

Section 13
Project Facilities

SECTION 13

PROJECT FACILITIES**13.1 General**

The requirement of the project facilities to be provided shall be indicated in Schedule-C of the Concession Agreement. This shall include information regarding location and size of the facilities. Land required for provision of facilities shall be acquired by the Government and the date of handing over of the land to the Concessionaire shall be indicated in the Concession Agreement.

13.2 Pedestrian Facilities**13.2.1 General**

Pedestrians are vulnerable to being involved in accidents. Therefore, adequate consideration shall be given to their safety through provision of facilities. The facilities for pedestrians given in this Section shall be provided on the Project Highway.

13.2.2 Footpath (Sidewalk)

- (i) The sidewalks shall be provided in the built-up sections, on both sides, by barrier type (non-mountable) kerbs of height 200 mm above the adjacent road surface.
- (ii) The width of sidewalks depends upon the expected pedestrian flow and shall be fixed subject to land availability, but shall not be less than 1.5 m.

13.2.3 Pedestrian Guard Rails

Pedestrian guardrails shall be as specified in Section 11 of this Manual.

13.2.4 Pedestrian Crossing

Where complete segregation of pedestrians from vehicular traffic is not provided, some form of planned road sharing principle shall be applied. Pedestrian crossings shall be provided where they will be well used. Pedestrian crossings shall be suitably integrated with the overall design of the intersection.

The following criteria shall be followed regarding selection of pedestrian crossing:

- (i) **At-Grade Pedestrian Crossing (Pedestrian Crosswalk):** Pedestrian crosswalks shall be provided at all important intersections and such other locations where substantial conflict exists between vehicular and pedestrian movements. Wherever possible, the crosswalks shall be at right angles to the carriageway and properly marked so that the pedestrians are subjected to minimum inconvenience. Crosswalks shall not substantially increase the walk distance of pedestrians. Adequate visibility, freedom from obstructions and sufficient space for waiting are the other important requirements for location of crosswalks.

At-grade pedestrian crossings can be uncontrolled or controlled. Uncontrolled pedestrian crossings shall be provided only where the intersection itself is left uncontrolled because of low volumes of both vehicular and pedestrian traffic even during peak hours and where accident records do

not indicate any need to segregate vehicular traffic from cross pedestrian traffic. Uncontrolled pedestrian crosswalk shall be marked by studs or paint line.

Controlled form of crossing shall be achieved through provision of Zebra Crossings, whether at an unsignalized or signalized intersection.

- (ii) **Zebra Crossing:** A Zebra Crossing shall not be sited within 150 m of another such crossing. The Zebra Crossing shall be somewhat set back from the carriageway line. However, the set back distance shall not be so much as to cause an appreciable increase in walking distance for the pedestrians. Pedestrian guardrails may be necessary where the setback distance is appreciable or at the skew crossings.

The width of the Zebra Crossing shall be adequate and shall generally lie within a range of 2.0 m to 4.0 m. The crossing shall, as far as possible, proceed uninterrupted through the median strip. In the event of the median strip being used as pedestrian refuge, adequate width of median shall be provided. In case of raised medians, such portion could be suitably depressed with kerb height not exceeding 150 mm.

In the vicinity of Zebra crossing, guardrails of sufficient length shall be provided to deter pedestrians from crossing the road at any arbitrary point along the road. Fig. 13.1 gives a typical layout of Zebra Crossing at an intersection controlled by channelization only.

13.3 Street Lighting

13.3.1 General

- (i) The Concessionaire shall provide lighting at specified locations of the Project Highway, using appropriate system and source of electric power as per the requirements of this Section.
- (ii) The Concessionaire shall make suitable arrangements for procuring Power Supply to ensure uninterrupted lighting during night and when visibility is low, including provision of DG sets as standby arrangements.
- (iii) The Concessionaire shall bear all costs of procurement, installation, running and operation cost of all lighting, including cost of energy consumption specified in this Section.

13.3.2 Specifications

- (i) Unless stated otherwise elsewhere in this Manual, the minimum average level of illumination on the stretches of Project Highway including Toll Plazas, truck lay-byes, bus bays, etc shall be 30 Lux.
- (ii) The layout of the lighting system together with type of luminaries for different locations shall be prepared by the Concessionaire in such a manner that the minimum illumination level prescribed in para 13.3.2(i) can be achieved and shall be submitted to the Independent Engineer for review and comments, if any.
- (iii) Overhead electrical power and telecommunication lines erected within the ROW by the Concessionaire shall

be provided with adequate clearance so that safe use of the highway is not affected.

- (iv) Vertical and horizontal clearances for electrical installations shall conform to IRC:32.
- (v) All the fixtures, wires/cables, lights shall conform to relevant BIS specifications as a minimum. The Concessionaire, may, with the prior review and comments, if any, of the Independent Engineer use fixtures with better specifications.

13.3.3 Locations where Lighting is to be Provided

Unless specified otherwise in Schedule-C of the Concession Agreement and elsewhere in this Manual, the Concessionaire shall provide lighting at the following locations of the Project Highway:

- (i) Toll Plaza Area: The lighting in and around Toll Plaza, toll booths, office building, on the approach road, etc. shall be as per Section 10 of this Manual.
- (ii) Truck lay byes: Lighting at the truck lay byes shall be as per para 13.4 of this Manual.

13.4 Truck Lay-byes

13.4.1 General

The Concessionaire shall construct and maintain adequate number and size of truck lay-byes for parking of trucks by the side of the Project Highway as indicated by the Government. The guidelines, as given here, shall be followed in regard to location, size

and facilities to be provided at the truck lay-byes.

13.4.2 Location and Size

Truck lay-byes shall, in general, be located near check barriers, interstate borders, places of conventional stops of the truck operators, etc. The places be identified on the basis of field survey and shall have adequate space for facilities as specified in subsequent para 13.4.3 and future growth.

13.4.3 Facilities

The truck lay-byes shall have the following facilities:

- (i) Paved parking,
- (ii) Rest areas with toilets, drinking water,
- (iii) Telephone.

13.4.4 Lighting

The truck lay-byes and 50 m length of the Project Highway on its either side shall be illuminated at night to provide an average illumination of 30 Lux. Suitably designed electric poles having aesthetic appeal and energy saving bulbs may be used to provide required illumination. Alternatively, photo voltaic lamps may be used.

13.5 Bus Bays and Bus Shelters

13.5.1 General

The buses shall be allowed to stop for dropping and picking up passengers only at the bus bays. The Government shall indicate in Schedule-C of the Concession Agreement, the number and broad location of bus bays to be provided by the Concessionaire. The bus bays shall conform

to the specifications and standards given in this Section. In cases where bus stands are provided by the concerned State Government Transport Authorities, the Concessionaire shall provide only access road within the right of way.

13.5.2 Location

The location of the bus bays shall be fixed on the basis of following principles:

- (i) The bus stops shall be sited away from bridges and other important structures and embankment sections more than 3 m high.
- (ii) As far as possible, bus bays shall not be located on horizontal curves or at the summit of vertical curves.
- (iii) The location shall have good visibility, not less than the safe stopping sight distance.
- (iv) The bus bays shall not be located too close to the road intersections. A gap of 300 m from the tangent point of intersections to start/end of the bus bay shall be desirable. At minor intersections (e.g. junctions with village roads), distance of 60 m may be adopted. However, if a substantial volume of buses is to turn right at the intersection, it is necessary that the bus bay shall be located sufficiently ahead of the intersection so that the buses can be manoeuvred easily from the pick-up stop on the left hand side to the extreme right lane for turning. The location of the bus bays may be fixed after due consultation with the local communities expected to use such facilities.
- (v) At major four-way intersections involving transfer of a substantial

number of passengers from one pick-up stop to the other, it might be desirable to construct a single, composite bus stop of suitable design to cater to all the bus routes collectively.

- (vi) In hilly areas, the bus bays shall be located, preferably, where the road is straight on both sides, gradients are flat and the visibility is reasonably good (usually not less than 50 m). Subject to these requirements, it will be advisable to choose locations where it is possible to widen the roadway economically for accommodating bus bays.

13.5.3 Layout and Design

- (i) For plain area, typical layouts of bus bays given in Fig. 13.2 shall be adopted. The length "L" shown in Fig. 13.2 shall be 15 m, which shall be increased in multiples of 15 m if more than one bus is likely to halt at the bus bay at one time.
- (ii) For hilly areas, where there is a general constraint on space, the layout indicated in Fig. 13.3 may be adopted.
- (iii) Bus bays shall be provided on both sides of the Project Highway for each direction of travel independently, so that the buses do not have to cut across the road. Bus bays on opposite sides shall be staggered to a certain extent to avoid undue congestion on the highway. At intersections, the bus bays for up and down direction shall be located on farther sides of the intersection.
- (iv) The bus bay shall be provided with a shelter for passengers. The shelter shall be structurally safe and aesthetic in appearance, while also being functional so as to protect the waiting passengers

adequately from sun, wind and rain. If the shelter is constructed on the hillside, slopes shall be properly dressed and suitably protected to avoid slips. The shelter shall be set back from the kerb line by at least 500 mm.

13.5.4 Pavement

The pavement in the bus bays shall have adequate crust with respect to the wheel loads expected. Also, the surfacing shall be strong enough to withstand forces due to frequent braking and acceleration by the buses. The colour and texture of the bus bay surfacing shall be preferably distinctive from that of the main carriageway.

13.5.5 Drainage

- (i) The bus bays shall have proper cross slope to drain off the excess water. No water, which is likely to splash on the waiting passengers, shall be allowed to collect near the bus shelters.
- (ii) Suitable kerb gutter section with requisite longitudinal slope and outlets at intervals to ensure quick disposal of water shall be provided.

13.5.6 Road Markings

Pavement markings with thermoplastic paint having glass beads shall be provided at the bus stops as shown in Figs. 13.2 and 13.3 with the word 'BUS' written prominently on the pavement. Pedestrian crossings shall be marked slightly behind the standing position of the buses in order to reduce pedestrian conflicts. The kerbs shall be marked with continuous yellow line to indicate "No Parking".

13.6 Cattle Crossings

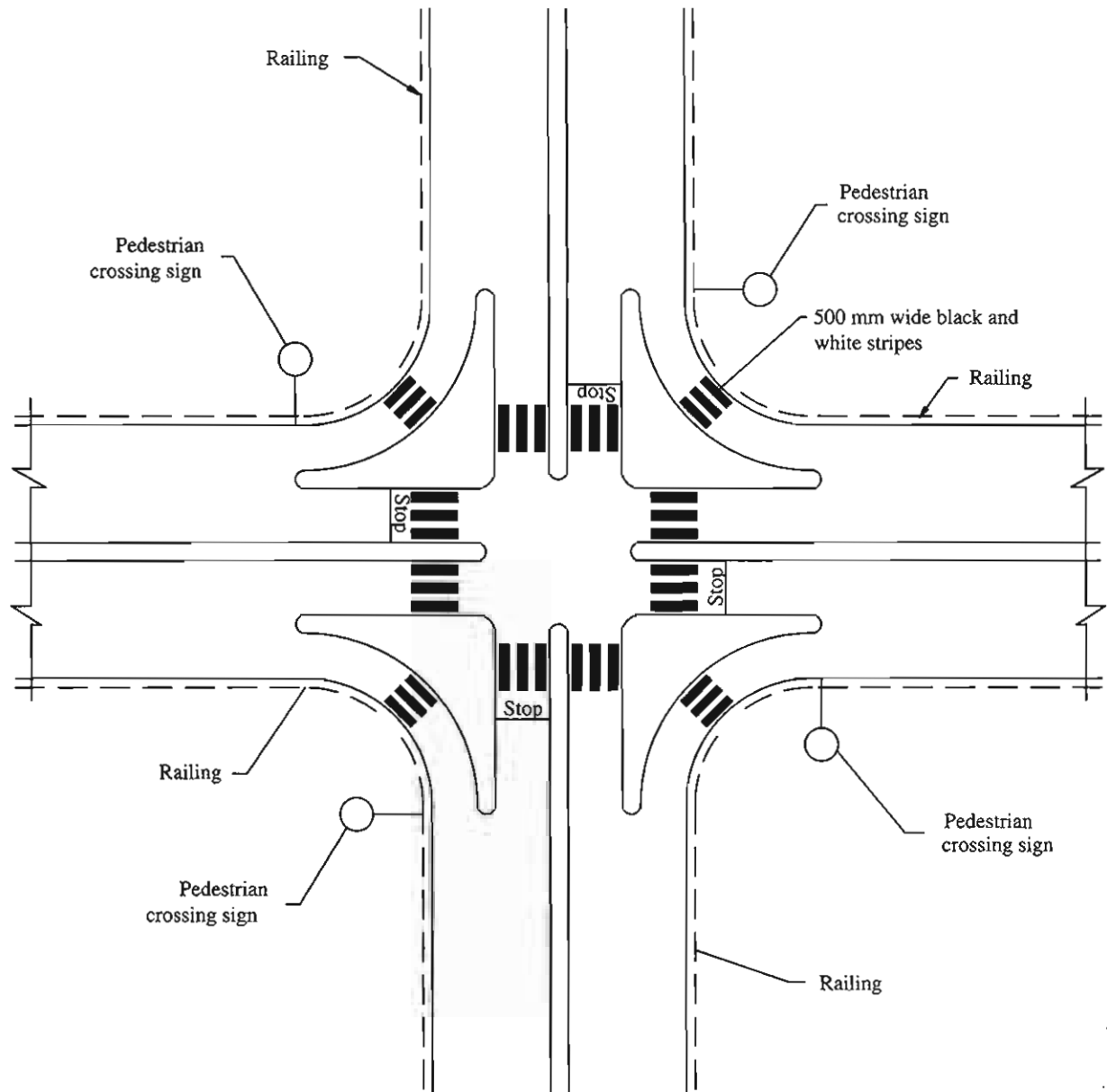
Facility for cattle crossings shall be provided as specified in para 2.14.3 of this Manual.

13.7 Traffic Aid Posts

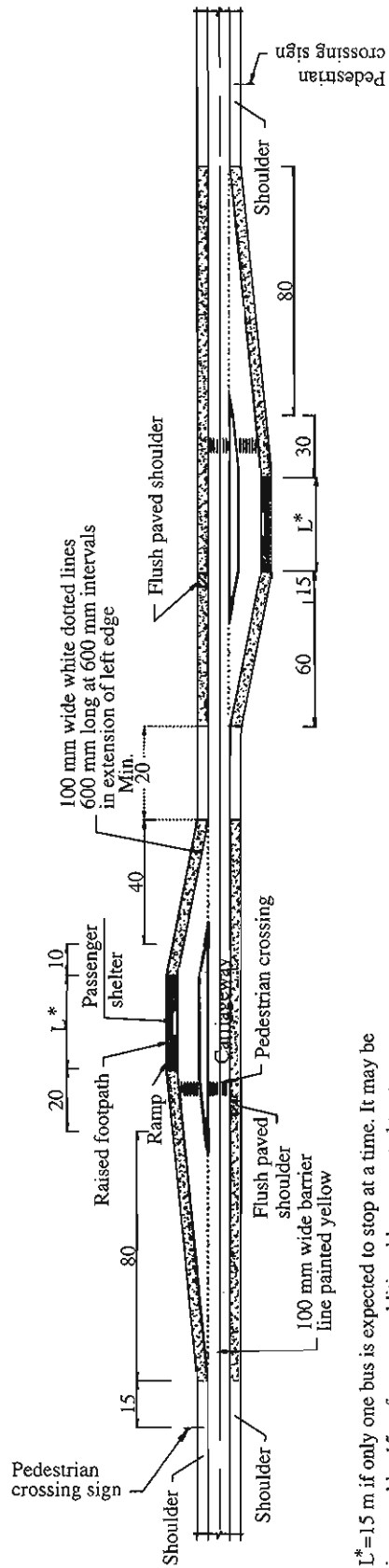
Traffic Aid Posts shall be established at Toll Plaza locations in accordance with the provisions of the Concession Agreement.

13.8 Medical Aid Posts

Medical Aid Posts shall be established at Toll Plaza locations in accordance with the provisions of the Concession Agreement.



**Fig. 13.1 : Arrangement of zebra crossing
(4-lane) in built up area**

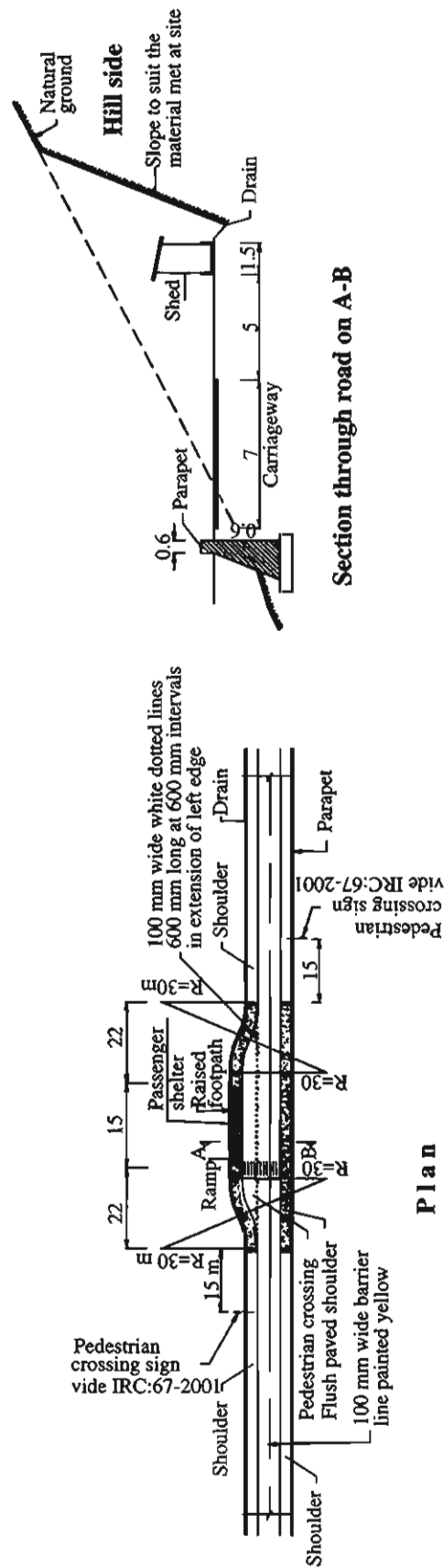


$L^* = 15$ m if only one bus is expected to stop at a time. It may be increased by 15 m for every additional bus expected to stop.

Note:

All dimensions are in metres except as shown otherwise.

Fig. 13.2 : Layout of staggered pick-up bus stop



Note:
All dimensions are in metres
except as shown otherwise.

Fig. 13.3 : Layout of pick-up bus stop in hilly area