Appendix G
Tier 1 and Tier 2 Evaluation Matrices

Table G-1 Tier 1a Alternatives Evaluation Matrix
Evaluation of Travel Mode Elements

	Description	0.1 Consistency with Public Desire	GOAL 1: Improve Multi-modal Mobility								GOAL 2: Enhance Accessibility	GOAL 3: Improve Safety		GOAL 4: Integrate Sustainability					
			1.1 Auto Comfort and Convenience	1.2 Transit Comfort and Convenience	1.3 Pedestrian Comfort and Convenience	1.4 Bicycling Comfort and Convenience	1.5 Balance Multi-modal Needs	1.6 Support Future TOD & Mixed Use	1.7 Multi-modal Connections to Transit Centers/ETCs	1.8 Auto Access to I-25	2.1 Ease of Bike/Ped Crossing	3.1 Improve Safety at High Crash Locations	3.2 Buffer btw vehicular traffic and bicyclists	4.1 Potential ROW impacts	4.2 Consistent with Potential Demand	4.3 Conformance with TMP	4.4 Consistent with Land Use Plans/ Zoning	4.5 Potential Environmental Impacts	4.6 Impervious Surface Area
Auto – East (West) of College Avenue	4 GP (3 GP)	Fair	Best	-	-	-	Tier 1b	Tier 1b	-	Best	Poor	Poor	-	Tier 1b	Good	Poor	Poor	Poor	Tier 1b
	3 GP (2 GP)	Best	Good	-	-	-	Tier 1b	Tier 1b	-	Good	Fair	Fair	-	Tier 1b	Best	Best	Good	Best	Tier 1b
	3 GP + HOV/Bus (2 GP + HOV/Bus)	Good	Best	-	-	-	Tier 1b	Tier 1b	-	Best	Poor	Poor	-	Tier 1b	Good	Good	Good	Poor	Tier 1b
	2 GP (2 GP)	Poor	Fair	-	-	-	Tier 1b	Tier 1b	-	Poor	Best	Best	-	Tier 1b	Poor	Poor	Best	Best	Tier 1b
	2 GP + HOV/Bus (2 GP + HOV/Bus)	Good	Good	-	-	-	Tier 1b	Tier 1b	-	Fair	Fair	Good	-	Tier 1b	Fair	Fair	Best	Best	Tier 1b
Transit	Mixed Traffic	Fair	-	Fair	-	-	Tier 1b	Tier 1b	Fair	-	Best	-	-	Tier 1b	Poor	Poor	Poor	Best	Tier 1b
	Transit Priority (Queue jumps, etc.)	Good	-	Good	-	-	Tier 1b	Tier 1b	Good	-	Good	-	-	Tier 1b	Good	Good	Good	Good	Tier 1b
	Curbside bus lanes	Good	-	Best	-	-	Tier 1b	Tier 1b	Best	-	Fair	-	-	Tier 1b	Fair	Best	Best	Fair	Tier 1b
	Curbside bus/HOV lanes	Good	-	Good	-	-	Tier 1b	Tier 1b	Good	-	Fair	-	-	Tier 1b	Good	Best	Best	Fair	Tier 1b
	Median bus lanes	Fair	-	Best	-	-	Tier 1b	Tier 1b	Best	-	Poor	-	-	Tier 1b	Poor	Best	Best	Poor	Tier 1b
Bike/Ped	Bike Lanes + Detached SW	Fair	-	-	Best	Fair	Tier 1b	Tier 1b	Fair	-	-	-	Poor	Tier 1b	Fair	Good	Fair	Best	Tier 1b
	Shared Use Paths	Fair	-	-	Good	Fair	Tier 1b	Tier 1b	Good	-	-	-	Best	Tier 1b	Good	Fair	Good	Good	Tier 1b
	Cycle Track + Detached SW	Best	-	-	Best	Best	Tier 1b	Tier 1b	Best	-	-	-	Best	Tier 1b	Best	Best	Good	Fair	Tier 1b
	Shared Bus/Bike Lane + Detached SW	Poor	-	-	Best	Fair	Tier 1b	Tier 1b	Fair	-	-	-	Poor	Tier 1b	Fair	Good	Fair	Fair	Tier 1b

Tier 1a – Evaluation of Travel Mode Elements

0.1 Consistency with Public Desire

This evaluation is based on the input received at the May 3, 2012 public meeting and the associated online survey, which received over 250 responses. The most common survey responses supporting a particular mode or improvement are associated with a higher rating.

Automobile Options

There was strong support for six travel lanes on Harmony. Although the survey did not specifically address the section of Harmony Road to the west of College, it has been inferred (based on the City's Transportation Plan showing this section remaining four lanes) that the desire is for six lanes east of College and four lanes west of College. The survey respondents also expressed a strong desire in providing a balance between travel modes. Therefore, the following ratings were applied:

4 GP (3 GP)	Fair	*- No desire for 8 lanes expressed in survey*
3 GP (2 GP)	Best	*+ Consistent with public perception that 6 lanes are needed*
3 GP + HOV/Bus (2 GP + HOV/Bus)	Good	*+ Consistent with public perception that 6 lanes are needed* *+ Consistent with desire to balance travel modes* *- No desire for 8 lanes expressed in survey*
2 GP (2 GP)	Poor	*- Strong perception that 4 lanes would not be wide enough*
2 GP + HOV/Bus (2 GP + HOV/Bus)	Good	*+ Consistent with public perception that 6 lanes are needed* *+ Consistent with desire to balance travel modes* *- Outside lanes would be restricted, therefore not the full 6 lane capacity*

Xx(xx) – east of College (west of College)

Transit Options

There was strong support for providing travel options and a better balance between modes. There was also general support shown for a dedicated bus lane, as well as for a landscaped median which would likely be precluded by the presence of a median BRT system.

Mixed Traffic	Fair	*+ Would not substantially improve transit as travel option*
Transit Priority (Queue jumps, etc.)	Good	*+ Increased emphasis on transit*
Curbside bus lanes	Good	*+ Increased emphasis on transit*
Curbside bus/HOV lanes	Good	*+ Increased emphasis on transit*
Median bus lanes	Fair	*- Difficult to provide landscaped median*

Bicycle and Pedestrian Options

There was strong support for separating bicyclists from the travel lane by providing a buffer between the two. There was also strong support for a detached sidewalk. The survey did not address shared use paths.

Bike Lanes + Detached SW	Fair	*- Bicyclists would remain adjacent to travel lane with no buffer*
Shared Use Paths	Fair	*- No specific desire for shared use path expressed in survey*
Cycle Track + Detached SW	Best	*+ Would separate bicyclists from travel lanes*

Shared Bus/Bike Lane + Detached SW	**Poor**	*- Bicyclists would remain adjacent to travel lane with no buffer* *- Additional conflict between bikes/buses*

Goal #1 – Improve Multi-modal Mobility

1.1 Auto Comfort and Convenience

Automobile Options

This rating is based on the ability for vehicles to move quickly through the corridor and is generally correlated to the roadway capacity.

4 GP (3 GP)	**Best**	*+ Highest auto capacity (8 lanes)*
3 GP (2 GP)	**Good**	*+ High auto capacity (6 lanes)*
3 GP + HOV/Bus (2 GP + HOV/Bus)	**Best**	*+ Highest auto capacity (8 lanes)*
2 GP (2 GP)	**Fair**	*- Lower auto capacity (4 lanes)*
2 GP + HOV/Bus (2 GP + HOV/Bus)	**Good**	*+ High auto capacity (6 lanes)*

Xx(xx) – east of College (west of College)

1.2 Transit Comfort and Convenience

Transit Options

This rating is based the quality of transit service that could be provided with the infrastructure in each option. A higher rating was given where transit would operate in a separate lane, thereby decreasing transit travel time and delays.

Mixed Traffic	**Fair**	*- Transit operates in GP lanes*
Transit Priority (Queue jumps, etc.)	**Good**	*+ Transit priority treatment would allow transit to reduce intersection delays* *- Transit operates in GP lanes*
Curbside bus lanes	**Best**	*+ Transit operates in separate lane improving travel time*
Curbside bus/HOV lanes	**Good**	*+ Transit operates in separate lane improving travel time* *- Shared with HOV*
Median bus lanes	**Best**	*+ Transit operates in separate lane improving travel time*

1.3 Pedestrian Comfort and Convenience

Bicycle and Pedestrian Options

This rating is based on the pedestrian's level of comfort in traveling along the corridor (pedestrian travel across is addressed in a separate evaluation criterion).

Bike Lanes + Detached SW	**Best**	*+ Pedestrians separated from motor vehicles* *+ Pedestrians separated from bicyclists*
Shared Use Paths	**Good**	*+ Pedestrians separated from motor vehicles* *- Pedestrian/bicyclist shared space/potential conflicts*
Cycle Track + Detached SW	**Best**	*+ Pedestrians separated from motor vehicles* *+ Pedestrians separated from bicyclists*
Shared Bus/Bike Lane + Detached SW	**Best**	*+ Pedestrians separated from motor vehicles* *+ Pedestrians separated from bicyclists*

1.4 Bicycling Comfort and Convenience

Bicycle and Pedestrian Options

This rating is based on the bicyclist's level of comfort in traveling along the corridor, generally following the bicycle segment LOS criteria.

Bike Lanes + Detached SW	Fair	*- Bicyclists are adjacent to travel lanes*
Shared Use Paths	Fair	*+ Bicyclists are separated from motor vehicles* *- Bicyclists must share space with pedestrians*
Cycle Track + Detached SW	Best	*+ Bicyclists are separated from motor vehicles* *+ Bicyclists are separated from pedestrians*
Shared Bus/Bike Lane + Detached SW	Fair	*- Bicyclists are adjacent to travel lanes* *- Bicyclists would share space with buses*

1.5 Balance Multi-modal Needs

Addressed in Tier 1b evaluation.

1.6 Support Future TOD & Mixed Use

Addressed in Tier 1b evaluation.

1.7 Multi-modal Connections to Transit Centers/ETCs

Transit Options

This rating is based on quality of transit service that could be provided in each option to the South Transit Center, the Harmony Transfer Center, Mason Corridor, and Timberline Road Corridor, and generally correlates to the expected ridership associated with each option.

Mixed Traffic	Fair	*- Difficult to provide high frequency reliable service in mixed traffic* *- Lowest ridership potential*
Transit Priority (Queue jumps, etc.)	Good	*+ Higher frequency service could be provided* *- Some reliability concerns with operating in GP lanes* *+ High ridership potential*
Curbside bus lanes	Best	*+ High frequency reliable service could be provided* *+ Highest ridership potential*
Curbside bus/HOV lanes	Good	*+ High frequency service could be provided* *- Some reliability concerns with shared HOV lane* *+ High ridership potential*
Median bus lanes	Best	*+ High frequency reliable service could be provided* *+ Highest ridership potential*

Bicycle and Pedestrian Options

This rating is based on the quality and perceived safety for bicyclists and pedestrians in each option to the South Transit Center, the Harmony Transfer Center, Mason Corridor, and Timberline Road Corridor, and generally correlates to each option's ability to attract bicycle and pedestrian use.

Bike Lanes + Detached SW	Fair	*+ Ped separated from motor vehicles and bicyclists* *- Low potential for bike/ped use (as documented in bike/ped counts)*
Shared Use Paths	Good	*+ High potential for bike/ped use*
Cycle Track + Detached SW	Best	*+ Highest potential for bike/ped use*
Shared Bus/Bike Lane + Detached SW	Fair	*- Lowest potential for bike/ped use*

1.8 Auto Access to I-25

Automobile Options

This rating is based on the automobile's ability to quickly access I-25.

4 GP (3 GP)	Best	*+ Potential for higher travel speeds and minimal delay*
3 GP (2 GP)	Good	*+ Potential for high travel speeds and less delay*
3 GP + HOV/Bus (2 GP + HOV/Bus)	Best	*+ Potential for higher travel speeds and minimal delay*
2 GP (2 GP)	Poor	*- Potential for longer delays and congestion*
2 GP + HOV/Bus (2 GP + HOV/Bus)	Fair	*- HOV lane may not be fully utilized, resulting in increased demand on GP lanes*

Xx(xx) – east of College (west of College)

Goal #2 – Enhance Accessibility

2.1 Ease of Bike/Ped Crossing

Automobile Options

This rating uses the number of travel lanes as an indication of the distance bicyclists and pedestrians would have to travel to cross Harmony Road. Longer distances result in a lower rating.

4 GP (3 GP)	Poor	*- Widest cross-section (8 lanes)*
3 GP (2 GP)	Fair	*- Wide cross-section (6 lanes)*
3 GP + HOV/Bus (2 GP + HOV/Bus)	Poor	*- Widest cross-section (8 lanes)*
2 GP (2 GP)	Best	*+ Narrowest cross-section (4 lanes)*
2 GP + HOV/Bus (2 GP + HOV/Bus)	Fair	*- Wide cross-section (6 lanes)*

Xx(xx) – east of College (west of College)

Transit Options

This rating considers the additional width added to the corridor by each transit option. Bus operating in mixed traffic would not add any width while median bus lanes would require the widest transit cross section and could be somewhat confusing for bicyclists and pedestrians crossing.

Mixed Traffic	**Best**	*+ Would not result in a wider cross section for bicyclists and pedestrians to cross*
Transit Priority (Queue jumps, etc.)	**Good**	*+ Could be achieved with transit signal priority which may not require additional width*
Curbside bus lanes	**Fair**	*- Wider cross-section than the mixed traffic*
Curbside bus/HOV lanes	**Fair**	*- Wider cross-section than the mixed traffic*
Median bus lanes	**Poor**	*- Widest cross-section required* *- Additional confusion for crossing bicyclists and pedestrians*

Goal #3 – Improve Safety

3.1 Improve Safety at High Crash Locations

Automobile Options

Increasing the number of travel lanes would result in increased complexity and decreased safety. To isolate the effect of the number of travel lanes on safety, we assume that all general purpose lanes would operate at their maximum capacity and that left turns are protected-only at signalized intersections. A shared HOV/bus lane would reduce the safety (compared to bus only lane) because the bus only lane would be used only by professional drivers.

4 GP (3 GP)	**Poor**	*- Higher number of through travel lanes = increased complexity and decreased safety*
3 GP (2 GP)	**Fair**	*- Current configuration*
3 GP + HOV/Bus (2 GP + HOV/Bus)	**Poor**	*- Higher number of through travel lanes = increased complexity and decreased safety* *- Addition of shared bus/HOV lane increases complexity*
2 GP (2 GP)	**Best**	*+ Fewer through travel lanes = less complexity and increased safety*
2 GP + HOV/Bus (2 GP + HOV/Bus)	**Good**	*+ Fewer through travel lanes = less complexity and increased safety* *- Addition of shared bus/HOV lane increases complexity*

Xx(xx) – east of College (west of College)

3.2 Buffer between Vehicular Traffic and Bicyclists

Bicycle and Pedestrian Options

This measure is a surrogate for bicycle safety on the corridor.

Bike Lanes + Detached SW	**Poor**	*- Bicyclists adjacent to travel lane*
Shared Use Paths	**Best**	*+ Bicyclists separated by landscape buffer from vehicular traffic*
Cycle Track + Detached SW	**Best**	*+ Bicyclists separated by landscape median from vehicular traffic*
Shared Bus/Bike Lane + Detached SW	**Poor**	*- Bicyclists adjacent to travel lane, mixed with buses*

Goal #4 – Integrate Sustainability

4.1 Potential ROW Impacts

Addressed in Tier 1b evaluation.

4.2 Consistent with Potential Demand

Automobile Options

2035 Baseline travel demand forecasts show the need for 6 travel lanes east of College Avenue, and 4 travel lanes west of College Avenue.

4 GP (3 GP)	Good	*+ Likely more capacity than needed to accommodate travel demand forecasts*
3 GP (2 GP)	Best	*+ In line with travel demand forecasts*
3 GP + HOV/Bus (2 GP + HOV/Bus)	Good	*+ Likely more capacity than needed to accommodate travel demand forecasts*
2 GP (2 GP)	Poor	*- Not enough capacity to accommodate travel demand forecasts*
2 GP + HOV/Bus (2 GP + HOV/Bus)	Fair	*- Likely not enough capacity to accommodate travel demand forecasts*

Xx(xx) – east of College (west of College)

Transit Options

This rating is based on the anticipated transit ridership potential compared to the order of magnitude cost associated with each transit option.

Mixed Traffic	Poor	*- Lower level of transit service than potential demand*
Transit Priority (Queue jumps, etc.)	Good	*+ Consistent with potential transit demand*
Curbside bus lanes	Fair	*- Somewhat higher level of transit service than potential demand*
Curbside bus/HOV lanes	Good	*+ Consistent with potential transit demand*
Median bus lanes	Poor	*- Higher level of transit service than potential demand*

Bicycle and Pedestrian Options

This rating is based on the potential for bicycle and pedestrian use on the Harmony Road corridor.

Bike Lanes + Detached SW	Fair	*- Lower level of accommodation than potential demand (as reflected in bike/ped counts)*
Shared Use Paths	Good	*+ Consistent with high potential for bicycle and pedestrian use* *- Does not accommodate bike/ped separately*
Cycle Track + Detached SW	Best	*+ Consistent with high potential for bicycle and pedestrian use*
Shared Bus/Bike Lane + Detached SW	Fair	*- Lower level of accommodation than potential demand*

4.3 Conformance with TMP

Automobile Options

The TMP identifies 6 travel lanes east of College Avenue and 4 travel lanes west of College Avenue.

4 GP (3 GP)	**Poor**	*- Inconsistent with TMP*
3 GP (2 GP)	**Best**	*+ Consistent with TMP*
3 GP + HOV/Bus (2 GP + HOV/Bus)	**Good**	*+ Mostly consistent with TMP*
2 GP (2 GP)	**Poor**	*- Inconsistent with TMP*
2 GP + HOV/Bus (2 GP + HOV/Bus)	**Fair**	*+ Somewhat consistent with TMP*

Xx(xx) – east of College (west of College)

Transit Options

The TMP identifies Harmony Road as an Enhanced Travel Corridor, which is defined as a "uniquely designed corridors that are planned to incorporate high frequency transit, bicycling, and walking as part of the corridor."

Mixed Traffic	**Poor**	*+ Low potential for high frequency transit, inconsistent with TMP*
Transit Priority (Queue jumps, etc.)	**Good**	*+ Accommodates high frequency transit, consistent with TMP* *- Operates in GP lanes; potential for reliability concerns*
Curbside bus lanes	**Best**	*+ Accommodates high frequency transit, consistent with TMP*
Curbside bus/HOV lanes	**Best**	*+ Accommodates high frequency transit, consistent with TMP*
Median bus lanes	**Best**	*+ Accommodates high frequency transit, consistent with TMP*

Bicycle and Pedestrian Options

The TMP identifies Harmony Road as an Enhanced Travel Corridor, which is defined as a "uniquely designed corridors that are planned to incorporate high frequency transit, bicycling, and walking as part of the corridor." The Bike Plan includes bike lanes along Harmony Road.

Bike Lanes + Detached SW	**Good**	*+ Provides bike and ped facilities consistent with TMP*
Shared Use Paths	**Fair**	*- Inconsistent with TMP*
Cycle Track + Detached SW	**Best**	*+ Best encouragement of biking and walking along corridor*
Shared Bus/Bike Lane + Detached SW	**Good**	*+ Provides bike and ped facilities consistent with TMP*

4.4 Consistent with Land Use Plans/Zoning

The City's zoning plan shows the Harmony corridor as an employment district with commercial mixed use infill development.

Automobile Options

Higher number of travel lanes supports corridor mobility, at the cost of access to the adjacent land uses. Lower number of travel lanes best support corridor land uses and the local economy.

4 GP (3 GP)	**Poor**	*-Discourages access to adjacent land uses*
3 GP (2 GP)	**Good**	*+ Balances access to adjacent land uses with mobility needs*
3 GP + HOV/Bus (2 GP + HOV/Bus)	**Good**	*+ Balances access to adjacent land uses with mobility needs*
2 GP (2 GP)	**Best**	*+ Favors access to adjacent land uses*
2 GP + HOV/Bus (2 GP + HOV/Bus)	**Best**	*+ Favors access to adjacent land uses*

Xx(xx) – east of College (west of College)

Transit Options

High-quality transit would likely result in higher transit ridership, which would best support the existing and future land uses along the corridor.

Mixed Traffic	**Poor**	*- Does not support transit access to corridor land uses*
Transit Priority (Queue jumps, etc.)	**Good**	*+ Supports transit access to corridor land uses*
Curbside bus lanes	**Best**	*+ Best supports transit access to corridor land uses*
Curbside bus/HOV lanes	**Best**	*+ Best supports transit access to corridor land uses*
Median bus lanes	**Best**	*+ Best supports transit access to corridor land uses*

Bicycle and Pedestrian Options

High quality bicycle and pedestrian accommodation separate from motor vehicles would support biking and walking activity, providing comfortable connections between corridor land uses.

Bike Lanes + Detached SW	**Fair**	*- Low bicycle use expected; does not support land uses*
Shared Use Paths	**Good**	*+ Supports bike/ped use and connections between land uses*
Cycle Track + Detached SW	**Good**	*+ Supports bike/ped use and connections between land uses*
Shared Bus/Bike Lane + Detached SW	**Fair**	*- Low bicycle use expected; does not support land uses*

4.5 Potential Environmental Resources Impacts

This evaluation assesses the likelihood that an alternative will impact environmental resources along the corridor, the degree of widening that would be required.

Automobile Options

4 GP (3 GP)	**Poor**	*- Widening required*
3 GP (2 GP)	**Best**	*+ No widening required*
3 GP + HOV/Bus (2 GP + HOV/Bus)	**Poor**	*- Widening required*
2 GP (2 GP)	**Best**	*+ No widening required*
2 GP + HOV/Bus (2 GP + HOV/Bus)	**Best**	*+ No widening required*

Xx(xx) – east of College (west of College)

Transit Options

Mixed Traffic	**Best**	*+ No widening required*
Transit Priority (Queue jumps, etc.)	**Good**	*+ Only minor widening at intersections required*
Curbside bus lanes	**Fair**	*- Widening required*
Curbside bus/HOV lanes	**Fair**	*- Widening required*
Median bus lanes	**Poor**	*- Substantial widening required*

Bicycle and Pedestrian Options

Potential for bike/ped use correlates to potential for air quality improvement, support for activity centers and compact pattern of development

Bike Lanes + Detached SW	**Best**	*+ No widening required*
Shared Use Paths	**Good**	*+ Some widening/reconfiguration required*
Cycle Track + Detached SW	**Fair**	*- Widening required*
Shared Bus/Bike Lane + Detached SW	**Fair**	*- Widening required*

4.6 Impervious Surface Area

Addressed in Tier 1b evaluation.

Table G-2 Tier 1b Alternatives Evaluation Matrix
WEST SEGMENT: Shields Street to College Avenue

Description		GOAL 1: Improve Multi-modal Mobility								GOAL 2: Enhance Accessibility	GOAL 3: Improve Safety		GOAL 4: Integrate Sustainability					
		1.1 Auto Comfort and Convenience	1.2 Transit Comfort and Convenience	1.3 Pedestrian Comfort and Convenience	1.4 Bicycling Comfort and Convenience	1.5 Balance Multi-modal Needs	1.6 Support Future TOD & Mixed Use	1.7 Multi-modal Connections to Transit Centers/ ETCs	1.8 Auto Access to I-25	2.1 Ease of Bike/Ped Crossing	3.1 Improve Safety at High Crash Locations	3.2 Buffer btw vehicular traffic and bicyclists	4.1 Potential ROW impacts	4.2 Consistent with Potential Demand	4.3 Conformance with TMP	4.4 Consistent with Land Use Plans/ Zoning	4.5 Potential Environmental Resources Impacts	4.6 Impervious Surface Area
Alt. 1	No Action	Good	Fair	Best	Good	Poor	Fair	Fair	Good	Good	Fair	Poor	Best	Good	Fair	Fair	Best	Good
Alt. 2A	2 GP + Transit Priority + Bike Lane + Det SW	Good	Good	Best	Good	Good	Good	Fair	Good	Good	Fair	Poor	Best	Best	Fair	Good	Best	Good
Alt. 2B	2 GP + Transit Priority + Shared Use Path	Good	Good	Good	Fair	Good	Good	Fair	Good	Good	Fair	Best	Best	Good	Fair	Good	Best	Good
Alt. 2C	2 GP + Transit Priority + Cycle Track + Det SW	Good	Good	Best	Best	Good	Good	Good	Good	Good	Fair	Best	Best	Good	Good	Good	Best	Good
Alt. 3A	2 GP + Curbside Bus + Bike Lane + Det SW	Good	Best	Best	Good	Good	Good	Good	Good	Fair	Fair	Poor	Good	Good	Good	Good	Good	Fair
Alt. 3B	2 GP + Curbside Bus + Shared Use Path	Good	Best	Good	Fair	Good	Good	Good	Good	Fair	Fair	Best	Good	Fair	Good	Good	Good	Fair
Alt. 3C	2 GP + Curbside Bus + Cycle Track + Det SW	Good	Best	Best	Best	Good	Good	Best	Good	Fair	Fair	Best	Fair	Fair	Best	Good	Fair	Fair
Alt. 4A	2 GP + Curbside Bus/HOV + Bike Lane + Det SW	Best	Good	Best	Good	Best	Good	Fair	Best	Fair	Poor	Poor	Good	Best	Good	Good	Good	Fair
Alt. 4B	2 GP + Curbside Bus/HOV+ Shared Use Path	Best	Good	Good	Fair	Best	Good	Fair	Best	Fair	Poor	Best	Good	Good	Good	Good	Good	Fair
Alt. 4C	2 GP + Curbside Bus/HOV + Cycle Track + Det SW	Best	Good	Best	Best	Best	Good	Good	Best	Fair	Poor	Best	Fair	Good	Best	Good	Fair	Fair

Table G-3 Tier 1b Alternatives Evaluation Matrix
CENTRAL SEGMENT: College Avenue to Ziegler Road

Description		GOAL 1: Improve Multi-modal Mobility								GOAL 2: Enhance Accessibility	GOAL 3: Improve Safety		GOAL 4: Integrate Sustainability					
		1.1 Auto Comfort and Convenience	1.2 Transit Comfort and Convenience	1.3 Pedestrian Comfort and Convenience	1.4 Bicycling Comfort and Convenience	1.5 Balance Multi-modal Needs	1.6 Support Future TOD & Mixed Use	1.7 Multi-modal Connections to Transit Centers/ ETCs	1.8 Auto Access to I-25	2.1 Ease of Bike/Ped Crossing	3.1 Improve Safety at High Crash Locations	3.2 Buffer btw vehicular traffic and bicyclists	4.1 Potential ROW impacts	4.2 Consistent with Potential Demand	4.3 Conformance with TMP	4.4 Consistent with Land Use Plans/ Zoning	4.5 Potential Environmental Resources Impacts	4.6 Impervious Surface Area
Alt. 1	No Action	Fair	Fair	Fair	Fair	Poor	Fair	Fair	Poor	Fair	Fair	Poor	Good	Fair	Poor	Fair	Good	Good
Alt. 2B	3 GP + Transit Priority + Shared Use Path	Good	Good	Good	Fair	Good	Good	Fair	Good	Fair	Fair	Best	Best	Good	Fair	Good	Best	Good
Alt. 2C	3 GP + Transit Priority + Cycle Track + Det SW	Good	Good	Best	Best	Good	Good	Good	Good	Fair	Fair	Best	Good	Best	Good	Good	Good	Good
Alt. 4B	2 GP + Curbside Bus/HOV+ Shared Use Path	Good	Good	Good	Fair	Best	Best	Fair	Fair	Fair	Good	Best	Best	Fair	Fair	Best	Best	Good
Alt. 4C	2 GP + Curbside Bus/HOV + Cycle Track + Det SW	Good	Good	Best	Best	Best	Best	Good	Fair	Fair	Good	Best	Good	Good	Good	Best	Good	Good
Alt. 7B	3 GP + Curbside Bus Lane + Shared Use Path	Good	Best	Good	Fair	Fair	Fair	Good	Good	Poor	Fair	Best	Fair	Fair	Good	Good	Fair	Fair
Alt. 7C	3 GP + Curbside Bus Lane + Cycle Track + Det SW	Good	Best	Best	Best	Fair	Fair	Best	Good	Poor	Fair	Best	Poor	Good	Best	Good	Poor	Fair
Alt. 8B	3 GP + Curbside Bus/HOV + Shared Use Path	Best	Good	Good	Fair	Fair	Fair	Fair	Best	Poor	Poor	Best	Fair	Good	Good	Good	Fair	Fair
Alt. 8C	3 GP + Curbside Bus/HOV + Cycle Track + Det SW	Best	Good	Best	Best	Fair	Fair	Good	Best	Poor	Poor	Best	Poor	Best	Best	Good	Poor	Fair

Table G-4 Tier 1b Alternatives Evaluation Matrix
EAST SEGMENT: Ziegler Road to I-25

Description		GOAL 1: Improve Multi-modal Mobility								GOAL 2: Enhance Accessibility	GOAL 3: Improve Safety		GOAL 4: Integrate Sustainability					
		1.1 Auto Comfort and Convenience	1.2 Transit Comfort and Convenience	1.3 Pedestrian Comfort and Convenience	1.4 Bicycling Comfort and Convenience	1.5 Balance Multi-modal Needs	1.6 Support Future TOD & Mixed Use	1.7 Multi-modal Connections to Transit Centers/ ETCs	1.8 Auto Access to I-25	2.1 Ease of Bike/Ped Crossing	3.1 Improve Safety at High Crash Locations	3.2 Buffer btw vehicular traffic and bicyclists	4.1 Potential ROW impacts	4.2 Consistent with Potential Demand	4.3 Conformance with TMP	4.4 Consistent with Land Use Plans/ Zoning	4.5 Potential Environmental Resources Impacts	4.6 Impervious Surface Area
Alt. 1	No Action	Good	Fair	Poor	Fair	Poor	Fair	Fair	Good	Fair	Fair	Poor	Good	Fair	Fair	Fair	Good	Good
Alt. 2B	3 GP + Transit Priority + Shared Use Path	Good	Good	Good	Fair	Good	Good	Fair	Good	Fair	Fair	Best	Best	Good	Fair	Good	Best	Good
Alt. 2C	3 GP + Transit Priority + Cycle Track + Det SW	Good	Good	Best	Best	Good	Good	Good	Good	Fair	Fair	Best	Good	Best	Good	Good	Good	Good
Alt. 4B	2 GP + Curbside Bus/HOV+ Shared Use Path	Good	Good	Good	Fair	Best	Best	Fair	Fair	Fair	Good	Best	Best	Fair	Fair	Best	Best	Good
Alt. 4C	2 GP + Curbside Bus/HOV + Cycle Track + Det SW	Good	Good	Best	Best	Best	Best	Good	Fair	Fair	Good	Best	Good	Good	Good	Best	Good	Good
Alt. 7B	3 GP + Curbside Bus Lane + Shared Use Path	Good	Best	Good	Fair	Fair	Fair	Good	Good	Poor	Fair	Best	Fair	Fair	Good	Good	Fair	Fair
Alt. 7C	3 GP + Curbside Bus Lane + Cycle Track + Det SW	Good	Best	Best	Best	Fair	Fair	Best	Good	Poor	Fair	Best	Fair	Good	Best	Good	Poor	Fair
Alt. 8B	3 GP + Curbside Bus/HOV + Shared Use Path	Best	Good	Good	Fair	Fair	Fair	Fair	Best	Poor	Poor	Best	Fair	Good	Good	Good	Fair	Fair
Alt. 8C	3 GP + Curbside Bus/HOV + Cycle Track + Det SW	Best	Good	Best	Best	Fair	Fair	Good	Best	Poor	Poor	Best	Fair	Best	Best	Good	Poor	Fair

Tier 1b – Evaluation by Segment

Goal #1 – Improve Multi-modal Mobility

1.1 Auto Comfort and Convenience

This evaluation is pulled directly from the auto travel mode from Tier 1a.

Central and East Segments

- 3 GP + HOV = Best
- 3 GP = Good
- 2 GP + HOV = Good
- No Action (Central) = Fair (because College to Boardwalk is only 2 GP)
- No Action (East) = Good (because full segment has 3 GP)

West Segment

- 2 GP + HOV = Best
- 2 GP = Good
- No Action (West) = Good (full segment has 2 GP)

1.2 Transit Comfort and Convenience

This evaluation is pulled directly from the transit travel mode from Tier 1a.

All Segments

- Curbside Bus = Best
- Curbside Bus/HOV Lanes = Good
- Transit Priority = Good
- Mixed Traffic = Fair (No Action for all segments)

1.3 Pedestrian Comfort and Convenience

This evaluation is pulled directly from the Bike/Ped travel mode from Tier 1a. This rating is based on the pedestrian's level of comfort in traveling along the corridor (pedestrian travel across is addressed in a separate evaluation criterion).

All Segments

- Detached Sidewalk = Best
- Shared Use Path = Good
- No Action (West) = Best (because full segment has detached sidewalk)
- No Action (Central) = Fair (because there are some missing sidewalks and some attached sidewalks)
- No Action (East) = Poor (because most of the segment is missing sidewalks or has attached sidewalks)

1.4 Bicycling Comfort and Convenience

Central and East Segments

This evaluation is pulled directly from the Bike/Ped travel mode from Tier 1a.

- Cycle Track = Best
- Shared Use Path = Fair
- Bike Lanes = Fair
- No Action = Fair (both segments have bike lanes)

West Segment

Because the traffic volumes (existing and future) and speeds and substantially lower on the West segment than the Central and East segments, bike lanes adjacent to the vehicle travel lanes are not nearly the deterrent for bicycling along Harmony. Therefore, the bike lanes are rated as having "Good" bicycling comfort and convenience on the West segment, as shown below:

- Cycle Track = Best
- Shared Use Path = Fair
- Bike Lanes = Good
- No Action = Good (bike lanes)

1.5 Balance Multi-Modal Needs

Central and East Segments

Alt. 1	No Action	Poor	- Low transit and bike accommodation
Alt. 2B	3 GP + Transit Priority + Shared Use Path	Good	+ Reasonable balance but favors auto over transit
Alt. 2C	3 GP + Transit Priority + Cycle Track + Det SW	Good	+ Reasonable balance but favors auto over transit
Alt. 4B	2 GP + Curbside Bus/HOV+ Shared Use Path	Best	+ Best balance between auto/transit/bike/ped
Alt. 4C	2 GP + Curbside Bus/HOV + Cycle Track + Det SW	Best	+ Best balance between auto/transit/bike/ped
Alt. 7B	3 GP + Curbside Bus Lane + Shared Use Path	Fair	- Low ped accommodation (wide cross-section difficult to cross)
Alt. 7C	3 GP + Curbside Bus Lane + Cycle Track + Det SW	Fair	- Low ped accommodation (wide cross-section difficult to cross)
Alt. 8B	3 GP + Curbside Bus/HOV + Shared Use Path	Fair	- Low ped accommodation (wide cross-section difficult to cross)
Alt. 8C	3 GP + Curbside Bus/HOV + Cycle Track + Det SW	Fair	- Low ped accommodation (wide cross-section difficult to cross)

West Segment

Alt. 1	No Action	Poor	- Low transit and bike accommodation
Alt. 2A	2 GP + Transit Priority + Bike Lane + Det SW	Good	+ Reasonable balance but favors auto over transit
Alt. 2B	2 GP + Transit Priority + Shared Use Path	Good	+ Reasonable balance but favors auto over transit
Alt. 2C	2 GP + Transit Priority + Cycle Track + Det SW	Good	+ Reasonable balance but favors auto over transit
Alt. 3A	2 GP + Curbside Bus + Bike Lane + Det SW	Good	+ Reasonable balance but favors transit
Alt. 3B	2 GP + Curbside Bus + Shared Use Path	Good	+ Reasonable balance but favors transit
Alt. 3C	2 GP + Curbside Bus + Cycle Track + Det SW	Good	+ Reasonable balance but favors transit
Alt. 4A	2 GP + Curbside Bus/HOV + Bike Lane + Det SW	Best	+ Best balance between auto/transit/bike/ped
Alt. 4B	2 GP + Curbside Bus/HOV+ Shared Use Path	Best	+ Best balance between auto/transit/bike/ped
Alt. 4C	2 GP + Curbside Bus/HOV + Cycle Track + Det SW	Best	+ Best balance between auto/transit/bike/ped

1.6 Support Future TOD & Mixed Use

Central and East Segments

Alt. 1	No Action	Fair	+ Relatively narrow cross-section supports walking connections between land uses - Not likely to attract high transit ridership
Alt. 2B	3 GP + Transit Priority + Shared Use Path	Good	+ Relatively narrow cross-section supports walking connections between land uses + Likely to attract somewhat higher transit ridership – more supportive of TOD and mixed use development
Alt. 2C	3 GP + Transit Priority + Cycle Track + Det SW	Good	+ Relatively narrow cross-section supports walking connections between land uses + Likely to attract somewhat higher transit ridership – more supportive of TOD and mixed use development
Alt. 4B	2 GP + Curbside Bus/HOV+ Shared Use Path	Best	+ Relatively narrow cross-section supports walking connections between land uses + Likely to attract higher transit ridership – more supportive of TOD and mixed use development
Alt. 4C	2 GP + Curbside Bus/HOV + Cycle Track + Det SW	Best	+ Relatively narrow cross-section supports walking connections between land uses + Likely to attract higher transit ridership – more supportive of TOD and mixed use development
Alt. 7B	3 GP + Curbside Bus Lane + Shared Use Path	Fair	- Wide cross-section deters walking between land uses + Likely to attract higher transit ridership – more supportive of TOD and mixed use development
Alt. 7C	3 GP + Curbside Bus Lane + Cycle Track + Det SW	Fair	- Wide cross-section deters walking between land uses + Likely to attract higher transit ridership – more supportive of TOD and mixed use development
Alt. 8B	3 GP + Curbside Bus/HOV + Shared Use Path	Fair	- Wide cross-section deters walking between land uses + Likely to attract higher transit ridership – more supportive of TOD and mixed use development
Alt. 8C	3 GP + Curbside Bus/HOV + Cycle Track + Det SW	Fair	- Wide cross-section deters walking between land uses + Likely to attract higher transit ridership – more supportive of TOD and mixed use development

West Segment

Alt. 1	No Action	Fair	+ Relatively narrow cross-section supports walking connections between land uses - Not likely to attract high transit ridership
Alt. 2A	2 GP + Transit Priority + Bike Lane + Det SW	Good	+ Relatively narrow cross-section supports walking connections between land uses + Likely to attract somewhat higher transit ridership – more supportive of TOD and mixed use development
Alt. 2B	2 GP + Transit Priority + Shared Use Path	Good	+ Relatively narrow cross-section supports walking connections between land uses + Likely to attract somewhat higher transit ridership – more supportive of TOD and mixed use development
Alt. 2C	2 GP + Transit Priority + Cycle Track + Det SW	Good	+ Relatively narrow cross-section supports walking connections between land uses + Likely to attract somewhat higher transit ridership – more supportive of TOD and mixed use development
Alt. 3A	2 GP + Curbside Bus + Bike Lane + Det SW	Good	- Wider cross-section deters walking between land uses + Likely to attract higher transit ridership – more supportive of TOD and mixed use development
Alt. 3B	2 GP + Curbside Bus + Shared Use Path	Good	- Wider cross-section deters walking between land uses + Likely to attract higher transit ridership – more supportive of TOD and mixed use development
Alt. 3C	2 GP + Curbside Bus + Cycle Track + Det SW	Good	- Wider cross-section deters walking between land uses + Likely to attract higher transit ridership – more supportive of TOD and mixed use development
Alt. 4A	2 GP + Curbside Bus/HOV + Bike Lane + Det SW	Good	- Wider cross-section deters walking between land uses + Likely to attract higher transit ridership – more supportive of TOD and mixed use development
Alt. 4B	2 GP + Curbside Bus/HOV+ Shared Use Path	Good	- Wider cross-section deters walking between land uses + Likely to attract higher transit ridership – more supportive of TOD and mixed use development
Alt. 4C	2 GP + Curbside Bus/HOV + Cycle Track + Det SW	Good	- Wider cross-section deters walking between land uses + Likely to attract higher transit ridership – more supportive of TOD and mixed use development

1.7 Multi-modal Connections to Transit Centers/ETCs

This evaluation uses a combination of the ratings for the transit and bike/ped modes from Tier 1a. This rating is based on quality of transit service and bicycle/pedestrian accommodation that could be provided in each option to the South Transit Center, the Harmony Transfer Center, Mason Corridor, and Timberline Road Corridor, and generally correlates to the expected ridership and bicycle/pedestrian use associated with each option.

All Segments

- Curbside Bus + Cycle Track + Detached Sidewalk = Best
- Curbside Bus + Shared Use Path = Good
- Curbside Bus + Bike Lane + Detached Sidewalk = Good (West only)

- Curbside Bus/HOV + Cycle Track + Detached Sidewalk = Good
- Curbside Bus/HOV + Shared Use Path = Fair
- Curbside Bus/HOV + Bike Lane + Detached Sidewalk = Fair (West only)

- Transit Priority + Cycle Track + Detached Sidewalk = Good
- Transit Priority + Shared Use Path = Fair
- Transit Priority + Bike Lane + Detached Sidewalk = Fair (West only)
- No Action (Mixed Traffic + Bike Lanes) = Fair

1.8 Auto Access to I-25

This evaluation is pulled directly from the auto travel mode from Tier 1a.

Central and East Segments

- 3 GP + HOV = Best
- 3 GP = Good
- 2 GP + HOV = Fair
- No Action (Central) = Poor (because College to Boardwalk is only 2 GP)
- No Action (East) = Good (because full segment has 3 GP)

West Segment

- 2 GP + HOV = Best
- 2 GP = Good
- No Action (West) = Good (full segment has 2 GP)

Goal #2 – Enhance Accessibility

2.1 Ease of Bike/Ped Crossing

Based on the total number of travel lanes a bicyclist or pedestrian is required to cross (GP + bus and/or bus/HOV).

All Segments

- 2 lanes in each direction = Good
- 3 lanes in each direction = Fair
- 4 lanes in each direction = Poor

Goal #3 – Improve Safety

3.1 Improve Safety at High Crash Locations

This evaluation uses the same methodology as the auto travel mode from Tier 1a. Increasing the number of travel lanes would result in increased complexity and decreased safety. To isolate the effect of the number of travel lanes on safety, we assume that all general purpose lanes would operate at their maximum capacity and that left turns are protected-only at signalized intersections. A shared HOV/bus lane would reduce the safety (compared to bus only lane) because the bus only lane would be used only by professional drivers.

East and Central Segments

- 2 GP (with Transit Priority or with bus only lane) = Best

- 2 GP + Bus/HOV = Good
- 3 GP (with Transit Priority or with bus only lane) = Fair (includes No Action)
- 3 GP + Bus/HOV = Poor

West Segment

- 2 GP (with Transit Priority or with bus only lane) = Fair (includes No Action)
- 2 GP + Bus/HOV = Poor

3.2 Buffer between Vehicular Traffic and Bicyclists

This evaluation is pulled directly from the Bike/Ped travel mode from Tier 1a.

All Segments

- Cycle Track = Best
- Shared Use Path = Best
- Bike Lane = Poor

Goal #4 – Integrate Sustainability

4.1 Potential ROW Impacts

Central and East Segments

Alt. 1	No Action	Good	114 feet + 2Buffer (10) + 2Sidewalk (6) = **146**
Alt. 2B	3 GP + Transit Priority + Shared Use Path	Best	98 + 2Buffer (10) + 2Shared Use Path (10) = **138**
Alt. 2C	3 GP + Transit Priority + Cycle Track + Det SW	Good	98 + 2Buffer (4) + 2Cycle Track (6) + 2Buffer (10) + 2Sidewalk (6) = **150**
Alt. 4B	2 GP + Curbside Bus/HOV+ Shared Use Path	Best	98 + 2Buffer (10) + 2Shared Use Path (10) = **138**
Alt. 4C	2 GP + Curbside Bus/HOV + Cycle Track + Det SW	Good	98 + 2Buffer (4) + 2Cycle Track (6) + 2Buffer (10) + 2Sidewalk (6) = **150**
Alt. 7B	3 GP + Curbside Bus Lane + Shared Use Path	Fair	122 + 2Buffer (10) +2Shared Use Path (10) = **162**
Alt. 7C	3 GP + Curbside Bus Lane + Cycle Track + Det SW	Poor	122 + 2Buffer (4) + 2Cycle Track (6) + 2Buffer (10) + 2Sidewalk (6) = **174**
Alt. 8B	3 GP + Curbside Bus/HOV + Shared Use Path	Fair	122 + 2Buffer (10) +2Shared Use Path (10) = **162**
Alt. 8C	3 GP + Curbside Bus/HOV + Cycle Track + Det SW	Poor	122 + 2Buffer (4) + 2Cycle Track (6) + 2Buffer (10) + 2Sidewalk (6) = **174**

The first number in the table represents the curbline to curbline dimension. For comparison purposes, assumes the following dimensions: 12 foot travel lanes, 26 foot median, 8 foot bike lanes, 6 foot buffers on either side of Median BRT, 6 foot one-way cycle tracks with 4 foot buffer, 10 foot buffer to sidewalk or shared use path, 6 foot sidewalks, 10 foot shared use path.

Potential ROW Impact: <140 BEST
140 – 150 GOOD
150 – 170 FAIR
>170 POOR (Central Segment), FAIR (East Segment because of fewer ROW constraints)

West Segment

Alt. 1	No Action	**Best**	78 + 2Buffer (6) + 2Sidewalk (6) = **102**
Alt. 2A	2 GP + Transit Priority + Bike Lane + Det SW	**Best**	78 + 2Buffer (6) + 2Sidewalk (6) = **102**
Alt. 2B	2 GP + Transit Priority + Shared Use Path	**Best**	62 + 2Buffer (6) + 2Shared Use Path (10) = **94**
Alt. 2C	2 GP + Transit Priority + Cycle Track + Det SW	**Best**	62 + 2Buffer (4) + 2Cycle Track (6) + 2Buffer (6) + 2Sidewalk (6) = **106**
Alt. 3A	2 GP + Curbside Bus + Bike Lane + Det SW	**Good**	102 + 2Buffer (6) + 2Sidewalk (6) = **126**
Alt. 3B	2 GP + Curbside Bus + Shared Use Path	**Good**	86 + 2Buffer (6) + 2Shared Use Path (10) = **118**
Alt. 3C	2 GP + Curbside Bus + Cycle Track + Det SW	**Fair**	86 + 2Buffer (4) + 2Cycle Track (6) + 2Buffer (6) + 2Sidewalk (6) = **130**
Alt. 4A	2 GP + Curbside Bus/HOV + Bike Lane + Det SW	**Good**	102 + 2Buffer (6) + 2Sidewalk (6) = **126**
Alt. 4B	2 GP + Curbside Bus/HOV+ Shared Use Path	**Good**	86 + 2Buffer (6) + 2Shared Use Path (10) = **118**
Alt. 4C	2 GP + Curbside Bus/HOV + Cycle Track + Det SW	**Fair**	86 + 2Buffer (4) + 2Cycle Track (6) + 2Buffer (6) + 2Sidewalk (6) = **130**

The first number in the table represents the curbline to curbline dimension, red text represents differences specific to the west segment. For comparison purposes, assumes the following dimensions: 12 foot travel lanes, 14 foot median, 8 foot bike lanes, 6 foot buffers on either side of Median BRT, 6 foot one-way cycle tracks with 4 foot buffer, 6 foot buffer to sidewalk or shared use path, 6 foot sidewalks, 10 foot shared use path.

Existing ROW 120 – 140 feet

Potential ROW Impact: ≤110 BEST
110 – 120 GOOD
120 – 130 FAIR
≥130 POOR

4.2 Consistent with Potential Demand

This evaluation uses a combination of the ratings for the auto, transit and bike/ped modes from Tier 1a.

Central and East Segments

Highest rating =

- 3 GP (NOTE: 2 GP not enough to serve 2035 demand)
- Transit Priority or Bus/HOV (NOTE: bus only lane would be costly compared to demand/use)
- Cycle Track + Detached Sidewalk (NOTE: shared use path would not provide separate facilities for bike vs ped)

All three of the highest = BEST
Two of the three highest = GOOD
One of the three highest = FAIR
None of the three highest = POOR

West Segment

Highest rating =

- 2 GP
- Transit Priority or Bus/HOV (NOTE: bus only lane would be costly compared to demand/use)
- Bike Lane + Detached Sidewalk (NOTE: cycle track would be costly compared to need on this segment, and shared use path would not provide separate facilities for bike vs ped)

All three of the highest = BEST
Two of the three highest = GOOD
One of the three highest = FAIR
None of the three highest = POOR

4.3 Conformance with TMP

This evaluation uses a combination of the ratings for the auto, transit and bike/ped modes from Tier 1a.

Central and East Segments

Highest rating =

- 3 GP (specified in TMP)
- Curbside Bus OR Curbside Bus/HOV (high quality, high frequency transit service on ETCs)
- Cycle Track + Detached Sidewalk (most consistent with ETC emphasis on providing mode choice)

All three of the highest = BEST
Two of the three highest = GOOD
One of the three highest = FAIR (No Action on East Segment because fully 3 GP lanes)
None of the three highest = POOR (No Action on Central Segment because not fully 3 GP lanes)

West Segment

Highest rating =

- 2 GP (specified in TMP)
- Curbside Bus OR Curbside Bus/HOV (high quality, high frequency transit service on ETCs)
- Cycle Track + Detached Sidewalk (most consistent with ETC emphasis on providing mode choice)

All three of the highest = BEST
Two of the three highest = GOOD
One of the three highest = FAIR (No Action)
None of the three highest = POOR

4.4 Consistent with Land Use Plans/Zoning

This evaluation is based on a combination of the ratings from Tier 1a.

Central and East Segments

Alt. 1	No Action	Fair	*+ Balances auto access to adjacent land uses with mobility needs* *- Does not support transit access to corridor land uses*
Alt. 2B	3 GP + Transit Priority + Shared Use Path	Good	*+ Balances auto access to adjacent land uses with mobility needs* *+ Supports transit access to corridor land uses*
Alt. 2C	3 GP + Transit Priority + Cycle Track + Det SW	Good	*+ Balances auto access to adjacent land uses with mobility needs* *+ Supports transit access to corridor land uses*
Alt. 4B	2 GP + Curbside Bus/HOV+ Shared Use Path	Best	*+ Favors access to adjacent land uses* *+ Best supports transit access to corridor land uses*
Alt. 4C	2 GP + Curbside Bus/HOV + Cycle Track + Det SW	Best	*+ Favors access to adjacent land uses* *+ Best supports transit access to corridor land uses*
Alt. 7B	3 GP + Curbside Bus Lane + Shared Use Path	Good	*+ Balances auto access to adjacent land uses with mobility needs* *+ Best supports transit access to corridor land uses*
Alt. 7C	3 GP + Curbside Bus Lane + Cycle Track + Det SW	Good	*+ Balances auto access to adjacent land uses with mobility needs* *+ Best supports transit access to corridor land uses*
Alt. 8B	3 GP + Curbside Bus/HOV + Shared Use Path	Good	*+ Balances auto access to adjacent land uses with mobility needs* *+ Best supports transit access to corridor land uses*
Alt. 8C	3 GP + Curbside Bus/HOV + Cycle Track + Det SW	Good	*+ Balances auto access to adjacent land uses with mobility needs* *+ Best supports transit access to corridor land uses*

West Segment

Alt. 1	No Action	Fair	*- Does not support transit access to corridor land uses*
Alt. 2A	2 GP + Transit Priority + Bike Lane + Det SW	Good	*+ Supports transit access to corridor land uses*
Alt. 2B	2 GP + Transit Priority + Shared Use Path	Good	*+ Supports transit access to corridor land uses*
Alt. 2C	2 GP + Transit Priority + Cycle Track + Det SW	Good	*+ Supports transit access to corridor land uses*
Alt. 3A	2 GP + Curbside Bus + Bike Lane + Det SW	Good	*+ Best supports transit access to corridor land uses*
Alt. 3B	2 GP + Curbside Bus + Shared Use Path	Good	*+ Best supports transit access to corridor land uses*
Alt. 3C	2 GP + Curbside Bus + Cycle Track + Det SW	Good	*+ Best supports transit access to corridor land uses*
Alt. 4A	2 GP + Curbside Bus/HOV + Bike Lane + Det SW	Good	*+ Best supports transit access to corridor land uses*
Alt. 4B	2 GP + Curbside Bus/HOV+ Shared Use Path	Good	*+ Best supports transit access to corridor land uses*
Alt. 4C	2 GP + Curbside Bus/HOV + Cycle Track + Det SW	Good	*+ Best supports transit access to corridor land uses*

NOTE: All include 2 GP, not a differentiator

4.5 Potential Environmental Resources Impacts

This evaluation assesses the likelihood that an alternative will impact environmental resources along the corridor, based on the overall width of the cross-section.

Central and East Segments

Alt. 1	No Action	Good	
Alt. 2B	3 GP + Transit Priority + Shared Use Path	Best	
Alt. 2C	3 GP + Transit Priority + Cycle Track + Det SW	Good	
Alt. 4B	2 GP + Curbside Bus/HOV+ Shared Use Path	Best	
Alt. 4C	2 GP + Curbside Bus/HOV + Cycle Track + Det SW	Good	
Alt. 7B	3 GP + Curbside Bus Lane + Shared Use Path	Fair	
Alt. 7C	3 GP + Curbside Bus Lane + Cycle Track + Det SW	Poor	
Alt. 8B	3 GP + Curbside Bus/HOV + Shared Use Path	Fair	
Alt. 8C	3 GP + Curbside Bus/HOV + Cycle Track + Det SW	Poor	

Total Width (refer to 4.1):
<140 BEST
140 – 150 GOOD
150 – 170 FAIR
>170 POOR

West Segment

Alt. 1	No Action	Best	
Alt. 2A	2 GP + Transit Priority + Bike Lane + Det SW	Best	
Alt. 2B	2 GP + Transit Priority + Shared Use Path	Best	
Alt. 2C	2 GP + Transit Priority + Cycle Track + Det SW	Best	
Alt. 3A	2 GP + Curbside Bus + Bike Lane + Det SW	Good	
Alt. 3B	2 GP + Curbside Bus + Shared Use Path	Good	
Alt. 3C	2 GP + Curbside Bus + Cycle Track + Det SW	Fair	
Alt. 4A	2 GP + Curbside Bus/HOV + Bike Lane + Det SW	Good	
Alt. 4B	2 GP + Curbside Bus/HOV+ Shared Use Path	Good	
Alt. 4C	2 GP + Curbside Bus/HOV + Cycle Track + Det SW	Fair	

Total Width (refer to 4.1):
≤110 BEST
110 – 120 GOOD
120 – 130 FAIR
≥130 POOR

4.6 Impervious Surface Area

This evaluation is a measure of the cross-section width that is impervious, which can be used as a planning-level indicator of water quality treatment requirements.

Central and East Segments

Alt. 1	No Action	Good	120 feet
Alt. 2B	3 GP + Transit Priority + Shared Use Path	Good	118 feet
Alt. 2C	3 GP + Transit Priority + Cycle Track + Det SW	Good	122 feet
Alt. 4B	2 GP + Curbside Bus/HOV+ Shared Use Path	Good	118 feet
Alt. 4C	2 GP + Curbside Bus/HOV + Cycle Track + Det SW	Good	122 feet
Alt. 7B	3 GP + Curbside Bus Lane + Shared Use Path	Fair	142 feet
Alt. 7C	3 GP + Curbside Bus Lane + Cycle Track + Det SW	Fair	146 feet
Alt. 8B	3 GP + Curbside Bus/HOV + Shared Use Path	Fair	142 feet
Alt. 8C	3 GP + Curbside Bus/HOV + Cycle Track + Det SW	Fair	146 feet

The first number in the table represents the curbline to curbline dimension. For comparison purposes, assumes the following dimensions: 12 foot travel lanes, 26 foot median, 8 foot bike lanes, 6 foot buffers on either side of Median BRT, 6 foot one-way cycle tracks with 4 foot buffer, 10 foot buffer to sidewalk or shared use path, 6 foot sidewalks, 10 foot shared use path.

Impervious Surface Area: about the same as No Action – 120 +/- = GOOD
>140 FAIR

West Segment

Alt. 1	No Action	Good	90 feet
Alt. 2A	2 GP + Transit Priority + Bike Lane + Det SW	Good	90 feet
Alt. 2B	2 GP + Transit Priority + Shared Use Path	Good	82 feet
Alt. 2C	2 GP + Transit Priority + Cycle Track + Det SW	Good	86 feet
Alt. 3A	2 GP + Curbside Bus + Bike Lane + Det SW	Fair	114 feet
Alt. 3B	2 GP + Curbside Bus + Shared Use Path	Fair	106 feet
Alt. 3C	2 GP + Curbside Bus + Cycle Track + Det SW	Fair	110 feet
Alt. 4A	2 GP + Curbside Bus/HOV + Bike Lane + Det SW	Fair	114 feet
Alt. 4B	2 GP + Curbside Bus/HOV+ Shared Use Path	Fair	106 feet
Alt. 4C	2 GP + Curbside Bus/HOV + Cycle Track + Det SW	Fair	110 feet

The first number in the table represents the curbline to curbline dimension, red text represents differences specific to the west segment. For comparison purposes, assumes the following dimensions: 12 foot travel lanes, 14 foot median, 8 foot bike lanes, 6 foot buffers on either side of Median BRT, 6 foot one-way cycle tracks with 4 foot buffer, 6 foot buffer to sidewalk or shared use path, 6 foot sidewalks, 10 foot shared use path.

Impervious Surface Area: about the same as No Action – 90 +/- = GOOD
>100 FAIR

Table G-5 Tier 2 Alternatives Evaluation and Screening

Alternative	Public Support	Potential to Improve Multi-modal Mobility			Potential to Enhance Accessibility	Potential to Improve Safety	Potential to Integrate Sustainability	Recommendations
		Transit Ridership	Traffic Operations	Bicycle and Pedestrian Accommodation	Quality of Transit Service Variety of bike/ped users	Crash Modification Factors Bike/Ped Safety	ROW impacts Cost Drainage Mode Shift Potential	
No Action	Of the 126 questionnaire respondents: 23% said no bus improvements needed	Harmony daily transit ridership = 650; Transfort daily transit riders = 10,100	Four intersections operate at LOS E, one intersection (Ziegler, east segment) operates at LOS F	See Bike/Ped Options	Relatively low quality of transit service; estimated 3,700 daily transfers	Does not address safety	No ROW impacts	**Retain** for further analysis as the No Action Alternative
TSM	40% said provide one bus route all the way along Harmony	16% increase in Harmony transit ridership over No Action; 8% increase in Transfort transit riders over No Action	Two intersections operate at LOS E; PM peak corridor travel time would decrease 2 minutes compared to No Action	See Bike/Ped Options	Slightly higher quality of transit service compared to No Action; over half of new transit riders would require transfer	Intersection improvements at Boardwalk, Timberline, Ziegler, and Lady Moon would provide crash reduction benefits	No ROW impacts Highest cost per new rider	**Eliminate** – All Segments because this alternative would not as effectively address the project purpose and need to provide comfortable and convenient multimodal travel options (lower transit ridership and highest cost per new rider) compared to the other build alternatives
Enhanced Bus	When asked which alternative they preferred, Enhanced Bus (paired with a cycle track) was selected more than other alternatives	227% increase in Harmony transit ridership over No Action; 17% increase in Transfort transit riders over No Action	Two intersections operate at LOS E; PM peak corridor travel time would decrease 2 minutes compared to No Action	See Bike/Ped Options	Higher quality of transit service compared to No Action; over half of new transit riders would require transfer	Intersection improvements at Boardwalk, Timberline, Ziegler, and Lady Moon would provide crash reduction benefits	Largest ROW impacts to accommodate queue jumps Would encourage transit use	**Retain** – West, Central and East Segments as the Locally Preferred Alternative because this alternative provides the best compromise of increasing transit ridership while retaining acceptable traffic operations.
End-to-End BRT/HOV	Only 24% liked the idea of a bus-only lane; and only 18% liked the idea of an HOV lane	266% increase in Harmony transit ridership over No Action; 30% increase in Transfort transit riders over No Action	Two intersections operate at LOS E; one intersection (College, west segment) operates at LOS F; PM peak corridor travel time would increase 3 minutes over No Action	See Bike/Ped Options	Highest quality of transit service compared to No Action and other alternatives; less than 5% of new transit riders would require transfer	Intersection improvements at Boardwalk, Timberline, Ziegler, and Lady Moon would provide crash reduction benefits	Minimal ROW impacts Would encourage transit use; may encourage carpooling	**Eliminate** – West, Central and East Segments because this alternative would not address the project purpose and need to improve auto mobility (poor LOS at College, increased delays at other intersections) ; increased transit ridership (compared to Enhanced Bus) not deemed sufficient to justify reduction in traffic operations
Interlined BRT/HOV	only 24% liked the idea of a bus-only lane; and only 18% liked the idea of an HOV lane	31% increase in Transfort transit riders over No Action	Two intersections operate at LOS E; one intersection (College, west segment) operates at LOS F; PM peak corridor travel time would increase 3 minutes over No Action	See Bike/Ped Options	Highest quality of transit service compared to No Action and other alternatives; total number of transfers (compared to No Action) would decrease by 15%	Intersection improvements at Boardwalk, Timberline, Ziegler, and Lady Moon would provide crash reduction benefits	Minimal ROW impacts Lowest cost per new rider Would encourage transit use; may encourage carpooling	**Eliminate** – West, Central and East Segments because this alternative would not address the project purpose and need to improve auto mobility (poor LOS at College, increased delays at other intersections) ; increased transit ridership (compared to Enhanced Bus) not deemed sufficient to justify reduction in traffic operations

Alternative	Public Support	Potential to Improve Multi-modal Mobility			Potential to Enhance Accessibility	Potential to Improve Safety	Potential to Integrate Sustainability	Recommendations
		Transit Ridership	Traffic Operations	Bicycle and Pedestrian Accommodation	Quality of Transit Service Variety of bike/ped abilities	Crash Modification Factors Bike/Ped Safety	ROW impacts Cost Drainage Mode Shift Potential	
Bike/Ped Options to be Paired with Build Alternatives								
Bike Lanes + Detached Sidewalks	18% of questionnaire respondents think bicyclists should be accommodated in bike lanes; 72% think pedestrians should be accommodated on detached sidewalks	Not Applicable	Not Applicable	Consistent with existing accommodation (no improvement); bicycle counts show relatively low use of facilities	Provides separate space for bicyclists and pedestrians – better accommodating different abilities; less confident bicyclists may not be comfortable riding in close proximity to travel lane	No change	Minimal cost to complete missing sidewalk segments	**Retain** – West Segment **Eliminate** – Central and East Segments because the existing bike lanes get relatively low use, and there is a strong public desire for enhanced bicycling accommodation
Buffered Bike Lanes + Detached Sidewalks	18% of questionnaire respondents think bicyclists should be accommodated in buffered bike lanes; 72% think pedestrians should be accommodated on detached sidewalks	Not Applicable	Not Applicable	Would improve bicycle accommodation by enhancing drivers' visibility and awareness of bicyclists	Provides separate space for bicyclists and pedestrians – better accommodating different abilities; visual separation from travel lane alerts drivers to presence of bicyclists – less confident bicyclists may be more comfortable	Heightened driver awareness of bicyclists; buffer provides improved comfort for bicyclists	Relatively low cost improvement ($18,000 per lane-mile); can be accommodated on existing infrastructure in Central and East Segments; would require widening (and higher cost) on East Segment	**Retain** – Central and East Segments **Eliminate** – West Segment because traffic volumes and speeds are lower on this segment, reducing the need for separation between cars and bikes; and this option would require widening
Cycle Tracks + Detached Sidewalks	50% of questionnaire respondents think bicyclists should be accommodated in cycle tracks; 72% think pedestrians should be accommodated on detached sidewalks	Not Applicable	Not Applicable	Would improve bicycle accommodation by enhancing drivers' visibility and awareness of bicyclists and providing a physical separation between auto travel lanes and bicyclists	Provides separate space for bicyclists and pedestrians – better accommodating different abilities; physical separation from travel lane alerts drivers to presence of bicyclists – less confident bicyclists likely more comfortable	Heightened driver awareness of bicyclists; physical separation from travel lanes provides improved comfort for bicyclists; potential for reduced crash rates	Highest cost improvement ($440,000 per lane-mile); raised separation creates drainage complexities; highest potential for mode shift	**Eliminate** – All Segments because of the significant cost compared to buffered bike lanes and the introduction of drainage complexities with the raised separation
Shared Use Paths	48% of questionnaire respondents think bicyclists should be accommodated in shared use paths	Not Applicable	Not Applicable	Eliminates on-street bicycling accommodation	Bicyclists and pedestrians of all types and abilities would be forced to use this single facility	Would introduce safety concern associated with operational conflicts between two-way sidepath and automobiles at intersections/access points	Higher cost improvement ($185,000 per lane-mile)	**Eliminate** – All Segments because of the introduction of conflict points at intersection and access points, and this option would require bicyclists and pedestrians of all abilities to use a single facility; this option is not consistent with guidelines in AASTHO Guide to Development of Bicycle Facilities (2012)