



INTERNAL MEMORANDUM

TO: Andrew Moore, Case Manager
Planning and Zoning Department

FROM: *SK* Scott A. James, P.E., PTOE, Land Use Review/Transportation
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Development Services Department

DATE: October 6, 2016

SUBJECT: Traffic Impact Analysis for Austin Oaks PUD
Zoning Case No. C814 – 2014 - 0120

The Transportation Review Section has reviewed the Traffic Impact Analysis (TIA) for the proposed Austin Oaks Planned Unit Development, dated July 26, 2016, and offers the following comments:

The project site (31.27 acres) is located at the southwest corner of Loop 1 (Mo-Pac Expressway) and Spicewood Springs Road in north Austin. The current zoning is LO, SF-3, GR and LR, and the request is for PUD zoning. The proposal is for up to 250 apartment dwelling units, approximately 673,000 SF of general office, approximately 169,000 SF of medical-dental office, approximately 46,700 SF of restaurant and a 100 room hotel within the site.

The proposed development is to be built in phases with the planned removal of existing office space concurrent with the construction of the proposed development. Twelve (12) driveways are proposed to serve the site, ten (10) intersecting Executive Center Drive and two (2) intersecting Wood Hollow Drive. All vehicle access to the site will use the current public roadway network. No new public roads are proposed.

The table below presents the proposed changes in current and future land use:

Table 1 – Current and proposed land uses for the Austin Oaks redevelopment

Development		Existing Office		Proposed Austin Oaks Land Use				
Phase	Year	Removed	Remaining	General Office	Medical Office	Restaurant	Apartment	Hotel
Existing	2016	-	445,322 SF	-	-	-	-	-
Phase I	2018	87,837 SF	357,485 SF	215,000 SF	55,000 SF	0 SF	0	0
Phase II	2020	105,893 SF	339,429 SF	0 SF	0 SF	15,000 SF	250 DU	0
Phase III	2022	149,822 SF	295,500 SF	207,000 SF	55,000 SF	31,700 SF	0	100 Rooms
Phase IV	2024	101,770 SF	343,552 SF	250,995 SF	59,000 SF	0 SF	0	0
Total		445,322 SF	-	672,995 SF	169,000 SF	46,700 SF	250 DU	100 Rooms

Roadways

Mo-Pac Expressway (Loop 1) is identified in the *2025 Austin Metropolitan Area Transportation Plan (AMATP)* as a freeway. In the vicinity of the site, the southbound frontage road is a three-lane, undivided, one-way facility. The northbound frontage road provides access to the site via the interchanges of Far West Boulevard and Spicewood Springs Road, respectively. The posted speed limit for both frontage roads is 50 MPH.

Spicewood Springs Road is an east to west direction, major arterial. In the vicinity of the site, Spicewood Springs Road is a five-lane, median-divided facility with bike lanes on either side. The posted speed limit is 35 mph and speed data collected along Spicewood Springs Road near Hart Lane indicated the 85th percentile speed to be greater than 40 mph.

Far West Boulevard is an east to west direction major six-lane divided arterial roadway east of Hart Lane. West of Hart Lane, the roadway is classified a minor undivided arterial roadway. The posted speed limit is 35 MPH and dedicated bicycle lanes exist on both sides of the roadway.

Steck Avenue is an east to west direction minor undivided arterial roadway as described in the AMATP. Currently, it is a two-lane undivided roadway west of Loop 1 and east of Loop 1 is a two-lane roadway with a two-way-left-turn-lane (TWLTL). In the vicinity of the site, the posted speed limit is 30 MPH and dedicated bicycle lanes exist on both sides of Steck Avenue.

Executive Center Drive is presently a two lane neighborhood collector. It runs east to west and is wholly contained within the boundaries of the site.

Greystone Drive is two lane neighborhood collector, running east to west, and it is located to the south of the site.

Hart Lane is a two lane neighborhood collector with bicycle facilities. It runs north to south and borders the northwestern edge of the site.

Wood Hollow Drive is a two lane residential collector street with bicycle facilities. It runs north to south and bisects the site.

Site Trip Generation Estimates

Section 25-6-114 of the Land Development Code requires that a traffic impact analysis (TIA) be conducted for a project proposed with a zoning application if the project is anticipated to generate more than 2,000 daily trips.

Based on the ITE publication Trip Generation, 9th Edition, the proposed development will generate up to 15,562 net new trips daily. As documented in the scoping agreement, reductions for internal capture and pass-by traffic were granted in the study. The following table present the estimated number of daily trips anticipated from the (re)development of the site.

Table 1 – Estimated Trip Generation for the proposed land uses (at full build out in 2024)

Land Use	Amount	Units	ITE Code	Daily Trips	AM Peak Hour Trips			PM Peak Hour Trips		
					In	Out	Total	In	Out	Total
Existing General Office Building	445.322	1,000 Sq Ft	710	4,086	556	76	632	98	479	577
Existing General Office Building (To Remain)	0	1,000 Sq Ft	710	0	0	0	0	0	0	0
Reduction in Existing Office Trips				4,086	556	76	632	98	479	577
Apartment	250	Dwelling Unit(s)	220	1,640	25	101	126	101	54	155
Hotel	100	Room(s)	310	818	31	22	53	31	29	60
General Office Building	672.995	1,000 Sq Ft	710	5,591	774	106	880	141	691	832
Medical-Dental Office Building	169.000	1,000 Sq Ft	720	6,695	319	85	404	131	336	467
Retail/High-Turnover (Sit-Down) Restaurant	46.700	1,000 Sq Ft	932	5,938	278	227	505	276	184	460
2024 Net New Trips				16,596	871	465	1,336	582	815	1,397
Internal Capture Trip Reduction (5%)				1,034	71	27	98	34	65	99
2024 Trips (at Site Driveways)				19,648	1,356	514	1,870	646	1,229	1,875
2024 Net New External Trips				15,562	800	438	1,238	548	750	1,298

The applicant assigned site related trip to the existing roadway network with respect to the current traffic volumes and travel patterns. The table below presents the assumed choice of access route to and from the site:

Table 2 - Expected distribution of vehicle trips

Direction	Roadway	Site Traffic
From the north	Mo-Pac/Loop 1	25%
From the south	Hart Ln.	5%
From the south	Mo-Pac/Loop 1	25%
From the east	Anderson Ln.	20%
From the west	Spicewood Springs Rd.	20%
From the west	Far West Blvd.	5%

Data Collection

For this study, traffic counts were conducted in March 2014 when public schools were in session. The data collected was adjusted to reflect an average 2% annual growth rate. To verify this adjustment, daily volumes (using 24-Hour recording machine counts) were collected in March 2016 while public schools were in session and the prior 2014 counts were compared to the 2016 daily volumes. The results of the comparison indicate that the 2014 counts used for the analysis reflected higher volumes than those from 2016 and were within an acceptable margin of error. Table 4 below provides the results of the comparison.

Table 4 – Existing and Projected Count Comparison

Roadway	24-Hour	TMC	% Difference
Executive Center Drive	176	190	8%
Far West Blvd	4,418	5,142	16%
Hart Lane	939	1,020	9%
Spicewood Springs Road	4,174	4,791	15%
Wood Hollow Drive	1,013	1,148	13%

Traffic Analysis Methodology

The applicant reviewed the traffic operations, both existing and forecast to determine potential capacity deficiencies at the study area intersections. The results of the analyses provide the output values (as derived from the traffic simulation software) used to determine the estimated delay per vehicle during the peak periods of travel. The software applies the methodology of the Transportation Research Board/Highway Capacity Manual, which is the industry standard for the calculation of delay as experienced by individual motorists while driving.

The following table presents the HCM definitions of 'levels of service' for both *signalized and* unsignalized intersections. Within the City of Austin, LOS "D" is considered the threshold for acceptable operations for signalized intersections. For intersections where the LOS is projected at "E" or lower, mitigation should be proposed.

Table 5 – Summary of Level of Service as defined by Highway Capacity Manual

Level of Service	Signalized Intersection Average Total Delay (Sec/Veh)	Unsignalized Intersection Average Total Delay (Sec/Veh)
A	≤10	≤10
B	>10 and ≤20	>10 and ≤15
C	>20 and ≤35	>15 and ≤25
D	>35 and ≤55	>25 and ≤35
E	>55 and ≤80	>35 and ≤50
F	>80	>50

The following tables present a summary of the analysis performed within the TIA. Each table will include the intersection studied, the type of traffic control existing or proposed, the volume to capacity ratio (V/C), the estimated delay in seconds for an individual vehicle, and the corresponding level of service category assigned. Staff from ATD and TxDOT reviewed these results in order to evaluate the likely consequences generated by the development in terms of traffic impact. Explanatory text will accompany certain key findings within a given table.

Table 6 shows the estimated delays for the current traffic conditions during the AM peak hour. The City of Austin assumes the morning peak hour traffic will occur between 7 and 9 AM during the regular workweek (Monday – Friday). The analysis below is used to estimate the current conditions without site related traffic.

Table 6 - 2016 AM PEAK HOUR ANALYSIS RESULTS

Required Study Area			2016 Existing Condition (AM Peak)		
Intersection	Traffic Control	Approach	V/C	Delay	LOS
Spicewood Springs Road & Hart Lane	TWSC/ Signalized	EB	0.33	0	A
		WB	0.25	1.9	A
		NB	0.54	28.7	C
Spicewood Springs Road & Wood Hollow Drive	Signalized	EB	0.46	19	B
		WB	0.84	18.8	B
		NB	0.2	45.1	D
		SB	0.01	43.3	D
		INT		20.8	C
Spicewood Springs Road & Loop 1 SBFR	Signalized	EB	1.45	198.6	F
		WB	0.85	15.3	B
		SB	1.19	72.1	E
		INT		91.7	F
Spicewood Springs Road & Loop 1 NBFR	Signalized	EB	0.4	2.1	A
		WB	0.76	38.7	D
		NB	1.31	99.9	F
		INT		44.1	D
Executive Center Drive & Hart Lane	TWSC	WB	0.04	11.5	B
		NB	0.16	0	A
		SB	0.07	2.2	A
Executive Center Drive & Wood Hollow Drive	TWSC/ AWSC	EB	0.09	17.4	B
		WB	0.07	13	B
		NB	0.02	1.1	A
		SB	0.08	2.5	A
Executive Center Dr. & Loop 1 SBFR	TWSC	EB	0.02	9.4	A
		SB	0.66	0	A
Greystone Drive & Hart Lane	AWSC	NB	0.435	14.3	B
		EB	0.442	13.6	B
		WB	0.343	14	B
		SB	0.618	18.8	B
		INT		15.4	B

Table 6 (con't) - 2016 AM PEAK HOUR ANALYSIS RESULTS

Required Study Area			2016 Existing Condition (AM Peak)		
Intersection	Traffic Control	Approach	V/C	Delay	LOS
Greystone Drive & Wood Hollow Drive	AWSC	NB	0.319	11.9	B
		EB	0.302	11.1	B
		WB	0.347	12.2	B
		SB	0.367	12.5	B
		INT		11.8	B
Greystone Drive & Loop 1 SBFR	TWSC	EB	0.79	56.4	E
		SB	0.62	0	A
Far West Boulevard & Hart Lane	Signalized	EB	0.65	34.7	C
		WB	0.58	37.5	D
		NB	0.8	62.9	E
		SB	0.89	65.6	E
		INT		46.5	D
Far West Boulevard & Wood Hollow Drive	Signalized	EB	0.57	30.2	C
		WB	0.49	29.4	C
		NB	0.72	68.8	E
		SB	0.67	45.6	D
		INT		37.9	D
Far West Boulevard & Loop 1 SBFR	Signalized	EB	0.57	20.2	C
		WB	0.41	2.8	A
		SB	0.89	26.8	C
		INT		20.4	C
Far West Blvd. & Loop 1 NBFR	Signalized	EB	0.42	3.3	A
		NB	0.57	41	D
		INT		17	B
Steck Avenue & Loop 1 SBFR	Signalized	EB	0.88	62	E
		WB	0.4	5.2	A
		SB	1.3	143.8	F
		INT		114.7	F
Steck Avenue & Loop 1 NBFR	Signalized	EB	0.61	4.1	A
		WB	0.73	54.8	D
		NB	2.58	610	F
		INT		203	F

Table 7 shows the estimated delays for the current traffic conditions during the PM peak hour. The City of Austin assumes the evening peak hour traffic will occur between 4 and 6 PM during the regular workweek (Monday – Friday). The analysis below is used to estimate the current conditions without site related traffic.

Table 7 - 2016 PM PEAK HOUR ANALYSIS RESULTS					
Required Study Area			2016 Existing Condition (PM Peak)		
Intersection	Traffic Control	Approach	V/C	Delay	LOS
Spicewood Springs Road & Hart Lane	TWSC/ Signalized	EB	0.25	0	A
		WB	0.34	1	A
		NB	1.01	77.4	E
Spicewood Springs Road & Wood Hollow Drive	Signalized	EB	0.33	11.7	B
		WB	0.46	10	A
		NB	0.76	64.2	E
		SB	0.03	49.1	D
		INT		20.3	C
Spicewood Springs Road & Loop 1 SBFR	Signalized	EB	1.1	108	F
		WB	0.74	10.5	B
		SB	1.09	86.1	F
		INT		66.4	E
Spicewood Springs Road & Loop 1 NBFR	Signalized	EB	0.77	7.3	A
		WB	0.72	34.3	C
		NB	1.35	161.1	F
		INT		50.6	D
Executive Center Drive & Hart Lane	TWSC	WB	0.23	12.3	B
		NB	0.21	0	A
		SB	0.02	0.8	A
Executive Center Drive & Wood Hollow Drive	TWSC/ AWSC	EB	0.48	23.3	C
		WB	0.3	14.1	B
		NB	0.01	0.3	A
		SB	0.02	0.9	A
Executive Center Dr. & Loop 1 SBFR	TWSC	EB	0.49	23.1	C
		SB	0.48	0	A
Greystone Drive & Hart Lane	AWSC	NB	0.525	14.6	B
		EB	0.209	10.6	B
		WB	0.405	12.8	B
		SB	0.309	11.3	B
		INT		12.8	B

Table 7 (con't) - 2016 PM PEAK HOUR ANALYSIS RESULTS

Required Study Area			2016 Existing Condition (PM Peak)		
Intersection	Traffic Control	Approach	V/C	Delay	LOS
Greystone Drive & Wood Hollow Drive	AWSC	NB	0.486	13.9	B
		EB	0.2	10.8	B
		WB	0.562	16.1	B
		SB	0.263	11.6	B
		INT		13.9	B
Greystone Drive & Loop 1 SBFR	TWSC	EB	0.63	34.7	C
		SB	0.46	0	A
Far West Boulevard & Hart Lane	Signalized	EB	0.32	18.8	B
		WB	0.32	6.3	A
		NB	0.75	60.7	E
		SB	0.73	60.5	E
		INT		26.3	C
Far West Boulevard & Wood Hollow Drive	Signalized	EB	0.45	15.7	B
		WB	0.76	30.3	C
		NB	0.82	65.2	E
		SB	0.75	65.9	E
		INT		36.6	D
Far West Boulevard & Loop 1 SBFR	Signalized	EB	0.68	18.6	B
		WB	0.25	3.7	A
		SB	1.38	151.5	F
		INT		78.7	E
Far West Blvd. & Loop 1 NBFR	Signalized	EB	0.93	32.2	C
		NB	0.29	25.4	C
		INT		30.8	C
Steck Avenue & Loop 1 SBFR	Signalized	EB	0.87	59.4	E
		WB	0.31	0.7	A
		SB	1.34	202.5	F
		INT		132.2	F
Steck Avenue & Loop 1 NBFR	Signalized	EB	0.97	15.9	B
		WB	0.91	56.9	E
		NB	2.02	458.2	F
		INT		169.8	F

Note: where the V/C ratio is greater than 1.0, the intersection is saturated and cannot process all of the vehicles which seek to enter the service area.

Summary of existing conditions

As shown in the tables above, certain intersections already exhibit LOS at "E" or below. These analyses reflect the baseline conditions to which site traffic (and proposed mitigations) will be added. Where the V/C ratio is shown greater than 1.0, staff interprets the analysis to indicate that more vehicles seek to enter the intersection than can be served.

Traffic analysis of future conditions

The TIA proposed phasing the development and determined the necessary improvements accordingly. The applicant provided the level of analysis for each phase (years 2018, 2020, 2022, and 2024), however, the following tables present the results of the analysis for the 'no build' conditions, the 'build conditions without mitigation' and the 'build conditions with mitigation' for only the final 2024 phase year.

Table 8 shows the estimated delays for the future traffic conditions during the AM peak hour. The City of Austin assumes the morning peak hour traffic will occur between 7 and 9 AM during the regular workweek (Monday – Friday). The analysis below is used to estimate the future conditions without site related traffic.

Table 8 - 2024 AM PEAK HOUR ANALYSIS RESULTS					
Required Study Area			2024 No Build Condition (AM Peak)		
Intersection	Traffic Control	Approach	V/C	Delay	LOS
Spicewood Springs Road & Hart Lane	TWSC/ Signalized	EB	0.38	0	A
		WB	0.34	2.3	A
		NB	0.84	53.7	D
		INT			
Spicewood Springs Road & Wood Hollow Drive	Signalized	EB	0.57	22.4	C
		WB	1	28	C
		NB	0.23	45.4	D
		SB	0.01	43.3	D
		INT		26.7	C
Spicewood Springs Road & Loop 1 SBFR	Signalized	EB	1.78	284.1	F
		WB	0.99	19	B
		SB	1.4	147.4	F
		INT		150.2	F
Spicewood Springs Road & Loop 1 NBFR	Signalized	EB	0.46	2.4	A
		WB	0.89	45.4	D
		NB	1.53	157.6	F
		INT		63.3	E
Executive Center Drive & Hart Lane	TWSC	WB	0.05	12.5	B
		NB	0.18	0	A
		SB	0.08	2.4	A

Table 8 (con't) - 2024 AM PEAK HOUR ANALYSIS RESULTS

Required Study Area			2024 No Build Condition (AM Peak)		
Intersection	Traffic Control	Approach	V/C	Delay	LOS
Executive Center Drive & Wood Hollow Drive	TWSC/ Signalized	EB	0.13	21.2	C
		WB	0.09	14.9	B
		NB	0.03	1.1	A
		SB	0.1	2.7	A
		INT			
Executive Center Dr. & Loop 1 SBFR	TWSC	EB	0.04	11	B
		SB	0.77	0	A
Greystone Drive & Hart Lane	AWSC	NB	0.571	19.8	B
		EB	0.575	17.8	B
		WB	0.451	17.5	B
		SB	0.806	32.3	C
		INT		22.7	C
Greystone Drive & Wood Hollow Drive	AWSC	NB	0.403	13.9	B
		EB	0.382	12.9	B
		WB	0.438	14.5	B
		SB	0.464	15.1	B
		INT		14	B
Greystone Drive & Loop 1 SBFR	TWSC	EB	1.19	172.1	F
		SB	0.72	0	A
Far West Boulevard & Hart Lane	Signalized	EB	0.82	43.3	D
		WB	0.82	53.5	D
		NB	0.86	67.8	E
		SB	0.96	75.1	E
		INT		56.7	E
Far West Boulevard & Wood Hollow Drive	Signalized	EB	0.73	41.4	D
		WB	0.72	35.6	D
		NB	1.04	115	F
		SB	0.71	43.9	D
		INT		50.7	D
Far West Boulevard & Loop 1 SBFR	Signalized	EB	0.67	19.6	B
		WB	0.48	1.9	A
		SB	1.16	69	E
		INT		39.5	D

Table 8 (con't) - 2024 AM PEAK HOUR ANALYSIS RESULTS					
Required Study Area			2024 No Build Condition (AM Peak)		
Intersection	Traffic Control	Approach	V/C	Delay	LOS
Far West Blvd. & Loop 1 NBFR	Signalized	EB	0.47	3.1	A
		NB	0.7	47.6	D
		INT		19.3	B
Steck Avenue & Loop 1 SBFR	Signalized	EB	1.03	88	F
		WB	0.47	5.9	A
		SB	1.52	233.9	F
		INT		184.3	F
Steck Avenue & Loop 1 NBFR	Signalized	EB	0.72	4.9	A
		WB	0.85	62.8	E
		NB	3.04	766.6	F
		INT		253.9	F

Table 9 shows the estimated delays for the future 2024 traffic conditions during the PM peak hour, assumed to occur between 4 and 6 PM during the regular workweek (Monday – Friday). The analysis below is used to estimate the future conditions without site related traffic.

Table 9 - 2024 PM PEAK HOUR ANALYSIS RESULTS					
Required Study Area			2024 No Build Condition (PM Peak)		
Intersection	Traffic Control	Approach	V/C	Delay	LOS
Spicewood Springs Road & Hart Lane	TWSC/ Signalized	EB	0.3	0	A
		WB	0.4	1.1	A
		NB	1.75	381.1	F
		INT			
Spicewood Springs Road & Wood Hollow Drive	Signalized	EB	0.39	12.6	B
		WB	0.54	11.2	B
		NB	0.89	73.6	E
		SB	0.03	49.1	D
		INT		22.7	C
Spicewood Springs Road & Loop 1 SBFR	Signalized	EB	1.29	162.4	F
		WB	0.87	12.1	B
		SB	1.28	125.3	F
		INT		97.2	F
Spicewood Springs Road & Loop 1 NBFR	Signalized	EB	0.9	8.7	A
		WB	0.84	39.2	D
		NB	1.66	233	F
		INT		68.5	E

Table 9 (con't) - 2024 PM PEAK HOUR ANALYSIS RESULTS

Required Study Area			2024 No Build Condition (PM Peak)		
Intersection	Traffic Control	Approach	V/C	Delay	LOS
Executive Center Drive & Hart Lane	TWSC	WB	0.3	13.8	B
		NB	0.25	0	A
		SB	0.02	0.9	A
Executive Center Drive & Wood Hollow Drive	TWSC/ Signalized	EB	0.69	39.2	D
		WB	0.4	16.8	B
		NB	0.01	0.3	A
		SB	0.02	0.9	A
		INT			
Executive Center Dr. & Loop 1 SBFR	TWSC	EB	0.69	37.8	D
		SB	0.56	0	A
Greystone Drive & Hart Lane	AWSC	NB	0.667	20.5	C
		EB	0.267	12	B
		WB	0.516	15.8	B
		SB	0.399	13.5	B
		INT		16.4	B
Greystone Drive & Wood Hollow Drive	AWSC	NB	0.616	18.3	B
		EB	0.258	12.1	B
		WB	0.71	23.1	C
		SB	0.339	13.4	B
		INT		18.3	B
Greystone Drive & Loop 1 SBFR	TWSC	EB	0.92	81.6	F
		SB	0.54	0	A
Far West Boulevard & Hart Lane	Signalized	EB	0.39	21.7	C
		WB	0.42	7.6	A
		NB	0.78	61.4	E
		SB	0.78	62.3	E
		INT		28.1	C
Far West Boulevard & Wood Hollow Drive	Signalized	EB	0.55	17.4	B
		WB	1.12	47.7	D
		NB	0.92	80.9	F
		SB	0.81	69.2	E
		INT		47.1	D

Table 9 (con't) - 2024 PM PEAK HOUR ANALYSIS RESULTS					
Required Study Area			2024 No Build Condition (PM Peak)		
Intersection	Traffic Control	Approach	V/C	Delay	LOS
Far West Boulevard & Loop 1 SBFR	Signalized	EB	0.83	23.2	C
		WB	0.29	3.8	A
		SB	1.86	277.7	F
		INT		139.4	F
Far West Blvd. & Loop 1 NBFR	Signalized	EB	1.09	70.8	E
		NB	0.35	26	C
		INT		61.7	E
Steck Avenue & Loop 1 SBFR	Signalized	EB	1.02	84.9	F
		WB	0.36	0.7	A
		SB	1.57	303.2	F
		INT		196.9	F
Steck Avenue & Loop 1 NBFR	Signalized	EB	1.14	46.5	D
		WB	1.12	86.7	F
		NB	2.36	594.3	F
		INT		234	F

Summary of future 2024 'no build' conditions

As shown in the tables above, certain intersections are project to operate at LOS at "E" or below, independent of the proposed development. These analyses reflect the baseline conditions to which site traffic (and proposed mitigations) will be added. Where the V/C ratio is shown greater than 1.0, staff interprets the analysis to indicate that more vehicles seek to enter the intersection than can be served.

Presentation of future 2024 "build without mitigation" conditions

Table 10 shows the estimated delays for the future traffic conditions during the AM peak hour with the site developed and no mitigations provided. The City of Austin assumes the morning peak hour traffic will occur between 7 and 9 AM during the regular workweek (Monday – Friday). The following analysis is used to estimate the future conditions without any mitigation provided to accommodate site traffic.

Table 10 - 2024 AM PEAK HOUR ANALYSIS RESULTS					
Required Study Area			2024 Build w/o mitigation (AM Peak)		
Intersection	Traffic Control	Approach	V/C	Delay	LOS
Spicewood Springs Road & Hart Lane	TWSC/ Signalized	EB	0.75	25.4	C
		WB	0.49	10.6	B
		NB	0.52	25.5	C
		INT		19.8	B
Spicewood Springs Road & Wood Hollow Drive	Signalized	EB	0.83	37.4	D
		WB	1	31.4	C
		NB	0.34	26.5	C
		SB	0.01	38.5	D
		INT		33.6	C
Spicewood Springs Road & Loop 1 SBFR	Signalized	EB	1.2	91.2	F
		WB	1.17	52.4	D
		SB	1.44	125.1	F
		INT		94.1	F
Spicewood Springs Road & Loop 1 NBFR	Signalized	EB	0.52	2.5	A
		WB	1.03	68.7	E
		NB	1.73	236.4	F
		INT		96.3	F
Executive Center Drive & Hart Lane	TWSC	WB	0.3	16.7	B
		NB	0.2	0	A
		SB	0.22	5.1	A
Executive Center Drive & Wood Hollow Drive	TWSC/ Signalized	EB	0.348	15.3	B
		WB	0.305	14.5	B
		NB	0.675	24.9	C
		SB	1.074	53.3	D
		INT		33.8	C
Executive Center Dr. & Loop 1 SBFR	TWSC	EB	free	free	free
		SB	free	free	free
Greystone Drive & Hart Lane	AWSC	NB	0.698	26.6	C
		EB	0.61	19.7	B
		WB	0.504	20	B
		SB	0.885	44.9	D
		INT		29	C
Greystone Drive & Wood Hollow Drive	AWSC	NB	0.848	41.1	D
		EB	0.527	18.9	B
		WB	0.54	18.9	B
		SB	4.9	0.675	C
		INT			C

Table 10 (con't) - 2024 AM PEAK HOUR ANALYSIS RESULTS					
Required Study Area			2024 Build w/o mitigation Condition (AM Peak)		
Intersection	Traffic Control	Approach	V/C	Delay	LOS
Greystone Drive & Loop 1 SBFR	TWSC	EB	1.42	254.9	F
		SB	0.63	0	A
Far West Boulevard & Hart Lane	Signalized	EB	0.67	29.6	C
		WB	0.74	43.1	D
		NB	0.74	51.4	D
		SB	0.85	54.9	D
		INT		42	D
Far West Boulevard & Wood Hollow Drive	Signalized	EB	0.54	33.1	C
		WB	0.61	56.7	E
		NB	0.96	88.2	F
		SB	0.72	44.5	D
		INT		49.4	D
Far West Boulevard & Loop 1 SBFR	Signalized	EB	0.68	22.4	C
		WB	0.57	5.7	A
		SB	0.63	13.6	B
		INT		15.3	B
Far West Blvd. & Loop 1 NBFR	Signalized	EB	0.56	5.5	A
		NB	0.71	43.7	D
		INT		20.1	C
Steck Avenue & Loop 1 SBFR	Signalized	EB	1.03	88	F
		WB	0.47	6	A
		SB	1.57	250.7	F
		INT		197.4	F
Steck Avenue & Loop 1 NBFR	Signalized	EB	0.72	4.9	A
		WB	0.85	62.8	E
		NB	3.04	765	F
		INT		253.4	F

Table 11 shows the estimated delays for the future 2024 traffic conditions during the PM peak hour, assumed to occur between 4 and 6 PM during the regular workweek (Monday – Friday). The analysis below is used to estimate the future conditions without any mitigation performed to serve site related traffic.

Table 11 - 2024 PM PEAK HOUR ANALYSIS RESULTS					
Required Study Area			2024 Build w/o mitigation (PM Peak)		
Intersection	Traffic Control	Approach	V/C	Delay	LOS
Spicewood Springs Road & Hart Lane	TWSC/ Signalized	EB	0.61	28.1	C
		WB	0.5	11.9	B
		NB	0.77	35.9	D
		INT		22.1	C
Spicewood Springs Road & Wood Hollow Drive	Signalized	EB	0.6	17.7	B
		WB	0.8	25.8	C
		NB	0.74	42.9	D
		SB	0.02	35	C
		INT		26.3	C
Spicewood Springs Road & Loop 1 SBFR	Signalized	EB	1.48	219.5	F
		WB	0.97	14.7	B
		SB	1.28	105.2	F
		INT		111.2	F
Spicewood Springs Road & Loop 1 NBFR	Signalized	EB	1.03	14.9	B
		WB	0.92	44.5	D
		NB	1.86	309.2	F
		INT		91.4	F
Executive Center Drive & Hart Lane	TWSC	WB	0.74	29.9	C
		NB	0.26	0	A
		SB	0.13	4	A
Executive Center Drive & Wood Hollow Drive	TWSC/ Signalized	EB	0.825	42.9	D
		WB	0.878	42.6	D
		NB	0.925	62.2	E
		SB	0.926	52.5	D
		INT			
Executive Center Dr. & Loop 1 SBFR	TWSC	EB	free	free	free
		SB	free	free	free
Greystone Drive & Hart Lane	AWSC	NB	0.735	25	C
		EB	0.279	12.5	B
		WB	0.569	17.7	B
		SB	0.458	15	B
		INT		18.9	B

Table 11 (con't) - 2024 PM PEAK HOUR ANALYSIS RESULTS					
Required Study Area			2024 Build w/o mitigation (PM Peak)		
Intersection	Traffic Control	Approach	V/C	Delay	LOS
Greystone Drive & Wood Hollow Drive	AWSC	NB	0.934	47.7	D
		EB	0.339	15.5	B
		WB	0.835	33.2	C
		SB	3.3	0.554	B
		INT			C
Greystone Drive & Loop 1 SBFR	TWSC	EB	1.17	143.4	F
		SB	0.5	0	A
Far West Boulevard & Hart Lane	Signalized	EB	0.36	17.5	B
		WB	0.42	31.5	C
		NB	0.73	54.5	D
		SB	0.74	54	D
		INT		34.5	C
Far West Boulevard & Wood Hollow Drive	Signalized	EB	0.47	35.6	D
		WB	0.79	45.7	D
		NB	0.82	51.2	D
		SB	0.83	69.2	E
		INT		46.3	D
Far West Boulevard & Loop 1 SBFR	Signalized	EB	0.9	29.5	C
		WB	0.33	3.3	A
		SB	1.32	78.6	E
		INT		49.5	D
Far West Blvd. & Loop 1 NBFR	Signalized	EB	1.2	117	F
		NB	0.4	26.8	C
		INT		97.9	F
Steck Avenue & Loop 1 SBFR	Signalized	EB	1.02	84.9	F
		WB	0.36	0.7	A
		SB	1.61	321.6	F
		INT		209.4	F
Steck Avenue & Loop 1 NBFR	Signalized	EB	1.14	46.5	D
		WB	1.12	86.7	F
		NB	2.36	594.3	F
		INT		234	F

Summary of future 2024 'build without mitigation' conditions

As shown in Tables 10 and 11, should the development be permitted without mitigation, several intersections will not operate satisfactorily. As was shown in the 2024 'no build' condition, current conditions continue to degrade and secondary consequences result. These analyses help to identify which intersections require mitigation as a part of development, and which may be deferred.

Presentation of future 2024 'build with mitigation' conditions

Table 12 shows the estimated delays for the future traffic conditions during the AM peak hour with the site developed and mitigations provided. The analysis below is used to estimate the future conditions with the improvements proposed to mitigate the impact of site related traffic.

Table 12 - 2024 AM PEAK HOUR ANALYSIS RESULTS					
Required Study Area			2024 Build and Mitigated Condition (AM Peak)		
Intersection	Traffic Control	Approach	V/C	Delay	LOS
Spicewood Springs Road & Hart Lane	TWSC/ Signalized	EB	0.75	25.4	C
		WB	0.49	10.6	B
		NB	0.52	25.5	C
		INT		19.8	B
Spicewood Springs Road & Wood Hollow Drive	Signalized	EB	0.83	37.4	D
		WB	1	31.4	C
		NB	0.34	26.5	C
		SB	0.01	38.5	D
		INT		33.6	C
Spicewood Springs Road & Loop 1 SBFR	Signalized	EB	1.2	91.2	F
		WB	1.17	52.4	D
		SB	1.44	125.1	F
		INT		94.1	F
Spicewood Springs Road & Loop 1 NBFR	Signalized	EB	0.52	2.5	A
		WB	1.03	68.7	E
		NB	1.73	236.4	F
		INT		96.3	F
Executive Center Drive & Hart Lane	TWSC	WB	0.15	14.7	B
		NB	0.2	0	A
		SB	0.22	3.6	A
Executive Center Drive & Wood Hollow Drive	TWSC/ Signalized	EB	0.24	21.7	C
		WB	0.22	21.2	C
		NB	0.77	31.9	C
		SB	0.92	38.2	D
		INT		31.7	C

Table 12 (con't) - 2024 AM PEAK HOUR ANALYSIS RESULTS					
Required Study Area			2024 Build and Mitigated Condition (AM Peak)		
Intersection	Traffic Control	Approach	V/C	Delay	LOS
Executive Center Dr. & Loop 1 SBFR	TWSC	EB	-	-	-
		SB	-	-	-
Greystone Drive & Hart Lane	AWSC	NB	0.719	28.6	C
		EB	0.592	18.5	B
		WB	0.488	18.9	B
		SB	0.483	17.3	B
		INT		20.5	C
Greystone Drive & Wood Hollow Drive	AWSC	NB	0.475	17.6	B
		EB	0.503	17.6	B
		WB	0.518	17.6	B
		SB	0.65	22	C
		INT		18.7	B
Greystone Drive & Loop 1 SBFR	TWSC	EB	1.42	254.9	F
		SB	0.63	0	A
Far West Boulevard & Hart Lane	Signalized	EB	0.67	29.6	C
		WB	0.74	32.4	C
		NB	0.74	51.4	D
		SB	0.85	54.9	D
		INT		39.3	D
Far West Boulevard & Wood Hollow Drive	Signalized	EB	0.52	29.6	C
		WB	0.47	42.9	D
		NB	0.83	64.8	E
		SB	0.85	54.7	D
		INT		42.3	D
Far West Boulevard & Loop 1 SBFR	Signalized	EB	0.68	22.2	C
		WB	0.57	5.7	A
		SB	0.63	13.6	B
		INT		15.3	B
Far West Blvd. & Loop 1 NBFR	Signalized	EB	0.56	5.5	A
		NB	0.71	43.7	D
		INT		20	B

Table 12 (con't) - 2024 AM PEAK HOUR ANALYSIS RESULTS					
Required Study Area			2024 Build and Mitigated Condition (AM Peak)		
Intersection	Traffic Control	Approach	V/C	Delay	LOS
Steck Avenue & Loop 1 SBFR	Signalized	EB	1.03	88	F
		WB	0.47	6	A
		SB	1.57	250.7	F
		INT		197.4	F
Steck Avenue & Loop 1 NBFR	Signalized	EB	0.72	4.9	A
		WB	0.85	62.8	E
		NB	3.04	765	F
		INT		253.4	F

Table 13 shows the estimated delays for the future 2024 traffic conditions during the PM peak hour, assumed to occur between 4 and 6 PM during the regular workweek (Monday – Friday). The analysis below is used to estimate the future conditions with the mitigation measures to accommodate site related traffic.

Table 13 - 2024 PM PEAK HOUR ANALYSIS RESULTS					
Required Study Area			2024 Build and Mitigated Condition (PM Peak)		
Intersection	Traffic Control	Approach	V/C	Delay	LOS
Spicewood Springs Road & Hart Lane	TWSC/ Signalized	EB	0.61	28.1	C
		WB	0.5	11.9	B
		NB	0.77	35.9	D
		INT		22.1	C
Spicewood Springs Road & Wood Hollow Drive	Signalized	EB	0.64	18.8	B
		WB	0.86	31.5	C
		NB	0.67	34.4	C
		SB	0.02	31.6	C
		INT		27.3	C
Spicewood Springs Road & Loop 1 SBFR	Signalized	EB	1.48	220.5	F
		WB	0.97	14.7	B
		SB	1.28	105.2	F
		INT		111.5	F
Spicewood Springs Road & Loop 1 NBFR	Signalized	EB	1.03	14.8	B
		WB	0.92	44.5	D
		NB	1.86	309.2	F
		INT		91.4	F

Table 13 (con't) - 2024 PM PEAK HOUR ANALYSIS RESULTS					
Required Study Area			2024 Build and Mitigated Condition (PM Peak)		
Executive Center Drive & Hart Lane	TWSC	WB	0.5	17.6	B
		NB	0.26	0	A
		SB	0.16	3.1	A
Executive Center Drive & Wood Hollow Drive	TWSC/ Signalized	EB	0.49	20.7	C
		WB	0.44	20	B
		NB	0.81	33.4	C
		SB	0.81	49.1	D
		INT		30.4	C
Executive Center Dr. & Loop 1 SBFR	TWSC	EB	free	free	free
		SB	free	free	free
Greystone Drive & Hart Lane	AWSC	NB	0.808	33.5	C
		EB	0.284	12.8	B
		WB	0.579	18.4	B
		SB	0.297	12.5	B
		INT		21.7	C
Greystone Drive & Wood Hollow Drive	AWSC	NB	0.596	20.9	C
		EB	0.329	14.9	B
		WB	0.814	30.7	C
		SB	0.574	19.2	B
		INT		22.9	C
Greystone Drive & Loop 1 SBFR	TWSC	EB	1.17	143.4	F
		SB	0.5	0	A
Far West Boulevard & Hart Lane	Signalized	EB	0.36	17.5	B
		WB	0.42	31.5	C
		NB	0.73	54.5	D
		SB	0.74	54	D
		INT		34.5	C
Far West Boulevard & Wood Hollow Drive	Signalized	EB	0.47	35.6	D
		WB	0.79	45.7	D
		NB	0.82	51.2	D
		SB	0.83	69.2	E
		INT		46.3	D

Table 13 (con't) - 2024 PM PEAK HOUR ANALYSIS RESULTS					
Required Study Area			2024 Build and Mitigated Condition (PM Peak)		
Far West Boulevard & Loop 1 SBFR	Signalized				
		EB	0.9	29.5	C
		WB	0.33	3.3	A
		SB	0.71	78.6	E
		INT		49.5	D
Far West Blvd. & Loop 1 NBFR	Signalized	EB	1.2	117	F
		NB	0.4	26.8	C
		INT		97.9	F
Steck Avenue & Loop 1 SBFR	Signalized	EB	1.02	84.9	F
		WB	0.36	0.7	A
		SB	1.61	321.6	F
		INT		209.4	F
Steck Avenue & Loop 1 NBFR	Signalized	EB	1.14	46.5	D
		WB	1.12	86.7	F
		NB	2.36	594.3	F
		INT		234	F

Summary of future 2024 'build with mitigation' conditions evaluation

As shown in Tables 12 and 13, the development proposes to address its site related traffic impact with improvements to the intersections along Spicewood Springs Road and the southbound frontage road of Mo-Pac Expressway. The interchanges of Far West Boulevard and Spicewood Springs/Anderson Lane with Mo-Pac have limited options, due to right-of-way limitations and the needs of larger regional traffic operations (apart from the site related traffic). As such, staff review of the TIA indicates that site related traffic will be adequately mitigated by the proposed improvements. The exception to these findings is the identified degradation of traffic operations along the Mo-Pac frontage roads in the vicinity of the site.

Discussion of results of TIA analysis

As illustrated in the above findings, existing capacity concerns are identified along the Loop 1 corridor. The impacts of these regional issues were observed at intersections in the study area in the Existing (2016) analysis. Although major improvements are necessary at intersections along Loop 1, these would need to be undertaken as regional improvements to achieve an acceptable LOS. The findings reflect a level of investment and analysis greater than can be offered by site development review. The applicant has requested the City consult with TxDOT to identify how best to determine the long range improvements required.

2024 Build Analysis Results – detailed intersection elements

- **Executive Center Drive & Hart Lane.** Vehicles making the 'westbound' left-turn movement from Executive Center Drive have difficulty finding gaps onto Hart Lane. Because the westbound approach is a single lane, the delay at the westbound left-turn movement is also experienced by vehicles waiting to turn right onto Hart Lane.

- Executive Center Drive & Wood Hollow Drive. The northbound approach of Wood Hollow Drive at Executive Center Drive experience an unacceptable LOS due to the high volume expected at this approach.
- Greystone Drive & Hart Lane. The southbound approach of Hart Lane at Greystone Drive experiences an unacceptable LOS due to the high volume at this approach and the capacity limitations of an all-way stop-controlled (AWSC) intersection.
- Greystone Drive & Wood Hollow Drive. The northbound approach of Wood Hollow Drive at Greystone Drive experiences an unacceptable LOS due to the high volume at this approach and the capacity limitations of an AWSC intersection.
- Spicewood Springs Road & Loop 1. Similar to existing conditions the intersection of Spicewood Springs Road and Loop 1 continues to operate at an unacceptable LOS.
- Greystone Drive & Loop 1. Similar to existing conditions the eastbound approach of Greystone Drive at Loop 1 SBFR continues to operate at an unacceptable LOS.
- Far West Boulevard & Loop 1. Similar to existing conditions the intersection of Far West Boulevard and Loop 1 continues to operate at an unacceptable LOS.
- Steck Avenue & Loop 1. Similar to existing conditions the intersection of Steck Avenue and Loop 1 continues to operate at an unacceptable LOS.

Traffic Signal Warrant Analysis

As part of the analysis of 2024 Build conditions, a traffic signal warrant analysis was performed at the intersection of Executive Center Drive and Wood Hollow Drive. The number of vehicles at the eastbound approach of Executive Center Drive throughout the day is consistently above the minor street volume threshold for warranting a signal. A traffic signal is warranted based on the 2024 projected traffic volumes at the intersection.

Transportation System Improvements

The TIA identified a series of improvements to the surrounding public infrastructure which would serve to mitigate the calculated impact to traffic resulting from this development. The following is a summation of the proposed improvements, organized by Phase:

Developer proposed Phase 1 (2018) improvements:

- Spicewood Springs Road & Hart Lane. Consider installing a fully actuated traffic signal at the intersection of Spicewood Springs Road and Hart Lane. Install an advance warning flasher west of the intersection synchronized with the traffic signal and widen the northbound approach of Hart Lane to include dual left-turns.
- Hart Lane between Executive Center Drive and Spicewood Springs Road. Widen Hart Lane between Executive Center Drive and Spicewood Springs Road to accommodate a three-lane northbound approach at the intersection of Hart Lane at Spicewood Springs Road. Restripe the northbound approach of Hart Lane to include dual-left-turn lanes and an exclusive right-turn lane (three 10' approach lanes); a single northbound receiving lane (14') and southbound bike lane (5') will remain.

- *Spicewood Springs Road & Wood Hollow Drive.* Extend the westbound left-turn bay of Spicewood Springs Road to Wood Hollow Drive to provide adequate storage for vehicles making a left-turn movement and prevent spill-back into the adjacent lane. 15% of the inbound trips generated by the Austin Oaks development were assigned to the westbound left-turn movement of Spicewood Springs Road to Wood Hollow Drive. The proposed left-turn bay extension will mitigate the impact of site traffic at this movement.
- *Spicewood Springs Road & Wood Hollow Drive.* Provide a right-turn overlap operation at the northbound right-turn movement of Wood Hollow Drive to Spicewood Springs Road. This will allow the northbound right-turn phase and the westbound left-turn phase to operate simultaneously and decrease delay at the northbound approach of Wood Hollow Drive. 15% of the outbound trips generated by the Austin Oaks development were assigned to the right-turn movement of Wood Hollow Drive to Spicewood Springs Road. The proposed right-turn overlap operation will mitigate the impact of site traffic at this movement.
- *Wood Hollow Drive between Executive Center Drive and Spicewood Springs Road.* Concurrently with the right-turn overlap improvement at the northbound right-turn movement of Wood Hollow Drive to Spicewood Springs Road, restripe Wood Hollow Drive between Executive Center Drive and Spicewood Springs Road to allow two northbound lanes, one southbound lane, and bike lanes on both sides of the roadway. Restricting parking and extending the northbound right-turn lane will maximize the operations at the northbound approach of Wood Hollow Drive at Spicewood Springs Road.
- *Spicewood Springs Road & Loop 1 southbound frontage road.* Provide a free, channelized operation at the southbound right-turn movement from Loop 1 SBFR to Spicewood Springs Road (westbound). On Spicewood Springs the existing pavement can accommodate a free movement; however, there are design constraints due to the existing bike lane. Where feasible, an eight foot wide (8') sidewalk will be provided along Mo-Pac Southbound Frontage Road. Any improvements at Mo-Pac Frontage Road are subject to TxDOT approval.
- *Spicewood Springs Road & Loop 1 southbound frontage road.* Provide striping and vertical panels (or other barrier) at the southbound receiving lanes of Loop 1 southbound frontage road to facilitate a free eastbound right-turn movement from Spicewood Springs Road to Loop 1 southbound frontage road. This movement is currently channelized and a merge with Loop 1 southbound frontage road can be accomplished with existing pavement. Twelve foot (12') wide receiving lanes should be maintained along Mo-Pac southbound frontage road. Where feasible, an eight foot wide (8') sidewalk will be provided along Mo-Pac southbound frontage road. Any improvements at Mo-Pac Frontage Road are subject to TxDOT approval.
- *Executive Center Drive & Wood Hollow Drive.* Implement stop-control at the northbound and southbound approaches of Wood Hollow Drive. Restripe the northbound approach of Wood Hollow Drive at Executive Center Drive to include a shared thru-left and a shared thru-right. The shared thru-right lanes will also be marked as shared bike lanes. This will require the north-leg of the intersection to be restriped to provide two receiving lanes. Restripe the southbound approach of Wood Hollow Drive at Executive Center Drive to include an exclusive right-turn lane and a shared thru-left. The proposed cross sections can be accomplished using existing pavement.
- *Executive Center Drive & Loop 1 southbound frontage road.* Construct a southbound right-turn deceleration lane on Loop 1 SBFR (upstream of Executive Center Drive). Additionally, install vertical panels (or other physical barrier) along Loop 1 Southbound Off-Ramp to prevent access to Executive Center Drive from southbound Loop 1 Southbound Off-Ramp and reduce

weaving in this section of the frontage road. Where feasible, an eight foot wide (8') sidewalk will be provided along Mo-Pac Southbound Frontage Road. Any improvements at Mo-Pac Frontage Road are subject to TxDOT approval.

- *Executive Center Drive at Loop 1 southbound frontage road.* Construct a southbound acceleration lane on Loop 1 southbound frontage road, downstream of Executive Center Drive to provide a free operation at the eastbound right-turn movement of Executive Center Drive. Where feasible, an eight foot wide (8') sidewalk will be provided along Mo-Pac Southbound Frontage Road. Any improvements at Mo-Pac Frontage Road are subject to TxDOT approval.
- *Greystone Drive & Loop 1 southbound frontage road.* Construct a southbound right-turn deceleration lane on Loop 1 southbound frontage road (upstream of Greystone Drive). The proposed southbound right-turn deceleration lane will mitigate the impact of site traffic at eastbound approach by removing vehicles turning right from the southbound thru lane. Where feasible, an eight foot wide (8') sidewalk will be provided along Mo-Pac Southbound Frontage Road. Any improvements at Mo-Pac Frontage Road are subject to TxDOT approval.
- *Far West Boulevard & Hart Lane.* Widen the northbound approach of Hart Lane to a five-lane cross-section at the intersection of Far West Boulevard. The northbound approach should include an exclusive left-turn lane, exclusive thru lane, and exclusive right-turn lane; two southbound receiving lanes will remain. Concurrent with the widening, a five foot (5') wide sidewalk should be reconstructed adjacent to the northbound approach of Hart Lane. Restripe the southbound approach of Hart Lane to include an exclusive left-turn lane, exclusive thru lane, and shared thru-right lane; a single northbound receiving lane will remain.
- *Far West Boulevard & Wood Hollow Drive.* Provide a right-turn overlap operation at the northbound right-turn movement from Wood Hollow Drive to Far West Boulevard. Restripe the northbound approach to extend the existing right-turn lane.
- *Far West Boulevard & Loop 1 southbound frontage road.* Provide a free, channelized operation at the southbound right-turn movement from Loop 1 southbound frontage road to Far West Boulevard (westbound). The existing lane configurations can accommodate a free operation because there are three westbound receiving lanes. The right-turn-only lane along Far West Boulevard is recommended to be restriped as a shared thru-right lane between Loop 1 and the first driveway (approximately 400'). Where feasible, an eight foot wide (8') sidewalk will be provided along Mo-Pac southbound frontage road. Any improvements along Mo-Pac are subject to TxDOT approval.

Developer proposed Phase 2 (2020) improvement:

- *Far West Boulevard & Wood Hollow Drive* Adjust signal timing at the intersection of Far West Boulevard and Wood Hollow Drive.

Developer proposed Phase 3 (2022) improvements:

- *Executive Center Drive & Wood Hollow Drive.* Restripe the eastbound approach of Executive Center Drive at Wood Hollow Drive to include a shared thru-left and a shared thru-right. The shared thru-right lanes will also be marked as shared bike lanes. This will require the east leg of the intersection to be restriped to provide two receiving lanes. Restripe the westbound approach of Executive Center Drive at Wood Hollow Drive to include an exclusive right-turn lane and a shared thru-left.
- *Far West Boulevard & Wood Hollow Drive.* Restripe the eastbound approach of Far West Boulevard at Wood Hollow Drive. The outside lane of the eastbound approach is currently striped as an exclusive right-turn lane and there are three eastbound receiving lanes. To prevent weaving downstream of Wood Hollow Drive the City should consider restriping the outside lane of Far West Boulevard as a shared thru-right until Loop 1 SBFR.

Developer proposed Phase 4 (2024) improvements:

- *Executive Center Drive & Hart Lane.* Restripe the westbound approach of Executive Center Drive at Hart Lane to include two lanes: exclusive left-turn lane and exclusive right-turn lane. This improvement will allow the left-turn and right-turn movements to operate independently and improve the LOS of this approach.
- *Hart Lane between Executive Center Drive and Spicewood Springs Road.* Restripe Hart Lane between Executive Center Drive and Spicewood Springs Road to provide a southbound left-turn bay from Hart Lane to Executive Center Drive. The storage provided in this bay will be minimal as space must be preserved to accommodate the dual left-turn lanes at the northbound approach from Hart Lane to Spicewood Springs Road.
- *Executive Center Drive & Wood Hollow Drive.* Consider installing a fully actuated traffic signal at the intersection of Executive Center Drive and Wood Hollow Drive. The City should consider split phase operation for northbound and southbound approaches. The recommended all-way stop should remain and be monitored until the signal is necessary.
- *Greystone Drive & Hart Lane.* Restripe the southbound approach of Hart Lane at Greystone Drive to include two thru lanes. This will require the south-leg of the intersection to be restriped to provide two receiving lanes. A cross-section which will accommodate three travel lanes and two bike lanes can be accomplished using existing pavement.
- *Greystone Drive & Wood Hollow Drive.* Restripe the northbound approach of Wood Hollow Drive at Greystone Drive to include two thru lanes. This will require the north-leg of the intersection to be restriped to provide two receiving lanes. A cross-section which will accommodate three travel lanes and two bike lanes can be accomplished using existing pavement.
- *Far West Boulevard & Wood Hollow Drive.* Adjust signal timing at the intersection of Far West Boulevard and Wood Hollow Drive.

As a part of the TIA, the applicant provided probable cost estimates to perform the identified improvements. These cost estimates were used to determine percentage cost participation ('pro-rata') from the developer. The following tables present the description, probable cost, percentage of site related traffic assigned to the location, along with the developer's estimate of the fiscal contribution (according to overall traffic volumes).

Phase 1 - 2018 improvements				
Location	Improvement Description	Probable Cost (\$)	Site Traffic (%)	Pro-Rata Cost Share (\$)
1. Spicewood Springs Road & Hart Lane (2018)	Install a fully actuated traffic signal.	\$420,000	11.0%	\$46,200
2. Spicewood Springs Road & Hart Lane (2018)	Widen Hart Lane.	\$150,000	11.0%	\$16,500
3. Spicewood Springs Road & Wood Hollow Drive (2018)	Extend westbound left-turn bay.	\$50,000	42.5%	\$21,250
4. Spicewood Springs Road & Wood Hollow Drive (2018)	Provide a right-turn overlap operation.	\$10,000	29.3%	\$2,930
5. Executive Center Drive & Wood Hollow Drive (2018)	Restripe Wood Hollow Drive.	\$20,000	40.1%	\$8,020
6. Spicewood Springs Road & Loop 1 SBFR (2018)	Create channelized turn from Mo-Pac to Spicewood Springs	\$175,000	7.3%	\$12,780
7. Spicewood Springs Road & Loop 1 SBFR (2018)	Provide channelized turn from Spicewood Springs Road to Mo-Pac SBFR	\$35,000	7.3%	\$2,560
8. Executive Center Drive & Wood Hollow Drive (2018)	Install multi-way stop signs	\$10,000	52.6%	\$5,260
9. Executive Center Drive & Loop 1 SBFR (2018)	Construct right turn deceleration lane	\$160,000	77.5%	\$124,000
10. Executive Center Drive & Loop 1 SBFR (2018)	Construct acceleration lane.	\$130,000	85.6%	\$111,280
11. Greystone Drive & Loop 1 SBFR (2018)	Construct right turn deceleration.	\$160,000	39.5%	\$63,200

Phase 1 - 2018 improvements (con't)				
Location	Improvement Description	Probable Cost (\$)	Site Traffic (%)	Pro-Rata Cost Share (\$)
12. Far West Blvd & Hart Lane (2018)	Widen northbound approach and restripe southbound approach Hart Lane	\$110,000	8.6%	\$9,460
13. Far West Blvd & Wood Hollow Drive (2018)	Provide a right-turn overlap operation	\$20,000	5.8%	\$1,160
14. Far West Blvd & Loop 1 SBFR (2018)	Provide channelized turn from Loop 1 SBFR to Far West Boulevard	\$175,000	7.5%	\$13,130
Phase I Improvements Subtotal		\$1,625,000	-	\$437,730

Phase 2 - 2020 improvement				
Improvement (Year)	Description	Probable Cost (\$)	Site Traffic (%)	Pro-Rata Share (\$)
1. Far West Boulevard & Wood Hollow Drive (2020)	Adjust signal.	\$10,000	5.6%	\$560
Phase 3 - 2022 improvements				
1. Executive Center Drive & Wood Hollow Drive (2022)	Widen Executive Center Drive to a four-lane cross-section	\$20,000	52.6%	\$10,520
2. Far West Boulevard & Wood Hollow Drive (2022)	Restripe the eastbound approach	\$10,000	3.0%	\$300
Phase 4 - 2024 improvements				
1. Executive Center Drive & Hart Lane (2024)	Restripe westbound approach of Executive Center Drive and Hart Lane	\$20,000	79.1%	\$15,820
2. Executive Center Drive & Hart Lane (2024)	Restripe Hart Lane	\$20,000	79.1%	\$15,820
3a. Executive Center Drive & Wood Hollow Drive (2024)	Conduct traffic signal warrant analysis.	\$10,000	52.6%	\$5,260
3b. Executive Center Drive & Wood Hollow Drive (2024)	Install a fully actuated traffic signal	\$250,000	52.6%	\$131,500

Phase 4 - 2024 improvements (con't)				
4. Greystone Drive & Hart Lane (2024)	Restripe southbound approach.	\$20,000	9.7%	\$1,940
5. Greystone Drive & Wood Hollow Drive (2024)	Restripe northbound approach.	\$20,000	40.2%	\$8,040
6. Far West Boulevard & Wood Hollow Drive (2024)	Adjust signal timing.	\$10,000	5.6%	\$560
Phase II, III, & IV Improvements Subtotal		\$390,000	-	\$190,320
Recommended Improvements Total		\$2,015,000	-	\$628,000

City of Austin Staff recommended improvements

Staff discussed the need to implement physical improvements concurrently with the development of the site and thus prioritized the infrastructure elements accordingly. Staff recognized and acknowledged the need to distinguish site related traffic congestion from larger (or preexisting) regional traffic concerns. Therefore, after review and acceptance of the TIA findings, the following terms were set forth:

- 1) Wherever feasible, staff prefers to have the developer construct physical improvements instead of posting fiscal towards the estimated costs of construction.
- 2) In locations where more than one improvement is identified, staff would accept a fully constructed single improvement in the place of several partial funded elements.
- 3) Texas Department of Transportation facilities also serve the interests of the general traveling public and are therefore incorporated into City of Austin objectives for site mitigation.

Conclusions and recommendations

While not all of the identified improvements necessary will be constructed as part of this site development, review staff are in agreement that the applicant will satisfactorily mitigate the impact determined in the TIA document if certain critical improvements are made as a part of site development. Therefore, staff recommends approval of this zoning application subject to the following conditions:

- 1) Prior to the 3rd Reading of City Council, the applicant should commit to constructing the following identified improvements as part of their site development application:
 - A. Within 1 year of the effective date of the rezoning ordinance, the owner will pay \$420,000 to the City of Austin Transportation Department, to be used exclusively for the installation of a traffic signal at Hart Lane and Spicewood Springs Road

B. The owner will enter into an agreement with TxDOT¹ to complete the work for the following three projects that were identified in the TIA:

- i. Construct free eastbound right-turn movement from Spicewood Springs Road to Mo-Pac (Loop 1) southbound frontage road,
 - ii. Construct a southbound right-turn deceleration lane on Mo-Pac (Loop 1) southbound frontage road (upstream of Executive Center Drive), and
 - iii. Construct a southbound acceleration lane on Mo-Pac (Loop 1) southbound frontage road (downstream of Executive Center Drive).
- 2) Per the Texas Dept. of Transportation (TxDOT), design of all elements which access the southbound frontage road of Mo-Pac (Loop 1) is subject to review for compliance with safety standards and requirements.
 - 3) Development of this property should not vary from the approved uses, nor exceed the approved intensities and estimated traffic generation assumptions within the TIA document (dated July 26, 2016), including land uses, trip generation, trip distribution, traffic controls and other identified conditions.

If you have any questions or require additional information, please contact me at (512) 974 – 2208.
Thank you.



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Development Services Department
Land Use Review Division/ Transportation Review

¹ The implementation of the construction will be done through an agreement with TxDOT that either (i) allows for the owner to design and construct the improvements with TxDOT approval or (ii) permits the owner to pay TxDOT to construct the improvements