

FALCON MARKETPLACE – DISCOUNT TIRE EL PASO COUNTY, COLORADO

Traffic Engineer's Statement

The traffic report and supporting information were prepared under my responsible charge and they comport with the standard of care. So far as is consistent with the standard of care, said report was prepared in general conformance with the criteria established by the County for traffic reports.



Curtis D. Rowe, P.E., PTOE
Vice President

Date: May 27, 2021

Developer's Statement

I, the Developer, have read and will comply with all commitments made on my behalf within this report.

Matthew Johnson, Agent

6.24.2021
Date

Only an authorized representative may sign for the developer/owner. Either add Matthew Johnson as an authorized representative on the application or have the developer sign this study.

May 27, 2021

Mr. Ryan Howser
El Paso County
Planning and Community Development
2880 International Circle
Suite 110
Colorado Springs, CO 80910

Re: Discount Tire – Traffic Compliance Letter
Falcon Marketplace
El Paso County, Colorado
PCD File No. AL214 and PPR2112

Dear Mr. Howser:

The purpose of this letter is to provide a trip generation comparison to identify conformance with the original Falcon Marketplace Traffic Impact Analysis (TIA) for a proposed Discount Tire store to be located within Falcon Marketplace on the northwest corner of the Woodmen Road and Meridian Road intersection in El Paso County, Colorado. Specifically, Discount Tire is proposed on Lot 4, located on the northwest corner of the right-in/right-out access and Meridian Road intersection.

This letter contains the following:

- A trip generation comparison of the currently proposed use to the use assumed in the original Falcon Marketplace TIA
- Any changes to the recommendations determined in the Falcon Marketplace TIA based on this proposed project

Land Use

A new Discount Tire is proposed to include a building of approximately 7,488 square feet on Lot 4 of the overall development (site plan attached). A Tire Store was identified to be located on Lot 6 of the overall *Falcon Marketplace Traffic Impact Analysis* prepared by LSC in September 2018. The original land use evaluated on Lot 4 in the original study was a fast-food restaurant with drive-through window. These land uses will most likely just swap lot locations with the buildout of the proposed Discount Tire on Lot 4. Therefore, for purposes of this traffic compliance letter, it was assumed that the tire center development originally evaluated will be located on this Lot 4 instead.

The overall development evaluated in the original study included 15,000 square feet of a pet supply superstore, a 123,000 square foot supermarket, a gas station with 18 fueling positions, 8,500 square feet of fast food restaurants with drive-through, 13,000 square feet of retail shopping center space, a 7,720 square foot tire store, 7,800 square feet of clinic use space, and a 1,300 square foot coffee/donut shop with drive-through.

Trip Generation

Site-generated traffic estimates are determined through a process known as trip generation. Rates and equations are applied to the proposed land use to estimate traffic generated by the development during a specific time interval. The acknowledged source for trip generation rates is the *Trip Generation Report*¹ published by the Institute of Transportation Engineers (ITE). ITE has established trip rates in nationwide studies of similar land uses. The original TIA used trip generation average rates that were based on the ITE Trip Generation, 9th Edition (current edition at the time). For this proposed project, Kimley-Horn used the average rate equations of the ITE Trip Generation, 10th Edition (most current edition), for the proposed Discount Tire store. The tire store is identified in the ITE Trip Generation as land use code 848. Trip generation calculations for the proposed use is attached. The following table summarizes the estimated trip generation for the proposed 7,488 square foot Discount Tire store compared to the trips generated by the 7,720 square foot tire store from the original TIA.

**Trip Generation Comparison
Original Tire Store vs. Proposed Discount Tire Store**

	Daily Vehicle Trips	Weekday Vehicle Trips					
		AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
Original TIA Tire Store – 7,720 SF	192	14	8	22	14	18	32
Proposed Discount Tire Tire Store – 7,488 SF	214	13	7	20	13	17	30
Net Difference in Trips	+22	-1	-1	-2	-1	-1	-2

The proposed Discount Tire store is projected to generate 214 daily trips, with 20 of these trips occurring during the morning peak hour and 30 of these occurring during the afternoon peak hour. The original TIA included a 7,720 square foot tire store expected to generate 192 daily trips with 22 of these trips occurring during the morning peak hour and 32 trips occurring during the afternoon peak hour. Therefore, the proposed Discount Tire store produces 22 additional daily trips due to the updated equations from the 9th to 10th Edition of the ITE Trip Generation Manual. During the studied peak hours, a decrease in two (2) trips are expected during each of the morning and afternoon peak hours. Although the daily trips increased due to the newer trip generation rates, the peak hour trips which are actually evaluated on the adjacent street network and intersections to determine improvement needs are expected to decrease with this current proposal.

Roadway Improvements

The attached Table 7b from the Falcon Marketplace TIA shows the roadways improvements that will be constructed with the first phase of the Falcon Marketplace project including the new improvements recommended with the King Soopers grocery store. In addition, the “dollar per trip” calculation is included for this site. The offsite roadway improvements are being constructed to serve the overall development.

¹ Institute of Transportation Engineers, *Trip Generation: An Information Report*, Tenth Edition, Washington DC, 2017.

Because Discount Tires is increase in building area from 6,000 square feet to 7,488 square feet from the original traffic study, the development's fair share cost for the five intersection improvements have already been calculated. These have been summarized as follows from the previous traffic study findings:

- The eastbound left turn lane improvement at Woodmen Road and Meridian Road was identified as 0.04 percent and \$125 for this project.
- The eastbound left turn lane improvement at Woodmen Road and Golden Sage was identified as 0.27 percent and \$540 for this project.
- The eastbound left turn lane protected/permissive phasing improvement at Woodmen Road and Golden Sage was identified as 0.27 percent and \$91 for this project.
- The southbound right turn lane improvement at Woodmen Road and Golden Sage was 0.32 percent and \$323 for this project.
- The traffic signal installation at N Frontage Road and Golden Sage Road was calculated as 0.17 percent and \$631 for this project in this improvement.

The total project cost participation for these four improvements equals \$1,710.

Conclusion

In summary, this proposed Discount Tire on Lot 4 of the overall Falcon Marketplace development is believed to be in traffic compliance with the original TIA. Development of the Discount Tire project is expected to generate 22 additional daily trips, but two (2) fewer trips during each of the studied morning and afternoon peak hours when comparing to the original TIA intensity. Due to this decrease in project traffic volume in the studied peak hours, all original traffic study results and conclusions remain valid. If you have any questions or require anything further, please feel free to call.

Sincerely,

KIMLEY-HORN AND ASSOCIATES, INC.



Curtis D. Rowe, P.E., PTOE
Vice President

Trip Generation Calculations

Project Discount Tire - Falcon Marketplace
 Subject Trip Generation for Tire Store
 Designed by MAG Date February 12, 2021 Job No. 096010025
 Checked by _____ Date _____ Sheet No. 1 of 1

TRIP GENERATION MANUAL TECHNIQUES

ITE Trip Generation Manual 10th Edition, Average Rates

Land Use Code - Tire Store (848)

Independant Variable - 1000 Square Feet Gross Floor Area (X)

Gross Floor Area = 7,488 Square Feet

X = 7.488

T = Average Vehicle Trip Ends

Peak Hour of Adjacent Street Traffic, One Hour Between 7 and 9 a.m. (800 Series Page 244)

		Directional Distribution:	64% ent.	36% exit.
T = 2.72 (X)		T = 20	Average Vehicle Trip Ends	
T = 2.72 *	7.488	13 entering	7 exiting	
		13 + 7 =	20	

Peak Hour of Adjacent Street Traffic, One Hour Between 4 and 6 p.m. (800 Series Page 245)

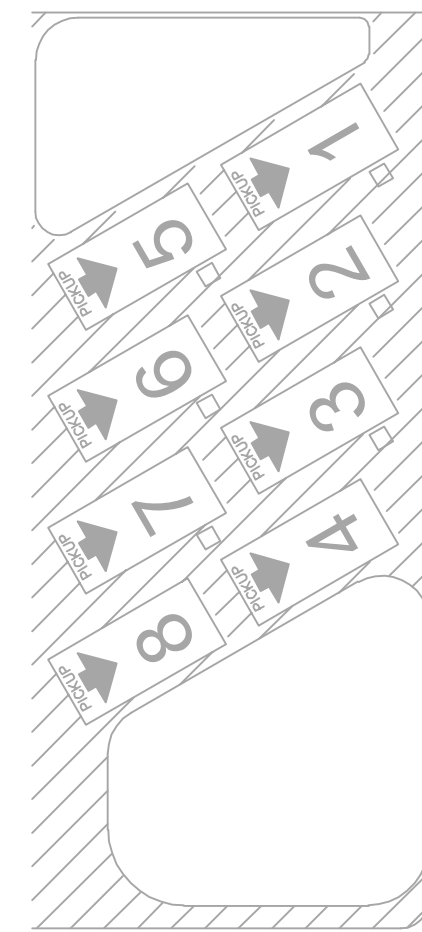
		Directional Distribution:	43% ent.	57% exit.
T = 3.98 (X)		T = 30	Average Vehicle Trip Ends	
T = 3.98 *	7.488	13 entering	17 exiting	
		13 + 17 =	30	

Weekday (800 Series Page 243)

Average Weekday		Directional Distribution:	50% entering, 50% exiting
T = 28.52 (X)		T = 214	Average Vehicle Trip Ends
T = 28.52*	7.488	107 entering	107 exiting
		107 + 107 =	214

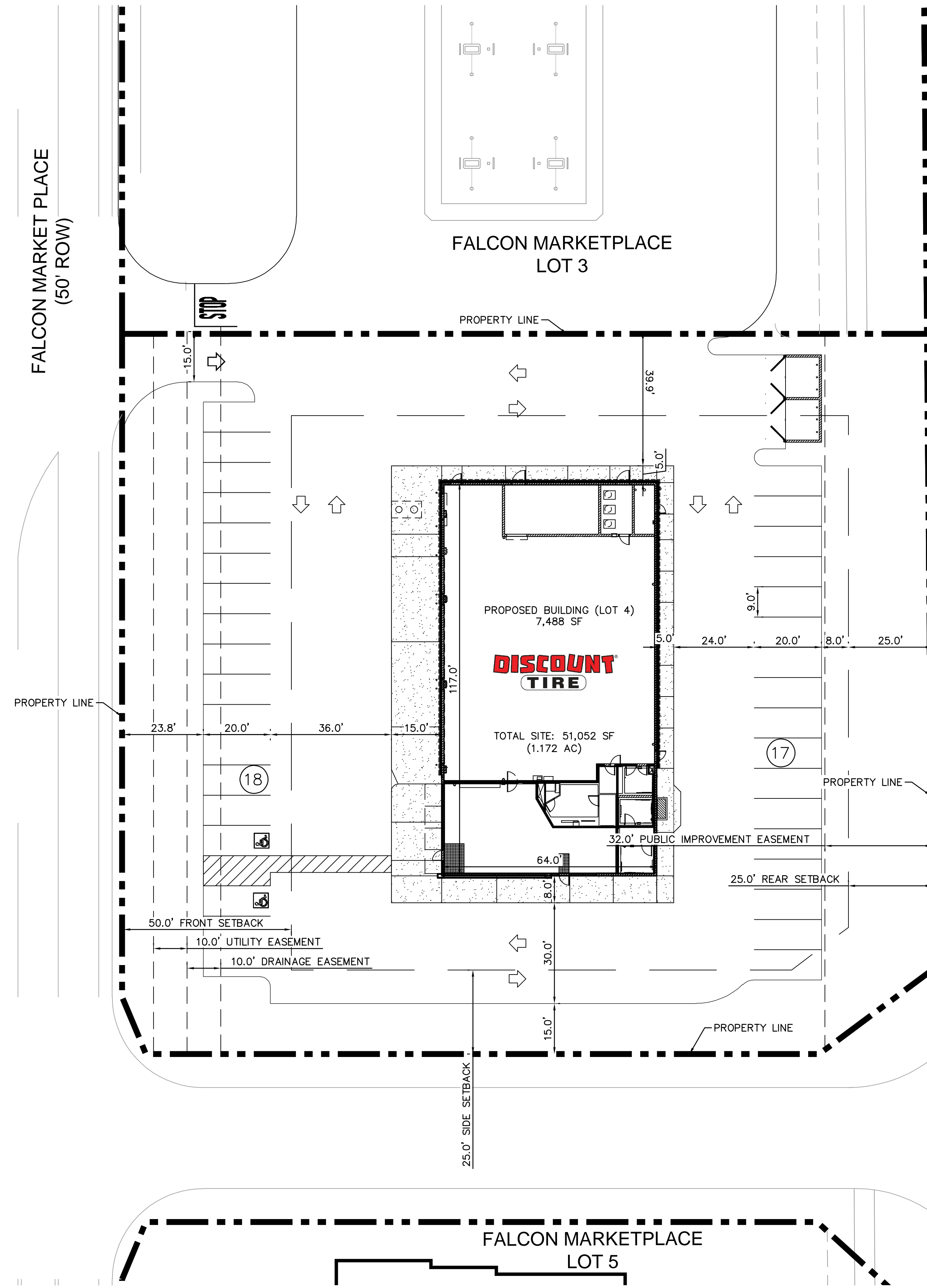
Conceptual Site Plan

K:\COS_Civil\096010025_DTC Falcon CO\CADD\Exhibits\DTC (Falcon) Concept Plan 2021_0119.dwg

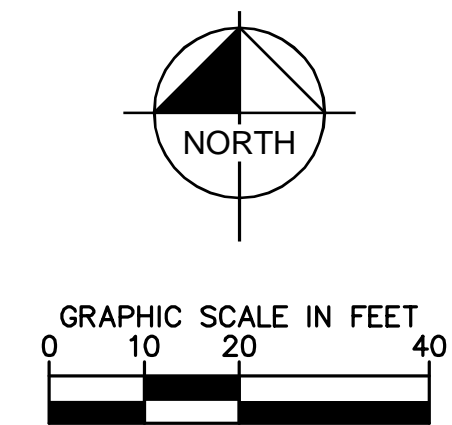


FALCON MARKETPLACE
LOT 2

FALCON MARKET PLACE
(50' ROW)



MERIDIAN ROAD



DTC (FALCON) CONCEPT SITE PLAN
1/19/2021

Kimley»Horn

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2 N NEVADA AVE., SUITE 300, COLORADO SPRINGS, 80903
PHONE: 719-453-0180

Original Traffic Study Documents

Trip Generation

Improvement Summary



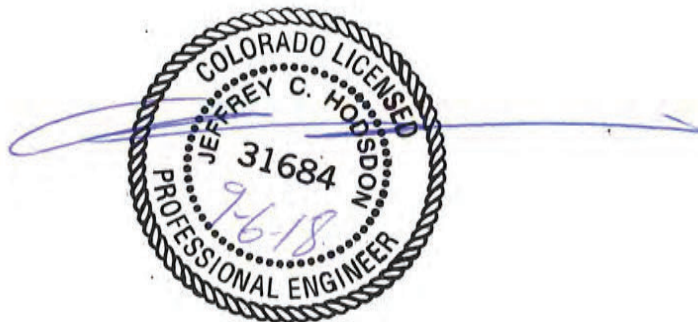
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(719) 633-2868
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E-mail: lsc@lsctrans.com
Website: <http://www.lsctrans.com>

Falcon Marketplace Traffic Impact Analysis SP-17-001/CDR-16-007

(LSC #164350)
October 23, 2017
(September 5, 2018 Revision)

Traffic Engineer's Statement

This traffic report and supporting information were prepared under my responsible charge and they comport with the standard of care. So far as is consistent with the standard of care, said report was prepared in general conformance with the criteria established by the County for traffic reports.



Developer's Statement

I, the Developer, have read and will comply with all commitments made on my behalf within this report.

A handwritten signature in blue ink, written over a horizontal line.

9/5/18
Date

Table 2
Trip Generation Estimate
Falcon Marketplace

New External Trips Generated																									
Lot	Land Use Code	Land Use Description	Trip Generation Units	Trip Generation Rates ⁽¹⁾					Total Trips Generated					Internal Trips ⁽⁷⁾					Total External Trips Generated					Pass-By Trips ⁽²⁾	New Weekday Traffic
				Average Weekday Traffic	Morning Peak Hour		Afternoon Peak Hour		Average Weekday Traffic	Morning Peak Hour		Afternoon Peak Hour		Average Weekday Traffic	Morning Peak Hour		Afternoon Peak Hour		Average Weekday Traffic	Morning Peak Hour		Afternoon Peak Hour			
					In	Out	In	Out		In	Out	In	Out		In	Out	In	Out		In	Out	In	Out		
Trip Generation Estimate Based on the Currently Proposed Plan																									
1	866	Pet Supply Superstore ⁽³⁾	15 KSF ⁽⁴⁾	38.24	0.53	0.33	1.69	1.69	574	8	5	25	25	54	1	2	3	2	520	7	3	22	23	10%	468
2	850	Supermarket	123 KSF	78.26	2.11	1.29	3.76	3.62	9,626	259	159	463	445	909	17	26	48	37	8,717	242	133	415	408	36%	5,579
3	944	Gasoline/Service Station	18 VFP ⁽⁵⁾	168.56	6.20	5.96	6.94	6.94	3,034	112	107	125	125	286	5	8	15	12	2,748	107	99	110	113	56%	1,209
4	934	Fast-Food Restaurant with Drive-Through Window ⁽⁶⁾	2.5 KSF	496.12	0.42	0.39	16.98	15.67	1,240	1	1	42	39	380	0	0	12	17	860	1	1	30	22	50%	430
5	820	Shopping Center	5 KSF	55.14	0.77	0.47	2.36	2.51	276	4	2	12	13	26	1	0	1	1	250	3	2	11	12	34%	165
6	848	Tire Store	7.72 KSF	24.87	1.82	1.07	1.78	2.37	192	14	8	14	18	18	0	1	1	1	174	14	7	13	17	28%	125
7	934	Fast-Food Restaurant with Drive-Through Window	3.5 KSF	496.12	23.16	22.26	16.98	15.67	1,736	81	78	59	55	532	26	12	17	24	1,204	55	66	42	31	50%	602
8	934	Fast-Food Restaurant with Drive-Through Window ⁽⁶⁾	2.5 KSF	496.12	0.42	0.39	16.98	15.67	1,240	1	1	42	39	380	0	0	12	17	860	1	1	30	22	50%	430
9	610	Clinic	7.8 KSF	31.45	2.19	2.19	2.12	3.06	245	17	17	17	24	40	3	16	10	5	205	14	1	7	19	0%	205
10	820	Shopping Center	8 KSF	55.14	0.77	0.47	2.36	2.51	441	6	4	19	20	42	1	1	2	2	399	5	3	17	18	34%	263
11	937	Coffee/Donut Shop With Drive-Through Window	1.3 KSF	818.58	51.30	49.28	21.40	21.40	1,064	67	64	28	28	326	21	10	9	12	738	46	54	19	16	89%	81
									19,669	570	446	846	831	2,993	75	76	130	130	16,676	495	370	716	701		9,558
Notes:																									
(1) Source: "Trip Generation, 9th Edition, 2012" by the Institute of Transportation Engineers (ITE)																									
(2) Source: "Trip Generation Handbook - An ITE Proposed Recommended Practice" 3rd Edition, 2014																									
(3) Daily and morning peak-hour trip generation rates for Pet Supply Superstore are estimates by LSC																									
(4) KSF = 1,000 square feet of floor space																									
(5) VFP = vehicle fueling position																									
(6) The AM peak-hour trip generation rates have been reduced by LSC as the proposed fast-food restaurant does not serve breakfast																									
(6) See attached NCHRP 684 Internal Trip Capture Estimate Tool Sheets																									
Source: LSC Transportation Consultants, Inc.																									

Exhibit 1

Table 7b - Updated Falcon Marketplace Roadway Improvements With Proposed Right-In Access to Woodmen Road					
Item #	Improvement	Timing	MORE DETAILED TIMING	ADT that will warrant/TRIGGER the Improvement	Responsibility
Countywide Road Impact Fee Program Fees and Taxes					
1	Woodmen Road Metropolitan District fees and taxes to be paid in lieu of Countywide Road Impact Fee Program fees and taxes. Woodmen Road has already been completed, but this project is joining the district.	District fees payable at platting	WITH PLAT & EACH BUILDING PERMIT	BASED ON WOODMEN ROAD DISTRICT REQUIREMENTS	Falcon Marketplace
Meridian/Eastonville and Meridian Right-In/Right-Out Intersections					
2	Signalization of Meridian Road/Eastonville Road intersection.	Design and installation with the development of Falcon Marketplace once allowed by El Paso County.	PHASE 1	TRIGGER FOR INSTALL IS ONCE WARRANTS ARE MET - HOWEVER, IF NOT ALLOWED TO INSTALL W/PHASE 1, EPC WILL REQUIRE ESCROW FOR FULL AMOUNT W PHASE 1	Falcon Marketplace
3	Reconstruction of the Meridian center median south of Eastonville Road to achieve major street left-turn sight distance for the option of northbound/southbound protected/permissive left-turn signal phasing with interim single left-turn lanes northbound and southbound and to accommodate future northbound dual left-turn lanes if needed in the future. This lane should be 425 feet long plus a 200-foot taper. The taper would be back-to-back with the southbound dual left-turn taper.	Design and installation with the development of Falcon Marketplace.	PHASE 1	PLANNED TO BE COMPLETED WITH PHASE 1	Falcon Marketplace
4	Southbound right-turn deceleration lane on Meridian Road approaching Eastonville Road. This lane should be 235 feet long plus a 200-foot taper.	Design and installation with the developoment of Falcon Marketplace.	PHASE 1	PLANNED TO BE COMPLETED WITH PHASE 1	Falcon Marketplace
5	Design and construction of continuous southbound right-turn lanes and shoulder/bike lane on Meridian Road from Eastonville Road south to the proposed right-in/right-out and from the right-in/right-out south to Woodmen Road. (Note: Also please refer to related Item #16 below.)	Design and installation with the developoment of Falcon Marketplace.	PHASE 1	PLANNED TO BE COMPLETED WITH PHASE 1	Falcon Marketplace
6	Widening of Eastonville Road east of Meridian Road to add a westbound through lane and add width as feasible between the westbound left-turn lane and the westbound through lane due to the proposed dual left-turn lanes on the west side of the intersection. This added width would allow for through lane alignment (with an acceptable offset across the intersection).	Design and installation with the development of Falcon Marketplace. Extent of this off-site improvement may be limited by available right-of-way and/or other existing constraints.	PHASE 1	PLANNED TO BE COMPLETED WITH PHASE 1	Falcon Marketplace
7	Design and construction of the proposed extension of Eastonville Road between Meridian and the proposed roundabout.	Design and installation with the development of Falcon Marketplace.	PHASE 1	PLANNED TO BE COMPLETED WITH PHASE 1	Falcon Marketplace
On-Site Improvements					
8	Design and construction of the public street connection through the site (Falcon Market Place).	Design and installation with the development of Falcon Marketplace.	PHASE 1	PLANNED TO BE COMPLETED WITH PHASE 1	Falcon Marketplace
9	Design and construction of the proposed roundabout on-site west of the Meridian/Eastonville intersection. This would include a "stub" to the north for the anticipated future street connection north to Bent Grass Meadows Drive.	Design and installation with the developoment of Falcon Marketplace.	PHASE 1	PLANNED TO BE COMPLETED WITH PHASE 1	Falcon Marketplace
10	Design and construction of the proposed roundabout on-site at the east terminus of the Woodmen Frontage Road.	Design and installation with the development of Falcon Marketplace.	PHASE 1	PLANNED TO BE COMPLETED WITH PHASE 1	Falcon Marketplace
Woodmen/Meridian Intersection					
11	Extend existing westbound right-turn acceleration lane on Woodmen Road at Meridian Road to provide a continuous right-turn lane between Meridian Road and the proposed right-in-only access.	Design and installation with the development of Falcon Marketplace.	PHASE 1	PLANNED TO BE COMPLETED WITH PHASE 1	Falcon Marketplace
12	Lengthening of Woodmen eastbound dual left-turn lanes . Lengthening of eastbound left-turn lanes and potential further future lengthening to provide a 240-foot lane transition taper, 290 feet of deceleration distance plus sufficient vehicle stacking distance. CURRENT lane length: 500 feet of dual left-turn lane and 425-foot taper. Of this taper, 215 feet is full-width "decel" distance. Remaining 20 feet of the required 235-foot decel distance occurs in the first 20 feet of the 500-foot dual left-turn lanes. The remainder of the dual left-turn lanes is stacking distance - 480 feet. SHORT TERM : Based on the short-term analysis, the existing lane provides sufficient stacking distance. LONG TERM : This lane will likely need to be extended to provide a total of 840 feet of dual left storage distance plus 235 feet of deceleration length plus a 200-foot taper.	Future extension of existing dual left-turn lanes once traffic queues regularly extend beyond the 480-foot stacking distance.	<p>PAYMENT WITH DEVELOPMENT PLAN FOR EACH INDIVIDUAL LOT; WITH REGARDS TO THE TIMING OF THE IMPROVEMENT: "once traffic queues regularly extend beyond the 480-foot stacking distance." This is estimated to be approximately 65 PM peak hour eastbound left turns above the estimated short term total volume from Figure 16a of the TIS. Note: Short term total volumes assume the Meridian extension to Highway 24 to be open.</p>	<p>PAYMENT OF PRO RATA SHARE WITH EACH LOT DEVELOPMENT PLAN; The estimated "trigger" of 65 PM peak hour eastbound left turns above the estimated short term total volume (from Figure 16a of the TIS) approximately translates to an additional 957 directional ADT for residential trips (based on the ITE single family trip ratio). This estimated threshold may be reached with a combination of Falcon Marketplace trips and background trips. Falcon Marketplace daily trip to afternoon peak hour trip ratio is about 23:1 but would need to be adjusted for passby trips.</p>	Falcon Marketplace will pay its pro-rata share by (based on total traffic volumes) of the cost of the improvements. The payment amount will be determined on an individual-lot basis in the form of an escrow amount payable at the time of site development plan for each individual lot.
13	Meridian northbound dual left-turn lanes : Lengthening of northbound left-turn lanes and potential further future lengthening to provide a 200-foot lane transition taper, 235 feet of deceleration distance plus sufficient vehicle stacking distance. CURRENT lane configuration: 315 feet of dual left-turn lane length, 145 feet of single left-turn lane length and a 150-foot lane transition taper from the through lane to the single left-turn lane. This provides a 150-foot taper, 235 feet of deceleration distance, and 225 feet of dual left stacking. SHORT TERM : The 315-foot dual left-turn lanes would accommodate the projected short-term queues. The deceleration distance (235 feet) plus a 200-foot taper will need to be provided south of the end of the existing 315-foot dual left stacking lanes. For the deceleration distance, 235 feet of at least single-lane width for deceleration length would flare to the north to connect to the existing dual lane width to the north. South of the deceleration portion of the lane, a standard 200-foot taper will need to be added in the median. These modifications will involve median reconstruction and restriping south of the existing dual left-turn lanes. This would result in a 200-foot taper, 235-foot deceleration distance, and 315 feet of dual left-turn stacking.	With the development of Falcon Marketplace, extend the northbound left-turn lane as described in the column to the left and as shown in Figure 25.	PHASE 1	PLANNED TO BE COMPLETED WITH PHASE 1	Short Term - Falcon Marketplace
14	Meridian northbound dual left-turn lanes. LONG TERM : Potentially, additional growth in the Falcon Area and east along Falcon Highway will add left-turning traffic demand. Long-term analysis indicates the potential future need for 400 feet of stacking distance plus the 235 feet of deceleration distance and the 200-foot taper.	Future (if necessary -- Add additional lane length beyond #13 to provide additional stacking if/when needed (as shown in Figure 26).			By other future developments impacting this turn lane. Potential for fee program credit for improvements completed as this is a regional intersection.
Golden Sage Intersections					
15	Directional wayfinding sign(s) on eastbound Woodmen Road upstream of Golden Sage - notifying/reminding eastbound motorists of the option to enter Falcon Marketplace via the Woodmen Frontage Road.	Design and installation with the development of Falcon Marketplace.	PHASE 1	PLANNED TO BE COMPLETED WITH PHASE 1	Falcon Marketplace
16	Lengthening of the current eastbound single left-turn deceleration lane on Woodmen approaching Golden Sage Road to provide a 240-foot transition taper (20:1 taper ratio), 290 feet of deceleration distance plus sufficient vehicle stacking distance. CURRENT : 175-foot taper plus a 465-foot left-turn lane which translates to a 175-foot taper, 290-foot deceleration distance, and 175 feet of stacking distance. SHORT TERM : Adequate stacking is available in the current turn lane - calculated queue length 141 feet. LONG TERM : Lengthen single left-turn lane and/or future implementation of dual left-turn lanes (if capacity needs dictate) to maintain 290 feet of deceleration length, a 240-foot lane taper (20:1 taper ratio) plus provide sufficient vehicle stacking length - model indicates 471 feet of dual left stacking distance based on morning peak-hour projected volumes. If a dual left is implemented in the future, consideration will need to be given to the configuration on Golden Sage and at the Golden Sage/Woodmen Frontage Road intersection to receive the dual left-turn movement.	Short Term: The existing lane is adequate based on the short-term analysis. Long Term: Future with additional development served by the north frontage road - extension of existing single left-turn lane and potentially widening in the median to provide dual left-turn lanes to provide additional vehicle stacking distance as described in the column to the left.	<p>PAYMENT WITH DEVELOPMENT PLAN FOR EACH INDIVIDUAL LOT; WITH REGARDS TO THE TIMING OF THE IMPROVEMENT: AS NEEDED TO MAINTAIN ADEQUATE LEVEL OF SERVICE AND VEHICLE STACKING DISTANCE. " This is estimated to be when the eastbound left turn turning volume reaches approximately 200 vehicles per hour during the PM peak. This translates to about 40 vehicles per hour over the estimated short term total volume from Figure 16a of the TIS. Note: Short term total volumes assume the Meridian extension to Highway 24 to be open.</p>	<p>PAYMENT OF PRO RATA SHARE WITH EACH LOT DEVELOPMENT PLAN; The estimated "trigger" of 40 PM peak hour eastbound left turns above the estimated short term total volume (from Figure 16a of the TIS) approximately translates to and additional 589 directional ADT for residential trips making this turning movement (based on the ITE single family trip ratio). This estimated threshold may be reached with a combination of Falcon Marketplace trips and background trips. Falcon Marketplace daily trip to afternoon peak hour trip ratio is about 23:1 but would need to be adjusted for passby trips.</p>	Falcon Marketplace will pay its pro-rata share by (based on total traffic volumes) of the cost of the improvements. The payment amount will be determined on an individual-lot basis in the form of an escrow amount payable at the time of site development plan for each individual lot.
17	Southbound exclusive right-turn lane on Golden Sage Road approaching Woodmen Road (a continuous right-turn lane within the 150 feet between the Woodmen Frontage Road and Woodmen Road).	If/when needed to maintain acceptable level of service/traffic operations and/or to control vehicle queues.	<p>PAYMENT WITH DEVELOPMENT PLAN FOR EACH INDIVIDUAL LOT; WITH REGARDS TO THE TIMING OF THE IMPROVEMENT: AS NEEDED TO MAINTAIN ADEQUATE LEVEL OF SERVICE AND VEHICLE STACKING DISTANCE. " A preliminary trigger could be a southbound right turn volume of about 150-175 vehicles per hour. This translates to about 5 to 30 vehicles per hour over the projected short term volume from Figure 16a of the TIS. This may be conservative due to the westbound right turn acceleration lane on Woodmen Road. Additional study may indicate a higher threshold based on empirical data collection and analysis.</p>	<p>PAYMENT OF PRO RATA SHARE WITH EACH LOT DEVELOPMENT PLAN; The estimated "trigger" of 5-30 AM peak hour southbound right turns above the estimated short term total volume (from Figure 16a of the TIS) approximately translates to an additional 85-610 directional ADT for residential trips making this turning movement (based on the ITE single family trip ratio). This estimated threshold may be reached with a combination of Falcon Marketplace trips and background trips. Falcon Marketplace daily trip to afternoon peak hour trip ratio is about 45:1 but would need to be adjusted for passby trips.</p>	Falcon Marketplace will pay its pro-rata share by (based on total traffic volumes) of the cost of the improvements. The payment amount will be determined on an individual-lot basis in the form of an escrow amount payable at the time of site development plan for each individual lot.
18	Signalization of Golden Sage Road/Woodmen Frontage Road or reconstruction as a modern roundabout; Future additional laneage may be necessary at this intersection to accommodate vehicle queues and for traffic operations.	Please refer to the attached sheet.	Please refer to the attached sheet.	PAYMENT OF PRO RATA SIGNAL ESCROW WITH EACH LOT DEVELOPMENT PLAN;	Falcon Marketplace will pay its pro-rata share by (based on total traffic volumes) of the cost of the improvements. The payment amount will be determined on an individual-lot basis in the form of an escrow amount payable at the time of site development plan for each individual lot.

Source: LSC Transportation Consultants, Inc. REV: (7-19-19)

*See note in Exhibit 2 regarding #16a.

Exhibit 2

Table ____ Calculation of Falcon Marketplace Overall Fair Share Percentage of Shared Offsite Improvements						
Table 7b*			Falcon Marketplace	Long Term Total	Applicable	Applicable
			Long Term Site Traffic AM/PM	Traffic AM/PM	Percentage	Percentage
ITEM NO.	Improvement	Table 7b* description	from TIS Figure 14	From TIS Figure 18a	based on..	for Falcon Marketplace
12	Eastbound Left Turn at Woodmen/Meridian	Lengthening of Woodmen eastbound dual left-turn lanes . Lengthening of eastbound left-turn lanes and potential further future lengthening to provide a 240-foot lane transition taper, 290 feet of deceleration distance plus sufficient vehicle stacking distance. CURRENT lane length: 500 feet of dual left-turn lane and 425-foot taper. Of this taper, 215 feet is full-width "decel" distance. Remaining 20 feet of the required 235-foot decel distance occurs in the first 20 feet of the 500-foot dual left-turn lanes. The remainder of the dual left-turn lanes is stacking distance - 480 feet. SHORT TERM : Based on the short-term analysis, the existing lane provides sufficient stacking distance. LONG TERM : This lane will likely need to be extended to provide a total of 840 feet of dual left storage distance plus 235 feet of deceleration length plus a 200-foot taper.	17	472	NOT USED	N/A
			20	785	PM Peak EB LT Volume	2.5%
16	Lengthening of the Eastbound Left Turn at Golden Sage/Woodmen future widening for dual left turn lanes (Note: The improvement may be phased to only lengthen the single left turn initially or potentially the median work could be done at one time to allow for the future dual left once it is needed (the additional width could be "striped out" until dual turn lanes are needed; <u>signal modifications to add appropriate signal heads.</u>)	Lengthening of the current eastbound single left-turn deceleration lane on Woodmen approaching Golden Sage Road to provide a 240-foot transition taper (20:1 taper ratio), 290 feet of deceleration distance plus sufficient vehicle stacking distance. CURRENT : 175-foot taper plus a 465-foot left-turn lane which translates to a 175-foot taper, 290-foot deceleration distance, and 175 feet of stacking distance. SHORT TERM : Adequate stacking is available in the current turn lane - calculated queue length 141 feet. LONG TERM : Lengthen single left-turn lane and/or future implementation of dual left-turn lanes (if capacity needs dictate) to maintain 290 feet of deceleration length, a 240-foot lane taper (20:1 taper ratio) plus provide sufficient vehicle stacking length - model indicates 471 feet of dual left stacking distance based on morning peak-hour projected volumes. If a dual left is implemented in the future, consideration will need to be given to the configuration on Golden Sage and at the Golden Sage/Woodmen Frontage Road intersection to receive the dual left-turn movement.	36	418	Average of AM and PM Volumes	13.1%
			70	394		
17	Widening of the west side of Golden Sage (Woodmen to the N. Frontage Road) and the North Frontage Road (Golden Sage to Falcon Meadows) to allow for "receiving" lanes on the departure leg (north leg) of the Woodmen/Golden Sage intersection necessary for future eastbound dual left turn lanes.	Southbound exclusive right-turn lane on Golden Sage Road approaching Woodmen Road (a continuous right-turn lane within the 150 feet between the Woodmen Frontage Road and Woodmen Road).	55	354	AM Peak SB RT Volume	15.5%
			38	446	NOT USED	N/A
18	Signalization of Golden Sage/Woodmen North Frontage Road	Signalization of Golden Sage Road/Woodmen Frontage Road or reconstruction as a modern roundabout; Future additional laneage may be necessary at this intersection to accommodate vehicle queues and for traffic operations.	101	1214	AM and PM Total Volumes Entering the intersection	8.5%
			124	1432		
* Table 7b - Improvements Table (included in the TIS - Note: Table 7b has been updated since the date of the final TIS. The most recent update to Table 7b: 9-13-19)						
LSC Transportation consultants, Inc. (9-13-19)						

Note (6-10-2020) Item16a: (if separate line item is applicable): Addition of protected/permissive left turn phasing at Woodmen/Golden Sage; King Soopers estimated percentage - same as calculated for Improvement #16 from above: 7.56% of Falcon Marketplace percentage (if applicable); Timing - as required for traffic operations & safety considering increases in EB left turn volume and opposing westbound through/right turn volumes.

Table ____ Pro-Rata Share for Shared Improvements by Lot Plus Calculation of Amount per Daily Trip Falcon Marketplace																							
Land Use Lot Code Description Trip Generation Units				Total External Trips Generated					Calculated Fair Share of Woodmen Road Eastbound Left Turn Lane Improvement at Meridian/Woodmen: Fair Share at 2.5 percent ⁽⁸⁾			Calculated Fair Share of Woodmen Road Eastbound Left Turn Lane Improvement at Woodmen/Golden Sage: Fair Share at 13.1 percent ⁽⁸⁾			Calculated Fair Share of Golden Sage Southbound Righth Turn Lane Improvement at Woodmen/Golden Sage: Fair Share at 15.5 percent ⁽⁸⁾			Calculated Fair Share of Golden Sage/ WoodmenN Frontage Traffic Signal Fair Share at 15.5 percent ⁽⁸⁾					
				Average Weekday Trips	Morning Peak Hour In Out		Afternoon Peak Hour In Out	Amount by Lot	Lot Dollar/Trip Rate	Amount by Lot	Lot Dollar/Trip Rate	Amount by Lot	Lot Dollar/Trip Rate	Amount by Lot	Lot Dollar/Trip Rate								
Trip Generation Estimate Based on the Currently Proposed Plan				519	9	4	24	25	0.08%	\$255	\$0.49	0.35%	\$706	\$1.36	0.17%	\$169	\$0.33	0.23%	\$802	\$1.55			
1	866	Pet Supply Superstore ⁽³⁾	15 KSF ⁽⁴⁾	519	9	4	24	25	0.08%	\$255	\$0.49	0.35%	\$706	\$1.36	0.17%	\$169	\$0.33	0.23%	\$802	\$1.55			
2	850	Supermarket	123 KSF	9,054	270	160	419	412	1.46%	\$4,525	\$0.50	7.56%	\$15,120	\$1.67	7.04%	\$7,038	\$0.78	4.77%	\$16,691	\$1.84			
3	944	Gasoline/Service Station	18 VFP ⁽⁵⁾	2,822	90	85	111	115	0.39%	\$1,202	\$0.43	2.21%	\$4,427	\$1.57	3.76%	\$3,757	\$1.33	1.52%	\$5,324	\$1.89			
4	934	Fast-Food Restaurant with Drive-Through Window	2.5 KSF	797	32	41	30	22	0.11%	\$329	\$0.41	0.69%	\$1,377	\$1.73	1.81%	\$1,814	\$2.28	0.48%	\$1,670	\$2.09			
5	820	Shopping Center	5 KSF	227	3	2	10	11	0.04%	\$110	\$0.49	0.15%	\$294	\$1.29	0.07%	\$68	\$0.30	0.10%	\$345	\$1.52			
6	848	Tire Store	7.488 KSF	156	10	6	9	13	0.03%	\$100	\$125	0.22%	\$433	\$540	0.26%	\$259	\$323	0.14%	\$506	\$631			
7	934	Fast-Food Restaurant with Drive-Through Window ⁽⁹⁾	3.5 KSF	1,116	0	1	42	32	0.15%	\$459	\$0.41	0.47%	\$943	\$0.84	0.06%	\$60	\$0.05	0.29%	\$1,008	\$0.90			
8	934	Fast-Food Restaurant with Drive-Through Window ⁽⁶⁾	2.5 KSF	797	1	1	30	22	0.11%	\$329	\$0.41	0.35%	\$692	\$0.87	0.04%	\$43	\$0.05	0.21%	\$724	\$0.91			
9	630	Clinic	7.8 KSF	247	18	1	3	14	0.01%	\$37	\$0.15	0.24%	\$480	\$1.95	0.06%	\$59	\$0.24	0.14%	\$495	\$2.01			
10	820	Shopping Center	8 KSF	364	7	3	16	18	0.06%	\$172	\$0.47	0.25%	\$496	\$1.36	0.14%	\$136	\$0.37	0.17%	\$584	\$1.60			
11	937	Coffee/Donut Shop With Drive-Through Window	1.3 KSF	722	37	48	19	17	0.07%	\$207	\$0.29	0.62%	\$1,234	\$1.71	2.10%	\$2,098	\$2.90	0.46%	\$1,603	\$2.22			
				16,822	478	352	715	702	2.5%	\$7,727		13.1%	\$26,200		15.5%	\$15,500		8.5%	\$29,750				
									2.5%	\$7,752		13.16%	\$26,309		15.6%	\$15,564		8.53%	\$29,875				
Total Falcon Marketplace Fair Share Percentage								2.5%				13.1%				15.5%				8.5%			
Total Falcon Marketplace Development Amount								\$7,727				\$26,200				\$15,500				\$29,750			
Total Estimated Amount to Complete the Improvement								\$309,099				\$200,000				\$100,000				\$350,000			
Plus Item 16a - Protected/Permissive Left Turn Phasing at Woodmen/Golden Sage																							
Notes																							
(1) Source: "Trip Generation, 10th Edition, 2017" by the Institute of Transportation Engineers (ITE)																							
(2) Source: "Trip Generation Handbook - An ITE Proposed Recommended Practice" 3rd Edition, 2014																							
(3) Daily and morning peak-hour trip generation rates for Pet Supply Superstore are estimates by LSC																							
(4) KSF = 1,000 square feet of floor space																							
(5) VFP = vehicle fueling position																							
(6) The AM peak-hour trip generation rates have been reduced by LSC as the proposed fast-food restaurant does not serve breakfast																							
(7) See attached NCHRP 684 Internal Trip Capture Estimate Tool Sheets																							
(8) 2.5 percent calculation based on PM Peak Hour traffic volumes shown for the Meridian/Woodmen intersection in the October 23, 2017 TIS: Sum of eastbound left turn and U turn Volumes from Figure 14 divided by the sum of eastbound left turn and U turn Volumes from Figure 18a (x100).																							
Source: LSC Transportation Consultants, Inc. (rev. date: 4/16/2018)																							

Note: The pro-rata share calculation for the Discount Tires has been revised to take into account the increase of square footage. A factor of 1.248 has been applied to the fair share percent and cost. The new pro-rate share calculation for the left turn lane improvement at Woodmen Road and Goldmen Sage intersection has been updated in blue text.

Item 16a Note:
Project estimated percentage = 0.27%
Amount = \$33,750 * 0.27% = \$91

Exhibit 4

“Triggers” for Signalization at Golden Sage/Woodmen N Frontage Road

(Attachment to Table 7b – Improvements)

Trigger No. 1: If Signal Warrants are **not** met but there are level of service and/or problematic queues and/or there are safety issues at the intersection or between the intersections (associated with the short intersection spacing) Evaluate:

- Test No. 1 – Queuing Issues
- Test No. 2 – Right Turn Operations
- Test No. 3 – Left Turn Operations
- Test No. 4 – Alternatives to a signal

Trigger No. 2: If signal warrant(s) **are met** at the intersection – either due to four/eight- hour signal warrants, crash experience warrant, or other applicable warrant(s):

- If warrants are met and LOS and/or queues **are** problematic and/or there are safety issues, go to
 - Test No. 1 – Queuing Issues
 - Test No. 2 – Right Turn Operations
 - Test No. 3 – Left Turn Operations
 - Test No. 4 – Alternatives to a signal
- If warrants are met and LOS and/or queues are **not** problematic or there are not significant safety issues, the installation could potentially be delayed.

Test #1: Queueing Operations:

- Once southbound queues extending back from Woodmen/Golden Sage intersection regularly back up to or through the N. Frontage Road intersection
- And:
 - Queues regularly block the northbound left movement at this intersection and cause queues in the northbound lane.
 - Queues regularly block/impede westbound traffic at this intersection from being able to turn left onto southbound Golden Sage and this regularly results in a long westbound queue which
 - Creates operational/safety issues at intersections to the east or
 - Results in westbound waiting through multiple Woodmen/Golden Sage signal cycles.
 - Queues regularly block/impede the passage of east/west through travel on the Frontage Road.

Test #2: Are the queuing issues identified in Test #1 primarily due **southbound right Turns** at Woodmen/Golden Sage?

- Has the separate SB right turn lane has been added?
- If so, have other causes of the southbound right turn queues lane been evaluated and all possible solutions to improve the SB RT operations been exhausted?

Test #3: Are the queuing issues identified in Test #1 primarily due **southbound left turns** at Woodmen/Golden Sage?

- Has the potential for a 2nd southbound left turn lane been evaluated?
- If a second southbound left turn lane has been added, have other causes of the southbound left turn queues lane been evaluated and all possible solutions to improve the SB LT operations been exhausted?

Test #4: Have **other alternatives** to a traffic signal at Woodmen N Frontage Road/Golden Sage been evaluated and options exhausted?