INTERPLANT STANDARD - STEEL INDUSTRY		
IPSS	**GUIDELINES FOR LAYING OF CABLES AND IMPULSE LINES** *(Third Revision)*	**IPSS: 2-07-040-13** ***(Third Revision)***
	No Corresponding IS	Formerly-: IPSS:2-07-040-88

0. FOREWORD

0.1 This Interplant Standard (first revision) was prepared by the Standards Committee on Computerization & Automation, IPSS 2:7, with the active participation of the representatives of all the steel plants, other concerned organizations and established manufacturers in the field. Originally, the standard was published in 1988. Based on recent developments, It revised and adopted in February, 2013.

0.2 Interplant standards on design parameters primarily aim 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.

0.3 This standard was first published in 1988. The first revision has been carried out to update the standard in general.

1. SCOPE

1.1 This Interplant standard covers the guidelines for laying of cables and impulse lines.

2. GUIDELINES FOR CABLE LAYING

2.1 Cables shall be laid on GI trays, overhead structures or through GI conduits with rigid supports at one meter intervals to avoid sagging.

2.2 Signal, power and compensating cables shall be laid in separate GI trays with minimum separation of 300 mm.

2.3 Partial run of signal cables and power cables shall normally be avoided but where parallel runs must be made, tray spacing of at least 300 mm shall be provided. In case of laying on overhead structure cable spacing of 300 mm shall be provided. Otherwise cables shall be run through GI conduits.

2.4 Crossing of power, signal and control cables shall be made at right angles only.

2.5 GI trays shall be mounted with their breadth in vertical plane to protect cable from falling objects and accumulation of dust. If trays are laid horizontally, these shall be provided with removable covers and shall be supported by rigid base to avoid sagging.

2.6 Use of elbow / bends shall be avoided, instead larger radius bends shall be provided for ease of laying and avoiding breakage at the bends.

2.7 Multicore cable shall not be bent to radius less than the manufacturer's recommendation.

2.8 Intermediate joints shall be avoided. If not avoidable, joints shall be made preferably in junction boxes. However, for compensating cables no jointing is permitted.

2.9 Clips and saddles securing cables to steelwork or tray shall preferably be plastic covered material and shall be spaced at 0.5 m interval.

2.10 All cables shall be suitably identified with their tag numbers duly clamped at an interval of 5 m. Tag plate should include Cable No. and size as per scheme.

2.11 FRLS cables shall only be used through a fire-hazard areas.

2.12 Cable entry into junction boxes or panels shall be through removable gland plates and compression glands suitable to withstand vibrations.

3. GUIDELINES FOR IMPULSE PIPE LAYING

3.1 All impulse piping in general be given a slope of not less than 1 in 12 except where otherwise specified. The slope of impulse pipe work shall be down from the tapping point for liquids and up from the tapping points for gas service unless special provisions are made for venting and draining. For steam and Condensable impulse lines should be raised to same height to compensate for differential and bring down through condensing pots.

3.2 Sitting of vents and drains shall be ensured at the highest and lowest points of piping run respectively.

3.3 Impulse pipe lines shall be kept as short as possible consistent with good practice and accessibility.

3.4 Handrails or process piping shall not be used as support to instrument impulse lines unless otherwise specified.

3.5 Piping and tubing shall be adequately supported and fixed at distances not exceeding limits as given below:

Copper tube 12 mm or less	Continuous support
Steel tube 10 mm to 20 mm	1.5 m
Steel tube 25 mm	2.0 m

Steel pipe 40-50 mm	3.0 m

3.6 Galvanized cable trays shall be used for continuously supporting four or more copper tubes and copper tubes shall be secured to the tray at 0.5 m interval.

3.7 Use of multicore PVC tubes shall be preferred where multiple signals are transmitted.

3.8 Trays supporting tubing shall be run with the breadth of the tray in vertical plane. If in horizontal plane the tray shall be provided with additional support to prevent sagging.

3.9 All trays and supports shall be securely fixed to structural steel work or masonary as per normal practice.

3.10 Impulse pipes shall be routed away from hot environment, places with fire hazards, spilled liquids and where they are subject to mechanical abuse.