

MAP WESTMINSTER



WESTMINSTER'S MOBILITY ACTION PLAN



APPENDIX



APPENDIX A:

PROJECT RECOMMENDATION TABLES

Zone 1 Project Recommendations



Trail Projects									
Trail projects recommended may include new shared-use paths (SUP), widening of existing sidewalks (W) to accommodate pedestrians and bicycles, or upgrading (U) existing trail surfaces from gravel to concrete. (Note: Upgrading trail surface material to concrete and widening sidewalks requires removal and replacement of existing trail/sidewalk; all upgrade and widening projects to are to result in 10' wide concrete shared-use path or sidepath unless otherwise noted).									
#	Project Name	Project Description	From Extent	To Extent	Estimated Improvement Length (Feet)*	Project Notes for Improvement	Total Prioritization Score	Cost Low	Cost High
1.1	I-25 Trail Connections	Construct new shared-use path connecting Huron St to existing I-25 trail (underway, scheduled for completion in 2017); from this point, construct new shared-use path south to existing I-25 trail; construct new shared-use path north from 128th Ave to existing I-25 Trail (underway, scheduled for completion in 2018).	I-25 Trail	Huron St	7612	The northern gap is scheduled to be completed in 2017; the southern gap is scheduled to be completed in 2018.	5	\$915,000	\$1,219,000
1.2	Big Dry Creek Park Trail Connection	Construct concrete trail from Big Dry Creek Trail south to 128th Ave. At 128th Ave and park entrance, install wirespan traffic light to provide safe crossing to park. South of the intersection, on east side of driveway, install 8' to 10' sidepath connecting to existing trail southbound.	128th Ave	Big Dry Creek Park sidewalk	316	--	10	\$89,000	\$101,000
1.3	Big Dry Creek Trail Connection East	To connect the Big Dry Creek Trail to 124th Ave, upgrade trail surface material from gravel to concrete, and construct new shared-use path connection leading to 124th Ave.	West of Big Dry Creek Park	124th Ave	2035	--	5	\$264,000	\$344,000
1.4	Big Dry Creek Trail Upgrade	Upgrade trail surface material of portions of Big Dry Creek between Huron St and 112th Avenue from gravel to concrete.	Huron St	112th Ave	19768	--	10	\$2,374,000	\$3,166,000
1.5	120th Ave East/West Path Upgrades	Add pedestrian refuge islands on Lowell Blvd, Bradburn Dr, and Vrain St where existing trail crosses these roads east/west. Add raised crossings at (2) driveway in/out. From Federal to Melody, widen existing sidewalk on north side of 120th Ave to 10' sidepath; conduct a complete streets assessment of land use along the corridor. Collaborate with City/County of Broomfield to assess feasibility of potentially using drainage ditch to under Sheridan Blvd at 120th Ave to create trail underpass.	Federal Blvd; Melody	Sheridan Blvd	8269	Use existing tree lawn on north side of 120th Ave to install sidepath. Installation of sidepath may require relocation of utilities and removal of trees.	12.5	\$1,314,000	\$1,655,000
1.6	I-25 to Farmers High Line Canal Trail Connection	Installed shared use path connecting the I-25 Trail south to the Farmers High Line Canal Trail. Use ditch to route trail from Delaware St east to I-25. Path would require construction of underpasses (two total) at I-25 southbound off-and-on ramps. Project would also require assessing the feasibility of constructing a path on the west side of I-25 under the 120th Ave overpass. Construction of path in this location would require assessing clear zones, and the erection of a vertical barrier between the path and roadway.	121st Ave	Farmers High Line Canal Trail	2055	To assess feasibility of underpasses, survey of all utilities, evaluate right-of-way, and evaluate stormwater existing conditions and proposed solutions, and assess traffic impacts during construction.	2.5	\$1,330,000	\$1,412,000
1.7	FRCC Trail Connection	Conduct a study identifying hierarchy of trails and upgrades to Front Range Community College (FRCC). Based upon study results, upgrade trail surface material from gravel to concrete and widen paths as necessary along the major routes leading east and south from Big Dry Creek Trail to FRCC	Big Dry Creek Trail	FRCC parking lot	3909	--	7.5	\$470,000	\$627,000
1.8	Promenade Dr Sidepath Connector*	Upgrade trail surface material of existing trail to from gravel to concrete, and install new shared-use path connection linking the Big Dry Creek Trail to the sidepath along Promenade Dr.	Promenade Dr	Big Dry Creek Trail	1252	Project will require construction of culvert to bridge over drainage ditch to connect to existing Promenade Dr sidepath.	7.5	\$118,500	
1.9	Church Ranch Park-N-Ride Underpass Connection	Assess the feasibility of constructing an underpass under Westminster Blvd at Promenade Dr to provide safer access to the Church Ranch Park-N-Ride	Intersection		248	To assess feasibility of underpass, survey of all utilities, evaluate right-of-way, and evaluate stormwater existing conditions and proposed solutions, and assess expected traffic impacts during construction.	7.5	\$800,000	\$1,000,000

*Pilot Project - Opinion of Probable Cost Prepared

Zone 1 Project Recommendations



Pedestrian Projects									
<i>Note: Widening (W) sidewalks requires removal and replacement of existing sidewalk.</i>									
#	Project Name	Project Description	From Extent	To Extent	Estimated Improvement Length (Feet)	Project Notes for Improvements	Total Prioritization Score	Cost Low	Cost High
1.1	Huron St Lexington Neighborhood Path Connection	Install sidewalk connection from existing sidewalk east of Huron St to the Lexington Neighborhood path.	Intersection	--	187	Two options exist A) Construct sidewalk west from existing sidewalk to existing crosswalk. This alignment will require removal of bushes and trees. B) Construct sidewalk directly north from existing sidewalk. Install culvert over ditch to bridge ditch.	7.5	\$15,000	\$19,000
1.2	Huron St Sidewalk Connection	Construct sidewalk on west side of Huron St between 121st Avenue and 122nd Avenue to close existing sidewalk gap	122nd St	121st St	466	Use existing tree lawn to route sidewalk	15	\$28,000	\$38,000
1.3	120th Ave and Huron St Intersection Access Study	Conduct intersection access study at 120th Ave and Huron St to assess installation of raised crosswalks at slip lanes, pedestrian refuge islands, or potentially closing slip lanes to reduce crossing distance. Also, assess signal timing to provide adequate time for pedestrian to cross intersection.	Intersection	--	672	--	10	Study	
1.4	Pecos St Sidewalk Connection	Construct buffer separated sidewalk on west side of Pecos St between 120th Avenue and North Tejon St W to close existing sidewalk gap	120th Ave	North Tejon St W	871	Use existing tree lawn to route sidewalk	10	\$53,000	\$70,000
1.5	120th Ave and Vrain St Bus Stop Connection	Install sidewalk connecting to bus stop on south side of 120th Ave west to Vrain St.	Vrain St	Bus Stop east of Vrain St	234	Project will require relocation of guardrail and reconstruction of retaining wall.	12.5	\$19,000	\$24,000
1.6	112th Ave Sidewalk Improvements	Widen sidewalk on north side of 112th Ave to 8 ft.	Wyandot St	Pecos St	2025	Project will require moving curb line south where right turn bays are present, and either narrowing or removing these turn bays; Utilities may need to be relocated and trees may need to be removed.	17.5	\$264,000	\$325,000
1.7	112th Crossing Improvements	Install pedestrian refuge island at 112th Ave and Harlan St at existing west side crosswalk that runs north/south across 112th Ave.	Intersection	--	75	--	20	\$13,000	\$18,000
1.8	Sheridan Blvd/112th Sidewalk Improvements	Install new segments of sidewalk in three sections: 1) south side of 112th Ave from Sheridan Blvd east to existing sidewalk; 2) east side of sheridan blvd from 112th Avenue to north of Big Dry Creek trail; 3) east side of Sheridan Blvd from 104th Ave north to existing sidewalk.	See Description	--	5065	Use existing tree lawn on south side of 112th/east side of Sheridan to install sidewalk. ROW acquisition may be required to install sidewalk here.	17.5	\$305,000	\$407,000
1.9	Legacy Ridge at 110th Ave At-Grade Crossing	Install raised crosswalk south of 110th Ave across legacy ridge at existing crosswalk location.	Intersection	--	58	--	15	\$5,000	\$10,000

Zone 1 Project Recommendations



Bicycle Projects

Bicycle facilities recommended may include conventional 5' striped bike lanes (BL); buffered bike lanes (BBL), which consist of bike lanes with striped buffers; neighborhood greenways, which are shared-use neighborhood streets, which are low-volume and low-speed, and prioritize the movement of bicyclists and pedestrians through signage and pavement markings, and separated bike lanes (SBL), which include bike lanes, separated from travel lanes by flexible posts or physical barriers, such as curbs or other vertical barriers. Signage in the table below refers to the installation of bicycle wayfinding signage. Signage along neighborhood greenways could be unique from other bicycle signage to help better identify the network.

#	Project Name	Project Description	From Extent	To Extent	Estimated Improvement Length (Feet)	Project Notes for Improvements	Total Prioritization Score	Cost Low	Cost High
1.1	Weather Stone Neighborhood Greenway	Install shared lane markings and signage from on Pecos St from 134th Ave to 130th Pkwy and on 130th Pkwy from Pecos St to Harmony Dr/Big Dry Creek Trail.	134th Ave	Big Dry Creek Trail	4094	--	15	\$10,000	\$21,000
1.2	Westfield Neighborhood Greenway	Install bike lanes on Vrain St from 120th Ave to 118th Place and on 118th Place from Vrain St to Wolff St; Install shared lane markings and signage on Wolff St from 118th Place to 112th Ave.	120th Ave	112th Ave	6107	--	15	\$14,000	\$42,000
1.3	115th Ave Neighborhood Greenway	Install shared lane markings and signage on Harlan St from 112th Ave north; install shared lane markings on Gray St from trail north to 114th Pl, and on 114th Pl/115th Ave from Gray St to Sheridan Blvd; install bike lanes on 115th Ave from Sheridan Blvd to Wolff St; install traffic signal at Sheridan Blvd and 115th Ave.	Harlan St	Wolff St	5024	--	17.5	\$13,000	\$36,000
1.4	Vrain St to Big Dry Creek Trail Connection	Install shared lane markings and signage; from Vrain to 112th, replace existing sidewalk with 10' shared-use path.	Wolff St	112th Ave	511	--	12.5	\$23,000	\$31,000
1.5	Stratford Lakes / King St Bike Lanes	Install bike lanes on Stratford Lakes / King St between 112th Ave and Federal Blvd.	111th Ave	Federal Blvd	3926	Restrict parking to one side of the street to install 5' bike lanes	10	\$7,000	\$46,000
1.6	112th Ave Bike Lanes	Install bike lanes on 112th Ave from existing bike lanes west of Sheridan Blvd east to Federal Blvd.	East of Sheridan Blvd	Federal Blvd	8456	Narrow travel lanes to minimums to install bike lanes within existing cross-section; Alternatively, Study potential 7/6-to-5/3 lane conversion to install wider bike lanes; Special consideration needed at driveways and intersections. Maximum AADT for segment is 15,000 vpd.	15	\$15,000	\$99,000
1.7	Sheridan Green Bikeway Improvements	Install bike lanes on Vrain St and Stuart St to 112th Avenue. Install shared lane markings on 111th Avenue from Vrain to 110th. Continue markings on 110th to Legacy Ridge Pkwy.	112th Ave	Legacy Ridge Pkwy	5425	--	15	\$12,000	\$44,000
1.8	Harlan St/108th Ave Bikeway Improvements	Install shared lane markings and signage on Lamar St from end of street north to 108th Ave, and on 108th Ave from Lamart St to Harlan St; install bike lanes on Harlan St from 108th Ave to 112th Ave.	112th Ave	Promenade Dr Sidepath	3619	For Harlan bike lanes, either restripe road to lane minimums to install 5' bike lanes, or restrict parking to one side of the road	15	\$8,000	\$35,000
1.9	Cotton Creek Dr Bike Lanes	Install bike lanes on Cotton Creek Dr from Vrain St to Stuart St. Install bike lanes on Tennyson St from Cotton Creek Dr to Legacy Ridge Pkwy.	Vrain St	Legacy Ridge Pkwy	6259	Along Cotton Creek Dr, restrict parking to one side of the street. Conduct parking study to determine the side of the street where parking should be retained. Along Tennyson St, restrict parking both sides of street to install bike lanes. Where raised medians are present, discontinue bike lanes and install shared lane markings in the center of the travel lane.	12.5	\$12,000	\$74,000
1.10	107th Ave Bike Lanes	Install bike lanes on 107th Avenue from Windsor Park to Grove St. Continue the bike lanes on Grove St to 104th Avenue.	Windsor Park	104th Pl	3586	Installation of bike facilities along corridor would require restricting parking to one side of the street or installing lane minimums (10' TL, 7' PL and 5' BL).	10	\$7,000	\$42,000

Zone 1 Project Recommendations



Complete Street Projects

Recommended Complete Street projects require further study with the intention of enabling safe, convenient and comfortable travel and access for users of all ages and abilities regardless of their mode of transportation. Improvements may include new sidewalks (SW), buffered bike lanes (BBL), separated bike lanes (SBL), or intersection improvements.

#	Project Name	Project Description	From Extent	To Extent	Estimated Improvement Length (Feet)	Project Notes for Improvements	Total Prioritization Score	Cost Low	Cost High
1.1	124th Ave/N Pecos Complete Street Improvements	Install sidewalks where none exist on the north section of 124th Avenue/Pecos St from Huron St to 120th Ave. Reduce the number of travel lanes, install buffered bike lanes, and assess crossing improvements to provide safer access to Mountain Range High School and Silver Hills Middle School.	Huron St	120th Ave	5484	124th Notes: Conduct 5-to-3 lane conversion; install north/west sidewalk in existing tree lawn. Pecos Notes: Conduct 5-to-3 lane conversion; Using excess pavement width - extend west side curb line east to accommodate wider sidewalk and buffer where width is constrained. Maximum AADT for segment is 5,400 vpd.	7.5		Study
1.2	121st Ave and Melody Dr Complete Street Improvements	Study should analyze the following elements on 121st Ave and Melody Dr: Install bike lane on 121st Ave from Huron St to Bannock St; install two-way separated bike lane on west side of Melody St from 121st Ave to Wagon Rd Park-N-Ride; crossing Improvements at Melody St and 120th Ave (pedestrian refuge islands and reducing curb radius should be considered); conduct a complete streets assessment of land use. Note: This project is along designated bus route.	See Description	--	2815	121st Notes: Either restripe road to lane minimums to install 5' bike lanes, or restrict parking to one side of the road; Melody Notes: Stripe lane minimums to accommodate west side SBL	10		Study

Zone 2 Recommendations



Trail Projects									
Trail projects recommended may include new shared-use paths (SUP), widening of existing sidewalks (W) to accommodate pedestrians and bicycles, or upgrading (U) existing trail surfaces from gravel to concrete. (Note: Upgrading trail surface material to concrete and widening sidewalks requires removal and replacement of existing trail/sidewalk; all upgrade and widening projects to are to result in 10' wide concrete shared-use path or sidepath unless otherwise noted).									
#	Project Name	Project Description	From Extent	To Extent	Estimated Improvement Length (Feet)	Project Notes for Improvement	Total Prioritization Score	Cost Low	Cost High
2.1	Big Dry Creek Trail	Upgrade trail surface material from gravel to concrete from 104th Ave to Westminster Blvd.	104th Ave	Westminster Blvd	1,357	--	5	\$163,000	\$218,000
2.2	Farmers' High Land Canal Trail Upgrades	Upgrade trail surface from gravel to concrete from 104th Avenue to Westminster Blvd and from Westminster Blvd to 92nd Ave.	104th Ave to Westminster Blvd	Adams Elementary School to 92nd Ave	8,808	--	2.5	\$1,410,000	\$1,762,000
2.3	Sheridan Blvd Sidewalk Upgrade	Upgrade eastside sidewalk to 10' sidepath between 98th Ave and City Center Dr.	98th Ave	City Center Dr	1,884	Use existing tree lawn on west side of Sheridan Blvd to install sidepath.	12.5	\$302,000	\$377,000
2.4	Farmers' High Line Canal Trail Westminster Blvd Connection	Where the Big Dry Creek Trail crosses under Westminster Blvd, construct a new shared use path connection southbound on the west side of Westminster Blvd. Where Westminster Blvd crosses US36, construct shared use path under Westminster Blvd ramp, and continue trail to Niver Canal. Route the path on the north side of Niver Canal, east to Sheridan Blvd. At Sheridan Blvd, install HAWK beacon and construct pedestrian refuge in median to facilitate path crossing. Install crosswalk and trail crossing signage. Coordinate signals on Sheridan.	Westminster Blvd	Sheridan Blvd	7,381	Construction of trail between active rail line and ditch will require installation of a 5' high barrier. FHWA recommends a minimum setback of 25' from the center of the active rail line, but the exact setback width will be determined during trail alignment and feasibility analysis.	10	\$1,274,000	\$1,575,000
2.5	Allen Ditch Trail	Construct sidewalk from existing sidewalk on the east side of Pierce St south to rail line. Construct shared use path on north side of Allen Ditch east between Pierce Street and Harlan Street, providing direct access to Downtown Westminster.	Pierce Ave	88th Ave	2,404	Construction of trail between active rail line and ditch will require installation of a 5' high minimum barrier. FHWA recommends a minimum setback of 25' from the center of the active rail line, but the exact setback width will be determined during trail alignment and feasibility analysis. Preliminary analysis indicates that this setback can be maintained for the majority of the corridor.	10	\$279,000	\$373,000
2.6	88th Pl Trail Connection	Work with neighborhood and developer to establish a shared use path from RTD Sheridan Station to subdivision.	88th Pl	Sheridan Station	351	--	10	\$43,000	\$57,000
2.7	92nd Ave Connection	Construct new shared-use path connecting sidewalk on north side of 92nd Ave to the US 36 Bikeway.	Underpass	--	353	Construction of path will require grading	12.5	\$57,000	\$71,000
2.8	Sheridan Station Underpass**	Construction of one underpass for pedestrian and bicyclist access underneath Sheridan Blvd, connecting Downtown Westminster to Sheridan Station.	Underpass	--	197	--	10	\$6,845,000	

**Cost prepared for 2016 TIGER Grant Application

Zone 2 Recommendations



Pedestrian Projects									
<i>Note: Widening (W) sidewalks requires removal and replacement of existing sidewalk.</i>									
#	Project Name	Project Description	From Extent	To Extent	Estimated Improvement Length (Feet)	Project Notes for Improvement	Total Prioritization Score	Cost Low	Cost High
2.1	Westminster Blvd Sidewalk Improvements	Install 8' sidewalk on the east side of Westminster Blvd south from existing sidewalk to trail.	Big Dry Creek Trail	Farmer's High Line Canal Trail	3,657	--	7.5	\$476,000	\$586,000
2.2	104th Ave at Legacy Ridge Pkwy	Intersection, wayfinding, and striping improvements at 104th Ave and Legacy Ridge Pkwy.	Intersection	--	262	--	12.5	Study	
2.3	104th Ave at Lowell Blvd	Install north/south crosswalk, curb ramps and pedestrian countdown signal on the east side of intersection of 104th Ave and Lowell Blvd.	Intersection	--	92	--	17.5	\$18,000	\$22,000
2.4	100th Ave at Sheridan Blvd	Extend existing raised median south and construct pedestrian refuge island at intersection of 100th Ave and Sheridan Blvd, providing pedestrian refuge for the existing east/west crosswalk. Reconstruct west side curb line to create a smaller turn radius, and install two curb cuts at this landing. Install HAWK beacon to facilitate crossing.	Intersection	--	96	Installation of HAWK should be coordinated with pedestrian project 2.5, as HAWK may only be desirable in one location.	12.5	\$94,000	\$99,000
2.5	98th Ave at Sheridan Blvd	Install pedestrian refuge island, crosswalk, and HAWK Beacon across Sheridan Blvd at 98th Ave. Coordinate signals.	Intersection	--	100	Construct pedestrian cut-through at existing raised median; Project will require construction of new curb-cuts on west side of Sheridan. Installation of HAWK should be coordinated with pedestrian project 2.2, as HAWK may only be desirable in one location.	17.5	\$97,000	\$102,000
2.6	City Center Dr at Sheridan Blvd	Remove continuous right hand turn at City Center Dr. Extend curb line southwest to shorten crossing distance.	Intersection	--	292	--	10	\$15,000	\$25,000
2.7	Wesfield / City Center Access Management	Assess consolidating driveways on the east and west side of Sheridan Blvd.	South of Niver Canal	Driveway North of 92nd Ave	2,210	--	10	Study	
2.8	Public Access to City Services Improvements*	Install crosswalk and HAWK beacon north/south across 92nd Ave at Xavier St; Install crosswalk and RRFB east/west across Yates at 91st Ave. Also adjust median radius to provide pedestrian refuge; to the south, install pedestrian refuge island, crosswalk, and RRFB to US 36 Parking Garage east/west across Yates St where path approaches Yates St; Install crosswalk north/south across garage driveway. Construct bus stop access to sidewalk.	Intersection	--	--	--	12.5	\$504,500	
2.9	US 36 Ramps Crossing Improvements**	Make pedestrian enhancements to the US 36 on-and-off ramps where Church Ranch Blvd, Sheridan Blvd, and Federal Blvd cross the ramps (nine ramp crossings total)	Intersection	--	--	--	12.5	\$455,000	
2.10	Sheridan Station Crossing Improvement***	Make pedestrian access improvements to intersection consistent with the 2016 HSIP Application.	Intersection	--	--	--	15	\$138,600	
2.11	Sheridan Blvd Access Management	Assess consolidating driveways on east side of Sheridan Blvd from 81st Ave to 78th Ave.	81st Ave	78th Ave	2,129	--	10	Study	
2.12	Bradburn Sidewalk	Install new sidewalk on north side of Bradburn Dr from Lowell Blvd to La Place Ct; widen existing sidewalk from La Place Ct to Oakwood St to 5' minimum; connect sidewalk to existing sidewalk north of Bradburn on the west side of Lowell Blvd.	Oakwood St	Lowell Blvd	2,230	Reconstruction of sidewalk may require adjustment of curbline from La Place Ct to Oakwood	7.5	\$146,000	\$191,000
2.13	Federal Blvd Pedestrian Access Study	Conduct pedestrian access study along the Federal Blvd corridor to improve pedestrian conditions along the corridor, including both linear sidewalk conditions, access management and intersection crossings.	104th Ave	68th Ave	24,015	--	10	Study	
2.14	South Westminster Safe Routes to School	Conduct Safe Routes to School Plan in South Westminster to improve connectivity from neighborhoods to schools.	Study	--	--	--	15	Study	

*Pilot Project - Opinion of Probable Cost Prepared

**Pilot Project - Opinion of Probable Cost Prepared. Costs prepared for 2017 HSIP Application ramp projects included in overall project cost.

***Cost prepared for 2017 HSIP Application.

Zone 2 Recommendations



Bicycle Projects
 Bicycle facilities recommended may include conventional 5' striped bike lanes (BL); buffered bike lanes (BBL), which consist of bike lanes with striped buffers; neighborhood greenways, which are shared-use neighborhood streets, which are low-volume and low-speed, and prioritize the movement of bicyclists and pedestrians through signage and pavement markings, and separated bike lanes (SBL), which include bike lanes, separated from travel lanes by flexible posts or physical barriers, such as curbs or other vertical barriers. Signage in the table below refers to the installation of bicycle wayfinding signage. Signage along neighborhood greenways could be unique from other bicycle signage to help better identify the network.

#	Project Name	Project Description	From Extent	To Extent	Estimated Improvement Length (Feet)	Project Notes for Improvements	Total Prioritization Score	Cost Low	Cost High
2.1	Lowell Ct Bikeway Connector	Install shared lane markings and signage between Legacy Ridge Pkwy and the end of Lowell Ct; upgrade north/south connector sidewalk to 10' shared-use path from Lowell Ct south to 104th Ave.	Legacy Ridge Pkwy	104th Dr	2,446	--	12.5	\$28,000	\$41,000
2.2	Perry/Northpark Bike Lane	Install bike lanes from 104th Ave to Federal Blvd on Perry St, 103rd Ave and Northpark Ave, and buffered bike lanes on Hooker St from Northpark to 104th Ave.	104th Ave	Federal Blvd	7,849	For the east/west facility on Perry, 103rd and Northpark, restrict parking both sides of street to install bike lanes. Parking is currently restricted on Hooker St. Install buffered bike lanes on Hooker St from Northpark Ave to 104th Ave (12' travel lanes, 6' bike lane and 3' buffer).	12.5	\$16,000	\$106,000
2.3	Highland Green Neighborhood Greenway	Install shared lane markings and signage on Wolff St from 104th Ave to Yates St, on Yates St from Wolff St to 98th Ave, and on 98th Ave from Yates St to Sheridan Blvd. Alternatively, install bike lanes on Wolff St.	104th Ave	Sheridan Blvd	4,548	Installation of bike lanes on Wolff St would require striping lane minimums (10' travel lanes and 7' parking lane) or a parking restriction. Installation of bike lanes on Yates St would require parking restriction both side of road.	12.5	\$11,000	\$23,000
2.4	99th Ave Neighborhood Greenway	Install shared lane markings and signage between Northpark Dr and Lowell Blvd. Alternatively, install bike lanes along this portion of the 99th Ave.	Northpark Dr	Lowell Blvd	2,516	Installation of bike lanes on 99th Ave would require striping lane minimums (10' travel lanes and 7' parking lane) or a parking restriction.	12.5	\$6,000	\$13,000
2.5	Westminster Blvd	Install bike lanes from 104th Ave to Farmer's High Line Canal Trail, buffered bike lanes from Farmer's High Line Canal Trail to 94th Ave, and bike lanes from 94th Ave to 92nd Ave.	104th Ave	92nd Ave	9,894	From Farmer's High Line Canal Trail (FHLCT) to 94th Ave, convert outside lane into buffered bike lane, from 94th Ave to 92nd Ave, turn lanes will need to be removed, and north of FHLCT, roadway will need to be widened. Maximum AADT for segment is 7,400 vpd.	17.5	\$23,000	\$162,000
2.6	Sunset Ridge Neighborhood Greenway	Install shared lane markings and signage on 94th Ave from Utica St to Perry St, and on 94th Ave from Lowell Blvd to Federal Blvd; Install bike lanes on 94th Ave from Perry St to Lowell Blvd; Install shared lane markings and signage on Raleigh St from 92nd Ave to 94th Ave; Construct new shared-use path connection from the west end of 94th Ave to the Carol Butts Park trails and the Hyland trail to the west.	Carol Butts Park	Federal Blvd	7,634	On 94th Ave, restrict parking from Perry St to Lowell Blvd to install bikes lanes; shared-use path construction will require coordination with Golf Course	17.5	\$53,000	\$96,000
2.7	Northridge Manor Bikeway	Install shared lane markings and signage on Raleigh St from 92nd Ave to Oakwood St, and on Oakwood St from Raleigh St to 89th Way.	92nd Ave	89th Way	1,556	--	15	\$4,000	\$8,000
2.8	Yates St Bike Lanes	Install buffered bike lanes from 92nd Ave to 88th Ave.	92nd Ave	88th Ave	3,514	Narrow travel lanes to minimums to install bike lanes within existing cross-section; Assess converting outside lane into wide buffered bike lanes. Maximum AADT for segment is 9,300 vpd.	20	\$10,000	\$75,000
2.9	Harlan Ave	Install buffered bike lanes between 92nd Ave and 88th Ave.	92nd Ave	88th Ave	2,730	Convert outside lane into buffered bike lanes; Special consideration needed at driveways. Maximum AADT for segment is 7,900 vpd.	15	\$8,000	\$58,000
2.10	88th Ave Bikeway	Install protected bikeway or multi-use trail on south end of new downtown from Harlan St to Sheridan Blvd.	Harlan St	Sheridan Blvd	2,703	Narrow travel lanes to minimums to install separated bike lanes within existing cross-section; Alternatively, assess potential lane reduction to install more separated facility; Special consideration needed at driveways	10	See Downtown Mobility Plan Estimate	
2.11	Lowell Blvd Bike Lane	Install bike lanes on Lowell Blvd between 88th Ave and 80th Ave.	88th Ave	80th Ave	5,274	From 88th Ave to Shaw St, restrict on-street parking, from Shaw to 82nd, widen roadway, and from 82 Ave to 80 Ave restrict on-street parking	10	\$152,193	\$252,109
2.12	Lowell Blvd Shared Lanes	Install shared lane markings and signage on Lowell Blvd between 80th Ave and 72nd Ave.	80th Ave	72nd Ave	5,293	--	17.5	\$7,000	\$16,000
2.13	Utica/68th Bikeway	Install shared lane markings and signage on Utica St from 72nd Ave to Federal Blvd.	72nd Ave	Federal Blvd	7,497	--	17.5	\$9,000	\$23,000

Zone 2 Recommendations

Complete Street Projects

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#	Project Name	Project Description	From Extent	To Extent	Estimated Improvement Length (Feet)	Project Notes for Improvements	Total Prioritization Score	Cost Low	Cost High
2.1	E 92 Avenue Bicycle Infrastructure Assessment	Study should analyze the the pedestrian and bicycle infrastructure between Sheridan Blvd and Federal Blvd. Specifically, the study should analyze narrowing travel lane widths to accommodate wider sidewalks and the installation of dedicated bikeway facilities. This project is along a dedicated bus route.	Wadsworth Blvd	Lowell Blvd	14,010	Narrow travel lanes to minimums to install bike lanes within existing cross-section; Alternatively, assess potential lane reduction to install buffered bike lanes; Special consideration needed at driveways, intersections, and where raised median are present. Maximum AADT for segment is 32,000 vpd.	15		Study
2.2	Oakwood St to Cobblestone Park Connection	Study should analyze the following elements on Oakwood St: Install shared lane markings and signage from Oakwood St to La Place Ct, and on 82nd/83rd Ave from Lowell Blvd to Federal Blvd; construct shared-use path from La Pl Ct to Lowell Blvd and from Federal Blvd to Cobblestone Park. At Federal Blvd and 83rd Ave, study should assess the feasibility of installing an underpass.	Oakwood St	Cobblestone Park	6,338	Special consideration needed at roadways crossings along bikeway	5		Study
2.3	80th Ave Complete Street Improvements	Study should analyze the following elements on 80th Ave: Widen sidewalks and install bike lanes along 80th Ave between Sheridan Blvd and Zuni St. Note: This project is along designated bus route.	Sheridan Blvd	Zuni St	10,643	Conduct 4-to-3 lane conversion; use excess pavement width to move curb lines and accommodate wider sidewalks. Maximum AADT for segment is 11,000 vpd.	15		Study
2.4	Bradburn St Complete Street Improvements	Study should analyze the following elements on Bradburn St: Add crosswalks, stop/yield bars, at intersecting streets on east side of Bradburn (six total). Install shared lane markings and signage along Bradburn St from 80th Ave to 72nd Ave. Note: This project is along designated bus route.	80th Ave	72nd Ave	5,286	Assess stop signs along corridor to give priority to bikeway.	15		Study
2.5	76th Ave Complete Street Improvements	Study should analyze the following elements on 76th Ave: Widen sidewalks; install bike lanes along 76th Ave from city boundary to Federal Blvd.	City Boundary West	Federal Blvd	10,570	Parking will need to be restricted to one side of the road from city border east to Sheridan Blvd. From Sheridan Blvd to Stuart St turn bays will need to be removed. From Stuart St to Federal Blvd, restrict parking to one side. Conduct parking study to determine which side of the street parking should be available on. Maximum AADT for segment is 4,100 vpd.	10		Study

Zone 3 Recommendations



Trail Projects									
<i>Trail projects recommended may include new shared-use paths (SUP), widening of existing sidewalks (W) to accommodate pedestrians and bicycles, or upgrading (U) existing trail surfaces from gravel to concrete. (Note: Upgrading trail surface material to concrete and widening sidewalks requires removal and replacement of existing trail/sidewalk; all upgrade and widening projects to are to result in 10' wide concrete shared-use path or sidepath unless otherwise noted).</i>									
#	Project Name	Project Description	From Extent	To Extent	Estimated Improvement Length (Feet)*	Project Notes for Improvements	Total Prioritization Score	Cost Low	Cost High
3.1	Westmoor Dr to Walnut Creek Trail Connection	Upgrade Walnut Creek Trail surface material to concrete (Johnson St to Wadsworth Pkwy); install sidepath from Walnut Creek Trail south to existing sidewalk; Assess using tunnel on south side of Wadsworth Pkwy and 104th Ave to install trail underpass; install shared-use path from Wadsworth Pkwy east to existing Walnut Creek Trail; use tunnel under Dover St to install trail underpass; construct tunnel under railroad separate from roadway underpass; install RRFB and crosswalk at 105th Ave and Wadsworth Blvd.	Westmoor Dr	Walnut Creek Trail	9,192	On 108th Ave from Lewis St to Johnson St, use existing wide tree lawn to install sidepath. Project will require assessing feasibility of using existing drainage ditch tunnels as trail underpasses. Project will require assessing feasibility of constructing tunnel under railroad. 2018 CIP project will study drainage and trail alignments from Church Ranch at Reed to Wadsworth Pkwy. With engineering, PRL, and Urban Drainage working together.	12.5	\$2,424,000	\$2,971,000
3.2	Church Ranch Station Underpass**	Construction of three bikeway underpasses: below the US 36 Church Ranch Blvd off-ramp, below Church Ranch Blvd that spans US 36, and below the US 36 Church Ranch Blvd on-ramp. Project will also include the construction of 535 ft of shared-use path, resulting in a grade-separated crossing of Church Ranch Blvd.	Underpass	--		See 2016 TIGER Grant Application for project details.	10	\$1,242,000	
3.3	100th Ave Sidepath Construction	Reconstruct existing north side sidewalks on 100th Ave to 10' minimum or 12' maximum from Church Ranch Station to Rocky Mountain Greenway Trailhead.	See Description	--	19,322	Installation of shared use path will require removal of trees/bushes, and potentially relocation of utilities and bus stops	10	\$3,040,000	\$3,813,000
3.4	Wadsworth Pkwy Trail Connection/Big Dry Creek Trail Improvement	Upgrade sidewalk to 10' sidepath on Wadsworth Pkwy from 100th Ave to Big Dry Creek Trail; install raised crosswalk at shopping center exit.	100th Ave	Big Dry Creek Trail	860	Use existing wide tree lawn to install sidepath.	10	\$109,000	\$148,000
3.5	Big Dry Creek Trail Upgrades	Upgrade trail surface material to concrete (two sections: from Westbrook Park to Wadsworth Pkwy and east of Wadsworth Blvd). Collaborate with Jefferson Academy to construct a new 10 foot wide trail within the 99th Ave ROW between Yarrow St to BNSF Railroad. Realign 99th Ave to the north to create width for trail.	See Description	--	4,647	--	5	\$632,000	\$818,000
3.6	Railroad Trail Study	Assess feasibility of installing shared use path along rail corridor from Big Dry Creek Trail to Pierce St.	Big Dry Creek Trail	Pierce St	8,301	Requires coordination with railroad owner.	5	\$1,329,000	\$1,661,000
3.7	Wadsworth Pkwy Crossing Improvements	Assess feasibility of installing grade-separated crossing at 92nd Ave and 94th Ave at Wadsworth Pkwy.	Intersection	--	343	--	10	\$2,400,000	\$2,800,000

**Cost prepared for 2016 TIGER Grant Application

Pedestrian Projects									
<i>Note: Widening (W) sidewalks requires removal and replacement of existing sidewalk.</i>									
#	Project Name	Project Description	From Extent	To Extent	Estimated Improvement Length (Feet)	Project Notes for Improvements	Total Prioritization Score	Cost Low	Cost High
3.1	108th Ave Sidewalk Improvements	Install and/or replace existing narrow sidewalks with 8 foot wide sidewalks on both sides of 108th Ave from Simms St to Wadsworth Blvd.	Simms St	Wadsworth Blvd	22,382	Installation of sidewalk along 108th Ave will require relocation of fence and potentially removal of trees and grading. Between 107th Pl to the east end of development, an 8' sidewalk exists on the south side of the road. This section of the sidewalk will not be replaced. Between Dover St and Wadsworth Blvd, utilities exist of both sides of the road. Utilities will either need to be relocated, or property aquired, to install sidewalk in these vicinity.	10	\$2,499,000	\$3,169,000
3.2	Wadsworth Pkwy Sidewalk Connections North	Install 8 foot wide buffered sidewalk on west side of Wadsworth Pkwy from City Limit south to existing sidewalk north of 104th Ave. On the east side of Wadsworth Pkwy, install 8' buffered sidewalk from 108th Ave south to existing sidewalk north of 104th Ave.			6,135	--	12.5	\$731,000	\$915,000
3.3	Church Ranch BRT Station Access Improvements*	Construct two new 8' sidewalks connecting BRT Stations south to Church Ranch Blvd on both sides of US 36.	Church Ranch BRT Stations	Church Ranch Blvd	480	Installation of eastside sidewalk may require grading; westside sidewalk will require removal of trees and potentially require grading.	10	\$731,500	
3.4	Wadsworth Pkwy Bus Stop Connections	Install sidewalk connections to bus stops on the east side of Wadsworth Pkwy along RTD Bus Route 76. At Independence Dr, assess moving crosswalk alignment north so that crosswalk passes through raised median and install sidewalk and curb ramp to Independence Dr. At 94th Ave and 92nd Ave, assess moving Wadsworth Pkwy crosswalk/median alignments so crosswalks pass through raised median on Wadsworth Pkwy.	Big Dry Creek Trail	92nd Ave	757	Project will require coordination with CDOT for funding and implementation.	17.5	\$94,000	\$118,000

*Pilot Project - Opinion of Probable Cost Prepared

Zone 3 Recommendations



Bicycle Projects
Bicycle facilities recommended may include conventional 5' striped bike lanes (BL); buffered bike lanes (BBL), which consist of bike lanes with striped buffers; neighborhood greenways, which are shared-use neighborhood streets, which are low-volume and low-speed, and prioritize the movement of bicyclists and pedestrians through signage and pavement markings, and separated bike lanes (SBL), which include bike lanes, separated from travel lanes by flexible posts or physical barriers, such as curbs or other vertical barriers. Signage in the table below refers to the installation of bicycle wayfinding signage. Signage along neighborhood greenways could be unique from other bicycle signage to help better identify the network.

#	Project Name	Project Description	From Extent	To Extent	Estimated Improvement Length (Feet)	Project Notes for Improvements	Total Prioritization Score	Cost Low	Cost High
3.1	Simms St Complete Street Improvements	Install bike lanes from 100th Ave north to Broomfield city boundary. Install sidewalks east and west sides of Simms St from 100th Ave north to Broomfield city boundary where sidewalks currently do not exist. At 107th and Simms, construct bulbouts to reduce crossing distance, and install crosswalks at all approaches; install RRFB at east/west crosswalks across Simms. Install traffic signals at 100th Ave and Simms St.	Northern City Limit	100th Ave	22,668	Conduct 4-to-3 lane conversion; between 108th and Countryside road remove TWLTL; road narrows north of 108th Ave and will require widening. Maximum AADT for segment is 7,300 vpd.	7.5	\$794,000	\$1,146,000
3.2	106th Ave Bike Lanes	Install bike lanes and signage on 106th Ave from Oak St to Johnson St.	Oak St	Johnson St	2,946	Installation of bike lanes requires that parking be restricted on both sides of the roadway.	7.5	\$6,000	\$35,000
3.3	Johnson St/104th Ave Bike Lanes	Install bike lanes on Johnson St, between 108th Ave and 104th Ave and on 104th Ave between Johnson St and Wadsworth Pkwy, to provide bikeway connection between Westmoor Business Park and the future Walnut Creek Trail extension to the east.	108th Ave	Wadsworth Pkwy	6,050	Restrict parking both sides of street to install bike lanes	10	\$11,000	\$71,000
3.4	Independence St/97th Ave Bikeway Improvements	Install bike lanes on Independence St from 100th Ave to 97th Ave; Install shared lane markings and signage on Kipling St from Kipling Way to 97th Ave, on 97th Ave from Kipling St to 98th Ave, and on 98th Ave from 97th Ave to Big Dry Creek Trail.	100th Ave	Big Dry Creek Trail	4,593	Restrict parking to one side of street to install bike lanes	10	\$11,000	\$37,000
3.5	90th/Pierce/91st Bikeway Improvements	Install bike lanes from Yukon St to Pierce St; implement access management from Wadsworth Blvd to Pierce St; Install signal at 90th Ave and Pierce St; improve railroad crossing.	Existing Bike Lanes 90th Ave	Harlan St	6,419	Wadsworth Pkwy to Pierce - convert outside lane into buffered bike lane; Pierce 90th to 92nd - narrow lanes to install bike lanes; 91st Pierce to Harlan - restrict parking to one side	20	\$11,000	\$75,000

Complete Street Projects
Recommended Complete Street projects require further study with the intention of enabling safe, convenient and comfortable travel and access for users of all ages and abilities regardless of their mode of transportation. Improvements may include new sidewalks (SW), buffered bike lanes (BBL), separated bike lanes (SBL), or intersection improvements.

#	Project Name	Project Description	From Extent	To Extent	Estimated Improvement Length (Feet)	Project Notes for Improvements	Total Prioritization Score	Cost Low	Cost High
3.1	Independence Dr Complete Street Improvements	Study should analyze the following elements on Independence Dr from 88th Ave to Wadsworth Pkwy: Remove left turn bays/median and install bike lanes; install raised crossing and RRFB at Nile Canal Trail crossing; install RRFB at Farmer's High Line Canal Trail crossing; longer term - install north/west side sidewalk from Nile Canal Trail to Wadsworth Pkwy.	88th Ave	Wadsworth Pkwy	8,802	Remove left turn bays; stripe (2) 5' bike lanes and (2) 11' TL; long term, use excess road space to install north/west side sidewalks. Maximum AADT for segment is 5,300 vpd.	12.5		Study
3.2	88th Ave Complete Streets Improvements	This project is a continuation of Zone 2 Bike Project 2.10. This study should analyze making complete streets improvements along 88th Ave from Harlan St west to City Limit. Study will take into consideration Downtown Westminster Mobility Study recommendations, and should be coordinated with Arvada to continue extend the existing bike lanes in Arvada east into Westminster.	Harlan St	City Limit	10,436	Maximum AADT for segment is 17,000 vpd	10		Study



APPENDIX B:

PAST PLAN SUMMARY

Existing Document Review

Introduction

MAP Westminster coincides with several recent planning efforts that have focused on managing the growth and development of the City and surrounding region. Reviewing related planning efforts and transportation-related policies and programs is key to understanding how the City has planned for multimodal improvements in the past and how MAP Westminster can be useful in integrating multiple past planning efforts and policy guidance in the future. The documents reviewed focus on several topics, including land use development, the transportation network, roadway maintenance standards, transit options, trails, bicycle and pedestrian infrastructure, and roadway design and construction specifications. Overall, they demonstrate the City's commitment to improving multimodal access to destinations and neighborhoods throughout Westminster.

Westminster began as a small community north of Denver, and has consistently grown over the past fifty years, developing into a mid-size suburban city with a healthy mix of housing, jobs, and recreational assets. As its population grew, so did traffic congestion, and Westminster recognized that to keep pace with growth it needed to construct larger roads that could accommodate ever increasing vehicular travel demands. The City has been successful in developing a robust roadway network that handles significant traffic volumes on a daily basis. Westminster coupled its roadway building policy with a commitment to environmental stewardship, and today, boasts over 7,000 acres of preserved land and 74 miles of shared use paths. The proliferation of trails in the City largely resulted from the establishment of a sales tax approved in 1985, which provided funding for open space preservation and trail development. Extensions of the sales tax continue to be approved, demonstrating that residents truly value access to the outdoors.

Although access to open spaces has been a community priority, it has become increasingly difficult for people to reach these and other destinations in the City without a personal vehicle, even for relatively short trips. As Westminster approaches its build-out limit, City leaders have focused on expanding the multimodal network to facilitate bicycle, pedestrian and transit circulation. The review of past plans focused on the following documents, which together, demonstrate Westminster's commitment to improving mobility for all modes of transportation:

- Westminster Bicycle Master Plan
- Westminster Comprehensive Plan
- Comprehensive Roadway Plan Update
- Open Space Stewardship Plan
- Trails Master Plan
- Westminster Downtown Specific Plan
- US 36 First and Last Mile Study
- DRCOG Northwest Corridor Bicycle and Pedestrian Accessibility Study

Policies and programs in the City also influence current city-wide effort to increase multimodal access. Policies reviewed include the Westminster Municipal Code and Standards and Specifications for the Design and Construction of Public Improvements. City-wide programs speak to the level of interest currently present within the City for multimodal options. In the City of Westminster, these include organized group cycling activities and on-demand transit service, such as A-Lift.

Four significant changes to the community have been completed or are commencing construction. These include the:

- Construction of a new, mixed-use Downtown
- Opening of Westminster's first commuter-rail station
- Establishment of a Bus Rapid Transit line (BRT) along the US 36 corridor, which includes two BRT stations in Westminster.
- Completion of the US 36 Bikeway, which connects Boulder to Denver

These exciting projects will make Westminster an even more appealing place to live and work, simplifying regional travel and providing additional amenities for residents and visitors alike. MAP Westminster will expand upon the past planning efforts that have focused on these projects, ensuring that they are well connected. If integrated properly, these new assets can reshape Westminster's future, helping it to be less of an automobile-oriented city and more of a multimodal community.

Westminster CO 2030 Bicycle Master Plan

Prepared For: City of Westminster

Plan Overview

Westminster completed its first bicycle master plan in 2011. The primary goal of the plan was to make Westminster a place where bicycling could become a viable transportation alternative, resulting in a healthier, more vibrant and sustainable city. The plan's recommendations were envisioned to be implemented over a 20-year period, so that over time, bicycling would increasingly become a safer and more desirable mode of transportation and recreation.

The plan acknowledges that Westminster has a well-developed off-road trail system. At the time of publication, the City boasted over 74 miles of shared use paths. The proliferation of trails in the City largely resulted from the establishment of a sales tax approved in 1985 that provided funding for the trail system and open space preservation, and many trails are located on City open space. Subsequent extensions of the sales tax have continued to be approved, demonstrating that residents truly value access to natural environments. The trail system is comprised of several key 'trunk lines', including the Farmers' High Line Canal, Little Dry Creek, Big Dry Creek and the future Walnut Creek Trail. These trunk lines connect to other trails that service many of the city's subdivisions.

The 2030 Westminster Bicycle Master Plan outlines short-, medium-, and long-term priority bicycle routes in the City. Short-term priority routes were identified based on existing budget constraints and the need to supplement the existing shared-use path system with a major north-south (Lowell Boulevard) and east-west (104th Avenue) connection. Other short-term projects were suggested to provide working examples of each proposed bikeway type and to provide neighborhood connections between the existing off-street trail systems, the two on-street priority bicycle corridors, and/or to schools, parks, and neighboring municipalities. Medium-term priority projects focus on a high degree of intra-neighborhood connectivity, and more intensive side path treatments along major north-south corridors. Long-term priority bikeway projects are focused on widening or major re-striping/re-surfacing projects to create various on-street, arterial bike lanes.

Key Findings and Recommendations

Despite having a robust trail system, at the time of the plan’s publication, the City had only 0.1 mile of on-street bicycle facilities. The lack of on-street facilities was seen as a critical weakness to Westminster’s multimodal transportation system, and the bicycle master plan focused primarily on recommending new on-street facilities that would complement the existing trail system.

In total, the plan recommended 52 miles of new bikeway facilities, including bike lanes, bike routes, shared lanes, and new shared use paths and sidepaths. The plan also included recommendations to improve wayfinding in the community. A review of existing wayfinding conditions concluded Westminster’s bikeway wayfinding was relatively sparse and incomplete, with a lack of consistency among signage types and placement policies. The plan included several recommendations to standardize and improve bicycle wayfinding throughout Westminster. In addition to wayfinding, the plan also included recommendations to improve bicycle parking options in the city, which is a critical component of all bicycle networks. To help shape a culture that supports bicycling in Westminster, the plan also identified a series of programming recommendations. These programs were grouped into categories, including education, encouragement, enforcement, and evaluation. Action items for these programs are shown in Table 1 through Table 4.

TABLE 1. EDUCATION ACTION ITEMS

1	Educate motorists and bicyclists about mutual rights and responsibilities.
2	Educate Westminster motorists and bicyclists about new facility types.
3	Expand Safe Routes to Schools Partnerships.
4	Encourage City of Westminster employees/residents to become League of American Bicyclists, League Certified Instructors (LCIs) on an annual basis.
5	Relay local bicycle information, safety tips, and news through official City communication channels.
6	Fund Education initiatives.

TABLE 2. ENCOURAGEMENT ACTION ITEMS

1	Expand Bike-to-Work Week activities.
2	Raise the profile of National Bike Month.
3	Help employers encourage and promote bicycle commuting.
4	Add bicycling information on the Getting Around Westminster webpage.
5	Continue working with the Regional Transportation District (RTD) and the Denver Regional Council of Governments (DRCOG) to promote bicycling as part of multimodal and transportation demand management (TDM) services.
6	Create and update bikeway map.
7	Fund Encouragement initiatives.

TABLE 3. ENFORCEMENT ACTION ITEMS

1	Encourage enforcement of unsafe and unlawful bicyclist and motorist behavior.
2	Train officers about traffic laws.
3	Where possible, improve traffic safety and education outreach material.
4	Encourage officers to watch for and, when possible, to contact motorists involved in unsafe driving behaviors.
5	Encourage officers to watch for and, when possible, to contact bicyclists involved in unsafe bicycling behaviors.

TABLE 4. EVALUATION ACTION ITEMS

1	Continue to publish a public map displaying all existing and proposed bikeway network facilities.
2	Track all upcoming roadway improvement projects at the city, county, and state level.
3	Evaluate where bicycle facility maintenance is needed.
4	Measure the percentage of bikeway network completed each year.

Westminster Comprehensive Plan

Prepared For: City of Westminster, 2014

Plan Overview

The City of Westminster is nearing its physical build-out limit, and little vacant land remains for new developments. The Comprehensive Plan was created to guide future growth in the community, which would primarily be concentrated on in-filling and redevelopment. The plan provides guidance for a

broad range of topics, including land use, economic development, transportation, community design, parks, recreation, open space, and public utilities and services.

The plan identifies how the City of Westminster has grown rapidly since 1950, from less than 2,000 residents to about 110,000. Over this period, the city grew in size from 4.5 square miles to 34 square miles through the annexation of surrounding areas. During this period of growth, Westminster has been committed to preserving open space, and today, boasts more than 7,000 acres of preserved land. Nearly one third of the City's land area is comprised of parks, open space, golf courses, and HOA greenbelts.

Key Findings and Recommendations

The plan includes recommendations grouped into several different categories. Recognizing that the city is reaching its new development limit, a substantial portion of the plan focuses on identifying design guidelines for the city's various land use districts that will serve to shape in-fill development in the City. The plan also includes specific recommendations for five key sites throughout the City that are currently under development or projected to be redeveloped. These include the new Downtown Westminster town center project, the new RTD Transit Station in South Westminster, the I-25 corridor, Church Ranch and Brookhill. Each of these sites is being planned to be dense, mixed-use developments, factors which have been shown to support walkability and decrease reliance on personal vehicles.

An entire chapter of the plan is dedicated to transportation conditions in the city. The foundation of the city's transportation network is its road system, which is comprised of local, collector and arterial roadways. Regional access is provided by Interstate 25 (I-25) and US Highway 36 (US 36) as well as multiple state routes including:

- Wadsworth Parkway (State Highway 121),
- 120th Avenue (US 287/State Highway 128),
- Sheridan Boulevard (State Highway 95 south of US 36)
- Federal Boulevard (US 287).

As the population has increased in the City, congestion city-wide has increased in step, especially along the City's arterials. The City's policy has been to identify roadways that are operating over capacity (as indicated by a poor vehicle Level of Service), and then reduce congestion along these

roadways by adding additional lanes. This policy has led to the construction of several large arterials throughout Westminster, resulting in some intersections that are ten lanes across. Although this approach can relieve congestion, wide roads act as barriers for those who are not travelling in personal vehicles, and the plan acknowledges that roadway improvements should consider impacts for all modes when changes are proposed. Many newer policies are promoted throughout the document, and together, they would help to alleviate congestion by creating a more connected and walkable Westminster.

The plan highlights that multimodal circulation in the City is facilitated by the presence of an extensive sidewalk network. This is augmented by a robust trail system and over 50 underpasses that enable people to cross Westminster's major arterials easily and comfortably. The plan also includes a review of transit options for the City's residents. Currently, RTD bus lines services both intra-and-inter-city destinations. A new commuter rail station is under development in South Westminster, and it will be open in mid-summer 2016, providing direct access for those commuting to Denver. In the future, it is anticipated that the line will extend from the station to the north, and additional stations will be added in Westminster as the line expands towards Longmont.

Comprehensive Roadway Plan Update

Prepared For: City of Westminster, 2008

Plan Overview

The City developed this study to plan for an expected population growth from about 110,000 people in 2008 to a build-out population of about 124,000 people. This growth, combined with the growth of surrounding communities would put increased stress on the City's transportation system. The plan's goal was to anticipate future transportation issues and develop a work program to address them. This program included adding capacity at key intersections, while also improving transit access and the bicycle and pedestrian networks. Specific emphasis was placed on ensuring connections to the park-and-ride locations were convenient and direct.

Street widening, intersection upgrades, and multimodal integration are discussed in this plan. Widening roadways does not necessarily equate to improving pedestrian or bicycle facilities. The recommendations outlined for widening roadways in the Comprehensive Roadway Plan Update are based predominantly on increasing the motorized vehicle capacity of the roadway. However, with

new projects, there is an opportunity to enhance connectivity for multiple travel modes. The plan recommends that new roadway projects include “Complete Streets” elements—facility enhancements for people walking, bicycling, and using transit. Where bicycle facilities are added, adequate separation is recommended to minimize the impacts of traffic on bicyclist comfort.

Key Findings and Recommendations

The report indicates that several roadways, or sections of roadway, in Westminster are congested. With expected population growth, congestion is anticipated to increase along these roads unless they are widened. The report recommends that capacity be added to the following roadways to mitigate congestion:

- Federal Boulevard
- Federal Parkway
- Sheridan Boulevard
- Wadsworth Parkway
- 144th Avenue
- 136th Avenue
- 128th Avenue
- 120th Avenue
- 112th Avenue

Intersections were also evaluated for their operational efficiency. Improvements were recommended for intersections that operated below a level of service (LOS) of D. LOS is graded from “A” to “F,” where LOS A is free-flowing traffic and LOS F is standstill congestion. Intersections with recommended improvements specified in the plan are:

- Federal Boulevard and 84th Avenue: Add a third northbound and southbound through lane, and southbound, eastbound, and northbound dual left-turn lanes
- Federal Boulevard and 104th Avenue: Add a third northbound and southbound through lane, and dual left-turn lanes for all directions
- Simms Street and 100th Avenue: Realign the intersection
- Sheridan Boulevard and 88th Avenue: Add a third northbound and southbound through lane

- Wadsworth Parkway and 100th Avenue: Add a third northbound and southbound through lane, and southbound and eastbound dual left-turn lanes

Westminster's Most Congested Arterial Streets

Street	Lanes	Average Daily Traffic (ADT)	% Over Threshold of Congestion (1)	% Over General Daily Traffic Capacity (2)
Sheridan Blvd. - 88th Ave. to US 36	4	53,789	73.5%	49.4%
120th Ave. - Lowell Blvd. to Federal Blvd.(3)	4	47,662	53.7%	32.4%
Wadsworth Parkway - 92nd Ave. to I00111 Ave.	4	43,775	41.1%	21.6%
120th Ave. - Federal Blvd. to Pecos St. (3)	4	43,063	38.9%	19.6%
120th Ave. - Huron St. to 1-25	6	62,183	35.2%	17.3%
Sheridan Blvd. - 88th Ave. to 80th Ave.	4	41,628	34.3%	15.6%
120th Ave. - Sheridan Blvd. to Lowell Blvd. (4)	4	41,213	32.9%	14.5%
Federal Blvd. - 84th Ave. to 80th Ave.	4	41,150	32.7%	14.3%
104th Ave. - US 36 to Westminster Blvd	4	40,006	29.1%	11.1%
Sheridan Blvd. - 80th Ave. to 76th Ave.	4	39,877	28.6%	10.8%
Federal Blvd. - 70th Ave. to BNSF Railroad	4	36,424	17.5%	1.2%
Sheridan Blvd. - 73rd Blvd. - 73rd Ave. to 76th Ave.	4	35,222	13.6%	0
Federal Blvd. - US 36 to 74th Ave.	6	51,280	11.5%	0
Sheridan Blvd. - 104th Ave. to 96th Ave.	4	32,671	5.3%	0
Federal Blvd. - 104th Ave. to 92nd Ave.	4	31,489	1.6%	0
Church Ranch Blvd. - US 36 to 103rd Ave.	4	31,320	1.0%	0

1) The threshold for congestion is 31,000 ADT for a 3-4 lane road and 46,000 ADT for a 5-6 lane road.
 2) The General Daily Traffic capacity is 36,000 ADT for a 3-4 lane road and 53,000 ADT for a 5-6 lane road.
 3) To be widened to 6 lanes in 2016
 4) 120th Avenue is 3 eastbound lanes in Westminster

Adding through lanes and turn bays addresses vehicular transportation concerns, but does not necessarily improve the City's multimodal vision. Large intersections are particularly difficult to navigate as a pedestrian or a cyclist.

The study also included an analysis of speed conditions along major roads in the City, and found that on some roads, observed 85th percentile speeds exceeded the posted speed limit by more than 5 mph. The plan recommended that additional studies be done to determine if speed limits along these roads should be adjusted.

The study reviewed existing bicycle and pedestrian conditions in the city (specifically focusing on the areas near the park and ride stations), and in general, found facilities sufficient. Recommendations for linear and spot improvements were included. Suggested improvements include:

- Conversion of shared roadways to dedicated bike lanes
- Expansion of the bicycle system near the future South Westminster Transit Station
- Creating wider sidewalks on Lowell Boulevard between 75th Avenue and 78th Avenue
- Paving the stretch of the Farmers' High Line Canal trail between 91st Avenue and Trendwood Park
- Adding a shared-use path to connect the Farmers' High Line Canal trail and Little Dry Creek Trail

The Comprehensive Roadway plan uses a Pedestrian Level of Service (PLOS) analysis based on methodologies outlined in the Kansas City, Missouri Walkability Plan. Three key destinations in Westminster were assessed for walkability: the Wagon Road Park-n-Ride, the Church Ranch Park-n-Ride, and the Westminster Center Park-n-Ride. This PLOS analysis is associated with five categories determined to have an impact on pedestrian comfort and access: (1) directness, (2) continuity, (3) street crossings, (4) visual interest and amenities, and (5) security.

Each Park-n-Ride facility received the highest PLOS for directness. The following gaps related to continuity were identified along major arterials:

- The west side of North Huron Street from 121st Avenue to 123rd Avenue is missing 1,200 linear feet of sidewalk (note: the connection from 122nd to 123rd has since been constructed)
- The west side of Westminster Boulevard 500 feet north of Promenade Drive is missing 350 linear feet of sidewalk (note: section currently being constructed)
- The northeast corner of Sheridan Boulevard and 88th Avenue is missing 200 linear feet of sidewalk (note: section currently being constructed)

The continuity of these facilities will be improved if these sections of sidewalk are completed.

Of the street crossings in the area surrounding the Park-n-Rides, one identified improvement was suggested: add a crosswalk across West 123rd Avenue at 123rd Avenue and North Huron Street to increase safety. Visual interest and amenities were deemed sufficient near the Park-n-Ride facilities. Security concerns refer to sidewalks not having adequate separation from larger roadways or arterials.

The Westminster Center Park-n-Ride facility has routes where pedestrians are feel uncomfortable with respect to adjacent traffic.

With the assumption that pedestrians have a focused destination to Park-n-Ride facilities, the Comprehensive Roadway Plan Update's walkability analysis concluded that the City has acceptable pedestrian facilities. Nonetheless, it is recommended that similar analysis be conducted for other areas in the City with the potential for high pedestrian activity.

Open Space Stewardship Plan

Prepared For: City of Westminster, 2014

Plan Overview

The purpose of this planning effort was to “serve as a guide for current and future Open Space management, rehabilitation, enhancement, and sustainability for passive recreational uses in an effort to protect natural resources while ensuring high-quality visitor experiences now and in the future.” The plan notes that the City has been able to create a connected system of open spaces by consistently acquiring properties along key creeks, drainage corridors and irrigation canal corridors. As the City has been developed, the cost to acquire new properties for preservation has dramatically increased, making new land acquisitions challenging and expensive. Due to this, the priority of the City's Open Space program has shifted in recent years from making new acquisitions to preserving and maintaining existing properties.

Key Findings and Recommendations

Several recommendations are made in the Open Space Stewardship Plan that relate to multimodal transportation needs and opportunities:

- The plan provides maintenance recommendations for each of the different types of open spaces that the City controls, from sensitive natural habitats to actively landscaped environments, such as public parks.
- The plan provides recommendations for preserving historic buildings within the City
- The plan makes specific recommendations for seven high priority areas, including Big Dry Creek, Little Dry Creek, Lower Church Ranch, Westminster Hills, Farmers' High Line Canal, Vogel Pond Park, and Ketner Open Space

- For Big Dry Creek Trail, the plan recommends integrating the trail into the region's greenway system and identifying local loop trails to better connect the trail to the community
- The Little Dry Creek Trail, which will service the soon-to-be open Westminster Station, should be designed to become a key transportation corridor
- The plan includes recommendations for improvements to existing trails and new trail links and crossings of infrastructural barriers, such as railroads and roadways
- Plan offers several specific recommendations to improve the existing trail system in Westminster and fill gaps in the network

This plan prioritizes missing links or areas where trail connections are inadequate and describes proposed improvements to the existing trail system. Prioritization of missing links in the trail system for this plan was based on the following criteria:

- Completes a missing link along a major trail
- Improves general connectivity (e.g., north-south connections)
- Provides connection to major transportation destinations (i.e., FasTracks Stations)
- Contributes to local or short loops off of the Big Dry Creek corridor
- Improves connectivity to a school
- Provides equitable distribution of improvements throughout the City
- Constructability opportunity for trail is tied to new development

Criteria for prioritizing improvements to existing trails include:

- Improves general connectivity by upgrading trail to major or minor trail standards
- Improves connectivity to a school
- Improves connection to major transportation destinations (i.e., FasTracks Stations)
- Improves pedestrian and bicycle safety

Trails Master Plan

Prepared For: City of Westminster, 2014

Plan Overview

This plan is structured according to three key goals: completing the existing trail system as it was originally conceived; mitigating issues caused by planning the trail system according to the Major Trail

Corridor/Minor Trail links framework; and expanding trail system to better connect to development. Major Trails in the City include: Big Dry Creek Trail, Walnut Creek Trail, Farmers' High Line Canal Trail and Little Dry Creek Trail. Recently, new trails travelling north/south have been developed, including US 36 Commuter Bikeway and the I-25 Trail. The establishment of the US 36 Bikeway represented a major achievement for the region, and provides an 18-mile commuter bikeway connecting Denver to Boulder. A major section of the bikeway travels through Westminster.

Key Findings and Recommendations (see trail map when you're mapping):

- The plan notes that much of the emphasis on trails in the community has focused on the major corridors, such as Big Dry Creek and Farmers' High Canal. These parallel trails follow drainage ditches that flow east/west, leaving South Westminster disconnected from the trail system. On-street bikeway connections, identified in the City's bicycle master plan should be established to link people in all parts of Westminster to trails.
- Major trails should be upgraded to accommodate two-way bicycle traffic, so that they are convenient for commuting (minimum 10' wide; surfaced with concrete).
- Minor trails should be upgraded to better connect with Major Trails through the installation of signage and improved crossings of busy roads.
- The combination of on-street bikeways and off-street trails will make multimodal transportation more viable.
- Since many people are not directly connected to the major trails in the City, they have to travel relatively long distances to use them. The plan recommends creating local neighborhood loop trails that better connect the City's open space system.
- Overall, signage and maps of the trail system need to be improved.
- The plan includes design guidance for several different trail types as well as trail crossing options for when trails intersect busy roads, including at-grade crossing and separated grade crossings.

Westminster Downtown Specific Plan

Prepared For: City of Westminster, 2014

Plan Overview

For many years, plans have been underway to convert an aging mall complex in the center of Westminster into a new Town Center development. The primary goals of the project are to provide Westminster's residents with a new, mixed-use and transit-oriented town center, becoming a place where people can live, work and shop all in the same area. The project is currently underway, and the City's Downtown Specific Plan will help to shape the urban design and character of the development.

Key Findings and Recommendations:

The plan includes guidelines for the scale and type of buildings that will be permitted within the development. It also includes guidance for supporting infrastructure, including the proposed street network and landscaping. The downtown will have a significant impact on the character of Westminster, and since it will become a desirable destination, it will also impact traffic patterns. To minimize its impact on vehicular traffic, it is being planned as a transit oriented development focused around the existing US 36 Bus Rapid Transit station and a nearby proposed commuter rail station. This transit connection will be complemented by a complete network and pedestrian and bicycle facilities within the development. Two separated grade crossings are also proposed that will link the downtown to adjacent neighborhoods. Ensuring that convenient transit and bicycle and pedestrian connections are made to surrounding neighborhoods will enable people to access the downtown in a variety of ways, and help it to function truly as a transit oriented development.

US 36 First and Final Mile Study

Prepared For: US 36 Commuting Solutions

Plan Overview

US 36 is a major highway connecting Denver to Boulder. The corridor is typified by suburban land use patterns consisting of large, single use parcels and surface level parking lots. This facilitates driving along the corridor, but makes travelling by other modes challenging because destinations are dispersed and not well connected by sidewalks, trails or transit. It exhibits suburban land-use patterns

along its length and is typified by single land uses connected by large arterial roadways. Several park-and-ride stations are available for commuters along US 36, and this study was undertaken to increase access to the stations by modes other than personal vehicles. A one mile radius around each station was analyzed, and overall, it was determined that for bicyclists, pedestrians and transit riders, the stations are relatively disconnected from adjacent employment centers and residential neighborhoods. Several recommendations were developed to improve access to the transit stations along the corridor.

Key Findings and Recommendations

Two park-and-ride stations, Church Ranch and Westminster Center, are located within Westminster, both of which are along the US 36 corridor. Like other stations along US 36, getting to the stations by vehicle is relatively easy, but more difficult for those walking, biking or taking transit. The planning team collaborated with Westminster, RTD and CDOT to identify opportunities to create better connections to the stations. The improvements, which ranged from new separated grade crossings to intersection improvements and better trail connections, would make it more convenient to walk, bike or take transit to access the stations, thereby reducing the need to drive to them. The recommendations in the plan are supported by recommendations in other planning efforts, such as the Westminster's Comprehensive Plan, Bicycle Master Plan, and Trails Master Plan.

DRCOG Northwest Corridor Bicycle and Pedestrian Accessibility Study

Prepared For: Denver Regional Council of Governments

Plan Overview

The Denver Regional Council of Governments hosts a partnership of public and private sector organizations whose goals include enhancing bicycle and pedestrian access and mobility within the first and last mile of new transit stations along the US 36 corridor, also known as the Northwest Corridor. The Northwest Corridor Bicycle and Pedestrian Accessibility study builds directly on the 2013 US 36 First and Final Mile Study to make recommendations to improve bicycle and pedestrian access to stations along US 36, and to advance recommendations that have been identified previously. In total, seven stations comprise the Northwest Corridor: Table Mesa BRT Station, McCaslin BRT Station, Flatiron BRT Station, Broomfield BRT Station, Church Ranch BRT Station, Westminster Center BRT Station and Westminster Rail Station. Two of these stations, Church Ranch and Westminster Center, are located in the City of Westminster.

Key Findings and Recommendations

The planning team conducted an audit of bicycling and walking conditions within a one-mile radius of each of the stations. This audit focused on identifying deficiencies in wayfinding and infrastructure specific to bicyclists and pedestrians. Bicycling conditions leading to the stations were also observed, and opportunities to improve conditions were noted. A large component of the planning effort was dedicated to developing a consistent and coherent signage system that would make accessing the stations for bicyclists and pedestrians easier. These recommendations, combined with the recommendations developed through the US 36 study, provide many opportunities to improve multi-modal connections to the stations.

Municipal Codes and Policies

The Westminster Municipal Code and Standards and Specifications for the Design and Construction of Public Improvements call out specific requirements for sidewalk maintenance, sidewalk widths, sidewalk locations, guiding pedestrian traffic during construction, and requirements for installing a pedestrian push button.

Westminster Municipal Code

The City of Westminster Municipal Code provides guidance and requirements for bicycle and pedestrian facility maintenance and use.

Section 8-1-10 Sidewalks

The City requires clear and unobstructed sidewalk paths, which encourages safe and accessible pedestrian routes, even during inclement weather. This includes a requirement (Section 8-1-10 (A)) that states that it is the responsibility of the property owner “abutting or adjoining” a sidewalk to remove snow or ice within 24 hours of the last measurable snow fall. By providing codes and requirements that outline snow removal and maintenance for sidewalks, the City is taking steps to create dependable facilities for pedestrians.

Section 10-1-13 Sidewalk Use

Section 10-1-13 of the City’s Municipal Code dedicates sidewalk use to pedestrian and non-motorized bicycles:

- (M) In Section 710, “Emerging from or entering alley, driveway, or building,” subsection (3) is modified to read as follows:
- (3) No person shall drive any vehicle other than a bicycle, electric assisted bicycle, or any other human-powered vehicle upon a sidewalk or sidewalk area, except upon a permanent or duly authorized temporary driveway and except as permitted in Sections 10-1-13 and 10-1-14, W.M.C.

Standards and Specifications for the Design and Construction of Public Improvements

Currently, the City of Westminster Standards and Specifications provides guidance and requirements for bicycle and pedestrian facilities. These include maintenance, design, and traffic control guidance that demonstrates a desire to have dependable, safe sidewalk facilities and connectivity.

Chapter 6, Roadway

In Chapter 6, Roadway, the City specifies minimum sidewalk widths. Sidewalk widths are shown in Table 5.

TABLE 5. SIDEWALK WIDTHS

Type of Road	Required Sidewalk Width	Section of Chapter 6
Local Street	Five-foot minimum, attached or detached from curb	6.12.01(L)
Minor Collector	Five-foot minimum, detached from curb	6.13.01(M)
Major Collector	Five-foot minimum, detached from curb	6.13.02(M)
Minor Arterial	Eight-foot minimum, detached from curb, or as required by the City Engineer	6.14.01(K)
Major Arterial (four lanes)	Eight-foot minimum, detached from curb, or as required by the City Engineer	6.14.02(K)
Major Arterial (six lanes)	Eight-foot minimum, detached from curb, or as required by the City Engineer	6.14.03(K)

Chapter 6 of the Standards includes typical sections for roads that show sidewalk widths. Additionally, the following standards regarding sidewalks and ramps can be found in Section 6.20.00, Sidewalks, Curb and Gutters, Ramps, and Driveways:

- (B) Sidewalks or bicycle paths shall be constructed on both sides of all roadways unless specifically deleted by action of City of Westminster Planning Department.
- (E) State law requires that handicap ramps be installed at all intersections and at certain mid-block locations for all new construction of curb and sidewalk [CRS 43-2-107(2)]. Handicap ramps shall be constructed in accordance with the detail drawings in these STANDARDS AND SPECIFICATIONS. Handicap ramps may be shown at all curb returns or called out by a general note on the development plans, but must be shown (located) on all "T" intersections. Whenever referencing a handicap ramp, call out the specific detail drawing to construct that ramp. Handicap ramps to be poured monolithic with the abutting curb and gutter. The ramp portion shall be constructed with "Truncated Domes/Detectable Warning Devices" colored "Pavestone River Red" in accordance with the detail drawings.

The City requires sidewalk facilities for pedestrians and bicyclists to have specified sidewalk widths, exist on both side of all roadways, and meet Americans with Disabilities Act (ADA) ramp requirements. The City encourages maintaining dependable routes during construction. During construction, the City standards require precautions be taken to maintain and protect pedestrian traffic (Section 6.60.02, Pedestrian Traffic):

Every precaution shall be taken to ensure that construction work does not interfere with the movement of pedestrian traffic, which shall be maintained on the sidewalk at all times.

Flagmen shall be provided for guidance as necessary.

- (A) Where an excavation interrupts the continuity of the sidewalk, the contractor shall provide suitable bridge or deck facilities to be supplemented by the use of such proper devices and measures as prescribed in the Manual on Uniform Traffic Control Devices, most recent edition, for the safe and uninterrupted movement of pedestrian traffic. The edges or ends of the pedestrian bridge or decking shall be beveled or chamfered to a thin edge to prevent tripping.
- (B) Temporary diversion walkways shall be hard surfaced and electric lighting shall be provided and kept continuously burning during hours of darkness, when required by the City Engineer.
- (C) Unless otherwise authorized by the City Engineer, pedestrians shall not be channeled to walk on the traveled portion of the roadway.
- (D) Under certain conditions, it may be necessary to divert pedestrians to the sidewalk on the opposite side of the street. Such crossings shall only be made at intersections or marked pedestrian crossovers.
- (E) Facilities satisfactory to the City Engineer shall be provided for pedestrian crossing at corners, pedestrian crossovers, and public transportation stops.

Chapter 8, Traffic Control

In Chapter 8, Traffic Control, of the City Standards, specifics regarding pedestrian push buttons are outlined as follows in Section 8.35.01:

- (A) Pedestrian push-buttons shall be of the direct push-button contact type. They shall operate on a voltage not to exceed 18 volts AC. They shall be of tamper-proof design and equipped with a push-button instruction sign as shown in the Standard Details.
- (B) The assembly shall be weatherproof.
- (C) The housing shall be shaped to fit the curvature of the pole to which it is attached to provide a rigid installation. Saddles shall be provided to make a neat fit.

Pedestrian push buttons also are shown in Standard Drawing T11. Standard drawings also are provided for School Flashing Beacon Assemblies on the side of road or overhead (T19, T20, T21).

Key Findings and Recommendations

Current municipal codes and specifications required by the City are intended to create better access to- and maintenance of- existing multimodal facilities. Information currently available specifically identifies regulations for the construction and maintenance of sidewalks. Sidewalk width requirements are generally consistent with recommended minimums of current best practice (five to eight-feet wide). Wider pedestrian facilities are recommended particularly where they have a multimodal function, or where enhanced pedestrian access is desired. Minimum width for separated non-motorized facilities is also recommended to be included as a specification, particularly for suburban areas where there is a strong regional trail network present, such as in Westminster. The Municipal Code also includes specific regulations for maintenance of sidewalks including for snow removal. Enforcement of this Code can improve multimodal connectivity.

None of the specifications currently adopted by the City include regulations for the design or maintenance of on-street bicycle facilities. To create a robust and consistent bicycling network, it is recommended that the City's typical cross-sections be updated to include both protected and standard bicycle lanes. It is also recommended that standard stencils for bicycle lane marking be added to existing traffic control devices so that there is consistent use of such. Other recommended standards could include design specifications for crossing markings and pedestrian crossing devices, such as rectangular rapid flashing beacons (RRFBs).

Programs

Multimodal transportation programs and resources help to create, engage, and sustain a bicycle-friendly community. Currently, several organizations and programs encourage multimodal transportation.

Two bicycle shops in the City of Westminster, Bicycle Village and Performance Bicycle, organize weekly group rides for riders of all levels of experience. Education and support for bicyclists is offered through these groups.

Using the seeclickfix.com platform, bicyclists in the City of Westminster can make note of "Beautiful Route—Needs a Bike Lane." Additionally, advocacy groups such as CyclistsHaveRights.org bring awareness to bicycling in the area. On the City's webpage, "Westminster Walks", hikes and urban walks within the city are listed.

The A-Lift is a sliding scale dial-a-ride program for senior citizens in the City. This service is provided for individuals 60 years or older or for those who have a disability. Riders may be eligible for rides to medical or dental appointments, congregate meal sites, and trips to the grocery stores at a suggested \$5 rate. This program provides enhanced transit service beyond existing RTD bus and rail routes.

Key Findings and Recommendations

Existing programs are important for increasing community support for multimodal activities. Current programs facilitated by bicycle shops in the City should be used as a model for encouraging and educating bicycle riding, for recreation and utilitarian purposes, such as traveling to work and school. It is recommended that the City participate in other programs to encourage the growth of such programs. Some successful examples from other communities in the Front Range are incentivized programs that include restaurant or brewery participation.

A-Lift and other paratransit services support the ability for elders in the community to age-in-place. With such large-scale improvements to the regional transit system, it is important that these services are integrated with fixed route bus and train services. Other programs could support carpooling and car-sharing in the area particularly for first and final mile connections to transit hubs in the City.

Summary

Existing plans suggest that the City is focused on providing multimodal travel options, and have identified multiple locations and projects that further this priority. Existing plans focus on both physical and programmatic improvements. There is a strong planning focus on recreational cycling as well as enhancing connections to existing and planned transit stations. Although there are benefits of roadway widening offered in several projects throughout the City, it will be important that those projects include multimodal elements so as to provide comfortable and convenient travel options for multiple users and all modes of travel.

Existing City policies suggest that dependable facilities are a priority, particularly for people walking. Current codes and specifications required by the City are intended to create better access to and maintenance of existing multimodal facilities. Much of this information currently available specifically identifies regulations for the construction and maintenance of sidewalks (including snow removal). Sidewalk width requirements are generally consistent with recommended minimums of current best practice (five feet to eight feet).

Wider pedestrian facilities are recommended, especially where they have a multimodal function or where enhanced pedestrian access is desired. Minimum width for separated non-motorized facilities also is recommended to be included as a specification, particularly for suburban areas where there is a strong regional trail network present, such as in many places of the City of Westminster. Other recommended standards could include design specifications for crossing markings and pedestrian crossing devices, such as rectangular rapid flashing beacons (RRFBs).

Existing roadway specifications do not include typical sections for bicycle facilities. To create a robust and consistent bicycling network, it is recommended that the City's typical cross-sections be updated to include both protected and standard bicycle lanes. It is also recommended that standard stencils for bicycle lane markings be added to existing traffic control device specifications. With several planned roadway projects, there is an opportunity to develop a standard template for incorporating bicycle facilities into these projects.



APPENDIX C:

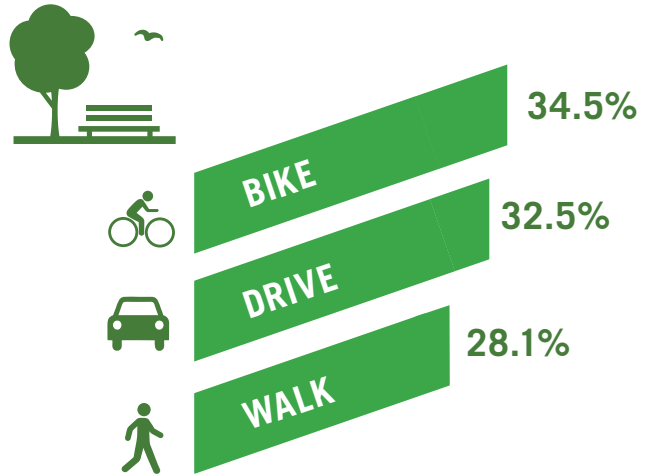
ONLINE SURVEY SUMMARY

WHY RESPONDENTS WALK + BIKE

#1 REASON
 **HEALTH & FITNESS** 



PRIMARY WAYS PEOPLE ACCESS PARKS



WHY RESPONDENTS TAKE TRANSIT

Of the percentage of people who reported using transit

54% REPORTED THE #1 REASON THEY TAKE TRANSIT



IS BECAUSE IT HAS less **impact** on the environment

WHAT PREVENTS YOU FROM WALKING/BICYCLING MORE



HIGH TRAVEL SPEEDS (56.2%)



DIFFICULT CROSSING MAJOR STREETS (53.2%)



NO CONVENIENT ROUTES (44.8%)



ROADS/SIDEWALK/TRAILS DON'T FEEL SAFE (44.8%)



DISTANCES TO DESTINATIONS TOO FAR (36.7%)

THE PRIMARY BARRIER TO USING TRANSIT IS:

TIME **63% REPORTED**



taking transit would take too long. In comments collected on this question, respondents stated that routes were too slow, ran too infrequently, and the schedules were not convenient.

PUBLIC SURVEY RESPONDENTS' TOP PRIORITIES FOR INVESTMENT



MORE PAVED PATHS AND TRAILS

60%



BETTER CROSSINGS

51.8%



MORE ON-STREET BIKEWAYS

48.2%



TRANSIT STATIONS

26.9%



MORE SIDEWALKS

21.8%

225

Total number of survey respondents

WHERE RESPONDENTS LIVE?

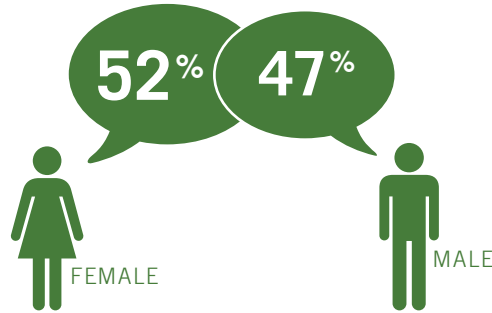
80021 (34%)

80031 (23%)

80234 (9.6%)

80020 (9.1%)

80030 (9.1%)



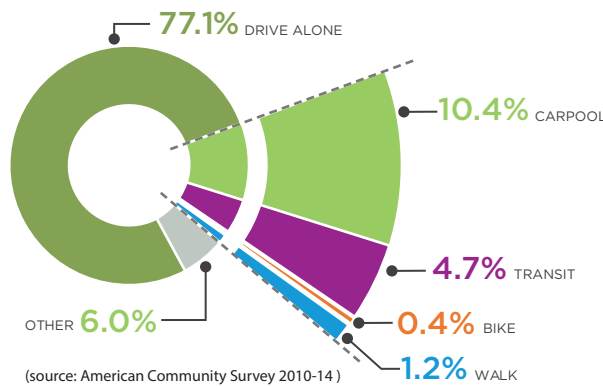
36-45

YEAR OLDS

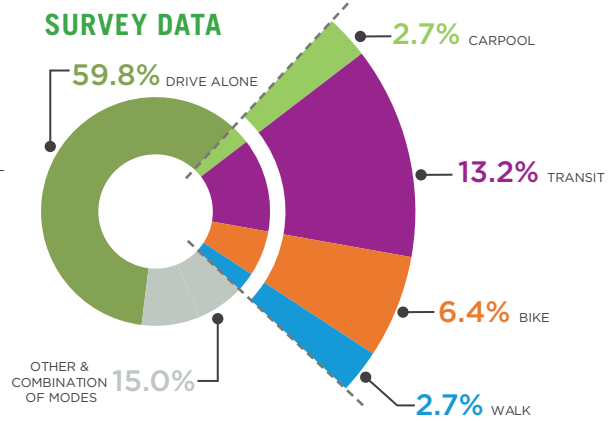
Most common age group (27%)

MODE SPLIT - CENSUS DATA VS RESPONDENTS

CENSUS DATA

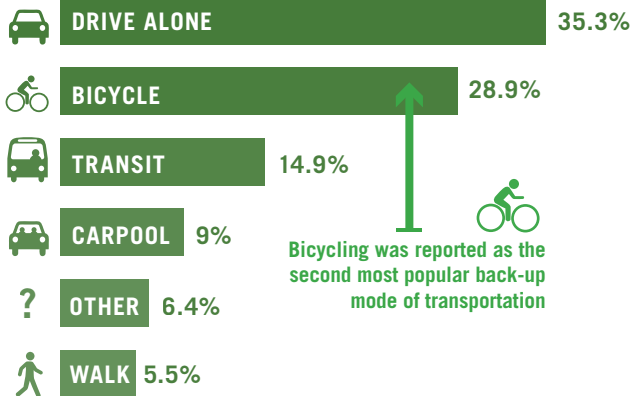


SURVEY DATA



HOW RESPONDENTS MOVE

If you sometimes use a different mode of transportation to get to and from work, what is it?



WHY PEOPLE WALK & HOW OFTEN



WHY RESPONDENTS BIKE & HOW OFTEN





APPENDIX D:

PILOT PROJECT COST ESTIMATES

1	US 36 and Sheridan Blvd EB On-ramp	
	Striping	\$8,000
	Signing	\$12,500
	Lump sum items	\$5,500
	Contingencies	\$8,000
	Total Estimate:	\$34,000
2	1.5 US 36 and Sheridan WB On-ramp	
	Striping	\$10,500
	Signing	\$12,500
	Lump sum items	\$6,500
	Contingencies	\$9,000
	Total Estimate:	\$38,500
3	1.6 US 36 and Sheridan, WB Off-ramp	
	Striping	\$11,500
	Signing	\$36,500
	Lump sum items	\$13,000
	Contingencies	\$18,500
	Total Estimate:	\$79,500
4	1.8 US 36 and Federal, EB OFR	
	Striping	\$11,000
	Signing	\$600
	Lump sum items	\$3,100
	Contingencies	\$4,500
	Total Estimate:	\$19,200
5	1.7 US 36 and Federal, WB OFR	
	Striping	\$8,500
	Signing	\$1,000
	Lump sum items	\$2,500
	Contingencies	\$3,500
	Total Estimate:	\$15,500
6	1.9 US 36 and Federal EB ONR	
	Striping	\$10,500
	Signing	\$12,500
	Lump sum items	\$6,500
	Contingencies	\$8,500

Total Estimate: **\$38,000**

7	2.1 Yates St. and 88th Pl	
	Striping	\$17,000
	Signing	\$24,000
	Sidewalk	\$85,000
	Lump sum items	\$19,500
	Contingencies	\$42,000
	Total Estimate:	\$187,500

8	2.1 Yates St. and 88th Pl AWS	
	Striping	\$17,000
	Signing	\$1,000
	Sidewalk	\$15,500
	Lump sum items	\$4,500
	Contingencies	\$9,500
	Total Estimate:	\$47,500

9	2.2 Yates St. and W. 91st Ave	
	Striping	\$10,500
	Signing	\$24,500
	Sidewalk	\$14,000
	Lump sum items	\$13,500
	Contingencies	\$18,500
	Total Estimate:	\$81,000

10	East Sidewalk	
	Sidewalk	\$15,000
	Lump sum items	\$87,000
	Retaining Wall	\$306,500
	Contingencies	\$123,000
	Total Estimate:	\$531,500

11	West Sidewalk	
	Sidewalk	\$12,500
	Lighting	\$2,500
	Retaining Wall	\$106,000
	Lump sum items	\$33,000
	Contingencies	\$46,000
	Total Estimate:	\$200,000

12	Promenade Sidepath Upgrade	
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Sidewalk	\$71,500
Lump sum items	\$19,500
Contingencies	\$27,500
Total Estimate:	\$118,500

13 **2.3 92nd and Xavier St**

Striping	\$20,500
HAWK Signal	\$80,000
Sidewalk	\$26,000
Lump sum items	\$34,000
Contingencies	\$48,000
Total Estimate:	\$208,500

13 **92nd and Xavier St Signal**

Striping	\$24,500
Sidewalk	\$21,500
Traffic Signal	\$227,000
Lump sum items	\$74,000
Contingencies	\$104,000
Total Estimate:	\$451,000

**ENGINEER'S OPINION OF PROBABLE BUDGET
US 36 and Sheridan Blvd EB On-ramp**

ITEM	UNIT	UNIT COST	QUANTITY	COST	REMARKS
					Costs from Westminster 2014 HSIP Application Bikeway Safety Improvements
STRIPING					
Yield Lines (Thermoplastic)	SF	\$15.00	28	\$420	
White Channelizing Lines	SF	\$15.00	150	\$2,250	
Continental Crosswalk Markings	SF	\$15.00	140	\$2,100	
Grooved Rumble Strip	EA	\$1,500.00	2	\$3,000	
				\$7,770	
SIGNING					
Pedestrian Crossing Advance Warning Sign	EACH	\$170.00	1	\$170	W11-15 plus Ahead Plaque
Rectangular Raping Flash Beacon	EACH	\$6,000.00	2	\$12,000	
				\$12,170	
SUBTOTAL OF BID CONSTRUCTION ITEMS:				\$19,940	
Utilities	LS	1%		\$199	
Drainage	LS	2%		\$399	
Erosion Control	LS	2%		\$399	
Miscellaneous	LS	5%		\$997	
Mobilization	LS	5%		\$997	
Phasing & Traffic Control	LS	10%		\$1,994	
Survey	LS	1%		\$199	
Bid Force Account	LS	1%		\$199	
SUBTOTAL LUMP SUM ITEMS:				\$5,384	
TOTAL OF BID CONSTRUCTION ITEMS:				\$25,324	
Contingencies	LS	30%		\$7,597.14	
TOTAL PROJECT COST ESTIMATE:				\$32,921	

Notes: Contingencies include associated earthwork, minor resets and adjustments and any other miscellaneous work

ENGINEER'S OPINION OF PROBABLE BUDGET

1.5 US 36 and Sheridan WB On-ramp

ITEM	UNIT	UNIT COST	QUANTITY	COST	REMARKS
					Costs from Westminster 2014 HSIP Application Bikeway Safety Improvements
Striping					
Yield Lines (Thermoplastic)	SF	\$15.00	25	\$375	
White Channelizing Lines	SF	\$15.00	150	\$2,250	
Continental Crosswalk Markings	SF	\$15.00	125	\$1,875	
Grooved Rumble Strip	EA	\$1,500.00	2	\$3,000	CDOT M-614-1
Edge Line Markings (8 IN)	SF	\$15.00	200	\$3,000	
				\$10,500	
Signing					
Pedestrian Crossing Advance Warning Sign	EACH	\$170.00	1	\$170	W11-15 plus Ahead Plaque
Rectangular Raping Flash Beacon	EACH	\$6,000.00	2	\$12,000	
				\$12,170	
SUBTOTAL OF BID CONSTRUCTION ITEMS:				\$22,670	
Utilities	LS	1%		\$227	
Drainage	LS	2%		\$453	
Erosion Control	LS	2%		\$453	
Miscellaneous	LS	5%		\$1,134	
Mobilization	LS	5%		\$1,134	
Phasing & Traffic Control	LS	10%		\$2,267	
Survey	LS	1%		\$227	
Bid Force Account	LS	1%		\$227	
SUBTOTAL LUMP SUM ITEMS:				\$6,121	
TOTAL OF BID CONSTRUCTION ITEMS:				\$28,791	
Contingencies	LS	30%		\$8,637.27	
TOTAL PROJECT COST ESTIMATE:				\$37,428	

Notes: Contingencies include associated earthwork, minor resets and adjustments and any other miscellaneous work

**ENGINEER'S OPINION OF PROBABLE BUDGET
1.6 US 36 and Sheridan, WB Off-ramp**

ITEM	UNIT	UNIT COST	QUANTITY	COST	REMARKS
					Costs from Westminster HSIP Application_Bikeway Safety Improvements Unless Noted
Striping					
Yield Lines (Thermoplastic)	SF	\$15.00	42	\$630	
White Channelizing Lines	SF	\$15.00	300	\$4,500	
Continental Crosswalk Markings	SF	\$15.00	210	\$3,150	
Edge Line Markings (8 IN)	SF	\$15.00	200	\$3,000	
				\$11,280	
Signing					
Pedestrian Crossing Advance Warning Sign	EACH	\$170.00	2	\$340	W11-15 plus Ahead Plaque
Rectangular Raping Flash Beacon	EACH	\$6,000.00	6	\$36,000	
				\$36,340	
SUBTOTAL OF BID CONSTRUCTION ITEMS:				\$47,620	
Utilities	LS	1%		\$476.20	
Drainage	LS	2%		\$952.40	
Erosion Control	LS	2%		\$952.40	
Miscellaneous	LS	5%		\$2,381.00	
Mobilization	LS	5%		\$2,381.00	
Phasing & Traffic Control	LS	10%		\$4,762.00	
Survey	LS	1%		\$476.20	
Bid Force Account	LS	1%		\$476.20	
SUBTOTAL LUMP SUM ITEMS:				\$12,857	
TOTAL OF BID CONSTRUCTION ITEMS:				\$60,477	
Contingencies	LS	30%		\$18,143.22	
TOTAL PROJECT COST ESTIMATE:				\$78,621	

Notes: Contingencies include associated earthwork, minor resets and adjustments and any other miscellaneous work

**ENGINEER'S OPINION OF PROBABLE BUDGET
1.7 US 36 and Federal, WB OFR**

ITEM	UNIT	UNIT COST	QUANTITY	COST	REMARKS
					Costs from Westminster HSIP Application Bikeway Safety Improvements Unless Noted
Striping					
Yield Lines (Thermoplastic)	SF	\$15.00	15	\$225	
Continental Crosswalk Markings	SF	\$15.00	75	\$1,125	
Edge Line Markings (8 In)	SF	\$15.00	470	\$7,050	
				\$8,400	
Signing					
Pedestrian Crossing Advanced Warning Sign	EACH	\$170.00	1	\$170	W11-15 plus Ahead Plaque
Pedestrian Crossing Warning Sign	EACH	\$170.00	3	\$510	
				\$680	
SUBTOTAL OF BID CONSTRUCTION ITEMS:				\$9,080	
Utilities	LS	1%		\$90.80	
Drainage	LS	2%		\$181.60	
Erosion Control	LS	2%		\$181.60	
Miscellaneous	LS	5%		\$454.00	
Mobilization	LS	5%		\$454.00	
Phasing & Traffic Control	LS	10%		\$908.00	
Survey	LS	1%		\$90.80	
Bid Force Account	LS	1%		\$90.80	
SUBTOTAL LUMP SUM ITEMS:				\$2,452	
TOTAL OF BID CONSTRUCTION ITEMS:				\$11,532	
Contingencies	LS	30%		\$3,459.48	
TOTAL PROJECT COST ESTIMATE:				\$14,991	

**ENGINEER'S OPINION OF PROBABLE BUDGET
1.8 US 36 and Federal, EB OFR**

ITEM	UNIT	UNIT COST	QUANTITY	COST	REMARKS
					Costs from Westminster HSIP Application Bikeway Safety Improvements Unless Noted
STRIPING					
White Channelizing Lines	SF	\$15.00	250	\$3,750	
Continental Crosswalk Markings	SF	\$15.00	75	\$1,125	
Edge Line Markings (8 In)	SF	\$15.00	400	\$6,000	
				\$10,875	
SIGNING					
Pedestrian Crossing Advance Warning Sign	EACH	\$170.00	1	\$170	
Pedestrian Crossing Warning Sign	EACH	\$170.00	2	\$340	
				\$510	
SUBTOTAL OF BID CONSTRUCTION ITEMS:				\$11,385	
Utilities	LS	1%		\$113.85	
Drainage	LS	2%		\$227.70	
Erosion Control	LS	2%		\$227.70	
Miscellaneous	LS	5%		\$569.25	
Mobilization	LS	5%		\$569.25	
Phasing & Traffic Control	LS	10%		\$1,138.50	
Survey	LS	1%		\$113.85	
Bid Force Account	LS	1%		\$113.85	
SUBTOTAL LUMP SUM ITEMS:				\$3,074	
TOTAL OF BID CONSTRUCTION ITEMS:				\$14,458.95	
Contingencies	LS	30%		\$4,337.69	
TOTAL PROJECT COST ESTIMATE:				\$18,797	

**ENGINEER'S OPINION OF PROBABLE BUDGET
1.9 US 36 and Federal EB ONR**

ITEM	UNIT	UNIT COST	QUANTITY	COST	REMARKS
					Costs from Westminster HSIP Application_Bikeway Safety Improvements Unless Noted
Striping					
Yield Lines (Thermoplastic)	SF	\$15.00	21	\$315	
White Channelizing Lines	SF	\$15.00	210	\$3,150	
Continental Crosswalk Markings	SF	\$15.00	105	\$1,575	
Edge Line Markings (8 In)	SF	\$15.00	340	\$5,100	
				\$10,140	
Signing					
Pedestrian Crossing Advance Warning Sign	EACH	\$170.00	1	\$170	
Rectangular Raping Flash Beacon	EACH	\$6,000.00	2	\$12,000	
				\$12,170	
SUBTOTAL OF BID CONSTRUCTION ITEMS:				\$22,310	
Utilities	LS	1%		\$223.10	
Drainage	LS	2%		\$446.20	
Erosion Control	LS	2%		\$446.20	
Miscellaneous	LS	5%		\$1,115.50	
Mobilization	LS	5%		\$1,115.50	
Phasing & Traffic Control	LS	10%		\$2,231.00	
Survey	LS	1%		\$223.10	
Bid Force Account	LS	1%		\$223.10	
SUBTOTAL LUMP SUM ITEMS:				\$6,024	
TOTAL OF BID CONSTRUCTION ITEMS:				\$28,334	
Contingencies	LS	30%		\$8,500.11	
TOTAL PROJECT COST ESTIMATE:				\$36,834	

ENGINEER'S OPINION OF PROBABLE BUDGET

2.1 Yates St. and 88th PI

ITEM	UNIT	UNIT COST	QUANTITY	COST	REMARKS
					Costs from Westminster HSIP Application_Bikeway Safety Improvements Unless Noted
Striping					
Continental Crosswalk	SF	\$15.00	1,010	\$15,150	
Stop Bar	SF	\$15.00	116	\$1,740	
				\$16,890	
Signing					
Rectangular Raping Flash Beacon	EACH	\$6,000.00	4	\$24,000	
				\$24,000	
Concrete Sidewalk (6in)	SY	\$49.00	1,600	\$78,400	Modify curb radii 608-00006
Curb Ramp	EA	\$1,500.00	4	\$6,000	
Detectable Warning Surface	EA	\$73.00	4	\$292	
				\$84,692	
TOTAL OF BID CONSTRUCTION ITEMS:				\$119,290	
Utilities	LS	1%		\$1,200	
Drainage	LS	2%		\$2,400	
Erosion Control	LS	2%		\$2,400	
Mobilization	LS	5%	1	\$0	
Phasing & Traffic Control	LS	5%	1	\$0	
Survey	LS	10%		\$11,900	
Bid Force Account	LS	1%		\$1,200	
		1%	MP SUM ITEMS:	\$19,100	
TOTAL OF BID CONSTRUCTION ITEMS:				\$138,390	
Contingencies	LS	30%		\$41,517.03	
TOTAL PROJECT COST ESTIMATE:				\$179,907	

ENGINEER'S OPINION OF PROBABLE BUDGET
2.1 Yates St. and 88th PI AWS

ITEM	UNIT	UNIT COST	QUANTITY	COST	REMARKS
					Costs from Westminster HSIP Application Bikeway Safety Improvements Unless Noted
Striping					
Continental Crosswalk	SF	\$15.00	1,010	\$15,150	
Stop Bar	SF	\$15.00	116	\$1,740	
				\$16,890	
Signing					
Stop Sign	EACH	\$170.00	4	\$680	
				\$680	
Concrete Sidewalk (6in)	SY	\$49.00	178	\$8,722	Modify curb radii 608-00006
Curb Ramp	EA	\$1,500.00	4	\$6,000	
Detectable Warning Surface	EA	\$73.00	4	\$292	
				\$15,014	
TOTAL OF BID CONSTRUCTION ITEMS:				\$26,292	
Utilities	LS	1%		\$300	
Drainage	LS	2%		\$500	
Erosion Control	LS	2%		\$500	
Mobilization	LS	5%	1	\$0	
Phasing & Traffic Control	LS	5%	1	\$0	
Survey	LS	10%		\$2,600	
Bid Force Account	LS	1%		\$300	
SUBTOTAL LUMP SUM ITEMS:				\$4,200	
TOTAL OF BID CONSTRUCTION ITEMS:				\$30,492	
Contingencies	LS	30%		\$9,147.63	
*TOTAL PROJECT COST ESTIMATE:				\$39,640	

*Total Cost Estimate does not include striping for buffered bicycle facility on Yates

ENGINEER'S OPINION OF PROBABLE BUDGET
2.2 Yates St. and W. 91st Ave

ITEM	UNIT	UNIT COST	QUANTITY	COST	REMARKS
					Costs from Westminster HSIP Application_Bikeway Safety Improvements Unless Noted
REMOVALS					
ELIM. TREES	SF	\$0.00	0	\$0	CDOT 202-00010 WEIGHTED AVERAGE OF THE YEAR
				\$0	
STRIPING					
Transverse Crosswalk Lines	SF	\$15.00	70	\$1,050	75' X 8" X 2
Continental Crosswalk Marking	SF	\$15.00	360	\$5,400	24 IN. X 120 IN X 10'
Stop Bar	SF	\$15.00	42	\$630	22 FT X 24 IN
Patterned Crosswalk	SF	\$15.00	210	\$3,150	Conservative estimate based on assumption that traffic paint cost less than thermoplastic. (6' wide)
				\$10,230	
SIDEWALK,CURB, RAMPS ETC.					
Curb Ramp	EA	\$1,500.00	4	\$6,000	
Detectable Warning Surface	EA	\$73.00	3	\$219	CDOT 608-00016
Concrete Sidewalk (6 IN.)	SY	\$49.00	89	\$4,361	608-00006 Extend curb ramp to reduce curb radius
Curb and Gutter	SL	\$2,000.00	1	\$2,000	
Median Cover Material (Stone)	SF	\$25.00	42	\$1,050	610-00055
				\$13,630	
SIGNING					
Advance Pedestrian Crossing Warning(W 11-15 + W16-9P)	EACH	\$170.00	2	\$340	
Rectangular Rapid Flashing Beacon	EACH	\$6,000.00	4	\$24,000	
				\$24,340	
SUBTOTAL OF BID CONSTRUCTION ITEMS:				\$48,200	
Utilities	LS	1%		\$482.00	
Drainage	LS	2%		\$964.00	
Erosion Control	LS	2%		\$964.00	
Miscellaneous	LS	5%		\$2,410.00	
Mobilization	LS	5%		\$2,410.00	
Phasing & Traffic Control	LS	10%		\$4,820.00	
Survey	LS	1%		\$482.00	
Bid Force Account	LS	1%		\$482.00	
SUBTOTAL LUMP SUM ITEMS:				\$13,014	
TOTAL OF BID CONSTRUCTION ITEMS:				\$61,214	
Contingencies	LS	30%		\$18,364.20	
TOTAL PROJECT COST ESTIMATE:				\$79,578	

ENGINEER'S OPINION OF PROBABLE BUDGET

2.3 92nd and Xavier St

ITEM	UNIT	UNIT COST	QUANTITY	COST	REMARKS
					Costs from Westminster HSIP Application_Bikeway Safety Improvements Unless Noted
Striping					
Transverse Crosswalk Lines	SF	\$15.00	100	\$1,500	12" stop bar
Continental Crosswalk Lines	SF	\$15.00	665	\$9,975	
Stop Bar	SF	\$15.00	270	\$4,050	
Patterned Crosswalk	SF	\$15.00	300	\$4,500	Conservative estimate based on assumption that traffic paint cost less than thermoplastic. (5' wide)
				\$20,025	
Sidewalk					
Curb Ramp	EA	\$1,500.00	4	\$6,000	
Detectable Warning Surface	EA	\$73.00	4	\$292	CDOT 608-00016
Concrete Sidewalk (6 IN)	SY	\$49.00	400	\$19,600	608-00006 Extend curb ramp to reduce curb radius
				\$25,892	
SIGNING					
Pedestrian Hybrid Beacon	EACH	\$80,000.00	1	\$80,000	RITA FHWA
				\$80,000	
SUBTOTAL OF BID CONSTRUCTION ITEMS:				\$125,917	
Utilities	LS	1%		\$1,259.17	
Drainage	LS	2%		\$2,518.34	
Erosion Control	LS	2%		\$2,518.34	
Miscellaneous	LS	5%		\$6,295.85	
Mobilization	LS	5%		\$6,295.85	
Phasing & Traffic Control	LS	10%		\$12,591.70	
Survey	LS	1%		\$1,259.17	
Bid Force Account	LS	1%		\$1,259.17	
SUBTOTAL LUMP SUM ITEMS:				\$33,998	
TOTAL OF BID CONSTRUCTION ITEMS:				\$159,915	
Contingencies	LS	30%		\$47,974.38	
TOTAL PROJECT COST ESTIMATE:				\$207,889	

**ENGINEER'S OPINION OF PROBABLE BUDGET
92nd and Xavier St Signal**

ITEM	UNIT	UNIT COST	QUANTITY	COST	REMARKS
Costs from CDOT 2015 and 2016 Average Bid Prices Unless Noted					
Striping					
Striping for Patterned Crosswalk Lines	SF	\$15.00	100	\$1,500	HSIP Application
92nd and Xavier Crosswalk Lines	SF	\$15.00	680	\$10,200	HSIP Application
Stop Bar	SF	\$15.00	270	\$4,050	HSIP Application
Patterned Crosswalk	SF	\$25.00	300	\$7,500	
4" Double Line Yellow	SF	\$15.00	53	\$800	80 ft. Double Yellow Line along Xavier St. north of intersection
				\$24,050	
Sidewalks					
Curb Ramp	EA	\$1,500.00	8	\$12,000	HSIP Application; assumes no change to eastern curb ramps and no additional crosswalk
Detectable Warning Surface	EA	\$73.00	8	\$584	CDOT 608-00016; assumes no change to eastern curb ramps and no additional crosswalk
Concrete Sidewalk (6 IN)	SY	\$49.00	180	\$8,820	608-00006 Extend curb ramp to reduce curb radius
				\$21,404	
Traffic Signal					
Remove Luminaire	EA	\$235.00	2	\$470	202-00750
2 Inch Electrical Conduit (Bored)	LF	\$20.00	250	\$5,000	613-00206
3 Inch Electrical Conduit (Bored)	LF	\$30.00	250	\$7,500	613-00306
Drilled Caisson (36 Inch)	LF	\$550.00	30	\$16,500	503-00036
Drilled Caisson (42 Inch)	LF	\$650.00	34	\$22,100	503-00042
Pull Box (30" x 48" x 24")	EA	\$2,000.00	1	\$2,000	613-07040
Pull Box (24" x 36" x 24")	EA	\$1,600.00	4	\$6,400	613-07023
Wiring	LS	\$5,000.00	1	\$5,000	613-10000
Traffic Signal Face (12 -12-12)	EA	\$850.00	8	\$6,800	614-70336
Traffic Signal Face (12 -12-12-12)	EA	\$1,150.00	4	\$4,600	614-70448
Intersection Detection System (Camera)	EA	\$8,900.00	4	\$35,600	614-72886
Traffic Signal Controller and Cabinet	EA	\$18,000.00	1	\$18,000	614-75855 (201520938 - City of Denver Ramp 141 Colfax Corridor Traffic Signal Upgrade Bid Tab)
Traffic Signal-Light Pole (1-40 Ft)	EA	\$15,500.00	2	\$31,000	614-81140
Traffic Signal-Light Pole (1-50 Ft)	EA	\$18,200.00	2	\$36,400	614-81150
Illuminated Street Name Sign	EA	\$750.00	4	\$3,000	614-00014
Pedestrian Signal Face (16)(Countdown)	EA	\$600.00	8	\$4,800	614-70150 (Engr's Est. CDOT BID 19906)
Pedestrian Push Button	EA	\$830.00	8	\$6,640	614-72860
Furnish and Install Electrical Service	EA	\$15,000.00	1	\$15,000	614-75855 (201520938 - City of Denver Ramp 141 Colfax Corridor Traffic Signal Upgrade Bid Tab)
				\$226,810.00	
SUBTOTAL OF BID CONSTRUCTION ITEMS:				\$272,264	
Utilities	LS	1%		\$2,722.64	
Drainage	LS	2%		\$5,445.28	
Erosion Control	LS	2%		\$5,445.28	
Miscellaneous	LS	5%		\$13,613.20	
Mobilization	LS	5%		\$13,613.20	
Phasing & Traffic Control	LS	10%		\$27,226.40	
Survey	LS	1%		\$2,722.64	
Bid Force Account	LS	1%		\$2,722.64	
SUBTOTAL LUMP SUM ITEMS:				\$73,511	
TOTAL OF BID CONSTRUCTION ITEMS:				\$345,775	
Contingencies	LS	30%		\$103,732.58	
TOTAL PROJECT COST ESTIMATE:				\$449,508	

ENGINEER'S OPINION OF PROBABLE BUDGET

East Sidewalk

ITEM	UNIT	UNIT COST	QUANTITY	COST	REMARKS
					Costs from Westminster 2014 HSIP Application, Bikeway Safety Improvements
REMOVALS					
ELIM. TREES	SF	\$380.00	2	\$760	CDOT 202-00010 WEIGHTED AVERAGE OF THE YEAR
				\$760	
SIDEWALK,CURB, RAMPS ETC.					
Curb Ramp	EA	\$1,500.00	1	\$1,500	
Detectable Warning Surface	EA	\$73.00	1	\$73	CDOT 608-00016
Concrete Sidewalk (6IN)	SY	\$49.00	267	\$13,083	608-00006 300 FT X 8 FT S/WALK
				\$14,656	
Sand Fill	CY	\$11.26	790	\$8,895	207-0025 Top soil
Concrete CL D (Wall)	CY	\$668.00	130	\$86,840	601-03050 (2016)
Gravel Fill	TON	\$26.00	217	\$5,642	304-06000 ABC CL6
Drainage Pipe	LF	\$38.18	350	\$13,363	12IN PIPE 624-20012 (NONE FOR 4") + Replace exist channel w/ culvert
Cut Stone Veneer	SF	\$101.41	1,890	\$191,665	
				\$306,405	
SUBTOTAL OF BID CONSTRUCTION ITEMS:				\$321,821	
Utilities	LS	1%		\$3,218.21	
Drainage	LS	2%		\$6,436.43	
Erosion Control	LS	2%		\$6,436.43	
Miscellaneous	LS	5%		\$16,091.07	
Mobilization	LS	5%		\$16,091.07	
Phasing & Traffic Control	LS	10%		\$32,182.13	
Survey	LS	1%		\$3,218.21	
Bid Force Account	LS	1%		\$3,218.21	
SUBTOTAL LUMP SUM ITEMS:				\$86,892	
TOTAL OF BID CONSTRUCTION ITEMS:				\$408,713	
Contingencies	LS	30%		\$122,613.92	
TOTAL PROJECT COST ESTIMATE:				\$531,327	

ENGINEER'S OPINION OF PROBABLE BUDGET

West Sidewalk

ITEM	UNIT	UNIT COST	QUANTITY	COST	REMARKS
					Costs from Westminster 2014 HSIP Application_Bikeway Safety Improvements
SIDEWALK,CURB, RAMPS ETC.					
Curb Ramp	EA	\$1,500.00	1	\$1,500	
Detectable Warning Surface	EA	\$73.00	1	\$73	CDOT 608-00016
Concrete Sidewalk (6IN)	SY	\$49.00	222	\$10,878	608-00006 300 FT X 8 FT S/WALK
				\$12,451	
Luminaires	EA	\$1,250.00	2	\$2,500	613-13000
Sand Fill	CY	\$11.26	28	\$315	207-0025 Top soil
Concrete CL D (Wall)	CY	\$668.00	44	\$29,392	601-03050 (2016)
Gravel Fill	TON	\$26.00	67	\$1,742	304-06000 ABC CL6
Drainage Pipe	LF	\$38.18	170	\$6,491	12IN PIPE 624-20012 (NONE FOR 4") (Length of wall)
Cut Stone Veneer	SF	\$101.41	667	\$67,640	
				\$105,580	
SUBTOTAL OF BID CONSTRUCTION ITEMS:				\$120,531	
Utilities	LS	1%		\$1,205.31	
Drainage	LS	2%		\$2,410.63	
Erosion Control	LS	2%		\$2,410.63	
Miscellaneous	LS	5%		\$6,026.57	
Mobilization	LS	5%		\$6,026.57	
Phasing & Traffic Control	LS	10%		\$12,053.14	
Survey	LS	1%		\$1,205.31	
Bid Force Account	LS	1%		\$1,205.31	
SUBTOTAL LUMP SUM ITEMS:				\$32,543	
TOTAL OF BID CONSTRUCTION ITEMS:				\$153,075	
Contingencies	LS	30%		\$45,922.44	
TOTAL PROJECT COST ESTIMATE:				\$198,997	

ENGINEER'S OPINION OF PROBABLE BUDGET
Promenade Sidepath Upgrade

ITEM	UNIT	UNIT COST	QUANTITY	COST	REMARKS
					Costs from Westminster 2014 HSIP Application, Bikeway Safety Improvements
Sidewalk					
Concrete Sidewalk (6IN)	SY	\$49.00	1,444	\$70,756	608-00006 300 FT X 10FT S/WALK
12 IN Drainage pipe	LF	\$24.00	20	\$480	624-20012
				\$71,236	
SUBTOTAL OF BID CONSTRUCTION ITEMS:				\$71,236	
Utilities	LS	1%		\$712.36	
Drainage	LS	2%		\$1,424.72	
Erosion Control	LS	2%		\$1,424.72	
Miscellaneous	LS	5%		\$3,561.80	
Mobilization	LS	5%		\$3,561.80	
Phasing & Traffic Control	LS	10%		\$7,123.60	
Survey	LS	1%		\$712.36	
Bid Force Account	LS	1%		\$712.36	
SUBTOTAL LUMP SUM ITEMS:				\$19,234	
TOTAL OF BID CONSTRUCTION ITEMS:				\$90,470	
Contingencies	LS	30%		\$27,140.92	
TOTAL PROJECT COST ESTIMATE:				\$117,611	