

# Welcome!

Please come in and review the presentation boards. Our staff will be happy to answer your questions and discuss the project.

Feedback forms are available and we encourage you to provide your input.

Please visit [calgary.ca/16Ave19St](https://calgary.ca/16Ave19St) for project information.

## Open House Objectives

- Provide opportunity for the public to:
  - Learn about the different options being proposed
  - Provide input on:
    - potential community impacts
    - proposed pedestrians / cyclists facilities and connections
    - accommodation of transit
    - ability to accommodate future auto / truck travel demand
- Feedback forms are provided.
  - We encourage you to fill one out and submit it in person, online, by email or mail.
  - You can also provide feedback at [calgary.ca/16Ave19St](http://calgary.ca/16Ave19St) or by calling 3-1-1 between Dec. 5 and Dec. 19, 2013.

# Public Engagement

## Our engagement promise

- To listen to stakeholders and community members and learn about their views, issues, concerns, and expectations.
- To incorporate stakeholder and community input to the maximum extent possible, and advise how consultation affected the decisions and outcomes.

## Engagement to date

- Stakeholders (community, business and special interest group representatives) and members of the public have been engaged throughout the study by way of a stakeholder meeting and workshop, public open house and accompanying online survey.

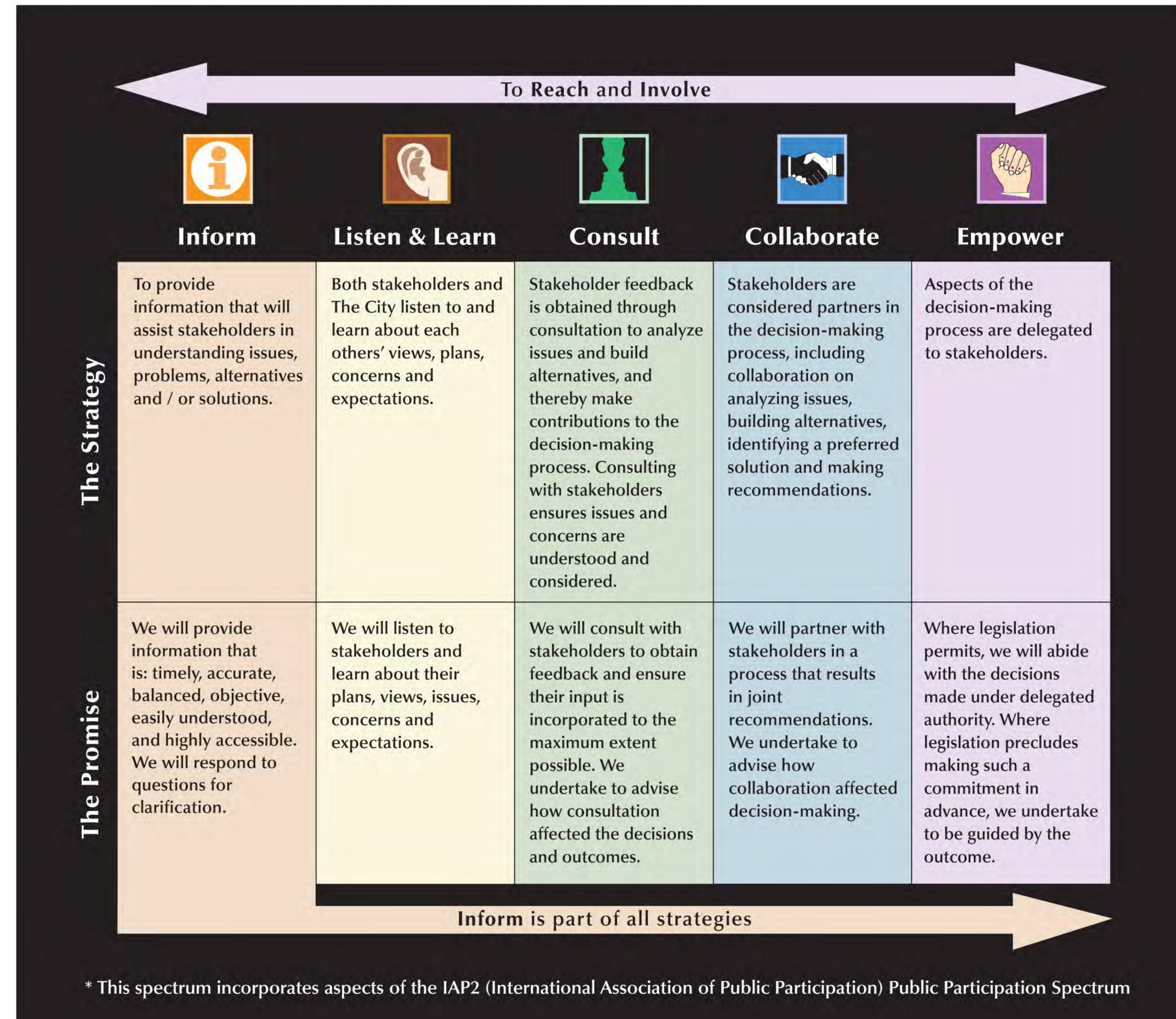
## Next steps

- The project team will work closely with stakeholders and the community to develop and refine a preferred concept that considers short-term and long-term transportation issues and improvements.



# engage! policy

## SPECTRUM OF STRATEGIES AND PROMISES



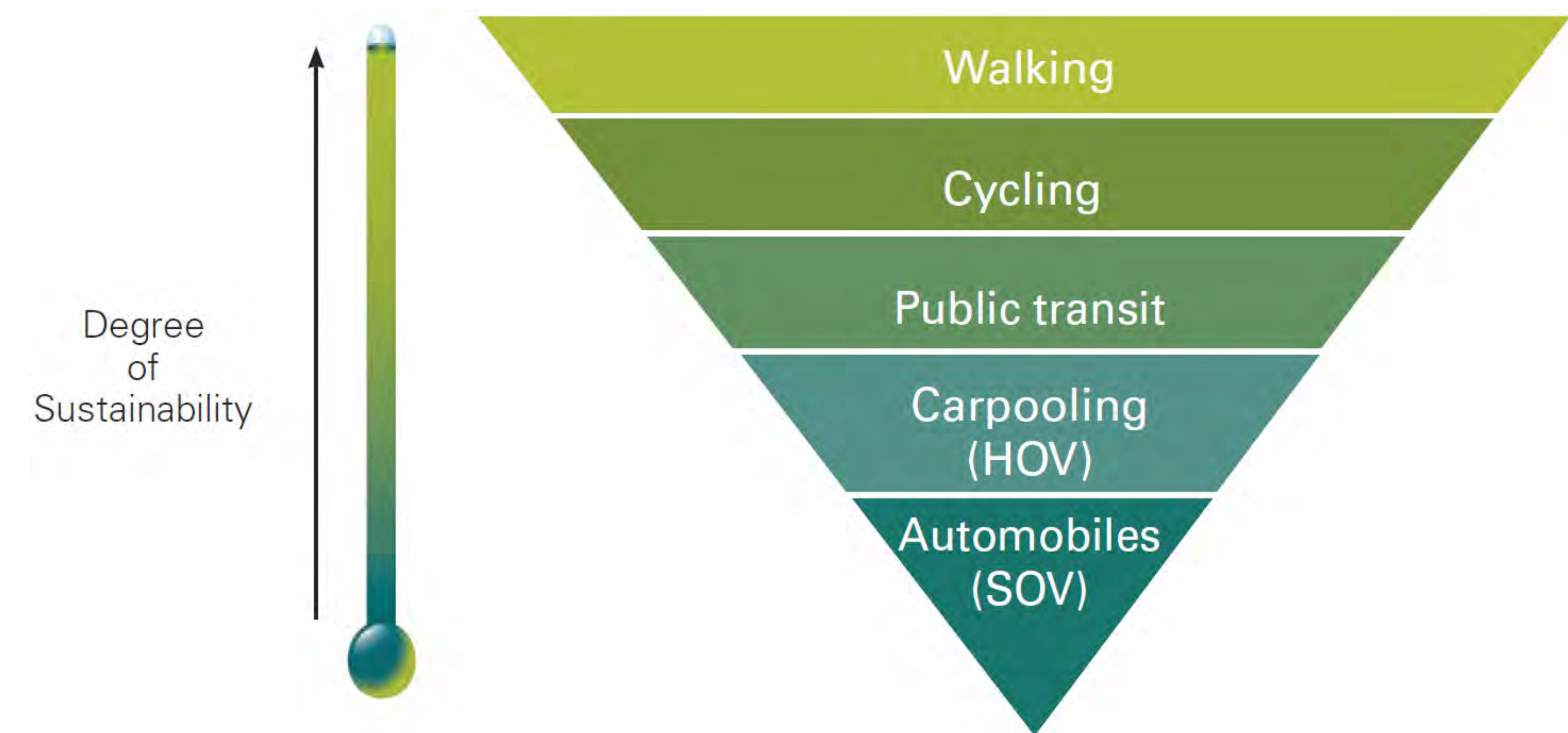
# Study Scope and Objectives

## Study Scope

- Determine the design and configuration of a future interchange at 16 Avenue N and 19 Street E that considers the proximity of existing interchanges at Deerfoot Trail and Barlow Trail.
- Identify opportunities to enhance walking, biking and transit connections to provide transportation options.

## Study Objectives

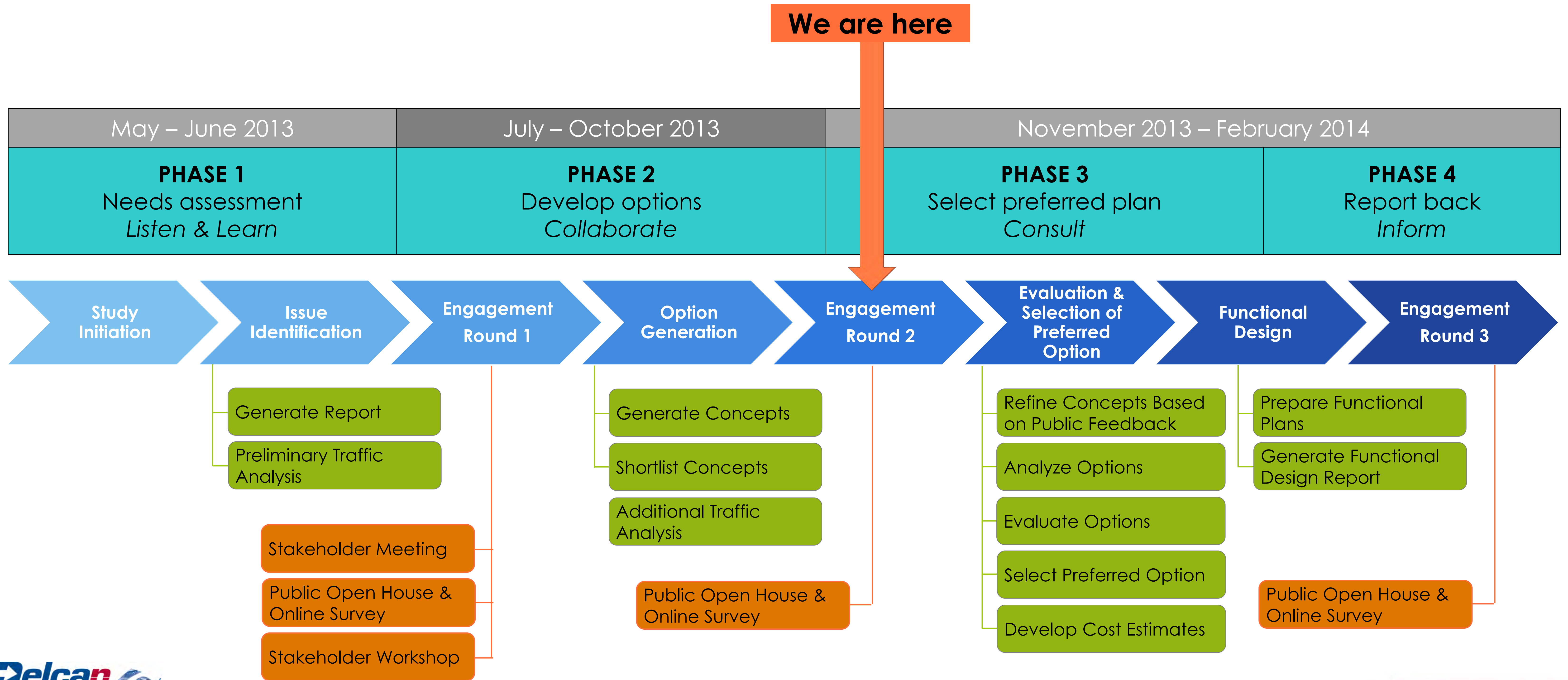
- Improve traffic flow and safety at:
  - The 16 Avenue N and 19 Street E intersection.
  - Along 16 Avenue N from Deerfoot Trail to Stoney Trail.
- Improve pedestrian and cyclist movement across 16 Avenue N between Deerfoot Trail and Barlow Trail.
- Accommodate frequent, reliable transit service as part of the primary transit network in N.E. Calgary.
- Address other issues identified during the study.



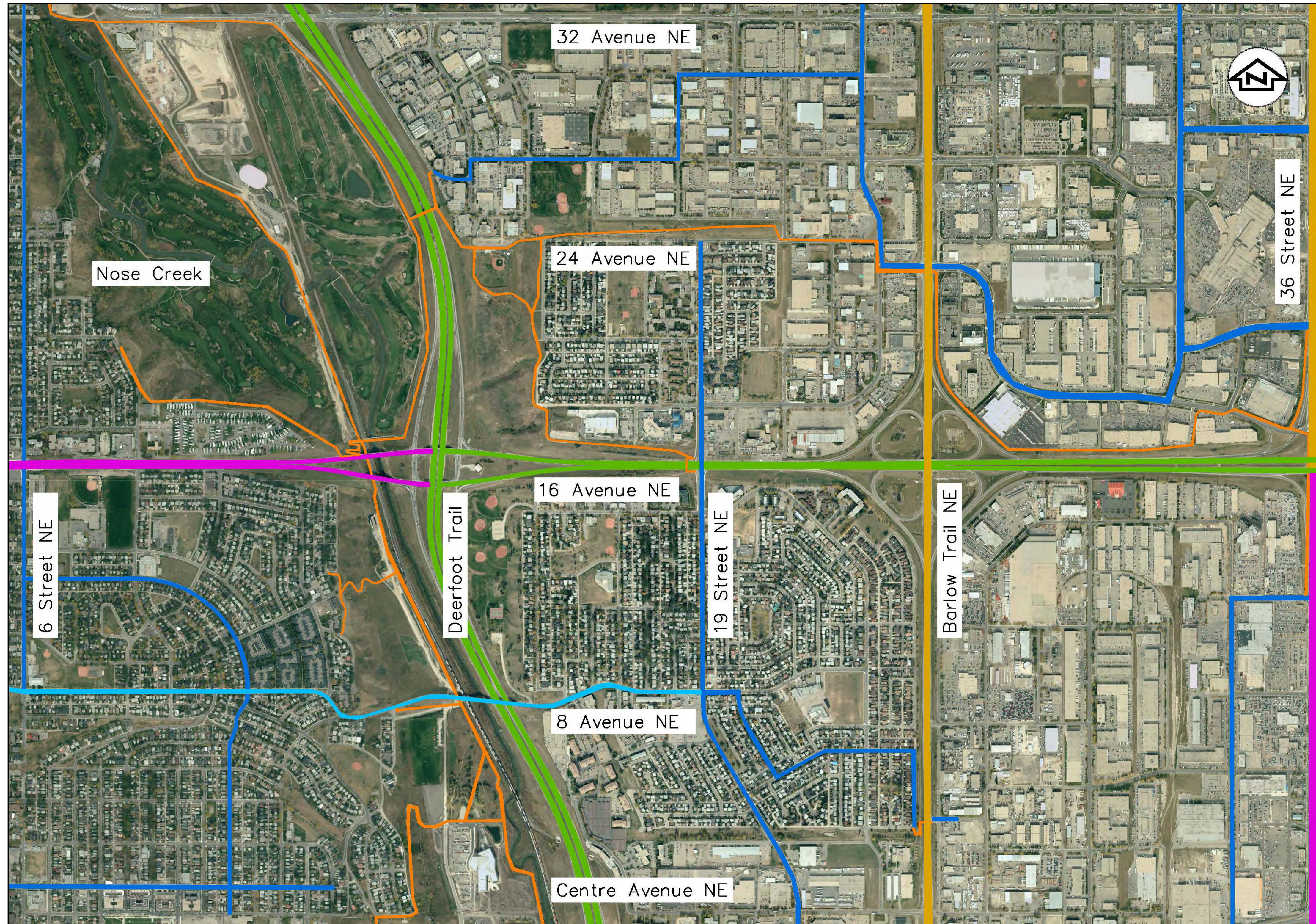
## Functional Planning Studies

- Identify the ultimate design of a roadway.
- Outline the interim and long-term requirements such as right-of-way, infrastructure upgrades, and estimated costs.
- Guided by the Council-approved Municipal Development and Calgary Transportation Plans (CTP).

# Study Process and Timeline



# Transportation Network



## LEGEND

Existing On-Street Bikeway	
Existing Bike Lane	
Existing Regional Pathway	
Skeletal Road	
Arterial Road	
Urban Boulevard	



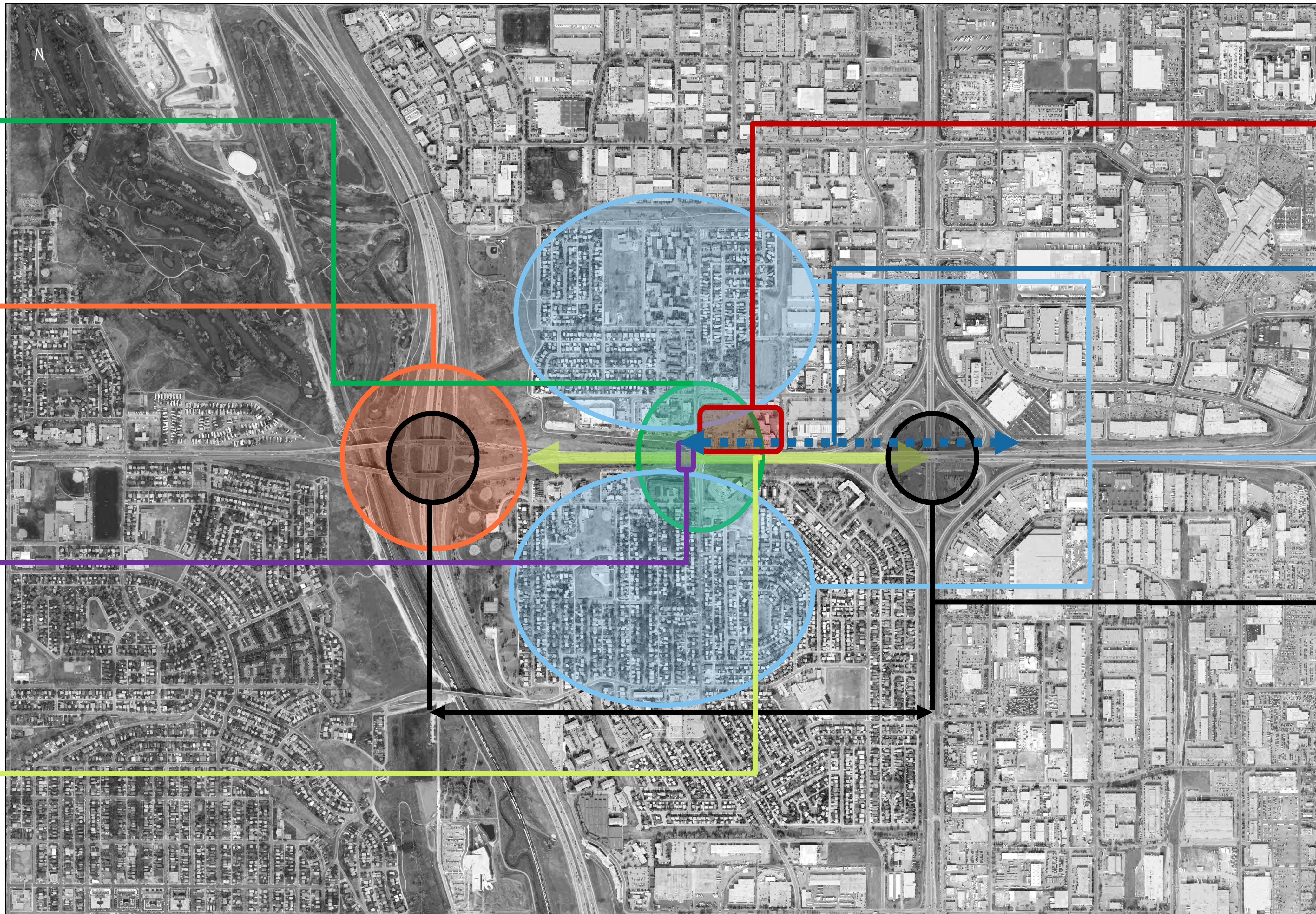
## Summary of Issues and Challenges

Issues and challenges have been identified and include feedback from the previous open house and stakeholder meetings.

This list is not exhaustive, but represents the main issues and challenges that affected the generation of options.

- Congestion in the peak periods at 19 Street E / 16 Avenue N
- Significant congestion at Deerfoot Trail Interchange
- Community access and “short cutting” through neighbourhoods
- Close spacing of interchanges at Deerfoot Trail and at Barlow Trail
- Limited right-of-way in the NE quadrant of 19 Street E intersection
- No continuity of pedestrian / cycling facilities along 16 Avenue N
- Pedestrian / cyclist accessibility across 16 Avenue N is inadequate
- Significant utilities in the 16 Avenue N corridor
- Steep grades along 16 Avenue N

# Summary of Issues and Challenges



Peak period congestion  
@ 19 St E & 16 Ave N

Congestion @ Deerfoot  
Trail Interchange

Pedestrian / cyclist  
accessibility @  
16 Ave N inadequate

Significant utilities and  
steep grades along  
16 Ave N corridor

Limited right-of-way NE  
quadrant of  
19 Street E intersection

No continuity of  
pedestrian / cycling  
facilities along 16 Ave N

"Short-cutting" through  
neighbourhoods

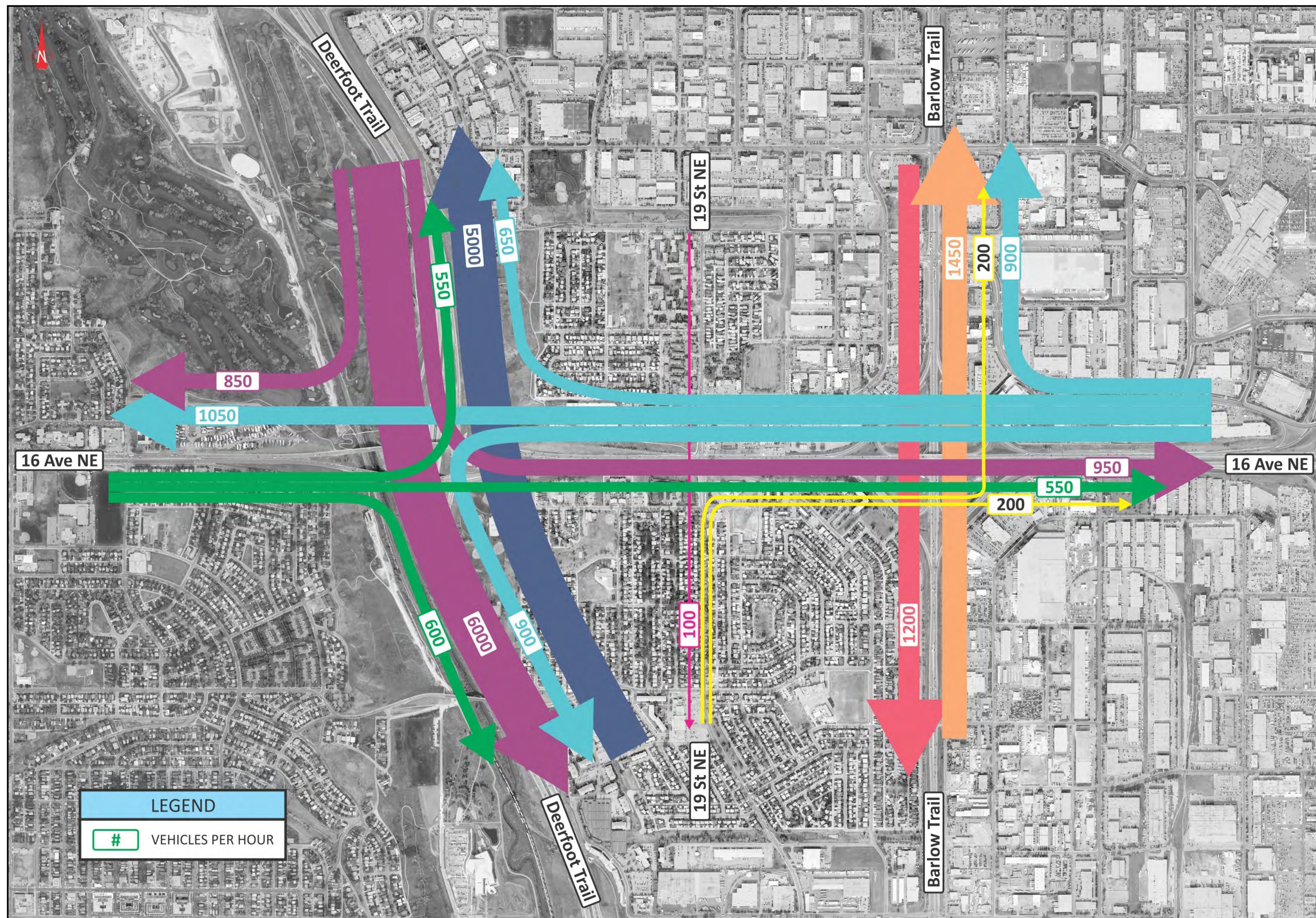
Close spacing of  
Interchanges



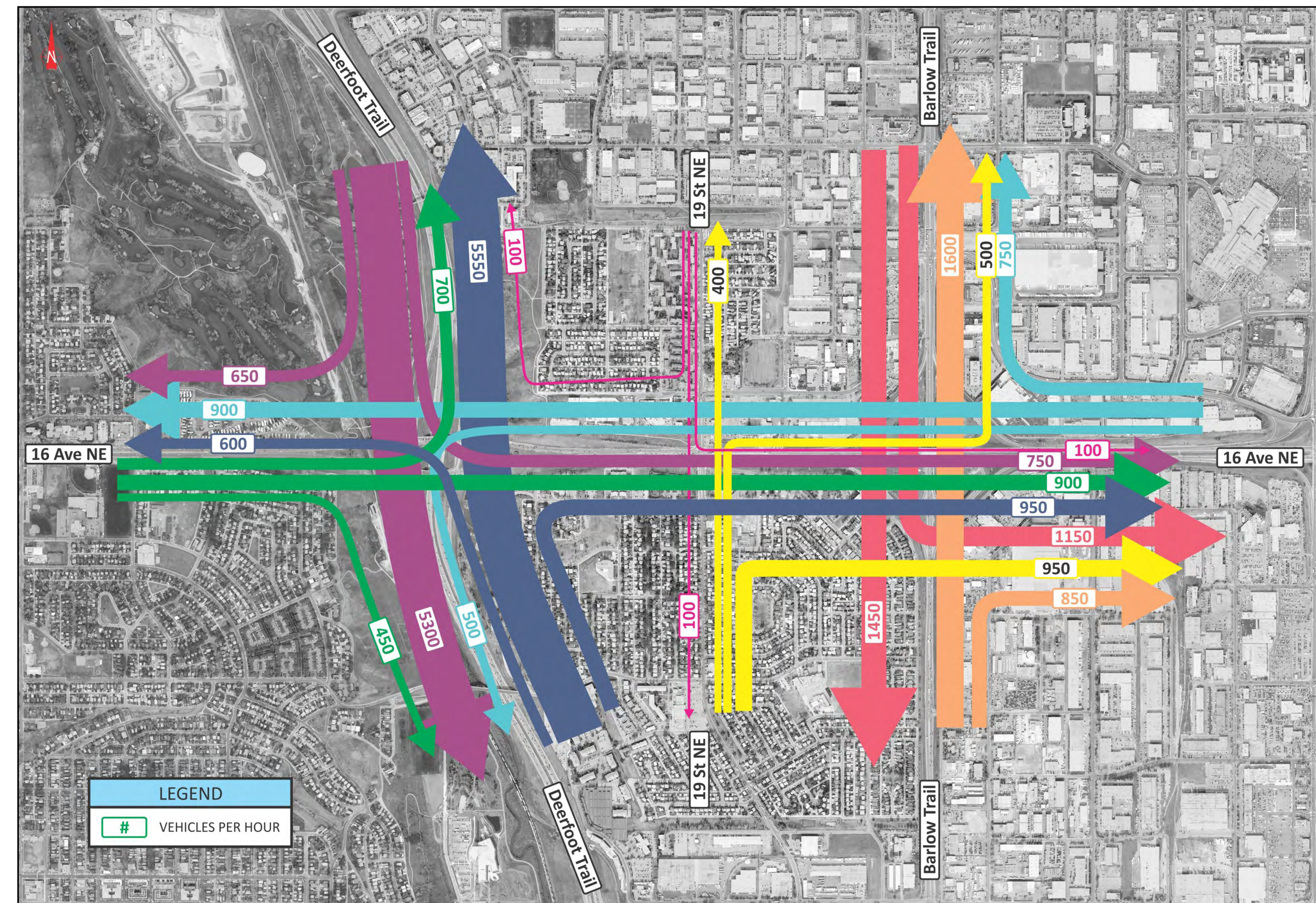


# Major Traffic Patterns in 2039

Morning  
peak period

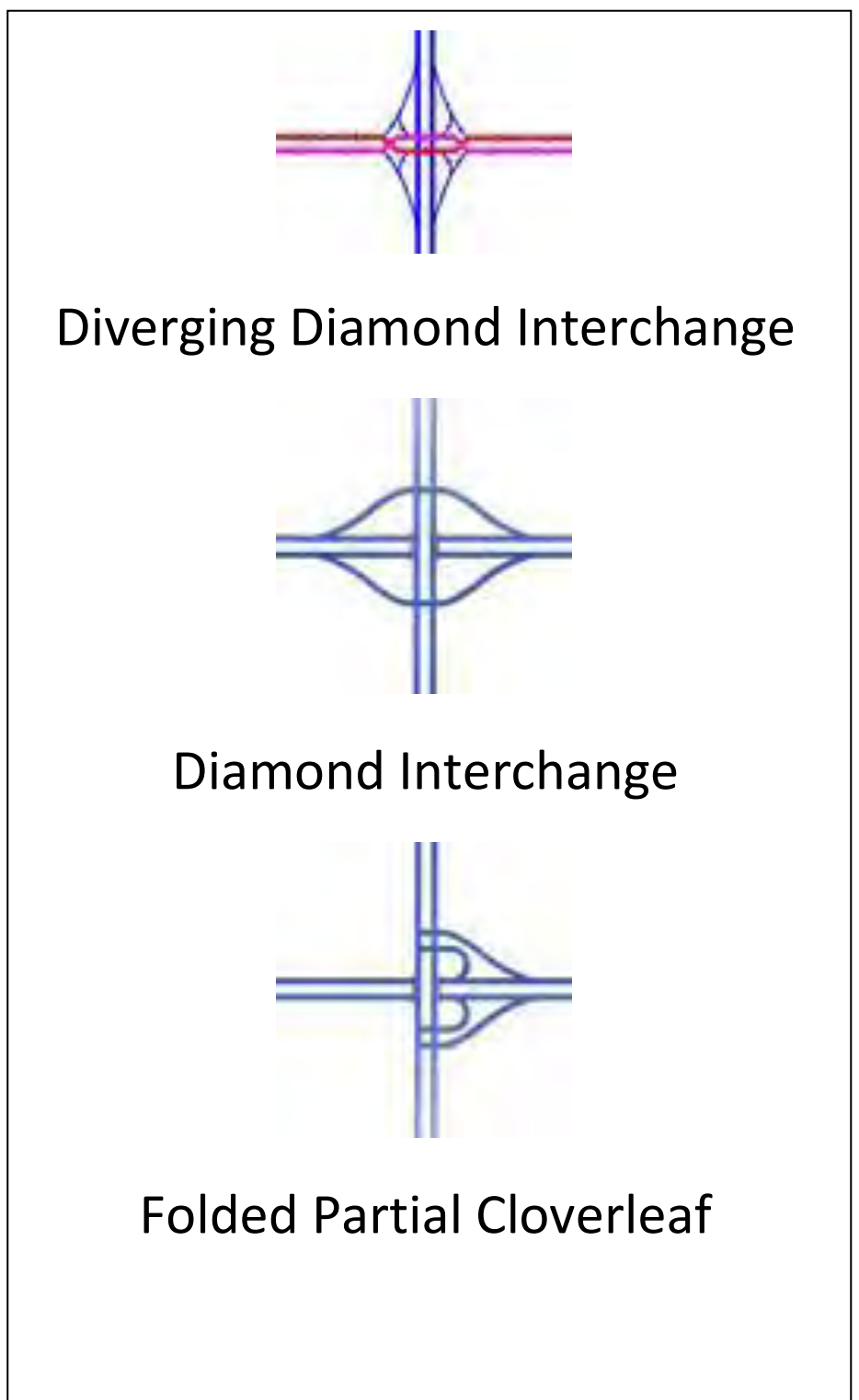


Afternoon  
peak period



## Summary of Concepts Generated

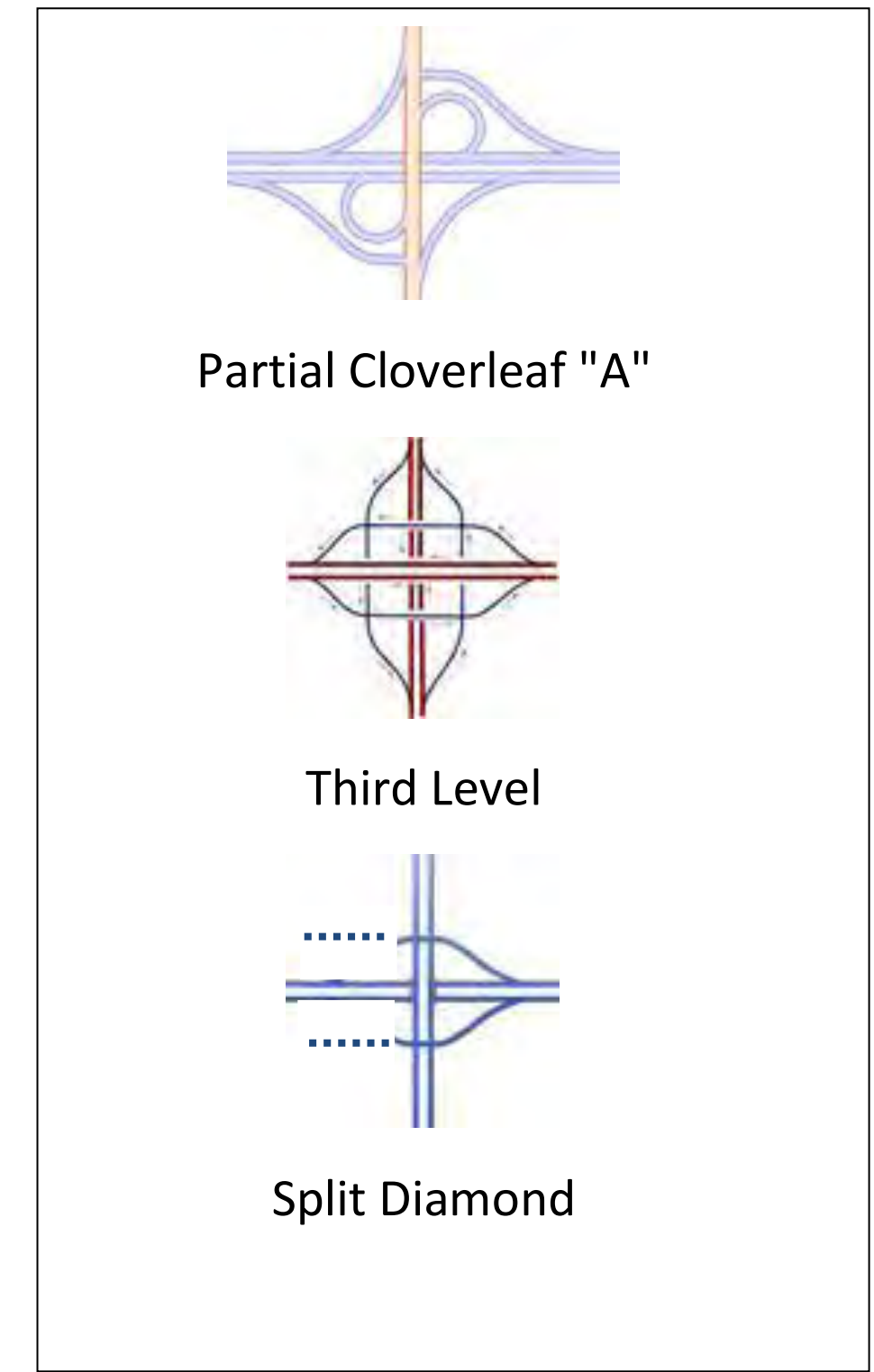
OPTION A	OPTION B	OPTION C
		
<p>16 Ave at Deerfoot Trail Interchange: <i>Diverging Diamond Interchange</i></p> <p>16 Ave at 19 St Interchange: <i>Tight Diamond Interchange</i></p> <p>16 Ave at Barlow Trail Interchange: <i>Folded Cloverleaf / Parclo Interchange</i></p> <p>&gt; Six new signalized intersections to be constructed</p>	<p>16 Ave at Deerfoot Trail Interchange: <i>Diverging Diamond interchange</i></p> <p>16 Ave at 19 St Interchange: <i>Tight Diamond Interchange</i></p> <p>16 Ave at Barlow Trail Interchange: <i>Diamond &amp; Basket Weave Interchange</i></p> <p>&gt; Four new signalized intersections to be constructed</p>	<p>16 Ave at Deerfoot Trail Interchange: <i>Diverging Diamond Interchange</i></p> <p>16 Ave at 19 St Interchange: <i>Tight Diamond Interchange</i></p> <p>16 Ave at Barlow Trail Interchange: <i>Parclo A Interchange</i></p> <p>&gt; Six new signalized intersections to be constructed</p>
OPTION D	OPTION E	OPTION F
		
<p>16 Ave at Deerfoot Trail Interchange: <i>As existing, No Change</i></p> <p>16 Ave at 19 St Interchange: <i>Tight Diamond Interchange</i></p> <p>16 Ave at Barlow Trail Interchange: <i>Diamond Interchange</i></p> <p>&gt; Four new signalized intersections to be constructed</p>	<p>16 Ave at Deerfoot Trail Interchange: <i>Complicated Four Level Interchange</i></p> <p>16 Ave at 19 St Interchange: <i>Tight Diamond Interchange</i></p> <p>16 Ave at Barlow Trail Interchange: <i>Parclo A Interchange</i></p> <p>&gt; Four new signalized intersections to be constructed</p>	<p>16 Ave at Deerfoot Trail Interchange: <i>Complicated Four Level Interchange</i></p> <p>16 Ave at 19 St Interchange: <i>North &amp; South Movement Overpass</i></p> <p>16 Ave at Barlow Trail Interchange: <i>Parclo A Interchange</i></p> <p>&gt; Four new signalized intersections to be constructed</p> <p>&gt; Three new urban roundabouts.</p>
OPTION G	OPTION H	OPTION I
		
<p>16 Ave at Deerfoot Trail Interchange: <i>Three Level Interchange</i></p> <p>16 Ave at 19 St Interchange: <i>Tight Diamond interchange</i></p> <p>16 Ave at Barlow Trail Interchange: <i>Folded Cloverleaf / Parclo Interchange</i></p> <p>&gt; Four new signalized intersections to be constructed</p>	<p>16 Ave at Deerfoot Trail Interchange: <i>Complicated Four Level Interchange</i></p> <p>16 Ave at 19 St Interchange: <i>Tight Diamond interchange</i></p> <p>16 Ave at Barlow Trail Interchange: <i>Diamond Interchange</i></p> <p>&gt; Four new signalized intersections to be constructed</p>	<p>16 Ave at Deerfoot Trail Interchange: <i>Complicated Four Level Interchange</i></p> <p>16 Ave at 19 St Interchange: <i>North &amp; South Movement Overpass, Right In &amp; Right Out</i></p> <p>16 Ave at Barlow Trail Interchange: <i>Diamond Interchange</i></p> <p>&gt; Two new signalized intersections to be constructed</p>
OPTION J	OPTION K	OPTION L
		
<p>16 Ave at Deerfoot Trail Interchange: <i>Complicated Four Level Interchange</i></p> <p>16 Ave at 19 St Interchange: <i>Tight Diamond Interchange</i></p> <p>16 Ave at Barlow Trail Interchange: <i>Folded Cloverleaf / Diamond Interchange</i></p> <p>&gt; Four new signalized intersections to be constructed</p>	<p>16 Ave at Deerfoot Trail Interchange: <i>Complicated Four Level Interchange</i></p> <p>16 Ave at 19 St Interchange: <i>Tight Diamond Interchange</i></p> <p>16 Ave at Barlow Trail Interchange: <i>Folded Cloverleaf interchange</i></p> <p>&gt; Four new signalized intersections to be constructed</p>	<p>16 Ave at Deerfoot Trail Interchange: <i>A new east &amp; west movement overpass constructed above the existing structures</i></p> <p>16 Ave at 19 St Interchange: <i>Tight Diamond Interchange</i></p> <p>16 Ave at Barlow Trail Interchange: <i>Diamond interchange</i></p> <p>&gt; Four new signalized intersections to be constructed</p>
OPTION M	OPTION N	OPTION O
		
<p>16 Ave at Deerfoot Trail Interchange: <i>A new east &amp; west movement overpass constructed above the existing structures</i></p> <p>16 Ave at 19 St Interchange: <i>North and South Movement Overpass</i></p> <p>16 Ave at Barlow Trail Interchange: <i>Diamond interchange</i></p> <p>&gt; Four new signalized intersections to be constructed</p> <p>&gt; Two new roundabouts to be built</p>	<p>16 Ave at Deerfoot Trail Interchange: <i>A new east &amp; west movement overpass constructed above the existing structure</i></p> <p>16 Ave at 19 St Interchange: <i>Tight Diamond Interchange</i></p> <p>16 Ave at Barlow Trail Interchange: <i>Parclo A Interchange</i></p> <p>&gt; Four new signalized intersections to be constructed.</p>	<p>16 Ave at Deerfoot Trail Interchange: <i>A new east &amp; west movement overpass constructed above the existing structure</i></p> <p>16 Ave at 19 St Interchange: <i>Tight Diamond Interchange</i></p> <p>16 Ave at Barlow Trail Interchange: <i>Parclo A Interchange with additional ramp to 20 Ave</i></p> <p>&gt; Four new signalized intersections to be constructed</p> <p>&gt; Previously identified in 1986 study</p>



Diverging Diamond Interchange

Diamond Interchange

Folded Partial Cloverleaf



Partial Cloverleaf "A"

Third Level

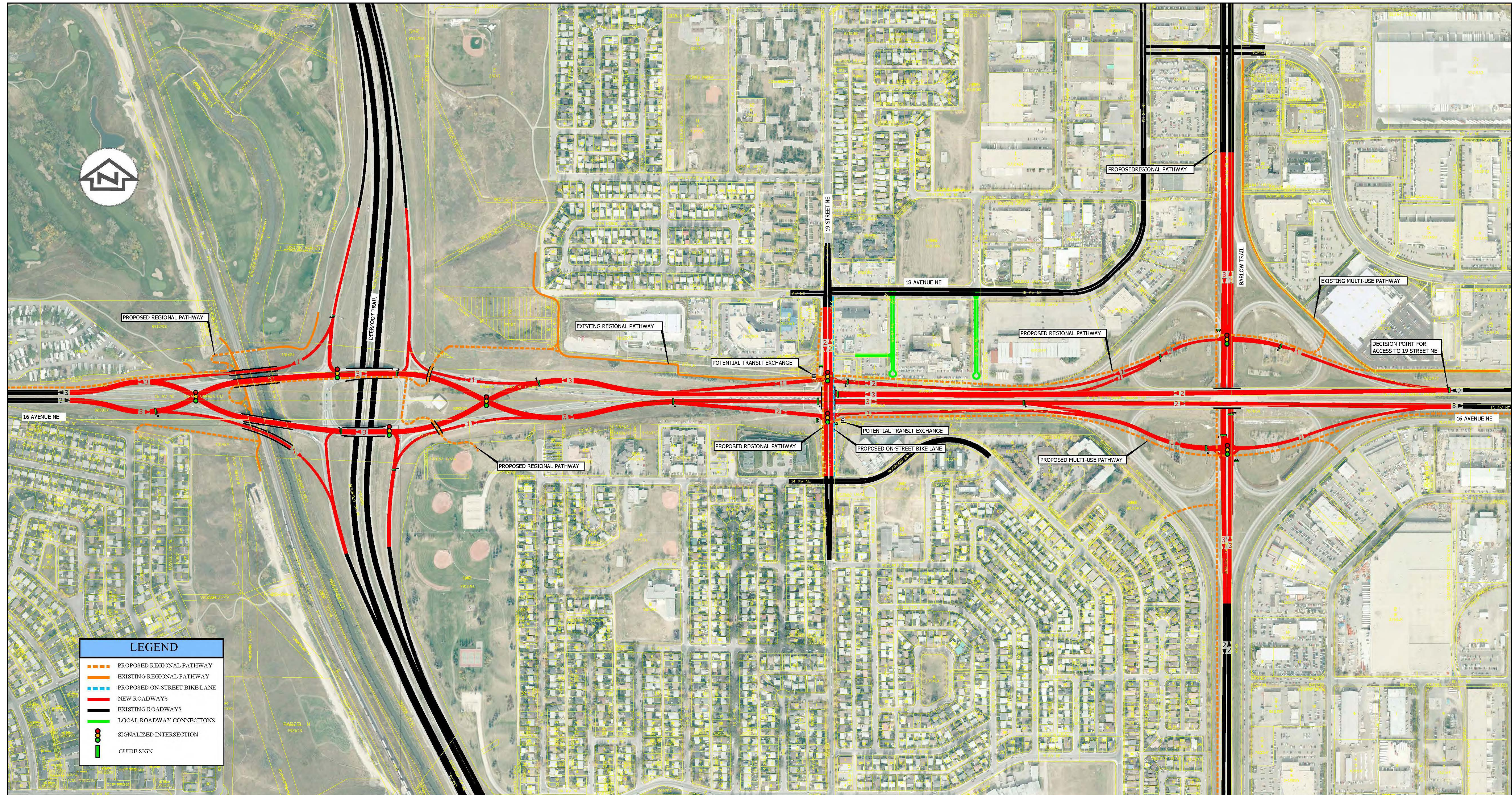
Split Diamond



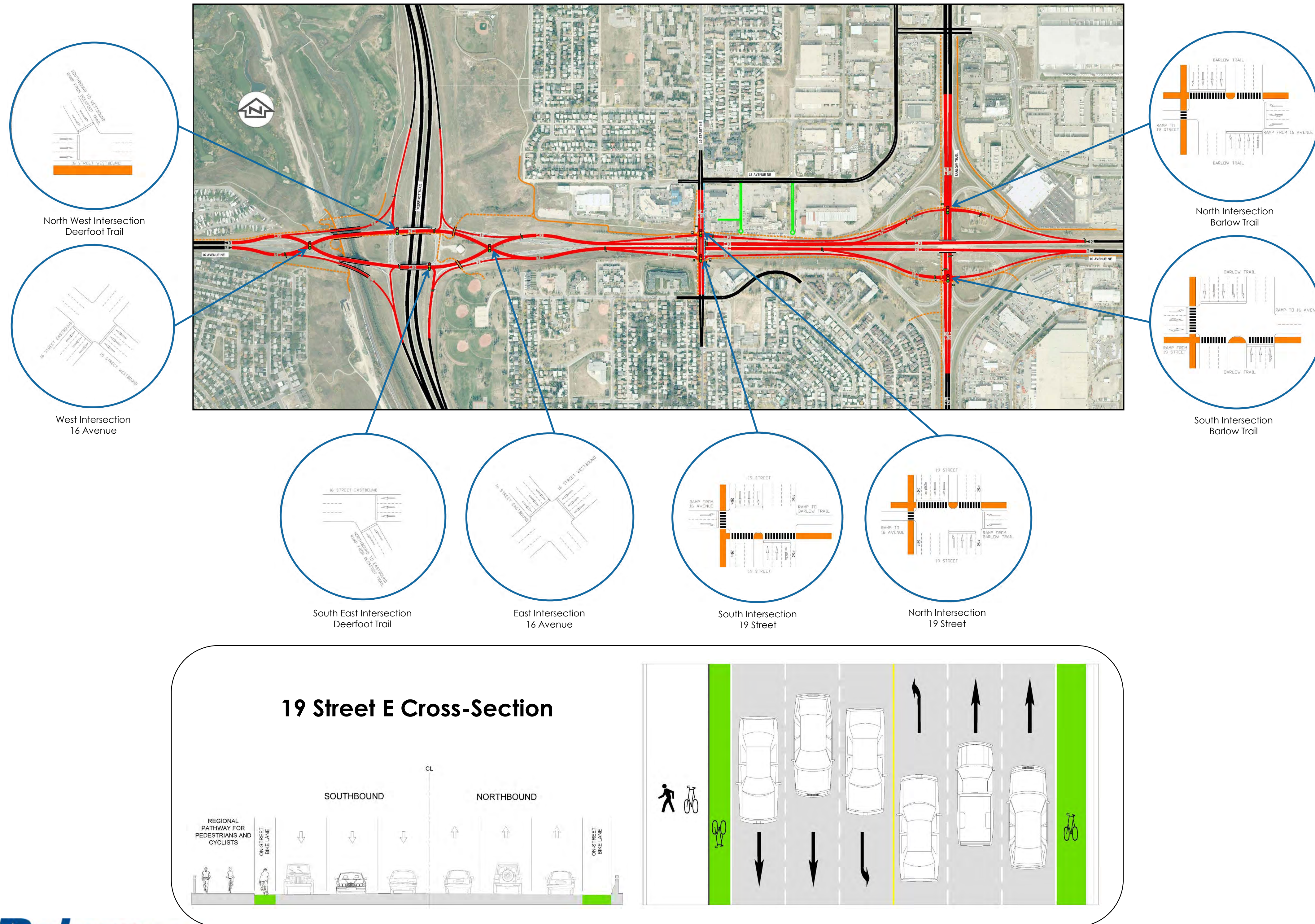
## Option Screening Process

- Options screened to reduce number using the following criteria:
  - **Costs** – estimated construction costs
  - **Traffic Capacity** – ability to accommodate traffic demand
  - **Traffic Operations** – ability to accommodate traffic movements
  - **Property Impacts** – level of impact to adjacent properties
  - **Accessibility** – ability to provide access to the major roads
  - **Way Finding / Guide Signs** – complexity of signage required
  - **Ease of Construction / Conflicts** – ability to construct
- Through feedback generated at stakeholder workshop, options were refined to four candidates

## Option 1



## Option 1 - Description

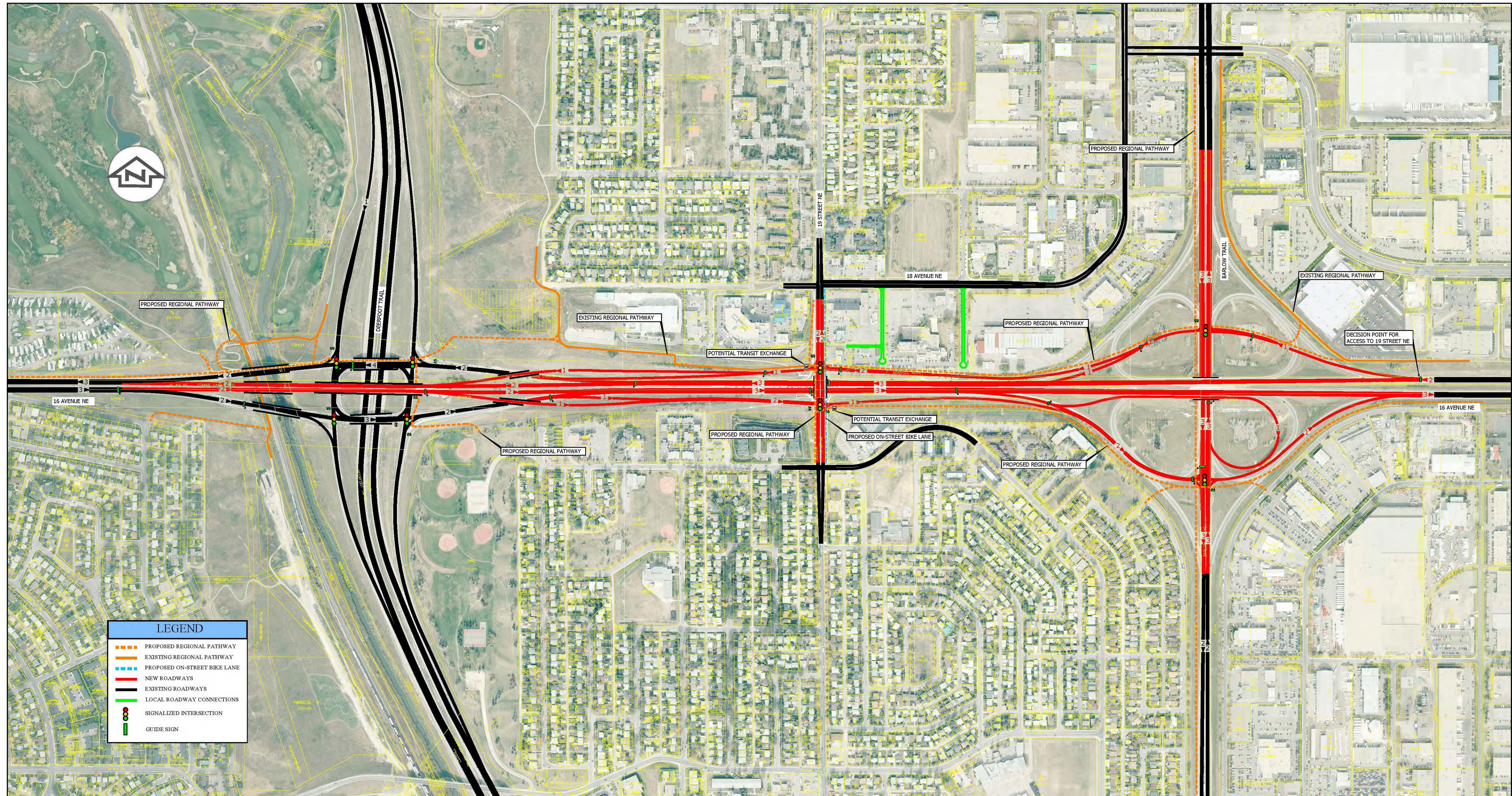


### Option Description

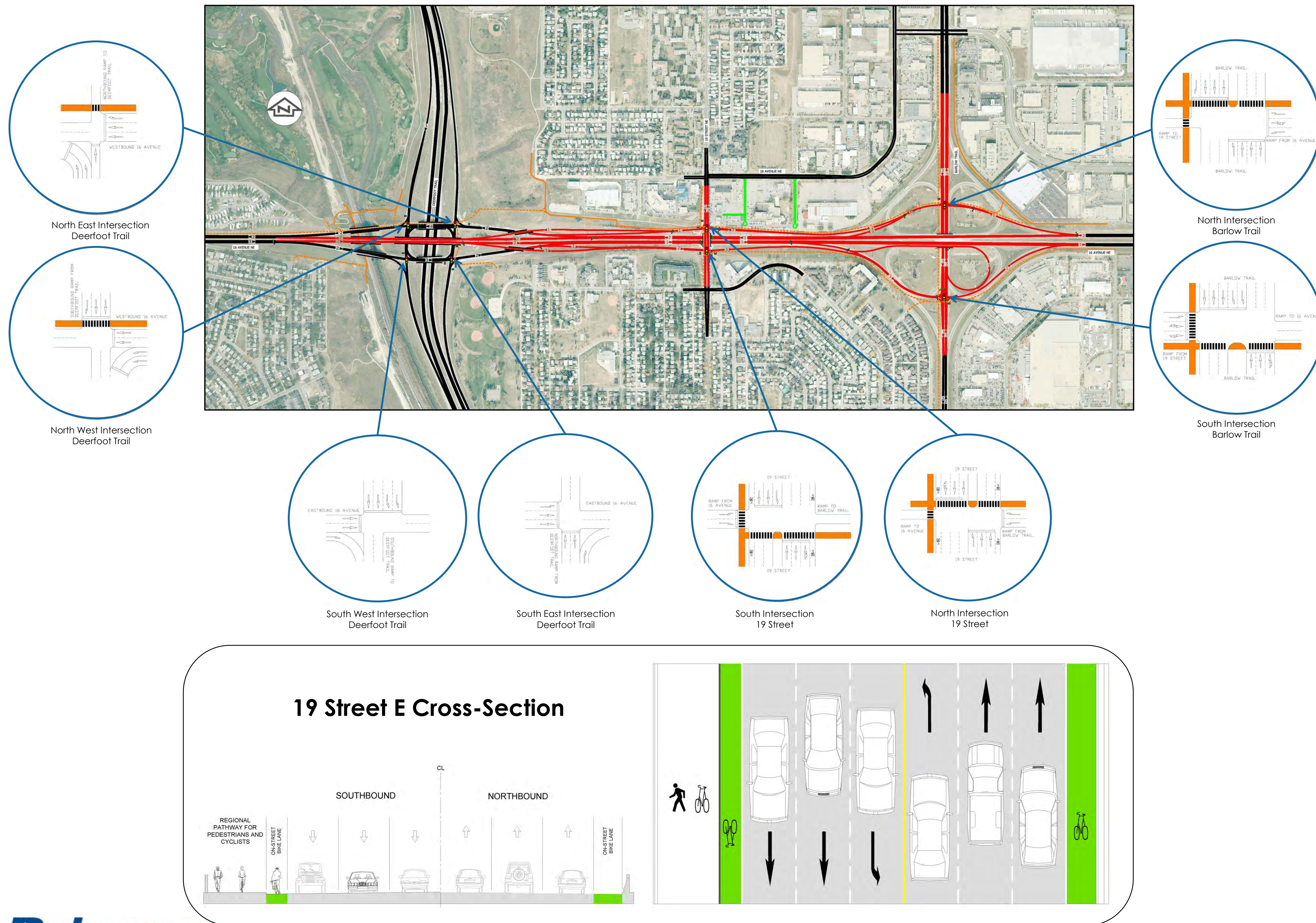
- Diverging diamond interchange at Deerfoot Trail to accommodate high left turn volumes
- Tight Diamond interchange at 19 Street E due to limited Right-of-Way
- Diamond interchange at Barlow Trail
- Option would interrupt traffic flow on 16 Avenue with signalized intersections at Deerfoot Trail, similar to existing conditions
- Regional pathway extends along north side of 16 Avenue N between Barlow Trail and Deerfoot Trail
- Regional pathway crosses 16 Avenue N along new 19 Street E overpass structure.
- Bike lanes on 19 Street E from 14 Avenue N to 18 Avenue N.
- Transit priority at Barlow Trail and 19 Street E
- Bus exchanges at 19 Street E and 16 Avenue N ramp intersection.

Cost = \$120 Million

## Option 2



## Option 2 - Description

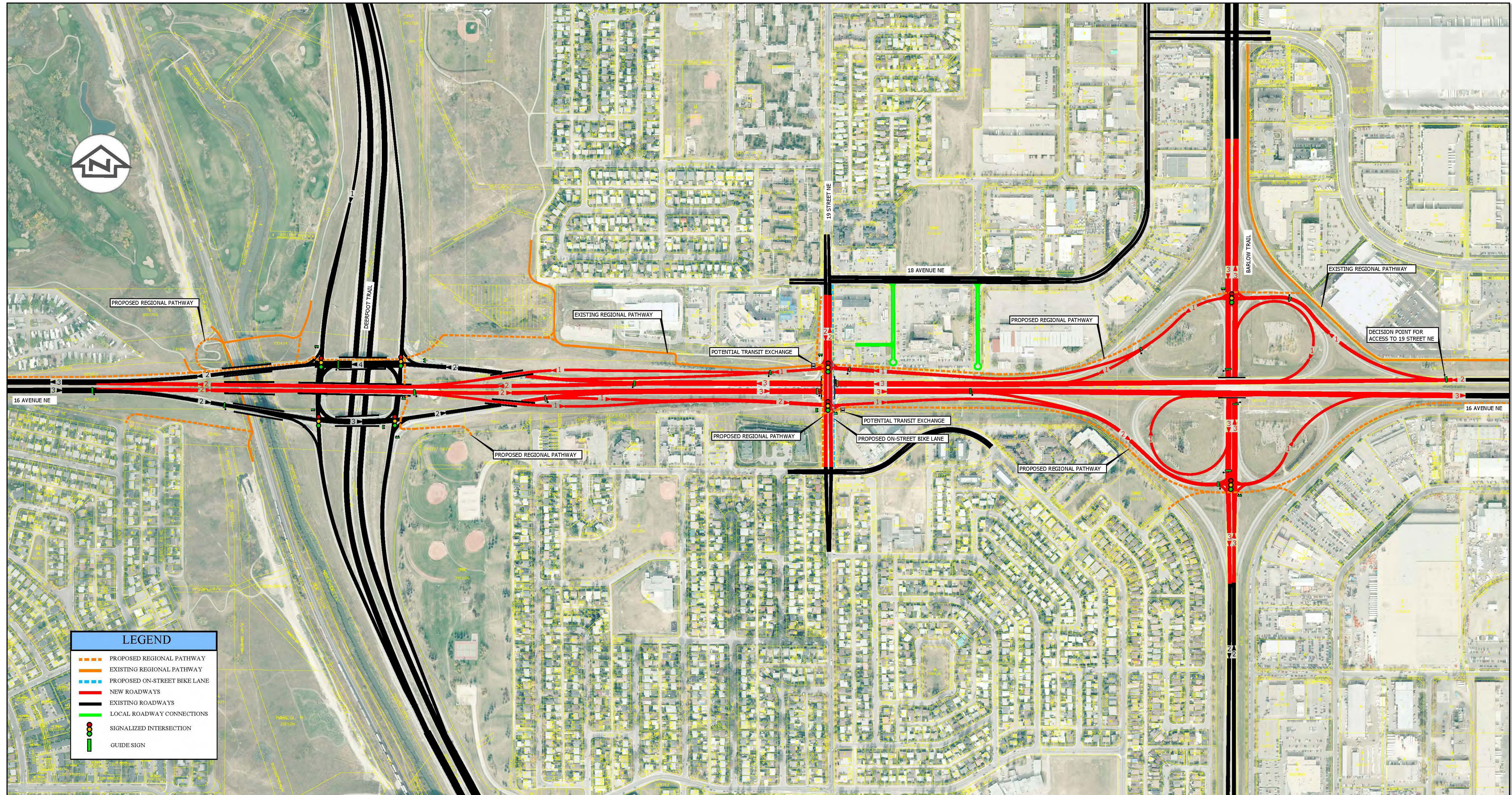


### Option Description

- Through movements added to third level at Deerfoot Trail interchange
- Tight Diamond interchange at 19 Street E due to limited Right-of-Way
- Diamond interchange at Barlow Trail with loop ramp in south east quadrant
- Signalized intersections located on 16 Avenue N at Deerfoot Trail
- Regional pathway extends along north side of 16 Avenue N between Barlow Trail and Deerfoot Trail
- Regional pathway crosses 16 Avenue N along new 19 Street E overpass structure.
- Bike lanes on 19 Street E from 14 Avenue N to 18 Avenue N.
- Transit priority at Barlow Trail and 19 Street E
- Bus exchanges at 19 Street E and 16 Avenue N ramp intersection.

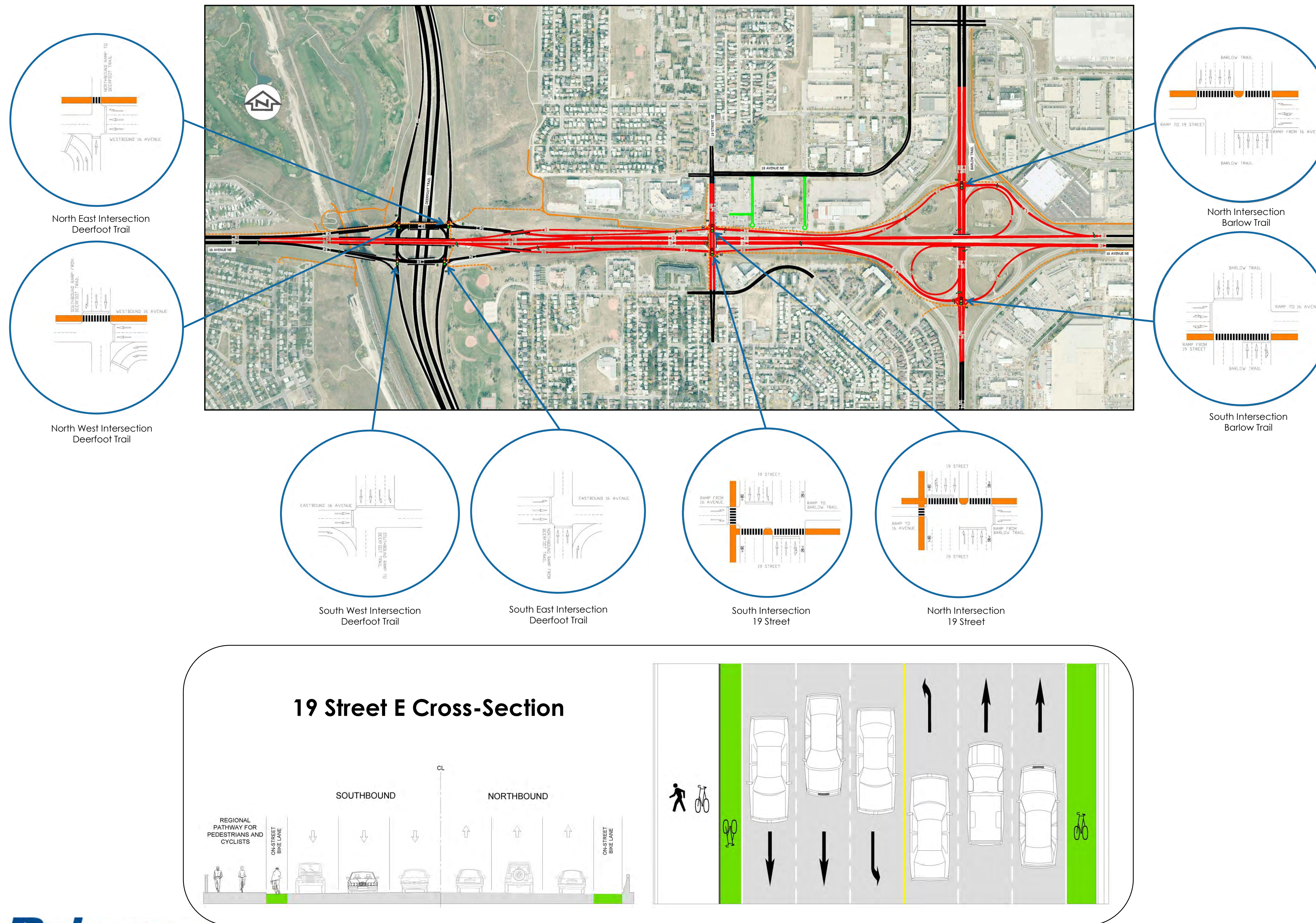
Cost = \$190 Million

## Option 3





## Option 3 - Description

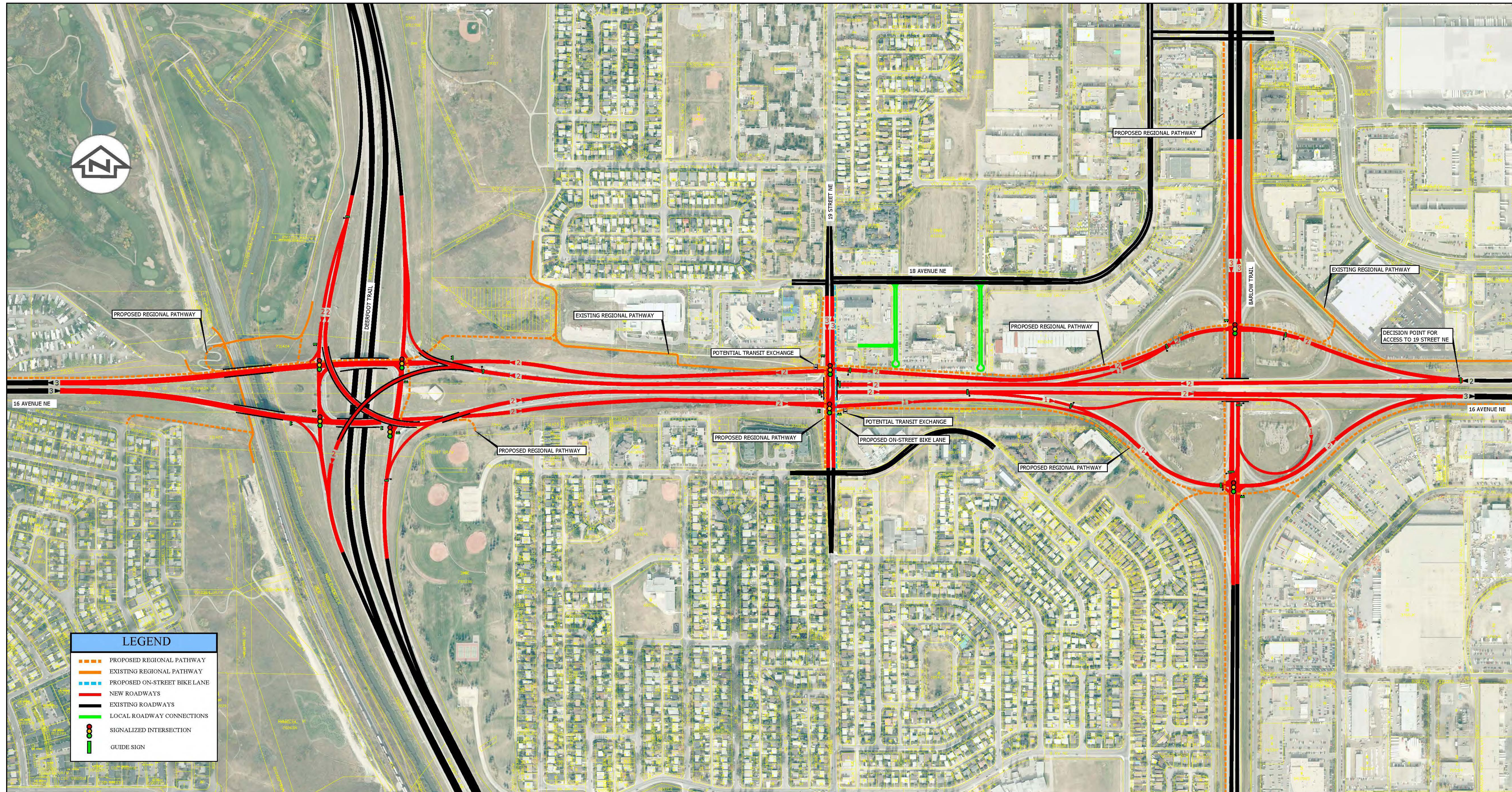


### Option Description

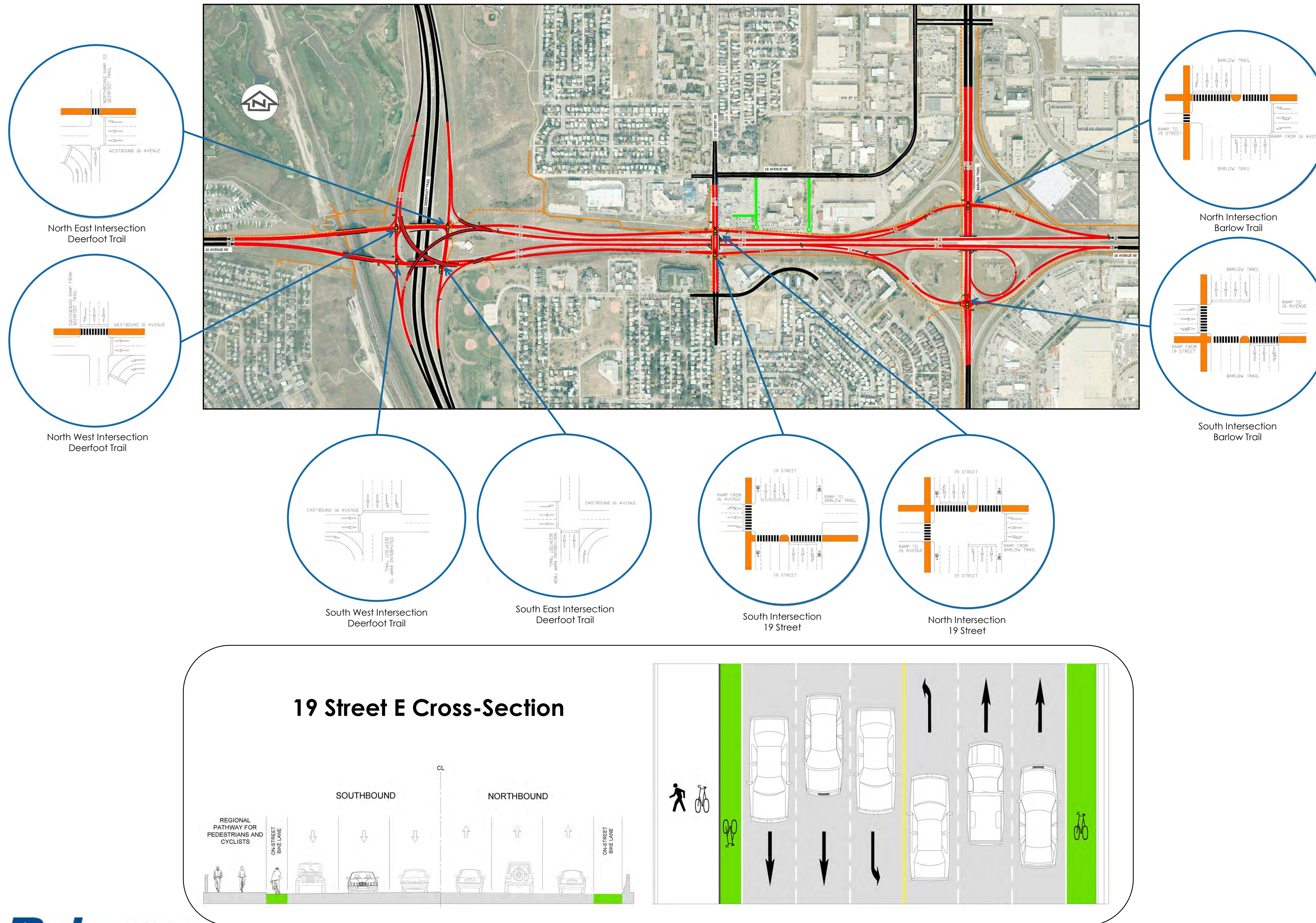
- Through movements added to third level at Deerfoot Trail interchange
- Tight Diamond interchange at 19 Street E due to limited Right-of-Way
- Partial cloverleaf interchange at Barlow Trail with loop ramps in south west and north east quadrants
- 16 Avenue N traffic flow is continuous through study area with no signalized intersections
- Regional pathway extends along north side of 16 Avenue N between Barlow Trail and Deerfoot Trail
- Regional pathway crosses 16 Avenue N along new 19 Street overpass structure
- Bike lanes on 19 Street E. from 14 Avenue N. to 18 Avenue N
- Transit priority at Barlow Trail and 19 Street E
- Bus exchanges at 19 Street N and 16 Avenue ramp intersection

Cost = \$195 Million

## Option 4



## Option 4 - Description

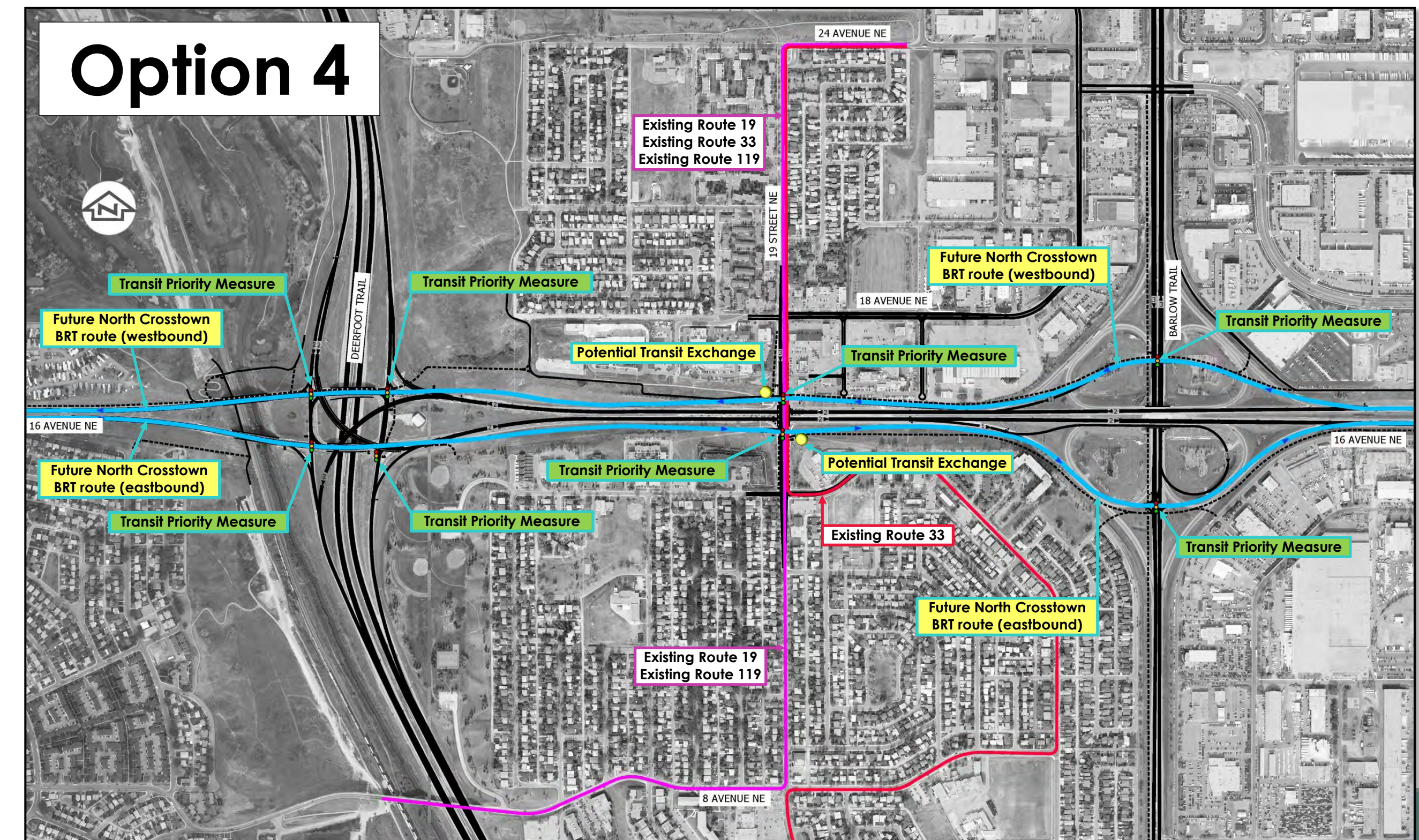
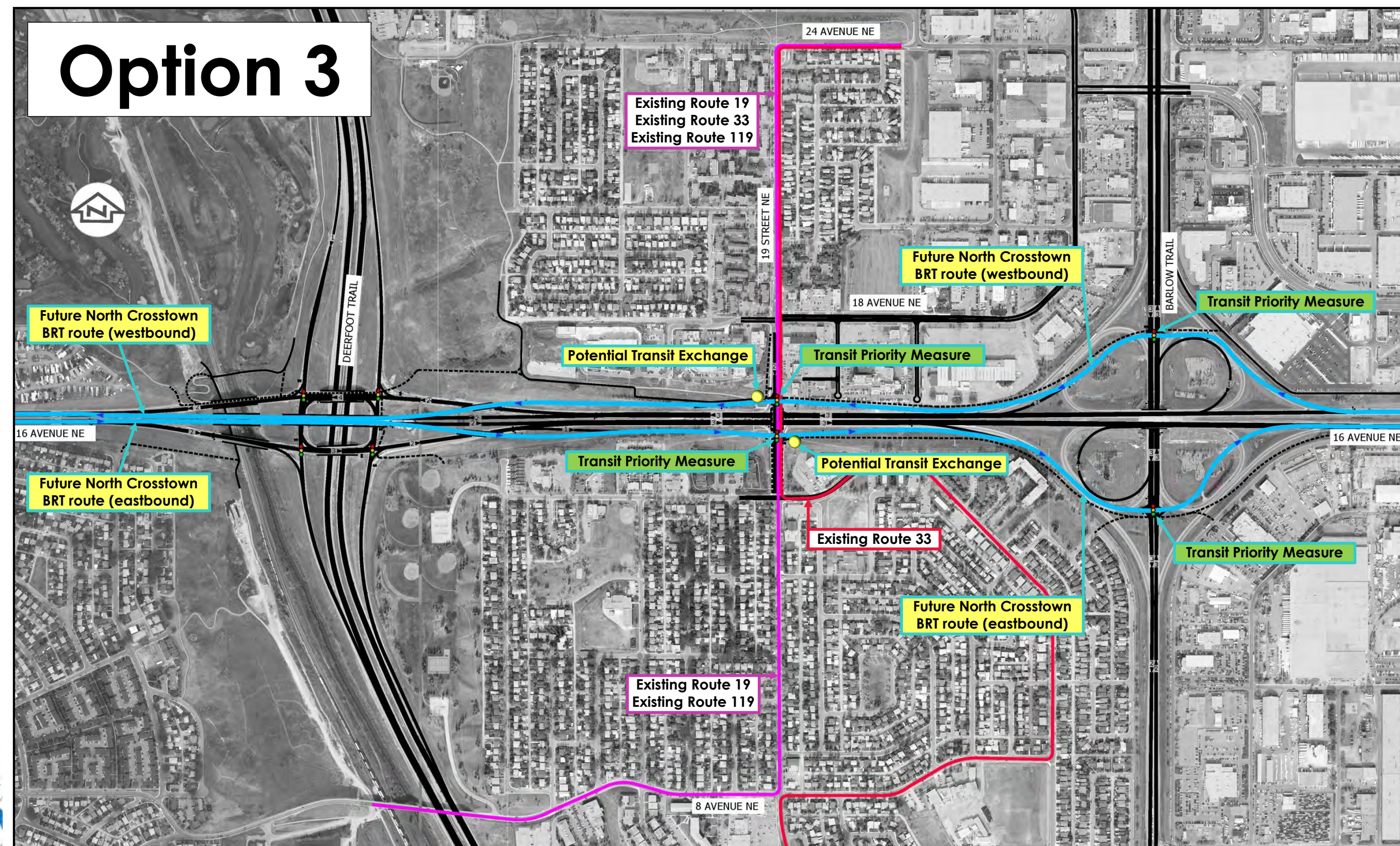
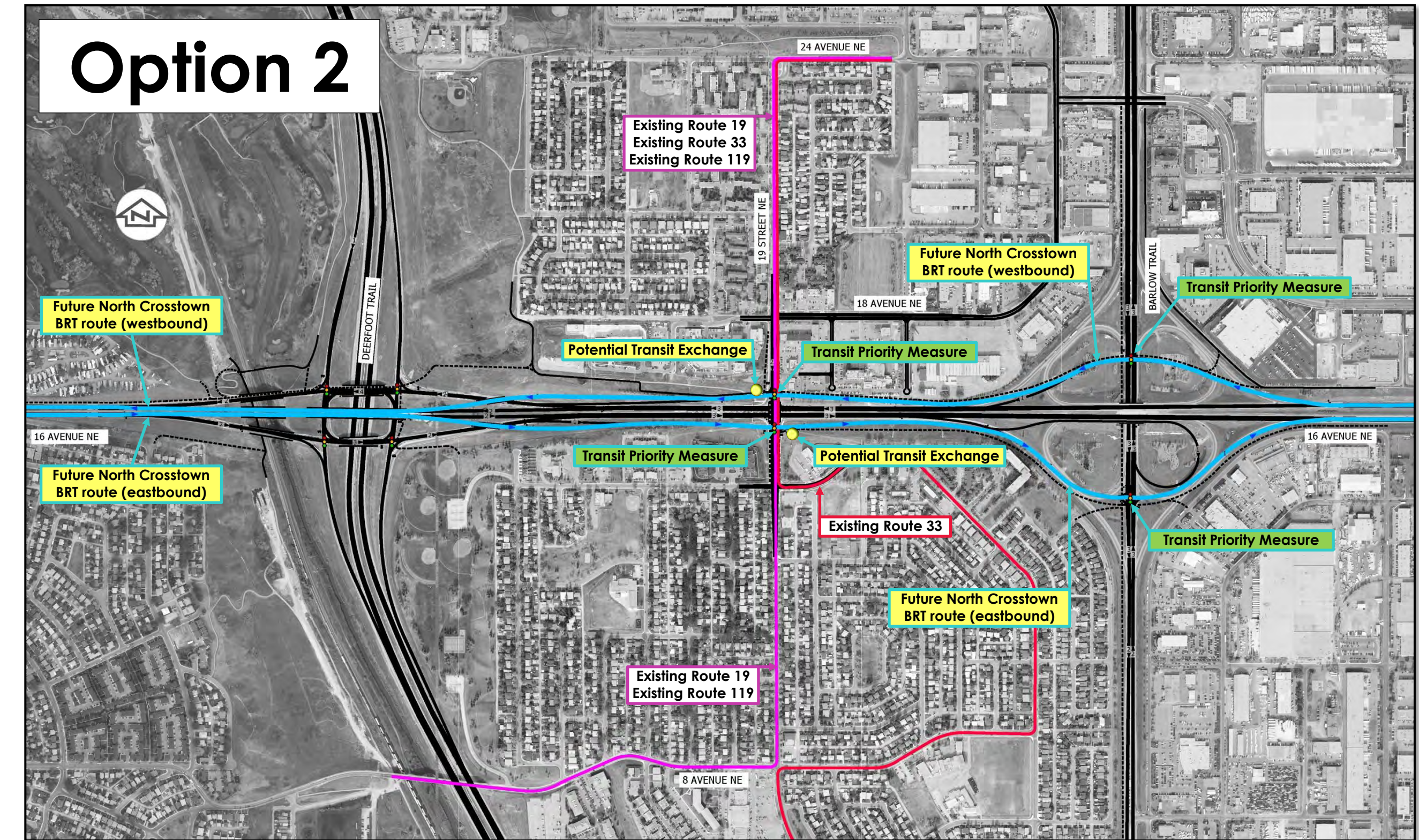
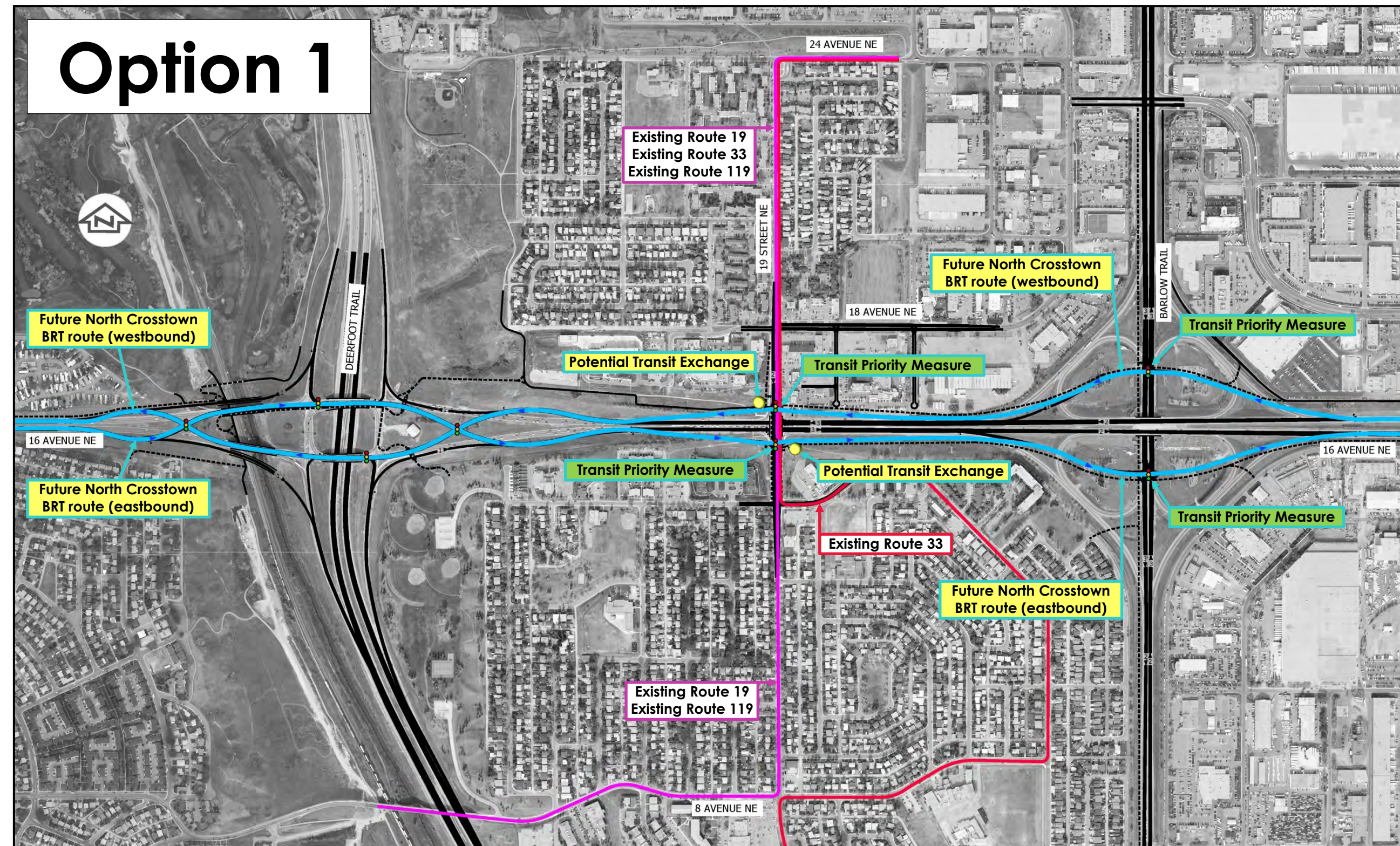


### Option Description

- Directional ramps for left turn movements added to and from Deerfoot Trail and 16 Avenue E
- Tight Diamond interchange at 19 Street E due to limited Right-of-Way
- Diamond interchange at Barlow Trail with loop ramp in south east quadrant
- Signalized intersections located on 16 Avenue N at Deerfoot Trail
- Regional pathway extends along north side of 16 Avenue N between Barlow Trail and Deerfoot Trail
- Regional pathway crosses 16 Avenue N along new 19 Street E overpass structure.
- Bike lanes on 19 Street E from 14 Avenue N to 18 Avenue N.
- Transit priority at Barlow Trail and 19 Street E
- Bus exchanges at 19 Street E and 16 Avenue N ramp intersection.

Cost = \$205 Million

# Transit Access for Interchange Options



# Proposed Evaluation Criteria

The following evaluation criteria will be used by the project team in assessing the four proposed options to identify the preferred solution.

CRITERIA	Mode	INDICATOR *
Traffic Operations	Autos / Trucks	Hours of Total Vehicle Delay / Savings (hrs) Intersection Performance (Level of Service)
Connectivity	Pedestrians Cyclists	Neutral / Minimal / Moderate / Significant Improvement or Impact
Accessibility	Pedestrians Cyclists Transit Autos / Trucks	Neutral / Minimal / Moderate / Significant Improvement or Impact
Safety	Pedestrians Cyclists Autos / Trucks	Neutral / Minimal / Moderate / Significant Improvement or Impact
Property Impacts		Number of Properties Affected Square metres of property impacted by type
Vehicle Emissions	Autos / Trucks	Tonnes of Greenhouse Gases (GHGs)
Guide Sign Complexity		Minimal / Moderate / Significant Complexity
Design Forgiveness		No / Minimal / Moderate level of forgiveness
Constructability		Minimal / Moderate / Significant Complexity
Costs		Construction Costs (\$) Property Acquisition Costs (\$)
Benefit / Cost		Comparison of Benefits (\$) to Costs (\$)

**\* All criteria are measured against existing and future “base” conditions (e.g. what’s out there today)**



## Next Steps

- Compile and analyze public input from open house
- Refine options as necessary based on public feedback
- Conduct analysis of each option
- Identify a preferred option based on technical analysis and public input
- Prepare a functional design for the preferred option
- Present the preferred option at a public information session in early 2014