INTER PLANT STANDARD – STEEL INDUSTRY		
IPSS	**GENERAL DESIGN FEATURES OF JUNCTION HOUSES FOR BELT CONVEYORS**	**IPSS:2-03-002-20 (*Third Revision*)**
	Corresponding IS does not exist	Formerly: IPSS:2-03-002-11 *(Second Revision)*

0. FOREWORD

0.1 This Interplant Standard has been prepared by the Standards Committee on Conveyors, IPSS 2:3, with the active participation of the representatives of all the steel plants, reputed consultants and established manufacturers of conveyors and conveyor equipment and was adopted with third revision in **September, 2020.**

0.2 This Inter Plant Standard was originally published in 1984 and was first revised in year 1995 with first revision and in year 2011 with second revision. In the light of the experience gained in the usage of this standard since then and after extensive discussions with the executives in the steel plants and captive mines, consultancy organizations and the experts from the conveyor system fabricating organizations through IPSS Standard Committee Meeting on Conveyors , this third revision has been finalized. The major changes include:

a) Chequered plates/ grating as material for flooring & stairs
b) Minimum head room at all floors

1. SCOPE

1.1 This Inter Plant Standard covers the factors to be taken into consideration for the planning and design of junction houses for belt conveyors handling bulk materials for general purpose application in steel industry.

1.2 The details of design approach for civil and structural works have not been covered in this standard and for these reference should be made to relevant Indian Standards as listed below:

IS 456:2000 `Code of practice for plain and reinforced concrete (fourth revision)

IS 800:2007 `Code of practice for general construction in steel (third revision)

IS 875 `Code of practice for design loads (other than earthquake for buildings and structures' – following parts:

IS 875 (Part 1)-1987 – Dead loads – unit weights of building materials stored materials (second revision)

IS 875 (Part 2)-1987 – Imposed loads (second revision)

IS 875 (Part 3)-2015 – Wind loads (third revision)

IS 875 (Part 5)-1987 – Special loads and load combinations (second revision)

2. GENERAL FEATURES

2.1 The safety requirements for junction houses shall conform to Interplant Standard `Design considerations for safety and control devices for belt conveyors'. The other requirements are given in 2.2 to 2.14.

2.2 The junction houses shall be reinforced cement concrete or steel construction. Steel construction shall be suitably painted as per protection against corrosion.

2.3 Roofing and side sheeting shall be galvanized corrugated steel sheets for protection against rain. Side sheeting may be replaced by brick walls according to the requirement of the location. Glazed windows shall be provided on the walls / sides sheeting to ensure sufficient day light and ventilation.

Note: For guidance Part VIII Building Services, Section 1 Lighting and ventilation of the National Building Code of India (SP: 7-1982) may be referred.

2.4 Floors shall be of reinforced cement concrete construction or of chequered plates or grating suitable slope shall be provided on RCC floors where hydro-flushing and drainage are envisaged. The floor shall stretch continuously from wall to wall unless specified otherwise. The floor shall have no uncovered / unguarded openings. The floor openings such as erection hatches staircase entries, etc. shall be covered / guarded by removable covers / hand rails.

2.5 Adequate side clearance for maintenance shall be provided for all equipment depending upon the exact location (see IPSS: 2-03-009-20 `Maintenance facilities in conveyor system).

2.6 Head room at any floor shall not be less than 2.5 m.

2.7 Access to all floors from ground level shall be provided through stairs. Stair cases shall be effectively protected against rain. Suitable access (through cat ladders or stairs) and platform, as necessary, shall be provided for maintenance of handling equipment and for reaching the roof.

2.8 The junction houses shall be equipped with suitable lifting devices, such as EOT cranes, electric hoists, chain pulley blocks, etc. for lifting individual loads from different floor and lowering the same to the ground level for placing on a truck or trolley. In case of space restrictions, suitable lifting beams projecting out of the junction house shall be provided.

Drive Motor Rating (kW)	**Clear space between the drive floor and bottom of the lifting beam**	**Clear space between the tail pulley floor and bottom of the lifting beam**
Drive Motor, kW < 100	4.5m (minimum)	3.5m (minimum)
Drive Motor, kW ≥ 100	5.5m (minimum)	3.5m (minimum)

2.9 Erection hatches with removable covered and hand railings shall be provided.

2.10 Openings in the junction house for erection and maintenance of equipment shall be approachable by motorable road.

2.11 The floor openings below the discharge pulley of the conveyor shall be large enough to transfer all the material falling off from the discharge and snub pulleys on to the subsequent system without causing any accumulation of materials on the floor.

2.12 The conveyor installation inside junction house shall be planned in a manner so that the floor shall be at least 300 mm below the bottom of the conveyor pulleys or belts, whichever is lower.

2.13 If the belt edge happens to be higher than 1500 mm above the floor, suitable platform to facilitate maintenance of the conveyors shall be provided.

2.14 The junction house floor shall be suitable for placement of any individual load of the installation on that floor. The dead and dynamic loads due to the permanent installations shall be provided by the equipment supplier. Wind and other loads for the junction house shall be computed by reference to relevant Indian Standards. The weight of the belt roll along

with its stand shall also be taken into account whenever they are to be placed in the junction house floor for changing of the belt.

2.15 The design of structure and building shall be in accordance with the following parts of IS 2974 `Code of practice for design and construction of machine foundations' to ensure that the amplitude of vibration of the foundation and the individual floors of the junction house do not exceed the permissible limits mentioned therein:

IS 2974 (Part 1):1982	Foundation for reciprocating type machines (second revision)
IS 2974 (Part 2):1980	Foundation for impact type machines hammer foundation (first revision)
IS 2974 (Part 3):1992	Foundation for rotary type machines (medium & high frequency) (second revision)
IS 2974 (Part 4):1979	Foundation for rotary type machines of low frequency (first revision)
IS 2974 (Part 5):1987	Foundation for impact machines other than Hammers (forging and stamping press, pig Breakers, drop crusher and jolter) (first revision)

2.16 The junction houses shall have provision for:

a) Effective ventilation, dust extraction and dust suppression
b) Adequate lighting
c) Cleaning facilities
d) Fire fighting arrangements
e) Adequate space for maintenance and handling facilities
f) Power socket outlets

2.16.1 Under-ground junction houses shall have additional provisions for:

a) Prevention of seepage and flooding, and
b) Disposal of seepage water and sludge

2.17 Amenities like communication facilities, drinking water, toilet, etc shall be provided as required.

2.18 Safety:

3. BASIC DATA

3.1 Before commencing the detailed engineering of the junction house, the following information / data shall be obtained from / furnished by the agencies mentioned below:

	INFORMATION REQUIRED	AGENCY TO PROVIDED THE INFORMATION
a)	Schematic layout of the junction house showing length, width, finished floor levels, hatch openings, roofing and walls, incoming and outgoing galleries, location of stairs, hoisting and maintenance facilities and arrangement of services like power and water supply, hydro-flushing and drainage provisions, ventilation, fire fighting, etc	System designer
b)	Design loads and dimensional data of the conveyor drives, shuttle conveyors, feeders, crushers, screens, handling facilities, etc. all information shall be super imposed over the schematic layout prepared by the system designer.	Equipment supplier
c)	Design loads and dimensional data of chutes bunkers, hoppers, electrical, ventilation, fire-fighting installation, etc.	System designer