

Edmonton's Downtown Bicycle Network

In-Service Road Safety
Review



Agenda

- Background
- Purpose and Objectives
- Safety Review Findings
- Lessons Learned & Conclusions





Background

Bicycle Network - Themes

1

CONNECTED

Minimum Downtown Grid

2

PROTECTED

All Ages and Abilities Facilities

3

TYPE OF IMPLEMENTATION

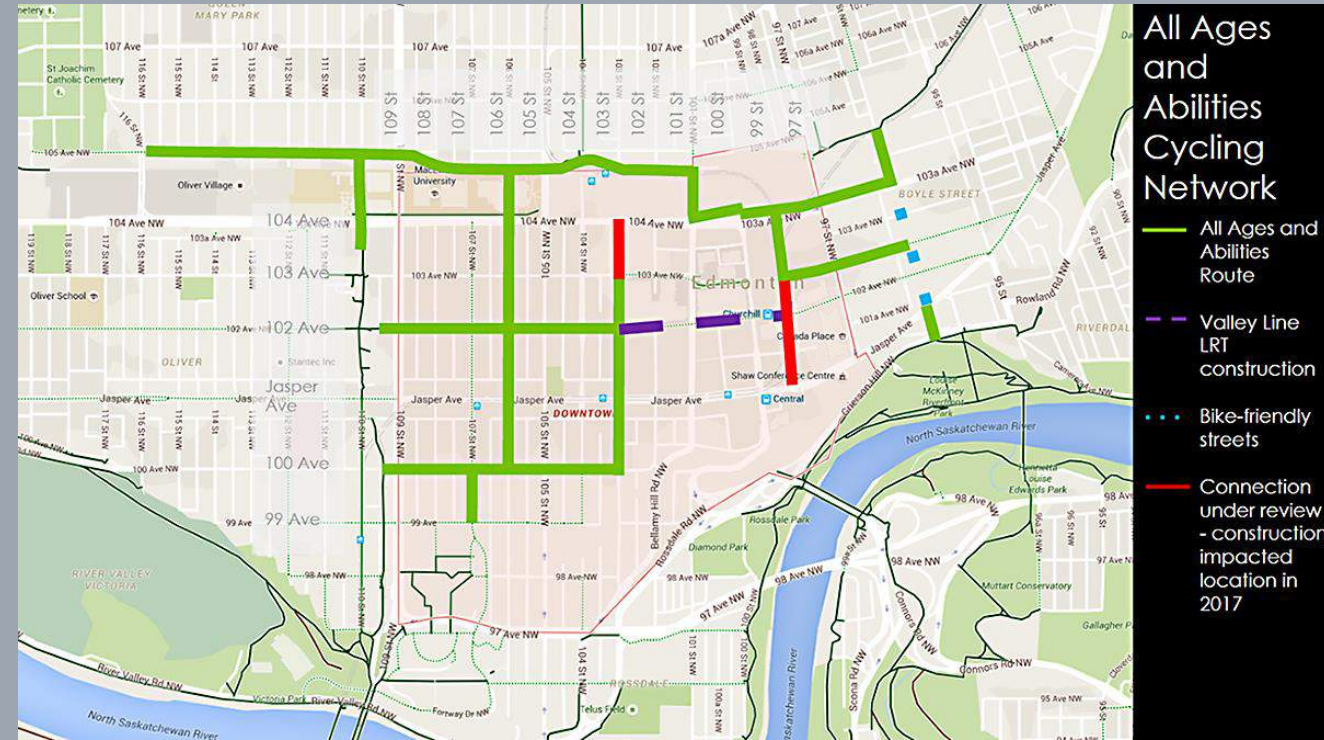
Quick Build Strategies

Interim Design

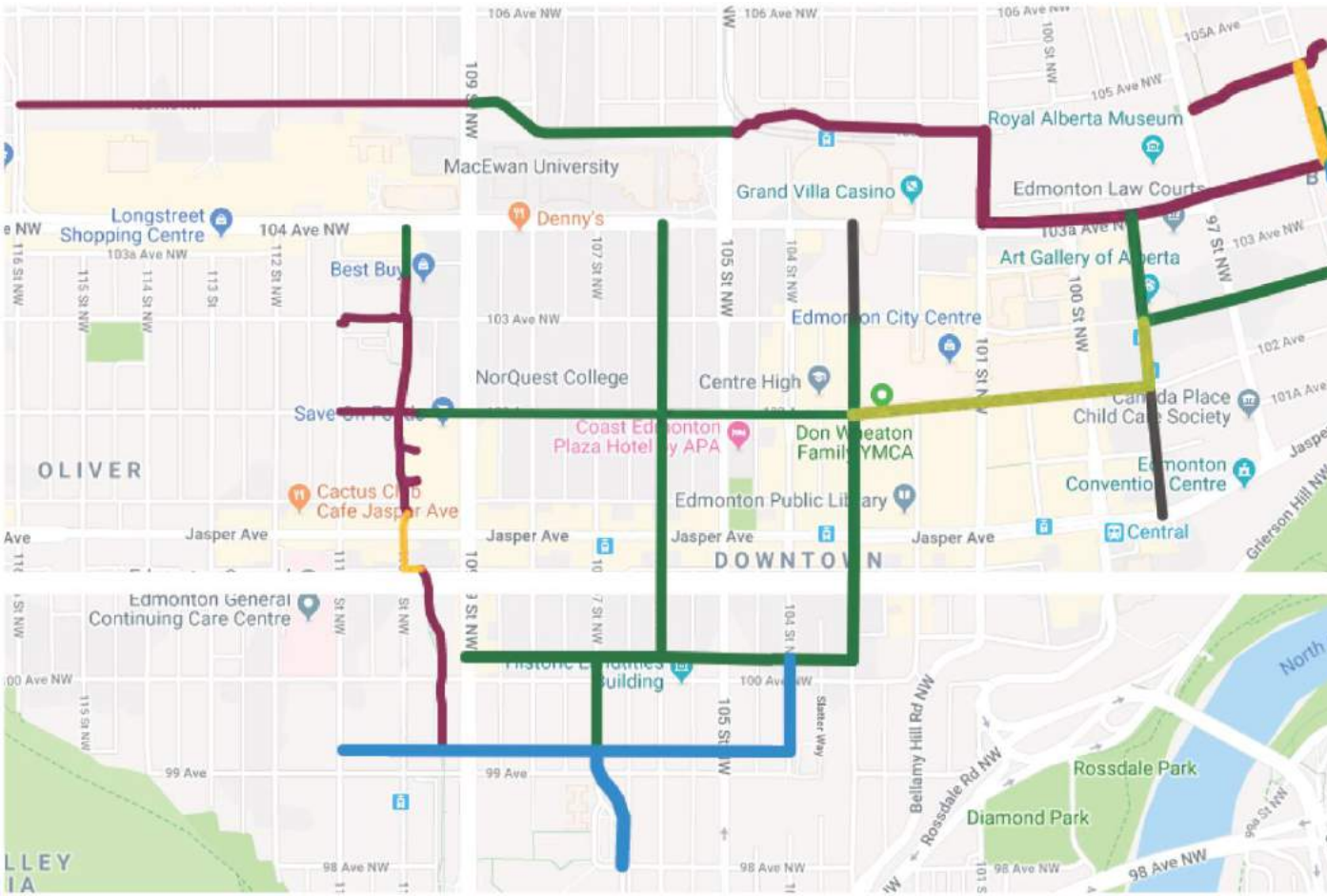


Overview

- Unanimously approved by Council in 2016
- Opened in 2017
- Modelled after Calgary's design, but NOT a pilot
- 7.8 km network
- \$7.5 million
- Construction costs: \$5.75 million (\$1.35 million under budget)



Downtown Network



EAST-WEST CORRIDORS:

- 100 Avenue from 103 Street to Ribbon of Steel Pathway
- 102 Avenue from 103 Street to Raittown Park
- 102A Avenue from 96 Street to 99 Street
- 103A Avenue from 96 Street to 101 Street
- 105 Avenue from 101 Street to 116 Street

NORTH-SOUTH CORRIDORS:

- 96 Street from 101 Avenue to 105 Avenue
- 99 Street from 102A Avenue to 103A Avenue
- 101 Street from 103A Avenue to 105 Avenue
- 103 Street from 100 Avenue to 103 Avenue
- 106 Street from 100 Avenue to 105 Avenue
- 107 Street from 99 Avenue to 100 Avenue
- 110 Street from Raittown Park to 105 Avenue

Facilities



On-road uni-directional protected bicycle lane



On-road shared use pathway



On-road bi-directional protected bicycle lane



On-road shared streets



Off-road shared use pathway



Purpose and Objectives

Objectives

The purpose of this study was to conduct an independent and objective review of the safety performance of the Downtown Bicycle Network. The objectives of this ISRSR were:

- 1 Assessment of existing infrastructure and behaviour of all users
- 2 Obtain input from internal and external stakeholders and review 311/Survey feedback
- 3 Review collision and ridership data (before and after)
- 4 Identify safety issues and develop mitigation measures

In-Service Road Safety Review

“An In-Service Road Safety Review is an in-depth engineering study of an existing road using road safety principles with the purpose of identifying cost-effective countermeasures that would improve road safety and operations for all road users.”





Safety Review

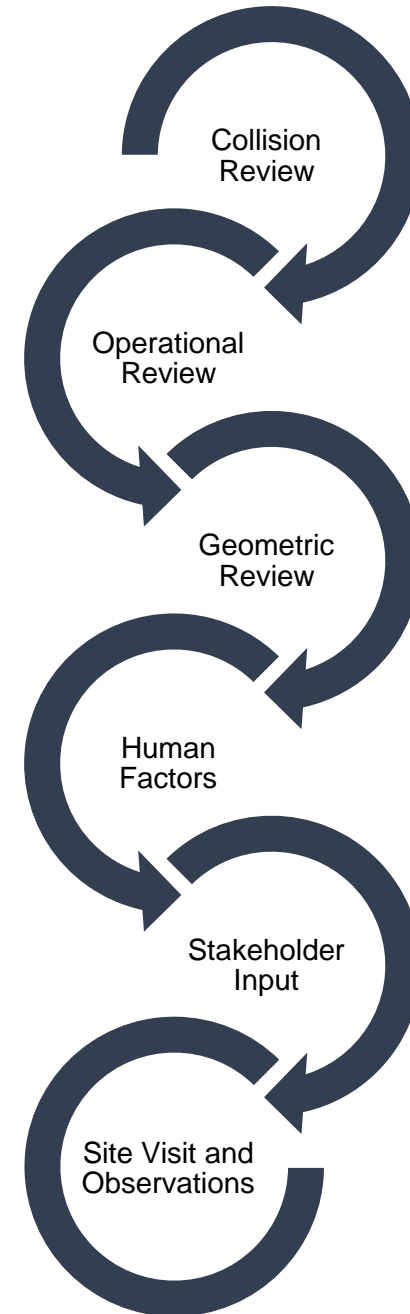
Process and Methodology

- Kick off Meeting
- Site Visits (4)
 - October, November, February, and June
- Project Team Meetings (2)
- Stakeholder Meeting
- Data Review and Analysis
- Prepare Road Safety Report
- **Response Report**



Data

- Site Inspections
- Collision data
- Cycling network usage
- Stakeholder Input
- 48 hour video (7 locations)

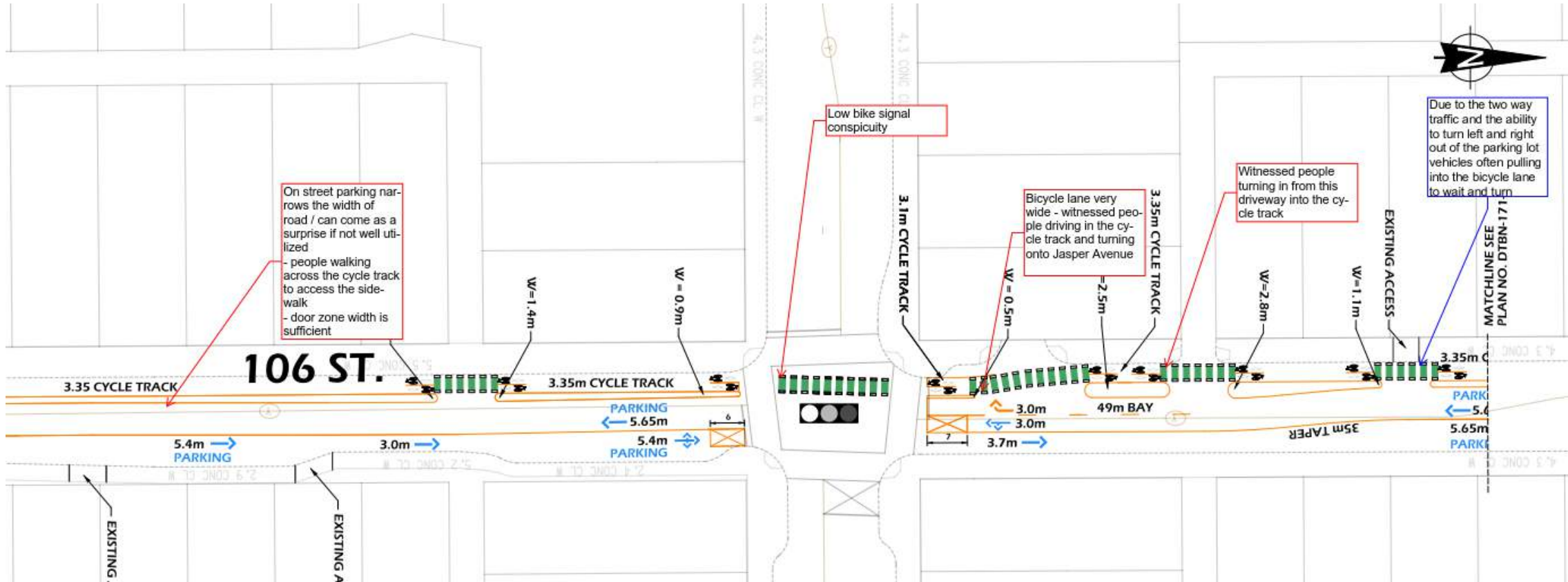


Limitations

- Focused on observed issues
- Limited to the physical and operational characteristics of the network
 - Collision history
 - Bicycle count data
 - Traffic operations
 - Geometric characteristics
 - Interim conditions



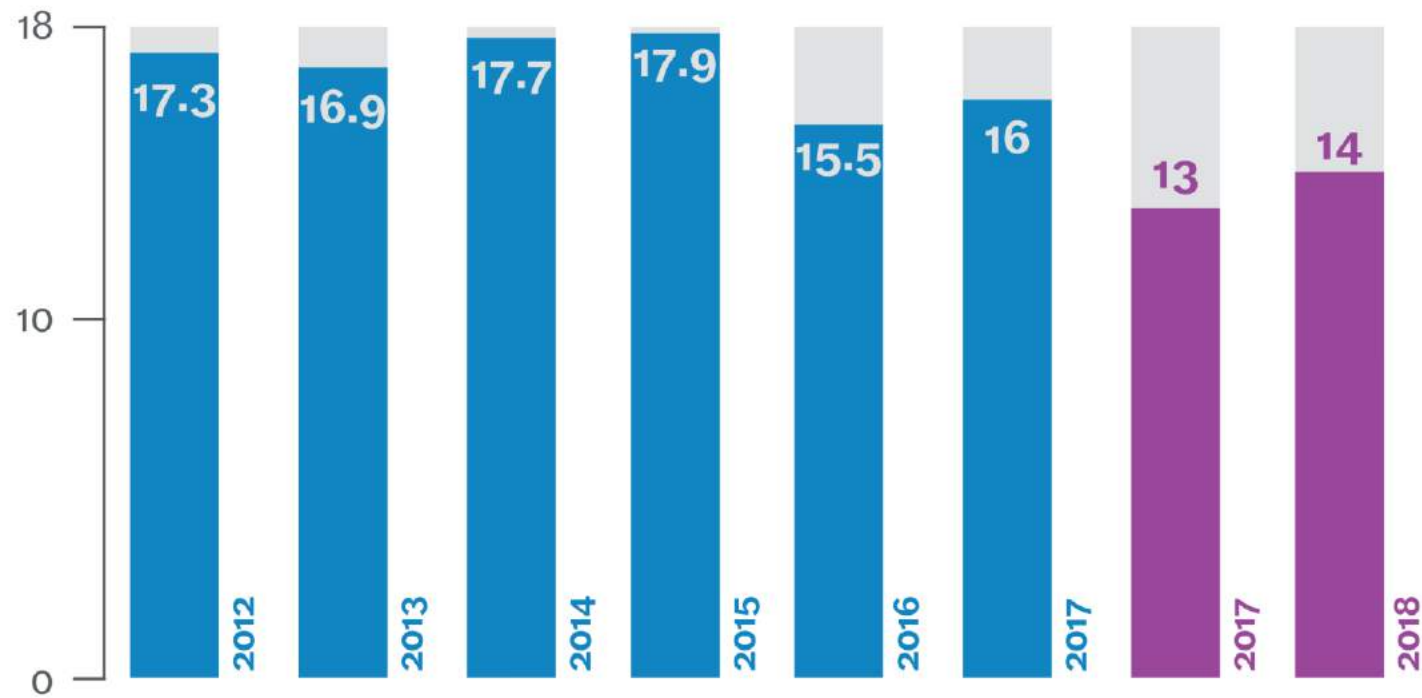
Site Inspections





Site Inspections

Collision Data and Network Usage



Downtown Bicycle Network Collision Trends (All Road Users)

Collision Data and Network Usage

100 Avenue

Pre-Installation				Post-Installation				Change / Collision Rate	
Total	Motor Vehicle (Average Collisions Per Year)	Pedestrian (Average Collisions Per Year)	Cyclist (Average Collisions Per Year)	Total	Motor Vehicle (Average Collisions Per Year)	Pedestrian (Average Collisions Per Year)	Cyclist (Average Collisions Per Year)	Total Annual Collision Percent Change	Cyclist Collision Rate (Normalized for ridership increase)
269	48.9	2.2	0.9	38	38	0	3	-22%	0.6

Pre-Installation (May 31, 2017)	Post-Installation Ridership Average (11 selected dates between June 30, 2017 - July 31, 2018)	% Change
196	929	374%

Video



Multi-Location Issues

- Permissive right turn conflicts;
- Surface condition;
- Gaps in physical separation;
- Shared pathways;
- Warning signage;
- Left turn restrictions at alleyways and driveways;
- Bicycle box usage;
- Bicycle box location; and
- Bicycle signal conspicuity
- Access management



Mid-block cross section



End-points and Transitions



Facility Convergence





Intersections



Shared Space



Conflict Zones





Temporary Conditions



Issue Prioritization

110 STREET

Location	Issue Category	Safety Issue	Suggestion	Priority
104 Avenue	End Points and Transitions	No designated bike facilities through MacEwan University	Coordinate with MacEwan University to ensure final configuration integrates with their facilities	Moderate
		No connection for southbound bikes to access the protected bicycle lanes through the intersection led to cyclists traveling in the wrong direction to access the protected bicycle lanes	Consider uni-directional protected bicycle lanes on 110 Street	High
		Shared use crossing pavement markings are not installed.	Consider installing shared use crossing pavement markings to the existing crosswalk	High
		Incorrect and confusing signage directing people to a bike route on the north of 104 Avenue that doesn't exist	Remove unwarranted signage	Low
Parking Lot Access north of Railtown Park	Conflict Zones	No stop sign at busy parking lot exit. Near miss collision between vehicle exiting the parking lot and a bicyclist was observed	Enhance safety with installation of a stop sign and WC-43 sign for vehicles exiting the parking lot and to raise awareness of the presence of the protected bicycle lanes	High

Lessons Learned

- Site visit
 - Document and cross reference
 - Seasons, modes, time of day
- Video analysis
- Pre / post bicycle counts and collision rates



Conclusions

While the ISRSR team has identified safety issues for each corridor

- Based on discussions with stakeholders and observations by the ISRSR team, it is the conclusion of the ISRSR team that that the implementation of the Downtown Bicycle Network has **improved both real and perceived safety for all road users along the study corridors**

Thank you!

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THE CITY OF
Edmonton

