

IDENTIFICATION OF BLACK SPOTS AND DESIGN OF TRAFFIC SIGNAL IN BHATKAL TOWN

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Introduction:

Intersections are a major source of crashes and vehicle delay, from 90's to even at the present many signals traffic is controlled by traffic police manually by showing sign to the traffic in each direction but as the traffic increases it is not possible to handle the traffic by single traffic police so as to reduce this problem traffic signals has been designed in present study.

In this project we have designed traffic signal timings for NH66-Jali Rd junction & NH66-Downtown Rd junction.

Identification of Black spots plays a major role in reducing accident rates. By identifying black spots on a road and fixing, it will provide a safe traffic system for road user. In our project we have identified black spots for Shirali-Bhatkal town stretch and provided remedial or mitigation measures to reduce accidents in this area.

Objectives:

1. To identify the traffic conflicts in major & minor streams in a particular intersection/junction.
2. To estimate the basic traffic stream parameters for the selected road.
3. Reduce the frequency of accidents and delays.
4. To evaluate & study the condition of road.
5. To identify traffic movement and categorize it.
6. To design and provide the signal timings at proposed junctions.

To find the accident's black spot and analyze them by suggesting a suitable solution to reduce accidents in Shirali - Bhatkal town stretch.

Methodology:

1. The classified vehicular count for each approach has been taken and tabulated.
2. Vehicular volume have been converted to PCU and the total PCU for each approach were calculated.
3. Traffic warranting study was conducted.
4. Peak hour was obtained from the vehicular count data.
5. Knowing the width of the pavement, saturation flow for each approach have been determined.
6. Peak Hour Factor (PHF) for each directional flow have been calculated.
7. Optimum cycle length, total effective green time and actual green time for all the three phases was calculated, using Webster's method, Trial cycle method and IRC method.
8. Collection of Accident data of last 3 years.
9. Crash Analysis

Black spots were identified

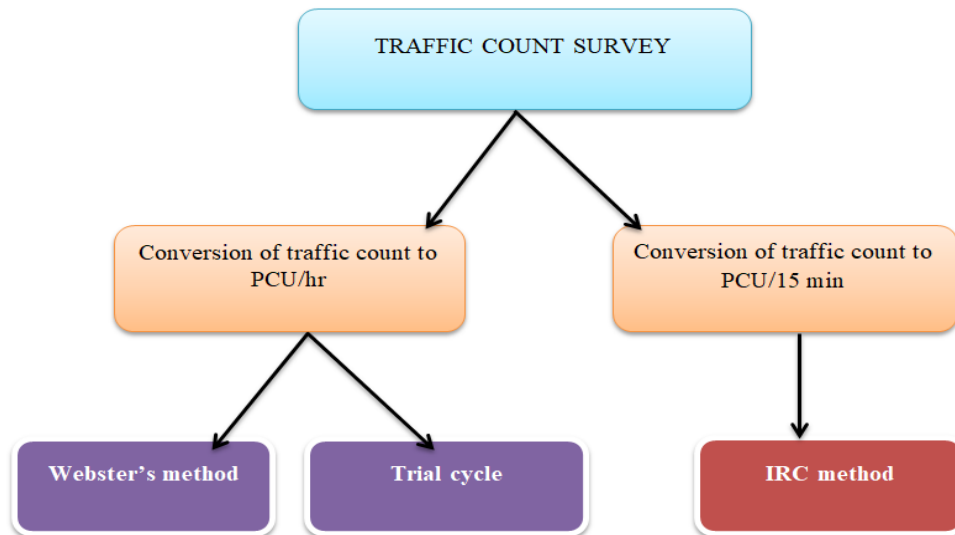


Fig: 1 Flow chart of traffic signal design

Results and Conclusions:

- After completion of Traffic survey the design of timings for each proposed junction were carried out using Webster's, trail cycle, and IRC methods(Table1&2). Since Webster's method is more accurate compared to other two methods we would suggest to follow timings found out using Webster's method.
- From the data collected from the Rural police station Bhatkal the black spots were identified namely Venktapur Bhatkal(14⁰01'04.3"N, 74⁰31'53.7"E) & Shirali Bhatkal (14⁰01'54.2"N, 74⁰31'37.7"E)

Table-1: Signal timing at NH66-JALI junction

Design methods	Phase/approach type	Signal time			
		Green (sec)	Amber (sec)	Red (sec)	Cycle length(sec)
Webster's	Phase 1	28.4	2	48.2	78.6
	Phase 2	18.6	2	58	78.6
	Phase 3	16.6	2	60	78.6
Trial cycle	Phase 1	34.65	2	44.1	80.75
	Phase 2	22.35	2	56.4	80.75
	Phase 3	17.75	2	61	80.75
IRC	Major road	30	4	17	51
	Minor road	15	4	32	51

Table-2: Signal timing at NH66-DOWN TOWN junction

Design methods	Phase/approach type	Signal time			
		Green (sec)	Amber (sec)	Red (sec)	Cycle length(sec)
Webster's	Phase 1	15.74	2	34.26	52
	Phase 2	15.74	2	34.26	52
	Phase 3	5.52	2	44.48	52
Trial cycle	Phase 1	10.1	2	17.9	30
	Phase 2	10.5	2	17.5	30
	Phase 3	2.9	2	25.1	30
IRC	Major road	51	4	16	71
	Minor road	14	4	53	71

Remedial measures to reduce the accident rate:

- Better enforcement of traffic rules
- Improvement of junctions
- Fixing of speed limits
- Installation of road signage
- Road markings
- Filling up of potholes
- Installation of rumble strip/scientific road humps