New Mexico DEPARTMENT OF TRANSPORTATION

SUBJECT: Traffic Study Requirements DATE: November 25, 2019

TO: Whom It May Concern

FROM: District Three Traffic

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According to NMAC 18.31.6.16, a traffic study shall be required for all land development directly or indirectly impacting a state highway facility. As a part of the second tier, the Traffic Impact Analysis, the following shall be required as a part of the study.

***Software***

NMDOT requires all traffic analysis be completed utilizing the latest version of the Highway Capacity Software based on the Highway Capacity Manual, 6th Edition.

***Demand Volumes***

Demand traffic volumes must be captured at all scoped intersections. Demand traffic volumes consist of not only the vehicles that enter an intersection from a particular approach or lane group during a 15 minute analysis period but also those vehicles that arrived at the intersection during the current 15 minute period but have not yet entered the intersection at the conclusion of the 15 minute time period. An exhibit listing the following shall be included in the report: traffic volume entering the intersection in the 15 minute period + queued traffic volume that arrived in the same 15 minute period but has not yet entered the intersection at the conclusion of the 15 minute period – queued traffic that arrived during the previous 15 minute period but entered the intersection during the current 15 minute period. This shall be provided for each 15 minute period that volumes are provided.

***Field Data Collection***

- Right-Turn-On-Red
- Parking if within 250-feet from stop bar
- Buses Stopping if in travel lane, how long
- Heavy Vehicles – Percentage per hour
- Lane Utilization estimate for multiple-lane movement groups
    - Shared lane vehicle counts for each movement
- Pedestrian and Bicycles
- Intersection Lane Configuration
- Signal Controller Settings to include but not limited to:
    - Vehicle extension intervals

    - Actuated movements
    - Min/max green times
    - Recall settings
    - Coordination data such as offsets and phase reference points
    - Refer to Exhibit 19-11 on page 19-23 for any other required input data
- Saturation flow rates to be calibrated by location
- Proportion arriving on green (signalized intersections)
- Field measured signal phases on any adaptive signal control technology.

***Multiple Period Analysis***

The multiple period analysis shall be required for oversaturated conditions in all analysis periods including horizon analysis periods. The initial analysis period for the Implementation Year Build and No Build and the Horizon Year Build and No Build will be the peak 15 minute period of demand traffic volume at a particular intersection or analysis area in the case of multiple intersection analysis. Peak hour factors are not needed if the peak 15 minutes is identified. The peak 15 minute volumes will then be multiplied by 4 (again without the use of peak hour factors) to perform the traffic analysis. If the initial analysis period shows one or more movements with a volume/capacity ratio > 1, the analysis will be repeated using the preceding 15 minute traffic volumes. This process shall be repeated until an analysis period is found with no movements with v/c ratios > 1. Using this 15 minute time interval as the initial analysis period, a multiple period traffic analysis will be performed for consecutive 15 minute time intervals until the interval is found in which all movements return to a state where v/c < 1. Delay and queueing results shall be reported for each 15 minute period in this interval.

***Implementation Year***

In the Implementation Year No Build scenario, capacity for each individual movement shall be equal to or greater than the actual volume counted entering the intersection (i.e. observed volumes <u>not</u> demand volumes). If a movement's calculated capacity is less than the counted volume, the default values for the analysis should be evaluated (i.e. saturated flow rates, controller settings, percent arriving on green, etc.) and adjusted.

***Queue Analysis***

Queues must be calculated per the HCM, 6$^{th}$ Edition Methodology. Only 95$^{th}$ percentile queues are needed.

***Urban Street Segment***

If the traffic study requires analysis of multiple intersections on the same route, then those intersections need to be analyzed utilizing the Urban Street Segment instead of as isolated intersections.

***Safety Analysis***

The safety analysis required for this section shall include:

1. Three (3) years of crash data must be obtained for all study intersections and summarized in the safety section of the report. Crash diagrams are not required. Crash reports may be requested online via the New Mexico Statewide Traffic Records System, http://nmtrafficrecords.com/resources/data-request/
2. Field review of sight distance.
3. Following the Highway Safety Manual, current edition provide:
    a. Predicted number of crashes for the existing condition
    b. Calibrated predicted number of crashes based on actual data
    c. Predicted number of crashes for the proposed site condition

***Existing Conditions/No Build Analysis – Signalized Intersections***

The existing conditions analysis should be completed utilizing the existing signal timing for that signalized intersection. The signal should NOT be optimized. The existing conditions write-up should discuss if signals are part of a coordinated system, if so what are the limits of that system.

***Full Build Analysis – Signalized Intersections***

The Full Build analysis on an isolated intersection may be optimized. For all other intersections the full build analysis should first be completed utilizing the existing signal timing for that signalized intersection. Signals located within a coordinated system may only be optimized under two conditions: (1) if a full corridor signal timing plan is completed or (2) if the coordinated phases at those signals are not altered in any way (i.e. green time or offsets).

***Electronic Files***

At each submittal, the software analysis files shall be provided.