ICC-ES Evaluation Report

ESR-4490

Reissued August 2024

This report also contains:

- CBC Supplement

Subject to renewal August 2025

DIVISION: 03 00 00—CONCRETE Section: 03 38 00—Post-Tensioned Concrete	REPORT HOLDER: PT ATLAS MANUFACTURING	EVALUATION SUBJECT: PT ATLAS POST-TENSION ANCHORAGE AND COUPLING SYSTEMS	

1.0 EVALUATION SCOPE

Compliance with the following code:

■ 2018, 2015, 2012 and 2009 *International Building Code*® (IBC)

Property evaluated:

■ Structural

2.0 USES

2.1 General Use: The PT Atlas Post-Tension Anchorage and Coupling Systems are 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 25 of ACI 318-14 (Chapter 18 of ACI 318-11 or -08 for the 2012 and 2009 IBC, respectively), under the provisions of IBC Section 1901.2. The components of the system may be used in structures assigned to Seismic Design Categories A through F.

2.2 Slab on Ground Foundations on Expansive Soils: The PT Atlas Post-Tension Anchorage and Coupling Systems are also 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 slab-on-ground foundations on expansive soils regulated under IBC Section 1808.6.2; and IBC Sections 1904 and 1907 (Sections 1904 and 1910 in the 2009 IBC).

3.0 DESCRIPTION

3.1 General: The PT Atlas (PTA) Post-Tension Anchorage and Coupling Systems consist of AN5S (0.5S) anchorage system (Section 3.2), AN5M (0.5M) anchorage system (Section 3.3), and SC50OTU splice chuck assembly (coupler) (Section 3.4).

3.2 PTA 0.5S Anchorage System: The PTA 0.5S anchorage system consists of ductile iron anchor casting and two-piece steel wedges, as described in Sections 3.2.1 and 3.2.2. The PTA 0.5S anchorage system components are used with $^1/_2$-inch-diameter (12.7 mm), seven-wire, low-relaxation steel strand conforming to ASTM A416, Grade 270 LR. PTA 0.5S anchorage system complies with ACI 423.7-07, which required by ACI 318-14 Sections 25.8.1, 25.8.3 and 25.9.3.1(a) (ACI 318-11 or -08 Sections 18.21.1 and 18.14.1). Refer to Figure 1 for an illustration of the PTA 0.5S anchorage system.

3.2.1 PTA 0.5S Anchor Casting: The PTA 0.5S anchor castings are ductile iron castings complying with ASTM A536, Grades 80-55-03 or 80-55-06, or SAE J434C, Grades D5503 or D5506. Acceptable Brinell hardness (BHN) range is 170 to 302. The anchors are used with PT Atlas wedges described in Section 3.1.2. See Figure 1.

3.2.2 PTA WG50122 0.5 Wedges: PTA 0.5 ½-inch-diameter by 1.2-inch-long (12.7 mm by 31 mm) wedges are two-piece wedges and are manufactured from steel conforming to ASTM A108, Grade 12L14 or 1215, and heat-treated to PT Atlas's Wedge System Specification.

3.3 PTA 0.5M Anchorage System: The PTA 0.5M anchorage system consists of ductile iron anchor castings, and two-piece steel wedges, as described in Sections 3.3.1 and 3.3.2. The PTA 0.5M anchorage system components are used with $^1/_2$-inch-diameter (12.7 mm), seven-wire, low-relaxation steel strand conforming to ASTM A416, Grade 270 LR. PTA 0.5M anchorage system complies with ACI 423.7-07, which required by ACI 318-14 Sections 25.8.1, 25.8.3 and 25.9.3.1(a) (ACI 318-11 or -08 Sections 18.21.1 and 18.14.1). Refer to Figure 2 for an illustration of the PTA 0.5M anchorage system.

3.3.1 PTA 0.5M Anchor Casting: The PTA 0.5M anchor castings are ductile iron castings manufactured to material specifications SAE J434C, Grade D5506 or Grade D5503, or ASTM A536, Grade 80-55-06 or Grade 80-55-03, with a Brinell hardness (BHN) in either grade of 170-302. The anchor castings may also be available with the proprietary cover. See Figure 2.

3.3.2 PTA WG50122 0.5 Wedges: PTA 0.5 ½-inch-diameter by 1.2-inch-long (12.7 mm by 31 mm) wedges are two-piece wedges and are manufactured from steel conforming to ASTM A108, Grade 12L14 or 1215, and heat-treated to PT Atlas's Wedge System Specification.

3.4 SC50OTU SPLICE CHUCK ASSEMBLY: The SC50OTU splice chuck assembly composed of components as described in Sections 3.4.1 through 3.4.4. Figure 3 provides an illustration of the assembly.

3.4.1 Threaded Connecting Tube: The connecting tubes are manufactured from 2-inch-diameter (50.8 mm) ASTM A513, DOM (Drawn on Mandrel) Grade 1020/1026 steel tubing.

3.4.2 Plastic Spring Retainer and Springs: The Atlas SC50OTU coupler contains a plastic spacer and springs as temporary internal positioning devices to align the wedges for ease of installation.

3.4.3 PTA WG50122RM Wedges: The two-piece wedges are manufactured from steel conforming to ASTM A108, Grade 12L14 or 1215, and heat-treated to PT Atlas's Wedge System Specification.

3.4.4 Threaded End Caps: The end caps are manufactured from steel conforming to ASTM A108, Grade C1045.

4.0 DESIGN AND INSTALLATION

4.1 General Use: The PT Atlas (PTA) Post-Tension Anchorage and Coupling System components and the SC50OTU splice chuck assembly (coupler) must be installed in accordance with the manufacturer's published installation instructions, the Post-Tensioning Institute's Field Procedures Manual for Unbonded Tendons (PTI M10.3) and Chapter 25 of ACI 318-14 (Chapter 18 of ACI 318-11 or -08). The manufacturer's installation instructions must be available at the jobsite at all times during the installation. The resulting prestressed concrete must be designed in accordance with Chapter 25 of ACI 318-14 (Chapter 18 of ACI 318-11 or -08), with the anchorage zones designed in accordance with ACI 318-14 Sections 25.8.1, 25.8.3 and 25.9.3.1(a) (Sections 18.13 and 18.14 of ACI 318-11 or -08).

4.2 Slab on Ground Foundations on Expansive Soils: The PT Atlas (PTA) Post-Tension Anchorage and Coupling System **components** and the SC50OTU splice chuck assembly (coupler) must be installed in accordance with the manufacturer's published installation instructions, the PTI Construction and Maintenance Manual for PT Slab-on-Ground Foundations (PTI DC10.2). The manufacturer's installation instructions must be available at the jobsite at all times during the installation. The resulting prestressed concrete must be designed in accordance with IBC Section 1808.6.2; and the 2018, 2015, 2012 IBC Sections 1904 and 1907 (Sections 1904 and 1910 in the 2009 IBC).

4.3 Special Inspection:

Special inspection must be provided for the installation and stressing of the tendons, in accordance with Section 1705.3.3 of the 2018, 2015 and 2012 IBC or Section 1704.4 of the 2009 IBC, as applicable. 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 PT Atlas (PTA) Post-Tension Anchorage and Coupling System and the SC50OTU splice chuck assembly described in this report comply with, or are a suitable alternative to what is specified in, the code indicated in Section 1.0 of this report, subject to the following conditions:

5.1 The materials, fabrication and installation must comply with this report and the manufacturer's installation instructions (or 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 Table 721.1(1), item 4-1.1 or 4-1.2, of the 2018, 2015 and 2012 IBC; or IBC Table 720.1(1), Item 4-1.1 or 4-1.2 of the 2009 IBC, 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 Use of encapsulated tendons has not been evaluated and is outside the scope of the evaluation report. Reports of tests of the encapsulated tendons must be provided when required by the authority having jurisdiction.

5.5 Special inspection must be provided in accordance with Section 4.3 of this report.

5.6 The PT Atlas (PTA) Post-Tension Anchorage and Coupling System and the SC50OTU splice chuck assembly are assembled at PT Atlas Manufacturing facility located in Seagoville, Texas under an approved quality control system with inspections by ICC-ES.

6.0 EVIDENCE SUBMITTED

Data in accordance with the ICC-ES Acceptance Criteria for Post-tensioning Anchorages and Couplers of Prestressed Concrete (AC303), dated April 2011 (editorially revised August 2020).

7.0 IDENTIFICATION

7.1 Each PT Atlas Anchor Casting is identified by embossments with the product name designation and date lot codes (see Figures 1 and 2). Packages of the PT Atlas anchor castings, wedges and splice chuck couplers are labeled with the report holder's name (PT Atlas Manufacturing) and address, part designation and tracing codes, and the evaluation report number (ESR-4490).

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

PT ATLAS MANUFACTURING
712 WEST SIMONDS ROAD, SUITE A
SEAGOVILLE, TEXAS 75159
(972) 287-1420
www.ptatlasmfg.com

FIGURE 1—P.T. ATLAS AN5S (0.5S) POST TENSION ANCHOR WITH A 1.2-IN TWO-PIECE WEDGE

Non-covered Anchor Casting

Covered Anchor Casting

FIGURE 2—P.T. ATLAS AN5M (0.5M) POST TENSION ANCHOR WITH A 1.2-IN TWO-PIECE WEDGE

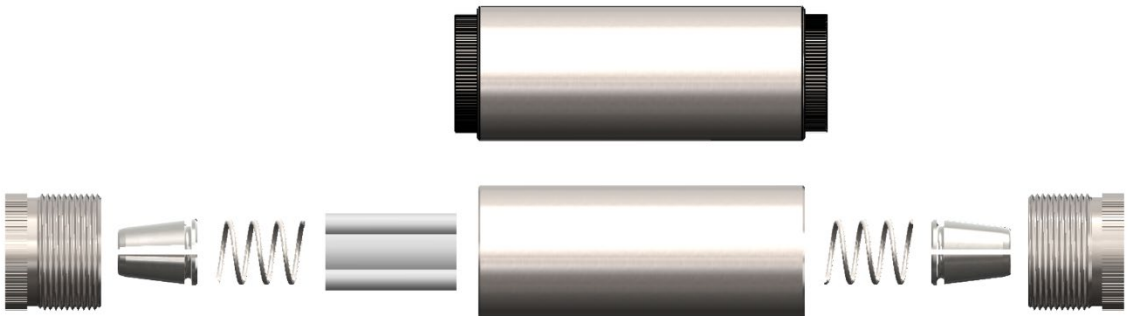

FIGURE 3—P.T. ATLAS SC50OTU SPLICE CHUCK ASSEMBLY

DIVISION: 03 00 00—CONCRETE
Section: 03 38 00—Post-Tensioned Concrete

REPORT HOLDER:

PT ATLAS MANUFACTURING

EVALUATION SUBJECT:

PT ATLAS POST-TENSION ANCHORAGE AND COUPLING SYSTEMS

1.0 REPORT PURPOSE AND SCOPE

Purpose:

The purpose of this evaluation report supplement is to indicate that PT Atlas Post-Tension Anchorage and Coupling Systems, described in ICC-ES evaluation report ESR-4490, have also been evaluated for compliance with the code noted below.

Applicable code edition:

2019 *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 PT Atlas Post-Tension Anchorage and Coupling Systems, described in Sections 2.0 through 7.0 of the evaluation report ESR-4490, comply with CBC Chapter 19, provided the design and installation are in accordance with the 2018 *International Building Code*® (IBC) provisions noted in the evaluation report and the additional requirements of CBC Chapters 17, 18 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 August 2024.