

Pei Evaluation Service® is an accredited ISO Standard 17065 Product Certifier, accredited by the IAS. This **Product Evaluation Report** represents a product that **Pei ES** has Evaluated. This product has a Product Evaluation Service Agreement & Follow-up Inspection Service Agreement. This **Product Evaluation Report** in no way implies warranty for this product or relieves **Aerosmith Fastening Systems** of their liabilities for this product. This **PER** is an official document if it is within one year of the initial or re-approval date.

Initial Approval
December, 2015

Re-Approved
February, 2020

See all **Pei ES** Listings at: www.p-e-i.com

Report Owner

Aerosmith Fastening Systems

5621 Dividend Road
Indianapolis, IN 46241

Product

TraxPin® Fasteners

Approved Manufacturing Locations

Pei ES has on file a list of each approved manufacturing locations and which product is approved to be manufactured at each location.

For Evaluation Report Questions

www.aerosmithfastening.com

Aerosmith Contact: Spencer Jessee
Phone: (800) 528-8183

General Details

The **TraxPin®** is manufactured by independent companies to meet **Aerosmith** design specifications. The approved plant locations have an approved Quality Control Manual to manufacture this product. **Aerosmith Fastening Systems** and any company manufacturing the product, which are intended to be evaluated by this **PER**, has a Follow-up Inspection Service Agreement in place with **Progressive Engineering Inc. (Pei)** to monitor their Quality Control Program and finished product on a quarterly basis.

Evaluation Details

The **TraxPin®** is a power driven steel pin used for fastening to concrete, masonry or hot-rolled steel. The smooth portion of the shank must penetrate the concrete at least 11/16" or 1/4" steel substrate at least 7/16". Fire Rated and Seismic assemblies are outside of the scope of this **PER**.

Product Description

The **TraxPin®** is manufactured from AISI C 1060/1062 Steel, heat treated to a Rockwell C hardness between 53 - 59 for the core and have a minimum tensile strength of 65-75,000 ksi. The pins are mechanically zinc plated to ASTM B633 Type 1 SC or ASTM B695 Type 1 Class B. The plating has a minimum thickness of 0.0002-inch thick.

The **TraxPin®** is manufactured with either a smooth shank or a stepped shank, a nominal finished head dia. of 0.248-inch, and a ballistic point. Smooth shank pins and the stepped shank lower shank diameters are a nominal 0.102-inch while the larger portion of the stepped shank is a nominal 0.120-inch diameter. The pins are identified by the **Aerosmith** logo head stamp as shown on page 3 of this **PER**.

Approved Pins

Product Description	Nominal Length	Actual Length
GT012PFP - Smooth Shank	1/2"	0.626"
GT034FP - Smooth Shank	3/4"	0.820"
GT100FP - Smooth Shank	1"	1.000"
GT112FP - Smooth Shank	1-1/2"	1.570"

Code Compliance

2015 / 2018 International Residential Code®	2015 / 2018 International Building Code®	2016 / 2019 California Building Code®
Concrete floors (on ground) must conform with Section R506	Concrete construction shall be in accordance with Chapter 19 and ACI 318	Concrete Construction per Sections 1.8.7 & 104.11 Alternative Materials

2010/2015 NBC of Canada

Meets or exceeds the requirements of Section 9.27.5.7 of the 2010 National Building Code - Fasteners for cladding other than that described in Sentence (1) shall penetrate through the nail-holding base or not less than 25mm into the framing.

Note: These standards are developed using processes that may differ from those used by Canadian standards development organizations; nevertheless; these standards have been reviewed by the relevant standing committees and found to be acceptable. The ASTM standards referenced herein are referenced in the 2010/2015 National Building Code of Canada.

Acceptance Criteria

ICC-ES AC70

• Meets or exceeds the requirements of ICC-ES AC70 "Acceptance Criteria for Fasteners Power Driven into Concrete, Steel and Masonry Elements", Section 3.3 and Section 3.6.

Note: Designers, Engineers, and installers shall install the fasteners at a spacing that meets the wind pressure / seismic requirements of the applicable code.

Tested to

ASTM E1190-11 Section 8.1 Standard Test Method for Strength of Power-Actuated Fasteners Installed in Structural Members.

ASTM E18-12 Standard Test Method for Rockwell Hardness of Metallic Materials.

General Product Usage and Limitations

1. The fasteners must be installed in accordance with this Evaluation Report and the published installation instructions.
2. Fastener installation requires the use of a gas actuated or pneumatic tool in accordance with [Aerosmith Fastening Systems](#) recommendations.
3. For fasteners installed into concrete, the fasteners must not be driven until the concrete has reached the designated strength.
4. For concrete applications the minimum spacing requirements are 3-inch from the slab edges or saw cut and spaced a minimum of 4-inch apart thereafter.
5. The use of fasteners is limited to installation in un-cracked concrete. Fasteners that are j-hooked / bent during installation, spalled concrete, over-driven pins and fasteners not perpendicular to the surface will result in reduced capacity. A second pin shall be installed next to all visibly misfired pins.
6. The minimum concrete compressive strength for fastener installation is noted in Table 1.
7. Minimum concrete thickness must be 3-1/2-inch.
8. GT012PFP stepped shank **TraxPin**® fasteners are only approved for use in 1/4-inch ASTM A36 hot-rolled steel. Testing has shown that increasing the steel thickness above 1/4-inch may actually decrease the tabulated fastener capacities shown in Table 2.

Table 1 - Allowable Tension and Shear for TraxPin® Fasteners Installed in Normal Weight Concrete

Fastener Description	Min. Diameter (inch)	Min. Embedment Depth (inch)	Min. Edge Distance (inch)	Allowable Capacity ^{1,2,3} (lbf)			
				f _c = 4000 psi		f _c = 6000 psi	
				Tension	Shear	Tension	Shear
GT034FP	0.101	11/16	3.0	52	77	50	89

1. If the COV exceeds 15% and the total number of tests is less than 30, then the lowest value is chosen from the first ten (10) acceptable values from set of tests conducted. Data that was suspect to installation were excluded from the set of ten as instructed by Section 8.2 of ASTM E1190 and Section 3.2.4 of AC70
2. The safety factor is based on Equation 3-4 defined in Section 3.2.4 of ICC-ES AC70 or reflects the EXCEPTION allowing the use of the lowest ultimate load in a set of 10 and a safety factor of 5.0. (Minimum of 5.0 per AC70)
3. The allowable capacity is based on Equation 3-3 defined in Section 3.2.4 of ICC-ES AC70. This includes a reduction factor for concrete overstrength and the calculated safety factor.

Table 2 - Allowable Tension and Shear for TraxPin® Fasteners Installed in Hot-Rolled Steel³

Fastener Description	Min. Diameter (inch)	Min. Fastener Penetration Depth (inch)	Min. Edge Distance (inch)	Allowable Capacity ^{1,2,3,4} (lbf)	
				1/4" ASTM A529 (A36) Steel	
				Tension	Shear
GT012PFP	0.102 / .120	7/16	1.0	133	354

- Notes:**
1. If the COV exceeds 15% and the total number of tests is less than 30, then lowest value is chosen from the first ten (10) acceptable values from set of tests conducted. Data that was suspect to installation were excluded from the set of ten as instructed by Section 8.2 of ASTM E1190 and Section 3.2.4 of AC70
 2. The safety factor is based on Equation 3-4 defined in Section 3.2.4 of ICC-ES AC70 or reflects the EXCEPTION allowing the use of the lowest ultimate load in a set of 10 and a safety factor of 5.0. (Minimum of 5.0 per AC70)
 3. The safety factor and reduction factors were calculated using the equations found in ICC-ES AC70, Section 3.2.4 and 3.6.
 4. The ASD Allowable load is calculated using ICC-ES AC-70 Section 3.6.4.1, Equation 3-6: $P_a = V_a = F_{all} = F \cdot R \cdot R_f / \Omega$

Table 3 - Allowable Tension and Shear for TraxPin® Fasteners Installed in Normal Weight Concrete Masonry Units³

Fastener Description	Min. Diameter (inch)	Min. Embedment Depth (inch)	Min. Edge Distance (inch)	Allowable Capacity ^{1,2,3,4} (lbf)	
				f _{cmu} = 4,400 psi	
				Tension	Shear
GT100FP	0.102	3/4"	3.0	107	170

1. If the COV exceeds 15% and the total number of tests is less than 30, then lowest value is chosen from the first ten (10) acceptable values from set of tests conducted. Data that was suspect to installation were excluded from the set of ten as instructed by Section 8.2 of ASTM E1190 and Section 3.2.4 of AC70

2. The safety factor is based on Equation 3-4 defined in Section 3.2.4 of ICC-ES AC70 or reflects the EXCEPTION allowing the use of the lowest ultimate load in a set of 10 and a safety factor of 5.0. (Minimum of 5.0 per AC70)

3. The allowable capacity is based on Equation 3-3 defined in Section 3.2.4 of ICC-ES AC70, but does NOT include the reduction factor for CMU overstrength. The force used is either the lowest of the first ten tests or the average ultimate load, whichever is indicated.

4. The values shown are based on nominal CMU with a compressive strength of 4,400 psi or greater. In accordance with ICC-ES AC70, a reduction factor shall be applied to these values when using a lesser compressive strength based on the following equation found in AC70, where f_{cmu} is 1,900 psi and f_{cmu test} is the actual compressive strength.

$$R = \sqrt{\frac{f_{cmu}}{f_{cmu, test}}}$$

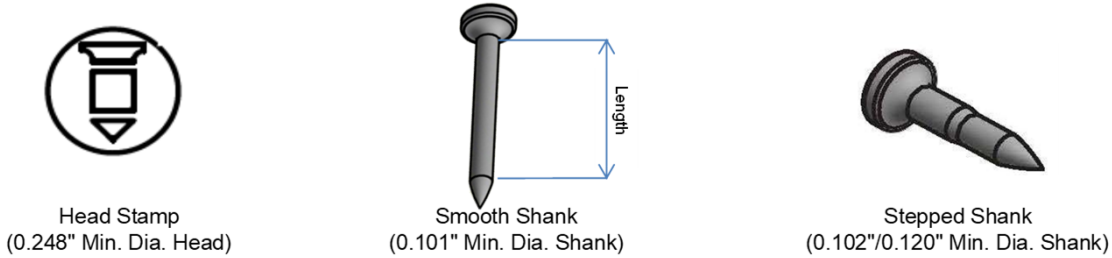


Figure 1 - Fastener Head Stamp & Dimensions

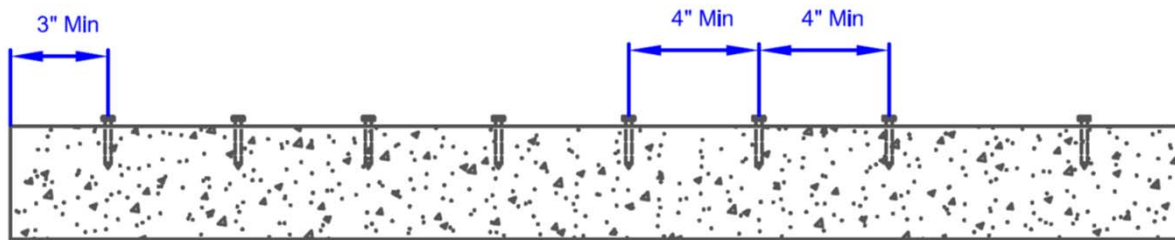


Figure 2 - Aerosmith TraxPin® Locations in 3-1/2-inch Deep Concrete

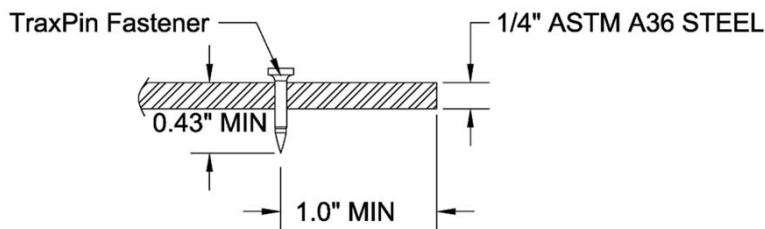


Figure 3 - Aerosmith TraxPin® Locations in 1/4-inch Thick ASTM A36 Steel Plate

Product Labeling

Each Box of fasteners shipped, that are covered by this **PER**, must have a label attached with at least the following information:

1. [Aerosmith Fastening Systems](#) Name, Address or Website
2. Fastener Designation & Fastener Part no.
3. This **PER** Number & *Pei* **Evaluation Service**[®] Evaluation Mark
4. Lot Number & Mfg. Plant Identification/Traceability
5. Trademark Head Stamp by [Aerosmith](#) as shown in Figure 1

Acceptable Evaluation Marks



Product Documentation

A Product Evaluation Service Agreement between *Pei* **Evaluation Service**[®] and [Aerosmith Fastening Systems](#)

An agreement between **PER** owner ([Aerosmith](#)) & each Approved Manufacturer

An [Aerosmith](#) Quality Control Manual - Dated: 4/1/2020

Pei test report No. 2018-6080 (A) - AC70 Fastener Tension & Shear Testing using a .102"/.120" x 1/2" Step Shank Pin, Part No. GT012PFP Embedded into 1/4" Steel - Dated 12/3/2018, Revised on 8/15/2019.

Pei test report No. 2018-6080 (B) - AC70 Fastener Tension & Shear Testing using a .102" x 1" Smooth Pin, Part No. GT100PFP @ 3/4" Embedment into Normal-Weight Concrete Masonry Units - Dated 1/3/2019

Pei test report No. 2018-6080 (C) - AC70 Fastener Tension & Shear Testing using a .102" x 3/4" Smooth Pin, Part No. GT034PFP @ 11/16" Embedment into 4,000 psi & 6000 psi Concrete - Dated 3/13/2019, Revised on 8/15/2019.