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Basic Design Parameters for an Intersection & Design Criteria For Unsignalised Intersection on NH-10, Sirsa

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ABSTRACT: Highway safety is one of the most important issues in transportation. Intersections are the locations with higher traffic crashes as compared with other highway locations. Pertaining to present mixed traffic situations in domestic cities, alongwith various intersection types and traffic characteristics, this design includes various basic design parameter, conflict points, solutions to intersection design and safety. The site for design of Intersection on National Highway" at Sirsa situated at crossing of Sirsa to Dabwali and Hisar to Rania roads. The design is based on manually counting the traffic volume at the site for peak hours for seven days on each roads, then maximum value of each traffic vehicle is used for designing the intersection. Then suitability of intersection is decided based on road intersecting to each other and then using IRC guidelines the rest of the parameters are calculated.

Key words: *highway intersection design, including design parameters, safety improvement.*

I. INTRODUCTION

This paper presents study of various basic parameter of Intersection design on National Highway-10 (Delhi-Ferozpur) through byepass and same through city sirsa aims at minimizing conflicts /accidents at the intersection. The intersection design are achieved either by using static signs like stop and give way or by using the dynamic signs like traffic traffic signals like green, red, yellow lights or by separating the levels (grade separations) of the intersecting roads. Intersection which mainly use static signs for control of traffic are called as unsignalized intersection and grade separations are called as interchanges. This area is reserved for the vehicle to turn to different directions to reach their destinations. Its main functions to guide the vehicle for their directions. Traffic intersections are the complex node on the highway design. This is because vehicles entering from / exiting in to different directions occupy the space at the same time. In additions, the pedestrians also need space and speed limit for crossing. Driver also need to take quick decision at an intersection by taking in to considerations the speed, route, traffic, geometry and directions of other vehicles etc. A small inaccurate judgement and negligency may cause severe accidents. In accurate intersection causes delay, speed restriction etc. Overall traffic flow depends upon the performance of the intersection which ultimately depends upon the design. Therefore from the point of view safety, accidents, speed, efficiency and capacity the study of intersection become most important for the transportation engineers especially in city areas.

Factors Covering Design: Road intersection are critical element of a road section. The are normally a major bottleneck to smooth flow of traffic and a major accident spot. The general principles of design in both rural and urban areas are the same. The basic difference lies in the design speeds, restriction on available land, sight distance available and the presence of larger volume of pedestrians and cyclists in urban areas. Design of safe intersection depends on many factors. The major factors can be classifieds as under:

Human Factors: Driving Habits, Ability to make decisions, Driver Expectancy, Decision and reaction time, Conformance to natural paths of movement, Pedestrian use and habits

Traffic Considerations: Design and actual capacities, Design hour turning movements, Size and operating characteristics of vehicles, Types of movements, Vehicle speeds, Transit involvement, Accident experience, Traffic mix i:e proportion of heavy and light vehicles, Slow vehicles, cyclists etc.

Road and Environmental Considerations: Character and use of abuting property, Vertical and Horizontal alignment at the intersection, Sight distance, Angle of the intersection, Conflict Area, Speed change lanes, Geometric features, Traffic control devices, Lighting equipment, Safety features, Environmental Features, Need for future upgrading of the at grade intersection to a grade separated intersection

Economic factors: Cost of Improvements, Effect of Controlling or limiting right of way on abutting residential or commercial properties where channelization restricts or prohibits vehicular movements

II. BASIC DESIGN PRINCIPLES

In the design of an intersection the primary consideration are safety, smooth and efficient flow of traffic. To achieve this, the following design principles must be followed.

Unformity and Simplicity. Intersection must be designed and operated for simplicity and uniformity. The design must keep the capabilities and limitations of drivers, pedestrians and vehicles using intersection. It should be based on knowledge of what a driver will do rather than what he should do. Further all the traffic information on road signs and markings should be considered in the design stage, prior to taking up construction work. All the intersection movements should be obvious to the drivers, even if he is a stranger to the area. Complex design which require complicated decision making by driver should be avoided. There should be no confusion and path to be taken by the driver should be obvious. Undesirable shortcuts should be blocked. Further, on an average trip route, all the intersection should have uniform design standards so that even a newcomer to the area anticipates what to expect at an intersection. Some of the major design elements in which uniformity is required are design speed, intersection curves, vehicle turning paths, super elevations, level shoulder width, speed change lane lengths, channelization, types of curves and types of signs and markings.

Minimise Conflict Points. Any location having merging, diverging or crossing manoeuvres of two vehicles is a potential conflict points. The main objective of the intersection design is to minimize the number and severity of potential conflicts between cars, buses, trucks, bicycles, and pedestrians and whenever possible, these should be separated. This can be done by: Space Separation (by access control islands through channelization), Time Separation (by traffic signals on waiting lanes).

Safety. The safety of a particular design can best be assessed by studying the frequency with which types of accidents occur at particular type of intersection and its correlation with volume and type of traffic. It is, therefore, necessary that a systematic record be maintained of all accidents at intersections in Road Accidents Forms suggested in IRC:53-1982 (under-revision). Prioritisation of intersection improvements can be done using the relationship of accident frequency with traffic volumes. A simple equation developed in U.K. is in the form

$$C = \frac{A}{\sqrt{Qq}}$$

Where A is the number of accidents per year ,Q and q are traffic volumes on the main and side roads in thousands of vehicles per day.

Alignments and Profile. In hilly and rolling terrain, site condition governs the alignment and grade of the intersections, but the safety can be considerably improved by designing the intersection with modification in alignment and grades. Some useful points are: The intersecting roads shall meet at or nearly at right angle. However, angles above 60 do not warrant realignment. Realignment of intersection may be in any of the forms Intersection on sharp curves should be avoided because the super elevation and widening of pavement complicates design. Combination of grade lines or substantial grade changes should be avoided at intersection. The gradient of intersecting highways should be as flat as practicable up to sections that are used for storage space. Grades in excess of 3 percent should , therefore be avoided on intersections while those in excess of 6 percent should not be allowed. Normally, the grade line of the major highway should be carried through the intersection and that of the cross-road should be adjusted to it. This concept of design would thus require transition of the crown of the minor highway to merge with the profile of the interface of major and minor roads. For simple un channelized intersection involving low speed and stop signals or signs, it may be desirable to warp the crowns of both roads in to a plane at the intersection, the particular plane depending on direction of drainage and other conditions. Change from one cross slope to another should be gradual, Intersection of a minor road with a multi lane divided highway having a narrow median and super elevated curve should be avoided whenever possible because of the difficulty in adjusting grades to provide a suitable crossing.

Parameters of Intersection Design

General: Intersection are designed having regard to flow speed, composition, distribution and future growth of traffic. Designed has to be specified for each site with due regard to physical conditions of the site, the amount and cost of land, cost of construction and the effect of proposal on the neighourhood. Allowance have to be made for traffic signs, lightning columns, drainage, public utilities etc. The preparation of alternative designs and comparison of their cost and benefits is desirable for all major intersections.

Design Speed: Three types of design speeds are relevant for intersection element design:

(i) Open highway or “approach” speeds

(ii) Design speed for various intersection elements. This is generally 40 percent of approach speed in built up areas and 60 percent in open area.

(iii) Transition speeds for design of speed change elements i.e changing from entry/exit speed at the intersection to merging/ diverging speed.

Design Traffic Volumes. Intersections are normally designed for peak hour flows. Estimation of future traffic and its distribution at peak hours is done on the basis of past trends and by accounting for factors like new development of land, socio-economic changes etc. Where it is not possible to predict traffic for longer period, intersection should be designed for stage development for design period in steps of 10 years. Where peak hour flows are not available they may be assumed to be 8 to 10 percent of the daily flow allocated in the ratio of 60:40 directionally.

Radius of Curves at Intersection. The radii of intersection curves depend on the turning characteristics of design vehicles their numbers and the speed at which vehicles enter or exit the intersection area. The design curves is developed by plotting the path of the design vehicles on the sharpest turn and fitting curves or combination of curves to the path of inner rear wheels. Generally four types of curves are possible to fit in with the wheel paths of a turning vehicle. Simple Circular Curve (Simple in layout but does not follow actual wheel path),3-centered compound (Closest to the actual wheel path and all transition curve But paved area is 20 percent more, where the numbers of semi trailers combination vehicles are substantial a symmetrical curve is closer to the wheel path),Simple curve with offset and taper. (This closest to 3 compound curve and keeps the paved area at the intersection a minimum),Transitional curves(Difficult to layout and compute but closest to actual path).Selection of appropriate curve radii, influences the vehicle speed at various points. The speed should be such that the vehicle should either be able to stop before the conflict point or accelerate to suitable speed to merge with traffic flow. The speed with which drivers can follow a curve can be taken to be $6\sqrt{R}$ Km/h for up to speed 55km/h, Where R is the radius of the curve in meters. Table.1 gives the relationship of the inner curve radii for a larger range of design speeds.

Table. 1. Design Speed and Minimum Radii.

Design Speed km/hr	Minimum inner radii
18.5	18
15	23
20	27
30	32
40	37
50	41
75	50
100	57
125	62
150	64
Straight	-

Design Vehicle: IRC:3-1983 recognises three types of road design vehicles namely single unit truck, semi trailer and truck trailer combination. Passenger cars are not considered as design vehicles in rural area as savings in construction using this vehicle cannot be justified on economic basis. As such nearly all intersection curves in rural areas should be designed for either single unit trucks / buses of 11/12 m length, or semi-trailer combination of 16 m length or truck-trailer combination of 18 m length. On most rural highway semi trailer combination would be used for design, whereas in non arterial urban areas a single unit truck or bus can form the basis for design. In purely residential areas, alone a car can form the basis of design. The dimension and turning radii of some of the typical Indian vahicles are tabulated in Table3. Dimensions and turning radii for special vehicles viz. single unit truck, single unit buses, semi-trailer, large semi trailer and truck-trailer combination trailer combination trailer combination as per U.S practices, are given in Table 2. In the absence of detailed investigations on Indian vehicles for their swept path etc. These vehicles are adobted for design purposes.

Radii of Curves in Urban Situations. In urban areas additional conditions like restriction on right of way widths, abutting developments, pedestrian crossings, parked vehicles and high cost of land govern the minimum radii at intersection, parked vehicles and high cost of land govern the minimum radii at intersections. Lower operating speeds and frequent signal stops also reduce the requirement of intersection areas. Generally, the minimum turning radius for a vehicle governs the design. However to ensure efficient traffic operation on arterial streets a common radii of 4.5 to 7.3m for passenger cars and 9m to 15m for trucks and buses is recommended. With use of single radius curve either a large radius must be used or width of street must be increased to accommodate large vehicles. For this reason 3-centered curve or simple curves with offset or spirals to fit vehicle path should be used.

Width of Turning Lanes at Intersection. Determination of width of turning lanes at intersection is primarily based upon the type of vehicles using it, the length of lanes, the volumes of traffic and if kerbs are provided, the necessity to pass a stalled vehicles. Table.4 gives the recommended widths of turning lanes. These can be assumed to have a capacity of 1200 PCU / hr. These widths are applicable for longer slip roads (over 60m length) and should beused only if vehicles are allowed to park.

Table 2: Dimension and Turning Radii of Design Vehicle.

Sr. No	Vehicle type	Overall Width	Overall Length(m)	Overhang Front(m)	Minimum Turning	
1	Passenger Car (P)	1.4-2.1	3-5.74	0.9	1.5	7.3
2	Single Unit Truck (S.U)	2.58	9	1.2	1.8	12.8
3	Semi Trailer and Single Unit Bus(WB-12m)	2.58	15	1.2	1.8	12.2
4	Large Semi-Trailer(WB-15m)	2.58	16.7	0.9	0.6	13.71
5	Large Semi-Truck Trailer (WB18)	2.58	19.7	0.6	0.9	18.2

Table 3: Dimension and Turning Radii of Some of the Typical Indian Vehicles.

Sr. No.	**Make Vehicle**	**Length**	**Width**	**Turning Radius**
1	Ambasador	4.343	1.651	
2	Maruti Car	3.300	1.405	4.400
3	Tata (LPT 2416) 3-axled truck		2.440	
4	Tata (LPO1210) Full Forward Control Bus chasis	9.885	2.434	10.030
5	Tata (LPO1616)	11.170	2.450	
6	Leyland Hippo Haulage	9.128	2.434	10.925
7	Leyland(18746) Taurus	8.614	2.394	11.202
8	Leyland Beaver Multidrive	12.30	2.500	
9	Mahindra NissanAllwyn cabstar	5.895	1.870	6.608
10	Swaraj Mazda Truck (WT-49)	5.974	2.170	6.400
11	DCM Toyota (Bus)	6.440	1.995	6.900

Visibility at Intersections. The sight distance is one of the major factor in safety at intersections. There are two considerations which are important to the driver as he approaches an intersection:

(i) Overall visibility at intersection layout so that it can be comprehended properly at first glance by the approaching driver, for visualising the prospective worthiness of the layout, a simple method for this is to hold the junction drawing horizontally at eye level and observe the proposed layout from the direction of each approach, simulating the drivers view of the junctions. This squinting procedure can remarkably bring out many defects in the design.

(ii) Sight triangle visibility to negotiate an intersection is another important requirement on becoming aware of approaching intersection, the driver must be able to observe and comprehend the speed and direction of approaching traffic from all other legs of the intersection. If a vehicle is approaching he should be able to safely stop prior to reaching the intersection. The approaching driver must be able to see sufficient distance along the cross road so as to judge if he can cross by suitably adjusting the speed and direction. Special care to ensure visiblity should be taken if intersection is located on high land in a cutting at or near a summit or near a bridge. Telephone poles, kiosks, signs, light posts etc. should not be placed where they restrict visibility.

Table 4: Width of Lanes at Intersections.

Inner Radius	Design Speed km/hr	Single lane width	Single lane width with space to pass stationary vehicles	2 lane width for 1 or 2 way traffic
(1)	(2)	(3)	(4)	(5)
10.5	18	5.50	10.53	11.5
15	23	5.50	9.50	10.5
20	27	5.00	9.00	10.0
30	32	4.50	8.00	9.0
40	37	4.50	7.50	9.00
50	41	4.50	7.00	8.00
75	50	4.50	7.00	8.00
100	57	4.50	7.00	8.00
125	62	4.50	6.50	8.00
150	64	4.50	6.50	8.00
-	-	4.50	6.00	7.00

Super Elevation and Cross-slope. Where the turning slip lanes are provided for higher speed operation at intersection, they should be super elevated for the appropriate speed as given in the appropriate geometric design standard. The principle of superelevation runoff also applies. But in intersection design the actual curves are of limited radii and length. As such in practice it is difficult to provide the required superelevation without causing abrupt crossslope change, which could be dangerous. In practice therefore lower rates of superelevation are often accepted to intersections to maintain riding comfort, appearance and to effect a balance in design. The cross slopes in the intersecting area should be maintained.

Design of Circular Intersection.

General: The Method of Design of Intersection for the is manually counting of the site data with the help of manpower and then converting it into Passenger Car Units (PCUs) with help of suitable factors .The above data so collected is used for the intersection design with the help of IRC guidelines and Drawings. So we can say that the method of design of intersection is manually and diagrammatically approach.

Traffic Volume Data: The Traffic Volume data of the target site of the intersection was collected during peak hours of the days using appropriate Performa for all seven day of the week and then maximum value of the any vehicle is extracted from them using which may be any day of the week and then it is converted into PCU by using values given below.

Suitability of Intersection

All the roads of a selected area meets to each other at almost right angle so that it will be preferable to select the rotary intersection as the best intersection for this situation. So I will design this intersection as rotary intersection by using guidelines for rotary ,with the help of site parameters and traffic volume (which is counted manually) after converted it into common PCUs form .

PCU Equivalents as per IRC.

Type of Traffic	PCU Value
LargeTruck/ Buses	2.8
Small Truck	2.8
Trolleys	2.8
Cars/Jeeps/Vans	1.0
3-Wheelers	1.0
M/Cycles, Scooters, Mopeds	0.75
Bicycles	0.5
Animal Drawn Vehicles	4.0

Method of Design (Fig. 1)

Radii of Curves at Entry and Exit

At entry: Radius of curve at the entry is related basically to the design speed, amount of superelevation and the coefficient of friction. Since major intersections like rotaries are provided with advance information signs and drivers travel through them with anticipation of more critical conditions than on open highways, the values of coefficient of friction for purposes of design are regarded as higher than for other locations. Based on overall considerations, Table 5 below gives guidance for the selection of radii of curves at entry. In this table, range of values for the radius is given. The lower value is meant to ensure easy entrance of vehicles into the rotary.

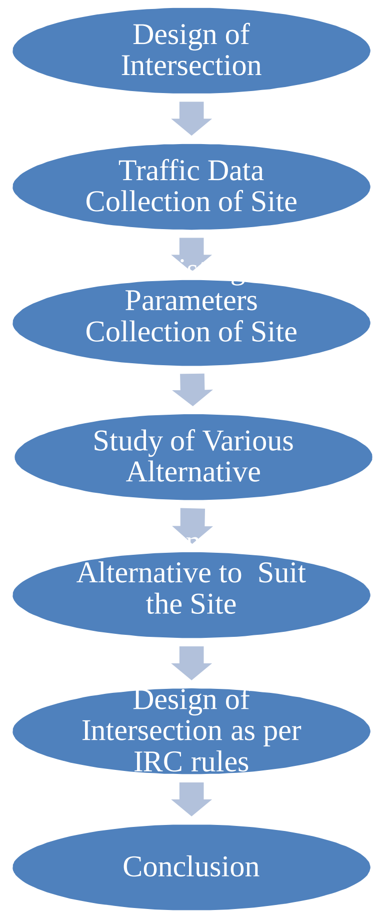

Fig. 1. Block Diagram of Method of Design.

At exit: The radii of the curves at exit should be larger than that of the central island and at entry so as to encourage the drivers to pick up speed and clear away from the rotary expeditiously. For this reason, the radius of the exit curves may he kept about 1.1 to 2 times the radius of the entry curves. If, however, there is a large pedestrian traffic across the exit road, radii similar to those at entrances should be provided to keep the exit speeds reasonably low.

Table 5: Radius of Curve at Entry.

Rotary Design Speed V (KMPH)	Suggested Value of Radius at Entry (m)
40	20-35
30	15-25

Radius of Central Island: Theoretically, the radius of the central island should be equal to the radius at entry. In practice, however, the radius of the central island is kept slightly larger than that of the curve at entry, this being an attempt to give a slight preference to the traffic already on the rotary and to slow down the approaching traffic. A value of 1.33 times the radius of entry curve is suggested as a general guide-line for adoption.

Weaving Length: The weaving length determines the case with which the vehicles can manoeuvre through the weaving section and thus determines the capacity of ihe rotary. The weaving length is decided on the basis of factors such as the width of the weaving section, the average width of entry, total traffic and the proportion of weaving traffic in it. As a general rule, effort should be made to keep the weaving length at least 4 times the width of the weaving section, rite following minimum values of weaving lengths for different design speeds should be observed .In order to discourage speeding in the weaving sections, the maximum weaving length should be restricted to twice the values Given Above.

Width of Carriageway at Entry and Exit. The carriageway width at entrance and exit of a rotary is governed by the amount of traffic entering and leaving the rotary. When deciding upon the width, the possible growth of traffic in the design period should be considered. It is recommended that the minimum width of carriageway be at least 5 metre with necessary widening to account for the curvature of the road. Table 6 gives the value of the width of carriageway at entry inclusive of widening needed on account of curvature.

Width of Rotary Carriageway

Width of non-weaving section: The width of non-weaving section of the rotary should be equal to the widest single entry into the rotary, and should generally be less than the width of the weaving section.

Width of weaving section: The width of the weaving section of the rotary should ba one traffic lane (3.5 m) wider than the mean entry width.

Table 6

Carriageway width of the approach road	Radius at entry (m)	Width of carriageway at entry at exit
7m(2 lanes)	25-35	6.5
10.5 m(3 lanes)		7.0
14m (4 lanes)		8.0
21m (6 lanes)		13.0
7m (2 lanes)	15-25	7.0
10.5 m(3 lanes)		7.5
14m (4 lanes)		10.0
21m (6lanes)		15.0

Entry and Exit Angles. Entry angles should be larger than exit angle, and it is desirable that the entry angles should be 60° if possible. The exit angles should be small, even tangential. An idealised design showing entry angles of 60° and exit angles of 30°. This condition can only be achieved by staggering the approach roads.

Capacity of the Rotary. It is important that the geometric design evolved for the rotary should be able to deal with the traffic flow at the end of the design period on the rotary. The practical capacity of a rotary is really synonymous with the capacity of the weaving section which can accommodate the least traffic. Capacity of the individual weaving sections depends on factors such as (i) width of the weaving section (ii) average width of entry into the rotary (iii) the weaving length and (iv) proportion of weaving traffic and could be calculated from the following formula :Capacity of individual weaving section is given by: Qp (PCU / hr) $= \frac{280\left(1+\frac{e}{w}\right)\left(1-\frac{p}{3}\right)}{\left(1+\frac{w}{L}\right)}$

Where Qp = Practical capacity of the weaving section of the rotary in the passenger car unit per hour.

W = width of the weaving section in metres

e = average entry width in metres

L = length in metres of the weaving section between ends of channelizing islands.

P = Proportion of the weaving traffic i:e ratio of sum of crossing streams to the total traffic on the weaving section should be between 0.4 to 1.0.

$P = \frac{b+c}{(a+b+c+d)}$

Channelising Islands. Channelization reduces the area of conflict between intersecting traffic streams and promotes orderly and safe movement.

Channelizing islands must be provided at the entries and exits of a rotary. The shape of the channelizing island depends on actual conditions obtaining at each site. How channelising islands can help in reducing speed at entry and encourage rapid exit can be seen from the principles of their design.

Outer Curb Line: The external curb line of weaving sections should not normally be re entrant, but consist of a straight or large radius curve of the same sense as the entry and exit curves. Such an arrangement eliminates waste of area which is not likely to be used by traffic.

Camber and Superelevation

Since the rotary curvature is opposite to that of entry and exit, vehicles, especially top-heavy buses and trucks, experience difficulty in changing over from one cross-slope to another in the opposite direction. It is, therefore, recommended that the algebraic difference in the cross-slopes be limited to about 0.07. The superelevation should be limited to the least amount consistent with design speed. The crown-line — which is the line of meeting of opposite cross-slopes—should, as far as possible, be located such that vehicles cross it while travelling along the common tangent to the reverse curve. Channelising islands should be situated on the peak with the road surfaces sloping away from them to all sides. Whenever possible, the cross slope at an entrance should be carried around on the outer edge of the rotary to the adjacent exit, altering the slope slightly to suit the curvature in the rotary and the exit.

Sight Distance: On approaches to the rotary, the sight distance available should enable a driver to discern the channelising and rotary islands clearly. A stopping sight distance appropriate to the approach speed should be ensured.On the rotary itself, the sight distance should be adequate for vehicles first entering a rotary to see vehicles to their right at a safe distance. Similarly, once a vehicle is on a rotary in the middle of a weaving section, it should be possible for it to see another vehicle ahead of it in the next weaving section at a safe distance. In both the above cases, the stopping sight distance appropriate to the design speed in the rotary could be taken as the minimum to be provided. As a general guideline, the sight distance for the 30-40 K.PH speed should range between 30 to 45 m.

Grades: A rotary should preferably be located on level ground. It may be sited to lie on a plane which is inclined to the horizontal at not more than 1 in 50. ft is, however, not desirable that a rotary be located in two planes having different inclinations to the horizontal. A rotary may, with advantages be located on a summit. Such locations assist deceleration while approaching and acceleration while leaving the rotary. But it is essential that sufficient sight distance is available. Rotaries in valleys always provider full view to the approaching vehicles, but are likely to induce greater approaching speeds and have drainage difficulties.

Curbs: The curbs for channelising and central islands should be either vertical curbs or mountable curbs. In rural sections, it is desirable that the height of the curb of the central island is not more than 225 mm and a mountable type is preferable. In urban areas, the curb of the central island should not be so high as to obstruct visibility. The curbs at the outer edges of rotary and at the approach roads should preferably be of the vertical type in built- up areas to discourage pedestrians from crossing over. In such areas, the approaches should be provided with curbs upto a minimum distance of 30 metre from the point where the flaring of the approach starts. To aid quick drainage, for instance at the periphery of the rotary island, a combined curb and gutter type of section will be more desirable. Curbs at outer edges and at approaches can be omitted in open sections of rural highways, but suitable formation indicators may be placed at the edges of the roadway.

Signs and Markincs: Rotaries require to be adequately designed both for day and night travel. A red reflector about one metre above the road level or a vertical cluster of such rellectors at a height of 0.3 to 1.0 m high should be fixed an the nose of each directional island, and on the curb of the central island facing the approach roads.

Illumination: Illumination of' (he rotary junction at night is very desirable. If the central island is small, viz., less than 20 m in diameter, satisfactory result is obtained by a single lantern having a symmetrical distribution and mounted centrally at a height of 8 metres or more, mounting height of 9-10 m is often advantageous. For larger diameter central islands

Landscaping: A rotary provides ample scope for effective development of the landscape. But all such development should only be ancillary to the essential object of traffic control, viz., the reduction in the speed of vehicles and the advance indication of the paths to be followed by vehicles. Planting on the central island should block off the view of approaching headlights so that an impression is not created that a road runs straight through. But once the motorist has entered the rotary, it is desirable that he gets an unobstructed view for adequate distance along the chord of the curve to be able to pick off the particular exit road that he wishes to take. Overhead electric and telephone cables should be discouraged.

Drainage: Adequate attention should be paid to drainage within the area of the rotary junction. Particularly, the water likely to accumulate at the edges of the rotary island should be drained by means of curb and gutter section having an outlet to underground pipes through appropriately placed gulley traps.

III. CONCLUSION

The paper topic entitled "Basic Design Parameters For an Intersection & Design Criteria For Unsignalised Intersection on NH-10, Sirsa situated at crossing of Sirsa to Dabwali and Hisar to Rania roads . This paper topic selected for the site is mainly to bound the traffic in to traffic rules and to convert the accident prone area in to safe area. This crossing area is also lacking with any type of intersection, signs, medians, and other basics safety devices, So I am trying to sort out this problem with this study.

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