

Part 1 General

1.1 RELATED REQUIREMENTS

- .1 Section 23 05 01 – Common Work Results for Mechanical.

1.2 REFERENCES

- .1 American National Standards Institute/American Society of Mechanical Engineers (ANSI/ASME)
 - .1 ANSI/ASME B31.1-2020, Power Piping.
 - .2 ANSI/ASME B31.3-2020, Process Piping.
 - .3 ANSI/ASME Boiler and Pressure Vessel Code-2021:
 - .1 BPVC 2021 Section I: Power Boilers.
 - .2 BPVC 2021 Section V: Nondestructive Examination.
 - .3 BPVC 2021 Section IX: Welding and Brazing Qualifications.
- .2 ANSI/AWWA C206-17, Field Welding of Steel Water Pipe.
- .3 American Welding Society (AWS)
 - .1 American National Standards Institute/American Water Works Association (ANSI/AWWA)
 - .2 AWS C1.1M/C1.1-2019, Recommended Practices for Resistance Welding.
 - .3 AWS Z49.1-2012, Safety in Welding, Cutting and Allied Process.
 - .4 AWS W1-2000, Welding Inspection Handbook.

1.3 Qualifications

- .1 Welders:
 - .1 Welding qualifications in accordance with CSA B51.
 - .2 Use qualified and licensed welders possessing certificate for each procedure performed from authority having jurisdiction.
 - .3 Submit welder's qualifications to Departmental Representative.
 - .4 Each welder to possess identification symbol issued by authority having jurisdiction.
 - .5 Certification of companies for fusion welding of aluminum in accordance with CSA W47.2.
- .2 Inspectors:
 - .1 Inspectors qualified to CSA W178.2.
 - .2 Certifications:
 - .3 Registration of welding procedures in accordance with CSA B51.
 - .4 Copy of welding procedures available for inspection.
 - .5 Safety in welding, cutting and allied processes in accordance with CSA-W117.2.

1.4 DELIVERY, STORAGE AND HANDLING

Deliver, store and handle in accordance with Section 01 61 00-Common Product requirements.

Deliver materials to site in original factory packaging, labelled with manufacturer's name, address.

Part 2 Products

2.1 Electrodes

- .1 Electrodes:
 - .1 In accordance with: CSA W48 Series.

Part 3 Execution

3.1 APPLICATION

- .1 Manufacturer's Instructions: comply with manufacturer's written recommendations, including product technical bulletins, handling, storage and installation instructions, and datasheets.

3.2 QUALITY OF WORK

- .1 Welding: in accordance with ANSI/ASME B31.1, ANSI/ASME Boiler and Pressure Vessel Code, Sections I and IX and ANSI/AWWA C206, using procedures conforming to AWS B3.0, AWS C1.1.

3.3 INSTALLATION REQUIREMENTS

- .1 Identify each weld with welder's identification symbol.
- .2 Backing rings:
 - .1 Where used, fit to minimize gaps between ring and pipe bore.
 - .2 Do not install at orifice flanges.
- .3 Fittings:
 - .1 DN 50 and smaller: install welding type sockets.
 - .2 Branch connections: install welding tees or forged branch outlet fittings.

3.4 INSPECTION AND TESTS-GENERAL REQUIREMENTS

- .1 Review weld quality requirements and defect limits of applicable codes and standards with Departmental Representative before work is started.
- .2 Formulate "Inspection and Test Plan" in co-operation with Departmental Representative.
- .3 Do not conceal welds until they have been inspected, tested and approved by inspector.
- .4 Provide for inspector to visually inspect welds during early stages of welding procedures in accordance with Welding Inspection Handbook. Repair or replace defects as required by codes and as specified.

3.5 INSPECTION AND TEST-SPECIALIST

- .1 General:
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- .1 Perform examinations and tests by specialist qualified to CSA W178.1 and CSA W178.2 and approved by Departmental Representative.
 - .2 To ANSI/ASME Boiler and Pressure Vessels Code, Section V, CSA B51 and requirements of authority having jurisdiction.
 - .3 Inspect and test 30% of welds in accordance with "Inspection and Test Plan" by non-destructive visual examination and magnetic particle (hereinafter referred to as "particle") tests.
 - .4 Hydrostatically test welds to ANSI/ASME B31.1.
 - .5 Visual examinations: include entire circumference of weld externally and wherever possible internally.
- .2 Failure of visual examinations:
- .1 Upon failure of welds by visual examination, perform additional testing as directed by Departmental Representative up to 10% of welds, selected at random by Departmental Representative by particle tests.

3.6 REPAIR OF FAILED WELDS

- .1 Re-inspect and re-test reworked or repaired welds at contractor's expense.

3.7 CLEANING

- .1 Work site to be cleaned and maintained in a clean state everyday.