|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Company - | | WPS # - **WPS-D1.1-001** | Rev # - **0** | Date – **11/16/2017** |
| Authorized By – | Date – **11/13/2017** | Supporting PQR(s) – **Prequalified BTC-P10-GF** | | CVN Report - **No** |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **BASE METALS** | Specification | Type or Grade | AWS Group # | **BASE METAL THICKNESS** | As Welded | With PWHT |
| Base Material | ASTM A500 | C | I | CJP Groove Welds | NQ | NQ |
| Welded To | ASTM A500 | C | 1 | CJP Groove W/CVN | NQ | NQ |
| Backing Material | NONE | NA | NA | PJP Groove Welds | 3/16” – 3/4" | NQ |
| Details – Procedure for performing flare groove welds in butt joints in matched square tubing | | | | Fillet Welds | NQ | NQ |
| **DIAMETER** | NQ | NQ |

**WELDING PROCEDURE SPECIFICATION – AWS D1.1**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **JOINT DETAILS** | | | **JOINT DETAILS** (Sketch) | | | | |
| Groove Type | Flare Bevel Groove | | **See Page 2 For Sketch** | | | | |
| Groove Angle | See Sketch for Details | |
| Root Opening | 0” – 1/8” | |
| Root Face | 3/16” Minimum | |
| **Backgouging** | None | |
| Method | None | |
| **POSTWELD HEAT TREATMENT** | | |
| Temperature | None | |
| Time at Temperature | None | |
| Other | None | |
| **PROCEDURE** | | | | | | | |
| Weld Layer(s) | | 1 | |  |  |  |  |
| Weld Pass(es) | | 1 | |  |  |  |  |
| **Process** | | GMAW | |  |  |  |  |
| Type (manual, mechanized, etc) | | Semi-Automatic | |  |  |  |  |
| **Position** | | Flat | |  |  |  |  |
| **Filler Metal (AWS Spec)** | | A5.18 | |  |  |  |  |
| AWS Classification | | ER70S-6 | |  |  |  |  |
| Diameter | | .035” | |  |  |  |  |
| **Shielding Gas Composition** | | Don Will Advise – 90/10 likely | |  |  |  |  |
| Flow Rate CFH | | Don Will Advise – 90/10 likely | |  |  |  |  |
| **Minimum Preheat Temperature** | | 32°F (If the base metal temperature is below 32°F, it is to be brought to 70°F before welding and the minimum Interpass temperature shall be maintained during welding) | |  |  |  |  |
| **Minimum Interpass Temperature** | | 32°F | |  |  |  |  |
| **Electrical Characteristics** | |  | |  |  |  |  |
| Current Type and Polarity | | DCEP | |  |  |  |  |
| Transfer Mode | | Spray | |  |  |  |  |
| Power Source Type (cc, cv, etc) | | CV | |  |  |  |  |
| Amps | | 190 - 280 | |  |  |  |  |
| Volts | | 22 – 30 (to be narrowed after trials) | |  |  |  |  |
| Wire Feed Speed | | 350 – 600 (to be narrowed after trials) | |  |  |  |  |
| Travel Speed | | Time welder to calculate | |  |  |  |  |
| Maximum Heat Input | | Calculate using Heat Input = (60 x Amps x Volts) / (1,000 x Travel Speed in in/min) = KJ/in | |  |  |  |  |
| **Technique** | |  | |  |  |  |  |
| Weld Size | | 1/16” minimum, reinforcement not to exceed 1/8” | |  |  |  |  |
| Stringer or Weave | | Either | |  |  |  |  |
| Multi or Single Pass (per side) | | Single | |  |  |  |  |
| Oscillation (mechanized, auto) | | NA | |  |  |  |  |
| Contact Tube to Work Distance | | 1/2" – 3/4" | |  |  |  |  |
| Peening | | None | |  |  |  |  |
| Interpass Cleaning | | NA | |  |  |  |  |
| **Other** | | Allowed per 9.10.1 (1) | |  |  |  |  |

Joint Details – Sketch

(Figure 3.2, P.72)

Effective Weld Size (E) = 5/8 Radius

Notes

* T1 shall be 3/16” minimum *per Figure 3.2*
* T3 shall be greater than or equal to T1 *per Figure 3.2*
* Weld are to be filled flush with the surface of the Joint
* Radius minimum = 2(T1) *per 2.4.1.4*
* Effective Weld Size (E) = 5/8 Radius for welds filled flush *per Table2.1*
* Maximum reinforcement is not to exceed 1/8” *per Table 5.9*

T3

Root Face = 3/16” min

T1

(E)

Radius

Root Opening = 0” (+1/8”, -0”)