



PROCESS  
INDUSTRY  
PRACTICES

COMPLETE REVISION  
*December 2019*

**Structural**

**PIP STF05521**  
**Angle Guards and Handrails Fabrication Details**

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In an effort to minimize the cost of process industry facilities, this Practice has been prepared from the technical requirements in the existing standards of major industrial users, contractors, or standards organizations. By harmonizing these technical requirements into a single set of Practices, administrative, application, and engineering costs to both the purchaser and the manufacturer should be reduced. While this Practice is expected to incorporate the majority of requirements of most users, individual applications may involve requirements that will be appended to and take precedence over this Practice. Determinations concerning fitness for purpose and particular matters or application of the Practice to particular project or engineering situations should not be made solely on information contained in these materials. The use of trade names from time to time should not be viewed as an expression of preference but rather recognized as normal usage in the trade. Other brands having the same specifications are equally correct and may be substituted for those named. All Practices or guidelines are intended to be consistent with applicable laws and regulations including OSHA requirements. To the extent these Practices or guidelines should conflict with OSHA or other applicable laws or regulations, such laws or regulations must be followed. Consult an appropriate professional before applying or acting on any material contained in or suggested by the Practice.

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### **PUBLISHING HISTORY**

<i>April 1999</i>	<i>Issued</i>	<i>June 2004</i>	<i>Technical Correction</i>
<i>May 2001</i>	<i>Technical Correction</i>	<i>January 2017</i>	<i>Technical Correction</i>
<i>October 2003</i>	<i>Complete Revision</i>	<i>December 2019</i>	<i>Complete Revision</i>

*Not printed with State funds*



# PIP STF05521

## Angle Guards and Handrails Fabrication Details

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## 1. Scope

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This Practice provides requirements and details for fabrication of angle guards for walking and working surfaces and angle guards with pipe handrails for standard stairs used for access and egress in industrial facilities.

## 2. References

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Applicable parts of the following Practices and references shall be considered an integral part of this Practice. The edition in effect on the date of contract award shall be used, except as otherwise noted. Short titles will be used herein where appropriate.

### 2.1 Process Industry Practices (PIP)

- PIP STF05501 - *Fixed Ladders Fabrication Details*
- PIP STF05511 - *Standard Stairs Fabrication Details*
- PIP STF05530 - *Grating Fabrication Details*
- PIP STS05120 - *Structural and Miscellaneous Steel Fabrication Specification*

### 2.2 Industry Codes and Standards

- American Institute of Steel Construction (AISC)
  - ANSI/AISC 303-16 - *Code of Standard Practice for Steel Buildings and Bridges*
- American Society of Mechanical Engineers (ASME)
  - ASME B16.9 - *Factory-Made Wrought Butt Welding Fittings*
- ASTM International (ASTM)
  - ASTM A36/A36M - *Standard Specification for Carbon Structural Steel*
  - ASTM A53/A53M - *Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless*
  - ASTM A307 - *Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60,000 psi Tensile Strength*
  - ASTM A500/A500M - *Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes*

### 2.3 Government Regulations

The following government document has been used as a reference in the development of this Practice.

- U.S. Department of Labor (DOL) - Occupational Safety and Health Administration (OSHA)
  - *Regulations 29 CFR 1910 Subpart D - Walking-Working Surfaces - Final Rule Published in Federal Register, Volume 81, No. 223, on November 18, 2016*