

ICC-ES Evaluation Report

ESR-2381*

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This report is subject to re-examination in two years.

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DIVISION: 03—CONCRETE
Section: 03250—Post-Tensioning

REPORT HOLDER:

PRECISION SURE-LOCK®, INC.
704 WEST SIMONDS ROAD
SEAGOVILLE, TEXAS 75159
(972) 287-2390
www.precision-surelock.com

EVALUATION SUBJECT:

PRECISION SURE-LOCK® POST-TENSION ANCHORAGE AND COUPLING SYSTEM

1.0 EVALUATION SCOPE

Compliance with the following code:

2006 *International Building Code®* (IBC)

Property evaluated:

Structural

2.0 USES

The Precision SURE-LOCK® Post-Tension Anchorage and Coupling System is used as anchorages at fixed end, intermediate, and stressing end locations, and as couplers for unbonded, monostrand (single-strand), post-tensioning tendons in prestressed concrete designed in accordance with Chapter 18 of ACI 318, under the provisions of IBC Section 1901.2. The components of the system comply with Section 1908.1.6 of the IBC, and therefore may be used in structures assigned to Seismic Design Categories A through F.

3.0 DESCRIPTION

3.1 General:

The Precision SURE-LOCK® Post-Tension Anchorage System consists of ductile iron castings, steel wedges, and splice chuck couplers as described in Section 3.2. The Precision SURE-LOCK® System components are used with 1/2-inch-diameter (12.7 mm), seven-wire, low-relaxation steel strand conforming to ASTM A 416, Grade 270 LR. Refer to Figure 1 for illustrations of the anchor and coupler assembly components.

3.2 Precision SURE-LOCK® System Components:

3.2.1 SURE-LOCK® and SURE-LOCK® II Anchor Castings: The SURE-LOCK® and SURE-LOCK® II Anchor Castings are ductile iron castings complying with ASTM A 536, Grades 80-55-03 or 80-55-06, or SAE J434C, Grades

D5503 or D5506. Acceptable BHN range is 170 to 302. The anchors are used with either of the wedges described in Section 3.2.2.

3.2.2 Precision SURE-LOCK® Wedges: SURE-LOCK® 1/2" x 1.2 and 1/2" x 1.3 wedges are two-piece wedges which are 1.2 and 1.3 inches (31 and 33 mm) long, respectively, and are manufactured from steel conforming to ASTM A 108, Grade 12L14. The wedges are heat-treated according to the Precision SURE-LOCK® specification.

3.2.3 Precision SURE-LOCK® and SURE-LOCK® II Splice Chuck Couplers: The couplers are comprised of a 2-inch-diameter (51 mm) threaded connecting tube of ASTM A 513/520 DOM steel tubing (Grade 1026), threaded end chucks (caps) of ASTM A 108, C1045 steel, and wedges described in Section 3.2.2. The SURE-LOCK® coupler is nominally 5 1/2 inches (140 mm) long and the SURE-LOCK® II coupler is nominally 4 1/2 inches (114 mm) long. Both use the 1.3 wedges. The couplers also contain a plastic spacer, springs, and rings as temporary positioning aids.

4.0 INSTALLATION AND DESIGN

4.1 General:

The Precision SURE-LOCK® Post-Tension Anchorage System components must be installed in accordance with the third edition of the Post-Tensioning Institute's Field Procedures Manual for Unbonded Tendons (PTI Field Procedures Manual) and Chapter 18 of ACI 318. The Precision SURE-LOCK® Post-Tension Anchorage System components must only be used in combination with other Precision SURE-LOCK® components described in this report. The resulting prestressed concrete must be designed in accordance with Chapter 18 of ACI 318, with the anchorage zones designed in accordance with Section 18.14 of ACI 318.

4.2 Special Inspection:

Special inspection must be provided for the installation and stressing of the tendons, in accordance with Section 1704.4 of the IBC. The special inspector's duties include verification of concrete compressive strength at the time the tendons are stressed; checking compliance with the design engineer's requirements, including prestressing instructions; and checking elongation and jacking force parameters, and the sequence of tendon stressing, as well as end and edge distance and tendon spacing dimensions.

5.0 CONDITIONS OF USE

The Precision SURE-LOCK® Post-Tension Anchorage System described in this report complies with, or is a suitable alternative to what is specified in, the code indicated in Section 1.0 of this report, subject to the following conditions:

***Corrected November 2009**

- 5.1 The materials, fabrication and installation must comply with this report and the manufacturer's instructions (PTI Field Procedures Manual). In the event of a conflict between this report and the manufacturer's instructions, this report governs.
- 5.2 Where fire-resistance-rated construction is required, the minimum concrete cover on the tendons, anchor castings, wedges, and couplers must comply with IBC Table 720.1(1), Item 4-1.1 or 4-1.2, as applicable.
- 5.3 The design and installation of the anchor castings, wedges, and couplers, and the prestressed concrete, must be in accordance with Section 4.0 of this report.
- 5.4 Special inspection must be provided in accordance with Section 4.2 of this report.

6.0 EVIDENCE SUBMITTED

Data in accordance with the ICC-ES Acceptance Criteria for Post-tensioning Anchorages and Couplers of Prestressed Concrete (AC303), dated October 2006.

7.0 IDENTIFICATION

Precision SURE-LOCK® Post-Tension Anchorage System components are identified by markings and labeling. The SURE-LOCK® and SURE-LOCK® II Anchor Castings are identified by embossments with the product name designation and date lot codes (see Figure 1). Packages of the Precision SURE-LOCK® and SURE-LOCK® II anchor castings, wedges and splice chuck couplers are labeled with the company name (Precision SURE-LOCK®) and address, part designation and tracing codes, and the evaluation report number (ESR-2381).

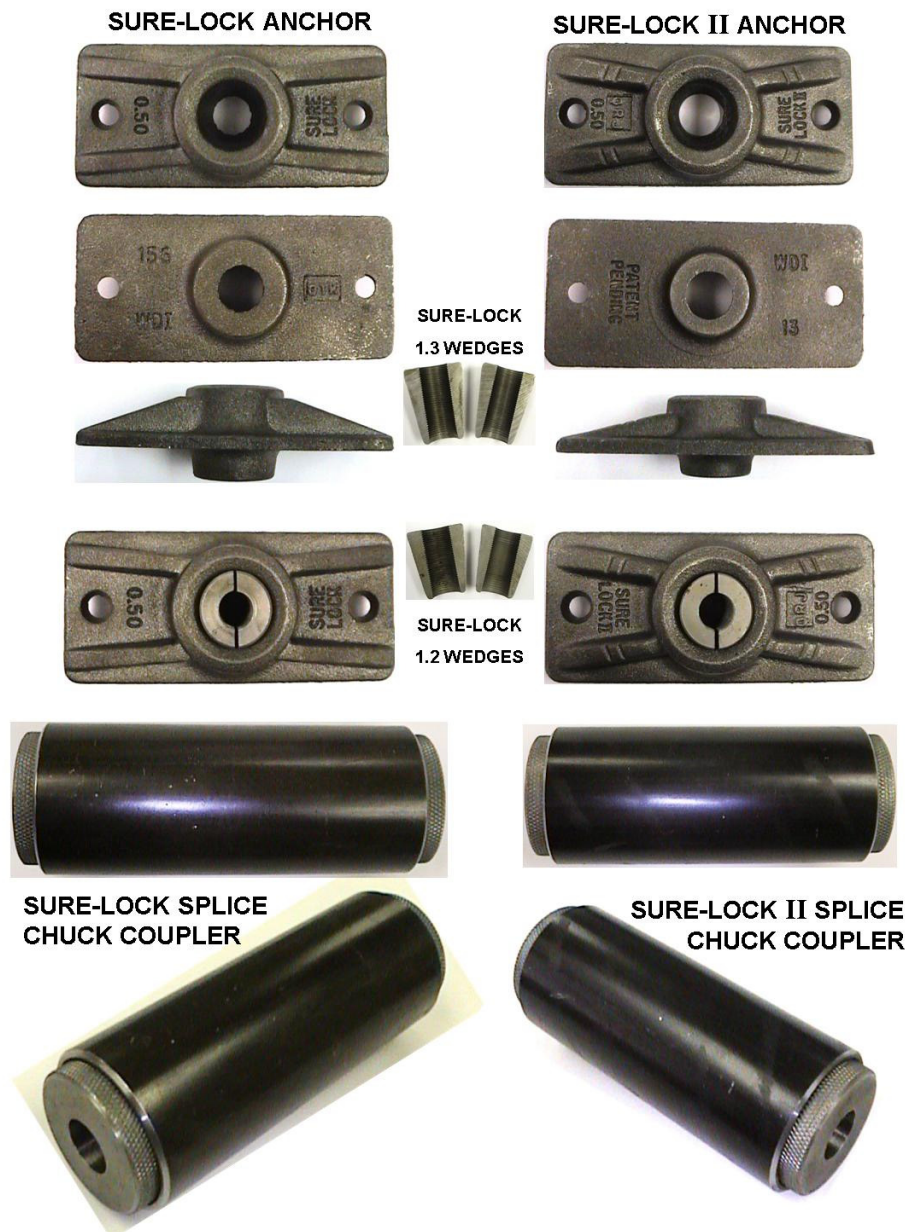


FIGURE 1—PRECISION SURE-LOCK® POST-TENSION ANCHORAGE SYSTEM COMPONENTS