

# The Updated CWI Practical Exam

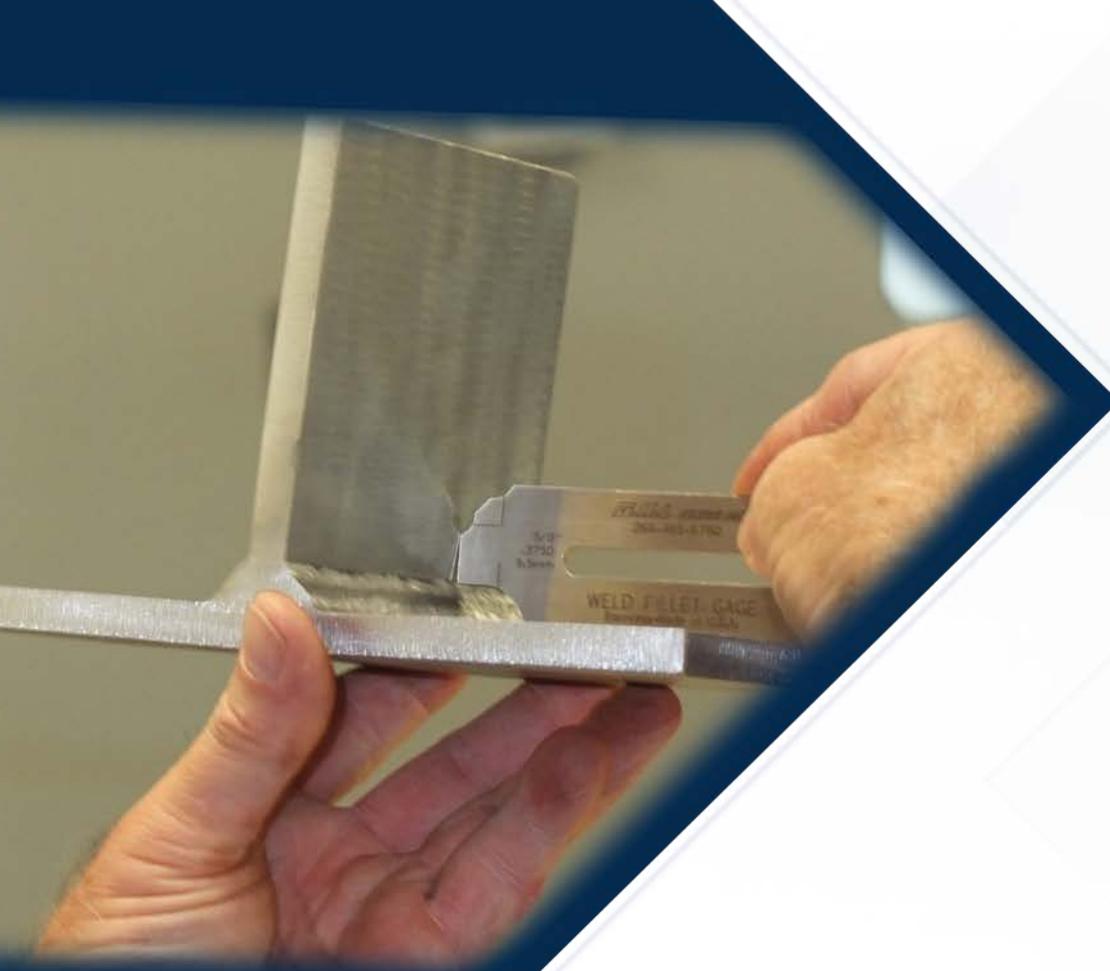
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February 8, 2017

# 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*

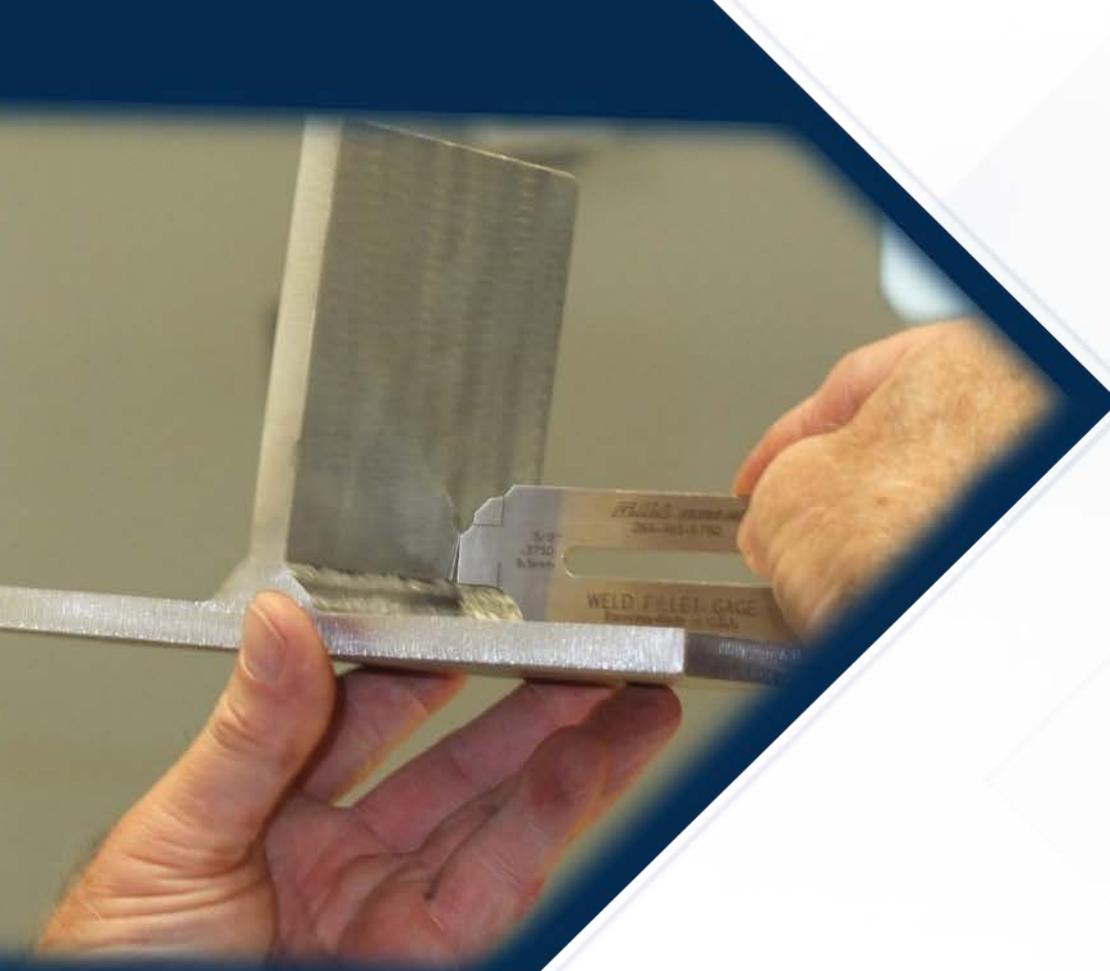
- Clause 6.0 – Performance Qualification
  - Performance Qualification Variables
  - Qualification Testing Requirements
  - Based on AWS B2.1
- Normative Annexes
  - Contain needed info and requirements
  - M-Numbers, F-Numbers, A-Numbers, etc.
- Informative Annexes
  - Contain useful information
  -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

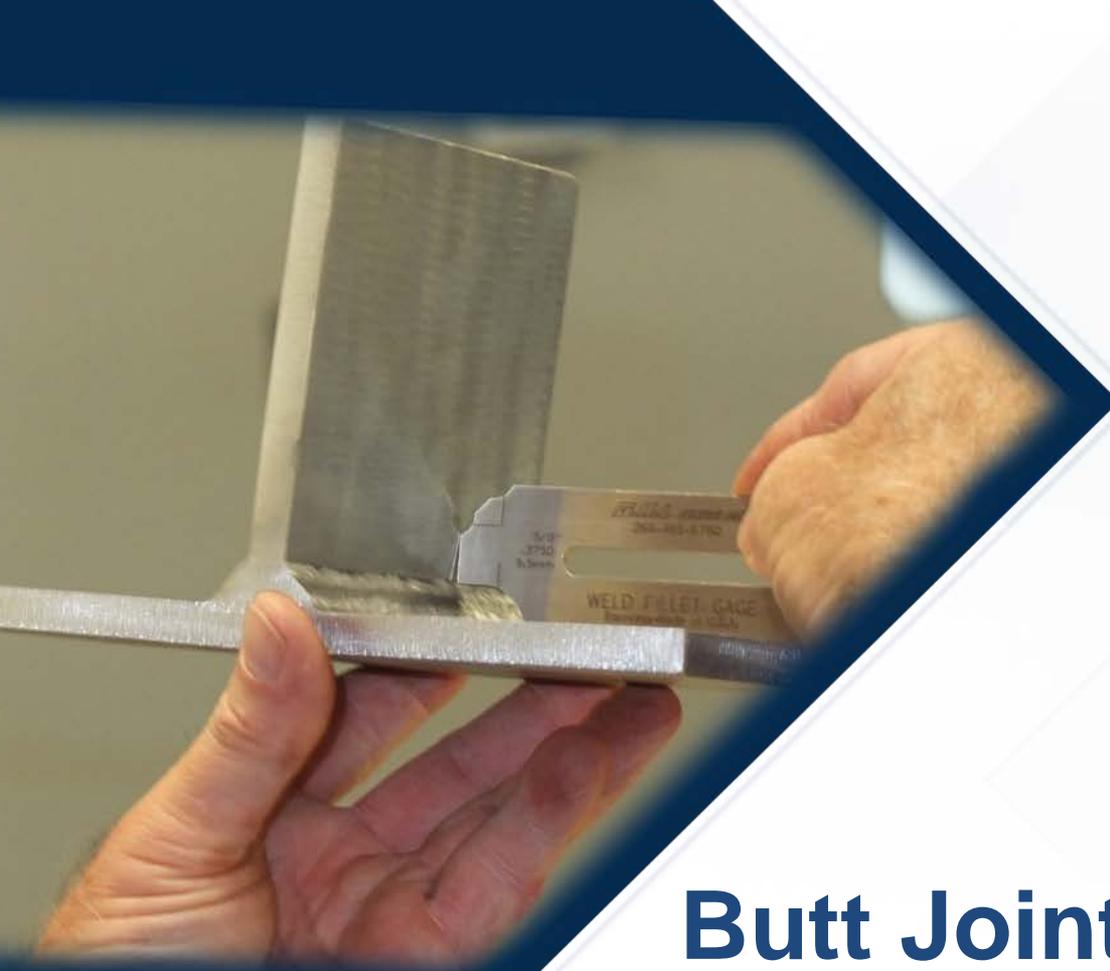


# Book of Exhibits

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Not available to candidates before exam

- WPSs
- PQRs
- WQTRs
- Photos of NDT Methods

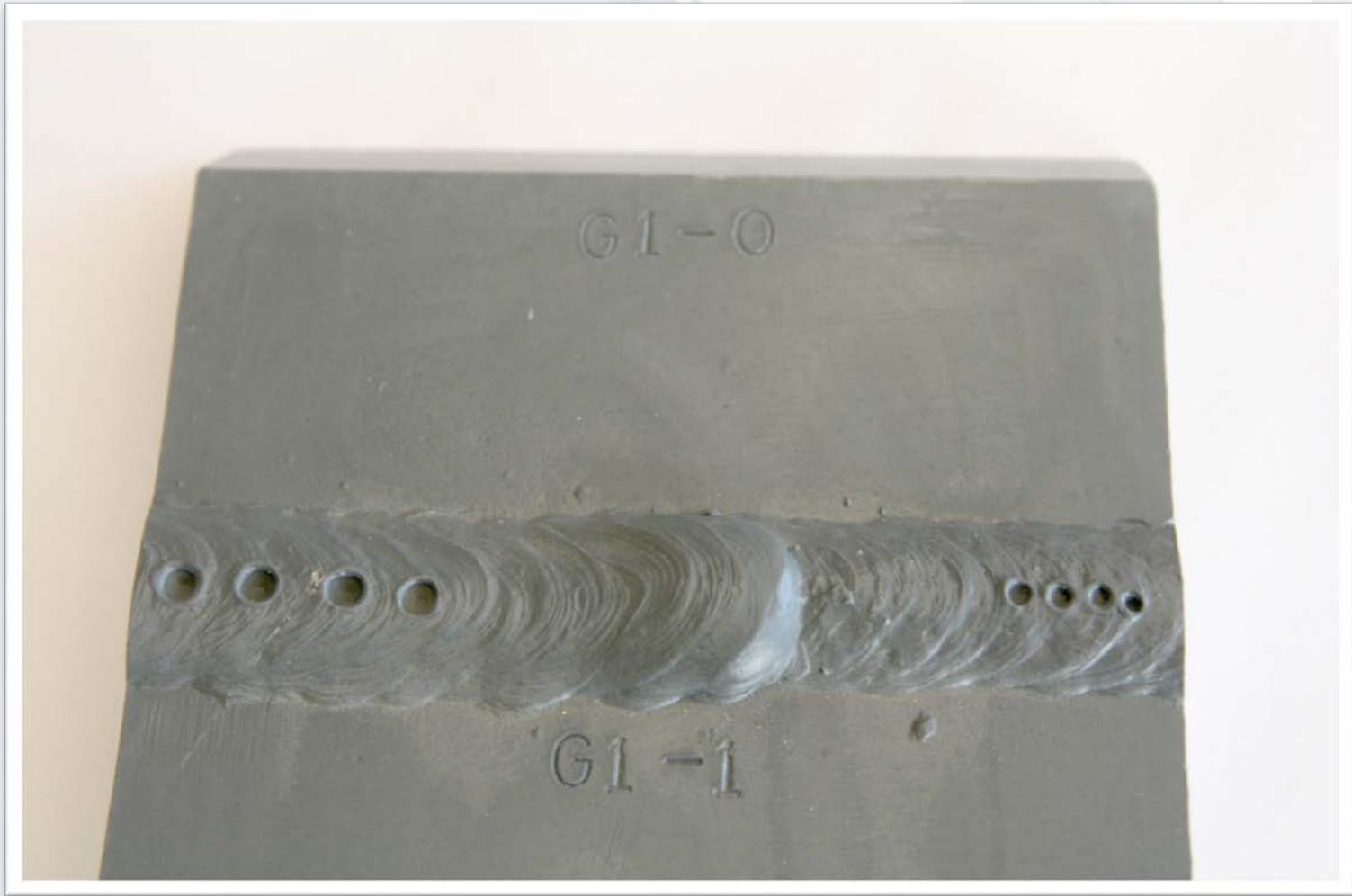


# Butt Joint Groove Welds

# Groove Weld



# Groove Weld



# Groove Weld



# Groove Weld

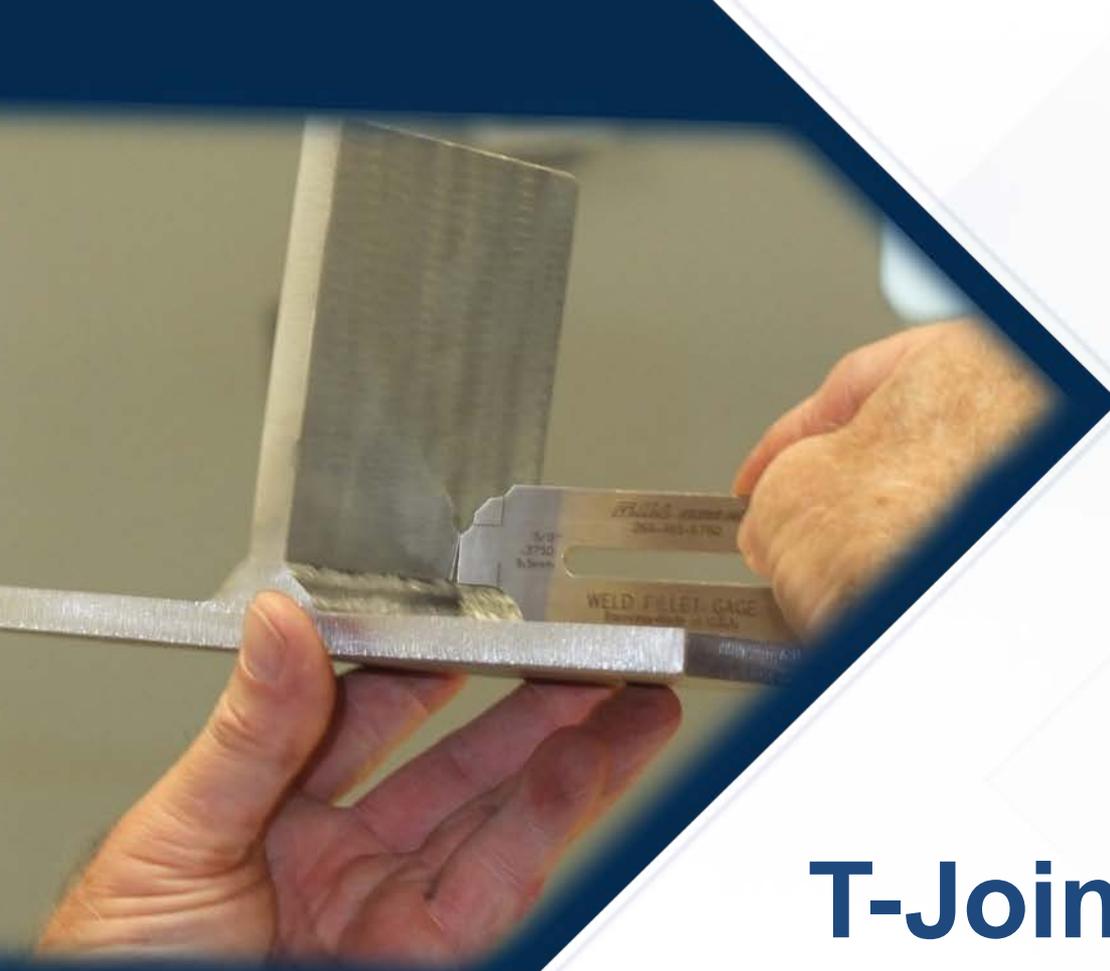


# Groove Weld Plate 2 Top



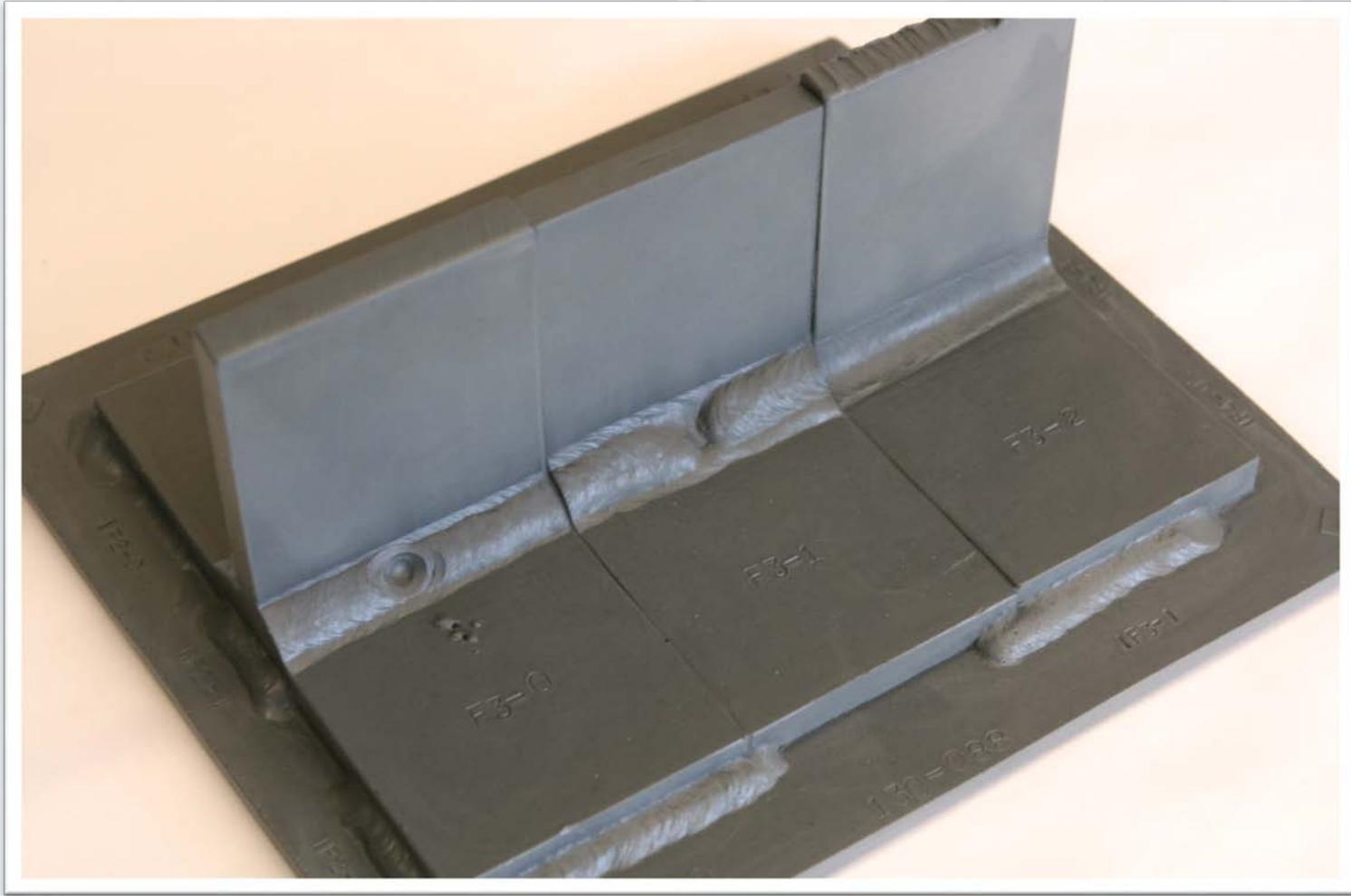
# Groove Weld



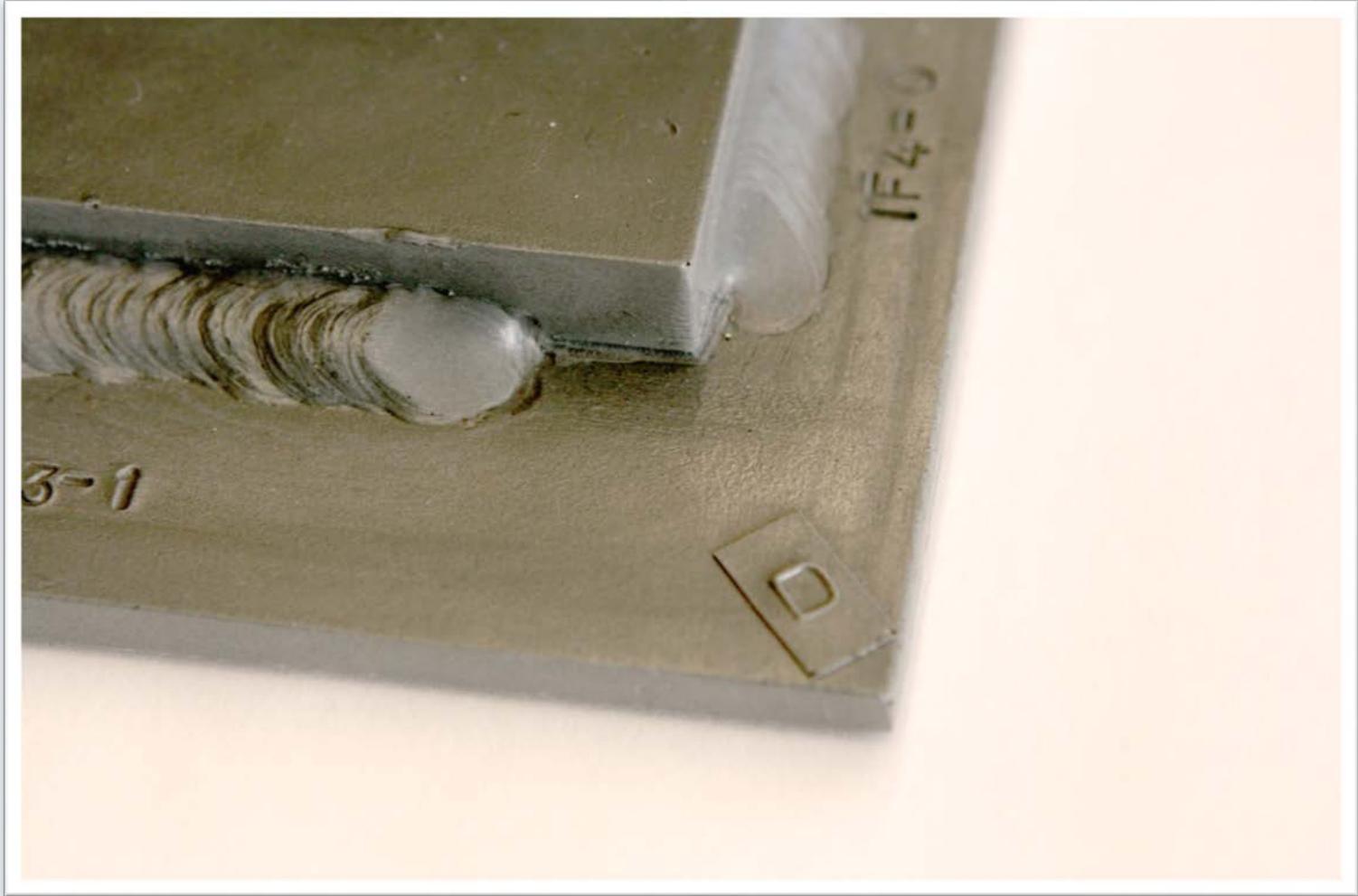


# T-Joint/Lap Joint

# T-Joint/Lap Joint



# Lap Joint



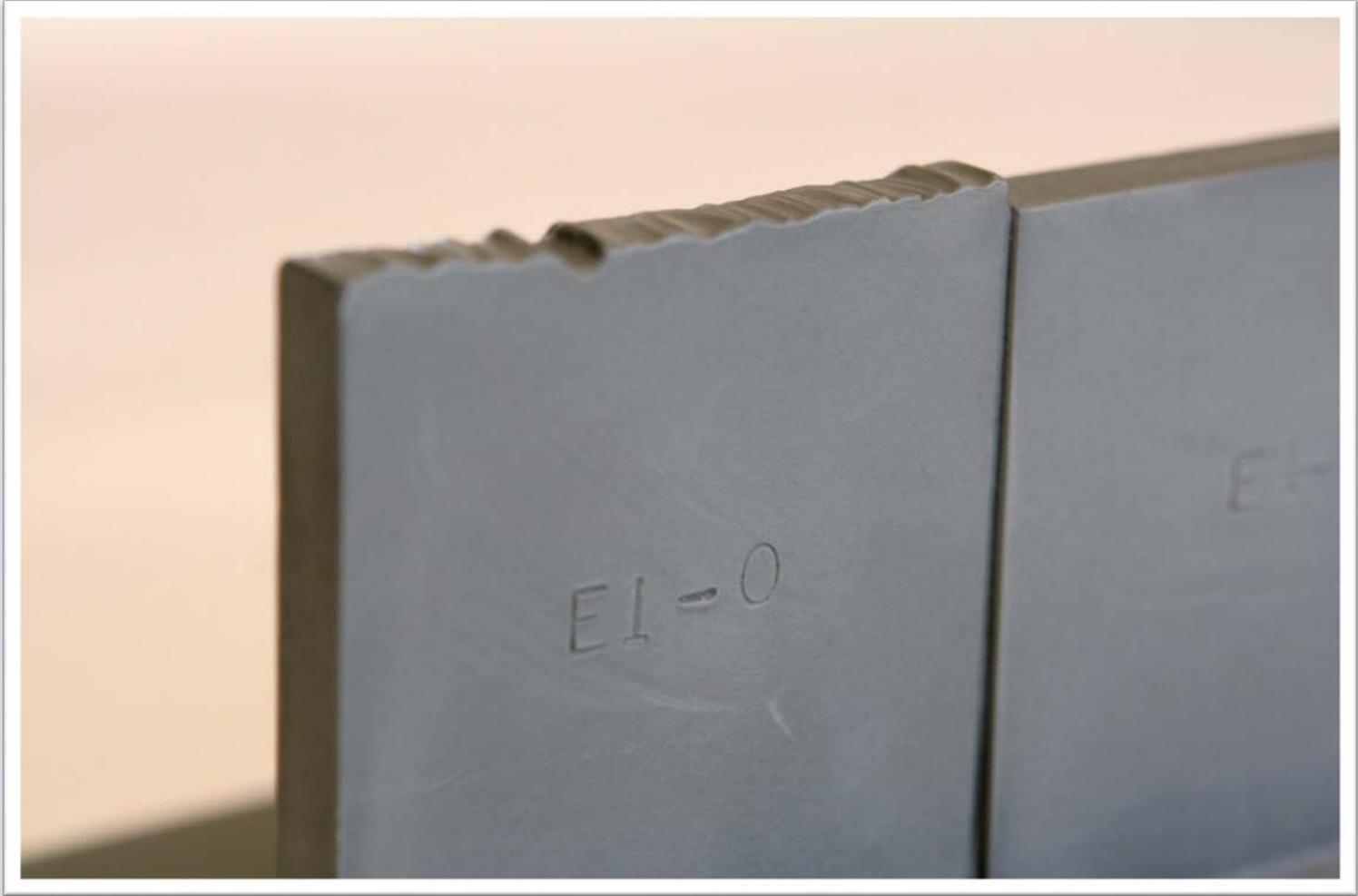
# T-Joint/Lap Joint

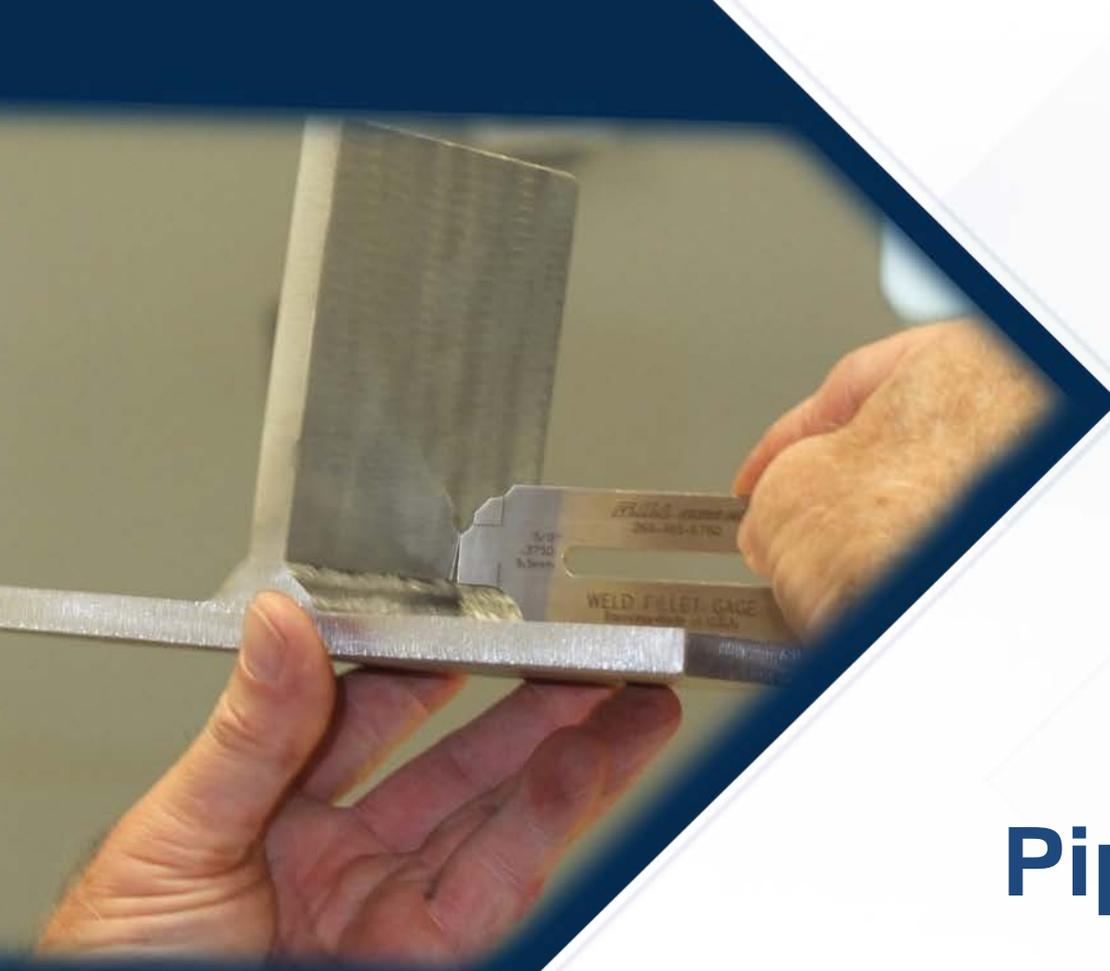


# Lap Joint/Intermittent Fillet



# T-Joint Surface Roughness





# Pipe Joint

# Pipe Joint



# Pipe Joint



# Pipe Joint



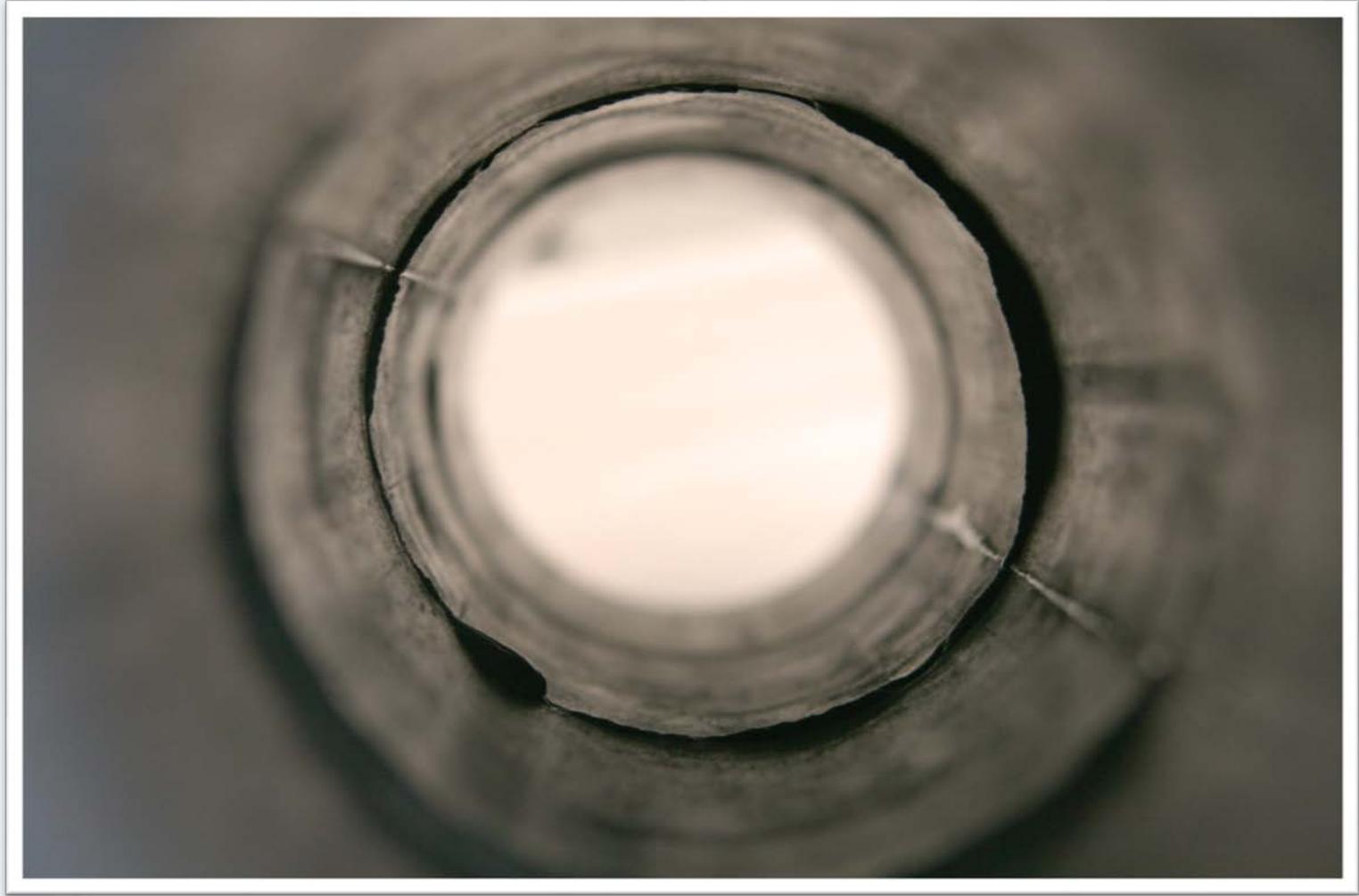
# Pipe Joint

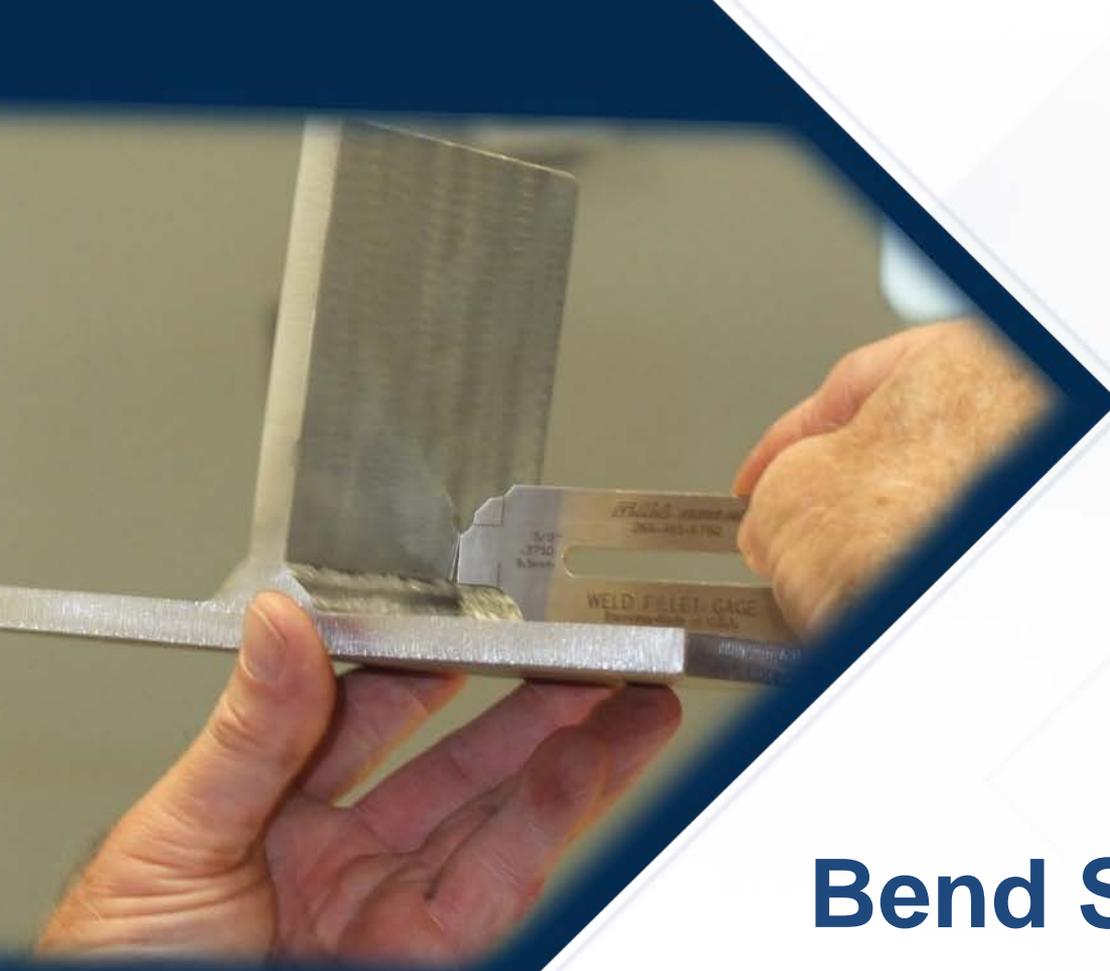


# Pipe Joint



# Pipe Joint

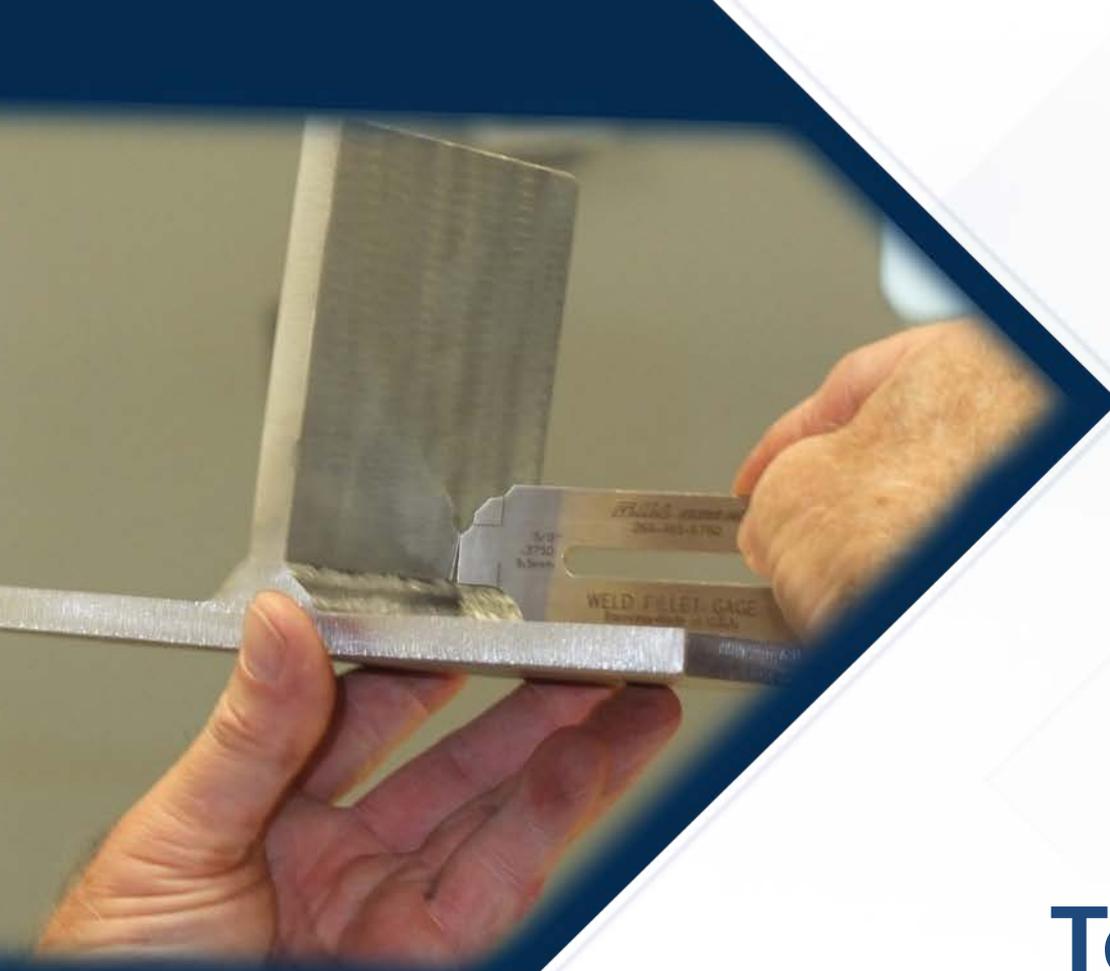




# Bend Specimens

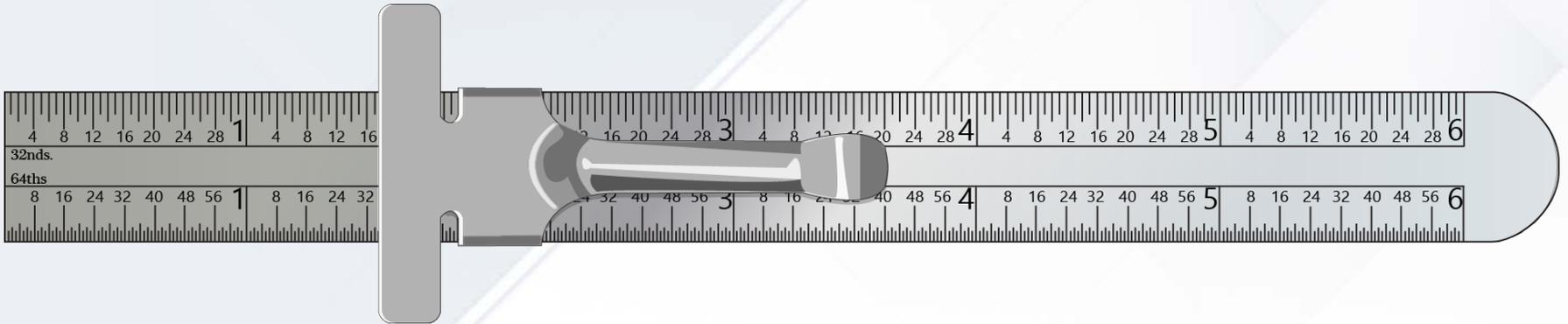
# Bend Test Replica





# Tool Kit

# 6 Inch Machinist's Rule 1/64" Scale

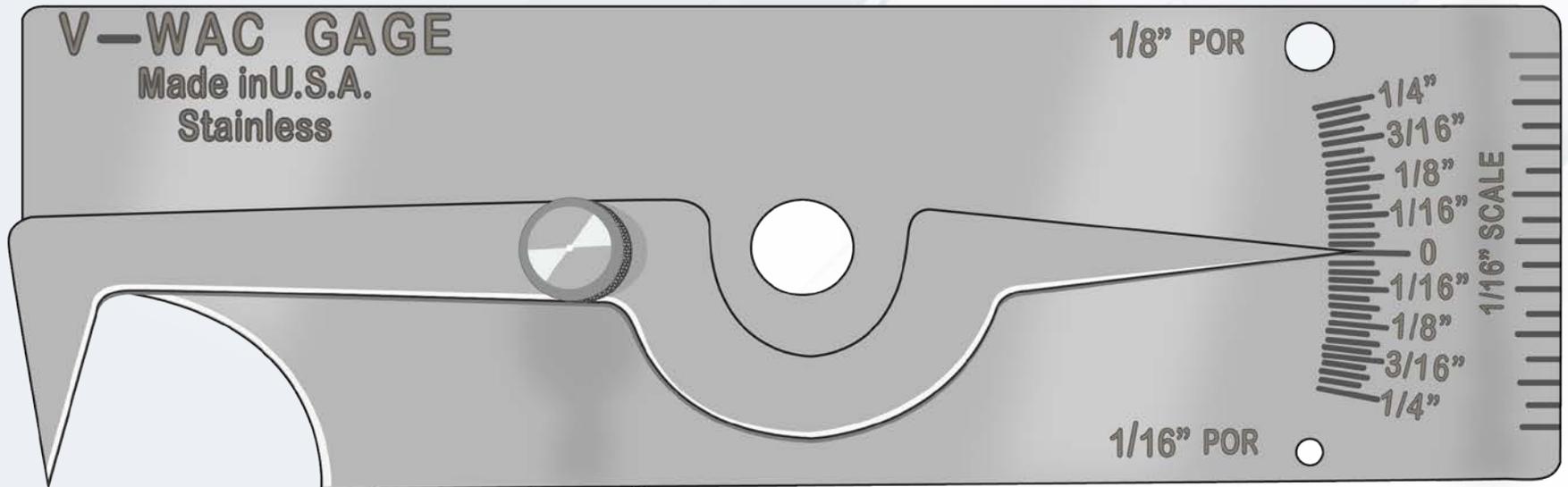


Note: Contains both fractions and decimals

# Dial Caliper



# V-WAC Gage



# Fillet Weld Gage



# Hi-Lo Gage

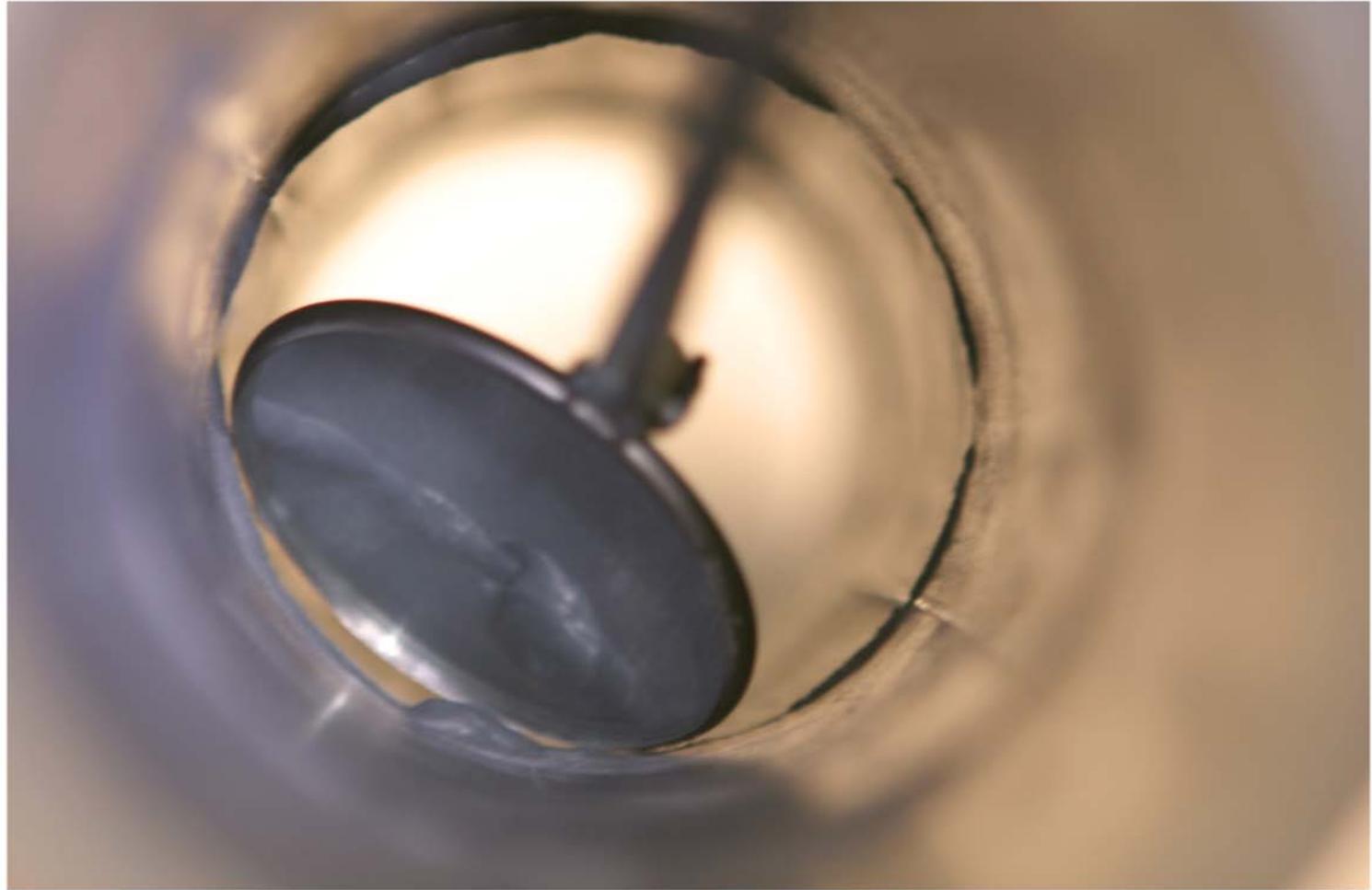
- Measures internal misalignment of pipe.
- Measures root opening.



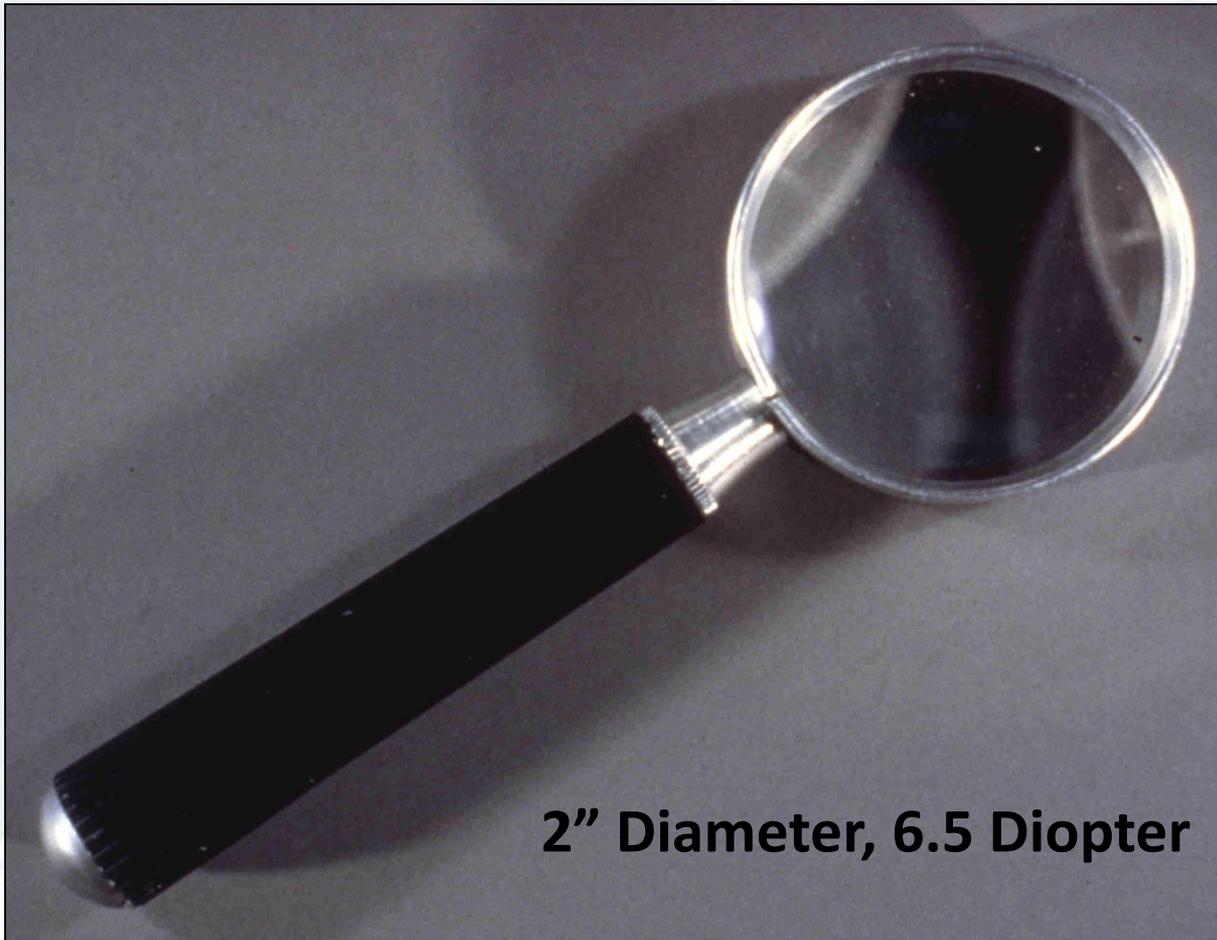
# Roughness Comparator



# Flashlight & Mirror



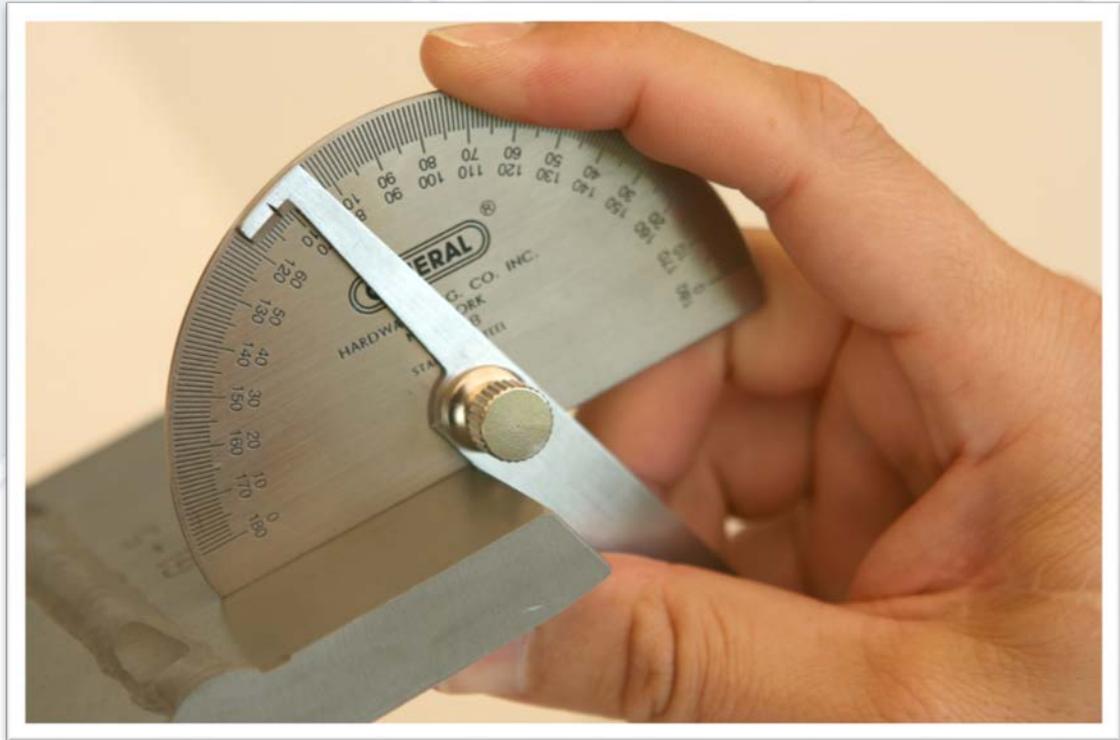
# Magnifier



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?**