

SECTION 900 TRAFFIC ENGINEERING

901 TRAFFIC OPERATIONAL ANALYSIS

901.01 GENERAL

Part 1, Section 200, Design Concept Development, of this manual discusses traffic counts and traffic projection methods suitable for the design concept phase of a project. Part 2, Section 200, Geometric Design Standards, outlines the data required to develop a preliminary parking demand analysis for inclusion in the Design Concept Report.

Final design may require refinement of concept data before a final traffic report can be completed. Specific model updating may be necessary to incorporate roadway network changes and revised roadway classifications.

Model output shall be calibrated to reflect current traffic trends by comparing the present actual traffic volume to a current model run and applying corrective adjustments to depict the actual conditions.

Model output shall be refined, particularly ramp volume and intersection turning volumes, to balance the daily traffic volumes from network link to network link. Directional design hourly volumes shall be derived in a manner similar to the daily volume adjustments.

Sub-modeling computer programs should be used to determine the roadway volumes associated with the proposed frontage roads and other roadway characteristics not incorporated in the original model.

901.02 OPERATIONAL ANALYSIS

The final traffic report should include an operational analyses utilizing the balanced traffic volumes determined from the traffic forecasts. The analysis will follow procedures and methods of the Highway Capacity Manual, By the Transportation Research Board and will include:

1. Ramp intersection capacity analysis.
2. Ramp merge/diverge analysis.

3. Freeway weaving analysis.
4. Basic segments capacity and operational analysis.
5. Intersection capacity and operational analysis.

Signal warrant analysis shall be performed to determine the need for signals at an intersection. The Manual on Uniform Traffic Control Devices (MUTCD) signal warrants shall be used for this purpose. All necessary traffic engineering studies required for signal warrants shall be conducted.

Where necessary, intersection simulation analysis shall be performed using a microscopic simulation program that models individual vehicle flow. Optimal phasing/timing and coordination parameters shall be used in the above mentioned operational and capacity analyses.

For interchanges, conceptual designs will be assessed and recommendations provided for modification. Interchange operational analyses shall be performed to assess alternative concepts once the general plans of the alternatives have been developed.

Lane configurations and the required turn-lane storage shall be designated at all intersections, furthermore, lane requirements of the freeway, mainline, ramps, cross-streets and frontage roads. The designations shall be a direct result of the analyses performed and shall be incorporated into roadway and bridge design drawings.

902 SIGNALIZATION

902.01 TRAFFIC SIGNAL DESIGN

Traffic signal phase and phase interval sequence diagrams shall be provided for intersections and interchange ramp terminals. The signal system design shall include the following:

- Signal pole locations
- Mast arm orientation and lengths
- Signal head locations on mast arms and poles
- Signal face types
- Conduits (ducts) location, including spares
- Local Signal Controller and Changeover Switch foundations locations