



Cincinnati

Objectives of the Course

- To prepare students with fundamental knowledge and problemsolving skills applicable to signal control system design and improvements, which are generally a requirement for a traffic engineer position by most of traffic engineering employers.
- To provide a basic understanding of traffic signal design and the overall design process.
- It includes practical procedures and experiences in the design and/or improvement of signal control systems at intersections using associated hardware and software (HCS and VISSIM).
- To understand emerging technology impact on signal system.
- Further more:
 - To instruct students how to develop a "quality" plan, which contains traffic signal related components.
 - Successful completion of this course provides a well preparation to obtain the State's (e.g. ODOT)'s required knowledge for "Basic Traffic Signal Design" and "Traffic Signal System Design" pre-qualifications.



References	
 William R. McShane, Elena S. Prassa, and Roger P. Poess, <u>Traffic Engineering</u>, 4rd Edition, 2011, Prentice Hall Publishing, ISBN: 0134613573 Federal Highway Administration, <i>The Manual on Uniform Traffic</i> <i>Control Devices (MUTCD)</i>. 2009 NCHRP Report 812. Signal Timing Manual (2nd Edition). 2015 TRB, Highway Capacity Manual, 2010 	
 Institute of Transportation Engineer, <u>Traffic Engineering</u> <u>Handbook</u>, latest version Institute of Transportation Engineer, <u>Traffic Detector Handbook</u>, latest Edition 	
 Institute of Transportation Engineer, <u>Traffic Control Devices</u> <u>Handbook</u>, latest version 	
4 Ci	n a V ncinnati











Modern Traffic Light
 Modern traffic lights are an American invention. Red-green systems were installed in Cleveland, Ohio in 1914.
 An electric traffic light was developed in 1912 by Lester Wire, a policeman in Salt Lake City, Utah, who also used red-green lights.
 Two-color signals. On August 5, 1914, the American Traffic Signal Company installed an electronic traffic signal system in Cleveland, Ohio. It had two colors (red and green), and a buzzer, based on the design of James Hoge, to provide a warning for color changes.
 Three-color signals. A tower with 3-color signals was installed in New York in 1918. The first 3-color lights in Britain were in London in 1925. They were operated manually by policemen using switches.
The first four-way, three-color traffic light (mounted on a tower) was created by police officer William Potts in Detroit, Michigan in 1920. The traffic tower soon used twelve <u>floodlights</u> (broad-beamed, high-intensity artificial lights) to control traffic and the reason for a tower in the first time was at the intersection was one of the busiest intersection that time in world, with over 20,000 vehicles daily.
10 Cincinnati

Modern Traffic Light

- First interconnected traffic signal system. The first one installed in Salt Lake City in 1917, with six connected intersections controlled simultaneously from a manual switch. Automatic control of such a system was introduced March 1922 in Houston, Texas.
- Controlled by automatic timers. The first company to add timers in traffic lights was Crouse Hinds in 1922, in Houston. The city of New York was able to reassign all but 500 of its 6,000 officers working on the traffic squad.
- Los Angeles installed its first automated traffic signals in October 1920 at five locations on Broadway. By 1923 the city had installed 31 Acme traffic control devices. The Acme semaphore traffic lights were often used in Warner Bros. Looney Tunes and Merrie Melodies cartoons for comedic effect due to their loud bell.



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11

Modern Traffic Light	
 The first traffic lights in Britain. Deployed in <u>Piccadilly Circus</u> in 1926 and Wolverhampton was the first British town to introduce automated traffic lights in 1927. 	
 The first vehicle-actuated signals. In Britain, on the junction between Gracechurc Street and Cornhill on the City, in 1932. But destroyed by a gas explosion. 	h
 The oldest working traffic light in the US. In Ashville, Ohio, it was used at an intersection of public roads from 1932 to 1982 when it was moved to a local museu (<u>Traffic Signal Trivia</u> website). 	ım
 Oldest traffic signals in Australia. Melbourne was the first city in Australia to install traffic lights in 1928. Hoods were placed over the light and each lens was sand-blasted to increase daytime visibility. Both the tower and semaphores were phased out by 1930. 	
 The first traffic light in South India. At Egmore Junction, Chennai in 1953. The city of Bangalore installed its first traffic light at Corporation Circle in 1963. 	
12	incinnati





Modern Traffic Light

- In the 1960's, traffic lights started to become computerized. Over time as computers improved, and the traffic lights subsequently improved. They could now monitor traffic and change lights accordingly. Based on the software, the traffic of a city could now be predicted and accordingly controlled.
- At present, traffic all over the world can be monitored, which gives an idea about the traffic at a certain time, which city has the most traffic, and what the peak hours of traffic are, so the lights can be controlled accordingly. The computer also monitors the weather and their operation can be changed depending on the weather. The lights can also be adjusted in the case of emergencies, so computers have vastly improved the handling of traffic and increased total road safety.



15

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