



LSC TRANSPORTATION CONSULTANTS, INC.

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November 17, 2023

Century Communities
c/o Mr. Jerry Richmond
Integrity Land Ventures, LLC
7200 S. Alton Way, Suite C-400
Centennial, CO 80112

Re: Foundry Filing No. 1
Aurora, CO
LSC #230190

Dear Mr. Richmond:

In response to your request, LSC Transportation Consultants, Inc. has prepared this updated detailed traffic letter for the proposed Foundry Filing No. 1 to address City comments. The site is located south of E. Jewell Avenue between S. Kewaunee Street and the future S. Powhatan Road alignment in Aurora, Colorado. LSC completed a Master Traffic Impact Study (MTIS) for the entire Foundry development dated March 17, 2023. This letter presents a comparison of the trip generation estimate based on the currently proposed land use and the trip generation estimate assumed in the MTIS for the same parcels, an analysis of pedestrian connectivity, and an updated analysis of the intersection of E. Warren Avenue and Foundry Way as a one-lane modern roundabout.

LAND USE AND ACCESS

Land Use

Foundry Filing 1 is planned to include the areas shown as Planning Areas 1 through 10 and 14 in the *Foundry Master Plan*. Planning Areas 1, 2, 3, 6, 10, and 14 are planned for open space or neighborhood parks. Planning Areas 5, 7, and 9 are shown as tracts in the currently proposed Filing 1 but are not included in Site Plan 1. The March 2023 *Foundry MTIS* assumed these planning areas would be developed with an elementary school, multi-family residential uses, and a recreation center. There are no known changes to the intended future land uses for these tracts from what was assumed in the MTIS.

Site Plan 1, which includes the areas shown as Planning Areas 4 and 8, is planned to include 462 residential dwelling units including 279 detached single-family homes, 140 paired homes, and 43 townhomes. This is 126 fewer residential dwelling units (22 fewer detached single-family homes and 104 fewer paired homes or townhomes) than were assumed for these same planning areas in the March 2023 *Foundry MTIS*.

Access

No changes are proposed to the access plan assumed for these parcels in the MTIS.

Pedestrian Analysis

Figure 1 shows the proposed pedestrian connectivity for Foundry Filing No. 1. As shown on Figure 1, all of the streets within the filing are proposed to have sidewalks on both sides and a trail network has been provided to connect open spaces and public parks. The sidewalk and trail system will provide travel paths to the future school and recreation center sites within the Master Foundry development. Bump outs will be provided at all of the collector/local intersections within Foundry Filing No. 1 to reduce the crossing distance for pedestrians. On-street bike lanes are planned on S. Kewaunee Street, S. Muscadine Way, and E. Warren Avenue.

TRIP GENERATION

Table 1 shows the estimated average weekday, morning peak-hour, and afternoon peak-hour trip generation for the proposed Site Plan 1 residential land uses based on the rates from Trip Generation, 11th Edition, 2021 by the Institute of Transportation Engineers (ITE). Table 1 also shows a comparison to the trip generation estimate assumed for the same area in the March 2023 *Foundry Master TIS*.

The remaining portion of Filing 1 includes open space and park land uses proposed for the areas shown as Planning Areas 1, 2, 3, 6, 10, and 14 and tracts for the areas shown as Planning Areas 5, 7 and 9. The open space and park land uses are expected to generate either negligible vehicle-trips or primarily internal vehicle trips within the Foundry development. Planning Areas 5, 7, and 9 are included in Filing 1 as tracts in Filing 1 but not included in Site Plan 1. A trip generation comparison will be provided for these parcels with future site plans. Currently there are no known changes to the intended future land uses.

Foundry Site Plan 1, which includes the area shown as Planning Areas 4 and 8, is expected to generate about 3,949 new external vehicle-trips on the average weekday, with about half entering and half exiting during a 24-hour period. This is about 956 fewer vehicle-trips than was assumed for the same area in the March 2023 *Foundry TIS*. During the morning peak-hour, which generally occurs for one hour between 6:30 and 8:30 a.m., about 78 vehicles would enter and about 205 vehicles would exit the site. During the afternoon peak-hour, which generally occurs for one hour between 4:00 and 6:00 p.m., about 224 vehicles would enter and about 142 vehicles would exit the site. These peak-hour estimates are also lower than assumed in the *Foundry MTIS*.

TOTAL TRAFFIC

Figures 2 and 3 show the estimated 2030 and 2040 total traffic at the intersection of East Warren Avenue and Foundry Way, respectively. These volumes were taken from MTIS for the entire Foundry development dated March 17, 2023. The MTIS assumed this intersection (Intersection #8) would be two-way, stop-sign controlled. It is now planned to be constructed as a modern one-lane roundabout.

PROJECTED LEVELS OF SERVICE AND 95TH PERCENTILE QUEUE LENGTH

Level of service (LOS) is a quantitative measure of the level of congestion or delay at an intersection. Level of service is indicated on a scale from "A" to "F". LOS A is indicative of little congestion or delay and LOS F is indicative of a high level of congestion or delay. Attached are specific level of service definitions for unsignalized intersections.

The intersection of Warren/Foundry (Intersection #8) was analyzed to determine the 2030 and 2040 total levels of service as a one-lane modern roundabout. Table 2 shows the level of service analysis results and the projected 95th percentile queue lengths. The level of service reports are attached. All approaches at this intersection are projected to operate at LOS A and have a projected 95th percentile queue length of one vehicle or less during the peak-hours through 2040.

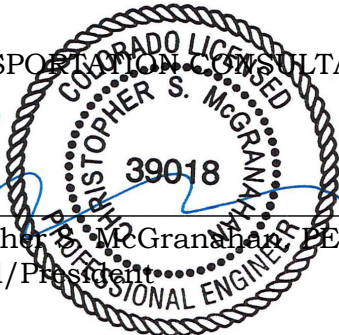
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We trust our findings will assist you in gaining approval of the proposed Foundry Filing 1 development. Please contact me if you have any questions or need further assistance.

Sincerely,

LSC TRANSPORTATION CONSULTANTS, INC.

By 
Christopher S. McGranahan, PE
Principal/President



CSM/wc

11-17-23

Enclosures: Tables 1 and 2
Figures 1 - 3
Level of Service Definitions
Level of Service Reports

Table 1
Trip Generation Estimate
Foundry Filing No. 1
Aurora, CO
LSC #230190; November, 2023

Planning Area	Land Use Description	Trip Generation Units	Trip Generation Rates ⁽¹⁾						Total Trips Generated				
			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	
Trip Generation Estimate Based on the Currently Proposed Land Use For Foundry Filing No. 1													
Residential Land Uses													
PA-4	Single Family Detached Housing ⁽²⁾	237 DU ⁽³⁾	9.43	0.182	0.518	0.592	0.348	2,235	43	123	140	82	
	Single Family Attached Housing ⁽⁴⁾	140 DU	7.20	0.15	0.33	0.32	0.25	1,008	21	46	45	34	
PA-8	Single Family Detached Housing	42 DU	9.43	0.182	0.518	0.592	0.348	396	8	22	25	15	
	Single Family Attached Housing	43 DU	7.20	0.15	0.33	0.32	0.25	310	6	14	14	11	
		462 DU						3,949	78	205	224	142	
Trip Generation Estimate From the Foundry Master Traffic Impact Analysis, March 17, 2023													
PA-4	Single Family Detached Housing	253 DU ⁽³⁾	9.43	0.182	0.518	0.592	0.348	2,386	46	131	150	88	
	Single Family Attached Housing	172 DU	7.20	0.149	0.331	0.325	0.245	1,238	26	57	56	42	
PA-8	Single Family Detached Housing	48 DU	9.43	0.182	0.518	0.592	0.348	453	9	25	28	17	
	Single Family Attached Housing	115 DU	7.20	0.149	0.331	0.325	0.245	828	17	38	37	28	
		588 DU						4,905	98	251	271	175	
Change (Decrease) In Trip Generation Estimate								-956	-20	-46	-47	-33	

Notes:

(1) Source: *Trip Generation, Institute of Transportation Engineers*, 11th Edition, 2021.

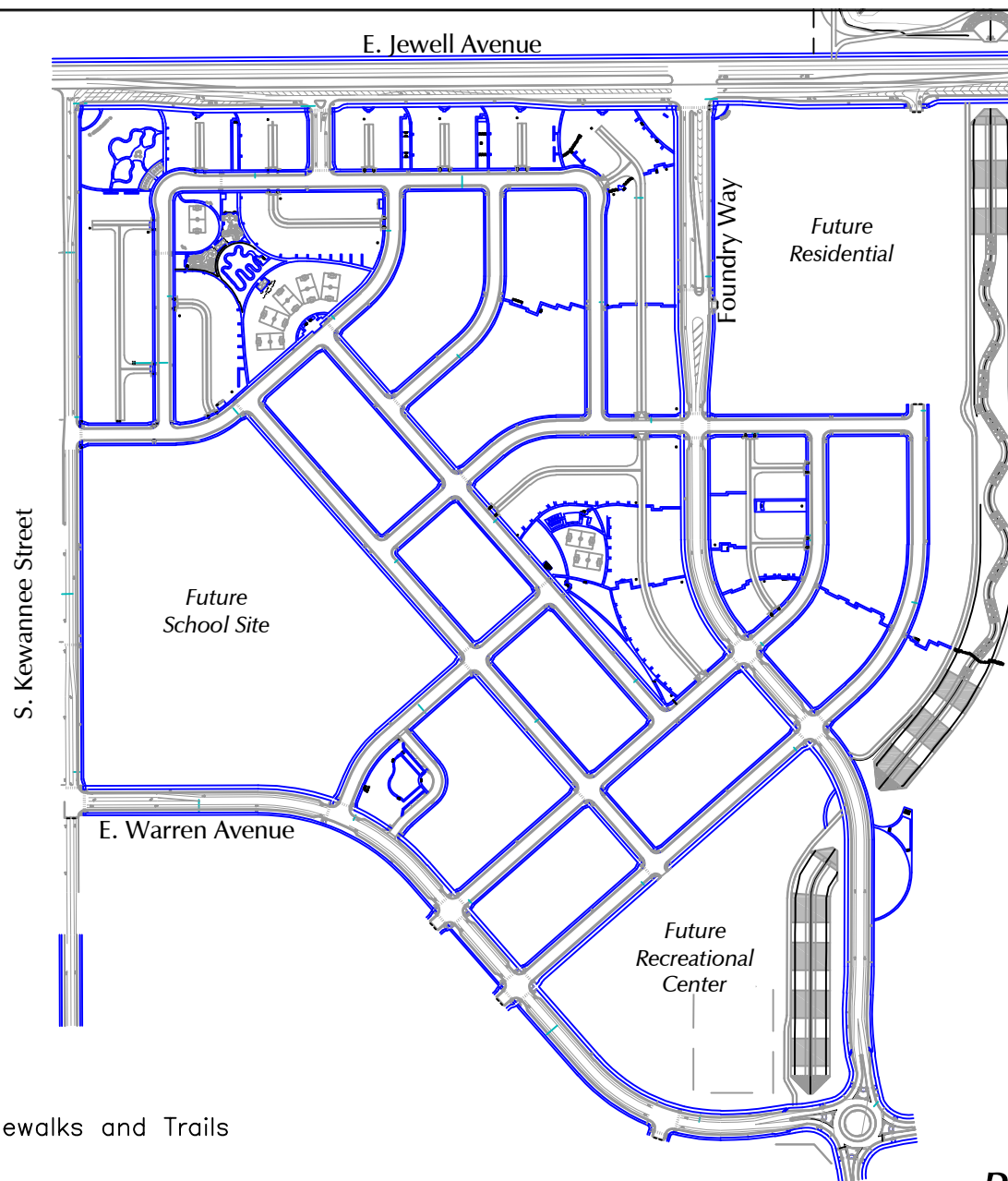
(2) ITE Land Use No. 210 - Single-Family Detached Housing

(3) DU = dwelling unit

(4) ITE Land Use No. 215 - Single-Family Attached Housing

Table 2
Intersection Level of Service Analysis
and 95th Percentile Queue Lengths
Foundry Filing No. 1
Aurora, CO
LSC #230190; November, 2023

Intersection Location	Traffic Control	2030 Total Traffic						2040 Total Traffic					
		Level of Service	Move-ment Delay (secs)	95th Percentile Queue Length (ft)	Level of Service	Move-ment Delay (secs)	95th Percentile Queue Length (ft)	Level of Service	Move-ment Delay (secs)	95th Percentile Queue Length (ft)	Level of Service	Move-ment Delay (secs)	95th Percentile Queue Length (ft)
8) <u>E. Warren Avenue/Foundry Way</u>	Roundabout												
EB Approach		A	3.5	<25	A	4.4	<25	A	3.8	<25	A	4.0	<25
WB Approach		A	5.5	25	A	4.3	25	A	4.7	25	A	4.2	<25
NB Approach		A	3.6	<25	A	4.3	<25	A	3.6	<25	A	4.6	25
SB Approach		A	3.7	<25	A	5.5	25	A	4.1	<25	A	4.6	25
Entire Intersection LOS			4.7			5.0			4.2			4.5	
Entire Intersection Delay (sec /veh)		A			A			A			A		



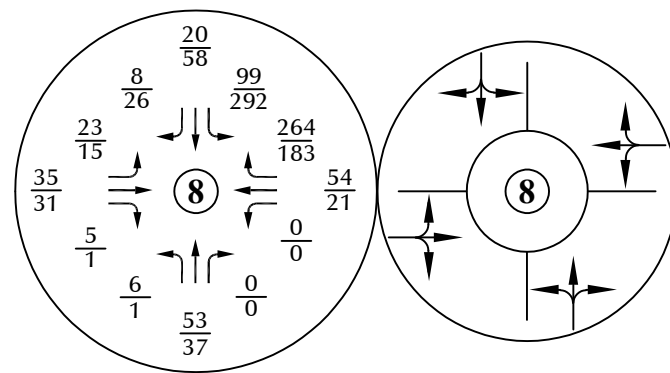
LEGEND:

— = Sidewalks and Trails

Figure 1

Site Plan and Pedestrian Analysis

Foundry Filing No. 1 (LSC #230190)



LEGEND:

$\frac{26}{35}$ = AM Peak Hour Traffic
 = PM Peak Hour Traffic

= Modern Roundabout

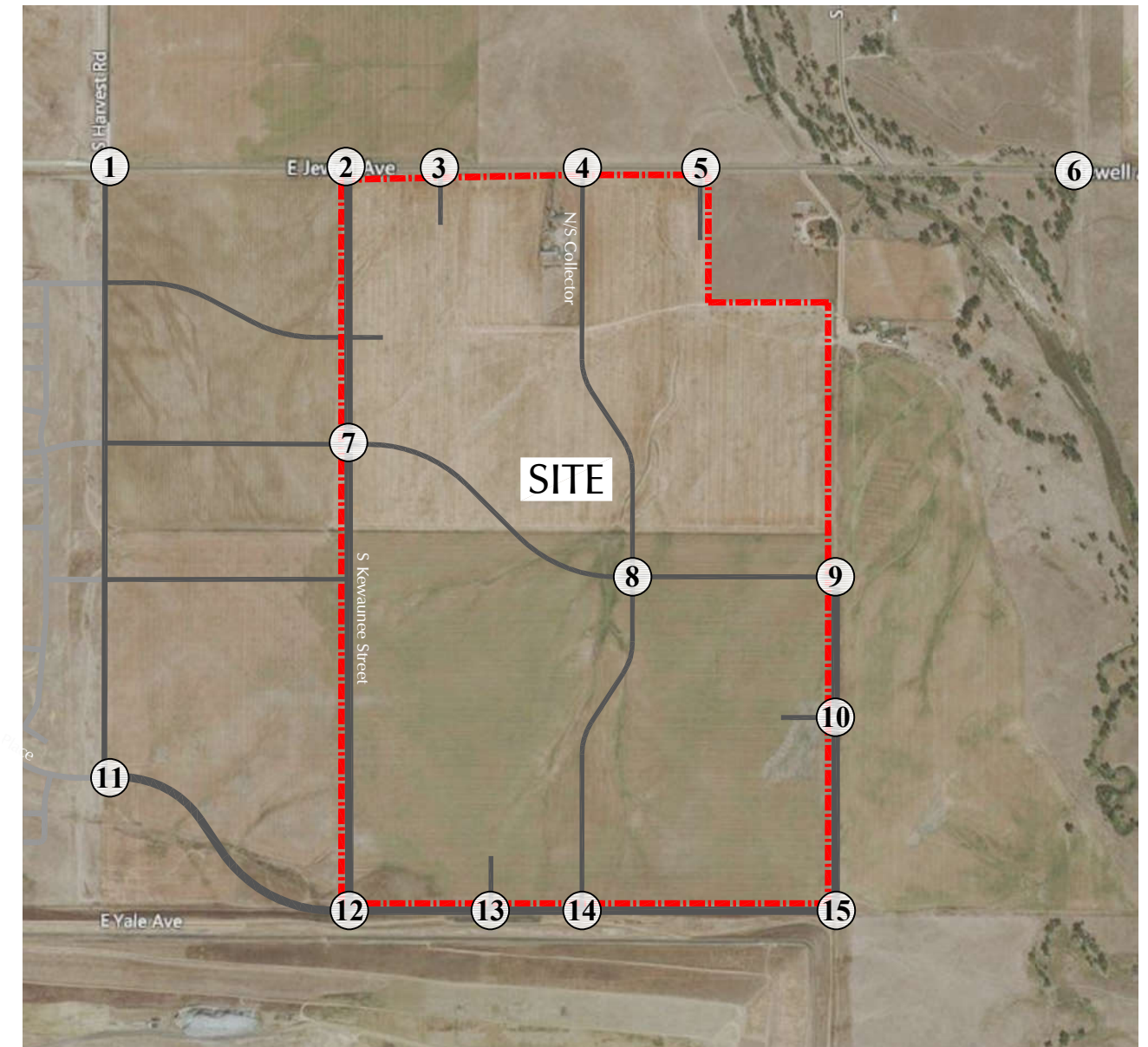
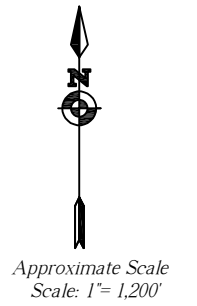
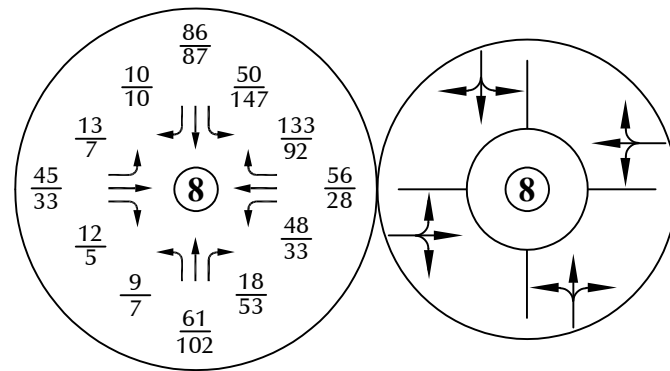


Figure 2

Year 2030
 Total Traffic

Foundry Filing No. 1 (LSC #230190)



LEGEND:

$\frac{26}{35}$ = AM Peak Hour Traffic
PM Peak Hour Traffic

 = Modern Roundabout



Approximate Scale
Scale: 1"= 1,200'

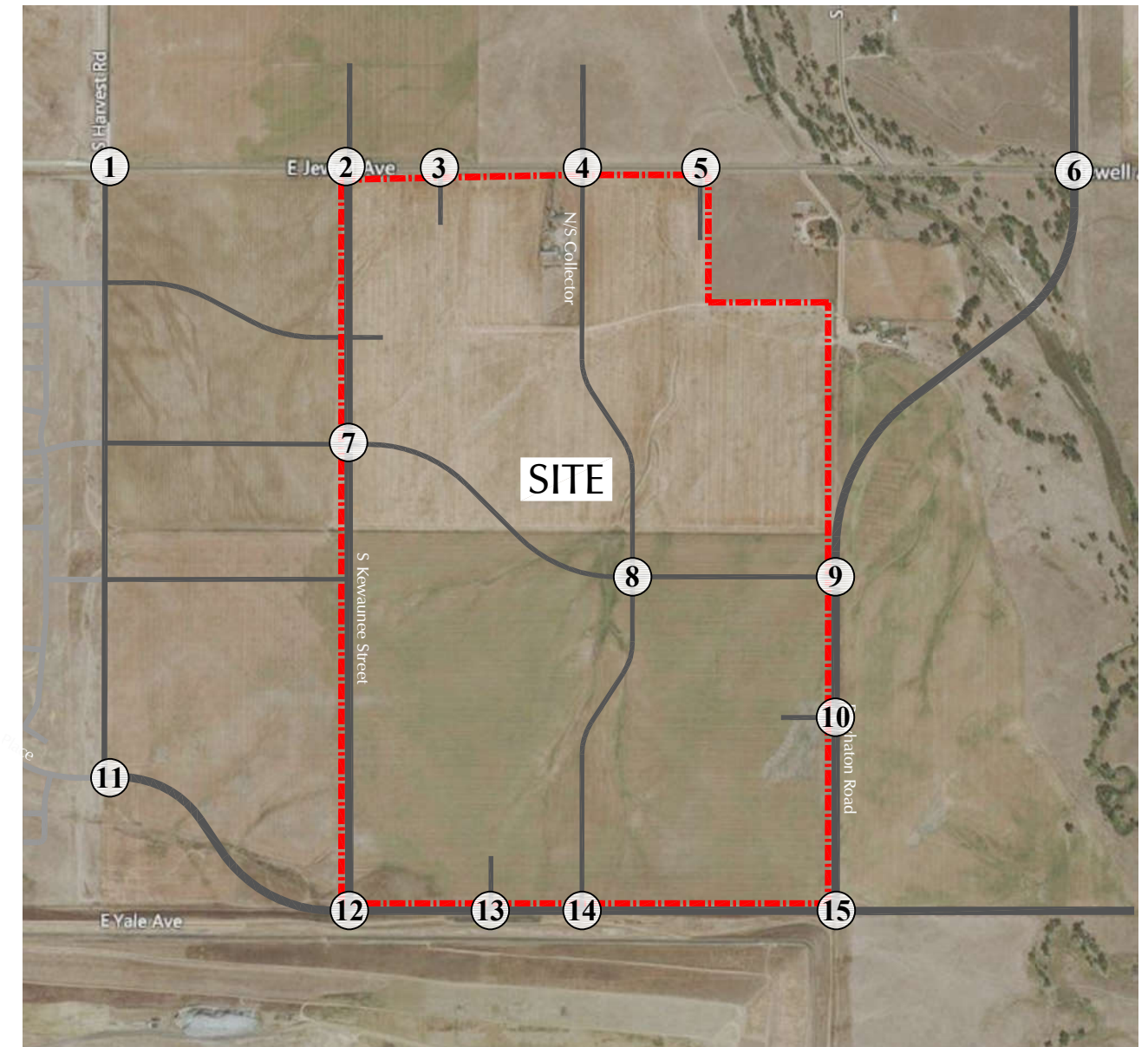


Figure 3

Year 2040
Total Traffic

Foundry Filing No. 1 (LSC #230190)

LEVEL OF SERVICE DEFINITIONS

From *Highway Capacity Manual*, Transportation Research Board

UNSIGNALIZED INTERSECTION LEVEL OF SERVICE (LOS)

Applicable to Two-Way Stop Control, All-Way Stop Control, and Roundabouts

LOS	Average Vehicle Control Delay	Operational Characteristics
A	<10 seconds	Normally, vehicles on the stop-controlled approach only have to wait up to 10 seconds before being able to clear the intersection. Left-turning vehicles on the uncontrolled street do not have to wait to make their turn.
B	10 to 15 seconds	Vehicles on the stop-controlled approach will experience delays before being able to clear the intersection. <u>The delay could be up to 15 seconds.</u> Left-turning vehicles on the uncontrolled street may have to wait to make their turn.
C	15 to 25 seconds	Vehicles on the stop-controlled approach can expect delays in the range of 15 to 25 seconds before clearing the intersection. Motorists may begin to take chances due to the long delays, thereby posing a safety risk to through traffic. <u>Left-turning vehicles on the uncontrolled street will now be required to wait to make their turn causing a queue to be created in the turn lane.</u>
D	25 to 35 seconds	<u>This is the point at which a traffic signal may be warranted for this intersection.</u> The delays for the stop-controlled intersection are not considered to be excessive. The length of the queue may begin to block other public and private access points.
E	35 to 50 seconds	The delays for all critical traffic movements are considered to be unacceptable. The length of the queues for the stop-controlled approaches as well as the left-turn movements are extremely long. <u>There is a high probability that this intersection will meet traffic signal warrants.</u> The ability to install a traffic signal is affected by the location of other existing traffic signals. Consideration may be given to restricting the accesses by eliminating the left-turn movements from and to the stop-controlled approach.
F	>50 seconds	The delay for the critical traffic movements are probably in excess of 100 seconds. The length of the queues are extremely long. Motorists are selecting alternative routes due to the long delays. <u>The only remedy for these long delays is installing a traffic signal or restricting the accesses.</u> The potential for accidents at this intersection are extremely high due to motorist taking more risky chances. If the median permits, motorists begin making two-stage left-turns.

HCM 6th Roundabout
8: Foundry Way & E. Warren Ave

2030 Total Traffic
AM Peak Hour

Intersection				
Intersection Delay, s/veh	4.7			
Intersection LOS	A			
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	68	346	65	139
Demand Flow Rate, veh/h	70	353	66	141
Vehicles Circulating, veh/h	132	91	174	67
Vehicles Exiting, veh/h	76	149	27	377
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	3.5	5.5	3.6	3.7
Approach LOS	A	A	A	A
Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	70	353	66	141
Cap Entry Lane, veh/h	1206	1258	1155	1289
Entry HV Adj Factor	0.975	0.980	0.982	0.983
Flow Entry, veh/h	68	346	65	139
Cap Entry, veh/h	1176	1232	1135	1266
V/C Ratio	0.058	0.281	0.057	0.109
Control Delay, s/veh	3.5	5.5	3.6	3.7
LOS	A	A	A	A
95th %tile Queue, veh	0	1	0	0

HCM 6th Roundabout
8: Foundry Way & E. Warren Ave

2030 Total Traffic
PM Peak Hour

Intersection				
Intersection Delay, s/veh	5.0			
Intersection LOS	A			
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	51	222	41	408
Demand Flow Rate, veh/h	52	226	42	416
Vehicles Circulating, veh/h	387	58	374	24
Vehicles Exiting, veh/h	53	358	65	260
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	4.4	4.3	4.3	5.5
Approach LOS	A	A	A	A
Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	52	226	42	416
Cap Entry Lane, veh/h	930	1301	942	1346
Entry HV Adj Factor	0.987	0.980	0.981	0.980
Flow Entry, veh/h	51	222	41	408
Cap Entry, veh/h	918	1275	924	1320
V/C Ratio	0.056	0.174	0.045	0.309
Control Delay, s/veh	4.4	4.3	4.3	5.5
LOS	A	A	A	A
95th %tile Queue, veh	0	1	0	1

HCM 6th Roundabout
8: Foundry Way & E. Warren Ave

2040 Total Traffic
AM Peak Hour

Intersection				
Intersection Delay, s/veh	4.2			
Intersection LOS	A			
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	74	250	92	155
Demand Flow Rate, veh/h	75	255	93	158
Vehicles Circulating, veh/h	199	88	116	121
Vehicles Exiting, veh/h	80	121	158	222
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	3.8	4.7	3.6	4.1
Approach LOS	A	A	A	A
Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	75	255	93	158
Cap Entry Lane, veh/h	1126	1261	1226	1220
Entry HV Adj Factor	0.987	0.980	0.986	0.982
Flow Entry, veh/h	74	250	92	155
Cap Entry, veh/h	1112	1236	1209	1198
V/C Ratio	0.067	0.202	0.076	0.130
Control Delay, s/veh	3.8	4.7	3.6	4.1
LOS	A	A	A	A
95th %tile Queue, veh	0	1	0	0

HCM 6th Roundabout
8: Foundry Way & E. Warren Ave

2040 Total Traffic
PM Peak Hour

Intersection				
Intersection Delay, s/veh	4.5			
Intersection LOS	A			
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	47	161	170	258
Demand Flow Rate, veh/h	48	165	173	263
Vehicles Circulating, veh/h	288	123	201	73
Vehicles Exiting, veh/h	48	251	135	215
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	4.0	4.2	4.6	4.6
Approach LOS	A	A	A	A
Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	48	165	173	263
Cap Entry Lane, veh/h	1029	1217	1124	1281
Entry HV Adj Factor	0.985	0.978	0.982	0.982
Flow Entry, veh/h	47	161	170	258
Cap Entry, veh/h	1014	1191	1104	1257
V/C Ratio	0.047	0.136	0.154	0.205
Control Delay, s/veh	4.0	4.2	4.6	4.6
LOS	A	A	A	A
95th %tile Queue, veh	0	0	1	1