

# ICC-ES Evaluation Report

**ESR-5183**

Reissued December 2023

This report also contains:

Revised April 2024


-LAEBC Supplement

Subject to renewal December 2024

-CEBC Supplement

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<p><b>DIVISION: 04 00 00 - MASONRY</b></p> <p><b>Section: 04 05 19.16 – Masonry Anchors</b></p>	<p><b>REPORT HOLDER:</b></p> <p><b>TERREMOTO LTD (dba PYTHON FASTENERS)</b></p>	<p><b>EVALUATION SUBJECT:</b></p> <p><b>PYTHON C AND PYTHON MT URM SCREW ANCHORS</b></p>	
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## 1.0 EVALUATION SCOPE

**Compliance with the following codes:**

- 2024, 2021 and 2018 [International Existing Building Code® \(IEBC\)](#)

For evaluation for compliance with codes adopted by the [Los Angeles Department of Building and Safety \(LADBS\)](#), see [ESR-5183 LAEBC Supplement](#).

**Property evaluated:**

- Structural

## 2.0 USES

The Python C and Python MT URM screw anchors are used as post installed connections for URM wall anchorages and URM element strengthening applications, to resist short-term tension and shear loads imposed by seismic or wind. The URM screw anchors are also used as connections for URM wall veneer strengthening and restraining applications.

The URM screw anchors are alternatives to “New wall anchors” described in Section A107.4 of Appendix A of the IEBC.

## 3.0 DESCRIPTION

### 3.1 Python C URM screw anchor:

The Python C URM screw anchor is a nominal ¼ - inch (6 mm) shank diameter, heat treated, carbon steel anchor, with a spiral threaded pitch and an unthreaded mid-section, available in a standard length of 9.45-inches (240 mm). The anchor has an electro-galvanized zinc-nickel coating. The Python C URM screw anchor is illustrated in [Figures 1](#) and [2](#).

### 3.2 Python MT URM screw anchor:

The Python MT URM screw anchor is a nominal 5/16 - inch (8 mm) shank diameter, heat treated, carbon steel anchor, with a spiral threaded pitch throughout the anchor’s body, available in three lengths: 6.3-inches, 9.1-inches, and 13.4-inches (160 mm, 230 mm, and 340 mm). The anchor has an electro-galvanized zinc-nickel coating. The Python MT URM screw anchor is illustrated in [Figures 1](#) and [2](#).

### 3.3 Unreinforced Masonry:

The existing unreinforced masonry walls with clay bricks may be single, double, or triple wythes as defined in the IEBC. Unreinforced masonry walls with ungrouted concrete blocks must be as defined in the IEBC. The existing unreinforced masonry wall average in-place mortar shear strength must be no less than 30 psi (207 kPa) net.

## 4.0 DESIGN AND INSTALLATION

**4.1 Design:** Anchors described in this report provide tension and shear loads for designs based on allowable stress design (working stress design) as indicated in [Tables 1, 2 and 3](#). The anchors are intended to resist only short-term loads imposed by wind or earthquake.

Allowable shear and tension loads may be combined in accordance with the following equation:

$$[P_s/P_t] + [V_s/V_t] \leq 1.0$$

where:

$P_s$  = Applied service tension load.

$P_t$  = Allowable tension load.

$V_s$  = Applied service shear load.

$V_t$  = Allowable shear load.

**4.2 Installation:** URM screw anchors must be installed in accordance with this report and the manufacturer's published installation instructions (MPII) as represented in [Figures 3 through 7](#). The drill bit size, hole diameter, embedment depth, spacing, edge distance and base material must comply with the requirements of this report. For impact drivers used to tighten URM screw anchors, the maximum torque capacity of the impact driver must be 1550 in-lbf. The anchors must be installed under special inspection in accordance with Section 4.4 of this report.

### 4.3 Field Tests:

- a. Tests for in-place mortar shear strength of the building must be conducted in accordance with 2024, 2021 or 2018 Section A106.2.3 of the IEBC. In-place mortar shear strengths must indicate a minimum mortar strength of 30 psi (275 kPa).
- b. Anchors resisting tension forces, or a combination of tension and shear forces must be tested in accordance with Section A107.4 of the IEBC. The test report must include:
  1. Test location(s)
  2. Brick/mortar/concrete block condition
  3. URM screw anchor movement/elongation
  4. Embedment depth and masonry wall thickness
  5. Applied load, loading procedure, load increments, and rate of loading.

**4.4 Special Inspection:** Periodic inspection and field direct-tension tests must be conducted in accordance with Section A107.4 and A107.5.1 of the IEBC, respectively, with modification to Section A107.5.1 of the IEBC as follow:

The test apparatus must be supported by the URM element. URM screw anchors must be subject to a direct tension load of not less than 2.5 times the allowable design load for 5 minutes without noticeable deformation or damage to the URM screw anchors. The field direct-tension test requirements and methods must be specified by the registered design professional and submitted to the code official for approval.

## 5.0 CONDITIONS OF USE:

The Python C and Python MT URM screw anchors described in this report comply with, or are a suitable alternative to what is specified in, those codes listed in Section 1.0 of this report, subject to the following conditions:

- 5.1** Use and installation must be as set forth in this evaluation report and the manufacturer's printed installation instructions (MPII) illustrated in [Figures 3 to 7](#) of this report. In case of conflict, this report governs.
- 5.2** Calculations and details, justifying the capacity of the URM elements to resist the demand loads from the URM screw anchors must be submitted to the code official for approval. The calculations and details must include a complete load path as part of the component design. The calculations and details must be prepared by a registered design professional where required by the statutes of the jurisdiction in which the project is to be constructed.

- 5.3 URM screw anchors must be designed by the registered design professional as single screw. Unless reduction factors for reduced edge distances are applied as indicated in [Tables 1, 2 or 3](#), the URM screw anchors resisting shear only must have with a minimum spacing and edge distance of 12-inches (30.48 cm) and the URM screw anchors resisting tension, or combined tension and shear must have a minimum spacing and edge distance of 16-inches (40.64 cm).
- 5.4 The in-place mortar shear strength of the building must be at least equal to the value published in the evaluation report under Section 3.3 and also comply with requirements in IEBC Section A106.2.3.6 (2024 or 2021 IEBC), or Section A106.2.3.5 (2018 IEBC).
- 5.5 The URM screw anchors are limited to dry, interior locations.
- 5.6 The URM screw anchors are used to resist short-term loading due to wind or seismic forces under the IEBC.
- 5.7 URM screw anchors, URM element and URM wall veneer configurations included in this evaluation report must meet or exceed the member parameters described in accordance with Section 3.0 of this report.
- 5.8 URM screw anchors must be installed under special inspection in accordance with Section 4.4 of this evaluation report. The URM screw anchors may be backed out of one full turn maximum and retightened for the direct-tension test described in Section 4.4 of this evaluation report.
- 5.9 The URM screw anchor allowable loads must be limited to the allowable values for existing materials in accordance with Table A108.1(2) of the IEBC (refer to Table A108.1(2) footnotes 'e' and 'f' of the IEBC to determine allowable values).
- 5.10 URM screw anchors must not be installed in URM elements constructed using stack bond pattern, and its evaluation is outside the scope of this criteria.
- 5.11 URM screw anchors are installed in holes predrilled with a carbide-tipped masonry drill bit complying with ANSI B212.15. Holes must be drilled using a rotary drill, or a rotary hammer drill set on "rotation only" (non-impact). Hammer action tools must not be used for drilling holes or for tightening URM screw anchors.
- 5.12 The Python C and Python MT URM screw anchors are manufactured under a quality control program with inspections by ICC-ES.

## 6.0 EVIDENCE SUBMITTED

- 6.1 Data in accordance with the [ICC-ES Acceptance Criteria for 5/16-in \(8mm\) diameter and smaller unreinforced masonry \(URM\) \(AC545\)](#), dated February 2023 and editorially revised November 2023.
- 6.2 Quality control documentation.

## 7.0 IDENTIFICATION

- 7.1 The ICC-ES mark of conformity, electronic labeling, or the evaluation report number (ICC-ES ESR-5183) 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 Python C and Python MT URM screw anchors are identified with the URM screw anchor size and length on the packaging labels.
- 7.3 The report holder's contact information is the following:

**TERREMOTO LTD (dba PYTHON FASTENERS)**  
**100 N. HOWARD ST. Ste R**  
**SPOKANE, WA 99201**  
**(206) 841-8745**  
<https://www.pythonfasteners.com>  
[info@pythonfasteners.com](mailto:info@pythonfasteners.com)

TABLE 1 – ALLOWABLE TENSION AND SHEAR OF PYTHON C IN UNREINFORCED BRICK MASONRY WALL APPLICATIONS<sup>2,3</sup>

Location	Embedment <sup>1</sup> , in (mm)	Mortar Shear Strength = 30 psi (0.2 MPa)		Mortar Shear Strength ≥ 48 psi (0.3 MPa)	
		Tension, lbf (kN)	Shear, lbf (kN)	Tension, lbf (kN)	Shear, lbf (kN)
Brick Face	2 (50)	145 <sup>4</sup> (0.6)	275 <sup>4</sup> (1.2)	235 <sup>4</sup> (1.0)	435 <sup>4</sup> (1.9)
	2.75 (70)	300 (1.3)	-	480 (2.1)	-
Mortar Joint	2 (50)	80 <sup>4</sup> (0.4)	195 <sup>4</sup> (0.9)	125 <sup>4</sup> (0.6)	315 <sup>4</sup> (1.4)
	2.75 (70)	125 (0.6)	-	200 (0.9)	-

For SI: 1 inch = 25.4 mm, 1 lbf = 4.45 N, 1 psi = 6.89 Pa.

1. Embedment of anchor into substrate.
2. Interpolation between mortar shear strengths is allowed.
3. Values are based on a Factor of Safety of 5.
4. For edge distances less than 12-in (305 mm) for shear loading and 16-in (406 mm) for tension or combined tension and shear loading, the following reduction factors must be applied where the edge distance is no less than 6 1/8-inches (155mm):
 

a. Allowable shear loads	0.8
b. Allowable tension (or combined shear and tension) loads	1.0

TABLE 2 – ALLOWABLE TENSION AND SHEAR OF PYTHON MT IN UNREINFORCED BRICK MASONRY WALL APPLICATIONS<sup>2,3</sup>

Location	Embedment <sup>1</sup> , in (mm)	Mortar Shear Strength = 30 psi (0.2 MPa)		Mortar Shear Strength ≥ 48 psi (0.3 MPa)	
		Tension, lbf (kN)	Shear, lbf (kN)	Tension, lbf (kN)	Shear, lbf (kN)
Brick Face	2 (50)	235 <sup>4</sup> (1.0)	510 <sup>4</sup> (2.3)	375 <sup>4</sup> (1.7)	815 <sup>4</sup> (3.6)
	2.75 (70)	300 (1.3)	-	480 (2.1)	-
	4.5 (115)	660 (3.0)	590 (2.6)	1060 (4.7)	940 (4.2)
	6.5 (165)	705 (3.1)	-	1135 (5.0)	-
	8 (200)	875 <sup>4</sup> (3.9)	855 <sup>4</sup> (3.8)	1400 <sup>4</sup> (6.2)	1370 <sup>4</sup> (6.1)
	10 (250)	1295 (5.8)	-	2075 (9.2)	-
Mortar Joint	2 (50)	95 <sup>4</sup> (0.4)	255 <sup>4</sup> (1.1)	150 <sup>4</sup> (0.7)	410 <sup>4</sup> (1.8)
	4.5 (115)	410 (1.8)	450 (2.0)	650 (2.9)	720 (3.2)
	8 (200)	590 <sup>4</sup> (2.6)	710 <sup>4</sup> (3.2)	940 <sup>4</sup> (4.2)	1140 <sup>4</sup> (5.1)
	10 (250)	1035 (4.6)	-	1665 (7.4)	-

For SI: 1 inch = 25.4 mm, 1 lbf = 4.45 N, 1 psi = 6.89 Pa.

1. Embedment of anchor into substrate.
2. Interpolation between mortar shear strengths is allowed.
3. Values are based on a Factor of Safety of 5.
4. For edge distances less than 12-in (305 mm) for shear loading and 16-in (406 mm) for tension or combined tension and shear loading, the following reduction factors must be applied where the edge distance is no less than 6 1/8-inches (155mm):
 

a. Allowable shear loads:	1.0
b. Allowable tension (or combined shear and tension) loads	0.6

TABLE 3 – ALLOWABLE TENSION AND SHEAR OF PYTHON MT IN UNGROUTED CONCRETE MASONRY BLOCK WALL APPLICATIONS<sup>2,3,5</sup>

Location	Embedment <sup>1</sup> , in (mm)	Mortar Shear Strength = 30 psi (0.2 MPa)		Mortar Shear Strength ≥ 48 psi (0.3 MPa)	
		Tension, lbf (kN)	Shear, lbf (kN)	Tension, lbf (kN)	Shear, lbf (kN)
Face Shell	1.25 (32)	150 (0.7)	200 (0.9)	240 (1.1)	315 (1.4)
	1.25 (32) + 3/8 (10) <sup>4</sup>	190 (0.9)	255 (1.1)	315 (1.4)	410 (1.8)

For SI: 1 inch = 25.4 mm, 1 lbf = 4.45 N, 1 psi = 6.89 Pa.

1. Embedment of anchor into substrate.
2. Interpolation between mortar shear strengths is allowed.
3. Values are based on ungrouted and unreinforced concrete masonry walls and a Factor of Safety of 5.
4. Anchor is installed through front face shell with a minimum embedment of 3/8 in in the rear face shell.
5. For edge distances less than 12-in (305 mm) for shear loading and 16-in (406 mm) for tension or combined tension and shear loading, the following reduction factors must be applied where the edge distance is no less than 6 1/8-inches (155mm):
 

c. Allowable shear loads where embedment is less than or equal to 1.25 in (32mm):	1.0
d. Allowable shear loads where embedment is greater than 1.25 in (32mm):	0.95
e. Allowable tension (or combined shear and tension) loads where embedment is less than or equal to 1.25 in (32mm):	1.0
f. Allowable tension (or combined shear and tension) loads where embedment is greater than 1.25 in (32mm):	0.8

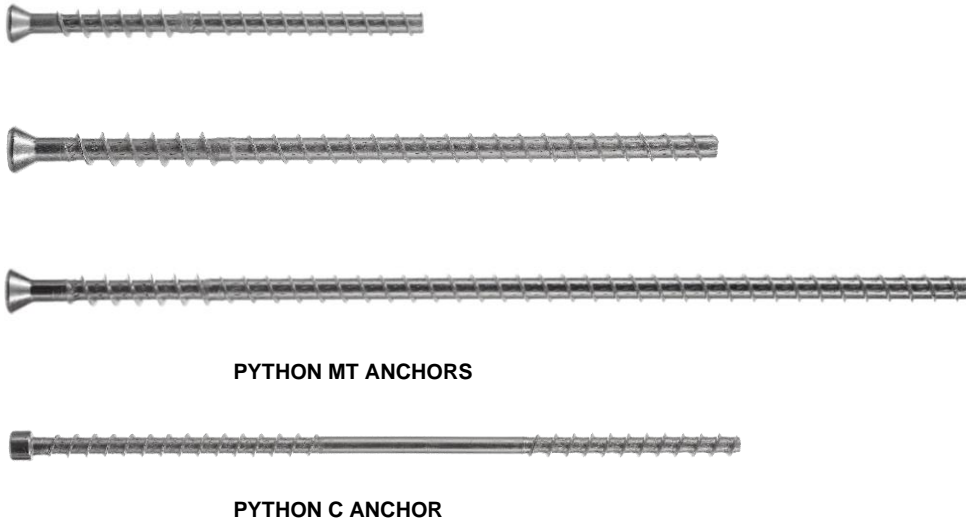


FIGURE 1—PYTHON URM SCREW ANCHORS

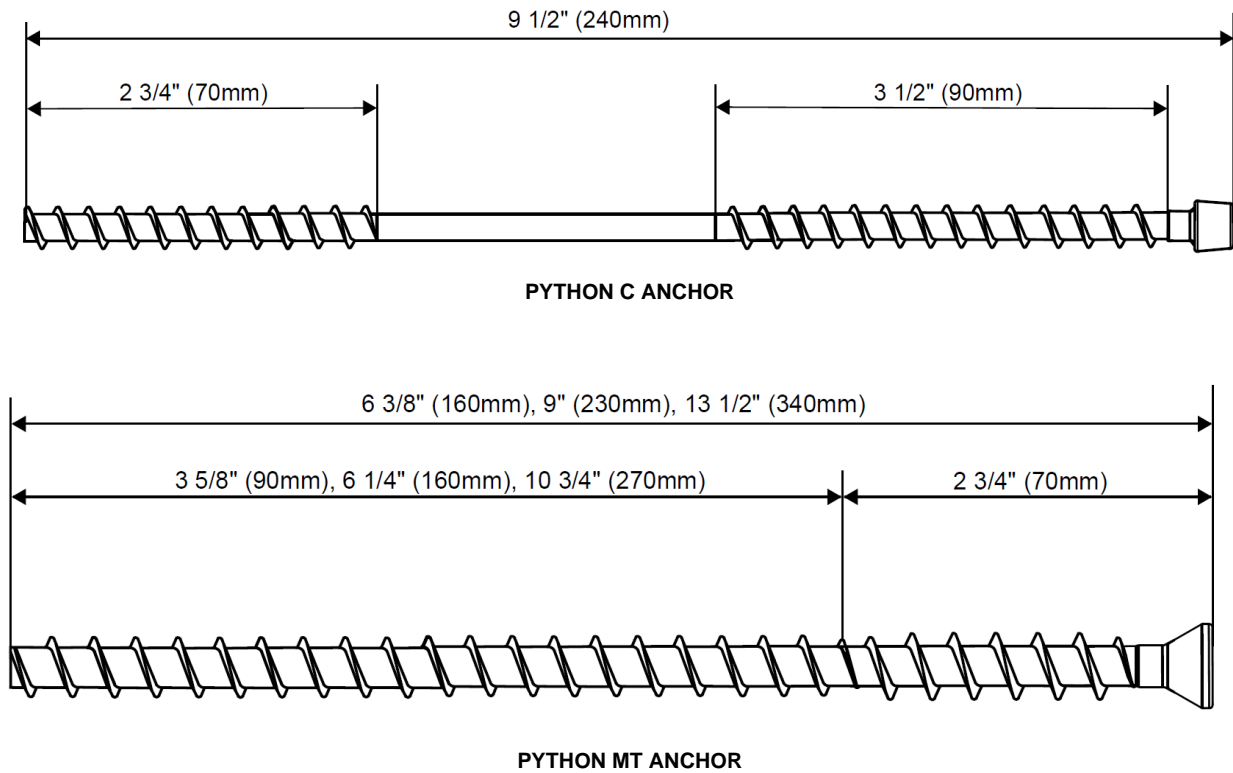
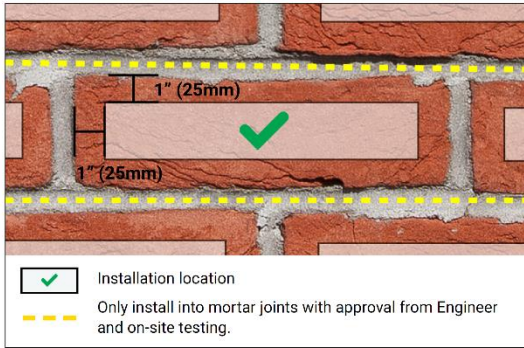


FIGURE 2—PYTHON URM SCREW ANCHOR DIMENSIONS

# INSTALLATION OF PYTHON C INTO CAVITY WALLS OR VENEERS



**01** Mark the location for screw installation on the brick, at least 1" (25mm) from the brick edge.



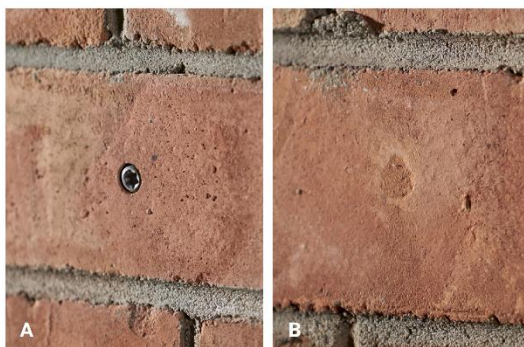
**02** Drill an approx. 10" (250mm) deep pilot hole with a 6mm diameter PYTHON masonry drill bit and rotary only drill.



**03** To countersink the screw head, drill a 1/4" (6mm) deep hole with a 7/16" (10mm) diameter masonry drill bit and rotary only drill.



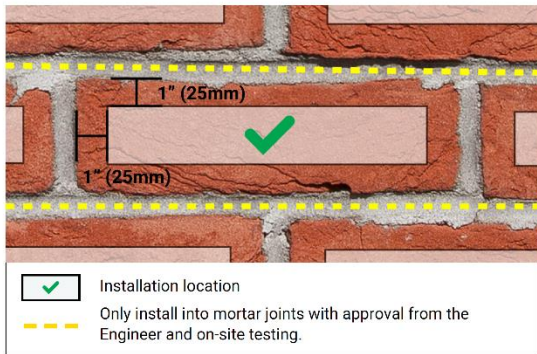
**05** Install the PYTHON C using a TORX T40 bit and impact driver.



**06** A. Leave head exposed. Or;  
B. Cover head with colour matched putty as per architectural specification.

**FIGURE 3 – PYTHON C MANUFACTURER’S PUBLISHED INSTALLATION INSTRUCTIONS FOR CAVITY WALLS OR VENEERS (MPII)**

# PYTHON MT: TIMBER TO MASONRY



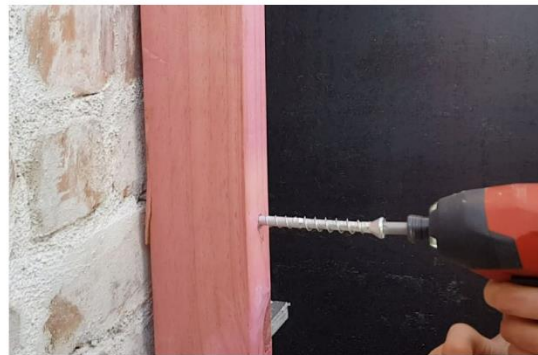
**01** Mark the location for screw installation on the timber. Ensure the location is at least 1" (25mm) from the brick edge.



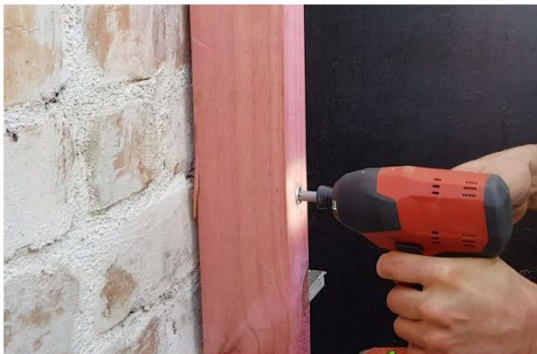
**02** Drill a 5/16" (8mm) diameter hole through the timber with a timber drill bit.



**03** Drill an 8mm diameter hole 1/2" (13mm) deeper than the intended screw embedment depth with a PYTHON masonry drill bit and rotary only drill.



**04** Install the PYTHON MT using a TORX T50 bit and impact driver.

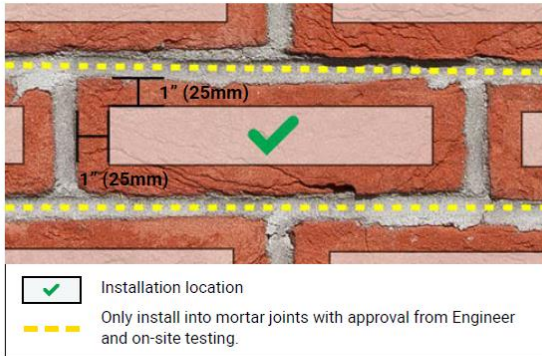


**05** Countersink the screw head for a smooth finish.

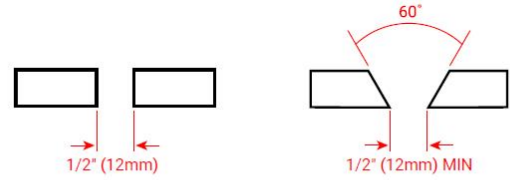
**WARNING:** Do not over-torque or countersink the head past flush.

FIGURE 4 – PYTHON MT MANUFACTURER'S PUBLISHED INSTALLATION INSTRUCTIONS FOR TIMBER TO URM (MPII)

# PYTHON MT: STEEL TO MASONRY



**01** Mark the installation location on the brick. Ensure the location is at least 1" (25mm) from the brick edge.



WITH PYTHON WASHER

COUNTERSUNK PYTHON MT  
PILOT HOLE IN STEEL

**02** Pre-fabricate 1/2" (12mm) diameter holes for use with PYTHON Washers OR cone holes with a 60° angle for countersunk option.



**03** Drill an 8mm diameter hole 1/2" (13mm) deeper than the intended screw embedment depth with a PYTHON masonry drill bit and rotary only drill.



**04** Thread the PYTHON MT through the center of the PYTHON Washer (if applicable).



**05** Install the PYTHON MT using a TORX T50 bit and impact driver.



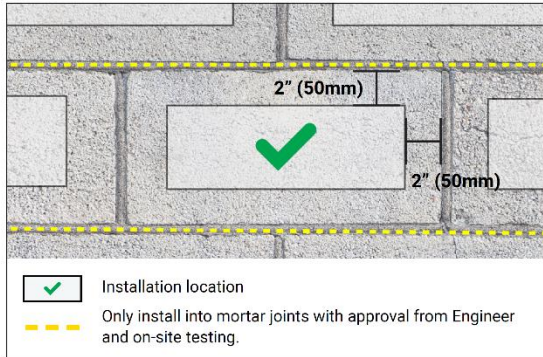
**06** PYTHON MT installed with washer.

**WARNING:** Do not over-torque.

**FIGURE 5 – PYTHON MT MANUFACTURER'S PUBLISHED INSTALLATION INSTRUCTIONS FOR STEEL TO URM (MPII)**

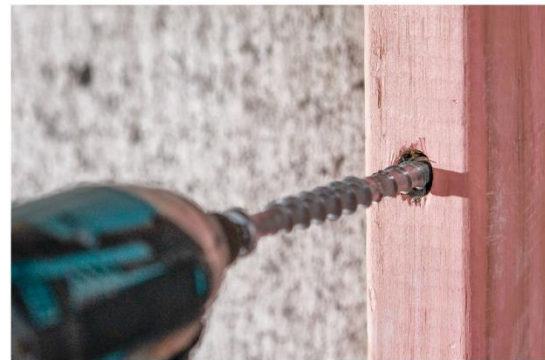


# PYTHON MT: TIMBER TO UNGROUTED CONCRETE BLOCK



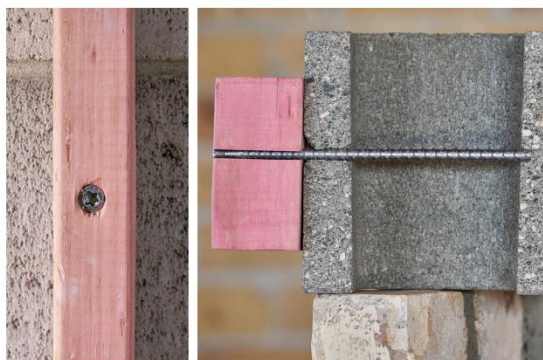
**01** Mark the installation location on the concrete block. Ensure the location is at least 2" (50mm) from the block edge.

**02** Drill a 5/16" (8mm) diameter hole through the timber with a timber drill bit.



**03** Drill an 8mm diameter hole 1/8" (4mm) deeper than the intended screw embedment depth with a PYTHON masonry drill bit and rotary only drill.

**04** Install the PYTHON MT using a TORX T50 bit and impact driver.

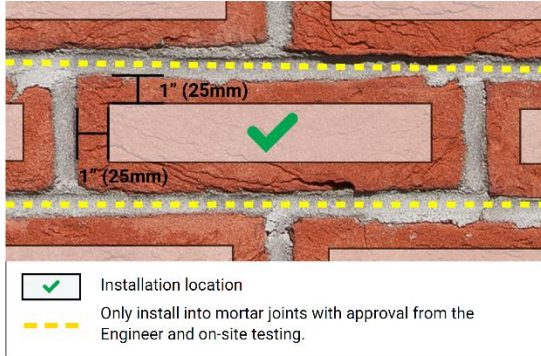


**05** Countersink the screw head for a smooth finish.

**WARNING:** Do not over-torque or countersink the head past flush.

**FIGURE 6 – PYTHON MT MANUFACTURER'S PUBLISHED INSTALLATION INSTRUCTIONS FOR TIMBER TO UNGROUTED CMU (MPII)**

# PYTHON MT: NEW CONCRETE/ SHOTCRETE STARTER-BAR



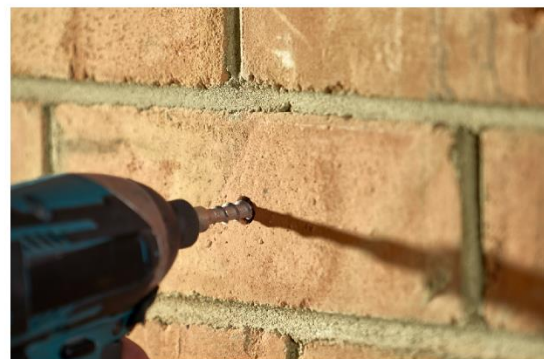
**01** Mark the location for screw installation on the timber. Ensure the location is at least 1" (25mm) from the brick edge.



**02** Mark the PYTHON MT starter bar set out. Ensure that installation locations are through the centre of the masonry elements.



**03** Drill an 8mm diameter hole 1/2" (13mm) deeper than the intended screw embedment depth with a PYTHON masonry drill bit and rotary only drill..



**04** Install the PYTHON MT using a TORX T50 bit and impact driver with the length specified by the Engineer left exposed.



**05** Tie the reinforcing to the PYTHON MT fasteners.



**06** Box and pour or apply shotcrete as specified by the Engineer.

**FIGURE 7 – PYTHON MT MANUFACTURER'S PUBLISHED INSTALLATION INSTRUCTIONS FOR NEW CONCRETE/SHOTCRETE TO STARTER-BAR (MPII)**

DIVISION: 04 00 00—MASONRY  
Section: 04 05 19.16—Masonry Anchors

**REPORT HOLDER:****TERREMOTO LTD (dba PYTHON FASTENERS)****EVALUATION SUBJECT:****PYTHON C AND PYTHON MT URM SCREW ANCHORS****1.0 REPORT PURPOSE AND SCOPE****Purpose:**

The purpose of this evaluation report supplement is to indicate that the Python C and Python MT URM screw anchors, described in ICC-ES evaluation report [ESR-5183](#), have also been evaluated for compliance with the codes noted below as adopted by the Los Angeles Department of Building and Safety (LADBS).

**Applicable code editions:**

- 2023 *City of Los Angeles Existing Building Code* (LAEBC)

**2.0 CONCLUSIONS**

Python C and Python MT URM screw anchors, described in Sections 2.0 through 7.0 of the evaluation report [ESR-5183](#), comply with the LAEBC Appendix A Chapter A1, and are subjected to the conditions of use described in this supplement.

**3.0 CONDITIONS OF USE**

Python C and Python MT URM screw anchors described in this evaluation report supplement must comply with all of the following conditions:

- All applicable sections in the evaluation report [ESR-5183](#).
- The design, installation, conditions of use and identification of the anchors are in accordance with the 2021 *International Existing Building Code*® (IEBC) provisions noted in the evaluation report [ESR-5183](#).
- The design, installation, testing and inspection are in accordance with additional requirements of LAEBC Appendix A Chapter A1, including LAEBC Sections A106, A107 and A108, as applicable.
- The allowable strength and design strength values listed in the evaluation report and tables are for the connection of the anchors to the masonry. The connection between the anchors and the connected members must also be checked for capacity (which may govern).

This supplement expires concurrently with the evaluation report, reissued December 2023 and revised April 2024.

**DIVISION: 04 00 00—MASONRY**  
**Section: 04 05 19.16—Masonry Anchors**

**REPORT HOLDER:**

**TERREMOTO LTD (dba PYTHON FASTENERS)**

**EVALUATION SUBJECT:**

**PYTHON C AND PYTHON MT URM SCREW ANCHORS**

## 1.0 REPORT PURPOSE AND SCOPE

**Purpose:**

The purpose of this evaluation report supplement is to indicate that Python C and Python MT URM screw anchors, described in ICC-ES evaluation report ESR-5183, have also been evaluated for compliance with the code noted below.

**Applicable code edition(s):**

- 2022 *California Existing Building Code* (CEBC)

## 2.0 CONCLUSIONS

### 2.1 CEBC:

The Python C and Python MT URM screw anchors, described in Sections 2.0 through 7.0 of the evaluation report ESR-5183, comply with CEBC Appendix A Chapter A1, provided the design and installation are in accordance with the 2021 *International Existing Building Code*® (IEBC) provisions noted in the evaluation report and the additional requirements of CEBC Appendix A Chapter A1, including CEBC Sections A106, A107 and A108, as applicable.

This supplement expires concurrently with the evaluation report, reissued December 2023 and revised April 2024.