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GUIDELINES FOR CONTROL OF ACCESS ON HIGHWAYS



**THE INDIAN ROADS CONGRESS
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GUIDELINES FOR CONTROL OF ACCESS ON HIGHWAYS

1. INTRODUCTION

1.1. These guidelines were approved by the Prevention of Ribbon Development Committee (personnel given below) in their meeting held at New Delhi on the 28th January 1974:

J. Datt	<i>—Convenor</i>
Deputy Secretary (Research) I.R.C. (L.R. Kadiyali)	<i>—Member-Secretary</i>

Members

T. Achyuta Ramayya	C.E. P.W.D., West Bengal
Dr. F.P. Antia	(R.B. Sen)
A.J. D'Costa	B.G. Fernandes
C.E., P.W.D. Bihar	O.P. Gupta
(S. Das Gupta)	C.L.N. Iyengar
C.E. R. & B., Gujarat	N.H. Keswani
(M.D. Patel)	Erach A. Nadirshah
C.E. National Highways, Kerala	Dr. Bh. Subbaraju
(C.M. Antony)	R. Thillainayagam
C.E. B.R.D., Maharashtra	Director General
(M.D. Kale)	(Road Development)
C.E. P.W.D., B&R, U.P.	<i>ex-officio</i>
(S.B. Mathur)	

The Specifications & Standards Committee in their meeting held at Chandigarh on the 5th March, 1975 decided that the text should be examined by a Working Group (personnel given below):

J. Datt	<i>—Convenor</i>
R.P. Sikka	<i>—Member-Secretary</i>
E.C. Chandrasekharan	<i>—Member</i>
Dr. N.S. Srinivasan	"
A.K. Bhattacharya	"

The Working Group in their meeting held on the 4th August 1975, revised the draft guidelines. The Specifications & Standards Committee in their meeting held on the 12th and 13th December 1975 processed and approved the draft guidelines subject to certain

further modifications. These were subsequently carried out by a Sub-group consisting of the following:

S.L. Kathuria	—Convenor
J. Datt	—Member
Dr. N.S. Srinivasan	— "
R.P. Sikka	— "

The Guidelines were approved by the Executive Committee and later by the Council in their meetings held on the 7th January 1976.

1.2 These guidelines have been formulated with a view to providing a reasonable basis for the control of access on through roads. Uncontrolled access materially reduces the level of service on the highways beside increasing the scope of accidents. Particularly dangerous are the right turning movements from and into the main highway.

2. SCOPE

2.1. The guidelines deal with control of access on urban as well as rural highways, and recommendations are given for each separately.

2.2. For allied aspects of control of ribbon development, reference may be made to IRC Special Publication No. 15-1974 "Ribbon Development along Highways and its Prevention".

3. DEFINITIONS

The following definitions shall apply as far as these guidelines are concerned:

3.1. **Highway:** (1) A general term denoting a public way for purposes of vehicular travel including the entire area within the right-of-way.

(2) An important road in a road system.

3.2. **Street:** A road within a town or other centre of habitation which has become partly or wholly defined by buildings established along one or both frontages and which may or may not be a highway.

3.3. **Expressway:** A divided arterial highway for motor traffic, with full or partial control of access and provided generally with grade separations at intersections.

- 3.4. Arterial Highway/ Street:** A general term denoting a highway/street primarily for through traffic usually on a continuous route.
- 3.5. Sub-arterial Street:** A general term denoting a highway or street primarily for through traffic but with a lower level of mobility than the arterial streets. They form the link between expressways/arterial streets and collector streets.
- 3.6. Collector Street:** A street or road for collecting and distributing the traffic from and to local streets and also for providing access to arterial streets.
- 3.7. Local Street:** A street or road primarily for access to residence, business or other abutting property.
- 3.8. Service Road, Frontage Road:** A subsidiary road constructed between a highway/street and buildings or properties facing thereon connected only at selected points with the principal road.
- 3.9. Byepass:** A road to enable through traffic to avoid congested areas or other obstructions to passage.
- 3.10. Divided Highway:** A road in which there are two physically separated carriageways reserved for up and down traffic.
- 3.11. Two-lane Road:** An undivided road having carriageway of two lane width.
- 3.12. Control of Access:** The condition where the right of owners or occupants of abutting land or other persons to access, light, air or view in connection with a highway is fully or partially controlled by public authority.
- 3.13. Full Control of Access:** The authority to control access is exercised to give preference to through traffic by providing access connections with selected public roads only and by prohibiting crossings at grade or direct private driveway connections.
- 3.14. Partial Control of Access:** The authority to control access is exercised to give preference to through traffic to a degree that in addition to access connections with selected public roads, there may be some private driveway connections and some crossings at grade.

- 3.15. **Median:** The portion of a divided highway separating the travelled ways for traffic in opposite directions.
- 3.16. **Median Opening:** A gap in a median provided for crossing and right turning traffic.
- 3.17. **Intersection:** The general area where two or more highways join or cross, within which are included the roadway and roadside facilities for traffic movements in that area.
- 3.18. **Progressive System of Signals:** A signal system in which the various signal faces controlling a given stream of traffic give green indication in accordance with the timing schedule (as nearly as possible) to permit continuous operation of group of vehicles along a route at a planned rate of speed, which may vary in different parts of the system.
- 3.19. **Driveway:** A way to secure access from a road to private property and constructed with the permission of and to the standards fixed by the highway authority and further subject to certain conditions imposed by that authority for the portion within the limits of the road land.
- 3.20. **At-grade Intersection:** An intersection where roads join or cross at the same level.
- 3.21. **Highway Grade Separation:** An intersection layout which permits crossing manoeuvres at different levels.
- 3.22. **Average Daily Traffic (ADT):** The average 24 hour volume, being the total volume during a stated period divided by the number of days in that period. The term is commonly abbreviated as ADT.

4. NEED FOR CONTROL OF ACCESS

- 4.1. If effective access control is not exercised along a highway facility, ribbon development invariably follows. Interference from the residential and commercial establishments increases, resulting in congestion. Accidents rise steeply due to the numerous conflicts inherent in the roads meeting the highway at numerous points. As a sequel to this, the speed drops and level of service reduces. The highway facilities built at great cost become functionally obsolescent before long. The ribbon development that is going on in an

unregulated way at the urban fringes of many cities should be viewed seriously if the situation is not to worsen further. Access control is one of the proven methods of combating this evil.

4.2. The control of access can be either full or partial. The degree of access control would depend *inter alia* on the level of service proposed, accident frequency, legal considerations, traffic pattern, vehicle operating costs, travel time, land use, and the convenience of access to abutting property owners.

5. HIGHWAY AUTHORITIES TO REGULATE ACCESS

It is necessary to pass suitable legislation so that highway authorities have the backing of law to regulate access to arterial highways. Model Highway Bill drafted by the Govt. of India (reproduced in IRC Special Publication No. 15) contains adequate provisions concerning access control. It is suggested that requisite legislation should be enacted on these lines.

6. CONTROL OF ACCESS ON URBAN HIGHWAYS/STREETS

6.1. To ensure safe and efficient circulation of traffic, which serves the various land uses adequately and ensures logical community development, the network of roads in an urban area has to be divided into different sub-systems each serving a particular function or a purpose. The principal factors to be considered in designating roads into categories are the travel desire lines, access needs of adjacent properties, network pattern and land use. For the purpose of these guidelines, urban highways/streets are considered to be divided into the following types:

- (i) Expressways
- (ii) Arterial Highways/Streets
- (iii) Sub-arterial Streets
- (iv) Collector Streets; and
- (v) Local Streets.

The function of each of these categories is apparent from the definitions in para 3.

Spacing of intersections

6.2. Standards for the location of access points depend largely on the needs of an area and no hard and fast rules can be laid down but the following guidelines are indicative of good practice.

6.3. Spacing between intersections should have regard to the relevant geometric design and traffic requirements, such as the type of traffic, length of right-turn or speedchange lanes etc.

As a rough guide, the suggested minimum spacing along various types of roads is given below:

(i) Expressways	1000 metre
(ii) Arterial Highways/Streets	500 metre
(iii) Sub-arterial Streets	300 metre
(iv) Collector Streets	150 metre
(v) Local Streets	Free access

Where necessary, a greater distance than given above should be adopted, as for example between junctions with linked traffic signals.

6.4. On expressways and arterial streets, signals should preferably be of progressive system, permitting continuous movement of vehicles at a planned speed of travel. As far as possible, all such intersections should have approximately the same spacing.

6.5. Apart from regular intersections, a limited number of access points with intervening streets may be permitted at a spacing closer than mentioned in para 6.3 provided only left turns to and from the main street are permitted. This may not, however, be done in the case of expressways where a number of such intersections exist at closer intervals; it will be desirable to add an additional continuous lane for turning traffic.

6.6. The location and spacing of all major points of access, including accesses to bus terminals, railway stations, parking areas etc., should be carefully planned so as to ensure safety and freedom from congestion.

Direct access driveways

6.7. On expressways and arterials, direct access to residential plots is not to be permitted. Driveways may, however, be permitted on a restricted basis for commercial and industrial complexes and other public locations when these are major generators of traffic. Right turn from these driveways should not be permitted unless the crossing fulfills the spacing criteria given in para 6.3. Moreover, adequate road geometrics should be provided to enable safe operation of vehicles.

6.8. On sub-arterials, direct access to residential property should be granted only where alternative access cannot be provided at a

reasonable cost. Direct access to commercial and industrial properties may be allowed.

6.9. On collector streets, access to abutting properties may be allowed to a limited extent keeping in view the safety of traffic.

6.10. On local streets, which will have no through traffic, access to abutting properties can be freely given.

Median openings

6.11. Median openings should generally be limited to intersections with public streets or major generators of traffic and should not be accepted for individual business needs. Their number should be kept to the minimum.

6.12. At locations other than signalised intersections, openings in median should be allowed preferably when the median is of sufficient width to afford protection to a vehicle turning right from the side street before it can complete the turning manoeuvre. To facilitate right turns from the main street, a protected right turn lane of adequate width and length should be provided in the median as far as possible.

Grade separations across streets

6.13. Grade separations should be provided at intersecting streets if the estimated traffic volumes within the next 5 years are in excess of the capacity of the intersection. When traffic projections show that volumes within the next 20 years will exceed the capacity of an at-grade layout, the need for a grade separated facility should be kept in view for future construction.

Grade separations across railways

6.14. Grade separations should be provided at railway crossings when justified by traffic and economic considerations. No grade separations may be required at isolated sidings etc.

7. GUIDELINES FOR ACCESS CONTROL ON RURAL HIGHWAYS

7.1. Major corridors of inter city traffic, which are increasing in importance, need to be protected from unregulated roadside development by exercising limited access control. This is especially necessary in the case of bypasses and highways in the urban fringe.

7.2. The guidelines proposed here are meant to be applied only to major arterial highways, viz., National Highways, State Highways and Major District Roads having a two-lane or divided cross-section.

Spacing of intersections

7.3. The spacing of intersections with public roads should not be less than 750 m. Connections from parallel service roads (i.e., frontage roads) should similarly not be closer than 750 m.

Accesses to private property

7.4. Individual driveways to private property such as petrol pumps, farms, commercial establishments, and industries should not be spaced closer than 300 metre from each other or from an intersection. As far as possible, a number of property owners along the highway should be grouped together and parallel service roads (i.e., frontage roads) constructed to give access at selected points. The geometrics of the driveways should conform to requisite standards conducive to smooth traffic flow.

Median openings

7.5. On highways with a divided cross-section, median openings should generally be limited to intersections with public roads, and should not be permitted for individual business needs. Where intersections are far apart, additional openings may be provided at intervals of about 2 kilometres for U-turns and diversion of traffic to one of the carriageways at times of emergency or major repairs.

Grade separations across highways

7.6. Grade separations should be provided at intersections of divided rural highways if the ADT (fast vehicles only) on the cross road within the next 5 years exceeds 5000. Where this traffic figure will be reached within the next 20 years, the need for such facilities should be kept in view for future construction.

Grade separations across railways

7.7. Grade separations should be provided across existing railway crossings if the product of ADT (fast vehicles only) and the number of trains per day exceeds 50,000 within the next 5 years. For new constructions such as bypasses, grade separations should be provided when this figure is greater than 25,000.

