

INTER PLANT STANDARD – STEEL INDUSTRY



IPSS

GUIDELINES FOR INSTALLATION AND USE OF BARRICADING

IPSS: 1-11-022-14

Corresponding IS does not exist

0 FOREWORD

0.1 This Inter Plant Standard, prepared by the Standards Committee on Personnel Safety Appliances & Procedures, IPSS 1:11; with the active participation of the representatives of all member steel plants and associated organizations in the field, was adopted in February, 2015.

1 SCOPE

1.1 To provide a safety guideline for selection and use of appropriate barricade for various type of construction, demolition work and to control ingress and egress into vital installations.

2 PROCEDURE

2.1 General

2.1.1 Barricades are used as warning devices, alerting people of the hazards in the construction sites. These are also used to control traffic movement on roads and to protect hazard prone vital installations like gas holders, electrical sub-stations etc.

2.1.2 Consultants, site-in-charge from Central Project Engineering Division and Operating Departments are responsible to ensure that the work site is properly barricaded.

2.1.3 Where required for protection of workers, public safety, or as required by laws, substantial barricades shall be provided for the areas where excavation, trenching, construction and demolition work are being performed.

2.1.4 Barricades shall be provided to protect people from associated hazards and to prevent trespassing into vital installations as per the requirement of prevailing laws.

2.1.5 An opening measuring 30 cm or more in its least dimension, in any floor, platform, pavement or yard through which person may fall; such as hatch way, stair or ladder opening, pit, large manhole, should be barricaded.

2.1.6 Traffic flow shall be controlled by using appropriate barricades to guide the vehicles into desired lane.

2.1.7 All barricades shall be visible from a safe distance, to alert people well in advance.

- 2.1.8 Caution board, diversion board, shutdown board to be displayed at both ends of barricade.
- 2.1.9 Two persons with red / green flag and whistle to be deputed at both ends of the barricades to regulate traffic.
- 2.1.10 Red light to be provided on the barricades if job is to be done after sunset at the site.
- 2.1.11 No material to project / spill beyond barricades.
- 2.1.12 Only authorized persons shall remove the barricades once the job is complete.
- 2.1.13 All extended open bars at construction site as well as at plants, other projected bars, valve spindle etc in the plants at man-height must be protected with Bar-cap, to cover the sharp projection of the bar.

3 TYPES OF BARRICADES

3.1 Barricades can be classified into two groups viz a) Indicative Barricades and b) Protective Barricades. Safety tape, portable steel frame barricades, portable road barriers like cones, drums and road runners form the group of indicative barricades. Rail guard, concrete guards, steel frame barricades grouted firmly onto the ground, permanent fencing etc. form the group of protective barricades. Type of barricade is to be selected depending upon the requirements and statutory provision.

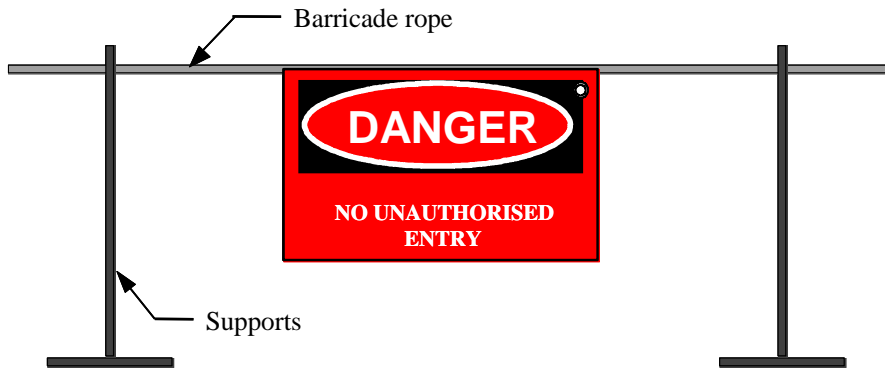
3.2 Danger Flags

- i) Each barricade erected shall have securely attached to it a sufficient number of Danger Flags to provide visible warning at all sides. Each recognised entry point shall have a Danger Flag across it attached.
- ii) If a barricade has a number of recognised entry points then each entry point flag shall have a Danger Flag attached.
- iii) The barricade and the attached Danger Flags are to be maintained in good condition during the life of its requirement.
- iv) Where a barricade crosses a recognised walkway, a Danger Flag with a Warning Tag attached shall be located across that walkway. In these circumstances an alternate safe access (walkway) will be provided.

3.2.2 A barricade with Danger Flags shall be used for two primary functions:

- i) To restrict access to a defined area containing hazards and risks,
- ii) To provide protection to those personnel working within the defined area from unauthorised access by any other person or activity.
- iii) Rope of sufficient diameter are to support flags without undue sagging strung between supports at a minimum height of 1m above the working floor level,

which is clearly visible on approach. Danger Flags are to be attached with a maximum spacing of 5m.

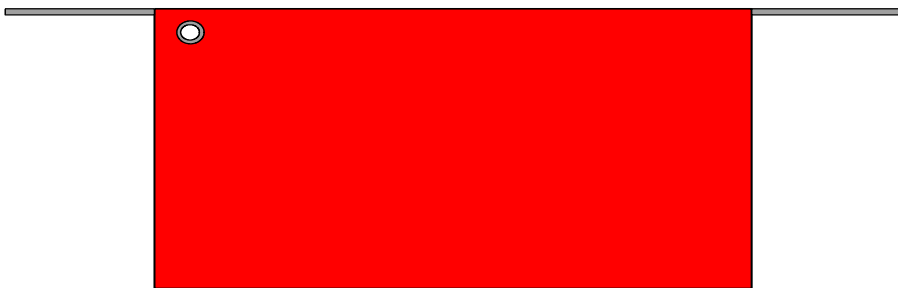


Danger Flag Layout

FRONT SIDE



OTHER SIDE



3.2.3 The size of the Danger Flag shall be of A4 size(210 X 297 mm). the ID of the eyelet to be 4 mm. The danger Flag is to be printed in hard bound paper with plastic cover.

4 SPECIFICATION USAGE OF BARRICADES**4.1 Barricading Construction site**

All construction sites are to be barricaded using the appropriate barricades, as given in the following points :

- 4.1.1 The construction sites shall be provided with barricade all around its periphery as per standard drawing given at **Annexure-6**.
- 4.1.2 Wherever construction debris is dropped without the use of an enclosed chute, the area is to be barricaded using either of the barricade standards given at **Annexure -2, 3 or 4** depending upon the availability of angle/square hollow section and pipes, with 1 meter clearance from the deposited materials.
- 4.1.3 Areas with temporary wiring operating at more than 600 volts shall be barricaded with indicative barricade comprising “Red-White” safety tape, if the job requires at most one day to complete. If job requires longer time, then the site is to be barricaded with protective barricades as per the above mentioned sketches. Plastic barriers must not be used to barricade the work area.
- 4.1.4 The swing radius of the rotating superstructure of cranes or other equipment is to be protected using minimum 50 mm wide ‘Red-White’ safety tapes. One strand of tape must run continuously from post to post at 1000 mm above ground. Another strand of tape is to run above 300 mm from the ground.
- 4.1.5 Excavations – A protective barricade of at least 1200mm high must be erected around a trench that is 1 meter or more deep using standard drawing given at **Annexure-6**.
- 4.1.6 Piling site, not requiring excavation & gas-cutting & welding sites shall be barricaded using minimum 50 mm wide ‘Red-White’ safety tapes for warning.
- 4.1.7 For construction near/on roads refer Clause 6.3.3. of this standard.

5 Barricading Demolition site

- 5.1 All the roads and open areas adjacent to demolition site shall be barricaded with caution board. Unauthorized entry to demolition site must be prevented.
- 5.2 Properly cover or securely barricade all the floors or roof openings / lift shaft entrances / doorways leading to staircases (where staircases are to be removed).
- 5.3 When floors are being removed, the area underneath shall be properly barricaded to prevent any other workman to work under the floor.
- 5.4 All floor openings / wall openings shall be adequately guarded / barricaded.
- 5.5 During night, red light and/or luminescent danger signs shall be placed on and around the barricades.

6 Barricading Roads

- 6.1 Before working on road or along road side, the executing agency shall obtain approval for working on road from Safety Department. Barricade to control or to protect traffic is to be provided as per the norm mentioned below and to be approved by the site-in-charge and the safety officer of the concerned department before starting the job.
- 6.2 Executing agency shall make safe work procedure for the job with the help of the safety officer of the concerned department.
- 6.3 Care should be taken to block only one-half of road width at a time. Caution boards and boards indicating diversion are to be placed at both sides of barricade.
- 6.4 If entire road width is to be blocked, in addition to the caution board, the road diversion sign is to be prominently placed on both ends of the work area.
- 6.5 If access by construction vehicles is required, the contractor or agency doing the work is responsible for properly replacing the barricades immediately after entry & exit of the construction vehicle.
- 6.6 If access to local office building is to be maintained beyond the point of the closure then an adequate opening shall be provided between the barricades to allow safe ingress and egress through the closure.
- 6.7 Drum painted white with red stripes at the middle and barricade with red / white safety tape may be used as barricade. However, barricades as shown either in the standard drawings given at **Annexure -2, 3 or 4** are preferable to drums.
- 6.8 Two persons with red / green flag and whistle to be deputed at both sides of the barricade to regulate traffic.
- 6.9 Red light to be provided if job is to be done after sunset. The cable for red lights shall be tied only with non-conductive material.
- 6.10 No material to be projected / spilled beyond barricades.
- 6.11 Barricade is to be provided around if equipment is left unattended near a roadway at night.
- 6.12 Rail guards, as per the standard drawing given at **Annexure-1**, are to be permanently placed in the ground, when road is passing parallel to railway track within 2 meter. These will be placed at places, where permanent rail track fencing is not provided.
- 6.13 For any work on a road near railway track or level crossing, Safety precautions are to be strictly followed, including barricading the work site.

7 Barricading water bodies

- 7.1 Permanent rail guards as shown in the standard drawing given at **Annexure-1** are to be grouted in the ground along the side of roads passing along water bodies like lake, cooling pond etc. Same guards are to be placed on both sides of roads running on the top of dam.
- 7.2 For roads passing on the top of a dam, rail guards along with hand rails and mid rails are to be fixed permanently on both side of the road.
- 7.3 All bridges crossing any stream or river must have railings with hand-rail and mid-rails and toe guards.

8 Barricading for positive isolation

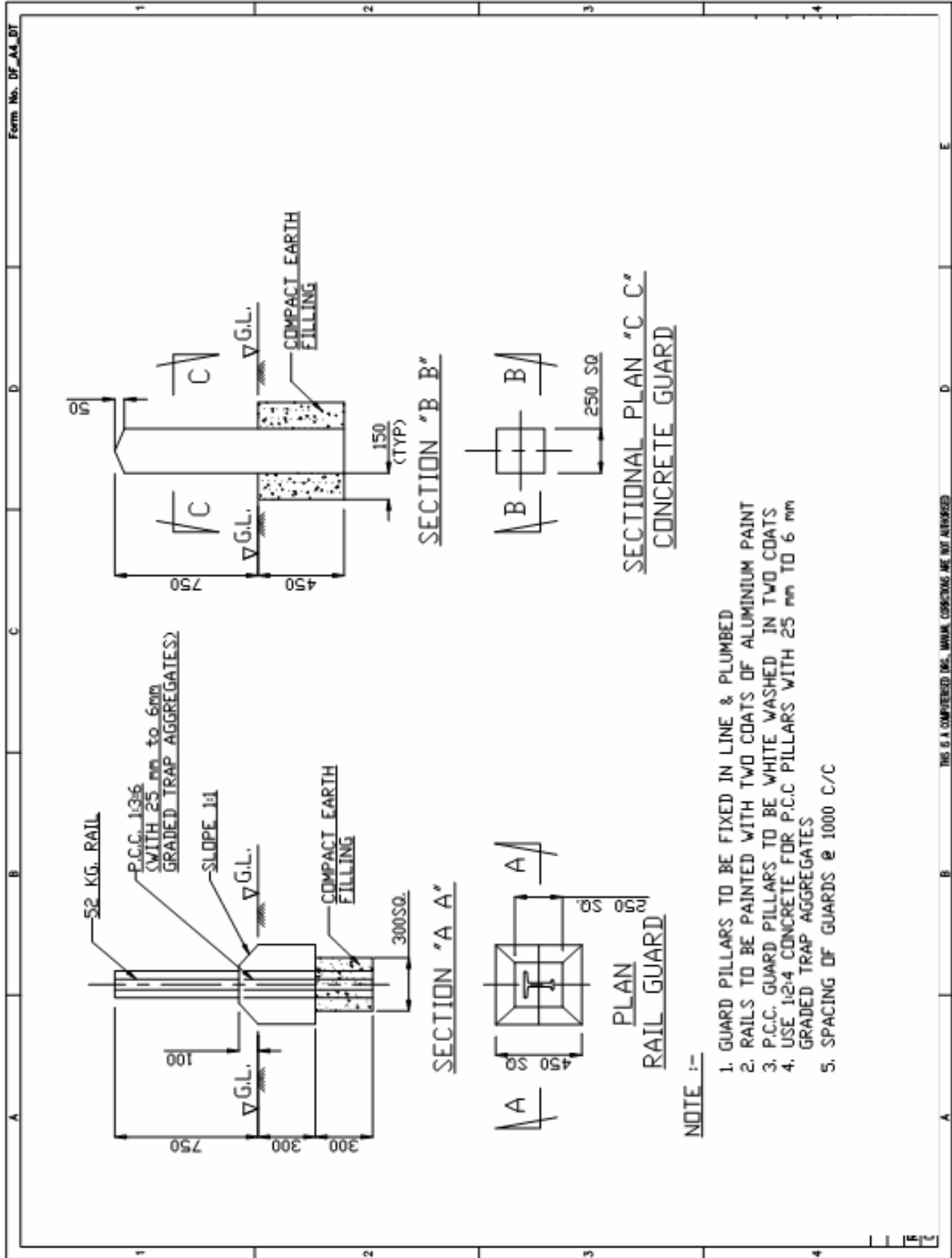
- 8.1 For positive isolation, the entry of the personnel and the trucks and cranes to the working area shall be restricted by using barricades as shown in the standard drawing given at **Annexure-5**.
- 8.2 Separate gate shall be provided, for the entry of personnel and trucks.
- 8.3 The barricades shall have self closing door for entry of persons

9 Barricade if work is going on at height

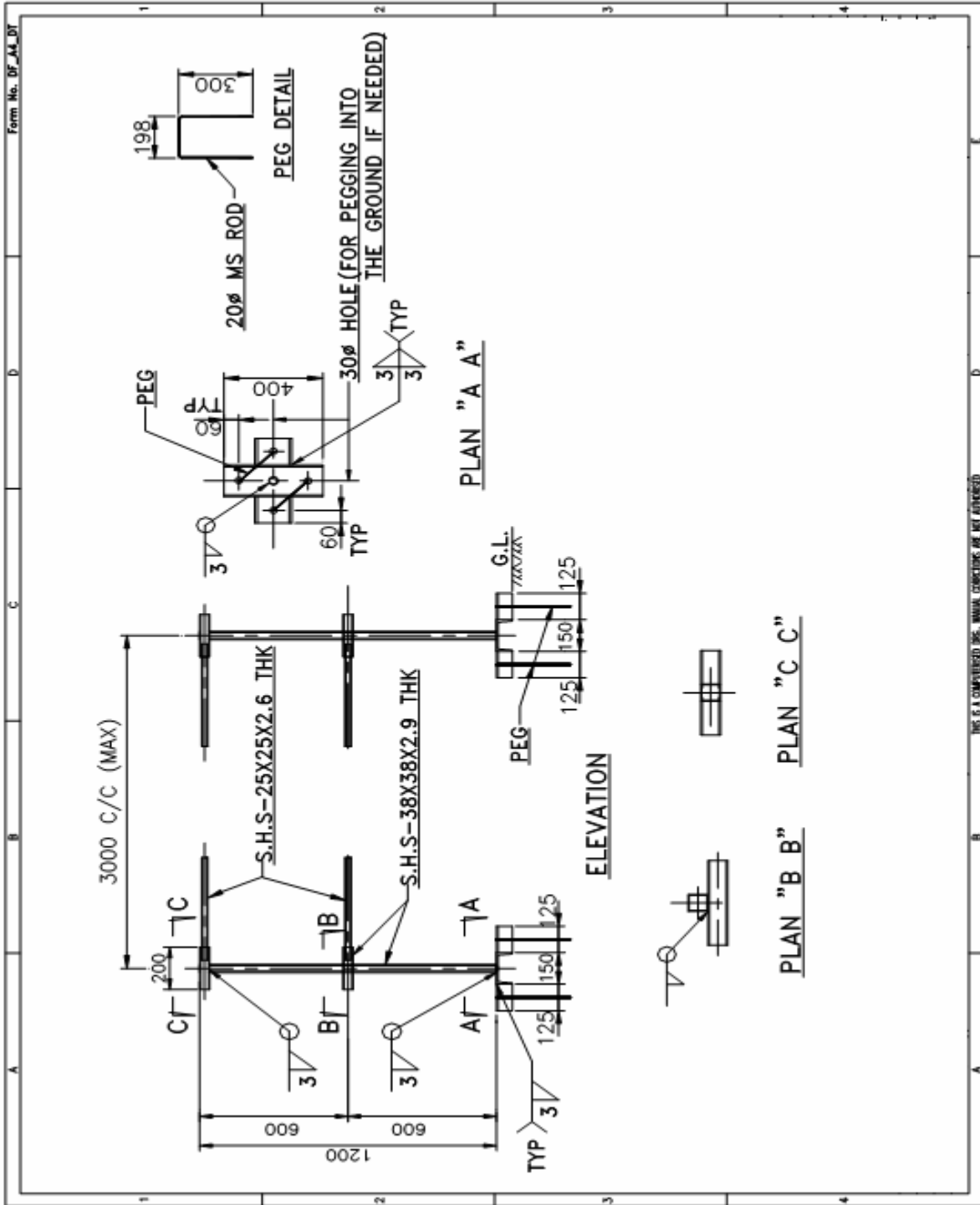
Requirements of barricading for working at Height shall be as per :

- 9.1 Clause 5.10 of IPSS:1-11-008-14 'Safety Procedure for Working at Height by Regular Employees of Plants / Mines'
- 9.2 Clause 5.10 of IPSS: 1-11-005-14 'Safety Procedure for Working at Height by Contractor's Workers'
- 9.3 Clause 4.2 of IPSS: 1-11-003-12 'Safety Procedure for Roof Sheet changing '

ANNEXURE-1



ANNEXURE-4



ANNEXURE-5

