

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 and this product has a Follow-up Service / Inspection Agreement. This **Product Evaluation Report** in no way implies warranty for this product or relieves **MPI Concepts, Inc.** 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
February, 2019

Re-Approved

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

Report Owner

MPI Concepts, Inc.
6548 Center Industrial Dr.
Jenison, MI 49428

Approved Manufacturing Locations

MPI Concepts, Inc.
6548 Center Industrial Dr.
Jenison, MI 49428

Product

ISTAIR™ System

Evaluation Report Information

MPI Concepts, Inc. Contact: Mike Prins
Phone: 616-669-9300

General Details

This report covers the **ISTAIR™ System**. This product is manufactured by **MPI Concepts, Inc.** and is intended for residential stairways in a non-fire rated assembly. This evaluation report covers structural strength properties only. The manufacturing location has an approved Quality Control Program to manufacture the products. **MPI Concepts, Inc.** has an Product Evaluation Service Agreement with **Pei Evaluation Service (Pei ES)** and an Inspection Agreement with **Progressive Engineering Inc. (Pei)**. The manufacturing location(s) for the bracket and gussets will be audited quarterly by **Pei**.

Product Description

The **ISTAIR™ System** is a stair assembly kit using 18 ga. steel (.048" +/- .005" nominal) and/or 20 ga. (.036" nominal) triangular shaped ASTM A653 33-ksi steel stringer brackets with a G60 galvanized coating, 2x4 #2 SPF lumber minimum stringers, and 3/4" APA, Structural 1 rated OSB treads/risers. Each bracket is fastened to the 2x4 stringer with four (4) #10 x 1-1/2 Strong Point Screws, to the 3/4" OSB treads with three (3) #6 x 3/4" zinc plated pan head screws or better, and to the 3/4" APA or Structural 1 rated OSB risers with two (2) #6 x 3/4" zinc plated pan head screw. On the underside of each tread to riser connection is a Tread-Riser-Gusset 20 ga. (.036") nominal galvanized steel hinge-gusset for support. See Figure 1 and Figure 2 for system details. The **ISTAIR™** stringer brackets, gussets and screws are not approved to be used in contact with pressure treated lumber. The **ISTAIR™ System** should be protected from exposure to the elements.

Building Code Compliance

2012 International Residential Code		2015 International Residential Code		2018 International Residential Code	
ISTAIR™ System		ISTAIR™ System		ISTAIR™ System	
R104.11	R302.7	R104.11	R302.7	R104.11	R302.7
R301.5	R311.7	R301.5	R311.7	R301.5	R311.7
R302.11	R505.23	R302.11	R505.2.2	R302.11	R505.2.2
R317.1		R317.1		R317.1	

- Notes:
1. Meets the loading requirements of the 2015 Michigan Residential Code - Table R301.5 (Stairs) including Note C
 2. Concentrated load tested in accordance with the loading required by 2012/2015/2018 IRC Table R301.5 - Note C
 3. Stairs have been evaluated for use in One and Two-Family Dwellings only in accordance with the 2012/2015/2018 IRC.
 4. Enclosed space under stairs that is accessed by a door or access panel shall have walls, under-stair surface and any soffits protected on the enclosed side with 1/2" (12.7mm) gypsum board as required in the 2012/2015/2018 IRC Section R302.7. Additional horizontal framing may be required for applying gypsum to the under-stair surface.
 5. Under-stair protection and Fireblocking shall be In accordance with 2012/2015/2018 IRC.
 6. Meets or exceed the Building Code sections as noted above.

General Product Use**ISTAIR™**

1. The **ISTAIR™ System** shall be assembled and installed in accordance with the manufacturer's installation instructions and is subject to the conditions of this **PER**. A copy of the **ISTAIR™** Installation Instructions shall be made easily available to the installer.
2. All construction, wood or steel framing, beams, joist, stringers and associated connections needed to support the **ISTAIR™ System** are outside the scope of this evaluation report. All construction shall follow applicable building.
3. Subfloor shall be cut leaving a 1-3/4" overhang or at least a 1-1/2" minimum.
4. The 2x4 lumber stringers are not designed to support the full code prescribed design loading on the **ISTAIR™ System**. Instead, the **ISTAIR™** is designed to be attached to adjacent wall studs per Table 1 of this **PER**. Alternative construction and connection methods are outside the scope of this **PER** and shall follow applicable codes.
5. The **ISTAIR™ System** is limited to a maximum width of 48-inches and shall not be less than 36-inches. This system is limited to use in One and Two-Family Dwellings only.
6. The **ISTAIR™ System** must have the impervious moisture barrier attached to stringer feet on any system that will come in contact with a concrete or masonry slab. Where any wood-based component of the **ISTAIR™ System** (including structural framing) is in direct contact with concrete or a masonry slab in direct contact with the ground, protection from decay shall be provided by the use of naturally durable wood or wood that is preservative-treated in accordance with AWPA U1. Fasteners for preservative treated wood shall comply with the requirements of the IRC. Please note that the fastener application will need to meet the corrosion requirements under the 2012/2015/2018 IRC Section R505.23 and R505.2.2. when any treated lumber is introduced to this system.
7. The underside of the **ISTAIR™ System** shall be protected with a minimum of 1/2" tk. gypsum in all uses/locations for this product.

Product Documentation

An Approved QC Manual - Dated January 13, 2019

An Evaluation and Follow-up Service Agreement between *Pei Evaluation Service* and MPI Concepts, Inc.

An Inspection Agreement between *Progressive Engineering Inc.* and **MPI Concepts, Inc.**

ISTAIR™ System Installation Instructions

A *Pei* test report No. 2011-0404 - i18gs, i20gs and trg45 i-Stair Bracket Concentrated Load Testing, **ISTair Systems, Inc.** Dated: March 11, 2011

An engineering calculation project no. 2016-1445 - i-Stair 2x4 Lumber Stringer to Wall Stud Connection - Dated: 12/11/2018.

Product Labeling

Each **ISTAIR™ System** assembly kit that is covered by this **Product Evaluation Report**, must have a label attached with at least the following information:

1. **MPI Concepts, Inc.** Name and Address
2. Product name
3. Plant identifier & date code
4. Product code
5. The **PER** number and
6. *Pei Evaluation Service* Name or Evaluation Mark

Acceptable Evaluation Marks

Table 1. Screw and Nail Fastener Connection

Table 1 - Number of Fasteners Required per Stud for Connection between ISTAIR™ Stringer and Support Wall

Fastener	Stud Spacing (in)	Stair Width (in) (Ref. Figure 2)			
		36	42	45	48
GRK RSS Screw 5/16 x 4" Lg. (7.0x100)	12	1	1	1	1
	16	1	1	1	1
	19.2	1	1	1	1
	24	1	1	1	1
0.131" x 3" Nails	12	2	2	2	2
	16	2	2	2	2
	19.2	2	2	2	2
	24	2	2	2	2

Notes:

1. Number of fasteners determined by engineering analysis assuming a maximum 40 psf live load or 300 lb concentrated load distributed between two studs.
2. Fasteners were analyzed in accordance with the design provisions found in the 2012 and 2015 National Design Specification® (NDS) for Wood Construction.
3. Alternative construction and connection methods are outside the scope of this PER and shall follow applicable codes or be designed by a licensed engineer.
4. The GRK RSS Screw is a speciality screw. See ESR-2442.

Figure 1 - ISTAIR™ Bracket and Gusset Installation Details

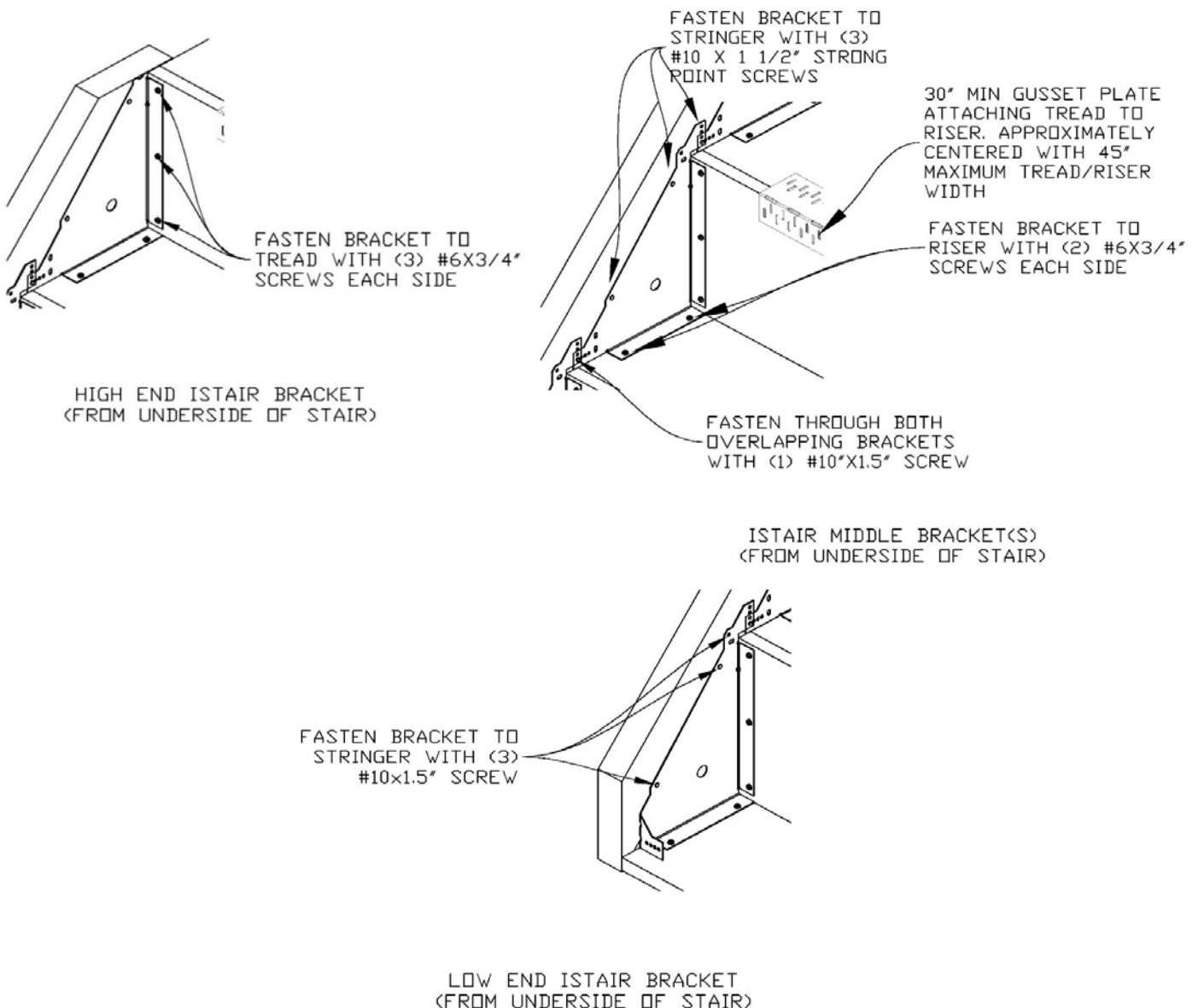


Figure 2 - ISTAIR™ Bracket and Gusset Installation Details

