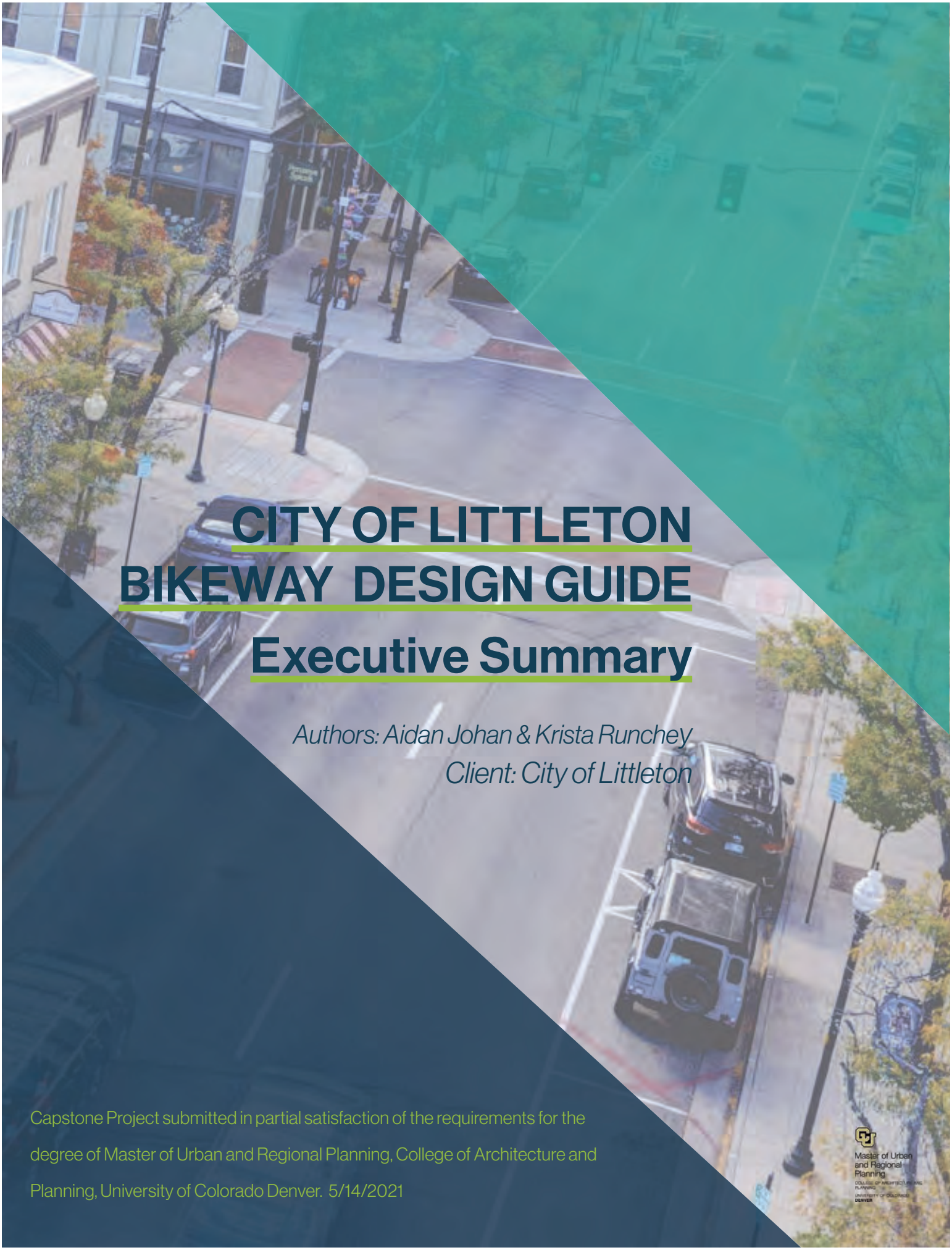


CITY OF LITTLETON BIKEWAY DESIGN GUIDE

Executive Summary

Authors: Aidan Johan & Krista Runchey

Client: City of Littleton

Capstone Project submitted in partial satisfaction of the requirements for the degree of Master of Urban and Regional Planning, College of Architecture and Planning, University of Colorado Denver. 5/14/2021

Master of Urban and Regional Planning
COLLEGE OF ARCHITECTURE AND PLANNING
UNIVERSITY OF COLORADO DENVER

EXECUTIVE SUMMARY

Bike Facilities for the City of Littleton

The Right Bike Facilities for Littleton

Problem Statement

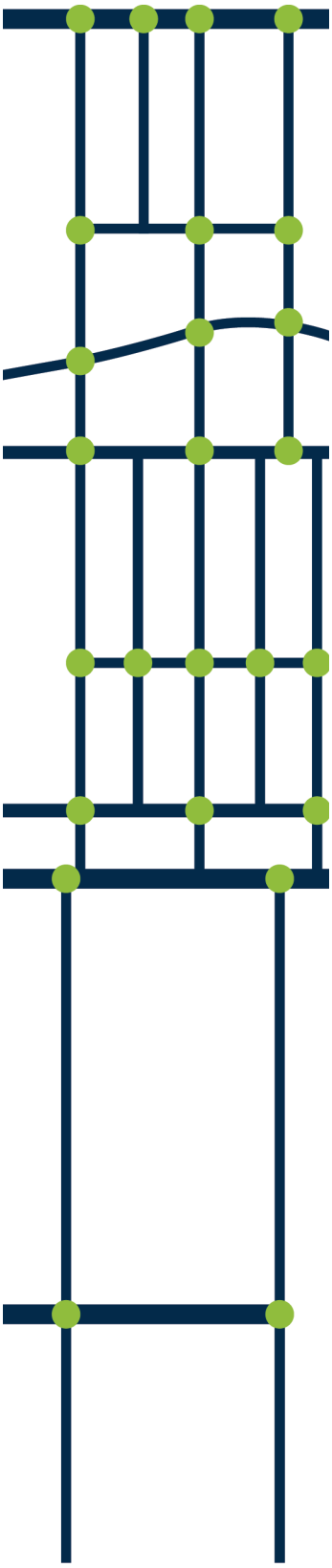
The City of Littleton, Colorado is a southern suburb of Denver, Colorado consisting primarily of residential streets with driving as the dominant mode of transportation. There is currently a well-connected transportation network both locally, within the city and across the region. Littleton is served by the RTD light rail and bus system, providing multi-modal connections to the rest of the region (City of Littleton 2019b p.13).

In 2019, the City of Littleton adopted the Transportation Master Plan (TMP) which charts the course for the city's future transportation network. The TMP puts emphasis making Littleton a great place to walk and bike by ensuring the street network is safe, convenient, and accessible to all users (City of Littleton 2019b p. 85). The TMP provides a strong foundation from which to build a complete bike network for all Littleton residents. This capstone details steps and interventions that the City of Littleton can make to create a more complete bicycle network for residents by using and expanding upon the goals and strategies in the TMP.

Background

The reasons people choose one transportation mode over another is multi-layered and requires a deep understanding of not only the general transportation climate, but also individual's personal mobility preferences. Bicycles have become an increasingly popular mobility option for many cities and their residents, with reasons ranging from cost effectiveness to health priorities (Civitas 2020). Additionally, other factors such as surrounding land-uses, and street conditions influence bicycle ridership (Zhao et al 2020).

Figure 1. Bike lane along S. Winderme St.



In order to understand the impacts and influence of the street-scape and personal choice on bicycle ridership, case studies and best practices were developed, by examining similar cities to Littleton to learn what success others have had. These best practices and case studies concluded that safety is the number one priority and is a determinant in increasing ridership, safety; however, safety does not look the same for all streets and cities. In order to create a safe environment for cyclists, the well-being of all street users must be taken into account, including cyclists, pedestrians and drivers. For new bicycle facilities to be successful, they must be well connected to other transportation options, such as public transit. Additionally, community education for cyclists and drivers on how to use new facilities is required to ensure all roadway users feel safe using Littleton's streets.

Most best practices and case studies find similar trends in roadway treatments that encourage bicycle ridership. Common roadway treatments include quick-build solutions. These solutions are ideal as they are inexpensive and flexible. They can be reconfigured until the right solution is found and made permanent. Other common trends include wider bicycle lanes to promote safety as well as alert drivers to the presence of bicyclists. These best practices informed the recommendations presented in this capstone.

Methodology

The methodology for this project involved spatial analysis to evaluate the existing conditions and identify areas for bicycle treatments. Tools such as Google Earth and ArcGIS were heavily utilized in analyzing Littleton's roadway network. The spatial analysis, was informed by background research which determined the type of roadway features that where analyzed. The main roadway elements that were examined were right-of-way width, number of travel lanes, number of four-way intersections, traffic volume, and connectivity (defined as parks, schools, existing bicycle facilities and municipal buildings along a corridor). These attributes were measured and scored to create four typologies. These typologies serve as way of classifying each street in Littleton to find what bicycle facilities would be most effective.

Recommended Infrastructure

Sharrows: for low traffic and slow streets, to be used in addition to other traffic calming measures

Super Sharrows: For streets where bike lanes may not be feasible but cyclists have priority

Conventional Bike Lanes: for streets with higher volumes and speed

Buffered Bike Lanes: For streets with high traffic volumes and fast speeds

Protected Bike Lanes: for streets with highest traffic volumes and speed

Through Bike Lane: allows cyclists priority when crossing complex intersections

Two-stage Turn Queues: to allow cyclists to turn left at multi-lane intersections

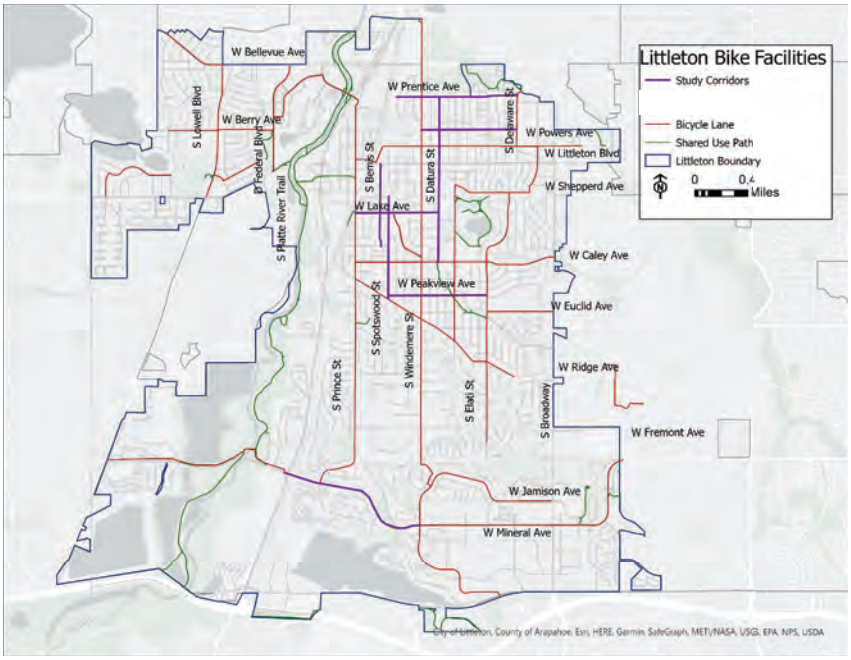
Bike Box: provide shelter for cyclists from right turning vehicles and improve sight lines

Cross Bike: provide a crossing for cyclists where they do not need to dismount

Curb Extension: narrow the roadway at an intersection to slow vehicles

Findings

The recommendations are targeted at increasing safety for cyclists while adhering to limitations of the street network and budgets. The recommendations focus on eight study corridors that were selected to represent each of the four different typologies. The four typologies are simple (low traffic residential streets), moderate (busier streets with more crossings or complicated intersections), complex (streets with high traffic volumes, faster speeds or many intersections) and most complex (streets with multiple lanes of traffic in both directions and faster speed limits). Each study corridor fits into one of the four typologies. As the typology becomes more complex, the treatments become more intensive, with subsequent typologies requiring more safety measures to provide key connectivity to activity centers, employment hubs, and public facilities. The results are illustrated in the Map 1.



Map 1. Study Corridors and Littleton's Bike Network

Conclusion

Due to its strong multi-modal foundation, the City of Littleton is well-equipped to create a bicycle-friendly suburb that is well-connected both locally and regionally. Best practices and case studies show an increased interest in bicycle commuting, due to bicycling having numerous cost and health benefits. The City of Littleton Bikeway Design Guide provides a framework for both short and long-term improvements of Littleton's streets and the creation of a network that is easily accessible, safe, and convenient for all cyclist

Sources

Civitas. (2020). Smart choices for cities Cycling in the City. Policy Note.

City of Littleton. (2019b). Transportation Master Plan. City of Littleton USA.

Zhao, Ye., Ke, S., Lin, Q., & Yu, Y. (2020). Impact of Lland-use on bicycle usage. Journal of Transportation and Lland-use, 13(1).