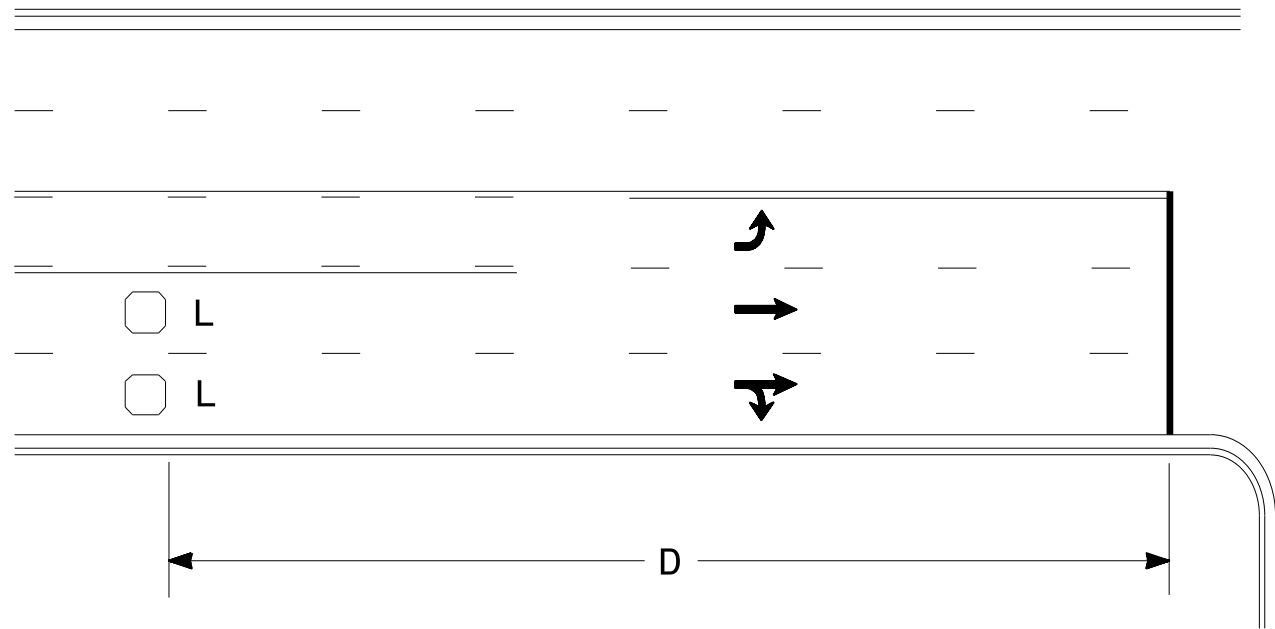


High Speed Detection

(≥35 mph)

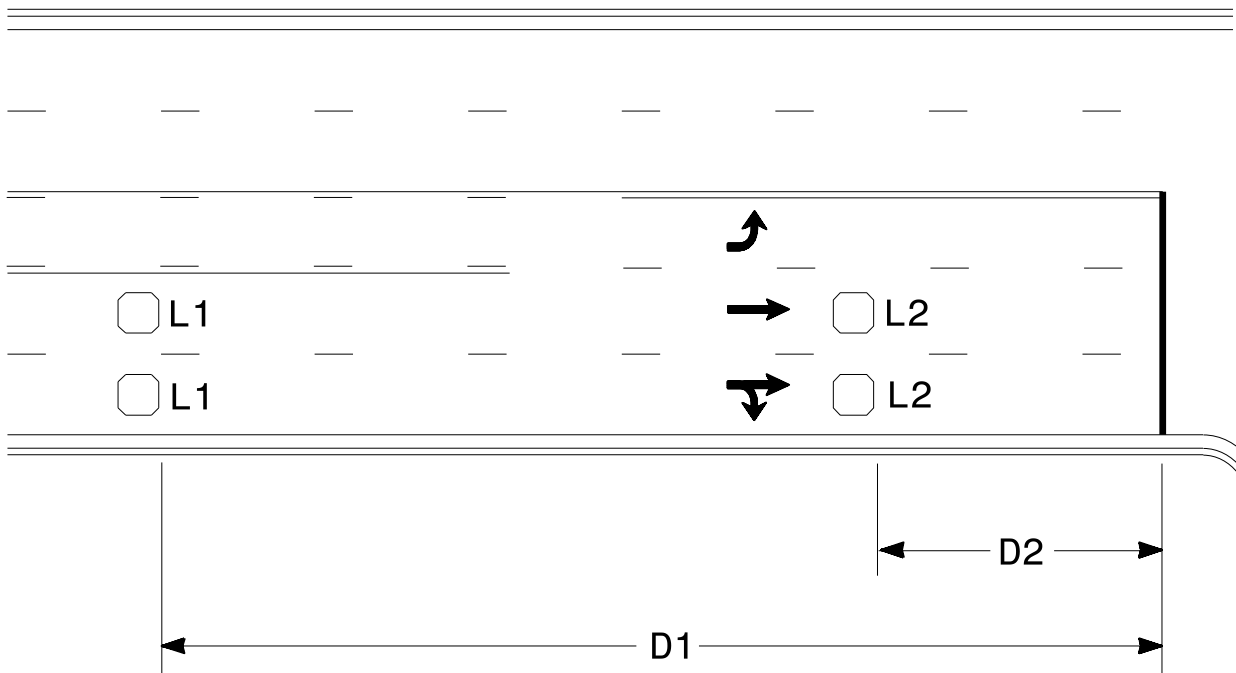


| Speed Limit<br>mph | D<br>ft |
|--------------------|---------|
| 35                 | 200     |
| 40                 | 250     |
| 45                 | 300     |
| 50                 | 355     |
| 55                 | 420     |
| 60                 | 475     |
| 65                 | 550     |

L = 6ft X 6ft  
Wired separately

Volume Density Operation

OR



| Speed Limit<br>mph | D1<br>ft | D2<br>ft |
|--------------------|----------|----------|
| 40                 | 250      | 80       |
| 45                 | 300      | 90       |
| 50                 | 355      | 100      |
| 55                 | 420      | 110      |
| 60                 | 475      | 120      |
| 65                 | 550      | 130      |

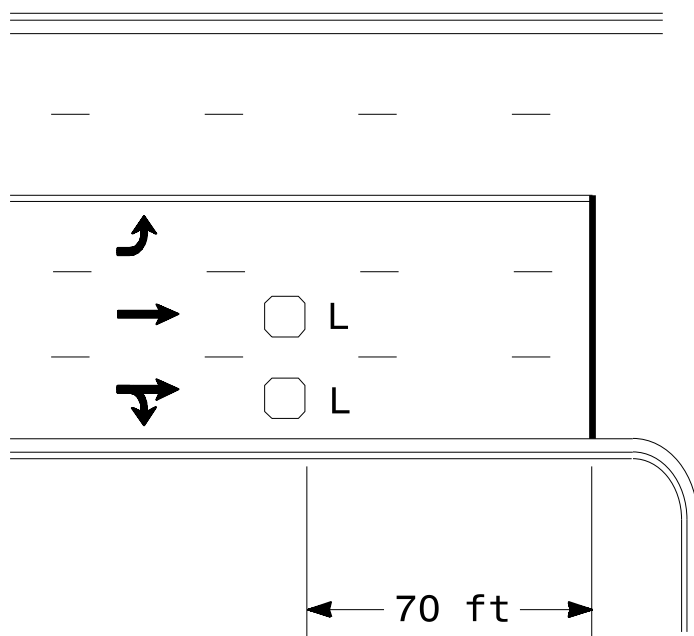
L1 = 6ft X 6ft  
Wired in series

L2 = 6ft X 6ft  
Wired in series

"Stretch" Operation

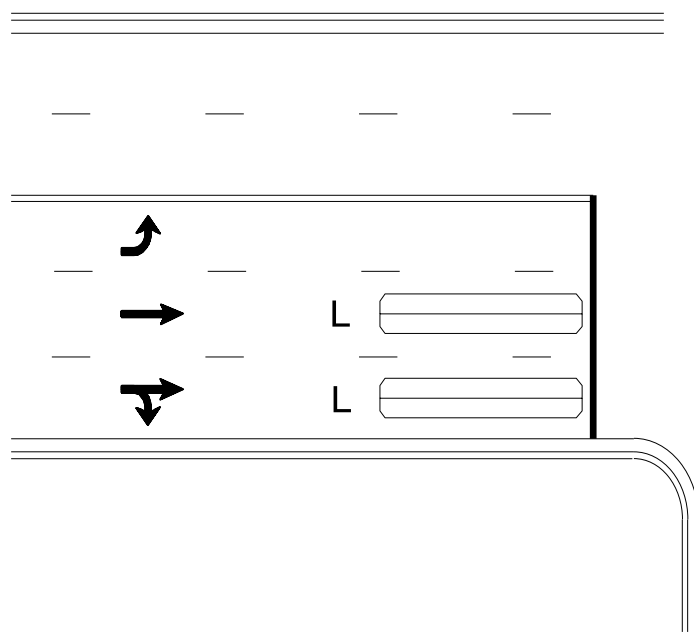
Low Speed Detection

(≤35 mph)



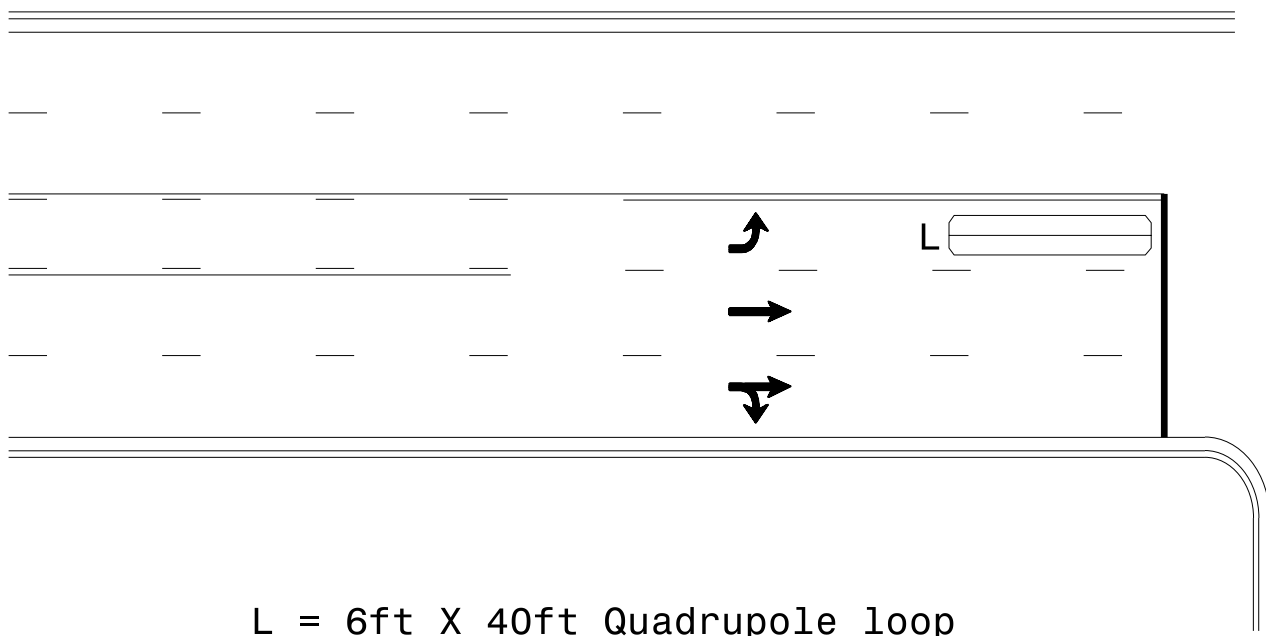
L = 6ft X 6ft  
Wired in series

OR



L = 6ft X 40ft  
Quadrupole loop, wired separately

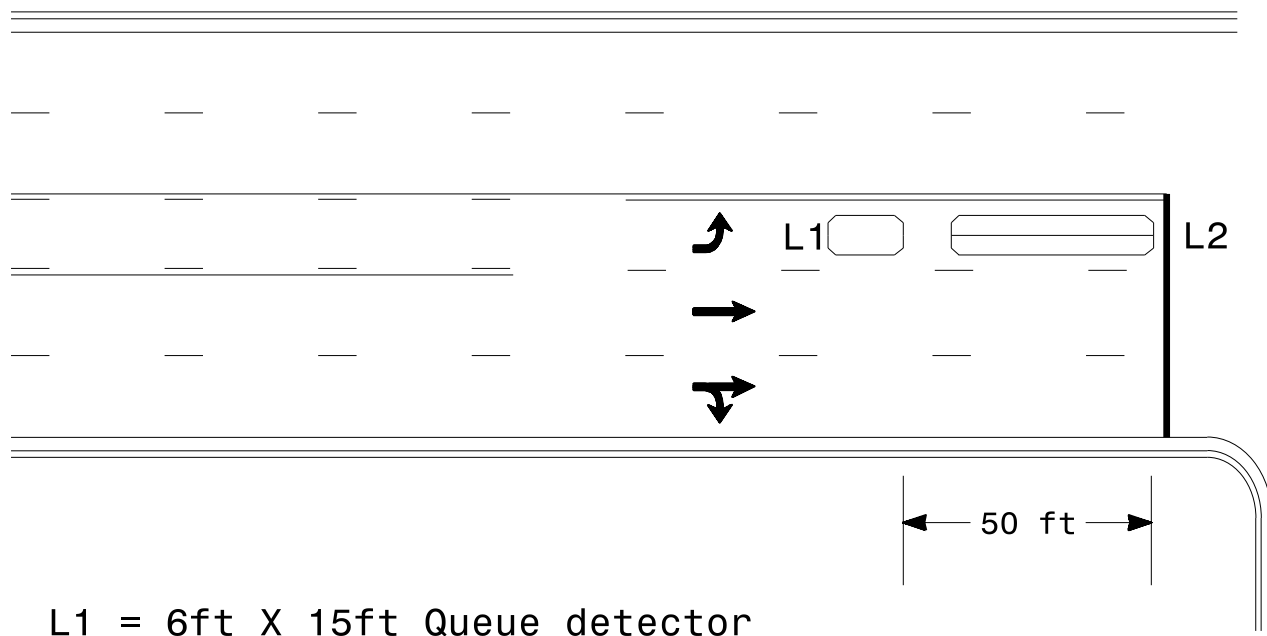
Left Turn Lane Detection



L = 6ft X 40ft Quadrupole loop

Presence Loop Detection

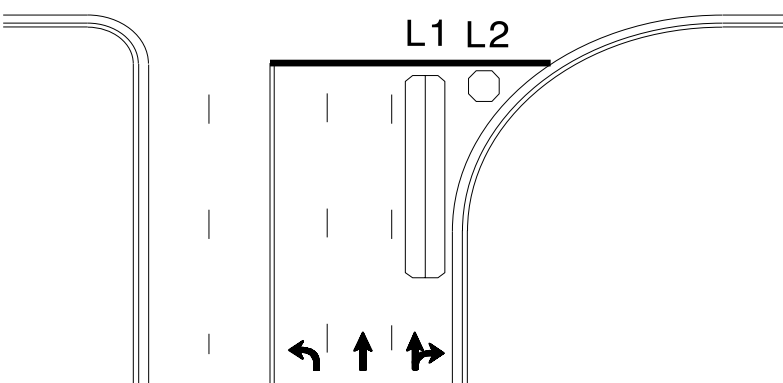
OR



L1 = 6ft X 15ft Queue detector  
L2 = 6ft X 40ft Quadrupole loop

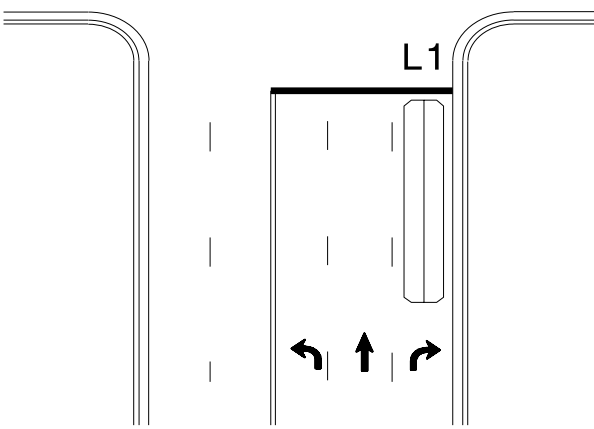
Queue Loop Detection

Right Turn Lane Detection

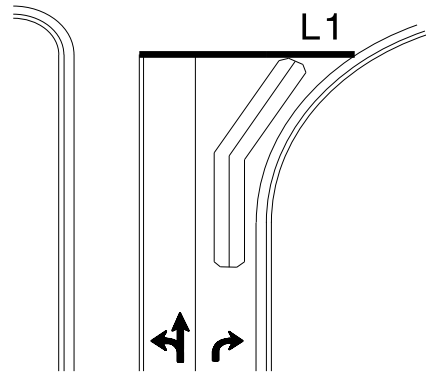


Shared Lane/  
Wide Radius Turn

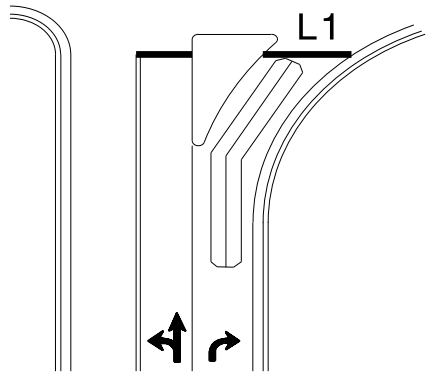
L1 = 6ft X 40ft Quadrupole loop  
L2 = 6ft X 6ft [Minimum] Presence loop  
Wired separately



Standard Turn

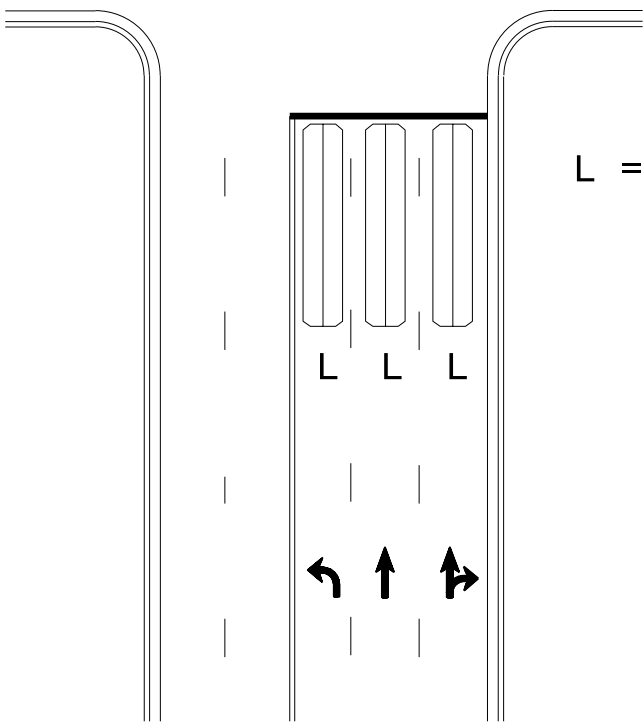


Wide Radius Turn



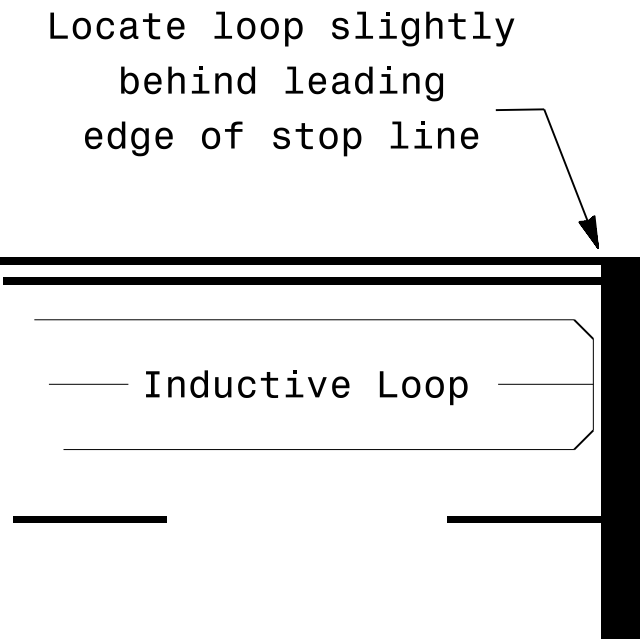
Channelized Turn

Side Street Detection



L = 6ft X 40ft  
Quadrupole loop  
Wired to separate  
detectors/channels

Presence Loop Placement at Stop Lines



- Note:  
Loop may be located in advance of stop line under any of the following conditions:
- stop line is greater than 15' from edge of intersecting roadway
  - loop detects a permissive or protected/permissive left turn
  - for an exclusive right turn lane

Recommended Number of Turns

Single 6' X 6' loop  
(when wired separately):

| Length of<br>Lead-in<br>ft | Number<br>of Turns |
|----------------------------|--------------------|
| < 250                      | 3                  |
| 250-375                    | 4                  |
| 375-525                    | 5                  |
| > 525                      | 6                  |

Quadrupole loops: Use 2-4-2 turns

6' X 15' Loops:  
Lead-in < 150', use 2 turns  
Lead-in > 150', use 3 turns

Prepared In the Offices of:

TRANSPORTATION MOBILITY AND SAFETY DIVISION

DEPARTMENT OF TRANSPORTATION

SIGNAL DESIGN SECTION

750 N. Greenfield Pkwy, Garner, NC 27529

SCALE

N/A

Typical Signal Loop Locations

PLAN DATE: September 2025

PREPARED BY: J.A. Lohr

REVISIONS

INIT.

DATE

REVIEWED BY:

REVIEWED BY:

11/25/2025

DATE

SEAL

NORTH CAROLINA

PROFESSIONAL ENGINEER

ROBERT J. ZIEMBA

18084860274A484

SIG. INVENTORY NO.