INTER PLANT STANDARD IN STEEL INDUSTRY		
IPSS	**GUIDELINES FOR ARRANGEMENT DRAWINGS AND DOCUMENTS TO BE SUBMITTED TO AN EOT CRANE CUSTOMER FOR APPROVAL**	**IPSS: 2-02-011-18 (First Revision)**
	Corresponding IS does not exist	Formerly: IPSS: 2-02-011-02

0. FOREWORD

0.1 Interplant standardization in steel industry has been initiated under the aegis of the Indian Standards Institution (ISI) and the Steel Authority of India Limited (SAIL). This Interplant Standards is prepared by the Standard Committee on E O T Cranes, IPSS 2:2 with the active participation of the representatives of all the steel plants and leading consultants and was adopted in January, 2002. Thereafter, standard was revised by the Standard Committee in March, 2018.

0.2 Interplant standardization for steel industry primarily aims at achieving rationalization and unification of parts and assemblies of process and auxiliary equipment used in steel plants and these are intended to provide guidance to the steel plant engineers, consultants and manufacturers in their design activities. It is not desirable to make deviations in technical requirements.

1. SCOPE

1.1 This Inter Plant standard lays down the guidelines for information and drawings to be submitted to a customer for approval with respect to an EOT crane order.

2. GENERAL

2.1 All EOT crane users shall be supplied with necessary calculations for selection of major components, general arrangement and layout drawings, detailed drawings as listed in ENCLOSURE-I, wearing parts drawings, specifications, bill of materials, Quality Assurance Plan, manuals, hard and soft copies, etc. unless otherwise specified in the contract.

2.2 Calculations for selection of motors and resistance, reducers, brake, coupling and calculations for connection between bridge girder and end-carriage/end-tie shall be submitted for approval.

3. REQUIREMENTS

3.1 **Drawing Format** – For preparation of original drawings, guidelines contained in IS 10164:1985 `Requirement to execute technical drawings for micro-copying (first revision) (amendment 1)' shall be followed. As far as possible, first angle projection shall be followed.

3.2 **Sizes and Quality** – The sizes shall generally be as follows:

A0 – 1189 x 841 mm	A3 – 420 x 297 mm
A1 – 841 x 594 mm	A4 - 297 x 210 mm
A2 - 594 x 420 mm	

A2, A3, A4 sizes shall be followed in consultation with the purchaser. However, Electrical Drawings shall be given in A3/A4 sizes. The drafting shall be done in black Indian ink against the clear background to obtain maximum contrast.

3.3 **List of drawings** – List of drawings shall be under 8 sub-headings as given in **ENCLOSURE-I**.

3.4 **Data** – Minimum data for general arrangement drawing shall be as per **ENCLOSURE-II**. In addition, it shall contain minimum and maximum wheel load diagram for LT & CT wheels.

3.5 **Bill of Materials** – Bill of materials shall include Item No., Description and Reference Drawing Nos., Quantity, Weight, Material used and its latest reference standard. As far as possible, bill of materials shall be along the body of the drawing indicating make and model number for all brought out items.

3.6 **Reference** – There shall be sufficient reference notes on the drawing to permit identification of all related drawings and documents which are required for proper understanding.

It shall have reference to IPSS & Indian Standards on the subject. All drawings shall clearly show scales used, angles of projection, tolerance norms, preparation date, signature of the person who has drawn and approved the drawings, with date and stamp. Any revision at a later date shall have revision date, area and signature of the person who has done it.

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ENCLOSURE-I

(Item 3.3)

LIST OF DRAWINGS/DOCUMENTS

1. General Arrangement Drawing
2. Mechanism sizing calculation, structural sizing calculation, coupling, brake, buffer, gearbox, drum coupling sizing calculation.

MAIN TROLLEY / AUXILIARY TROLLEY

1. Main Trolley Arrangement including Rope Reeving Arrangement / Auxiliary Trolley
2. Main Hoist Arrangement / Auxiliary Trolley
3. Arrangement of Main Trolley Lubrication / Auxiliary Trolley

MAIN HOIST DETAILS

1. Main Hoist Gear Box Assembly along with Bearing and Oil Seals
2. Details of First Stage Reduction
3. Rope Drum Assembly and Details
4. Details of Pulleys
5. Arrangement of Limit Switches
6. Arrangement and mounting Details of Emergency Brake
7. Details of Hoist Block / Spreader Beam.
8. Cable Drum Arrangement and mounting Details.

AUXILIARY HOIST DETAILS

1. Auxiliary Hoist Gear Box Assembly along with Bearing and Oil Seals
2. Details of First Stage Reduction
3. Rope Drum Assembly and Details
4. Details of Pulleys
5. Arrangement of Limit Switches
6. Arrangement and mounting Details of Emergency Brake
7. Cable Drum Arrangement and mounting Details

LONG TRAVEL DRIVE

1. Long Travel Drive Arrangement
2. Wheel Assembly and Balancer Details
3. LT Lubrication Arrangement
4. LT Details of First Stage Reduction
5. LT Limit Switches with Striker Arrangement/Anti Collision device

CROSS TRAVEL DRIVE (Main & Auxiliary)

1. Cross Travel Drive Arrangement
2. Wheel Assembly and Balancer Details
3. CT Details of First Stage Reduction
4. CT Limit Switches with Striker Arrangement/Anti Collision device

STRUCTURAL DRAWINGS

1. Main Girder Assembly and Details
2. End Carriage Assembly with Jacking Pads
3. Connection Details of Main Girder and End Carriage
4. Cabin Arrangement and Visibility Diagram for the Operator
5. Trolley Frame Structural Assembly with Jacking Pads
6. Details of Trolley Frame in Final Assembly to receive all the Drives
7. Main Current Collector Cage

ELECTRICAL DRAWINGS

1. General Arrangement of Panel and Resistance Boxes
2. Arrangement of Main Current Collector System
3. Cable Layout on the Crane
4. Single Line Diagram of Crane Power Supply
5. Equipment Layout in the Operator's Cabin
6. Power and Control Cable Schedule and Termination Plan
7. Control Schematics of all Drives
8. Electrical Equipment Layout on the Girder/Platform
9. Arrangement of Festoon Cable System and / or Arrangement of Cross Trolley Lines

BUFFER AND OTHER DRAWINGS

1. Buffer for Main and Auxiliary Trolleys
2. LT& CT Buffer Assembly.
3. Drum coupling, input/output coupling, brake, buffer, gear box, lubrication system.
3. Additional Features like Ladle Beam, Magnets, Lifting Tackles, etc.

NOTE: Above information are to be covered in various drawings, number of which may vary as per mutual agreement.

ENCLOSURE-II

(Item 3.4)

MINIMUM DATA FOR GENERAL ARRANGEMENT DRAWING

		HOIST		TRAVEL	
		MAIN	**AUXILIARY**	**LONG**	**CROSS**
Lifting Capacity		t	t	-	-
Class of Duty		-	-	-	-
Design standard					
Speed		m/min	m/min	m/min	m/min
Wheel Size		-	-	mm	mm
Rope					
a)	Size	mm	mm	-	-
b)	Construction				
c)	Length				
No. of Rope Falls				-	-
Drum Diameter		mm	mm		
Pulley Size		mm	mm	-	-
Reduction Ratio					
Brakes					
a) b) c)	Type Size ac/dc	mm	mm	mm	mm
Coupling					
a) b)	Drum Motor				

Type of Operator's Cabin					
Motor					
a)	Type				
b)	Frame Size				
c)	Mech. kW				
d)	Frame kW				
e)	Duty				
f)	Starts per Hour				
g)	RPM				
h)	Main Pull out Torque	%	%	%	%
i)	Degree of Protection				
j)	Class of Insulation				

ENCLOSURE-II

(**Continued**)

MINIMUM DATA FOR GENERAL ARRANGEMENT DRAWING

	HOIST		TRAVEL	
	MAIN	**AUXILIARY**	**LONG**	**CROSS**
Limit Switches / Anti-collision Device				
Supply Voltage				
Control Voltage				
Type of Control				
Ambient Temperature ^{o}C				
Weight of Crane (t)				
Weight of Trolley (t)				
Type of crane				
Span of crane (m)				
Lift (m)				
Operation	Cabin/Pendant/RRC			
Type of attachment				
Hook details				
Special attachment				
Wheel load diagram				
Slew bearing details (if applicable)				

Gear Box details a) Make b) Model No. c) Gear Ratio				
Material grade/composition and standards for all components				
Wt. of Single Heaviest Assembly				
Gantry Rail /CT Rail Size	-	-		
Special Attachment				
Buffer & Capacity	-	-		-
Painting specification				