

CITY OF CHARLOTTE
DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL SIGNALS
GUIDELINES

2017

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INTRODUCTION

This document is to assist the signal designer in selecting the appropriate signal indication and signal head location for an already determined signal phasing/ lane configuration and placing the signal heads in the proper locations overhead. Signal locations in this standard are based on the entrance approaches to the intersection being directly aligned (straight) with the exit sides. Further engineering judgment will have to be used to determine signal locations for intersections with skewed approaches.

This standard does not cover traffic signal warrants for determining whether a traffic signal is needed or not, does not cover methods for determining the appropriate phasing, and does not cover signal timing

GENERAL NOTES

Vehicular Traffic Signals

TRAFFIC SIGNAL LENS SIZE:

All vehicular signal head lenses shall be 12" in diameter.

TRAFFIC SIGNAL LENS ARRANGEMENT:

Lenses in a signal head shall be arranged vertically. Only when it is absolutely necessary or unavoidable, signal lenses maybe arranged horizontally after a thorough evaluation and approval by the engineer.

TRAFFIC SIGNAL DISTANCE FROM STOP BAR:

If the distance between signal heads and the stop bar exceeds 180', then a near side signal head/s of the same indication/s shall be installed. Only when it is absolutely necessary or unavoidable, signal heads maybe installed using the 40' minimum distance from the stop bar.

SEPARATION BETWEEN TRAFFIC SIGNAL HEADS:

A minimum distance of 8' must be maintained between signal heads.

TRAFFIC SIGNAL VERTICAL CLEARANCE:

- The bottom of the signal head shall be a minimum of 15' above the roadway (desirable 16.5') and 8' if it is located above the sidewalk.
- The maximum distance from the top of the signal head to the roadway surface varies depending on the location of the signal head relative to the stop bar.

Distance from stop bar	Max. height to top of signal
53' and greater	25.6'
50'	24.5'
46'	23.0'
43'	22.0'
40'	21.0'

RIGHT-TURN RED INDICATIONS:

Right-turn on red arrow is prohibited. Right turn on red ball is permitted.

Overhead Signage

LANE USE CONTROL SIGNS:

Overhead lane use control signs may not need to be used over a lane that has over it an all arrow indications (no balls). Following are example where overhead lane use control signs should be used:

- On multi-lane approaches over a left lane used for left /thru/right combination movements.
- On multi-lane approaches over a right lane used for right/thru/left combination movements

GENERAL NOTES - continue:

- On a 3-lane approach over the middle lane used for thru/right or thru/left combination movements
- On multi-lane approaches where one or more of the above conditions exist, it may be appropriate to have overhead lane control
- Anywhere where the engineers deems it appropriate

TURN RESTRICTION SIGNS:

Turn restriction signs shall be installed overhead. Ground mounted turn restriction signs can supplement the overhead signs but not be in lieu of.

U-TURN YIELD TO RIGHT-TURN SIGNS:

"U-Turn Yield to Right Turn" shall be installed over a left turn lane with a protected movement anytime a right turn overlap is present on the crossing street approach to the left.

ONE-WAY STREET SIGNS:

A "one-way" sign shall be installed overhead facing traffic that crosses a one-way street. Ground mounted "one-way" signs shall also be installed (near right, far left).

STREET NAME MARKERS:

A street name marker shall be installed overhead for each approach of the intersection, unless the approach is a driveway or a private street. A private street approach may have a ground mounted sign with the indication that it is private

OTHER OVERHEAD SIGNS:

This guideline document does not cover all the overhead signs that maybe used. Any signal related sign must be approved by the engineer (signal designer)

Pedestrian Signals

PEDESTRIAN SIGNAL HEAD LENS:

All new signal head indications shall be displayed within a rectangular background and shall consist of symbolised messages and have a countdown display.

PEDESTRIAN SIGNAL HEAD HEIGHT:

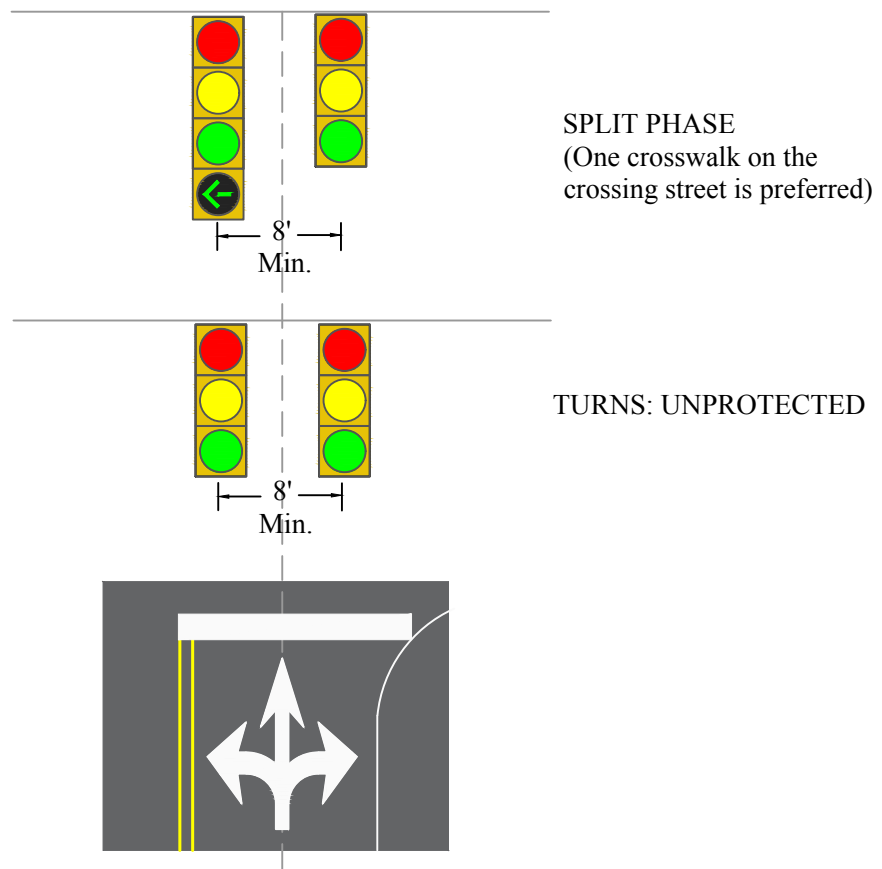
The bottom of the pedestrian signal head shall be a minimum of 7' and a maximum of 10' from the sidewalk surface.

PEDESTRIAN SIGNALS AND PUSH BUTTON LOCATION:

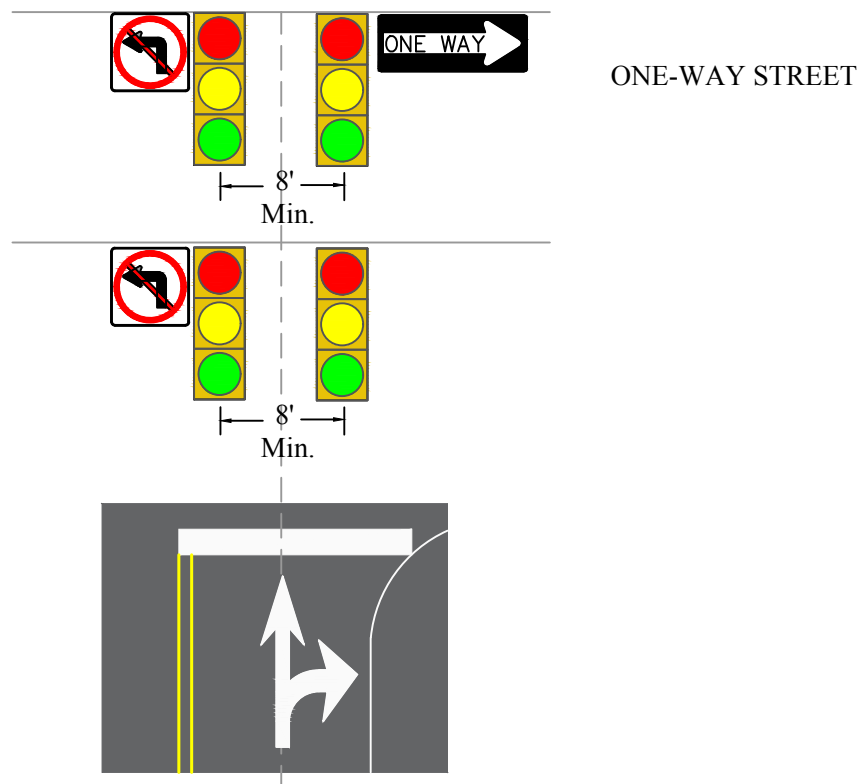
Pedestrian signals and push button locations must be in accordance with ADA and PROWAG documents. Pedestrian signals and push button location are specific to each design and therefore will not be shown in this document.

Four - Leg Intersection

1 Lane Approach

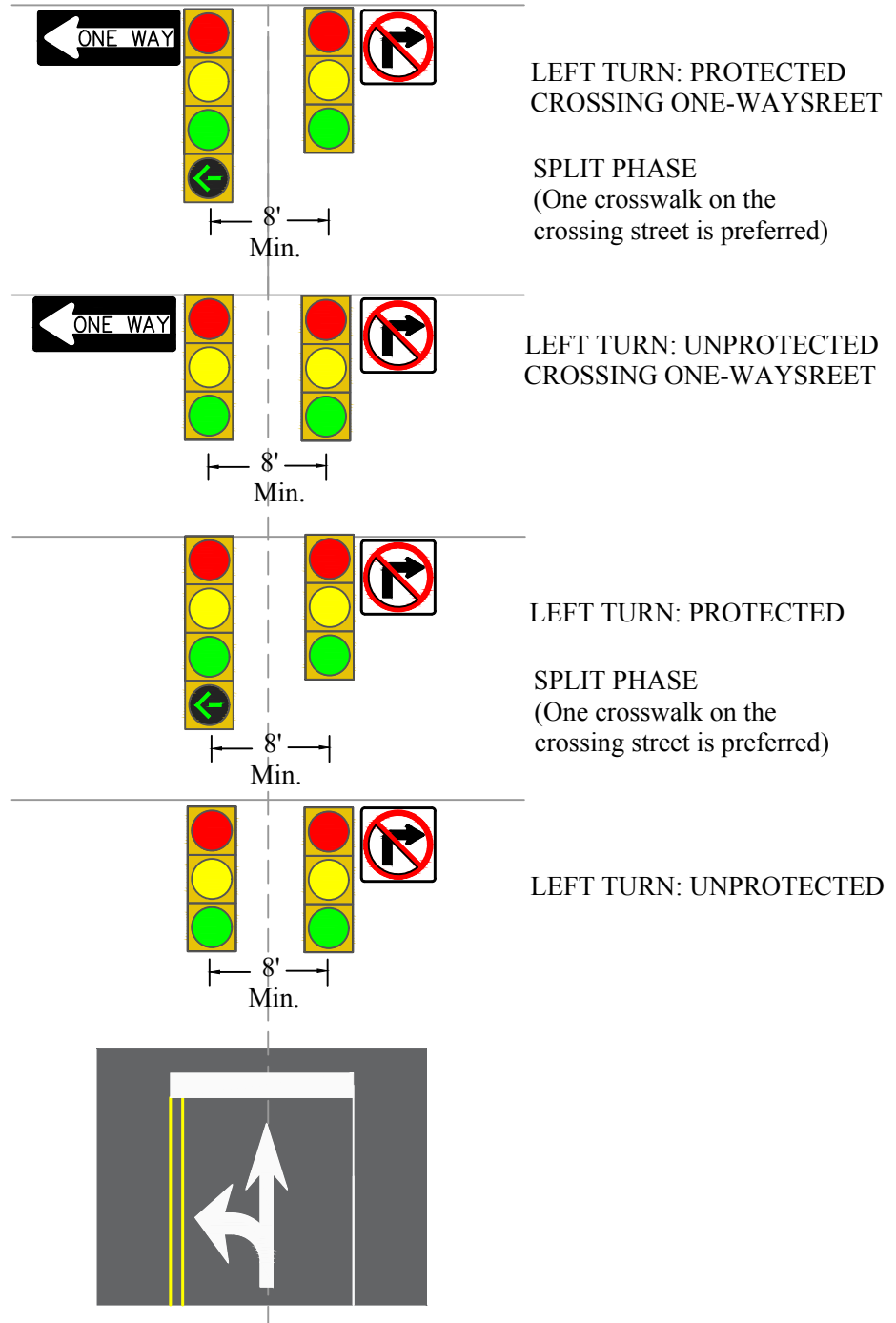


Four - Leg Intersection 1 Lane Approach

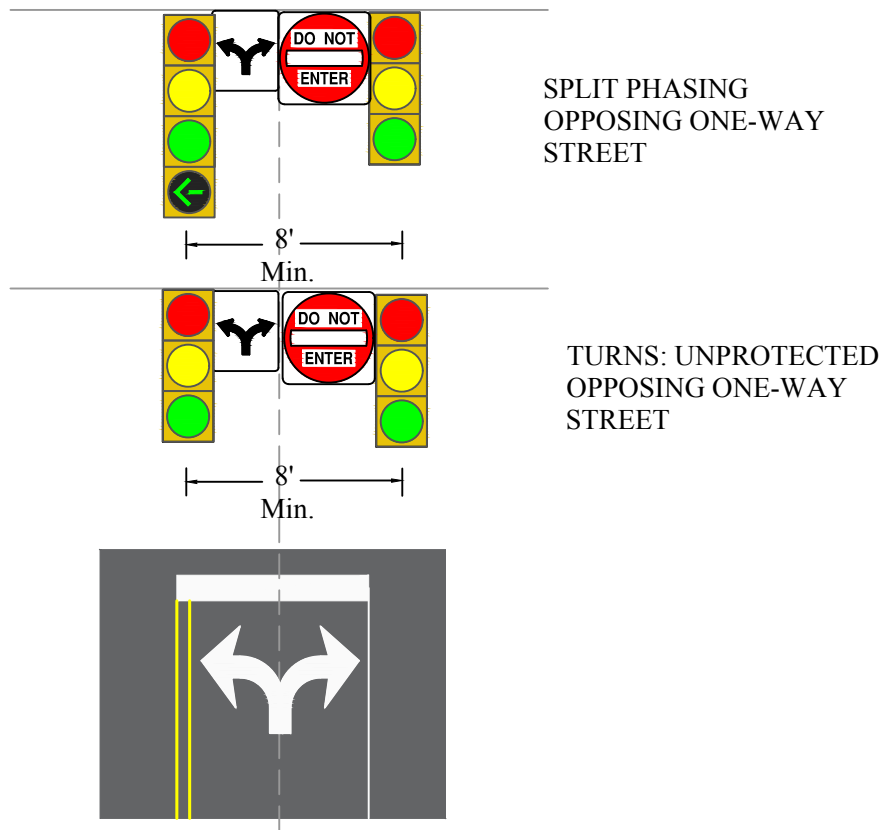


Four - Leg Intersection

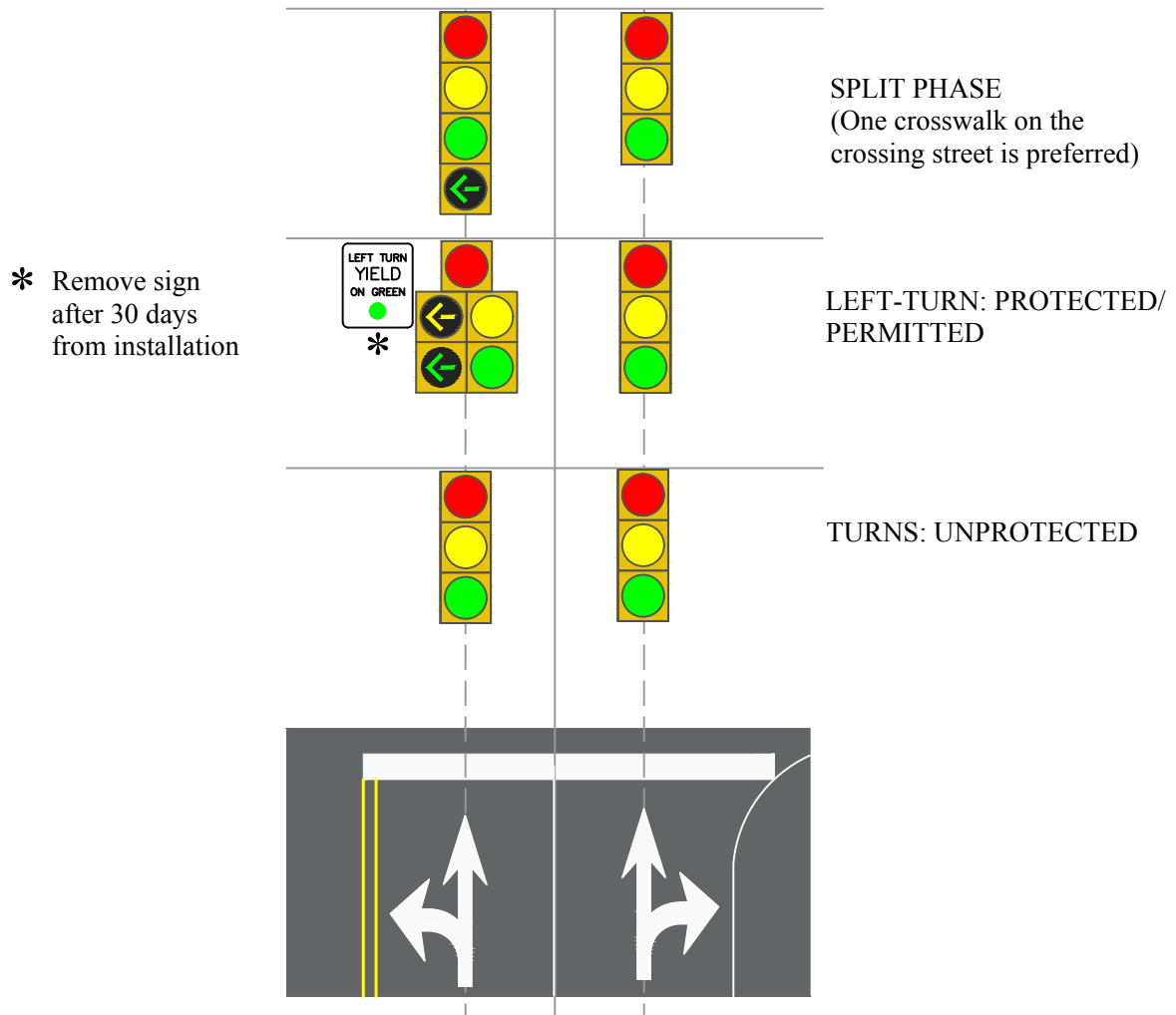
1 Lane Approach



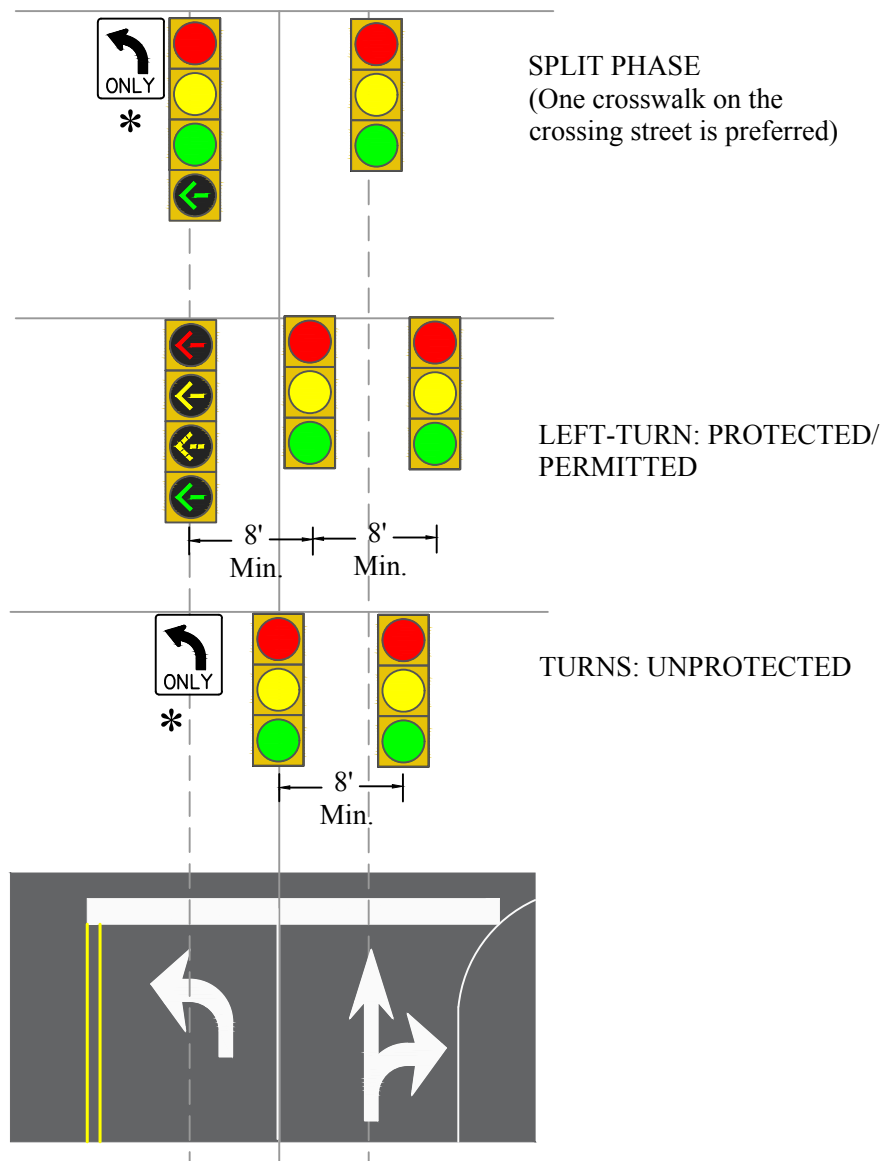
Four - Leg Intersection
1 Lane Approach
Opposing a one-way street



Four - Leg Intersection 2 Lane Approach

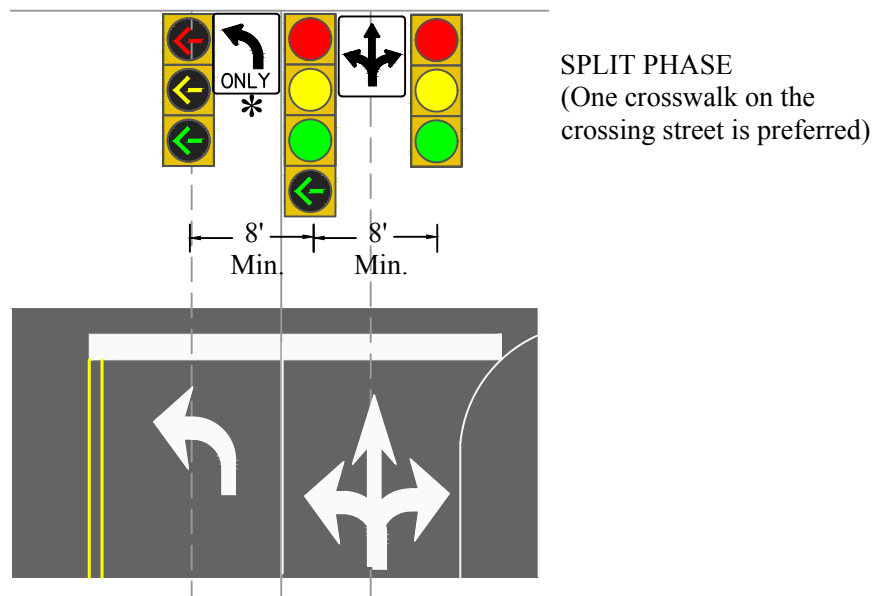


Four - Leg Intersection 2 Lane Approach



* SHALL BE USED OVER A DROP LANE AND ONLY ON CASE BY CASE BASIS OVER A BAY LANE

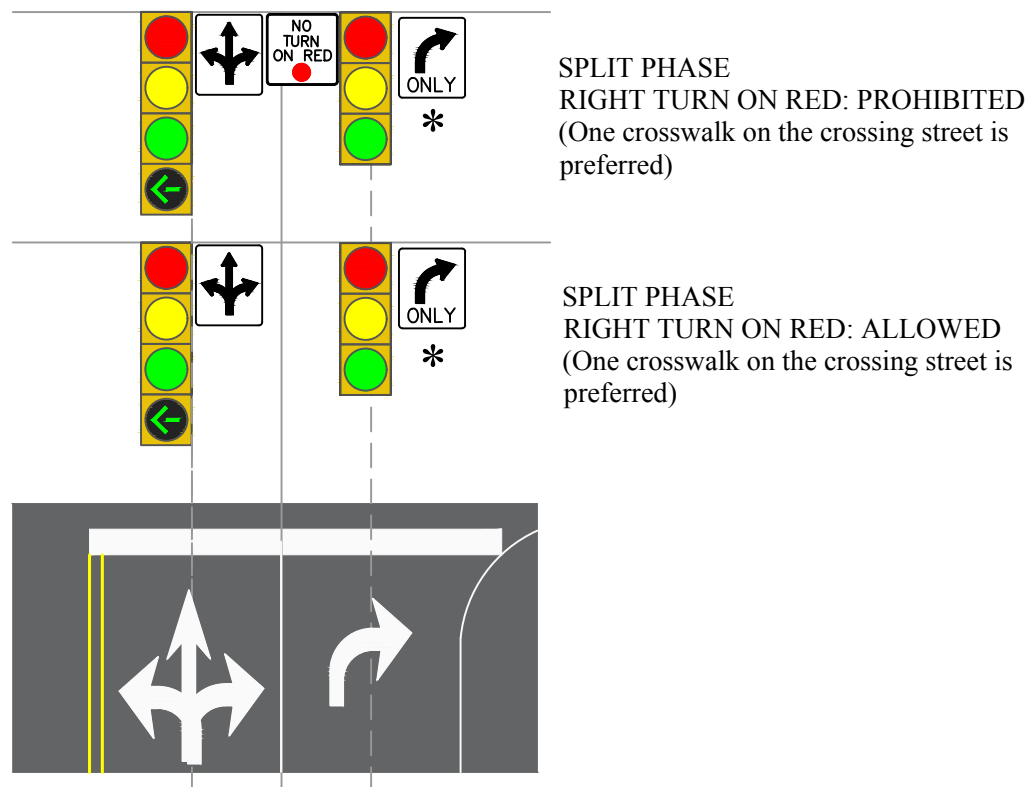
Four - Leg Intersection 2 Lane Approach



* SHALL BE USED OVER A DROP LANE AND ONLY ON CASE BY CASE BASIS OVER A BAY LANE

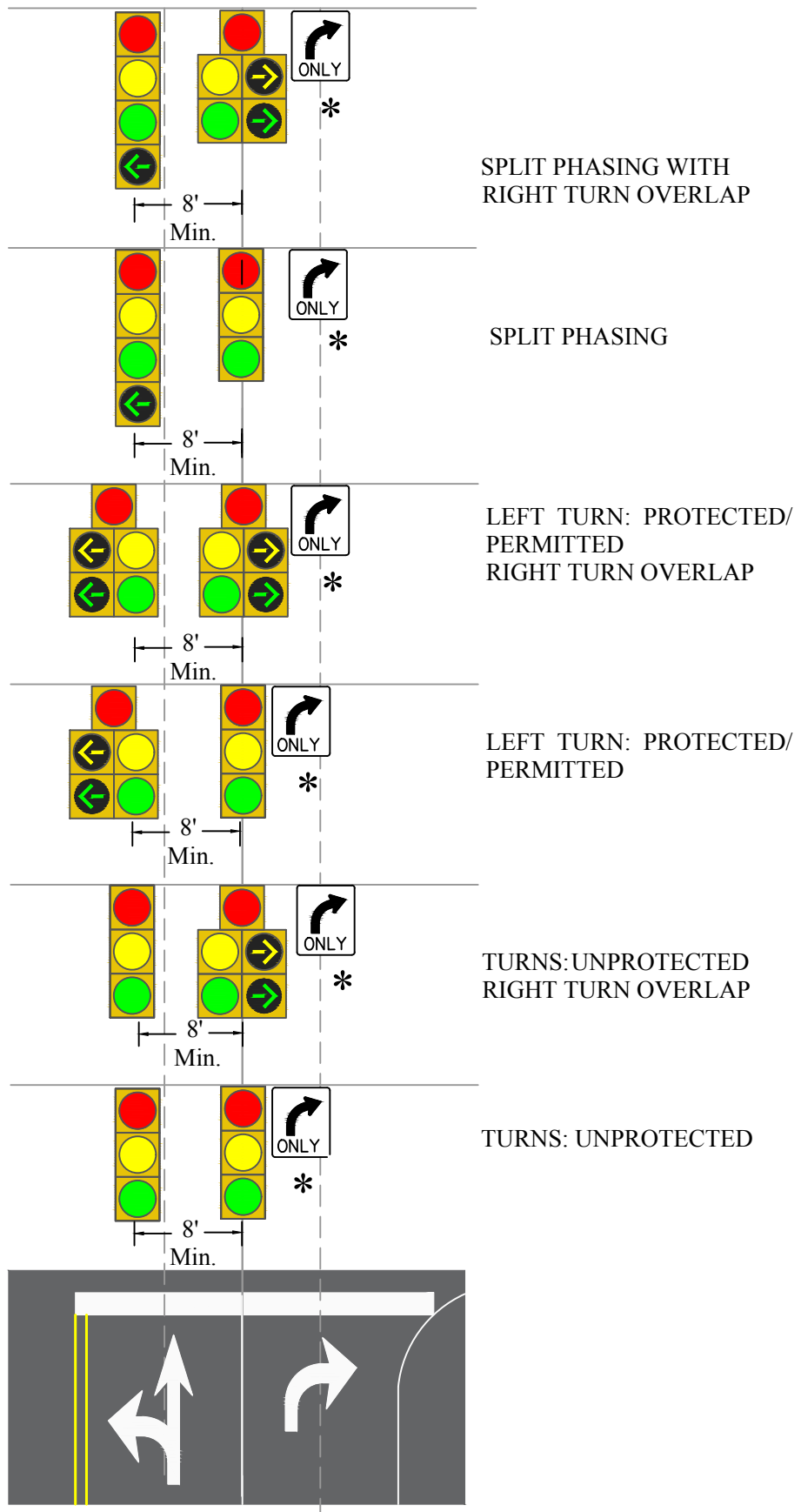
Four - Leg Intersection

2 Lane Approach

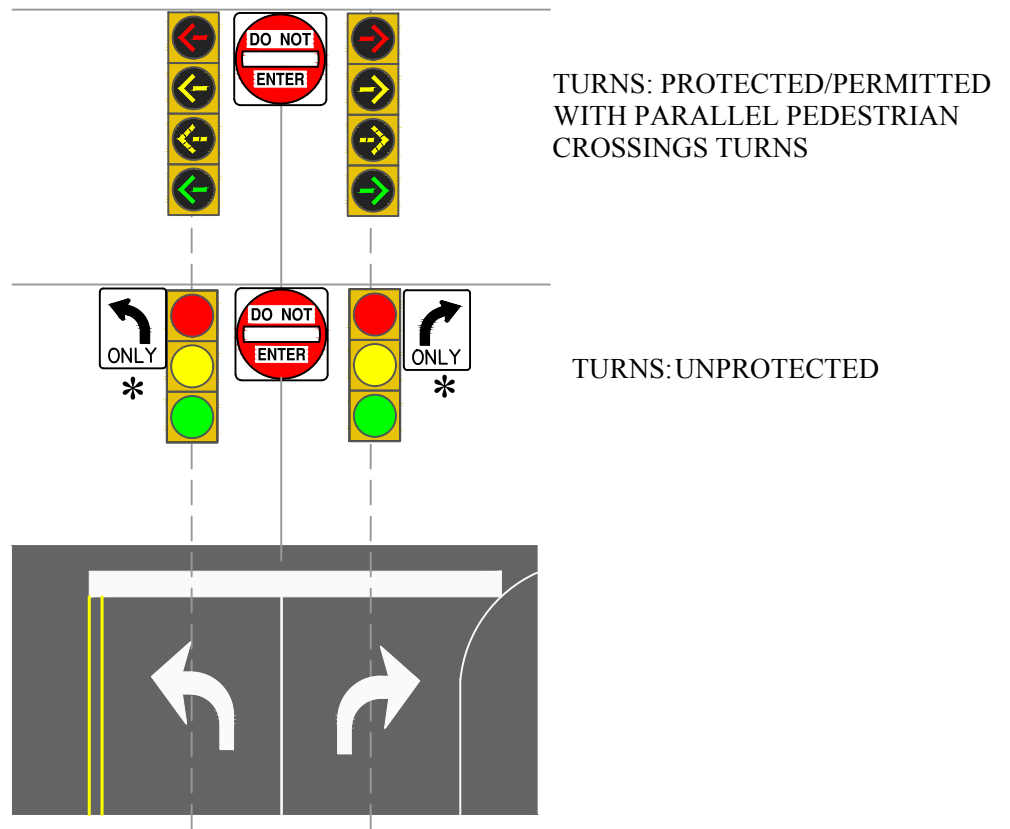


* SHALL BE USED OVER A DROP LANE AND ONLY ON CASE BY CASE BASIS OVER A BAY LANE

Four - Leg Intersection 2 Lane Approach

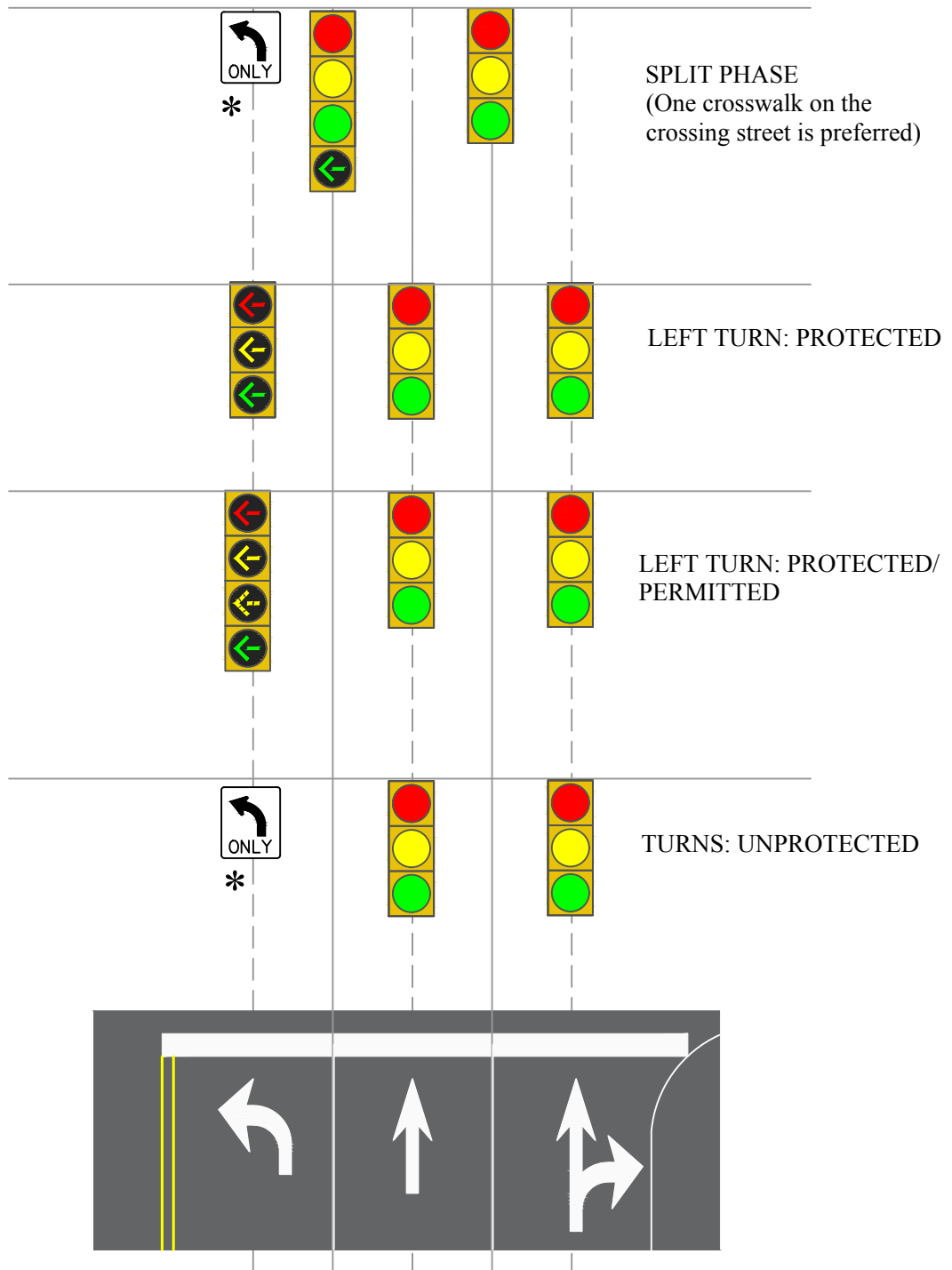


Four - Leg Intersection 2 Lane Approach Opposing one-way street



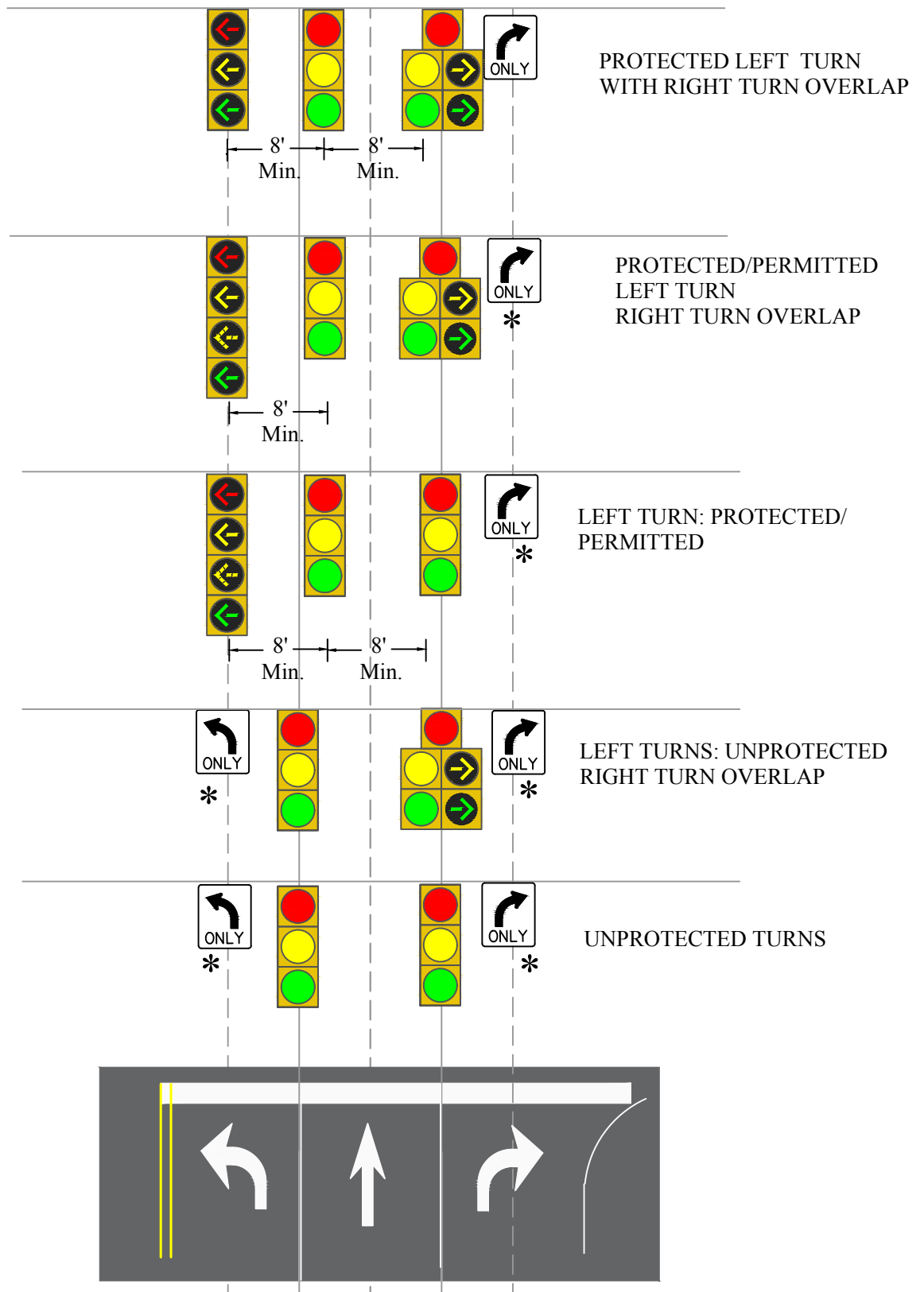
* SHALL BE USED OVER A DROP LANE AND ONLY ON CASE BY CASE BASIS OVER A BAY LANE

3 Lane Approach



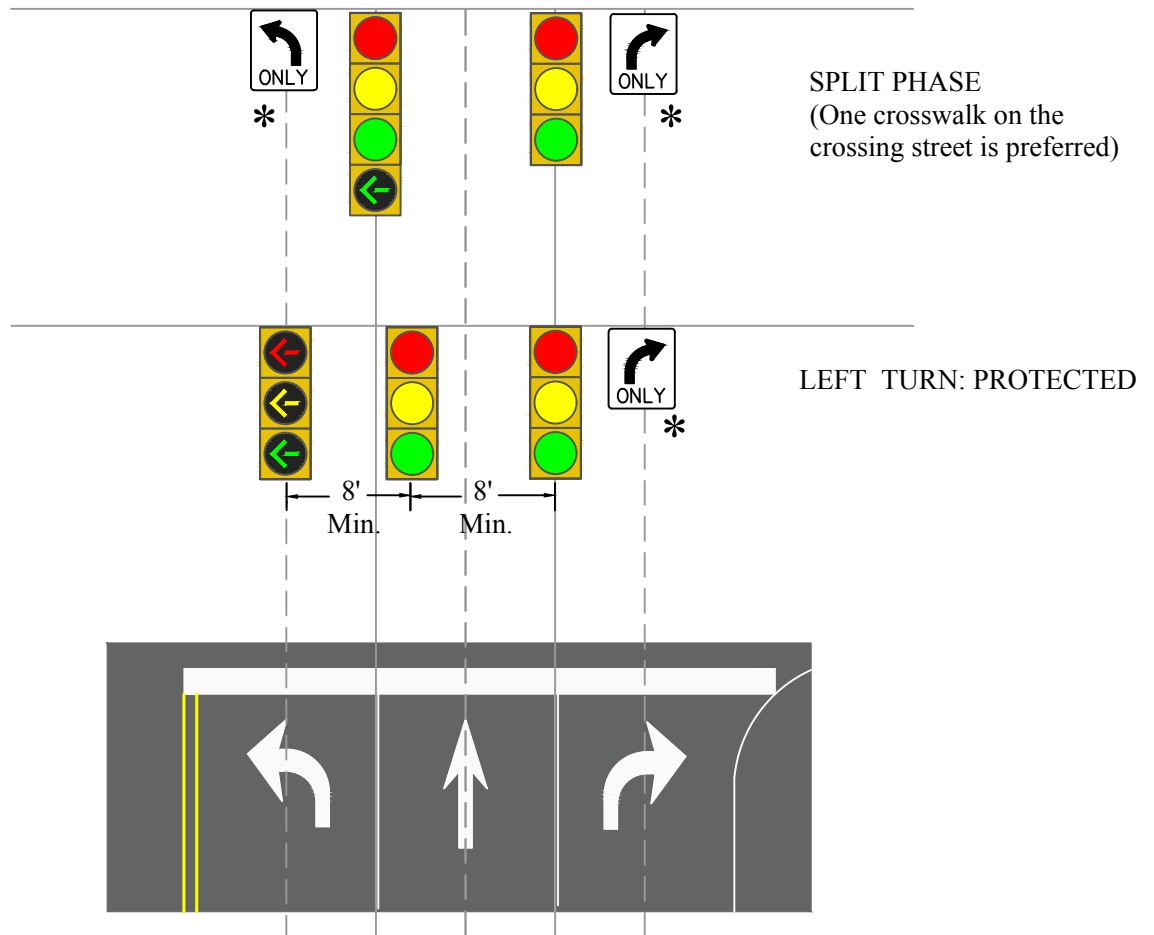
* SHALL BE USED OVER A DROP LANE AND ONLY ON CASE BY CASE BASIS OVER A BAY LANE

3 Lane Approach



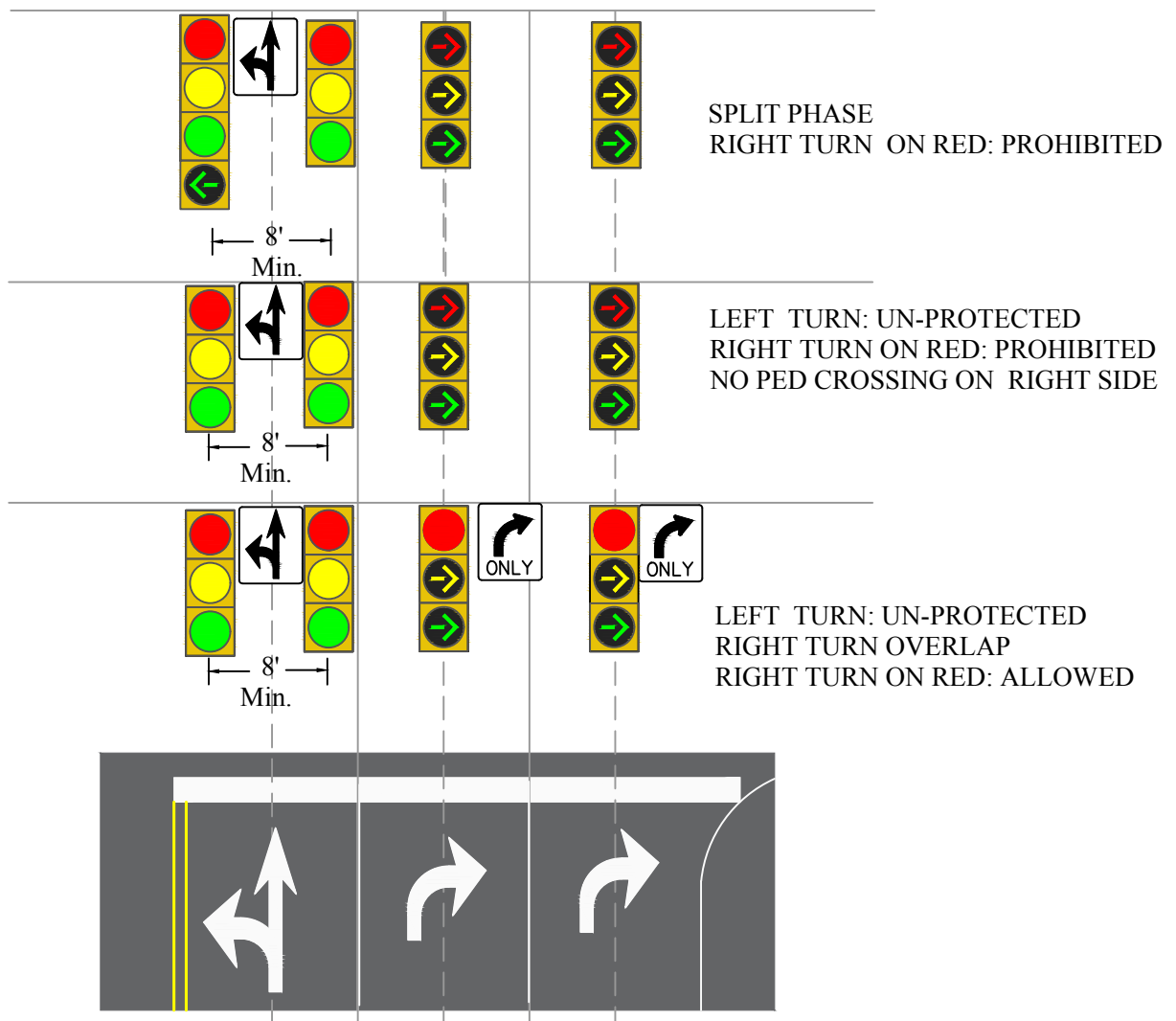
* SHALL BE USED OVER A DROP LANE AND ONLY ON CASE BY CASE BASIS OVER A BAY LANE

3 Lane Approach

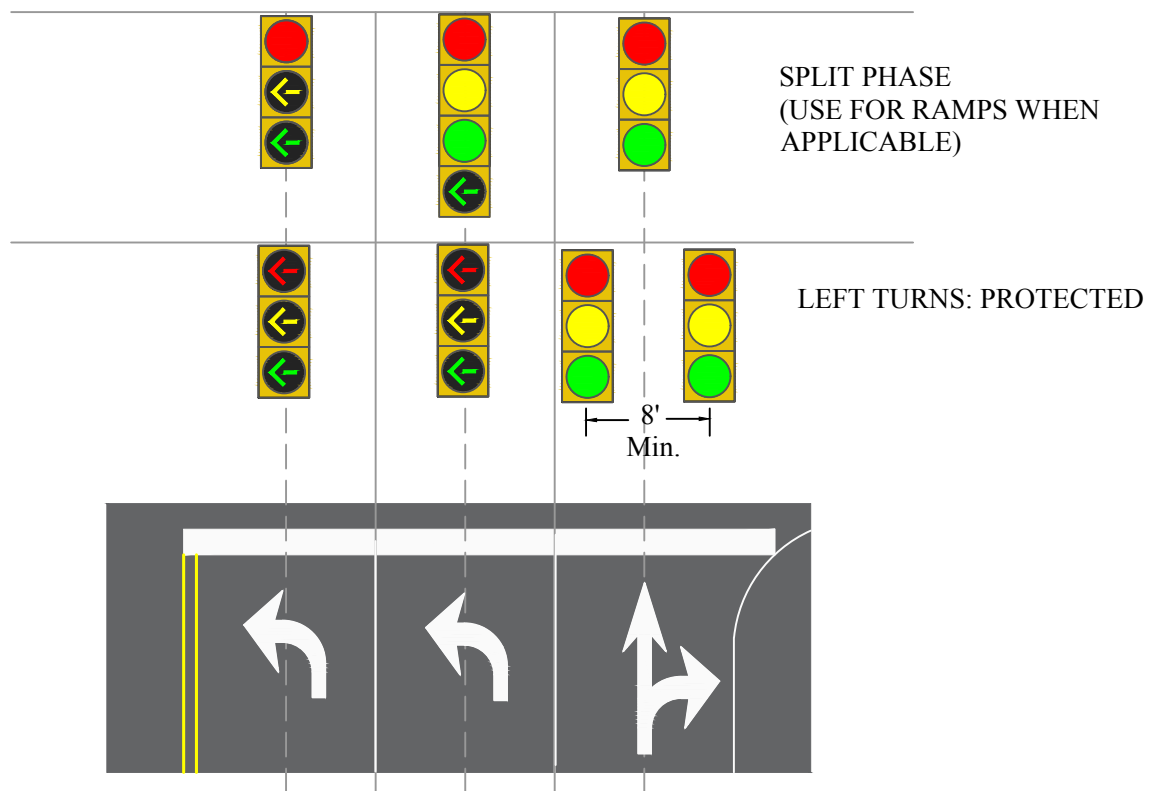


* SHALL BE USED OVER A DROP LANE AND ONLY ON CASE BY CASE BASIS OVER A BAY LANE

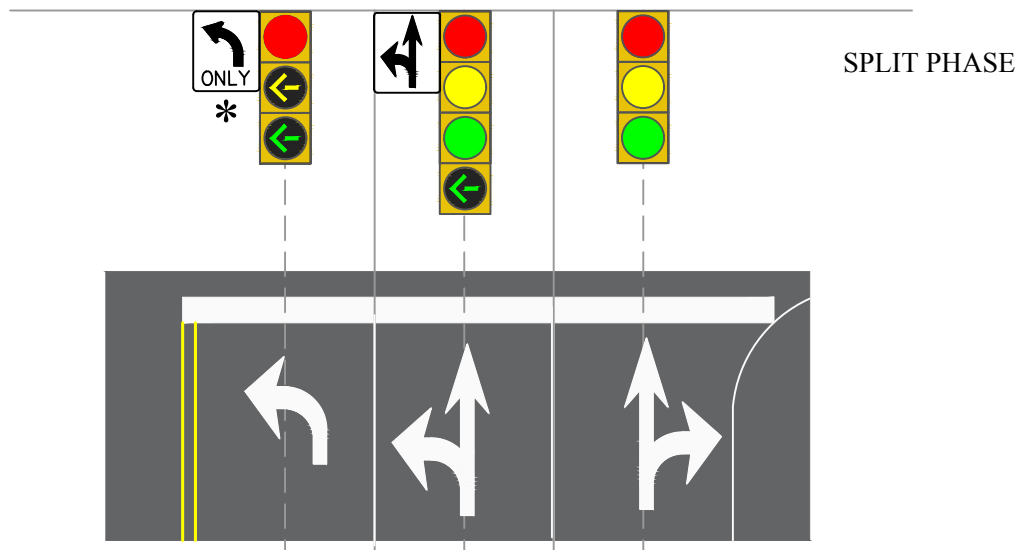
3 Lane Approach



3 Lane Approach

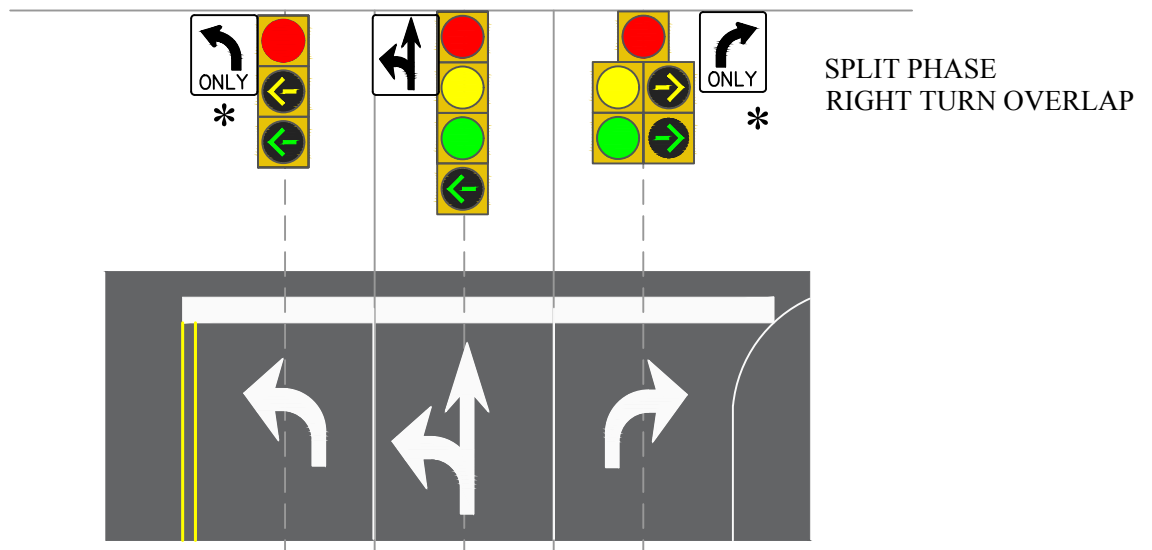


3 Lane Approach



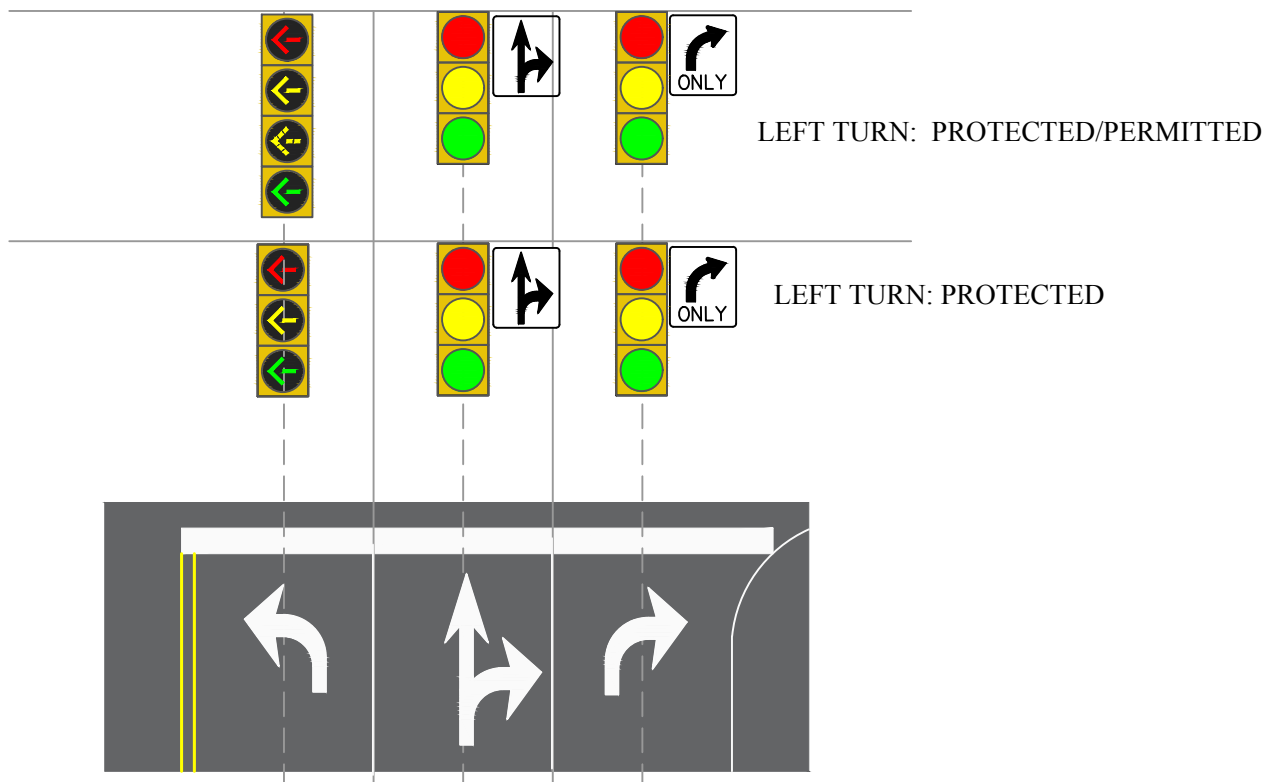
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3 Lane Approach

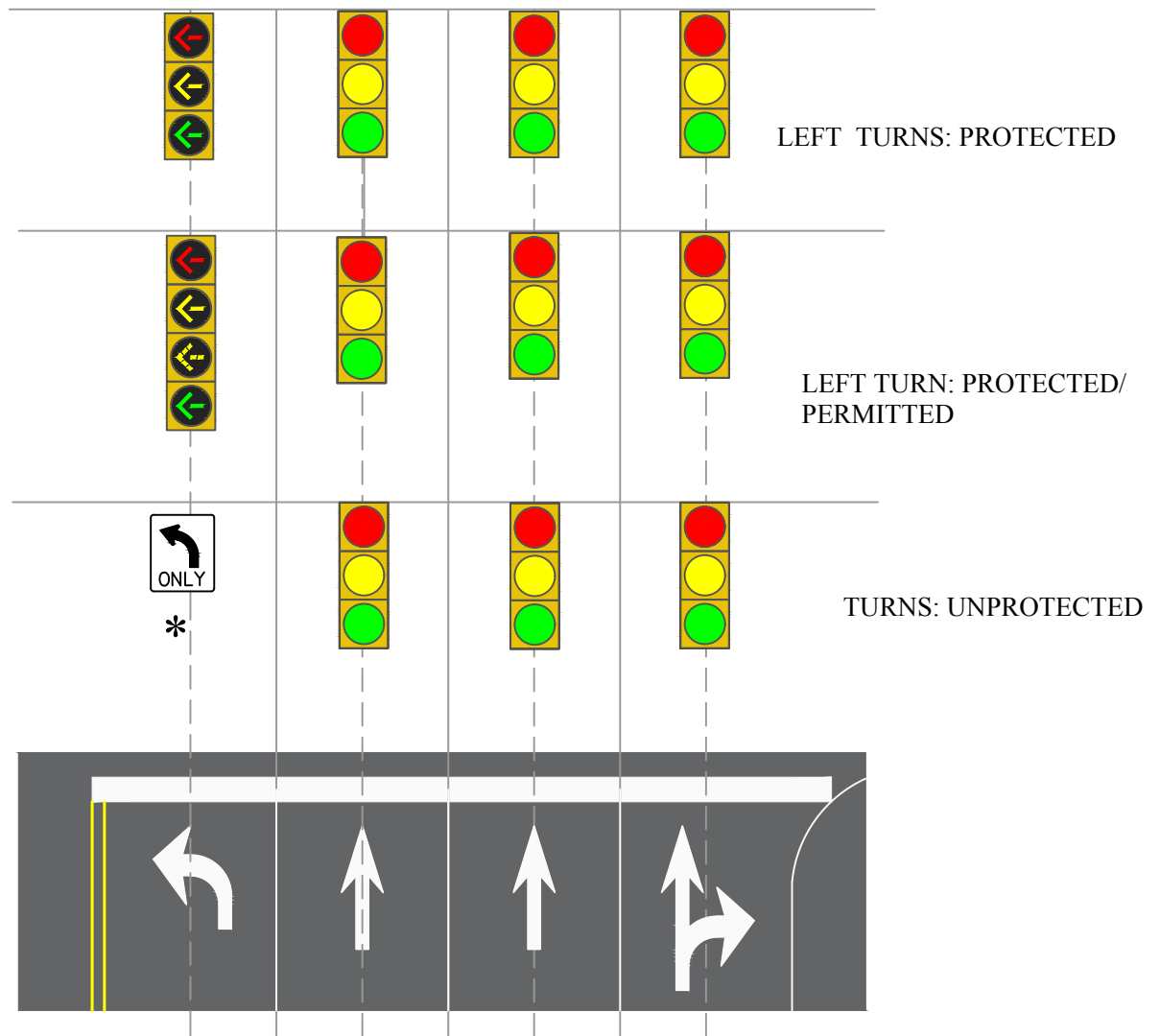


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3 Lane Approach

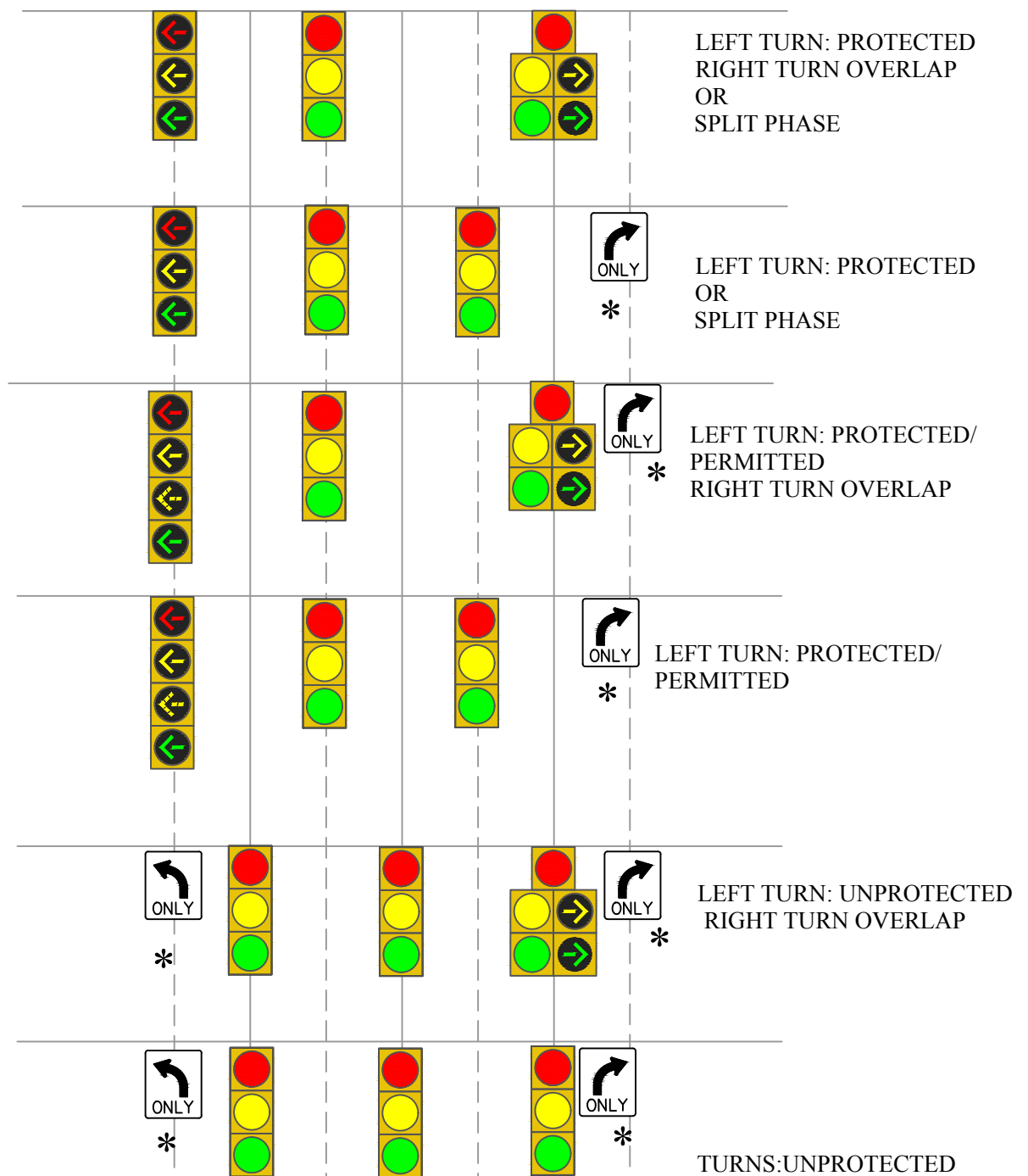


4 Lane Approach

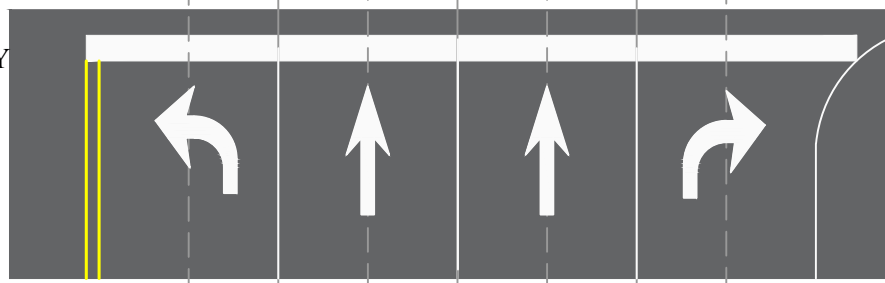


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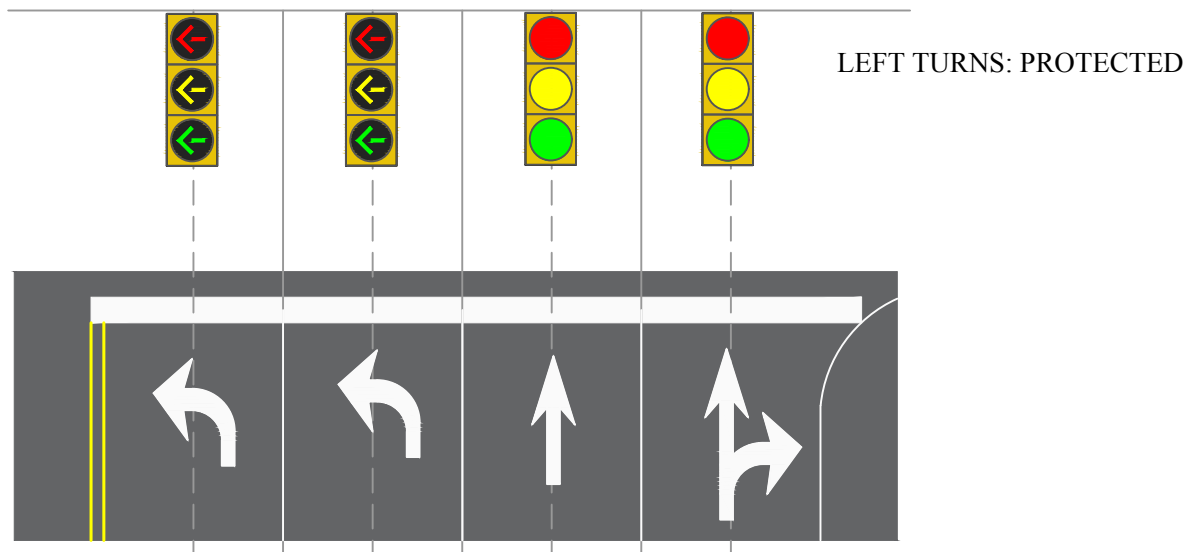
4 Lane Approach



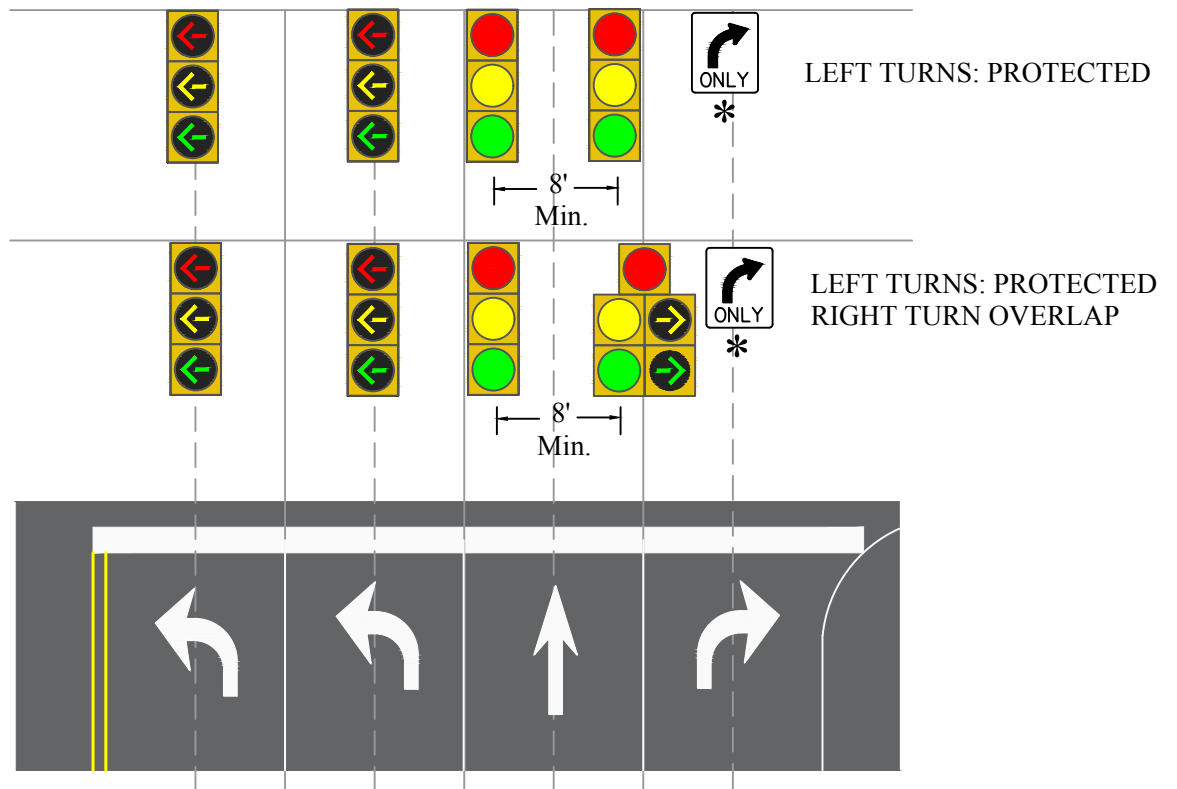
* SHALL BE USED
OVER A DROP
LANE AND ONLY
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CASE BASIS
OVER A BAY
LANE



4 Lane Approach

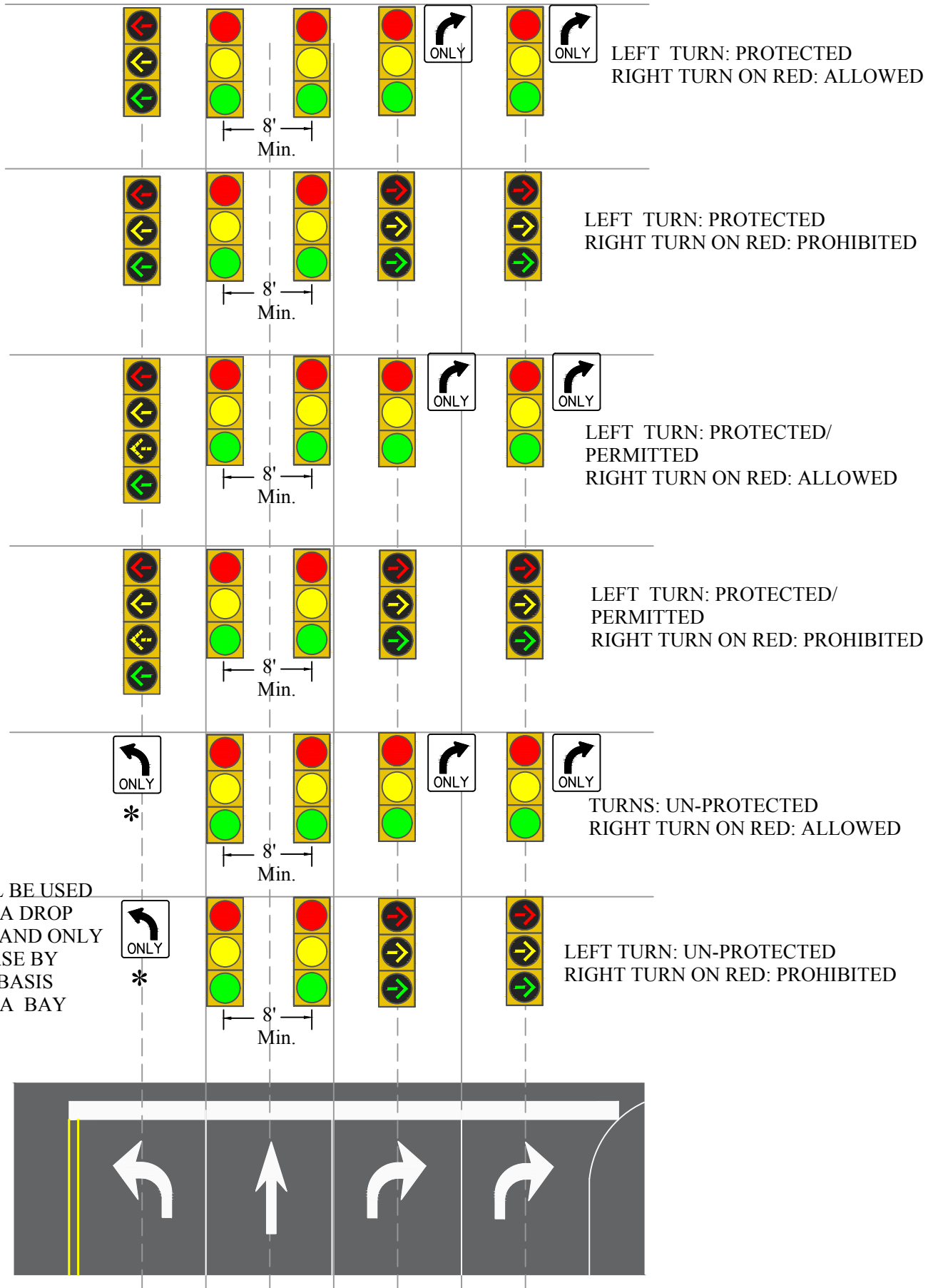


4 Lane Approach

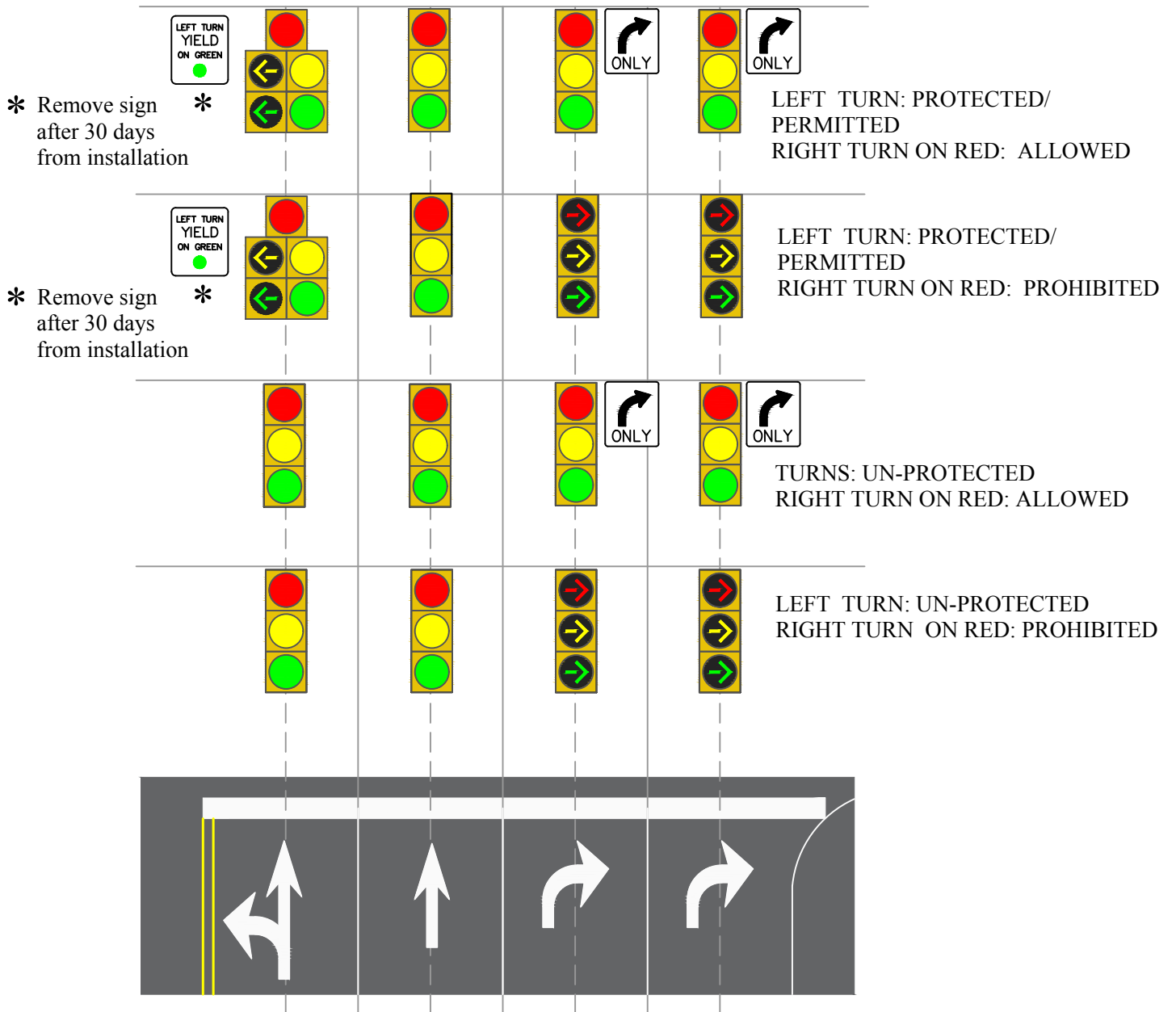


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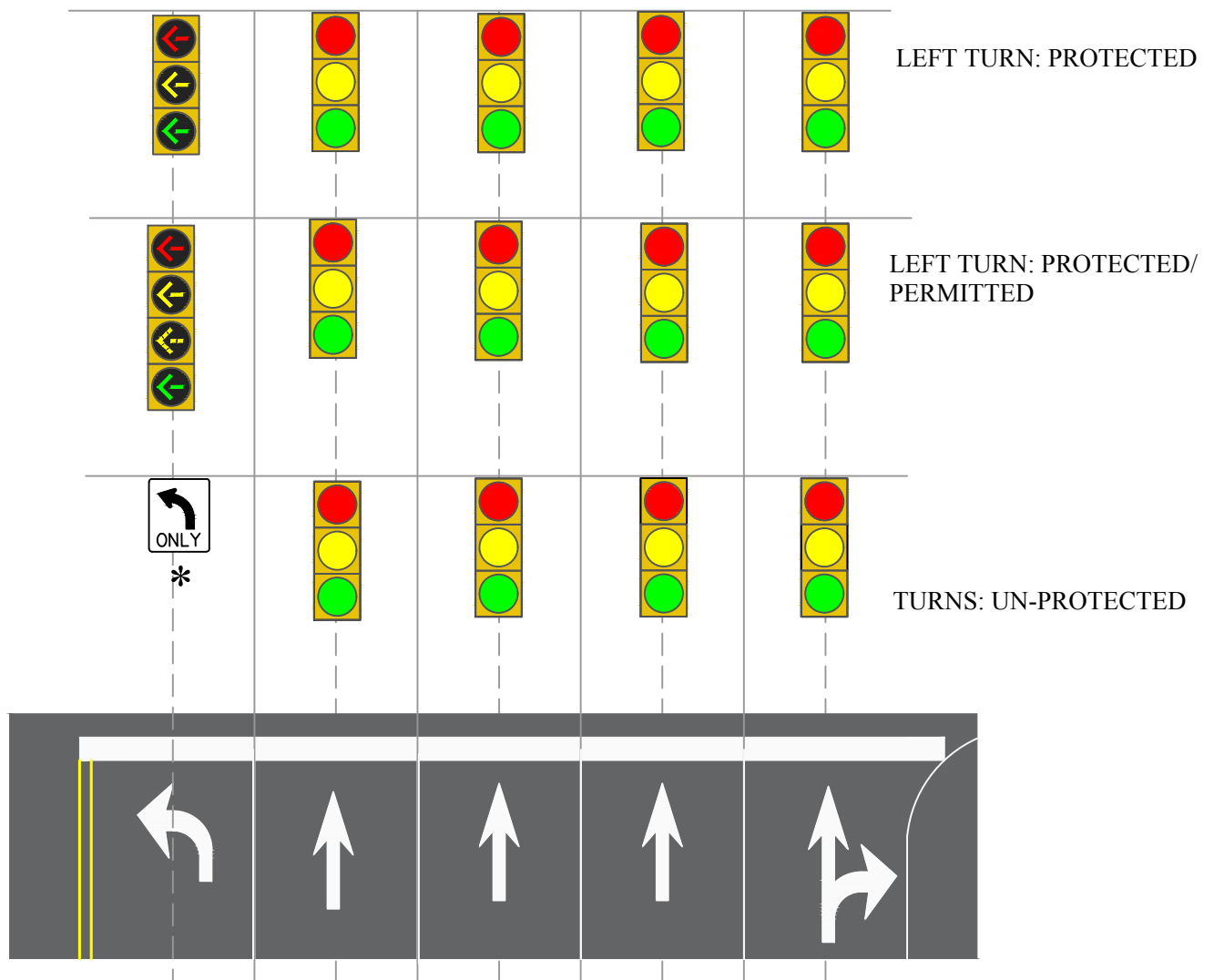
4 Lane Approach



4 Lane Approach

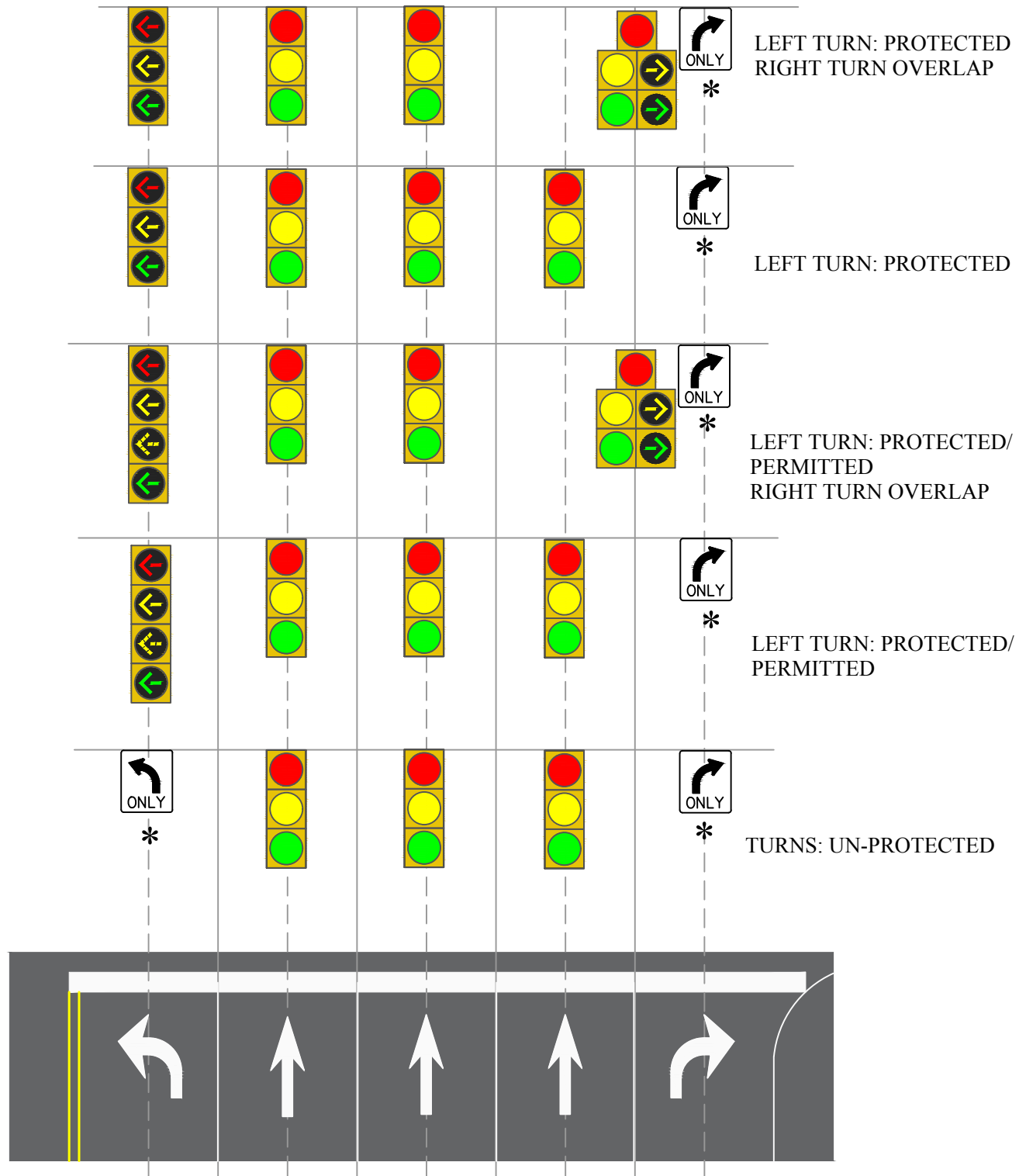


5 Lane Approach



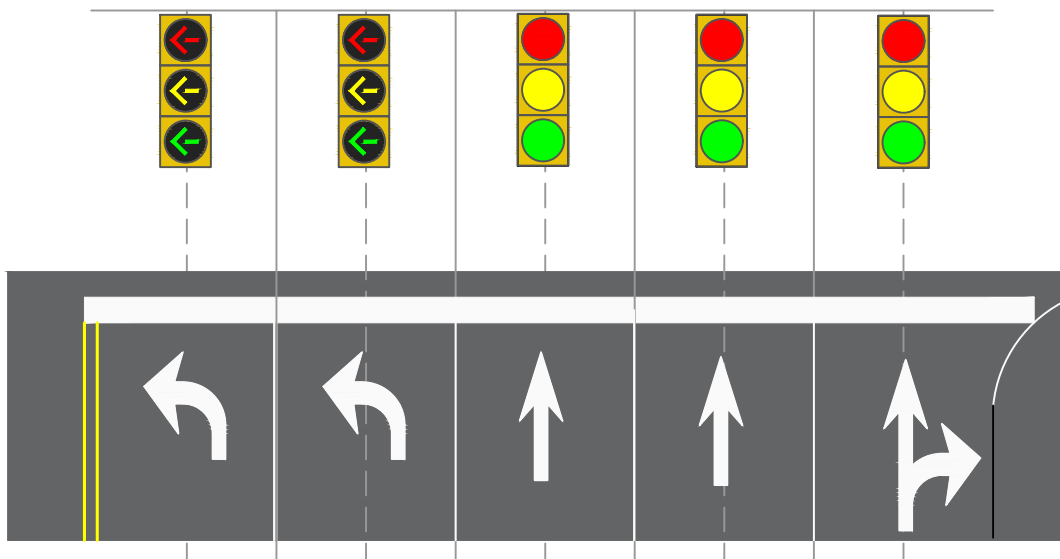
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5 Lane Approach

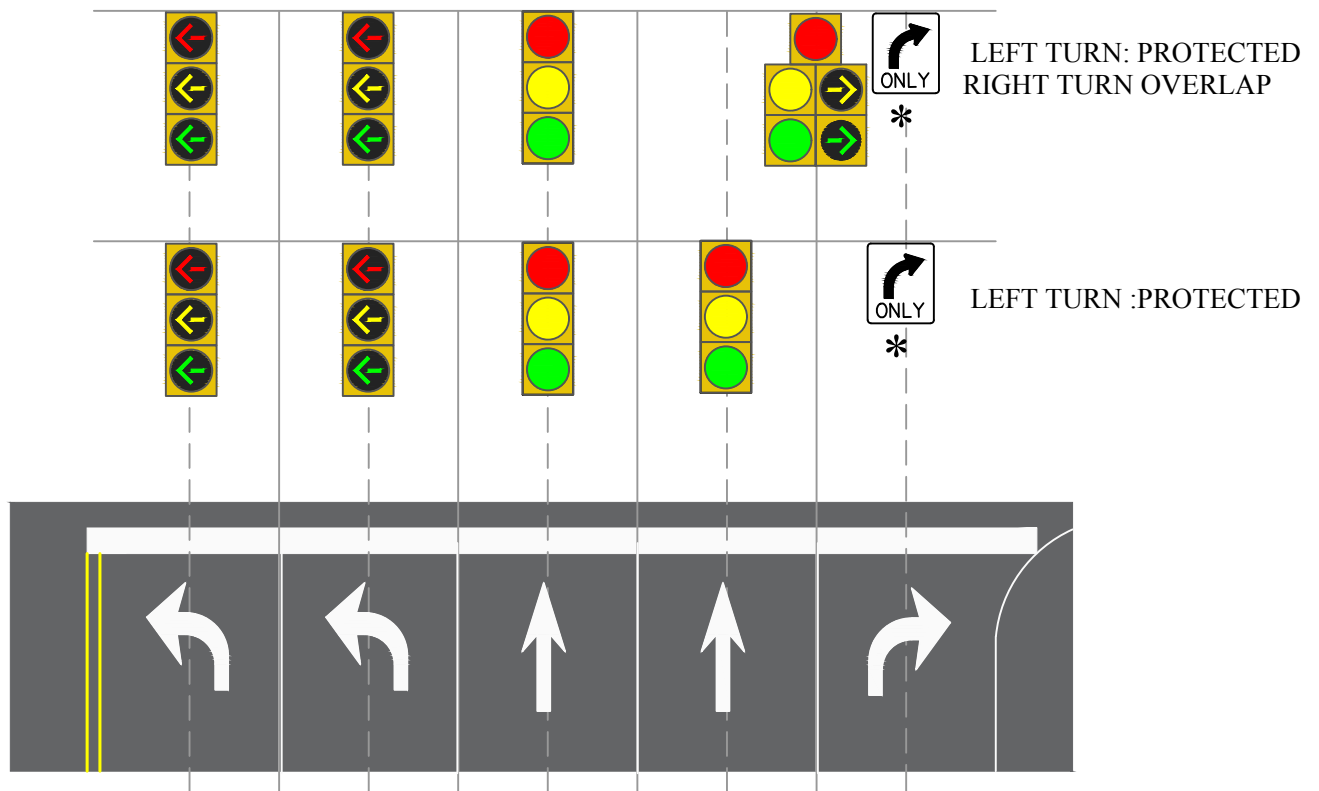


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5 Lane Approach

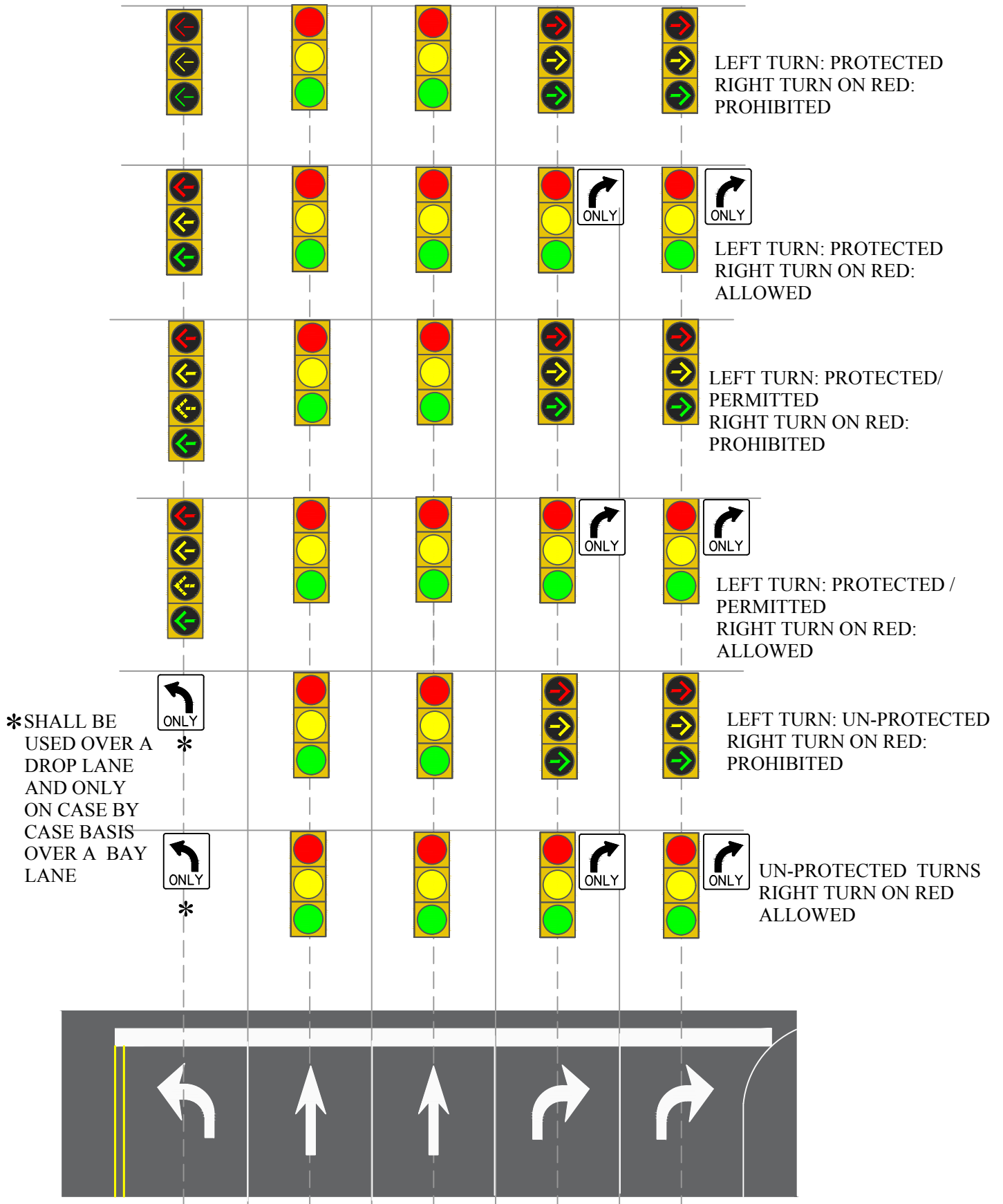


5 Lane Approach

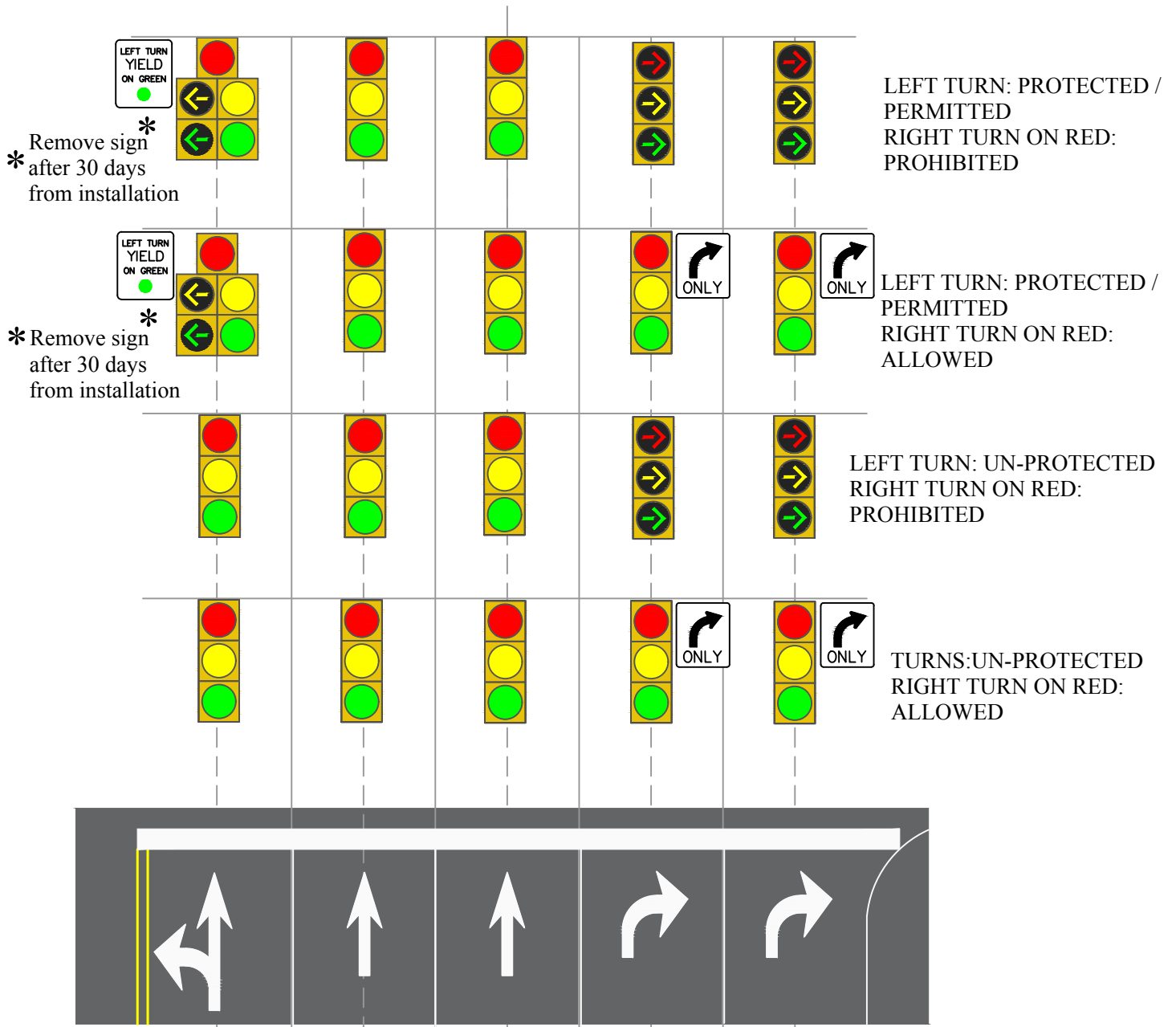


* SHALL BE USED OVER A DROP LANE AND ONLY ON CASE BY CASE BASIS OVER A BAY LANE

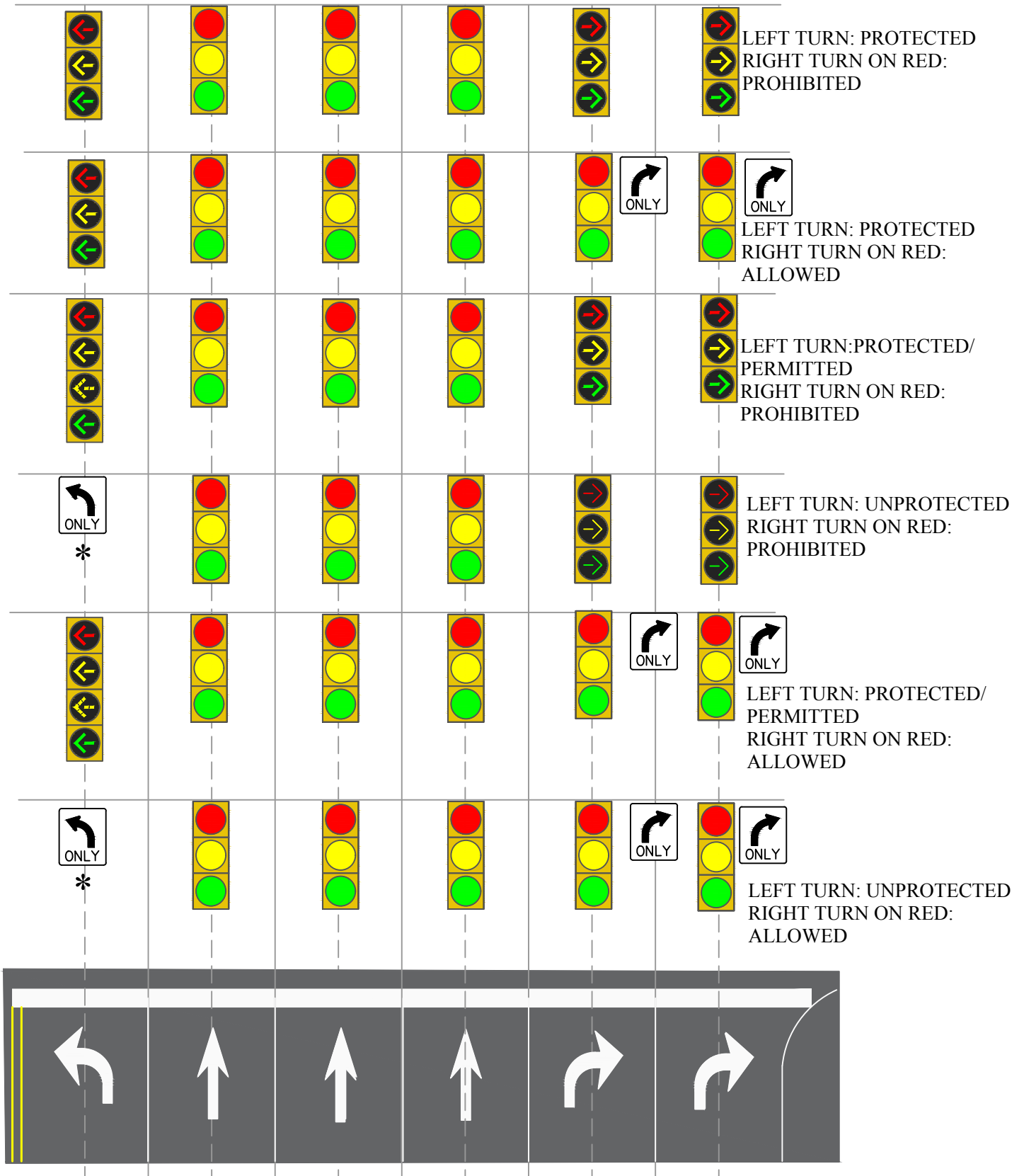
5 Lane Approach



5 Lane Approach

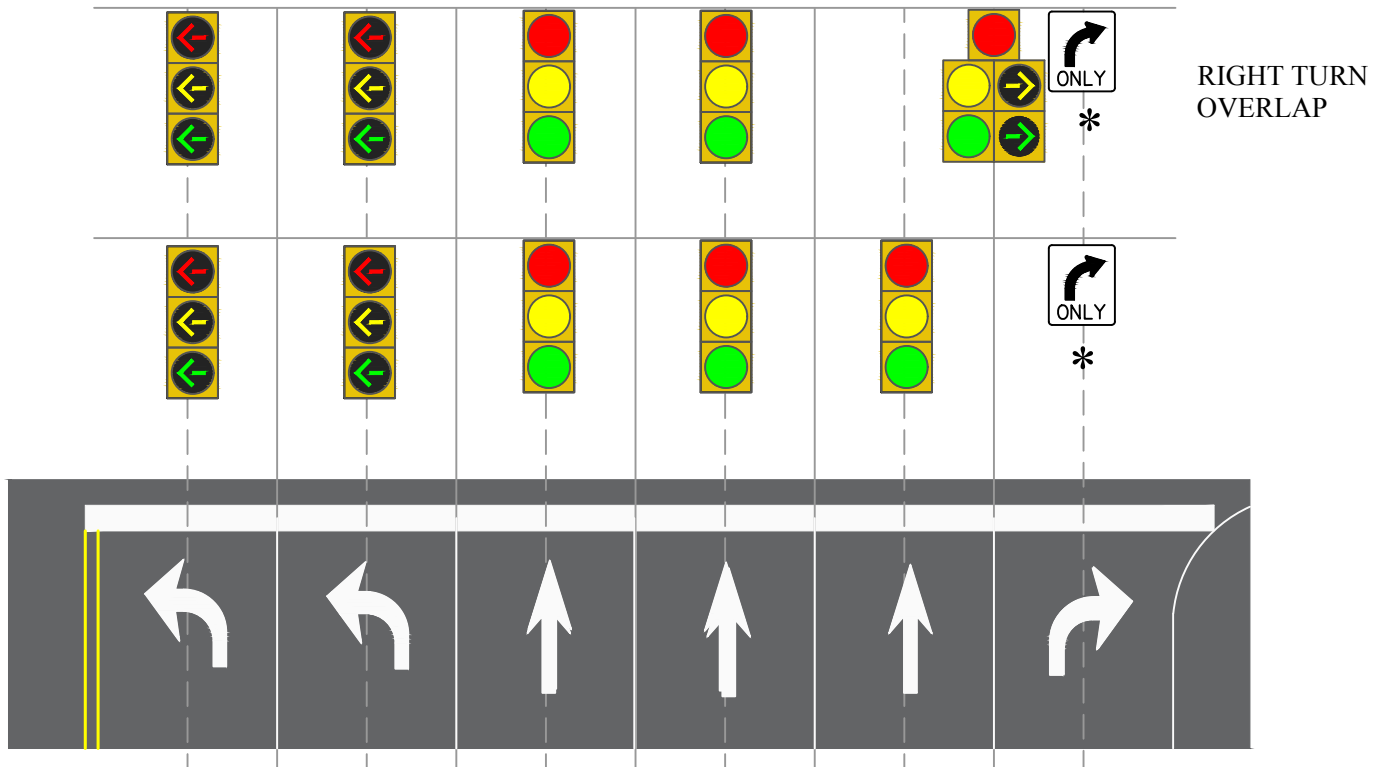


6 Lane Approach 3 Thru Lanes + Turn Lanes



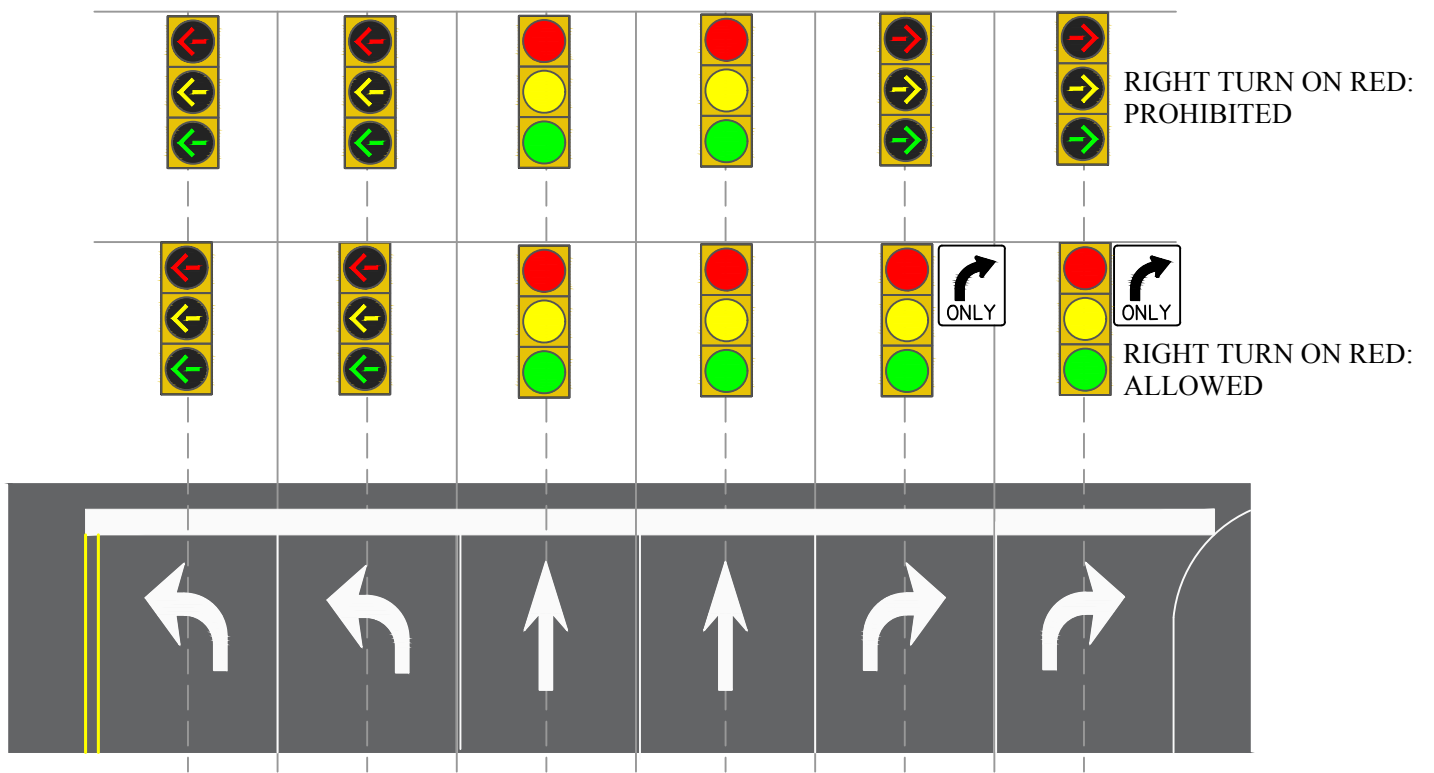
* SHALL BE USED OVER A DROP LANE AND ONLY ON CASE BY CASE BASIS OVER A BAY LANE

6 Lane Approach 3 Thru Lanes + Turn Lanes

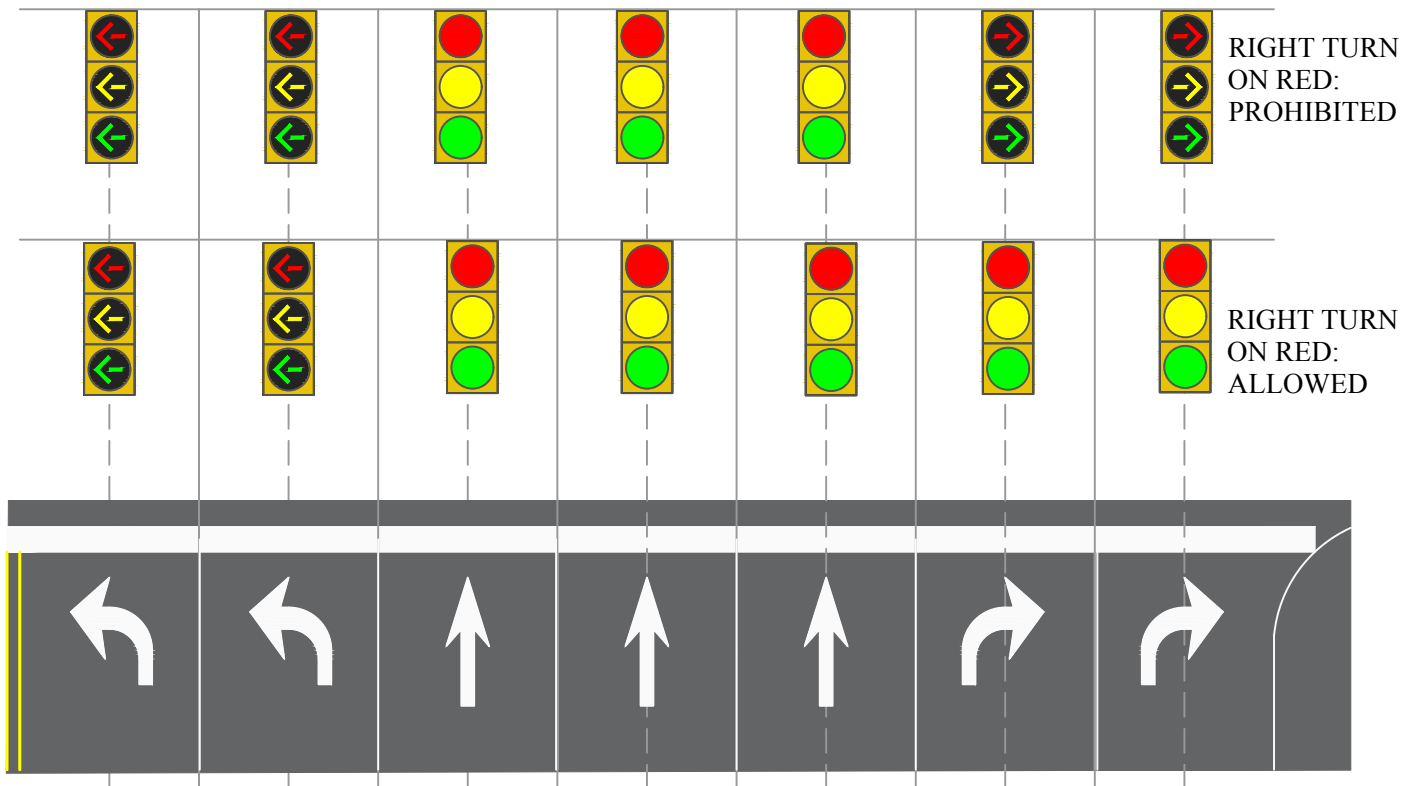


* SHALL BE USED OVER A DROP LANE AND ONLY ON CASE BY CASE BASIS OVER A BAY LANE

6 Lane Approach 3 Thru Lanes + Turn Lanes

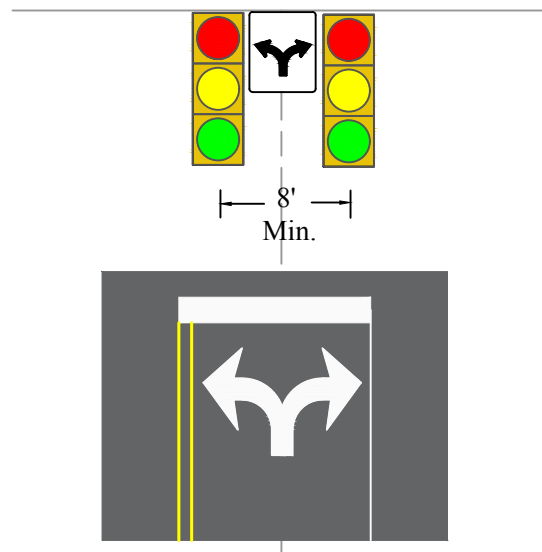


7 Lane Approach 3 Thru Lanes + Turn Lanes



STEM OF "T" Intersection *

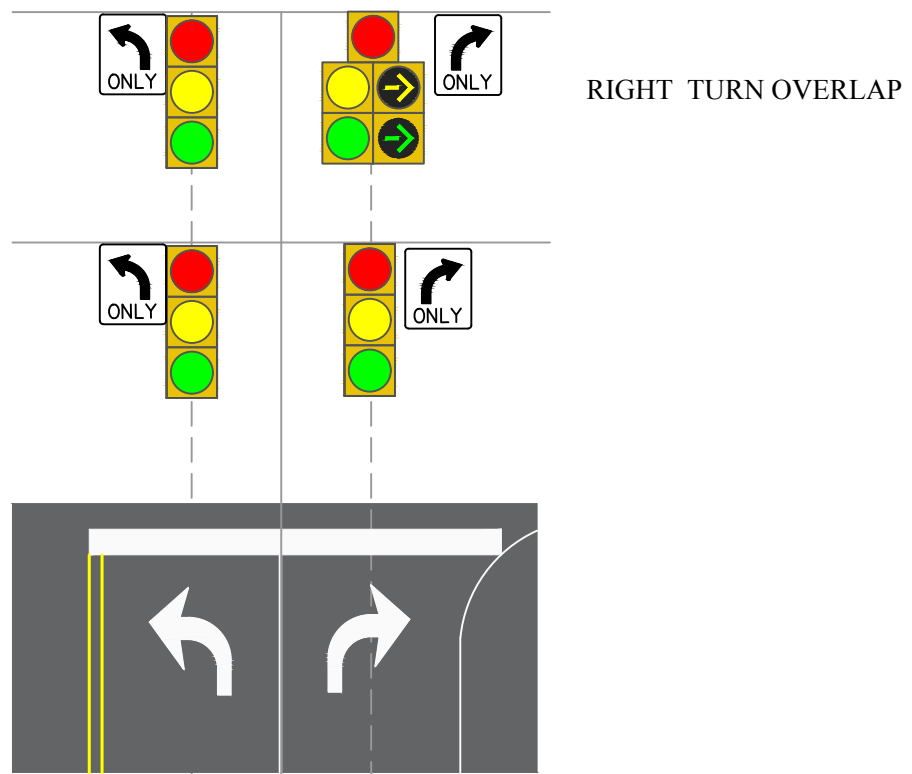
1 Lane Approach



- * ALL STEM OF "T" APPROACHES SHALL HAVE THE FOLLOWING SIGNAGE:
OVERHEAD LANE CONTROL SIGNS
GROUND MOUNTED LANE CONTROL SIGNS, "T" INTERSECTION WARNING SIGN, END
OF ROAD RED DIAMOND SIGNS, AND A BIG ARROW/DOUBLE ARROW YELLOW SIGN.

STEM OF "T" Intersection *

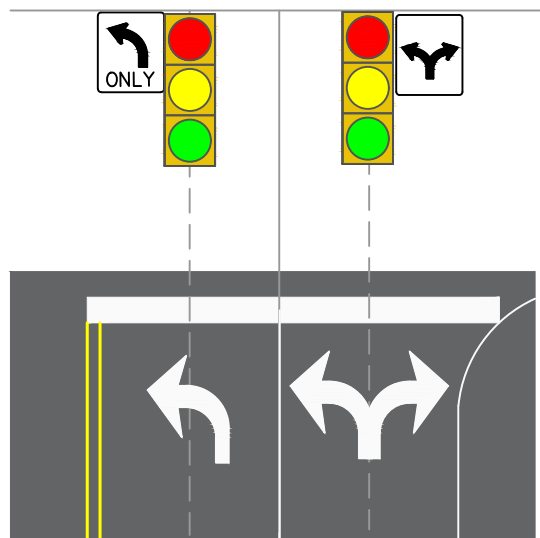
2 Lane Approach



- * ALL STEM OF "T" APPROACHES SHALL HAVE THE FOLLOWING SIGNAGE:
OVERHEAD LANE CONTROL SIGNS
GROUND MOUNTED LANE CONTROL SIGNS, "T" INTERSECTION WARNING SIGN, END OF ROAD RED DIAMOND SIGNS, AND A BIG ARROW/DOUBLE ARROW YELLOW SIGN.

STEM OF "T" Intersection *

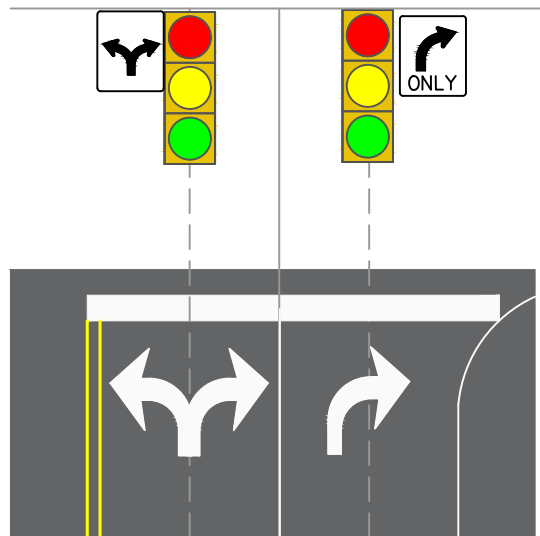
2 Lane Approach



- * ALL STEM OF "T" APPROACHES SHALL HAVE THE FOLLOWING SIGNAGE:
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GROUND MOUNTED LANE CONTROL SIGNS, "T" INTERSECTION WARNING SIGN, END OF ROAD RED DIAMOND SIGNS, AND A BIG ARROW/DOUBLE ARROW YELLOW SIGN.

STEM OF "T" Intersection *

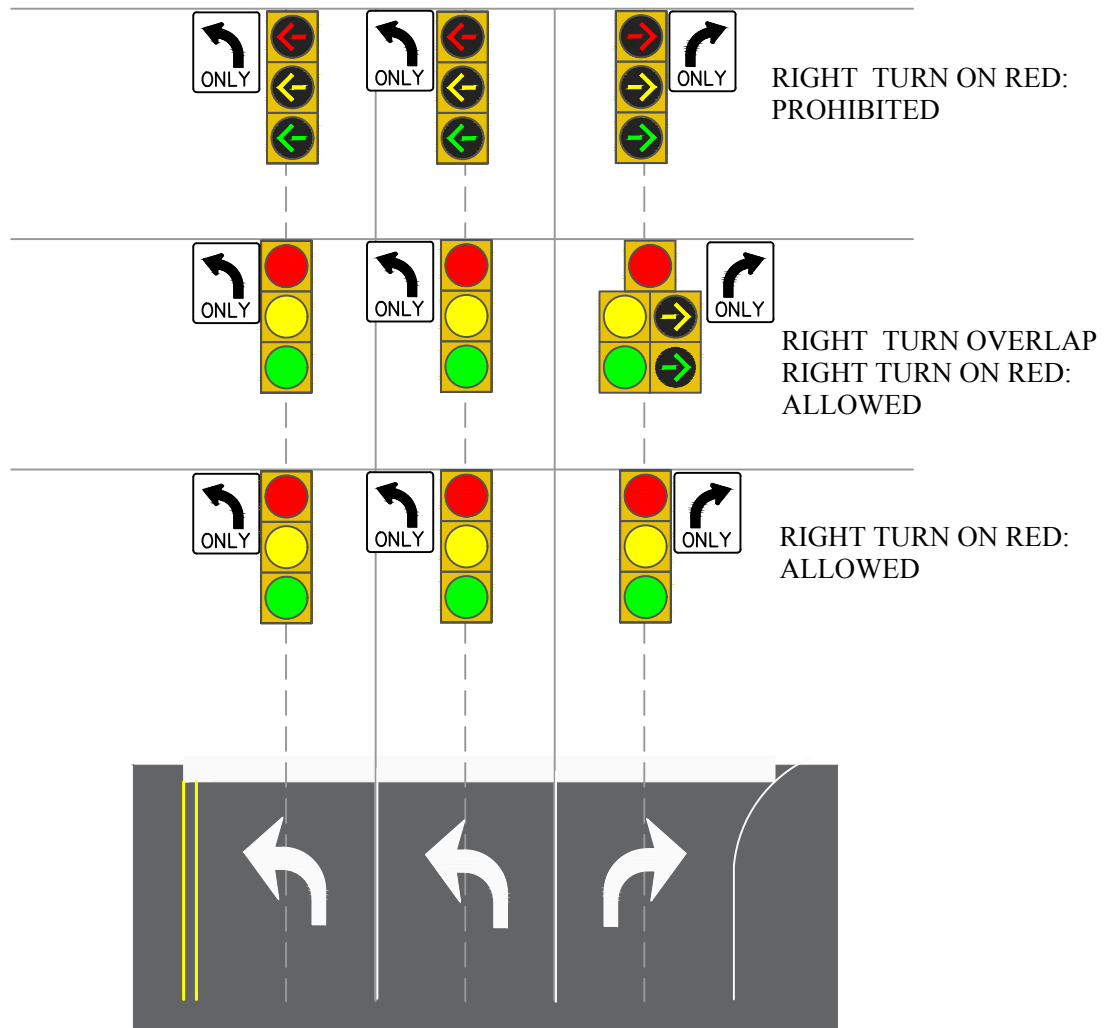
2 Lane Approach



- * ALL STEM OF "T" APPROACHES SHALL HAVE THE FOLLOWING SIGNAGE:
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STEM OF "T" Intersection *

3 Lane Approach

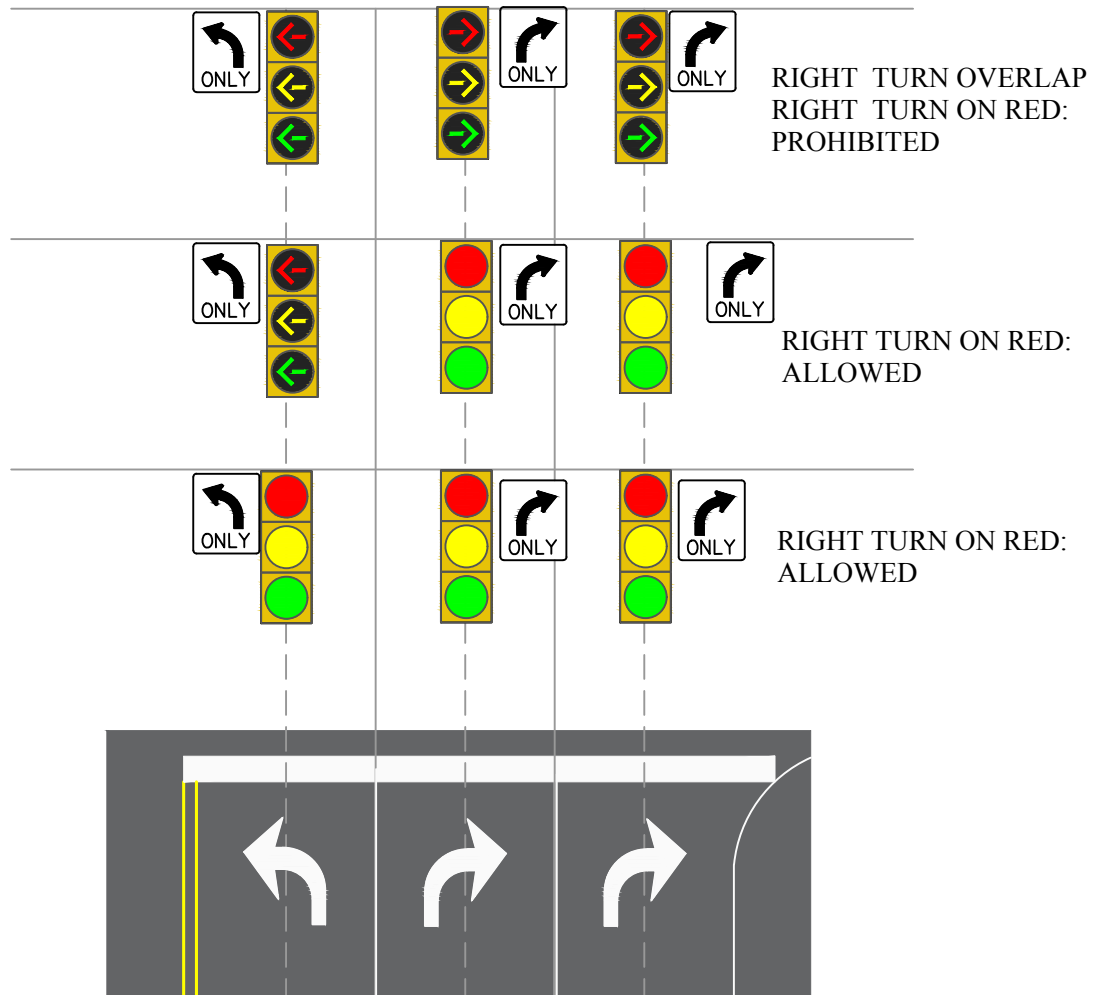


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 GROUND MOUNTED LANE CONTROL SIGNS, "T" INTERSECTION WARNING SIGN, END OF ROAD RED DIAMOND SIGNS, AND A BIG ARROW/DOUBLE ARROW YELLOW SIGN.

STEM OF "T" Intersection *

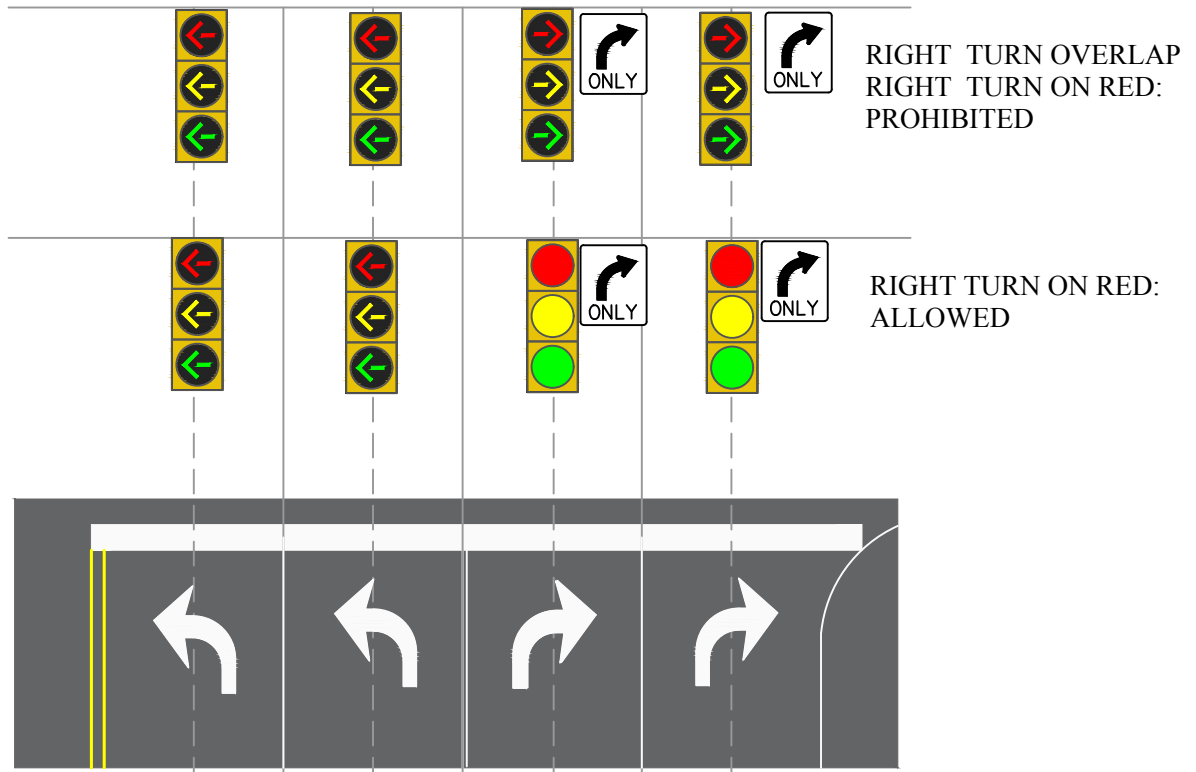
3 Lane Approach



*

ALL STEM OF "T" APPROACHES SHALL HAVE THE FOLLOWING SIGNAGE:
 OVERHEAD LANE CONTROL SIGNS
 GROUND MOUNTED LANE CONTROL SIGNS, "T" INTERSECTION WARNING SIGN, END OF ROAD RED DIAMOND SIGNS, AND A BIG ARROW/DOUBLE ARROW YELLOW SIGN.

STEM OF "T" Intersection 4 Lane Approach



Channelized Dual Rights

FOR THRU AND LEFT TURN
MOVEMENTS, CHOOSE SIGNAL
CONFIGURATION THAT MATCHES
LANES USES SHOWN IN THIS
DOCUMENT KEEPING IN MIND THAT
NO RIGHT TURNS ARE ALLOWED
FROM THE LEFT SIDE OF
CHANNELIZING ISLAND.



RIGHT TURN
ON RED: ALLOWED
RIGHT TURN OVERLAP

FOR THRU AND LEFT TURN
MOVEMENTS, CHOOSE SIGNAL
CONFIGURATION THAT MATCHES
LANES USES SHOWN IN THIS
DOCUMENT KEEPING IN MIND THAT
NO RIGHT TURNS ARE ALLOWED
FROM THE LEFT SIDE OF
CHANNELIZING ISLAND.



RIGHT TURN
ON RED: PROHIBITED
RIGHT TURN OVERLAP

