

CONSTRUCTION: JOINING OF PIPES BY WELDING

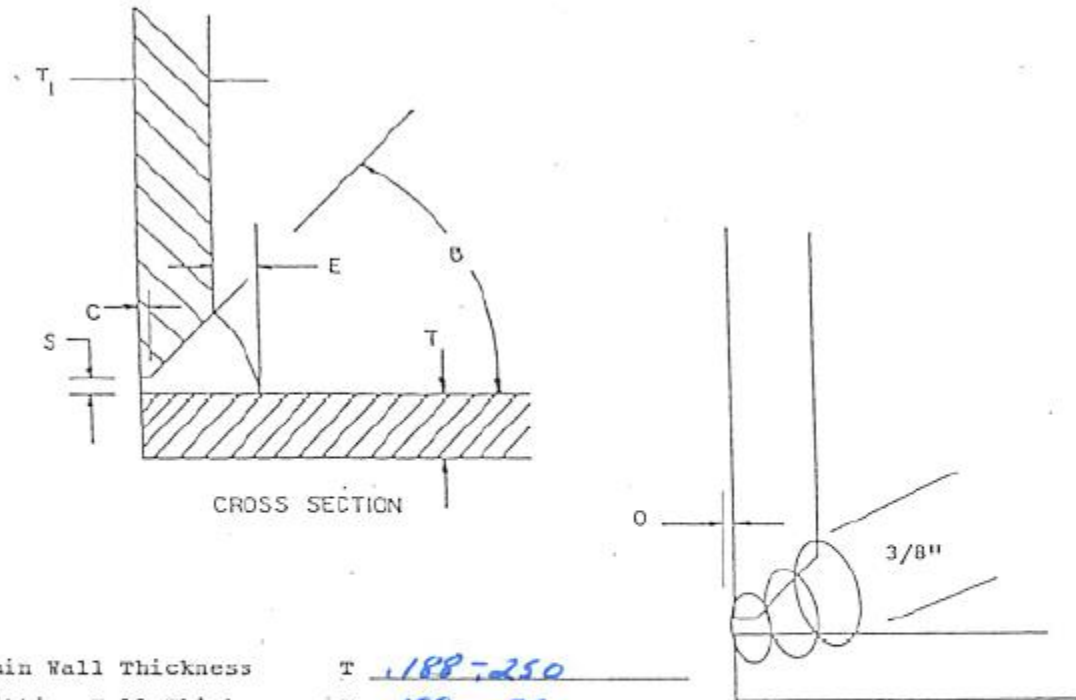
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STANDARD WELDING PROCEDURE SPECIFICATION #: 7B2F

- A. Process: Manual Electric Arc
- B. Material: 2 3/8 thru 12-inch header X 1-inch thru 4-inch branch
- C. Diameter and Wall Thickness: 0.188 WT thru 0.500 WT
- D. Joint Design: Standard Vee Groove 35 degrees
- E. Filler Metal and Number of Beads: Electrode Classification Electrode E6010 & E8010
AWS Class A Minimum of 3 Passes
- F. Electrical or Flame Characteristics: D.C. Reverse Polarity, Electrode Positive
- G. Position: N/A
- H. Direction of Welding: N/A
- I. Number of Welders: 1
- J. Time Lapse Between Passes: Maximum of 5 minutes between stringer and hot pass; 3 minutes maximum when temperature is below 35° F
- K. Type of Line-up Clamp: None
- L. Removal of Line-up Clamp: N/A
- M. Cleaning: Taper grind starts and craters and flatten crown by grinding stringer bead, power buff all remaining passes
- N. Speed of Travel: String bead 10 inches per minute maximum
- O. *Preheat, Stress Relief: Maximum of 300°F, Minimum of 150°F Preheating shall be done with device or equipment which will heat entire circumference(s) in single application 2" back from pipe ends
- P. Notes: Welded pipe strings shall be temporarily capped to prevent air draft cooling of stringer beads. Weld shall be completely protected from moisture until it has cooled to ambient temperature. Weld zone shall be protected so that the wind velocity near it does not exceed 8mph.
- * X-rated pipe must be stress relief if the carbon content exceeds 32% or C+1/4 Mn exceeds 65%. Heating of X-rated pipe is limited to 600°F.

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| | | | |
|------------------------|---|-----------------------------|---|
| Main Wall Thickness | T | <u>.188 - .250</u> | |
| Fitting Wall Thickness | T | <u>.188 - .250</u> | |
| Bevel | B | <u>35° +5° -0°</u> | |
| Spacing | S | <u>1/32" and 1/32" - 0"</u> | |
| Root Face | C | <u>1/16" - 1/32"</u> | Protrusion O <u>1/32" Max</u> |
| Toe Extension | E | <u>1/4" Min. - 3/8" Max</u> | Note (A) Fitting shall be contoured to fit curvature of main. (B) Position tee and tack sufficiently to prevent shifting or pulling during welding. |

| Bead No. | Electrode Diameter | Amperage Range | Voltage Range | Type Rod | Notes |
|----------|--------------------|----------------|---------------|-----------|-------|
| 1 | 1/8 | 90-120 | 25-33 | E6010 5P+ | |
| 2 | 1/8 | 94-120 | 26-34 | E8010 | |
| 3 | 5/32 | 110-145 | 22-30 | E8010 | |
| 4 | 5/32 | 95-120 | 22-30 | E8010 | |
| 5 | | | | | |

| Bead No. | Notes |
|----------|---|
| | Electrodes may be substituted within rod group 1&2 of AWS A5.1-A5.5 |
| | * If another pass is needed same amps and volts as pass #4 |

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WELD TEST REPORT (USE SEPARATE FORM FOR EACH WELDING PROCEDURE)

| | | | | | | | |
|--|--|---|--|-----------------------------------|--|--------------------------------------|---|
| DATE <i>11-15-10</i> | | WELDER'S NAME <i>Timothy Light</i> | | | SOCIAL SECURITY NUMBER <i>1323</i> | | |
| LOCATION <i>Dalhart</i> | | NAME OF CONTRACTOR OR COMPANY <i>Bowman Bros</i> | | | RIGHT HANDED <input checked="" type="checkbox"/> | LEFT HANDED <input type="checkbox"/> | QUALIFYING TEST <input type="checkbox"/> |
| POSITION INCLINED <input type="checkbox"/> HORIZONTAL <input checked="" type="checkbox"/> | | ELECTRIC ARC <input checked="" type="checkbox"/> INDOORS <input checked="" type="checkbox"/> OX-ACETYLENE <input type="checkbox"/> OUTDOORS <input type="checkbox"/> | | | WEATHER <i>C1</i> | TEMPERATURE <i>65</i> | TIME OF DAY <i>Afternoon</i> |
| PIPE SPECIFICATION <i>API-5L X42</i> | | PIPE MANUFACTURER | | | WALL THICKNESS <i>.188</i> | DIAMETER (OD) <i>6 5/8" / 4"</i> | |
| MAKE OF WELDING MACHINE <i>Lin</i> | | SIZE <i>200</i> | MAKE OF OX-ACETYLENE APPARATUS <i>N/A</i> | WELDING NOZZLE SIZE <i>N/A</i> | OX-ACETYLENE PRESSURE FLOWING <i>N/A</i> | | |
| BRAND OF ELECTRODE <i>Lin</i> | | BRAND OF OX-ACETYLENE ROD AND SIZE <i>N/A</i> | | | NUMBER OF PASSES - OX-ACETYLENE WELD <i>N/A</i> | | WELDING PROCEDURE NO. <i>782F-Fillet</i> |

| | ELECTRODE TYPE AND SIZE | | | MACHINE SETTINGS | | AMPERAGE RG. | VOLTAGE RG. |
|---|-------------------------|-----------------|------------|------------------|-----------|----------------|--------------|
| | | | | COARSE | FINE | | |
| 1 | STRINGER | <i>1/8 5P+</i> | <i>Lin</i> | <i>120-190</i> | <i>60</i> | <i>90-120</i> | <i>25-33</i> |
| 2 | HOT PASS | <i>1/8 70+</i> | <i>Lin</i> | <i>120-190</i> | <i>60</i> | <i>94-120</i> | <i>26-31</i> |
| 3 | FILLER (S) | <i>5/32 70+</i> | <i>Lin</i> | <i>120-190</i> | <i>75</i> | <i>110-145</i> | <i>22-30</i> |
| 4 | CAP PASS | <i>5/32 70+</i> | <i>Lin</i> | <i>120-190</i> | <i>50</i> | <i>95-120</i> | <i>22-30</i> |

| | COUPON | | | CROSS SEC. AREA SQ. IN. | LOAD | % ELONG. | COMPUTED TENSIL PSI | REMARKS | AC-CEPTED | RE-JECTED |
|---|---|--------|-------|-------------------------|------|----------|---------------------|---------|-----------|-----------|
| | LOCATION | LENGTH | WIDTH | | | | | | | |
| 1 | <i>If Needed 5th Pass at 4 settings</i> | | | | | | | | | |
| 2 | | | | | | | | | | |
| 3 | | | | | | | | | | |
| 4 | | | | | | | | | | |

| | COUPON LOCATION | TYPE OF BEND | REMARKS | AC-CEPTED | RE-JECTED |
|---|-----------------|--------------|---------|-----------|-----------|
| | 1 | | | | |
| 2 | | | | | |
| 3 | | | | | |
| 4 | | | | | |

| | COUPON LOCATION | REMARKS | AC-CEPTED | RE-JECTED |
|---|-----------------|------------------------------|-------------------------------------|-------------------------------------|
| | 1 | <i>Top</i> | <i>Full Pen. Clean Metal</i> | <input checked="" type="checkbox"/> |
| 2 | <i>Top</i> | <i>Full Pen. Clean Metal</i> | <input checked="" type="checkbox"/> | |
| 3 | <i>Stitch</i> | <i>Full Pen. Clean Metal</i> | <input checked="" type="checkbox"/> | |
| 4 | <i>Crack</i> | <i>Full Pen. Clean Metal</i> | <input checked="" type="checkbox"/> | |

| TEE WELD TEST | SIZE AND WALL THICKNESS OF MAIN | | GAS PRESSURE ON MAIN PSIG | LOCATION OF FRACTURE | | |
|---------------------|---------------------------------|----------|---------------------------|-------------------------------|---------------------------------|-------------------------------|
| | | | | WELD <input type="checkbox"/> | NIPPLE <input type="checkbox"/> | MAIN <input type="checkbox"/> |
| | DID WELD CONTAIN: | | DEPTH OF UNDERCUT | | LENGTH OF UNDERCUT | |
| | PINHOLES | COLDROLL | UNDERCUT | | | |
| REMARKS ON TEE WELD | | | | | | |

| | | | | | |
|-----------|--|--|---------------------|--|--|
| PIPE WELD | QUALIFIED <input type="checkbox"/> NOT QUALIFIED <input checked="" type="checkbox"/> | ELECTRIC ARC <input type="checkbox"/> OX-ACETYLENE <input checked="" type="checkbox"/> | TEE WELD | QUALIFIED <input type="checkbox"/> NOT QUALIFIED <input checked="" type="checkbox"/> | ELECTRIC ARC <input type="checkbox"/> OX-ACETYLENE <input checked="" type="checkbox"/> |
| TESTED BY | SIGNATURE <i>Timothy Light</i> | | TITLE <i>Welder</i> | | |