



June 16, 2025

Lindsey Samelson
Contrarian Land
2 N Cascade Ave
Colorado Springs, CO 80903

RE: Landings Business Park Preliminary Traffic Study (FHU Project No. 121421-01)

Dear Ms. Samelson:

This letter provides trip generation estimates and a preliminary assessment of traffic operations associated with the proposed Landings Business Park development located east of the Colorado Springs Airport and Peterson Space Force Base in Colorado Springs, Colorado. Felsburg Holt & Ullevig prepared a preliminary traffic report for the Landings Business Park (previously referred to as the Contrarian development) in August 2024. This report provides an update based on new conceptual land use plans for the site.

Site Plan and Development Information

Two land use scenarios have been created for the Landings Business Park, including:

Mixed-Use Scenario

- 67 Acres Multi-Family Residential
- 138 Acres Industrial and Warehouse/Distribution
- 63 Acres Office/Commercial/Hotel

Non-Residential Scenario

- 239 Acres Industrial and Warehouse/Distribution
- 63 Acres Office/Commercial/Hotel

Through the current PDZ zoning, these uses will be interchangeable within defined parameters, including a maximum residential density of 30 dwelling units/acre (approximately 2,000 units) and a maximum non-residential floor area of 2.5 million square feet. This preliminary traffic study analyzes the Mixed-Use Scenario, as it is the higher potential traffic generator. The study makes assumptions as to the potential mix of uses within the broader land use categories.

The development will be located west of Marksheffel Road between CO-94 and Drennan Road. Access to the development will be via four access points: a central access and a northern access to Marksheffel Road and two accesses to tie in with future development to the south. The proposed site plan with the Mixed-Use Scenario is shown on Figure 1.

Planning and Vision

ConnectCOS is the citywide multimodal transportation plan that was adopted in 2023 and provides long-term recommendations for enhancing mobility in Colorado Springs.

Marksheffel Road: Marksheffel Road, which will provide the primary access route for the Landings Business Park, is designated as follows on the three primary transportation mode vision maps in ConnectCOS:

- Principal Arterial (Major Thoroughfare Plan page 67)
- Future Enhanced Transit Corridor (Transit Vision Network page 73)
- Primary Bicycle/Pedestrian Route (Active Transportation Network page 71)

Marksheffel Widening & Improvements, Drennan to US 24 is listed in as Project Recommendation #220 in the ConnectCOS project recommendations and as shown in the Corridor Portraits Appendix page 18.

South Airport Connector: Another important access route shown in the ConnectCOS Major Thoroughfare Plan is a future minor arterial street connecting from the Peak Innovation Park street system south of the airport, passing south of the airport and connecting to Marksheffel Road. When constructed, this connection will provide a route between the Landings Business Park and the airport and central Colorado Springs.

Trip Generation Estimates

The number of vehicle trips that will be generated by the proposed development was estimated based on trip generation rates and procedures documented in the *Trip Generation Manual* (Institute of Transportation Engineers, 11th Edition). **Table I** summarizes the number of dwelling units (du) and 1,000 square feet (ksf) estimated for each parcel at development buildout. The table shows parcel acres, density (du/acre or floor area ratio), *Trip Generation Manual* categories used and resulting daily and peak hour trip generation estimates.

The Trip Generation Manual also provides guidance to estimate the internal trip capture for a mixed-use development such as the Landings Business Park. Since the precise land use types and locations have not been determined at this time, the potential internal capture has not been calculated in this preliminary study. Thus, the trip generation estimates provided here can be viewed as conservative and are likely to decrease with a future more detailed traffic study.

Table I. Trip Generation Estimates

Land Use (ITE Category)	Acres	Density/Floor Area Ratio	Quantity	Daily Trips	AM Peak Hour Trips			PM Peak Hour Trips		
					In	Out	Total	In	Out	Total
Multi-Family Residential – Mid-Rise (221)	66.7	30 DU/Acre	2,000 DU	9,085	170	569	739	475	304	779
Warehousing (150)	24	0.3 FAR	313.6 ksf	536	41	12	53	16	41	57
Light Industrial (110)	110.4	0.15 FAR	721.4 ksf	3,513	470	64	534	66	403	469
Shopping Center (No Grocery, 821)	13.76	0.18 FAR	107.9 ksf	7,285	116	71	187	274	286	560
General Office (710)	20	0.45 FAR	392 ksf	4,250	524	72	596	96	469	565
Hotel/Convention Center (310)	16.8	500 Rooms		3,995	129	101	230	156	139	295
Total	251.56			28,663	1,450	889	2,339	1,083	1,641	2,724

Trip Distribution

Based on a review of available traffic counts and an assessment of current and anticipated traffic patterns, the overall directional distribution of trips to and from the development was estimated to be 45% north and 55% south.

All of the 45% of traffic to/from the north were assumed to use Marksheffel Road.

The 55% of traffic to/from the north was assigned to Marksheffel Road or the south development accesses as follows:

- Residential – 55% Marksheffel
- Commercial, Hotel, Office – 50% Marksheffel Road, 5% south development accesses
- Industrial, Warehouse – 40% Marksheffel Road, 15% south development accesses

Traffic to and from the residential area in the northern part of the development were assigned to the north Marksheffel Road access. Traffic to and from the commercial and industrial areas in the middle and southern parts of the site were assigned to the central Marksheffel Road access or the south development accesses. Figure 2 shows the resulting estimated AM and PM peak hour turning movements at the two Marksheffel Road accesses with buildout of the Landings Business Park mixed-use scenario.

Traffic Operations Evaluation

A full traffic impact study will provide more precise recommendations, but preliminary assessments show the following:

Travel Lanes on Marksheffel Road

The Pikes Peak Area Council of Governments (PPACG) regional travel model was used as an initial basis for projecting traffic levels on Marksheffel Road in 2050. Since the PPACG model includes only minimal development along Marksheffel, the trip generation for the Landings Business Park was added to model projections. Additionally, trip generation for the developable area to the south was estimated using approximately half of the potential Landings Business Park density and this traffic was also assigned to Marksheffel Road.

This resulted in rough forecasts for Marksheffel Road in 2050 with Landings Business Park buildout in the range of 30,000 to 35,000 vehicles per day. Based on this level of traffic, Marksheffel Rd would require a 4-through lane section, with appropriate turn lanes at intersections. These improvements to Marksheffel Road are consistent with ConnectCOS recommendations for this section and also consistent with the existing Marksheffel Road design south of Drennan Road.

Traffic Signal Warrant Evaluation

The two proposed access intersections on Marksheffel Road were evaluated for traffic signal needs in accordance with the Manual of Uniform Traffic Control Devices (MUTCD) signal warrants. The Peak Hour Warrant, Warrant 3, was used as an initial indicator of needs for a traffic signal. Evaluation of other MUTCD signal warrants is recommended with the detailed traffic study.

Central Access Intersection: This intersection's traffic volumes would clearly exceed traffic signal warrant thresholds at buildout. It is estimated that signal warrants would be met with roughly 30% to 40% of full mixed-use scenario buildout.

North Access Intersection: This intersection's traffic volumes would also clearly exceed traffic signal warrant thresholds at buildout. It is estimated that signal warrants would be met with roughly 60% to 70% of the full 1,998 DU estimate.

Intersection Spacing

The City of Colorado Springs Engineering Criteria Manual states that on a principal arterial like Marksheffel Road "signalized intersections shall be limited to half mile spacing unless adequate justification is provided to approve signalized intersections at other locations". The two proposed signalized intersections would be slightly more than a half mile apart, so the signal spacing conforms with City standards.

The existing adjacent Marksheffel Road traffic signal at the Peterson SFB east entrance north is more than a mile north of the proposed north access intersection and Drennan Road is more than a mile south of the proposed central access intersection, so no signal spacing issues are expected.

Turn Lanes

Rough estimates of 2050 peak hour turning movements were developed at the two access intersections with Marksheffel Road based on buildout estimated in and out of the site (as shown on Figure 2) and estimated Marksheffel Road through movements based on 2050 forecasts. Turn lane requirements at the two access intersections on Marksheffel Road were preliminarily identified using Synchro software. Summary sheets are attached to this report. Preliminary analysis of buildout forecasts shows that acceptable level of service could be obtained at with the following intersection lanes:

Central Access/Marksheffel Road Intersections:

- 2 eastbound left-turn lanes
- 1 eastbound right-turn lane
- 2 southbound through lanes
- 1 southbound right-turn lane
- 2 southbound through lanes
- 2 northbound left-turn lanes
- 2 northbound through lanes

North Access/Marksheffel Road Intersections:

- 1 eastbound left-turn lanes
- 1 eastbound right-turn lane
- 2 southbound through lanes
- 1 southbound right-turn lane
- 2 southbound through lanes
- 1 northbound left-turn lanes
- 2 northbound through lanes

It is likely that initial development phases will be constructed before traffic signals are warranted at these intersections. To meet principal arterial design requirements, northbound left-turn and southbound right-turn deceleration lanes will be required with any substantial development phases. The need for right-turn acceleration lanes should be evaluated with detailed future traffic studies.

Conclusions

The proposed development is anticipated to require the following:

- Two conceptual land use scenarios have been developed for the Landings Business Park, including a Mixed-Use Scenario and a Non-Residential Scenario.
- This preliminary traffic study analyzes the higher trip generating Mixed-Use Scenario with residential, commercial, office, hotel, industrial, and warehouse uses.
- The proposed access to Marksheffel Road, including two full-movement accesses, would provide effective site access and are compliant with Colorado Springs principal arterial standards.
- Marksheffel Rd is expected to require a 4-through lane section in the long range consistent with ConnectCOS recommendations.
- Traffic signals are expected to be needed and at the two Marksheffel Road accesses.
- Signal warrants are estimated to be met with roughly 30% to 40% of buildout at the central access intersection and 60%-70% of buildout at the north access intersection.

Sincerely,

FELSBURG HOLT & ULLEVIG

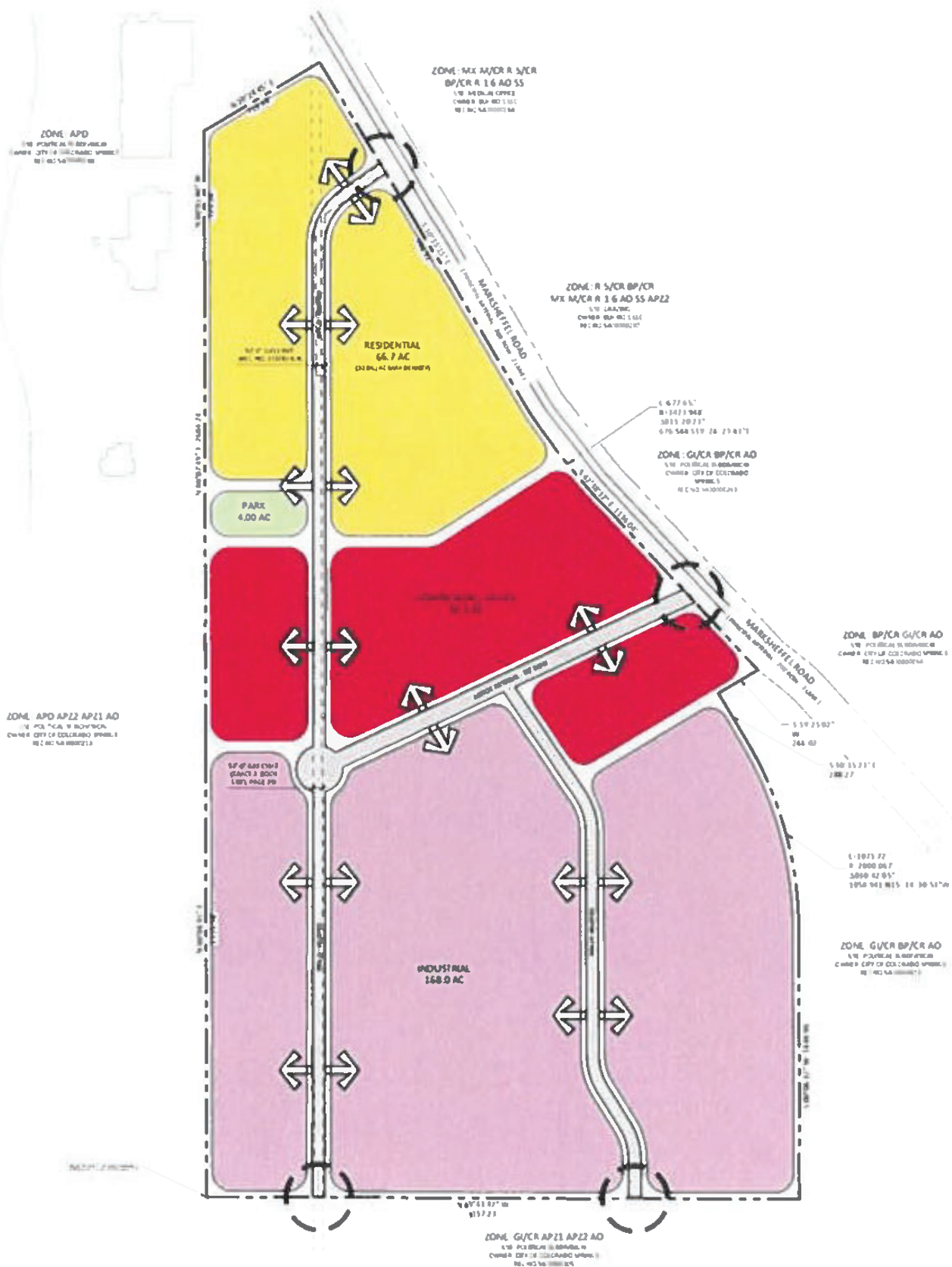


Melanie Bishop, PTP, RSP1
Transportation Planner



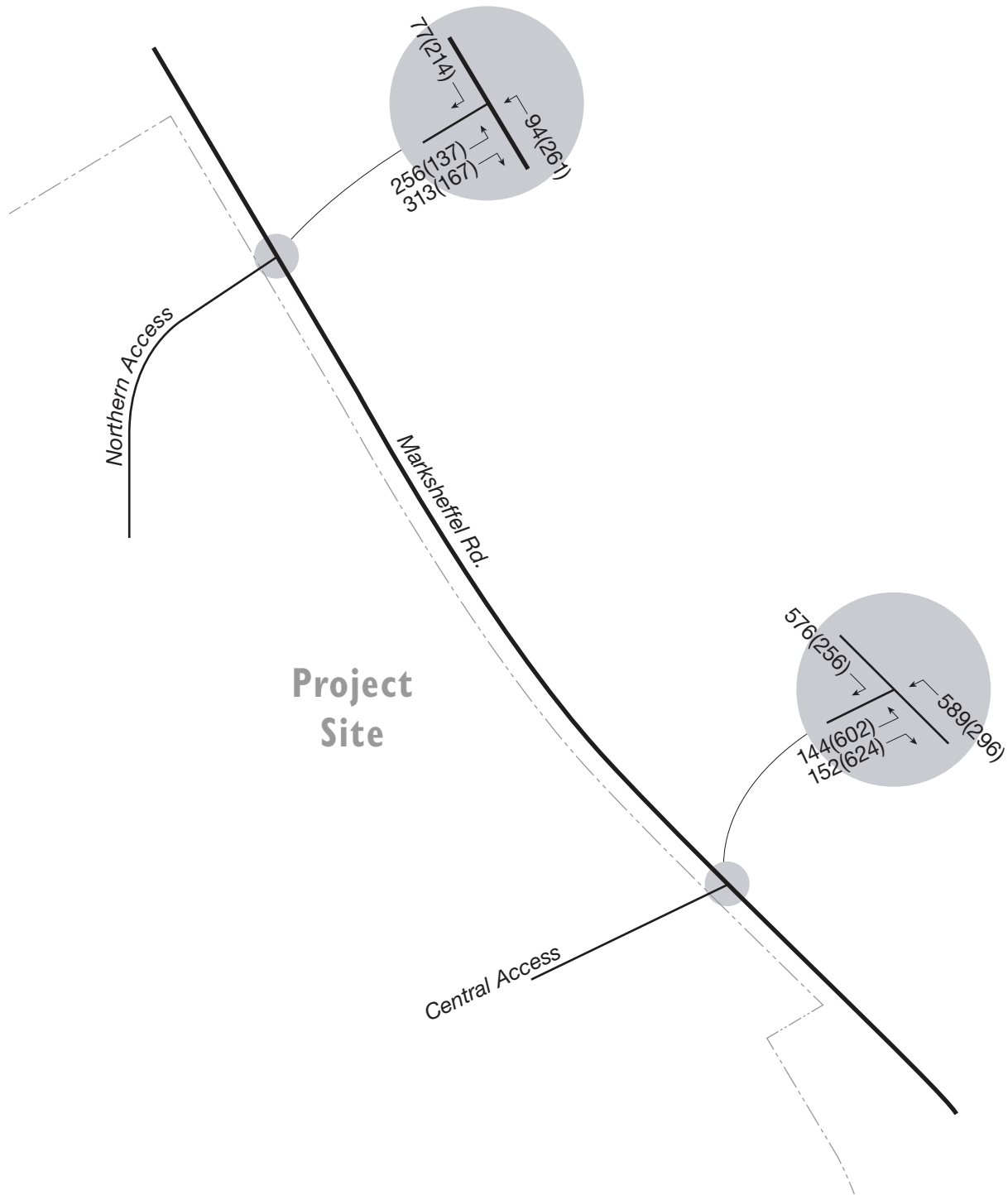
Elliot Sulsky, PE
Principal

NOTE: Drawing Not to Scale



NORTH

**FIGURE I
Site Plan**



LEGEND

XXX(XXX) = AM(PM) Peak Hour Traffic Volumes

HCM 6th Signalized Intersection Summary

1: MARKSHEFFEL & NORTH INTERSECTION

Landings Business Park
2050 Buildout - AM Peak Hour



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	256	313	94	988	998	77
Future Volume (veh/h)	256	313	94	988	998	77
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1824
Adj Flow Rate, veh/h	278	340	102	1074	1085	84
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	0	0	0	0	0
Cap, veh/h	526	468	365	2035	1444	618
Arrive On Green	0.29	0.29	0.09	0.56	0.40	0.40
Sat Flow, veh/h	1810	1610	1810	3705	3705	1546
Grp Volume(v), veh/h	278	340	102	1074	1085	84
Grp Sat Flow(s),veh/h/ln	1810	1610	1810	1805	1805	1546
Q Serve(g_s), s	7.1	10.4	1.6	10.2	14.2	1.9
Cycle Q Clear(g_c), s	7.1	10.4	1.6	10.2	14.2	1.9
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	526	468	365	2035	1444	618
V/C Ratio(X)	0.53	0.73	0.28	0.53	0.75	0.14
Avail Cap(c_a), veh/h	526	468	365	2035	1444	618
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	16.3	17.5	9.5	7.5	14.2	10.5
Incr Delay (d2), s/veh	3.8	9.5	1.9	1.0	3.6	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	5.7	15.3	1.2	5.7	9.5	3.8
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	20.1	27.0	11.4	8.4	17.8	10.9
LnGrp LOS	C	C	B	A	B	B
Approach Vol, veh/h	618			1176	1169	
Approach Delay, s/veh	23.9			8.7	17.3	
Approach LOS	C			A	B	
Timer - Assigned Phs	2			4	5	6
Phs Duration (G+Y+Rc), s	35.0			20.0	9.0	26.0
Change Period (Y+Rc), s	4.0			4.0	4.0	4.0
Max Green Setting (Gmax), s	31.0			16.0	5.0	22.0
Max Q Clear Time (g_c+I1), s	0.0			0.0	0.0	0.0
Green Ext Time (p_c), s	0.0			0.0	0.0	0.0
Intersection Summary						
HCM 6th Ctrl Delay			15.3			
HCM 6th LOS			B			

HCM 6th Signalized Intersection Summary

2: MARKSHEFFEL & SOUTH INTERSECTION

Landings Business Park
2050 Buildout - AM Peak Hour



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰	↱	↰	↱	↱	↰
Traffic Volume (veh/h)	144	152	589	743	880	576
Future Volume (veh/h)	144	152	589	743	880	576
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	157	0	640	808	957	626
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	0	0	0	0	0
Cap, veh/h	936		869	2166	1384	617
Arrive On Green	0.27	0.00	0.15	0.60	0.38	0.38
Sat Flow, veh/h	3510	1610	3510	3705	3705	1610
Grp Volume(v), veh/h	157	0	640	808	957	626
Grp Sat Flow(s), veh/h/ln	1755	1610	1755	1805	1805	1610
Q Serve(g_s), s	2.1	0.0	5.8	6.9	13.3	23.0
Cycle Q Clear(g_c), s	2.1	0.0	5.8	6.9	13.3	23.0
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	936		869	2166	1384	617
V/C Ratio(X)	0.17		0.74	0.37	0.69	1.01
Avail Cap(c_a), veh/h	936		869	2166	1384	617
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	16.9	0.0	11.3	6.2	15.5	18.5
Incr Delay (d2), s/veh	0.4	0.0	5.5	0.5	2.9	39.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.5	0.0	4.2	3.8	9.1	31.7
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	17.3	0.0	16.9	6.7	18.4	58.3
LnGrp LOS	B		B	A	B	F
Approach Vol, veh/h	157			1448	1583	
Approach Delay, s/veh	17.3			11.2	34.2	
Approach LOS	B			B	C	
Timer - Assigned Phs	2			4	5	6
Phs Duration (G+Y+Rc), s	40.0			20.0	13.0	27.0
Change Period (Y+Rc), s	4.0			4.0	4.0	4.0
Max Green Setting (Gmax), s	36.0			16.0	9.0	23.0
Max Q Clear Time (g_c+I1), s	0.0			0.0	0.0	0.0
Green Ext Time (p_c), s	0.0			0.0	0.0	0.0

Intersection Summary

HCM 6th Ctrl Delay	22.9
HCM 6th LOS	C

Notes

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

HCM 6th Signalized Intersection Summary

1: MARKSHEFFEL & NORTH INTERSECTION

Landings Business Park
2050 Buildout - PM Peak Hour



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	137	167	261	1354	878	214
Future Volume (veh/h)	137	167	261	1354	878	214
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	149	182	284	1472	954	233
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	0	0	0	0	0
Cap, veh/h	483	429	469	2166	1384	617
Arrive On Green	0.27	0.27	0.15	0.60	0.38	0.38
Sat Flow, veh/h	1810	1610	1810	3705	3705	1610
Grp Volume(v), veh/h	149	182	284	1472	954	233
Grp Sat Flow(s),veh/h/ln	1810	1610	1810	1805	1805	1610
Q Serve(g_s), s	3.9	5.6	4.8	16.5	13.3	6.3
Cycle Q Clear(g_c), s	3.9	5.6	4.8	16.5	13.3	6.3
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	483	429	469	2166	1384	617
V/C Ratio(X)	0.31	0.42	0.61	0.68	0.69	0.38
Avail Cap(c_a), veh/h	483	429	469	2166	1384	617
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	17.6	18.2	10.6	8.1	15.5	13.3
Incr Delay (d2), s/veh	1.7	3.0	5.7	1.7	2.8	1.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	3.1	9.5	3.9	8.9	9.1	10.8
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	19.2	21.2	16.3	9.8	18.3	15.1
LnGrp LOS	B	C	B	A	B	B
Approach Vol, veh/h	331			1756	1187	
Approach Delay, s/veh	20.3			10.9	17.7	
Approach LOS	C			B	B	
Timer - Assigned Phs	2			4	5	6
Phs Duration (G+Y+Rc), s	40.0			20.0	13.0	27.0
Change Period (Y+Rc), s	4.0			4.0	4.0	4.0
Max Green Setting (Gmax), s	36.0			16.0	9.0	23.0
Max Q Clear Time (g_c+I1), s	0.0			0.0	0.0	0.0
Green Ext Time (p_c), s	0.0			0.0	0.0	0.0
Intersection Summary						
HCM 6th Ctrl Delay			14.3			
HCM 6th LOS			B			

HCM 6th Signalized Intersection Summary

2: MARKSHEFFEL & SOUTH INTERSECTION

Landings Business Park
2050 Buildout - PM Peak Hour



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰	↱	↰	↕	↕	↰
Traffic Volume (veh/h)	602	624	296	904	774	256
Future Volume (veh/h)	602	624	296	904	774	256
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	654	0	322	983	841	278
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	0	0	0	0	0
Cap, veh/h	1194		752	1805	1155	515
Arrive On Green	0.34	0.00	0.10	0.50	0.32	0.32
Sat Flow, veh/h	3510	1610	3510	3705	3705	1610
Grp Volume(v), veh/h	654	0	322	983	841	278
Grp Sat Flow(s), veh/h/ln	1755	1610	1755	1805	1805	1610
Q Serve(g_s), s	7.6	0.0	2.7	9.4	10.3	7.1
Cycle Q Clear(g_c), s	7.6	0.0	2.7	9.4	10.3	7.1
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	1194		752	1805	1155	515
V/C Ratio(X)	0.55		0.43	0.54	0.73	0.54
Avail Cap(c_a), veh/h	1194		752	1805	1155	515
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	13.4	0.0	10.3	8.6	15.1	14.0
Incr Delay (d2), s/veh	1.8	0.0	1.8	1.2	4.0	4.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	5.1	0.0	1.8	5.5	7.6	11.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	15.2	0.0	12.1	9.8	19.1	18.0
LnGrp LOS	B		B	A	B	B
Approach Vol, veh/h	654			1305	1119	
Approach Delay, s/veh	15.2			10.3	18.8	
Approach LOS	B			B	B	
Timer - Assigned Phs	2			4	5	6
Phs Duration (G+Y+Rc), s	29.0			21.0	9.0	20.0
Change Period (Y+Rc), s	4.0			4.0	4.0	4.0
Max Green Setting (Gmax), s	25.0			17.0	5.0	16.0
Max Q Clear Time (g_c+I1), s	0.0			0.0	0.0	0.0
Green Ext Time (p_c), s	0.0			0.0	0.0	0.0

Intersection Summary

HCM 6th Ctrl Delay	14.5
HCM 6th LOS	B

Notes

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.