August 21, 1997

DUAL ENTRY

When checking timing values of multi-phase intersections during inspection, it is important to make sure that the dual entry settings are correct. Note that "dual entry" is a NEMA term. The term "double entry" is used for Model 170 controllers.

As shown in Figure 1, activating dual entry operation at a signal allows non-conflicting vehicle phases to operate concurrently with the vehicle phase that is being serviced, even if there is no call on the non-conflicting phase. Dual entry operation, which is typically activated through front-panel programming of the signal controller, is a useful feature that improves the operational efficiency of an intersection by presenting a green indication to as many non-conflicting movements as possible.

When the side street has left turn phasing, a choice needs to be made as to exactly how dual entry operation is to function. For example, if actual demand exists for the side street left turn phase then the non-conflicting green indication can be given to the opposing left turn (see Figure 2). In this case, phase 7 receives a green arrow as well as phase 3, even though demand exists only on phase 3. On the other hand, the non-conflicting green indication can be given to the adjacent thru movement (see Figure 3). In this case, phase 8 receives a green ball even though it has no demand.

When the dual entry option shown in Figure 3 is selected then, if actual demand occurs on phase 7 during the time phases 3 and 8 are active the controller will not "back-up" to service this phase. This will force the phase 7 vehicle to wait through an entire cycle. This problem will not occur if the dual entry option shown in Figure 2 is selected. In this case, during the time phases 3 and 7 are active, the signal will cycle from phase 7 to phase 8 as soon as actual demand occurs on phase 8.

Some controllers give the operator flexibility in deciding which dual entry option to use whereas, in other controllers, the dual entry option is pre-programmed at the factory. When the choice is pre-programmed, the operator can only activate or deactivate dual entry, he or she cannot choose the type of dual entry.

To ensure that dual entry is always operative, some agencies require that it be "hard-wired" on the backpanel. When this is done, it makes no difference what settings are entered into the controller; the backpanel wiring will ensure continuous dual entry operation.

In conclusion it should be noted that signal contractors (or their signal equipment supplier) often forget to properly activate dual entry operation, resulting in less-than-optimal signal operation during periods when side street traffic volumes are low. Consequently, the inspector should remember to check this setting.

DUAL ENTRY

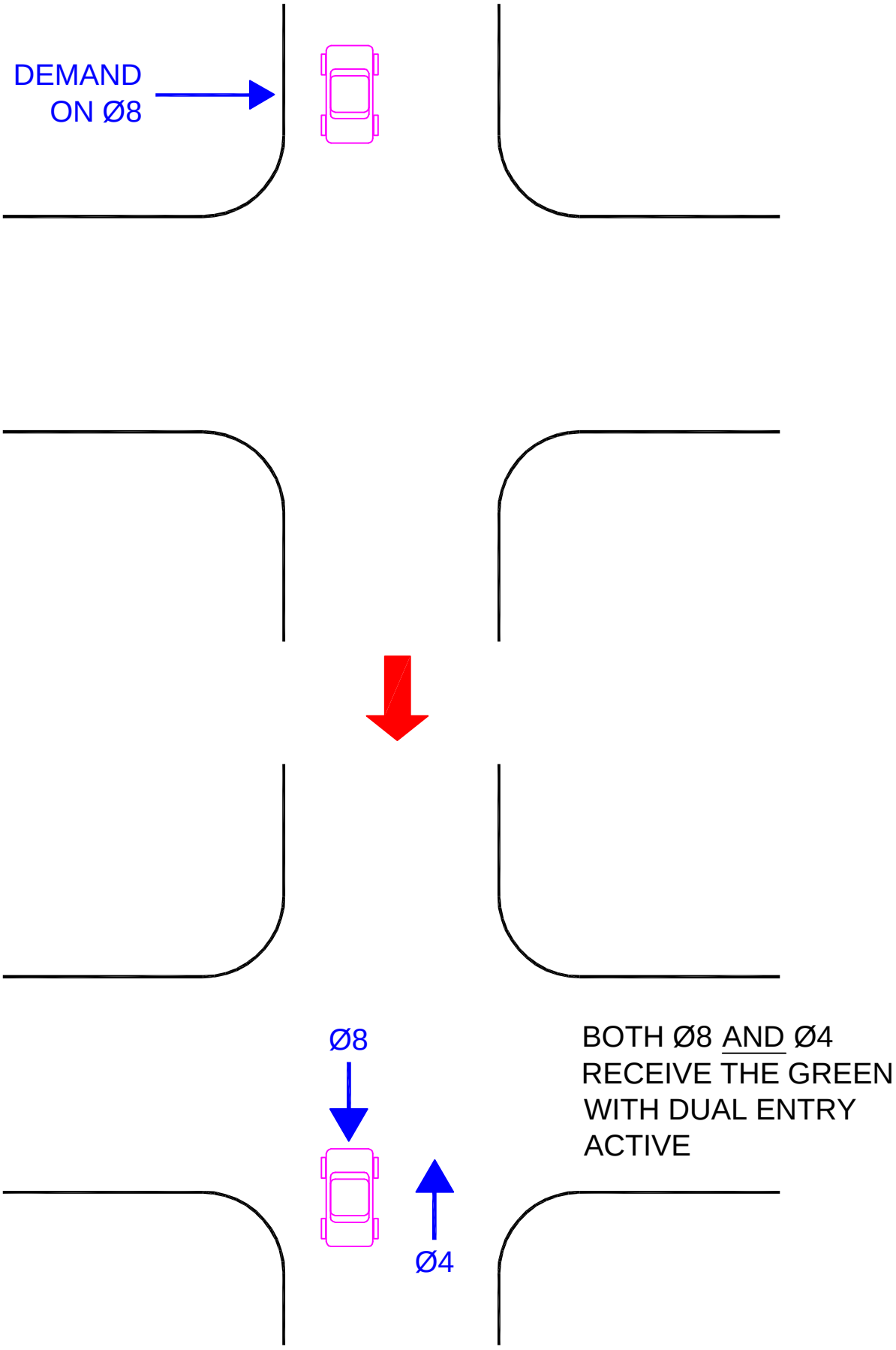

FIGURE 1

DUAL ENTRY
OPTION 1

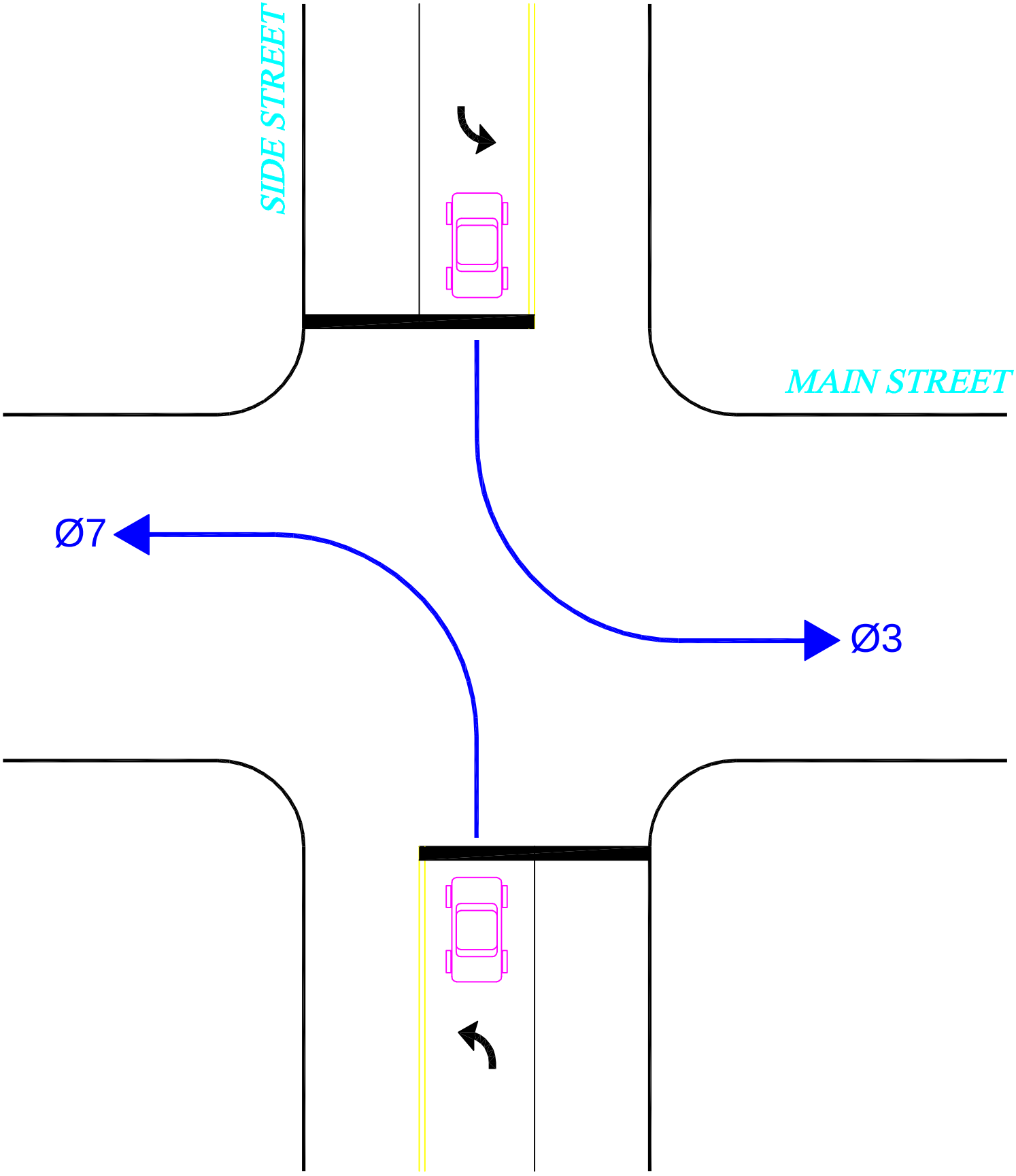

FIGURE 2

DUAL ENTRY
OPTION 2

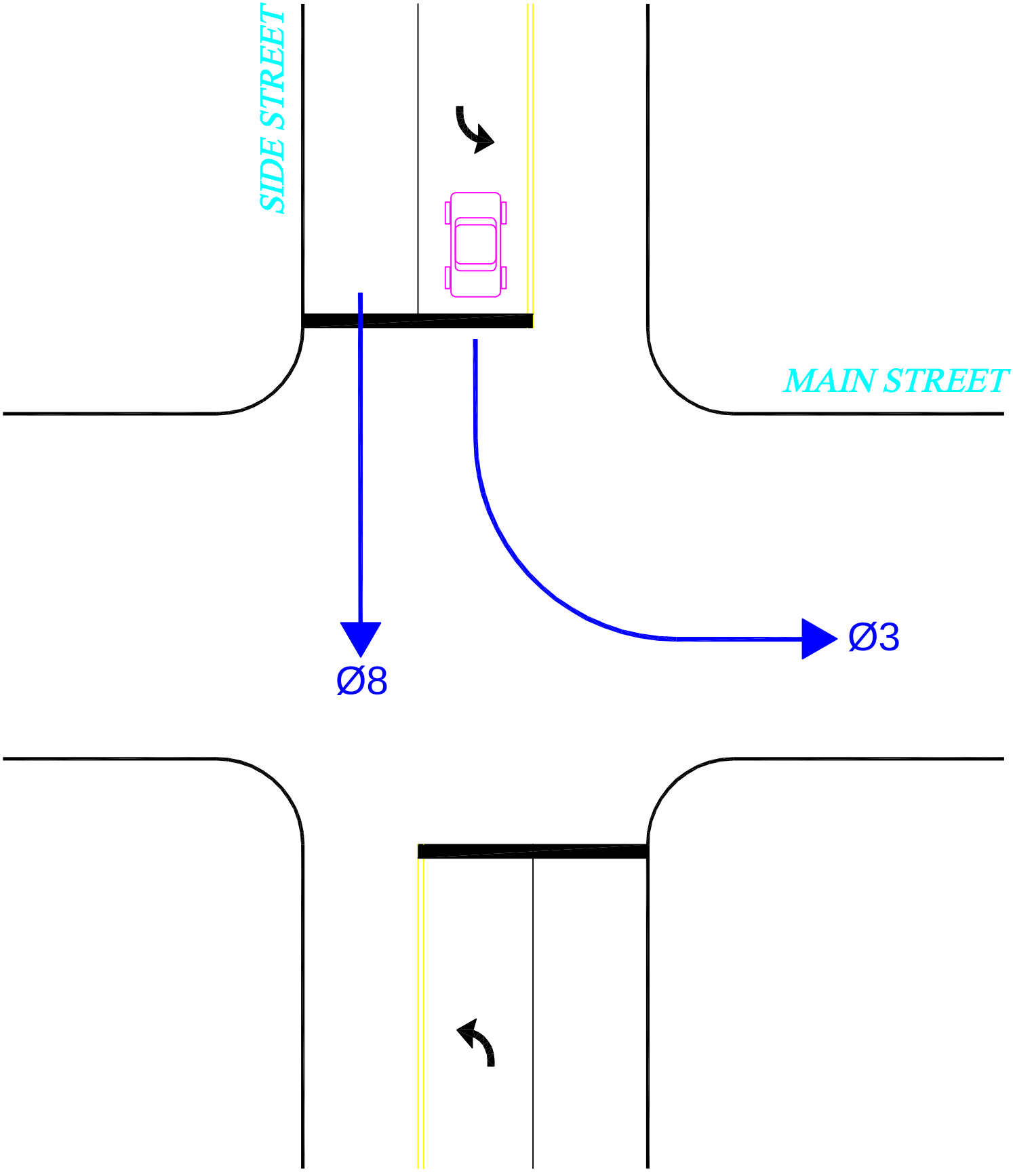

FIGURE 3