Wichita Priority Safety Corridor Plan

Alternative Evaluation Methodology – September 10, 2018

Methodology

Multiple design options existing for the Broadway Avenue corridor from 3rd Street to 11th Street. In order to help identify the designs that best meet the goals of Wichita residents and stakeholders, the Project Team developed a scoring matrix. The matrix compares each option relative to each other and to the baseline condition on a variety of factors. Given that the alternatives are conceptual designs and have not been directly field tested in the corridor, evaluation relies primarily on qualitative measures with some quantitative analysis as well as the use of relevant policies and best practices where applicable. In some cases, quantitative data may be available. Only permanent or long-term concepts were evaluated through this process. Concepts that were not evaluated include Concepts D, E, H, and N. These concepts illustrate temporary changes that will be explored in project phasing as appropriate.

Community Goals

The community goals of Wichita residents and stakeholders are reflected in the City's vision and mission; and the goals of both the Wichita Pedestrian Master Plan and the Wichita Bicycle Master Plan.

The City of Wichita vision is that the "City of Wichita is a leading-edge organization serving a dynamic and inclusive community". The City's mission, as an exceptionally well-run city, is to:

- keep Wichita safe
- grow our economy
- build dependable infrastructure; and
- provide conditions for living well

The goals of the Wichita Pedestrian Master are:

- provide a safe and welcoming pedestrian network
- improve community accessibility and connections for pedestrians; and
- promote a citywide culture of walking

The goals of the Wichita Bicycle Master Plan are:

- increase the amount of bicycling in Wichita;
- improve the safety of bicyclists in Wichita;
- foster and promote a culture where bicycling is a viable and acceptable form of transportation.

Evaluation Criteria and Methodology

The following criteria and methodology have been developed in order to assist with evaluating which of the design options best meet the community goals.

- **Safety**: Improve safety for people walking, biking, and driving
- **Mobility:** Provide mobility options for people of all ages, abilities, and backgrounds
- **Health:** Increase opportunities for active living and environmental sustainability
- **Economy:** Support local businesses, community vitality, and access to economic opportunity

- **Infrastructure:** Build dependable infrastructure in a cost-effective way

Alternatives may be rated using a “high,” “medium,” “neutral,” “negative,” and “poor” scale to rank how that alternative performed on the overarching criteria with a “high” representing the most favorable score.

Ranking: High

Alternative performs well on this measure relative to existing conditions and additional alternatives. Option represents best case scenario for the corridor given known constraints.

Ranking: Medium

Alternative performs well on this measure relative to existing conditions and additional alternatives but does not represent the best-case scenario for the corridor given known constraints.

Ranking: Neutral

Alternative performs neutrally on this measure relative to existing conditions and additional alternatives.

Ranking: Negative

Alternative performs negatively on this measure relative to existing conditions and additional alternatives.

Ranking: Poor

Alternative performs relatively poorly on this measure relative to existing conditions and additional alternatives. Option represents worst case scenario for the corridor given known constraints.

Evaluation Criteria

Safety

Integration of pedestrian and bicycle facilities, reducing vehicle speeds and crash risk, and enhancing crossings that improve corridor safety for all modes. The following areas contribute to improved corridor safety:

- Crash potential
- Travel mode separation
- Travel mode conflicts
- Vehicle speed
- Pedestrian crossing distances
- Pedestrian and street lighting

Cost

Cost is measured by an order of magnitude estimates cost of implementation. Each option is evaluated based on the expected price relative to the other options. Each option would be ranked by either Substantial, Moderate, or Low cost.

- Moving utilities & stormwater facilities
- Increased pavement, curbing, striping & miscellaneous infrastructure
- Increased amenities and vegetation

Maintenance & Operations

Maintenance and operations considerations account for labor and materials necessary to keep a facility running once constructed. Each option is evaluated based on the expected costs relative to the other options. Each option would be ranked by either Substantial, Moderate, or Low maintenance and operations impacts. The following are maintenance and operations considerations:

- User Navigation
- Pavement Maintenance
- Re-striping
- Amenity Maintenance
- Vegetation Maintenance
- Plowing Considerations
- Life-cycle Cost

Phasing & Implementation

Developing the corridor only within the existing curb lines reduces potential impacts to utilities and avoids impacts to private property. The more substantial the improvements outside of the existing roadway, the increased likelihood of longer construction duration.

- Existing facility re-use
- Construction duration
- Construction impacts to existing travel modes
- Utility relocation
- Right-of-way or easement acquisition

Environmental Impact

Reconfiguration of the corridor provides an opportunity for reducing the roadway's environmental impact. These impacts may include natural systems like vegetation and stormwater management; operations which reduce carbon footprints; and construction processes conserving, re-using, or recycling resources. Following are considerations evaluated when determining environmental impacts:

- Shade protection/conservation
- Opportunities for stormwater best management practices
- Areas for trees and green space
- Construction material conservation/reduction
- Operations & facilities supporting carbon footprint reduction

Health & Mobility

Comfortable facilities for people walking, biking, or taking transit can positively affect public health by impacting the following areas:

- Promoting physical activity for all users and abilities
- Increasing walking, bicycling, and transit mode share by providing connections to destinations
- Enhancing social cohesion through activation of the public realm
- Pedestrian crossing timing
- Travel mode comfort
- Environmental benefits (ie. Pollutant reduction, noise reduction, heat reduction, etc)

Economic

Economic considerations address the impact a new facility may have on a corridor. Studies have shown that individuals traveling by non-motorized modes are more likely to be repeat customers of local businesses and that safe, inviting walking and bicycling facilities can encourage private investment. On-street parking is more utilized than off-street providing opportunity for revenue and increased development. Even speed reduction and provision of street trees has been shown to benefit economic growth. The following are considerations evaluated with regard to economic impacts:

- Vehicular speed
- Active transportation facilities
- Land use integration
- Parking provision and development offset
- Environmental/community amenity and comfort
- Public realm activation

Parking Impact

Parking impacts will be measured differently in the project area based on existing conditions and needs. Currently, on-street parking has low utilization generally with spikes in use such as mass attendance at the cathedral. Parking is evaluated as follows:

- Between 3rd Street and Central Avenue, where on-street parking is currently provided, parking impacts will be measured based on preservation of existing parking.
- Between Central Avenue and 11th Street, where on-street parking is not provided, parking impacts will be measured based on their ability to satisfy a demonstrated demand.

Traffic Operations

With the exception of select alternatives in transition zones at each end of the project area, all options propose a four to three lane conversion of Broadway Avenue. Traffic analysis examined vehicular traffic operations in the existing four lane and proposed three lane configurations using current and 2040 projected traffic volumes. Results suggested that traffic flow would operate at or above the desired level of service in both the four lane and three lane scenarios. The impact of a lane reallocation on bus operations is negligible. Between Central Avenue and 13th Street, there are currently two buses per hour off peak and four buses per hour during peak hours. Today, buses stop in the curbside traffic lane, requiring other vehicles to either wait or merge. In a three-lane scenario, buses would stop either in a parking or bike lane, and vehicles would pass without needing to merge into adjacent or oncoming traffic. Operations for people walking and biking will be based on the safety, comfort, and connectivity of people using active transportation modes. Concepts will be evaluated based how they balance operational needs for all traffic modes including people walking, bicycling, driving, and taking transit.

Evaluation Matrix

The evaluation matrix below evaluates the concepts, existing and proposed, listed along the top row against evaluation criteria listed on the left-hand column. The corridor has been evaluated in two segments – from Central to 11th and from 3rd to Central. Concepts in each segment should be compared with other concepts in the same segment and not with concepts in a different segment. Each criterion has been scored as follows:

High (++)

Medium (+)

Neutral = (o)

Negative = (-)

Poor = (--)

Totals in the matrix's bottom row reflect the numerical sum of +, represented with a whole numerical value #, and –, represented (#), for each individual concept. For example, four + and two – equals 2 with o having no value. Similarly, four – and two + equals (2).

	Existing Central to 11th (C-11)	Concept A: C-11	Concept B: C-11	Concept C: C-11	Concept F: C-11	Existing 3rd to Central (3–C)	Concept G: 3–C	Concept I: 3–C	Concept J: 3–C	Concept K: 3–C	Concept L: 3–C	Concept M: 3–C	Concept O: 3–C
Safety	--	+	++	o	-	--	--	o	+	++	++	++	-
Cost	o	++	-	--	-	o	++	++	+	+	+	-	-
Maintenance & Operations	o	++	--	-	-	o	++	++	o	-	-	--	+
Phasing & Implementing	o	++	+	+	+	o	++	++	++	++	++	+	+
Environmental Impact	o	+	-	-	-	o	+	+	+	+	+	--	-
Health & Mobility	--	+	++	+	--	--	+	+	+	++	++	++	--
Economic	-	+	+	++	+	o	+	+	+	++	+	++	o
Parking Impacts	o	o	o	++	++	o	--	o	-	-	--	-	o
Traffic Operations	--	+	++	+	o	--	--	+	++	++	++	++	o
TOTALS	(7)	**11**	4	3	(2)	(6)	3	**10**	**8**	**10**	**8**	3	(3)

Conclusions

All proposed options score higher than existing conditions indicating each alternative provides benefits. Concept A scores highest for the Central to 11th segment. Multiple concepts scored high within the 3rd to Central segment including Concepts I, J, K, and L. Depending on community engagement results any of these concepts would provide substantial benefits.