

WELDING PROCEDURE SPECIFICATION SHEET

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WPSS FOR FABRICATION OF COP COLUMN, CROSS GIRDER, CROSS BRACINGS & CANOPY

Name of Work	Jogeshwari(AT): - New coaching terminal for platform returning Mail/Express trains .
Zonal Railway jurisdiction	WESTERN RAILWAY, MUMBAI DIVISION. – Construction (GatiShakti)
Contractor Agency	M/s. GIRIRAJ CIVIL DEVELOPERS LIMITED. 2 nd Floor , Nine square Building, Ramdas sutrale Marg, Off. Chandavarkar Lane, Borivali West, Mumbai 400092.
Fabricating Agency	M/s. PRODUCTIVE ENGINEERS (I) PVT LTD. Plot No. B-31, Anand Nagar, MIDC, Opp. ASB International, Ambernath (E) - 421506 .
Inspecting Agency	WESTERN RAILWAY Construction (GatiShakti)
LOA No. & date	GSU-MMCT-2022-23-ENGG-08 Dt. 21-03-2023
Completion date as per Contract Agreement/LOA	As per LOA - 21.05.2024, Extended Upto – 31.12.2025
Scope of fabrication	COP Columns, Cross Girder, Cross Bracing & Canopy
Scope of fabrication in MT	Approx 2000 MT
GAD	PCE No. – e-31565-HQ/1-D(2)
Structural Drawing	JOS/GCDL/2023/184-02-002
Specifications	IRS-B1-2001, IRS Welded Bridge Code, BS 130, IS: 2062-2011, IS: 4225, ASTM SA-435, IS: 1852, IS:5905, IS: 2590, IS: 9595, IS: 4353, IS: 7310, IS: 7307, BS-110, BS-111, IRS: M-39, IRS: M-28, IRS: M-46 & Contract Agreement



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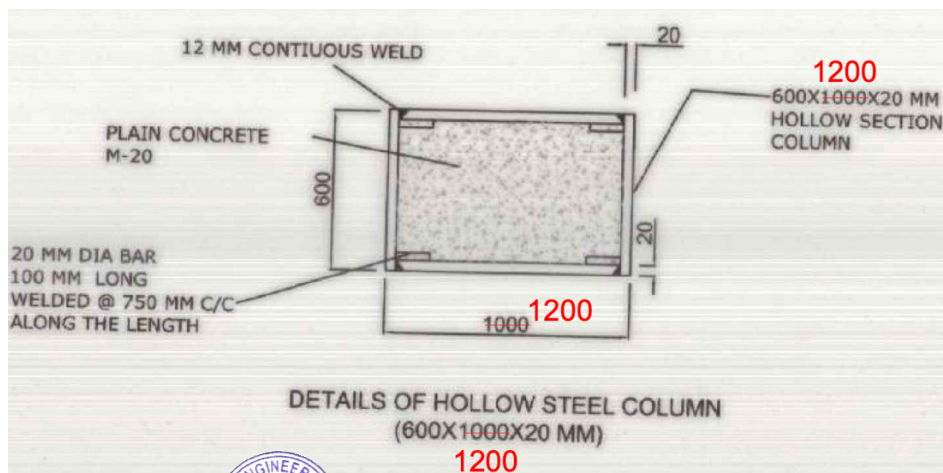
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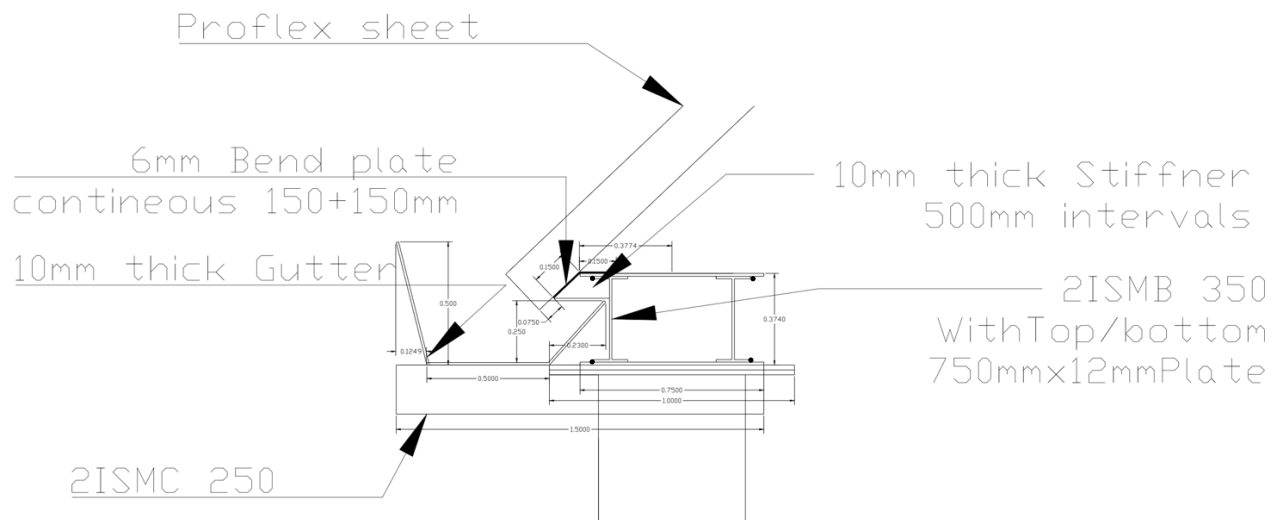
- Name & Address of Contractor : **M/s. GIRIRAJ CIVIL DEVELOPERS LIMITED**
2nd Floor , Nine square Building, Ramdas sutrale Marg,
Off. Chandavarkar Lane, Borivali West, Mumbai 400092.
- Welding Procedure Specification No. : JOS AT/GCDL/COP/WPS/101, REV.00
- Joint Description & Location : COP Built up Columns
- 1). Reference Drawing : JOS/GCDL/2023/184-02-002
- 2). Weld Joint Description : Butt weld 12mm
- 3). Base Metal & Its Preparation : Plates IS: 2062-2011, E-250 Gr. BR, Fully-killed & Normalized,
Material to be cut straight and square by Controlled Gas/Plasma
cutting machine. Fusion faces and adjacent surfaces are Cleaned Made
free from cracks, notches, mill scale, Grease, paint, rust, etc. which
may affect weld quality.
- 4). Welding Process : SUBMERGED ARC WELDING (SAW)
- 5). Welding Position : Flat 1G
- 6). Welding Consumable: -
- 6.1). Electrode/Wire
- DIA : 4.00 mm
Class : W-1 of IRS M-39/01 Amend.no.1 of May 2020
Type : Copper coated mild steel wire W-1
Drying : N.A.
- 6.2). Flux
- Class : F1 of IRS M-39-2020.
Type : Agglomerated
Drying Method : As recommended by manufacturer.
- 6.3). Shielding Gas : N.A.
- 7.1). Joint design detail : As per Sketch shown below:



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- Name & Address of Contractor : **M/s. GIRIRAJ CIVIL DEVELOPERS LIMITED**
2nd Floor , Nine square Building, Ramdas sutrale Marg,
Off. Chandavarkar Lane, Borivali West, Mumbai 400092.
- Welding Procedure Specification No. : JOS AT/GCDL/COP/WPS/102, REV.00
- Joint Description & Location : Cross Girder
- 1). Reference Drawing : JOS/GCDL/2023/184-02-002
- 2). Weld Joint Description : 8mm Lap Joint Fillet weld
- 3). Base Metal & Its Preparation : Plates IS: 2062-2011, E-250 Gr. Br, Fully-killed & Normalized,
Material to be cut straight and square by Controlled Gas/Plasma
cutting machine. Fusion faces and adjacent surfaces are Cleaned Made
free from cracks, notches, mill scale, Grease, paint, rust, etc. which
may affect weld quality.
- 4). Welding Process : SUBMERGED ARC WELDING (SAW)
- 5). Welding Position : Flat 1F
- 6). Welding Consumable: -
- 6.1). Electrode/Wire
- DIA : 4.00 mm
- Class : W-1 of IRS M-39/01 Amend.no.1 of May 2020
- Type : Copper coated mild steel wire W-1
- Drying : N.A.
- 6.2). Flux
- Class : F1 of IRS M-39-2020.
- Type : Agglomerated
- Drying Method : As recommended by manufacturer.
- 6.3). Shielding Gas : N.A.
- 7.1). Joint design detail : As per Sketch shown below:



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THICKNESS	T1	T2	T3
mm	12	12	12

7.2). Joint Preparation : As per IS:4353-1995, Cl.7, IRS B1-2001, Cl.17.3&WBC-2011-CL12

8). Welding Current Type : DC
Polarity : Reverse

9). Welder qualification : As per IS:7310 (Part-1), IS:7307 (Part-1) & IS: 817

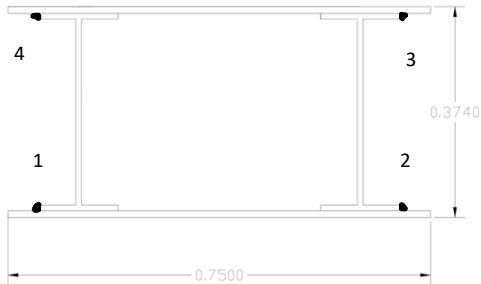
10). Welding parameters & techniques :

10.1) Welding parameters

Weld pass no.	Electrode/Wire dia. (in mm)	Current (in Amp.)	Arc voltage (in volt)	Wire feed speed (mm/min.)	Travel speed (mm/min.)	Electrode stick out (mm)	Gas flow (Ltr./min.)
Root Run	4.00	460-570	26-32	1600-2000	260-310	20 – 25	N.A.
Subsequent Run	4.00	460-570	26-32	1600-2000	260-310	20 - 25	N.A.

10.2) Welding sequence & techniques

String or Weave Bead	: String
Initial & Interpass Cleaning	: Brushing/Grinding
Single or Multipass (per side)	: Multiple
Single or Multiple Electrode	: Single



- | | |
|------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|
| 11). Provision of run on/run off tabs | : Yes |
| 12). Cleaning of weld bead before laying of next weld bead | : Yes |
| 13). Root preparation before Welding | : N.A. |
| 14). Pre-heating & interpass temperature | : Min. 100 °C |
| 15). Peening | : N.A. |
| 16). Post weld treatment | : N.A. |
| 17). Rectification of weld defect | : By grinding of the defective weld & rectifying the Weld as per Cl.32.2 of IS:9595-96, Using B1 Class of electrode of Specification IRS M28-02 |
| 18). Inspection of weld | : Visual, D.P. Test & Macro Etching |
| 19). Any other relevant detail | : Developed as per 5.2 of IS 7307 PART 1 |
| 20). Acceptance level | : IS 7307 part 1, IS7310 Part-1, & WBC 2001 |



WELDING PROCEDURE SPECIFICATION SHEET

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Name & Address of Contractor : **M/s. GIRIRAJ CIVIL DEVELOPERS LIMITED**
2nd Floor , Nine square Building, Ramdas sutrale Marg,
Off. Chandavarkar Lane, Borivali West, Mumbai 400092.

Welding Procedure Specification No. : JOS AT/GCDL/COP/WPS/103, REV.00
Joint Description & Location : Columns To Base plate & stiffeners connection

- 1). Reference Drawing : JOS/GCDL/2023/184-02-002
2). Weld Joint Description : 8mm Fillet Weld
3). Base Metal & Its Preparation : Plates IS: 2062-2011, E-250 Gr. BR, Fully-killed & Normalized,
Material to be cut straight and square by Controlled Gas/Plasma
cutting machine. Fusion faces and adjacent surfaces are Cleaned Made
free from cracks, notches, mill scale, Grease, paint, rust, etc. which
may affect weld quality.
4). Welding Process : GAS METAL ARC WELDING (GMAW)
5). Welding Position : 1F , 2F, 3F T- joints
6). Welding Consumable: -
6.1). Electrode/Wire

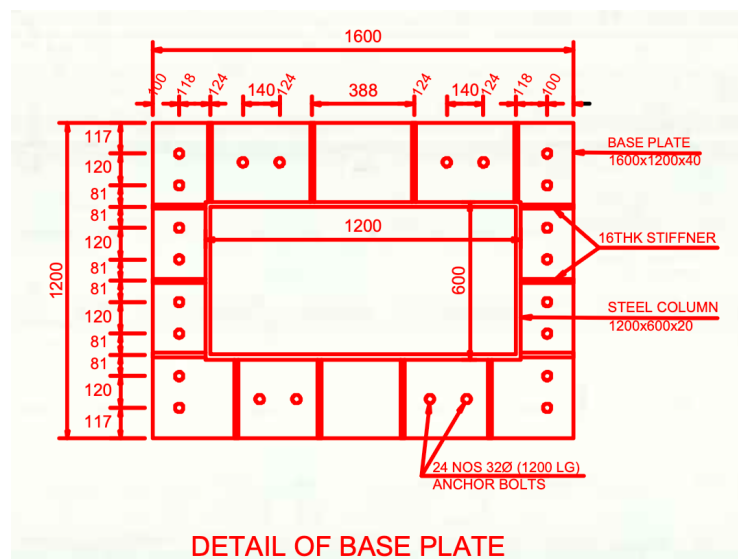
Class : Class-1 as per IRS M46-2020
Type : Solid (Copper coated mild steel wire)
Dia : $\varnothing 1.2$
Drying Method : N.A.

6.2). Flux

Class : N.A.
Type : N.A.
Drying Method : N.A.

6.3). Shielding Gas : CO₂ (99.7% pure absolute dry and free from N₂ as per IS 307 Gr.1)

7.1). Joint design detail : As per Sketch shown below:



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WELDING PROCEDURE SPECIFICATION SHEET

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THICKNESS	T1	T2	T3	T4
mm	32	16	12	-

7.2). Joint Preparation : As per IRS B1-2001, Cl.17.3 & WBC-2011-CL12

8). Welding Current Type : DC
Polarity : DCEP

9). Welder qualification : As per IS:7310 (Part-1), IS:7307 (Part-1) & IS: 817

10). Welding parameters & techniques :

10.1) Welding parameters

Weld pass no.	Electrode/Wire dia. (in mm)	Current (in Amp.)	Arc voltage (in volt)	Wire feed speed (in mm/min.)	Travel speed (in mm/min.)	Electrode stick out (in mm)	Gas flow (Ltr./min.)
Root Run	1.2	190-240	25-30	Controlled by Current	NA	15-20	15-20
Subsequent Run	1.2	190-240	25-30	Controlled by Current	NA	15-20	15-20

10.2) Welding sequence & techniques

String or Weave Bead : String/Weave as per requirement
Initial & Interpass Cleaning : Brushing/Grinding
Single or Multipass (per side) : Multipass
Single or Multiple Electrode : Single

11). Provision of run on/run off tabs : N.A.

12). Cleaning of weld bead before laying of next weld bead : Yes

13). Root preparation before welding : N.A.

14). Pre-heating & interpass temperature : Min. 100 °C

15). Peening : N.A.

16). Post weld treatment : N.A.

17). Rectification of weld defect : By grinding of the defective weld & rectifying the Weld as per Cl.32.2 of IS:9595-96, Using B1 Class of electrode of Specification IRS M28-02

18). Inspection of weld : Visual & D.P. Test

19). Any other relevant detail : Developed as per 5.2 of IS 7307 PART 1

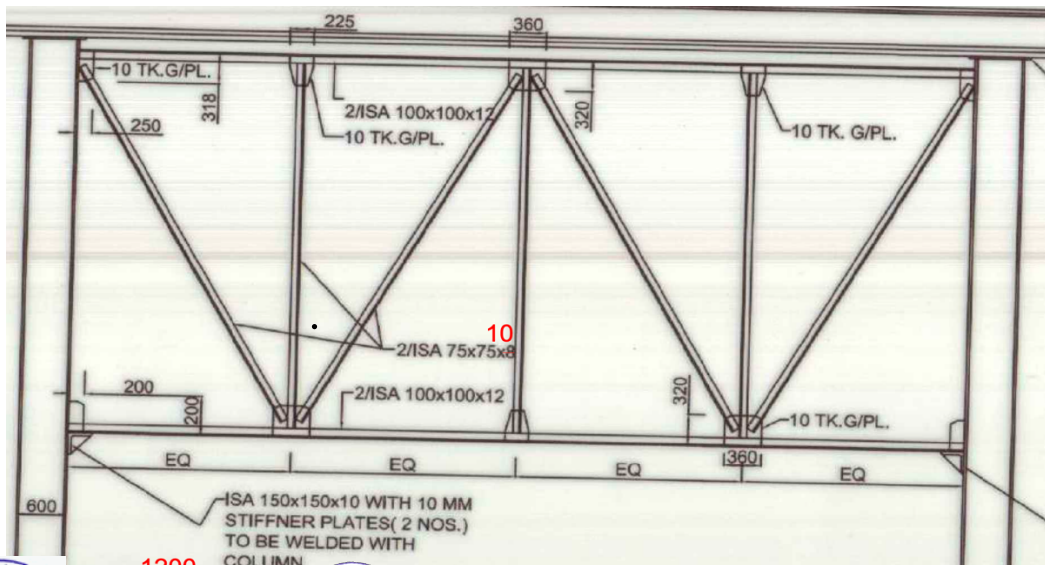
20) Acceptance level : IS 7307 part 1, IS7310 Part-1, &WBC-2001



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- Name & Address of Contractor : **M/s. GIRIRAJ CIVIL DEVELOPERS LIMITED**
2nd Floor , Nine square Building, Ramdas sutrale Marg,
Off. Chandavarkar Lane, Borivali West, Mumbai 400092.
- Welding Procedure Specification No. : JOS AT/GCDL/COP/WPS/104, REV.00
- Joint Description & Location : Bracing
- 1). Reference Drawing : JOS/GCDL/2023/184-02-002
- 2). Weld Joint Description : 8mm Fillet Weld
- 3). Base Metal & Its Preparation : Plates IS: 2062-2011, E-250 Gr. BR, Fully-killed & Normalized,
Material to be cut straight and square by Controlled Gas/Plasma
cutting machine. Fusion faces and adjacent surfaces are Cleaned Made
free from cracks, notches, mill scale, Grease, paint, rust, etc. which
may affect weld quality.
- 4). Welding Process : GAS METAL ARC WELDING (GMAW)
- 5). Welding Position : Horizontal-Vertical 1F , 2F, 3F T- joints
- 6). Welding Consumable: -
- 6.1). Electrode/Wire
- Class : Class-1 as per IRS M46-2020
Type : Solid (Copper coated mild steel wire)
Dia : $\varnothing 1.2$
Drying Method : N.A.
- 6.2). Flux
- Class : N.A.
Type : N.A.
Drying Method : N.A.
- 6.3). Shielding Gas : CO₂ (99.7% pure absolute dry and free from N₂ as per IS 307 Gr.1)
- 7.1). Joint design detail : As per Sketch shown below:



WELDING PROCEDURE SPECIFICATION SHEET

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THICKNESS	T1	T2	T3	T4
mm	16	12	10	-

7.2). Joint Preparation : As per IRS B1-2001, Cl.17.3 & WBC-2011-CL12

8). Welding Current Type : DC
Polarity : DCEP

9). Welder qualification : As per IS:7310 (Part-1), IS:7307 (Part-1) & IS: 817

10). Welding parameters & techniques :

10.1) Welding parameters

Weld pass no.	Electrode/Wire dia. (in mm)	Current (in Amp.)	Arc voltage (in volt)	Wire feed speed (in mm/min.)	Travel speed (in mm/min.)	Electrode stick out (in mm)	Gas flow (Ltr./min.)
Root Run	1.2	190-240	25-30	Controlled by Current	NA	15-20	15-20
Subsequent Run	1.2	190-240	25-30	Controlled by Current	NA	15-20	15-20

10.2) Welding sequence & techniques

String or Weave Bead : String/Weave as per requirement
Initial & Interpass Cleaning : Brushing/Grinding
Single or Multipass (per side) : Multipass
Single or Multiple Electrode : Single

11). Provision of run on/run off tabs : N.A.

12). Cleaning of weld bead before laying of next weld bead : Yes

13). Root preparation before welding : N.A.

14). Pre-heating & interpass temperature : Min. 100 °C

15). Peening : N.A.

16). Post weld treatment : N.A.

17). Rectification of weld defect : By grinding of the defective weld & rectifying the Weld as per Cl.32.2 of IS:9595-96, Using B1 Class of electrode of Specification IRS M28-02

18). Inspection of weld : Visual & D.P. Test

19). Any other relevant detail : Developed as per 5.2 of IS 7307 PART 1

20) Acceptance level : IS 7307 part 1, IS7310 Part-1, &WBC-2001



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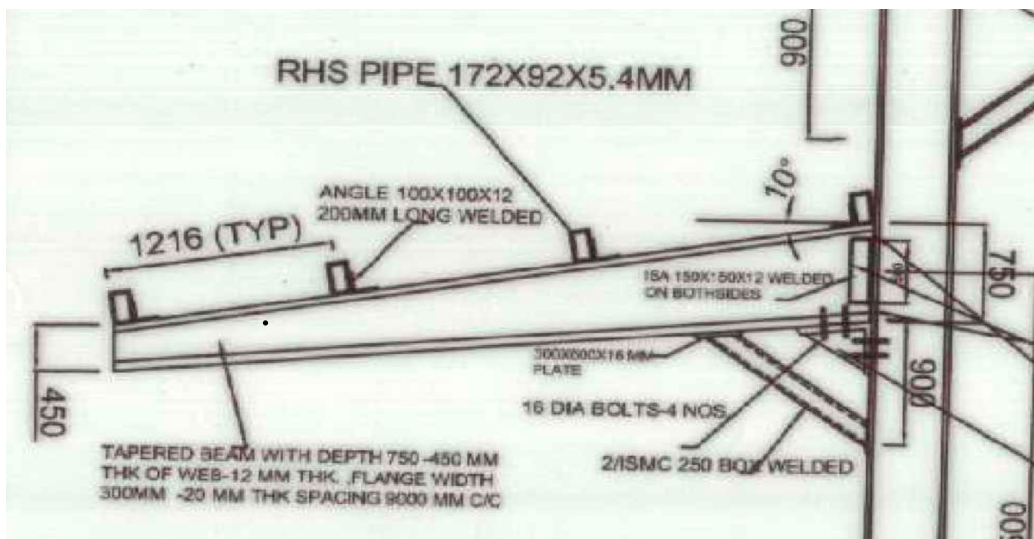
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WELDING PROCEDURE SPECIFICATION SHEET

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- Name & Address of Contractor : **M/s. GIRIRAJ CIVIL DEVELOPERS LIMITED**
2nd Floor , Nine square Building, Ramdas sutrale Marg,
Off. Chandavarkar Lane, Borivali West, Mumbai 400092.
- Welding Procedure Specification No. : JOS AT/GCDL/COP/WPS/105, REV.00
- Joint Description & Location : Canopy
- 1). Reference Drawing : JOS/GCDL/2023/184-02-002
- 2). Weld Joint Description : 8mm Fillet Weld
- 3). Base Metal & Its Preparation : Plates IS: 2062-2011, E-250 Gr. BR, Fully-killed & Normalized,
Material to be cut straight and square by Controlled Gas/Plasma
cutting machine. Fusion faces and adjacent surfaces are Cleaned Made
free from cracks, notches, mill scale, Grease, paint, rust, etc. which
may affect weld quality.
- 4). Welding Process : GAS METAL ARC WELDING (GMAW)
- 5). Welding Position : Horizontal-Vertical 1F , 2F, 3F T- joints
- 6). Welding Consumable: -
- 6.1). Electrode/Wire
- Class : Class-1 as per IRS M46-2020
Type : Solid (Copper coated mild steel wire)
Dia : $\varnothing 1.2$
Drying Method : N.A.
- 6.2). Flux
- Class : N.A.
Type : N.A.
Drying Method : N.A.
- 6.3). Shielding Gas : CO₂ (99.7% pure absolute dry and free from N₂ as per IS 307 Gr.1)
- 7.1). Joint design detail : As per Sketch shown below:



WELDING PROCEDURE SPECIFICATION SHEET

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THICKNESS	T1	T2	T3	T4
mm	16	12	10	-

7.2). Joint Preparation : As per IRS B1-2001, Cl.17.3 & WBC-2011-CL12

8). Welding Current Type : DC
Polarity : DCEP

9). Welder qualification : As per IS:7310 (Part-1), IS:7307 (Part-1) & IS: 817

10). Welding parameters & techniques :

10.1) Welding parameters

Weld pass no.	Electrode/Wire dia. (in mm)	Current (in Amp.)	Arc voltage (in volt)	Wire feed speed (in mm/min.)	Travel speed (in mm/min.)	Electrode stick out (in mm)	Gas flow (Ltr./min.)
Root Run	1.2	190-240	25-30	Controlled by Current	NA	15-20	15-20
Subsequent Run	1.2	190-240	25-30	Controlled by Current	NA	15-20	15-20

10.2) Welding sequence & techniques

String or Weave Bead : String/Weave as per requirement
Initial & Interpass Cleaning : Brushing/Grinding
Single or Multipass (per side) : Multipass
Single or Multiple Electrode : Single

11). Provision of run on/run off tabs : N.A.

12). Cleaning of weld bead before laying of next weld bead : Yes

13). Root preparation before welding : N.A.

14). Pre-heating & interpass temperature : Min. 100 °C

15). Peening : N.A.

16). Post weld treatment : N.A.

17). Rectification of weld defect : By grinding of the defective weld & rectifying the Weld as per Cl.32.2 of IS:9595-96, Using B1 Class of electrode of Specification IRS M28-02

18). Inspection of weld : Visual & D.P. Test

19). Any other relevant detail : Developed as per 5.2 of IS 7307 PART 1

20) Acceptance level : IS 7307 part 1, IS7310 Part-1, &WBC-2001



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- Name & Address of Contractor : **M/s. GIRIRAJ CIVIL DEVELOPERS LIMITED**
2nd Floor , Nine square Building, Ramdas sutrale Marg,
Off. Chandavarkar Lane, Borivali West, Mumbai 400092.
- Welding Procedure Specification No. : JOS AT/GCDL/COP/WPS/106, REV.00
- Joint Description & Location : Tack welding, Chequered Plates, Platform railing
- 1). Reference Drawing : JOS/GCDL/2023/184-02-002
- 2). Weld Joint Description : T-Joint 6mm, 8 mm Fillet Weld
- 3). Base Metal & Its Preparation : Plates IS: 2062-2011, E-250 Gr. BR, Fully-killed & Normalized,
Material to be cut straight and square by Controlled Gas/Plasma
cutting machine. Fusion faces and adjacent surfaces are Cleaned Made
free from cracks, notches, mill scale, Grease, paint, rust, etc. which
may affect weld quality.
- 4). Welding Process : MANUAL METAL ARC WELDING (MMAW)
- 5). Welding Position : Horizontal-Vertical 1F , 2F, 3F T- joints
- 6). Welding Consumable: -
- 6.1). Electrode/Wire
- Class : B1 as per IRS M28-2020
Type : Medium Coated
Dia : Ø4.0
Drying Method : As recommended by the electrode manufacturer
- 6.2). Flux
- Class : N.A.
Type : N.A.
Drying Method : N.A.
- 6.3). Shielding Gas : N.A.
- 7.1). Joint design detail : As per Sketch shown below:

