bonded Topping Slab: The grouted keyways can develop a maximum nominal shear value of $40b_v d$ (lbf) for loads applied in a vertical direction normal to the Spancrete units.

4.1.3 Lateral Loading: Topping slabs cast over the Spancrete units may be designed as diaphragms in accordance with Sections 18.12.4.1 and 18.12.5.1, as applicable, and ACI 318 Section 18.12.6. Design of untopped Spancrete units as diaphragms must comply with ACI 318-19 Section 18.12.11.1.

4.1.4 Anchorage to Spancrete Units: Shear capacities for bolts grouted into the Spancrete unit cores must be determined in accordance with IBC Section 1901.3. Shear and tension capacities of power-actuated fasteners or other proprietary anchorage mechanisms must be determined in accordance with the evaluation report on the proprietary anchorage product.

4.1.5 Fire-resistance-rated Construction: Fire-resistance ratings for the Standard and Ultralite units based on testing are shown in Table 1. Alternatively, fire-resistance ratings may be calculated in accordance with IBC Section 722.2.2.

4.2 Installation:

Spancrete units must be delivered to the jobsite and erected into their final position in accordance with the manufacturer's installation instructions and the construction documents. Each unit is designed to fit tightly to the adjacent unit, but there may be a gap between the units in order to provide erection tolerances.

Grout used to fill keyways between adjacent edges of Spancrete units must comply with ASTM C476. Concrete topping must be cast and allowed to cure in accordance with the requirements of IBC Section 1901.2.

5.0 CONDITIONS OF USE:

The Spancrete Prestressed Deck Units described in this report comply with, or are suitable alternatives to what is specified in, those codes listed in Section 1.0 of this report, subject to the following conditions:

5.1 The shape and material of the units must be as described in this report.

5.2 The units and topping slabs must have adequate strength, determined in accordance with IBC Section 1901.2. Calculations and details supporting this determination must be submitted to the code official as required by the statutes in the jurisdiction where the units are to be erected.

5.3 Spancrete Prestressed Deck Units are manufactured under a quality control program with inspections by ICC-ES.

6.0 EVIDENCE SUBMITTED

Reports of structural tests, and of small- and full-scale fire tests in accordance with ASTM E119.

7.0 IDENTIFICATION

7.1 The ICC-ES mark of conformity, electronic labeling, or the evaluation report number (ICC-ES ESR-5306) along with the name, registered trademark, or registered logo of the report holder must be included in the product label.

7.2 In addition, the units are identified by their configuration as indicated in Figures 1 and 2, the project identification number and the plank identification number.

7.3 The report holder's contact information is the following:

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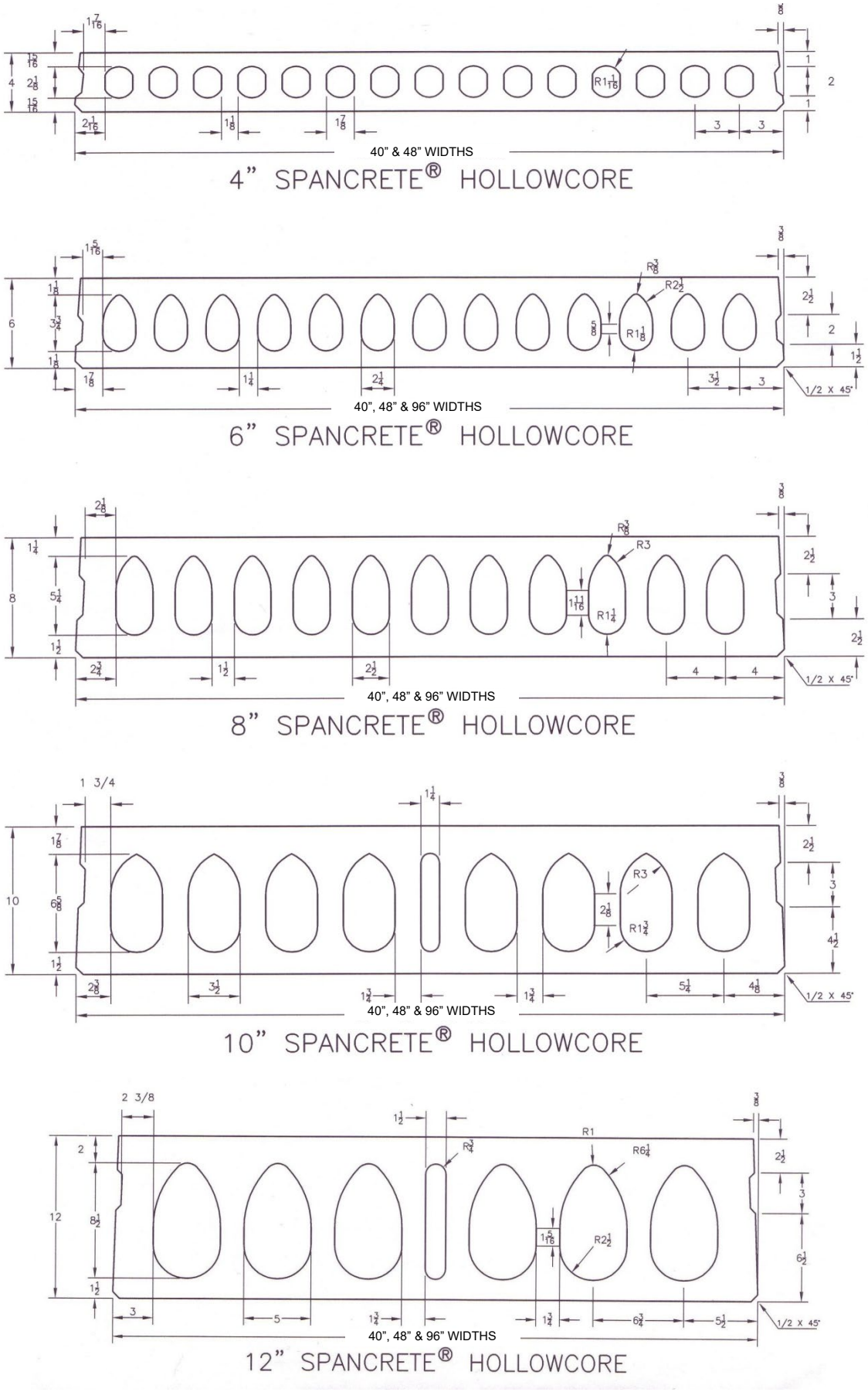
710 RIVERPOINT COURT
WEST SACRAMENTO, CALIFORNIA 95605
(800) 350-0306
www.clarkpacific.com
info@clarkpacific.com

TABLE 1—FIRE-RESISTANCE RATINGS FOR SPANCRETE PRESTRESSED DECK UNITS[1]

THICKNESS OF SPANCRETE UNIT (inches)	TOPPING REQUIRED (inches)	TIME PERIOD RATING (hours)	CONCRETE COVER ON STRAND (inches)
Siliceous Aggregate, Normalweight Concrete Cover on Strand			
6, 8, 10 & 12	None	1	$1\frac{1}{4}$
4	2	1	$1\frac{1}{4}$
8, 10 & 12	None	2	$1\frac{7}{8}$
Carbonate Aggregate, Normalweight Concrete Cover on Strand			
6, 8, 10 & 12	None	1	1
4	2	1	1
6	2	2	$1\frac{1}{2}$
8, 10 & 12	None	2	$1\frac{1}{2}$
8, 10 & 12	None	3	2
Lightweight Concrete Cover on Strand			
4	None	1	$\frac{3}{4}$
6, 8, 10 & 12	None	1	$\frac{3}{4}$
4 & 6	2	2	$1\frac{1}{8}$
8, 10 & 12	None	2	$1\frac{1}{8}$
6	2	3	$1\frac{1}{2}$
8, 10 & 12	None	3	$1\frac{1}{2}$
8, 10 & 12	2	4	2

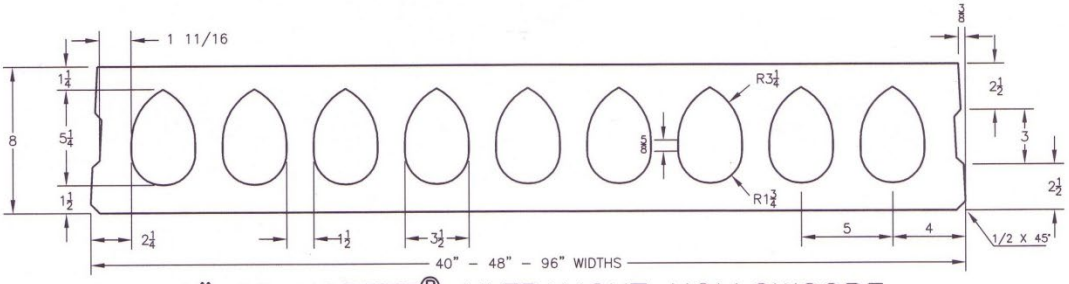
For **SI:** 1 in. = 25.4 mm.

[1]Fire-resistive rating for Ultralight slabs apply only to 8-, 10-, and 12-inch-thick units.

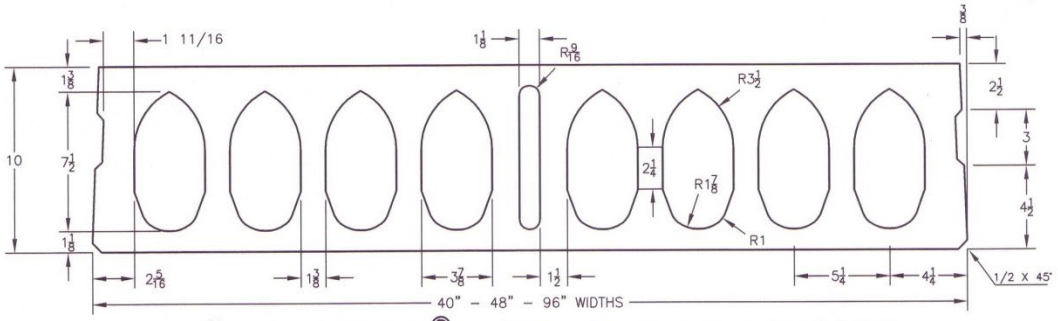


For **SI:** 1 in. = 25.4 mm.

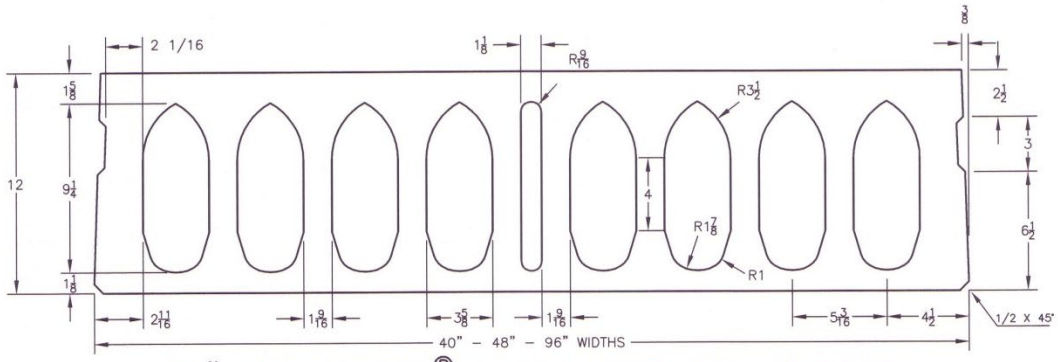
FIGURE 1—STANDARD SPANCRETE DECK UNITS



8" SPANCRETE® ULTRALIGHT HOLLOWCORE



10" SPANCRETE® ULTRALIGHT HOLLOWCORE



12" SPANCRETE® ULTRALIGHT HOLLOWCORE

For **SI:** 1 in. = 25.4 mm.

FIGURE 2—ULTRALITE SPANCRETE DECK UNITS

DIVISION: 03 00 00—CONCRETE
Section: 03 41 00—Precast Structural Concrete

REPORT HOLDER:

CLARK PACIFIC

EVALUATION SUBJECT:

SPANCRETE PRESTRESSED DECK UNITS

1.0 REPORT PURPOSE AND SCOPE

Purpose:

The purpose of this evaluation report supplement is to indicate that Spancrete Prestressed Deck Units, described in ICC-ES evaluation report ESR-5306, have also been evaluated for compliance with the codes noted below.

Applicable code edition*(s)*:

- *2022 California Building Code* (CBC)

For evaluation of applicable Chapters adopted by the California Office of Statewide Health Planning and Development (OSHPD) AKA: California Department of Health Care Access and Information (HCAI) and the Division of State Architect (DSA), see Sections 2.1.1 and 2.1.2 below.

2.0 CONCLUSIONS

2.1 CBC:

The Spancrete Prestressed Deck Units, described in Sections 2.0 through 7.0 of the evaluation report ESR-5306, comply with CBC Chapter 19, provided the design and installation are in accordance with the 2021 *International Building Code*® (IBC) provisions noted in the evaluation report and the additional requirements of CBC Chapters 16, 17 and 19, as applicable.

2.1.1 OSHPD: The applicable OSHPD Sections and Chapters of the CBC are beyond the scope of this supplement.

2.1.2 DSA: The applicable DSA Sections and Chapters of the CBC are beyond the scope of this supplement.

This supplement expires concurrently with the evaluation report, reissued October 2024.