

West Reserve Drive: Hutton Ranch Rd. to Whitefish Stage Rd. Intersection

Growth Rate Information

Sources: Average Daily Traffic Volumes (2000-2019)

Source: West Reserve Drive Corridor Planning Study, October 2021

Annual average growth rate: 2.40%

Table 3: Historic AADT and Growth Rate

Count Site	2000 AADT	2019 AADT	Growth Rate		
			2000-2009	2010-2019	2000-2019
W. Reserve Dr., west of Country Way	10,700	19,853	5.2%	1.5%	3.1%
W. Reserve Dr., west of Whitefish Stage Rd.	13,230	18,323	2.3%	1.4%	1.6%
W. Reserve Dr., east of Whitefish Stage Rd.	8,730	13,574	3.8%	1.0%	2.2%
W. Reserve Dr., west of US 2	9,340	15,281	2.6%	2.7%	2.5%
Average Growth Rate for W. Reserve Count Sites			3.4%	1.7%	2.4%

Figure 8 shows the data graphically. The recommended 2.4% growth rate is also consistent with growth rates used for other planning-level studies in the area. The Kalispell Move 2040 Transportation plan projects 2.4% annual growth in households in the Kalispell area and 1.9% annual growth in employment over the next 20 years.

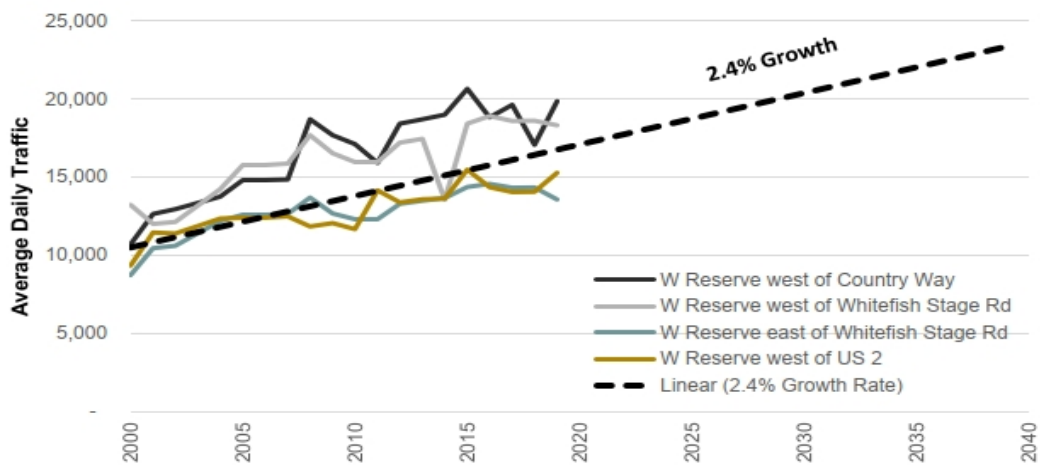


Figure 8: Average Daily Traffic Volumes (2000-2019)

24-Hr Volume Estimates

Sources: Source: West Reserve Drive Corridor Planning Study, Appendix 2

4.4 COVID Traffic Impacts

A 12-hour traffic count was collected at each study intersection during October 13th-15th, 2020. This count data was compared to recent historic counts (count dates shown in Table 6), to understand how the COVID-19 pandemic has impacted existing traffic volumes. The historic counts were collected by MDT over a 48-hour period and represent typical traffic conditions (i.e., typical weekday traffic while school was in session). Attachment 1 provides a summary of historic and October 2020 count data.

Figure 10 compares the traffic volume profile for historic traffic counts versus October 2020 traffic counts at the three intersections. The historic 48-hour traffic count data was averaged across the two weekdays and is shown as a dashed line in the figure.

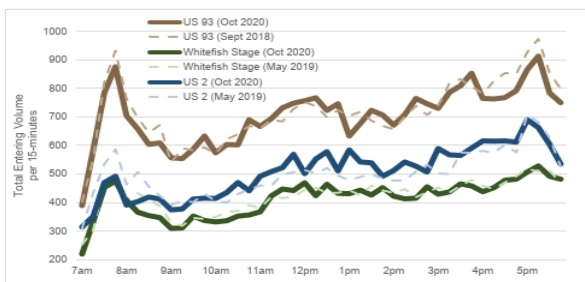


Figure 10: Comparison of Historic vs October 2020 Traffic Counts

From 8:00-9:00 am, October 2020 traffic volumes are lower at all three intersections. From 5-6pm, existing and historic volumes are about the same at Whitefish Stage Rd. and US 2 while US 93 has lower volumes compared to historic data.

The highest hourly volumes generally occurred from 7:30-8:30 am for the AM peak hour and 4:45-5:45 pm for the PM peak hour. Table 7 takes a closer look at total entering volume (TEV) during the AM and PM peak hours and the percent change observed.

	Start	End
AM peak hour:	7:30 AM	8:30 AM
PM peak hour:	4:45 PM	5:45 PM

Int ID	Intersection	AM PEAK HOUR		PM PEAK HOUR	
		2020 TEV	% of Day	2020 TEV	% of Day
1	W Reserve/US 93	3185	8.190%	3570	8.964%
2	W Reserve/Home Depot	1712	7.126%	1765	8.409%
3	W Reserve/Hutton Ranch	1632	7.126%	1895	8.409%
4	W Reserve/Country Way	1620	6.063%	1900	7.853%
5	W Reserve/Country Way N	1566	6.360%	1666	7.625%
6	W Reserve/Whitefish Stage	1850	6.360%	2040	7.625%

TEV - total entering volume

Average:	6.871%	Average:	8.147%
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West Reserve Drive: Hutton Ranch Rd. to Whitefish Stage Rd. Intersection

2025 Traffic Volumes, AM and PM Peak Hour

Notes: These volumes have not been seasonally adjusted
 Intersection turning movement volumes were field-collected in 2018, 2019, and 2020.
 Existing year (2020) volumes were grown to base year 2025 assuming an annual growth rate of 2.4%.
 Source: West Reserve Drive Corridor Planning Study, Appendix 2

2020 Traffic Volumes, from West Reserve Corridor Study, Oct 2021		AM PEAK HOUR											PM PEAK HOUR												
Int ID	Intersection	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
1	W Reserve/US 93	30	295	180	125	480	360	400	415	40	335	385	140	120	645	275	120	460	415	350	215	75	325	450	120
2	W Reserve/Home Depot	10	1	30	15	1	70	85	590	45	30	780	55	25	5	80	35	5	100	95	455	60	60	770	75
3	W Reserve/Hutton Ranch	15		60					625	7	75	850	55	25		240					545	25	180	880	
4	W Reserve/Country Way	30	0	4	0	0	7	4	645	35	3	890	2	10	0	1	0	0	1	0	710	125	3	1050	0
5	W Reserve/Country Way N	1		3					610	0	2	950		0	0	0					710	1	0	955	
6	W Reserve/Whitefish Stage	230	65	20	25	100	110	30	415	170	35	615	35	220	75	20	45	125	135	80	555	120	40	600	25

2025 Traffic Volumes, apply 2.4% annual growth to 2020 volumes		AM PEAK HOUR											PM PEAK HOUR												
Int ID	Intersection	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
1	W Reserve/US 93	35	335	205	145	545	410	455	470	50	380	435	160	140	730	310	140	520	470	395	245	85	370	510	140
2	W Reserve/Home Depot	15	5	35	20	5	80	100	665	55	35	880	65	30	10	95	40	10	115	110	515	70	70	875	85
3	W Reserve/Hutton Ranch	20		70					705	10	85	960	55	30		275					620	30	205	1000	
4	W Reserve/Country Way	35	0	5	0	0	10	5	730	40	5	1005	5	15	0	5	0	0	5	0	800	145	5	1185	0
5	W Reserve/Country Way N	5		5					695	0	5	1070		0		0					800	5	0	1085	
6	W Reserve/Whitefish Stage	260	75	25	30	115	125	35	470	195	40	690	40	250	85	25	55	145	155	95	625	140	50	680	30

West Reserve Drive: Hutton Ranch Rd. to Whitefish Stage Rd. Intersection

2045 Traffic Volumes, AM and PM Peak Hour

Notes: These volumes have not been seasonally adjusted
 Future year (2040) volumes were grown to year 2045 assuming an annual growth rate of 2.4%.
 Source: West Reserve Drive Corridor Planning Study, Appendix 2

2040 Traffic Volumes, from West Reserve Corridor Study, Oct 2021																									
Int ID	Intersection	AM PEAK HOUR												PM PEAK HOUR											
		NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
1	W Reserve/US 93	50	475	390	200	770	580	645	665	65	540	615	225	195	1035	440	195	740	665	560	345	120	520	725	195
2	W Reserve/Home Depot	15	2	50	25	2	110	135	950	70	50	1255	90	40	10	130	55	10	160	155	730	95	95	1240	120
3	W Reserve/Hutton Ranch	25	0	95	0	0	10	5	1015	10	120	1370	4	40	0	385	0	0	2	0	875	40	290	1415	0
4	W Reserve/Country Way	50	0	5	0	0	10	5	1050	55	5	1430	0	15	0	2	0	0	2	0	1140	200	5	1685	0
5	W Reserve/Country Way N	2	0	5	0	0	10	5	980	0	4	1530	0	0	0	0	0	0	0	0	1140	2	0	1535	0
6	W Reserve/Whitefish Stage	370	105	30	40	160	175	50	660	275	55	990	55	355	120	30	70	200	215	130	890	195	65	965	40

2045 Traffic Volumes, apply 2.4% annual growth to 2040 volumes																									
Int ID	Intersection	AM PEAK HOUR												PM PEAK HOUR											
		NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
1	W Reserve/US 93	60	535	330	230	870	655	730	745	75	610	695	255	220	1170	500	220	835	750	635	390	140	590	820	220
2	W Reserve/Home Depot	20	5	60	30	5	125	155	1070	80	60	1415	105	50	15	150	65	15	185	175	825	110	110	1395	140
3	W Reserve/Hutton Ranch	30	0	110	0	0	15	10	1145	15	140	1550	5	50	0	435	0	0	5	0	990	50	330	1595	0
4	W Reserve/Country Way	60	0	10	0	0	15	10	1180	65	10	1615	5	20	0	5	0	0	5	0	1285	230	10	1900	0
5	W Reserve/Country Way N	5	0	10	0	0	15	10	1105	0	5	1725	0	0	0	0	0	0	0	0	1285	5	0	1730	0
6	W Reserve/Whitefish Stage	420	120	35	50	185	200	60	745	310	65	1110	65	400	140	35	80	230	245	150	1005	220	75	1085	50

West Reserve Drive: Hutton Ranch Rd. to Whitefish Stage Rd. Intersection
Traffic Operations Results - Intersection improvements at Hutton Ranch and Whitefish Stage

	YEAR 2025			YEAR 2045		
	2025 Base			2045 Base		
	AM	PM	24-hr estimate ¹	AM	PM	24-hr estimate ¹
Travel Time (hr)	215	306	3,436	1,357	1,802	20,929
Total Delay (hr)	105	158	1,733	534	687	8,096
Fuel Used (gal)	170	206	2,499	440	558	6,624

	2025 With Project ²			2045 With Project ²		
	AM	PM	24-hr estimate ¹	AM	PM	24-hr estimate ¹
Travel Time (hr)	168	208	2,497	678	1,057	11,425
Total Delay (hr)	59	81	924	339	383	4,818
Fuel Used (gal)	162	191	2,347	345	448	5,259

¹ The 24-hr estimate is calculated based on the following formula:

Vehicle volumes counted in 2020 indicate AM peak hour traffic

volumes are approximately 6.9% of daily traffic and PM peak hour traffic volumes are approximately 8.1% of daily traffic.

² The project includes widening of West Reserve Drive between Hutton Ranch Road and Mission Trail from 3-lanes to 5-lanes, and improvements at 2 signalized intersections (Hutton Ranch Road, Whitefish Stage Road).

Fuel Savings & CO₂ Reduction
West Reserve Drive: Hutton Ranch Rd. to Whitefish Stage Rd. Intersection

	Fuel Saved (gallons)	Vehicle Fuel Price (Gasoline, \$2020) ¹	Vehicle Fuel Savings	CO ₂ Reduced (Metric Tons) ²	Social Cost of CO ₂ (2020\$/Metric Ton) ³	Value of CO ₂ Avoided
2022						
2023						
2024						
2025	51,435	\$2.52	\$129,512	457	\$56.00	\$25,598
2026	71,997	\$2.54	\$183,159	640	\$57.00	\$36,471
2027	92,559	\$2.57	\$238,230	823	\$58.00	\$47,709
2028	113,121	\$2.60	\$294,236	1,005	\$60.00	\$60,318
2029	133,683	\$2.62	\$350,252	1,188	\$61.00	\$72,470
2030	154,244	\$2.68	\$414,021	1,371	\$62.00	\$84,988
2031	174,806	\$2.77	\$484,135	1,554	\$63.00	\$97,871
2032	195,368	\$2.80	\$546,456	1,736	\$64.00	\$111,119
2033	215,930	\$2.82	\$608,840	1,919	\$65.00	\$124,733
2034	236,492	\$2.84	\$671,839	2,102	\$66.00	\$138,712
2035	257,054	\$2.85	\$732,842	2,284	\$67.00	\$153,057
2036	277,615	\$2.87	\$796,954	2,467	\$69.00	\$170,235
2037	298,177	\$2.89	\$861,200	2,650	\$70.00	\$185,493
2038	318,739	\$2.92	\$930,526	2,833	\$71.00	\$201,117
2039	339,301	\$2.92	\$990,911	3,015	\$72.00	\$217,106
2040	359,863	\$2.94	\$1,059,035	3,198	\$73.00	\$233,461
2041	380,425	\$2.96	\$1,126,475	3,381	\$74.00	\$250,182
2042	400,986	\$2.97	\$1,189,080	3,564	\$75.00	\$267,267
2043	421,548	\$2.99	\$1,262,277	3,746	\$77.00	\$288,465
2044	442,110	\$3.02	\$1,336,172	3,929	\$78.00	\$306,465
2045	462,672	\$3.05	\$1,411,149	4,112	\$79.00	\$324,829
Total	5,398,125		\$15,617,301	47,973		\$3,397,667

1. The forecasted gasoline fuel price is based on the EIA Annual Energy Outlook 2022, converted from 2021 dollars to 2020 dollars using the BEA Implicit Deflator.
2. For the CO₂ analysis, assumed 8,887 grams of CO₂ per gallon of gasoline based on factors provided by the EPA fact sheet EPA-420-F-14-040.
3. The US DOT BCA Guidance published in March 2022 listed the social cost of carbon per metric ton between \$52 and \$85, to be discounted at a 3% Discount Rate. .

2025 was used a baseline value for analysis purposes. Its value was not used in the BCA calculations as construction will be active and users will not realize the full emissions benefit until 2026.

Safety Benefits									
West Reserve Drive: Hutton Ranch Rd. to Whitefish Stage Rd. Intersection									
	Fatality and Injuries (Without Improvements)	Fatality and Injuries (With Improvements)	Fatality and Injuries (Net Change)	Value of Fatality/Injury Crash (2020\$)	PDO Crashes (Without Improvements)	PDO Crashes (With Improvements)	PDO Crashes (Net Change)	Value of PDO Crash (2020\$)	Value of Net Safety Benefits (2020\$)
2022									
2023									
2024									
2025	3.93	3.69	0.25	\$210,300	7	7	0.52	\$4,600	\$54,501
2026	4.05	3.80	0.26	\$210,300	8	7	0.54	\$4,600	\$56,237
2027	4.17	3.91	0.26	\$210,300	8	7	0.56	\$4,600	\$58,028
2028	4.30	4.02	0.27	\$210,300	8	8	0.57	\$4,600	\$59,876
2029	4.43	4.14	0.28	\$210,300	8	8	0.59	\$4,600	\$61,782
2030	4.56	4.27	0.29	\$210,300	9	8	0.61	\$4,600	\$63,749
2031	4.69	4.39	0.30	\$210,300	9	8	0.62	\$4,600	\$65,778
2032	4.83	4.52	0.31	\$210,300	9	8	0.64	\$4,600	\$67,872
2033	4.98	4.66	0.32	\$210,300	9	9	0.66	\$4,600	\$70,032
2034	5.13	4.80	0.33	\$210,300	10	9	0.68	\$4,600	\$72,260
2035	5.28	4.94	0.34	\$210,300	10	9	0.70	\$4,600	\$74,560
2036	5.44	5.09	0.35	\$210,300	10	9	0.72	\$4,600	\$76,931
2037	5.60	5.24	0.36	\$210,300	10	10	0.74	\$4,600	\$79,378
2038	5.77	5.39	0.37	\$210,300	11	10	0.76	\$4,600	\$81,903
2039	5.94	5.55	0.38	\$210,300	11	10	0.79	\$4,600	\$84,508
2040	6.12	5.72	0.40	\$210,300	11	10	0.81	\$4,600	\$87,195
2041	6.30	5.89	0.41	\$210,300	12	11	0.83	\$4,600	\$89,967
2042	6.49	6.06	0.42	\$210,300	12	11	0.86	\$4,600	\$92,827
2043	6.68	6.24	0.44	\$210,300	12	11	0.88	\$4,600	\$95,777
2044	6.88	6.43	0.45	\$210,300	13	12	0.91	\$4,600	\$98,821
2045	7.09	6.62	0.46	\$210,300	13	12	0.94	\$4,600	\$101,961
Total	112.64	105.39	7.25		209.39	194.43	14.95		\$1,593,943

For the safety analysis, the value of the fatality and injury crashes is "Injured (Severity Unknown)" and the value of PDO crashes are from the US DOT BCA Guidance published in March 2022.

Year	Fatalities & Injuries (Baseline)	PDO Crashes (Baseline)	Fatalities & Injuries (Proposed Improvements)	PDO Crashes (Proposed Improvements)
2024	3.82	7.22	3.58	6.71
2044	6.88	12.65	6.43	11.74
Annual Growth Rate	3%	3%	3%	3%

Element	2024 Baseline			2024 Proposed			2044 Baseline			2044 Proposed		
	Predicted Average Crash Frequency (crashes/year)			Predicted Average Crash Frequency (crashes/year)			Predicted Average Crash Frequency (crashes/year)			Predicted Average Crash Frequency (crashes/year)		
	Total	FI	PDO	Total	FI	PDO	Total	FI	PDO	Total	FI	PDO
Intersection 1	3.39	1.1	2.29	3.39	1.1	2.29	6.19	2.1	4.1	6.19	2.1	4.1
Intersection 2	1.35	0.52	0.83	0.74	0.52	0.83	2.17	0.88	1.29	1.19	0.88	1.29
Intersection 3	1.76	0.63	1.13	1.76	0.63	1.13	3.3	1.1	2.2	3.3	1.1	2.2
Intersection 4	1.13	0.42	0.71	0.62	0.42	0.71	1.7	0.66	1.04	0.93	0.66	1.04
Intersection 5	0.31	0.16	0.15	0.17	0.16	0.15	0.51	0.27	0.24	0.28	0.27	0.24
Intersection 6	3.1	0.99	2.11	2.35	0.75	1.6	5.65	1.87	3.78	4.29	1.42	2.87
Intersection Total	11.04	3.82	7.22	9.03	3.58	6.71	19.52	6.88	12.65	16.18	6.43	11.74

Pedestrian and Bicycle Benefits West Reserve Drive: Hutton Ranch Rd. to Whitefish Stage Rd. Intersection													
	Annual Bicycle Trips (Without Project)	Annual Bicycle Trips (With Project)	Net Change in Annual Bicycle Trips	Net Change in Annual Bicycle-Miles Traveled	Value of New Cycling Boulevard (2020\$)	Value of Induced Bicycle Trips (2020\$)	Annual Pedestrian Trips (Without Project)	Annual Pedestrian Trips (With Project)	Net Change in Annual Pedestrian Trips	Net Change in Annual Pedestrian-Miles Traveled	Value of New Sidewalk (2020\$)	Value of Induced Pedestrian Trips (2020\$)	Total Value of Bicyclist and Pedestrian Benefits (2020\$)
2022													
2023													
2024													
2025	12,379	39,797	27,419	27,419	\$7,129	\$173,012	12,123	21,306	9,184	9,184	\$1,837	\$65,021	\$246,998
2026	12,640	40,638	27,998	27,998	\$7,279	\$176,665	12,379	21,756	9,378	9,378	\$1,876	\$66,394	\$252,214
2027	12,907	41,496	28,589	28,589	\$7,433	\$180,396	12,640	22,216	9,576	9,576	\$1,915	\$67,796	\$257,540
2028	13,179	42,372	29,193	29,193	\$7,590	\$184,205	12,907	22,685	9,778	9,778	\$1,956	\$69,227	\$262,978
2029	13,458	43,267	29,809	29,809	\$7,750	\$188,095	13,179	23,164	9,984	9,984	\$1,997	\$70,689	\$268,531
2030	13,742	44,180	30,438	30,438	\$7,914	\$192,067	13,458	23,653	10,195	10,195	\$2,039	\$72,182	\$274,201
2031	14,032	45,113	31,081	31,081	\$8,081	\$196,122	13,742	24,152	10,410	10,410	\$2,082	\$73,706	\$279,992
2032	14,328	46,066	31,738	31,738	\$8,252	\$200,264	14,032	24,662	10,630	10,630	\$2,126	\$75,262	\$285,904
2033	14,631	47,039	32,408	32,408	\$8,426	\$204,492	14,328	25,183	10,855	10,855	\$2,171	\$76,852	\$291,941
2034	14,940	48,032	33,092	33,092	\$8,604	\$208,811	14,631	25,715	11,094	11,094	\$2,217	\$78,474	\$298,106
2035	15,255	49,046	33,791	33,791	\$8,786	\$213,220	14,940	26,258	11,318	11,318	\$2,264	\$80,132	\$304,400
2036	15,578	50,082	34,504	34,504	\$8,971	\$217,722	15,255	26,812	11,557	11,557	\$2,311	\$81,824	\$310,828
2037	15,906	51,139	35,233	35,233	\$9,161	\$222,320	15,578	27,379	11,801	11,801	\$2,360	\$83,551	\$317,392
2038	16,242	52,219	35,977	35,977	\$9,354	\$227,014	15,906	27,957	12,050	12,050	\$2,410	\$85,316	\$324,094
2039	16,585	53,322	36,737	36,737	\$9,552	\$231,808	16,242	28,547	12,305	12,305	\$2,461	\$87,117	\$330,937
2040	16,936	54,448	37,512	37,512	\$9,753	\$236,703	16,585	29,150	12,565	12,565	\$2,513	\$88,957	\$337,925
2041	17,293	55,598	38,304	38,304	\$9,959	\$241,701	16,936	29,765	12,830	12,830	\$2,566	\$90,835	\$345,061
2042	17,658	56,772	39,113	39,113	\$10,169	\$246,805	17,293	30,394	13,101	13,101	\$2,620	\$92,753	\$352,347
2043	18,031	57,970	39,939	39,939	\$10,384	\$252,016	17,658	31,036	13,377	13,377	\$2,675	\$94,712	\$359,788
2044	18,412	59,194	40,783	40,783	\$10,603	\$257,338	18,031	31,691	13,660	13,660	\$2,732	\$96,712	\$367,385
2045	18,801	60,444	41,644	41,644	\$10,827	\$262,772	18,412	32,360	13,948	13,948	\$2,790	\$98,754	\$375,143
Total	322,935		715,300	715,300	\$175,151	\$4,513,845	316,257		239,585	239,585	\$45,127	\$1,696,265	\$6,443,706

For the CO₂ analysis, assumed 8.887 grams of CO₂ per gallon of gasoline based on factors provided by the EPA fact sheet EPA-420-F-14-040. The US DOT BCA Guidance published in March 2022 listed the social cost of carbon per metric ton between \$52 and \$85, discounted at a 3% Discount Rate.

1	Length of bicycle trail (miles)								
26	Annualization Factor (Weekdays per Year)								
30.26	Recommended Value per Cycling Mile (Cycling Boulevard)								
30.10	Recommended Value per Pedestrian Mile (per additional foot of width of New Sidewalk)								
2.00	Additional Width of Sidewalk (feet)								
56.31	Recommended Value per Induced Trip (Cycling)								
57.08	Recommended Value per Induced Trip (Pedestrian)								

2017 Ped/Bike Pop. In Project Area	% Pedestrians	% Bicyclists
2,659	70%	30%
1,894	66%	34%
2,591	86%	14%
Total	5,340	1,804
Weekday Average	42	14

Trail and Pathway Use in Flathead County, Montana, Headwaters Economics, 2017	
Expand Sidewalk (per foot of added Width) ²	\$0.10
Improvement Type	Recommended Value per Person-Mile Walked (2020 \$) ³
Install Marked Crosswalk on Roadway with Volumes <10,000 Vehicles per Day	\$0.18
Install Signal for Pedestrian Crossing on Roadway with Volumes >15,000 Vehicles per Day	\$0.46

Mode	Applicable Age Range	Recommended Value per Induced Trip (2020 \$) ¹
Walking	Ages 20-74	\$7.08
Cycling ²	Ages 20-64	\$6.31

Facility Type	Recommended Value per Cycling Mile (2020 \$) ³
Cycling Path with At-Grade Crossings	\$1.42
Cycling Path with no At-Grade Crossings ²	\$1.78
Dedicated Cycling Lane	\$1.69
Cycling Boulevard "Sharrow"	\$0.26
Separated Cycle Track	\$1.69

Economic Impact

West Reserve Drive: Hutton Ranch Rd. to Whitefish Stage Rd. Intersection

PRELIMINARY COST ESTIMATE

Project No.: TBD Date Prepared: March 25, 2022
 Control No.: 10212000
 Project Name: West Reserve Drive: Hutton Ranch Rd. to Whitefish Stage Rd. Intersection IDC: 9.66%
 Estimate Prepared By: Ed Toavs, P.E.
 (Costs based on West Reserve Drive Corridor Study and 2022 cost updates)

*Project improvements include widening of West Reserve Drive between Hutton Ranch Road and Mission Trail, signalized intersection improvements on West Reserve at Hutton Ranch and Whitefish Stage Road, and urban reconstruction of Whitefish Stage Rd. 0.5 miles north on the West Reserve - Whitefish Stage Intersection.

Design and Engineering Costs

ITEM DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	AMOUNT
I. PRELIMINARY ENGINEERING [9102]				
MDT PE Costs (After Award)	1	LS	\$200,000.00	\$200,000
IDC	9.66%			\$19,320
SUBTOTAL =				\$219,320
Stipend Payments to DB Firm	2	EA	\$200,000.00	\$400,000
Design Services (D-B Firm)	1	LS	\$1,779,578.42	\$1,779,578
IDC	9.66%			\$210,547
SUBTOTAL =				\$2,390,126
II. CONSTRUCTION ENGINEERING AND INSPECTION (CEI) SERVICES [9402]				
MDT CEI Costs	1	LS	8%	\$1,443,655.11
IDC	9.66%			\$139,457
SUBTOTAL =				\$1,583,112
CEI Costs (D-B Firm)	1	LS	\$400,000.00	\$400,000
IDC	9.66%			\$38,640
SUBTOTAL =				\$438,640
III. INCIDENTAL CONSTRUCTION [9302]				
Utility Design/Coordination	1	LS	\$302,644.56	\$302,645
Utility Relocation Costs	1	LS	\$3,026,445.55	\$3,026,446
IDC	9.66%			\$321,590
SUBTOTAL =				\$3,650,680
IV. RIGHT-OF-WAY [9202]				
Right-of-Way Design/Coordination	1	LS	\$185,108.93	\$185,109
Right-of-Way Relocation Costs	1	LS	\$1,851,089.33	\$1,851,089
IDC	9.66%			\$196,697
SUBTOTAL =				\$2,232,895
DESIGN AND ENGINEERING COST SUBTOTAL =				\$10,514,773
Construction Costs				
V. CONSTRUCTION [9502]				
Widening of W. Reserve Dr. and intersection improvement for Whitefish Stage Rd. Includes mobilization, project administration, scheduling, quality control, misc work, etc.	1	LS	\$14,829,820.20	\$14,829,800
IDC	9.66%			\$1,432,559
SUBTOTAL =				\$16,262,359
VI. CONTINGENCY				
	1	%	10%	\$1,626,236
IDC	9.66%			\$157,094
SUBTOTAL =				\$1,783,330
CONSTRUCTION COSTS SUBTOTAL =				\$18,045,689
SUBTOTAL ESTIMATED MDT PE COST =				\$219,320
SUBTOTAL ESTIMATED MDT CE COST =				\$1,583,112
SUBTOTAL ESTIMATED MDT IC & R/W COST =				\$5,883,575
SUBTOTAL ESTIMATED D-B PE COST =				\$2,390,126
SUBTOTAL ESTIMATED D-B CE COST =				\$438,640
SUBTOTAL ESTIMATED D-B CONSTRUCTION COST =				\$18,045,689
SUBTOTAL ESTIMATED DESIGN-BUILD CONTRACT COST =				\$20,874,455
TOTAL ESTIMATED DESIGN-BUILD CONSTRUCTION COST =				\$28,560,462

West Reserve Drive - Hutton Ranch Rd. to Whitefish Stage Rd. Intersection			
Design-Build Project Cost Subtotal			
Project Segment	Construction Cost	IC - Utilities	Right-of-Way
S1 Segment - Whitefish Stage Rd. Intersection	\$ 2,618,437	\$ 523,688	\$ 100,000
R1 Segment - W Reserve Drive (Hutton Ranch Rd. to Whitefish Stage Rd.)	\$ 9,366,987	\$ 1,873,797	\$ 1,063,022
R4 Segment - Whitefish Stage Rd. - Urban Cross Section	\$ 1,275,091	\$ 426,174	\$ 250,000
A-Series - Access Management Improvements	\$ 470,000		
Right-of-Way Project Contingency			\$ 300,000
Total (2022 Dollars) - Without 1% X3 Inflation	\$ 13,731,515	\$ 2,869,669	\$ 1,713,022
Total (2023 Dollars) - Using 3% Inflation	\$ 14,259,520	\$ 3,026,464	\$ 1,851,409

MDT is currently experiencing high inflationary price increases in construction bid. Material availability is limited due to supply chain issues causing material price escalation. One source for this BCR that was used to assist in determination of construction price increases, including material escalation, is the February 2022 AGC Construction Inflation Alert. This document which along with MDT's current bidding results provided a basis to estimate material escalation for this BCR.

Reserve & Whitefish Stage - K&L & Reserve Dr. - W of Whitefish Stg		
West Reserve Corridor - Cost - S3 Segment - Whitefish Stage Rd. Intersection		
Description of Work		Cost Estimate
Base Construction Cost*	\$	1,516,417
Traffic Control	\$	75,827
Mobilization	\$	109,224
Material Escalation***	\$	267,720
Contingency	\$	658,255
Construction Cost Total	\$	2,618,437
IC - Utilities	\$	523,688
Right-of-Way**	\$	100,000
*See West Reserve Drive - Corridor Planning Study, Appendix 4 for planning level cost estimates		
**See Right-of-Way Cost Table		
***Added 15% Material Price Escalation due to current availability		
†Used percentage calculations as shown in the West Reserve Drive - Corridor Planning Study, Appendix 4		
††Used 20% percent of the Construction Total for IC-Utilities		

Reserve & Whitefish Stage - K&L & Reserve Dr. - W of Whitefish Stg		
West Reserve Corridor - Cost - R1 Segment - W Reserve Dr. (Hutton Ranch Rd. to Whitefish Stage Rd.)		
Description of Work		Cost Estimate
Base Construction Cost*	\$	5,424,711
Traffic Control	\$	271,226
Mobilization	\$	569,559
Material Escalation***	\$	929,832
Contingency	\$	2,319,111
Construction Cost Total	\$	9,366,987
IC - Utilities	\$	1,873,797
Right-of-Way**	\$	1,063,022
*See West Reserve Drive - Corridor Planning Study, Appendix 4 for planning level cost estimates. Added \$500,000 for project end taper from 5 lane to three lane.		
**See Right-of-Way Cost Table		
***Added 15% Material Price Escalation due to current availability		
†Used percentage calculations as shown in the West Reserve Drive - Corridor Planning Study, Appendix 4		
††Used 20% percent of the Construction Total for IC-Utilities		

Reserve & Whitefish Stage - K&L & Reserve Dr. - W of Whitefish Stg		
West Reserve Corridor - Cost - R4 - Whitefish Stage Rd. - Urban Cross Section		
Description of Work		Cost Estimate
Base Construction Cost*	\$	738,906
Traffic Control	\$	36,936
Mobilization	\$	77,826
Material Escalation***	\$	128,036
Contingency	\$	294,437
Construction Cost Total	\$	1,275,091
IC - Utilities	\$	426,174
Right-of-Way**	\$	250,000
*See West Reserve Drive - Corridor Planning Study, Appendix 4 for planning level cost estimates		
**See Right-of-Way Cost Table		
***Added 15% Material Price Escalation due to current availability		
†Used percentage calculations as shown in the West Reserve Drive - Corridor Planning Study, Appendix 4		
††Used 20% percent of the Construction Total for IC-Utilities. Also added \$150,000 for new utilities installed since after		

Reserve & Whitefish Stage - K&L & Reserve Dr. - W of Whitefish Stg		
West Reserve Corridor - Cost - Access Management Improvements		
Improvement Option		Cost Estimate*
A1 - Corridor Access Management Plan	\$	50,000
A2 - Side Street and Approach Movement Restriction	\$	320,000
A3 - Approach Consolidation near Whitefish Stage Rd.	\$	320,000
Total	\$	470,000
Improvements		

Reserve & Whitefish Stage - K&L & Reserve Dr. - W of Whitefish Stg						
Project Right-Of-Way Costs						
Name	Parcel	ROW Needed (Acres)	Value per Acre	Parcel Value	Project Segment	
R Thompson Farms**	47	0.83	\$ 304,920	\$ 253,084	R4	
Millwater Corp**	31	0.17	\$ 100,000	\$ 17,000	R1	
Scenicwood Inc**	35	1.14	\$ 100,000	\$ 114,000	R4	
Scenicwood Inc**	37A	0.39	\$ 100,000	\$ 39,000	R1	
Scenicwood Inc**	37	1.48	\$ 100,000	\$ 148,000	R1 & R4	
Robyn Wanda	3A	0.05	\$ 150,000	\$ 7,500	R4	
HFA Substrata		0.07	\$ 150,000	\$ 10,500	R4	
R Thompson Farms**	48	2.81	\$ 100,000	\$ 281,000	R1 & R4	
R Thompson Farms**	46	0.24	\$ 354,000	\$ 73,116	R1	
R Thompson Farms**	48	0.24	\$ 354,000	\$ 73,116	R1	
R Thompson Farms**	4A	0.15	\$ 354,000	\$ 45,138	R1	
R Thompson Farms**	8	0.77	\$ 354,000	\$ 272,580	R1	
	SubTotal	8.51		\$ 1,313,972		
Contingency				\$ 300,000		
	SubTotal			\$ 1,613,972		
Scenario S3 - Construction Permits and Care to Care Inquiries				\$ 100,000		
	Total			\$ 1,713,972		

*Used \$7 per square foot value for smaller parcels based on current MDT experience in this area.
 **Used \$100,000 per acre for larger tracks given escalating costs in the Kallispell area.
 †Used \$150,000 per acre for non-commercial tracks less than 10 acres given escalating costs in the Kallispell area.
 †† \$300,000 contigency is applied to the right-of-way costs due to unprecedented land valuation increase in the Kallispell area.

Total R1 Cost	\$ 1,863,022	(6.51 Acres Estimated)
Total R4 Cost	\$ 250,950	(2.00 Acres Estimated)
Contingency	\$ 300,000	
Segment S3	\$ 400,000	

West Reserve Drive: Hutton Ranch Rd. to Whitefish Stage Rd. Intersection

Kalispell Section Maintenance Costs FY 21	2022 Value	2025 Value
Labor	\$909,207	\$993,515.04
Equipment	\$416,147	\$454,735.06
Materials	\$435,455	\$475,833.44
Contracted Services	\$423,100	\$462,332.79
Total Cost	\$2,183,909	\$2,386,416.33
Kalispell Section Lane Miles	270	270
Cost Per Lane Mile	8089	8839
West Reserve Additional Lane Miles	2	2
Additional Annual Maintenance Cost Estimate	\$16,177	\$17,677

Maintenance Preservation Future Work - No Build Scenario	2022 Value	Future Value
Pavement Mill&Fill With Digouts in 2028	\$445,000.00	\$500,851.42
Pavement Mill&Fill With Digouts in 2038	\$445,000.00	\$673,102.43

Maintenance Presevation Future Work - Build Scenario	2022 Value	Future Value
Chip Seal in 2033 - 8 Years After Project Completion	\$306,000.00	\$387,631.64
O'lay and S&C in 2041 - 16 Years After Project Completion	\$1,897,200.00	\$3,044,449.06

Calculations & Inputs		
Unit Price - Seal & Cover Projects per sq ft	\$ 0.50	MDT Bid History
Unit Price - Overlay Seal & Cover Projects per sq ft	\$ 3.10	MDT Bid History
Project Area - West Reserve (sq ft)	468000	
Length (ft)	6000	
Width (ft)	78	Width from West Reserve Corridor Study
Project Area - Whitefish Stage sq ft	144000	
Length	3000	
Width	48	Width from West Coi
Total Project Area (sq ft)	612000	

Executive Data Summary
West Reserve Drive: Hutton Ranch Rd. to Whitefish Stage Rd. Intersection

Calendar Year	Total Benefits (\$2020 Value)	Maintenance Costs (\$2020 Value)	Total Net Benefits (\$2020 Value)	Total Capital Costs (\$2020 Value)	Discounted Total Net Benefits (7%)	Discounted Capital Costs (7%)	Net Present Value
2022					\$0		\$0
2023			(\$2,775,617)	(\$2,775,617)	\$0	(\$2,594,034)	(\$2,594,034)
2024			(\$13,744,381)	(\$13,744,381)	\$0	(\$12,004,874)	(\$12,004,874)
2025	\$7,988,263	(\$16,177)	(\$10,033,721)	(\$10,033,721)	\$6,523,332	(\$8,190,505)	(\$8,190,505)
2026	\$9,210,339	(\$16,662)	\$7,203,595	(\$2,006,744)	\$7,031,104	(\$1,530,935)	\$5,500,169
2027	\$10,434,356	(\$17,162)	\$10,434,356		\$7,446,690		\$7,446,690
2028	\$11,660,832	(\$17,677)	\$11,660,832		\$7,780,428		\$7,780,428
2029	\$13,387,871	\$482,644	\$13,387,871		\$8,351,087		\$8,351,087
2030	\$14,121,488	(\$18,754)	\$14,121,488		\$8,236,461		\$8,236,461
2031	\$15,362,832	(\$19,316)	\$15,362,832		\$8,378,137		\$8,378,137
2032	\$16,596,918	(\$19,896)	\$16,596,918		\$8,463,227		\$8,463,227
2033	\$17,443,974	(\$408,124)	\$17,443,974		\$8,318,357		\$8,318,357
2034	\$19,067,453	(\$21,107)	\$19,067,453		\$8,501,877		\$8,501,877
2035	\$20,301,852	(\$21,741)	\$20,301,852		\$8,465,258		\$8,465,258
2036	\$21,542,379	(\$22,393)	\$21,542,379		\$8,401,031		\$8,401,031
2037	\$22,781,312	(\$23,065)	\$22,781,312		\$8,308,826		\$8,308,826
2038	\$24,698,989	\$649,346	\$24,698,989		\$8,423,606		\$8,423,606
2039	\$25,262,087	(\$24,469)	\$25,262,087		\$8,059,952		\$8,059,952
2040	\$26,506,597	(\$25,203)	\$26,506,597		\$7,910,407		\$7,910,407
2041	\$24,706,551	(\$3,070,409)	\$24,706,551		\$6,905,065		\$6,905,065
2042	\$28,991,148	(\$26,738)	\$28,991,148		\$7,570,776		\$7,570,776
2043	\$30,246,221	(\$27,540)	\$30,246,221		\$7,390,254		\$7,390,254
2044	\$31,499,021	(\$28,367)	\$31,499,021		\$7,200,512		\$7,200,512
2045	\$32,753,500	(\$29,218)	\$32,753,500		\$7,005,315		\$7,005,315
Total	\$416,575,721	(\$2,705,852)	\$388,015,259	(\$28,560,462)	\$158,148,372	(\$24,320,349)	\$133,828,023

2025 Benefits and Maintenance Costs are included - Used for calculations only.

West Reserve Drive: Hutton Ranch Rd. to Whitefish Stage Rd. Intersection

Current Status/Baseline & Problem to be Addressed	Change to Baseline/ Alternatives	Population Affected by Impacts	RAISE Merit Criteria	Economic Benefits	Summary of Results	Page Reference in BCA
The current 3-lane alignment of West Reserve Drive and Whitefish Stage Road experiences significant traffic congestion and delayed turning movements. The lack of adequate sidewalk and bicyclist infrastructure discourages pedestrian travel and does not provide connectivity for the commercial and residential areas in this section of the Kalispell Urban Area.	The expansion from 3-lane to 5-lane roadway increases throughput speeds for vehicles, resulting in shorter trip times and lower fuel consumption.	Vehicle users directly benefit from the improved capacity the proposed project offers.	Economic Competitiveness	Travel Time Savings	\$148.0 Million	15
					Reduced Fuel Consumption	\$5.5 Million
			Environmental Sustainability	CO2 Emissions Reduction	\$2.1 Million	16
	The intersection improvements reduce the risk of traffic crashes.	Vehicle users directly benefit from the safety improvements the proposed project offers.	Safety	Reduced Roadway Crashes	\$0.6 Million	17
	The addition of sidewalk space and a multiuse path encourages pedestrian and bicyclist travel.	Non-motorized users benefit from the facilities the proposed project offers.	Improves Mobility and Community Connectivity	Pedestrian and Bicycle Benefits	\$2.6 Million	17

Project Schedule - West Reserve Drive: Hutton Ranch Rd. to Whitefish Stage Rd. Intersection

Event	Schedule
Conduct Project Delivery Determination	January 2, 2023
Recommendation Memo Approval by Commission	January 24, 2023
Stipend Memo Approval by Commission	February 21, 2023
Advertise RFQ	April 3, 2023
SOQ Due Date	April 24, 2023
Distribute RFP	May 11, 2023
Pre-Proposal Meeting	May 18, 2023
Technical Proposals Due Date	August 1, 2023
Bid Price Proposals Due Date	August 21, 2023
Final Selection Date	August 22, 2023
Commission Award	September 12, 2023
Notice to Proceed for DB Firm	September 27, 2023
Preconstruction Phase Begins (Includes R/W and Utility Activities)	September 28, 2023
Preconstruction Phase Completed	March 25, 2024
Construction Phase Begins (Notice to Proceed)	March 26, 2024
Construction Phase - Substantial Completion	November 21, 2025
Construction Phase - Final Completion	July 17, 2026

The proposed schedule listed above is an example of the schedule of work which will be contracted to be complete by July 2026. Under this example, the project would be substantially complete in November 2025 providing full benefits for all users. The Design-Build contract method is an example of a project delivery method which allows for expedited project delivery and for innovation of project scheduling and the incorporation of value-added materials and products.