

# Part 1

# Base Information

1. Project Title	104 <sup>th</sup> Avenue (SH-44) Widening – Colorado Boulevard to US-85	
2. Project Start/End points or Geographic Area <i>Provide a map with submittal, as appropriate</i>	Colorado Boulevard to US-85	
3. Project Sponsor (entity that will construct/ complete and be financially responsible for the project)	City of Thornton	
4. Project Contact Person, Title, Phone Number, and Email	Darrell Alston, Traffic Engineer, 720-977-6480, darrell.alston@cityofthornton.net	
5. Does this project touch CDOT Right-of-Way, involve a CDOT roadway, access RTD property, or request RTD involvement to operate service?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <i>If yes, provide applicable concurrence documentation with submittal</i>	
6. What planning document(s) identifies this project?	<input checked="" type="checkbox"/> <a href="#">DRCOG 2040 Fiscally Constrained Regional Transportation Plan (2040 FC RTP)</a>	
	<input checked="" type="checkbox"/> Local plan:	City of Thornton Transportation Plan (pages 3 and 65, <a href="http://www.cityofthornton.net/government/citydevelopment/planning/Documents/master-plans/transportation-plan/thornton_transportation_plan.pdf">http://www.cityofthornton.net/government/citydevelopment/planning/Documents/master-plans/transportation-plan/thornton_transportation_plan.pdf</a> ) Adams County Transportation Plan (pages 16, 50, and 68, <a href="http://www.adcogov.org/sites/default/files/2776.pdf">http://www.adcogov.org/sites/default/files/2776.pdf</a> ) Commerce City Transportation Plan (pages 33, 43, and 78, <a href="https://www.c3gov.com/home/showdocument?id=7016">https://www.c3gov.com/home/showdocument?id=7016</a> )
	<input type="checkbox"/> Other(s):	<i>Provide link to document/s and referenced page number if possible, or provide documentation with submittal</i>
7. Identify the project’s key elements.		
<input type="checkbox"/> Rapid Transit Capacity (2040 FC RTP) <input type="checkbox"/> Transit Other: <input checked="" type="checkbox"/> Bicycle Facility <input checked="" type="checkbox"/> Pedestrian Facility <input checked="" type="checkbox"/> Safety Improvements <input checked="" type="checkbox"/> Roadway Capacity or Managed Lanes (2040 FC RTP) <input checked="" type="checkbox"/> Roadway Operational	Grade Separation <input type="checkbox"/> Roadway <input type="checkbox"/> Railway <input type="checkbox"/> Bicycle <input type="checkbox"/> Pedestrian <input type="checkbox"/> Roadway Pavement Reconstruction/Rehab <input checked="" type="checkbox"/> Bridge Replace/Reconstruct/Rehab <input checked="" type="checkbox"/> Study <input checked="" type="checkbox"/> Design <input checked="" type="checkbox"/> Transportation Technology Components <input type="checkbox"/> Other:	
8. <b>Problem Statement</b> What specific Metro Vision-related subregional problem/issue will the transportation project address?		
The proposed project will conduct preliminary engineering and environmental design necessary to reach		

approximately 30% level design documents for the widening of 104<sup>th</sup> Avenue (SH-44) between Colorado Boulevard and US-85. The widening will address the subregional issues of traffic congestion, lack of connectivity, air quality, and traffic safety. The 30% level design documents will lay the foundation for the future widening necessary to alleviate congestion along the corridor and decrease pollution associated with such congestion, improve bicycle and pedestrian connectivity by creating trails and bicycle lanes where none currently exist, and improve safety by reducing crashes associated with congestion and inadequate roadway capacity.

**9. Define the *scope* and *specific elements* of the project.**

This project will conduct preliminary engineering and environmental design necessary to reach approximately 30% level design documents for the widening of 104<sup>th</sup> Avenue (SH-44) between Colorado Boulevard and US-85. No construction is planned with project. However, when the future construction phase is complete 104<sup>th</sup> Avenue between Colorado Boulevard and US-85 will be widened from one lane in each direction to two lanes in each directions plus a center turn lane/median. Detached trails would be constructed along 104<sup>th</sup> Avenue and the road widening would include the installation of on-street bicycle lanes. The 104<sup>th</sup> Avenue bridge over the Fulton ditch would need to be reconstructed due to insufficient capacity to handle four lanes of travel. The widening would also include the installation of fiber optic cable along the corridor to support future intelligent transportation system and connected vehicle applications.

**10. What is the status of the proposed project?**

The project is currently unfunded. No elements of preliminary engineering and environmental design have been completed.

**11. Would a smaller DRCOG-allocated funding amount than requested be acceptable, while maintaining the original intent of the project?**

Yes  No

*If yes, define smaller meaningful limits, size, service level, phases, or scopes, along with the cost for each.*

**A. Project Financial Information and Funding Request**

<b>1. Total Project Cost</b>	<b>\$2,000,000</b>	
<b>2. Total amount of DRCOG Subregional Share Funding Request</b>	<b>\$1,600,000</b>	<b>80%</b> of total project cost
<b>3. Outside Funding Partners (other than DRCOG Subregional Share funds)</b> List each funding partner and contribution amount.	<b>\$\$</b> <b>Contribution Amount</b>	<b>% of Contribution</b> <b>to Overall Total</b> <b>Project Cost</b>
Adams County	\$100,000	5%
Commerce City	\$100,000	5%
Thornton	\$200,000	10%
	\$	
	\$	
	\$	
<b>Total amount of funding provided by other funding partners</b> <i>(private, local, state, Regional, or federal)</i>	<b>\$400,000</b>	

**Funding Breakdown (year by year)\***

*\*The proposed funding plan is not guaranteed if the project is selected for funding. While DRCOG will do everything it can to accommodate the applicants' request, final funding will be assigned at DRCOG's discretion within fiscal constraint. Funding amounts must be provided in year of expenditure dollars using an inflation factor of 3% per year from 2019.*

	FY 2020	FY 2021	FY 2022	FY 2023	Total
<b>Federal Funds</b>	\$	\$1,600,000	\$	\$	<b>\$1,600,000</b>
<b>State Funds</b>	\$	\$	\$	\$	<b>\$ 0</b>
<b>Local Funds</b>	\$	\$400,000	\$	\$	<b>\$400,000</b>
<b>Total Funding</b>	\$ 0	\$2,000,000	\$ 0	\$ 0	<b>\$2,000,000</b>
<b>4. Phase to be Initiated</b> <i>Choose from Design, ENV, ROW, CON, Study, Service, Equip. Purchase, Other</i>	Choose an item	Design	Choose an item	Choose an item	

**5. By checking this box**, the applicant's Chief Elected Official (Mayor or County Commission Chair) or City/County Manager for local governments or Agency Director or equivalent for others, has certified it allows this project request to be submitted for DRCOG-allocated funding and will follow all DRCOG policies and state and federal regulations when completing this project, if funded.



## Part 2 Evaluation Criteria, Questions, and Scoring

### A. Subregional significance of proposed project

WEIGHT **40%**

Provide **qualitative and quantitative** (derived from Part 3 of the application) responses to the following questions on the subregional significance of the proposed project.

1. Why is this project important to your subregion?

The preliminary engineering and environmental design for the widening of 104<sup>th</sup> Avenue between Colorado Boulevard and US-85 will establish 30% design level documents that will set the framework for the future widening of this segment of 104<sup>th</sup> Avenue. The project is of significant importance to the Adams County subregion as 104<sup>th</sup> Avenue is a principal arterial in the DRCOG Regional Transportation Plan that essentially spans from the west side of the Denver metro area to the east side and provides an alternate route to I-70 for accessing the Denver International Airport. The segment between Colorado Boulevard and US-85 is primarily only one lane in each direction, creating a capacity bottleneck with two lanes in each direction existing both east and west of this segment. Goods, services, commuters, and transit riders using 15,000 to 18,000 vehicles per day endure the delay associated with this bottleneck. The lack of bicycle and pedestrian facilities along the majority of the segment prevents use by alternative means of transportation other than car or truck and does not allow for recreational use of the corridor. The lack of ability to use alternative means of transportation combined with increased congestion as a result of inadequate capacity contributes to reduced air quality in the subregion.

2. Does the proposed project cross and/or benefit multiple **municipalities**? If yes, which ones and how?

The proposed project crosses the municipalities of Adams County, Commerce City, and Thornton. All three municipalities will benefit from this project. The 104<sup>th</sup> Avenue corridor passes through each of these municipalities, with Thornton on the west, Commerce City on the east, and unincorporated Adams County at various locations in between. The future widening as a result of this design project will increase capacity along 104<sup>th</sup> Avenue so these municipalities can manage existing traffic volumes along the corridor ranging from 15,000 to 18,000 vehicles per day and future projected traffic volumes ranging from 25,000 to 32,000 vehicles per day in 2035. In addition to managing vehicular traffic, the future widening will establish bicycle and pedestrian connectivity between all three municipalities.

3. Does the proposed project cross and/or benefit another **subregion(s)**? If yes, which ones and how?

The future widening as a result of the proposed project does not cross any other subregions. However, it does benefit the Jefferson County subregion. 104<sup>th</sup> Avenue extends west of Colorado Boulevard to US-36, where it changes to Church Ranch Boulevard. Continuing further west, Church Ranch Boulevard changes to 100<sup>th</sup> Avenue at Wadsworth Parkway and continues west until essentially terminating at Simms Street. To the east of US-85, 104<sup>th</sup> Avenue extends to Tower Road and then further east to terminate at E-470. This approximately 20 mile east/west principal arterial area allows goods and services to move across the Denver-metro area from municipalities within Jefferson County. This arterial also indirectly benefits the Denver, Broomfield, Boulder, and Southwest Weld County subregions by providing alternative access to the Denver International Airport as well as access to Wadsworth Parkway, US-36, Sheridan Boulevard, Federal Boulevard, Huron Street, I-25, Washington Street, Colorado Boulevard, US-85, I-76, Tower Road, and E-470.

4. How will the proposed project address the specific transportation problem described in the **Problem Statement** (as submitted in Part 1, #8)?

The proposed project will address the subregional issue of traffic congestion by laying the foundation for future widening of the Colorado Boulevard to US-85 corridor. Once the future widening is completed, travel time is anticipated to be reduced by 123 seconds per vehicle on average during the peak hour of travel. The creation of trails and bicycle lanes along the corridor will fill gaps in connectivity for these modes of transportation and could

potentially create 314 bicycle and pedestrian trips on 104<sup>th</sup> Avenue by 2040 (162 bicycle and 152 pedestrian). With some of these trips replacing single occupancy vehicle trips, greenhouse gas emissions could be reduced by 131 pounds per day by 2040 (102 lbs as a result of bicycle use; 29 lbs as a result of pedestrian use). The future widening is also anticipated to result in a 65% reduction in non-injury crashes and 63% reduction in injury and fatal crashes.

5. One foundation of a sustainable and resilient economy is physical infrastructure and transportation. How will the **completed** project allow people and businesses to thrive and prosper?

The future widening as a result of the proposed project allows goods and services to move across the Denver-metro area in a more efficient manner than such services having to use an unwidened road. This is of particular importance with 104<sup>th</sup> Avenue providing an alternate route from various municipalities along the corridor to the Denver International Airport. Specific to the Adams County subregion, over 28,000 residents and over 7,500 jobs are within one mile of the project limits. Population and employment is anticipated to grow to over 41,000 residents and over 9,400 jobs by 2040. Not widening 104<sup>th</sup> Avenue between Colorado Boulevard and US-85 will result in a long-term bottleneck on a principal arterial directly impacting these residents as well as places of employment. Delay through this stretch of 104<sup>th</sup> Avenue will continue to increase in the future as traffic volumes increase, resulting in delay to the movement of goods and services and an impact to the ability for people and businesses to thrive and prosper.

6. How will connectivity to different travel modes be improved by the proposed project?

104<sup>th</sup> Avenue provides an alternate route to the Denver International Airport. The future widening of the segment between Colorado Boulevard and US-85 will improve air travel by providing more efficient travel to the airport. A safer on-street bicycle facility will be provided and detached pedestrian facilities will be constructed where none exist today. As previously mentioned, the creation of trails and bicycle lanes along the corridor will fill gaps in connectivity for these modes of transportation and could potentially create 314 bicycle and pedestrian trips on 104<sup>th</sup> Avenue by 2040. With some of these trips replacing single occupancy vehicle trips, greenhouse gas emissions could be reduced by 131 pounds per day by 2040. The detached pedestrian facilities can also be used by non-commuter and recreational bicyclists. Bus service would be improved by efficient operation of the widened segment. Travelers would also have more efficient travel to/from the RTD North Metro Rail line that has 5 stations in Thornton, Adams County, and Northglenn, with the station closest to 104<sup>th</sup> Avenue located on Colorado Boulevard approximately 0.20 miles south of 104<sup>th</sup> Avenue.

7. Describe funding and/or project partnerships (*other subregions, regional agencies, municipalities, private, etc.*) established in association with this project.

The total estimated cost of the project is \$2,000,000. Adams County, Commerce City, and Thornton will be partnering to provide at 20% match or \$400,000 for the proposed project. Because approximately one-half of the segment of 104<sup>th</sup> Avenue between Colorado Boulevard and US-85 is within Thornton, Thornton will be provided half of the match or \$200,000. Adams County and Commerce City will each be providing \$100,000.

## B. DRCOG Board-approved Metro Vision TIP Focus Areas

WEIGHT **30%**

Provide **qualitative and quantitative** (derived from Part 3 of the application) responses to the following questions on how the proposed project addresses the three DRCOG Board-approved Focus Areas (in bold).

1. Describe how the project will **improve mobility infrastructure and services for vulnerable populations (including improved transportation access to health services)**.

Within one mile of the project area there are four health services facilities. Two are assisted living facilities that have the potential to serve the 2,171 citizens located within one mile of the project area that are over the age of 65. Two facilities assist people with intellectual and developmental disabilities and have the potential to service

the 1,759 individuals with disabilities located within one mile of the project area. The future widening as a result of the proposed design project will provide a more efficient transportation system for these health facilities by reducing congestion and improving travel time along the corridor. With 408 households located within one mile of the project area that do not have a motor vehicle, the addition of bike lanes and trails along the Colorado Boulevard to US-85 corridor will provide facilities for other modes of travel from these households. Travel from Thornton to Commerce City and vice versa will be achievable for those without vehicles. This includes the 7,077 children age 6-17 years old that may be either not old enough to drive or old enough, but unable to drive. With pedestrian and bicycle facilities in place, this age group can learn how to not rely on a motor vehicle for transportation. 730 low income households and 15,872 minorities are also located within one mile of the project limits. The future widening project will provide members of these demographics with a transportation system that minimizes delay and provides opportunity for bicycle and walking modes of travel. A transportation system that minimizes delay and provides opportunity for bicycle and walking modes of travel will also benefit the 2,035 linguistically-challenged persons within one mile of the project limits that need access to facilities addressing such challenges.

**2. Describe how the project will increase reliability of existing multimodal transportation network.**

104<sup>th</sup> Avenue between Colorado Boulevard and US-85 is part of RTD’s AA route, which ultimately reaches the Denver International Airport. According to RTD’s Service Performance Report, the AA route has 13.91 boardings per hour or 306 boardings per day. With the future widening in place these passengers will benefit from reduced travel time along the route, particularly during the peak travel period when delay is anticipated to be reduced by 123 seconds per vehicle on average. Reliability is also increased as a result of an anticipated 63-65% reduction in vehicle crashes. Fewer crashes means less delay and increased travel time reliability along the corridor. For bicyclists and pedestrians, reliability is increased due to the future widening providing both bicycle and pedestrian facilities where none exist today.

**3. Describe how the project will improve transportation safety and security.**

The preliminary engineering and environmental design proposed under this project will lead to the future widening of 104<sup>th</sup> Avenue between Colorado Boulevard and US-85. The future widening is anticipated to reduce non-injury crashes by 65% and injury crashes by 63%, resulting in a safer corridor for vehicle travel.

**C. Consistency & Contributions to Transportation-focused Metro Vision Objectives**

WEIGHT **20%**

Provide **qualitative and quantitative** responses (derived from Part 3 of the application) to the following items on how the proposed project contributes to Transportation-focused Objectives (in bold) in the adopted Metro Vision plan. Refer to the expanded Metro Vision Objective by clicking on links.

[MV objective 2](#)

**Contain urban development in locations designated for urban growth and services.**

1. Will this project help focus and facilitate future growth in locations where urban-level infrastructure already exists or areas where plans for infrastructure and service expansion are in place?

Yes  No

Describe, including supporting quantitative analysis

The local agencies of the city of Thornton, Adams County, and Commerce City have all developed transportation plans based on growth within each agency that will rely on the widening of 104<sup>th</sup> Avenue between Colorado Boulevard and US-85. The proposed project to conduct preliminary engineering and environmental design to establish 30% design documents for this future widening project represents an investment by these local agencies in a transportation system in growth areas that aligns with growth aspirations and regional planning assumptions made in the transportation plans for each local agency. Thornton, Adams County, and Commerce

City combined are investing \$400,000 toward the proposed project.

**MV objective 3**

**Increase housing and employment in urban centers.**

2. Will this project help establish a network of clear and direct multimodal connections within and between urban centers, or other key destinations?

Yes  No

Describe, including supporting quantitative analysis

The future widening as a result of the proposed project will establish bike lanes and trails along a corridor where none exist today. Commerce City and Thornton will become linked by bicycle and trail, with long distance bicyclists ultimately having access to bike lanes recently constructed on Tower Road for access to the Denver International Airport. People employed at the airport will then have an additional option for transportation to work besides motor vehicle and bus. With bike lanes and trails in place, approximately 628 combined bicycle and pedestrian trips are anticipated to occur on 104<sup>th</sup> Avenue by 2040 (162 one way bicycle trips and 152 one way pedestrian trips).

**MV objective 4**

**Improve or expand the region's multimodal transportation system, services, and connections.**

3. Will this project help increase mobility choices within and beyond your subregion for people, goods, or services?

Yes  No

Describe, including supporting quantitative analysis

The future widening as a result of the proposed project will increase capacity of 104<sup>th</sup> Avenue. This will improve travel time for bus service during the peak travel period with delay anticipated to be reduced 123 seconds per vehicle on average, resulting in transit as a more attractive option for travel. Pedestrian and bicycle access is also improved, with bike lanes and trails being added to 104<sup>th</sup> Avenue in conjunction with the future widening project. Biking and walking modes of travel will then be improved for road users, with approximately 628 combined bicycle and pedestrian trips anticipated by 2040. Travelers will also have more efficient travel to/from the RTD North Metro Rail line, with the closest station located on Colorado Boulevard approximately 0.20 miles south of 104<sup>th</sup> Avenue.

**MV objective 6a**

**Improve air quality and reduce greenhouse gas emissions.**

4. Will this project help reduce ground-level ozone, greenhouse gas emissions, carbon monoxide, particulate matter, or other air pollutants?

Yes  No

Describe, including supporting quantitative analysis

The future widening as a result of the proposed project is anticipated to reduce greenhouse gas emissions by 129 pounds per day by 2040. This is due to the installation of bike lanes, which are anticipated to result in 54 fewer single occupancy vehicle trips per day (102 lbs of greenhouse gas emissions reduced per day). The installation of trails is anticipated to result in 76 fewer single occupancy vehicle trips per day (29 lbs of greenhouse gas emissions reduced per day).

**MV objective 7b**

**Connect people to natural resource or recreational areas.**

5. Will this project help complete missing links in the regional trail and greenways network or improve other multimodal connections that increase accessibility to our region's open space assets?

Yes  No

Describe, including supporting quantitative analysis

The South Platte River is within the project limits and intersects 104<sup>th</sup> Avenue approximately two miles east of Colorado Boulevard. This trail provides access to the Adams County Elaine T. Valente Open Space, Adams County 88<sup>th</sup> Avenue Open Space, Adams County Regional Park, and ultimately Confluence Park in Denver. The project will establish bike lanes and trails that will lead to the South Platte River Trail.

[MV objective 10](#)

**Increase access to amenities that support healthy, active choices.**

6. Will this project expand opportunities for residents to lead healthy and active lifestyles?

Yes  No

Describe, including supporting quantitative analysis

As previously mentioned, the future widening as a result of the project will provide access to the South Platte River Trail. This will create more walking and biking recreational access, resulting in a healthier and more active lifestyle. In addition, the alternative biking and walking modes of transportation will allow commuters to engage in a healthier and more active lifestyle with options for transportation to and from employment that require physical activity and do not use a single occupant vehicle. 130 fewer single occupant vehicle trips per day are anticipated by 2040 (54 fewer due to biking and 76 fewer due to walking). Meaning, 130 trips per day are using a more healthy and active means of transportation.

[MV objective 13](#)

**Improve access to opportunity.**

7. Will this project help reduce critical health, education, income, and opportunity disparities by promoting reliable transportation connections to key destinations and other amenities?

Yes  No

Describe, including supporting quantitative analysis

As mentioned earlier, there are four health services facilities within one mile of the project area. Two are assisted living facilities that have the potential to serve the 2,171 citizens located within one mile of the project area that are over the age of 65. Two facilities assist people with intellectual and developmental disabilities and have the potential to service the 1,759 individuals with disabilities located within one mile of the project area. The future widening as a result of the proposed design project will provide a more efficient transportation system for these health facilities by reducing congestion and improving travel time along the corridor. 408 households are located within one mile of the project area that do not have a motor vehicle. The addition of bike lanes and trails along the project corridor will allow for other modes of travel from these households. Travel from Thornton to Commerce City and vice versa will be achievable for those without vehicles. This includes the 7,077 children age 6-17 years old that may be either not old enough to drive or old enough, but unable to drive. With pedestrian and bicycle facilities in place, this age group can learn how to not rely on a motor vehicle for transportation. 730 low income households and 15,872 minorities are also located within one mile of the project limits. The future widening project will provide members of these demographics with a transportation system that minimizes delay and provides opportunity for bicycle and walking modes of travel. The transportation system will also benefit the 2,035 linguistically-challenged persons within one mile of the project limits that need access to facilities addressing such challenges.

[MV objective 14](#)

**Improve the region's competitive position.**

8. Will this project help support and contribute to the growth of the subregion's economic health and vitality?

Yes  No

Describe, including supporting quantitative analysis

104<sup>th</sup> Avenue provides an alternate route to the Denver International Airport. The future widening of the segment between Colorado Boulevard and US-85 will improve accessibility to this major employment center and

hub for movement of goods, services, and freight. Movement of goods, services, and freight along this corridor will be more efficient due to an anticipated reduction in delay of 123 seconds per vehicle on average during peak periods. Transit will also benefit from this reduced delay as well as reductions in delay associated with 63-65% fewer crashes on 104<sup>th</sup> Avenue. This will result in a more reliable transit system for those employed at the airport or other businesses along 104<sup>th</sup> Avenue. The future bike lanes and trails will provide transportation facilities for those who cannot or choose not to use single occupant vehicles or transit (estimated to result in 130 fewer one way single occupancy vehicle trips per day by 2040).

D. Project Leveraging		WEIGHT <b>10%</b>
9. What percent of outside funding sources (non-DRCOG-allocated Subregional Share funding) does this project have?	20%	60%+ outside funding sources .....High 30-59% .....Medium 29% and below .....Low

## Part 3 Additional Considerations

The ADCOG Subregional Forum has established five additional considerations to guide project selection within the subregional process. These considerations may be used by the ADCOG Subregional Forum in the project evaluation process in combination with the above listed criteria. The five additional considerations are:

- Does the project benefit a small community, which for this process is defined as a community with a population of less than 50,000 people?
- Is this project a suburban connector?
- Does the project address a gap in existing service?
- Is this the logical next step of a project?
- Is the project construction ready?

Applicants should provide an attachment to the application to address these additional considerations.

## Part 4 Project Data Worksheet – Calculations and Estimates *(Complete all subsections applicable to the project)*

### A. Transit Use

1. Current ridership weekday boardings	306
2. Population and Employment	

Year	Population within 1 mile	Employment within 1 mile	Total Pop and Employ within 1 mile
2020	28,294	7,524	<b>35,818</b>
2040	41,044	9,496	<b>50,540</b>

Transit Use Calculations	Year of Opening	2040 Weekday Estimate
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3. Enter estimated additional daily transit boardings after project is completed. <i>(Using 50% growth above year of opening for 2040 value, unless justified)</i> <i>Provide supporting documentation as part of application submittal</i>	0	0
4. Enter number of the additional transit boardings (from #3 above) that were previously using a different transit route. <i>(Example: {#3 X 25%} or other percent, if justified)</i>	0	0
5. Enter number of the new transit boardings (from #3 above) that were previously using other non-SOV modes (walk, bicycle, HOV, etc.) <i>(Example: {#3 X 25%} or other percent, if justified)</i>	0	0
6. = Number of SOV one-way trips reduced per day (#3 – #4 – #5)	0	0
7. Enter the value of <b>{#6 x 9 miles}</b> . (= the VMT reduced per day) <i>(Values other than the default 9 miles must be justified by sponsor; e.g., 15 miles for regional service or 6 miles for local service)</i>	0	0
8. = Number of pounds GHG emissions reduced (#7 x 0.95 lbs.)	0	0
9. If values would be distinctly greater for weekends, describe the magnitude of difference:		
10. If different values other than the suggested are used, please explain here:  Current ridership weekday boardings is from the RTD Service Performance document for the AA bus route at 22 hours of operation per day. Because the AA bus route is already in existence, additional daily transit boardings are not expected after the future widening project is completed.		

## B. Bicycle Use

1. Current weekday bicyclists	20
2. Population and Employment	

Year	Population within 1 mile	Employment within 1 mile	Total Pop and Employ within 1 mile
2020	28,294	7,524	35,818
2040	41,044	9,496	50,540

Bicycle Use Calculations	Year of Opening	2040 Weekday Estimate
3. Enter estimated additional weekday one-way bicycle trips on the facility after project is completed.	108	162
4. Enter number of the bicycle trips (in #3 above) that will be diverting from a different bicycling route. <i>(Example: {#3 X 50%} or other percent, if justified)</i>	36	54
5. = Initial number of new bicycle trips from project (#3 – #4)	72	108
6. Enter number of the new trips produced (from #5 above) that are replacing an SOV trip. <i>(Example: {#5 X 30%} or other percent, if justified)</i>	36	54
7. = Number of SOV trips reduced per day (#5 - #6)	36	54

8. Enter the value of <b>{#7 x 2 miles}</b> . (= the VMT reduced per day) <i>(Values other than 2 miles must be justified by sponsor)</i>	72	108
9. = Number of pounds GHG emissions reduced (#8 x 0.95 lbs.)	68	102
10. If values would be distinctly greater for weekends, describe the magnitude of difference:		
11. If different values other than the suggested are used, please explain here:  Current weekday bicyclists is estimated based on comparison of Strava heat maps of current 104 <sup>th</sup> Avenue vs. 86 <sup>th</sup> Avenue west of Simms Street (facility considered to be similar in cross section to what is proposed for 104 <sup>th</sup> Avenue). The estimated number of opening day additional weekday one-way bicycle trips was based on an average of short-duration bicycle counts from CDOT's non-motorized traffic data database for 86 <sup>th</sup> Avenue west of Simms Street minus current weekday bicyclists to represent on street bike lane use (56 trips – 20 trips = 36 trips). This was combined with an assumed 50% of the average of short-duration bicycle counts for South Platte River Trail to represent sidewalk recreational bicycle use (72 trips). The 2040 estimate was based on an additional 50% growth similar to Transit Use Calculation #3. It was assumed 50% of recreational bicycle use would be diverted from another recreational bicycle route. It was assumed that no on street bicyclists would be diverting from another route as there are no nearby alternative east/west commuter bicycle routes that connect Thornton to Commerce City. It was also assumed that all new on street bicyclists would be replacing an SOV trip (36 trips) for this reason.		

### C. Pedestrian Use

1. Current weekday pedestrians (include users of all non-pedaled devices)	0
2. Population and Employment	

Year	Population within 1 mile	Employment within 1 mile	Total Pop and Employ within 1 mile
2020	28,294	7,524	35,818
2040	41,044	9,496	50,540

Pedestrian Use Calculations	Year of Opening	2040 Weekday Estimate
3. Enter estimated additional weekday pedestrian one-way trips on the facility after project is completed	101	152
4. Enter number of the new pedestrian trips (in #3 above) that will be diverting from a different walking route <i>(Example: {#3 X 50%} or other percent, if justified)</i>	51	76
5. = Number of new trips from project (#3 – #4)	50	76
6. Enter number of the new trips produced (from #5 above) that are replacing an SOV trip. <i>(Example: {#5 X 30%} or other percent, if justified)</i>	0	0
7. = Number of SOV trips reduced per day (#5 - #6)	50	76
12. Enter the value of <b>{#7 x .4 miles}</b> . (= the VMT reduced per day) <i>(Values other than .4 miles must be justified by sponsor)</i>	20	30
8. = Number of pounds GHG emissions reduced (#8 x 0.95 lbs.)	19	29

9. If values would be distinctly greater for weekends, describe the magnitude of difference:

10. If different values other than the suggested are used, please explain here:

Current weekday pedestrians is assumed to be zero due to lack of pedestrian facilities along the corridor. The estimated number of opening day additional weekday one-way trips was based on the average of continuous pedestrian counts from CDOT's non-motorized traffic data database for Park Trail west of SH-287 (facility considered to be located in an area with population density similar to 104<sup>th</sup> Avenue). The 2040 estimate was based on an additional 50% growth similar to Transit Use Calculation #3. Pedestrian use is anticipated to be primarily recreational due to access 104<sup>th</sup> Avenue provides to the South Platte River trail. An assumed 50% of pedestrian use was assumed to be diverted from another recreational trail route. Because trail use is anticipated to be primarily recreational, none of the new trips from the project are assumed to be replacing an SOV trip.

## D. Vulnerable Populations

Use Current Census Data	Vulnerable Populations	Population within 1 mile
	1. Persons over age 65	2,171
2. Minority persons	15,872	
3. Low-Income households	730	
4. Linguistically-challenged persons	2,035	
5. Individuals with disabilities	1,759	
6. Households without a motor vehicle	408	
7. Children ages 6-17	7,077	
8. Health service facilities served by project	4	

## E. Travel Delay *(Operational and Congestion Reduction)*

Sponsor must use industry standard Highway Capacity Manual (HCM) based software programs and procedures as a basis to calculate estimated weekday travel delay benefits. *DRCOG staff may be able to use the Regional Travel Model to develop estimates for certain types of large-scale projects.*

1. Current ADT (average daily traffic volume) on applicable segments	18,000
2. 2040 ADT estimate	32,000
3. Current weekday vehicle hours of delay (VHD) (before project)	1,401

Travel Delay Calculations	Year of Opening
4. Enter calculated future weekday VHD (after project)	722
5. Enter value of {#3 - #4} = Reduced VHD	679
6. Enter value of {#5 X 1.4} = <b>Reduced person hours of delay</b> <i>(Value higher than 1.4 due to high transit ridership must be justified by sponsor)</i>	951
7. <b>After project peak hour congested average travel time reduction</b> per vehicle (includes persons, transit passengers, freight, and service equipment carried by vehicles). <i>If applicable, denote unique travel time reduction for certain types of vehicles</i>  Calculated based on weighted average of eastbound and westbound travel time reduction per vehicle during peak AM and PM hours.	123 seconds

8. If values would be distinctly different for weekend days or special events, describe the magnitude of difference.

9. If different values other than the suggested are used, please explain here:  
 Vehicle hours of delay was calculated using Sychro/SimTraffic HCM output and DRCOG methodology for calculating travel time reduction.

## F. Traffic Crash Reduction

1. Provide the current number of crashes involving motor vehicles, bicyclists, and pedestrians (*most recent 5-year period of data*)

<b>Fatal</b> crashes	1
<b>Serious Injury</b> crashes	1
<b>Other Injury</b> crashes	36
<b>Property Damage Only</b> crashes	113

Sponsor must use industry accepted crash reduction factors (CRF) or accident modification factor (AMF) practices (*e.g., NCHRP Project 17-25, NCHRP Report 617, or DiExSys methodology*).

2. Estimated reduction in crashes applicable to the project scope (*per the five-year period used above*)

<b>Fatal</b> crashes reduced	0
<b>Serious Injury</b> crashes reduced	0
<b>Other Injury</b> crashes reduced	23
<b>Property Damage Only</b> crashes reduced	73

## G. Facility Condition

Sponsor must use a current industry-accepted pavement condition method or system and calculate the average condition across all sections of pavement being replaced or modified.  
 Applicants will rate as: Excellent, Good, Fair, or Poor

### Roadway Pavement

1. Current roadway pavement condition	Good
2. Describe current pavement issues and how the project will address them.  On average, the remaining drivable life of pavement on 104 <sup>th</sup> Avenue – Colorado Boulevard to US-85 is 10 years according to CDOT’s Online Transportation Information System. This translates to a drivability life rating of “Moderate”, which can be considered “Good” on a rating scale of Poor, Fair, Good, Excellent. Once the widening project is completed, drivability life is anticipated to be above 10 years, which translates to a drivability life rating of “High” which can be considered “Excellent”.	
3. Average Daily User Volume	35,000 (2040)

### Bicycle/Pedestrian/Other Facility

4. Current bicycle/pedestrian/other facility condition	Poor
5. Describe current condition issues and how the project will address them.  There are no bicycle or pedestrian facilities along almost the entire stretch of 104 <sup>th</sup> Avenue – Colorado Boulevard to US-85. Once the widening project is completed, bicycle and pedestrian facilities are anticipated to be considered “Excellent” as such facilities will be introduced with the project.	

6. Average Daily User Volume	628 (2040)
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**H. Bridge Improvements**

1. Current bridge structural condition from CDOT

There are two bridges on 104<sup>th</sup> Avenue between Colorado Boulevard and US-85. One is located over the South Platte River. The other is located over the Fulton Ditch. According to CDOT’s Online Transportation Information System, the South Platte River bridge has a Sufficiency Rating of 98.2 and considered in “Good” condition. The Fulton Ditch bridge has a Sufficiency Rating of 57.7 and considered in “Fair” condition.

2. Describe current condition issues and how the project will address them.

The South Platte River bridge was reconstructed in 2015. During the reconstruction, the bridge was widened to accommodate four lanes of travel (two in each direction) but is currently striped for two lanes as 104<sup>th</sup> Avenue east and west of the bridge is not yet widened. When the widening of 104<sup>th</sup> Avenue occurs, the South Platte River bridge will only need to be restriped to achieve the desired four lane capacity of 104<sup>th</sup> Avenue. The Fulton Ditch bridge is currently only wide enough for two lanes. When the widening of 104<sup>th</sup> Avenue occurs, this bridge will need to be reconstructed to achieve the desired four lane capacity of 104<sup>th</sup> Avenue.

3. Other functional obsolescence issues to be addressed by project

The Fulton Ditch bridge is currently only wide enough for two lanes of travel. When the widening of 104<sup>th</sup> Avenue occurs, this bridge will need to be reconstructed to achieve the desired four lane capacity of 104<sup>th</sup> Avenue.

4. Average Daily User Volume over bridge

35,000 (2040)

**I. Other Beneficial Variables** *(identified and calculated by the sponsor)*

1.

2.

3.

**J. Disbenefits or Negative Impacts** *(identified and calculated by the sponsor)*

1. Increase in VMT? *If yes, describe scale of expected increase*

Yes  No

2. Negative impact on vulnerable populations

3. Other: