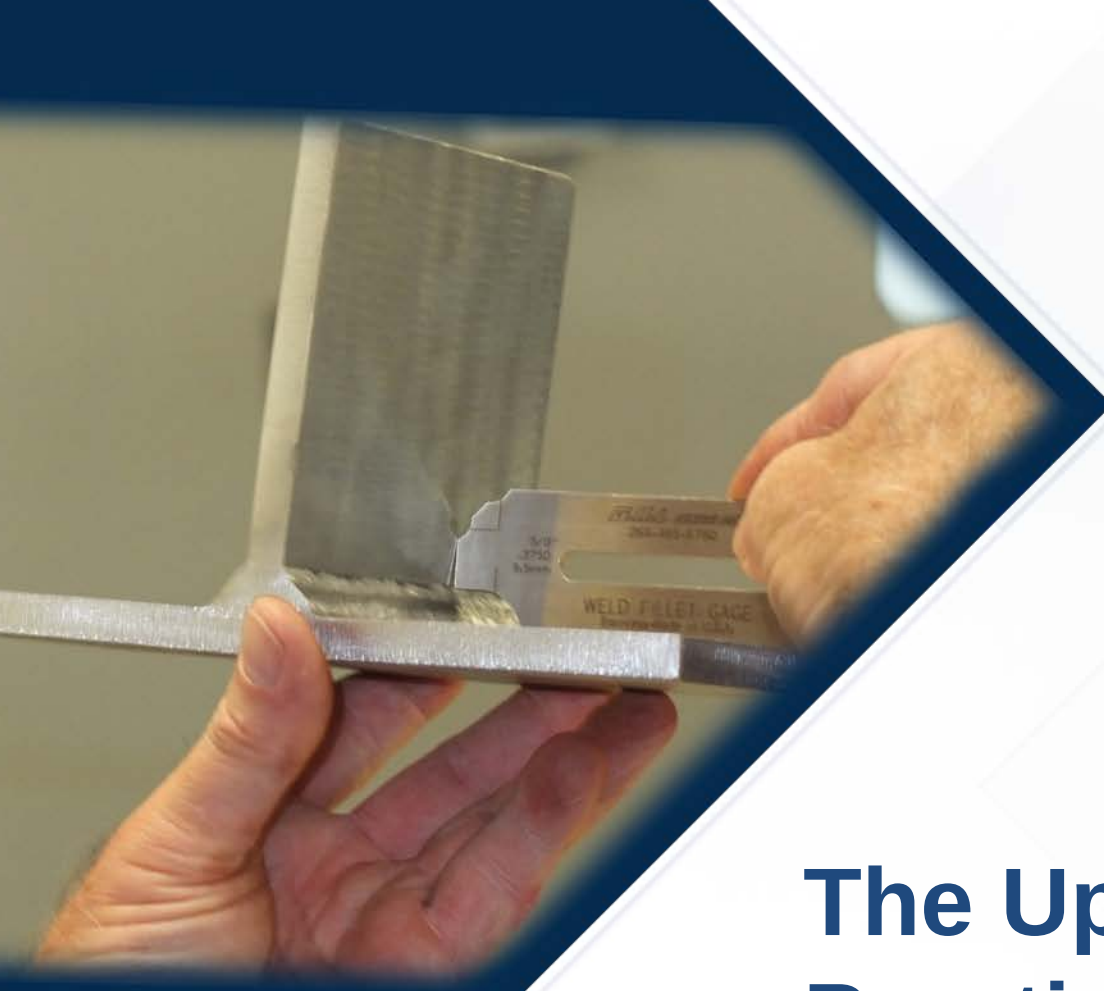




The Updated CWI Practical Exam

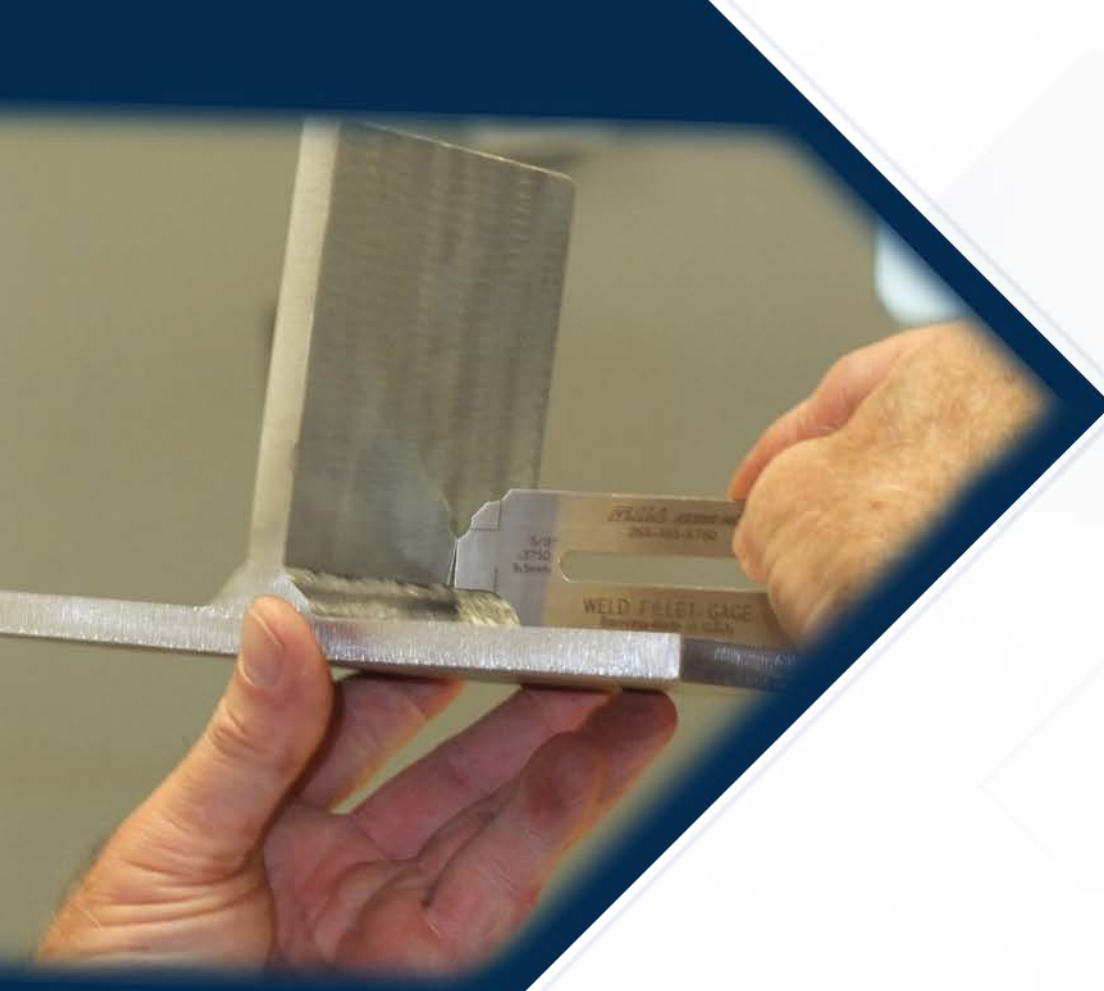
Kenneth W. Coryell, PE, SCWI
February 8, 2017

Overview

- Introduction
- Book of Specifications
- Book of Exhibits
- Test Specimens
- Tool Kit

Introduction

- 4 years in development
- CWI job task analysis
- Updated ANSI/AWS B5.1
- Earlier exam had gaps
 - Edge Preparation
 - Fit up
 - In process monitoring
 - WPS,PQR, and WQTR review



Book of Specifications

AMERICAN WELDING SOCIETY

Book of Specifications

- Earlier BoS was mostly collection of tables.
- Based mostly on D1.1
- CWI's work in many industry sectors
- New BoS contains multiple industry sectors

Structure of New *BoS*

- 6 Clauses plus Normative and Informative Annexes
- Clause 1.0 – General
 - Standard tolerances
- Clause 2.0 – Structural Steel
 - Workmanship/Visual Inspection Criteria
 - Based on AWS D1.1

Structure of New *BoS*

- Clause 3.0 – Pipeline
 - Workmanship/Visual Inspection Criteria
 - Based on API 1104
- Clause 4.0 – Pressure Piping
 - Workmanship/Visual Inspection Criteria
 - Based on ASME B31.1
- Clause 5.0 – Procedure Qualification
 - WPS/PQR Qualification Variables
 - Qualification Testing Requirements
 - Based on AWS B2.1

Structure of New *BoS*

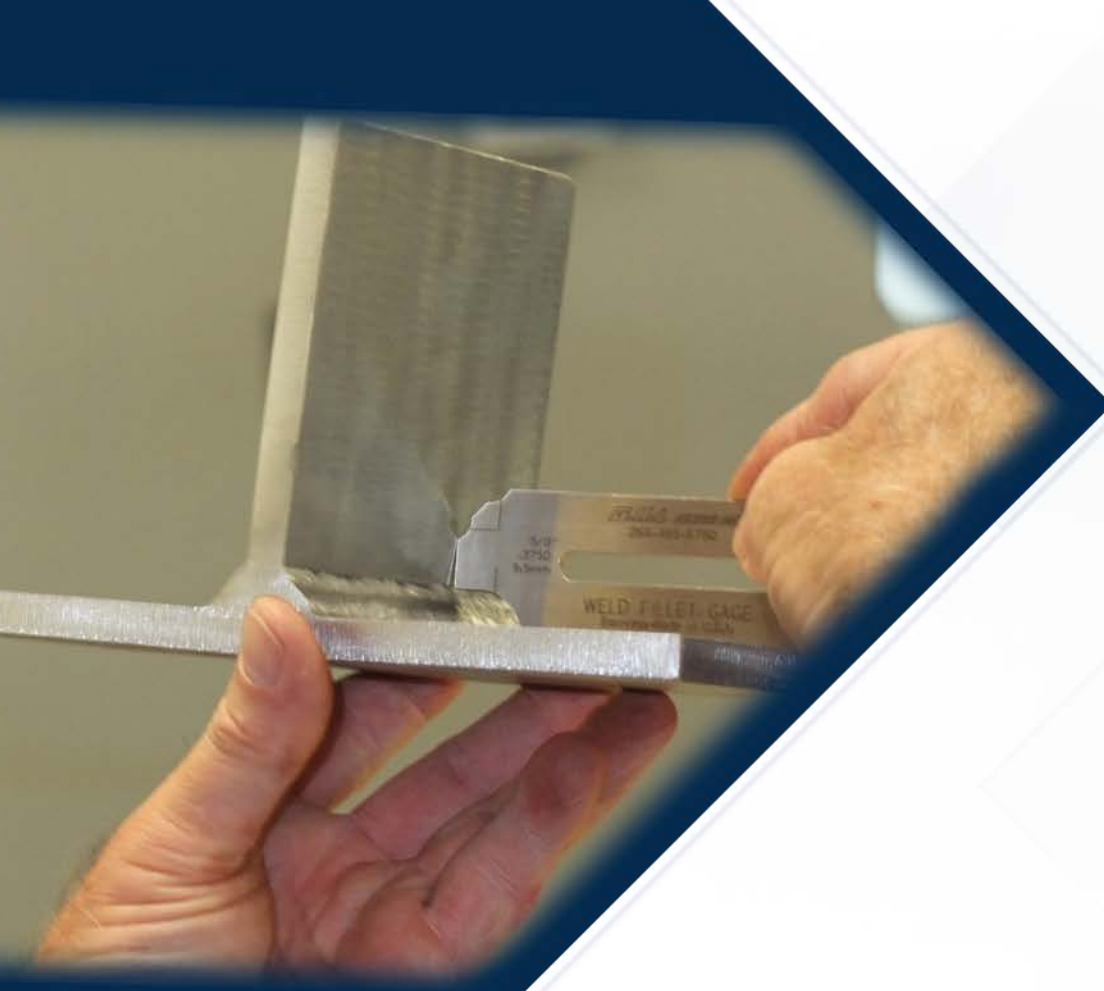
- Clause 6.0 – Performance Qualification
 - Performance Qualification Variables
 - Qualification Testing Requirements
 - Based on AWS B2.1
- Normative Annexes
 - Contain needed info and requirements
 - M-Numbers, F-Numbers, A-Numbers, etc.
- Informative Annexes
 - Contain useful information
 - Formulas, Pipe schedules, Abbreviations, etc.

Book of Specifications

Publicly available at AWS website (AWS.org)

Log in and search “Book of Specifications” or

<http://aws.org/library/doclib/CWI-Book-of-Specifications-2016.pdf>

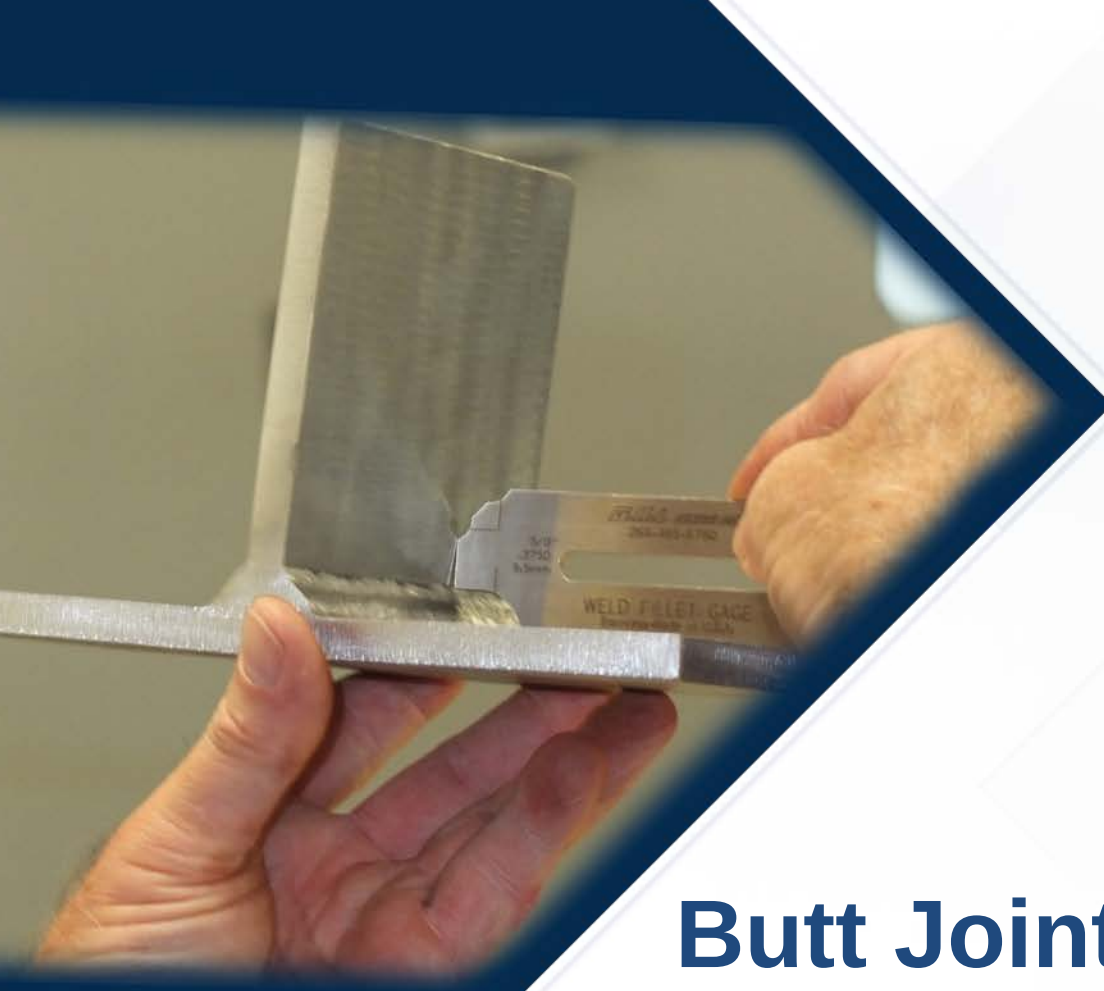


Book of Exhibits

Book of Exhibits

Not available to candidates before exam

- WPSs
- PQRs
- WQTRs
- Photos of NDT Methods

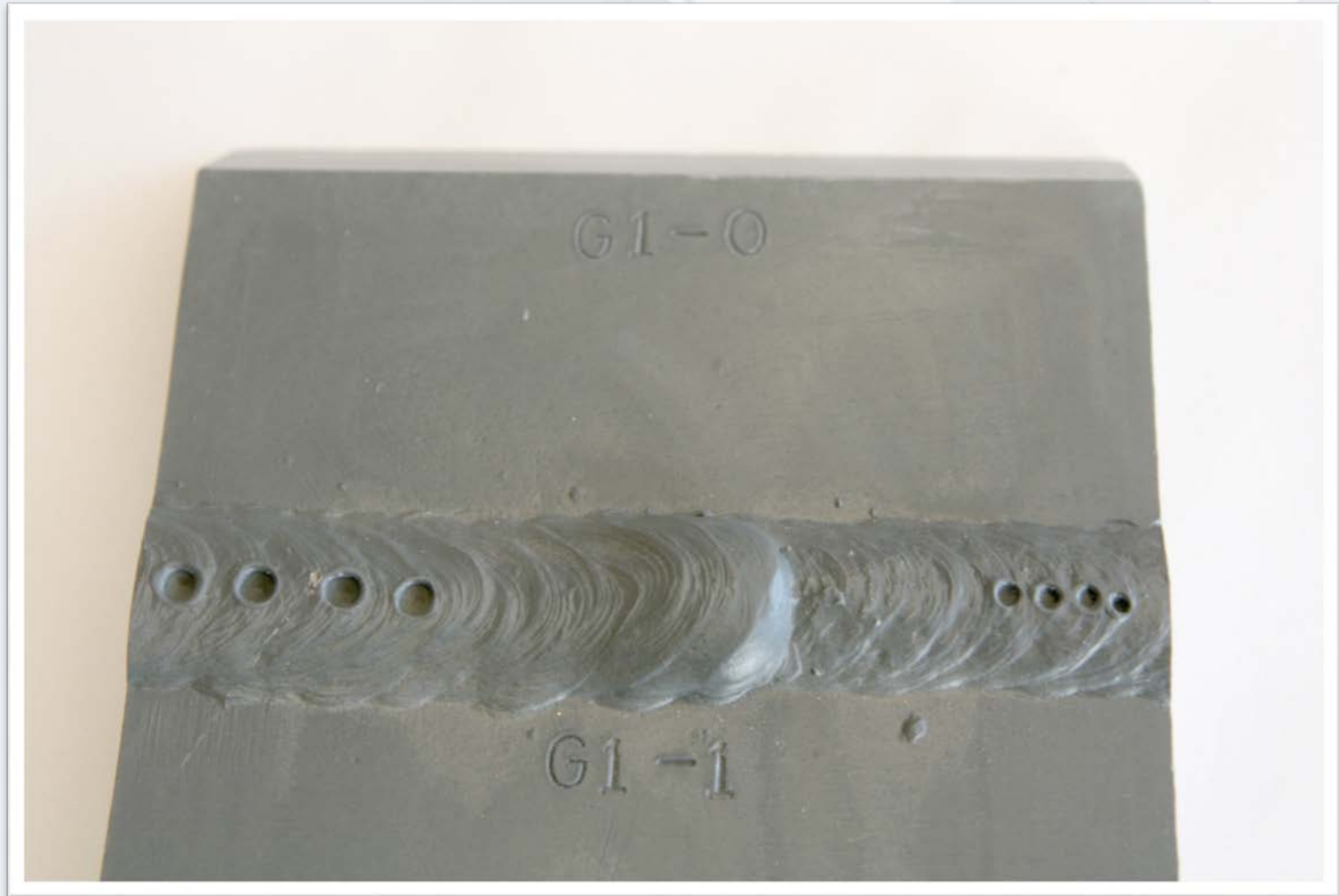


Butt Joint Groove Welds

Groove Weld



Groove Weld



Groove Weld



Groove Weld

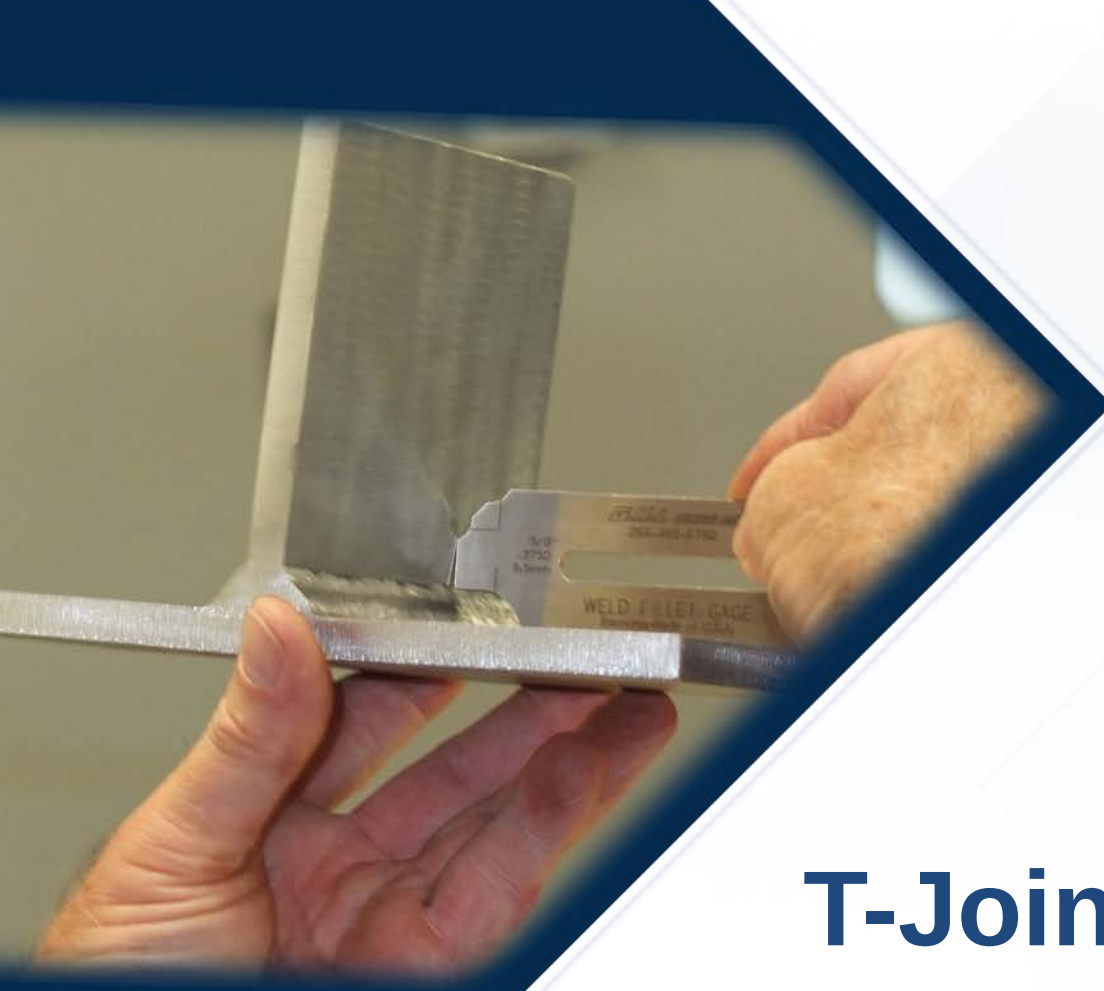


Groove Weld Plate 2 Top



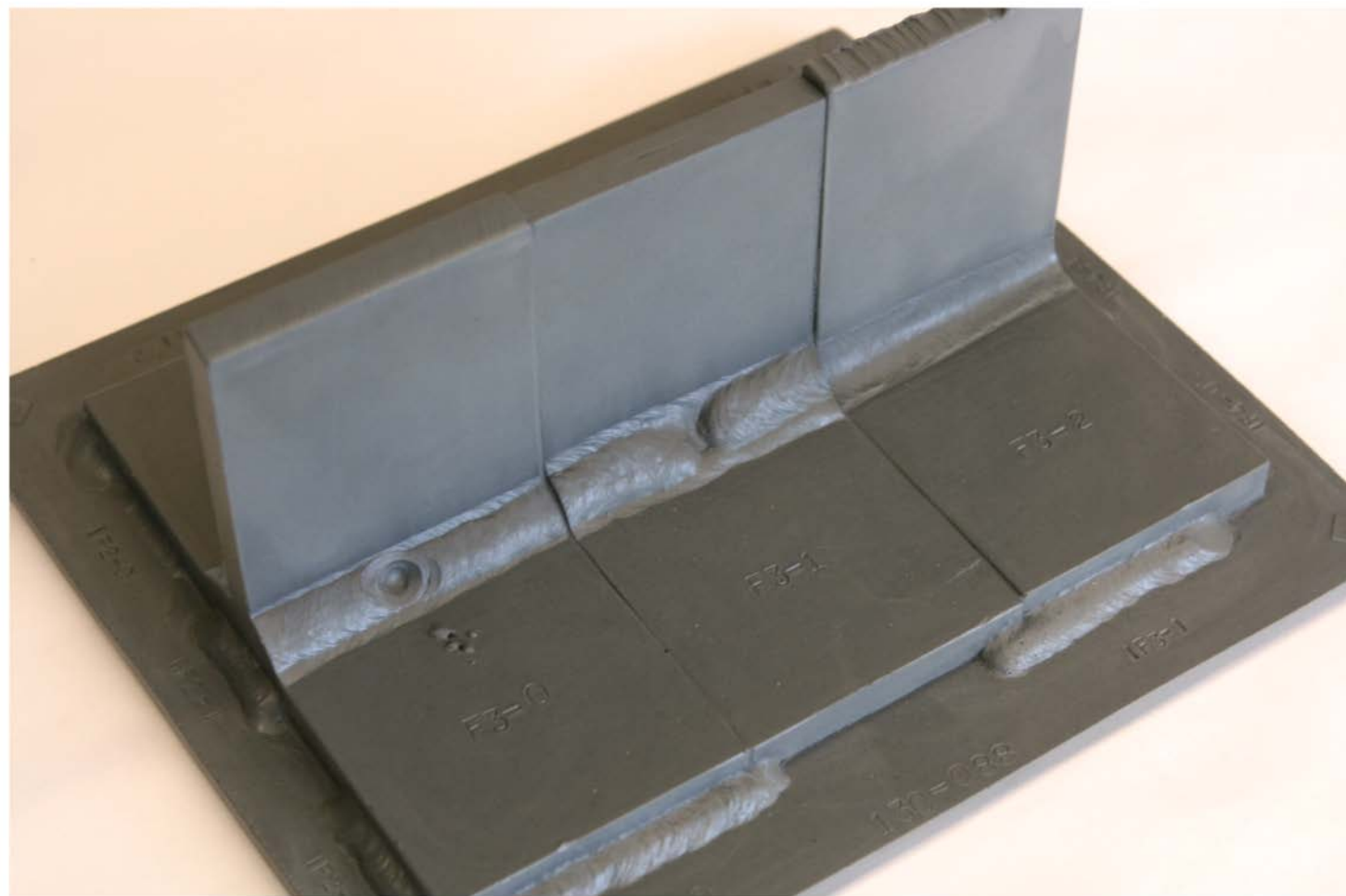
Groove Weld



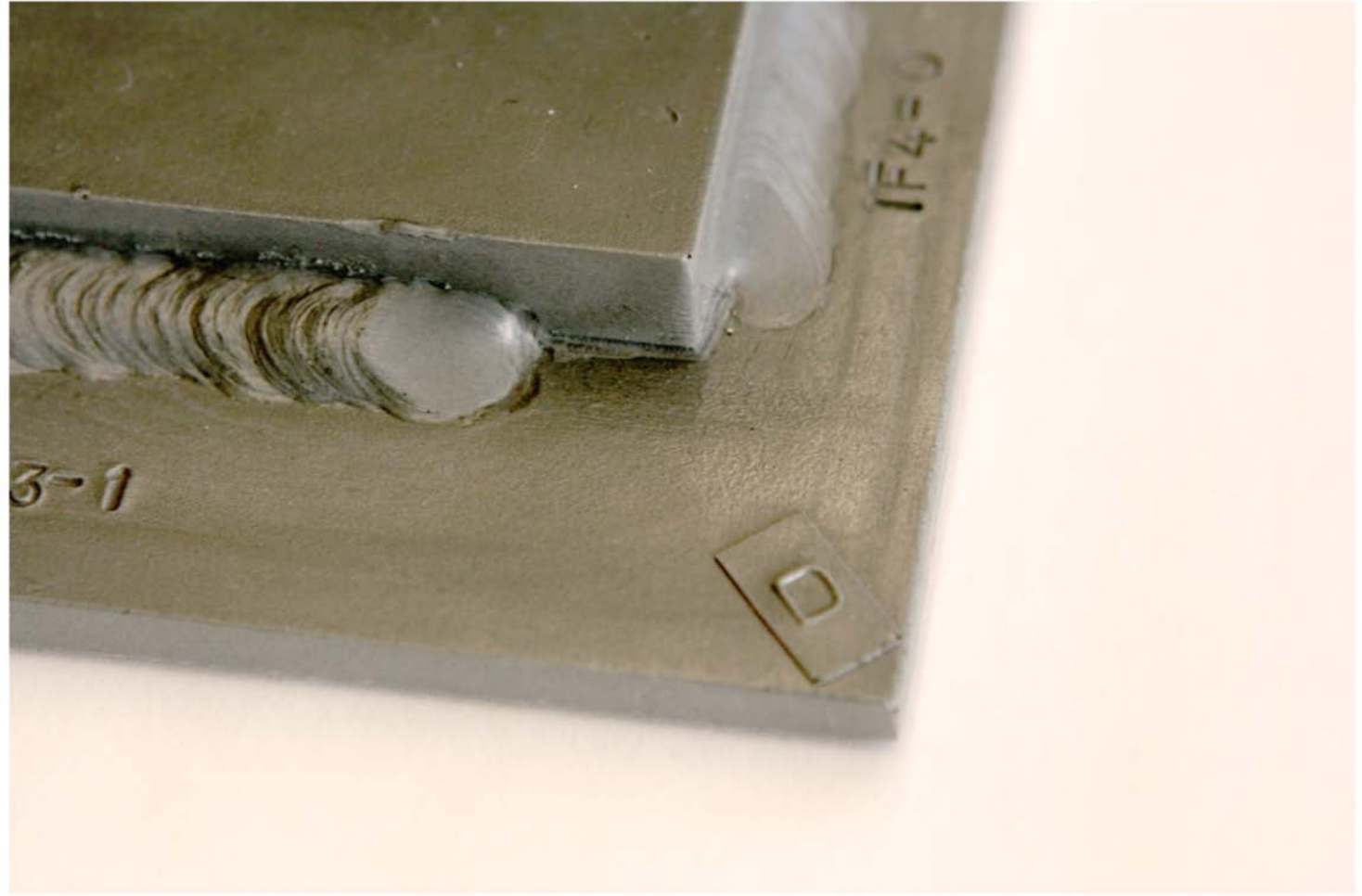


T-Joint/Lap Joint

T-Joint/Lap Joint



Lap Joint



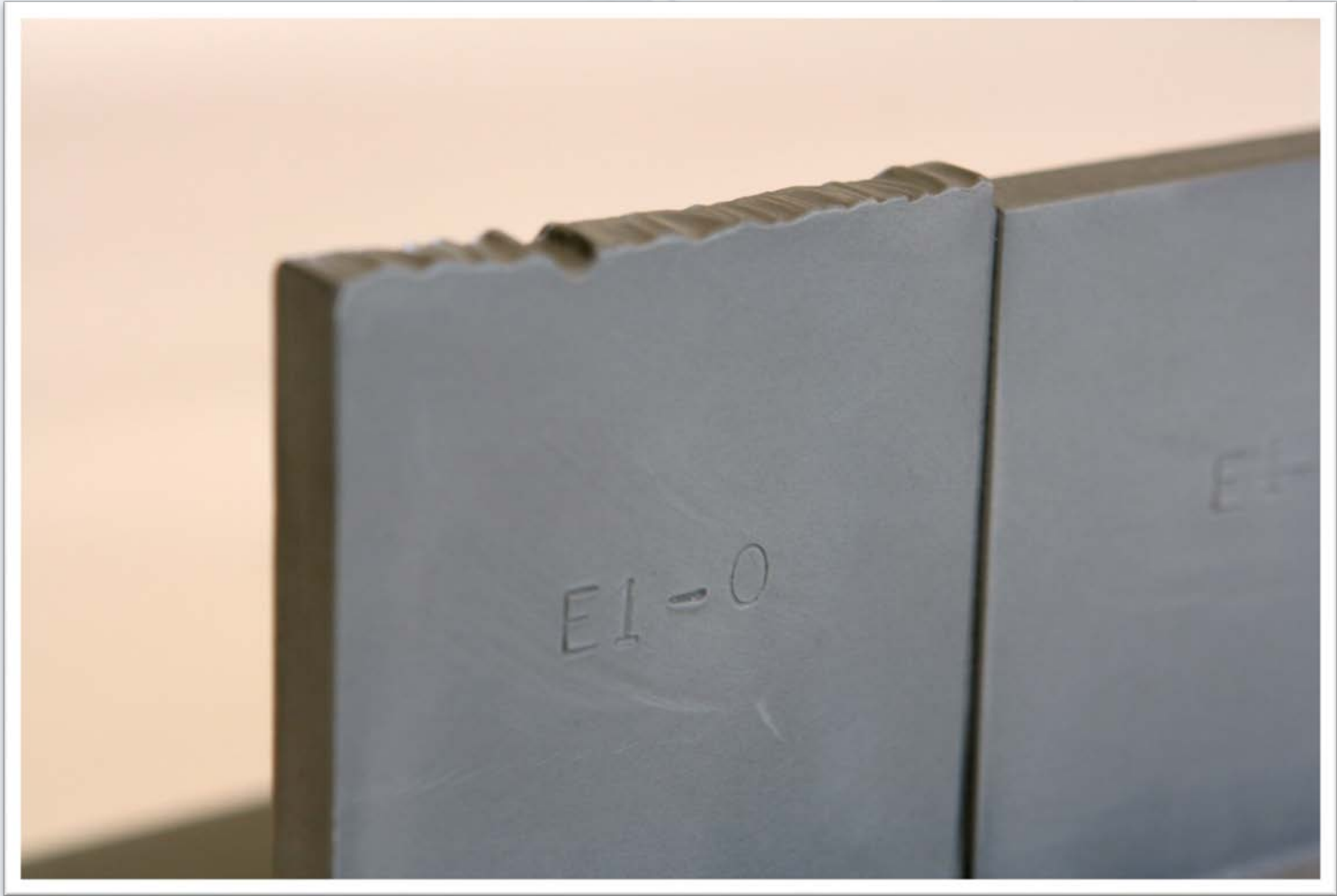
T-Joint/Lap Joint

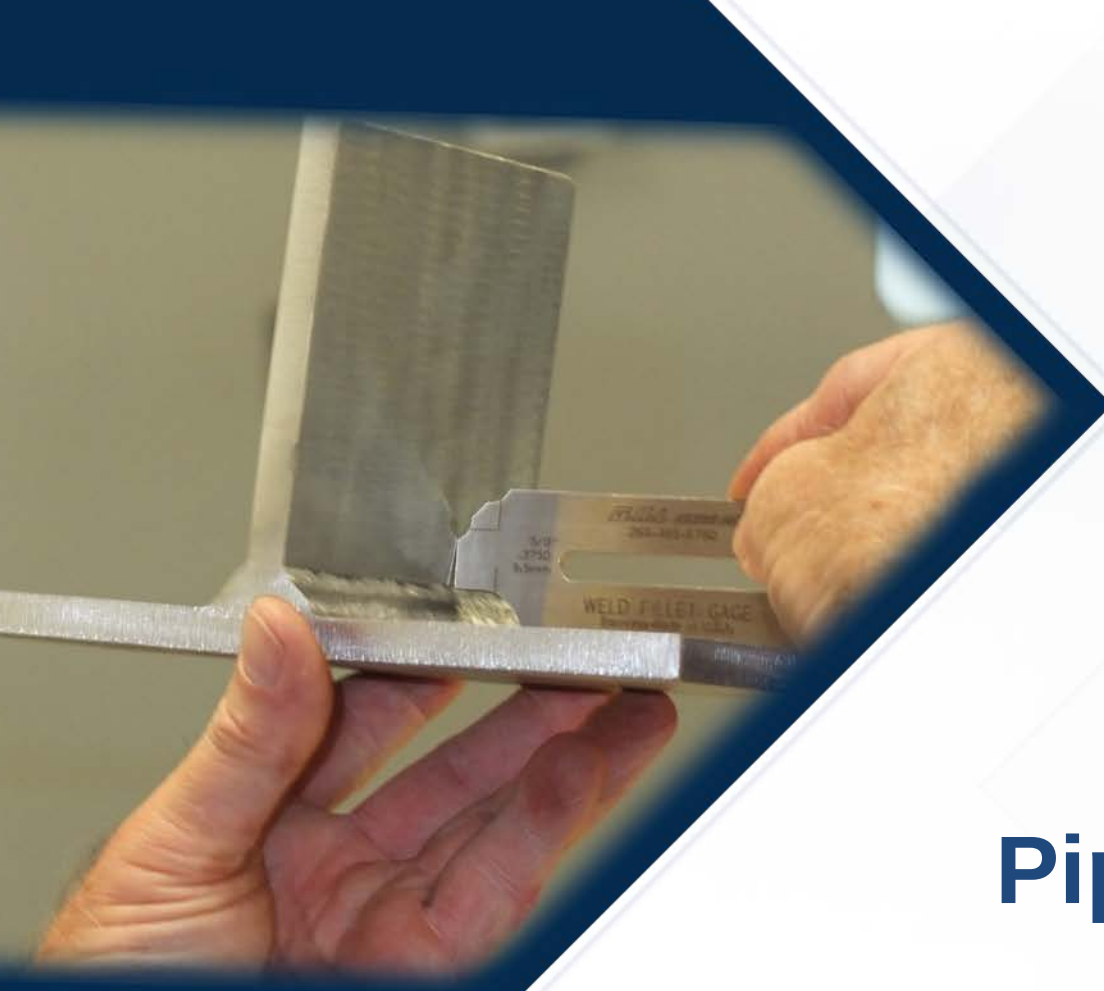


Lap Joint/Intermittent Fillet



T-Joint Surface Roughness





Pipe Joint

Pipe Joint



Pipe Joint



Pipe Joint



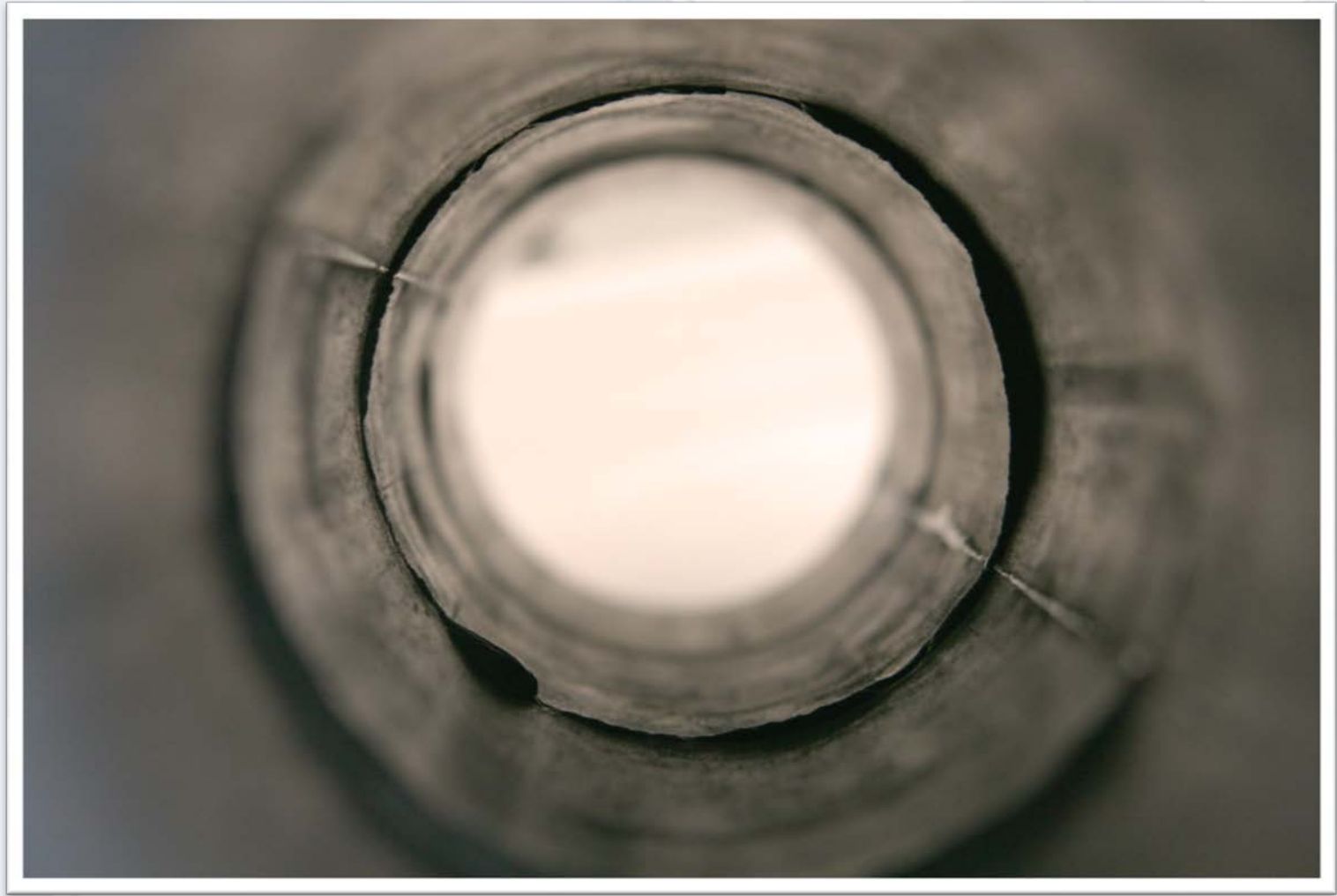
Pipe Joint

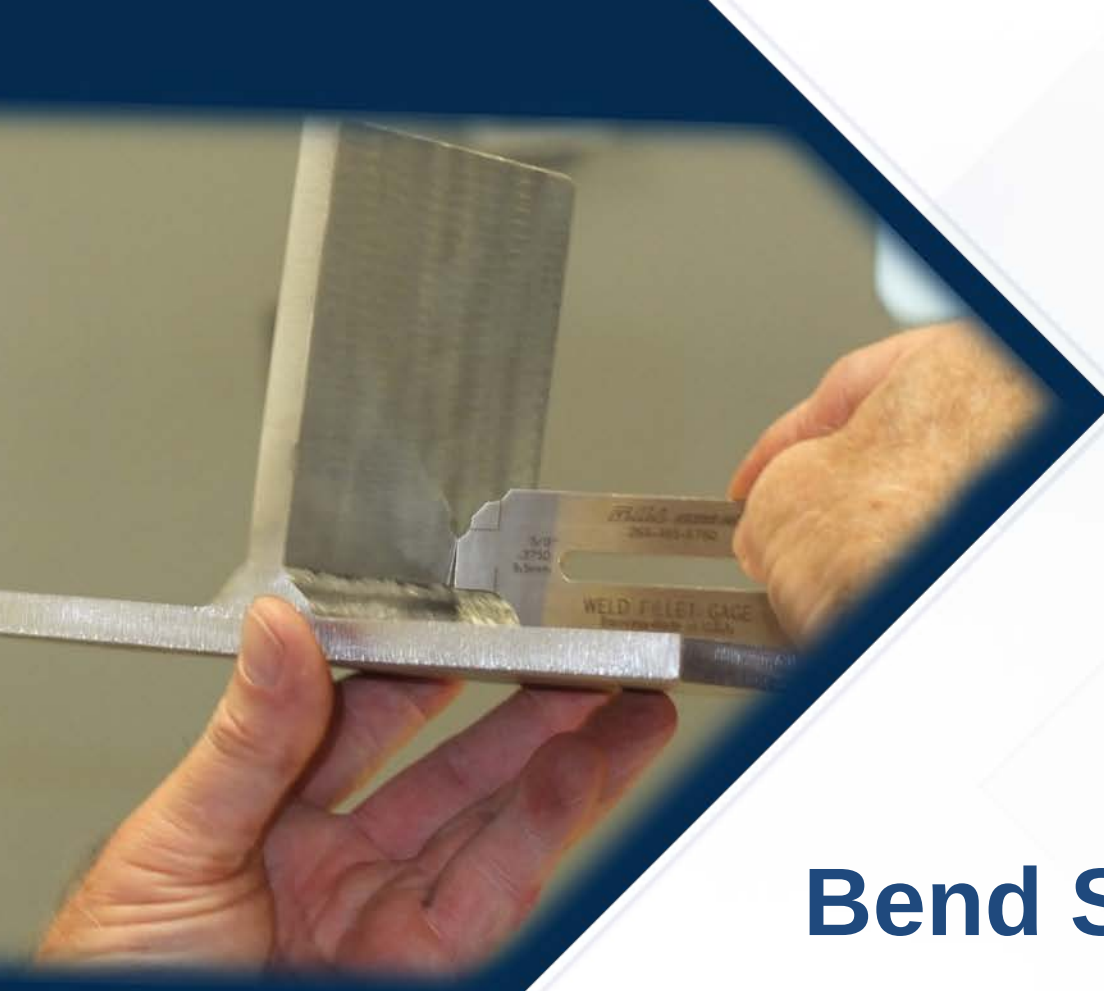


Pipe Joint



Pipe Joint

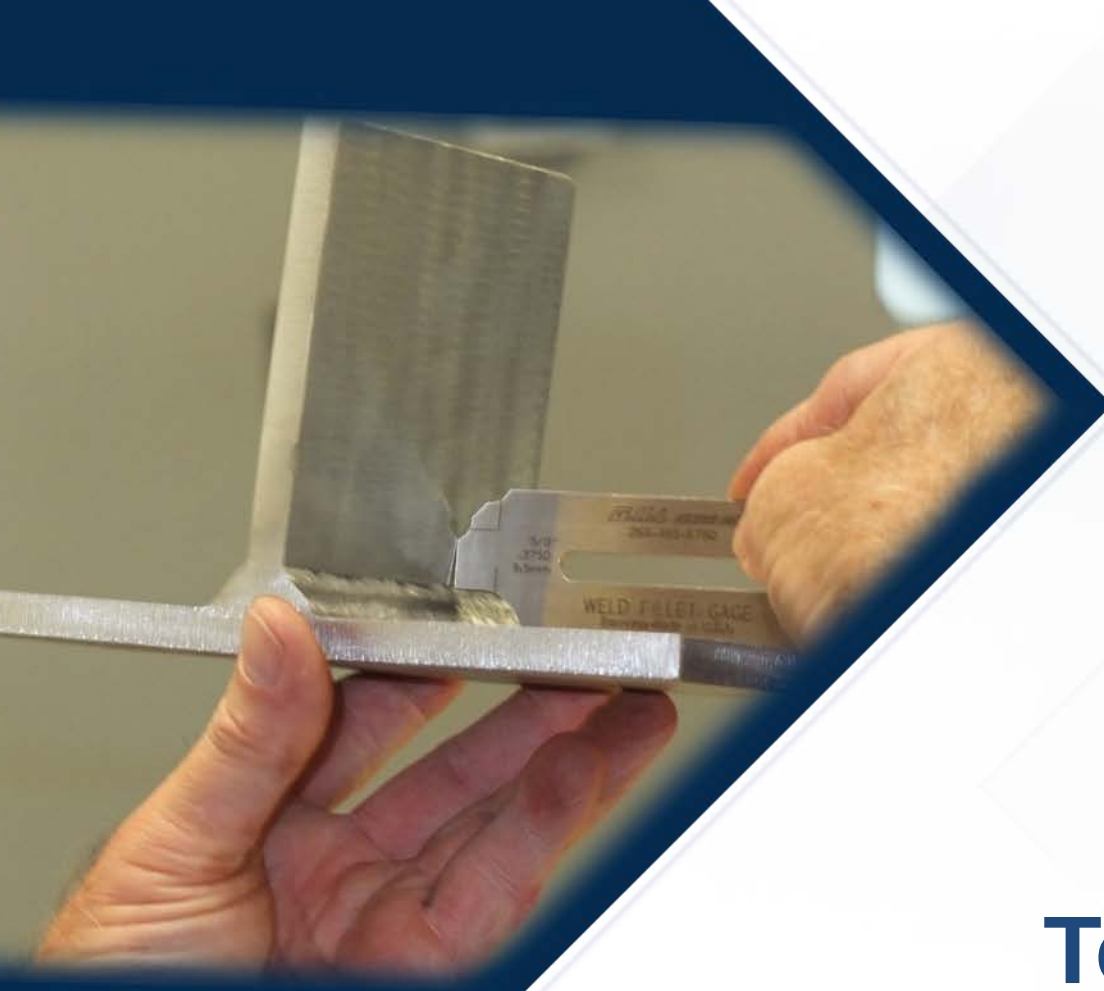




Bend Specimens

Bend Test Replica

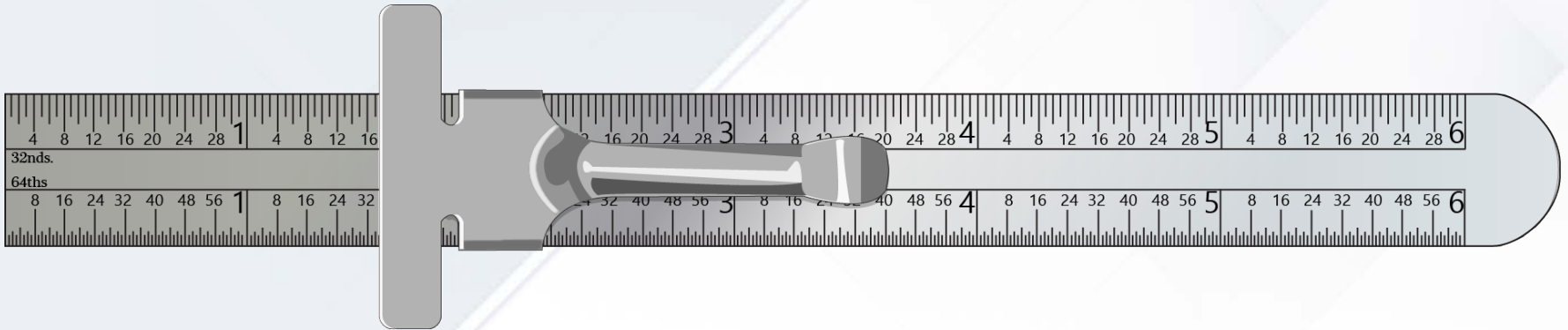




Tool Kit

6 Inch Machinist's Rule

1/64" Scale

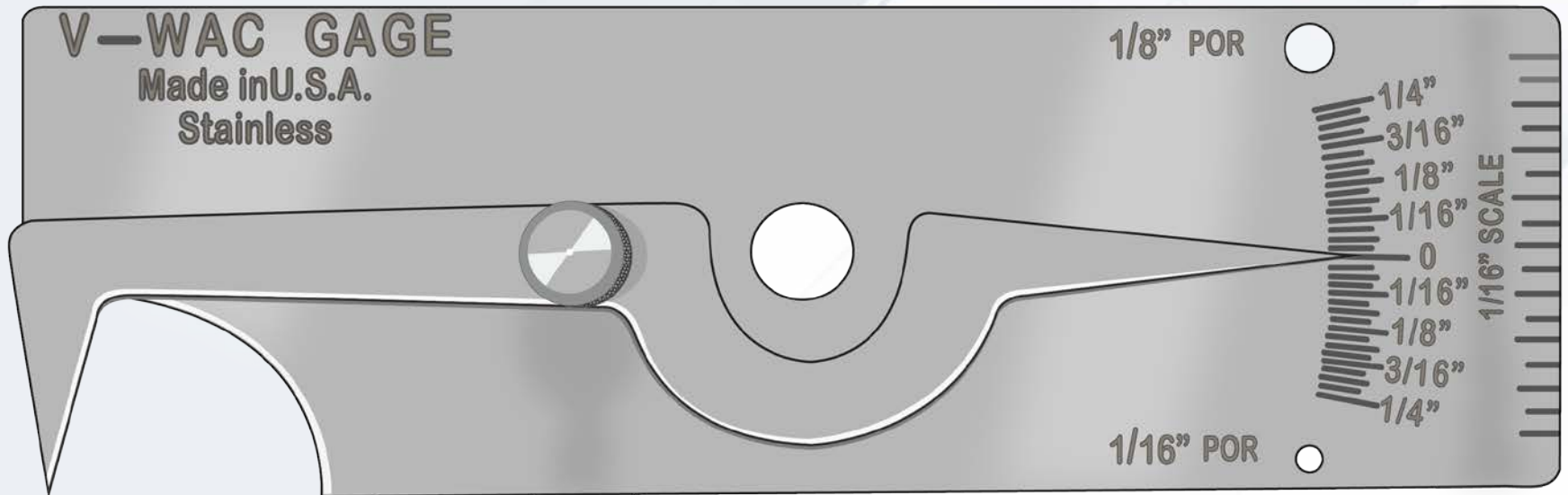


Note: Contains both fractions and decimals

Dial Caliper



V-WAC Gage

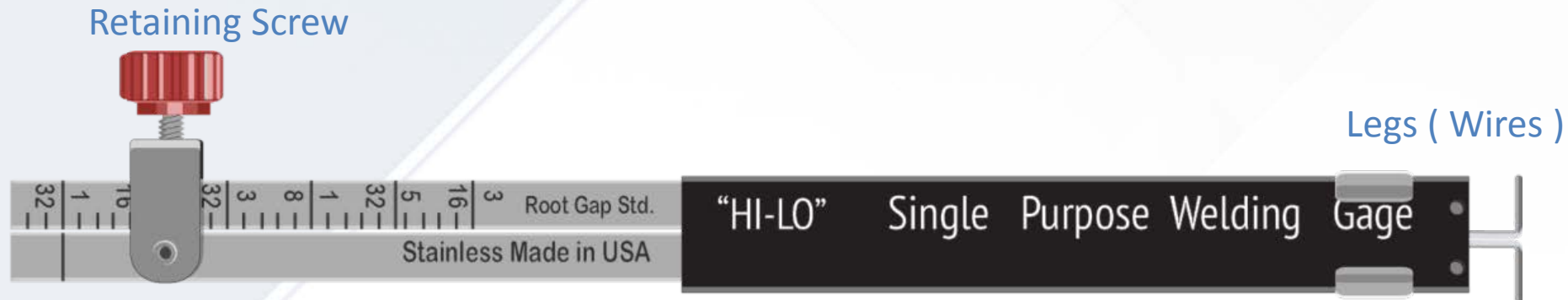


Fillet Weld Gage



Hi-Lo Gage

- Measures internal misalignment of pipe.
- Measures root opening.



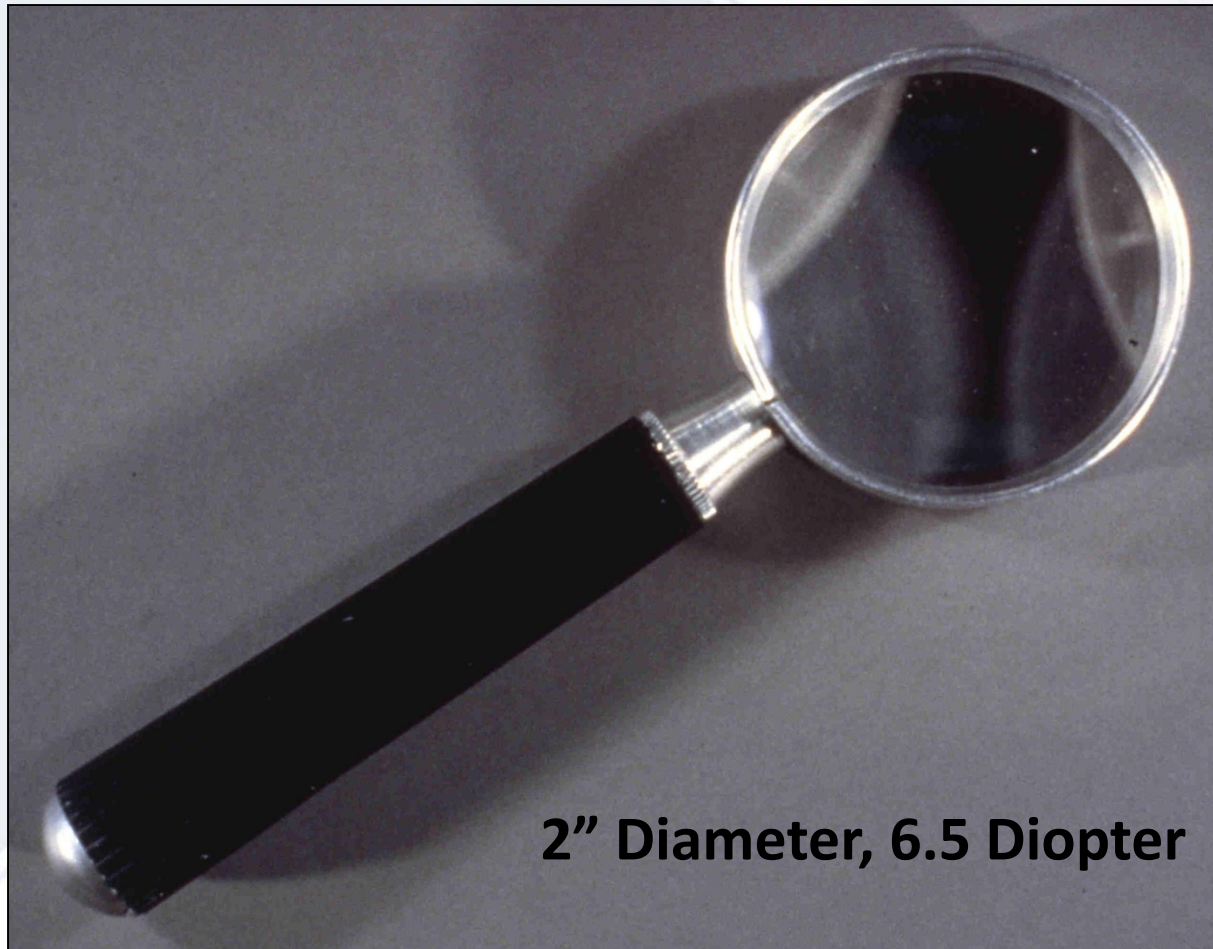
Roughness Comparator



Flashlight & Mirror



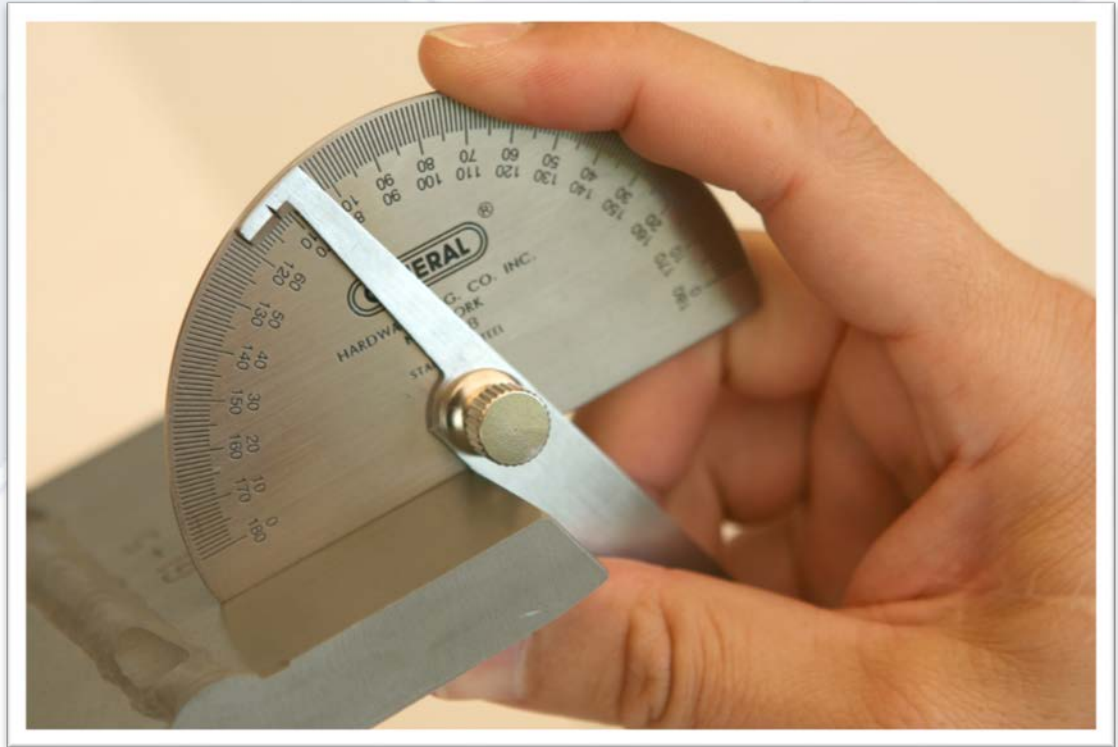
Magnifier



2" Diameter, 6.5 Diopter

Protractor

Measure edge preparations for compliance with WPS.



Exam Development

- Questions written
- Numerous beta exams
- Questions revised and retested
- Data collected and psychometrically analyzed to ensure exam fair and valid prior to launch

Future Plans

- A metric version of the practical is scheduled to be launched in July 2017 for non-domestic exams.
- Book of Specifications, Book of Exhibits, Tool Kit, question bank have all been converted.

Questions?