



TOWN BOARD WORK SESSION

December 12, 2022 - 5:30 PM

1st Floor Conference Room, 301 Walnut Street, Windsor, CO 80550

To view Town Board meeting broadcasts, visit
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AGENDA

GOAL of this Work Session is to have the Town Board receive information on topics of Town business from the Town Manager, Town Attorney and Town staff in order to exchange ideas and opinions regarding these topics.

Members of the Public in attendance are asked to be recognized by the Mayor before participating in any discussions of the Town Board

WORK SESSION AGENDA ITEMS

1. Board/Manager/Attorney Monthly Meeting
2. Road Impact Fees - E. Bracke, Transportation Engineer
3. Future Meetings Agenda

The Town of Windsor will make reasonable accommodations for access to Town services, programs, and activities and will make special communication arrangements for persons with disabilities. Please call (970) 674-2400 by noon on the Thursday prior to the meeting to make arrangements.



MEMORANDUM

Date: December 12, 2022
To: Mayor and Town Board
From: Eric Bracke, Transportation Planner
Re: Road Impact Fees - E. Bracke, Transportation Engineer
Item #: 2.

Background / Discussion:

In July, staff started reviewing the current road impact fees the Town is applying for development. Revisions were required due to the high growth of development and high inflation in the construction industry. The Town was not keeping up with the costs of providing new transportation improvements to the network.

Financial Impact:

The fees that are recommended and presented in the document bring fees up to where construction costs are today and with a revised Roadway Improvement Plan that reflects current growth trends

Relationship to Strategic Plan:

Sustainable Infrastructure:

- Adequately maintain and ensure that infrastructure (streets, trails, water & sewer) aligns with growth
- Design and implement a well-connected, efficient, multi-modal transportation network

Recommendation:

CC:

Attachments:



ROAD IMPACT FEE UPDATE

for the
Town of Windsor, Colorado

prepared by
FELSBURG HOLT & ULLEVIG
and
DUNCAN ASSOCIATES

November 2022
Public Review Draft

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EXECUTIVE SUMMARY

Impact fees are a type of development exaction intended to ensure that new development pays its proportionate fair share of the cost of growth-related infrastructure improvements. Impact fees are charges that are assessed on new development based on a standard formula rather than an individualized assessment. The fees are one-time, up-front charges, with the payment usually made at the time of building permit issuance. Essentially, impact fees require that each new residential or commercial project pay its pro-rata share of the cost of new infrastructure facilities required to serve that development.

Impact fees and other forms of developer exactions are not the sole answer to local government's capital funding needs. These funding mechanisms do not address the costs of maintenance, rehabilitation, or replacement of existing facilities, nor can they be used to fund capital improvements required to remedy existing capacity deficiencies or safety problems. Rather than the ultimate solution to a community's capital funding needs, impact fees should be viewed as a supplemental financing mechanism to be used in concert with more traditional funding sources.

The Town of Windsor originally adopted road impact fees in 2001, based on a transportation plan and impact fee study. The fees were last comprehensively updated in 2017, although there have been subsequent inflation adjustments. The Town has engaged the consultant team of Felsburg Holt & Ullevig and Duncan Associates to update the transportation plan and fees.

Windsor is a fast-growing home rule municipality in northern Colorado. The population increased by 75% over the last decade, from 18,644 in 2010 to 32,716 in 2020. It is located about 60 miles north of Denver, abuts I-25, straddles the boundary between Larimer and Weld Counties, and is about halfway between Fort Collins and Greeley.

Summary of Changes

Changes from the 2017 road impact fee study include the following:

Land Use Categories. This update adds convenience store with gasoline sales and fast food restaurant uses to the fee schedule.

Major Road System. An alternative definition of the major road system that excludes State roads was dropped from this update.

Improvement Costs. Roundabouts were added, but costs continue to exclude right-of-way acquisitions, landscaping, and major utility relocations.

Revenue Credits. A credit for Town non-impact fee funding is no longer provided, as it is not deemed to be warranted.

Fee Changes

The Town's road impact fees are currently assessed at about 16% more than the maximum fees calculated in the 2017 study, due to annual adjustments for construction cost inflation. The updated fees are compared to the maximum fees calculated in 2017 and current fees in Table 1. The percentage changes vary considerably by land use type. These variations are due to changes in travel demand factors (trip generation and average trip length). The updated fee for a single-family unit is up 75% from the previous study, and 51% from the current inflation-adjusted fee.

Table 1. Current and Updated Road Impact Fees

Land Use Type	Unit	2017 Study	Inflation Adjust.	Current Fee	Updated Fee	Change From:	
						Study	Current
Single-Family Detached	Dwelling	\$3,838	\$621	\$4,459	\$6,715	75%	51%
Multi-Family	Dwelling	\$2,436	\$394	\$2,830	\$4,353	79%	54%
Mobile Home Park	Site	\$1,156	\$186	\$1,342	\$2,900	151%	116%
Retail/Commercial	1,000 sq. ft.	\$5,076	\$821	\$5,897	\$9,205	81%	56%
Convenience Store w/Gas	1,000 sq. ft.	n/a	n/a	n/a	\$16,130	n/a	n/a
Fast Food Restaurant	1,000 sq. ft.	n/a	n/a	n/a	\$21,316	n/a	n/a
Office	1,000 sq. ft.	\$4,674	\$756	\$5,430	\$8,238	76%	52%
Public/Institutional	1,000 sq. ft.	\$2,834	\$458	\$3,292	\$3,432	21%	4%
Industrial	1,000 sq. ft.	\$2,016	\$326	\$2,342	\$4,317	114%	84%
Warehouse	1,000 sq. ft.	\$1,879	\$304	\$2,183	\$1,547	-18%	-29%
Mini-Warehouse	1,000 sq. ft.	\$1,319	\$214	\$1,533	\$1,310	-1%	-15%
Oil and Gas Well	Wellhead	\$2,111	\$342	\$2,453	\$3,642	73%	48%

Source: Current fees from Town of Windsor Fee Schedule, updated January 1, 2021; 2017 maximum fees for total system from Duncan Associates/Felsburg Holt & Ullevig, *Road Impact Fee Update*, September 2017, updated fees from Table 17.

Components of Fee Changes

The demand unit is a daily vehicle-mile of travel (VMT). The fees are the product of two primary factors: the net cost per VMT and the VMT per unit.

The net cost per VMT is the cost per VMT less the revenue credit per VMT. The cost per VMT is up 64% compared to the 2017 study, while the revenue credit is down 40%. The reduction in the revenue credit is primarily due to dropping the unwarranted credit for local funding. Taken together, the net cost per VMT is up 111% from the 2017 study, as shown in Table 2.

Table 2. Change in Net Cost per VMT

	2017	2022	Change
Cost per VMT	\$209	\$343	64%
- Revenue Credit per VMT	-\$65	-\$39	-40%
Net Cost per VMT	\$144	\$304	111%

Source: 2017 figures from *Town of Windsor Road Impact Fee Update*, 2017; 2022 figures from Table 16.

The second component – travel demand by land use – is the product of new trips per unit and average trip length. Trip rates were updated from the 2012 to the 2021 edition of the *Trip Generation Manual*. Trip lengths changed due to updated modeling to derive an overall average trip length for development in the Windsor service area, and adjusting national trip lengths by trip purpose from the most recent (2017 versus 2009) *National Household Travel Survey* to be consistent with the overall local average trip length. The resulting changes are summarized in Table 3. Vehicle travel per development unit is down for most land uses.

Table 3. Changes in Travel Demand by Land Use

Land Use Type	Unit	New Trips per Unit			Trip Length (miles)			VMT per Unit		
		2017	2022	Chng.	2017	2022	Chng.	2017	2022	Chng.
Single-Family Det.	Dwelling	4.76	4.71	-1%	5.60	4.69	-16%	26.66	22.09	-17%
Multi-Family	Dwelling	3.33	3.37	1%	5.08	4.25	-16%	16.92	14.32	-15%
Mobile Home Park	Site	2.50	3.56	42%	3.21	2.68	-17%	8.03	9.54	19%
Retail/Commercial	1,000 sq. ft.	9.18	8.14	-11%	3.84	3.72	-3%	35.25	30.28	-14%
Office	1,000 sq. ft.	5.52	5.42	-2%	5.88	5.00	-15%	32.46	27.10	-17%
Public/Institutional	1,000 sq. ft.	3.80	3.37	-11%	5.18	3.35	-35%	19.68	11.29	-43%
Industrial	1,000 sq. ft.	1.91	2.37	24%	7.33	5.99	-18%	14.00	14.20	1%
Warehouse	1,000 sq. ft.	1.78	0.85	-52%	7.33	5.99	-18%	13.05	5.09	-61%
Mini-Warehouse	1,000 sq. ft.	1.25	0.72	-42%	7.33	5.99	-18%	9.16	4.31	-53%
Oil and Gas Well	Wellhead	2.00	2.00	0%	7.33	5.99	-18%	14.66	11.98	-18%

Source: 2017 figures from *Town of Windsor Road Impact Fee Update*, 2017; 2022 figures from Table 8.

MAJOR ROADWAY SYSTEM

A road impact fee should have a clear definition of the roadway system that the fees will be used to improve. Windsor's road impact fee is designed and intended to fund improvements to arterial and major collector roads within the Town and its Growth Management Area (GMA), excluding interstates and U.S. highways. These are referred to as the "major roads" or the "major roadway system." An updated functional classification map of roadways within the GMA was prepared by Felsburg Holt & Ullevig in coordination with the Town as part of this update, and it is presented in Figure 1. Minor collectors, US 34, and I-25 are shown on the map, but are excluded from the major roadway system that is eligible for impact fee funding.

Figure 1. Functional Classification Map

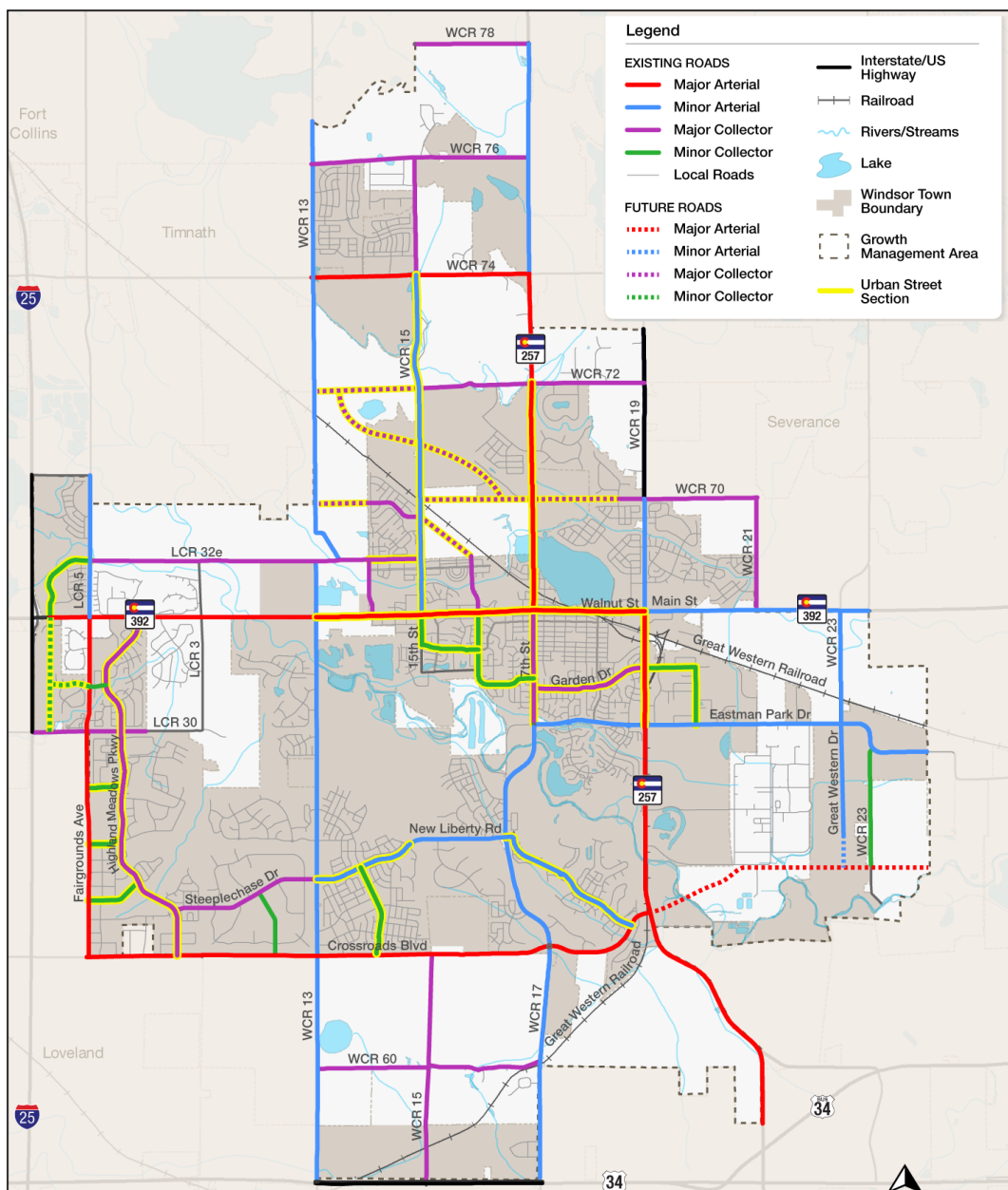
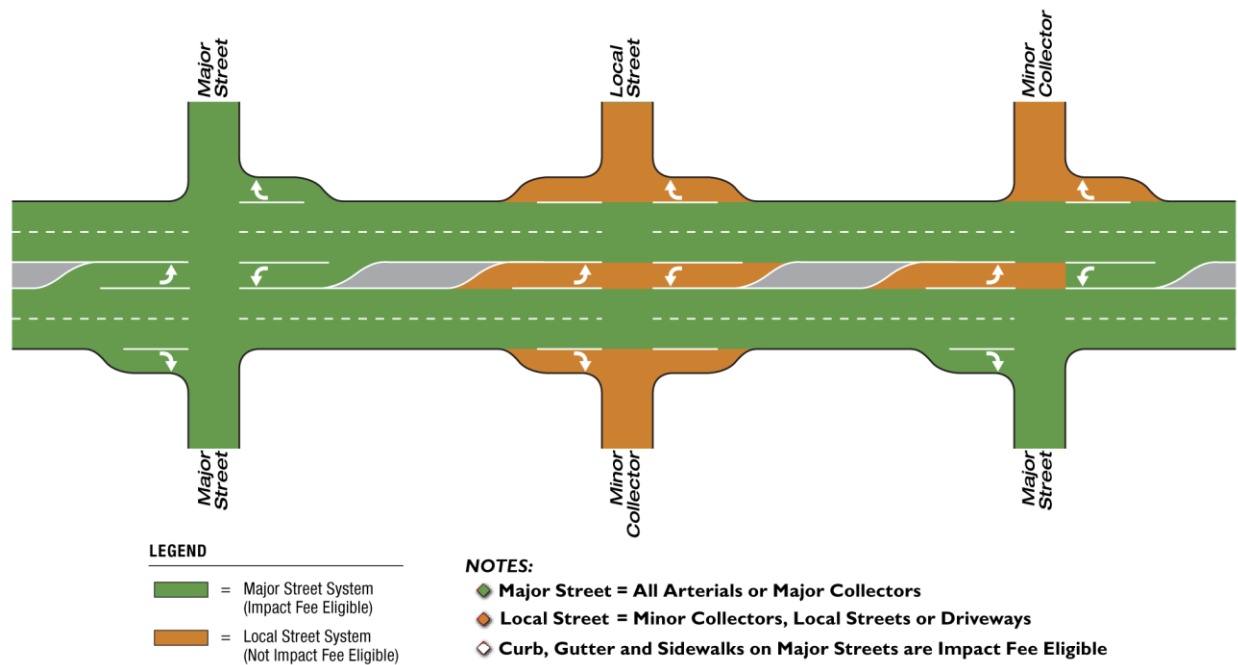


Figure 2 provides an illustration of roadway segments and improvements that are considered part of the major roadway system and eligible to be funded with road impact fees, versus minor collector and local streets that are not considered part of the major roadway system. Minor collectors and local street construction and improvements are the responsibility of developments that necessitate these streets.

Figure 2. Eligible Major Road Improvements



In the Town's previous impact fee studies, road impact fees were calculated for two alternative definitions of the major roadway system. One option was to define it as the total system, including State roads within the GMA. This definition recognizes that the Town will need to contribute to the cost of State road improvements to ensure maintenance of acceptable levels of service within the Town and its GMA. The road impact fee is reduced by a revenue credit that accounts for anticipated State funding for these improvements. This is the major road system definition that has been the basis for the Town's road impact fees since they were originally adopted in 2001.

The alternative would be to redefine the major roadway system designed to be funded by the impact fees as only the non-State (Town and County) arterials and major collectors within the GMA. It is anticipated that the Town will desire to continue to have the ability to contribute impact fee funds toward State road improvements within the GMA. To retain this flexibility, it is necessary to continue to base the fees on the "total system" definition of the major roadway system. This update does not calculate the alternative that excludes State roads.

METHODOLOGY

The Town's road impact fee methodology uses the "consumption-based" approach, which basically charges a new development the cost of replacing the capacity that it consumes on the major roadway system. That is, for every service unit of traffic generated by the development, the impact fee charges the net cost to construct an additional service unit of capacity. Since travel is never evenly distributed throughout a roadway system, actual roadway systems require more than one vehicle-mile of capacity (VMC) for every vehicle-mile of travel (VMT) to keep most road segments functioning at an acceptable level of service. Consequently, the consumption-based road impact fee model generally underestimates the full cost of growth. It is, however, a conservative, legally sound and relatively simple approach to the calculation of road impact fees. In the standard consumption-based model, the VMT generated by a development is multiplied by the cost per VMC to develop the impact fee.

While the consumption-based model is probably the most commonly-used approach for road impact fees in the nation, many communities have used the alternative "improvements-driven" model. The improvements-driven approach essentially divides the cost of growth-related improvements required over a fixed planning horizon (or to build-out) by the number of new service units (e.g., VMT) projected to be generated by growth over the same planning horizon to determine the cost per service unit. Fees based on the improvement-driven methodology should be spent only on improvements included in the plan.

The standard consumption-based methodology is retained in this update to provide the flexibility to make improvements as required by development as it occurs. The total cost of the needed capacity improvements is not used directly in the fee calculations, which instead utilize the average cost to add new capacity derived from those planned improvement costs.

The formula for Windsor's road impact fee calculations is shown in Figure 2.

Figure 3. Road Impact Fee Formula

FEE = VMT x NET COST/VMT	
<u>Where:</u>	
VMT	= TRIPS x % NEW x MILES
TRIPS	= 1/2 trip ends generated by development during average weekday
% NEW	= Percentage of primary trips as opposed to pass-by or diverted-linked trips
MILES	= Average length of a trip on major roadway system by trip purpose
NET COST/VMC	= COST/VMT - CREDIT/VMT
COST/VMT	= COST/VMT x VMC/VMT
COST/VMC	= Average cost to create a new VMC based on planned improvements
VMC/VMT	= The system-wide ratio of capacity to demand in the major road system (assumed 1:1)
CREDIT/VMT	= Net present value of revenues attributable to new development provided by other entities to be used for capacity-expanding road improvements in the GMA

SERVICE UNITS

A service unit is a uniform unit of demand on roadway facilities. An appropriate demand unit for road impact fees is a vehicle-mile of travel (VMT). Vehicle-miles of travel is a combination of the number of vehicles traveling during a given time period and the distance (in miles) that these vehicles travel. Available traffic counts and projected volumes and roadway capacities are expressed in terms of vehicles per 24-hour period. Consequently, average daily VMT is the most appropriate service unit for Windsor's road impact fees.

The travel demand generated by specific land use types is a product of three factors: 1) trip generation, 2) percent primary trips and 3) trip length. The first two factors are well documented in the professional literature, and the average trip generation characteristics identified in studies of communities around the nation should be reasonably representative of trip generation characteristics in Windsor. In contrast, trip lengths are much more likely to vary between communities, depending on the geographic size and shape of the community and its major roadway system.

To make the fee calculations easier to follow, numbers in one table that are inputs into another table are highlighted in red.

Trip Generation

Trip generation rates are based on information published in the most recent edition of the Institute of Transportation Engineers' (ITE) *Trip Generation Manual*. Trip generation rates represent trip ends, which consist of both origins and destinations. Thus, a single trip from home to work counts as one trip end for the residence and one trip end for the workplace, for a total of two trip ends. To avoid over-counting, all trip rates have been divided by two. This splits the responsibility for a trip equally between the origin and destination, and avoids the double-counting of trips. The 2017 study was based on the 2012 9th edition of the ITE manual, while this update is based on the 2021 11th edition.

Percent New Trips

Trip rates for retail/commercial uses need to be adjusted by a "percent new trips" to exclude pass-by and diverted-linked trips. This adjustment is intended to reduce the possibility of over-counting trips generated by the development. Pass-by trips are those trips that are already on a particular route for a different purpose and simply stop at a particular development on that route. For example, a stop at a convenience store on the way home from the office is a pass-by trip for the convenience store. Pass-by trips place no additional burden on the street system and are excluded from the new trip percentage. A diverted-linked trip is like a pass-by trip, but a diversion is made from the regular route to make an interim stop. The reduction for pass-by and diverted-linked trips for retail/commercial was drawn from the ITE manual.

The recommended trip generation rates, new trip percentages and resulting new trips generated by specific land use categories are presented in Table 4.

Table 4. Trip Generation Rates

Land Use Type	ITE Code	Unit	Daily Trips	% New	New Trips
Single-Family Detached	210	Dwelling	4.71	100%	4.71
Multi-Family	220	Dwelling	3.37	100%	3.37
Mobile Home Park	240	Site	3.56	100%	3.56
Retail/Commercial	820	1,000 sq. ft.	18.50	44%	8.14
Convenience Store w/Gas	945	1,000 sq. ft.	312.10	17%	53.06
Fast Food Restaurant	934	1,000 sq. ft.	233.74	30%	70.12
Office	710	1,000 sq. ft.	5.42	100%	5.42
Public/Institutional	620	1,000 sq. ft.	3.37	100%	3.37
Industrial	140	1,000 sq. ft.	2.37	100%	2.37
Warehouse	150	1,000 sq. ft.	0.85	100%	0.85
Mini-Warehouse	151	1,000 sq. ft.	0.72	100%	0.72
Oil and Gas Well	n/a	Wellhead	2.00	100%	2.00

Source: Daily trips is 1/2 trip ends during a weekday, ITE, Trip Generation Manual, 11th ed., 2021 (for oil and gas wells, 1/2 daily trip ends per wellhead for oil and gas removal, routine inspections and maintenance and repair from City of Loveland, Development Services Department, memorandum for August 19, 2014 City Council meeting, agenda item 14); percent new trips for retail uses from the ITE manual.

Average Trip Length

The average trip length on the major roadway system is the most difficult travel demand factor to determine, because it varies due to size and geographic distribution of communities, and because it needs to exclude travel on all roadways that are not part of the major roadway system. The approach used here is to divide the existing VMT on the major roadway system in the Town's Growth Management Area (GMA) by the number of daily trips generated by existing land use within the area to determine the average trip length on the major roadway system. The number of daily trips generated by existing development in the GMA is estimated based on existing development and national average trip generation rates, as shown in Table 5.

Table 5. Total Average Daily Trips

Land Use Type	Development Unit	Existing Units	Trips/ Unit	Daily Trips
Residential	Households	12,444	4.52	56,247
Retail	Employees	1,322	8.75	11,568
Other Nonresidential	Employees	8,298	1.56	12,945
Total Average Daily Trips				80,760

Source: Existing households and employees in GMA in 2020 from Felsburg Holt & Ullevig, October 26, 2022 based on transportation model; trips per unit is one-half trip ends during a week day from Institute of Transportation Engineers (ITE), Trip Generation, 11th edition, 2021; residential trip rate is average of 86% single-family detached and 14% multi-family units in the Town from U.S. Census, American Community Survey 2016-2020 5% sample data; retail trip rate per employee is based on 0.93 employees per 1,000 sq. ft. from US Dept. of Energy, Commercial Building Energy Consumption Survey, 2012 and the average shopping center trip generation rate and primary trip factor from Table 4; other nonresidential trip rate is average of one-half of trip ends during a week day per employee for general office building (1.66) and industrial park (1.45) from the ITE Trip Generation Manual.

Traffic that is passing through the major roadway system, without an origin or destination in the GMA, should not be counted in determining the average trip length. Deducting the estimate of through traffic, then dividing the vehicle-miles of travel by trips generated in the GMA, yields an estimate of the average length of a trip on the major roadway system. As shown in Table 6, this approach indicates that the average trip length on the major roadway system in the Windsor planning area is 4.75 miles.

Table 6. Average Trip Lengths

2020 Vehicle-Miles of Travel (VMT)	511,806
x Percent Non-Pass-Through Traffic	75%
2020 Non-Pass-Through VMT	383,855
÷ 2020 Trips	80,760
Average Trip Length	4.75

Source: 2020 VMT and percent non-pass-through traffic based on modelling from Felsburg Holt & Ullevig, October 26, 2022; 2020 daily trips from existing development in GMA from Table 5.

The overall average trip length in Windsor is used to derive trip lengths for specific purposes including residential, retail, office, and institutional. Data from the National Household Travel Survey by trip purpose is adjusted for use in Windsor by using the overall average trip length in Windsor to derive local trip lengths by purpose, as shown in Table 7.

Table 7. Trip Length by Purpose

Trip Purpose	National Trip Length (miles)	Local Adjustment Factor	Local Trip Length (miles)
Single-Family Detached	8.96	0.523	4.69
Multi-Family	8.12	0.523	4.25
Mobile Home	5.13	0.523	2.68
Shopping	7.11	0.523	3.72
Medical/Dental	9.56	0.523	5.00
School/Church	6.41	0.523	3.35
To or from work	11.45	0.523	5.99
Average	9.08	0.523	4.75

Source: National trip lengths by trip purpose from U.S. Department of Transportation, *National Household Travel Survey*, 2017 (trip lengths by housing type derived from 2009 survey – not available in 2017 survey); overall local average trip length from Table 6; adjustment factor is ratio of overall average local to national trip length; local trip length by purpose is product of national trip length and adjustment factor.

Travel Demand Schedule

The result of combining trip generation rates and average trip lengths is a demand schedule that establishes the average daily vehicle-miles of travel during a weekday generated by various land use types per unit of development. The updated service unit schedule is presented in Table 8.

Table 8. Service Unit Generation by Land Use

Land Use Type	Unit	New Trips/ Unit	Trip Length (miles)	VTM per Unit
Single-Family Detached	Dwelling	4.71	4.69	22.09
Multi-Family	Dwelling	3.37	4.25	14.32
Mobile Home Park	Site	3.56	2.68	9.54
Retail/Commercial	1,000 sq. ft.	8.14	3.72	30.28
Convenience Store w/Gas	1,000 sq. ft.	53.06	1.00	53.06
Fast Food Restaurant	1,000 sq. ft.	70.12	1.00	70.12
Office	1,000 sq. ft.	5.42	5.00	27.10
Public/Institutional	1,000 sq. ft.	3.37	3.35	11.29
Industrial	1,000 sq. ft.	2.37	5.99	14.20
Warehouse	1,000 sq. ft.	0.85	5.99	5.09
Mini-Warehouse	1,000 sq. ft.	0.72	5.99	4.31
Oil and Gas Well	Wellhead	2.00	5.99	11.98

Source: New trips per unit from Table 4; trip lengths from Table 7 (convenience store/fast food based on 21% of single-family trip length, which was derived from a summary of Florida origin-destination studies in Benesch, *Palm Beach County Impact Fee Update Study*, March 2022, Appendix E); VMT per unit is new trips times trip length.

LEVEL OF SERVICE

“Level of service” is a basic concept in impact fee methodology. Impact fees should not charge new development for the cost to provide a level of service higher than what is currently provided for existing development. Level of service is defined as the ratio of system capacity to system demand.

A roadway’s capacity is the maximum traffic volume that can be accommodated at the desired level of service. Capacity is defined differently for different roadway types. Capacities for paved roads in Windsor are based on Level of Service “C” (LOS C). Level of service is a standard traffic engineering measure of congestion on a scale from A to F, where LOS A represents free-flow conditions with virtually no congestion or delay and LOS F represents extremely high levels of congestion and delay.

Table 9 shows daily volume thresholds at LOS C for different types of roadways based on number of lanes, functional classification, and rural or urban cross-section. For unpaved roads, the 200 vehicles per day threshold is based on the Colorado Department of Public Health standard that requires that roads carrying more than 200 vehicles should be either paved or have dust abatement treatments. Capacities for paved roads were developed by Felsburg Holt & Ullevig based on standards documented in the Highway Capacity Manual, using typical Windsor traffic characteristics and the North Front Range regional travel model. While capacities for minor collectors are shown in Table 9, minor collectors are not included in the definition of the major roadway system, and would be eligible for impact fee funding only if they are to be upgraded to a higher functional classification.

Table 9. Daily Capacities

Roadway Type Characteristics	Capacity at LOS C
2-Lane, Gravel	200
2-Lane Rural Collector, Major or Minor	8,000
2-Lane Urban Collector, Major or Minor	11,000
2-Lane Minor Arterial, Urban or Rural	11,000
2-Lane Major Arterial, Urban or Rural	15,000
4-Lane Minor Arterial, Urban or Rural	22,000
4-Lane Major Arterial, Urban or Rural	30,000
4-Lane Highway	60,000

Source: Felsburg Holt & Ullevig, October 26, 2022.

The existing level of service for the major roadway system is the ratio of vehicle-miles of capacity (VMC) to vehicle-miles of travel (VMT). System-wide VMC is determined by multiplying the capacity of each segment by the length of each segment in miles, and aggregating the results for all road segments. Similarly, system VMT is determined by multiplying the length of each road segment by the average daily traffic count and aggregating the results for all road segments.

Table 10 shows that the major roadways in Windsor have more than a one-to-one ratio of VMC to VMT. The existing VMC is an under-estimate, since it is based on the existing inventory in the 2017 study, which has not been updated for this study. Still, it is clear that the existing roadways provide considerably more capacity than existing demand (i.e., more than the 1.00 VMC/VMT ratio used in the standard consumption-based methodology).

Table 10. System-Wide Ratio of Capacity to Demand

Existing Vehicle-Miles of Capacity (VMC)	938,400
÷ Existing Vehicle-Miles of Travel (VMT)	511,806
Existing VMC/VMT Ratio	1.83
Recommended Ratio	1.00

Source: Existing VMC from 2017 study, existing VMT from Felsburg Holt & Ullevig, October 26, 2022.

COST PER SERVICE UNIT

The average cost per vehicle-mile of capacity (VMC) is the total cost of the identified capacity-expanding improvements divided by the additional roadway capacity created by the improvements. As part of the transportation planning effort conducted by Felsburg Holt & Ullevig (FHU) for this project, unit cost estimates (cost per roadway mile) were developed for the typical roadway cross-sections that have been developed by the Town of Windsor. These estimates, shown in Table 11, represent typical, conceptual-level cost estimates for constructing a mile of each roadway segment. Cost estimates include typical design and construction engineering costs. They do not include right-of-way, landscaping, major utility relocation, or local street/driveway intersection costs.

Table 11. Road Improvement Cost per Mile

Roadway Costs per Mile	
Rural 2 Lane Collector (New or Pave)	\$3,270,000
New 4 Lane Rural Arterial	\$5,550,000
New 2 Lane Urban Collector	\$5,180,000
New 4 Lane Urban Arterial	\$8,220,000
Widen Rural Road 2 to 4 Lanes	\$3,450,000
Widen Urban Road - 2 to 4 Lanes	\$4,170,000
Upgrade 2 Lane Road - Rural to Urban	\$1,750,000
Other Unit Costs	
Bridge Widening - Cost per Sq. Ft.	\$250
Single Lane Roundabout	\$3,000,000

Source: Felsburg Holt & Ullevig, October 26, 2022 (see detailed cost estimate sheets in Appendix C).

The updated list of planned roadway improvements started with projects that were identified in the 2017 study using forecasted 2040 traffic volumes based on modeling. FHU worked with Town staff to update the list of long-term planned improvements. The identified improvement needs are detailed in Appendix A, and are summarized in Table 12. The locations of the improvements are illustrated in Figure 4. The types of improvements include widening roads from 2 to 4 lanes, constructing new 2-lane and 4-lane roads, paving 2-lane gravel roads, and constructing bridge and roundabout improvements related to some of the road improvement projects.

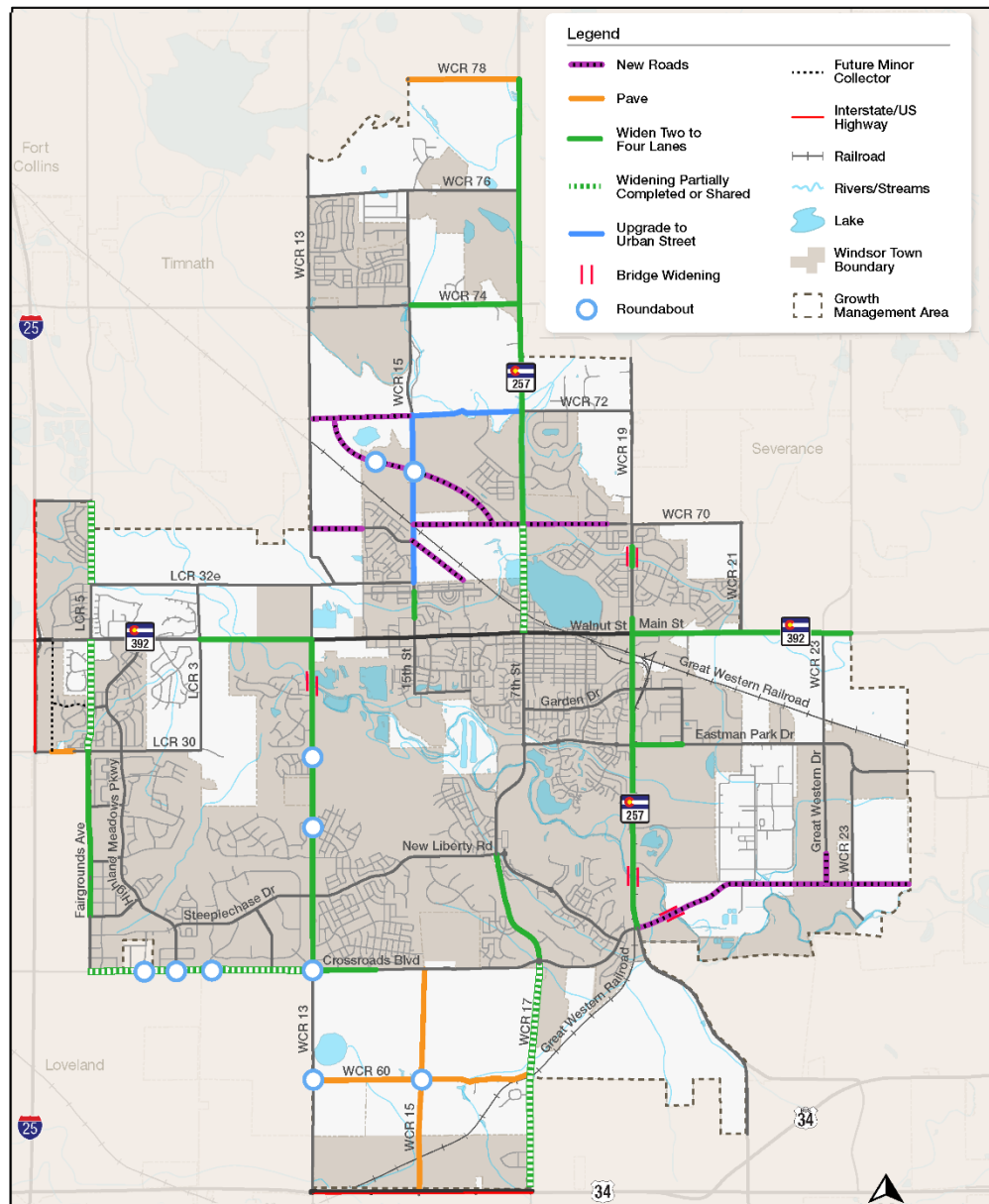
Dividing the total cost of the identified capacity-expanding improvements by the additional roadway capacity created by the improvements results in an average cost of \$343 per vehicle-mile of capacity to expand the major roadway system. The cost per unit of new capacity must be multiplied by the system-wide ratio of capacity to demand to derive the cost per unit of additional demand. Because the standard consumption-based methodology used in this study utilizes a one-to-one ratio as the level of service, the cost per VMT is the same as the \$343 cost per VMC calculated in Table 12.

Table 12. Cost per Service Unit

Roadway Design/Construction Costs	\$143,465,000
Associated Bridge Costs	\$6,970,000
Associated Roundabout Costs	\$17,598,750
Total Improvement Costs	\$168,033,750
÷ New Vehicle-Miles of Capacity (VMC)	490,000
Cost per New VMC	\$343

Source: Improvement costs from Table 18 (road construction cost) and Table 19 (associated bridge and roundabout costs) in Appendix A; new VMC from Table 18 in Appendix A.

Figure 4. Planned Project Location Map



NET COST PER SERVICE UNIT

One of the guiding principles of impact fees is that new development should not be required to pay twice for the same level of service, once through impact fees and again through other taxes or fees. To avoid such potential double-payment, the fees are reduced with what are called “revenue credits.” That is the subject of this section.

Revenue credits are clearly warranted if there are existing deficiencies or if there is outstanding debt for past road improvements that are providing the level of service on which the fees are based. There are no existing deficiencies with respect to the one-to-one ratio of capacity to demand on which the fees are based, and the Town has no outstanding debt related to existing roadways.

The need for revenue credits is less clear for other types of funding that may be used for capacity-expanding road improvements. This is especially true for road impact fees like Windsor’s that are calculated using the standard consumption-based methodology, where the level of service used is a one-to-one ratio of capacity to demand. This ensures only the minimum acceptable level of service – one vehicle-mile of capacity (VMC) for each vehicle-mile of travel (VMT) on the system. Because traffic is not evenly distributed to match each road’s capacity, roadway systems need more aggregate capacity than demand to function efficiently. Any additional funding can be used to fund improvements that help ensure that the shared roadway system exceeds the minimally-acceptable level of service. This enhanced level of service benefits existing development as well as new development, and the burden, typically through the payment of property or motor fuel taxes, is shared equally between these two classes of development.

Given these considerations, no credit would appear to be warranted for the Town’s expenditure of non-impact fee revenues for capacity-expanding road improvements. The need for such credits has long been a grey area in impact fee law and practice, and in previous studies such a credit was provided to be conservative. However, the consultant has gained a deeper understanding of the rationale for revenue credits over the last 20 years, and is now convinced that a local funding credit is not warranted for Windsor’s road impact fees. This update does not provide a local funding credit.

There is a stronger rationale to provide a credit for funding provided by other entities. The Town’s road impact fee service area includes Weld and Larimer County roads in the unincorporated areas within the Town’s Growth Management Area (GMA), and the major roadway system includes these county roads as well as State roads. The two counties and the State make capacity improvements to major roads within the Town’s service area. Revenue credits to account for county and State funding continue to be provided in this update.

State/Federal Funding Credit

A reasonable estimate of the amount of future State and Federal highway funding that might be available for expanding the capacity of the roads in Windsor's GMA can be derived from programmed four-year funding for roadway capacity improvement in the current Transportation Improvement Plan (TIP). There is only one road capacity improvement in the current TIP for Windsor (\$2.7 million for an intersection improvement at SH 257 and Eastman Park Drive). At this rate of funding, State and Federal highway funding for capacity improvements over the long-term (approximated as 25 years) amounts to a present current value equivalent of \$21 per service unit, as shown in Table 13.

Table 13. State/Federal Funding Credit per Service Unit

Total State/Federal Capacity Funding, FY 2023-2026	\$2,705,000
÷ Years in Funding Plan	4
Annual State/Federal Road Funding for Windsor GMA	\$676,250
÷ Existing Daily VMT in Windsor GMA	511,806
Annual Capital Funding per VMT	\$1.32
x Net Present Value Factor (25 years)	15.79
State/Federal Funding Credit per VMT	\$21

Source: Programmed funding for roads in Windsor GMA from North Front Range Metropolitan Planning Organization, FY 2023-2026 Transportation Improvement Plan; existing VMT from Table 10; net present value factor based on a discount rate of 3.90% which was the average national annual yield on AAA 20-year and 30-year municipal bonds on October 27, 2022 from fmsbonds.com.

County Funding Credit

In addition to State and Federal highway funds, some funding may also be available from Weld and Larimer County to help finance capacity-expanding improvements to the major roadway system in the service area. Because the Windsor GMA accounts for only small portions of Larimer and Weld County, only the portion of county funding proportional to the Town's population is used in the calculations. In the aggregate, the two counties are estimated to have averaged spending \$0.6 million annually in non-impact fee revenues over the last three years on capacity-expanding road improvements within the Windsor GMA, as shown in Table 14.

Table 14. Annual County Road Capacity Funding, 2018-2020

	Annual Road Capacity Funding				Windsor Share	Windsor Funding
	2018	2019	2020	Average		
Weld County	\$10,671,164	\$8,028,395	\$9,375,983	\$9,358,514	4.71%	\$440,785
Larimer County	\$3,093,233	\$611,703	\$5,399,174	\$3,034,703	4.71%	\$142,935
Total						\$583,720

Source: Expenditures for construction on capacity improvements, less impact fees, from Local Highway Finance Report in each jurisdiction's Comprehensive Annual Financial Report, 2018 through 2020 calendar years; Windsor share based on Windsor's 2020 population as percent of combined 2020 population of the two counties from U.S. Census Bureau.

The estimated annual county expenditures for capacity-expanding road improvements within the service area is divided by existing vehicle-miles of travel (VMT) to determine annual funding per service unit, as shown in Table 15 on the following page. Assuming the local governments maintain this pattern of expenditure in the future, new development will generate the present value equivalent of \$18 per VMT to be spent on capacity-expanding road improvements over the long term – defined as the next 25 years.

Table 15. County Funding Credit per Service Unit

Annual County Road Capacity Expenditures	\$583,720
÷ Existing Daily VMT in Windsor GMA	511,806
Annual Capacity Expenditures per VMT	\$1.14
Net Present Value Factor (25 years)	15.79
County Funding Credit per VMT	\$18

Source: Annual local capacity expenditures from Table 14; existing daily VMT from Table 10; net present value factor from Table 13.

Net Cost Summary

The net cost calculations are summarized in Table 16. The cost per VMT is reduced by the amount of credits per VMT for additional revenues that may be generated by or attributed to new development and used for capacity-expanding improvements to the major roadway system. The result is a net cost of \$304 per VMT.

Table 16. Net Cost per Service Unit

Cost per Vehicle-Mile of Travel (VMT)	\$343
– State/Federal Funding Credit per VMT	-\$21
– County Funding Credit per VMT	-\$18
Net Cost per VMT	\$304

Source: Cost per VMT is same as cost per VMC from Table 12; State/Federal funding credit from Table 13; county funding credit from Table 15.

UPDATED FEE SCHEDULE

Based on average daily travel demand by land use and the net cost per service unit, the net costs to accommodate additional travel demand per unit of development are shown in Table 17. These represent the maximum road impact fees that can be adopted based on the data, methodology and assumptions presented in this report. The Town could adopt maximum fees at a percentage less than 100% of the maximum fees, as long as the same percentage is applied to all land use types to retain the proportionality of the fees to the impact of the development. For a comparison with current fees, see the Executive Summary.

Table 17. Road Impact Fee Net Cost Schedule

Land Use Type	Unit	Daily VMT	Net Cost/ VMT	Net Cost/ Unit
Single-Family Detached	Dwelling	22.09	\$304	\$6,715
Multi-Family	Dwelling	14.32	\$304	\$4,353
Mobile Home Park	Site	9.54	\$304	\$2,900
Retail/Commercial	1,000 sq. ft.	30.28	\$304	\$9,205
Convenience Store w/Gas	1,000 sq. ft.	53.06	\$304	\$16,130
Fast Food Restaurant	1,000 sq. ft.	70.12	\$304	\$21,316
Office	1,000 sq. ft.	27.10	\$304	\$8,238
Public/Institutional	1,000 sq. ft.	11.29	\$304	\$3,432
Industrial	1,000 sq. ft.	14.20	\$304	\$4,317
Warehouse	1,000 sq. ft.	5.09	\$304	\$1,547
Mini-Warehouse	1,000 sq. ft.	4.31	\$304	\$1,310
Oil and Gas Well	Wellhead	11.98	\$304	\$3,642

Source: Daily VMT per unit from Table 8; net cost per VMT from Table 16.

APPENDIX A: IMPROVEMENT COSTS

Table 18. Major Roadway Improvement Costs

Road	From-To	Planned Improvement	Mi.	Capacity		Daily VMC		New VMC	Estimated Constr. Cost
				Exist	2040	Exist	2040		
Crossroads Blvd	Frgrnds Ave-WCR 13	Widen to 4 Lanes *	2.0	15,000	30,000	30,000	60,000	15,000	\$3,450,000
Crossroads Blvd	East of WCR 13	Widen to 4 Lanes	0.4	15,000	30,000	6,000	12,000	6,000	\$1,380,000
Crsrds Bvd Ext	SH 257-GMA Line	New 4-Lane Road	2.7	0	30,000	0	81,000	81,000	\$14,985,000
Fairgrounds Ave	LCR 30-SH 392	Widen to 4 Lanes *	1.0	15,000	30,000	15,000	30,000	3,750	\$1,042,500
Fairgrounds Ave	Aladar Dr-LCR 30	Widen to 4 Lanes	1.4	15,000	30,000	21,000	42,000	21,000	\$5,838,000
LCR 5	LCR 32E-GMA Line	Widen to 4 Lanes*	0.6	11,000	22,000	6,600	13,200	3,300	\$1,251,000
LCR 30	Westgate-w/of Annapolis Dr	Pave 2-Lane Road	0.3	200	11,000	50	2,750	2,700	\$1,295,000
WCR 13	Kaplan Dr-SH 392	Widen to 4 Lanes	1.2	11,000	22,000	13,200	26,400	13,200	\$4,140,000
WCR 13	Crsrds Blvd-Stplchse	Widen to 4 Lanes	0.6	11,000	22,000	6,600	13,200	6,600	\$2,070,000
WCR 13	Stplechse-Kaplan St	Widen to 4 Lanes	1.2	11,000	22,000	13,200	26,400	13,200	\$3,924,000
WCR 15	Cold Ck Dr-Grand Ave	Widen to 4 Lanes	0.2	11,000	30,000	2,200	6,000	3,800	\$834,000
WCR 15	US 34-Crossrds Blvd	Pave 2-Lane Road	2.0	200	8,000	400	16,000	15,600	\$6,540,000
WCR 15	LCR 32e - WCR 72	Upgrade to Urban	1.5	8,000	11,000	12,000	16,500	4,500	\$2,625,000
WCR 17	Crsrds Blvd-New Librty	Widen to 4 Lanes	1.1	11,000	22,000	12,100	24,200	12,100	\$3,795,000
WCR 17	US 34-Crossroads Bvd	Widen to 4 Lanes	2.0	11,000	22,000	22,000	44,000	16,500	\$5,175,000
WCR 19	SH 392-WCR 70	Widen to 4 Lanes*	0.2	20,500	30,000	4,100	6,000	950	\$417,000
WCR 60	WCR 13-WCR 15	Pave 2-Lane Road	1.0	200	8,000	200	8,000	7,800	\$3,270,000
WCR 60	WCR 15-WCR 17	Pave 2-Lane Road	1.0	200	8,000	200	8,000	7,800	\$3,270,000
Eastman Pk Dr	SH 257-Diamond Vly Dr	Widen to 4 Lanes	0.6	15,000	30,000	9,000	18,000	9,000	\$2,070,000
WCR 70	WCR 13-Camberly Dr	New 2-Lane Road	0.5	0	11,000	0	5,500	5,500	\$2,590,000
WCR 70	WCR 15-WCR 17/SH257	New 2-Lane Road	1.0	0	11,000	0	11,000	11,000	\$5,180,000
WCR 70	WCR 17/257-Clydesdale Ln	New 2-Lane Road	0.8	0	11,000	0	8,250	8,250	\$3,885,000
WCR 70	WCR 15-WCR 68.5	New 2-Lane Road	0.7	0	11,000	0	7,700	7,700	\$3,626,000
WCR 70.5	WCR 72-WCR 70	New 2-Lane Road	2.0	0	11,000	0	22,000	22,000	\$10,360,000
WCR 72	WCR 13-WCR 15	New 2-Lane Road	1.0	0	11,000	0	11,000	11,000	\$5,180,000
WCR 72	WCR 15 - WCR 17	Rural to Urban	1.0	8,000	11,000	8,000	11,000	3,000	\$1,750,000
WCR 74	WCR 15-WCR 17	Widen to 4 Lanes	1.0	15,000	30,000	15,000	30,000	15,000	\$3,450,000
WCR 78	WCR 15-WDR 17	Pave 2-Lane Road	1.0	200	8,000	200	8,000	7,800	\$3,270,000
SH 257/WCR 17	WCR 74 to WCR 78	Widen to 4 Lanes	2.0	11,000	22,000	22,000	44,000	22,000	\$6,900,000
SH 257/WCR 17	WCR 70-WCR 74	Widen to 4 Lanes	2.0	15,000	30,000	30,000	60,000	30,000	\$7,620,000
SH 257/WCR 17	SH 392-WCR 70	Widen to 4 Lanes *	1.0	15,000	30,000	11,000	22,000	13,200	\$2,904,000
SH 257/WCR 19	Garden Dr-RR s/of SH 392	Widen to 4 Lanes	0.3	15,000	30,000	4,500	9,000	4,500	\$1,251,000
SH 257/WCR 19	Eastmn Prk-Garden Dr	Widen to 4 Lanes	0.5	15,000	30,000	7,500	15,000	7,500	\$2,085,000
SH 257/WCR19	Crsrds Bvd-Estmn Prk	Widen to 4 Lanes	1.7	15,000	30,000	24,750	49,500	24,750	\$5,692,500
SH 392	LCR 3-WCR 13	Widen to 4 Lanes	1.0	15,000	30,000	15,000	30,000	15,000	\$3,450,000
SH 392	WCR 19-WCR 21	Widen to 4 Lanes	1.0	11,000	30,000	11,000	30,000	19,000	\$3,450,000
SH 392	WCR 21-WCR 23	Widen to 4 Lanes	1.0	11,000	30,000	11,000	30,000	19,000	\$3,450,000
Total, Planned Roadway Improvements			40.4					490,000	\$143,465,000

* partially completed and/or shared with another jurisdiction
Source: Felsburg Holt & Ullevig, October 26, 2022.

Table 19. Planned Bridge and Roundabout Costs

Road	From-To	Bridge Location	Est. Bridge Cost	Number of Roundabouts	Est. Roundabout Cost
Crossroads Blvd	Frgrnds Ave-WCR 13	-	-	1/2 of 3 & 1/3 of 1	\$3,430,000
Crossroads Blvd	East of WCR 13	-	-	1/3 of 1	\$482,500
Crsrds Bvd Ext	SH 257-GMA Line	Cache la Poudre	\$3,200,000	-	-
WCR 13	Kaplan Dr-SH 392	Cache la Poudre	\$1,120,000	all of 1	\$2,482,500
WCR 13	Crsrds Blvd-Stplchse	-	-	1/3 of 1	\$482,500
WCR 13	Stplechse-Kaplan St	-	-	all of 1	\$2,482,500
WCR 19	SH 392-WCR 70	Greeley Canal	\$1,050,000	-	-
WCR 60	WCR 13-WCR 15	-	-	1/2 of 2	\$2,264,250
WCR 60	WCR 15-WCR 17	-	-	1/2 of 1	\$1,009,500
WCR 70.5	WCR 72-WCR 70	-	-	all of 2	\$4,965,000
SH 257/WCR19	Crsrds Bvd-Estmn Prk	Cache la Poudre	\$1,600,000	-	-
Total, Planned Roadway Improvements			\$6,970,000		\$17,598,750

Source: Felsburg Holt & Ullevig, October 26, 2022.

APPENDIX B: LAND USE DEFINITIONS

Recommended definitions for the land use categories in the City's updated impact fee schedules are provided below. These definitions are intended to assist City staff in classifying proposed developments and assessing appropriate impact fees. If these definitions are adopted by ordinance or resolution, they should be accompanied by a disclaimer that they only apply to interpretation of the impact fee schedules.

Single-Family Detached means a building containing only one dwelling unit, including a mobile home not located in a mobile home park.

Multi-Family means a building containing two or more dwelling units. It includes duplexes, apartments, residential condominiums, townhouses, and timeshares.

Mobile Home Park means a parcel (or portion thereof) or abutting parcels of land designed, used or intended to be used to accommodate two or more occupied mobile homes or recreational vehicles, with necessary utilities, vehicular pathways, and concrete pads or vehicle stands.

Retail/Commercial means an integrated group of commercial establishments planned, developed, owned or managed as a unit, or a free-standing retail or commercial use. A retail or commercial use shall mean the use of a building or structure primarily for the sale to the public of nonprofessional services, or goods or foods that have not been made, assembled, or otherwise changed in ways generally associated with manufacturing or basic food processing in the same building or structure. This category includes all uses located in shopping centers and includes, but is not limited to, the following types of free-standing uses:

Amusement park	Laundromat
Auto parts store	Laundry or dry cleaning
Auto wrecking yard	Lawn and garden supply store
Automobile repair	Massage establishment
Bank	Music store
Bar or cocktail lounge	Newsstand
Camera shop	Nightclub
Car wash	Racetrack
Convenience store (no gas)	Rental establishment
Department store	Restaurant (no drive-through)
Fitness or health club	Theater, including movie theater
Furniture store	Repair shop, including auto repair
Food store	Specialty retail shop
Gasoline service station	Supermarket
Golf course	Trade school
Grocery store	Used merchandise store
Hardware store	Variety store
Hotel or motel	Vehicle and equipment dealer
Junkyard or salvage yard	

Convenience Store with Gas means an establishment offering the sale of motor fuels and convenience items to motorists.

Fast Food Restaurant means an establishment that sells meals prepared on site and provides drive-through or drive-in service.

Office means a building exclusively containing establishments providing executive, management, administrative, financial, medical or other professional services, and which may include ancillary services for office workers, such as a restaurant, coffee shop, newspaper or candy stand, or childcare facilities. It may be the upper floors of a multi-story office building with ground floor retail uses. Typical uses include real estate, insurance, property management, investment, employment, travel, advertising, secretarial, data processing, telephone answering, telephone marketing, medical and veterinary offices; music, radio and television recording and broadcasting studios; professional or consulting services in the fields of law, architecture, design, engineering, accounting and similar professions; and business offices of private companies, utility companies, trade associations, unions and nonprofit organizations. This category does not include an administrative office that is ancillary to the principal use on the site.

Industrial means an establishment primarily engaged in the fabrication, assembly or processing of goods. Typical uses include manufacturing plants, industrial parks, research and development laboratories, welding shops, wholesale bakeries, dry cleaning plants, and bottling works.

Warehouse means an establishment primarily engaged in the display, storage and sale of goods to other firms for resale, as well as activities involving significant movement and storage of products or equipment. Typical uses include wholesale distributors, storage warehouses, trucking terminals, moving and storage firms, recycling facilities, trucking and shipping operations, and major mail processing centers.

Mini-Warehouse means an enclosed storage facility containing independent, fully enclosed bays that are leased to persons for storage of their household goods or personal property.

Public/Institutional means a governmental, quasi-public or institutional use, or a non-profit recreational use, not located in a shopping center or separately listed in the impact fee schedule. Typical uses include churches, day care centers, elementary and secondary schools, higher education facilities, hospitals, nursing homes, city halls, courthouses, fire stations, post offices, jails, parks, libraries, museums, military bases, airports, bus stations, and fraternal lodges.

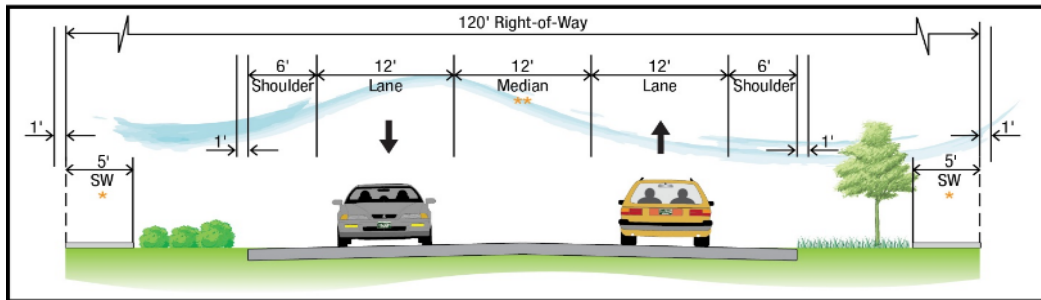
APPENDIX C: COST ESTIMATE DETAIL SHEETS

Detailed cost estimate sheets prepared by Felsburg Holt & Ullevig for the various types of road improvements are provided on the following pages. These conceptual-level cost estimates are summarized in the table below.

Project Type	Estimated Cost Per Mile (2022)
Rural 2 Lane Collector (New or Pave)	\$3,270,000
New 4 Lane Rural Arterial	\$5,550,000
New 2 Lane Urban Collector	\$5,180,000
New 4 Lane Urban Arterial	\$8,220,000
Widen Rural Road – 2 to 4 Lanes	\$3,450,000
Widen Urban Road – 2 to 4 Lanes	\$4,170,000
Upgrade 2 Lane Road – Rural to Urban	\$1,750,000
Intersection Signalization	\$600,000 Each
Single Lane Roundabout	\$3,000,000 Each
Bridge Widening	\$250 per SF
Includes:	
·Typical number of signals and major intersection turn lanes	
·Construction and design engineering costs	
Does Not Include:	
·Right-of-way Costs	
·Major utility additions or relocations	
·Landscaping	

Windsor, Colorado Conceptual Opinion of Construction Costs

Roadway Type: Major Rural Collector



*Costs do not reflect sidewalks; however, sidewalk installation should be anticipated for new development.

**Median may only be required at intersections; configuration to be determined at time of improvements.

Estimated Costs

Item No.	Description	Unit	Quantity (per Mile)	Unit Cost	Per Mile Cost
1	Clearing and Grubbing	AC	15	\$ 5,000	\$ 75,000
2	Earthwork (Excavation or Embankment) CIP	CY	56,000	\$ 16	\$ 896,000
3	Topsoil and Reseeding	AC	6	\$ 6,000	\$ 36,000
4	Aggregate Base Course (CL 6)	CY	9,400	\$ 35	\$ 329,000
5	Hot Mix Asphalt	TN	10,200	\$ 90	\$ 918,000
6	Curb and Gutter - 2 foot Pan	LF	-	\$ 30	\$ -
7	Curb and Gutter - 1 foot Pan	LF	-	\$ 25	\$ -
8	Concrete Sidewalk*	SY	5,867	\$ 65	\$ 381,355
9	Subtotal Construction Bid Items (CBI)				\$ 2,254,000
10	Erosion Control and Water Quality (~5% of CBI)				\$ 113,000
11	Signing, Striping and New/Modified Signals (~5% of CBI)				\$ 113,000
12	Construction and Design Engineering (~22% of CBI)				\$ 496,000
13	Subtotal 9-12				\$ 2,976,000
14	Contingency (10%) for Misc. & Unforeseen Items				\$ 297,600
				USE	\$ 3,270,000

Median and Formal Landscape Treatments not assumed for reimbursement costs.

* Sidewalks are usually, but not always, a developer item and are not included in the bid item totals

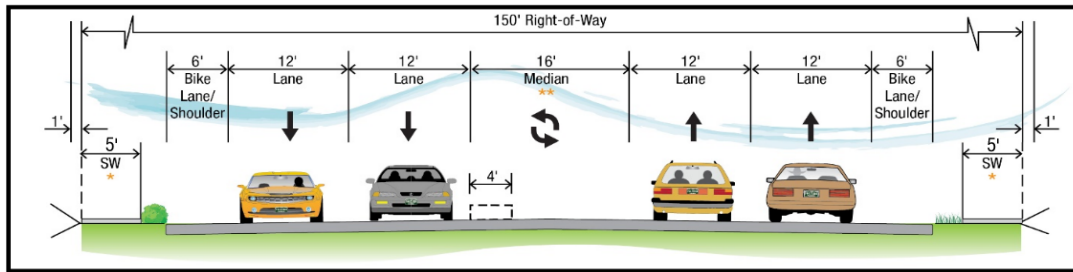
Quantity Calculations

Number of Lanes:	2	
Lane Width:	12	
Shoulder/Bike Width:	6	
Median Width:	12	
Total Pavement Width:	48 feet	(Average)
Aggregate Depth:	12 inches	
Pavement Depth:	6 inches	
Assumed Earthwork Depth:	3	(Assumes 3 foot Average Depth by 2x Paved Width)
ROW Width	120	(Use full width for Clearing & Grubbing)
		USE
Clearing & Grubbing per mile (Acre):	14.5 (Use Full width of R/W)	15
Earthwork per mile (CY):	56320 (Exc. Or Embankment)	56,000
Topsoil/Reseeding per mile (Acre):	5.82 (Earthwork - Roadway)	6
Aggregate Base per mile (CY):	9387 (Class 6)	9,400
Hot Mix Asphalt per Mile (Ton):	10222 (Includes Emulsifieds)	10,200
Topsoil/Reseeding per mile (Acre):	2.67 (Earthwork - Roadway)	2
Aggregate Base per mile (CY):	0 (Class 6)	-
Hot Mix Asphalt per Mile (Ton):	0 (Includes Emulsifieds)	-

10/25/2022

Windsor, Colorado Conceptual Opinion of Construction Costs

Roadway Type: Rural Arterial



*Costs do not reflect sidewalks; however, sidewalk installation should be anticipated for new development.

**Median may only be required at intersections; configuration to be determined at time of improvements.

Estimated Costs

Item No.	Description	Unit	Quantity (per Mile)	Unit Cost	Per Mile Cost
1	Clearing and Grubbing	AC	18	\$ 5,000	\$ 90,000
2	Earthwork (Excavation or Embankment) CIP	CY	96,000	\$ 16	\$ 1,536,000
3	Topsoil and Reseeding	AC	10	\$ 6,000	\$ 60,000
4	Aggregate Base Course (CL 6)	CY	16,000	\$ 35	\$ 560,000
5	Hot Mix Asphalt	TN	17,500	\$ 90	\$ 1,575,000
6	Curb and Gutter - 2 foot Pan	LF	-	\$ 30	\$ -
7	Curb and Gutter - 1 foot Pan	LF	-	\$ 25	\$ -
8	Concrete Sidewalk*	SY	5,867	\$ 65	\$ 381,355
9	Subtotal Construction Bid Items (CBI)				\$ 3,821,000
10	Erosion Control and Water Quality (~5% of CBI)				\$ 191,000
11	Signing, Striping and New/Modified Signals (~5% of CBI)				\$ 191,000
12	Construction and Design Engineering (~22% of CBI)				\$ 841,000
13	Subtotal 9-12				\$ 5,044,000
14	Contingency (10%) for Misc. & Unforeseen Items				\$ 504,400
				USE	\$ 5,550,000

Median and Formal Landscape Treatments not assumed for reimbursement costs.

* Sidewalks are usually, but not always, a developer item and are not included in the bid item totals

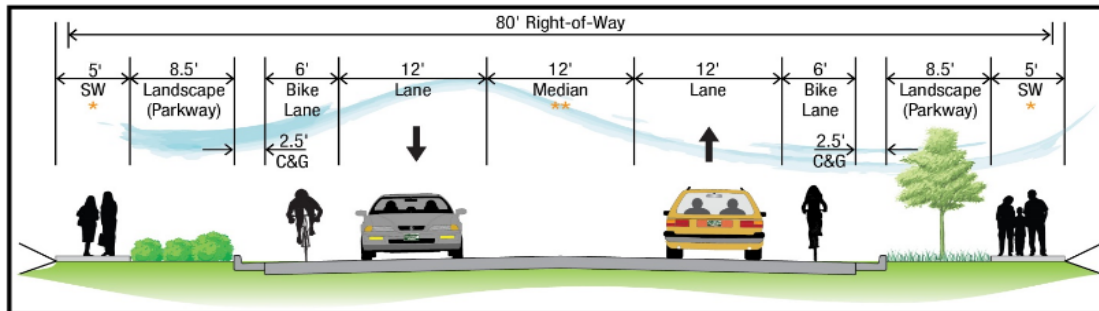
Quantity Calculations

Number of Lanes:	4	
Lane Width:	12	
Shoulder/Bike Width:	9	(Assumes RT Lane for 25% of Length)
Median Width:	16	
Total Pavement Width:	82 feet	(Average)
Aggregate Depth:	12 inches	
Pavement Depth:	6 inches	
Assumed Earthwork Depth:	3	(Assumes 3 foot Average Depth by 2x Paved Width)
ROW Width	150	(Use full width for Clearing & Grubbing)
		USE
Clearing & Grubbing per mile (Acre):	18.2 (Use Full width of R/W)	18
Earthwork per mile (CY):	96213 (Exc. Or Embankment)	96,000
Topsoil/Reseeding per mile (Acre):	9.94 (Earthwork - Roadway)	10
Aggregate Base per mile (CY):	16036 (Class 6)	16,000
Hot Mix Asphalt per Mile (Ton):	17463 (Includes Emulsifieds)	17,500

Windsor, Colorado

Conceptual Opinion of Construction Costs

Roadway Type: Major Urban Collector



*Costs reflect a five-foot wide sidewalk; however, sidewalk installation may be at greater width such as shown and may require additional right-of-way.

**Median may only be required at intersections; configuration to be determined at time of improvements.

Estimated Costs

Item No.	Description	Unit	Quantity (per Mile)	Unit Cost	Per Mile Cost
1	Clearing and Grubbing	AC	10	\$ 5,000	\$ 50,000
2	Earthwork (Excavation or Embankment) CIP	CY	68,000	\$ 16	\$ 1,088,000
3	Topsoil and Reseeding	AC	7	\$ 6,000	\$ 42,000
4	Aggregate Base Course (CL 6)	CY	11,300	\$ 35	\$ 395,500
5	Hot Mix Asphalt	TN	16,500	\$ 90	\$ 1,485,000
6	Curb and Gutter - 2 foot Pan	LF	10,560	\$ 30	\$ 316,800
7	Curb and Gutter - 1 foot Pan	LF	-	\$ 25	\$ -
8	Concrete Sidewalk*	SY	5,867	\$ 65	\$ 381,333
9	Subtotal Construction Bid Items (CBI)				\$ 3,377,300
10	Erosion Control and Water Quality (~5% of CBI)				\$ 169,000
11	Signing, Striping and New/Modified Signals (~10% of CBI)				\$ 338,000
12	Construction and Design Engineering (~22% of CBI)				\$ 743,000
13	Subtotal 9-12				\$ 4,627,300
14	Contingency (12%) for Misc. & Unforeseen Items				\$ 555,276
					USE \$ 5,180,000

Median and Formal Landscape Treatments not assumed for reimbursement costs.

* Sidewalks are usually, but not always, a developer item and are not included in the bid item totals

Quantity Calculations

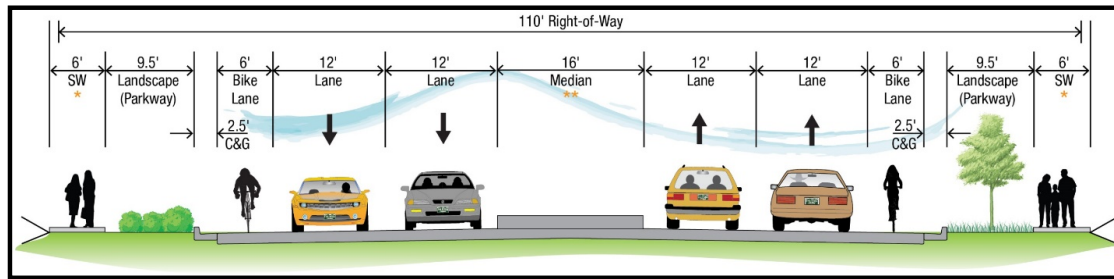
Number of Lanes:	2	
Lane Width:	12	
Shoulder/Bike Width:	9	(Assumes RT Lane for 25% of Length)
Median Width:	16	
Total Pavement Width:	58 feet	(Average)
Aggregate Depth:	12 inches	
Pavement Depth:	8 inches	
Assumed Earthwork Depth:	3	(Assumes 3 foot Average Depth by 2x Paved Width)
ROW Width	80	(Use full width for Clearing & USE
Clearing & Grubbing per mile (Acre):	9.7 (Use Full width of R/W)	10
Earthwork per mile (CY):	68053 (Exc. Or Embankment)	68,000
Topsoil/Reseeding per mile (Acre):	7.03 (Earthwork - Roadway)	7
Aggregate Base per mile (CY):	11342 (Class 6)	11,300
Hot Mix Asphalt per Mile (Ton):	16469 (Includes Emulsifieds)	16,500
Topsoil/Reseeding per mile (Acre):	2.67 (Earthwork - Roadway)	2
Aggregate Base per mile (CY):	0 (Class 6)	-
Hot Mix Asphalt per Mile (Ton):	0 (Includes Emulsifieds)	-

10/25/2022

Windsor, Colorado

Conceptual Opinion of Construction Costs

Roadway Type: 4-Lane Urban Arterial



*Costs reflect a five-foot wide sidewalk; however, sidewalk installation may be at greater width such as shown and may require additional right-of-way.

**Median may only be required at intersections; configuration to be determined at time of improvements.

Estimated Costs

Item No.	Description	Unit	Quantity (per Mile)	Unit Cost	Per Mile Cost
1	Clearing and Grubbing	AC	13	\$ 5,000	\$ 65,000
2	Earthwork (Excavation or Embankment) CIP	CY	96,000	\$ 16	\$ 1,536,000
3	Topsoil and Reseeding	AC	10	\$ 6,000	\$ 60,000
4	Aggregate Base Course (CL 6)	CY	16,000	\$ 35	\$ 560,000
5	Hot Mix Asphalt	TN	23,300	\$ 90	\$ 2,097,000
6	Curb and Gutter - 2 foot Pan	LF	10,560	\$ 30	\$ 316,800
7	Curb and Gutter - 1 foot Pan	LF	10,560	\$ 25	\$ 264,000
8	Concrete Sidewalk	SY	7,040	\$ 65	\$ 457,600
9	Subtotal Construction Bid Items (CBI)				\$ 5,356,400
10	Erosion Control and Water Quality (~5% of CBI)				\$ 268,000
11	Signing, Striping and New/Modified Signals (~10% of CBI)				\$ 536,000
12	Construction and Design Engineering (~22% of CBI)				\$ 1,178,000
13	Subtotal 9-13				\$ 7,338,400
14	Contingency (12%) for Misc. & Unforeseen Items				\$ 880,608
				USE	\$ 8,220,000

Median and Formal Landscape Treatments not assumed for reimbursement costs.

Quantity Calculations

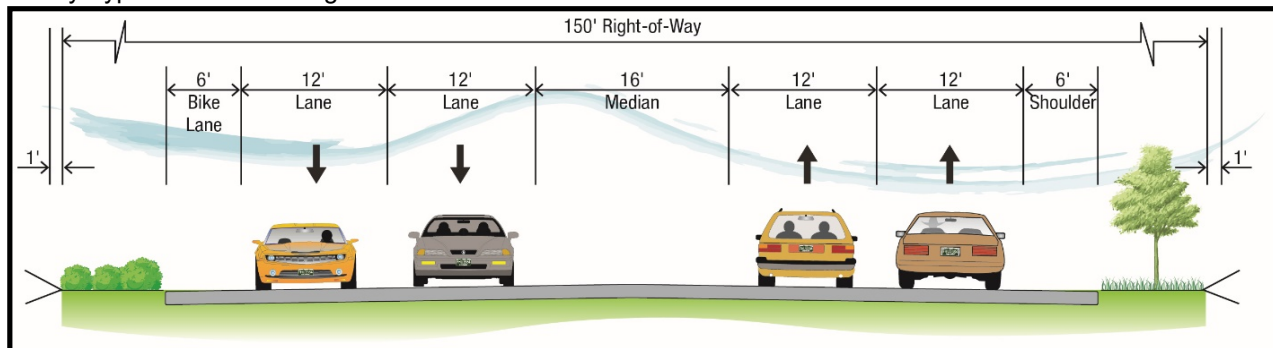
Number of Lanes:	4	
Lane Width:	12	
Shoulder/Bike Width:	9 (Assumes RT Lane for 25% of Length)	
Median Width:	16	
Total Pavement Width:	82 feet	(Average)
Aggregate Depth:	12 inches	
Pavement Depth:	8 inches	
Assumed Earthwork Depth:	3	(Assumes 3 foot Average Depth by 2x Paved Width)
ROW Width	110	(Use full width for Clearing & USE)
Clearing & Grubbing per mile (Acre):	13.3 (Use Full width of R/W)	13
Earthwork per mile (CY):	96213 (Exc. Or Embankment)	96,000
Topsoil/Reseeding per mile (Acre):	9.94 (Earthwork - Roadway)	10
Aggregate Base per mile (CY):	16036 (Class 6)	16,000
Hot Mix Asphalt per Mile (Ton):	23284 (Includes Emulsifieds)	23,300
Topsoil/Reseeding per mile (Acre):	2.67 (Earthwork - Roadway)	2
Aggregate Base per mile (CY):	0 (Class 6)	-
Hot Mix Asphalt per Mile (Ton):	0 (Includes Emulsifieds)	-

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Windsor, Colorado

Conceptual Opinion of Construction Costs

Roadway Type: Rural Widening



Completed Widening Section

Estimated Costs

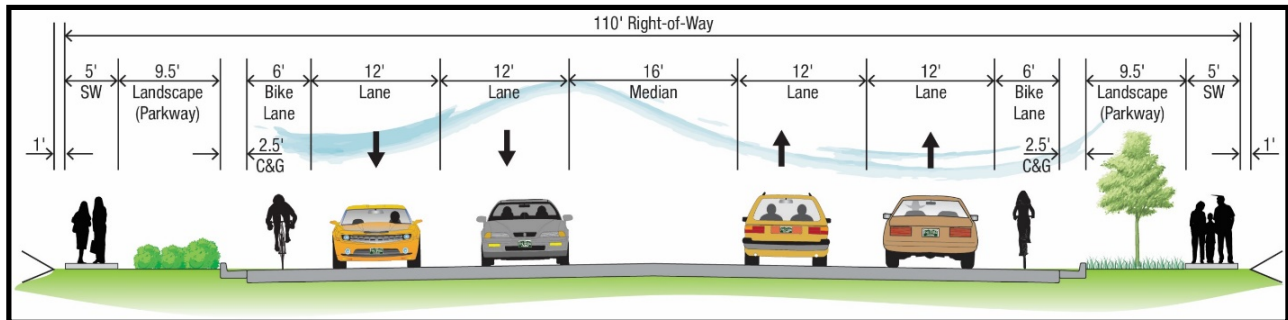
Item No.	Description	Unit	Quantity (per Mile)	Unit Cost	Per Mile Cost
1	Clearing and Grubbing	AC	9	\$ 5,000	\$ 45,000
2	Remove Existing Pavement Edge (Shoulder)	SF	20,000	1.75	\$ 35,000
3	Earthwork (Excavation or Embankment) CIP	CY	57,600	\$ 16	\$ 921,600
4	Reset Existing Features (Signs etc.)	LS	1	\$ 30,000	\$ 30,000
5	Topsoil and Reseeding	AC	9	\$ 2,500	\$ 22,500
6	Aggregate Base Course (CL 6)	CY	9,600	\$ 35	\$ 336,000
7	Hot Mix Asphalt	TN	10,500	\$ 90	\$ 945,000
8	Subtotal Construction Bid Items (CBI)				\$ 2,335,100
9	Erosion Control and Water Quality (~5% of CBI)				\$ 117,000
10	Signing, Striping and New/Modified Signals (~5% of CBI)				\$ 117,000
11	Construction and Design Engineering (~22% of CBI)				\$ 514,000
12	Subtotal 8-11				\$ 3,083,100
13	Contingency (12%) for Misc. & Unforeseen Items				\$ 369,972
				USE	\$ 3,450,000

10/25/2022

Windsor, Colorado

Conceptual Opinion of Construction Costs

Roadway Type: Urban Widening



Completed Widening Section

Estimated Costs

Item No.	Description	Unit	Quantity (per Mile)	Unit Cost	Per Mile Cost
1	Clearing and Grubbing	AC	8	\$ 5,000	\$ 40,000
2	Remove Existing Pavement Edge (Curb/walk)	LF	5,300	\$ 10	\$ 53,000
3	Earthwork (Excavation or Embankment) CIP	CY	57,600	\$ 16	\$ 921,600
4	Reset Existing Features (Signs etc.)	LS	1	\$ 120,000	\$ 120,000
5	Topsoil and Reseeding	AC	8	\$ 2,500	\$ 20,000
6	Aggregate Base Course (CL 6)	CY	6,336	\$ 35	\$ 221,760
7	Hot Mix Asphalt	TN	6,336	\$ 90	\$ 570,240
8	Concrete Sidewalk (5 Foot Wide + median)	SY	3,520	\$ 65	\$ 228,800
9	Curb and Gutter (1 side + median)	LF	10,500	\$30	\$ 315,000
10	Traffic Signal Modification (2 legs)	EA	1	\$ 150,000	\$ 150,000
11	Subtotal Construction Bid Items (CBI)				\$ 2,640,400
12	Erosion Control and Water Quality (~5% of CBI)				\$ 132,000
13	Drainage Modifications and Connections (~4% of CBI)				\$ 106,000
14	Signing, Striping and New Signals (~10% of CBI)				\$ 264,000
15	Construction and Design Engineering (~22% of CBI)				\$ 581,000
16	Subtotal 11-15				\$ 3,723,400
17	Contingency (12%) for Misc. & Unforeseen Items				\$ 446,808
				USE	\$ 4,170,000

10/25/2022



MEMORANDUM

Date: December 12, 2022
To: Mayor and Town Board
From: Shane Hale, Town Manager
Re: Future Meetings Agenda
Item #: 3.

Background / Discussion:

Financial Impact:

Relationship to Strategic Plan:

Recommendation:

CC:

Attachments:

1. 2022 Future Meetings Agenda



FUTURE TOWN BOARD MEETINGS

December 14, 2022 6:30 p.m. – 8:30 p.m.	Board/Manager/Attorney Dinner Social
December 19, 2022	Canceled
December 26, 2022	Canceled – Christmas Holiday
January 2, 2023	Canceled – New Year’s Holiday
January 9, 2023 5:30 p.m.	Town Board Work Session Board/Manager/Attorney Monthly Meeting Treatment Authority IGA Main Street Alternate Route Study Update
January 9, 2023 7:00 p.m.	Town Board Regular Meeting
January 16, 2023	Canceled – MLK Holiday
January 23, 2023 5:30 p.m.	Town Board Work Session Meet the Board – New Employees Windsor Energy Action Plan Update Roadway Safety Program – Tentative
January 23, 2023 7:00 p.m.	Town Board Regular Meeting
January 30, 2023	Canceled – 5 th Monday

Future Work Session Topics

- DDA Entertainment District
- Telecom Code (Pending FCC Rules)
- Regional Water Treatment Plant Site Update
- Weld RE-4 School Land Dedication/Cash in lieu of Land Update