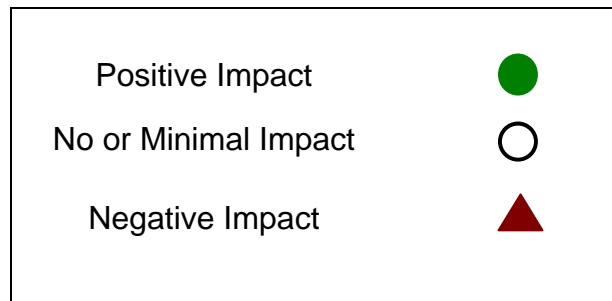


## **4.0 Evaluation of Preliminary Conceptual Alternatives**

### **4.1 Evaluation Matrices**

#### *Evaluation Methodology*

Three matrices have been developed to as a means of evaluating the preliminary conceptual alternatives discussed in *Chapter 3: Table 4-1 Intersection Concepts (Concepts with Independent Utility)*; *Table 4-2 SR 18 Concepts*; and *Table 4-3 Interchange Concepts*. The matrices are provided to illustrate the impacts of each conceptual alternative with respect to the baseline (i.e. No-Build) for a variety of categories including Congestion/Delay, Safety, Drainage, Access Concerns, and Environmental. Every conceptual alternative is rated for its performance in each applicable category or sub-factor based on the following symbology illustrated in *Figure 4-1*. Scoring levels are intentionally limited to three perceived levels of impact (Positive, No or Minimal, Negative) in order to simplify the evaluation process as this matrix represents the first formal screening of the preliminary conceptual alternatives.



*Figure 4.1 – Levels of Impact Key*

The criteria used to assess the impacts of each concept vary with respect to the category/sub-factor. The assessment of impacts for *Congestion/Intersection Delay* is based upon the intersection LOS in the future 2030 condition, with a LOS C or higher considered a positive impact and a LOS D or lower considered a negative impact. The same rating system applies for the *Freeway LOS* category in the Interchange Concepts matrix.

The assessment of impacts for the *Safety* category/sub-factor depends upon whether or not a safety issue has been identified in that specific location in the Existing and Future Conditions Report. If a safety problem does not currently exist at a location (i.e. Medina Line Rd intersection) the No-Build concept will display a No Impact. For locations where a safety problem has been identified (i.e. Springside Dr intersection) the No-Build concept would display a Negative Impact since the no-build does not address the existing safety problem. Each of the “build” concepts are evaluated on the basis of whether they enhance or

degrade safety at a particular location regardless of whether or not a safety problem exists there currently. For example, the intersection of North Hametown Rd and SR 18 has not demonstrated a safety problem, yet a Two Stage Left Turn is considered to have a Positive Impact on safety because it provides an adequate median refugee space to enable a vehicle to assess gaps in each direction of traffic separately. Conversely, the construction of Indirect left Turns at Medina Line is considered to have a negative impact on because the probability of a vehicle becoming involved in a crash increases as a result of traveling through three more intersections. The *Number of Geometric Deficiencies* sub-factor on the *Table 4-3 Interchange Concepts* matrix displays No Impact for both the No-Build interchange concepts because they have existing geometric deficiencies. All of the “build” concepts display a Positive Impact because they would be expect to upgrade any existing geometric deficiencies to the current design standards.

The *Drainage on SR 18* category is included in the *Table 4-2 SR 18 Concepts* evaluation matrix because improving drainage along SR 18 in the western portion of the corridor was one of the four study goals identified by the steering committee. Both the of “build” Access Management Concepts indicate positive impacts with respect to drainage as both reconstruction options would alleviate existing drainage concerns from Medina Line Rd to South Hametown Rd.

The assessment of the *Access Concerns* category is based solely upon whether a concept reduces the number of access points (Positive Impact) or increases the number of access points (Negative Impact.)

The criteria for the assessment of *Environmental* sub-factors are qualitative and fairly intuitive. With respect to the *Wetlands* sub-factor any disturbance, regardless of the area affected, is considered to have a Negative Impact. The realignment of North Hametown Rd is considered to have Negative Impacts with respect to *Historic/Landmarks* and *Neighborhoods* because it impacts a National Historical Register parcel and is located close to the Fryman Dr subdivision cul-de-sac. Any improvement that demonstrates a Positive Impact with respect to *Congestion/Delay* exhibits a Positive Impact on *Air Quality/Vehicle Emissions*. Both the Basic Lane Addition and Montrose West Relocation capacity enhancement concepts display Negative Impacts for *Noise* because they both add additional through lanes bringing traffic closer to receptors. All “build” concepts in the more developed eastern portion of the corridor exhibit Negative Impacts with respect to *Community/Business Disruptions during Construction* because of their close proximity to the Montrose retail district.

Table 4-1

Summit 18 Corridor Study Evaluation Matrix  
Intersection Concepts  
(Concepts With Independent Utility)

Category / Sub-Factor	Medina Line Road Intersection		Harmony Hills Intersection			North Hametown Intersection				Springside Drive Intersection	
	No-Build	Capacity Addition (Left Turn)	No-Build	Two Stage Left Turns	Indirect Left Turns (at Medina Line Rd)	No-Build	Two Stage Left Turns	Indirect Left Turns (at Medina Line Rd)	Realignment to South Hametown	No-Build	Capacity Addition (Turn Lanes)
Congestion / Intersection Delay	▲	●	▲	●	●	●	●	●	●	▲	●
Safety	○	●	○	●	○	○	○	○	○	○	○
Drainage on SR 18	○	○	○	○	○	○	○	○	○	○	○
Access Concerns	○	○	○	○	○	○	○	○	○	○	○
Environmental	○	○	○	○	○	○	○	○	○	○	○
Wetlands	○	○	○	○	○	○	○	○	○	○	○
Streams	○	○	○	○	○	○	○	○	○	○	○
100-Yr. Flood Plains	○	○	○	○	○	○	○	○	○	○	○
Hazardous Materials	○	○	○	○	○	○	○	○	○	○	○
Historic / Landmarks	○	○	○	○	○	○	○	○	○	○	○
Air Quality / Vehicle Emissions	○	○	○	○	○	○	○	○	○	○	○
Species (Threatened / Endangered)	○	○	○	○	○	○	○	○	○	○	○
Noise	○	○	○	○	○	○	○	○	○	○	○
Neighborhoods	○	○	○	○	○	○	○	○	○	○	○
Community / Business Disruptions during Construction	○	○	○	○	○	○	○	○	○	○	○
<b>Cost / Other</b>											
Project Cost (Including R/W)	\$250 K	\$775 K	\$10 K	\$370 K	\$288 M	\$10 K	\$400 K	\$293 M	\$1.25 M	\$275 K	\$146 M
Right-of-Way (No. of Additional Acres)		0.2		0	6.04		0	6.04	1.1		0.25
Relocations - Residential		0		0	0		0	0	0		0
Relocations - Business		0		0	0		0	0	0		0

The matrix is a simplified summary graphic to represent composite performance of categorized measures for each of the conceptual alternatives. For the initial evaluation, the factors are displayed using shaded shapes to represent the relative level of change in relation to No-Build. Subsequent evaluations might entail comparisons relative to other concepts. Positive impacts are indicated using solid green circles and negative impacts are represented by solid red triangles. The shapes are filled proportionately to their perceived relative level of impact (See Below). Alternatives which have no change, or very small changes, relative to No-Build, are represented by unfilled circles. The combination of color and fill level allows the person assessing the criteria to determine, at a glance, whether the impact of the performance measure is positive or negative and to what extent the measure is positive or negative relative to the baseline (i.e., No-Build).

●  
Positive impact

○  
No or Minimal Impact

▲  
Negative impact

Table 4-2  
Summit 18 Corridor Study Evaluation Matrix  
SR 18 Concepts

Category / Sub-Factor	Access Management (Medina Line to South Hametown)		Capacity Additions (South Hametown to Crystal Lake)	
	No-Build	Two-Way Left Turn Lane (Medina Line to South Hametown)	Raised Median (Medina Line to South Hametown)	No-Build
<b>Congestion / Intersection Delay</b>				
North Hametown Intersection	○	○	○	●
Heritage Woods Intersection				●
Montrose West/Crystal Lane Intersection				●
<b>Safety</b>				
Heritage Woods Drive	○	○	●	
Crystal Lake Road				●
SR 18 from S. Hametown to Springside Drive				●
<b>Drainage on SR 18</b>				
<b>Access Concerns</b>				
<b>Environmental</b>				
Wetlands	○	○	○	○
Streams	○	○	○	○
100-Yr. Flood Plains	○	○	○	○
Hazardous Materials	○	○	○	○
Historic / Landmarks	○	○	○	○
Air Quality / Vehicle Emissions	○	○	○	○
Species (Threatened / Endangered)	○	○	○	○
Noise	○	○	○	○
Neighborhoods	○	○	○	○
Community / Business Disruptions during Construction	○	○	○	○
<b>Cost / Other</b>				
Project Cost (Including RW)	\$1.87 M	\$4.25 M	\$2.61 M	\$854 K
Right-of-Way (No. of Additional Acres)	0	0	0	0
Relocations - Residential	0	0	0	0
Relocations - Business	0	0	0	0
Project Cost (Including RW)				\$9.16 M
Right-of-Way (No. of Additional Acres)				1.58
Relocations - Residential				0
Relocations - Business				0

The matrix is a simplified summary graphic to represent composite performance of categorized measures for each of the conceptual alternatives. For the initial evaluation, the factors are displayed using shaded shapes to represent the relative level of change in relation to No-Build. Subsequent evaluations might entail comparisons relative to other concepts. Positive impacts are indicated using solid green circles and negative impacts are represented by solid red triangles. The shapes are filled proportionately to their perceived relative level of impact (See Below). Alternatives which have no change, or very small changes, relative to No-Build, are represented by unfilled balls. The combination of color and fill level allows the person assessing the criteria to determine, at a glance, whether the impact of the performance measure is positive or negative and to what extent the measure is positive or negative relative to the baseline (i.e., No-Build).

●  
Positive impact

○  
No or Minimal Impact

▲  
Negative impact



### 4.2 Cost Estimates

#### *Methodology*

Probable costs were estimated for all of the Preliminary Conceptual Alternatives developed for the SUM-18 Corridor Study using the methodology in the *ODOT Budget Estimating Procedure 2006*. Based on the ODOT Estimating Procedure the “major cost drivers” such as pavement, roadway, drainage, barrier wall, bridges, and retaining walls were estimated based on the projected work limits of the various conceptual alternatives. Some additional critical items that would significantly affect the construction costs were also estimated (i.e. rock excavation or significant embankment) and added to the major cost drivers. Using the 80%/20% rule (80% of the cost is in the major cost drivers which represent about 20% of the total pay items on an average project) the estimated construction cost was increased by 25% (80/20).

The various segments for each conceptual alternative were summed and estimated costs for items relative to the overall alternative were added to the project, such as traffic control, maintenance of traffic, and erosion control. All of these items were included in the final construction costs. The project costs are based on the estimated construction cost plus the estimated preliminary development costs (12% of construction costs), contract administration and inspection (10% of construction costs), right-of-way acquisition costs, and contingency costs (30%). The contingency percentage was obtained from the *ODOT PDP Design Contingency Graph* for a planning study level of detail.

































