1.0 INTRODUCTION:

Government of India, have passed an act, namely, “The persons with disabilities (Equal Opportunities, Protection of Rights and full Participation) Act-1995” to cater for the needs of the persons with disabilities. To implement the provision of the act, Railway Board had issued instructions to all the railways vide letter no.96/LM(B)/2/404 dated 13-12-96 but not much headway could be made in absence of standard design and drawings of amenities to be provided at railway stations. Railway Board therefore, advised RDSO to take up the task of necessary study and prepare guidelines for providing the requisite amenities for implementation for provisions of the act vide letter no.97/LM(B)/2/404 dated 24-4-98.

2.0 TERMS OF REFERENCE:

Terms of reference to RDSO are as under: (Railway Board letter no. 98/LM(B)/3/13 dated 13-7-98)

i) To study:
   - Guidelines issued so far on this subject.
   - Provision of National Building Codes.
   - Bye-laws and other legislation.

ii) To formulate detailed practical instructions for adoption by the Railways in future constructions of public buildings. Following areas, in planning and design of buildings, need to be enhanced.
   - Parking space for disabled persons
   - Separate walk ways with guiding blocks of non-slip material
   - Ramps with suitable slopes
   - Separate entry with adequate width for the wheel chair users.
   - Lifts with adequate width of door and operation panels accessible to the disabled.
   - Separate toilets with fittings accessible to disabled persons particularly to wheel chair users.
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- Audio video signages and indicators for diverse disability groups.
- Barrier free foot paths along the roads.

3.0 RELEVANT CLAUSES OF THE ACT:

Extracts from the relevant portion of the act are reproduced below:

**Clause 44 (b)**

“adapt toilets in rail compartments, vessels, aircrafts and waiting rooms in such a way as to permit the wheel chair users to use them conveniently.”

**Clause 45(d)**

“engraving on the edges of Railway platforms for the blind or for persons with low vision”.

**Clause 46**

“The appropriate Government and the local authorities shall, within the limits for their economic capacity and development, provide for:

a) ramps in public buildings;

b) adaptation of toilets for wheel chair users;

c) braille symbols and auditory signals in elevators/lifts;

d) ramps in hospitals, primary health centres and other medical care and rehabilitation institutions”.

4.0 DEFINITIONS:

**Non-ambulatory Disabilities**:

Impairments that regardless or cause of manifestation, for all practical purposes, confine individuals to wheel chairs.

**Semi-ambulatory Disabilities**:
Impairments that cause individuals to walk with difficulty or insecurity. Individuals using braces or crutches, amputees, arthritics, spastics, and those with pulmonary and cardiac ills may be semi-ambulatory.

**Hearing Disabilities:**

Deafness or hearing handicaps that might make an individual insecure in public areas because he is unable to communicate or hear warning signals.

**Sight Disabilities:**

Total blindness or impairments affecting sight to the extent that the individual functioning in public areas is insecure or exposed to danger.

**Wheel Chair:**

Chair used by disabled people for mobility. The standard size of wheel chair shall be taken as 1050 x 750mm.

5.0 **LITERATURE SURVEY:**

The following literature, was collected from different sources and studied:

i) A report of ‘Core Group Committee’ for formulation and final recommendation of new schemes for implementation of persons with disabilities’ in the area of “Barrier Free Environment” issued by “National Institute for the Orthopaedically Handicapped (Under Ministry of Social Justice & Empowerment)”.

ii) “Model Building Bye-laws to provide facilities for Physically Handicapped persons” by Chief Architect, CPWD.


iv) Drawings prepared by “Access Council for the Rights of Disabled”.

v) A booklet issued by “Public Transport - Disability Services” Melbourne, Australia.

6.0 **GENERAL PRINCIPLES AND CONSIDERATIONS:** (IS:4963-1987)
Clause 3.1  Wheel Chair:

The standard size of wheel chair shall be taken as 1050x750mm. For details regarding wheel chair, IS 7454-1974 and IS 8086-1976 may be referred to.

Clause 3.2  Functioning of a wheel chair:

Clause 3.2.2  The fixed turning radius of a standard wheel chair, wheel to wheel, is 450mm. The fixed turning radius, front structure, to rear structure is 785mm.

Clause 3.2.3  The average turning spaces required is 1800 x 1800mm.

Clause 3.3  Adult Individual Functioning in a Wheel Chair:

Clause 3.3.1  The average unilateral vertical reach is 1500mm from the floor and ranges from 1350 to 1600mm.

Clause 3.3.2  The average horizontal working (table) reach is 775mm and ranges from 715 to 830mm.

Clause 3.3.3  The bilateral horizontal reach, both arm extended to reach side shoulder high, ranges from 1350 to 1770 and averages 1560mm.

Clause 3.3.4  An individual reaching diagonally, as would be required in using a wall mounted dial telephone or towel dispenser, would make the average reach (on the wall) 1200mm from the floor.

Clause 3.5  People with Hearing Disabilities:

Clause 3.5.1  People with hearing disabilities, have particular difficulty in comprehending sounds and works in noisy environments. Loud speaking (announcing) systems should be clearly audible. Supplementary visual information should be provided for at railway stations.

Clause 3.6  People with Sight Disabilities:

Clause 3.6.1  For people with sight disabilities, orientation can be aided by marking with the use of colour, illumination and,
in certain cases, the texture of material. Design and plan arrangements should be simple and uncomplicated. Contrasting colours should be used to aid the identification of doors, stairs, ramps, passage ways, skirting boards, etc. Surfaces can be varied to indicate passage ways, changes of direction, etc. Orientation hints should be specially illuminated. Hand rails can be used as a locational aid.

Clause 3.6.2 To minimise the risk of falls and injuries, hazards such as posts, single steps and projections from walls should be avoided wherever possible. Hazards should be emphasized by means of illumination and by contrasting colours and materials.

Clause 3.6.3 People with sight disabilities are often sensitive to glare. Unwanted mirroring effects and reflections may be avoided by attention to the location of windows and illumination, and the choice of floor and wall surfaces. People with sight disabilities often have difficulty in reading signs and other printed informations. Blind people are restricted to tactile reading. Visual informations in railway stations should be supplemented with audible information.

7.0 AMENITIES TO BE PROVIDED IN RAILWAY STATION PREMISES AND OTHER PUBLIC UTILITY BUILDINGS OF RAILWAYS:

The following facilities are required to be provided for the persons with disabilities at railway stations and other public utility buildings:

7.1 Parking: (Sketch-1)

For parking of vehicles of handicapped people/people using wheel chair, following provision shall be made:

i) Surface parking for two car spaces shall be provided near entrance for the handicapped persons with the maximum travel distance of 30m from building entrance.

ii) The width of parking bay shall be minimum 3600mm.
iii) The information indicating that the space is reserved for wheelchair users shall be conspicuously displayed.

iv) Guiding floor materials shall be provided.

7.2 **Approach to Buildings: (Sketch-2)**

Every station/public utility buildings shall have at least one entrance accessible to the handicapped persons and shall be indicated by signage. It should be Barrier free from parking place to the platform/reservation hall or entrance of the building.

i) **Ramped Approach: (Sketch-3)**

Ramped approach shall be provided to negotiate the plinth height of the station building. Ramp shall be finished with non-slip material. Minimum width of ramp will be 1800mm with minimum gradient at 1:20 and maximum gradient of 1:12 for a short distance upto 900mm. Maximum length of flight will be 9000 mm.

ii) **Stepped Approach/Stair Case : (Sketch-3A)**

For the handicapped who are not using wheelchair stepped approach with tread size of seat less than 300mm and maximum riser of 150mm shall be provided.

7.3 **Ramp for Foot-over Bridges: (Sketch -3 )**

Ramps for FOBs or sub-ways should be provided to facilitate boarding of trains at other than the main platforms by the persons with disabilities.

7.4 **Ticket Window: (Sketch-4)**

Every station should have at least one ticket window for handicapped persons. The height of the counter from the floor level to the top should be not more than 800mm. Audio-visual signal should be provided at appropriate locations.

7.5 **Toilet: (Sketch 5 & 5A)**
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Every station should have at least one toilet with drinking water facilities for handicapped persons. The special features shall be as follows:

i) Vertical rail should be 835mm to 1295mm above the floor level.

ii) Pull rail of the door should be 1070mm above from the floor level as shown in the sketch.

iii) Height of WC shall be 500mm above the floor level the rim of wash basin shall be 780mm above the floor level.

7.6 Lift: (Sketch-6)

The location of lift shall be nearest to the exist/entrance place. Guiding floor should be provided up to the entry of lift i.e. the door of the lift. Size of lift shall be 2000 x 1100 mm. Minimum door width shall be 900mm.

7.7 Telephone Facilities: (Sketch-7)

At least one public telephone should be accessible for usage by physically disabled persons:

i) Maximum height of the telephone should be 1300 mm.

ii) Seat height should be 450mm from the floor level as shown in the sketch.

7.8 Canteen: (Sketch-8)

At least one counter should be made accessible to physically disabled persons. The height of service counter and eating table should be 800mm from floor level as shown in the sketch.

7.9 Signage/Indicator: (Sketch-9)

Appropriate identification of specific facilities within Railway Station premises/other public utility buildings for the handicapped persons should be done with proper signage. Audiovisual signals for visually impaired and those with hearing disabilities should be provided.

The symbols/informations should be in contrasting colour and properly illuminated because people with limited vision may able to differentiate amongst primary colours. International symbol mark for
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wheel chair as shown in the sketch, to be installed at lift, toilet, parking areas etc. that have been provided for the handicapped persons.

Signs should be designed and located, so that, they are easily legible by using suitable letter size (not less than 20mm high). For visually impaired persons information board in braille should be installed on the wall at an suitable height and it should be possible to approach them closely. To ensure safe walking there should not be any protruding sign which creates obstruction in walking. Public Address System may also be provided in busy public areas.

7.10 Guiding /warning floor material: (Sketch-10)

The floor material to guide or to warn the visually impaired persons with a change of colour or material with conspicuously different texture which is easily distinguishable form the rest of the surrounding floor material, is called as guiding/warning materials. The guiding/warning floor material is meant to give the directional effect or warning to the physically disabled person at critical places. This floor material should provided in the following areas:

i) The access path from parking area to the building.

ii) Immediately at the beginning/end of walk way where there is a vehicular traffic.

iii) At the location with abruptly changing in level or ramp.

iv) Immediately in front of an entrance/exist and the landing.

v) For rest of the floor area, non slip material should be used.

vi) Kerb should be 25mm high and floor joint shall be flushed at all the places.

7.11 Use of Braille:

For visually handicapped persons, Braille symbol shall be used at the height of 800mm on right side of door entrance.

7.12 The sketches are not to scale and all dimensions are in millimeters.

8.0 RECOMMENDATIONS:
AMENITIES TO BE PROVIDED AT RAILWAY STATION AND OTHER PUBLIC BUILDINGS FOR THE PERSONS WITH DISABILITIES

i) The facilities for the persons with disabilities should be provided in all important future constructions.

ii) As far as provision of these amenities at existing railway stations and other public utility buildings of Railways is concerned, the scope of work is voluminous, therefore, this work has to be planned in the phased manner. The following phases are recommended:

**Phase - I** : Station buildings at Zonal Railway headquarters.

**Phase - II** : Railway stations of state capitals.

**Phase - III** : Important public utility buildings like Computerised Reservation Office etc.

**Phase - IV** : Other important stations as identified by Zonal Railways.