Tier 2 Analysis

At the conclusion of the Tier 2 analysis, all alternatives will be ranked using a total score with an applied weighting factor. The weighted factors and the rating scale should be defined with justification and approved at the preliminary analysis meeting. These factors shall be selected according to the critical needs and issues identified in Chapter 2. This shall be approved prior to beginning Tier 2 Analysis.

A. Operational Analysis

Alternatives shall be analyzed using an approved software for the approved peak hours during the design year. This shall be the same software used in No Build.

The Measures of Effectiveness (MOEs) for the alternatives should be the same as the No Build analysis.

11 x 17 Map(s) showing queues on an aerial comparing all alternatives and No Build alternative (hard copy and pdf)

The results will be generated from the appropriate analysis software and included in the Tier 2 Analysis appendix as a table. These should only show the results and inputs related to the MOEs.

Electronic copies of the analysis software for each scenario will also be included in the Tier 2 Analysis appendix in their native format.

The results will be compared to the No Build alternative for the design year.

Note: If it becomes evident during the analysis of the alternatives that the selected alternatives are not viable due to unacceptable operations or critical geometry issues that cannot be remedied, then DOTD must be notified of these developments prior to the Consultant continuing the study.

Other alternatives that were considered during the Tier 1 Analysis, but not advanced to Tier 2 analysis may be revisited for further analysis.

B. Critical Geometry

Alternatives will be drawn on an aerial using a single sketch line technique. Each line shall represent each ramp and traveled way of the highway in the plan view. Number of lanes required and controlling horizontal curve information shall be noted in plan view. The alternatives shall also be drawn in profile using single lines indicating existing grade and each tier of the proposed interchange or alternative with relative elevations. These lines

will be developed to scale and apply design criteria and operational characteristics. Both existing and proposed Right of Way (ROW) and Control of Access (COA) boundaries shall be shown.

The Design Criteria Report shall contain the design criteria for alternatives and whether they meet preferred or acceptable values within DOTD's Minimum Design Guidelines. Information on design guidelines can be found on DOTD's webpage or at http://spindex-1:8181/Inside_LaDOTD/Divisions/Engineering/Road_Design/Pages/Memoranda.aspx

C. Safety Analysis

At a minimum, the safety analysis should include an explanation or justification of corrected crashes per alternative and a corresponding collision diagram of existing crashes which highlights the following:

- Uncorrectable crashes
- Correctable crashes by this alternative
- Correctable crashes not addressed by this alternative

If the Purpose & Need or project scope identifies a safety issue, further analysis and discussion that addresses the identified issue(s) should be included as part of this section.

D. Alternative Comparative Evaluation Matrix

Each alternative will be rated numerically within each category, such as, but not limited to, operational, safety, critical geometry, etc of the Tier 2 Analysis. Values should be organized so that the highest value among the alternatives indicates the best solution in each category. Criteria is project relevant and should correspond with identified problems in Chapter 2. Weighting factors may be different for each category but must sum to 100. This recommended baseline criteria Matrix should be discussed and approved at the Preliminary Tier 2 Alternatives Analysis meeting.

Below is an example of the criteria used for the baseline Alternative Evaluation Matrix:

	Traffic Operations	**Safety**	**Construction Cost**	**Right of Way Impacts**	**Utility Relocations**
Weight Factor	30	5	20	10	35
Problem(s)*	Corridor Travel Time is high in peak periods	Lower than state crash rates so weighted lower	Phasing constructability and cost of phases	Rural area with minimal impacts so weighted lower	Impacts at critical intersections significant to this project
Rank					
1	Worse than NO Build	Make it worse (more right angle conflicts)	Unable to be phased, or phases cost more than $2 million	Taking of historic and/or 4F areas	All of gas, water, electric, drainage

2	~Equal to NO Build	-	-	Total taking of commercial or residential building	Three of gas, water, electric, drainage
3	< 10% Better than NO Build	-	Able to be phased and most phases are less than $1 million, but none over $2 million	Partial taking of commercial or residential ROW	Two of gas, water, electric, drainage
4	10 - 20 % Better than NO Build	-	-	Taking ROW without building or structure impacts	One of gas, water, electric, drainage
5	> 20% Better than NO Build	Make it better or stay the same (Less right angle conflicts)	Able to be phased and all phases less than $1 Million	No ROW taken	None of gas, water, electric, drainage

** Notes:*

- *Problems used here are defined in Chapter 2 of the report. Other categories used must have a justification for being included in the ranking.*
- *It is OK for some alternatives to have the same ratings as another in the same category.*
- *Arrangement of the matrix is flexible as long as Weight Factors, Categories and Rank values are represented and easily understood.*

The Alternative Comparative Evaluation Matrix, along with criteria, shall be completed and placed in Appendix E. A simple example can be seen below:

		Alt 1		**Alt 2**		**Alt 3**	
Category	Weight	Rating	Score (Rate X Weight)	Rating	Score (Rate X Weight)	Rating	Score (Rate X Weight)
Traffic Operations	***30***	2	60	2	60	2	60
Safety	***5***	1	5	1	5	5	25
Construction Cost	***20***	3	60	3	60	5	100
Right of Way Impacts	***10***	4	40	3	30	1	10
Utility Relocation	***35***	2	70	2	70	3	105
Total Score (Highest= Best)			**235**		**225**		**300**