

Traffic operational analysis of the existing conditions at the interchange, as well as for the proposed DDI shall be performed to determine the appropriate DDI geometry and quantify the operational benefit in terms of delay (sec), queue lengths (ft), etc. The analyses shall be conducted for the existing traffic volumes for existing geometric conditions and DDI; and projected future traffic for existing geometric conditions and DDI, the projected year of analysis shall be discussed and determined with the VDOT project manager, it shall include any major change in traffic volume patterns anticipated due to land use, etc, this is necessary as the efficiency of a DDI is dependent on the traffic volume patterns.*

The analyses shall be based on the guidelines in VDOT's latest version of the Traffic Operations Analysis Tools Guidebook and in consultation with the VDOT project manager/ traffic engineer within a mutually agreed upon impact area. The traffic impact area shall contain at a minimum, the interchange being considered including the full length of all ramps proposed and the merging area of the on-ramp with the interchange/ main roadway; and any median accesses within ½ mile on either direction of the cross road. The traffic analysis shall at a minimum include all the proposed signal coordination plans within impact area, the controller configurations (single/multiple) and also include left turn on red analysis. In addition, engineering judgment should be used to determine the various aspects of the geometry and signal configuration proposed; all suggested geometry and signal configurations shall be evaluated as described above.

Ramp design for a DDI should take into consideration the need of separate lanes for left- and right-turning traffic especially when either movement is signalized. While traditional ramp designs allow for shared lane usage, exit ramp design for a DDI should provide separate left- and right-turn lanes prior to the ramp terminal. This is because the phasing for the signalized left turn and right turn typically does not occur simultaneously. The storage lengths of these lanes are dependent upon projected volumes and potential queuing.

Access Control / Spacing of Intersections

Nearby signalized intersections may reduce the effectiveness of a DDI. The two-phased signal phasing of the DDI typically allows for shorter cycles lengths which may impact the coordinated operations of nearby traffic signals. When evaluating a DDI, the traffic analysis should consider whether the entire interchange should be operated with a single signal controller or if multiple controllers should be used for the two separate intersections.

As with any interchange type, the minimum intersection spacing shown in the RDM Appendix F, Table 2-3 and Figure 2-9 shall be used. VDOT's access control standards shall be followed. However in developed areas, it may be difficult to achieve the standards. If these standards are not met, an Access Management Exception (AM-E) or an Access Management Waiver (AM-W) shall be required.

* Added 7/14