MEMBERS OF THE SPECIFICATIONS AND STANDARDS COMMITTEE

1. Brig. Golindar Singh (Convenor) Director General, (Road Development), and Addl. Secy. to the Govt. of India, Ministry of Shipping & Transport
2. R.P. Sirkla Chief Engineer (Roads), Ministry of Shipping & Transport
(Member-Secretary)
3. Qazi Moad, Aizal Adviser, P.W.D., Jammu & Kashmir
4. V.K. Arora Chief Engineer (Roads), Ministry of Shipping & Transport
5. R.T. Aire Secretary to the Govt. of Maharashtra, (II), P.W. & H Dep't.
6. H. Burna Secretary to the Govt. of Assam, PWD (B & R)
7. M.K. Chanakje Chief Engineer, (Roads.), West Bengal Industrial Development Corporation Ltd.
8. E.C. Chandrasekhar Chief Engineer, (Roads.), Tamil Nadu
9. D.C. Chaturvedi Managing Director (Roads.), 51, Gulistan Colony, Lucknow
10. J. Datta Chief Engineer (Roads.), Greater Kailash, New Delhi-110048.
11. Dr. M.P. Dhir Deputy Director & Head, Roads Division, Central Road Research Institute
12. Y.C. Gokhale Head, Information & Operational Research Division, Central Road Research Institute
13. Dr. R.K. Ghosh Deputy Director & Head, Rigid & Semi Rigid Pavements Division, Central Road Research Institute
14. A.Y. Gupta Chief Road Engineer, Hindustan Petroleum Corporation Ltd., Bombay
15. L.C. Gupta Engineer-in-Chief, Haryana PWD, B & R
16. Brig. L.V. Ramakrishna Director of Design, Engineer-in-Chief's Branch, AHO
17. S.A. Raha Managing Director (Roads.), Bihar State Bridge Construction Corporation
18. M.B. Jayawant Neelkantn, 24, Carter Road, Bandra, Bombay
19. S.B. Kulkarni Manager (Asphalt), Indian Oil Corporation Ltd., Bombay
20. P.K. Lauria General Manager, Rajasthan State Bridge Construction Corporation Ltd.
21. Mahabir Prasad Chief Engineer (Roads.), A-472, Ramasagar Mithra Nagar, Lucknow
22. J.M. Malhotra Chairman-cum-Managing Director, Rajasthan State Bridge Construction Corporation
23. H.C. Malhotra Engineer-in-Chief & Secretary to the Govt. of Himachal Pradesh, P.W.D.
24. M.R. Malha 3, Panorama, 30, Pali Hill Road, Bombay
25. I.K. Modi Joint Secretary and special Secretary to the Govt. of Gujarat, P.W.D., Gujarat
TYPE DESIGNS
FOR
PICK-UP BUS STOPS
ON RURAL
(i.e., NON-URBAN) HIGHWAYS

Published by
THE INDIAN ROADS CONGRESS
Jammagar House, Shahjahan Road,
New Delhi-110011
1981

Price Rs 24
(plus packing & postage)
TYPE DESIGNS FOR PICK-UP BUS STOPS ON RURAL (i.e. NON-URBAN) HIGHWAYS

1. INTRODUCTION

1.1. Buses standing indiscriminately on the carriageway to drop or pick-up passengers can seriously affect capacity of the roadway, besides being a source of accidents. It is, therefore, desirable that on all busy non-urban highways, consideration should be given to the construction of bus laybys of suitable design at required locations to ensure orderly movement of the through traffic.

1.2. Recognising the need for a standard on this subject, the Specifications and Standards Committee has evolved the type designs given herein covering the siting and layout of wayside pick-up bus stops, and these are recommended for general adoption.

1.3. These type designs were considered by the Specifications and Standards Committee in their meeting held at Guwahati on the 26th October, 1979. The Committee after reviewing the standard in their meeting held at Srinagar on the 20th August, 1980 set up a Working Group consisting of R.P. Sikka and Dr. N.S. Sitlivan to go into the text and finalise the same for further necessary action. The standard as finalised by the Working Group was processed and approved by the Executive Committee and the Council in their meetings held on the 11th August and 20th September, 1981 respectively.

2. SCOPE

2.1. The standard applies essentially to wayside bus stops in non-urban locations meant for quick loading and unloading of passengers. It does not deal with more elaborate bus depots or terminals which are sometimes provided by the side of the road between the cities.

2.2. As regards design of on-street bus stops in urban or sub-urban situations, reference may be made to IRC: 70-1977 "Guidelines on Regulation and Control of Mixed Traffic in Urban Areas".
3. NEED FOR LAYBYES

3.1. The need for laybys on a particular road will depend on factors like the volume of traffic, frequency of buses stopping to pick-up passengers, duration of bus stops etc.

3.2. Normally, provision of separate laybys will be justified on all important trunk routes such as National Highways and State Highways, when:

(a) the volume of traffic is such that through traffic movement will be unduly disturbed by buses stopping on the carriageway;

(b) buses are required to halt at a particular stop for considerable time for rest or loading/unloading of passengers and goods; or

(c) the road is passing through a relatively congested locality like a village or a small town where besides waiting passengers the roadway is occupied by local traffic as well.

3.3. Usually, bus laybys will not be required on lower category roads like Other District Roads and Village Roads where traffic is comparatively low and not many buses ply on the route. However, from safety considerations it may be desirable to provide separate laybys at the bus terminal points.

4. GENERAL PRINCIPLES OF LOCATION

4.1. The governing considerations when locating pick-up bus stops are increased overall safety and minimum interference to the through traffic.

4.2. Normally the bus stops should be sited away from bridges and other important structures, also from embankment sections which are more than four metres high. As far as possible, these should not be located on horizontal curves or at the top or summit vertical curves. Moreover, the need for good visibility around corresponding to safe stopping sight distance should be kept in view.

4.3. Bus stops should not be located too close to the road intersections. A gap of 300 metres from the tangent point of intersection to start/end of the layby will be desirable, particularly at junctions with main roads. In other cases, the distance may be relaxed to a certain extent having regard to the local conditions. At minor intersection (e.g. junctions with village roads), distance
of 60 metres may be accepted as a special case. However, if a
substantial volume of buses is to turn right at the intersection, it is nec-
essary that the bus stop should 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.

4.4. 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.

4.5. In hilly areas, the bus stops should 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 metres). Sub-
ject to these requirements, it will be advisable to choose locations
where it is possible to widen the roadway economically for accom-
modating bus laybys, passenger shelters, etc.

3. LAYOUT AND DESIGN

5.1. Typical layouts of laybys are given in figures 1 to 3.
Selection of layout at a particular location should be based on local
factors like the number of buses stopping at a time, the period of
halt, volume of traffic on the road, number of passengers alighting
at the bus stop, etc. To determine the layout required, a careful
study of various factors should be made and the bus authorities
also consulted.

5.2. In the normal run, layout in Fig. 1 will be found suitable
for bus stops on busy sections of the highways. For bus stops on
lightly trafficked routes, or where the number of buses halting each
day is nominal, the layout shown in Fig. 2 will be better suited. For
hilly areas where there is a general constraint on space, the more
simple layout indicated in Fig. 3 may be adopted. Length ‘L’ shown
in Figs. 1-3 should be usually 15 metres, but may be increased in
multiples of 15 metres if more than one bus is likely to halt at the
pick-up stop at one time.

5.3. Normally the bus stops should be provided on both
sides of the road for each direction of travel independently so that
the buses do not have to cut across the road. Bus stops on opposite
sides should be staggered to a certain extent as shown in Fig. 4 to
avoid undue congestion on the highway. At intersections it may be
preferable to locate the bus stops for up and down directions on
farther sides of the intersection.
5.4. Ordinarily no structure other than sheds for passengers should be permitted at the bus stops. The sheds should 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 shed is constructed on the hill side, slopes should be properly dressed and suitably protected to avoid slips. The sheds should be set back from the kerb line by at least 0.25 metres.

5.5. On important bus stops, temporary type of toilet facilities with necessary arrangements for disposal of effluents (for instance with the help of soak pits) may also be provided close to the road land boundary away from the passenger shelters.

5. PAVING OF LAYBIE AREA

6.1. The pavement in the laybie area should have adequate crust with respect to the wheel loads expected. Also, the surfacing should be strong enough to withstand forces due to frequent breaking and acceleration by the buses. The colour and texture of the laybie surfacing should be preferably distinctive from that of the main carriageway.

6.2. Shoulders close to the laybies should be paved to some distance (see Figs. 1, 3 & 4) to permit parking of occasional vehicles and facilitate drainage. Brick-on edge; lean cement concrete, lean cement-fly ash; concrete and lime-fly ash concrete either cast-in-situ or precast; precast tiles; stone slabs,blocks; water bound materials with surface dressing etc., are some of the materials which could be considered for this purpose. Paved shoulders should be flush with the surface of the adjoining carriageway and slope away from it to enable drainage. Where the pavement and the shoulders are of the same colour, it will be preferable to provide edge lines at their junction in accordance with IRC : 55-1970 "Code of Practice for Road Markings (with paints)".

7. DRAINAGE

7.1. Laybies for pick-up bus stops should have proper cross slope to drain off the excess water. No water which is likely to splash on the waiting passengers should be allowed to collect near the bus shelters.

7.2. Along all kerbed edges it will be desirable to provide a suitable kerb-gutter section with requisite longitudinal slope and outlets at intervals to ensure quick disposal of water.
1. MARKINGS

8.1. Pavement markings at the bus stops should be provided as shown in Figs. 1-3 with the word 'BUS' written prominently on the pavement. Pedestrian crossings should be marked slightly behind the standing position of the buses in order to reduce pedestrian conflicts. Moreover, the kerbs should be marked with continuous yellow line to indicate no parking.

8.2. For more details about road markings reference may be made to IRC : 35-1970.

8.3. Markings should be kept maintained regularly.
3. MARKINGS

8.1. Pavement markings at the bus stops should be provided as shown in Figs. 1-3 with the word ‘BUS’ written prominently on the pavement. Pedestrian crossings should be marked slightly behind the standing position of the buses in order to reduce pedestrian conflicts. Moreover, the kerbs should be marked with continuous yellow line to indicate no parking.

8.2. For more details about road markings reference may be made to IRC : 35-1970.

8.3. Markings should be kept maintained regularly.
FIG. 1 - LAYOUT FOR PICK-UP BUS STOP ON HIGHWAYS WITH HEAVY TRAFFIC

FIG. 2 - LAYOUT FOR PICK-UP BUS STOP ON HIGHWAYS CARRYING MEDIUM TO LIGHT TRAFFIC

FIG. 3 - LAYOUT OF PICK-UP BUS STOP ON HIGHWAYS IN HILLY AREAS

FIG. 4 - LAYOUT OF STAGGERED PICK-UP BUS STOP
26. O. Mutthachen
Poonkavil House, Soma garam, Panapur P.O. (Kerala).

27. Lt. Gen. T.B. Nanda
Master General of the Ordnance, Army Headquarters
Ramamati, II, First Crescent Park Road, Adyar, Madras-600026.

28. K.K. Nambar
Deputy Director & Head, Soil Mechanics Division,
Central Research Institute

29. T.K. Nathrajan
Deputy Director & Head, Soil Mechanics Division,
Central Road Research Institute

30. Satish Prasad
AI-103, Sakrargunj Enclave, New Delhi-110016

31. A.C. Padhi
Chairman, Odisha Public Service Commission

32. Prof. M.S.V. Rao
Head of the Deptt. of Traffic & Transportation
Planning, School of Planning & Architecture

33. K.C. Reddy
Managing Director, Mysore Power Corp. Ltd

34. S.K. Sambuddhar
Chief Project Administrator, Hooghly Bridge Commisioners,
Calcutta-70002

35. Dr. O.S. Salgai
Principal, Punjab Engg. College, Chandigarh

36. N. Sekh
Chief Engineer (Rcd.) 12-A Civilian Park, New
Delhi-110019

37. N. Sivaguru
Chief Engineer (Roads), Ministry of Shipping &
Transport

38. J.S. Sodhi
Chief Engineer, Punjab State Small Industries Corp.
Chandigarh

39. Dr. N.S. Srimath
Chief Executive, National Traffic Planning & Automa-
tion Centre, Trivandrum-62502

40. Prof. C.G. Swaminathan
Director, Central Road Research Institute

41. Miss P.K. Thekkin
Chief Engineer (Construction), Kerala

42. B.T. Unwalla
Chief Engineer, The Concrete Association of India
Bombay

43. The Director
Highways Research Station, Madras
(S. Natrajan)

44. The Director
Indian Standards Institution
(Civil Engg.)