



Traffic Signal Design Manual

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| ORIGINATOR Director, Bureau of Highway Operations | | 3-4-4 |
| CHAPTER 3 | Project Scoping Process & Geometric Design Considerations | |
| SECTION 4 | Operational Considerations | |
| SUBJECT 4 | Overlap | |

General

An overlap is a vehicle movement that operates with more than one parent phase. Overlap movements will display a green when the phases to which the overlap is assigned is green. Usually a three-section head with right arrows controls the overlap movement (red ball and yellow and green arrows). Clearance (yellow and red) timings for the overlap signal indications are determined by the phase of the overlap.

To distinguish from the basic vehicle and pedestrian phases, overlaps are designated alphabetically by letters (i.e., A, B, C, etc.). The overlap chart is located on the Sequence of Operations Sheet. The overlap *should* only be shown if it contains two (2) or more phases. The chart *should* indicate which phases the overlap times concurrently.

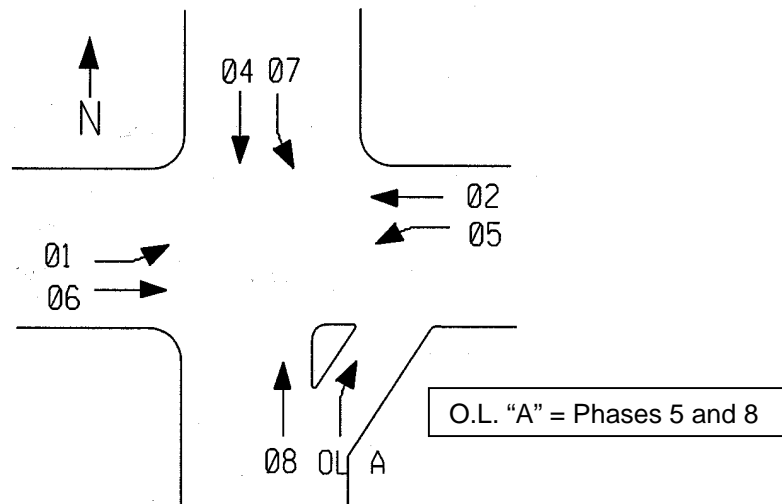


Figure 1
Overlap Diagram

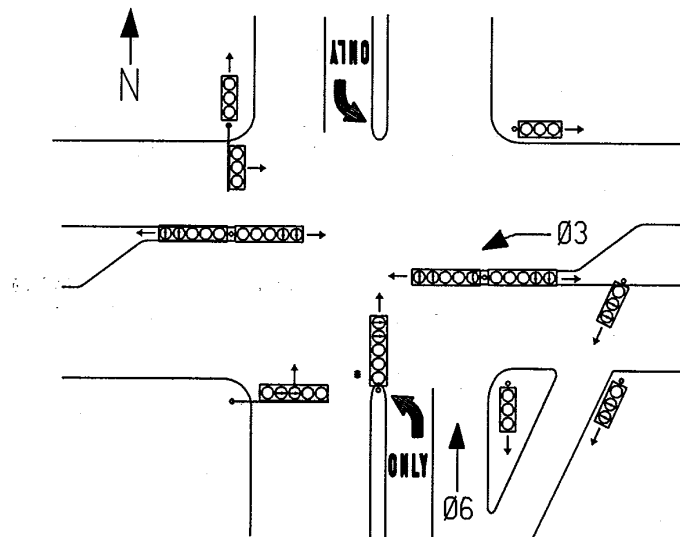
In the example above, overlap “A” is a right-turn movement operating in conjunction with the complementary left turn movement (phase 5) and will also operate with the adjacent through movement (phase 8). Under this scenario, time given to the right turn overlap is governed by the associated left turn demand or the adjacent through movement depending on which phase is operating, not the right turn demand.

| | |
|------------|------------|
| O.L. “A” = | O.L. “E” = |
| O.L. “B” = | O.L. “F” = |
| O.L. “C” = | O.L. “G” = |
| O.L. “D” = | O.L. “H” = |

Figure 2
Overlap Chart

Geometrics

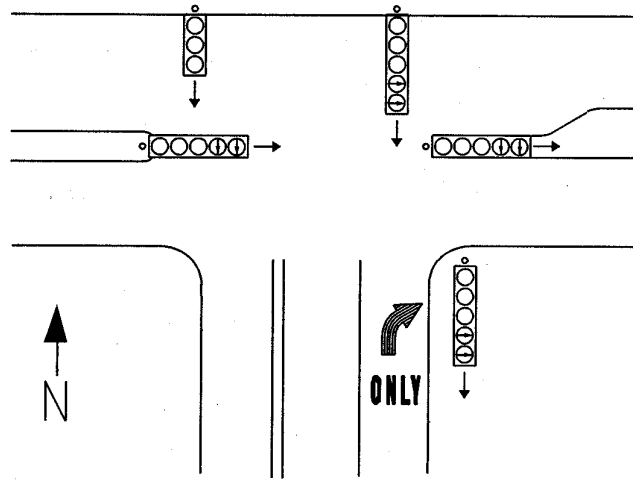
Right turn overlaps are best utilized at locations where there is an exclusive right turn lane, a complementary left turn lane and a left turn phase on the crossing street. Refer to figures 3 and 4 below for examples of typical signal head layouts with overlaps.



NOTE: Signal heads only shown for EB/WB/SB left-turns and NB right-turn indications. 5-section heads are normally not recommended on right-turn bypasses, and may be dependent on opposing left-turn volumes. See Regional Traffic Engineer for guidance. *If no median, then the signal head should be placed in for-left channelizing island.

Figure 3
Right Turn Overlap
with 3-Section Heads

The use of a protected only versus a permissive left turn for the southbound left turn movement (Phase 5) is dependant on receiving approach geometrics and intersection turning movement volumes. The Regional Traffic Engineer **shall** be consulted.



NOTE: Signal heads only shown for EB/WB left-turns and NB right-turn indications

Figure 4
Right Turn Overlap at T-intersection

Interchanges

At interchanges, overlaps are commonly used in conjunction with the ramp phases and the through phases between the ramps when one controller is used.

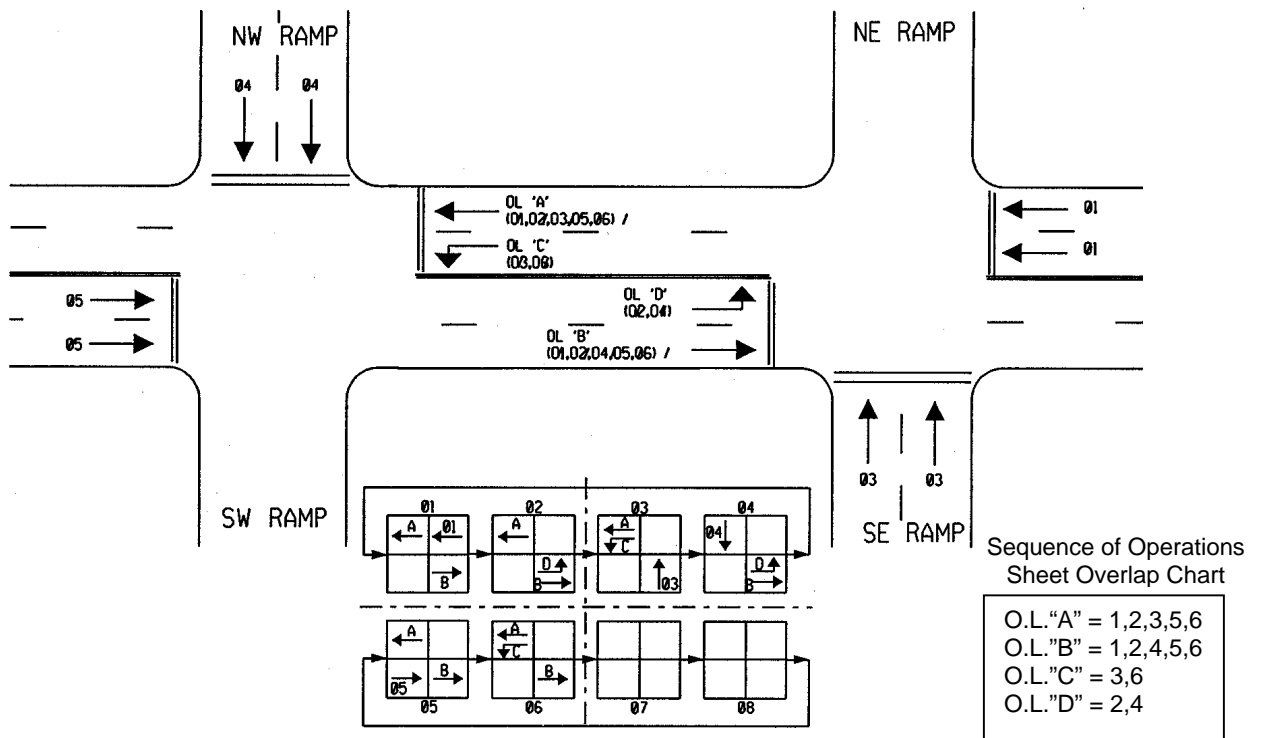


Figure 5
Single Controller – Dual Ring

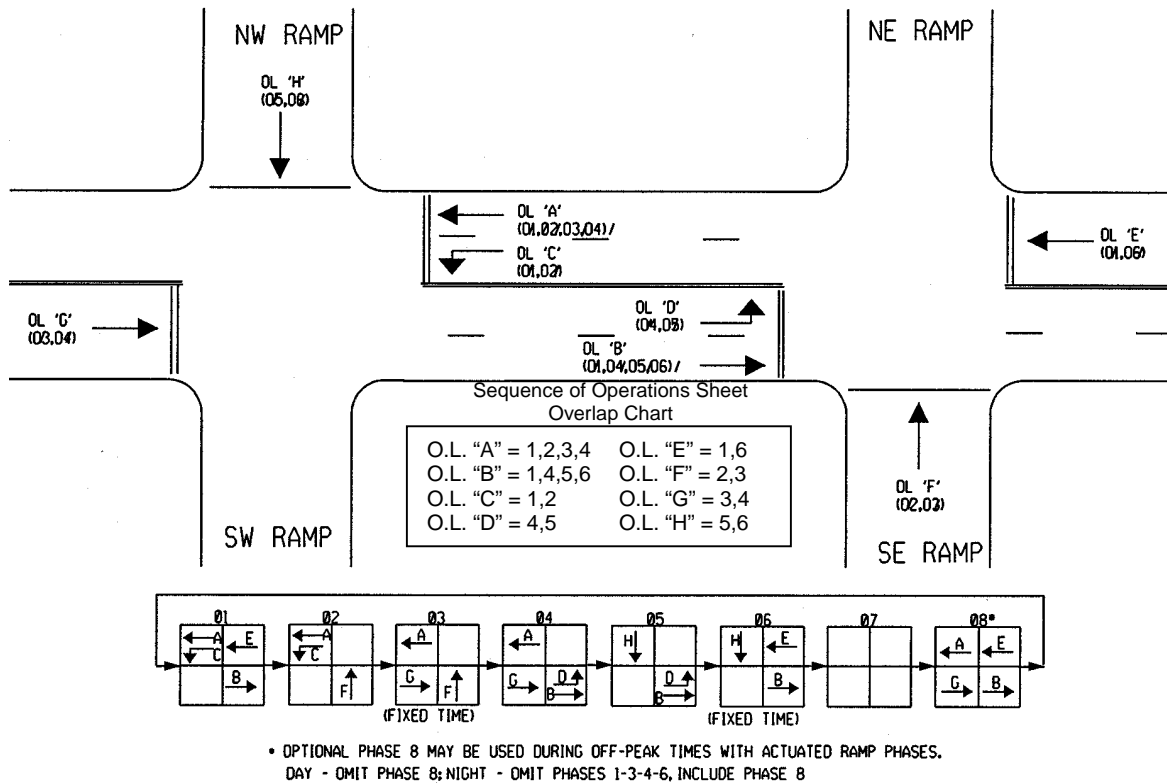


Figure 6
TTI Lead – Sequential Interchange

Pedestrian Considerations

In areas where pedestrian demands are high, particularly in central business districts, school crossings, or locations associated with special events, the use of right turn overlaps *should* be carefully evaluated with respect to pedestrian safety.