GREELEY COLORADO

Mobility Enhancements for Regional Growth & Equity (MERGE) Project

Multimodal Project Discretionary Grant Opportunity (MPDG)
Grant Application
August 2023

Table of Contents

The City of Greeley, Colorado submitted a grant application as part of the FY2022 MPDG Notice of Funding Opportunity. The project qualified for INFRA, RURAL, and MEGA grant funding but was not selected for funding. The feedback received during the debrief process has been addressed in this grant application. The meeting minutes are in **Appendix A** for ease of review as well as inserted in the application narrative at appropriate locations.

I. Project Description

The City of Greeley is the county seat of Weld County. From 2010 to 2020, the population of Weld County grew 30.1 percent making it the fastest-growing metro area in Colorado and the fourth fastest-growing metro area in the country. Of the population increase, 96 percent were people of color specifically residing in City of Greeley. The median age in the City of Greeley is 31.5 years old, which is significantly lower than the national average of 38 years old. The University of Northern Colorado and the Aims Community College further add to the youthful culture in City of Greeley and have a combined enrollment of over 22,000 students. It is essential for a city with a growing, diverse, and young population to facilitate infrastructure and mobility enhancements to meet the needs of its residents not only today but also in the future. This is a pivotal situation in the City of Greeley, Colorado today.

According to a report conducted by Kantar in 2019-2020, young urban dwellers aged 18-34 years are keen to change their mobility habits and their lifestyles. Results from the study indicated the following priorities for this demographic will have a major impact on mobility trends and associated infrastructure improvements: Remote Work, Improving Cycling Infrastructure, Zero-Emission Mobility, Mobility Hubs, and Value of Time.

The proposed **Mobility Enhancements for Regional Growth and Equity (MERGE) project** is a **public transit-oriented** project that includes construction of a **regional new mobility hub** between two grade-separated interchanges at 35th Avenue and 47th Avenue. The mobility hub allows for critical regional/local connectivity as well as safe pedestrian and micro-mobility friendly connection between the north and south sides of the City of Greeley. The MERGE project thus incorporates multiple transportation components to meet the needs of a fast-growing, diverse, and young community. The project removes the separation US Highway 34 creates between the north and south portions of the City of Greeley. Recent growth in surrounding communities, including the City of Greeley, has caused an increase in traffic. The City of Greeley is dedicated to removing mobility barriers, ensuring equity and accessibility for all, reducing greenhouse gas emissions, and looking to the future needs of the community and the North Front Range Metropolitan Planning Organization (NFRMPO).

Due to the proactive steps taken by the City of Greeley, the region has completed multiple studies and is now well positioned to seek funding under recently passed IIJA to ensure the project's success. In January of 2019, a Planning and Environmental Linkages (PEL) Study was completed by the Colorado Department of Transportation (CDOT) for US Highway 34 between Larimer County Road 29 and Weld County Road 53 within Larimer County, Weld County, and Cities of Evans, Greeley, Loveland, Kersey, Garden City, Town of Johnstown and Town of Windsor.

The goal of the early integrated planning efforts is to improve transportation decision making while streamlining subsequent alternatives analysis during the National Environmental Policy Act (NEPA) process. While the US 34 PEL study covered an area much larger than the City of Greeley's Multimodal Project Discretionary Grant (MPDG) project location, the PEL includes 35th and 47th Avenue interchanges and are identified as high priority. The project is also identified as a Tier 1 project in the NFRMPO Long Range Project list. *

After the completion of the PEL, the Colorado General Assembly passed an aggressive greenhouse gas reduction bill, H.B. 19-1261. This bill ensures any future projects will result in a more balanced and sustainable, and less auto-dependent, transportation system over time. The planned mobility hub meets these requirements and is a key component of the project.

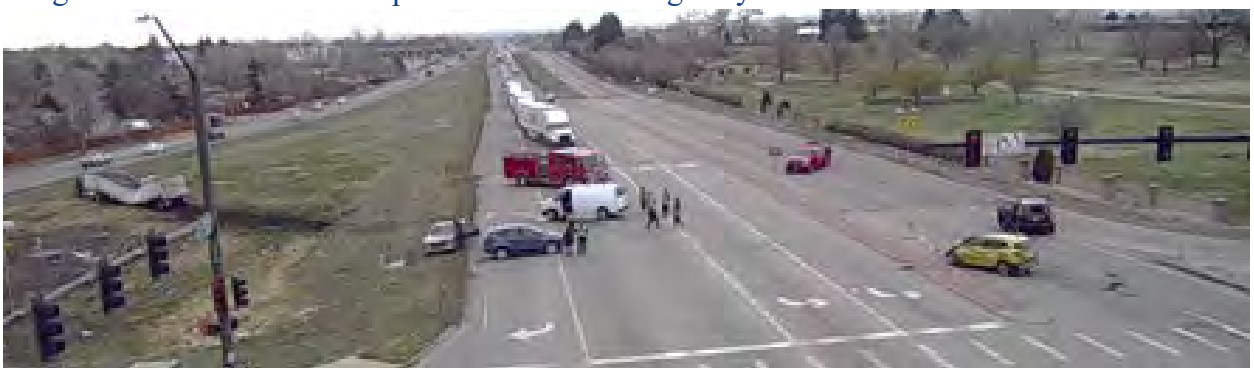
Each component of the project can be constructed separately as an independent utility and is presented accordingly in this application. However, for ease of construction, schedule, budget efficiency, and less impact to the traveling public, the ideal scenario would be for all the components to be constructed together. This was discussed with FHWA/CDOT staff in a meeting to discuss the project and there was general agreement that the approach was logical. The project Concept Map, **Figure 1**, can be viewed below and on the **project website**.

Figure 1: Concept Map

The City's MERGE project will include the conversion of at-grade intersections with US 34 and 35th Avenue and US 34 and 47th Avenue into grade-separated interchanges. Both interchanges include the addition of auxiliary lanes in both directions along the regional connector. US 34 and 35th Avenue includes the construction of a tight diamond configuration with a partial cloverleaf on-ramp in the southwest quadrant of the interchange. US 34 and 47th Avenue includes the construction of a diverging diamond interchange. The project will alleviate the separation between the north and south portions of the City of Greeley. Removal of the at-grade intersections at 35th Avenue and 47th Avenue will lead to the free flow of east-west traffic through this part of the US 34 corridor thereby improving travel times, reducing congestion, and improving safety metrics (particularly the reduction of rear end crashes). US 34 and 35th Avenue have been the site of major multivehicle crashes in recent years, involving commercial vehicles, transit vehicles, and personal automobiles.

*Addresses Greeley MERGE Application Debrief Notes 3.d.2.a. (Readiness) as shown in Appendix A

Image 1: Crash between Multiple Vehicles at US Highway 34 and 35th Avenue - MERGE Site



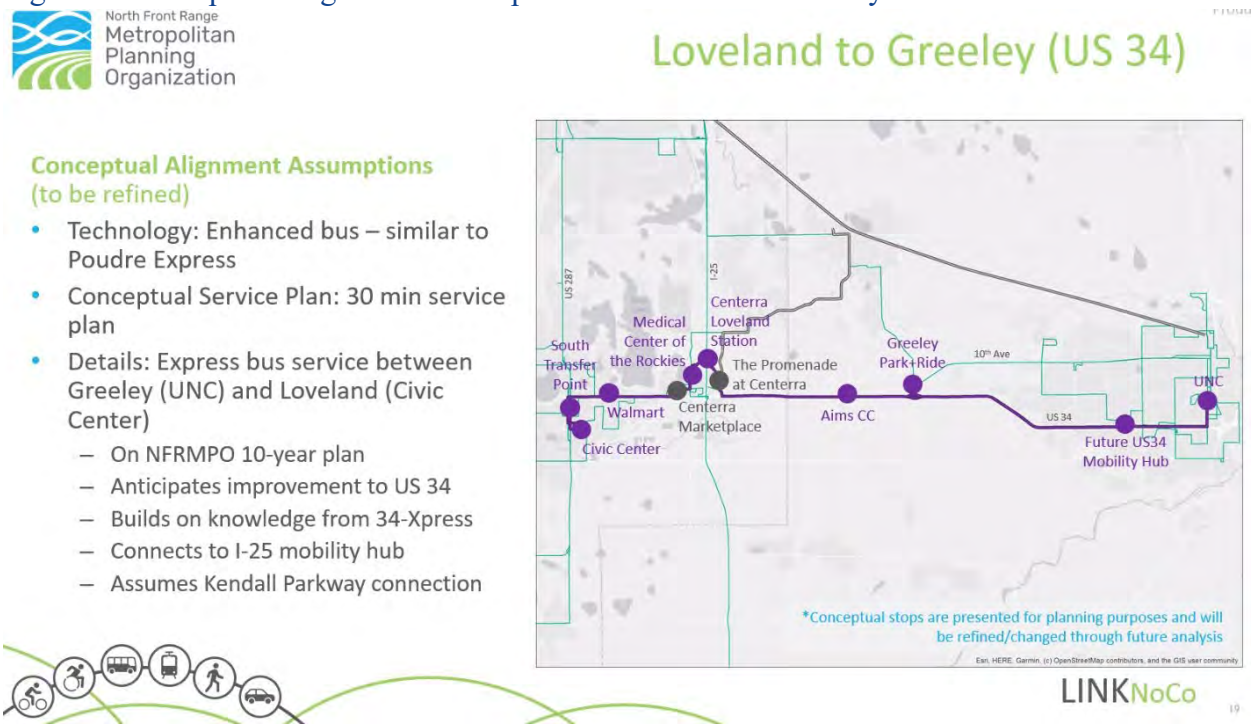
The MERGE project will eliminate a significant mobility barrier and safety concern for active transportation users (at-grade crossings are used heavily by students walking, rolling, and biking) which, when coupled with other multi-modal improvements, will further enhance corridor mobility. The regional bus station at the center of US 34 between interchanges will facilitate a higher level of shared commuting to Denver and the Denver International Airport via Bustang and Flex which connects to Boulder and Fort Collins (as shown in **Figure 2)**. Additionally, the Greeley Evans Transit (GET) will operate a bus service with direct connectivity between the Greeley mobility hub and the transit hub in Loveland. A proposed shared-use underpass of US 34 supports regional trail connectivity in all directions and provides access to the transit station. Overall, the mobility hub supports active and sustainable transportation with modal flexibility. The combination of new grade-separated interchanges, regional and local transit service, and active transportation infrastructure will reduce the number of cars on the road leading to a reduction in emissions, vehicles operating costs, and wear and tear on state and local infrastructure (**6% reduction in AADT is expected**). *

Sustained growth and economic development along the corridor have increased the need to enhance multimodal safety, eliminate barriers to jobs, reduce recurring congestion, and improve regional mobility. The MERGE project is vital to the realization of these important outcomes for the City of Greeley and NFRMPO and will bring about a continuity of mobility conditions along this key travel corridor.

The regional mobility hub with the local connection will also allow the City of Greeley to reconfigure its current local transit systems to be more responsive and provide flexible schedules and routes including a new micro-transit options and regional connections to support the needs of the traveling residents. This transformative project will provide better opportunities for lower income residents through greater accessibility to employment, health services, essential services, and recreational activities by breaking the barrier that US 34 is today and providing a grade-separated multimodal underpass. *

*Addresses Greeley MERGE Application Debrief Notes 3.b.ii.4, 5. (Climate, Equity) as shown in Appendix A

Figure 2: Conceptual Alignment Assumptions – Loveland to Greeley



II. Project Location

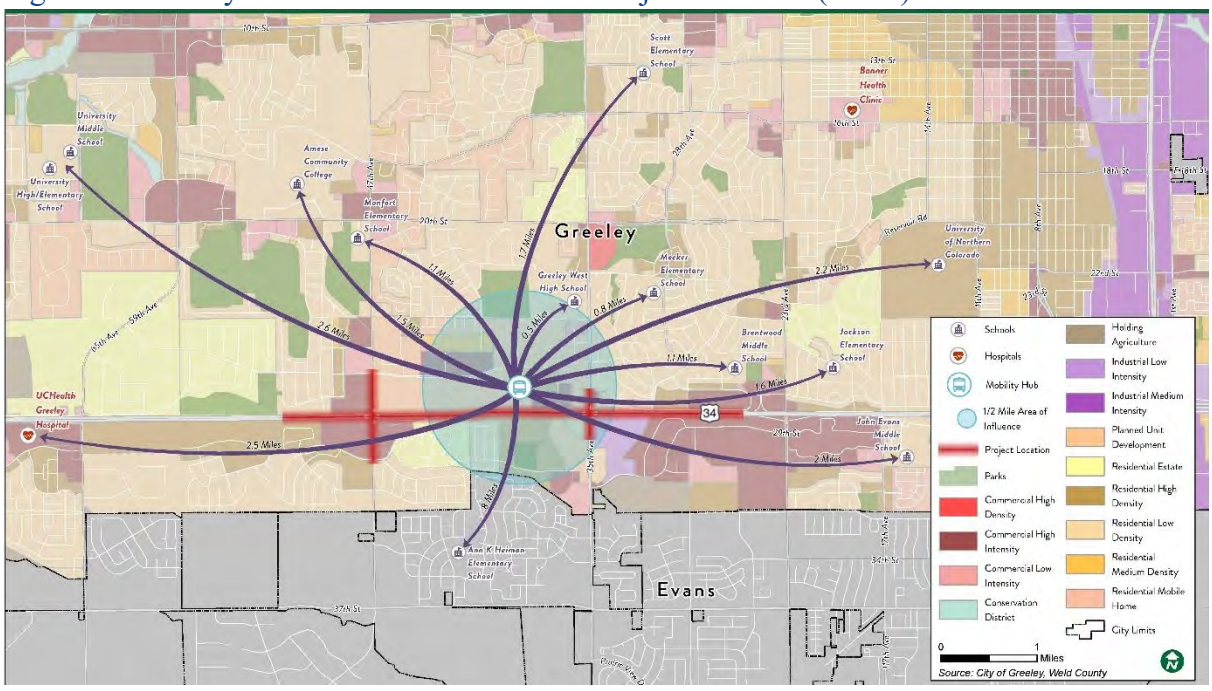
MERGE is in the heart of the City of Greeley along US Highway 34. The City of Greeley is designated as a Rural Area with a population of 108,795 according to the 2020 Decennial Census. The project will be approximately two and half miles west of the connection with US Highway 85, a north to south highway of regional importance. US Highway 34 is a critical east-west transportation corridor for northern Colorado's fastest growing communities and an important regional connection between the region's largest population and employment centers: City of Greeley, City of Fort Collins, and City of Loveland.* This project will have a benefit to a Historically Disadvantaged Communities in Greeley surrounding the MERGE project as shown in **Figure 10**.**

The location of the new mobility hub is an ideal location to provide an easy means of access to this central area of Greeley as well as local/regional connectivity. The MERGE project will provide various connections, new and existing, and fill gaps within the existing transit network. **Figure 3** shows the amenities that will directly benefit from the mobility hub's location.**

*Addresses Greeley MERGE Application Debrief Notes 3.b.ii.3. (Economic) as shown in Appendix A

**Addresses Greeley MERGE Application Debrief Notes 3.b.ii.5. (Equity) as shown in Appendix A

Figure 3: Mobility Hub Area of Influence and Project Location (Local)



III. Project Parties

The City of Greeley is the applicant for MPDG grant funding and will contribute a majority of the non-federal funding match toward the program of works described in this application. CDOT and the NFRMPO have also provided funding for the mobility hub which is included in the local match. * Additionally, the City of Greeley intends to use TIFIA49 funding. ** Draft letters of intent (LOIs) have already been submitted to the USDOT's Build America Bureau (BAB). The City of Greeley will continue the public engagement process initiated by the CDOT as part of the US 34 PEL study. To date, the public has been engaged in very well attended open houses. Throughout the course of project development, the City of Greeley will continue to coordinate with the BAB, FHWA, CDOT, and others as necessary to obtain the permits and approvals needed. *

The program manager and grant administrator for the MERGE Project will be Bhooshan Karnik, Deputy Director/Chief Engineer of City of Greeley's Public Works Department.

The City of Greeley appreciates and sincerely thanks the many parties and partners who have pledged support to the City of Greeley's MERGE Project including Federal, State and Local representatives, businesses, schools, who unanimously support this project. A resolution by the City of Greeley City Council expressing unanimous support for the project, support letters from the Colorado Congressional delegation, State of Colorado Governor, Jared Polis, the North Front Range MPO, and other partners who have expressed support for the project can be found in **Appendix B**.

*Addresses Greeley MERGE Application Debrief Notes 3.d.2.a. (Readiness) as shown in Appendix A

**Addresses Greeley MERGE Application Debrief Notes 3.b.ii.6. (Innovative) as shown in Appendix A

The CDOT Region 4 Director, Heather Paddock has expressed her support for the project: "Colorado DOT Region 4 considers the MERGE project to be a high priority for regional premium transit throughout the north front range of Colorado. The City of Greeley's pursuit to better connectivity throughout Colorado is critical for safety, economic development, and equality for all." *

IV. Grant Funds, Sources, and Uses of All Project Funding

The total estimated MERGE project budget is approximately $131.2 million. This cost includes engineering, construction, and property acquisition. **This 2023 MPDG grant proposal requests $50 million from MPDG**, approximately $35 million from TIFIA and approximately $45 million would be from State and local sources including $31.5 million of the $45 million from the City of Greeley. Prior to this 2023 MPDG grant proposal in June 2023, the City of Greeley has applied for individual TIFIA loans for the proposed 35th Avenue interchange, proposed 47th Avenue interchange, and new mobility hub totaling $35 million. The draft LOIs can be viewed on the project website.

The budget is broken down by fiscal year and funding source in **Table 1**. Fiscal Years are set as October 1 through September 30 of the next year in accordance with the Federal Fiscal year limits.

Table 1: MERGE – Project Budget (In Millions)

Items	Itemized Totals	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028
Pre-Alternative Delivery Tasks	$19.0	$0.9	$1.1	$4.5	$7.7	$4.8
ROW Acquisition	$4.7	$0.0	$0.0	$0.0	$4.7	$0
Mobility Hub	$22.8	$0.0	$0.0	$4.6	$17.1	$1.1
35th Avenue Interchange	$46.9	$0.0	$0.0	$0.0	$39.9	$7.0
47th Avenue Interchange	$37.8	$0.0	$0.0	$0.0	$18.9	$18.9
Total	$131.2	$0.9	$1.1	$9.1	$88.3	$31.8
Funding Sources						
City of Greeley	$31.5	$0.9	$1.1	$1.6	$14.0	$13.8
Colorado DOT	$8	$0.0	$0.0	$2.5	$5.5	$0.0
North Front Range MPO	$5.4	$0.0	$0.0	$1.6	$3.8	$0.0
CMAQ	$1.6	$0.0	$0.0	$1.6	$0.0	$0.0
TIFIA	$34.7	$0.0	$0.0	$0.9	$27.6	$6.2
MPDG Application	$50.0	$0.0	$0.0	$0.9	$37.3	$11.8
Total	$131.2	$0.9	$1.1	$9.1	$88.3	$31.8

*Addresses Greeley MERGE Application Debrief Notes 3.d.2.a. (Readiness) as shown in Appendix A

Figure 4 and Figure 5 show g the percentage of non-federal and federal funding anticipated in the MERGE project. The MPDG funding request of **$50,000,000** comprises of **28%** of the total project cost.0. The total amount of non-federal funding in the MERGE project is $**44,906,000** which represents **34** percent of the total project cost. The remaining **28** percent of the total cost comprises of **$1,594,000** about **1** percent of CMAQ funding from the NFRMPO and **$34,739,800** of TIFIA comprising **27** percent of the total project cost.

Figure 4: MPDG Federal Funding

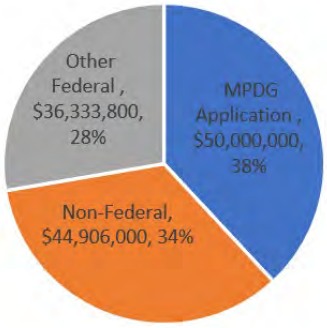


Figure 5: MPDG Percentages by Funding Source

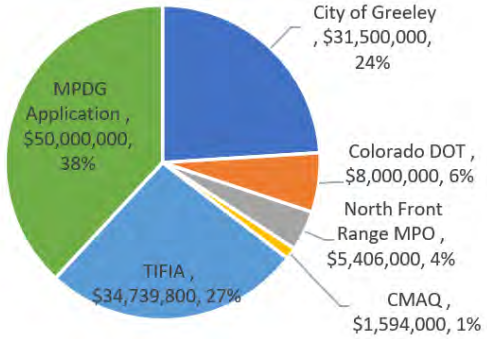


Figure 5 illustrates a detailed funding breakdown. It is to be noted that the City of Greeley is contributing $31,500,000 which is 24 percent of the total cost upfront with an additional 27 percent of TIFIA credit that will be paid back to the BAB over the duration of the credit terms. **The combined total share of the project cost that the City of Greeley is contributing to the project is $66,239,800** which is **51** percent of the project cost. The CDOT and the North Front Range MPO are contributing 6 percent and 4 percent, respectively.

Table 2 presents the budget showing the breakdown of the $131.2M project cost by each category and Federal Fiscal Year. The detailed engineer's estimate of probable cost can be found on the **project website**.

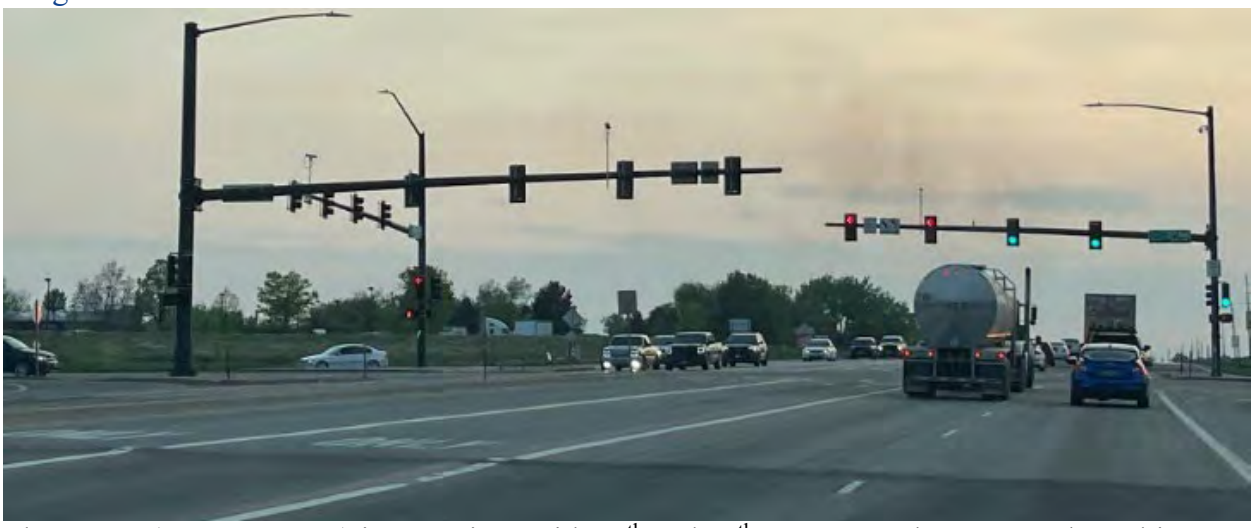
Table 2: Funding by Category and Year

Funding Source	FY 2024		FY 2025		FY 2026		FY 2027		FY 2028		Total	
Pre-Alt Delivery Tasks	$0.9	0.7%	$1.1	0.9%	$4.5	3.4%	$7.7	5.9%	$4.8	3.6%	$19.0	14.5%
ROW Acquisition	$0.0	0.0%	$0.0	0.0%	$0.0	0.0%	$4.7	3.6%	$0.0	0.0%	$4.7	3.6%
Mobility Hub	$0.0	0.0%	$0.0	0.0%	$4.6	3.5%	$17.1	13.0%	$1.1	0.9%	$22.8	17.4%
35th Avenue Interchange	$0.0	0.0%	$0.0	0.0%	$0.0	0.0%	$39.9	30.4%	$7.0	5.4%	$46.9	35.8%
47th Avenue Interchange	$0.0	0.0%	$0.0	0.0%	$0.0	0.0%	$18.9	14.4%	$18.9	14.4%	$37.8	28.8%
Total	$0.9	0.7%	$1.1	0.9%	$9.1	6.9%	$88.3	67.3%	$31.8	24.2%	$131.2	100%

V. Project Outcome Criteria

i. Safety

Image 2: US 34 at 47th Avenue

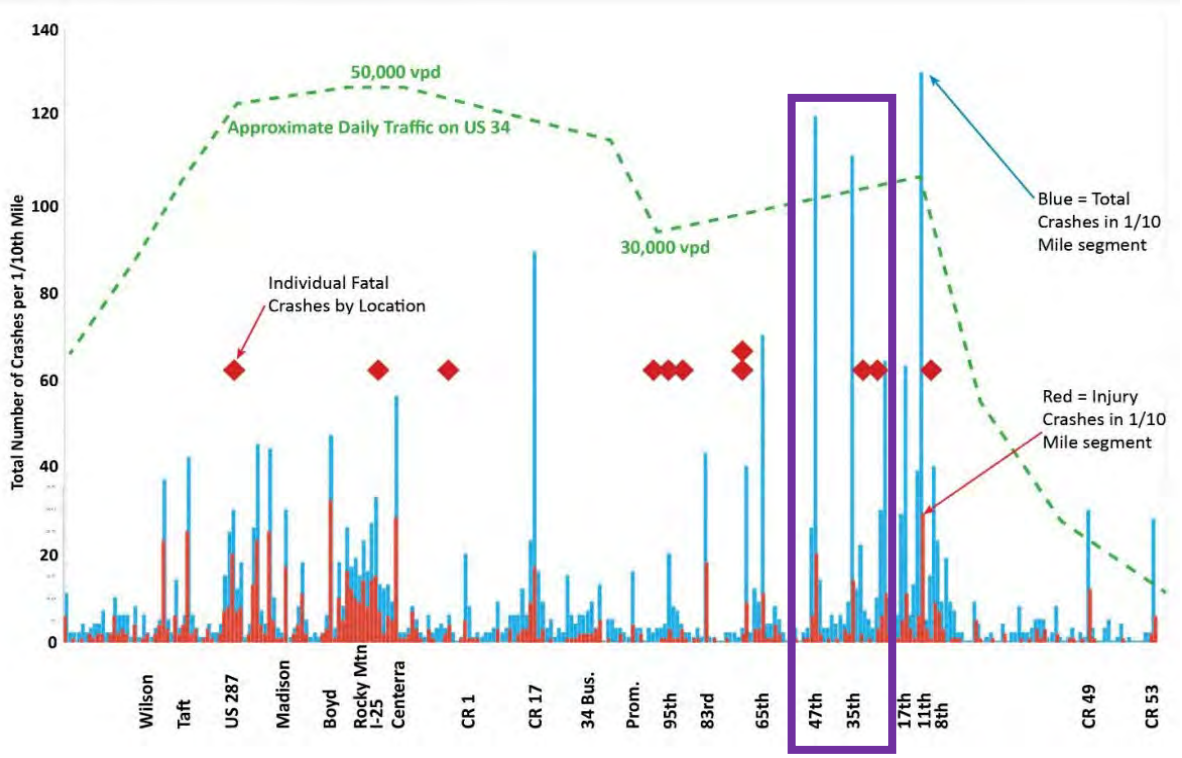


The US 34 (US 34 Bypass) intersections with 35th and 47th Avenue are large at-grade multi-phased signalized intersections shown below that require long crossings for bicycles and pedestrians. The US 34 PEL Study completed by CDOT and subsequent traffic modeling by CDOT, indicate that there is a need for improvements to the US 34 signalized intersections at both 35th and 47th Avenues.* Currently, these intersections are operating at a Level of Service (LOS) D which approaches the relatively unacceptable level. By 2045, both 35th and 47th Avenues are expected to be operating at an unacceptable Level of Service (LOS) (LOS E or LOS F) and will need to be upgraded to interchanges. * Most importantly, the existing at-grade signalized intersections have extensive safety issues. **Image 3** displays an example of a multivehicle crash involving commercial, transit, and personal vehicles. The 35th and 47th Avenue signalized intersections were in the **top three crash locations** for the entire US 34 PEL Study completed by CDOT for 2011-2015 as seen in **Figure 6** and highlighted by the purple outline. In addition, the 35th and 47th Avenue signalized intersections with US 34 were the **#1 and #3 highest crash locations in the City of Greeley** respectively between 2016 and 2020. (City of Greeley 2021 Transportation Safety Report). Using Colorado DOT crash data from 2017-2021, showed that there were 187 and 152 crashes at the US 34 intersections with 35th Avenue and 47th Avenue, respectively.

*Addresses Greeley MERGE Application Debrief Notes 3.d.3.a. (Environmental) as shown in Appendix A

Image 3: 2019 Crash involving Transit, Commercial, and Personal Vehicles

Figure 6: Crash Data from the *US 34 PEL Corridor* Existing Conditions Report



The MERGE project is surrounded by Historically Disadvantaged Communities that are known to have high percentages of households who rely on walking, biking, and transit options. According to the City of Greeley Bicycle Master Plan, the area just north of the future (new) mobility hub and future interchange (around 20th Street and 35th Avenue) is one of the highest demand locations in the city for active transportation based on demographic and land use characteristics. (For more information, see *Equity, Multimodal Options, and Quality of Life* section). * Currently, students who live south of US 34 and attend Greeley West High School, located north of US 34 on 35th Avenue, are forced to cross at the US 34 and 35th Avenue signalized intersection. Several bike and pedestrian safety issues present themselves at this intersection due to the high speed of traffic, heavy vehicle volumes, and long crossing distances. To address these safety issues, District 6 (School District) and the City of Greeley consider a grade-separated bike and pedestrian crossing of US 34 near 35th Avenue a top priority for student safety. *

Merge Project Components

The interchanges at 35th and 47th Avenues would realize immediate safety benefits by **reducing approximately 40% of the crashes through the elimination of signals at this at-grade section of US 34** (Crash Modification Factor Clearinghouse ID: 460). The MERGE project will, over its first twenty years of operation, result in nearly **640 fewer vehicular crashes and 278 fewer injuries due to crashes** at the US 34 signalized intersections of 35th and 47th Avenue. Concepts for the proposed interchanges at 35th and 47th Avenues, respectively, are shown below along with the mobility hub.

The MERGE project includes the construction of a regional bus station within the center of US 34 between the interchanges. The regional bus station, while being connected to the mobility hub, will encourage and facilitate a higher level of shared commuting options. Currently, there are no GET transit routes south of US 34 and west of 35th Avenue other than demand response service to the Greeley Hospital.

Image 4: US 34 at 35th Avenue Concept - Modified Partial Clover Leaf (Parclo)

Image 5: US 34 at 47th Avenue Concept - Diverging Diamond Interchange (DDI)

*Addresses Greeley MERGE Application Debrief Notes 3.b.ii. 5. (Equity) as shown in Appendix A

Image 6: Center Loading Mobility Hub on US 34

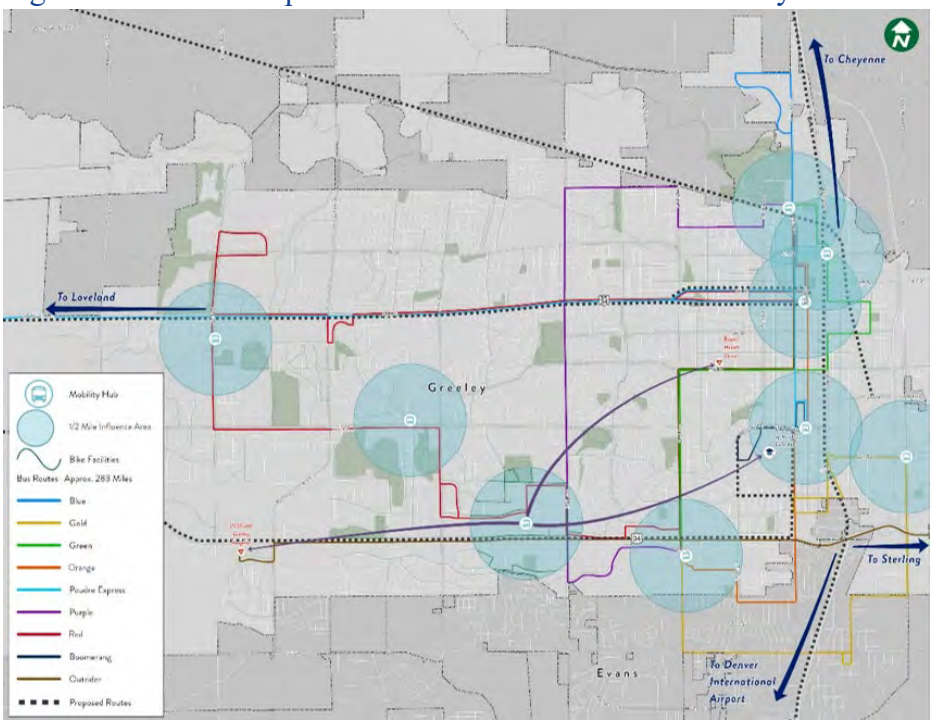
The City of Greeley has plans to partner with private transportation providers to increase the use of the proposed mobility hub and integrate it into the mobility hub system.* The **project website** contains resources on the current bike facilities, bus routes, and mobility hubs in Greeley. **Figure 7** shows the new Greeley Mobility System which integrates micro transit, micromobility, and transit. The new system would total 283 miles as compared to the existing 162 miles; an increase of 74 percent.** Mobility hubs within Greeley are currently Each blue circle represents a new mobility hub proposed upon the completion of the MERGE Project.

The combination of new grade-separated interchanges, regional and local transit service, and active transportation infrastructure along both sides of US 34 will reduce the number of cars on the roadways leading to improved safety, a reduction in vehicle greenhouse gas emissions, vehicle operating costs, and wear and tear on state and local infrastructure.

*Addresses Greeley MERGE Application Debrief Notes 3.b.ii.6. (Innovation) as shown in Appendix A

**Addresses Greeley MERGE Application Debrief Notes 3.b.ii.5. (Equity) as shown in Appendix A

Figure 7: New and Expanded Bus Routes with Micromobility Hubs



ii. State of Good Repair

The MERGE project comprises the delivery of a complex mix of infrastructure components including new auxiliary lanes, improved exits and entrances to the highway, transit elements, and micro mobility options. With the roadway improvements to US 34, 35th and 47th Avenue, the pavement conditions for the MERGE project study area will be in good condition and become safer for users and reduce wear and tear costs for vehicles using the roadways.

By far, the main elements of the project are the construction of the bridges that grade-separate US 34 with 35th and 47th Avenue as part of the new interchanges, the center loading regional transit center, and underpass with US 34. These elements will be designed with a minimum of 75-year asset life and will be ranked as "good" (indicating no design or structural issues). Maintenance activities for the new infrastructure will be limited to preventative maintenance for at least the first ten years of operation, leading to less vehicle delays during these activities. Given the asset lives of major elements of the project (bridges, ramps, concrete lanes, retaining walls), the project will also deliver approximately $6M in discounted residual value benefits at the end of the assessment period. Coupled with the provision of the other infrastructure elements of the MERGE project (retaining walls, noise barriers, culverts, pavement, drainage improvements, signals, ITS, and utilities), this key corridor to regional and local mobility will be in a good state of repair. *

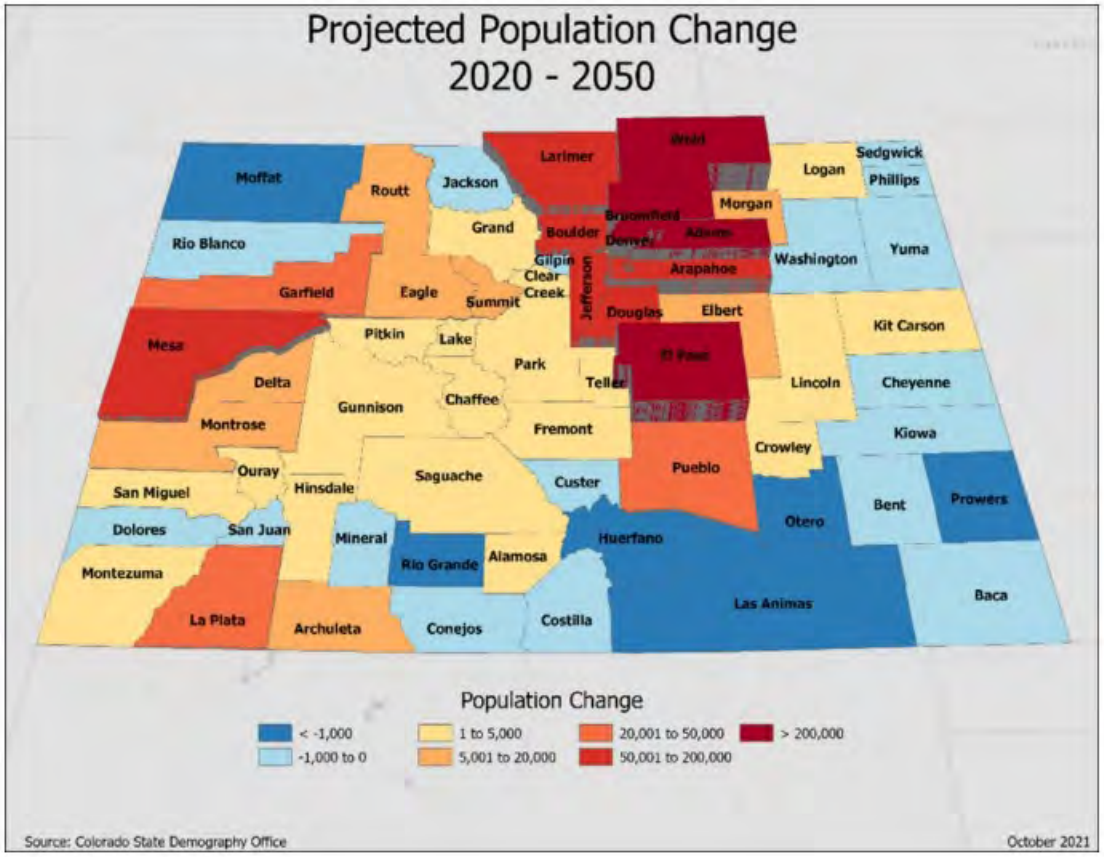
*Addresses Greeley MERGE Application Debrief Notes 3.b.ii.2. (State of Good Repair) as shown in Appendix A.

iii. Economic Impacts, Freight Movement, and Job Creation

Economic Impacts

Transportation is the backbone for commerce, and the extent and quality of transportation infrastructure is one of the most important factors to determine long-term economic prosperity at the local, regional, and national levels. As a result, the City of Greeley's position as both a regional economic center and a multimodal transportation hub drives the MERGE project initiative.

The Population Summary January 2023 prepared by the Colorado State Demography Office projects **"The largest population growth is forecast to be along the Front Range. Between 2020 and 2030, the state's population is projected to increase by 630,000, with 88% of this increase projected for the Front Range and of that, 300,000 for the Denver Metro area. The North Front Range is expected to observe the fastest growth, at an annual average growth rate of 2%, or 140,000 people. The 2050 forecast for the state is 7.48 million, with 6.3 million along the Front Range, or 85% of the total population."** *



*Addresses Greeley MERGE Application Debrief Notes 3.b.ii.3. (Economic) as shown in Appendix A

The proposed MERGE project is expected to have significant positive impacts on the local and regional economies. Increased mobility (and more affordable mobility options), improved regional transit service to areas such as Fort Collins and Denver, and improved system-wide traffic operations (reduced travel times for all modes) are key benefits of this initiative and will help the City of Greeley and Weld County to continue to develop as a regional economic hub for decades to come. Weld County is top ranked in agriculture, the number 1 meat processing company (JBS) is headquartered and has a facility in Greeley, and the world's largest manufacturer of cheese (Leprino) has a facility in Greeley. This workforce lives mostly in the City of Greeley. Improved traffic and safety operations will remove supply chain bottlenecks that reduces the cost of doing business and improves local and regional connectivity to the ever-more global economy. * The possibility of additional long-term parking for commercial vehicles adjacent to the project is also a key economic benefit.

In addition to the operational benefits that enable economic growth, research has shown that corridors with grade-separated do not suffer negative impacts to local businesses. In fact, they often flourish as adjacent and local land uses move toward the highest land-use productivity. This is a key benefit that will benefit local businesses as well as the success of the mobility hub.

US 34 is the primary east-west corridor through the northern Colorado region and the North Front Range MPO (NFRMPO) area of Weld and Larimer counties. The components of the proposed project (two proposed interchanges at 35th and 47th Avenues and the mobility hub) have been identified as priority projects in state and regional long-term planning as the area supports growing housing, employment centers, and tourism nodes. See *Project Readiness and Environmental Risk* for additional information.

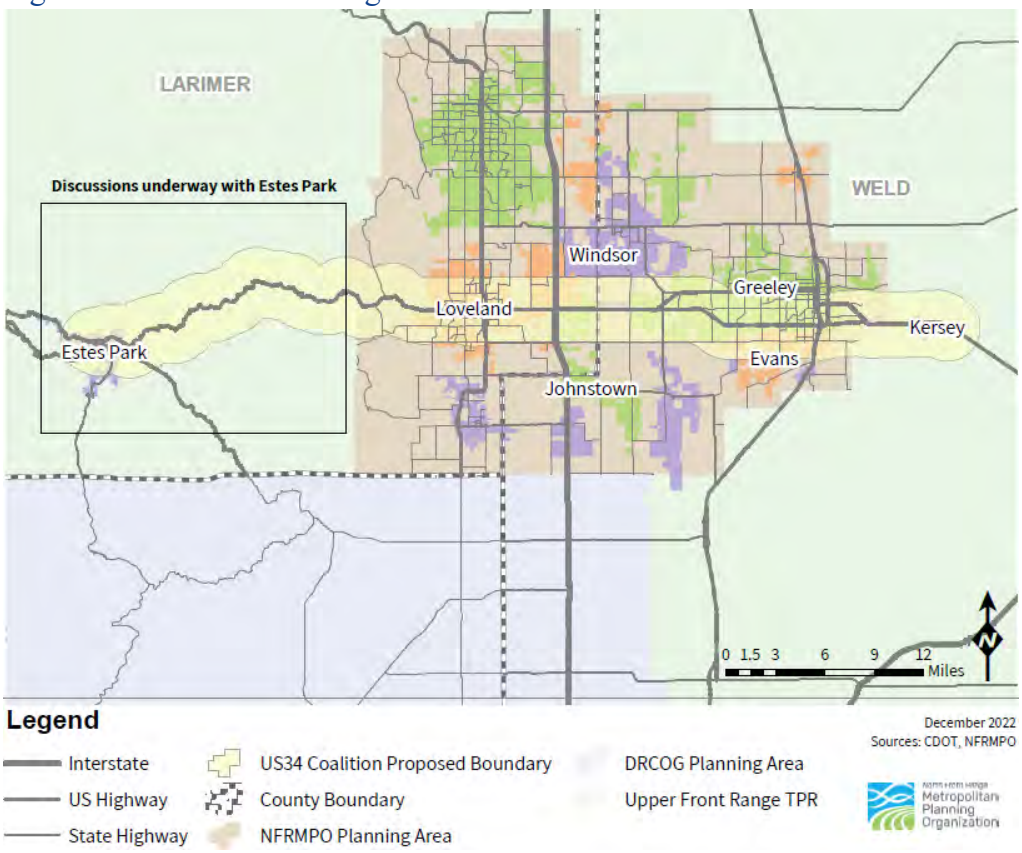
The proposed interchanges for this MERGE project will improve the overall operations of not just US 34, but the larger local network. This project will take pressure off the local roadways as well as increase throughput on US 34 along this key mobility corridor within the NFRMPO planning area (**Figure 8)**. Sustained growth and regional economic development along the US 34 corridor from Greeley to I-25, Loveland, Estes Park and Rocky Mountain National Park have increased the need to eliminate transportation barriers to jobs, reduce recurring traffic congestion, enhance multimodal safety, and improve regional mobility. **

On August 8, 2023, the USDOT approved a $501 million TIFIA loan to improve a 61-mile north-south corridor of I-25, including adding 52 miles of express toll lanes between Denver and Fort Collins, Colorado which provides direct access to US 34. The benefits of the $1.6 billion project include improved travel times; construction of new mobility hubs that encourage a modal shift to transit, carpooling, and bicycle/pedestrian travel; capacity for future travel demand; rehabilitation of older critical rail crossings and structures; and connecting users to a 100-mile regional trail network, while also maintaining safe crossings for wildlife throughout the corridor. This connectivity makes the need for the MERGE project even more critical to address the challenges that will be presented due to the ease of connectivity.

*Addresses Greeley MERGE Application Debrief Notes 3.b.ii.2. (State of Good Repair) and 3.b.ii.3 (Economic Impact) as shown in Appendix A

**Addresses Greeley MERGE Application Debrief Notes 3.b.ii.3. (Economic Impact) as shown in Appendix A

Figure 8: NFRMPO Planning Area



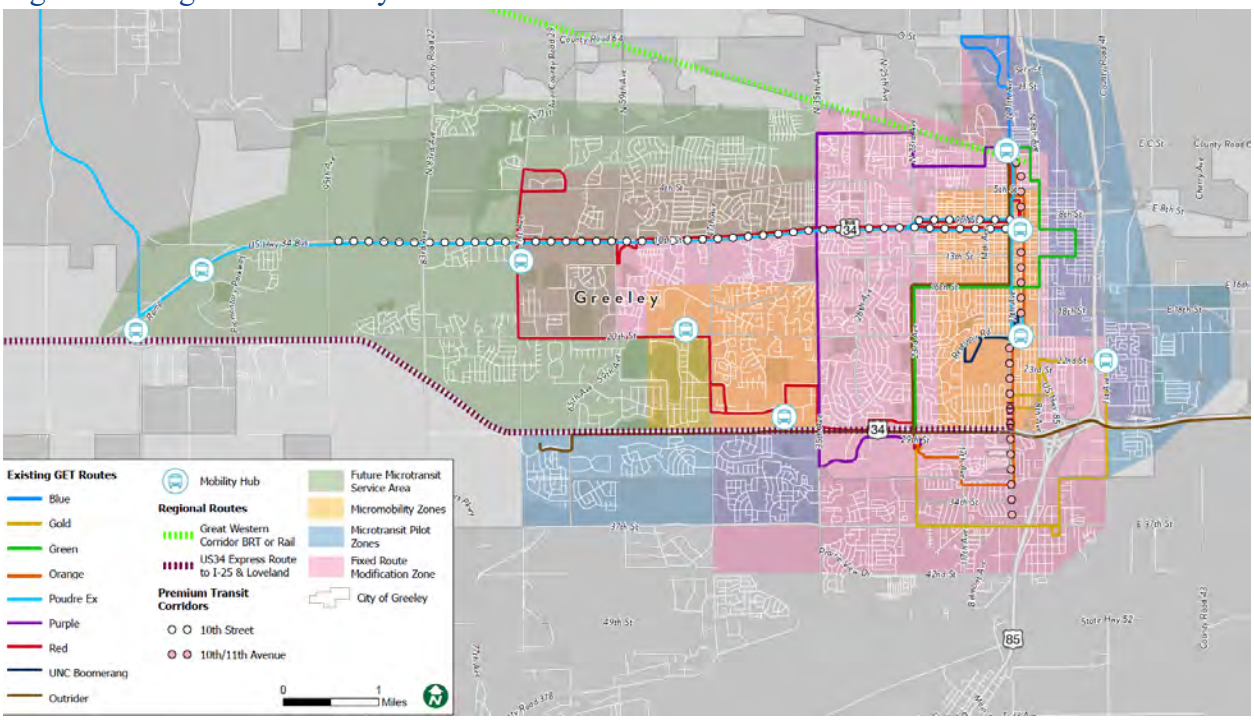
Furthermore, construction and operation of the MERGE project will improve active transportation mobility and safety for students and those seeking recreation while also enabling the future expansion of regional and local transit services. In addition to safer transportation for the students, this project will provide better opportunities for lower income residents through greater accessibility to employment, health services, essential services, and recreational activities. * The Long-Term Mobility Vision for the City of Greeley is shown in **Figure 9**.

By incorporating multiple transportation components, the MERGE project will generate economic development, enable the future expansion of regional and local transit services, and dramatically improve transit accessibility, efficiency, and safety. The new mobility hub serves the region with the local connection that will allow the City of Greeley to reconfigure its current local transit systems to be more responsive and provide flexible schedules and routes including new micro-transit options to support the needs of the traveling residents.

The following agencies/organizations are the public and private sector regional partners for the MERGE Project, respectively.
Public Sector: City of Greeley, NFRMPO, Colorado DOT, University of Northern Colorado, Weld County, City of Loveland, City of Windsor, City of Fort Collins, Greeley Area Chamber of Commerce, Greeley Downtown Development Authority
Private Sector: Leprino Food, JBS Foods

*Addresses Greeley MERGE Application Debrief Notes 3.b.ii.4. (Climate Change) and 3.b.ii.5. (Equity) as shown in Appendix A

Figure 9: Long-Term Mobility Vision



Freight Movement

The MERGE project will be critical infrastructure to support the need of a resilient freight transportation network. One of the key aspects of our local economy is how freight moves through and within the City of Greeley and the greater region. The MERGE project will be transformative to improve traffic operations and safety on US 34, 35th and 47th Avenue and throughout the area which will naturally extend to freight operations as well. This will increase travel time reliability and manage travel demand for freight, especially for supply chain bottlenecks. * With Greeley as a regional economic hub, this increase in reliable mobility reduces the cost of doing business in and around Greeley and improves the local and regional freight connectivity. ** Large private sector regional partners with heavy freight traffic such as JBS and Leprino Foods would benefit from the improved east-west mobility along US 34.

Job Creation

A healthy economic business environment is a main element for sustainable and well-paying jobs. This MERGE project will support hundreds of construction jobs that will spur spending locally. The new mobility hub will also provide premium transit services directly to the City of Loveland via US 34, which is finalizing a new Amazon warehouse projected to create 1,000 jobs. The City of Greeley in partnership with the University of Northern Colorado (UNC) will provide important Mobility Hub micro transit connections to the campus and planned new Osteopathic Medical College. Recently, Alquist 3D, a three-dimensional (3D) concrete printing company has decided to relocate their headquarters and operations to Greeley in 2023 with City and State incentives. The company's expertise is in printing houses and other infrastructure elements using robots and artificial intelligence. The company has expressed interest to the City of Greeley in 3D printing the new mobility hub.

*Addresses Greeley MERGE Application Debrief Notes 3.b.ii.2. (Economic Impact) as shown in Appendix A

**Addresses Greeley MERGE Application Debrief Notes 3.b.ii.5. (State of Good Repair) as shown in Appendix A

The improved business environment created by the MERGE initiative will enable more local job creation as the commercial hub grows. * The mobility hub also expands the potential job pool for these new jobs, as improved regional mobility broadens the area of available labor.

iv. Climate Change, Resiliency, and the Environment

The proposed improvements to the US 34 corridor of two new grade-separated interchanges at 35th and 47th Avenues, improved transit service along US 34, and the new mobility hub would lower vehicle emissions by providing improved traffic flow and non-motorized flow in the north-south direction across US 34. By converting the existing at-grade US 34 intersections at 35th and 47th Avenue to grade-separated interchanges, traffic congestion would be reduced, transit efficiency is estimated to improve by 20% **, and the amount of fossil fuels consumed would be reduced. An estimated air pollutant decrease of 40% is expected to result with the implementation of the project. Air pollutants include carbon, ozone, particulate matter 2.5 (autos) and diesel particulate matter (trucks) (CMF ID:460).

With respect to environmental justice (EJ), EPA's EJ SCREEN Report (Version 2.2) for the two major Block Groups bisected by US 34 between 35th and 47th Avenues, reveals EJ (environmental justice) areas impacted by limited transportation mobility. The two major Block Groups have 40% and 36% averages for "people of color" and "low income", respectively, which are higher than the Statewide and National averages.

With respect to Climate Change, on the north side of US 34, Census Tract 08123001409 is ranked a relatively high risk for Climate and Disaster burdens. This tract falls into the 72nd percentile rank for Anticipated Changes in Extreme Weather and the 67th percentile for the prevalence of Impervious Surfaces (from Land Cover).

A grade-separated non-motorized connection across existing US 34 between 35th and 47th Avenues, improved pedestrian sidewalks and ADA accessibility and added bicycle connections to transit routes would likely create a shift in modes of transportation as people could walk, roll, bike, and use micro mobility (e-bikes and e-scooters) along the corridor. These mode shifts factor into reducing environmental justice impacts as well as climate change reducing greenhouse gases and improving sustainability/resiliency and ultimately improving air quality. This proposed project clearly benefits the environment over the existing conditions of at-grade intersections at 35th and 47th Avenues and no grade-separated non-motorized crossing of US 34. ***

Greeley's Energy Action Plan

The City of Greeley, with support from Xcel Energy adopted an Energy Action Plan in 2019 as a part of Greeley's comprehensive plan - Imagine Greeley. City of Greeley staff worked through Xcel Energy's Partners in Energy, offering to assemble an Energy Action Team of community stakeholders to draft goals and strategies for residences, businesses, institutions, and the City of Greeley. The Energy Action Plan identifies four focus areas: residential, business, educational institution, and municipal. Each focus area has identified goals and specific strategies to help Greeley reach their goals. Three priorities for the community were identified:

*Addresses Greeley MERGE Application Debrief Notes 3.b.ii.2. (Economic Impact) as shown in Appendix A

**Addresses Greeley MERGE Application Debrief Notes 3.b.ii.5. (Equity) as shown in Appendix A

***Addresses Greeley MERGE Application Debrief Notes 3.b.ii.4. (Climate Change) as shown in Appendix A

a) Create an affordable and reliable energy future.
b) Increase residential, commercial, and industrial energy efficiency and alternative energy opportunities.
c) Improve economic health and stimulate growth.

Greenhouse Gases

The MERGE project holistically addresses climate change through various resilient infrastructure improvements. This project is inclusive of interchanges instead of signalized intersections, multimodal transportation to and from the new mobility hub, and increased transit ridership will not only decrease local and regional travel times through Greeley but will also decrease greenhouse gas emissions due to less idling time for vehicles. Using the reported NOx and CO2 emissions in SimTraffic and the USDOT recommended emission reduction monetized value, an environmental benefit was calculated for the two proposed interchanges. This resulted in a benefit of **$6,957,000** for a 7 percent discount rate over the 20-year analysis period (2028-2047). Additionally, there would be an estimated 3,850-ton reduction of NOx from the implementation of the MERGE project which would significantly improve air quality in the NFRMPO region. *

In January 2021, Colorado released its Greenhouse Gas Pollution Reduction Roadmap. The GHG Roadmap represents the most action-oriented, ambitious, and substantive planning process Colorado has ever undertaken on climate leadership, pollution reduction and clean energy transition. It lays out an achievable pathway to meet the state's science-based climate targets of 26% by 2025, 50% by 2030 and 90% by 2050 from 2005 levels. The development of the GHG Roadmap was an open, transparent process. State agencies sought input from a wide variety of stakeholders including those most impacted by the effects of climate change.

Electric Vehicle Infrastructure

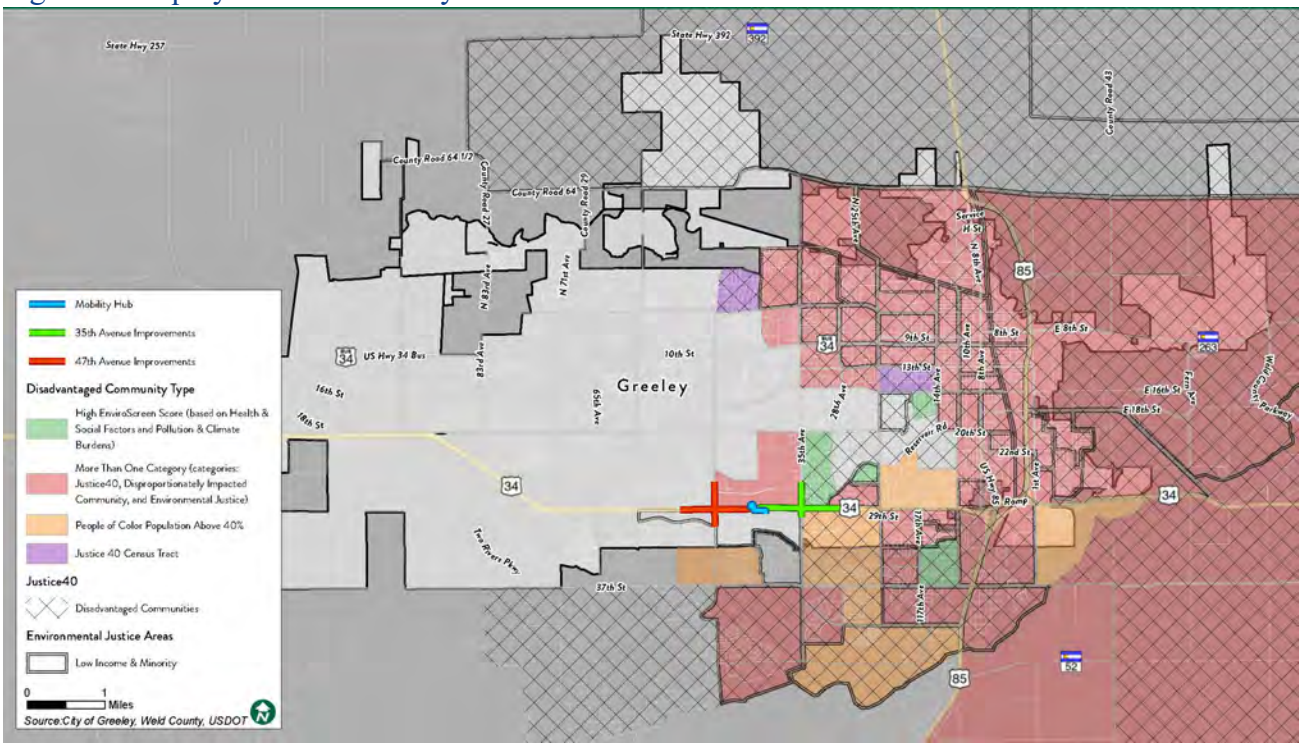
Numerous electric vehicle (EV) charging stations currently exist in Census Tracts 08123001409 and 08123001406 that cover both sides of US 34 between 35th and 47th Avenues. The proposed new mobility hub will bring even more stations to this area. Two types of chargers are provided in the area, DC Fast Chargers and Level 2 Chargers. The main difference between these types is the charge time. DC Fast Chargers require about an hour or less to charge a vehicle fully, while Level 2 Chargers require five to six hours. Within Census Tract 08123001409, a mix of the two types of chargers exists. Within Census Tract 08123001406, only Level 2 Chargers exist.

v. Equity Multimodal Options and Quality of Life

The MERGE project will proactively address equity and barriers to opportunity, improve quality of life in the urbanized area of Greeley and the region, and benefit choice neighborhoods, Historically Disadvantaged Communities, and populations in the area by increasing affordable transportation choices and by effectively engaging communities and stakeholders affected by the project.

*Addresses Greeley MERGE Application Debrief Notes 3.b.ii.4. (Climate Change) as shown in Appendix A

Figure 10: Equity and Accessibility with Economic Growth Areas



The poverty level around the US 34 corridor ranges from zero to 10 percent in the south and west, 10 to 20 percent in the north and 20 to 30 percent in the east. Poverty level is defined as "families whose incomes do not exceed the greater of 30 percent of the median family income for the area". *

The project will benefit residents, workers, and students from the adjacent Historically Disadvantaged Communities on the east side of 35th Street (Census Tract 08123001005), north of US 34 (Census Tract 08123001201) and other areas near downtown Greeley as shown in **Figure 10**. which is characterized by community deficits in the areas of environmental, equity, economy, and health factors by providing the following improvements:

a) On average Greeley residents spend 20% of their income on transportation and spend 20% of their income on housing with the transportation costs averaging $14,808 annually (Source).
b) Existing and future improved bus routes along 35th Avenue and the project corridor are designed to provide access to services and jobs to residents of this area with limited transportation options.
c) The new mobility hub will provide increased access to jobs via connections to additional and reconfigured local and regional transit routes, new demand-responsive transit, and express bus services to and from Denver.

*Addresses Greeley MERGE Application Debrief Notes 3.b.ii.5. (Equity) as shown in Appendix A

d) New pedestrian and bicycle connection under US 34 at the mobility hub and improved pedestrian and bicycle facilities on the 35th and 47th Avenue bridges will provide increased walkability and accessibility for people using active transport and electric micro mobility modes.
e) The mobility hub and multimodal tunnel will be located adjacent to an existing multi-use path on the north side of existing US 34, which will connect to new pedestrian and bicycle infrastructure at the new interchanges and the City of Greeley's active transportation network. * All project infrastructure will be constructed with universal design and improved accessibility standards to help encourage modal shifts and thereby increase equity in transportation.
f) Shared micro mobility, car share, transportation network companies (TNC) and other passenger drop-off/pick-up, and EV-charging infrastructure at the new mobility hub will provide additional transportation options for adjacent workers, transit users and nearby residents.
g) The new mobility hub will be in a central area of existing commercial services and employment for the City of Greeley and adjacent to multi-family housing development, which will provide new housing options for a greater range of people and households at various income levels.
h) Placemaking and other mobility-related improvements (e.g., seating, art, landscaping, WiFi/charging, retail-access)

The City of Greeley has already conducted the following equitable and inclusive planning and public participation efforts surrounding this project and will continue to engage residents, business owners, school district, and other partners as the project progresses.

a) In 2018, voters passed the Quality of Life tax renewal to raise $30 million dollars to fund improvements at the 35th Avenue and 47th Avenue and Highway 34 intersections.
b) A pedestrian connection across US 34 near 35th Avenue was stated as the highest priority project for School District 6.
c) Students are known to utilize the 35th Avenue bridge on foot today to cross US 34 to get to and from the high school.
d) Students from local schools and the University are heavy users of the City's transit system as school bus service is not provided within 3 miles of high schools or 2 miles of middle schools in the district.
e) Inclusive and equitable engagement of surrounding neighborhoods and stakeholders will be programmed into each stage of future design and construction of the project.

*Addresses Greeley MERGE Application Debrief Notes 3.b.ii.5. (Equity) as shown in Appendix A

Mobility Hub with Multimodal Options and Quality of Life

The new mobility hub as part of the MERGE project is shown in **Image 6**. The new mobility hub is directly between the proposed 35th and 47th Avenue interchanges with a local bus station (north side of existing US 34).

In connection with transit services and other mobility hubs in Greeley shown in **Figure 7**, the new mobility hub would support active and sustainable transportation with modal flexibility, including direct regional-local bus transfers, bike and scooter sharing, ADA parking, and electric vehicle charging stations. The new mobility hub directly connects to the regional bus station within the center of US 34 between the interchanges via a pedestrian underpass of US 34. **The new mobility hub and the other eight mobility hubs create nine new half-mile areas of influence, dramatically improving accessibility for residents in Justice40, Disproportionately Impacted Communities, Environmental Justice and Transportation Insecure areas**.

In addition to improving north-south traffic safety and efficiency along US 34 and along 35th and 47th Avenues as described in the *Project Outcome Criteria*; the MERGE project will eliminate a significant north-south mobility barrier and safety concerns for active transportation users (the existing at-grade crossings are heavily used by students walking or biking to schools) which, when coupled with other multi-modal improvements, will further enhance overall US 34 corridor mobility, address equity, and improve the quality of life.*

i. Innovation Area: Technology, Project Delivery, and Financing

Innovative Technology

The MERGE project has tremendous potential for utilizing/integrating innovative technologies. Intelligent Transportation Systems (ITS) technologies have a long-established absence in smaller metropolitan areas due to lack of funding. Development of Vehicle-to-everything (V2X) infrastructure in cities like City of Greeley and in facilities like the new mobility hub. Connected vehicle infrastructure has been deployed to improve the overall efficiency of transit operations and in similar corridors in and around this area. V2X can also provide and enhance the reliability of connected and autonomous vehicles (CAV) deployments as they mature and expand into smaller cities. This suite of advancements includes both active measures such as controlling the vehicle's steering and braking as well as passive measures such as notifying drivers about the environment such as stopped emergency vehicles or pedestrian/bicyclists on the roadway ahead.

In addition, the mobility hub facility itself will be a stage for innovative technology. With a planned goal to be a true net-zero facility, the hub will utilize electric vehicle (EV) charging stations/technology for both passenger vehicles and the micro-transit units centered at this location. The entire micro-transit fleet will be 100% powered/charged through solar arrays located at/on the hub facility.

*Addresses Greeley MERGE Application Debrief Notes 3.b.ii.4. (Climate Change) and 3.b.ii.5 (Equity) as shown in Appendix A

Alquist 3D, a 3D concrete printing company, has recently relocated their headquarters and operations to the City of Greeley. The company uses robotics and artificial intelligence to 3D print concrete houses and other infrastructure elements. The company has expressed interest in collaborating with the City of Greeley on the MERGE project to use innovative 3D printing technology in construction of the mobility hub and the underpass, making the structures carbon negative.*

Innovative Project Delivery

The MERGE initiative will be utilizing a CDOT approved alternative project delivery processes. One of the key considerations on this project is the schedule. The City of Greeley in partnership with CDOT proposed to use the Construction Manager General Contractor (CMGC) as the best method of delivery for this MERGE project. CMGC ranked highest in the areas of project complexity and innovation, project cost considerations, and risk assessment. This alternative project delivery method allows for continuous value engineering and real-time feedback on design costs and provides critical input on constructability, real-time industry costs and phasing. The Draft Project Delivery Selection Matrix prepared by the CDOT/City of Greeley project team is presented in the **Appendix C**. **

Financing

In terms of innovative financing options, the City of Greeley is and will continue to evaluate availability of Federal and State grant programs and intergovernmental agreements with surrounding cities and Weld County to help offset the City's match on this project.

The City of Greeley has independently applied for TIFIA federal funding for the 35th Avenue interchange, 47th Avenue interchange, and new mobility hub as independent utility projects instead of as one MERGE project. As part of the TIFIA application, the City of Greeley has scheduled regular check-in meetings with FHWA as the MERGE project goes through the NEPA process and will coordinate financing opportunities going forward. The draft LOIs submitted to TIFIA are presented on the **project website**.

*Addresses Greeley MERGE Application Debrief Notes 3.b.ii.6. (Innovative) as shown in Appendix A

**Addresses Greeley MERGE Application Debrief Notes 3.d.2.a. (Readiness) as shown in Appendix A

VI. Benefit-Cost Analysis

A benefit-cost analysis (BCA) for the MERGE project was completed, and the full analysis is included in the **Appendix D**. A primary goal for this MERGE project is to improve traffic safety and provide safe multimodal transportation opportunities while maintaining traffic flow at an acceptable level of service.

For the BCA, a Build alternative was analyzed and compared to a No-Build or Do nothing alternative. The Build alternative includes construction of an interchange at 35th Avenue and widening from four to six lanes to 47th Avenue, construction of an interchange at 47th Avenue and construction of a Mobility Hub in the median of US 34 (inclusive of transit and multi-modal transportation connectivity) between the 35th and 47th Avenue interchanges.

The purpose of a BCA is to express the reasonably expected outcomes of an initial investment to a common measure, base-year dollars. This accounts for benefits occurring over long periods of time, while most of the costs are incurred as an initial investment. Under this approach, a project with monetized benefits that are greater than its costs will have a benefit-to-cost ratio greater than one and therefore is considered an economically beneficial endeavor.

The monetary benefit for this project is quantified in terms of travel time savings, project area collisions, and roadway operations and maintenance. The costs considered for the project include surfacing, grading and drainage, signal and lighting construction, subbase/base, right-of-way acquisition, as well as engineering fees and costs.

The benefits and economic impacts the MERGE project will deliver are diversified and numerous. It will provide enhanced local and regional mobility and connectivity through the elimination of signals and grade-separation thereby allowing the free flow of passenger and freight traffic. MERGE's implementation will generate significant safety improvements for both vehicular and active transportation. Grade-separation of US 34 traffic, in addition to improving the efficiency of east-west travel along the corridor, will provide safer pedestrian and bike crossing which is especially important given several schools, colleges, medical facilities, high density and senior housing and major retail centers are located directly adjacent to the project's location. The elimination of traffic signals at the existing US 34/35th Avenue intersection will alleviate recurring congestion on the regional connector as well as at the busiest local arterial while also lowering greenhouse gases along the corridor through the reduction of idling emissions (where idle times can exceed 220 seconds during peak times).

The results of the analysis provide input for evaluating the overall benefit of the proposed MERGE project to the US 34 corridor. Since the current design is still preliminary, it should be noted certain benefits and costs may change prior to final design, however these changes are anticipated to be relatively minor as initial cost estimates were made to be conservative. A 20-year analysis period beginning in 2028 and ending in 2047 was chosen for the benefit-cost evaluation with all values discounted to 2020 dollars.

Various Benefits

The benefits derived from the Build alternative for travel time are estimated at $107,612,000 for the 47th Avenue interchange and $50,802,000 for the 35th Avenue interchange at a 7 percent discount rate. With the addition of the Mobility Hub and proposed interchanges, the City of Greeley conservatively estimates it will improve the average transit trip travel time by 20%. This is outlined in City of Greeley's Transportation Master Plan. The economic travel benefit was quantified using USDOT's suggested value for person travel time. The benefits derived from the Build alternative are estimated at $21,715,000 at a 7% discount rate.

The USDOT's value of a statistical life (VSL) provided in the Benefit-Cost Analysis Guidance for Discretionary Grant Programs were used for the values of the crashes. A resulting benefit of $38,874,000 was obtained for a 7 percent discount rate over the 20-year analysis period.

The Mobility Hub will feature state-of-the-art technology and amenities to best serve users. To quantify the benefit these amenities will have, the estimated number of users were multiplied by the monetized values of these amenities outlined in the Benefit-Cost Analysis Guidance for Discretionary Grant Programs, 2022. This resulted in a benefit of $14,069,187 for a 7 percent discount rate over the 20-year analysis period.

The proposed interchanges will not only decrease travel times but will also decrease greenhouse gas emissions due to less idling time for vehicles. Using the reported NOx and CO2 emissions in SimTraffic and the USDOT recommended emission reduction monetized value, an environmental benefit was calculated for each interchange. * This resulted in a benefit of $6,957,000 for a 7 percent discount rate over the 20-year analysis period.

BCA Results

See **Tables 3, 4 and 5** for a results summary of the benefit-cost analysis for the MERGE Project.

Table 3: Benefit-Cost Analysis Summary for the 35th Avenue Interchange

Benefit-Cost Ratio		
	Benefit	**Cost**
Emissions	$ -	$ 201,884.22
Vehicle Operating	$ -	$ 3,692,909.13
Travel Time	$ 99,115,731.64	$ -
Safety	$ 2,730,553.28	$ -
Maintenance	$ *665,456.21*	$ -
Construction	$ -	$ *38,847,120.22*
Salvage Value	$ *3,000,829.28*	$ -
PV Total Benefit	***$ 102,511,741.13***	
PV Total Cost		***$ 42,741,913.58***
PV Total Cost-Salvage Value		***$ 39,741,084.30***
Benefit-Cost Ratio	**2.58**	

*Addresses Greeley MERGE Application Debrief Notes 3.c.ii. (Economic Analysis) as shown in Appendix A

Table 4: Benefit-Cost Analysis Summary for the 47th Avenue Interchange

Benefit-Cost Ratio		
	Benefit	Cost
Emissions	$ 65,291.85	$ -
Vehicle Operating	$ -	$ 4,335,296.32
Travel Time	$ 84,188,707.85	$ -
Safety	$ 2,363,552.26	$ -
Maintenance	$ *665,456.21*	$ -
Construction	$ -	$ *34,442,262.39*
Salvage Value	$ *3,099,005.08*	$ -
PV Total Benefit	***$ 87,283,008.16***	
PV Total Cost		***$ 38,777,558.71***
PV Total Cost-Salvage Value		***$ 35,678,553.64***
Benefit-Cost Ratio	**2.45**	

Table 5: Benefit-Cost Analysis Summary for the Mobility Hub

Benefit-Cost Ratio		
	Benefit	Cost
Transit Amenities	$ *16,049,066.86*	$ -
Public Transit Travel Time	$ 19,513,209.70	$ -
Construction	$ -	$ *18,986,530.88*
Salvage Value	$ *1,491,025.75*	$ -
PV Total Benefit	***$ 35,562,276.56***	
PV Total Cost		***$ 18,986,530.88***
PV Total Cost-Salvage Value		***$ 17,495,505.13***
Benefit-Cost Ratio	**2.03**	

The analysis of the Mobility Hub and 35th Avenue and 47th Avenue proposed interchanges indicates the build alternative has a benefit-cost ratio significantly greater than 1.0, meaning each are economically beneficial projects. The benefits of the MERGE project are estimated to be higher than the costs associated with the construction of the project. A more complete breakdown of both the project costs and benefits can be found in **Appendix D**.

VII. Project Readiness and Environmental Risk

The City of Greeley, in conjunction with the Colorado DOT and other project funding partners, is ready for obligation as soon as the necessary environmental documentation can be completed. The proposed project has been developed through extensive planning and environmental studies with public engagement, with preliminary engineering and design nearly complete on the major components; namely, the two proposed US 34 interchanges at 35th and 47th Avenues and the proposed new mobility hub between them.

Previous Studies

The Colorado DOT (CDOT) commissioned the US 34 Planning and Environmental Linkages (PEL) Study in January 2019 which represented collaboration between multiple local and regional agencies with the US 34 and evaluated the 35th Avenue interchange project as a priority project.

The components of the proposed project (two proposed interchanges at 35th and 47th Avenues) have been identified as priority projects in state and regional long-term planning, including the following:

2045 Regional Transportation Plan (NFRMPO)
2040 Regional Transit Element (NFRMPO)
Greeley Evans Transit Plan (GET)
LINKNoCO Premium Transit Study

A RAISE Grant Application, the Greeley Regional Interchange Project (GRIP) was submitted to the USDOT in July 2021 for the 35th Avenue interchange. The interchange will provide much needed improvements to mobility, significant congestion reduction, and substantial mobility and safety improvements for motorists, bicyclists, and pedestrians. A debrief with the USDOT indicated that this application was highly recommended for grant approval.

In May 2022, the City of Greeley applied for the proposed MERGE project to obtain MPDG funding. The project was eligible for funding through INFRA, RURAL, and MEGA grants but was not selected. There were also additional requests for information from the MPDG review team during the review process which were addressed by the City. The City of Greeley obtained a subsequent debrief with FHWA to receive scoring from the application. The City has addressed all the comments received during the course of the MPDG review and the debrief in this application. Additional information can be found in the **Appendix A**.

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Environmental Risk

A thorough review of the baseline human and natural environment resources along the US 34 corridor in the project study area has been completed and GIS data and mapping has been developed. Land use in the vicinity of the US 34 and 47th Avenue intersection is generally commercial and largely developed. There are parcels of undeveloped land in all four quadrants consisting of previously dedicated or preserved right-of-way for a future interchange. The land use in the vicinity of the US 34 and 35th Avenue intersection is mixed and largely developed. There are pockets of undeveloped land in the southeast and northwest quadrants nearer to the intersection. The City of Greeley has initiated a long-term lease of the land required for the new mobility hub with local funds, the City of Greeley will follow all applicable State and Federal requirements for acquisition of additional ROW.

Upon review of the human and natural environmental resources, the project team anticipates no significant environmental risks or impacts and completion of the NEPA environmental document prior to right-of-way acquisition. An environmental screening table covering social, economic, and other environmental topics is presented in **Appendix E**.

Preliminary discussions with CDOT indicates that the project will qualify for an Individual Categorical Exclusion under NEPA policies.

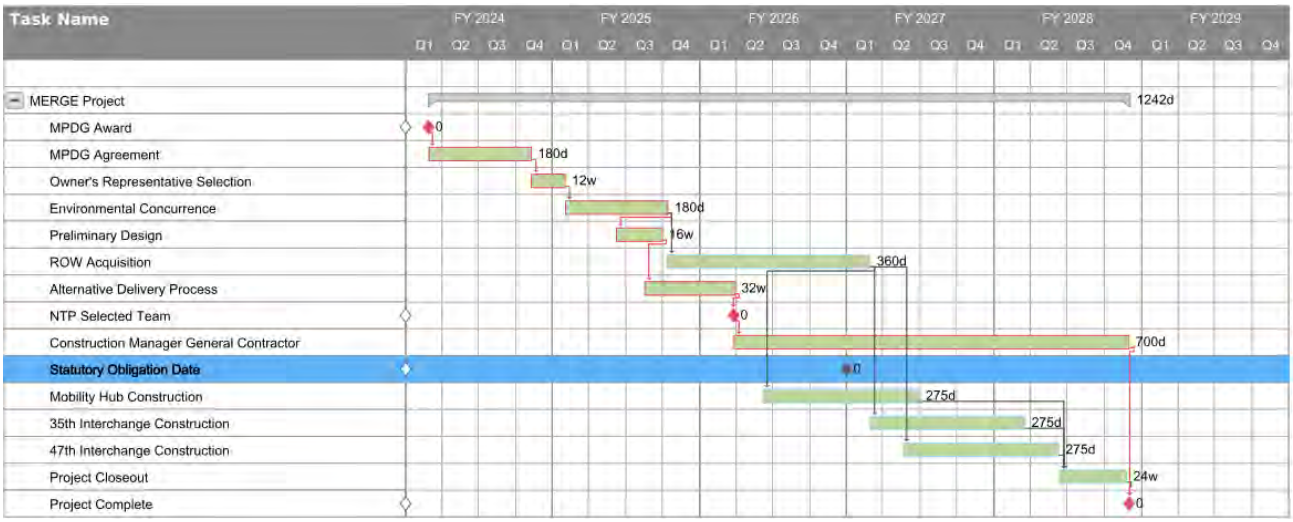
It is important to note that each element of the MERGE project, namely the two interchanges at 35th and 45th Avenue and the mobility hub/regional transit hub can be constructed independently and are treated as independent utility for environmental clearance purposes. However, to realize maximum environmental, cost, schedule, and impact to the traveling public, the projects may be delivered as concurrent packages in accordance with USDOT guidance. *

i. Project Schedule

The proposed project schedule identifies all the major project milestones and assumes the MPDG Grant award as identified in **Figure 11** below. The proposed project schedule provides adequate time to meet the MPDG obligation and expenditure requirements as required by the Notice of Funding Opportunity. As seen from the project schedule, the City is confident that the work will be started before the statutory obligation date of September 30, 2026 and completed by FFY 2029. The Mobility Hub construction does not require right of way acquisition, so therefore can begin construction prior to the noted 360 days and before the statutory obligation date. The project schedule shows the independent utility nature of each of the project elements as each element can be constructed separately if needed based on ROW acquisition timeframes. As seen within the schedule, the CMGC is the critical path item which will determine the most efficient way to deliver the project.

*Addresses Greeley MERGE Application Debrief Notes 3.d.3.a. (Environmental) as shown in Appendix A

Figure 11: Project Schedule



ii. Required Approvals

Environmental Permits and Reviews

The proposed project has permanent right-of-way acquisition for the 47th Avenue interchange as described in CDOT's *US 34 – 35th & 47th Avenues Interchange Selection Report*. No permanent right-of-way (ROW) is anticipated to be required for the development of the 35th Avenue interchange. ROW will be needed for the mobility hub, areas along 35th Avenue north of the proposed interchange, and the construction of the 47th Avenue interchanges. The anticipated ROW areas can be seen on the **project website**.

As part of CDOT's *US 34 – 35th & 47th Avenues Interchange Selection Report*, two public involvement meetings were held, and no negative comments were received which demonstrated public acceptance and approval of the proposed interchanges at 35th (Tight Diamond with Parclo-Loop Interchange) and 47th Avenue (Diverging Diamond Interchange). Additional discussions are on-going with affected property owners. These initial discussions have been positive, and no significant delays are expected in ROW acquisition as soon as a FONSI is issued for the project. The City of Greeley will follow all applicable State and Federal rules in ROW acquisitions.

The MERGE project has broad support from state and regional elected officials, and the community at-large including the US 34 Coalition. The US 34 Coalition is an existing group of elected officials along the corridor with adopted bylaws, standing meetings, and regional support. The existing US 34 Coalition includes (from west to east) Larimer County, Loveland, Johnstown, Weld County, Windsor, Greeley, Evans, and Kersey.

State and Local Approvals

This proposed project will require approval of an environmental document in compliance with NEPA by CDOT and FHWA. For this project inclusive of two proposed interchanges (35th and 47th Avenues) and a Mobility Hub between the proposed interchanges, an Individual Categorical Exclusion (ICE) is expected. *

*Addresses Greeley MERGE Application Debrief Notes 3.d.3.a. (Environmental) as shown in Appendix A

Federal Transportation Requirements Affecting State and Local Planning

The proposed project area located in Weld County is in a non-attainment area in 2023 for 2015 8-hour Ozone standard and the 2008 8-hour Ozone standard as per EPA's Green Book (Colorado Nonattainment/Maintenance Status for Each County by Year for All Criteria Pollutants | Green Book | US EPA). As such, the proposed project requires inclusion in a conformity transportation plan or State TIP. The NFRMPO has provided a support letter for the project. The project is also included in the State and Local Long-range plans and the mobility hub is included in the STIP. *

*Addresses Greeley MERGE Application Debrief Notes 3.d.2.a. (Readiness) as shown in Appendix A

VIII. Project Requirements

According to the Program Statutory Requirements, the MERGE project will meet all the requirements mentioned in the Notice of Funding Opportunity. Below is a list of each requirement and how this project will fulfill each.

23 U.S.C. 117 Infra	49 U.S.C. 6701 Mega	23 U.S.C. 173 Rural	MERGE Project Response
1) The project will generate national, or regional economic, mobility, or safety benefits	(1) The project is likely to generate national or regional economic, mobility, safety benefits	(1) The project will generate regional economic, mobility, or safety benefits	Sustained growth and economic development along the corridor have increased the need to enhance multimodal safety, eliminate barriers to jobs, reduce recurring congestion, and improve regional mobility. The MERGE project is vital to the realization of these important outcomes for the City and will bring about a continuity of free flow travel conditions along this key mobility corridor. The successful implementation of the project will result in faster travel times throughout the entire corridor; a decrease in recurring and non-recurring congestion; and improved safety conditions resulting in a reduction in crashes, property damage, injuries, and potential fatalities.
2) The project will be cost effective	(3) The project will be cost effective	(2) The project will be cost effective	The analysis of the Mobility Hub and 35th Avenue and 47th Avenue proposed interchanges indicates the build alternative has a benefit-cost ratio (BCR) significantly greater than 1.0, meaning each are economically beneficial projects. On an individual basis, the BCR values are 1.982, 2.877, and 2.097 for the 35th Ave, 47th Ave, and the mobility hub, respectively. The benefits of the MERGE project are estimated to be higher than the costs associated with the construction of the project.

3) The project will contribute to 1 or more of the national goals described under Section 150	No statutory requirement	(3) The project will contribute to 1 or more of the national goals described under Section 150	The MERGE project will meet the Section 150 goals. These goals include safety, infrastructure condition, congestion reduction, system reliability, freight movement and economic vitality, environmental sustainability, and reduced project delivery delays. Safety goals will be met through the project by installing the two new interchanges will create better traffic flow. The center loading regional transit center will create separation between regular vehicles and buses that are making stops. Safety goals will also be achieved through this project by providing a safer trail system along US Highway 34. Additionally, safety will be improved through creating a safer underpass for non-vehicular traffic to use to cross US Highway 34. The improvements to the infrastructure condition will be seen through improved traffic flow as well as providing more opportunities for non-motorized vehicles to get around, which will slow down the deterioration of the roadway. As mentioned with the first two goals, traffic flow will be improved through this project which will allow for less idle time and less congestion on US Highway 34 and on the side streets. These outcomes will meet the congestion reduction and system reliability goals identified in Section 150. MERGE has been developed through extensive planning over the recent years as well as environmental studies being conducted to conclude there is no change in the existing land use as well as completing several NEPA environmental processes, many of which also include public involvement. By completing these tasks, this project has already further advanced both the environmental sustainability and reduced project delivery delays goals.

4) The project is based on the results of preliminary engineering	No statutory requirement	(4) The project is based on the results of preliminary engineering	A PEL was completed in 2019 by CDOT and followed by an Interchange Selection Report (ISR) in 2021 for the 35th and 47th interchanges. Thirty percent plans have been completed for the interchange work and it is anticipated that the environmental analysis will be expected to arrive at a Finding of No Significant Impact leading to the required level of documentation anticipated to be an Individual Categorical Exclusion (ICE). An additional desktop review was performed as part of this grant application specifically over the project limits. The results of the review are on the **project website** and support the ICE.
5) With respect to related non-federal financial commitments, 1 or more stable and dependable sources of funding and financing are available to construct, maintain, and operate the project, and contingency amounts are available to cover unanticipated cost increases	(4) With respect to non-federal financial commitments, 1 or more stable and dependable sources are available to construct, operate, and maintain the project, and to cover cost increases	No statutory requirement	The City of Greeley will be utilizing multiple funding sources to see this project through completion. The City of Greeley has a committed a budget of $31.5 Million which will allow for them to provide a significant financial contribution through local funds. Additional funding will be through TIFIA, CDOT, and NFRMPO. The city is and will continue to seek additional partnerships to serve as additional contingency or to offset the City's share or as that enables the City to divert much needed resources to other maintenance needs. The City of Greeley also has a Public Works department that work with the Colorado Department of Transportation through design/construction and to ensure proper maintenance will occur through the entire life of the project.

6) The project cannot be easily and efficiently completed without other Federal funding or financing available to the project sponsor	6) The project cannot be easily and efficiently completed without other Federal funding or financing available to the project sponsor	No statutory requirement	If MPDG funds are not secured for the City of Greeley, this will put a large financial commitment back on the taxpayers. The city will work to seek other grant funding opportunities and or design alternatives to lessen the burden, however the project goals can be only achieved with the proposed design and when all elements are completed together. Areas of the project may be reduced in scope to cut back on costs; however, while each piece is independent to the other, it does not allow for a significant cost reduction which will lead to increased costs over time and increased delays and difficulties to the residents and regional traffic usage US 34 daily. This MPDG grant will be key to ensure the project can be built and constructed properly to provide the highest return on investment for all involved. The project serves as a vital component to meet the GHG reduction goals of the State of Colorado and the grant will allow the project partners to accelerate the desired outcomes.
7) The project is reasonably expected to begin not later than 18 months after the date of obligation of funds for the project	(5) The applicant have, or will have, sufficient legal, financial, and technical capacity to carry out the project	(5) The project is reasonably expected to begin not later than 18 months after the date of obligation of funds for the project	As shown in **Figure 11: Project Schedule**, the MERGE project will meet the statutory obligation date as shown in the Notice of Funding Opportunity. As can be seen in the application, the environmental, ROW risks are low. Some project elements are already at a 30% design level. The project will be delivered using the Alternative Project Delivery processes as allowed by CDOT policies. The grant application provides the project budget and anticipated expenditures, each financial year. The City of Greeley is, therefore, confident that the project construction can begin prior to the September 30, 2026 obligation date in the NOFO.

Appendix A
FY2022 Debrief Notes

Meeting Minutes

Date: 02/22/2023 @ 11am Eastern

Place: Microsoft Teams Meeting

Attendance: Marina Manganaris (US DOT), Paul Trombino (City of Greeley), Bhooshan Karnik (City of Greeley), Ryan Davis (Bolton & Menk), & Madison Burke (Bolton & Menk)

Project: Greeley MERGE Application Debrief

Marina Manganaris supports MPDG team within US DOT. Did not evaluate our project specifically.

MERGE –applied to: INFRA, MEGA, and RURAL

1. Overall
    a. More than 450 applications
        i. 250 apps for INFRA
            1. 21% of funds went to SMALL projects
            2. 43% of funds went to Rural areas
        ii. 150 apps for MEGA
            1. 30% of funding to Rural areas
            2. Publish the ratings/review on all for MEGA applications
        iii. 241 apps for RURAL
    b. Request 40 billion in funds
2. Phases of review: **Intake, Analysis Review** (high, medium and low rating, Project readiness and BCA), and Statutory requirements review), **Senior review** (reviews all ratings), **Secretary Review**
    a. If didn't meet all statutory requirements, you automatically go to not recommended
        i. Highly Rec. rating:
            1. 6 apps for INFFRA
            2. 16 apps for MEGA
            3. 25 apps for Rural
3. Specifics of MERGE application
    a. Recommended category for INFRA and Rural, not MEGA.*
    *The project qualified for MEGA but was not recommended as "*The applicant submitted, together with the grant application, a data collection and analysis plan that meets the requirements in 49 USC 6701 (g).*" The required data collection and analysis plan can be seen in Appendix F of the 2023 application package.
    b. Outcome areas:
        i. Medium high rating for MERGE
            1. Means one three rating and no zeros.
        ii. 6 criteria for each rating (refer to NOFO for exact titles for each section)
            1. Safety – 3
                a. Grade separation to benefit all users.

2. State of good repair – 2
    a. Will address bottleneck as region experiences rapid growth. But not transformative.

    Response: Addressed on pages 12, 14, and 16 of the FY23 MPDG Application
3. Economic Impact – 2
    a. Grade separation by reducing travel times and congestions. Economic Impacts are not significant given the scale of the project.

    Response: Addressed on pages 4, 13, 14, 16, and 17 of the FY23 MPDG Application
4. Climate change – 2
    a. Grade separation improve traffic flow and reduce emissions. Does not demonstrate evidence that modal shifts would occur as a result of the project.

    Response: Addressed on pages 3, 15, 17, 18, and 21 of the FY23 MPDG Application
5. Equity - 2
    a. Removing at grade and improving public transportation. Project does not result in a transformative access.
        i. Provide some additional numbers – data driven.

    Response: Addressed on pages 3, 4, 10, 11, 15, 17, 19, 20, and 21 of the FY23 MPDG Application
6. Innovation areas, - 1
    a. Does not demonstrate intentions to use innovative technologies mentioned. Demonstrate directly incorporated into planning.
        i. Incorporate into plans! Need documentation to show it will be incorporated.

    Response: Addressed on pages 5, 11, and 21 of the FY23 MPDG Application

c. Economic Analysis
    i. Rated High – benefits will exceed its cost (BCA above 1.5)
    ii. "Only a moderate level of transparency" – external modeling that could not be directly verified.

    Response: Addressed on page 24 of the FY23 MPDG Application
    iii. A few adjustments made:
        1. adjusted safety to reflect 6 year data period. Transit amenity lowered benefits for hub. Share of transit users that will use the hub as 3 of 5 routes don't serve immediate area. Removed residual value (per USDOT guidelines) –
d. Overall readiness rating
    i. Medium low rating – it received all 2s

1. Technical assessment review – somewhat uncertain rating –
2. Financial – partially complete rating – funding appears uncertain, unclear if done in a timely fashion.
    a. Non federal funding identified but not clearly committed support from Colorado DOT and NFRMPO.

    Response: Addressed on pages 2, 5, 6, 22 and 29 of the FY23 MPDG Application
3. Environmental – moderate risk rating
    a. Project is subject to multiple planning studies to grade separation. But so little info provided for mobility hub on what risks will be there, too much uncertainty, need more information.

    Response: Addressed on pages 8, 27, and 28 of the FY23 MPDG Application. As part of the TIFIA discussions, a meeting was held with the local FHWA staff and USDOT staff regarding the project's technical viability.

e. Statutory requirements – All were met.
    i. Reasonably expected to begin no later than 18 months after obligated – met through follow up information.

4. Highlights of 2023 round
    a. All 3 programs again under MPDG but refining NOFO with some lessons learned.
        i. INFRA $1.5 billion
        ii. MEGA $1 billion
        iii. RURAL $300 million
    b. Publishing later this Spring – Late March goal
5. Marina to send link to the MEGA reviews – on USDOT website.

Appendix B
Letters of Support

CITY OF GREELEY, COLORADO
RESOLUTION NO. 29, 2023

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF GREELEY, COLORADO, IN SUPPORT OF THE GREELEY DEPARTMENT OF PUBLIC WORKS TO SUBMIT FUNDING AND FINANCING APPLICATIONS TO THE UNITED STATES DEPARTMENT OF TRANSPORTATION TO CONSTRUCT A REGIONAL MOBILITY HUB INTEGRATED WITH PROPOSED INTERCHANGES AT US HIGHWAY 34 ON 35TH AND 47TH AVENUES IN THE CITY OF GREELEY

WHEREAS, the Greeley City Council has identified the construction of the regional mobility hub integrated with the proposed interchanges at US Highway 34 on 35th and 47th Avenues (MERGE) project as a high priority due to the need for integrated regional mobility hub and two of the region's busiest and most dangerous intersections on a regional significant corridor and two major street corridors in the City of Greeley; and

WHEREAS, From 2010 to 2020, the population of the Greeley metropolitan statistical area (MSA), which spans all of Weld County, increased from 252,825 to 328,981 people and this 30.1% increase makes it the fastest-growing metro area in Colorado and the fourth fastest-growing metro area in the country and in the City of Greeley, 96% of this growth was among people of color and the median age in Greeley is 31.5 years old, significantly lower than the national average of 38 years old and, 50% of the jobs in Weld County are located in City of Greeley; and

WHEREAS, the City of Greeley recognizes the provision of safer, more efficient, and more sustainable transportation infrastructure is critical to improving, and maintaining quality of life, and local and regional mobility; and

WHEREAS, the City Council of the City of Greeley has committed $31.5 million in matching funds for this project; and

WHEREAS, the United States Department of Transportation provides numerous grant and other financing opportunities to reduce the burden for state and local applicants and increase the pipeline of "shovel-worthy" projects; and

WHEREAS, the City of Greeley desires to participate in these funding opportunities to construct the MERGE project to deliver a diversified multimodal transit-oriented transportation for users of the US Highway 34, the City of Greeley, the region at large; and the State of Colorado; and

WHEREAS, the Public Works Department in partnership with the Colorado Department of Transportation will provide adequate oversight for the project should the funds be awarded.

NOW THEREFORE BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF GREELEY, COLORADO:

Section 1: The City Council demonstrates its support for the submittal of funding applications to the United States Department of Transportation to construct the MERGE Project in the City of Greeley

Section 2: This Resolution shall be effective following its adoption by the City Council.

PASSED AND ADOPTED, SIGNED AND APPROVED this 15th day of AUGUST 2023.

ATTEST **THE CITY OF GREELEY, COLORADO**

By: City Clerk **By: Mayor**

United States Senate
Washington, D.C. 20510

August 16, 2023

The Honorable Pete Buttigieg
US Department of Transportation
1200 New Jersey Ave, SE
Washington, DC 20590

Dear Secretary Buttigieg:

We write in support of the application submitted by the City of Greeley (Greeley) to the U.S. Department of Transportation for discretionary funding from the Multimodal Project Discretionary Grant (MPDG) opportunity. If selected, Greeley will advance the construction of the Mobility Enhancements for Regional Growth and Equity (MERGE) project and continue collaboration with the Colorado Department of Transportation to improve mobility locally and regionally.

Located on the U.S. Highway 34 Bypass, the MERGE project is a vital east/west corridor in the North Front Range region that runs through the heart of Greeley. With MPDG funds, Greeley will construct a regional mobility hub that integrates with the proposed interchanges on 35th and 47th Avenues, two of the City's busiest and most dangerous intersections. The MERGE project will bring diversified multimodal transportation options for users of Highway 34, Greeley residents, and the region at large.

Greeley's proposal will provide improvements to mobility, reduce greenhouse gas emissions, and facilitate the efficient movement of people, goods, and services in the region. We encourage you to give the application submitted by the City of Greeley your full and fair consideration consistent with all applicable laws and regulations. Thank you for your review, and please notify our offices of any funds awarded.

Sincerely,

Michael F. Bennet
United State Senator

John Hickenlooper
United States Senator

YADIRA CARAVEO, M.D.
8TH DISTRICT, COLORADO

COMMITTEE ON AGRICULTURE

COMMITTEE ON SCIENCE, SPACE, AND TECHNOLOGY

Congress of the United States
House of Representatives
Washington, DC 20515

August 5, 2023

Dear Secretary Buttigieg,

I am writing to express my full support for the City of Greeley's MERGE project and corresponding Infrastructure for Rebuilding America (INFRA) grant funding application. The award of discretionary funding will advance the construction of this desperately needed project, serving as a catalyst for mobility improvements both locally and regionally.

The project is located on US Highway 34 Bypass, a vital east/west corridor in the North Front Range region that runs through the heart of Greeley. The project would construct a regional mobility hub that integrates the proposed interchanges on 35th and 47th Avenues - two of Greeley's busiest and most dangerous intersections - to bring forward the delivery of diversified, multimodal transportation methods for users of Highway 34, the City of Greeley and the region at large. The project will provide much needed improvements to mobility, significant improvements to greenhouse gas emissions and facilitate the efficient movement of people, goods, and services in the region. There is a need for innovative mobility solutions to serve local and regional demand, and this project meets that need.

I am enthusiastically in support of this project. Like the City of Greeley, we recognize that the provision of safer, more efficient, and more sustainable transportation infrastructure is critical to improving, and maintaining the quality of life and continued growth of the local and regional economy.

Thank you for your full and fair consideration of the city of Greeley's application.

Sincerely,

Yadira Caraveo, M.D.

Member of Congress

3400 W 16TH STREET
BLDG. 1S, SUITE C
GREELEY, CO 80634
(970) 324-2567
FAX: (771) 200-5726

WASHINGTON, D.C. OFFICE
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NORTHGLENN DISTRICT OFFICE
10701 MELODY DRIVE, SUITE 500
NORTHGLENN, CO 80234
(303) 723-6560
FAX: (771) 200-5726

JARED POLIS
GOVERNOR

136 STATE CAPITOL
DENVER, COLORADO 80203

TEL 303-866-2471
FAX 303-866-2003

August 14, 2023

The Honorable Pete Buttigieg
1200 New Jersey Ave SE
Washington, DC 20590

Re: Support for US Highway 34 Bypass MERGE Project - INFRA 2023

Dear Secretary Buttigieg,

I am writing to express my full support for the City of Greeley's Mobility Enhancements for Regional Growth and Equity (MERGE) project and corresponding Infrastructure for Rebuilding America (INFRA) grant funding application. The award of discretionary funding will advance the construction of this desperately needed project that will serve as a catalyst for mobility improvements both locally and regionally.

The project is located on US Highway 34 Bypass, a vital east/west corridor in the North Front Range region that runs through the heart of Greeley. The project would construct a regional mobility hub that integrates with the proposed interchanges on 35th and 47th Avenues- two of Greeley's busiest and most dangerous intersections to bring forward the delivery of diversified multimodal transportation methods for users of the Highway 34, the City of Greeley, and the region at large. The project will provide much needed improvements to mobility; significant improvements to greenhouse gas emissions; and facilitate the efficient movement of people, goods, and services in the region. There is a need for innovative mobility solutions to serve local and regional demand, and this project meets that need.

While this project is not part of the Colorado Department of Transportation's (CDOT) 10 year plan, I am enthusiastically in support of the improvements this project will provide. Like the City of Greeley, I recognize that the provision of safer, more efficient, and more sustainable transportation infrastructure is critical to improving and maintaining quality of life and the continued growth of the local and regional economy.

Thank you for your consideration of this exciting and unique opportunity.

Sincerely,

Jared Polis
Governor
State of Colorado

Kevin Priola
STATE SENATOR

STATE CAPITOL
200 E. COLFAX AVENUE
DENVER, COLORADO 80203
CAPITOL: (303) 866-4855
kpriola@gmail.com

COMMITTEES

CHAIR, JOINT TECHNOLOGY COMMITTEE
VICE CHAIR, TRANSPORTATION & ENERGY
AGRICULTURE & NATURAL RESOURCES
FINANCE

The Honorable Pete Buttigieg
Secretary
U.S. Department of Transportation
1200 New Jersey Ave SE
Washington, D.C. 20590

August 16, 2023

Dear Secretary Buttigieg,

I am writing to express my full support for the City of Greeley's MERGE project and corresponding Multimodal Project Discretionary Grant (MPDG) funding application. The award of discretionary funding will advance the construction of this desperately needed project that will serve as a catalyst for mobility improvements both locally and regionally.

The project is located on US Highway 34 Bypass, a vital east/west corridor in the North Front Range region, that runs through the heart of Greeley. The project would construct a regional mobility hub that integrates with the proposed interchanges on 35th and 47th Avenues - two of Greeley's busiest and most dangerous intersections to bring forward the delivery of diversified multimodal transportation methods for users of the Highway 34, the City of Greeley, and the region at large. The project will provide much needed improvements to mobility; significant improvements to greenhouse gas emissions; and facilitate the efficient movement of people, goods, and services in the region. There is a need for innovative mobility solutions to serve local and regional demand, and this project meets that need.

I am enthusiastically in support of this project. Like the City of Greeley, I recognize that the provision of safer, more efficient, and more sustainable transportation infrastructure is critical to improving, and maintaining, quality of life and the continued growth of the local and regional economy.

Thank you for your consideration of this exciting and unique opportunity.

Sincerely,

Kevin Priola

Senator Kevin Priola
Senate District 13

State Representative
MARY YOUNG
Colorado State Capitol
200 East Colfax Ave., Room 331
Denver, Colorado 80203
Capitol: 303-866-2929
Email: mary.young.house@coleg.gov

Vice-Chair:
Public & Behavioral Health & Human Services Committee
Member:
Education Committee

COLORADO
HOUSE OF REPRESENTATIVES
State Capitol
Denver
80203

August 18, 2023

The Honorable Pete Buttigieg
Secretary
U.S. Department of Transportation
1200 New Jersey Ave SE
Washington, D.C. 20590

Re: MERGE- Mobility Enhancements for Regional Growth and Equity- Letter of Support

Dear Secretary Buttigieg,

I am writing to express my full support for the City of Greeley's MERGE project and corresponding Multimodal Project Discretionary Grant (MPDG) funding application. The award of discretionary funding will advance the construction of this desperately needed project that will serve as a catalyst for mobility improvements both locally and regionally.

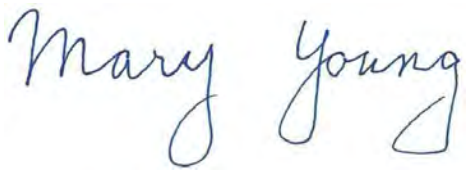
The project is located on US Highway 34 Bypass, a vital east/west corridor in the North Front Range region, which runs through the heart of Greeley. The project would construct a regional mobility hub that integrates with the proposed interchanges on 35th and 47th Avenues - two of Greeley's busiest and most dangerous intersections to bring forward the delivery of diversified multimodal transportation methods for users of the Highway 34, the City of Greeley, and the region at large.

The MERGE project offers a range of benefits to the community. The project will provide much needed improvements to mobility; significant improvements to greenhouse gas emissions; and facilitate the efficient movement of people, goods, and services in the region. There is a need for innovative mobility solutions to serve local and regional demand, and this project meets that need.

I am enthusiastically in support of this project. Like the City of Greeley, I recognize that the provision of safer, more efficient, and more sustainable transportation infrastructure is critical to improving, and maintaining, quality of life and the continued growth of the local and regional economy.

Thank you for your consideration of this exciting and unique opportunity.

Sincerely,



Mary Young, Ph.D.
State Representative
House District 50

State Representative
RYAN ARMAGOST
Colorado State Capitol
200 East Colfax Avenue, Room 307
Denver, Colorado 80203
Office: 303-866-2906
Email: ryan.armagost.house@coleg.gov

Member:
Business Affairs & Labor Committee
Judiciary Committee
State, Civic, Military, & Veterans Affairs Committee

COLORADO
HOUSE OF REPRESENTATIVES
State Capitol
Denver
80203

August 16, 2023

The Honorable Pete Buttigieg
Secretary
U.S. Department of Transportation
1200 New Jersey Ave SE
Washington, D.C. 20590

Dear Secretary Buttigieg,

I am writing to express my full support for the City of Greeley's MERGE project and corresponding Multimodal Project Discretionary Grant (MPDG) funding application. The award of discretionary funding will advance the construction of this desperately needed project that will serve as a catalyst for mobility improvements both locally and regionally.

The project is located on US Highway 34 Bypass, a vital east/west corridor in the North Front Range region, that runs through the heart of Greeley. The project would construct a regional mobility hub that integrates with the proposed interchanges on 35th and 47th Avenues - two of Greeley's busiest and most dangerous intersections to bring forward the delivery of diversified multimodal transportation methods for users of the Highway 34, the City of Greeley, and the region at large. The project will provide much needed improvements to mobility; significant improvements to greenhouse gas emissions; and facilitate the efficient movement of people, goods, and services in the region. There is a need for innovative mobility solutions to serve local and regional demand, and this project meets that need.

I am enthusiastically in support of this project. Like the City of Greeley, I recognize that the provision of safer, more efficient, and more sustainable transportation infrastructure is critical to improving, and maintaining, quality of life and the continued growth of the local and regional economy.

Thank you for your consideration of this exciting and unique opportunity.

Sincerely,

Ryan Armagost
State Representative
House District 64

North Front Range
Metropolitan
Planning
Organization

December 5, 2022

Ms. Shoshana Lew
Executive Director
Colorado Department of Transportation
2829 West Howard Place, Suite 562
Denver, Colorado 80204

Dear Ms. Lew:

I am writing to support the NFRMPO's application for the Transportation Demand Management (TDM) Seed Funding Grant for the US34 Transportation Management Organization (TMO). This application is the result of a regional effort from elected officials and staff.

The US34 TMO project achieves two of the NFRMPO's Planning Council goals for 2022: developing a regional TDM program and establishing a TMO. On December 1, 2022, the Planning Council adopted the first TDM Action Plan for the region in the last decade. A key recommendation is to establish and support a TMO within the region. The Planning Council will support this endeavor by setting aside Multimodal Transportation & Mitigation Options Funds (MMOF) up to $75,000 matched with $37,500 in local funds. This grant would provide the remaining local match requirement.

TDM is a key strategy for achieving greenhouse gas reductions in the 2045 Regional Transportation Plan (RTP) 2022 Update. Implementing TDM will require additional staff capacity, beyond what current local, regional, and state staff can provide. Establishing, supporting, and staffing the TMO along this key tourism, commuting, and freight corridor will benefit the communities, visitors, and residents alike.

To hit the ground running, the NFRMPO will contract with an individual to run the TMO in partnership with the US34 Coalition. The US34 Coalition is an existing group of elected officials along the corridor with adopted bylaws, standing meetings, and regional support.

Please feel free to follow up with any questions.

Sincerely,

Suzette Mallette

Suzette Mallette
Executive Director

419 Canyon Avenue, Suite 300
Fort Collins, Colorado 80521
(970) 800.9560
nfrmpo.org

COLORADO ASSOCIATION OF TRANSIT AGENCIES

110 16th Street #604
Denver, CO 80202

Telephone 303 839 5197
www.coloradotransit.com

May 11, 2022

HON. SECRETARY PETE BUTTIGIEG
1200 New Jersey Ave SE
Washington, DC 20590

Re: MERGE- Mobility Enhancements for Regional Growth and Equity- Letter of Support

Dear Secretary Buttigieg,

I am writing to express our full support for the City of Greeley's MERGE project and corresponding Infrastructure for Rebuilding America (INFRA) grant funding application. The award of discretionary funding will advance the construction of this desperately needed project that will serve as a catalyst for mobility improvements both locally and regionally.

The project is located on US Highway 34 Bypass, a vital east/west corridor in the North Front Range region, that runs through the heart of Greeley. The project would construct a regional mobility hub that integrates with the proposed interchanges on 35th and 47th Avenues- two of Greeley's busiest and most dangerous intersections to bring forward the delivery of diversified multi-modal transportation methods for users of Highway 34, the City of Greeley, and the region at large. The project will provide much-needed improvements to mobility; significant improvements to greenhouse gas emissions; and facilitate the efficient movement of people, goods, and services in the region. There is a need for innovative mobility solutions to serve local and regional demand, and this project meets that need.

The CASTA Board enthusiastically supports this project. Like the City of Greeley, we recognize that the provision of safer, more efficient, and more sustainable transportation infrastructure is critical to improving, and maintaining, quality of life and the continued growth of the local and regional economy.

Thank you for your consideration of this exciting and unique opportunity.

Sincerely,

Dawn L. Block

Dawn Block
CASTA Board President

City of Loveland

CITY OF LOVELAND
PUBLIC WORKS
ADMINISTRATION
2525 West 1st Street ● Loveland, Colorado 80537
(970) 962-2524 ● FAX (970) 962-2908 ● TDD (970) 962-2620

May 17, 2022

HON. SECRETARY PETE BUTTIGIEG
1200 New Jersey Ave SE
Washington, DC 20590

Re: MERGE- Mobility Enhancements for Regional Growth and Equity- Letter of Support

Dear Secretary Buttigieg:

I am writing to express my support for the City of Greeley's MERGE project and corresponding Infrastructure for Rebuilding America (INFRA) grant funding application. The award of discretionary funding will advance the construction of this innovative project that will serve as a catalyst for mobility improvements both locally and regionally.

The project is located on US Highway 34 Bypass, a vital east/west corridor in the North Front Range region of Colorado, that runs through the heart of Greeley. The project would construct a regional mobility hub that integrates with the proposed interchanges on 35th and 47th Avenues- two of Greeley's busiest and most dangerous intersections to bring forward the delivery of diversified multimodal transportation methods for users of the Highway 34, the City of Greeley, and the region at large. The project will provide much needed improvements to mobility; significant improvements to greenhouse gas emissions; and facilitate the efficient movement of people, goods, and services in the region. There is a need for innovative mobility solutions to serve local and regional demand, and this project meets that need. Furthermore, the City of Loveland envisions the US-34 Mobility Hub connecting with Loveland's Centerra (I-25) Mobility Hub to service this key transportation corridor into the future.

City of Loveland Public Works supports this project as a key element of future regional transit connectivity. Like the City of Greeley, we recognize that the provision of safer, more efficient, and more sustainable transportation infrastructure is critical to improving, and maintaining, quality of life and the continued growth of the local and regional economy.

Thank you for your consideration of this exciting and unique opportunity.

Sincerely,

Mark A. Jackson
City of Loveland Public Works Director

City of Evans, Colorado

1100 37th Street • Evans, CO 80620 • (970) 475-1160

May 12, 2022

HON. SECRETARY PETE BUTTIGIEG
U.S. Department of Transportation
1200 New Jersey Ave SE
Washington, DC 20590

Re: MERGE- Mobility Enhancements for Regional Growth and Equity- Letter of Support

Dear Secretary Buttigieg,

I am writing to express full support for the City of Greeley's MERGE project and corresponding Infrastructure for Rebuilding America (INFRA) grant funding application. The award of discretionary funding will advance the construction of this desperately needed project that will serve as a catalyst for mobility improvements both locally and regionally.

The project is located on US Highway 34 Bypass, a vital east/west corridor in the North Front Range region, that runs through the heart of Greeley. The project would construct a regional mobility hub that integrates with the proposed interchanges on 35th and 47th Avenues- two of Greeley's busiest and most dangerous intersections to bring forward the delivery of diversified multimodal transportation methods for users of the Highway 34, the City of Greeley, and the region at large. The project will provide much needed improvements to mobility; significant improvements to greenhouse gas emissions; and facilitate the efficient movement of people, goods, and services in the region. There is a need for innovative mobility solutions to serve local and regional demand, and this project meets that need.

The City of Evans enthusiastically supports this project. Our community lies adjacent to and just to the south of the City of Greeley. We provide funding and our residents benefit greatly from the Greeley-Evans Transit service. The new mobility hub would truly be a regional project that will improve access to both local and regional transit service and other modes of transportation in this fastest-growing metro area in Colorado. Like the City of Greeley, we recognize that the provision of safer, more efficient, and more sustainable transportation infrastructure is critical to improving, and maintaining, quality of life and the continued growth of the local and regional economy.

Thank you for your consideration of this exciting and unique opportunity.

Sincerely,

Mark C. Clark
Mayor

TOWN OF
WINDSOR
COLORADO

May 9, 2022

HON. SECRETARY PETE BUTTIGIEG
1200 New Jersey Ave SE
Washington, DC 20590

Re: MERGE- Mobility Enhancements for Regional Growth and Equity
City of Greeley - Letter of Support

Dear Secretary Buttigieg,

I am writing to express our full support for the City of Greeley's MERGE project and corresponding Infrastructure for Rebuilding America (INFRA) grant funding application. The award of discretionary funding will advance the construction of this desperately needed project that will serve as a catalyst for mobility improvements both locally and regionally.

The project is located on US Highway 34 Bypass, a vital east/west corridor in the North Front Range region, that runs through the heart of Greeley. The project would construct a regional mobility hub that integrates with the proposed interchanges on 35th and 47th Avenues, two of Greeley's busiest and most dangerous intersections, to bring forward the delivery of diversified multimodal transportation methods for users of the Highway 34, the City of Greeley, and the region at large. The project will provide much needed improvements to mobility; significant improvements to greenhouse gas emissions; and facilitate the efficient movement of people, goods, and services in the region. There is a need for innovative mobility solutions to serve local and regional demand, and this project meets that need.

Over the past twenty-five years, the North Front Range MPO has spent significant resources to improve mobility, increase transit and bike use and connect the region in a more sustainable way. The proposed mobility hub in Greeley is a large portion of our efforts in Northern Colorado.

301 Walnut Street
Windsor, CO 80550
Office: 970-674-2400
Fax: 970-674-2456
www.windsorgov.com

The Town of Windsor enthusiastically supports this project. Like the City of Greeley, we recognize that the provision of safer, more efficient, and more sustainable transportation infrastructure is critical to improving, and maintaining, quality of life and the continued growth of the local and regional economy.

Thank you for your consideration of this exciting and unique opportunity.

Regards,

Paul Rennemeyer (May 9, 2022 15:51 MDT)
Mayor Paul Rennemeyer

301 Walnut Street
Windsor, CO 80550

Office: 970-674-2400
Fax: 970-674-2456

www.windsorgov.com

May 9, 2022

HON. SECRETARY PETE BUTTIGIEG

1200 New Jersey Ave SE

Washington, DC 20590

Re: MERGE- Mobility Enhancements for Regional Growth and Equity- Letter of Support

Hello Mr. Buttigieg,

I am writing to express our full support for the City of Greeley's MERGE project and corresponding Infrastructure for Rebuilding America (INFRA) grant funding application. The award of discretionary funding will advance the construction of this desperately needed project that will serve as a catalyst for mobility improvements both locally and regionally.

The project is located on US Highway 34 Bypass, a vital east/west corridor in the North Front Range region, that runs through the heart of Greeley. The project would construct a regional mobility hub that integrates with the proposed interchanges on 35th and 47th Avenues- two of Greeley's busiest and most dangerous intersections to bring forward the delivery of diversified multimodal transportation methods for users of the Highway 34, the City of Greeley, and the region at large. The project will provide much needed improvements to mobility; significant improvements to greenhouse gas emissions; and facilitate the efficient movement of people, goods, and services in the region. There is a need for innovative mobility solutions to serve local and regional demand, and this project meets that need.

We are enthusiastically in support of this project. Like the City of Greeley, we recognize that the provision of safer, more efficient, and more sustainable transportation infrastructure is critical to improving, and maintaining, quality of life and the continued growth of the local and regional economy which includes the greater Kersey area.

Thank you for your consideration of this exciting and unique opportunity.

Sincerely,

C. Morgan

Christian Morgan, Kersey Town Manager

May 12, 2022

HON. SECRETARY PETE BUTTIGIEG
1200 New Jersey Ave SE
Washington, DC 20590

RE: Support for MERGE (Mobility Enhancements for Regional Growth and Equity) in Greeley, Colorado

Dear Secretary Buttigieg:

I am writing to express our full support for the City of Greeley's MERGE project and corresponding Infrastructure for Rebuilding America (INFRA) grant funding application. The award of discretionary funding will advance the construction of this desperately needed project that will serve as a catalyst for mobility improvements both locally and regionally.

The project is located on US Highway 34 Bypass, a vital east/west corridor in the North Front Range region, that runs through the heart of Greeley. The project would construct a regional mobility hub that integrates with the proposed interchanges on 35th and 47th Avenues- two of Greeley's busiest and most dangerous intersections to bring forward the delivery of diversified multimodal transportation methods for users of the Highway 34, the City of Greeley, and the region at large. The project will provide much needed improvements to mobility; significant improvements to greenhouse gas emissions; and facilitate the efficient movement of people, goods, and services in the region. There is a need for innovative mobility solutions to serve local and regional demand, and this project meets that need.

I am enthusiastically in support of this project. Like the City of Greeley, we recognize that the provision of safer, more efficient, and more sustainable transportation infrastructure is critical to improving, and maintaining, quality of life and the continued growth of the local and regional economy.

Thank you for your consideration of this exciting and unique opportunity.

Sincerely,

Bianca Fisher

Bianca Fisher,
Executive Director

Greeley Downtown Development Authority
802 9th Street, Ste. 100, Greeley CO 80631
(970) 356-6775//www.greeleydowntown.com

GREELEY AREA CHAMBER OF COMMERCE

May 13, 2022

HON. SECRETARY PETE BUTTIGIEG
1200 New Jersey Ave SE
Washington, DC 20590

Re: MERGE- Mobility Enhancements for Regional Growth and Equity- Letter of Support

Dear Secretary, Buttigieg:

I am writing to express our full support for the City of Greeley's MERGE project and corresponding Infrastructure for Rebuilding America (INFRA) grant funding application. The award of discretionary funding will advance the construction of this desperately needed project that will serve as a catalyst for mobility improvements both locally and regionally.

The project is located on US Highway 34 Bypass, a vital east/west corridor in the North Front Range region, which runs through the heart of Greeley. The project would construct a regional mobility hub that integrates with the proposed interchanges on 35th and 47th Avenues- two of Greeley's busiest and most dangerous intersections to bring forward the delivery of diversified multimodal transportation methods for users of the Highway 34, the City of Greeley, and the region at large. The project will provide needed improvements to mobility; significant improvements to greenhouse gas emissions; and facilitate the efficient movement of people, goods, and services in the region. There is a need for innovative mobility solutions to serve local and regional demand, and this project meets that need.

We are enthusiastically in support of this project. Transportation is a key policy priority for the Greeley Area Chamber of Commerce and like the City of Greeley, we recognize that the provision of safer, more efficient, and more sustainable transportation infrastructure is critical to improving, and maintaining, quality of life and the continued growth of the local and regional economy.

Thank you for your consideration of this exciting and unique opportunity.

Sincerely,

Jaime Henning, CCE
President & CEO, Greeley Area Chamber of Commerce & the Greeley Area Chamber of Commerce Board of Directors

Margo Karsten, Board Chair, Banner Health
Leah Bornstein, AIMS Community College
Mark Bradley, Realtec
Brad Darby, Cintas Corporation
Doug Dennison, Chevron
Phil DelVecchio, JBS
Josh Dollard, Pepsi Beverages Company
Andy Feinstein, University of Northern Colorado
Neil Fisher, WeldWerks
Levi Gain, Doug's Carpet & Upholstery Care
Chris Gentle, Great Western Bank
Dale Hall, City of Greeley
Judy Hicks, Anderson & Whitney
Lisa Hudson, SBDC
Aimee Hutson, Aunt Helen's Coffee
Jason Jones, Adams State Bank
Dr. Diedre Pilch, Greeley Evans School District 6
Roger Ramirez, Weld County Garage
Collin Richardson, Rich mark
Jared Salas, State Farm
Marilyn Schock, UC Health
Christian Schulte, Peters, Schulte, Odil & Wallschein, LLC
Scott Werner, Connecting Point
Kevin Weimer, Coldwell Banker Residential Brokerage
Rich Werner, Upstate Colorado Economic Development

Aims COMMUNITY COLLEGE / All in.

Facilities and Operations | Executive Director | 5401 West 20th Street | Greeley, Colorado 80632

April 28, 2022

HON. SECRETARY PETE BUTTIGIEG
1200 New Jersey Ave SE
Washington, DC 20590

Re: MERGE- Mobility Enhancements for Regional Growth and Equity- Letter of Support

Dear Secretary Buttigieg,

I am writing to express **Aims Community Colleges'** full support for the City of Greeley's MERGE project and corresponding Infrastructure for Rebuilding America (INFRA) grant funding application. The award of discretionary funding will advance the construction of this desperately needed project that will serve as a catalyst for mobility improvements both locally and regionally.

The project is located on US Highway 34 Bypass, a vital east/west corridor in the North Front Range region, that runs through the heart of Greeley. The project would construct a regional mobility hub that integrates with the proposed interchanges on 35th and 47th Avenues- two of Greeley's busiest and most dangerous intersections to bring forward the delivery of diversified multimodal transportation methods for users of the Highway 34, the City of Greeley, and the region at large. The project will provide much needed improvements to mobility; significant improvements to greenhouse gas emissions; and facilitate the efficient movement of people, goods, and services in the region. There is a need for innovative mobility solutions to serve local and regional demand, and this project meets that need.

Aims Community College is enthusiastically in support of this project. Like the City of Greeley, we recognize that the provision of safer, more efficient, and more sustainable transportation infrastructure is critical to improving, and maintaining, quality of life and the continued growth of the local and regional economy.

Aims Community College prides itself in serving the norther Colorado region and beyond. Improving corridor mobility benefits us all.

Thank you for your consideration of this exciting and unique opportunity.

Sincerely,

Michael W. Millsapps, CFM – Executive Director/Chief Facilities Officer

Greeley-Evans | Weld County School District 6
Office of the Superintendent
1025 NINTH AVENUE
GREELEY, COLORADO 80631
970-348-6000
WWW.GREELEYSCHOOLS.ORG

May 16, 2022

HON. SECRETARY PETE BUTTIGIEG
1200 New Jersey Ave SE
Washington, DC 20590

Re: MERGE- Mobility Enhancements for Regional Growth and Equity - Letter of Support

Dear Secretary Buttigieg:

I am writing to express my full support for the City of Greeley's MERGE project and corresponding Infrastructure for Rebuilding America (INFRA) grant funding application. The award of discretionary funding will advance the construction of this desperately needed project that will serve as a catalyst for mobility improvements both locally and regionally.

The project is located on US Highway 34 Bypass, a vital east/west corridor in the North Front Range region, that runs through the heart of Greeley, Colorado. The project would construct a regional mobility hub that integrates with the proposed interchanges on 35th and 47th Avenues, two of Greeley's busiest and most dangerous intersections, to bring forward the delivery of diversified multi-modal transportation methods for users of Highway 34, the City of Greeley, and the region at large. The project will provide much-needed improvements to mobility, significant improvements to greenhouse gas emissions, and facilitate the efficient movement of people, goods, and services in the region.

A significant number of students in Greeley-Evans School District 6 use the Greeley-Evans Transit system to travel to and from school every day. The City of Greeley provides free transportation to our students and has worked with the school district to ensure routes are available to students who need to access this service. This is an invaluable service for our students and families, some of whom have no other source of transportation. The City of Greeley has been a significant partner to Greeley-Evans School District 6 and we are grateful for their continued support.

There is a need for innovative mobility solutions to serve local and regional demands, and the City of Greeley's MERGE project meets that need. Like the City of Greeley, we recognize that the provision of safer, more efficient, and increasingly sustainable transportation infrastructure is critical to improving and maintaining quality of life and the continued growth of the local and regional economy. I am enthusiastically in support of this project.

Thank you for your consideration of this exciting and unique opportunity.

Sincerely,

Deirdre Pilch

Dr. Deirdre Pilch, Superintendent, Greeley-Evans School District 6

United Way of Weld County

United Way of Weld County mission statement: To improve lives by mobilizing the caring power of our community.

May 2022

Hon. Secretary Pete Buttigieg
1200 New Jersey Avenue SE
Washington, DC 20590

Re: MERGE-Mobility Enhancements for Regional Growth and Equity – Letter of Support

Dear Hon. Secretary Buttigieg:

I am writing to express our full support for the City of Greeley's MERGE project and corresponding Infrastructure for Rebuilding America (INFRA) grant funding application. The award of discretionary funding will advance the construction of this desperately needed project that will serve as a catalyst for mobility improvements both locally and regionally.

The project is located on US Highway 34 Bypass, a vital east/west corridor in the North Front Range region that runs through the heart of Greeley. The project would construct a regional mobility hub that integrates with the proposed interchanges on 35th and 47th Avenues – two of Greeley's busiest and most dangerous intersections to bring forward the delivery of diversified multimodal transportation methods for users of the Highway 34, the City of Greeley, and the region at large. The project will provide much needed improvements to mobility; significant improvements to greenhouse gas emissions; and facilitate the efficient movement of people, goods, and services in the region. There is a need for innovative mobility solutions to serve local and regional demand, and this project meets that need.

We are enthusiastically in support of this project. Like the City of Greeley, we recognize that the provision of safer, more efficient, and more sustainable transportation infrastructure is critical to improving and maintaining quality of life and the continued growth of the local and regional economy.

United Way of Weld County works to improve the lives of people in our community. We partner with the City of Greeley on multiple projects that impact our most vulnerable residents. We support their dedication to the health, safety and well-being of our community and all our residents.

Sincerely,

Jeannine Truswell
President & CEO
United Way of Weld County

HENSEL PHELPS
Plan. Build. Manage.

420 Sixth Avenue
Greeley, Colorado 80631
970.352.6565

April 28, 2022

HON. SECRETARY PETE BUTTIGIEG
1200 New Jersey Ave SE
Washington, DC 20590

Re: MERGE- Mobility Enhancements for Regional Growth and Equity- Letter of Support

Dear Secretary Buttigieg,

I am writing to express Hensel Phelps' full support for the City of Greeley's MERGE project and corresponding Infrastructure for Rebuilding America (INFRA) grant funding application. The award of discretionary funding will advance the construction of this desperately needed project that will serve as a catalyst for mobility improvements both locally and regionally.

The project is located on US Highway 34 Bypass, a vital east/west corridor in the North Front Range region, that runs through the heart of Greeley. The project would construct a regional mobility hub that integrates with the proposed interchanges on 35th and 47th Avenues- two of Greeley's busiest and most dangerous intersections to bring forward the delivery of diversified multimodal transportation methods for users of the Highway 34, the City of Greeley, and the region at large. The project will provide much needed improvements to mobility; significant improvements to greenhouse gas emissions; and facilitate the efficient movement of people, goods, and services in the region. There is a need for innovative mobility solutions to serve local and regional demand, and this project meets that need.

Hensel Phelps is enthusiastically in support of this project. Like the City of Greeley, we recognize that the provision of safer, more efficient, and more sustainable transportation infrastructure is critical to improving, and maintaining, quality of life and the continued growth of the local and regional economy.

Attracting talent to the region is a key driver of our business and enhancing the mobility of the workforce is of great importance to Hensel Phelps and our local partners.

Thank you for your consideration of this exciting and unique opportunity.

Sincerely,

Michael J. Choutka
President & CEO

May 15, 2022

HON. SECRETARY PETE BUTTIGIEG
1200 New Jersey Ave SE
Washington, DC 20590

Re: MERGE- Mobility Enhancements for Regional Growth and Equity- Letter of Support

Dear Secretary Buttigieg,

I am writing to express our full support for the City of Greeley's MERGE project and corresponding Infrastructure for Rebuilding America (INFRA) grant funding application. The award of discretionary funding will advance the construction of this desperately needed project that will serve as a catalyst for mobility improvements both locally and regionally.

The project is located on US Highway 34 Bypass, a vital east/west corridor in the North Front Range region, that runs through the heart of Greeley. The project would construct a regional mobility hub that integrates with the proposed interchanges on 35th and 47th Avenues- two of Greeley's busiest and most dangerous intersections to bring forward the delivery of diversified multimodal transportation methods for users of the Highway 34, the City of Greeley, and the region at large. The project will provide much needed improvements to mobility; significant improvements to greenhouse gas emissions; and facilitate the efficient movement of people, goods, and services in the region. There is a need for innovative mobility solutions to serve local and regional demand, and this project meets that need.

We are enthusiastically in support of this project. Like the City of Greeley, we recognize that the provision of safer, more efficient, and more sustainable transportation infrastructure is critical to improving, and maintaining, quality of life and the continued growth of the local and regional economy.

The US Highway 34 Bypass project represents a great opportunity to allow for safer and more effective movement of people and goods in the region. Investment in the project will allow for Northern Colorado communities to move forward in way that we desperately need.

Thank you for your consideration of this exciting and unique opportunity.

Sincerely,

Garrett Varra

President, Varra Companies, Inc.

April 28, 2022

HON. SECRETARY PETE BUTTIGIEG
1200 New Jersey Ave SE
Washington, DC 20590

Re: MERGE- Mobility Enhancements for Regional Growth and Equity- Letter of Support

Honorable Secretary,

I am writing to express my full support for the City of Greeley's MERGE project and corresponding Infrastructure for Rebuilding America (INFRA) grant funding application. The award of discretionary funding will advance the construction of this desperately needed project that will serve as a catalyst for mobility improvements both locally and regionally.

The project is located on US Highway 34 Bypass, a vital east/west corridor in the North Front Range region, that runs through the heart of Greeley. The project would construct a regional mobility hub that integrates with the proposed interchanges on 35th and 47th Avenues- two of Greeley's busiest and most dangerous intersections to bring forward the delivery of diversified multimodal transportation methods for users of the Highway 34, the City of Greeley, and the region at large. The project will provide much needed improvements to mobility; significant improvements to greenhouse gas emissions; and facilitate the efficient movement of people, goods, and services in the region. There is a need for innovative mobility solutions to serve local and regional demand, and this project meets that need.

I enthusiastically support this project. Like the City of Greeley, we recognize that the provision of safer, more efficient, and more sustainable transportation infrastructure is critical to improving, and maintaining, quality of life and the continued growth of the local and regional economy.

As a lifelong citizen of Greeley, I know that the proposed changes will also reduce the possibility of accidents, saving the lives of countless people moving forward. This project is truly in the best interest of all parties involved.

Thank you for your consideration of this exciting and unique opportunity.

Sincerely,

Bryan M. Guest
Market President II – Northern Colorado

First Interstate Bank

Appendix C
Draft Project Delivery Selection Matrix

Project Delivery Selection Workshop Summary (MAY 2019 VERSION)

Workshop Summary	
Project Name:	Mobility Enhancements for Regional Growth and Mobility (MERGE) Project US34 Greeley Interchanges at 35th (23011) and 47th (23013) Avenues and Mobility Hub
Workshop Dates:	9/7/2022, 9/14/2022, 9/19/2022, 9/28/2022
Workshop Location:	CDOT Region 4 HQ, 10601 W. 10th St. Greeley, CO 80634
Facilitator:	Matthew Pacheco
Delivery Method Selected:	Construction Manager General Contractor

Workshop Participants	
Name	**Email**
Matthew Pacheco	matthew.pacheco@state.co.us
Dan Mattson	daniel.mattson@state.co.us
L J Maillet	lj.maillet@state.co.us
Casey Valentinelli	casey.valentinelli@state.co.us
Richard Christy	richard.christy@state.co.us
Booshan Karnik	Bhooshan.Karnik@greeleygov.com
Steven Younkin	steven.younkin@greeleygov.com
Paul Trombino	Paul.Trombino@greeleygov.com
Will Jones	will.jones@greeleygov.com
Craig Parent	craig.parent@aecom.com
Rich Barker	richard.barker@state.co.us
Thomas Nicholas	thomas.nicholas@state.co.us
Vanessa Santistevan	vanessa.santistevan@state.co.us
Nick Schipanski	nicholaus.schipanski@state.co.us
Natalie Shishido	natalie.shishido@state.co.us

David Torrez	david.torrez@state.co.us

Project Delivery Selection Matrix

Overview

This document provides a formal approach for selecting project delivery methods for highway projects. The information below lists the project delivery methods followed by an outline of the process, instructions, and evaluation worksheets for use by CDOT staff and project team members. By using these forms, a brief Project Delivery Selection Report can be generated for each individual project. The primary objectives of this tool are:

- Present a structured approach to assist Agencies in making project delivery decisions.
- Assist Agencies in determining if there is a dominant or optimal choice of a delivery method; and
- Provide documentation of the selection decision.

Background

The project delivery method is the process by which a construction project is comprehensively designed and constructed including project scope definition, organization of designers, constructors and various consultants, sequencing of design and construction operations, execution of design and construction, and closeout and start-up. Thus, the different project delivery methods are distinguished by the manner in which contracts between the agency, designers and builders are formed and the technical relationships that evolve between each party inside those contracts. Currently, there are several types of project delivery systems available for publicly funded transportation projects. The most common systems are Design-Bid-Build (DBB), Design-Build (DB), and Construction Manager/General Contractor (CMGC). No single project delivery method is appropriate for every project. Each project must be examined individually to determine how it aligns with the attributes of each available delivery method.

Primary delivery methods

Design-Bid-Build is the traditional project delivery method in which an agency designs, or retains a designer to furnish complete design services, and then advertises and awards a separate construction contract based on the designer's completed construction documents. In DBB, the agency "owns" the details of design during construction and as a result, is responsible for the cost of any errors or omissions encountered in construction.

Design-Build is a project delivery method in which the agency procures both design and construction services in the same contract from a single, legal entity referred to as the design-builder. The method typically uses Request for Qualifications (RFQ)/Request for Proposals (RFP) procedures rather than the DBB Invitation for Bids procedures. The design-builder controls the details of design and is responsible for the cost of any errors or omissions encountered in construction.

Construction Manager / General Contractor is a project delivery method in which the agency contracts separately with a designer and a construction manager. The agency can perform design or contract with an engineering firm to provide a facility design. The agency selects a construction manager to perform construction management services and construction works. The significant characteristic of this delivery method is a contract between an agency and a construction manager who will be at risk for the final cost and time of construction. Construction industry/Contractor input into the design development and constructability of complex and innovative projects are the major reasons an agency would select the CMGC method. Unlike DBB, CMGC brings the builder into the design process at a stage where definitive input can have a positive impact on the project. CMGC is particularly valuable for new non-standard types of designs where it is difficult for the agency to develop the technical requirements that would be necessary for DB procurement without industry input.

Facilitation of the tool

When embarking on using the project delivery selection tool for the first time, it is recommended that a facilitator be brought in for the workshop. The facilitator will assist with working through the tool and provide guidance for discussing the project and selection of a delivery method. This individual should be knowledgeable about the process and should be consistently used. The facilitator also helps to answer questions and make sure the process stays on track and the team moves towards a formal selection.

Participation

Using the project delivery selection matrix is only as good as the people who are involved in the selection workshop. Therefore, it is necessary to have a collection of individuals to participate in the selection of the delivery method. The selection team needs to include the project manager, the project engineer, a representative of the procurement/contracting office, and any other CDOT staff that is crucial to the project. In addition, the selection team might want to consider including representatives from specialty units and from the local jurisdictions where the project is located. However, it is important to keep the selection team to a minimum amount of participants. Otherwise, the selection process can take a long time to complete. Normally, 3-7 people represent a selection team, but this number should be based on the specific project being analyzed.

Potential bias

The best approach for the participants of the workshop is to keep an open mind about the delivery method to choose. However, there might be participants that have a preconceived notion about the delivery method to use on a project. When this occurs, it is best to discuss that person's ideas with the entire selection team at the beginning of the workshop. Putting that person's ideas on the table helps others to understand the choice that person has in mind. Then, it is important to acknowledge this person's ideas, but to remind that person to keep an open mind as the team works through the selection process.

Pre-workshop Tasks

Before conducting the selection workshop, a few tasks can be completed by the workshop participants. Preparing for the workshop prior to conducting it will result in a much more concise and informative session. It is advised that participants review all known project information, goals, risks, and constraints prior to the workshop. The best approach is to complete

the ***Project Delivery Description***, the ***Project Delivery Goals***, and the ***Project Delivery Constraints*** worksheets before conducting the workshop. Completing the three worksheets will shorten the time needed to review the project and allows the workshop team to move right into the selection process.

Project Delivery Selection Process

The process is shown in the outline below and a flowchart on the next page. It consists of individual steps to complete the entire process. The steps should be followed in sequential order.

STAGE I - Project Attributes, Goals, and Constraints

A. Delivery methods to consider
    1. Design-Bid-Build
    2. Design-Build
    3. Construction Manager / General Contractor
B. Project Description/Goals/Constraints
    1. Project attributes
    2. Set project goals
    3. Identify project dependent constraints
    4. Discuss project risks

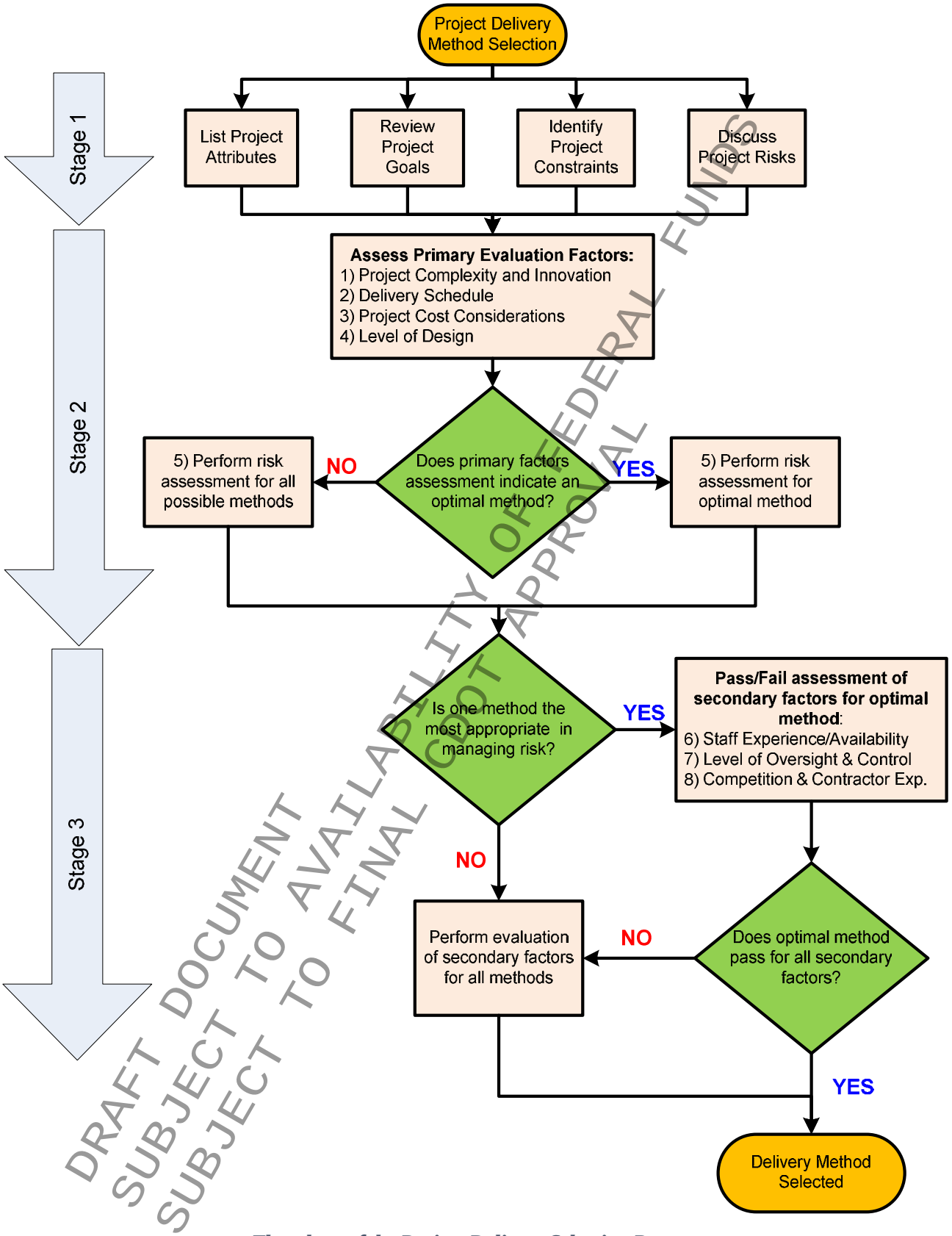
STAGE II – Primary Factor Evaluation

A. Assess the primary factors (these factors most often determine the selection)
    1. Complexity and Innovation
    2. Delivery Schedule
    3. Project Cost Considerations
    4. Level of Design
B. If the primary factors indicate there is a clear choice of a delivery method, then:
    5i. Perform a risk assessment for the desired delivery method to ensure that risks can be properly allocated and managed, and then move on to Stage III Part A
C. If the primary factors do not indicate a clear choice of a delivery method, then:
    5ii. Perform a risk assessment for all delivery methods to determine which method can properly allocate and manage risks, and then move on to Stage III Part B

STAGE III – Secondary Factor Evaluation

A. Perform a pass/fail analysis of the secondary factors to ensure that they are not relevant to the decision.
    6. Staff Experience/Availability (Agency)
    7. Level of Oversight and Control
    8. Competition and Contractor Experience
B. If pass/fail analysis does not result in clear determination of the method of delivery, then perform a more rigorous evaluation of the secondary factors against all potential methods of delivery

NOTE: Typically, the project team can complete the entire selection process in a 3-hour workshop session, as long as each team member has individually reviewed and performed the assessment prior to the workshop.



Flowchart of the Project Delivery Selection Process

Project Delivery Selection Matrix Worksheets and Forms

The following forms and appendices are included to facilitate this process.

Project delivery description worksheet

Provide information on the project. This includes size, type, funding, risks, complexities, etc. All information should be developed for the specific project.

Project delivery goals worksheet – including example project goals

A careful determination of the project goals is an instrumental first step of the process that will guide both the selection of the appropriate method of delivery for the project.

Project delivery constraints worksheet - including example project constraints

Carefully review all possible constraints to the project. These constraints can potentially eliminate a project delivery method before the evaluation process begins.

Project risks worksheet

In addition to project goals and constraints, a detailed discussion of project risks is a critical step that helps with evaluation of the selection factors.

Project delivery selection summary form

The Project Delivery Selection Summary summarizes the assessment of the eight selection factors for the three delivery methods. The form is qualitatively scored using the rating provided in the table below. The form also includes a section for comments and conclusions. The completed Project Delivery Selection Summary should provide an executive summary of the key reasons for the selection of the method of delivery**.**

Rating Key	
++	Most appropriate delivery method
+	Appropriate delivery method
–	Least appropriate delivery method
X	Fatal Flaw (discontinue evaluation of this method)
NA	Factor not applicable or not relevant to the selection

Workshop blank form

This form can be used by the project team for additional documentation of the process. In particular, it can be used to elaborate the evaluation of the ***Assessment of Risk*** factor.

Project delivery methods selection factor opportunities / obstacles form

These forms are used to summarize the assessments by the project team of the opportunities and obstacles associated with each delivery method relative to each of the eight Selection Factors. The bottom of each form allows for a qualitative

conclusion using the same notation as described above. Those conclusions then are transferred to the ***Project Delivery Selection Summary Form.***

Project delivery methods opportunities / obstacles checklists

These forms provide the project team with direction concerning typical delivery method opportunities and obstacles associated with each of the eight Selection Factors. However, these checklists include general information and are not an all-inclusive checklist. Use the checklists as a supplement to developing project specific opportunities and obstacles.

Risk assessment guidance form

Because of the unique nature of Selection Factor 5, ***Assessment of Risk***, this guidance section provides the project team with additional assistance for evaluation of the risk factor including: Typical Transportation Project Risks; a General Project Risks Checklist; and a Risk Opportunities/Obstacles Checklist.

Project Delivery Description

The following items should be considered in describing the specific project. Other items can be added to the bottom of the form if they influence the project delivery decision. Relevant documents can be added as appendices to the final summary report.

Project Attributes
Project Name: Mobility Enhancements for Regional Growth and Mobility (MERGE) Project US34 Greeley Interchanges at 35th (23011) and 47th (23013) Avenues and Mobility Hub
Location: Greeley, CO
Estimated Budget: 35th Ave Interchange $47.5M, 47th Ave Interchange $45.0M, Mobility Hub $25.0M (Total $117.5M)
Estimated Project Delivery Period: To Be Determined
Required Delivery Date (if applicable):
Source(s) of Project Funding: Greeley, CDOT, Federal Grant
Project Corridor: US34 from I-25 to US85
Major Features of Work – pavement, bridge, sound barriers, etc.: Diverging Diamond Interchange (DDI) at 47th and a Modified Partial Clover Leaf (Parclo) Interchange at 35th. Both interchanges include bridge structures, retaining walls, noise barriers, culverts, pavement, drainage improvements, signals, ITS, and utilities. The project also includes a park-n-ride and transit center/mobility hub in the median of US34 in between the two interchanges.
Major Schedule Milestones: TBD
Major Project Stakeholders: CDOT, City of Greeley, utility owners, adjacent businesses, travelling public, and residents
Major General Obstacles: Maintenance of traffic, access to businesses, significant utility impacts including relocation of a major waterline, accommodating ultimate future typical section
Major Obstacles with Right of Way, Utilities, and/or Environmental Approvals: Minor ROW acquisition as well as permanent and temporary easements; major utility impacts especially in the vicinity of the bridges, retaining walls, and embankments; water quality features; SHPO for historic ditches
Major Obstacles during Construction Phase: Utility relocations, maintenance of traffic, major new structures; access to businesses, residences, cemetery
Safety Issues: Performance of safety critical work, worker safety, high speed, and high traffic volumes
Sustainable Design and Construction Requirements: Bridge design for 75- to 100-year life; water quality treatment for impervious area; interchanges reduce queuing and energy consumption; improving multi-modal transportation with transit center and multi-use paths

Project Delivery Goals

An understanding of project goals is essential to selecting an appropriate project delivery method. Therefore, project goals should be set prior to using the project delivery selection matrix. Typically, the project goals can be defined in three to five items and need to be reviewed here. Example goals are provided below, but the report should include project-specific goals. These goals should remain consistent over the life of the project.

Project-Specific Goals
Goal #1: Improve safety – significant crash history
Goal #2: Reduce congestion – high ADTs and queueing
Goal #3: Maximize resiliency (structures and future ADT) and access to areas impacted, businesses, residences, school, etc
Goal #4: Improve multi-modal transportation
Goal #5: Minimize environmental resource impacts

General Project Goals (For reference)

Schedule

- Minimize project delivery time
- Complete the project on schedule
- Accelerate start of project revenue

Cost

- Minimize project cost
- Maximize project budget
- Complete the project on budget
- Maximize the project scope and improvements within the project budget

Quality

- Meet or exceed project requirements
- Select the best team
- Provide a high quality design and construction constraints
- Provide an aesthetically pleasing project

Functional

- Maximize the life cycle performance of the project
- Maximize capacity and mobility improvements
- Minimize inconvenience to the traveling public during construction
- Maximize safety of workers and traveling public during construction

Project Delivery Constraints

There are potential aspects of a project that can eliminate the need to evaluate one or more of the possible delivery methods. A list of general constraints can be found below the table and should be referred to after completing this worksheet. The first section below is for general constraints and the second section is for constraints specifically tied to project delivery selection.

General Constraints
Source of Funding: City of Greeley, CDOT, Federal if grant is awarded
Schedule constraints:
Federal, state, and local laws: CDOT standards for US34 and ramps within CDOT ROW, City of Greeley standards for 35th and 47th Avenues, City of Greeley MS4, CDOT CatEx/NEPA
Third party agreements with railroads, ROW, etc.: At 47th, there are properties on NE, NW, and SE quadrants that are reserved, but not dedicated. SW quadrant is City of Greeley. Additional, permanent ROW acquisition is needed at both 47th and 35th as well as permanent and temporary easements.
Project Financing
Does your project have any funding gaps that would require Financing*?
Project Delivery Specific Constraints
Project delivery constraint #1: Lack of construction funding
Project delivery constraint #2: If sufficient funding is identified, there may be a deadline to spend funds
Project delivery constraint #3: ROW acquisition
Project delivery constraint #4: Complex construction phasing and maintenance of traffic
Project delivery constraint #5:

General Project Constraints

Schedule

- Utilize federal funding by a certain date
- Complete the project on schedule
- Weather and/or environmental impact

Cost

- Project must not exceed a specific amount
- Minimal changes will be accepted
- Some funding may be utilized for specific type of work (bridges, drainage, etc.)
- *If project financing is required before proceeding with the project delivery selection matrix, the project will need to coordinate with the Colorado High Performance Transportation Enterprise (HPTE). If financing is necessary, the project will need to work with the HPTE to determine the appropriate project delivery method that will accommodate the financing mechanism(s).

Quality

- Must adhere to standards proposed by the Agency
- High quality design and construction constraints
- Adhere to local and federal codes

Functional

- Traveling public must not be disrupted during construction
- Hazardous site where safety is a concern
- Return area surrounding project to existing conditions

Project Risks

Identified Project Risks
Project Risk: Utility relocation. A large waterline at 47th (City of Greeley) needs to be relocated, designed, and coordinated with construction phasing. 35th has relocations of water and underground power. There is an overhead electric line at 35th.
Project Risk: Construction phasing and MOT
Project Risk: Environmental – SHPO and 404 Permit
Project Risk:
Project Risk:
Project Risk:
Project Risk:
Project Risk:
Project Risk:
Project Risk:

General Risk Categories to Consider

1. Site Conditions and Investigations
2. Utilities
3. Railroads
4. Drainage/Water Quality
5. Environmental
6. Third-party Involvement
7. Organizational
8. Design

9. Construction
10. Right-of-Way

Project Delivery Selection Summary

Determine the factors that should be considered in the project delivery selection, discuss the opportunities and obstacles related to each factor, and document the discussion on the following pages. Then complete the summary below.

PROJECT DELIVERY METHOD OPPORTUNITY/OBSTACLE SUMMARY			
	DBB	**CMGC**	**DB**
Primary Selection Factors			
1. Project Complexity & Innovation	-	++	+
2. Project Delivery Schedule	-	+	+
3. Project Cost Considerations	-	++	+
4. Level of Design	-	+	+
5. Risk Assessment	-	++	-
Secondary Selection Factors			
6. Staff Experience/Availability (Agency)			
7.Level of Oversight and Control			
8. Competition and Contractor Experience			

Rating Key	
++	Most appropriate delivery method
+	Appropriate delivery method
–	Least appropriate delivery method
X	Fatal Flaw (discontinue evaluation of this method)
NA	Factor not applicable or not relevant to the selection

Project Delivery Selection Summary Conclusions and Comments

The team selected CMGC as the best method of delivery for this project. CMGC ranked highest in the areas of Project Complexity & Innovation, Project Cost Considerations, and Risk Assessment. CMGC and DB tied in the other two criteria - Project Delivery Schedule and Level of Design. The secondary factors were reviewed for CMGC as well and CMGC was found to have no fatal flaws in these areas. We recommend CMGC as the delivery method for this project.

Project Delivery Selection Matrix Primary Factors

1) Project Complexity and Innovation

Project complexity and innovation is the potential applicability of new designs or processes to resolve complex technical issues.

DESIGN-BID-BUILD - Allows Agency to fully resolve complex design issues and qualitatively evaluate designs before procurement of the general contractor. Innovation is provided by Agency/Consultant expertise and through traditional agency directed processes such as VE studies and contractor bid alternatives.

Opportunities	Obstacles	Rating
Ability to have extended negotiation with stakeholders to ensure their buy-in.	Multiple designers?	-
Opportunity to coordinate with Greeley and our funding partners.	Complexity of design increases the risk of errors and Omissions --- high number of utilities, vertical design, etc.	
	Complex Construction phasing.	
	Maintaining traffic and pedestrian mobility.	
	Change order processes can impact cost and scope and delays.	
	Any tenuous ROW negotiation can significantly impact the project delivery schedule.	

CMGC - Allows independent selection of designer and contractor based on qualifications and other factors to jointly address complex innovative designs through three party collaboration of Agency, designer and Contractor. Allows for a qualitative (non-price oriented) design but requires agreement on CAP.

Opportunities	Obstacles	Rating
Level of plan development provides opportunities	Need to coordinate between contractor, ICE, and designer.	++
Innovation for constructability, construction phasing and MOT	Process depends on designer/CM relationship.	
Qualification based selection	No contractual relationship between designer/CM.	
Ability to have extended negotiation with stakeholders to ensure their buy-in.		
Opportunity to coordinate with Greeley and our funding partners.		
Coordination of horizontal and vertical elements.		
Contractor input provides opportunity for field investigation.		
Contractor input provides the opportunity to explore options with more accurate data.		
Opportunity to break construction into multiple packages.		
ICE can encourage efficiency and value.		
VE inherent in process and enhanced constructability.		
Can take to market for bidding as contingency.		

DESIGN-BUILD - Incorporates design-builder input into design process through best value selection and contractor proposed Alternate Technical Concepts (ATCs) – which are a cost-oriented approach to providing complex and innovative designs. Requires that desired solutions to complex projects be well defined through contract requirements.

Opportunities	Obstacles	Rating
Level of plan development provides opportunities	Requires development of procurement package at 30%	+
Innovation for constructability, construction phasing and MOT	Seems like available ROW hinders design innovation (ATCs)	
Qualification and cost based selection	Project intensity may limit the ability to have extended negotiation with stakeholders to ensure their buy-in.	
Opportunity to coordinate with Greeley and our funding partners in a constrained schedule.	Project intensity may limit the opportunity to coordinate with Greeley and our funding partners.	
Coordinate vertical and horizontal construction elements.	Extended negotiation with stakeholders to ensure their buy-in can put the project on a Critical Path	
Competitive procurement process provides opportunity to add value.		

2) Delivery Schedule

Delivery schedule is the overall project schedule from scoping through design, construction and opening to the public. Assess time considerations for starting the project or receiving dedicated funding and assess project completion importance.

DESIGN-BID-BUILD - Requires time to perform sequential design and procurement, but if design time is available has the shortest procurement time after the design is complete.

Opportunities	Obstacles	Rating
Familiar process.	Unable to meet schedule requirements of grant.	–
Owner has the opportunity to set the schedule.	Least schedule certainty.	
Ability to coordinate events.	Bids over budget may result in re-bid.	
Easier to incorporate public input in the schedule	Issues with procurement of construction package can have schedule impacts.	
	Coordination of separate packages is difficult.	
	Lack of contractor input on schedule can result in unrealistic drop dead dates.	
	Limited control over mean and methods can impact schedule.	

CMGC - Quickly gets contractor under contract and under construction to meet funding obligations before completing design. Parallel process of development of contract requirements, design, procurements, and construction can accelerate project schedule. However, schedule can be slowed down by coordinating design-related issues between the CM and designer and by the process of reaching a reasonable CAP.

Opportunities	Obstacles	Rating
Opportunity to procure long lead time items.	Separate environmental clearances.	++
Opportunity to get CM on board.	Potential for not reaching CAP and substantially delaying schedule	
Easily defined ROW easements.	Designer-contractor-agency disagreements can add delays	
Can start work on separate packages.	Strong agency management is required to control schedule	
Can get to construction faster.		
Once last package is negotiated, schedule is certain.		

Can adjust for upcoming events.		
Easier to incorporate public input in the schedule		

DESIGN-BUILD - Ability to get project under construction before completing design. Parallel process of design and construction can accelerate project delivery schedule; however, procurement time can be lengthy due to the time necessary to develop an adequate RFP, evaluate proposals and provide for a fair, transparent selection process.

Opportunities	Obstacles	Rating
Opportunity to procure long lead time items.	Commitment to ROW purchase dates.	
Schedule certainty at procurement.	Difficult to coordinate upcoming events.	
Ability to complete construction faster.	Not as easy to incorporate public input in the schedule	
	Lack of staff and resources can impact the ability to meet the schedule.	+

3) Level of Design

Level of design is the percentage of design completion at the time of the project delivery procurement.

DESIGN-BID-BUILD - 100% design by Agency or contracted design team, with Agency having complete control over the design.

Opportunities	Obstacles	Rating
Agency has complete control over the design	No opportunity for contractor input on design.	
Project/scope can be developed through design	100% design by agency means higher level risk for vertical design elements.	
Well-known process to the industry	Agency design errors can result in a higher number of change orders, claims, etc.	
	Minimizes competitive innovation opportunities.	
	Can reduce the level of constructability since the contractor is not brought into the project until the design is complete.	-

CMGC - Can utilize a lower level of design prior to procurement of the CMGC and then joint collaboration of Agency, designer, and CMGC in the further development of the design. Iterative nature of design process risks extending the project schedule.

Opportunities	Obstacles	Rating
Can utilize a lower level of design prior to selecting a contractor then collaboratively advance design with agency, designer, and contractor.	Teaming and communicating concerning design can cause disputes	
Contractor involvement in early design improves constructability.	Three party process can slow progression of design	+
Agency controls design.	Scope creep is a higher risk	

DESIGN-BUILD - Design advanced by Agency to the level necessary to precisely define contract requirements and properly allocate risk (typically 30% or less).

Opportunities	Obstacles	Rating
Does not require much design to be completed before awarding project to the design-builder (between ~ 10% - 30% complete)	Less agency control over the design	
Contractor involvement in early design, which improves constructability and innovation	Can create project less standardized designs across agency as a whole	
Competitive process encourages innovation.	Less opportunity for owner's value to influence engineering judgement.	
	Higher risk for unknow unknows.	+
	RFP development process is rigorous to capture accurate scope.	

4) Project Cost Considerations

Project cost is the financial process related to meeting budget restrictions, early and precise cost estimation, and control of project costs.

DESIGN-BID-BUILD - Competitive bidding provides a low cost construction for a fully defined scope of work. Costs accuracy limited until design is completed. More likelihood of cost change orders due to contractor having no design responsibility.

Opportunities	Obstacles	Rating
Competitive bidding provides a lowest initial cost construction to a fully defined scope of work	Construction costs are not certain until construction is 100% complete	
Construction costs are contractually set before construction begins	Cost reductions due to contractor innovation and constructability are difficult to obtain	
	More potential of costly change orders due to Agency design risk responsibility	
		-

CMGC - Agency/designer/contractor collaboration to reduce risk pricing can provide a low cost project however, non-competitive negotiated CAP introduces price risk. Good flexibility to design to a budget.

Opportunities	Obstacles	Rating
Agency/designer/contractor collaboration to reduce project risk can result in lower total project costs	Non-competitive negotiated CAP introduces price risk	++
Early contractor involvement can result in added value through VE and constructability	Contractor's involvement in the design phase could potentially increase nonessential scope	

Cost will be known earlier when compared to DBB	Adding CM and ICE can increase project development cost	
Integrated design/construction process can provide cost-efficient strategies to meet project goals		
Early out packages can result in lower overall project cost by avoiding inflation.		
Reducing risk of change orders due to errors and omissions.		

DESIGN-BUILD - Designer-builder collaboration and ATCs can provide a cost-efficient response to project goals. Costs are determined with design-build proposal, early in design process. Allows a variable scope bid to match a fixed budget. Poor risk allocation can result in high contingencies.

Opportunities	Obstacles	Rating
Contractor input into design should moderate cost and reduce overall construction cost	Risks related to design-build, lump sum cost without 100% design complete, can compromise financial success of the project	+
Costs are contractually set early in design process with design-build proposal	The lump sum cost coming in higher than available budget could kill the project	
Competition can result in lower cost or increased project value	The overall scope is set up front and is inflexible without changing cost and schedule	
Funding can be obligated in a very short timeframe	Can result in higher overhead costs	

5) Risk Assessment of Delivery Methods

Risk is an uncertain event or condition that, if it occurs, has an effect on a project's objectives. Risk allocation is the assignment of unknown events or conditions to the party that can best manage them. An initial assessment of project risks is important to ensure the selection of the delivery method that can properly address them. An approach that focuses on a fair allocation of risk will be most successful.

DESIGN-BID-BUILD - Risk allocation for design-bid-build best is understood by the industry, but requires that most design-related risks and third party risks be resolved prior to procurement to avoid costly contractor contingency pricing, change orders, and potential claims.

Opportunities	Obstacles	Rating
Risk allocation is most widely understood/used	Innovative risk allocation is difficult to obtain due to limited industry input	-
	Owner owns all the risks due to errors and omissions.	
	Change order risks are greater	
	ROW acquisition must be done upfront	

CMGC - Provides opportunity for Agency, designer, and contractor to collectively identify and minimize project risks, and allocate risk to appropriate party. Has potential to minimize contractor contingency pricing of risk, but can lose the element of competition in pricing.

Opportunities	Obstacles	Rating
Contractor can have a better understanding of the unknown conditions as design progresses	Strong agency management is required to negotiate/optimize risks	++
Innovative opportunities to allocate risks to different parties (e.g., schedule, means and methods, phasing)	Disagreement among Designer-Contractor-Agency can put the project at risk	
Contractor will help identify and manage risk		
Avoids low-bidding risk in procurement		
Opportunity to avoid or mitigate risk through preconstruction phase in design		
Opportunity to put separate packages out to bid		
ROW can be acquired during the process		

DESIGN-BUILD - Provides opportunity to properly allocate risks to the party best able to manage them, but requires risks allocated to design-builder to be well defined to minimize contractor contingency pricing of risks.

Opportunities	Obstacles	Rating
Performance specifications can allow for alternative risk allocations to the design builder	Need a detailed project scope, description etc., for the RFP to get accurate/comprehensive responses to the RFP (Increased RFP costs may limit bidders)	-
Risk-reward structure can be better defined	Limited time to resolve risks	
Contractor will help identify risks related to environmental, ROW, and utilities	ROW acquisition must meet a set schedule	
Avoid low-bidding risk in procurement	Poorly defined risks are expensive	
Additional risks allocated to designers for errors and omissions, claims for change orders	Contractor may avoid risks or drive consultant to decrease cost at risk to quality	

Project Delivery Selection Matrix Secondary Factors

6) Staff Experience and Availability

Agency staff experience and availability as it relates to the project delivery methods in question.

DESIGN-BID-BUILD - Technical and management resources necessary to perform the design and plan development. Resource needs can be more spread out.

Opportunities	Obstacles	Rating

CMGC - Strong, committed Agency project management resources are important for success of the CMGC process. Resource needs are similar to DBB except Agency must coordinate CM's input with the project designer and be prepared for CAP negotiations.

Opportunities	Obstacles	Rating
Agency can improve efficiencies by having more project managers on staff rather than specialized experts	Strong committed agency project management is important to success	PASS
Smaller number of technical staff required through use of consultant designer	Agency must learn how to negotiate CAP projects	

DESIGN-BUILD - Technical and management resources and expertise necessary to develop the RFQ and RFP and administrate the procurement. Concurrent need for both design and construction resources to oversee the implementation.

Opportunities	Obstacles	Rating

7) Level of Oversight and Control

Level of oversight involves the amount of agency staff required to monitor the design or construction, and amount of agency control over the delivery process

DESIGN-BID-BUILD - Full control over a linear design and construction process.		
Opportunities	**Obstacles**	**Rating**
CMGC - Most control by Agency over both the design, and construction, and control over a collaborative agency/designer/contractor project team		
Opportunities	**Obstacles**	**Rating**
Preconstruction services are provided by the construction manager	Agency must have experienced staff to oversee the CMGC	PASS
Obtaining input from the CMGC to enhance constructability and innovation	Higher level of cost oversight required	
Provides agency control over an integrated design/construction process		
DESIGN-BUILD - Less control over the design (design desires must be written into the RFP contract requirements). Generally less control over the construction process (design-builder often has QA responsibilities).		
Opportunities	**Obstacles**	**Rating**

8) Competition and Contractor Experience

Competition and availability refers to the level of competition, experience and availability in the market place and its capacity for the project.

DESIGN-BID-BUILD - High level of competition, but GC selection is based solely on low price. High level of marketplace experience.

Opportunities	Obstacles	Rating

CMGC - Allows for the selection of the single most qualified contractor, but CAP can limit price competition. Low level of marketplace experience.

Opportunities	Obstacles	Rating
Allows for qualifications based contractor procurement	Currently there is not a large pool of contractors with experience in CMGC, which will reduce the competition and availability	PASS
Agency has control over an independent selection of best qualified designer and contractor	Working with only one contractor to develop the CAP can limit price competition	
Contractor is part of the project team early on, creating a project "team"	Requires a strong project manager from the agency	
Increased opportunity for innovation due to the diversity of the project team		

DESIGN-BUILD - Allows for a balance of price and non-price factors in the selection process. Medium level of marketplace experience.

Opportunities	Obstacles	Rating

Project Delivery Selection Factors Opportunities and Obstacles Checklists

(With project risk assessment and checklists)

1) Project Complexity and Innovation Project Delivery Selection Checklist

DESIGN-BID-BUILD
Complexity and Innovation Considerations
• Agencies control of design of complex projects • Agency and consultant expertise can select innovation independently of contractor abilities • Opportunities for value engineering studies during design, more time for design solutions • Aids in consistency and maintainability • Full control in selection of design expertise • Complex design can be resolved and competitively bid • Innovations can add cost or time and restrain contractor's benefits • No contractor input to optimize costs • Limited flexibility for integrated design and construction solutions (limited to constructability) • Difficult to assess construction time and cost due to innovation
CMGC
Complexity and Innovation Considerations
• Highly innovative process through 3 party collaboration • Allows for agency control of a designer/contractor process for developing innovative solutions • Allows for an independent selection of the best qualified designer and best qualified contractor • VE inherent in process and enhanced constructability • Risk of innovation can be better defined and minimized and allocated • Can take to market for bidding as contingency • Can develop means and methods to the strengths of a single contractor partner throughout preconstruction • Process depends on designer/CM relationship • No contractual relationship between designer/CM • Innovations can add or reduce cost or time • Management of scope additions •
DESIGN-BUILD
Complexity and Innovation Considerations
• Designer and contractor collaborate to optimize means and methods and enhance innovation • Opportunity for innovation through competiveness of ATC process • Can use best-value procurement to select design-builder with best qualifications • Constructability and VE inherent in process • Early team integration • Requires desired solutions to complex designs to be well defined through technical requirements • Qualitative designs can be difficult to define if not done early in design (example. aesthetics) • time or cost constraints on designer • Quality assurance for innovative processes can be difficult to define in RFP • Ability to obtain intellectual property through the use of stipends

2) Delivery Schedule Project Delivery Selection Checklist

DESIGN-BID-BUILD
Schedule Considerations
• Schedule is more predictable and more manageable • Milestones can be easier to define • Projects can more easily be "shelved" • Shortest procurement period • Elements of design can be advanced prior to permitting, construction, etc. • Time to communicate/discuss design with stakeholders • Time to perform a linear Design-Bid-Build delivery process • Design and construction schedules can be unrealistic due to lack of industry input • Errors in design lead to change orders and schedule delays • Low bid selection may lead to potential delays and other adverse outcomes.
CMGC
Schedule Considerations
• Ability to start construction before entire design, ROW, etc. is complete (i.e., phased design) • More efficient procurement of long-lead items • Early identification and resolution of design and construction issues (e.g., utility, ROW, and earthwork) • Can provide a shorter procurement schedule than DB • Team involvement for schedule optimization • Continuous constructability review and VE • Maintenance of Traffic improves with contractor inputs • Contractor input for phasing, constructability and traffic control may reduce overall schedule • Potential for not reaching CAP and substantially delaying schedule • CAP negotiation can delay the schedule • Designer-contractor-agency disagreements can add delays • Strong agency management is required to control schedule
DESIGN-BUILD
Schedule Considerations
• Potential to accelerate schedule through parallel design-build process • Shifting of schedule risk • Industry input into design and schedule • Fewer chances for disputes between agency and the Design-Build team • More efficient procurement of long-lead items • Ability to start construction before entire design, ROW, etc. is complete (i.e., phased design) • Allows innovation in resource loading and scheduling by DB team • Request for proposal development and procurement can be intensive • Undefined events or conditions found after procurement, but during design can impact schedule and cost • Time required to define and develop RFP technical requirements and expectations • Requires agency and stakeholder commitments to an expeditious review of design

3) Project Cost Considerations Project Delivery Selection Checklist

DESIGN-BID-BUILD
Project Cost Considerations
• Competitive bidding provides a low cost construction to a fully defined scope of work • Increased certainty about cost estimates • Construction costs are contractually set before construction begins • Cost accuracy is limited until design is completed • Construction costs are not locked in until design is 100% complete • Cost reductions due to contractor innovation and constructability is difficult to obtain • More potential of cost change orders due to Agency design responsibility
CMGC
Project Cost Considerations
• Agency/designer/contractor collaboration to reduce project risk can result in lowest project costs • Early contractor involvement can result in cost savings through VE and constructability • Cost will be known earlier when compared to DBB • Integrated design/construction process can provide a cost efficient strategies to project goals • Can provide a cost efficient response to meet project goals • Non-competitive negotiated CAP introduces price risk • Difficulty in CAP negotiation introduces some risk that CAP will not be successfully executed requiring aborting the CMGC process • Paying for contractors involvement in the design phase could potentially increase total cost • Use of Independent Cost Estimating (ICE) expertise to obtain competitive pricing during CAP negotiations
DESIGN-BUILD
Project Cost Considerations
• Contractor input into design should moderate cost • Design-builder collaboration and ATCs can provide a cost-efficient response to project goals • Costs are contractually set early in design process with design-build proposal • Allows a variable scope bid to match a fixed budget • Potential lower average cost growth • Funding can be obligated in a very short timeframe • Risks related to design-build, lump sum cost without 100% design complete, can compromise financial success of the project

4) Level of Design Project Delivery Selection Checklist

DESIGN-BID-BUILD
Level of Design Considerations
• 100% design by agency • Agency has complete control over the design (can be beneficial when there is one specific solution for a project) • Project/scope can be developed through design • The scope of the project is well defined through complete plans and contract documents • Well-known process to the industry • Agency design errors can result in a higher number of change orders, claims, etc. • Minimizes competitive innovation opportunities • Can reduce the level of constructability since the contractor is not bought into the project until after the design is complete
CMGC
Level of Design Considerations
• Can utilize a lower level of design prior to selecting a contractor then collaboratively advance design with agency, designer and contractor • Contractor involvement in early design improves constructability • Agency controls design • Design can be used for DBB if the price is not successfully negotiated • Design can be responsive to risk minimization • Teaming and communicating concerning design can cause disputes • Three party process can slow progression of design • Advanced design can limit the advantages of CMGC or could require re-design
DESIGN-BUILD
Level of Design Considerations
• Design advanced by the agency to level necessary to precisely define the contract requirements and properly allocate risk • Does not require much design to be completed before awarding project to the design-builder (between ~ 10% - 30% complete) • Contractor involvement in early design, which improves constructability and innovation • Plans do not have to be as detailed because the design-builder is bought into the project early in the process and will accept design responsibility • Clearly define requirements in the RFP because it is the basis for the contract • If design is too far advanced it will limit the advantages of design-build • Carefully develop the RFP so that scope is fully defined • Over utilizing performance specifications to enhance innovation can risk quality through reduced technical requirements • Less agency control over the design • Can create project less standardized designs across agency as a whole

5a) Initial Risk Assessment Guidance

Three sets of risk assessment checklists are provided to assist in an initial risk assessment relative to the selection of the delivery method:

- Typical Transportation Project Risks
- General Project Risks Checklist
- Opportunities/Obstacles Checklist (relative to each delivery method)

It is important to recognize that the initial risk assessment is to only ensure the selected delivery method can properly address the project risks. A more detailed level of risk assessment should be performed concurrently with the development of the procurement documents to ensure that project risks are properly allocated, managed, and minimized through the procurement and implementation of the project.

The following is a list of project risks that are frequently encountered on transportation projects and a discussion on how the risks are resolved through the different delivery methods.

1) Site Conditions and Investigations

How unknown site conditions are resolved. For additional information on site conditions, refer to 23 CFR 635.109(a) at the following link: http://ecfr.gpoaccess.gov/

DESIGN-BID-BUILD

Site condition risks are generally best identified and mitigated during the design process prior to procurement to minimize the potential for change orders and claims when the schedule allows.

CMGC

CDOT, the designer, and the contractor can collectively assess site condition risks, identify the need to perform site investigations in order to reduce risks, and properly allocate risk prior to CAP.

DESIGN-BUILD

Certain site condition responsibilities can be allocated to the design-builder provided they are well defined and associated third party approval processes are well defined. Caution should be used, as unreasonable allocation of site condition risk will result in high contingencies during bidding. The Agency should perform site investigations in advance of procurement to define conditions and avoid duplication of effort by proposers. At a minimum, the Agency should perform the following investigations:

1) Basic design surveys
2) Hazardous materials investigations to characterize the nature of soil and groundwater contamination
3) Geotechnical baseline report to allow design-builders to perform proposal design without extensive additional geotechnical investigations

2) Utilities

DESIGN-BID-BUILD

Utility risks are best allocated to the Agency, and mostly addressed prior to procurement to minimize potential for claims when the schedule allows.

CMGC

Can utilize a lower level of design prior to contracting and joint collaboration of Agency, designer, and contractor in the further development of the design.

DESIGN-BUILD

Utilities responsibilities need to be clearly defined in contract requirements, and appropriately allocated to both design-builder and the Agency:

Private utilities (major electrical, gas, communication transmission facilities): Need to define coordination and schedule risks, as they are difficult for design-builder to price. Best to have utilities agreements before procurement. Note – by state regulation, private utilities have schedule liability in design-build projects, but they need to be made aware of their responsibilities.

Public Utilities: Design and construction risks can be allocated to the design-builder, if properly incorporated into the contract requirements.

3) Railroads (if applicable)

DESIGN-BID-BUILD

Railroad risks are best resolved prior to procurement and relocation designs included in the project requirements when the schedule allows.

CMGC

Railroad impacts and processes can be resolved collaboratively by Agency, designer, and contractor. A lengthy resolution process can delay the CAP negotiations.

DESIGN-BUILD

Railroad coordination and schedule risks should be well understood to be properly allocated and are often best assumed by the Agency. Railroad design risks can be allocated to the designer if well defined. Best to obtain an agreement with railroad defining responsibilities prior to procurement

4) Drainage/Water Quality Best Management Practices (construction and permanent)

Both drainage and water quality often involve third party coordination that needs to be carefully assessed with regard to risk allocation. Water quality in particular is not currently well defined, complicating the development of technical requirements for projects.

Important questions to assess:

1) Do criteria exist for compatibility with third party offsite system (such as an OSP (Outfall System Plan))?
2) Is there an existing cross-drainage undersized by design Criteria?
3) Can water quality requirements be precisely defined? Is right-of-way adequate?

DESIGN-BID-BUILD

Drainage and water quality risks are best designed prior to procurement to minimize potential for claims when the schedule allows.

CMGC

The Agency, the designer, and the contractor can collectively assess drainage risks and coordination and approval requirements, and minimize and define requirements and allocate risks prior to CAP.

DESIGN-BUILD
Generally, the Agency is in the best position to manage the risks associated with third party approvals regarding compatibility with offsite systems, and should pursue agreements to define requirements for the design-builder.

5) Environmental

Meeting environmental document commitments and requirements, noise, 4(f) and historic, wetlands, endangered species, etc.

DESIGN-BID-BUILD
Risk is best mitigated through design prior to procurement when the schedule allows.
CMGC
Environmental risks and responsibilities can be collectively identified, minimized, and allocated by the Agency, the designer, and the contractor prior to CAP
DESIGN-BUILD
Certain environmental approvals and processes that can be fully defined can be allocated to the design-builder. Agreements or MOUs with approval agencies prior to procurement is best to minimize risks.

6) Third Party Involvement

Timeliness and impact of third party involvement (funding partners, adjacent municipalities, adjacent property owners, project stakeholders, FHWA, PUC)

DESIGN-BID-BUILD
Third party risk is best mitigated through design process prior to procurement to minimize potential for change orders and claims when the schedule allows.
CMGC
Third party approvals can be resolved collaboratively by the Agency, designer, and contractor.
DESIGN-BUILD
Third party approvals and processes that can be fully defined can be allocated to the design-builder. Agreements or MOUs with approval agencies prior to procurement is best to minimize risks.

5b) General Project Risk Checklist (Items to consider when assessing risk)

Environmental Risks	External Risks
• Delay in review of environmental documentation • Challenge in appropriate environmental documentation • Defined and non-defined hazardous waste • Environmental regulation changes • Environmental impact statement (EIS) required • NEPA/ 404 Merger Process required • Environmental analysis on new alignments required	• Stakeholders request late changes • Influential stakeholders request additional needs to serve their own commercial purposes • Local communities pose objections • Community relations • Conformance with regulations/guidelines/ design criteria • Intergovernmental agreements and jurisdiction
Third-Party Risks	**Geotechnical and Hazmat Risks**
• Unforeseen delays due to utility owner and third-party • Encounter unexpected utilities during construction • Cost sharing with utilities not as planned • Utility integration with project not as planned • Third-party delays during construction • Coordination with other projects • Coordination with other government agencies	• Unexpected geotechnical issues • Surveys late and/or in error • Hazardous waste site analysis incomplete or in error • Inadequate geotechnical investigations • Adverse groundwater conditions • Other general geotechnical risks
Right-of-Way/ Real Estate Risks	**Design Risks**
• Railroad involvement • Objections to ROW appraisal take more time and/or money • Excessive relocation or demolition • Acquisition ROW problems • Difficult or additional condemnation • Accelerating pace of development in project corridor • Additional ROW purchase due to alignment change	• Design is incomplete/ Design exceptions • Scope definition is poor or incomplete • Project purpose and need are poorly defined • Communication breakdown with project team • Pressure to delivery project on an accelerated schedule • Constructability of design issues • Project complexity - scope, schedule, objectives, cost, and deliverables - are not clearly understood
Organizational Risks	**Construction Risks**
• Inexperienced staff assigned • Losing critical staff at crucial point of the project • Functional units not available or overloaded • No control over staff priorities • Lack of coordination/ communication • Local agency issues • Internal red tape causes delay getting approvals, decisions • Too many projects/ new priority project inserted into program	• Pressure to delivery project on an accelerated schedule. • Inaccurate contract time estimates • Construction QC/QA issues • Unclear contract documents • Problem with construction sequencing/ staging/ phasing • Maintenance of Traffic/ Work Zone Traffic Control

5c) Assessment of Risk Project Delivery Selection Opportunities/Obstacles Checklist

DESIGN-BID-BUILD
Risk Considerations
• Risks managed separately through design, bid, build is expected to be easier • Risk allocation is most widely understood/used • Opportunity to avoid or mitigate risk through complete design • Risks related to environmental, railroads, & third party involvement are best resolved before procurement • Utilities and ROW best allocated to the agency and mostly addressed prior to procurement to minimize potential for claim • Project can be shelved while resolving risks • Agency accepts risks associated with project complexity (the inability of designer to be all-knowing about construction) and project unknowns • Low-bid related risks • Potential for misplaced risk through prescriptive specifications • Innovative risk allocation is difficult to obtain • Limited industry input in contract risk allocation • Change order risks can be greater
CMGC
Risk Considerations
• Contractor can have a better understanding of the unknown conditions as design progresses • Innovative opportunities to allocate risks to different parties (e.g., schedule, means and methods, phasing) • Opportunities to manage costs risks through CMGC involvement • Contractor will help identify and manage risk • Agency still has considerable involvement with third parties to deal with risks • Avoids low-bidding risk in procurement • More flexibility and innovation available to deal with unknowns early in the design process • Lack of motivation to manage small quantity costs • Increase costs for non-proposal items • Disagreement among Designer-Contractor-Agency can put the process at risk • If CAP cannot be reached, additional low-bid risks appear • Limited to risk capabilities of CMGC • • Strong agency management is required to negotiate/optimize risks • Discovery of unknown conditions can drive up CAP, which can be compounded in phased construction
DESIGN-BUILD
Risk Considerations
• Performance specifications can allow for alternative risk allocations to the design builder • Risk-reward structure can be better defined • Innovative opportunities to allocate risks to different parties (e.g., schedule, means and methods, phasing) • Opportunity for industry review of risk allocation (draft RFP, ATC processes) • Avoid low-bidding risk in procurement • Contractor will help identify risks related to environmental, railroads, ROW, and utilities • Designers and contractors can work toward innovative solutions to, or avoidance of, unknowns • Need a detailed project scope, description etc., for the RFP to get accurate/comprehensive responses to the RFP (Increased RFP costs may limit bidders) • Limited time to resolve risks • Additional risks allocated to designers for errors and omissions, claims for change orders • Unknowns and associated risks need to be carefully allocated through a well-defined scope and contract • Risks associated with agreements when design is not completed • Poorly defined risks are expensive • Contractor may avoid risks or drive consultant to decrease cost at risk to quality

6) Staff Experience and Availability Project Delivery Selection Checklist

DESIGN-BID-BUILD
Staff Experience and Availability Considerations
• Agency, contractors and consultants have high level of experience with the traditional system • Designers can be more interchangeable between projects • Can require a high level of agency staffing of technical resources • Staff's responsibilities are spread out over a longer design period • Can require staff to have full breadth of technical expertise
CMGC
Staff Experience and Availability Considerations
• Agency can improve efficiencies by having more project managers on staff rather than specialized experts • Smaller number of technical staff required through use of consultant designer • Strong committed agency project management is important to success • Limitation of availability of staff with skills, knowledge and personality to manage CMGC projects • Existing staff may need additional training to address their changing roles • Agency must learn how to negotiate CAP projects
DESIGN-BUILD
Staff Experience and Availability Considerations
• Less agency staff required due to the sole source nature of DB • Opportunity to grow agency staff by learning a new process • Limitation of availability of staff with skills and knowledge to manage DB projects • Existing staff may need additional training to address their changing roles • Need to "mass" agency management and technical resources at critical points in process (i.e., RFP development, design reviews, etc.)

7) Level of Oversight and Control Project Delivery Selection Checklist

DESIGN-BID-BUILD
Level of Oversight and Control Considerations
• Full agency control over a linear design and construction process • Oversight roles are well understood • Contract documents are typically completed in a single package before construction begins • Multiple checking points through three linear phases: design-bid-build • Maximum control over design • Requires a high-level of oversight • Increased likelihood of claims due to agency design responsibility • Limited control over an integrated design/construction process
CMGC
Level of Oversight and Control Considerations
• Preconstruction services are provided by the construction manager • Obtaining input from the CMGC to enhance constructability and innovation • Provides agency control over an integrated design/construction process • Agency must have experienced staff to oversee the CMGC • Higher level of cost oversight required
DESIGN-BUILD
Level of Oversight and Control Considerations
• A single entity responsibility during project design and construction • Obtaining input from the Design-Builder to enhance constructability and innovation • Overall project planning and scheduling is established by one entity • Can require a high level of design oversight • Can require a high level of quality assurance oversight • Limitation on staff with DB oversight experience • Less agency control over design • Control over design relies on proper development of technical requirements

8) Competition and Contractor Experience Project Delivery Selection Checklist

DESIGN-BID-BUILD
Competition and Contractor Experience Considerations
• Promotes high level of competition in the marketplace • Opens construction to all reasonably qualified bidders • Transparency and fairness • Reduced chance of corruption and collusion • Contractors are familiar with the DBB process • Risks associated with selecting the low bid (the best contractor is not necessary selected) • No contractor input into the process • Limited ability to select contractor based on qualifications
CMGC
Competition and Contractor Experience Considerations
• Allows for qualifications based contractor procurement • Agency has control over an independent selection of best qualified designer and contractor • Contractor is part of the project team early on, creating a project "team" • Increased opportunity for innovation due to the diversity of the project team • Currently there is not a large pool of contractors with experience in CMGC, which will reduce the competition and availability • Working with only one contractor to develop the CAP can limit price competition • Requires a strong project manager from the agency • Teamwork and communication among the project team
DESIGN-BUILD
Competition and Contractor Experience Considerations
• Allows for a balance of qualifications and cost in design-builder procurement • Two-phase process can promote strong teaming to obtain "Best Value" • Increased opportunity for innovation possibilities due to the diverse project team • Need for DB qualifications can limit competition • Lack of competition with past experience with the project delivery method • Reliant on DB team selected for the project • The gap between agency experience and contractor experience with delivery method can create conflict

MEMORANDUM

Date: August 21, 2023

To: Paul Trombino, III, City of Greeley

From: Ryan Davis, P.E., PTOE

Subject: MPDG Grant - Benefit Cost Analysis

Mobility Enhancements for Regional Growth and Equity (MERGE) Project

This technical memorandum documents the methodology and results of a benefit-cost analysis (BCA) for the proposed US 34 interchanges at 35th Avenue and 47th Avenue and a proposed Mobility Hub; referred to hereinafter as the MERGE Project, in Greeley, Colorado.

Purpose and Need

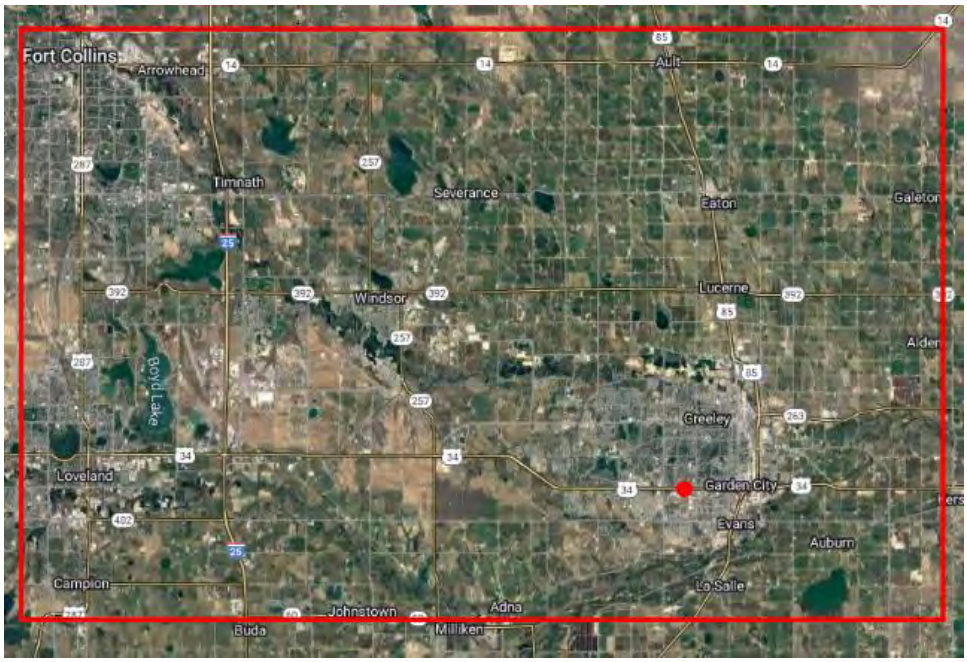
MERGE will be located in the heart of Greeley along US Highway 34. The project will be approximately two and half miles west of the connection with US Highway 85, a north to south highway of regional importance. US Highway 34 is a critical east-west transportation corridor for northern Colorado's fastest growing community and an important regional connection between the region's largest population and employment centers: Greeley, Fort Collins, and Loveland. Greeley has approximately 108,795 residents. While this project is not fully incorporated in a Historically Disadvantaged Area, a portion of the roadway is directly adjacent to an area with the designation. This project will have direct benefit to the noted area even if it is not fully imbedded in the designated area. The project location can be viewed in Figure 1 below. The proposed mobility hub and interchange locations are noted with a red circle. At each interchange, the intersection to the north will be mitigated as well.

Figure 1. Project Location

MERGE will be a key project serving not only the residents and those travelling through Greeley, but also those commuting to the nearby shopping center, the many schools including the University of Northern Colorado and Aims Community College. It will also provide a benefit for the various employment opportunities that Greeley has to offer.

The Mobility Hub will serve existing transit routes and will be a catalyst for new local and regional bus routes. The Mobility Hub, paired with the City's goal of improving last mile service, will provide the opportunity for a new transit network that will provide more efficient service to residents and visitors. The grade separated interchanges on either side of the mobility hub will drastically improve service and reduce emissions, costs, and travel time.

Figure 2. Mobility Hub Area of Influence



Sustained growth and economic development along the US 34 corridor have increased the need to enhance multimodal safety, eliminate barriers to jobs, reduce recurring congestion, and improve regional mobility. The MERGE project is vital to the realization of these important outcomes for the City and will bring about a continuity of free flow travel conditions along this key mobility corridor. The successful implementation of the project would enable faster travel times throughout the entire corridor; an increase in vehicle capacity; a decrease in recurring and non-recurring congestion; and improved safety conditions resulting in a reduction in accidents and fatalities. The results will be true for personal vehicles, freight, transit, bicyclists, EV scooters, pedestrians and any other mode of transportation existing in Greeley. Furthermore, construction and operation of MERGE will improve active transportation mobility and safety for students and those seeking recreation while also enabling the future expansion of regional and local transit services. In addition to safer transportation for the students, this project will provide better opportunities for lower income residents through greater accessibility to employment, health services, essential services, and recreational activities.

For this BCA, a build alternative was analyzed and compared to a no-build alternative. The alternatives are listed below:

1. No-Build – Do nothing alternative
2. Build – Along the US 34 corridor in Greeley, construction of an interchange at 35th Avenue and providing auxiliary lanes to 47th Avenue, construction of an interchange at 47th Avenue and construct a Mobility Hub in the median of US 34 (inclusive of transit and multi-modal transportation connectivity) between the 35th and 47th Avenue interchanges. At the 35th Avenue interchange, the intersection of 35th Avenue and Centerplace Drive will have lane additions and signal retiming. At the 47th Avenue interchange, the intersection of 47th Avenue and Centerplace Drive will have lane reconfiguration and signal retiming.

Background

In January of 2019, a Planning and Environmental Linkages (PEL) Study was completed for US Highway 34 between Larimer County Road 29 and Weld County Road 53 within Larimer County, Weld County, City of Evans, City of Greeley, City of Loveland, Johnstown, Kersey, Garden City, and Windsor. The goal of the early integrated planning efforts is to improve transportation decision making while streamlining subsequent alternatives analysis during the National Environmental Policy Act (NEPA) process. While this PEL study covered an area much larger than the City of Greeley's Multimodal Project Discretionary Grant (MPDG) project location, it includes two of the intersections that are included with the MPDG project. Construction of an interchange at 35th Avenue and widening from four to six lanes to 47th Avenue, and construction of an interchange at 47th Avenue were both identified as high priority projects in the PEL.

Subsequent to the completion of the PEL, the Colorado General Assembly passed an aggressive greenhouse gas reduction bill, H.B. 19-1261. This bill set a goal of reducing statewide greenhouse gas emissions from all sources by twenty-six (26) percent by 2025, fifty (50) percent by 2030 and ninety (90) percent by 2050. The Colorado Department of Transportation (CDOT) then created governing regulations to ensure any future projects will result in a more balanced and sustainable, and less auto-dependent, transportation system over time.

The new regulations, combined with the needs of a growing, diverse, and young demographic and other safety related considerations such as safe routes to school, led the City of Greeley to consider constructing a mobility hub located between the two interchanges.

A primary goal for this MERGE project is to improve traffic safety and provide safe multimodal transportation opportunities while maintaining traffic flow at an acceptable level of service. Using Colorado DOT crash data from 2017-2021, showed that there were 187 and 121 crashes at the US 34 intersections with 35th Avenue and 47th Avenue, respectively.

For the US 34 and 35th Avenue, there were no fatalities, 35 injury crashes, and 152 property damage only crashes associated with intersection in the 5-year time period. For the US 34 and 47th Avenue, there were no fatalities, 31 injury crashes, and 121 property damage only crashes associated with intersection in the 5-year time period. **Tables 1a** and **1b** show a summary of collisions at these two at-grade intersections along US 34.

Table 1a. 2017-2021 US 34 at 35th Avenue Intersection (At-Grade)

KABCO Level	Severity	Number of Collisions
K	Fatal	0
A, B and C	Injuries	35
O	No Injury	152
	Total	**187**

Table 1b. 2017-2021 US 34 at 47th Avenue Intersection (At-Grade)

KABCO Level	Severity	Number of Collisions
K	Fatal	0
A, B and C	Injuries	31
O	No Injury	121
	Total	**152**

Providing a mobility hub for multimodal transportation is another priority in undertaking this MERGE project. This hub is a key component of the project that allows for critical regional/local connectivity as well as safe pedestrian and micro-mobility friendly connection between the north and south sides of the City of Greeley.

With the proposed mobility hub between the 35th Avenue and 47th Avenue interchanges along the US 34 corridor, there would be an increase in other forms of transportation such as transit, biking, micro-mobility and walking. Existing traffic data along US 34 and 35th Avenue for 2019 is displayed in **Table 2**.

Table 2. Existing Traffic Data

Location	2019 AADT
US 34 West of 35th Ave	37,000
US 34 East of 35th Ave	36,000
35th Ave North of US 34	28,500
35th Ave South of US 34	26,000

The purpose of a benefit-cost analysis is to express the reasonably expected outcomes of an initial investment to a common measure, base-year dollars. This accounts for benefits occurring over long periods of time, while most of the costs are incurred as an initial investment. Under this approach, a project with monetized benefits that are greater than its costs will have a benefit-to-cost ratio greater than one and therefore is considered an economically beneficial endeavor.

Benefit-Cost Methodology

The monetary benefit for this project is quantified in terms of travel time savings, project area collisions, and roadway operations and maintenance. The costs considered for the project include surfacing, grading and drainage, signal and lighting construction, subbase/base, right-of-way acquisition, as well as engineering fees and costs. The itemized cost breakdown of the build alternative for each interchange and the mobility hub is shown in **Tables D.6.5** of **Appendix D**. Remaining capital values of these roadway features at the end of the analysis period are subtracted from the total cost of the project. The salvage values can be found in **Tables D.7.1** of the **Appendix** for a 7 percent discount rate.

The benefits and economic impacts the MERGE project will deliver are diversified and numerous. It will provide enhanced local and regional mobility and connectivity through the elimination of signals and grade-separation thereby allowing the free flow of passenger and freight traffic. MERGE's implementation will generate significant safety improvements for both vehicular and active transportation. Grade-separation of US34 traffic, in addition to improving the efficiency of east-west travel along the corridor, will provide safer pedestrian and bike crossing which is especially important given several schools and major retail centers are located directly adjacent to the project's location. The elimination of traffic signals at the existing US 34/35th Avenue intersection will alleviate recurring congestion on the regional connector as well as at the busiest local arterial while also lowering greenhouse gases along the corridor through the reduction of idling emissions (where idle times can exceed 220 seconds during peak times).

The results of the analysis provide input for evaluating the overall benefit of the proposed MERGE project to the US 34 corridor. Since the current design is still preliminary, it should be noted that certain benefits and costs may change prior to final design, however these changes are anticipated to be relatively minor as initial cost estimates were made to be conservative.

General Assumptions

- All monetary values are discounted to the 2021 analysis year.
- The 20-year benefit period is based on a 2028 day-of-opening through the year 2047. Benefits are assumed to start January 1st, 2028 and end December 31st, 2047.
- Yearly Build and No-Build benefits are calculated based on linear interpolation over the 20-year analysis period.
- Longer travel times and rerouting of trips during construction years are not included in this analysis. Construction is anticipated to occur under traffic.
- Preliminary cost estimates were completed using unit costs for grading, base, and pavement. An appropriate risk factor given the early stage in the project development process was therefore used.
- General assumptions regarding the costs associated with project area collisions, vehicle operating costs, time costs, component service life, analysis period, and discount rates can be found in **Table D.13** of the **Appendix.**

Calculation of Benefits

Economic values for vehicle occupancy, travel time savings, operating costs, and emissions were obtained from the USDOT guidance: "Benefit-Cost Analysis for Discretionary Grant Programs". See **Table 2** for a summary of economic values that were used for this analysis. A 20-year analysis period beginning in 2028 and ending in 2047 was chosen for the benefit-cost evaluation with all values discounted to 2021 dollars.

Table 2. BCA Recommended Standard Values

Occupancy Rates		
Auto	1.67	
Truck	1.00	
Value of Travel Time Savings (per person-hour)		
Auto	$	17.80
Truck	$	32.00
Operating Cost (per mile)		
Auto	$	0.46
Truck	$	1.01

Travel Time Benefit

Delay benefit was calculated in terms of delay per person. Using USDOT's guidance of 1.67 persons per car and 1.0 persons per truck, delay was calculated by using these multipliers and the travel time reported in vehicle hours by SimTraffic. The economic costs of this delay were then quantified by using USDOT's suggested values for auto and truck travel time savings. The benefits derived from the build scenario for travel time are estimated at **$ $84,188,707** for the 47th Avenue interchange and **$99,115,731** for the 35th Avenue interchange at a 7 percent discount rate. 2028 and 2047 delay benefits can be seen in **Tables D.1.1** of the **Appendix** and a yearly breakdown of the benefit-cost analysis pertaining to delay can be found in **Table D.1.3** of the **Appendix.**

With the addition of the mobility hub and interchanges, the City conservatively estimates it will improve the average transit trip travel time by 20%. This is outlined in Greeley's Transportation Master Plan. The economic travel benefit was quantified using USDOT's suggested value for person travel time. The benefits derived from the build scenario for the Mobility Hub are estimated at **$35,562,276** at a 7% discount rate. 2028 and 2047 delay benefits can be seen in **Table D.12.1** of the **Appendix** and a yearly breakdown of the benefit-cost analysis pertaining to improved service can be found in **Table D.12.3** of the **Appendix.**

Operation and Maintenance Benefits

Roadway and utilities maintenance would be needed if the project does not happen. The City would mill and overlay the roadway and perform a chipseal treatment of the roadway. Historical pricing information for these maintenance activities were obtained from the City and it was assumed that each maintenance activity would occur 20 years after it was last completed. This resulted in the assumption that a mill and overlay for portions of 47th Avenue would occur in 2036 and 2039 and a chipseal treatment in 2031, as well as a mill and overlay for portions of 35th Avenue in 2028 and 2030 and a chipseal treatment in 2035.

The previous maintenance costs were inflated to reflect a probable cost for year of expenditure. This resulted in total discounted maintenance benefits of **$ $665,456** per intersection at a 7 percent rate. **Table D.5.3** of the **Appendix** show a yearly breakdown of the benefit-cost analysis for maintenance activities.

Safety Benefits

The methodology used to complete the crash analysis and corresponding benefit-cost ratio is described in the following paragraphs. Crash reduction within the project area was determined by separating intersections and segments so that factors and state averages could be applied appropriately. Crashes were obtained for a five-year period from 2017-2021. These collisions were then annualized, and reductions and additions of crashes were added appropriately relative to geometry reconfigurations.

By grade separating the two intersections along US 34, the vehicle conflict points will be decreased significantly. Crash modification factors were reviewed from the Highway Safety Manual (HSM) and the Crash Modification Factors (CMFs) Clearinghouse. Crash modification factors were used to determine the anticipated number of crashes after an improvement is made to an intersection or roadway. The Crash Modification Factors (CMF) for each improvement type are as follows:

- Converting an at-grade intersection to a grade separated interchange (CMF ID: 460)
  - Applied to all injury level crashes
    - CMF = 0.43
- Converting an at-grade intersection to a grade separated interchange (CMF ID: 461)
  - Applied to all property damage only (O) crashes
    - CMF = 0.64

A copy of the CMFs are included in the **Appendix**. After establishing no-build and build crashes for 2020 using the CMFs, forecasted 2028 and 2047 collisions were obtained by inflating numbers according to the expected AADT growth rate along US 34 for the no-build and build scenarios.

Table 3. KABCO Collision Values – 35th Avenue Interchange

Severity	Description	2028		2047	
		No-Build	Build	No-Build	Build
K	Fatal	0.0	0.0	0.0	0.0
ABC	Injuries	7.0	3.0	8.8	3.8
O	Property Damage Only	30.4	19.5	38	24.4
Total		**37.4**	**22.5**	**46.8**	**28.2**

Table 6. KABCO Collision Values - 47th Avenue Interchange

Severity	Description	2028		2047	
		No-Build	Build	No-Build	Build
K	Fatal	0.0	0.0	0.0	0.0
ABC	Injuries	6.2	2.7	7.8	3.4
O	Property Damage Only	24.2	15.5	30.3	19.4
Total		**30.4**	**18.2**	**38.1**	**22.8**

The USDOT's value of a statistical life (VSL) provided in the Benefit-Cost Analysis Guidance for Discretionary Grant Programs were used for the values of the crashes. A resulting benefit of **$2,730,553** was obtained for 35th Avenue and a benefit of **$2,363,552** was obtained for 47th Avenue for a 7 percent discount rate over the 20-year analysis period. A yearly breakdown of the benefit-cost analysis pertaining to this decrease in collisions can be seen in **Tables D.2** of the **Appendix**.

Transit Facility Amenities

The mobility hub will feature state-of-the-art technology and amenities to best serve users. To quantity the benefit that these amenities will have, the estimated number of users were multiplied by the monetized values of these amenities outlined in the Benefit-Cost Analysis Guidance for Discretionary Grant Programs, 2022. This resulted in a benefit of **$16,049,066** for a 7 percent discount rate over the 20-year analysis period. A yearly breakdown of the benefit-cost analysis pertaining to these added amenities can be seen in **Tables D.11** of the **Appendix**.

Public Health Benefit

Improved public health to the communities on both sides of the US 34 corridor is another benefit of the proposed project. This benefit was not quantified in terms of active transportation trips that are expected to be induced by the proposed Mobility Hub, but the improved pedestrian and bicycle facilities to the Mobility Hub and active transportation connectivity across US 34 will improve public health. The proposed MERGE project will improve active transportation connectivity through the following improvements:

- Providing a new non-motorized grade-separated crossing of US 34 (inclusive with Mobility Hub), currently one does not exist.
- Grade-separated pedestrian access at the Mobility Hub (pedestrian tunnel)
- Constructing grade-separated interchanges for 35th and 47th Avenues which will eliminate conflicts for pedestrians and vehicles from the US 34 corridor.
- ADA compliant facilities and parking
- Transit station access and connectivity to bus routes with a US 34 center median bus station.

Environmental Analysis

The proposed interchanges will not only decrease travel times but will also decrease greenhouse gas emissions due to less idling time for vehicles. Because the improvements will increase total vehicle miles traveled, a cost of **$136,592** for a 7 percent discount rate over the 20-year analysis period. A yearly breakdown of the benefit-cost analysis pertaining to these added amenities can be seen in **Tables D.4** of the **Appendix**.

Benefit-Cost Analysis Results

Tables D.6 of the **Appendix** show a yearly breakdown of design and construction costs for the project. See Table 7, Table 8, and Table 9 for a results summary of the benefit-cost analysis for the MERGE Project.

Table 7. Benefit-Cost Analysis Summary for 35th Avenue Interchange

Benefit-Cost Ratio		
	Benefit	**Cost**
Emissions	$ -	$ 201,884.22
Vehicle Operating	$ -	$ 3,692,909.13
Travel Time	$ 99,115,731.64	$ -
Safety	$ 2,730,553.28	$ -
Maintenance	$ *665,456.21*	$ -
Construction	$ -	$ *38,847,120.22*
Salvage Value	$ *3,000,829.28*	$ -
PV Total Benefit	***$ 102,511,741.13***	
PV Total Cost		***$ 42,741,913.58***
PV Total Cost-Salvage Value		***$ 39,741,084.30***
Benefit-Cost Ratio	**2.58**	

Table 8. Benefit-Cost Analysis Summary for 47th Avenue Interchange

Benefit-Cost Ratio		
	Benefit	**Cost**
Emissions	$ 65,291.85	$ -
Vehicle Operating	$ -	$ 4,335,296.32
Travel Time	$ 84,188,707.85	$ -
Safety	$ 2,363,552.26	$ -
Maintenance	$ *665,456.21*	$ -
Construction	$ -	$ *34,442,262.39*
Salvage Value	$ *3,099,005.08*	$ -
PV Total Benefit	***$ 87,283,008.16***	
PV Total Cost		***$ 38,777,558.71***
PV Total Cost-Salvage Value		***$ 35,678,553.64***
Benefit-Cost Ratio	**2.45**	

Table 9. Benefit-Cost Analysis Summary for the Mobility Hub

Benefit-Cost Ratio		
	Benefit	**Cost**
Transit Amenities	*$ 16,049,066.86*	*$ -*
Public Transit Travel Time	$ 19,513,209.70	$ -
Construction	*$ -*	*$ 18,986,530.88*
Salvage Value	*$ 1,491,025.75*	*$ -*
PV Total Benefit	***$ 35,562,276.56***	
PV Total Cost		***$ 18,986,530.88***
PV Total Cost-Salvage Value		***$ 17,495,505.13***
Benefit-Cost Ratio	**2.03**	

The analysis of the mobility hub and 35th Avenue and 47th Avenue proposed interchanges indicates that the build alternative has a benefit-cost ratio significantly greater than 1.0, meaning that each are economically beneficial projects. The benefits of the project are estimated to be higher than the costs associated with the construction of the project. A more complete breakdown of both the project costs and benefits can be found in **Appendix D.**

Resources Used

"Benefit-Cost Analysis Guidance for Discretionary Grant Programs." Office of the Secretary. U.S. Department of Transportation, https://www.transportation.gov/sites/dot.gov/files/2021-02/Benefit%20Cost%20Analysis%20Guidance%202021.pdf

"Highway Safety Manual" Washington D.C. American Association of State Highway and Transportation Officials. 2010. Book

"Crash Modification Factors Clearinghouse." *Safety Research Center*, U.S. Department of Transportation Federal Highway Administration, http://www.cmfclearinghouse.org/

Appendix

Table D.A.1.1 35th Ave Interchange Travel Time Benefit

Year	Project Year	Travel Time Cost					
		At-Grade Intersection (Existing)			Interchange (Proposed)		
		Light Vehicle	Heavy Vehicle	Total	Light Vehicle	Heavy Vehicle	Total
2021	-8	$ -	$ -	$ -	$ -	$ -	$ -
2022	-7	$ -	$ -	$ -	$ -	$ -	$ -
2023	-6	$ -	$ -	$ -	$ -	$ -	$ -
2024	-5	$ -	$ -	$ -	$ -	$ -	$ -
2025	-4	$ -	$ -	$ -	$ -	$ -	$ -
2026	-3	$ -	$ -	$ -	$ -	$ -	$ -
2027	-2	$ -	$ -	$ -	$ -	$ -	$ -
2028	-1	$ 58,306,859.66	$ 1,305,107.37	***$ 59,611,967.03***	$ 58,202,030.41	$ 1,302,760.93	***$ 59,504,791.35***
2029	0	$ 61,088,178.97	$ 1,367,362.83	***$ 62,455,541.80***	$ 59,120,614.29	$ 1,323,321.99	***$ 60,443,936.28***
2030	1	$ 63,869,498.27	$ 1,429,618.29	***$ 65,299,116.56***	$ 60,039,198.16	$ 1,343,883.04	***$ 61,383,081.21***
2031	2	$ 66,650,817.58	$ 1,491,873.75	***$ 68,142,691.33***	$ 60,957,782.04	$ 1,364,444.10	***$ 62,322,226.14***
2032	3	$ 69,432,136.89	$ 1,554,129.21	***$ 70,986,266.09***	$ 61,876,365.91	$ 1,385,005.16	***$ 63,261,371.07***
2033	4	$ 72,213,456.19	$ 1,616,384.67	***$ 73,829,840.86***	$ 62,794,949.79	$ 1,405,566.21	***$ 64,200,516.00***
2034	5	$ 74,994,775.50	$ 1,678,640.13	***$ 76,673,415.63***	$ 63,713,533.66	$ 1,426,127.27	***$ 65,139,660.93***
2035	6	$ 77,776,094.81	$ 1,740,895.59	***$ 79,516,990.39***	$ 64,632,117.54	$ 1,446,688.32	***$ 66,078,805.86***
2036	7	$ 80,557,414.11	$ 1,803,151.04	***$ 82,360,565.16***	$ 65,550,701.41	$ 1,467,249.38	***$ 67,017,950.79***
2037	8	$ 83,338,733.42	$ 1,865,406.50	***$ 85,204,139.92***	$ 66,469,285.29	$ 1,487,810.43	***$ 67,957,095.72***
2038	9	$ 86,120,052.73	$ 1,927,661.96	***$ 88,047,714.69***	$ 67,387,869.16	$ 1,508,371.49	***$ 68,896,240.65***
2039	10	$ 88,901,372.03	$ 1,989,917.42	***$ 90,891,289.46***	$ 68,306,453.04	$ 1,528,932.54	***$ 69,835,385.58***
2040	11	$ 91,682,691.34	$ 2,052,172.88	***$ 93,734,864.22***	$ 69,225,036.91	$ 1,549,493.60	***$ 70,774,530.51***
2041	12	$ 94,464,010.65	$ 2,114,428.34	***$ 96,578,438.99***	$ 70,143,620.79	$ 1,570,054.66	***$ 71,713,675.44***
2042	13	$ 97,245,329.95	$ 2,176,683.80	***$ 99,422,013.75***	$ 71,062,204.66	$ 1,590,615.71	***$ 72,652,820.37***
2043	14	$ 100,026,649.26	$ 2,238,939.26	***$ 102,265,588.52***	$ 71,980,788.54	$ 1,611,176.77	***$ 73,591,965.30***
2044	15	$ 102,807,968.57	$ 2,301,194.72	***$ 105,109,163.29***	$ 72,899,372.41	$ 1,631,737.82	***$ 74,531,110.23***
2045	16	$ 105,589,287.87	$ 2,363,450.18	***$ 107,952,738.05***	$ 73,817,956.29	$ 1,652,298.88	***$ 75,470,255.16***
2046	17	$ 108,370,607.18	$ 2,425,705.64	***$ 110,796,312.82***	$ 74,736,540.16	$ 1,672,859.93	***$ 76,409,400.09***
2047	18	$ 111,151,926.49	$ 2,487,961.10	***$ 113,639,887.58***	$ 75,655,124.03	$ 1,693,420.99	***$ 77,348,545.02***
			Total:	$ 1,732,518,546.13			$ 1,368,533,363.70

Table D.A.1.2 35th Ave Interchange Travel Time Benefit

Year	Project Year	Undiscounted Travel Time Benefit					
		At-Grade Intersection (Existing)			Interchange (Proposed)		
		Light Vehicle	Heavy Vehicle	Total	Light Vehicle	Heavy Vehicle	Total
2021	-8	$ -	$ -	$ -	$ -	$ -	$ -
2022	-7	$ -	$ -	$ -	$ -	$ -	$ -
2023	-6	$ -	$ -	$ -	$ -	$ -	$ -
2024	-5	$ -	$ -	$ -	$ -	$ -	$ -
2025	-4	$ -	$ -	$ -	$ -	$ -	$ -
2026	-3	$ -	$ -	$ -	$ -	$ -	$ -
2027	-2	$ -	$ -	$ -	$ -	$ -	$ -
2028	-1	$ -	$ -	$ -	$ 104,829.25	$ 2,346.44	$ 107,175.68
2029	0	$ -	$ -	$ -	$ 1,967,564.68	$ 44,040.84	$ 2,011,605.52
2030	1	$ -	$ -	$ -	$ 3,830,300.11	$ 85,735.25	$ 3,916,035.36
2031	2	$ -	$ -	$ -	$ 5,693,035.54	$ 127,429.65	$ 5,820,465.19
2032	3	$ -	$ -	$ -	$ 7,555,770.97	$ 169,124.05	$ 7,724,895.03
2033	4	$ -	$ -	$ -	$ 9,418,506.41	$ 210,818.46	$ 9,629,324.86
2034	5	$ -	$ -	$ -	$ 11,281,241.84	$ 252,512.86	$ 11,533,754.70
2035	6	$ -	$ -	$ -	$ 13,143,977.27	$ 294,207.26	$ 13,438,184.53
2036	7	$ -	$ -	$ -	$ 15,006,712.70	$ 335,901.67	$ 15,342,614.37
2037	8	$ -	$ -	$ -	$ 16,869,448.13	$ 377,596.07	$ 17,247,044.20
2038	9	$ -	$ -	$ -	$ 18,732,183.56	$ 419,290.47	$ 19,151,474.04
2039	10	$ -	$ -	$ -	$ 20,594,919.00	$ 460,984.88	$ 21,055,903.87
2040	11	$ -	$ -	$ -	$ 22,457,654.43	$ 502,679.28	$ 22,960,333.71
2041	12	$ -	$ -	$ -	$ 24,320,389.86	$ 544,373.69	$ 24,864,763.55
2042	13	$ -	$ -	$ -	$ 26,183,125.29	$ 586,068.09	$ 26,769,193.38
2043	14	$ -	$ -	$ -	$ 28,045,860.72	$ 627,762.49	$ 28,673,623.22
2044	15	$ -	$ -	$ -	$ 29,908,596.16	$ 669,456.90	$ 30,578,053.05
2045	16	$ -	$ -	$ -	$ 31,771,331.59	$ 711,151.30	$ 32,482,482.89
2046	17	$ -	$ -	$ -	$ 33,634,067.02	$ 752,845.70	$ 34,386,912.72
2047	18	$ -	$ -	$ -	$ 35,496,802.45	$ 794,540.11	$ 36,291,342.56
			Total:	$ -			$ 363,985,182.43

Base Year For Discounting	2021
Travel Time Discount Rate	7%

Table D.A.1.3 35th Ave Interchange Travel Time Benefit

Year	Project Year	Analysis Period	PV Travel Time Benefit					
			At-Grade Intersection (Existing)			Interchange (Proposed)		
			Light Vehicle	Heavy Vehicle	Total	Light Vehicle	Heavy Vehicle	Total
2021	-8	27	$ -	$ -	$ -	$ -	$ -	$ -
2022	-7	26	$ -	$ -	$ -	$ -	$ -	$ -
2023	-6	25	$ -	$ -	$ -	$ -	$ -	$ -
2024	-5	24	$ -	$ -	$ -	$ -	$ -	$ -
2025	-4	23	$ -	$ -	$ -	$ -	$ -	$ -
2026	-3	22	$ -	$ -	$ -	$ -	$ -	$ -
2027	-2	21	$ -	$ -	$ -	$ -	$ -	$ -
2028	-1	20	$ -	$ -	$ -	$ 65,282.39	$ 1,461.24	$ 66,743.63
2029	0	19	$ -	$ -	$ -	$ 1,145,140.56	$ 25,632.17	$ 1,170,772.73
2030	1	18	$ -	$ -	$ -	$ 2,083,429.47	$ 46,634.29	$ 2,130,063.77
2031	2	17	$ -	$ -	$ -	$ 2,894,050.59	$ 64,778.77	$ 2,958,829.36
2032	3	16	$ -	$ -	$ -	$ 3,589,692.36	$ 80,349.62	$ 3,670,041.98
2033	4	15	$ -	$ -	$ -	$ 4,181,929.48	$ 93,605.92	$ 4,275,535.40
2034	5	14	$ -	$ -	$ -	$ 4,681,314.29	$ 104,783.86	$ 4,786,098.15
2035	6	13	$ -	$ -	$ -	$ 5,097,461.00	$ 114,098.65	$ 5,211,559.65
2036	7	12	$ -	$ -	$ -	$ 5,439,123.29	$ 121,746.22	$ 5,560,869.51
2037	8	11	$ -	$ -	$ -	$ 5,714,265.73	$ 127,904.85	$ 5,842,170.58
2038	9	10	$ -	$ -	$ -	$ 5,930,129.59	$ 132,736.63	$ 6,062,866.22
2039	10	9	$ -	$ -	$ -	$ 6,093,293.39	$ 136,388.79	$ 6,229,682.18
2040	11	8	$ -	$ -	$ -	$ 6,209,728.59	$ 138,995.01	$ 6,348,723.60
2041	12	7	$ -	$ -	$ -	$ 6,284,850.90	$ 140,676.50	$ 6,425,527.40
2042	13	6	$ -	$ -	$ -	$ 6,323,567.41	$ 141,543.11	$ 6,465,110.52
2043	14	5	$ -	$ -	$ -	$ 6,330,319.99	$ 141,694.26	$ 6,472,014.25
2044	15	4	$ -	$ -	$ -	$ 6,309,125.14	$ 141,219.85	$ 6,450,344.99
2045	16	3	$ -	$ -	$ -	$ 6,263,610.63	$ 140,201.08	$ 6,403,811.71
2046	17	2	$ -	$ -	$ -	$ 6,197,049.19	$ 138,711.20	$ 6,335,760.39
2047	18	1	$ -	$ -	$ -	$ 6,112,389.40	$ 136,816.23	$ 6,249,205.62
				Total:	$ -			$ 99,115,731.64

Table D.A.2.1 35th Ave Interchange Collision Reduction Benefit

		Collision Cost	
Year	Project Year	At-Grade Intersection (Existing)	Interchange (Proposed)
2021	-8	$ -	$ -
2022	-7	$ -	$ -
2023	-6	$ -	$ -
2024	-5	$ -	$ -
2025	-4	$ -	$ -
2026	-3	$ -	$ -
2027	-2	$ -	$ -
2028	-1	$ 695,420.00	$ 322,216.34
2029	0	$ 698,729.05	$ 323,666.26
2030	1	$ 702,038.09	$ 325,116.18
2031	2	$ 705,347.14	$ 326,566.09
2032	3	$ 708,656.19	$ 328,016.01
2033	4	$ 711,965.23	$ 329,465.93
2034	5	$ 715,274.28	$ 330,915.85
2035	6	$ 718,583.33	$ 332,365.77
2036	7	$ 721,892.37	$ 333,815.69
2037	8	$ 725,201.42	$ 335,265.61
2038	9	$ 728,510.47	$ 336,715.52
2039	10	$ 731,819.51	$ 338,165.44
2040	11	$ 735,128.56	$ 339,615.36
2041	12	$ 738,437.61	$ 341,065.28
2042	13	$ 741,746.65	$ 342,515.20
2043	14	$ 745,055.70	$ 343,965.12
2044	15	$ 748,364.75	$ 345,415.04
2045	16	$ 751,673.79	$ 346,864.95
2046	17	$ 754,982.84	$ 348,314.87
2047	18	$ 758,291.89	$ 349,764.79
	Total:	$ 14,537,118.88	$ 6,719,811.30

Table D.A.2.2 35th Ave Interchange Collision Reduction Benefit

		Undiscounted Collision Benefit	
Year	Project Year	At-Grade Intersection (Existing)	Interchange (Proposed)
2021	-8	$ -	$ -
2022	-7	$ -	$ -
2023	-6	$ -	$ -
2024	-5	$ -	$ -
2025	-4	$ -	$ -
2026	-3	$ -	$ -
2027	-2	$ -	$ -
2028	-1	$ -	$ 373,203.66
2029	0	$ -	$ 375,062.79
2030	1	$ -	$ 376,921.92
2031	2	$ -	$ 378,781.05
2032	3	$ -	$ 380,640.17
2033	4	$ -	$ 382,499.30
2034	5	$ -	$ 384,358.43
2035	6	$ -	$ 386,217.56
2036	7	$ -	$ 388,076.69
2037	8	$ -	$ 389,935.81
2038	9	$ -	$ 391,794.94
2039	10	$ -	$ 393,654.07
2040	11	$ -	$ 395,513.20
2041	12	$ -	$ 397,372.33
2042	13	$ -	$ 399,231.46
2043	14	$ -	$ 401,090.58
2044	15	$ -	$ 402,949.71
2045	16	$ -	$ 404,808.84
2046	17	$ -	$ 406,667.97
2047	18	$ -	$ 408,527.10
	Total:	$ -	$ 7,817,307.58

Base Year For Discounting		2021	**Table D.A.2.3** 35th Ave Interchange Collision Reduction Benefit	
Safety Discount Rate		7%	**PV Collision Benefit**	
Year	**Project Year**	**Analysis Period**	**At-Grade Intersection (Existing)**	**Interchange (Proposed)**
2021	-8	27	$ -	$ -
2022	-7	26	$ -	$ -
2023	-6	25	$ -	$ -
2024	-5	24	$ -	$ -
2025	-4	23	$ -	$ -
2026	-3	22	$ -	$ -
2027	-2	21	$ -	$ -
2028	-1	20	$ -	**$ 232,412.48**
2029	0	19	$ -	**$ 218,289.96**
2030	1	18	$ -	**$ 205,020.55**
2031	2	17	$ -	**$ 192,553.08**
2032	3	16	$ -	**$ 180,839.40**
2033	4	15	$ -	**$ 169,834.26**
2034	5	14	$ -	**$ 159,495.08**
2035	6	13	$ -	**$ 149,781.83**
2036	7	12	$ -	**$ 140,656.85**
2037	8	11	$ -	**$ 132,084.75**
2038	9	10	$ -	**$ 124,032.25**
2039	10	9	$ -	**$ 116,468.04**
2040	11	8	$ -	**$ 109,362.70**
2041	12	7	$ -	**$ 102,688.56**
2042	13	6	$ -	**$ 96,419.62**
2043	14	5	$ -	**$ 90,531.43**
2044	15	4	$ -	**$ 85,000.99**
2045	16	3	$ -	**$ 79,806.69**
2046	17	2	$ -	**$ 74,928.24**
2047	18	1	$ -	**$ 70,346.52**
		Total:	$ -	$ 2,730,553.28

Table D.A.3.1 35th Ave Interchange Vehicle Operating Benefit

Year	Project Year	Vehicle Operating Cost					
		At-Grade Intersection (Existing)			Interchange (Proposed)		
		Light Vehicle	Heavy Vehicle	Total	Light Vehicle	Heavy Vehicle	Total
2021	-8	$ -	$ -	***$ -***	$ -	$ -	***$ -***
2022	-7	$ -	$ -	***$ -***	$ -	$ -	***$ -***
2023	-6	$ -	$ -	***$ -***	$ -	$ -	***$ -***
2024	-5	$ -	$ -	***$ -***	$ -	$ -	***$ -***
2025	-4	$ -	$ -	***$ -***	$ -	$ -	***$ -***
2026	-3	$ -	$ -	***$ -***	$ -	$ -	***$ -***
2027	-2	$ -	$ -	***$ -***	$ -	$ -	***$ -***
2028	-1	$ 18,943,630.61	$ 848,849.46	***$ 19,792,480.08***	$ 19,233,162.11	$ 861,823.15	***$ 20,094,985.26***
2029	0	$ 19,009,533.05	$ 851,802.50	***$ 19,861,335.55***	$ 19,327,926.66	$ 866,069.47	***$ 20,193,996.13***
2030	1	$ 19,075,435.48	$ 854,755.54	***$ 19,930,191.01***	$ 19,422,691.20	$ 870,315.80	***$ 20,293,007.00***
2031	2	$ 19,141,337.91	$ 857,708.58	***$ 19,999,046.48***	$ 19,517,455.74	$ 874,562.12	***$ 20,392,017.86***
2032	3	$ 19,207,240.34	$ 860,661.61	***$ 20,067,901.95***	$ 19,612,220.28	$ 878,808.45	***$ 20,491,028.73***
2033	4	$ 19,273,142.77	$ 863,614.65	***$ 20,136,757.42***	$ 19,706,984.82	$ 883,054.78	***$ 20,590,039.60***
2034	5	$ 19,339,045.20	$ 866,567.69	***$ 20,205,612.89***	$ 19,801,749.36	$ 887,301.10	***$ 20,689,050.46***
2035	6	$ 19,404,947.63	$ 869,520.72	***$ 20,274,468.36***	$ 19,896,513.90	$ 891,547.43	***$ 20,788,061.33***
2036	7	$ 19,470,850.06	$ 872,473.76	***$ 20,343,323.82***	$ 19,991,278.44	$ 895,793.75	***$ 20,887,072.20***
2037	8	$ 19,536,752.49	$ 875,426.80	***$ 20,412,179.29***	$ 20,086,042.98	$ 900,040.08	***$ 20,986,083.06***
2038	9	$ 19,602,654.93	$ 878,379.83	***$ 20,481,034.76***	$ 20,180,807.52	$ 904,286.41	***$ 21,085,093.93***
2039	10	$ 19,668,557.36	$ 881,332.87	***$ 20,549,890.23***	$ 20,275,572.06	$ 908,532.73	***$ 21,184,104.80***
2040	11	$ 19,734,459.79	$ 884,285.91	***$ 20,618,745.70***	$ 20,370,336.61	$ 912,779.06	***$ 21,283,115.66***
2041	12	$ 19,800,362.22	$ 887,238.95	***$ 20,687,601.16***	$ 20,465,101.15	$ 917,025.38	***$ 21,382,126.53***
2042	13	$ 19,866,264.65	$ 890,191.98	***$ 20,756,456.63***	$ 20,559,865.69	$ 921,271.71	***$ 21,481,137.40***
2043	14	$ 19,932,167.08	$ 893,145.02	***$ 20,825,312.10***	$ 20,654,630.23	$ 925,518.04	***$ 21,580,148.26***
2044	15	$ 19,998,069.51	$ 896,098.06	***$ 20,894,167.57***	$ 20,749,394.77	$ 929,764.36	***$ 21,679,159.13***
2045	16	$ 20,063,971.94	$ 899,051.09	***$ 20,963,023.04***	$ 20,844,159.31	$ 934,010.69	***$ 21,778,170.00***
2046	17	$ 20,129,874.37	$ 902,004.13	***$ 21,031,878.51***	$ 20,938,923.85	$ 938,257.01	***$ 21,877,180.87***
2047	18	$ 20,195,776.81	$ 904,957.17	***$ 21,100,733.97***	$ 21,033,688.39	$ 942,503.34	***$ 21,976,191.73***
			Total:	$ 408,932,140.52			$ 420,711,769.94

Table D.A.3.2 35th Ave Interchange Vehicle Operating Benefit

Year	Project Year	Undiscounted Vehicle Operating Cost					
		At-Grade Intersection (Existing)			Interchange (Proposed)		
		Light Vehicle	Heavy Vehicle	Total	Light Vehicle	Heavy Vehicle	Total
2021	-8	$ -	$ -	***$ -***	$ -	$ -	***$ -***
2022	-7	$ -	$ -	***$ -***	$ -	$ -	***$ -***
2023	-6	$ -	$ -	***$ -***	$ -	$ -	***$ -***
2024	-5	$ -	$ -	***$ -***	$ -	$ -	***$ -***
2025	-4	$ -	$ -	***$ -***	$ -	$ -	***$ -***
2026	-3	$ -	$ -	***$ -***	$ -	$ -	***$ -***
2027	-2	$ -	$ -	***$ -***	$ -	$ -	***$ -***
2028	-1	$ (289,531.50)	$ (12,973.68)	***$ (302,505.18)***	$ -	$ -	***$ -***
2029	0	$ (318,393.61)	$ (14,266.97)	***$ (332,660.58)***	$ -	$ -	***$ -***
2030	1	$ (347,255.72)	$ (15,560.26)	***$ (362,815.98)***	$ -	$ -	***$ -***
2031	2	$ (376,117.83)	$ (16,853.55)	***$ (392,971.38)***	$ -	$ -	***$ -***
2032	3	$ (404,979.94)	$ (18,146.84)	***$ (423,126.78)***	$ -	$ -	***$ -***
2033	4	$ (433,842.05)	$ (19,440.13)	***$ (453,282.18)***	$ -	$ -	***$ -***
2034	5	$ (462,704.16)	$ (20,733.42)	***$ (483,437.58)***	$ -	$ -	***$ -***
2035	6	$ (491,566.27)	$ (22,026.71)	***$ (513,592.97)***	$ -	$ -	***$ -***
2036	7	$ (520,428.38)	$ (23,319.99)	***$ (543,748.37)***	$ -	$ -	***$ -***
2037	8	$ (549,290.49)	$ (24,613.28)	***$ (573,903.77)***	$ -	$ -	***$ -***
2038	9	$ (578,152.60)	$ (25,906.57)	***$ (604,059.17)***	$ -	$ -	***$ -***
2039	10	$ (607,014.71)	$ (27,199.86)	***$ (634,214.57)***	$ -	$ -	***$ -***
2040	11	$ (635,876.82)	$ (28,493.15)	***$ (664,369.97)***	$ -	$ -	***$ -***
2041	12	$ (664,738.93)	$ (29,786.44)	***$ (694,525.37)***	$ -	$ -	***$ -***
2042	13	$ (693,601.04)	$ (31,079.73)	***$ (724,680.76)***	$ -	$ -	***$ -***
2043	14	$ (722,463.15)	$ (32,373.02)	***$ (754,836.16)***	$ -	$ -	***$ -***
2044	15	$ (751,325.26)	$ (33,666.30)	***$ (784,991.56)***	$ -	$ -	***$ -***
2045	16	$ (780,187.37)	$ (34,959.59)	***$ (815,146.96)***	$ -	$ -	***$ -***
2046	17	$ (809,049.48)	$ (36,252.88)	***$ (845,302.36)***	$ -	$ -	***$ -***
2047	18	$ (837,911.59)	$ (37,546.17)	***$ (875,457.76)***	$ -	$ -	***$ -***
			Total:	$ (11,779,629.42)			$ -

Base Year For Discounting	2021
Vehicle Operating Costs Discount Rate	7%

Table D.A.3.3 35th Ave Interchange Vehicle Operating Benefit

Year	Project Year	Analysis Period	PV Vehicle Operating Cost					
			At-Grade Intersection (Existing)			Interchange (Proposed)		
			Light Vehicle	Heavy Vehicle	Total	Light Vehicle	Heavy Vehicle	Total
2021	-8	27	$ -	$ -	$ -	$ -	$ -	$ -
2022	-7	26	$ -	$ -	$ -	$ -	$ -	$ -
2023	-6	25	$ -	$ -	$ -	$ -	$ -	$ -
2024	-5	24	$ -	$ -	$ -	$ -	$ -	$ -
2025	-4	23	$ -	$ -	$ -	$ -	$ -	$ -
2026	-3	22	$ -	$ -	$ -	$ -	$ -	$ -
2027	-2	21	$ -	$ -	$ -	$ -	$ -	$ -
2028	-1	20	$ (180,305.67)	$ (8,079.36)	$ ***(188,385.03)***	$ -	$ -	$ -
2029	0	19	$ (185,307.98)	$ (8,303.51)	$ ***(193,611.49)***	$ -	$ -	$ -
2030	1	18	$ (188,884.10)	$ (8,463.75)	$ ***(197,347.85)***	$ -	$ -	$ -
2031	2	17	$ (191,199.23)	$ (8,567.49)	$ ***(199,766.72)***	$ -	$ -	$ -
2032	3	16	$ (192,403.05)	$ (8,621.43)	$ ***(201,024.48)***	$ -	$ -	$ -
2033	4	15	$ (192,631.06)	$ (8,631.65)	$ ***(201,262.71)***	$ -	$ -	$ -
2034	5	14	$ (192,005.78)	$ (8,603.63)	$ ***(200,609.41)***	$ -	$ -	$ -
2035	6	13	$ (190,637.87)	$ (8,542.34)	$ ***(199,180.21)***	$ -	$ -	$ -
2036	7	12	$ (188,627.19)	$ (8,452.24)	$ ***(197,079.43)***	$ -	$ -	$ -
2037	8	11	$ (186,063.69)	$ (8,337.37)	$ ***(194,401.06)***	$ -	$ -	$ -
2038	9	10	$ (183,028.31)	$ (8,201.36)	$ ***(191,229.66)***	$ -	$ -	$ -
2039	10	9	$ (179,593.75)	$ (8,047.46)	$ ***(187,641.21)***	$ -	$ -	$ -
2040	11	8	$ (175,825.24)	$ (7,878.59)	$ ***(183,703.83)***	$ -	$ -	$ -
2041	12	7	$ (171,781.17)	$ (7,697.38)	$ ***(179,478.55)***	$ -	$ -	$ -
2042	13	6	$ (167,513.73)	$ (7,506.16)	$ ***(175,019.89)***	$ -	$ -	$ -
2043	14	5	$ (163,069.44)	$ (7,307.02)	$ ***(170,376.46)***	$ -	$ -	$ -
2044	15	4	$ (158,489.72)	$ (7,101.80)	$ ***(165,591.52)***	$ -	$ -	$ -
2045	16	3	$ (153,811.30)	$ (6,892.17)	$ ***(160,703.47)***	$ -	$ -	$ -
2046	17	2	$ (149,066.70)	$ (6,679.56)	$ ***(155,746.26)***	$ -	$ -	$ -
2047	18	1	$ (144,284.60)	$ (6,465.28)	$ ***(150,749.88)***	$ -	$ -	$ -
				Total:	$ (3,692,909.13)			$ -

Table D.A.4.1 35th Ave Interchange Emissions Reduction Benefit

		Emissions Cost	
Year	Project Year	At-Grade Intersection (Existing)	Interchange (Proposed)
2021	-8	$ -	$ -
2022	-7	$ -	$ -
2023	-6	$ -	$ -
2024	-5	$ -	$ -
2025	-4	$ -	$ -
2026	-3	$ -	$ -
2027	-2	$ -	$ -
2028	-1	**$ 2,347,418.14**	**$ 2,446,941.61**
2029	0	**$ 2,410,244.18**	**$ 2,512,936.22**
2030	1	**$ 2,480,560.82**	**$ 2,585,608.71**
2031	2	**$ 2,512,691.97**	**$ 2,618,212.06**
2032	3	**$ 2,545,281.15**	**$ 2,651,048.22**
2033	4	**$ 2,578,328.36**	**$ 2,684,117.20**
2034	5	**$ 2,611,833.62**	**$ 2,717,418.99**
2035	6	**$ 2,645,796.91**	**$ 2,750,953.59**
2036	7	**$ 2,695,985.11**	**$ 2,799,524.00**
2037	8	**$ 2,731,093.50**	**$ 2,833,640.63**
2038	9	**$ 2,766,659.92**	**$ 2,867,990.08**
2039	10	**$ 2,802,684.37**	**$ 2,902,572.34**
2040	11	**$ 2,839,166.86**	**$ 2,937,387.41**
2041	12	**$ 2,893,019.36**	**$ 2,987,820.33**
2042	13	**$ 2,930,646.95**	**$ 3,023,217.43**
2043	14	**$ 2,968,732.57**	**$ 3,058,847.35**
2044	15	**$ 3,007,276.22**	**$ 3,094,710.08**
2045	16	**$ 3,046,277.92**	**$ 3,130,805.63**
2046	17	**$ 3,103,794.71**	**$ 3,183,101.04**
2047	18	**$ 3,143,941.50**	**$ 3,219,778.62**
	Total:	$ 55,061,434.14	$ 57,006,631.55
			$ 1,945,197.41

Table D.A.4.2 35th Ave Interchange Emissions Reduction Benefit

		Undiscounted Emission Cost	
Year	Project Year	At-Grade Intersection (Existing)	Interchange (Proposed)
2021	-8	$ -	$ -
2022	-7	$ -	$ -
2023	-6	$ -	$ -
2024	-5	$ -	$ -
2025	-4	$ -	$ -
2026	-3	$ -	$ -
2027	-2	$ -	$ -
2028	-1	**$ (99,523.47)**	$ -
2029	0	**$ (102,692.04)**	$ -
2030	1	**$ (105,047.89)**	$ -
2031	2	**$ (105,520.09)**	$ -
2032	3	**$ (105,767.08)**	$ -
2033	4	**$ (105,788.83)**	$ -
2034	5	**$ (105,585.37)**	$ -
2035	6	**$ (105,156.68)**	$ -
2036	7	**$ (103,538.88)**	$ -
2037	8	**$ (102,547.13)**	$ -
2038	9	**$ (101,330.16)**	$ -
2039	10	**$ (99,887.97)**	$ -
2040	11	**$ (98,220.55)**	$ -
2041	12	**$ (94,800.96)**	$ -
2042	13	**$ (92,570.48)**	$ -
2043	14	**$ (90,114.78)**	$ -
2044	15	**$ (87,433.86)**	$ -
2045	16	**$ (84,527.71)**	$ -
2046	17	**$ (79,306.33)**	$ -
2047	18	**$ (75,837.13)**	$ -
	Total:	$ (1,945,197.41)	$ -
			$ (1,945,197.41)

Base Year For Discounting	2021

Table D.A.4.3 35th Ave Interchange Emissions Reduction Benefit

Discount Rate Varies Depending on Emission Type			PV Emission Cost	
Year	**Project Year**	**Analysis Period**	**At-Grade Intersection (Existing)**	**Interchange (Proposed)**
2021	-8	27	$ -	$ -
2022	-7	26	$ -	$ -
2023	-6	25	$ -	$ -
2024	-5	24	$ -	$ -
2025	-4	23	$ -	$ -
2026	-3	22	$ -	$ -
2027	-2	21	$ -	$ -
2028	-1	20	$ **(61,234.84)**	$ -
2029	0	19	$ **(57,473.24)**	$ -
2030	1	18	$ **(52,971.10)**	$ -
2031	2	17	$ **(47,404.54)**	$ -
2032	3	16	$ **(41,740.98)**	$ -
2033	4	15	$ **(36,014.99)**	$ -
2034	5	14	$ **(30,257.44)**	$ -
2035	6	13	$ **(24,495.82)**	$ -
2036	7	12	$ **(18,135.85)**	$ -
2037	8	11	$ **(12,384.34)**	$ -
2038	9	10	$ **(6,697.34)**	$ -
2039	10	9	$ **(1,091.37)**	$ -
2040	11	8	$ -	$ **4,419.16**
2041	12	7	$ -	$ **10,667.21**
2042	13	6	$ -	$ **15,987.10**
2043	14	5	$ -	$ **21,176.39**
2044	15	4	$ -	$ **26,227.54**
2045	16	3	$ -	$ **31,134.24**
2046	17	2	$ -	$ **36,889.62**
2047	18	1	$ -	$ **41,516.36**
		Total:	$ (389,901.84)	$ 188,017.62
				$ (201,884.22)

Table D.A.5.1 35th Ave Interchange Maintenance Benefit

		Uninflated Maintenance Cost	
Year	Project Year	At-Grade Intersection (Existing)	Interchange (Proposed)
2021	-8	$ -	$ -
2022	-7	$ -	$ -
2023	-6	$ -	$ -
2024	-5	$ -	$ -
2025	-4	$ -	$ -
2026	-3	$ -	$ -
2027	-2	**$ 396,284.62**	$ -
2028	-1	$ -	$ -
2029	0	**$ 399,868.90**	$ -
2030	1	$ -	$ -
2031	2	$ -	$ -
2032	3	$ -	$ -
2033	4	$ -	$ -
2034	5	**$ 97,160.04**	$ -
2035	6	$ -	$ -
2036	7	$ -	$ -
2037	8	$ -	$ -
2038	9	$ -	$ -
2039	10	$ -	$ -
2040	11	$ -	$ -
2041	12	$ -	$ -
2042	13	$ -	$ -
2043	14	$ -	$ -
2044	15	$ -	$ -
2045	16	$ -	$ -
2046	17	$ -	$ -
2047	18	$ -	$ -
	Total:	$ 893,313.56	$ -

Current Year	2023
Inflation Rate	4%

Table D.A.5.2 35th Ave Interchange Maintenance Bene

		Inflated (to Current Year) Maintenance Cost	
Year	Project Year	At-Grade Intersection (Existing)	Interchange (Proposed)
2021	-8	$ -	$ -
2022	-7	$ -	$ -
2023	-6	$ -	$ -
2024	-5	$ -	$ -
2025	-4	$ -	$ -
2026	-3	$ -	$ -
2027	-2	**$ 463,596.95**	$ -
2028	-1	$ -	$ -
2029	0	**$ 505,961.72**	$ -
2030	1	$ -	$ -
2031	2	$ -	$ -
2032	3	$ -	$ -
2033	4	$ -	$ -
2034	5	**$ 149,573.42**	$ -
2035	6	$ -	$ -
2036	7	$ -	$ -
2037	8	$ -	$ -
2038	9	$ -	$ -
2039	10	$ -	$ -
2040	11	$ -	$ -
2041	12	$ -	$ -
2042	13	$ -	$ -
2043	14	$ -	$ -
2044	15	$ -	$ -
2045	16	$ -	$ -
2046	17	$ -	$ -
2047	18	$ -	$ -
	Total:	$ 1,119,132.10	$ -

fit

Table D.A.5.3 35th Ave Interchange Maintenance Benefit

		Undiscounted Maintenance Benefit	
Year	**Project Year**	**At-Grade Intersection (Existing)**	**Interchange (Proposed)**
2021	-8	$ -	$ -
2022	-7	$ -	$ -
2023	-6	$ -	$ -
2024	-5	$ -	$ -
2025	-4	$ -	$ -
2026	-3	$ -	$ -
2027	-2	$ -	$ **463,596.95**
2028	-1	$ -	$ -
2029	0	$ -	$ **505,961.72**
2030	1	$ -	$ -
2031	2	$ -	$ -
2032	3	$ -	$ -
2033	4	$ -	$ -
2034	5	$ -	$ **149,573.42**
2035	6	$ -	$ -
2036	7	$ -	$ -
2037	8	$ -	$ -
2038	9	$ -	$ -
2039	10	$ -	$ -
2040	11	$ -	$ -
2041	12	$ -	$ -
2042	13	$ -	$ -
2043	14	$ -	$ -
2044	15	$ -	$ -
2045	16	$ -	$ -
2046	17	$ -	$ -
2047	18	$ -	$ -
	Total:	$ -	$ 1,119,132.10

Base Year For Discounting	2021
Maintenance Discount Rate	7%

Table D.A.5.4 35th Ave Interchange Maintenance Benefit

			PV Maintenance Benefit	
Year	**Project Year**	**Analysis Period**	**At-Grade Intersection (Existing)**	**Interchange (Proposed)**
2021	-8	27	$ -	$ -
2022	-7	26	$ -	$ -
2023	-6	25	$ -	$ -
2024	-5	24	$ -	$ -
2025	-4	23	$ -	$ -
2026	-3	22	$ -	$ -
2027	-2	21	**$ -**	**$ 308,914.23**
2028	-1	20	$ -	$ -
2029	0	19	**$ -**	**$ 294,474.33**
2030	1	18	$ -	$ -
2031	2	17	$ -	$ -
2032	3	16	$ -	$ -
2033	4	15	$ -	$ -
2034	5	14	**$ -**	**$ 62,067.65**
2035	6	13	$ -	$ -
2036	7	12	$ -	$ -
2037	8	11	$ -	$ -
2038	9	10	$ -	$ -
2039	10	9	$ -	$ -
2040	11	8	$ -	$ -
2041	12	7	$ -	$ -
2042	13	6	$ -	$ -
2043	14	5	$ -	$ -
2044	15	4	$ -	$ -
2045	16	3	$ -	$ -
2046	17	2	$ -	$ -
2047	18	1	$ -	$ -
		Total:	$ -	$ 665,456.21

Table D.A.6.1 35th Ave Interchange Design and Construction Cost

		Uninflated Construction Cost	
Year	Project Year	At-Grade Intersection (Existing)	Interchange (Proposed)
2021	-8	$ -	$ -
2022	-7	$ -	$ -
2023	-6	$ -	$ -
2024	-5	$ -	$ 720,000.00
2025	-4	$ -	$ 2,465,660.00
2026	-3	$ -	$ 23,059,955.00
2027	-2	$ -	$ 21,122,525.00
2028	-1	$ -	$ 8,040,460.00
2029	0	$ -	$ -
2030	1	$ -	$ -
2031	2	$ -	$ -
2032	3	$ -	$ -
2033	4	$ -	$ -
2034	5	$ -	$ -
2035	6	$ -	$ -
2036	7	$ -	$ -
2037	8	$ -	$ -
2038	9	$ -	$ -
2039	10	$ -	$ -
2040	11	$ -	$ -
2041	12	$ -	$ -
2042	13	$ -	$ -
2043	14	$ -	$ -
2044	15	$ -	$ -
2045	16	$ -	$ -
2046	17	$ -	$ -
2047	18	$ -	$ -
	Total:	$ -	$ 55,408,600.00

Construction Costs (Cost in 2026 Dollars)

Table D.A.6.2 35th Ave Interchange Design and Construction Cost

Inflation Rate	4%	Inflated (to Project Year 0) Construction Cost	
Year	Project Year	At-Grade Intersection (Existing)	Interchange (Proposed)
2021	-8	$ -	$ -
2022	-7	$ -	$ -
2023	-6	$ -	$ -
2024	-5	$ -	$ 665,680.47
2025	-4	$ -	$ 2,370,826.92
2026	-3	$ -	$ 23,059,955.00
2027	-2	$ -	$ 21,967,426.00
2028	-1	$ -	$ 8,696,561.54
2029	0	$ -	$ -
2030	1	$ -	$ -
2031	2	$ -	$ -
2032	3	$ -	$ -
2033	4	$ -	$ -
2034	5	$ -	$ -
2035	6	$ -	$ -
2036	7	$ -	$ -
2037	8	$ -	$ -
2038	9	$ -	$ -
2039	10	$ -	$ -
2040	11	$ -	$ -
2041	12	$ -	$ -
2042	13	$ -	$ -
2043	14	$ -	$ -
2044	15	$ -	$ -
2045	16	$ -	$ -
2046	17	$ -	$ -
2047	18	$ -	$ -
	Total:	$ -	$ 56,760,449.93

Table D.A.6.3 35th Ave Interchange Design and Construction Cost

		Undiscounted Construction Cost	
Year	Project Year	At-Grade Intersection (Existing)	Interchange (Proposed)
2021	-8	$ -	$ -
2022	-7	$ -	$ -
2023	-6	$ -	$ -
2024	-5	$ -	$ 665,680.47
2025	-4	$ -	$ 2,370,826.92
2026	-3	$ -	$ 23,059,955.00
2027	-2	$ -	$ 21,967,426.00
2028	-1	$ -	$ 8,696,561.54
2029	0	$ -	$ -
2030	1	$ -	$ -
2031	2	$ -	$ -
2032	3	$ -	$ -
2033	4	$ -	$ -
2034	5	$ -	$ -
2035	6	$ -	$ -
2036	7	$ -	$ -
2037	8	$ -	$ -
2038	9	$ -	$ -
2039	10	$ -	$ -
2040	11	$ -	$ -
2041	12	$ -	$ -
2042	13	$ -	$ -
2043	14	$ -	$ -
2044	15	$ -	$ -
2045	16	$ -	$ -
2046	17	$ -	$ -
2047	18	$ -	$ -
	Total:	$ -	$ 56,760,449.93

Base Year For Discounting		2021
Construction Discount Rate		7%

Table D.A.6.4 35th Ave Interchange Design and Construction Cost

			PV Construction Cost	
Year	**Project Year**	**Analysis Period**	**At-Grade Intersection (Existing)**	**Interchange (Proposed)**
2021	-8	27	$ -	$ -
2022	-7	26	$ -	$ -
2023	-6	25	$ -	$ -
2024	-5	24	$ -	**$ 543,393.56**
2025	-4	23	$ -	**$ 1,808,692.51**
2026	-3	22	$ -	**$ 16,441,429.21**
2027	-2	21	$ -	**$ 14,637,823.49**
2028	-1	20	$ -	**$ 5,415,781.45**
2029	0	19	$ -	$ -
2030	1	18	$ -	$ -
2031	2	17	$ -	$ -
2032	3	16	$ -	$ -
2033	4	15	$ -	$ -
2034	5	14	$ -	$ -
2035	6	13	$ -	$ -
2036	7	12	$ -	$ -
2037	8	11	$ -	$ -
2038	9	10	$ -	$ -
2039	10	9	$ -	$ -
2040	11	8	$ -	$ -
2041	12	7	$ -	$ -
2042	13	6	$ -	$ -
2043	14	5	$ -	$ -
2044	15	4	$ -	$ -
2045	16	3	$ -	$ -
2046	17	2	$ -	$ -
2047	18	1	$ -	$ -
		Total:	$ -	$ 38,847,120.22

Table D.A.6.5 35th Ave Interchange Yearly Construction Costs (Cost in 2026 Dollars)

	Yearly Construction Cost							
Year	**Engineering**	**ROW**	**Grading and Draining**	**Subbase/Base**	**Surfacing**	**Major Structures**	**Lighting/Signals**	**Other Costs**
2021	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2022	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2023	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2024	$ 720,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2025	$ 1,080,000.00	$ 160,000.00	$ -	$ -	$ -	$ -	$ -	$ 1,225,660.00
2026	$ 2,520,000.00	$ -	$ 4,560,595.00	$ 1,525,920.00	$ 3,602,490.00	$ 7,177,800.00	$ 609,000.00	$ 3,064,150.00
2027	$ 2,160,000.00	$ -	$ 1,754,075.00	$ 1,109,760.00	$ 7,204,980.00	$ 3,588,900.00	$ 1,015,000.00	$ 4,289,810.00
2028	$ 720,000.00	$ -	$ 701,630.00	$ 138,720.00	$ 1,200,830.00	$ 1,196,300.00	$ 406,000.00	$ 3,676,980.00
2029	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2030	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2031	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2032	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2033	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2034	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2035	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2036	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2037	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2038	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2039	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2040	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2041	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2042	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2043	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2044	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2045	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2046	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2047	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Total:	$ 7,200,000.00	$ 160,000.00	$ 7,016,300.00	$ 2,774,400.00	$ 12,008,300.00	$ 11,963,000.00	$ 2,030,000.00	$ 12,256,600.00
								$ 55,408,600.00

Table D.A.7.1 35th Ave Interchange Salvage Value

Salvage Year		2045	PV Salvage Value	
Year	**Project Year**	**Analysis Period**	**At-Grade Intersection (Existing)**	**Interchange (Proposed)**
2021	-8	27	$ -	$ -
2022	-7	26	$ -	$ -
2023	-6	25	$ -	$ -
2024	-5	24	$ -	$ -
2025	-4	23	$ -	$ **118,461.54**
2026	-3	22	$ -	$ **8,218,836.00**
2027	-2	21	$ -	$ **5,231,284.55**
2028	-1	20	$ -	$ **1,652,725.18**
2029	0	19	$ -	$ -
2030	1	18	$ -	$ -
2031	2	17	$ -	$ -
2032	3	16	$ -	$ -
2033	4	15	$ -	$ -
2034	5	14	$ -	$ -
2035	6	13	$ -	$ -
2036	7	12	$ -	$ -
2037	8	11	$ -	$ -
2038	9	10	$ -	$ -
2039	10	9	$ -	$ -
2040	11	8	$ -	$ -
2041	12	7	$ -	$ -
2042	13	6	$ -	$ -
2043	14	5	$ -	$ -
2044	15	4	$ -	$ -
2045	16	3	$ -	$ -
2046	17	2	$ -	$ -
2047	18	1	$ -	$ -
		Total:	$ -	$ 15,221,307.27
		Construction Discount Rate	7%	$ 3,000,829.28

Table D.A.8.1 35th Ave Interchange Pedestrian Benefit

		Pedestrian Benefit	
Year	Project Year	At-Grade Intersection (Existing)	Interchange (Proposed)
2021	-8	$ -	$ -
2022	-7	$ -	$ -
2023	-6	$ -	$ -
2024	-5	$ -	$ -
2025	-4	$ -	$ -
2026	-3	$ -	$ -
2027	-2	$ -	$ -
2028	-1	$ -	$ -
2029	0	$ -	$ -
2030	1	$ -	$ -
2031	2	$ -	$ -
2032	3	$ -	$ -
2033	4	$ -	$ -
2034	5	$ -	$ -
2035	6	$ -	$ -
2036	7	$ -	$ -
2037	8	$ -	$ -
2038	9	$ -	$ -
2039	10	$ -	$ -
2040	11	$ -	$ -
2041	12	$ -	$ -
2042	13	$ -	$ -
2043	14	$ -	$ -
2044	15	$ -	$ -
2045	16	$ -	$ -
2046	17	$ -	$ -
2047	18	$ -	$ -
	Total:	$ -	$ -

Base Year For Discounting	2021
Pedestrian Facilities Discount Rate	7%

Table D.A.8.2 35th Ave Interchange Pedestrian Benefit

			PV Pedestrian Benefit	
Year	Project Year	Analysis Period	At-Grade Intersection (Existing)	Interchange (Proposed)
2021	-8	27	$ -	$ -
2022	-7	26	$ -	$ -
2023	-6	25	$ -	$ -
2024	-5	24	$ -	$ -
2025	-4	23	$ -	$ -
2026	-3	22	$ -	$ -
2027	-2	21	$ -	$ -
2028	-1	20	$ -	$ -
2029	0	19	$ -	$ -
2030	1	18	$ -	$ -
2031	2	17	$ -	$ -
2032	3	16	$ -	$ -
2033	4	15	$ -	$ -
2034	5	14	$ -	$ -
2035	6	13	$ -	$ -
2036	7	12	$ -	$ -
2037	8	11	$ -	$ -
2038	9	10	$ -	$ -
2039	10	9	$ -	$ -
2040	11	8	$ -	$ -
2041	12	7	$ -	$ -
2042	13	6	$ -	$ -
2043	14	5	$ -	$ -
2044	15	4	$ -	$ -
2045	16	3	$ -	$ -
2046	17	2	$ -	$ -
2047	18	1	$ -	$ -
		Total:	$ -	$ -

Table D.A.9.1 35th Ave Interchange Health Benefit

		Health Benefit	
Year	Project Year	At-Grade Intersection (Existing)	Interchange (Proposed)
2021	-8	$ -	$ -
2022	-7	$ -	$ -
2023	-6	$ -	$ -
2024	-5	$ -	$ -
2025	-4	$ -	$ -
2026	-3	$ -	$ -
2027	-2	$ -	$ -
2028	-1	$ -	$ -
2029	0	$ -	$ -
2030	1	$ -	$ -
2031	2	$ -	$ -
2032	3	$ -	$ -
2033	4	$ -	$ -
2034	5	$ -	$ -
2035	6	$ -	$ -
2036	7	$ -	$ -
2037	8	$ -	$ -
2038	9	$ -	$ -
2039	10	$ -	$ -
2040	11	$ -	$ -
2041	12	$ -	$ -
2042	13	$ -	$ -
2043	14	$ -	$ -
2044	15	$ -	$ -
2045	16	$ -	$ -
2046	17	$ -	$ -
2047	18	$ -	$ -
	Total:	$ -	$ -

Base Year For Discounting	2021
Health Improvements Discount Rate	7%

Table D.A.9.2 35th Ave Interchange Health Benefit

			PV Health Benefit	
Year	Project Year	Analysis Period	At-Grade Intersection (Existing)	Interchange (Proposed)
2021	-8	27	$ -	$ -
2022	-7	26	$ -	$ -
2023	-6	25	$ -	$ -
2024	-5	24	$ -	$ -
2025	-4	23	$ -	$ -
2026	-3	22	$ -	$ -
2027	-2	21	$ -	$ -
2028	-1	20	$ -	$ -
2029	0	19	$ -	$ -
2030	1	18	$ -	$ -
2031	2	17	$ -	$ -
2032	3	16	$ -	$ -
2033	4	15	$ -	$ -
2034	5	14	$ -	$ -
2035	6	13	$ -	$ -
2036	7	12	$ -	$ -
2037	8	11	$ -	$ -
2038	9	10	$ -	$ -
2039	10	9	$ -	$ -
2040	11	8	$ -	$ -
2041	12	7	$ -	$ -
2042	13	6	$ -	$ -
2043	14	5	$ -	$ -
2044	15	4	$ -	$ -
2045	16	3	$ -	$ -
2046	17	2	$ -	$ -
2047	18	1	$ -	$ -
		Total:	$ -	$ -

Table D.A.10.1 35th Ave Interchange Bicyling Benefit

		Bicycle Benefit	
Year	Project Year	At-Grade Intersection (Existing)	Interchange (Proposed)
2021	-8	$ -	$ -
2022	-7	$ -	$ -
2023	-6	$ -	$ -
2024	-5	$ -	$ -
2025	-4	$ -	$ -
2026	-3	$ -	$ -
2027	-2	$ -	$ -
2028	-1	$ -	$ -
2029	0	$ -	$ -
2030	1	$ -	$ -
2031	2	$ -	$ -
2032	3	$ -	$ -
2033	4	$ -	$ -
2034	5	$ -	$ -
2035	6	$ -	$ -
2036	7	$ -	$ -
2037	8	$ -	$ -
2038	9	$ -	$ -
2039	10	$ -	$ -
2040	11	$ -	$ -
2041	12	$ -	$ -
2042	13	$ -	$ -
2043	14	$ -	$ -
2044	15	$ -	$ -
2045	16	$ -	$ -
2046	17	$ -	$ -
2047	18	$ -	$ -
	Total:	$ -	$ -

Base Year For Discounting	2021
Cycling Facilities Discount Rate	7%

Table D.A.10.2 35th Ave Interchange Bicyling Benefit

			PV Bicyle Benefit	
Year	Project Year	Analysis Period	At-Grade Intersection (Existing)	Interchange (Proposed)
2021	-8	27	$ -	$ -
2022	-7	26	$ -	$ -
2023	-6	25	$ -	$ -
2024	-5	24	$ -	$ -
2025	-4	23	$ -	$ -
2026	-3	22	$ -	$ -
2027	-2	21	$ -	$ -
2028	-1	20	$ -	$ -
2029	0	19	$ -	$ -
2030	1	18	$ -	$ -
2031	2	17	$ -	$ -
2032	3	16	$ -	$ -
2033	4	15	$ -	$ -
2034	5	14	$ -	$ -
2035	6	13	$ -	$ -
2036	7	12	$ -	$ -
2037	8	11	$ -	$ -
2038	9	10	$ -	$ -
2039	10	9	$ -	$ -
2040	11	8	$ -	$ -
2041	12	7	$ -	$ -
2042	13	6	$ -	$ -
2043	14	5	$ -	$ -
2044	15	4	$ -	$ -
2045	16	3	$ -	$ -
2046	17	2	$ -	$ -
2047	18	1	$ -	$ -
		Total:	$ -	$ -

Table D.A.11.1 35th Ave Interchange Transit Amenity Benefit

		Bicycle Benefit	
Year	Project Year	At-Grade Intersection (Existing)	Interchange (Proposed)
2021	-8	$ -	$ -
2022	-7	$ -	$ -
2023	-6	$ -	$ -
2024	-5	$ -	$ -
2025	-4	$ -	$ -
2026	-3	$ -	$ -
2027	-2	$ -	$ -
2028	-1	$ -	$ -
2029	0	$ -	$ -
2030	1	$ -	$ -
2031	2	$ -	$ -
2032	3	$ -	$ -
2033	4	$ -	$ -
2034	5	$ -	$ -
2035	6	$ -	$ -
2036	7	$ -	$ -
2037	8	$ -	$ -
2038	9	$ -	$ -
2039	10	$ -	$ -
2040	11	$ -	$ -
2041	12	$ -	$ -
2042	13	$ -	$ -
2043	14	$ -	$ -
2044	15	$ -	$ -
2045	16	$ -	$ -
2046	17	$ -	$ -
2047	18	$ -	$ -
	Total:	$ -	$ -

Base Year For Discounting	2021
Transit Amenity Discount Rate	7%

Table D.A.11.2 35th Ave Interchange Transit Amenity Benefit

			PV Bicyle Benefit	
Year	Project Year	Analysis Period	At-Grade Intersection (Existing)	Interchange (Proposed)
2021	-8	27	$ -	$ -
2022	-7	26	$ -	$ -
2023	-6	25	$ -	$ -
2024	-5	24	$ -	$ -
2025	-4	23	$ -	$ -
2026	-3	22	$ -	$ -
2027	-2	21	$ -	$ -
2028	-1	20	$ -	$ -
2029	0	19	$ -	$ -
2030	1	18	$ -	$ -
2031	2	17	$ -	$ -
2032	3	16	$ -	$ -
2033	4	15	$ -	$ -
2034	5	14	$ -	$ -
2035	6	13	$ -	$ -
2036	7	12	$ -	$ -
2037	8	11	$ -	$ -
2038	9	10	$ -	$ -
2039	10	9	$ -	$ -
2040	11	8	$ -	$ -
2041	12	7	$ -	$ -
2042	13	6	$ -	$ -
2043	14	5	$ -	$ -
2044	15	4	$ -	$ -
2045	16	3	$ -	$ -
2046	17	2	$ -	$ -
2047	18	1	$ -	$ -
		Total:	$ -	$ -

Table D.A.12.1 35th Ave Interchange Public Transit Travel Time Cost

		Public Transit Travel Time Cost	
Year	Project Year	At-Grade Intersection (Existing)	Interchange (Proposed)
2021	-8	$ -	$ -
2022	-7	$ -	$ -
2023	-6	$ -	$ -
2024	-5	$ -	$ -
2025	-4	$ -	$ -
2026	-3	$ -	$ -
2027	-2	$ -	$ -
2028	-1	$ -	$ -
2029	0	$ -	$ -
2030	1	$ -	$ -
2031	2	$ -	$ -
2032	3	$ -	$ -
2033	4	$ -	$ -
2034	5	$ -	$ -
2035	6	$ -	$ -
2036	7	$ -	$ -
2037	8	$ -	$ -
2038	9	$ -	$ -
2039	10	$ -	$ -
2040	11	$ -	$ -
2041	12	$ -	$ -
2042	13	$ -	$ -
2043	14	$ -	$ -
2044	15	$ -	$ -
2045	16	$ -	$ -
2046	17	$ -	$ -
2047	18	$ -	$ -
	Total:	$ -	$ -
			$ -

Table D.A.12.2 35th Ave Interchange Public Transit Travel Time Cost

		Undiscounted Public Transit Travel Time Cost	
Year	Project Year	At-Grade Intersection (Existing)	Interchange (Proposed)
2021	-8	$ -	$ -
2022	-7	$ -	$ -
2023	-6	$ -	$ -
2024	-5	$ -	$ -
2025	-4	$ -	$ -
2026	-3	$ -	$ -
2027	-2	$ -	$ -
2028	-1	$ -	$ -
2029	0	$ -	$ -
2030	1	$ -	$ -
2031	2	$ -	$ -
2032	3	$ -	$ -
2033	4	$ -	$ -
2034	5	$ -	$ -
2035	6	$ -	$ -
2036	7	$ -	$ -
2037	8	$ -	$ -
2038	9	$ -	$ -
2039	10	$ -	$ -
2040	11	$ -	$ -
2041	12	$ -	$ -
2042	13	$ -	$ -
2043	14	$ -	$ -
2044	15	$ -	$ -
2045	16	$ -	$ -
2046	17	$ -	$ -
2047	18	$ -	$ -
	Total:	$ -	$ -
			$ -

Base Year For Discounting		2021
Public Transit Travel Time Discount Rate		7%

Table D.A.12.3 35th Ave Interchange Public Transit Travel Time Cost

			PV Public Transit Travel Time Cost	
Year	**Project Year**	**Analysis Period**	**At-Grade Intersection (Existing)**	**Interchange (Proposed)**
2021	-8	27	$ -	$ -
2022	-7	26	$ -	$ -
2023	-6	25	$ -	$ -
2024	-5	24	$ -	$ -
2025	-4	23	$ -	$ -
2026	-3	22	$ -	$ -
2027	-2	21	$ -	$ -
2028	-1	20	$ -	$ -
2029	0	19	$ -	$ -
2030	1	18	$ -	$ -
2031	2	17	$ -	$ -
2032	3	16	$ -	$ -
2033	4	15	$ -	$ -
2034	5	14	$ -	$ -
2035	6	13	$ -	$ -
2036	7	12	$ -	$ -
2037	8	11	$ -	$ -
2038	9	10	$ -	$ -
2039	10	9	$ -	$ -
2040	11	8	$ -	$ -
2041	12	7	$ -	$ -
2042	13	6	$ -	$ -
2043	14	5	$ -	$ -
2044	15	4	$ -	$ -
2045	16	3	$ -	$ -
2046	17	2	$ -	$ -
2047	18	1	$ -	$ -
		Total:	$ -	$ -
				$ -

Table D.B.1.1 47th Ave Interchange Travel Time Benefit

Year	Project Year	Travel Time Cost					
		At-Grade Intersection (Existing)			Interchange (Proposed)		
		Light Vehicle	Heavy Vehicle	Total	Light Vehicle	Heavy Vehicle	Total
2021	-8	$ -	$ -	$ -	$ -	$ -	$ -
2022	-7	$ -	$ -	$ -	$ -	$ -	$ -
2023	-6	$ -	$ -	$ -	$ -	$ -	$ -
2024	-5	$ -	$ -	$ -	$ -	$ -	$ -
2025	-4	$ -	$ -	$ -	$ -	$ -	$ -
2026	-3	$ -	$ -	$ -	$ -	$ -	$ -
2027	-2	$ -	$ -	$ -	$ -	$ -	$ -
2028	-1	$ 56,267,353.19	$ 1,259,456.23	$ ***57,526,809.42***	$ 47,470,917.38	$ 1,062,561.84	$ ***48,533,479.22***
2029	0	$ 57,533,512.70	$ 1,287,797.21	$ ***58,821,309.91***	$ 48,345,008.22	$ 1,082,126.99	$ ***49,427,135.21***
2030	1	$ 58,799,672.20	$ 1,316,138.20	$ ***60,115,810.41***	$ 49,219,099.05	$ 1,101,692.14	$ ***50,320,791.19***
2031	2	$ 60,065,831.71	$ 1,344,479.19	$ ***61,410,310.90***	$ 50,093,189.89	$ 1,121,257.29	$ ***51,214,447.18***
2032	3	$ 61,331,991.21	$ 1,372,820.18	$ ***62,704,811.40***	$ 50,967,280.73	$ 1,140,822.44	$ ***52,108,103.17***
2033	4	$ 62,598,150.72	$ 1,401,161.17	$ ***63,999,311.89***	$ 51,841,371.57	$ 1,160,387.59	$ ***53,001,759.15***
2034	5	$ 63,864,310.22	$ 1,429,502.16	$ ***65,293,812.39***	$ 52,715,462.41	$ 1,179,952.74	$ ***53,895,415.14***
2035	6	$ 65,130,469.73	$ 1,457,843.15	$ ***66,588,312.88***	$ 53,589,553.25	$ 1,199,517.88	$ ***54,789,071.13***
2036	7	$ 66,396,629.23	$ 1,486,184.14	$ ***67,882,813.37***	$ 54,463,644.08	$ 1,219,083.03	$ ***55,682,727.12***
2037	8	$ 67,662,788.74	$ 1,514,525.13	$ ***69,177,313.87***	$ 55,337,734.92	$ 1,238,648.18	$ ***56,576,383.10***
2038	9	$ 68,928,948.24	$ 1,542,866.12	$ ***70,471,814.36***	$ 56,211,825.76	$ 1,258,213.33	$ ***57,470,039.09***
2039	10	$ 70,195,107.75	$ 1,571,207.11	$ ***71,766,314.86***	$ 57,085,916.60	$ 1,277,778.48	$ ***58,363,695.08***
2040	11	$ 71,461,267.25	$ 1,599,548.10	$ ***73,060,815.35***	$ 57,960,007.44	$ 1,297,343.63	$ ***59,257,351.07***
2041	12	$ 72,727,426.76	$ 1,627,889.09	$ ***74,355,315.85***	$ 58,834,098.28	$ 1,316,908.78	$ ***60,151,007.05***
2042	13	$ 73,993,586.26	$ 1,656,230.08	$ ***75,649,816.34***	$ 59,708,189.11	$ 1,336,473.93	$ ***61,044,663.04***
2043	14	$ 75,259,745.76	$ 1,684,571.07	$ ***76,944,316.83***	$ 60,582,279.95	$ 1,356,039.08	$ ***61,938,319.03***
2044	15	$ 76,525,905.27	$ 1,712,912.06	$ ***78,238,817.33***	$ 61,456,370.79	$ 1,375,604.22	$ ***62,831,975.01***
2045	16	$ 77,792,064.77	$ 1,741,253.05	$ ***79,533,317.82***	$ 62,330,461.63	$ 1,395,169.37	$ ***63,725,631.00***
2046	17	$ 79,058,224.28	$ 1,769,594.04	$ ***80,827,818.32***	$ 63,204,552.47	$ 1,414,734.52	$ ***64,619,286.99***
2047	18	$ 80,324,383.78	$ 1,797,935.03	$ ***82,122,318.81***	$ 64,078,643.30	$ 1,434,299.67	$ ***65,512,942.98***
Total:		$ 1,396,491,282.31			$ 1,140,464,221.95		

Table D.B.1.2 47th Ave Interchange Travel Time Benefit

Year	Project Year	Undiscounted Travel Time Benefit					
		At-Grade Intersection (Existing)			Interchange (Proposed)		
		Light Vehicle	Heavy Vehicle	Total	Light Vehicle	Heavy Vehicle	Total
2021	-8	$ -	$ -	$ -	$ -	$ -	$ -
2022	-7	$ -	$ -	$ -	$ -	$ -	$ -
2023	-6	$ -	$ -	$ -	$ -	$ -	$ -
2024	-5	$ -	$ -	$ -	$ -	$ -	$ -
2025	-4	$ -	$ -	$ -	$ -	$ -	$ -
2026	-3	$ -	$ -	$ -	$ -	$ -	$ -
2027	-2	$ -	$ -	$ -	$ -	$ -	$ -
2028	-1	$ -	$ -	$ -	$ 8,796,435.82	$ 196,894.38	$ ***8,993,330.20***
2029	0	$ -	$ -	$ -	$ 9,188,504.48	$ 205,670.22	$ ***9,394,174.71***
2030	1	$ -	$ -	$ -	$ 9,580,573.15	$ 214,446.07	$ ***9,795,019.22***
2031	2	$ -	$ -	$ -	$ 9,972,641.82	$ 223,221.91	$ ***10,195,863.72***
2032	3	$ -	$ -	$ -	$ 10,364,710.48	$ 231,997.75	$ ***10,596,708.23***
2033	4	$ -	$ -	$ -	$ 10,756,779.15	$ 240,773.59	$ ***10,997,552.74***
2034	5	$ -	$ -	$ -	$ 11,148,847.82	$ 249,549.43	$ ***11,398,397.24***
2035	6	$ -	$ -	$ -	$ 11,540,916.48	$ 258,325.27	$ ***11,799,241.75***
2036	7	$ -	$ -	$ -	$ 11,932,985.15	$ 267,101.11	$ ***12,200,086.26***
2037	8	$ -	$ -	$ -	$ 12,325,053.81	$ 275,876.95	$ ***12,600,930.76***
2038	9	$ -	$ -	$ -	$ 12,717,122.48	$ 284,652.79	$ ***13,001,775.27***
2039	10	$ -	$ -	$ -	$ 13,109,191.15	$ 293,428.63	$ ***13,402,619.78***
2040	11	$ -	$ -	$ -	$ 13,501,259.81	$ 302,204.47	$ ***13,803,464.29***
2041	12	$ -	$ -	$ -	$ 13,893,328.48	$ 310,980.31	$ ***14,204,308.79***
2042	13	$ -	$ -	$ -	$ 14,285,397.15	$ 319,756.15	$ ***14,605,153.30***
2043	14	$ -	$ -	$ -	$ 14,677,465.81	$ 328,531.99	$ ***15,005,997.81***
2044	15	$ -	$ -	$ -	$ 15,069,534.48	$ 337,307.83	$ ***15,406,842.31***
2045	16	$ -	$ -	$ -	$ 15,461,603.15	$ 346,083.67	$ ***15,807,686.82***
2046	17	$ -	$ -	$ -	$ 15,853,671.81	$ 354,859.51	$ ***16,208,531.33***
2047	18	$ -	$ -	$ -	$ 16,245,740.48	$ 363,635.36	$ ***16,609,375.83***
Total:		$	-		$ 256,027,060.36		

Base Year For Discounting	2021
Travel Time Discount Rate	7%

Table D.B.1.3 47th Ave Interchange Travel Time Benefit

Year	Project Year	Analysis Period	PV Travel Time Benefit					
			At-Grade Intersection (Existing)			Interchange (Proposed)		
			Light Vehicle	Heavy Vehicle	Total	Light Vehicle	Heavy Vehicle	Total
2021	-8	27	$ -	$ -	$ -	$ -	$ -	$ -
2022	-7	26	$ -	$ -	$ -	$ -	$ -	$ -
2023	-6	25	$ -	$ -	$ -	$ -	$ -	$ -
2024	-5	24	$ -	$ -	$ -	$ -	$ -	$ -
2025	-4	23	$ -	$ -	$ -	$ -	$ -	$ -
2026	-3	22	$ -	$ -	$ -	$ -	$ -	$ -
2027	-2	21	$ -	$ -	$ -	$ -	$ -	$ -
2028	-1	20	$ -	$ -	$ -	$ 5,477,978.13	$ 122,615.93	$ 5,600,594.06
2029	0	19	$ -	$ -	$ -	$ 5,347,793.27	$ 119,701.94	$ 5,467,495.21
2030	1	18	$ -	$ -	$ -	$ 5,211,197.01	$ 116,644.45	$ 5,327,841.46
2031	2	17	$ -	$ -	$ -	$ 5,069,585.41	$ 113,474.70	$ 5,183,060.11
2032	3	16	$ -	$ -	$ -	$ 4,924,199.29	$ 110,220.46	$ 5,034,419.75
2033	4	15	$ -	$ -	$ -	$ 4,776,138.59	$ 106,906.35	$ 4,883,044.94
2034	5	14	$ -	$ -	$ -	$ 4,626,375.48	$ 103,554.14	$ 4,729,929.62
2035	6	13	$ -	$ -	$ -	$ 4,475,766.39	$ 100,182.99	$ 4,575,949.38
2036	7	12	$ -	$ -	$ -	$ 4,325,062.97	$ 96,809.73	$ 4,421,872.70
2037	8	11	$ -	$ -	$ -	$ 4,174,922.15	$ 93,449.07	$ 4,268,371.21
2038	9	10	$ -	$ -	$ -	$ 4,025,915.30	$ 90,113.78	$ 4,116,029.08
2039	10	9	$ -	$ -	$ -	$ 3,878,536.63	$ 86,814.94	$ 3,965,351.58
2040	11	8	$ -	$ -	$ -	$ 3,733,210.84	$ 83,562.05	$ 3,816,772.90
2041	12	7	$ -	$ -	$ -	$ 3,590,300.09	$ 80,363.22	$ 3,670,663.31
2042	13	6	$ -	$ -	$ -	$ 3,450,110.36	$ 77,225.30	$ 3,527,335.66
2043	14	5	$ -	$ -	$ -	$ 3,312,897.27	$ 74,154.00	$ 3,387,051.26
2044	15	4	$ -	$ -	$ -	$ 3,178,871.33	$ 71,154.04	$ 3,250,025.37
2045	16	3	$ -	$ -	$ -	$ 3,048,202.80	$ 68,229.23	$ 3,116,432.03
2046	17	2	$ -	$ -	$ -	$ 2,921,025.99	$ 65,382.57	$ 2,986,408.57
2047	18	1	$ -	$ -	$ -	$ 2,797,443.29	$ 62,616.37	$ 2,860,059.66
				Total:	$ -			$ 84,188,707.85

Table D.B.2.1 47th Ave Interchange Collision Reduction Benefit

		Collision Cost	
Year	Project Year	At-Grade Intersection (Existing)	Interchange (Proposed)
2021	-8	$ -	$ -
2022	-7	$ -	$ -
2023	-6	$ -	$ -
2024	-5	$ -	$ -
2025	-4	$ -	$ -
2026	-3	$ -	$ -
2027	-2	$ -	$ -
2028	-1	$ 602,860.00	$ 283,004.13
2029	0	$ 606,762.68	$ 284,861.93
2030	1	$ 610,665.36	$ 286,719.73
2031	2	$ 614,568.04	$ 288,577.52
2032	3	$ 618,470.72	$ 290,435.32
2033	4	$ 622,373.40	$ 292,293.11
2034	5	$ 626,276.07	$ 294,150.91
2035	6	$ 630,178.75	$ 296,008.70
2036	7	$ 634,081.43	$ 297,866.50
2037	8	$ 637,984.11	$ 299,724.29
2038	9	$ 641,886.79	$ 301,582.09
2039	10	$ 645,789.47	$ 303,439.88
2040	11	$ 649,692.15	$ 305,297.68
2041	12	$ 653,594.83	$ 307,155.47
2042	13	$ 657,497.51	$ 309,013.27
2043	14	$ 661,400.19	$ 310,871.06
2044	15	$ 665,302.87	$ 312,728.86
2045	16	$ 669,205.54	$ 314,586.65
2046	17	$ 673,108.22	$ 316,444.45
2047	18	$ 677,010.90	$ 318,302.24
Total:		$ 12,798,709.02	$ 6,013,063.79

Table D.B.2.2 47th Ave Interchange Collision Reduction Benefit

		Undiscounted Collision Benefit	
Year	Project Year	At-Grade Intersection (Existing)	Interchange (Proposed)
2021	-8	$ -	$ -
2022	-7	$ -	$ -
2023	-6	$ -	$ -
2024	-5	$ -	$ -
2025	-4	$ -	$ -
2026	-3	$ -	$ -
2027	-2	$ -	$ -
2028	-1	$ -	$ 319,855.87
2029	0	$ -	$ 321,900.75
2030	1	$ -	$ 323,945.63
2031	2	$ -	$ 325,990.52
2032	3	$ -	$ 328,035.40
2033	4	$ -	$ 330,080.28
2034	5	$ -	$ 332,125.17
2035	6	$ -	$ 334,170.05
2036	7	$ -	$ 336,214.94
2037	8	$ -	$ 338,259.82
2038	9	$ -	$ 340,304.70
2039	10	$ -	$ 342,349.59
2040	11	$ -	$ 344,394.47
2041	12	$ -	$ 346,439.36
2042	13	$ -	$ 348,484.24
2043	14	$ -	$ 350,529.12
2044	15	$ -	$ 352,574.01
2045	16	$ -	$ 354,618.89
2046	17	$ -	$ 356,663.77
2047	18	$ -	$ 358,708.66
Total:		$ -	$ 6,785,645.24

Base Year For Discounting		2021
Safety Discount Rate		7%

Table D.B.2.3 47th Ave Interchange Collision Reduction Benefit

Year	Project Year	Analysis Period	PV Collision Benefit	
			At-Grade Intersection (Existing)	Interchange (Proposed)
2021	-8	27	$ -	$ -
2022	-7	26	$ -	$ -
2023	-6	25	$ -	$ -
2024	-5	24	$ -	$ -
2025	-4	23	$ -	$ -
2026	-3	22	$ -	$ -
2027	-2	21	$ -	$ -
2028	-1	20	$ -	**$ 199,190.16**
2029	0	19	$ -	**$ 187,349.17**
2030	1	18	$ -	**$ 176,204.96**
2031	2	17	$ -	**$ 165,717.05**
2032	3	16	$ -	**$ 155,847.26**
2033	4	15	$ -	**$ 146,559.59**
2034	5	14	$ -	**$ 137,820.14**
2035	6	13	$ -	**$ 129,596.91**
2036	7	12	$ -	**$ 121,859.77**
2037	8	11	$ -	**$ 114,580.30**
2038	9	10	$ -	**$ 107,731.75**
2039	10	9	$ -	**$ 101,288.89**
2040	11	8	$ -	**$ 95,227.94**
2041	12	7	$ -	**$ 89,526.51**
2042	13	6	$ -	**$ 84,163.50**
2043	14	5	$ -	**$ 79,119.04**
2044	15	4	$ -	**$ 74,374.39**
2045	16	3	$ -	**$ 69,911.92**
2046	17	2	$ -	**$ 65,715.01**
2047	18	1	$ -	**$ 61,768.01**
		Total:	$ -	$ 2,363,552.26

Table D.B.3.1 47th Ave Interchange Vehicle Operating Benefit

Year	Project Year	Vehicle Operating Cost					
		At-Grade Intersection (Existing)			Interchange (Proposed)		
		Light Vehicle	Heavy Vehicle	Total	Light Vehicle	Heavy Vehicle	Total
2021	-8	$ -	$ -	***$ -***	$ -	$ -	***$ -***
2022	-7	$ -	$ -	***$ -***	$ -	$ -	***$ -***
2023	-6	$ -	$ -	***$ -***	$ -	$ -	***$ -***
2024	-5	$ -	$ -	***$ -***	$ -	$ -	***$ -***
2025	-4	$ -	$ -	***$ -***	$ -	$ -	***$ -***
2026	-3	$ -	$ -	***$ -***	$ -	$ -	***$ -***
2027	-2	$ -	$ -	***$ -***	$ -	$ -	***$ -***
2028	-1	$ 20,685,579.56	$ 926,904.85	***$ 21,612,484.42***	$ 21,161,796.21	$ 948,243.75	***$ 22,110,039.96***
2029	0	$ 20,794,522.30	$ 931,786.49	***$ 21,726,308.79***	$ 21,285,989.22	$ 953,808.75	***$ 22,239,797.97***
2030	1	$ 20,903,465.04	$ 936,668.13	***$ 21,840,133.17***	$ 21,410,182.23	$ 959,373.74	***$ 22,369,555.97***
2031	2	$ 21,012,407.78	$ 941,549.77	***$ 21,953,957.55***	$ 21,534,375.24	$ 964,938.73	***$ 22,499,313.97***
2032	3	$ 21,121,350.52	$ 946,431.41	***$ 22,067,781.93***	$ 21,658,568.25	$ 970,503.72	***$ 22,629,071.97***
2033	4	$ 21,230,293.25	$ 951,313.05	***$ 22,181,606.31***	$ 21,782,761.26	$ 976,068.72	***$ 22,758,829.97***
2034	5	$ 21,339,235.99	$ 956,194.69	***$ 22,295,430.69***	$ 21,906,954.27	$ 981,633.71	***$ 22,888,587.98***
2035	6	$ 21,448,178.73	$ 961,076.33	***$ 22,409,255.06***	$ 22,031,147.28	$ 987,198.70	***$ 23,018,345.98***
2036	7	$ 21,557,121.47	$ 965,957.97	***$ 22,523,079.44***	$ 22,155,340.29	$ 992,763.70	***$ 23,148,103.98***
2037	8	$ 21,666,064.21	$ 970,839.61	***$ 22,636,903.82***	$ 22,279,533.30	$ 998,328.69	***$ 23,277,861.98***
2038	9	$ 21,775,006.95	$ 975,721.25	***$ 22,750,728.20***	$ 22,403,726.31	$ 1,003,893.68	***$ 23,407,619.99***
2039	10	$ 21,883,949.68	$ 980,602.89	***$ 22,864,552.58***	$ 22,527,919.31	$ 1,009,458.67	***$ 23,537,377.99***
2040	11	$ 21,992,892.42	$ 985,484.53	***$ 22,978,376.95***	$ 22,652,112.32	$ 1,015,023.67	***$ 23,667,135.99***
2041	12	$ 22,101,835.16	$ 990,366.17	***$ 23,092,201.33***	$ 22,776,305.33	$ 1,020,588.66	***$ 23,796,893.99***
2042	13	$ 22,210,777.90	$ 995,247.81	***$ 23,206,025.71***	$ 22,900,498.34	$ 1,026,153.65	***$ 23,926,652.00***
2043	14	$ 22,319,720.64	$ 1,000,129.45	***$ 23,319,850.09***	$ 23,024,691.35	$ 1,031,718.65	***$ 24,056,410.00***
2044	15	$ 22,428,663.38	$ 1,005,011.09	***$ 23,433,674.47***	$ 23,148,884.36	$ 1,037,283.64	***$ 24,186,168.00***
2045	16	$ 22,537,606.11	$ 1,009,892.73	***$ 23,547,498.85***	$ 23,273,077.37	$ 1,042,848.63	***$ 24,315,926.00***
2046	17	$ 22,646,548.85	$ 1,014,774.37	***$ 23,661,323.22***	$ 23,397,270.38	$ 1,048,413.62	***$ 24,445,684.00***
2047	18	$ 22,755,491.59	$ 1,019,656.01	***$ 23,775,147.60***	$ 23,521,463.39	$ 1,053,978.62	***$ 24,575,442.01***
Total:		$ 453,876,320.18			$ 466,854,819.70		

Table D.B.3.2 47th Ave Interchange Vehicle Operating Benefit

Year	Project Year	Undiscounted Vehicle Operating Cost					
		At-Grade Intersection (Existing)			Interchange (Proposed)		
		Light Vehicle	Heavy Vehicle	Total	Light Vehicle	Heavy Vehicle	Total
2021	-8	$ -	$ -	***$ -***	$ -	$ -	***$ -***
2022	-7	$ -	$ -	***$ -***	$ -	$ -	***$ -***
2023	-6	$ -	$ -	***$ -***	$ -	$ -	***$ -***
2024	-5	$ -	$ -	***$ -***	$ -	$ -	***$ -***
2025	-4	$ -	$ -	***$ -***	$ -	$ -	***$ -***
2026	-3	$ -	$ -	***$ -***	$ -	$ -	***$ -***
2027	-2	$ -	$ -	***$ -***	$ -	$ -	***$ -***
2028	-1	$ (476,216.65)	$ (21,338.90)	***$ (497,555.55)***	$ -	$ -	$ -
2029	0	$ (491,466.92)	$ (22,022.25)	***$ (513,489.17)***	$ -	$ -	$ -
2030	1	$ (506,717.19)	$ (22,705.61)	***$ (529,422.80)***	$ -	$ -	$ -
2031	2	$ (521,967.46)	$ (23,388.96)	***$ (545,356.42)***	$ -	$ -	$ -
2032	3	$ (537,217.73)	$ (24,072.31)	***$ (561,290.04)***	$ -	$ -	$ -
2033	4	$ (552,468.00)	$ (24,755.66)	***$ (577,223.67)***	$ -	$ -	$ -
2034	5	$ (567,718.27)	$ (25,439.02)	***$ (593,157.29)***	$ -	$ -	$ -
2035	6	$ (582,968.55)	$ (26,122.37)	***$ (609,090.92)***	$ -	$ -	$ -
2036	7	$ (598,218.82)	$ (26,805.72)	***$ (625,024.54)***	$ -	$ -	$ -
2037	8	$ (613,469.09)	$ (27,489.08)	***$ (640,958.16)***	$ -	$ -	$ -
2038	9	$ (628,719.36)	$ (28,172.43)	***$ (656,891.79)***	$ -	$ -	$ -
2039	10	$ (643,969.63)	$ (28,855.78)	***$ (672,825.41)***	$ -	$ -	$ -
2040	11	$ (659,219.90)	$ (29,539.13)	***$ (688,759.04)***	$ -	$ -	$ -
2041	12	$ (674,470.17)	$ (30,222.49)	***$ (704,692.66)***	$ -	$ -	$ -
2042	13	$ (689,720.44)	$ (30,905.84)	***$ (720,626.28)***	$ -	$ -	$ -
2043	14	$ (704,970.71)	$ (31,589.19)	***$ (736,559.91)***	$ -	$ -	$ -
2044	15	$ (720,220.99)	$ (32,272.55)	***$ (752,493.53)***	$ -	$ -	$ -
2045	16	$ (735,471.26)	$ (32,955.90)	***$ (768,427.16)***	$ -	$ -	$ -
2046	17	$ (750,721.53)	$ (33,639.25)	***$ (784,360.78)***	$ -	$ -	$ -
2047	18	$ (765,971.80)	$ (34,322.60)	***$ (800,294.40)***	$ -	$ -	$ -
Total:		$ (12,978,499.52)			$	-	

Base Year For Discounting	2021
Vehicle Operating Costs Discount Rate	7%

Table D.B.3.3 47th Ave Interchange Vehicle Operating Benefit

Year	Project Year	Analysis Period	PV Vehicle Operating Cost					
			At-Grade Intersection (Existing)			Interchange (Proposed)		
			Light Vehicle	Heavy Vehicle	Total	Light Vehicle	Heavy Vehicle	Total
2021	-8	27	$ -	$ -	***$ -***	$ -	$ -	***$ -***
2022	-7	26	$ -	$ -	***$ -***	$ -	$ -	***$ -***
2023	-6	25	$ -	$ -	***$ -***	$ -	$ -	***$ -***
2024	-5	24	$ -	$ -	***$ -***	$ -	$ -	***$ -***
2025	-4	23	$ -	$ -	***$ -***	$ -	$ -	***$ -***
2026	-3	22	$ -	$ -	***$ -***	$ -	$ -	***$ -***
2027	-2	21	$ -	$ -	***$ -***	$ -	$ -	***$ -***
2028	-1	20	$ (296,563.79)	$ (13,288.79)	***$ (309,852.59)***	$ -	$ -	***$ -***
2029	0	19	$ (286,038.22)	$ (12,817.15)	***$ (298,855.37)***	$ -	$ -	***$ -***
2030	1	18	$ (275,620.58)	$ (12,350.35)	***$ (287,970.92)***	$ -	$ -	***$ -***
2031	2	17	$ (265,341.79)	$ (11,889.76)	***$ (277,231.55)***	$ -	$ -	***$ -***
2032	3	16	$ (255,228.27)	$ (11,436.58)	***$ (266,664.86)***	$ -	$ -	***$ -***
2033	4	15	$ (245,302.40)	$ (10,991.81)	***$ (256,294.21)***	$ -	$ -	***$ -***
2034	5	14	$ (235,582.90)	$ (10,556.29)	***$ (246,139.19)***	$ -	$ -	***$ -***
2035	6	13	$ (226,085.25)	$ (10,130.71)	***$ (236,215.96)***	$ -	$ -	***$ -***
2036	7	12	$ (216,822.03)	$ (9,715.63)	***$ (226,537.66)***	$ -	$ -	***$ -***
2037	8	11	$ (207,803.20)	$ (9,311.50)	***$ (217,114.71)***	$ -	$ -	***$ -***
2038	9	10	$ (199,036.45)	$ (8,918.67)	***$ (207,955.12)***	$ -	$ -	***$ -***
2039	10	9	$ (190,527.38)	$ (8,537.38)	***$ (199,064.76)***	$ -	$ -	***$ -***
2040	11	8	$ (182,279.80)	$ (8,167.82)	***$ (190,447.61)***	$ -	$ -	***$ -***
2041	12	7	$ (174,295.91)	$ (7,810.07)	***$ (182,105.97)***	$ -	$ -	***$ -***
2042	13	6	$ (166,576.51)	$ (7,464.16)	***$ (174,040.68)***	$ -	$ -	***$ -***
2043	14	5	$ (159,121.17)	$ (7,130.10)	***$ (166,251.27)***	$ -	$ -	***$ -***
2044	15	4	$ (151,928.37)	$ (6,807.79)	***$ (158,736.17)***	$ -	$ -	***$ -***
2045	16	3	$ (144,995.67)	$ (6,497.14)	***$ (151,492.82)***	$ -	$ -	***$ -***
2046	17	2	$ (138,319.82)	$ (6,198.00)	***$ (144,517.83)***	$ -	$ -	***$ -***
2047	18	1	$ (131,896.89)	$ (5,910.20)	***$ (137,807.09)***	$ -	$ -	***$ -***
				Total:	$ (4,335,296.32)			$ -
2047	18	1	$ (131,896.89)	$ (5,910.20)	***$ (137,807.09)***	$ -	$ -	***$ -***
				Total:	$ (4,335,296.32)			$ -

Table D.B.4.1 47th Ave Interchange Emissions Reduction Benefit

		Emissions Cost	
Year	Project Year	At-Grade Intersection (Existing)	Interchange (Proposed)
2021	-8	$ -	$ -
2022	-7	$ -	$ -
2023	-6	$ -	$ -
2024	-5	$ -	$ -
2025	-4	$ -	$ -
2026	-3	$ -	$ -
2027	-2	$ -	$ -
2028	-1	**$ 2,553,410.52**	**$ 2,592,164.12**
2029	0	**$ 2,621,035.59**	**$ 2,661,169.54**
2030	1	**$ 2,695,912.38**	**$ 2,736,333.85**
2031	2	**$ 2,729,043.37**	**$ 2,769,066.35**
2032	3	**$ 2,762,460.11**	**$ 2,802,054.86**
2033	4	**$ 2,796,162.62**	**$ 2,835,299.37**
2034	5	**$ 2,830,150.89**	**$ 2,868,799.89**
2035	6	**$ 2,864,424.92**	**$ 2,902,556.43**
2036	7	**$ 2,914,794.44**	**$ 2,951,608.53**
2037	8	**$ 2,949,782.86**	**$ 2,986,005.09**
2038	9	**$ 2,985,057.05**	**$ 3,020,657.65**
2039	10	**$ 3,020,617.00**	**$ 3,055,566.22**
2040	11	**$ 3,056,462.71**	**$ 3,090,730.80**
2041	12	**$ 3,109,118.31**	**$ 3,141,830.98**
2042	13	**$ 3,145,678.42**	**$ 3,177,635.59**
2043	14	**$ 3,182,524.29**	**$ 3,213,696.20**
2044	15	**$ 3,219,655.91**	**$ 3,250,012.82**
2045	16	**$ 3,257,073.30**	**$ 3,286,585.45**
2046	17	**$ 3,312,014.99**	**$ 3,339,733.71**
2047	18	**$ 3,350,146.78**	**$ 3,376,946.36**
	Total:	$ 59,355,526.45	$ 60,058,453.81
			$ 702,927.36

Table D.B.4.2 47th Ave Interchange Emissions Reduction Benefit

		Undiscounted Emission Benefit	
Year	Project Year	At-Grade Intersection (Existing)	Interchange (Proposed)
2021	-8	$ -	$ -
2022	-7	$ -	$ -
2023	-6	$ -	$ -
2024	-5	$ -	$ -
2025	-4	$ -	$ -
2026	-3	$ -	$ -
2027	-2	$ -	$ -
2028	-1	**$ (38,753.59)**	$ -
2029	0	**$ (40,133.95)**	$ -
2030	1	**$ (40,421.47)**	$ -
2031	2	**$ (40,022.98)**	$ -
2032	3	**$ (39,594.74)**	$ -
2033	4	**$ (39,136.75)**	$ -
2034	5	**$ (38,649.01)**	$ -
2035	6	**$ (38,131.51)**	$ -
2036	7	**$ (36,814.09)**	$ -
2037	8	**$ (36,222.22)**	$ -
2038	9	**$ (35,600.60)**	$ -
2039	10	**$ (34,949.22)**	$ -
2040	11	**$ (34,268.10)**	$ -
2041	12	**$ (32,712.67)**	$ -
2042	13	**$ (31,957.17)**	$ -
2043	14	**$ (31,171.91)**	$ -
2044	15	**$ (30,356.91)**	$ -
2045	16	**$ (29,512.15)**	$ -
2046	17	**$ (27,718.72)**	$ -
2047	18	**$ (26,799.58)**	$ -
	Total:	$ (702,927.36)	$ -
			$ (702,927.36)

Base Year For Discounting	2021

Table D.B.4.3 47th Ave Interchange Emissions Reduction Benefit

Discount Rate Varies Depending on Emission Type			**PV Emission Benefit**	
Year	**Project Year**	**Analysis Period**	**At-Grade Intersection (Existing)**	**Interchange (Proposed)**
2021	-8	27	$ -	$ -
2022	-7	26	$ -	$ -
2023	-6	25	$ -	$ -
2024	-5	24	$ -	$ -
2025	-4	23	$ -	$ -
2026	-3	22	$ -	$ -
2027	-2	21	$ -	$ -
2028	-1	20	$ **(16,449.27)**	$ -
2029	0	19	$ **(14,655.70)**	$ -
2030	1	18	$ **(12,139.61)**	$ -
2031	2	17	$ **(9,519.74)**	$ -
2032	3	16	$ **(7,034.71)**	$ -
2033	4	15	$ **(4,679.46)**	$ -
2034	5	14	$ **(2,449.00)**	$ -
2035	6	13	$ **(338.51)**	$ -
2036	7	12	$ -	$ **2,151.10**
2037	8	11	$ -	$ **4,030.60**
2038	9	10	$ -	$ **5,803.82**
2039	10	9	$ -	$ **7,475.13**
2040	11	8	$ -	$ **9,048.74**
2041	12	7	$ -	$ **10,996.35**
2042	13	6	$ -	$ **12,381.11**
2043	14	5	$ -	$ **13,680.00**
2044	15	4	$ -	$ **14,896.75**
2045	16	3	$ -	$ **16,034.94**
2046	17	2	$ -	$ **17,536.92**
2047	18	1	$ -	$ **18,522.40**
		Total:	$ (67,266.01)	$ 132,557.86
				$ 65,291.85

Table D.B.5.1 47th Ave Interchange Maintenance Benefit

		Uninflated Maintenance Cost	
Year	Project Year	At-Grade Intersection (Existing)	Interchange (Proposed)
2021	-8	$ -	$ -
2022	-7	$ -	$ -
2023	-6	$ -	$ -
2024	-5	$ -	$ -
2025	-4	$ -	$ -
2026	-3	$ -	$ -
2027	-2	**$ 396,284.62**	$ -
2028	-1	$ -	$ -
2029	0	**$ 399,868.90**	$ -
2030	1	$ -	$ -
2031	2	$ -	$ -
2032	3	$ -	$ -
2033	4	$ -	$ -
2034	5	**$ 97,160.04**	$ -
2035	6	$ -	$ -
2036	7	$ -	$ -
2037	8	$ -	$ -
2038	9	$ -	$ -
2039	10	$ -	$ -
2040	11	$ -	$ -
2041	12	$ -	$ -
2042	13	$ -	$ -
2043	14	$ -	$ -
2044	15	$ -	$ -
2045	16	$ -	$ -
2046	17	$ -	$ -
2047	18	$ -	$ -
Total:		$ 893,313.56	$ -

Current Year	2023
Inflation Rate	4%

Table D.B.5.2 47th Ave Interchange Maintenance Bene

		Inflated (to Current Year) Maintenance Cost	
Year	Project Year	At-Grade Intersection (Existing)	Interchange (Proposed)
2021	-8	$ -	$ -
2022	-7	$ -	$ -
2023	-6	$ -	$ -
2024	-5	$ -	$ -
2025	-4	$ -	$ -
2026	-3	$ -	$ -
2027	-2	**$ 463,596.95**	$ -
2028	-1	$ -	$ -
2029	0	**$ 505,961.72**	$ -
2030	1	$ -	$ -
2031	2	$ -	$ -
2032	3	$ -	$ -
2033	4	$ -	$ -
2034	5	**$ 149,573.42**	$ -
2035	6	$ -	$ -
2036	7	$ -	$ -
2037	8	$ -	$ -
2038	9	$ -	$ -
2039	10	$ -	$ -
2040	11	$ -	$ -
2041	12	$ -	$ -
2042	13	$ -	$ -
2043	14	$ -	$ -
2044	15	$ -	$ -
2045	16	$ -	$ -
2046	17	$ -	$ -
2047	18	$ -	$ -
Total:		$ 1,119,132.10	$ -

fit

Table D.B.5.3 47th Ave Interchange Maintenance Benefit

		Undiscounted Maintenance Benefit	
Year	**Project Year**	**At-Grade Intersection (Existing)**	**Interchange (Proposed)**
2021	-8	$ -	$ -
2022	-7	$ -	$ -
2023	-6	$ -	$ -
2024	-5	$ -	$ -
2025	-4	$ -	$ -
2026	-3	$ -	$ -
2027	-2	$ -	$ **463,596.95**
2028	-1	$ -	$ -
2029	0	$ -	$ **505,961.72**
2030	1	$ -	$ -
2031	2	$ -	$ -
2032	3	$ -	$ -
2033	4	$ -	$ -
2034	5	$ -	$ **149,573.42**
2035	6	$ -	$ -
2036	7	$ -	$ -
2037	8	$ -	$ -
2038	9	$ -	$ -
2039	10	$ -	$ -
2040	11	$ -	$ -
2041	12	$ -	$ -
2042	13	$ -	$ -
2043	14	$ -	$ -
2044	15	$ -	$ -
2045	16	$ -	$ -
2046	17	$ -	$ -
2047	18	$ -	$ -
Total:		$ -	$ 1,119,132.10

Base Year For Discounting	2021
Maintenance Discount Rate	7%

Table D.B.5.4 47th Ave Interchange Maintenance Benefit

			PV Maintenance Benefit	
Year	**Project Year**	**Analysis Period**	**At-Grade Intersection (Existing)**	**Interchange (Proposed)**
2021	-8	27	$ -	$ -
2022	-7	26	$ -	$ -
2023	-6	25	$ -	$ -
2024	-5	24	$ -	$ -
2025	-4	23	$ -	$ -
2026	-3	22	$ -	$ -
2027	-2	21	$ -	$ **308,914.23**
2028	-1	20	$ -	$ -
2029	0	19	$ -	$ **294,474.33**
2030	1	18	$ -	$ -
2031	2	17	$ -	$ -
2032	3	16	$ -	$ -
2033	4	15	$ -	$ -
2034	5	14	$ -	$ **62,067.65**
2035	6	13	$ -	$ -
2036	7	12	$ -	$ -
2037	8	11	$ -	$ -
2038	9	10	$ -	$ -
2039	10	9	$ -	$ -
2040	11	8	$ -	$ -
2041	12	7	$ -	$ -
2042	13	6	$ -	$ -
2043	14	5	$ -	$ -
2044	15	4	$ -	$ -
2045	16	3	$ -	$ -
2046	17	2	$ -	$ -
2047	18	1	$ -	$ -
		Total:	$ -	$ 665,456.21

Table D.B.6.1 47th Ave Interchange Design and Construction Cost

		Uninflated Construction Cost	
Year	Project Year	At-Grade Intersection (Existing)	Interchange (Proposed)
2021	-8	$ -	$ -
2022	-7	$ -	$ -
2023	-6	$ -	$ -
2024	-5	$ -	$ 580,500.00
2025	-4	$ -	$ 4,410,800.00
2026	-3	$ -	$ 18,625,115.00
2027	-2	$ -	$ 19,188,595.00
2028	-1	$ -	$ 6,222,890.00
2029	0	$ -	$ -
2030	1	$ -	$ -
2031	2	$ -	$ -
2032	3	$ -	$ -
2033	4	$ -	$ -
2034	5	$ -	$ -
2035	6	$ -	$ -
2036	7	$ -	$ -
2037	8	$ -	$ -
2038	9	$ -	$ -
2039	10	$ -	$ -
2040	11	$ -	$ -
2041	12	$ -	$ -
2042	13	$ -	$ -
2043	14	$ -	$ -
2044	15	$ -	$ -
2045	16	$ -	$ -
2046	17	$ -	$ -
2047	18	$ -	$ -
Total:		$ -	$ 49,027,900.00

Construction Costs (Cost in 2026 Dollars)

Table D.B.6.2 47th Ave Interchange Design and Construction Cost

Inflation Rate	4%	Inflated (to Project Year 0) Construction Cost	
Year	Project Year	At-Grade Intersection (Existing)	Interchange (Proposed)
2021	-8	$ -	$ -
2022	-7	$ -	$ -
2023	-6	$ -	$ -
2024	-5	$ -	$ 536,704.88
2025	-4	$ -	$ 4,241,153.85
2026	-3	$ -	$ 18,625,115.00
2027	-2	$ -	$ 19,956,138.80
2028	-1	$ -	$ 6,730,677.82
2029	0	$ -	$ -
2030	1	$ -	$ -
2031	2	$ -	$ -
2032	3	$ -	$ -
2033	4	$ -	$ -
2034	5	$ -	$ -
2035	6	$ -	$ -
2036	7	$ -	$ -
2037	8	$ -	$ -
2038	9	$ -	$ -
2039	10	$ -	$ -
2040	11	$ -	$ -
2041	12	$ -	$ -
2042	13	$ -	$ -
2043	14	$ -	$ -
2044	15	$ -	$ -
2045	16	$ -	$ -
2046	17	$ -	$ -
2047	18	$ -	$ -
Total:		$ -	$ 50,089,790.35

Table D.B.6.3 47th Ave Interchange Design and Construction Cost

		Undiscounted Construction Cost	
Year	Project Year	At-Grade Intersection (Existing)	Interchange (Proposed)
2021	-8	$ -	$ -
2022	-7	$ -	$ -
2023	-6	$ -	$ -
2024	-5	$ -	$ **536,704.88**
2025	-4	$ -	$ **4,241,153.85**
2026	-3	$ -	$ **18,625,115.00**
2027	-2	$ -	$ **19,956,138.80**
2028	-1	$ -	$ **6,730,677.82**
2029	0	$ -	$ -
2030	1	$ -	$ -
2031	2	$ -	$ -
2032	3	$ -	$ -
2033	4	$ -	$ -
2034	5	$ -	$ -
2035	6	$ -	$ -
2036	7	$ -	$ -
2037	8	$ -	$ -
2038	9	$ -	$ -
2039	10	$ -	$ -
2040	11	$ -	$ -
2041	12	$ -	$ -
2042	13	$ -	$ -
2043	14	$ -	$ -
2044	15	$ -	$ -
2045	16	$ -	$ -
2046	17	$ -	$ -
2047	18	$ -	$ -
Total:		$ -	$ 50,089,790.35

Base Year For Discounting	2021
Construction Discount Rate	7%

Table D.B.6.4 47th Ave Interchange Design and Construction Cost

Year	Project Year	Analysis Period	PV Construction Cost	
			At-Grade Intersection (Existing)	Interchange (Proposed)
2021	-8	27	$ -	$ -
2022	-7	26	$ -	$ -
2023	-6	25	$ -	$ -
2024	-5	24	$ -	$ **438,111.06**
2025	-4	23	$ -	$ **3,235,555.96**
2026	-3	22	$ -	$ **13,279,449.59**
2027	-2	21	$ -	$ **13,297,617.91**
2028	-1	20	$ -	$ **4,191,527.88**
2029	0	19	$ -	$ -
2030	1	18	$ -	$ -
2031	2	17	$ -	$ -
2032	3	16	$ -	$ -
2033	4	15	$ -	$ -
2034	5	14	$ -	$ -
2035	6	13	$ -	$ -
2036	7	12	$ -	$ -
2037	8	11	$ -	$ -
2038	9	10	$ -	$ -
2039	10	9	$ -	$ -
2040	11	8	$ -	$ -
2041	12	7	$ -	$ -
2042	13	6	$ -	$ -
2043	14	5	$ -	$ -
2044	15	4	$ -	$ -
2045	16	3	$ -	$ -
2046	17	2	$ -	$ -
2047	18	1	$ -	$ -
Total:			$ -	$ 34,442,262.39

Table D.B.6.5 47th Ave Interchange Yearly Construction Costs (Cost in 2026 Dollars)

	Yearly Construction Cost							
Year	Engineering	ROW	Grading and Draining	Subbase/Base	Surfacing	Major Structures	Lighting/Signals	Other Costs
2021	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2022	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2023	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2024	$ 580,500.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2025	$ 870,750.00	$ 2,736,000.00	$ -	$ -	$ -	$ -	$ -	$ 804,050.00
2026	$ 2,031,750.00	$ 1,824,000.00	$ 5,079,360.00	$ 1,003,680.00	$ 3,388,200.00	$ 2,952,000.00	$ 336,000.00	$ 2,010,125.00
2027	$ 1,741,500.00	$ -	$ 3,232,320.00	$ 1,254,600.00	$ 6,776,400.00	$ 2,361,600.00	$ 1,008,000.00	$ 2,814,175.00
2028	$ 580,500.00	$ -	$ 923,520.00	$ 250,920.00	$ 1,129,400.00	$ 590,400.00	$ 336,000.00	$ 2,412,150.00
2029	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2030	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2031	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2032	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2033	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2034	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2035	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2036	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2037	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2038	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2039	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2040	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2041	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2042	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2043	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2044	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2045	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2046	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2047	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Total:	$ 5,805,000.00	$ 4,560,000.00	$ 9,235,200.00	$ 2,509,200.00	$ 11,294,000.00	$ 5,904,000.00	$ 1,680,000.00	$ 8,040,500.00
								$ 49,027,900.00

Table D.B.7.1 47th Ave Interchange Salvage Value

Salvage Year		2045	PV Salvage Value	
Year	**Project Year**	**Analysis Period**	**At-Grade Intersection (Existing)**	**Interchange (Proposed)**
2021	-8	27	$ -	$ -
2022	-7	26	$ -	$ -
2023	-6	25	$ -	$ -
2024	-5	24	$ -	$ -
2025	-4	23	$ -	**$ 2,025,692.31**
2026	-3	22	$ -	**$ 6,995,001.60**
2027	-2	21	$ -	**$ 5,293,542.38**
2028	-1	20	$ -	**$ 1,405,054.64**
2029	0	19	$ -	$ -
2030	1	18	$ -	$ -
2031	2	17	$ -	$ -
2032	3	16	$ -	$ -
2033	4	15	$ -	$ -
2034	5	14	$ -	$ -
2035	6	13	$ -	$ -
2036	7	12	$ -	$ -
2037	8	11	$ -	$ -
2038	9	10	$ -	$ -
2039	10	9	$ -	$ -
2040	11	8	$ -	$ -
2041	12	7	$ -	$ -
2042	13	6	$ -	$ -
2043	14	5	$ -	$ -
2044	15	4	$ -	$ -
2045	16	3	$ -	$ -
2046	17	2	$ -	$ -
2047	18	1	$ -	$ -
		Total:	$ -	$ 15,719,290.93
		Construction Discount Rate	7%	$ 3,099,005.08

Table D.B.8.1 47th Ave Interchange Pedestrian Benefit

		Pedestrian Benefit	
Year	Project Year	At-Grade Intersection (Existing)	Interchange (Proposed)
2021	-8	$ -	$ -
2022	-7	$ -	$ -
2023	-6	$ -	$ -
2024	-5	$ -	$ -
2025	-4	$ -	$ -
2026	-3	$ -	$ -
2027	-2	$ -	$ -
2028	-1	$ -	$ -
2029	0	$ -	$ -
2030	1	$ -	$ -
2031	2	$ -	$ -
2032	3	$ -	$ -
2033	4	$ -	$ -
2034	5	$ -	$ -
2035	6	$ -	$ -
2036	7	$ -	$ -
2037	8	$ -	$ -
2038	9	$ -	$ -
2039	10	$ -	$ -
2040	11	$ -	$ -
2041	12	$ -	$ -
2042	13	$ -	$ -
2043	14	$ -	$ -
2044	15	$ -	$ -
2045	16	$ -	$ -
2046	17	$ -	$ -
2047	18	$ -	$ -
	Total:	$ -	$ -

Base Year For Discounting	2021
Pedestrian Facilities Discount Rate	7%

Table D.B.8.2 47th Ave Interchange Pedestrian Benefit

			PV Pedestrian Benefit	
Year	Project Year	Analysis Period	At-Grade Intersection (Existing)	Interchange (Proposed)
2021	-8	27	$ -	$ -
2022	-7	26	$ -	$ -
2023	-6	25	$ -	$ -
2024	-5	24	$ -	$ -
2025	-4	23	$ -	$ -
2026	-3	22	$ -	$ -
2027	-2	21	$ -	$ -
2028	-1	20	$ -	$ -
2029	0	19	$ -	$ -
2030	1	18	$ -	$ -
2031	2	17	$ -	$ -
2032	3	16	$ -	$ -
2033	4	15	$ -	$ -
2034	5	14	$ -	$ -
2035	6	13	$ -	$ -
2036	7	12	$ -	$ -
2037	8	11	$ -	$ -
2038	9	10	$ -	$ -
2039	10	9	$ -	$ -
2040	11	8	$ -	$ -
2041	12	7	$ -	$ -
2042	13	6	$ -	$ -
2043	14	5	$ -	$ -
2044	15	4	$ -	$ -
2045	16	3	$ -	$ -
2046	17	2	$ -	$ -
2047	18	1	$ -	$ -
		Total:	$ -	$ -

Table D.B.9.1 47th Ave Interchange Health Benefit

		Health Benefit	
Year	Project Year	At-Grade Intersection (Existing)	Interchange (Proposed)
2021	-8	$ -	$ -
2022	-7	$ -	$ -
2023	-6	$ -	$ -
2024	-5	$ -	$ -
2025	-4	$ -	$ -
2026	-3	$ -	$ -
2027	-2	$ -	$ -
2028	-1	$ -	$ -
2029	0	$ -	$ -
2030	1	$ -	$ -
2031	2	$ -	$ -
2032	3	$ -	$ -
2033	4	$ -	$ -
2034	5	$ -	$ -
2035	6	$ -	$ -
2036	7	$ -	$ -
2037	8	$ -	$ -
2038	9	$ -	$ -
2039	10	$ -	$ -
2040	11	$ -	$ -
2041	12	$ -	$ -
2042	13	$ -	$ -
2043	14	$ -	$ -
2044	15	$ -	$ -
2045	16	$ -	$ -
2046	17	$ -	$ -
2047	18	$ -	$ -
	Total:	$ -	$ -

Base Year For Discounting	2021
Health Improvements Discount Rate	7%

Table D.B.9.2 47th Ave Interchange Health Benefit

			PV Health Benefit	
Year	Project Year	Analysis Period	At-Grade Intersection (Existing)	Interchange (Proposed)
2021	-8	27	$ -	$ -
2022	-7	26	$ -	$ -
2023	-6	25	$ -	$ -
2024	-5	24	$ -	$ -
2025	-4	23	$ -	$ -
2026	-3	22	$ -	$ -
2027	-2	21	$ -	$ -
2028	-1	20	$ -	$ -
2029	0	19	$ -	$ -
2030	1	18	$ -	$ -
2031	2	17	$ -	$ -
2032	3	16	$ -	$ -
2033	4	15	$ -	$ -
2034	5	14	$ -	$ -
2035	6	13	$ -	$ -
2036	7	12	$ -	$ -
2037	8	11	$ -	$ -
2038	9	10	$ -	$ -
2039	10	9	$ -	$ -
2040	11	8	$ -	$ -
2041	12	7	$ -	$ -
2042	13	6	$ -	$ -
2043	14	5	$ -	$ -
2044	15	4	$ -	$ -
2045	16	3	$ -	$ -
2046	17	2	$ -	$ -
2047	18	1	$ -	$ -
		Total:	$ -	$ -

Table D.B.10.1 47th Ave Interchange Bicyling Benefit

		Bicycle Benefit	
Year	Project Year	At-Grade Intersection (Existing)	Interchange (Proposed)
2021	-8	$ -	$ -
2022	-7	$ -	$ -
2023	-6	$ -	$ -
2024	-5	$ -	$ -
2025	-4	$ -	$ -
2026	-3	$ -	$ -
2027	-2	$ -	$ -
2028	-1	$ -	$ -
2029	0	$ -	$ -
2030	1	$ -	$ -
2031	2	$ -	$ -
2032	3	$ -	$ -
2033	4	$ -	$ -
2034	5	$ -	$ -
2035	6	$ -	$ -
2036	7	$ -	$ -
2037	8	$ -	$ -
2038	9	$ -	$ -
2039	10	$ -	$ -
2040	11	$ -	$ -
2041	12	$ -	$ -
2042	13	$ -	$ -
2043	14	$ -	$ -
2044	15	$ -	$ -
2045	16	$ -	$ -
2046	17	$ -	$ -
2047	18	$ -	$ -
	Total:	$ -	$ -

Base Year For Discounting	2021
Cycling Facilities Discount Rate	7%

Table D.B.10.2 47th Ave Interchange Bicyling Benefit

			PV Bicyle Benefit	
Year	Project Year	Analysis Period	At-Grade Intersection (Existing)	Interchange (Proposed)
2021	-8	27	$ -	$ -
2022	-7	26	$ -	$ -
2023	-6	25	$ -	$ -
2024	-5	24	$ -	$ -
2025	-4	23	$ -	$ -
2026	-3	22	$ -	$ -
2027	-2	21	$ -	$ -
2028	-1	20	$ -	$ -
2029	0	19	$ -	$ -
2030	1	18	$ -	$ -
2031	2	17	$ -	$ -
2032	3	16	$ -	$ -
2033	4	15	$ -	$ -
2034	5	14	$ -	$ -
2035	6	13	$ -	$ -
2036	7	12	$ -	$ -
2037	8	11	$ -	$ -
2038	9	10	$ -	$ -
2039	10	9	$ -	$ -
2040	11	8	$ -	$ -
2041	12	7	$ -	$ -
2042	13	6	$ -	$ -
2043	14	5	$ -	$ -
2044	15	4	$ -	$ -
2045	16	3	$ -	$ -
2046	17	2	$ -	$ -
2047	18	1	$ -	$ -
		Total:	$ -	$ -

Table D.B.11.1 47th Ave Interchange Transit Amenity Benefit

		Bicycle Benefit	
Year	Project Year	At-Grade Intersection (Existing)	Interchange (Proposed)
2021	-8	$ -	$ -
2022	-7	$ -	$ -
2023	-6	$ -	$ -
2024	-5	$ -	$ -
2025	-4	$ -	$ -
2026	-3	$ -	$ -
2027	-2	$ -	$ -
2028	-1	$ -	$ -
2029	0	$ -	$ -
2030	1	$ -	$ -
2031	2	$ -	$ -
2032	3	$ -	$ -
2033	4	$ -	$ -
2034	5	$ -	$ -
2035	6	$ -	$ -
2036	7	$ -	$ -
2037	8	$ -	$ -
2038	9	$ -	$ -
2039	10	$ -	$ -
2040	11	$ -	$ -
2041	12	$ -	$ -
2042	13	$ -	$ -
2043	14	$ -	$ -
2044	15	$ -	$ -
2045	16	$ -	$ -
2046	17	$ -	$ -
2047	18	$ -	$ -
	Total:	$ -	$ -

Base Year For Discounting	2021
Transit Amenity Discount Rate	7%

Table D.B.11.2 47th Ave Interchange Transit Amenity Benefit

			PV Bicyle Benefit	
Year	Project Year	Analysis Period	At-Grade Intersection (Existing)	Interchange (Proposed)
2021	-8	27	$ -	$ -
2022	-7	26	$ -	$ -
2023	-6	25	$ -	$ -
2024	-5	24	$ -	$ -
2025	-4	23	$ -	$ -
2026	-3	22	$ -	$ -
2027	-2	21	$ -	$ -
2028	-1	20	$ -	$ -
2029	0	19	$ -	$ -
2030	1	18	$ -	$ -
2031	2	17	$ -	$ -
2032	3	16	$ -	$ -
2033	4	15	$ -	$ -
2034	5	14	$ -	$ -
2035	6	13	$ -	$ -
2036	7	12	$ -	$ -
2037	8	11	$ -	$ -
2038	9	10	$ -	$ -
2039	10	9	$ -	$ -
2040	11	8	$ -	$ -
2041	12	7	$ -	$ -
2042	13	6	$ -	$ -
2043	14	5	$ -	$ -
2044	15	4	$ -	$ -
2045	16	3	$ -	$ -
2046	17	2	$ -	$ -
2047	18	1	$ -	$ -
		Total:	$ -	$ -

Table D.B.12.1 47th Ave Interchange Public Transit Travel Time Cost

		Public Transit Travel Time Cost	
Year	Project Year	At-Grade Intersection (Existing)	Interchange (Proposed)
2021	-8	$ -	$ -
2022	-7	$ -	$ -
2023	-6	$ -	$ -
2024	-5	$ -	$ -
2025	-4	$ -	$ -
2026	-3	$ -	$ -
2027	-2	$ -	$ -
2028	-1	$ -	$ -
2029	0	$ -	$ -
2030	1	$ -	$ -
2031	2	$ -	$ -
2032	3	$ -	$ -
2033	4	$ -	$ -
2034	5	$ -	$ -
2035	6	$ -	$ -
2036	7	$ -	$ -
2037	8	$ -	$ -
2038	9	$ -	$ -
2039	10	$ -	$ -
2040	11	$ -	$ -
2041	12	$ -	$ -
2042	13	$ -	$ -
2043	14	$ -	$ -
2044	15	$ -	$ -
2045	16	$ -	$ -
2046	17	$ -	$ -
2047	18	$ -	$ -
	Total:	$ -	$ -
			$ -

Table D.B.12.2 47th Ave Interchange Public Transit Travel Time Cost

		Undiscounted Public Transit Travel Time Cost	
Year	Project Year	At-Grade Intersection (Existing)	Interchange (Proposed)
2021	-8	$ -	$ -
2022	-7	$ -	$ -
2023	-6	$ -	$ -
2024	-5	$ -	$ -
2025	-4	$ -	$ -
2026	-3	$ -	$ -
2027	-2	$ -	$ -
2028	-1	$ -	$ -
2029	0	$ -	$ -
2030	1	$ -	$ -
2031	2	$ -	$ -
2032	3	$ -	$ -
2033	4	$ -	$ -
2034	5	$ -	$ -
2035	6	$ -	$ -
2036	7	$ -	$ -
2037	8	$ -	$ -
2038	9	$ -	$ -
2039	10	$ -	$ -
2040	11	$ -	$ -
2041	12	$ -	$ -
2042	13	$ -	$ -
2043	14	$ -	$ -
2044	15	$ -	$ -
2045	16	$ -	$ -
2046	17	$ -	$ -
2047	18	$ -	$ -
	Total:	$ -	$ -
			$ -

Base Year For Discounting	2021
Public Transit Travel Time Discount Rate	7%

Table D.B.12.3 47th Ave Interchange Public Transit Travel Time Cost

			PV Public Transit Travel Time Cost	
Year	**Project Year**	**Analysis Period**	**At-Grade Intersection (Existing)**	**Interchange (Proposed)**
2021	-8	27	$ -	$ -
2022	-7	26	$ -	$ -
2023	-6	25	$ -	$ -
2024	-5	24	$ -	$ -
2025	-4	23	$ -	$ -
2026	-3	22	$ -	$ -
2027	-2	21	$ -	$ -
2028	-1	20	$ -	$ -
2029	0	19	$ -	$ -
2030	1	18	$ -	$ -
2031	2	17	$ -	$ -
2032	3	16	$ -	$ -
2033	4	15	$ -	$ -
2034	5	14	$ -	$ -
2035	6	13	$ -	$ -
2036	7	12	$ -	$ -
2037	8	11	$ -	$ -
2038	9	10	$ -	$ -
2039	10	9	$ -	$ -
2040	11	8	$ -	$ -
2041	12	7	$ -	$ -
2042	13	6	$ -	$ -
2043	14	5	$ -	$ -
2044	15	4	$ -	$ -
2045	16	3	$ -	$ -
2046	17	2	$ -	$ -
2047	18	1	$ -	$ -
		Total:	$ -	$ -
				$ -

Table D.C.1.1 Mobility Hub Travel Time Benefit

Year	Project Year	Travel Time Cost					
		No Build			Build (Mobility Hub)		
		Light Vehicle	Heavy Vehicle	Total	Light Vehicle	Heavy Vehicle	Total
2021	-8	$ -	$ -	$ -	$ -	$ -	$ -
2022	-7	$ -	$ -	$ -	$ -	$ -	$ -
2023	-6	$ -	$ -	$ -	$ -	$ -	$ -
2024	-5	$ -	$ -	$ -	$ -	$ -	$ -
2025	-4	$ -	$ -	$ -	$ -	$ -	$ -
2026	-3	$ -	$ -	$ -	$ -	$ -	$ -
2027	-2	$ -	$ -	$ -	$ -	$ -	$ -
2028	-1	$ -	$ -	$ -	$ -	$ -	$ -
2029	0	$ -	$ -	$ -	$ -	$ -	$ -
2030	1	$ -	$ -	$ -	$ -	$ -	$ -
2031	2	$ -	$ -	$ -	$ -	$ -	$ -
2032	3	$ -	$ -	$ -	$ -	$ -	$ -
2033	4	$ -	$ -	$ -	$ -	$ -	$ -
2034	5	$ -	$ -	$ -	$ -	$ -	$ -
2035	6	$ -	$ -	$ -	$ -	$ -	$ -
2036	7	$ -	$ -	$ -	$ -	$ -	$ -
2037	8	$ -	$ -	$ -	$ -	$ -	$ -
2038	9	$ -	$ -	$ -	$ -	$ -	$ -
2039	10	$ -	$ -	$ -	$ -	$ -	$ -
2040	11	$ -	$ -	$ -	$ -	$ -	$ -
2041	12	$ -	$ -	$ -	$ -	$ -	$ -
2042	13	$ -	$ -	$ -	$ -	$ -	$ -
2043	14	$ -	$ -	$ -	$ -	$ -	$ -
2044	15	$ -	$ -	$ -	$ -	$ -	$ -
2045	16	$ -	$ -	$ -	$ -	$ -	$ -
2046	17	$ -	$ -	$ -	$ -	$ -	$ -
2047	18	$ -	$ -	$ -	$ -	$ -	$ -
Total:		$ -			$ -		

Table D.C.1.2 Mobility Hub Travel Time Benefit

Year	Project Year	Undiscounted Travel Time Cost					
		No Build			Build (Mobility Hub)		
		Light Vehicle	Heavy Vehicle	Total	Light Vehicle	Heavy Vehicle	Total
2021	-8	$ -	$ -	$ -	$ -	$ -	$ -
2022	-7	$ -	$ -	$ -	$ -	$ -	$ -
2023	-6	$ -	$ -	$ -	$ -	$ -	$ -
2024	-5	$ -	$ -	$ -	$ -	$ -	$ -
2025	-4	$ -	$ -	$ -	$ -	$ -	$ -
2026	-3	$ -	$ -	$ -	$ -	$ -	$ -
2027	-2	$ -	$ -	$ -	$ -	$ -	$ -
2028	-1	$ -	$ -	$ -	$ -	$ -	$ -
2029	0	$ -	$ -	$ -	$ -	$ -	$ -
2030	1	$ -	$ -	$ -	$ -	$ -	$ -
2031	2	$ -	$ -	$ -	$ -	$ -	$ -
2032	3	$ -	$ -	$ -	$ -	$ -	$ -
2033	4	$ -	$ -	$ -	$ -	$ -	$ -
2034	5	$ -	$ -	$ -	$ -	$ -	$ -
2035	6	$ -	$ -	$ -	$ -	$ -	$ -
2036	7	$ -	$ -	$ -	$ -	$ -	$ -
2037	8	$ -	$ -	$ -	$ -	$ -	$ -
2038	9	$ -	$ -	$ -	$ -	$ -	$ -
2039	10	$ -	$ -	$ -	$ -	$ -	$ -
2040	11	$ -	$ -	$ -	$ -	$ -	$ -
2041	12	$ -	$ -	$ -	$ -	$ -	$ -
2042	13	$ -	$ -	$ -	$ -	$ -	$ -
2043	14	$ -	$ -	$ -	$ -	$ -	$ -
2044	15	$ -	$ -	$ -	$ -	$ -	$ -
2045	16	$ -	$ -	$ -	$ -	$ -	$ -
2046	17	$ -	$ -	$ -	$ -	$ -	$ -
2047	18	$ -	$ -	$ -	$ -	$ -	$ -
Total:		$ -			$ -		

Base Year For Discounting	2021
Travel Time Discount Rate	7%

Table D.C.1.3 Mobility Hub Travel Time Benefit

Year	Project Year	Analysis Period	PV Travel Time Cost					
			No Build			Build (Mobility Hub)		
			Light Vehicle	Heavy Vehicle	Total	Light Vehicle	Heavy Vehicle	Total
2021	-8	27	$ -	$ -	$ -	$ -	$ -	$ -
2022	-7	26	$ -	$ -	$ -	$ -	$ -	$ -
2023	-6	25	$ -	$ -	$ -	$ -	$ -	$ -
2024	-5	24	$ -	$ -	$ -	$ -	$ -	$ -
2025	-4	23	$ -	$ -	$ -	$ -	$ -	$ -
2026	-3	22	$ -	$ -	$ -	$ -	$ -	$ -
2027	-2	21	$ -	$ -	$ -	$ -	$ -	$ -
2028	-1	20	$ -	$ -	$ -	$ -	$ -	$ -
2029	0	19	$ -	$ -	$ -	$ -	$ -	$ -
2030	1	18	$ -	$ -	$ -	$ -	$ -	$ -
2031	2	17	$ -	$ -	$ -	$ -	$ -	$ -
2032	3	16	$ -	$ -	$ -	$ -	$ -	$ -
2033	4	15	$ -	$ -	$ -	$ -	$ -	$ -
2034	5	14	$ -	$ -	$ -	$ -	$ -	$ -
2035	6	13	$ -	$ -	$ -	$ -	$ -	$ -
2036	7	12	$ -	$ -	$ -	$ -	$ -	$ -
2037	8	11	$ -	$ -	$ -	$ -	$ -	$ -
2038	9	10	$ -	$ -	$ -	$ -	$ -	$ -
2039	10	9	$ -	$ -	$ -	$ -	$ -	$ -
2040	11	8	$ -	$ -	$ -	$ -	$ -	$ -
2041	12	7	$ -	$ -	$ -	$ -	$ -	$ -
2042	13	6	$ -	$ -	$ -	$ -	$ -	$ -
2043	14	5	$ -	$ -	$ -	$ -	$ -	$ -
2044	15	4	$ -	$ -	$ -	$ -	$ -	$ -
2045	16	3	$ -	$ -	$ -	$ -	$ -	$ -
2046	17	2	$ -	$ -	$ -	$ -	$ -	$ -
2047	18	1	$ -	$ -	$ -	$ -	$ -	$ -
				Total:	$ -			$ -

Table D.C.2.1 Mobility Hub Collision Reduction Benefit

		Collision Cost	
Year	Project Year	No Build	Build (Mobility Hub)
2021	-8	$ -	$ -
2022	-7	$ -	$ -
2023	-6	$ -	$ -
2024	-5	$ -	$ -
2025	-4	$ -	$ -
2026	-3	$ -	$ -
2027	-2	$ -	$ -
2028	-1	$ -	$ -
2029	0	$ -	$ -
2030	1	$ -	$ -
2031	2	$ -	$ -
2032	3	$ -	$ -
2033	4	$ -	$ -
2034	5	$ -	$ -
2035	6	$ -	$ -
2036	7	$ -	$ -
2037	8	$ -	$ -
2038	9	$ -	$ -
2039	10	$ -	$ -
2040	11	$ -	$ -
2041	12	$ -	$ -
2042	13	$ -	$ -
2043	14	$ -	$ -
2044	15	$ -	$ -
2045	16	$ -	$ -
2046	17	$ -	$ -
2047	18	$ -	$ -
Total:		$ -	$ -

Table D.C.2.2 Mobility Hub Collision Reduction Benefit

		Undiscounted Collision Cost	
Year	Project Year	No Build	Build (Mobility Hub)
2021	-8	$ -	$ -
2022	-7	$ -	$ -
2023	-6	$ -	$ -
2024	-5	$ -	$ -
2025	-4	$ -	$ -
2026	-3	$ -	$ -
2027	-2	$ -	$ -
2028	-1	$ -	$ -
2029	0	$ -	$ -
2030	1	$ -	$ -
2031	2	$ -	$ -
2032	3	$ -	$ -
2033	4	$ -	$ -
2034	5	$ -	$ -
2035	6	$ -	$ -
2036	7	$ -	$ -
2037	8	$ -	$ -
2038	9	$ -	$ -
2039	10	$ -	$ -
2040	11	$ -	$ -
2041	12	$ -	$ -
2042	13	$ -	$ -
2043	14	$ -	$ -
2044	15	$ -	$ -
2045	16	$ -	$ -
2046	17	$ -	$ -
2047	18	$ -	$ -
Total:		$ -	$ -

Base Year For Discounting		2021
Safety Discount Rate		7%

Table D.C.2.3 Mobility Hub Collision Reduction Benefit

			PV Collision Cost	
Year	**Project Year**	**Analysis Period**	**No Build**	**Build (Mobility Hub)**
2021	-8	27	$ -	$ -
2022	-7	26	$ -	$ -
2023	-6	25	$ -	$ -
2024	-5	24	$ -	$ -
2025	-4	23	$ -	$ -
2026	-3	22	$ -	$ -
2027	-2	21	$ -	$ -
2028	-1	20	$ -	$ -
2029	0	19	$ -	$ -
2030	1	18	$ -	$ -
2031	2	17	$ -	$ -
2032	3	16	$ -	$ -
2033	4	15	$ -	$ -
2034	5	14	$ -	$ -
2035	6	13	$ -	$ -
2036	7	12	$ -	$ -
2037	8	11	$ -	$ -
2038	9	10	$ -	$ -
2039	10	9	$ -	$ -
2040	11	8	$ -	$ -
2041	12	7	$ -	$ -
2042	13	6	$ -	$ -
2043	14	5	$ -	$ -
2044	15	4	$ -	$ -
2045	16	3	$ -	$ -
2046	17	2	$ -	$ -
2047	18	1	$ -	$ -
		Total:	$ -	$ -

Table D.C.3.1 Mobility Hub Vehicle Operating Benefit

Year	Project Year	Vehicle Operating Cost					
		No Build			Build (Mobility Hub)		
		Light Vehicle	Heavy Vehicle	Total	Light Vehicle	Heavy Vehicle	Total
2021	-8	$ -	$ -	$ -	$ -	$ -	$ -
2022	-7	$ -	$ -	$ -	$ -	$ -	$ -
2023	-6	$ -	$ -	$ -	$ -	$ -	$ -
2024	-5	$ -	$ -	$ -	$ -	$ -	$ -
2025	-4	$ -	$ -	$ -	$ -	$ -	$ -
2026	-3	$ -	$ -	$ -	$ -	$ -	$ -
2027	-2	$ -	$ -	$ -	$ -	$ -	$ -
2028	-1	$ -	$ -	$ -	$ -	$ -	$ -
2029	0	$ -	$ -	$ -	$ -	$ -	$ -
2030	1	$ -	$ -	$ -	$ -	$ -	$ -
2031	2	$ -	$ -	$ -	$ -	$ -	$ -
2032	3	$ -	$ -	$ -	$ -	$ -	$ -
2033	4	$ -	$ -	$ -	$ -	$ -	$ -
2034	5	$ -	$ -	$ -	$ -	$ -	$ -
2035	6	$ -	$ -	$ -	$ -	$ -	$ -
2036	7	$ -	$ -	$ -	$ -	$ -	$ -
2037	8	$ -	$ -	$ -	$ -	$ -	$ -
2038	9	$ -	$ -	$ -	$ -	$ -	$ -
2039	10	$ -	$ -	$ -	$ -	$ -	$ -
2040	11	$ -	$ -	$ -	$ -	$ -	$ -
2041	12	$ -	$ -	$ -	$ -	$ -	$ -
2042	13	$ -	$ -	$ -	$ -	$ -	$ -
2043	14	$ -	$ -	$ -	$ -	$ -	$ -
2044	15	$ -	$ -	$ -	$ -	$ -	$ -
2045	16	$ -	$ -	$ -	$ -	$ -	$ -
2046	17	$ -	$ -	$ -	$ -	$ -	$ -
2047	18	$ -	$ -	$ -	$ -	$ -	$ -
Total:		$ -			$ -		

Table D.C.3.2 Mobility Hub Vehicle Operating Benefit

Year	Project Year	Undiscounted Vehicle Operating Cost					
		No Build			Build (Mobility Hub)		
		Light Vehicle	Heavy Vehicle	Total	Light Vehicle	Heavy Vehicle	Total
2021	-8	$ -	$ -	$ -	$ -	$ -	$ -
2022	-7	$ -	$ -	$ -	$ -	$ -	$ -
2023	-6	$ -	$ -	$ -	$ -	$ -	$ -
2024	-5	$ -	$ -	$ -	$ -	$ -	$ -
2025	-4	$ -	$ -	$ -	$ -	$ -	$ -
2026	-3	$ -	$ -	$ -	$ -	$ -	$ -
2027	-2	$ -	$ -	$ -	$ -	$ -	$ -
2028	-1	$ -	$ -	$ -	$ -	$ -	$ -
2029	0	$ -	$ -	$ -	$ -	$ -	$ -
2030	1	$ -	$ -	$ -	$ -	$ -	$ -
2031	2	$ -	$ -	$ -	$ -	$ -	$ -
2032	3	$ -	$ -	$ -	$ -	$ -	$ -
2033	4	$ -	$ -	$ -	$ -	$ -	$ -
2034	5	$ -	$ -	$ -	$ -	$ -	$ -
2035	6	$ -	$ -	$ -	$ -	$ -	$ -
2036	7	$ -	$ -	$ -	$ -	$ -	$ -
2037	8	$ -	$ -	$ -	$ -	$ -	$ -
2038	9	$ -	$ -	$ -	$ -	$ -	$ -
2039	10	$ -	$ -	$ -	$ -	$ -	$ -
2040	11	$ -	$ -	$ -	$ -	$ -	$ -
2041	12	$ -	$ -	$ -	$ -	$ -	$ -
2042	13	$ -	$ -	$ -	$ -	$ -	$ -
2043	14	$ -	$ -	$ -	$ -	$ -	$ -
2044	15	$ -	$ -	$ -	$ -	$ -	$ -
2045	16	$ -	$ -	$ -	$ -	$ -	$ -
2046	17	$ -	$ -	$ -	$ -	$ -	$ -
2047	18	$ -	$ -	$ -	$ -	$ -	$ -
Total:		$	-		$	-	

Base Year For Discounting	2021
Vehicle Operating Costs Discount Rate	7%

Table D.C.3.3 Mobility Hub Vehicle Operating Benefit

Year	Project Year	Analysis Period	PV Vehicle Operating Cost					
			No Build			Build (Mobility Hub)		
			Light Vehicle	Heavy Vehicle	Total	Light Vehicle	Heavy Vehicle	Total
2021	-8	27	$ -	$ -	$ -	$ -	$ -	$ -
2022	-7	26	$ -	$ -	$ -	$ -	$ -	$ -
2023	-6	25	$ -	$ -	$ -	$ -	$ -	$ -
2024	-5	24	$ -	$ -	$ -	$ -	$ -	$ -
2025	-4	23	$ -	$ -	$ -	$ -	$ -	$ -
2026	-3	22	$ -	$ -	$ -	$ -	$ -	$ -
2027	-2	21	$ -	$ -	$ -	$ -	$ -	$ -
2028	-1	20	$ -	$ -	$ -	$ -	$ -	$ -
2029	0	19	$ -	$ -	$ -	$ -	$ -	$ -
2030	1	18	$ -	$ -	$ -	$ -	$ -	$ -
2031	2	17	$ -	$ -	$ -	$ -	$ -	$ -
2032	3	16	$ -	$ -	$ -	$ -	$ -	$ -
2033	4	15	$ -	$ -	$ -	$ -	$ -	$ -
2034	5	14	$ -	$ -	$ -	$ -	$ -	$ -
2035	6	13	$ -	$ -	$ -	$ -	$ -	$ -
2036	7	12	$ -	$ -	$ -	$ -	$ -	$ -
2037	8	11	$ -	$ -	$ -	$ -	$ -	$ -
2038	9	10	$ -	$ -	$ -	$ -	$ -	$ -
2039	10	9	$ -	$ -	$ -	$ -	$ -	$ -
2040	11	8	$ -	$ -	$ -	$ -	$ -	$ -
2041	12	7	$ -	$ -	$ -	$ -	$ -	$ -
2042	13	6	$ -	$ -	$ -	$ -	$ -	$ -
2043	14	5	$ -	$ -	$ -	$ -	$ -	$ -
2044	15	4	$ -	$ -	$ -	$ -	$ -	$ -
2045	16	3	$ -	$ -	$ -	$ -	$ -	$ -
2046	17	2	$ -	$ -	$ -	$ -	$ -	$ -
2047	18	1	$ -	$ -	$ -	$ -	$ -	$ -
				Total:	$ -			$ -

Table D.C.4.1 Mobility Hub Emissions Reduction Benefit

		Emissions Cost	
Year	Project Year	No Build	Build (Mobility Hub)
2021	-8	$ -	$ -
2022	-7	$ -	$ -
2023	-6	$ -	$ -
2024	-5	$ -	$ -
2025	-4	$ -	$ -
2026	-3	$ -	$ -
2027	-2	$ -	$ -
2028	-1	$ -	$ -
2029	0	$ -	$ -
2030	1	$ -	$ -
2031	2	$ -	$ -
2032	3	$ -	$ -
2033	4	$ -	$ -
2034	5	$ -	$ -
2035	6	$ -	$ -
2036	7	$ -	$ -
2037	8	$ -	$ -
2038	9	$ -	$ -
2039	10	$ -	$ -
2040	11	$ -	$ -
2041	12	$ -	$ -
2042	13	$ -	$ -
2043	14	$ -	$ -
2044	15	$ -	$ -
2045	16	$ -	$ -
2046	17	$ -	$ -
2047	18	$ -	$ -
	Total:	$ -	$ -
			$ -

Table D.C.4.2 Mobility Hub Emissions Reduction Benefit

		Undiscounted Emission Cost	
Year	Project Year	No Build	Build (Mobility Hub)
2021	-8	$ -	$ -
2022	-7	$ -	$ -
2023	-6	$ -	$ -
2024	-5	$ -	$ -
2025	-4	$ -	$ -
2026	-3	$ -	$ -
2027	-2	$ -	$ -
2028	-1	$ -	$ -
2029	0	$ -	$ -
2030	1	$ -	$ -
2031	2	$ -	$ -
2032	3	$ -	$ -
2033	4	$ -	$ -
2034	5	$ -	$ -
2035	6	$ -	$ -
2036	7	$ -	$ -
2037	8	$ -	$ -
2038	9	$ -	$ -
2039	10	$ -	$ -
2040	11	$ -	$ -
2041	12	$ -	$ -
2042	13	$ -	$ -
2043	14	$ -	$ -
2044	15	$ -	$ -
2045	16	$ -	$ -
2046	17	$ -	$ -
2047	18	$ -	$ -
	Total:	$ -	$ -
			$ -

Base Year For Discounting	2021

Table D.C.4.3 Mobility Hub Emissions Reduction Benefit

Discount Rate Varies Depending on Emission Type			PV Emission Cost	
Year	**Project Year**	**Analysis Period**	**No Build**	**Build (Mobility Hub)**
2021	-8	27	$ -	$ -
2022	-7	26	$ -	$ -
2023	-6	25	$ -	$ -
2024	-5	24	$ -	$ -
2025	-4	23	$ -	$ -
2026	-3	22	$ -	$ -
2027	-2	21	$ -	$ -
2028	-1	20	$ -	$ -
2029	0	19	$ -	$ -
2030	1	18	$ -	$ -
2031	2	17	$ -	$ -
2032	3	16	$ -	$ -
2033	4	15	$ -	$ -
2034	5	14	$ -	$ -
2035	6	13	$ -	$ -
2036	7	12	$ -	$ -
2037	8	11	$ -	$ -
2038	9	10	$ -	$ -
2039	10	9	$ -	$ -
2040	11	8	$ -	$ -
2041	12	7	$ -	$ -
2042	13	6	$ -	$ -
2043	14	5	$ -	$ -
2044	15	4	$ -	$ -
2045	16	3	$ -	$ -
2046	17	2	$ -	$ -
2047	18	1	$ -	$ -
		Total:	$ -	$ -
				$ -

Table D.C.5.1 Mobility Hub Maintenance Benefit

		Uninflated Maintenance Cost	
Year	Project Year	No Build	Build (Mobility Hub)
2021	-8	$ -	$ -
2022	-7	$ -	$ -
2023	-6	$ -	$ -
2024	-5	$ -	$ -
2025	-4	$ -	$ -
2026	-3	$ -	$ -
2027	-2	$ -	$ -
2028	-1	$ -	$ -
2029	0	$ -	$ -
2030	1	$ -	$ -
2031	2	$ -	$ -
2032	3	$ -	$ -
2033	4	$ -	$ -
2034	5	$ -	$ -
2035	6	$ -	$ -
2036	7	$ -	$ -
2037	8	$ -	$ -
2038	9	$ -	$ -
2039	10	$ -	$ -
2040	11	$ -	$ -
2041	12	$ -	$ -
2042	13	$ -	$ -
2043	14	$ -	$ -
2044	15	$ -	$ -
2045	16	$ -	$ -
2046	17	$ -	$ -
2047	18	$ -	$ -
Total:		$ -	$ -

Current Year	2023
Inflation Rate	4%

Table D.C.5.2 Mobility Hub Maintenance Benefit

		Inflated (to Current Year) Maintenance Cost	
Year	Project Year	No Build	Build (Mobility Hub)
2021	-8	$ -	$ -
2022	-7	$ -	$ -
2023	-6	$ -	$ -
2024	-5	$ -	$ -
2025	-4	$ -	$ -
2026	-3	$ -	$ -
2027	-2	$ -	$ -
2028	-1	$ -	$ -
2029	0	$ -	$ -
2030	1	$ -	$ -
2031	2	$ -	$ -
2032	3	$ -	$ -
2033	4	$ -	$ -
2034	5	$ -	$ -
2035	6	$ -	$ -
2036	7	$ -	$ -
2037	8	$ -	$ -
2038	9	$ -	$ -
2039	10	$ -	$ -
2040	11	$ -	$ -
2041	12	$ -	$ -
2042	13	$ -	$ -
2043	14	$ -	$ -
2044	15	$ -	$ -
2045	16	$ -	$ -
2046	17	$ -	$ -
2047	18	$ -	$ -
Total:		$ -	$ -

Table D.C.5.3 Mobility Hub Maintenance Benefit

		Undiscounted Maintenance Cost	
Year	**Project Year**	**No Build**	**Build (Mobility Hub)**
2021	-8	$ -	$ -
2022	-7	$ -	$ -
2023	-6	$ -	$ -
2024	-5	$ -	$ -
2025	-4	$ -	$ -
2026	-3	$ -	$ -
2027	-2	$ -	$ -
2028	-1	$ -	$ -
2029	0	$ -	$ -
2030	1	$ -	$ -
2031	2	$ -	$ -
2032	3	$ -	$ -
2033	4	$ -	$ -
2034	5	$ -	$ -
2035	6	$ -	$ -
2036	7	$ -	$ -
2037	8	$ -	$ -
2038	9	$ -	$ -
2039	10	$ -	$ -
2040	11	$ -	$ -
2041	12	$ -	$ -
2042	13	$ -	$ -
2043	14	$ -	$ -
2044	15	$ -	$ -
2045	16	$ -	$ -
2046	17	$ -	$ -
2047	18	$ -	$ -
Total:		$ -	$ -

Base Year For Discounting	2021
Maintenance Discount Rate	7%

Table D.C.5.4 Mobility Hub Maintenance Benefit

			PV Maintenance Cost	
Year	**Project Year**	**Analysis Period**	**No Build**	**Build (Mobility Hub)**
2021	-8	27	$ -	$ -
2022	-7	26	$ -	$ -
2023	-6	25	$ -	$ -
2024	-5	24	$ -	$ -
2025	-4	23	$ -	$ -
2026	-3	22	$ -	$ -
2027	-2	21	$ -	$ -
2028	-1	20	$ -	$ -
2029	0	19	$ -	$ -
2030	1	18	$ -	$ -
2031	2	17	$ -	$ -
2032	3	16	$ -	$ -
2033	4	15	$ -	$ -
2034	5	14	$ -	$ -
2035	6	13	$ -	$ -
2036	7	12	$ -	$ -
2037	8	11	$ -	$ -
2038	9	10	$ -	$ -
2039	10	9	$ -	$ -
2040	11	8	$ -	$ -
2041	12	7	$ -	$ -
2042	13	6	$ -	$ -
2043	14	5	$ -	$ -
2044	15	4	$ -	$ -
2045	16	3	$ -	$ -
2046	17	2	$ -	$ -
2047	18	1	$ -	$ -
		Total:	$ -	$ -

Table D.C.6.1 Mobility Hub Design and Construction Cost

		Uninflated Construction Cost	
Year	Project Year	No Build	Build (Mobility Hub)
2021	-8	$ -	$ -
2022	-7	$ -	$ -
2023	-6	$ -	$ -
2024	-5	$ -	$ 699,300.00
2025	-4	$ -	$ 699,300.00
2026	-3	$ -	$ 17,826,580.00
2027	-2	$ -	$ 6,758,495.00
2028	-1	$ -	$ 819,625.00
2029	0	$ -	$ -
2030	1	$ -	$ -
2031	2	$ -	$ -
2032	3	$ -	$ -
2033	4	$ -	$ -
2034	5	$ -	$ -
2035	6	$ -	$ -
2036	7	$ -	$ -
2037	8	$ -	$ -
2038	9	$ -	$ -
2039	10	$ -	$ -
2040	11	$ -	$ -
2041	12	$ -	$ -
2042	13	$ -	$ -
2043	14	$ -	$ -
2044	15	$ -	$ -
2045	16	$ -	$ -
2046	17	$ -	$ -
2047	18	$ -	$ -
Total:		$ -	$ 26,803,300.00

Construction Costs (Cost in 2026 Dollars)	
Inflation Rate	4%

Table D.C.6.2 Mobility Hub Design and Construction Cost

		Inflated (to Project Year 0) Construction Cost	
Year	Project Year	No Build	Build (Mobility Hub)
2021	-8	$ -	$ -
2022	-7	$ -	$ -
2023	-6	$ -	$ -
2024	-5	$ -	$ 646,542.16
2025	-4	$ -	$ 672,403.85
2026	-3	$ -	$ 17,826,580.00
2027	-2	$ -	$ 7,028,834.80
2028	-1	$ -	$ 886,506.40
2029	0	$ -	$ -
2030	1	$ -	$ -
2031	2	$ -	$ -
2032	3	$ -	$ -
2033	4	$ -	$ -
2034	5	$ -	$ -
2035	6	$ -	$ -
2036	7	$ -	$ -
2037	8	$ -	$ -
2038	9	$ -	$ -
2039	10	$ -	$ -
2040	11	$ -	$ -
2041	12	$ -	$ -
2042	13	$ -	$ -
2043	14	$ -	$ -
2044	15	$ -	$ -
2045	16	$ -	$ -
2046	17	$ -	$ -
2047	18	$ -	$ -
Total:		$ -	$ 27,060,867.21

Table D.C.6.3 Mobility Hub Design and Construction Cost

		Undiscounted Construction Cost	
Year	Project Year	No Build	Build (Mobility Hub)
2021	-8	$ -	$ -
2022	-7	$ -	$ -
2023	-6	$ -	$ -
2024	-5	$ -	$ 646,542.16
2025	-4	$ -	$ 672,403.85
2026	-3	$ -	$ 17,826,580.00
2027	-2	$ -	$ 7,028,834.80
2028	-1	$ -	$ 886,506.40
2029	0	$ -	$ -
2030	1	$ -	$ -
2031	2	$ -	$ -
2032	3	$ -	$ -
2033	4	$ -	$ -
2034	5	$ -	$ -
2035	6	$ -	$ -
2036	7	$ -	$ -
2037	8	$ -	$ -
2038	9	$ -	$ -
2039	10	$ -	$ -
2040	11	$ -	$ -
2041	12	$ -	$ -
2042	13	$ -	$ -
2043	14	$ -	$ -
2044	15	$ -	$ -
2045	16	$ -	$ -
2046	17	$ -	$ -
2047	18	$ -	$ -
Total:		$ -	$ 27,060,867.21

Base Year For Discounting	2021
Construction Discount Rate	7%

Table D.C.6.4 Mobility Hub Design and Construction Cost

			PV Construction Cost	
Year	**Project Year**	**Analysis Period**	**No Build**	**Build (Mobility Hub)**
2021	-8	27	$ -	$ -
2022	-7	26	$ -	$ -
2023	-6	25	$ -	$ -
2024	-5	24	$ -	$ **527,770.99**
2025	-4	23	$ -	$ **512,973.67**
2026	-3	22	$ -	$ **12,710,105.17**
2027	-2	21	$ -	$ **4,683,609.41**
2028	-1	20	$ -	$ **552,071.63**
2029	0	19	$ -	$ -
2030	1	18	$ -	$ -
2031	2	17	$ -	$ -
2032	3	16	$ -	$ -
2033	4	15	$ -	$ -
2034	5	14	$ -	$ -
2035	6	13	$ -	$ -
2036	7	12	$ -	$ -
2037	8	11	$ -	$ -
2038	9	10	$ -	$ -
2039	10	9	$ -	$ -
2040	11	8	$ -	$ -
2041	12	7	$ -	$ -
2042	13	6	$ -	$ -
2043	14	5	$ -	$ -
2044	15	4	$ -	$ -
2045	16	3	$ -	$ -
2046	17	2	$ -	$ -
2047	18	1	$ -	$ -
Total:			$ -	$ 18,986,530.88

Table D.C.6.5 Mobility Hub Yearly Construction Costs (Cost in 2026 Dollars)

	Yearly Construction Cost							
Year	**Engineering**	**ROW**	**Grading and Draining**	**Subbase/Base**	**Surfacing**	**Major Structures**	**Lighting/Signals**	**Other Costs**
2021	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2022	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2023	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2024	$ 699,300.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2025	$ 699,300.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2026	$ 1,048,950.00	$ -	$ 5,763,340.00	$ 1,201,050.00	$ 2,345,490.00	$ 3,578,400.00	$ 541,200.00	$ 3,348,150.00
2027	$ 944,055.00	$ -	$ 1,017,060.00	$ 400,350.00	$ 1,005,210.00	$ 397,600.00	$ 315,700.00	$ 2,678,520.00
2028	$ 104,895.00	$ -	$ -	$ -	$ -	$ -	$ 45,100.00	$ 669,630.00
2029	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2030	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2031	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2032	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2033	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2034	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2035	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2036	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2037	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2038	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2039	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2040	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2041	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2042	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2043	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2044	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2045	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2046	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2047	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Total:	$ 3,496,500.00	$ -	$ 6,780,400.00	$ 1,601,400.00	$ 3,350,700.00	$ 3,976,000.00	$ 902,000.00	$ 6,696,300.00
								$ 26,803,300.00

Table D.C.7.1 Mobility Hub Salvage Value

Salvage Year		2045	PV Salvage Value	
Year	**Project Year**	**Analysis Period**	**No Build**	**Build (Mobility Hub)**
2021	-8	27	$ -	$ -
2022	-7	26	$ -	$ -
2023	-6	25	$ -	$ -
2024	-5	24	$ -	$ -
2025	-4	23	$ -	$ -
2026	-3	22	$ -	$ **6,315,721.70**
2027	-2	21	$ -	$ **1,247,308.04**
2028	-1	20	$ -	$ -
2029	0	19	$ -	$ -
2030	1	18	$ -	$ -
2031	2	17	$ -	$ -
2032	3	16	$ -	$ -
2033	4	15	$ -	$ -
2034	5	14	$ -	$ -
2035	6	13	$ -	$ -
2036	7	12	$ -	$ -
2037	8	11	$ -	$ -
2038	9	10	$ -	$ -
2039	10	9	$ -	$ -
2040	11	8	$ -	$ -
2041	12	7	$ -	$ -
2042	13	6	$ -	$ -
2043	14	5	$ -	$ -
2044	15	4	$ -	$ -
2045	16	3	$ -	$ -
2046	17	2	$ -	$ -
2047	18	1	$ -	$ -
		Total:	$ -	$ 7,563,029.74
		Construction Discount Rate	7%	$ 1,491,025.75

Table D.C.8.1 Mobility Hub Pedestrian Benefit

		Pedestrian Benefit	
Year	Project Year	No Build	Build (Mobility Hub)
2021	-8	$ -	$ -
2022	-7	$ -	$ -
2023	-6	$ -	$ -
2024	-5	$ -	$ -
2025	-4	$ -	$ -
2026	-3	$ -	$ -
2027	-2	$ -	$ -
2028	-1	$ -	$ -
2029	0	$ -	$ -
2030	1	$ -	$ -
2031	2	$ -	$ -
2032	3	$ -	$ -
2033	4	$ -	$ -
2034	5	$ -	$ -
2035	6	$ -	$ -
2036	7	$ -	$ -
2037	8	$ -	$ -
2038	9	$ -	$ -
2039	10	$ -	$ -
2040	11	$ -	$ -
2041	12	$ -	$ -
2042	13	$ -	$ -
2043	14	$ -	$ -
2044	15	$ -	$ -
2045	16	$ -	$ -
2046	17	$ -	$ -
2047	18	$ -	$ -
	Total:	$ -	$ -

Base Year For Discounting	2021
Pedestrian Facilities Discount Rate	7%

Table D.C.8.2 Mobility Hub Pedestrian Benefit

			PV Pedestrian Benefit	
Year	Project Year	Analysis Period	No Build	Build (Mobility Hub)
2021	-8	27	$ -	$ -
2022	-7	26	$ -	$ -
2023	-6	25	$ -	$ -
2024	-5	24	$ -	$ -
2025	-4	23	$ -	$ -
2026	-3	22	$ -	$ -
2027	-2	21	$ -	$ -
2028	-1	20	$ -	$ -
2029	0	19	$ -	$ -
2030	1	18	$ -	$ -
2031	2	17	$ -	$ -
2032	3	16	$ -	$ -
2033	4	15	$ -	$ -
2034	5	14	$ -	$ -
2035	6	13	$ -	$ -
2036	7	12	$ -	$ -
2037	8	11	$ -	$ -
2038	9	10	$ -	$ -
2039	10	9	$ -	$ -
2040	11	8	$ -	$ -
2041	12	7	$ -	$ -
2042	13	6	$ -	$ -
2043	14	5	$ -	$ -
2044	15	4	$ -	$ -
2045	16	3	$ -	$ -
2046	17	2	$ -	$ -
2047	18	1	$ -	$ -
		Total:	$ -	$ -

Table D.C.9.1 Mobility Hub Health Benefit

		Health Benefit	
Year	Project Year	No Build	Build (Mobility Hub)
2021	-8	$ -	$ -
2022	-7	$ -	$ -
2023	-6	$ -	$ -
2024	-5	$ -	$ -
2025	-4	$ -	$ -
2026	-3	$ -	$ -
2027	-2	$ -	$ -
2028	-1	$ -	$ -
2029	0	$ -	$ -
2030	1	$ -	$ -
2031	2	$ -	$ -
2032	3	$ -	$ -
2033	4	$ -	$ -
2034	5	$ -	$ -
2035	6	$ -	$ -
2036	7	$ -	$ -
2037	8	$ -	$ -
2038	9	$ -	$ -
2039	10	$ -	$ -
2040	11	$ -	$ -
2041	12	$ -	$ -
2042	13	$ -	$ -
2043	14	$ -	$ -
2044	15	$ -	$ -
2045	16	$ -	$ -
2046	17	$ -	$ -
2047	18	$ -	$ -
	Total:	$ -	$ -

Base Year For Discounting	2021
Health Improvements Discount Rate	7%

Table D.C.9.2 Mobility Hub Health Benefit

			PV Health Benefit	
Year	Project Year	Analysis Period	No Build	Build (Mobility Hub)
2021	-8	27	$ -	$ -
2022	-7	26	$ -	$ -
2023	-6	25	$ -	$ -
2024	-5	24	$ -	$ -
2025	-4	23	$ -	$ -
2026	-3	22	$ -	$ -
2027	-2	21	$ -	$ -
2028	-1	20	$ -	$ -
2029	0	19	$ -	$ -
2030	1	18	$ -	$ -
2031	2	17	$ -	$ -
2032	3	16	$ -	$ -
2033	4	15	$ -	$ -
2034	5	14	$ -	$ -
2035	6	13	$ -	$ -
2036	7	12	$ -	$ -
2037	8	11	$ -	$ -
2038	9	10	$ -	$ -
2039	10	9	$ -	$ -
2040	11	8	$ -	$ -
2041	12	7	$ -	$ -
2042	13	6	$ -	$ -
2043	14	5	$ -	$ -
2044	15	4	$ -	$ -
2045	16	3	$ -	$ -
2046	17	2	$ -	$ -
2047	18	1	$ -	$ -
		Total:	$ -	$ -

Table D.C.10.1 Mobility Hub Bicyling Benefit

		Bicycle Benefit	
Year	Project Year	No Build	Build (Mobility Hub)
2021	-8	$ -	$ -
2022	-7	$ -	$ -
2023	-6	$ -	$ -
2024	-5	$ -	$ -
2025	-4	$ -	$ -
2026	-3	$ -	$ -
2027	-2	$ -	$ -
2028	-1	$ -	$ -
2029	0	$ -	$ -
2030	1	$ -	$ -
2031	2	$ -	$ -
2032	3	$ -	$ -
2033	4	$ -	$ -
2034	5	$ -	$ -
2035	6	$ -	$ -
2036	7	$ -	$ -
2037	8	$ -	$ -
2038	9	$ -	$ -
2039	10	$ -	$ -
2040	11	$ -	$ -
2041	12	$ -	$ -
2042	13	$ -	$ -
2043	14	$ -	$ -
2044	15	$ -	$ -
2045	16	$ -	$ -
2046	17	$ -	$ -
2047	18	$ -	$ -
	Total:	$ -	$ -

Base Year For Discounting	2021
Cycling Facilities Discount Rate	7%

Table D.C.10.2 Mobility Hub Bicyling Benefit

			PV Bicyle Benefit	
Year	Project Year	Analysis Period	No Build	Build (Mobility Hub)
2021	-8	27	$ -	$ -
2022	-7	26	$ -	$ -
2023	-6	25	$ -	$ -
2024	-5	24	$ -	$ -
2025	-4	23	$ -	$ -
2026	-3	22	$ -	$ -
2027	-2	21	$ -	$ -
2028	-1	20	$ -	$ -
2029	0	19	$ -	$ -
2030	1	18	$ -	$ -
2031	2	17	$ -	$ -
2032	3	16	$ -	$ -
2033	4	15	$ -	$ -
2034	5	14	$ -	$ -
2035	6	13	$ -	$ -
2036	7	12	$ -	$ -
2037	8	11	$ -	$ -
2038	9	10	$ -	$ -
2039	10	9	$ -	$ -
2040	11	8	$ -	$ -
2041	12	7	$ -	$ -
2042	13	6	$ -	$ -
2043	14	5	$ -	$ -
2044	15	4	$ -	$ -
2045	16	3	$ -	$ -
2046	17	2	$ -	$ -
2047	18	1	$ -	$ -
		Total:	$ -	$ -

Table D.C.11.1 Mobility Hub Transit Amenity Benefit

		Bicycle Benefit	
Year	Project Year	No Build	Build (Mobility Hub)
2021	-8	$ -	$ -
2022	-7	$ -	$ -
2023	-6	$ -	$ -
2024	-5	$ -	$ -
2025	-4	$ -	$ -
2026	-3	$ -	$ -
2027	-2	$ -	$ -
2028	-1	$ -	$ **1,847,549.70**
2029	0	$ -	$ **1,905,766.82**
2030	1	$ -	$ **1,963,983.93**
2031	2	$ -	$ **2,022,201.05**
2032	3	$ -	$ **2,080,418.16**
2033	4	$ -	$ **2,138,635.28**
2034	5	$ -	$ **2,196,852.39**
2035	6	$ -	$ **2,255,069.51**
2036	7	$ -	$ **2,313,286.63**
2037	8	$ -	$ **2,371,503.74**
2038	9	$ -	$ **2,429,720.86**
2039	10	$ -	$ **2,487,937.97**
2040	11	$ -	$ **2,546,155.09**
2041	12	$ -	$ **2,604,372.21**
2042	13	$ -	$ **2,662,589.32**
2043	14	$ -	$ **2,720,806.44**
2044	15	$ -	$ **2,779,023.55**
2045	16	$ -	$ **2,837,240.67**
2046	17	$ -	$ **2,895,457.78**
2047	18	$ -	$ **2,953,674.90**
	Total:	$ -	$ 48,012,246.00

Base Year For Discounting	2021
Transit Amenity Discount Rate	7%

Table D.C.11.2 Mobility Hub Transit Amenity Benefit

			PV Bicyle Benefit	
Year	Project Year	Analysis Period	No Build	Build (Mobility Hub)
2021	-8	27	$ -	$ -
2022	-7	26	$ -	$ -
2023	-6	25	$ -	$ -
2024	-5	24	$ -	$ -
2025	-4	23	$ -	$ -
2026	-3	22	$ -	$ -
2027	-2	21	$ -	$ -
2028	-1	20	$ -	$ **1,150,561.10**
2029	0	19	$ -	$ **1,109,173.64**
2030	1	18	$ -	$ **1,068,277.13**
2031	2	17	$ -	$ **1,027,984.47**
2032	3	16	$ -	$ **988,391.68**
2033	4	15	$ -	$ **949,579.64**
2034	5	14	$ -	$ **911,615.64**
2035	6	13	$ -	$ **874,554.84**
2036	7	12	$ -	$ **838,441.53**
2037	8	11	$ -	$ **803,310.37**
2038	9	10	$ -	$ **769,187.40**
2039	10	9	$ -	$ **736,091.07**
2040	11	8	$ -	$ **704,033.10**
2041	12	7	$ -	$ **673,019.27**
2042	13	6	$ -	$ **643,050.17**
2043	14	5	$ -	$ **614,121.83**
2044	15	4	$ -	$ **586,226.36**
2045	16	3	$ -	$ **559,352.41**
2046	17	2	$ -	$ **533,485.72**
2047	18	1	$ -	$ **508,609.51**
		Total:	$ -	$ 16,049,066.86

Table D.C.12.1 Mobility Hub Public Transit Travel Time Benefit

		Public Transit Travel Time Cost	
Year	Project Year	No Build	Build (Mobility Hub)
2021	-8	$ -	$ -
2022	-7	$ -	$ -
2023	-6	$ -	$ -
2024	-5	$ -	$ -
2025	-4	$ -	$ -
2026	-3	$ -	$ -
2027	-2	$ -	$ -
2028	-1	$ 11,501,249.28	$ 9,254,911.53
2029	0	$ 11,863,658.78	$ 9,546,537.92
2030	1	$ 12,226,068.28	$ 9,838,164.32
2031	2	$ 12,588,477.78	$ 10,129,790.71
2032	3	$ 12,950,887.28	$ 10,421,417.10
2033	4	$ 13,313,296.77	$ 10,713,043.50
2034	5	$ 13,675,706.27	$ 11,004,669.89
2035	6	$ 14,038,115.77	$ 11,296,296.29
2036	7	$ 14,400,525.27	$ 11,587,922.68
2037	8	$ 14,762,934.77	$ 11,879,549.07
2038	9	$ 15,125,344.27	$ 12,171,175.47
2039	10	$ 15,487,753.77	$ 12,462,801.86
2040	11	$ 15,850,163.27	$ 12,754,428.25
2041	12	$ 16,212,572.77	$ 13,046,054.65
2042	13	$ 16,574,982.27	$ 13,337,681.04
2043	14	$ 16,937,391.76	$ 13,629,307.44
2044	15	$ 17,299,801.26	$ 13,920,933.83
2045	16	$ 17,662,210.76	$ 14,212,560.22
2046	17	$ 18,024,620.26	$ 14,504,186.62
2047	18	$ 18,387,029.76	$ 14,795,813.01
	Total:	$ 298,882,790.40	$ 240,507,245.40
			$ (58,375,545.00)

Table D.C.12.2 Mobility Hub Public Transit Travel Time Benefit

		Undiscounted Public Transit Travel Time Benefit	
Year	Project Year	No Build	Build (Mobility Hub)
2021	-8	$ -	$ -
2022	-7	$ -	$ -
2023	-6	$ -	$ -
2024	-5	$ -	$ -
2025	-4	$ -	$ -
2026	-3	$ -	$ -
2027	-2	$ -	$ -
2028	-1	$ -	$ 2,246,337.75
2029	0	$ -	$ 2,317,120.86
2030	1	$ -	$ 2,387,903.96
2031	2	$ -	$ 2,458,687.07
2032	3	$ -	$ 2,529,470.17
2033	4	$ -	$ 2,600,253.28
2034	5	$ -	$ 2,671,036.38
2035	6	$ -	$ 2,741,819.49
2036	7	$ -	$ 2,812,602.59
2037	8	$ -	$ 2,883,385.70
2038	9	$ -	$ 2,954,168.80
2039	10	$ -	$ 3,024,951.91
2040	11	$ -	$ 3,095,735.01
2041	12	$ -	$ 3,166,518.12
2042	13	$ -	$ 3,237,301.22
2043	14	$ -	$ 3,308,084.33
2044	15	$ -	$ 3,378,867.43
2045	16	$ -	$ 3,449,650.54
2046	17	$ -	$ 3,520,433.64
2047	18	$ -	$ 3,591,216.75
	Total:	$ -	$ 58,375,545.00
			$ 58,375,545.00

Base Year For Discounting	2021
Public Transit Travel Time Discount Rate	7%

Table D.C.12.3 Mobility Hub Public Transit Travel Time Benefit

			PV Public Transit Travel Time Benefit	
Year	**Project Year**	**Analysis Period**	**No Build**	**Build (Mobility Hub)**
2021	-8	27	$ -	$ -
2022	-7	26	$ -	$ -
2023	-6	25	$ -	$ -
2024	-5	24	$ -	$ -
2025	-4	23	$ -	$ -
2026	-3	22	$ -	$ -
2027	-2	21	$ -	$ -
2028	-1	20	$ -	$ **1,398,906.25**
2029	0	19	$ -	$ **1,348,585.43**
2030	1	18	$ -	$ **1,298,861.54**
2031	2	17	$ -	$ **1,249,871.83**
2032	3	16	$ -	$ **1,201,733.06**
2033	4	15	$ -	$ **1,154,543.55**
2034	5	14	$ -	$ **1,108,385.14**
2035	6	13	$ -	$ **1,063,324.87**
2036	7	12	$ -	$ **1,019,416.61**
2037	8	11	$ -	$ **976,702.49**
2038	9	10	$ -	$ **935,214.19**
2039	10	9	$ -	$ **894,974.12**
2040	11	8	$ -	$ **855,996.53**
2041	12	7	$ -	$ **818,288.45**
2042	13	6	$ -	$ **781,850.61**
2043	14	5	$ -	$ **746,678.18**
2044	15	4	$ -	$ **712,761.55**
2045	16	3	$ -	$ **680,086.94**
2046	17	2	$ -	$ **648,637.00**
2047	18	1	$ -	$ **618,391.34**
		Total:	$ -	$ 19,513,209.70
				$ 19,513,209.70

Table D.13.1

Analysis Period	
Initial Year	2028
Future Year	2047
Base Year For Discounting	2021
Analysis Period (years)	*20*

Table D.13.2

Discount Rates			
Vehicle Operating Costs Discount Rate	7%	Pedestrian Facilities Discount Rate	7%
Travel Time Savings Discount Rate	7%	Health Improvements Discount Rate	7%
Safety Discount Rate	7%	Cycling Facilities Discount Rate	7%
Construction Discount Rate	7%	Transit Amenity Discount Rate	7%
Inflation Rate	4%	Public Transit Travel Time Discount Rate	7%
Maintenance Discount Rate	7%		

Table D.13.3

Construction Timeframe			
Engineering Start	2024	Construction Start	2026
Construction Completion	2028		
Construction Length	*5*		
Salvage Year	2045		
Project Year 0	2029		

Table D.13.4

Component Service Life (5 Year Intervals, 0-100 years)	
Engineering	0
Right-of-Way	100
Grading and Draining	50
Subbase/Base	40
Surfacing	25
Major Structures	60
Lighting/Signals	20
Other Costs	0

Appendix E
Environmental Screening Documentation

US 34 MERGE with Mobility Hub, City of Greeley

Environmental Screening Table

Social, Economic, or Environmental Topic	Considerations	Existing/Planned Conditions
Social and Community	Access to social and institutional resources adjacent to the project area may be impacted during the construction phase of the project.	Social and institutional resources within 0.5 miles of the project area are listed below in **Table 1**. There are multiple schools and parks in the area, but otherwise limited public, civic, or religious buildings in the vicinity of the project.
Environmental Justice (EJ)	Approximately 37% of the population within a 0.5-mile buffer is considered minority. Avoid/mitigate disproportionate impacts to low income and minority populations.	There are several households within the buffer zone of the project area that are considered below the poverty level. The proposed mobility corridor encompasses numerous BIPOC populations, approximately 37% within the buffer area, and even higher in specific locations along the corridor. Andy's Place, a public housing facility, is located adjacent to the project area at 2831 W 28th Street. Additionally, several households use public transportation which increases the benefit of the added mobility hub. **A more in-depth review of other EJ factors will be needed as the project continues.**
Noise	Type I roadway improvements with the addition of grade-separated interchanges at 47th and 35th Avenues.	Proposed conceptual design adds on and off-ramps to US 34 through grade-separated interchanges. Possible noise impacts to sensitive noise receptors – residential land uses, City parks and trails, schools, churches and commercial land uses.
Air Quality	EV Charging station open on Centerplace Drive near proposed Mobility Hub	Existing condition of an EV Charging Station provides an opportunity for reduced greenhouse gas emissions in the vicinity of the MERGE project. Proposed Mobility Hub reduces single occupancy vehicle trips by connecting to transit and other micromobility options.
Rare Natural Features	Nine federally listed species were identified in a USFWS IPaC review of the proposed project area (see **Table 2** below). There are no critical habitats within the project area.	The proposed project should incorporate wildlife friendly construction methods and materials such as surmountable curbs, wildlife-friendly erosion control materials, pollinator-friendly and other native vegetation post-construction, and reduced or no pesticide use.
Public Waters Inventory (PWI)	No public water basins or watercourses fall within the study area. Although no public waters are found within the study area, Ashcroft Draw, a tributary of	The proposed project corridor is located within the South Platte River watershed and the South Platte Basin Implementation Plan provides additional guidance. Urban land-use may increase the potential for non-point source pollution along and adjacent to the corridor and best

Social, Economic, or Environmental Topic	Considerations	Existing/Planned Conditions
	the South Platte River, is found less than one mile away (**Exhibit B**).	management practices should be implemented to avoid and minimize potential impacts.
National Wetlands Inventory (NWI)	The Loveland & Greeley Canal, with fringing wetlands, crosses through the project area just east of 26th Avenue and between 32nd and 33rd Avenues. Wetlands classified as PEM1A, PEM1F and PUBF are located near or adjacent to the project area (**Exhibit C**).	Wetland areas should be protected from impacts both during and post-construction with appropriate and recommended methods. **Field survey to confirm wetland delineation boundaries may be required.**
Source Water Protection	There are no known wells within the study area, although several are identified adjacent to or within 0.5 miles (**Exhibit D**).	Avoid potential contaminants entering the water supply through proactive avoidance measures prior to and during construction activities. Coordination with local and state authorities may alleviate potential impacts.
Cultural Resources	There are no NRHP-listed properties within 1 mile of the project area (**Exhibit E**). However, there are 12 unlisted properties and 1 property that has previously been determined eligible that overlaps the project area (**Table 3**).	Given the history of previous ground disturbance and prior survey within the project area (**Table 4**), there is unlikely to be any impact upon the identified cultural resources; however, **the proposed project should be submitted for review to the Colorado SHPO as well as THPOs identified in Table 5 below.**
Section 4(f) Resources	FHWA coordination for impact assessment to Homestead Park and Gateway Lakes Natural Area	Conceptual design shows proposed pathway connection from future Mobility Hub under existing US 34 to Homestead Park and Gateway Lakes Natural Area. Proposed pathway connection lies within public park/natural area (owned by City of Greeley). Additionally, there's a multiuse path along the northern side of US 34 between 47th and 35th Avenues and Greeley West Park adjacent to Greeley West High School.
Visual Resources	Homestead Park and Gateway Lakes Natural Area and Sunset Memorial Cemetery on south side of US 34 eastbound	The proposed conditions of US 34 at the Mobility Hub would raise existing US 34 approximately 10 feet which would make this roadway more visible from Homestead Park and Gateway Lakes Natural Area and Sunset Memorial Cemetery on south side of US 34 eastbound. **Conduct Visual Impact Assessment and aesthetics review.**
CO Dept of Public Health & Environment – Hazardous Materials & Waste Management Division (HMWMD)	A variety of hazardous waste generators and permit considerations are located within or near the study area (**Exhibit F**).	In the US 34 PEL (December 2017, Figure B-8 identified an existing 'HazMat Site of Concern' along US 34 between 47th Ave. and 35th Ave. Name of the HazMat Site – Hyland Enterprises Inc. spill, and description – tank containing flaming material leaked while driving, everything was cleaned up.

Social, Economic, or Environmental Topic	Considerations	Existing/Planned Conditions
	Site study included Resource Conservation Recovery Act (RCRA) sites, Waste Tire Registrants, Solid Waste Facilities, and information regarding Disproportionately Impacted Communities.	**Recommend a Phase 1 Environmental Site Assessment (ESA) to identify potential hazardous materials or project impacts for site-specific locations. This will determine if more in-depth (Phase 2 ESA or other assessments) surveys or studies are warranted.**
Permits, Approvals & Additional Reviews	Local, State and Federal Regulations	• USACE – Sec 404 – if wetland impacts occur • USFWS – Federal species review • CDOT Water Resources approval • CDOT/CPW – T&E species reviews • SHPO/THPO – Cultural resources reviews • Stormwater Pollution Prevention (SWPPP) • Water Appropriations – if needed • Source water protection review • Karst topography review • Visual quality and aesthetics review • Air/Dust & Noise Analysis reviews • Climate Change and Greenhouse Gas reviews • Traffic management and access review • Accessibility (ADA) review • Best management practices (invasive species, vegetation practices, etc.) • Weld County Conservation District review • City of Greeley approvals

Table 1: Social and Institutional Resources Within 0.5 Miles of Project Area

Resource Type	Resource Name	Resource Location	Distance from Project Area
Cemetery	Sunset Memorial Gardens	3400 W 28th Street	Adjacent
Church	Trinity Lutheran Church and School	3000 35th Avenue	Adjacent
Civic	Central Colorado Water Conservancy District	3209 W 28th Street	Adjacent
Park	Josephine B Jones Park	5300 26th Street	Adjacent
Park	Monfort Park	2122 50th Avenue	0.17 miles
Park	Leavy Park	33rd Avenue/22nd Street	0.23 miles
Park	Brentwood Park	1607 C Street	0.29 miles
Park	Gateway Lakes Natural Area and Homestead Park	3699 W 29th Street	0.29 miles
Park	Greeley West Park	3900 W 22nd Street	0.36 miles
Park	Sanborn Park	2031 28th Avenue	0.45 miles
School	Frontier Charter Academy	2560 W 29th Street	0.15 miles
School	Greeley West High School	2401 35th Avenue	0.27 miles
School	Brentwood Middle School	2600 24th Ave Court	0.28 miles
School	Meeker Elementary School	2221 28th Avenue	0.45 miles

Table 2: Endangered Species Act Species

Group	Species Name	Common Name	Status
Mammals	*Canis lupus*	Gray Wolf	Endangered
Mammals	*Zapus hudsonius preblei*	Preble's Meadow Jumping Mouse	Threatened
Birds	*Laterallus jamaicensis ssp. Jamaicensis*	Eastern Black Rail	Threatened
Birds	*Charadrius melodus*	Piping Plover	Threatened
Birds	*Grus americana*	Whooping Crane	Endangered
Fishes	*Scaphirhynchus albus*	Pallid Sturgeon	Endangered
Insects	*Danaus plexippus*	Monarch Butterfly	Candidate
Flowering Plants	*Spiranthes diluvialis*	Ute Ladies'-tresses	Threatened
Flowering Plants	*Platanthera praeclara*	Western Prairie Fringed Orchid	Threatened

Table 3: Cultural Resource Properties Within 1 Mile of Project Area

Site Number	Site Name	Description	Distance from Project Area	NRHP Status	Potential Effects
5WL.898	Loveland/Greeley Canal	Historic Canal	Overlaps	Determined Eligible	Possible
5WL.899	Grapevine Ditch	Historic Ditch	Overlaps	Determined Not Eligible	Possible

Site Number	Site Name	Description	Distance from Project Area	NRHP Status	Potential Effects
5WL.4347	Eisenman Farm-Eisenknock Farm-Stephens Farm	Historic Farmstead	0.16 miles	Determined Not Eligible	None
5WL.8357	John Evans Middle School	Historic School (Demolished)	0.35 miles	Undetermined	None
5WL.6898	Macedo Residence	Historic House	0.45 miles	Determined Not Eligible	None
5WL.6937	Loftus House	Historic House	0.54 miles	Determined Not Eligible	None
5WL.7228	-	Historic House	0.74 miles	Recommended Not Eligible	None
5WL.6319	-	Historic House	0.75 miles	Determined Not Eligible	None
5WL.6349	Adams House – Pagano House	Historic House	0.78 miles	Determined Not Eligible	None
5WL.6931	Wideman House- Tupper Residence	Historic House	0.80 miles	Determined Not Eligible	None
5WL.3166	Weld-Greeley-Rosedale Transmission Line	Historic Transmission Line	0.97 miles	Determined Not Eligible	None
5WL.7437	West Greeley Water Tower	Historic Water Tower	1.0 mile	Recommended Not Eligible	None
5WL.5538	-	Historic Feature (Concrete Slab)	1.0 mile	Recommended Not Eligible	None

Table 4: Previous Cultural Resource Surveys Within the Project Area

Survey Number	Survey Name	Survey Type	Location	Acres	Date Recorded on COMPASS
WL.CH.NR20	Archaeological Survey of U.S. 34 Between 65th and 35th, South and West of Greeley, Weld County, Colorado (Cx Cxbrf 03-0034-21)	Class III	Along U.S. 34 between 35th – 65th Ave	13.023	1/3/2022
WL.CH.NR46	Archaeological Survey of Project M 5501-(1), Weld County, Colorado	Class III	Along 47th Ave within Greeley municipal boundary	43.009	2/12/2008

Table 5: THPOs with Interest in Weld County per TDAT

Tribal Name	THPO Name	Street Address	Phone	Email
Comanche Nation, OK	Martina Minthorn	6 SW D Ave, Lawton, OK 73502	580-595-9618	martina.minthorn@comanchenation.com
Arapaho Tribe of the Wind River Reservation, WY	Ben Ridgley	PO Box 67, St. Stevens, WY 82524	307-851-1254	benridgley007@gmail.com
Northern Cheyenne Tribe of the Northern Cheyenne Indian Reservation, MT	Teanna Limpy	PO Box 128, Lame Deer, MT 59043	406-477-4839	Teanna.Limpy@cheyennenation.com
Apache Tribe of OK	Bobby Komardley	PO Box 1330, Anadarko, OK 73005	405-247-9493	bkomardley@outlook.com

Tribal Name	THPO Name	Street Address	Phone	Email
Fort Belknap Indian Community of the Fort Belknap Reservation of MT	Michael Blackwolf	656 Agency Main St, Harlem, MT 59526	406-353-2889	mblackwolf@ftbelknap.org
Cheyenne and Arapaho Tribes, OK	Max Bear	700 Black Kettle Blvd, Concho, OK 73022	405-422-7715	mbear@c-a-tribes.org

HWY 34 Mobility Study

City of Greeley, Weld County, Colorado

Exhibit A: Aerial Map

March 2023

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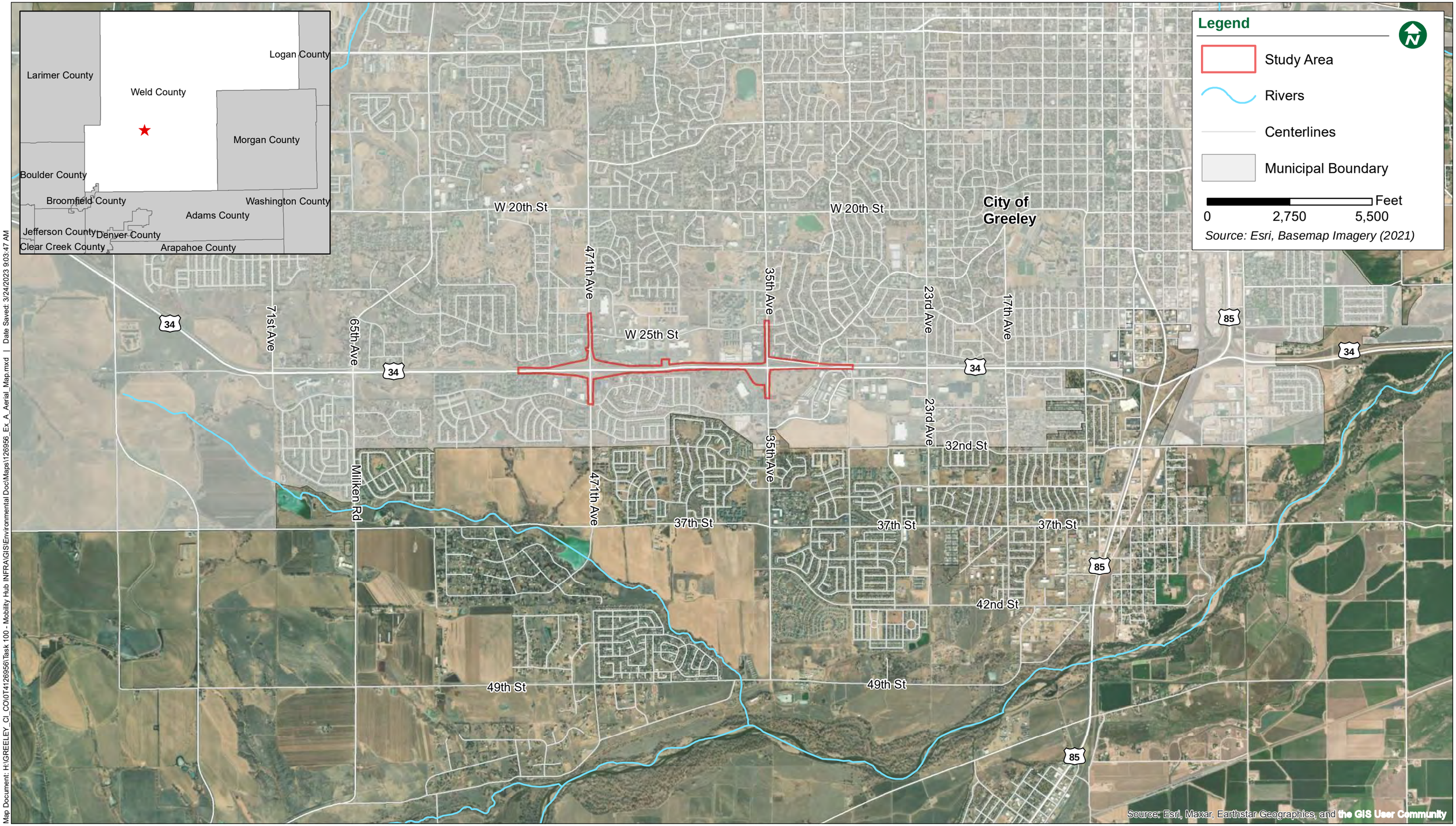

Map Document: H:\GREELEY_CI_CO\0T4126956\Task 100 - Mobility Hub INFRA\GIS\Environmental Doc\Maps\126956_Ex_A_Aerial_Map.mxd | Date Saved: 3/24/2023 9:03:47 AM

HWY 34 Mobility Study

City of Greeley, Weld County, Colorado

Exhibit B: Public Water Inventory (PWI)

March 2023

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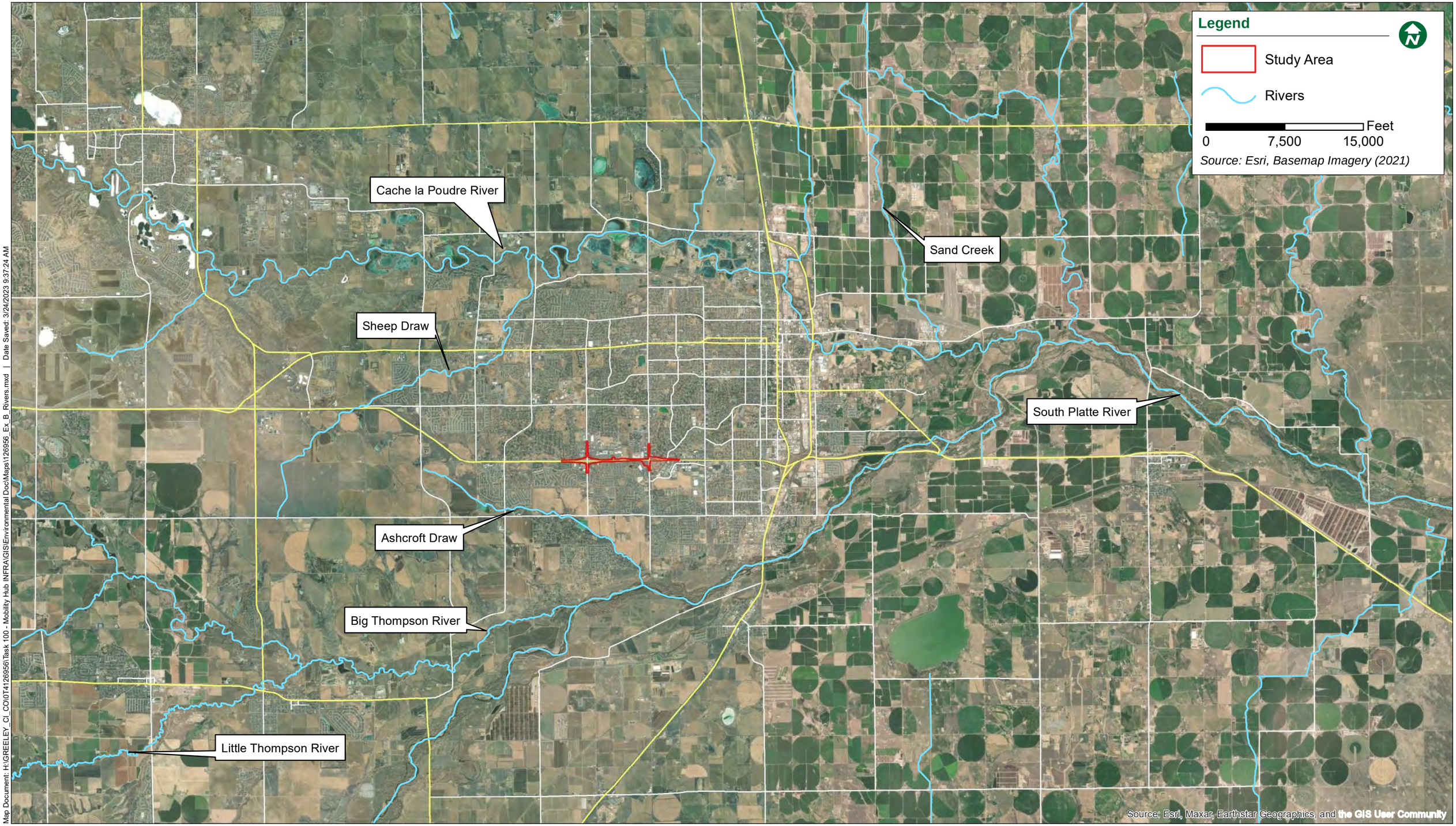

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HWY 34 Mobility Study

City of Greeley, Weld County, Colorado

Exhibit C: National Wetlands Inventory

March 2023

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PUBGx
PUBF
R4SBC
R5UBFx
PEM1Cx
PEM1Cx
PUBGx
R4SBAx
PEM1A
R4SBCx
PUBF
PUBF
R5UBH
PEM1F
R4SBC
PEM1F
R5UBH
Loveland and Greeley Canal
PABGh
PEM1F
PEM1F
R5UBH
PEM1A
PEM1F
PSS1A
PSS1A
PEM1A
PEM1F
R5UBH
PEM1C
PEM1F
PEM1C
PEM1A

Legend

- Study Area
- NWI

Feet
0 800 1,600

Source: Esri, Basemap Imagery (2021)

Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

Map Document: H:\GREELEY_CI_CO\0T4126956\Task 100 - Mobility Hub INFRA\GIS\Environmental DocMaps\126956_Ex_C_NWI.mxd | Date Saved: 3/24/2023 9:37:41 AM

HWY 34 Mobility Study

City of Greeley, Weld County, Colorado

Exhibit D: Colorado Well Index Map

March 2023

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HWY 34 Mobility Study

City of Greeley, Weld County, Colorado

Exhibit E: NPS National Register of Historic Places

March 2023

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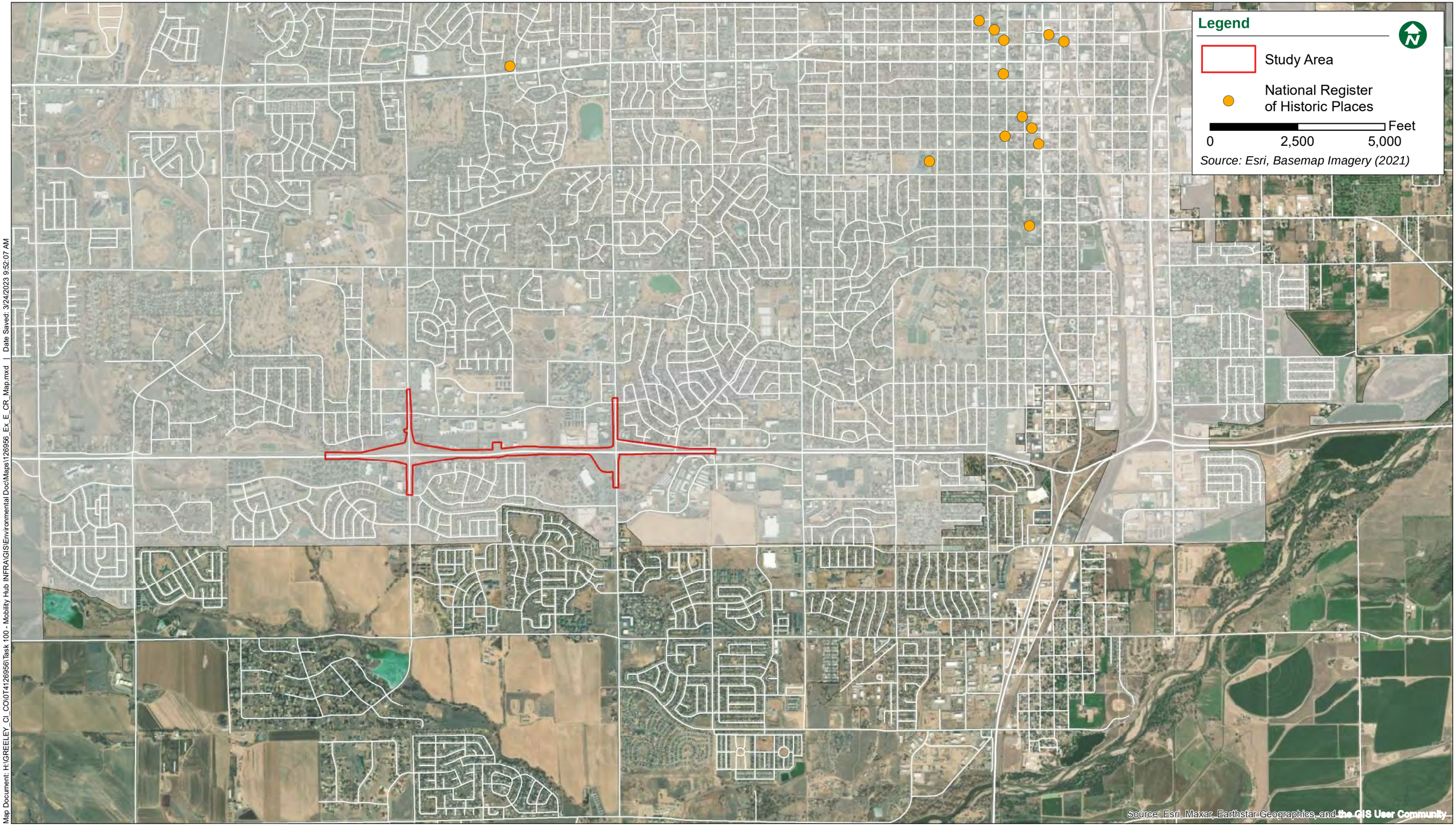

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HWY 34 Mobility Study

City of Greeley, Weld County, Colorado

Exhibit F: Hazardous Materials Map

March 2023

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Appendix F
MERGE Mega Data Plan

Mega Project Data Collection Plan

This attachment to the City of Greeley, Colorado's *Mobility Enhancements for Regional Growth and Equity (MERGE)* FY 2024 Multimodal Project Discretionary Grant (MPDG) application outlines the plan for data collection and analysis to evaluate the impacts of the proposed project five years after its significant completion of construction. The research aims to assess the effects of the project on three outcome criteria: 1) Safety, 2) Climate Change, Resiliency, and the Environment, 3) Equity, Multimodal Options, and Quality of Life.

Figure 1: Concept Map

The research will adopt a mixed-methods approach combining quantitative and qualitive data to comprehensively assess the identified outcome criteria. This will allow the project team to gather both objective data and capture users' perceptions and experiences.

Outcome Criterion – Safety

Project Outcomes Measure: Actual annual average crash and injuries eliminated (compared to the predicted reduction in the Project area)

Predicted Project Impact: According to the MPDG application and Benefit Cost Analysis (BCA), the new, safer interchange and associated improvements are projected to achieve **a reduction of 640 vehicular crashes and 278 injuries in its first twenty years of operation.**

Measure Methodology Summary

1. To assess the safety impacts, pre-project and post-project accident rates and emergency response times within the project area will be compared. The data will be analyzed to assess if there are significant changes within the five-year time frame. Additionally, a spatial analysis can be conducted to identify any crash hotspots of motorized and non-motorized transportation.
2. User interviews may be conducted to identify perceived and tangible safety concerns. Any notable changes will be discussed in the context of the completed project.

Outcome Criterion – Climate Change, Resiliency, and the Environment

Project Outcomes Measure: Actual annual Greenhouse Gas reduction (compared to projected annual Greenhouse Gas reduction)

Predicted Project Impact: The MPDG application and BCA predict that the Project will result in a total estimated reduction of **6,464 metric tons annually of Greenhouse Gas** emissions derived from an increase in vehicle speed that comes from congestion relief. Stated another way, **40% less air pollutants** will be emitted annual than the 'no build' scenario.

Measure Methodology Summary

1. Over the five-year period, climate-related parameters within the project area will be collected. More specifically, air quality tests will be conducted to determine if less air pollutants have been emitted in comparison to the 'no build' scenario. Currently, multiple agencies collect this data in some capacity, including CDOT, the Department of Public Health & Environment, and the North Front Range MPO.
2. Pop-up user events could be hosted at the mobility hub to gauge how people are using the new infrastructure and if there has been a modal switch from pre-construction to post-construction conditions.

Outcome Criterion – Equity, Multimodal Options, and Quality of Life

Project Outcomes Measure: Actual annual modal shift

Predicted Project Impact: The MPDG application and BCA predict that by implementing the proposed project, improvements will result in an estimated **20% transit efficiency.** This benefit will result in a reduction in emissions, vehicle operating costs, and infrastructure wear and tear.

Measure Methodology Summary

1. Over the five-year period, ridership within GET will be collected. Data will also be collected within the project area to determine if more multimodal usage has increased in comparison to before the project.

Outcome Criterion – Equity Multimodal Options and Quality of Life

Project Outcomes Measure: Reduction in Average Transit Trip Travel Time

Predicted Project Impact: The City of Greeley conservatively estimates the **average transit trip travel time will be reduced by 20%.** With the construction of the two interchanges and mobility hub, transit will be able to travel more efficiently through the project area.

Measure Methodology Summary

1. As stated in the 2045 Greeley on the Go Transportation Plan, a key performance measure is 'Travel time on major corridors'. The performance target set by the transit agency is to 'Maintain current average travel times and maintain on-peak travel delay of not more than 20 percent over the next 10 years.' This target applies to all major corridors within the service area.
2. For the project area it is expected that the average transit trip travel time will be reduced by 20%. For transit routes that travel through the project area, trip times can be collected by the transit agency and compared to pre-project completion times.