**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**

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>R104.11 R302.7 R301.5 R301.7 R302.23 R317.1</td>
<td>R104.11 R301.5 R302.7 R301.7 R302.23 R317.1</td>
<td>R104.11 R301.5 R302.7 R301.7 R302.23 R317.1</td>
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<tr>
<td>ISTAIR™ System ISTAIR™ System ISTAIR™ System</td>
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</tbody>
</table>

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 codes.

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™** Installation Instructions


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

![Pei ES](image-url)
### Table 1. Screw and Nail Fastener Connection

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

<table>
<thead>
<tr>
<th>Fastener</th>
<th>Stud Spacing (in)</th>
<th>36</th>
<th>42</th>
<th>45</th>
<th>48</th>
</tr>
</thead>
<tbody>
<tr>
<td>GRK RSS Screw 5/16 x 4&quot; Lg. (7.0x100)</td>
<td>12</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>16</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>19.2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>24</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>0.131&quot; x 3&quot; Nails</td>
<td>12</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>16</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
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<tr>
<td></td>
<td>19.2</td>
<td>2</td>
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<td>24</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>

**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 specialty screw. See ESR-2442.

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#### Figure 1 - ISTAIR™ Bracket and Gusset Installation Details

- **High End ISTAIR Bracket** (from underside of stair)
  - Fasten bracket to tread with (3) #6x3/4" screws each side
- **Low End ISTAIR Bracket** (from underside of stair)
  - Fasten bracket to stringer with (3) #10x1 1/2" strong point screws
  - 30° Min Gusset plate attaching tread to riser, approximately centered with 45° maximum tread/riser width
  - Fasten through both overlapping brackets with (1) #10x1 1/2" screw
  - Fasten bracket to riser with (2) #6x3/4" screws each side
Figure 2 - ISTAIR™ Bracket and Gusset Installation Details

FASTEN TOP RISER TO SUBFLOOR
HEADERJOIST (HEADER JOIST
DESIGNED BY OTHER) WITH (4)
#8X2½" SCREWS OR (4) 8d NAILS

MIN 9" MAX MIN 3/8" MAX 8 1/4" MIN MAX 3/8"

FASTENERS TO TOP PLATE
OR BALLOON FRAMING
SPACED 12" MAXIMUM FROM
HEADER JOIST

3/4" APA, STRUCTURAL 1
RATED OSB SHEATHING
MAX STAIR WIDTH 48"
MAX TREAD WITH 45"

SUPPORT STRINGERS &
RISER ON FLOOR

2X4 SPF #2 OR BETTER
STRINGER FASTENED TO
STUDS - SEE TABLE 1
FOR FASTENER INFO.

SEE NOTE #6 UNDER GENERAL PRODUCT
USE

RECOMMENDED: USE SUBFLOOR
CONSTRUCTION ADHESIVE TO GLUE ALL
STRINGERS TO STUD CONNECTIONS AND
BOTTOM RISER TO FLOOR OR LANDINGS

MAX STAIR WIDTH 48"
MAX TREAD WIDTH 45"