

WELDING PROCEDURE SPECIFICATION (WPS)

As per AWS D1.1 CLAUSE.4 Structural Welding Code-Steel

Organization Name

: URJKA CONSULTING AND ENGINEERING SOLUTIONS PVT LTD

WPS No.

: WPS-01

Date: 06.12.2022

Supporting PQR(s)

: 01

Date: 06.12.2022

Welding Process (es)

: SMAW (Manual)

Types (Manual, Automatic, Semi Auto)

: Manual (SMAW)

Base Metals	Specification	Type or Grade	AWS Group No.	Base metal Thickness	As-Welded	With PWHT
Base Material	IS2062	E250 BR	-	CJP Groove welds	3mm to Unlimited	N.A
Welded To	IS2062	E250 BR	-	CJP Groove w/Cvn	N.A	N.A
Backing Material	Weld metal	-	-	PJP Groove welds	3mm to Unlimited	N.A
Other	-	-	-	Fillet	Unlimited	N.A

Groove Type	Single V Groove Butt Joint & CJP, PJP, Fillet
Groove Angle	As per Manufacturing Drawing
Root Opening	As per Manufacturing Drawing
Root Face	As per Manufacturing Drawing
Back gouging	YES
Method	Grinding & Chipping

Temperature	N.A
Time at Temperature	N.A
Other	-

AS PER MANUFACTURING DRG.

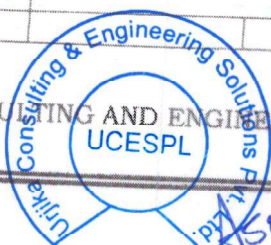
Weld Layer (s)	Root Layer	Subsequent Layer	Subsequent Layer	Back gouging
Weld Pass (es)	Root passes	Subsequent Passes	Subsequent Passes	Back gouging
Process	SMAW	SMAW	SMAW	SMAW
Type (Manual, Machinized, etc.)	Manual	Manual	Manual	Manual
Position	3G	3G	3G	3G
Vertical Progression	Uphill	Uphill	Uphill	Uphill
Filler Metal (AWS Spec.)	A5.1	A5.1	A5.1	A5.1
AWS Classification	E7018-1	E7018-1	E7018-1	E7018-1
Diameter (mm)	2.5	3.15	4	2.5
Manufacturer / Trade Name	HONAVAR - ULTIMATE-18 (SPL)			
Shielding Gas Composition	N.A	N.A	N.A	N.A
Flow Rate (GTAW)	N.A	N.A	N.A	N.A
Nozzle Size (GTAW)	N.A	N.A	N.A	N.A
Preheat Temperature	50°C Min	50°C Min	50°C Min	50°C Min
Interpass Temperature	250 °C Max.	250 °C Max.	250 °C Max.	250 °C Max.
Electrical Characteristics	-	-	-	-
Electrode Diameter (GTAW)	N.A	N.A	N.A	N.A
Current Type & Polarity	DCEP	DCEP	DCEP	DCEP
AMPS	80-90	100-125	130-155	90-100
Volts	22-23	23-26	25-27	23-24
Cold or Hot Wire Feed (GTAW)	N.A	N.A	N.A	N.A
Travel Speed (mm/min.)	85-92	111-118	130-146	86-90
Maximum Heat Input (KJ/mm)	1.46	1.69	1.93	1.67
Technique	-	-	-	-
Stringer or Weave	Stringer & Weave	Stringer & Weave	Stringer & Weave	Stringer & Weave
Multi or Single Pass (per side)	Multi pass	Multi pass	Multi pass	Multi pass
Oscillation (GTAW Mech./Auto)	NO	NO	NO	NO
Traverse Length	-	-	-	-
Traverse Speed	-	-	-	-
Dwell Time	-	-	-	-
Peening	NONE	NONE	NONE	NONE
Interpass Cleaning	BRUSHING & GRINDING FOR EACH PASSES			
Other	% WITNESSED			

PREPARED BY

M/S URJKA CONSULTING AND ENGINEERING SOLUTIONS PVT LTD

PAGE 01 of 01

RANJAN KUMAR SINCH



PROCEDURE QUALIFICATION RECORD (PQR)

As per AWS D1.1 CLAUSE.4 Structural Welding Code-Steel

Organization Name

: URJKA CONSULTING AND ENGINEERING SOLUTIONS PVT LTD

Procedure Qualification Record No.

: 01

Date: 06.12.2022

WPS No.

: WPS-01 DT: 30.11.2022

Welding Process (es)

: SMAW (Manual)

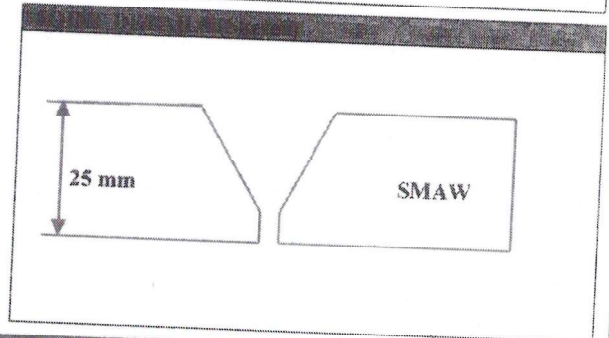
Types (Manual, Automatic, Semi Auto)

: Manual (SMAW)

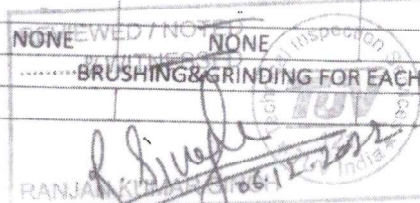
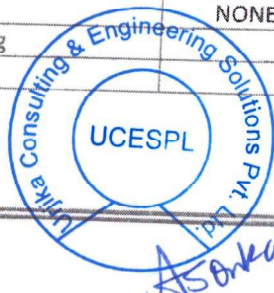
Base Metals	Specification	Type or Grade	AWS Group No.	Thickness	Size (NPS)	Schedule	Diameter
Base Material	IS2062	E250 BR	-	25 MM	-	-	-
Welded To	IS2062	E250 BR	-	25 MM	-	-	-
Backing Material	N.A	N.A	N.A	-	-	-	-
Other	-	-	-	-	-	-	-

Groove Type	Single V Groove Butt Joint (CJP)
Groove Angle	60°
Root Opening	3-4 MM
Root Face	1.5-2.5 MM
Back gouging	YES
Method	Grinding & Chipping

Temperature	N.A
Time at Temperature	N.A
Other	-



Weld Layer (s)	1	2	3-4	5-9	10-11
Weld Pass (es)	1	2	3-4	5-9	10-11
Process	SMAW	SMAW	SMAW	SMAW	SMAW
Type (Manual, Machinized, etc.)	Manual	Manual	Manual	Manual	Manual
Position	3G	3G	3G	3G	3G
Vertical Progression	Uphill	Uphill	Uphill	Uphill	Uphill
Filler Metal (AWS Spec.)	A5.1	A5.1	A5.1	A5.1	A5.1
AWS Classification	E7018	E7018	E7018	E7018	E7018
Diameter (mm)	2.5	2.5	3.15	4	2.5
Manufacturer / Trade Name	HONAVAR - ULTIMATE-18 (SPL)				
Shielding Gas Composition	N.A	N.A	N.A	N.A	N.A
Flow Rate (GTAW)	N.A	N.A	N.A	N.A	N.A
Nozzle Size (GTAW)	N.A	N.A	N.A	N.A	N.A
Preheat Temperature	50°C Min	50°C Min	50°C Min	50°C Min	50°C Min
Inter pass Temperature	250 °C Max	250 °C Max	250 °C Max	250 °C Max	250 °C Max
Electrical Characteristics	-	-	-	-	-
Electrode Diameter (GTAW)	N.A	N.A	N.A	N.A	N.A
Current Type & Polarity	DCEP	DCEP	DCEP	DCEP	DCEP
AMPS	80-90	90-100	100-125	130-155	90-100
Volts	22-23	23-24	23-26	25-27	23-24
Cold or Hot Wire Feed (GTAW)	N.A	N.A	N.A	N.A	N.A
Travel Speed (mm/min.)	85	92	111-118	130-146	86-90
Maximum Heat Input (KJ/mm)	1.46	1.57	1.69	1.93	1.67
Technique	-	-	-	-	-
Stringer or Weave	Both Stringer or Weave for SMAW				
Multi or Single Pass (per side)	Multi pass	Multi pass	Multi pass	Multi pass	Multi pass
Oscillation (GTAW Mech./Auto)	NO	NO	NO	NO	NO
Traverse Length	-	-	-	-	-
Traverse Speed	-	-	-	-	-
Dwell Time	-	-	-	-	-
Peening	NONE	NONE	NONE	NONE	NONE
Interpass Cleaning	BRUSHING & GRINDING FOR EACH PASSES				
Other	-	-	-	-	-



PROCEDURE QUALIFICATION RECORD (PQR)

PQR-01 DT: 06.12.2022

Tests	Type of Test	Clause / Figure (s) Reference	Acceptance Criteria	Result	Remarks (Ref. Repot No)
✓	Visual Inspection	4.9.1	4.9.1	Satisfactory	-----
✓	Radiographic Examination	4.9.2.1	4.9.2.2	Satisfactory	SNS/RT/2022/0020 DT: 03.12.2022
X	Ultrasonic Testing	-----	-----	-----	-----
X	LPT Examination (WEP)	-----	6.14.5	-----	-----
✓	LPT Examination (Final weld)	-----	6.14.5	Satisfactory	-----
X	2 Transverse Root Bends	-----	-----	-----	-----
X	2 Transverse Face Bends	-----	-----	-----	-----
X	2 Side Bends	-----	-----	-----	-----
✓	4 Side Bends	4.9.3.1/FIG 4.9	4.9.3.3	Satisfactory	ELPL/22-23/6608/1 DT: 05.12.2022
✓	2 Tensile Tests	4.9.3.4/FIG 4.10	4.9.3.5	Satisfactory	ELPL/22-23/6608/1 DT: 05.12.2022
X	All-Weld-Metal Tensions	-----	-----	-----	-----
✓	3 Macroetch	4.9.4	4.9.4.1	Satisfactory	ELPL/22-23/6608/1 DT: 05.12.2022
X	4 Macroetch	-----	-----	-----	-----
X	CVN Tests	-----	-----	-----	-----
X	Hardness test	-----	ASTM E92	-----	-----
✓	Chemical Analysis	-----	AWS A5.1	Satisfactory	-----

TENSILE TESTS:

Specimen Number	Width (mm)	Thickness (mm)	Area (mm²)	Ultimate Tensile Load (KN)	Ultimate Unit Stress (MPa)	Type of Failure and Location
TT1	19.03	24.97	475.18	223.81	471	Broken at Parent Metal/Ductile fracture
TT2	19.05	24.95	475.30	226.72	477	Broken at Parent Metal/Ductile fracture

GUIDED BEND TESTS:

Type and Figure No.	Result
SB-1 SIDE BEND AT 38mm Ø MANDREL AT 180°	Satisfactory
SB-2 SIDE BEND AT 38mm Ø MANDREL AT 180°	Satisfactory
SB-3 SIDE BEND AT 38mm Ø MANDREL AT 180°	Satisfactory
SB-4 SIDE BEND AT 38mm Ø MANDREL AT 180°	Satisfactory

Toughness Test Details

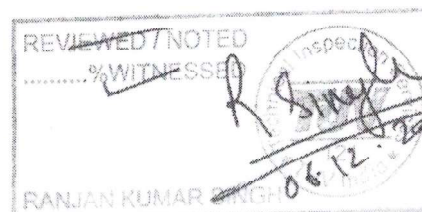
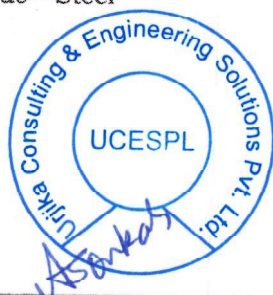
Specimen Number	Notch Location	Specimen Size	Test Temperature	Absorbed Energy	Percent Shear	Lateral Expansion	Average
NOT APPLICABLE							

OTHER: Type of Test

Welder's Name : Mr. Ankit Kuamr (SMAW) Stamp No: WS-1 (Respectively)
 Tests conducted by : M/S URJKA CONSULTING AND ENGINEERING SOLUTIONS PVT LTD
 Laboratory Test No. : ELPL/22-23/6608/1 DT: 05.12.2022

We the undersigned, certify that the statements in this record are correct and that the tests welds were prepared, welded, and tested in accordance with the requirements of Clause 4 of AWS D1.1/D1.1M. 2015 Structural Welding Code—Steel

CERTIFIED
IN CHARGE-QC
DATE: 06.12.2022



PERFORMANCE QUALIFICATION TEST RECORD (WELDER, OPERATOR, OR TACK WELDER)

As per AWS D1.1 CLAUSE.4 Structural Welding Code-Steel

Name	GAJENDAR KUMAR	Test Date	30.11.2022	Rev.0
ID Number	--	Record No.	02	
Stamp No.	WS-02	Std. test No.	02	
Company	URJIKA	WPS No.	WPS-01	
Division	--	Qualified To		

Base Metals	Specification	Type of Grade	AWS Group No.	Size (NPS)	Schedule	Thickness	Diameter
Base Material	IS2062	E250 BR	-	-	-	25MM	-
Welded To	IS2062	E250 BR	-	-	-	25MM	-

Variables	Actual Values	Range Qualified
Type of Weld Joint	Single V Groove Butt Joint (CJP)	Single V Groove Butt Joint & CJP, PJP, Fillet
Base Metal	IS2062 E250 BR	IS2062 E250 BR

	Groove	Fillet	Groove	Fillet
Plate Thickness	25MM	-	3mm to Unlimited	Unlimited
Pipe / Tube Thickness	-	-	-	-
Pipe Diameter	-	-	-	-

Welding Process		
Type (Manual, Semiautomatic, Mechanized, Automatic)	SMAW	SMAW
Backing	Manual	Manual
Filler Metal (AWS Spec.)	With Backing	With Backing
AWS Classification	A5.1	A5.1
F-Number	E7018	E7018
Position	4	4
Groove-Plate and Pipe > 24in	3G	F, H, V
Groove-Pipe < 24in	25mm	25mm
Fillet-Plate and Pipe > 24in	--	--
Fillet-Pipe < 24in	--	F, H, V
Progression	--	--
GMAW Transfer Mode	UPHILL	UPHILL
Single or Multiple Electrodes	--	--
Gas / Flux Type	SINGLE	SINGLE

TEST RESULTS

Type of Test	Acceptance Criteria	Results	Remarks
Radiographic Examination	4.9.2.2	Satisfactory	

CERTIFICATION

Test Conducted By	
Laboratory	SNS/RT/2022/0021 DT: 03.12.2022
Test Number	-----
File Number	-----

We, the undersigned, certify that the statements in this record are correct and that the test welds were prepared, welded, and tested in accordance with the requirements of Clause 4 of AWS D1.1/D1.1M 2015 Structural Welding Code-Steel.

Manufacturer or Contractor



Authorized By

Date

REVIEWED/NOTED
% WITNESSED
[Signature]
06.12.2022

PERFORMANCE QUALIFICATION TEST RECORD (WELDER, OPERATOR, OR TACK WELDER)

As per AWS D1.1 CLAUSE.4 Structural Welding Code-Steel

Name	ANKIT KUMAR	Test Date	30.11.2022	Rev.0
ID Number	--	Record No.	01	
Stamp No.	WS-01	Std. test No.	01	
Company	URJIKA	WPS No.	WPS-01	
Division	--	Qualified To		

Base Metals	Specification	Type of Grade	AWS Group No.	Size (NPS)	Schedule	Thickness	Diameter
Base Material	IS2062	E250 BR	-	-	-	25MM	-
Welded To	IS2062	E250 BR	-	-	-	25MM	-

Variables	Actual Values	Range Qualified
Type of Weld Joint	Single V Groove Butt Joint (CJP)	Single V Groove Butt Joint & CJP, PJP, Fillet
Base Metal	IS2062 E250 BR	IS2062 E250 BR

	Groove	Fillet	Groove	Fillet
Plate Thickness	25MM	-	3mm to Unlimited	Unlimited
Pipe / Tube Thickness	-	-	-	-
Pipe Diameter	-	-	-	-

Welding Process	SMAW	SMAW
Type (Manual, Semiautomatic, Mechanized, Automatic)	Manual	Manual
Backing	With Backing	With Backing
Filler Metal (AWS Spec.)	A5.1	A5.1
AWS Classification	E7018	E7018
F-Number	4	4
Position	3G	F, H, V
Groove-Plate and Pipe > 24in	25mm	25mm
Groove-Pipe < 24in	--	--
Fillet-Plate and Pipe > 24in	--	F, H, V
Fillet-Pipe < 24in	--	--
Progression	UPHILL	UPHILL
GMAW Transfer Mode	--	--
Single or Multiple Electrodes	SINGLE	SINGLE
Gas / Flux Type	-	-

TEST RESULTS

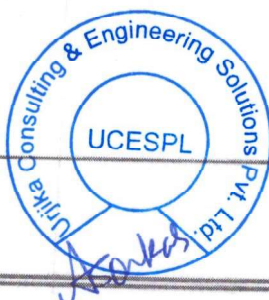
Type of Test	Acceptance Criteria	Results	Remarks
Radiographic Examination	4.9.2.2	Satisfactory	

CERTIFICATION

Test Conducted By	
Laboratory	SNS/RT/2022/0020 DT: 03.12.2022
Test Number	-----
File Number	-----

We, the undersigned, certify that the statements in this record are correct and that the test welds were prepared, welded, and tested in accordance with the requirements of Clause 4 of AWS D1.1/D1.1M 2015 Structural Welding Code-Steel.

Manufacturer or Contractor



Authorized By

Date

