ORIGINATOR Director, Bureau of Highway Operations		8-1-7
CHAPTER 8	Detector and Controller Logic	
SECTION 1	Vehicle Detection	
SUBJECT 7	Left Turn Detection	

Several variations of detection *may* be used for left turn lane detection. The specific type of configuration that *should* be used is dependent upon many factors, including signal phasing, geometrics, vehicle classification, and turning volumes. All of these factors must be taken into account when designing the detection scheme.

Alternative No. 1: Protected-only or protected/permitted operation.

Detector loops are placed beginning at the stop line to call and extend the phase. This *may* be used for protected-only or protected/permitted left-turn operations. The detector amplifier is set to presence mode and controller logic to non-locking memory. This allows for more efficient operation in that once a vehicle leaves the zone of detection the call is dropped, and the controller can begin to service other calls. This type of operation is often used for left turns where the opposing through volume is relatively high and the left turn demand is constant. Figure I below illustrates two commonly used layouts.

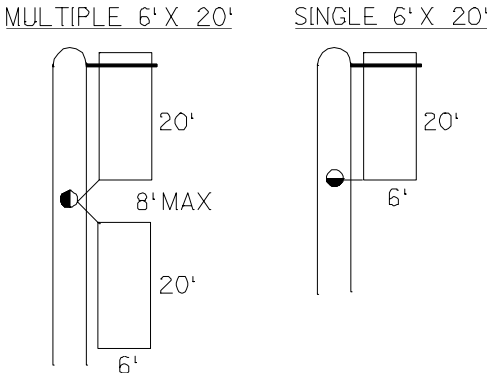

Figure 1
Protected-Only or Protected/Permitted Left Turn Loop Layout

Alternative No. 2: Third-vehicle detection. Protected/permitted operation only.

The detector is placed in advance (upstream) of the stop line such that the first one or two vehicles in the left-turn lane will not place a call in the protective phase. This *should* not be used for protected-only left turn operation. Figure 3 illustrates two commonly used layouts.

Sufficient gaps, particularly during non-peak hours, are usually available to permit vehicles to turn on a green ball. This alternative *may* be used only for approaches with minimum recall or approaches with stop line detection. The detector amplifier is set to presence mode and controller logic to non-locking memory. This type of operation allows for more efficient use of the green time for mainline traffic.

Detector layouts illustrated in Alternative 1 *may* be used for third-vehicle detection by programming the front loop for extend-only. This layout allows for the flexibility of changing operations from third-car to protected detection.

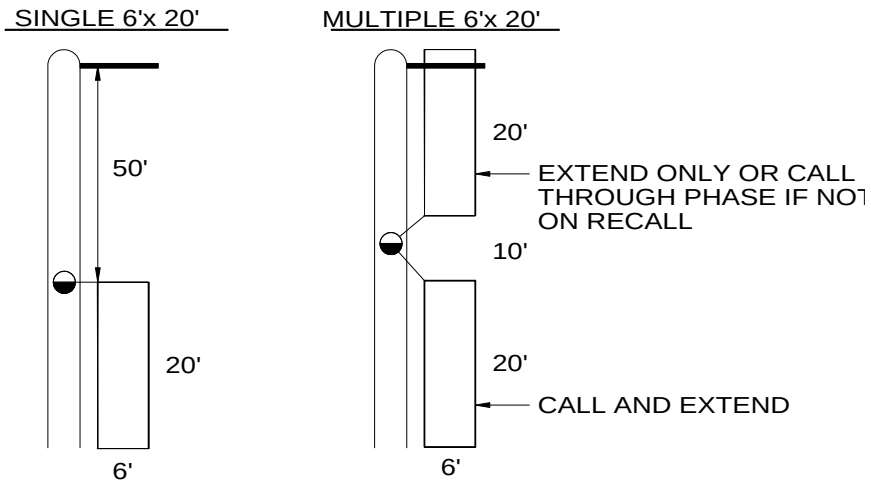

Figure 2
Third-Vehicle Detection Loop Layout

Alternative No. 3: Left-turn extension detection.

Long left turn lanes or high left turn volumes *may* require the use of advance detection for the purpose of extending the green. Generally an advance loop installed in the left turn lane *may* extend the left turn phase, the through movement, or both. Loop layout for left turn lane extension *should* follow the guidelines outlined in this subject.

Figure 3
Left Turn Extension Detection