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ORTATION
TANTS, INC.

Waterbury Filing Nos. 1 and 2
Traffic Impact Analysis
(LSC #204220)
February 12, 2021

ffic Engineer's Statement

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

neering Review
/2021 1:27:00 PM
dsdrice
ce@elpasoco.com
19) 520-7877
nning & Community
pment Department

mment letter also.

COLORADO LICENSED
JEFFREY C. HODSDON
31684
PROFESSIONAL ENGINEER
2-12-21

veloper's Statement

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

_____ _____
Date

LSC Response to TIS Redlines June 2021

Page: 1

Number: 1 Author: dsdrice Subject: EPC ENG Review Date: 6/14/2021 1:27:29 PM

Number: 2 Author: dsdrice Subject: Text Box Date: 6/14/2021 1:27:15 PM

See comment letter also.

Author: kdferrin Subject: Sticky Note Date: 9/28/2021 3:57:15 PM

LSC Response: See responses in that document.

- *Waterbury Filing No. 1 Updated Traffic Impact Study,* January 6, 2014
- *Waterbury Phase 1Filing Nos. 2 and 3 Updated Traffic Impact Analysis,* October 16, 2017
- *Waterbury Phase 2 Preliminary Plan Traffic Impact Analysis*, August 3, 2017

This report is an update to the Preliminary Plan Phase 1 reports.

A list of other traffic studies in the area of study completed within the past five years (that LSC is aware of) is attached for reference. This study accounts for the land use, trip generation and the roadway network included in these studies.

Not found?

LAND USE AND ACCESS

Site Plan

Figure 2 shows the location of the entire Waterbury PUD development as well as the location of the currently proposed Filing Nos. 1 and 2. The currently proposed filings are planned to include 201 lots for single-family homes. This is five more lots than was assumed in the 2013 traffic study for the same area (the Phase 1 Preliminary Plan area). Access for these filings will be to a new full-movement intersection (Saybrook Drive) on Stapleton Road 1,150 east of Bandanero Drive. In the future, Filing Nos. 1 and 2 will have additional access through the remaining Waterbury PUD development area to Eastonville Road and the future Dumont Drive.

Sight Distance Analysis

Figure 3 shows sight-distance analysis at the proposed public street intersection to Stapleton Drive (Saybrook Drive). Per the *El Paso County Engineering Criteria Manual* ECM Table 2-21, the required intersection sight distance at Saybrook Drive is 555 feet based on a design speed of 50 mph for Stapleton Drive. As shown in Figure 3, this requirement is met in both directions.

The required stopping sight distance from ECM Table 2-17 is 445 feet. As shown in Figure 3 this requirement is met in both directions.

Pedestrian and Bicycle Accommodations

There are two existing schools located within two miles of the site, Falcon High School and Meridian Ranch Elementary. A future K-8 school site is located just north of Falcon High School. These schools are located north of Londonderry Drive and west of Eastonville Road. There is also a regional park located northwest of the site.

Figure 4 shows the school pedestrian routes. There are currently no sidewalks on Stapleton Drive and on Eastonville Road.

Page: 6

Number: 1 Author: dsdrice Date: 6/14/2021 1:25:30 PM

Number: 2 Author: dsdrice Subject: Callout Date: 6/14/2021 1:26:31 PM

Not found?

Author: kdferrin Subject: Sticky Note Date: 9/28/2021 3:57:06 PM

LSC Response: Appendix Table 1 is located on page 37 of the PDF.

Number: 3 Author: dsdrice Date: 6/11/2021 1:01:47 PM

Driv

Author: kdferrin Subject: Sticky Note Date: 9/28/2021 3:56:59 PM

LSC Response: All references to "Saybrook Drive" have been revised to "Saybrook Road."

The following is a list of known and planned multi-modal and pedestrian accommodations in the vicinity of the site:

- A park n' ride facility is planned for a site near Meridian Road and US Highway 24.
- The Rock Island Regional Trail passes near to the site.
- Many of the area County roads have been or will be upgraded to provide paved shoulders for cyclists. Stapleton is shown as a future "bike route."
- The MTCP shows a future primary regional trail along Eastonville Road. Another future primary regional trail is shown extending west from Eastonville Road though Meridian Ranch.
- The Highway 24 PEL study also includes multi-modal elements.

ROADWAY AND TRAFFIC CONDITIONS

Area Roadways

The major roadways in the site's vicinity are shown in Figure 1 and are described below. Copies of the 2016 El Paso *County Major Transportation Corridors Plan* (MTCP) *2040 Roadway Plan*, and 2016 MTCP *2060 Corridor Preservation Plan* (CPP) with the site location identified on them have been attached to this report.

US Highway 24 (US Hwy 24) is generally a two-lane State Highway extending east/west across Colorado connecting the Buena Vista, Colorado Springs, and Limon areas. US Hwy 24 is planned to be widened to four lanes through the Falcon area. The US Hwy 24 PEL identifies this widening as a high priority with a timeline of less than 10 years. US Hwy 24 in the vicinity is classified as an EX – Expressway/Major Bypass by the Colorado Department of Transportation (CDOT). US Hwy 24 is shown as a four-lane Principal Arterial on the *MTCP* and the *Preserved Corridor Network Plan*. The posted speed limit on US Hwy 24 adjacent to the site is 65 miles per hour (mph).

Eastonville Road extends northeast from Meridian Road to past Hodgen Road. It is shown as a two-lane Minor Arterial on the El Paso County *Major Transportation Corridors Plan* and the *Preserved Corridor Network Plan*. Eastonville Road has a three-lane cross-section (one through lane in each direction plus a center two-way, left-turn lane) from Woodmen Hills Drive to Snaffle Bit Road (approximately midway between Judge Orr Road and Stapleton Road). Eastonville Road is a two-lane roadway north and south of this section. Eastonville Road is currently unpaved north of Londonderry Drive. Pikes Peak Rural Transportation Authority (PPRTA)-funded improvements are anticipated in the future for Eastonville Road. Potentially, as part of the PPRTA project, northbound and southbound left-turn lanes may be added at the intersection of Eastonville Road and Stapleton Drive. . The posted speed limit north of Stapleton Drive is 35 mph.

Stapleton Drive is shown as an Urban four-lane Principal Arterial on the El Paso County *Major Transportation Corridors Plan* and El Paso County *Corridor Preservation Plan (CPP)*. Stapleton Drive extends east from Towner Drive to US Hwy 24. Stapleton continues southeast, then south as Curtis

1

The draft Eastonville corridor study shows upgrades to an urban 48' paved section in the site vicinity.

Page: 7

Number: 1 Author: dsdrice Subject: Callout Date: 6/14/2021 10:19:17 AM

The draft Eastonville corridor study shows upgrades to an urban 48' paved section in the site vicinity.

Author: kdferrin Subject: Sticky Note Date: 9/28/2021 3:56:55 PM

LSC Response: The description of Eastonville Road has been revised to reference the draft corridor study.

2040 model volumes. Engineering judgement and LSC estimates were then applied using the other factors listed to modify these percentages. The PPACG model output is attached.

When the distribution percentages (from Figure 8) were applied to the trip generation estimates (from Table 2), the site-generated traffic volumes on the area roadways were determined. Figures 9 and 10 shows the short-term and long-term site-generated traffic volume, respectively.

TOTAL TRAFFIC

Figure 11 shows the projected short-term (Year 2021) total traffic volumes. The short-term total traffic volumes are the sum of the short-term background traffic volumes (from Figure 6) plus the short-term site-generated traffic volumes (from Figure 9).

Figure 12 shows the projected 2040 total traffic volumes. The 2040 total traffic volumes are the sum of the 2040 background traffic volumes (from Figure 7) plus the long-term site-generated traffic volumes (from Figure 10).

PROJECTED LEVELS OF SERVICE

The key area intersections have been analyzed to determine the projected future levels of service based on the unsignalized method of analysis procedures from the *Highway Capacity Manual, 6th Edition* by the Transportation Research Board and Synchro signalized intersection procedures. Based on the criteria contained in the ECM, a peak hour factor of 0.85 was used for the short-term (Year 2021) analysis except for those intersections whose existing peak hour factor calculated from traffic counts conducted by LSC was higher than 0.85. In those cases, the existing peak hour factor was used. A peak hour factor of 0.95 was used for the long-term (Year 2040) analysis, except for the southbound through traffic on US Hwy 24 during the morning peak hour and the northbound through traffic on US Hwy 24 in the afternoon peak hour. Based on the existing peak hour factor and high traffic volumes projected for these movements, a future peak hour factor of 0.98 was used. The results of the analysis are contained in Figures 6, 7, 11, and 12. The level of service reports are attached.

Stapleton/Saybrook

The full-movement site access to Stapleton Drive (Saybrook Drive) is projected to operate at a LOS C or better for all movements during the peak hours as a stop-sign controlled "T" intersection based on the projected short-term total traffic volumes. By 2040 it was assumed that Stapleton Drive would be constructed to its full cross section, a south leg would be added to the Stapleton/Saybrook Drive to serve a future commercial development. Based on the 2040 total traffic volumes and the lane geometry shown in Figure 12 the minor approach movements are projected to operate at LOS F during the afternoon peak hour if this intersection remains stop-sign controlled. If this intersection is converted to traffic signal control all movements at this intersection are projected to operate at LOS D or better during the peak hours.

1 (It might not be likely that a full-movement intersection is allowed here if Dumont to the east is constructed.)

Road or Drive? 2

Page: 12

Number: 1 Author: dsdrice Subject: Text Box Date: 6/14/2021 11:19:12 AM

(It might not be likely that a full-movement intersection is allowed here if Dumont to the east is constructed.)

Author: kdferrin Subject: Sticky Note Date: 9/28/2021 3:57:43 PM

LSC Response: This access was shown as a full-movement signalized intersection in the approved *Waterbury PUD Development Plan Updated Traffic Impact Study* dated January 10, 2013. Copies of the related approved deviation requests related to the Saybrook/Stapleton intersection have been included with the updated TIS.

Number: 2 Author: dsdrice Subject: Callout Date: 6/11/2021 1:01:32 PM

Road or Drive?

Author: kdferrin Subject: Sticky Note Date: 9/28/2021 3:57:51 PM

LSC Response: All references to "Saybrook Drive" have been revised to "Saybrook Road."

remain as a two-way, stop-sign-controlled intersection. All movements at this intersection are projected to operate at a satisfactory level of service, if it is reconstructed as a modern roundabout or traffic-signal controlled. By 2040, it will likely be necessary to provide two northbound and southbound through lanes to achieve an acceptable level of service.

if not constructed as a roundabout? 1

Rex/Eastonville

In the short term, it was assumed that a new section of Rex Road would be constructed from Eastonville Road through the Grandview Reserve sketch plan area to US Hwy 24. It was assumed that the section of Rex Road just west of Eastonville Road through the Meridian Ranch development was not yet constructed. The intersection of Rex/Eastonville is projected to operate at LOS B or better for all movements during the peak hours as a stop sign-controlled "T" intersection, based on the projected short-term total traffic volumes.

By 2040, it was assumed that Rex Road would be completed between Meridian Road and US Hwy 24. Based on the projected 2040 total traffic volumes, the intersection of Rex/Meridian is projected to operate at LOS F for some of the minor approach volumes, if it is stop-sign-controlled. If this intersection is constructed as a one-lane modern roundabout or if it is traffic-signal-controlled, all movements are projected to operate at LOS D or better during the peak hours.

TRAFFIC SIGNAL WARRANT ANALYSIS

The intersections of Stapleton/Eastonville and Stapleton/US Hwy 24 were analyzed to determine when Four-Hour Vehicular Volume Traffic-Signal Warrant thresholds would be reached or exceeded, based on the projected short-term peak-hour traffic volumes. The satisfaction of warrants does not indicate that a signal must be installed. The decision to require a signal to be installed rests with the County (or CDOT in the case of US Highway 24/Stapleton).

Stapleton/Eastonville

Table 3 shows the results of the analysis for the intersection of Stapleton/Eastonville. The minor approach volumes were assumed to include either the eastbound left-turn, through, and right-turn movements or the westbound left-turn and through movements (the right-turn movements were excluded, as there is an exclusive right-turn lane). Even if the threshold is met, based on both the eastbound and westbound approaches, it would only be considered to be met once for that hour. As shown in the Table 3, the thresholds for a Four-Hour Vehicular Volume Traffic-Signal Warrant are **not** projected to be met, based on the projected short-term (Year 2021) total traffic volumes.

Page: 14

Number: 1 Author: dsdrice Subject: Callout Date: 6/14/2021 11:08:34 AM

if not constructed as a roundabout?

Author: kdferrin Subject: Sticky Note Date: 9/2/2021 9:32:39 AM

LSC Response: Two through lanes will likely be needed even with a modern roundabout

Most likely also a fee program eligible signal

Table 5
Waterbury Filing Nos. 1 and 2
Waterbury Cost Estimate for Conditions of Approval

1

Prior Condition of Approval #	Improvement/Location	Type of Improvement	Quantity	Units	Unit Cost	Total Estimated Cost	Percent for Filing Nos. 1&2	Filing Nos. 1&2 Amt.
a)	US Hwy 24 & Stapleton Dr.	Signal	1	ea	$350,000	$350,000	6.22%	$21,753
b)	US 24 & Judge Orr Intersection	Intersection Improvements	NOT REQUIRED BY CDOT					$0
c)	Eastonville Road & Stapleton Dr.	Signal	This intersection is considered an "eligible intersection" under the fee impact program					
c)	Eastonville Road & Stapleton Dr.	Northbound and Southbound Turn Lane Improvements	To be included in Eastonville Road PPRTA Project					
c)	Eastonville Road & Stapleton Dr.	Eastbound and Westbound Turn Lane Improvements	The westbound left-turn lane, which has already been constructed as part of the north half section of Stapleton, will be able to be placed into service with the completion of the southern (eastbound) half of the interesection. The future construction of the eastbound left-turn lane will be completed with the south (eastbound) half of the intersection.					
d)	Eastonville Road - Stapleton to Latigo	Final Grading and Paving	PPRTA Project					
e)	Stapleton/Bandanero Intersection	Intersection Reconfiguration Impr.	250	ft	$27	$6,750	**3.00%**	$203
f)	Stapleton/Dumont Intersection	Intersection Reconfiguration Impr.	To be completed with future phases of Waterbury or contributions to be collected with future Waterbury filings that connect to Dumont (if the 4 Way Ranch Commecial project constructs the road).					
g)	Stapleton Drive - US 24 to Eastonville	Roadway Segment 4-Lane Principal	800	ft	$496	$396,672	3.44%	$13,639
g)	Stapleton Drive - US 24 to Eastonville	Roadway Segment Half Principal Art.	4,965	ft	$248	$1,230,923	3.44%	$42,323
								$77,917

Source of Unit Costs - Countywide Fee Program Fee Study except CDOT provided the US Highway 24/Stapleton signal cost.

Feb-21

Page: 22

Number: 1 Author: dsdrice Subject: Callout Date: 6/14/2021 11:37:43 AM

Most likely also a fee program eligible signal

Author: kdferrin Subject: Sticky Note Date: 9/28/2021 3:57:56 PM

LSC Response: The table has been revised to show US 24/Stapleton as an eligible signal.

Or developers with [1] fee reimbursement

Table 6
Waterbury Filing Nos. 1 and 2
Roadway Improvements

Item #	Improvement	Trigger	Timing	Responsibility
	Roadway Segment Improvements			
1	Eastonville - Stapleton to Latigo final grading and paving	dependent on PPRTA funding priorities	TBD by EPC; PPRTA "A-List" Project	PPRTA
2	Eastonville - Stapleton to Londonderry upgrade to Rural Minor Arterial (per MUTCD)	average daily traffic > 6,000 vehicles per day	dependent on PPRTA funding priorities	PPRTA
3	Eastonville - Londonderry to future Waterbury access upgrade from unimproved roadway to Rural Minor Arterial (per MUTCD)	average daily traffic > 300 vehicles per day	With future Waterbury filings or Initial Grandview Reserve rilings or Construction of Rex to Eastonville	PPRTA
4	Eastonville - Stapleton to Grandview Reserve south boundary upgrade to [3] [2] Rural Minor Arterial (per MUTCD)	average daily traffic > 20,000 vehicles per day	dependent on PPRTA funding priorities	PPRTA Grandview and other area developments if/as required
5	Stapleton Drive - US Hwy 24 to Eastonville Road complete southern (eastbound) half	average daily traffic > 18,000 vehicles per day	Shown in 2040 MTCP	El Paso County west of Eastonville Road; 4 Way Ranch Metro District east of Eastonville Road.
6	Widen US Hwy 24 to provide two lanes in each direction	dependent on CDOT funding priorities	Shown in US Highway 24 PEL Study; 2040 MTCP	CDOT
	Stapleton/US Hwy 24 Intersection			
7	Convert from Two-Way, Stop-Sign Control to Signal Control	When Traffic Signal Warrant(s) are met. The decision on timing of traffic signal installation rests with the Colorado Department of Transportation	anticipated in the short-term	CDOT; along with any available escrow collected from area developments through the access permitting process.
8	Add dual left-turn lanes	As needed with future developments (Will require Items 5, 6, and 7 to be completed)	Future	Area developments as required
9	Potential long-term capacity upgades (jughandle, a Jr Interchange, etc.)	When level of service degrades below acceptable levels	Shown in US Highway 24 PEL Study;	CDOT; along with any available escrow collected from area developments, including this project, through the access permitting process.
	Eastonville/Stapleton			
10	Construct northbound and southbound left-turn lanes on Eastonville Rd. approaching Stapleton Dr.	- - -	Short-Term	PPRTA/El Paso County(1)
11	Signalization of the intersection of Stapleton/Eastonville.	Once warrants are met. The decision on timing of traffic signal installation rests with El Paso County Public Works.	anticipated in the short-term	eligible intersection under the fee impact program
	Stapleton/Saybrook Intersection			
12	Constructed an eastbound left-turn lane on Stapleton Dr approaching Saybrook. This lane should be 335 feet long plus a 200-foot taper.	eastbound left-turn volume > 10 vph	With Waterbury Filing Nos. 1 and 2	Waterbury
13	Constructed a westbound right-turn deceleraton lane on Stapleton Dr approaching Saybrook. This lane should be 235 feet long plus a 200-foot taper.	westbound right-turn volume > 25 vph	With Waterbury Filing Nos. 1 and 2	Waterbury
14	Constructed a westbound right-turn acceleraton lane on Stapleton Dr at Saybrook. This lane should be 760 feet long plus a 180-foot taper.	southbound right-turn volume > 50 vph	With Future Waterbury Filings	Waterbury
15	Convert from Two-Way, Stop-Sign Control to Signal Control	When Traffic Signal Warrant(s) are met. The decision on timing of traffic signal installation rests with El Paso County	Future (Likely with commercial development on the south side of Stapleton)	Waterbury and/or other area developments

Notes:

(1) The design of Eastonville Road will be performed by the Meridian Ranch developer. LSC anticipates that these turn lanes will be included in the project design. The project will be constructed by El Paso County as PPRTA project.

Source: LSC Transportation Consultants, Inc. (February 2021)

Page: 23

Number: 1 Author: dsdrice Subject: Callout Date: 6/14/2021 11:43:46 AM

Or developers with fee reimbursement

Author: kdferrin Subject: Sticky Note Date: 9/28/2021 3:58:00 PM

LSC Response: The table has been revised as requested.

Number: 2 Author: dsdrice Subject: Delete Date: 6/14/2021 11:42:41 AM

Delete

Number: 3 Author: dsdrice Date: 6/14/2021 11:42:29 AM

4-Lane

Author: kdferrin Subject: Sticky Note Date: 9/28/2021 3:58:04 PM

LSC Response: The table has been revised as requested.

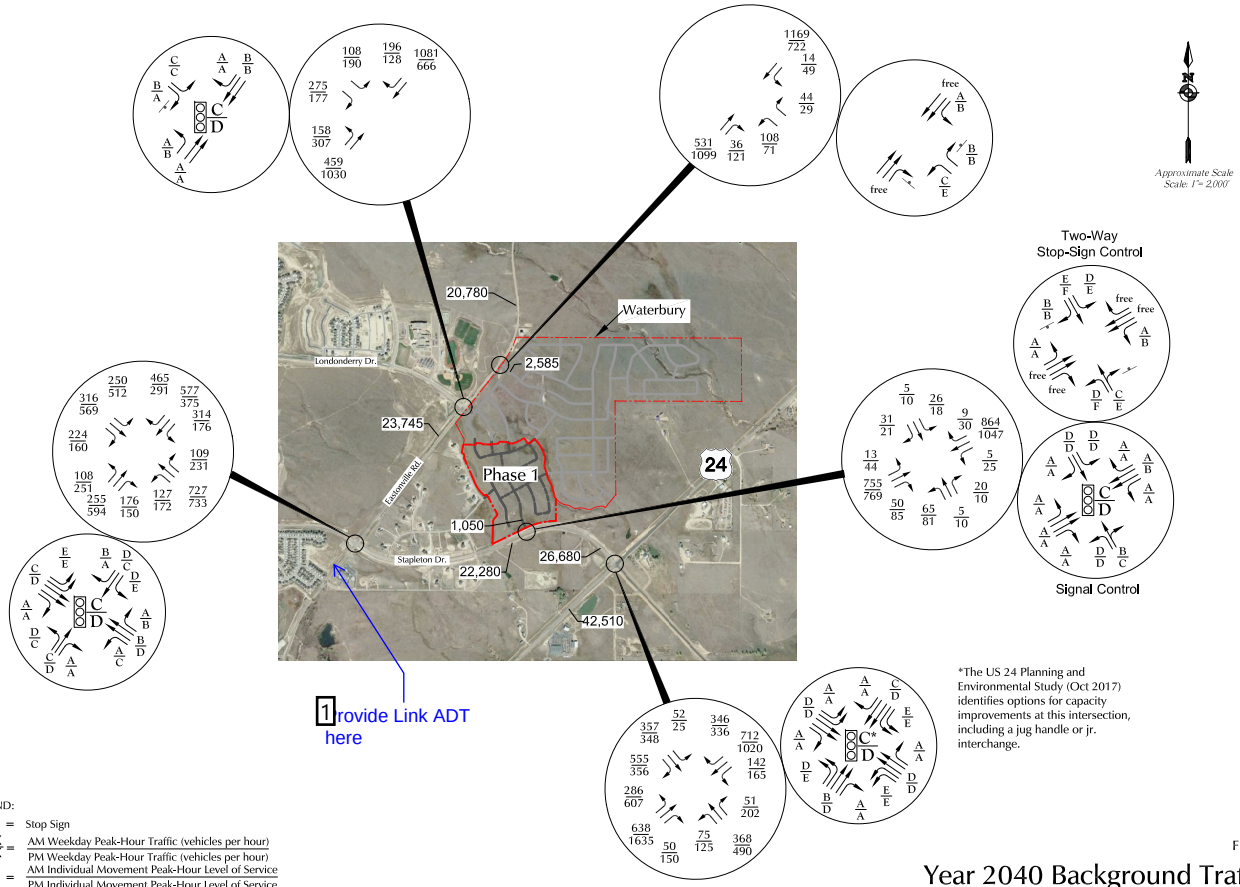


Figure 7

Year 2040 Background Traffic, Lane Geometry and Traffic Control

Waterbury Filing Nos 1 and 2 (LSC #204220)

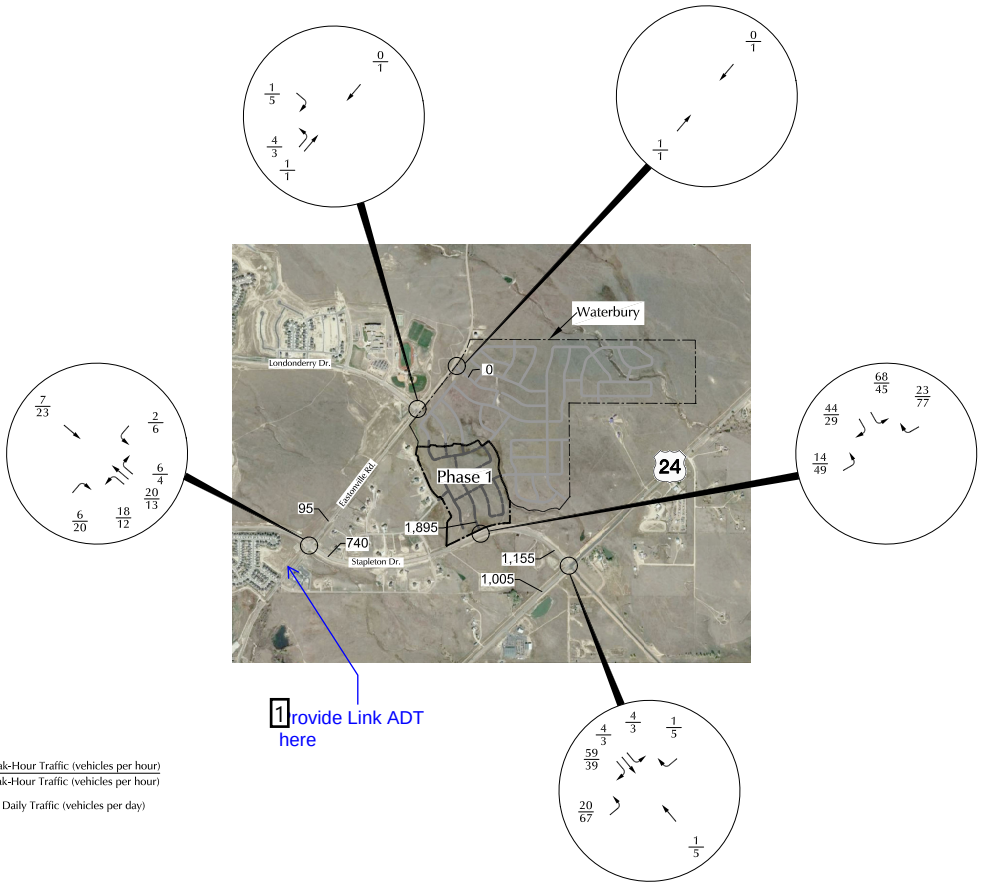
Page: 30

Number: 1 Author: dsdrice Subject: Callout Date: 6/14/2021 10:35:24 AM

Provide Link ADT here

Author: kdferrin Subject: Sticky Note Date: 9/28/2021 3:58:07 PM

LSC Response: The additional information has been added as requested.



Approximate Scale
Scale: 1"= 2,000'

LEGEND:

XX/XX = AM Weekday Peak-Hour Traffic (vehicles per hour) / PM Weekday Peak-Hour Traffic (vehicles per hour)

X,XXX= Average Daily Traffic (vehicles per day)

LSC TRANSPORTATION CONSULTANTS, INC.

Figure 9

Assignment of Short-Term Site-Generated Traffic

Waterbury Filing Nos 1 and 2 (LSC #204220)

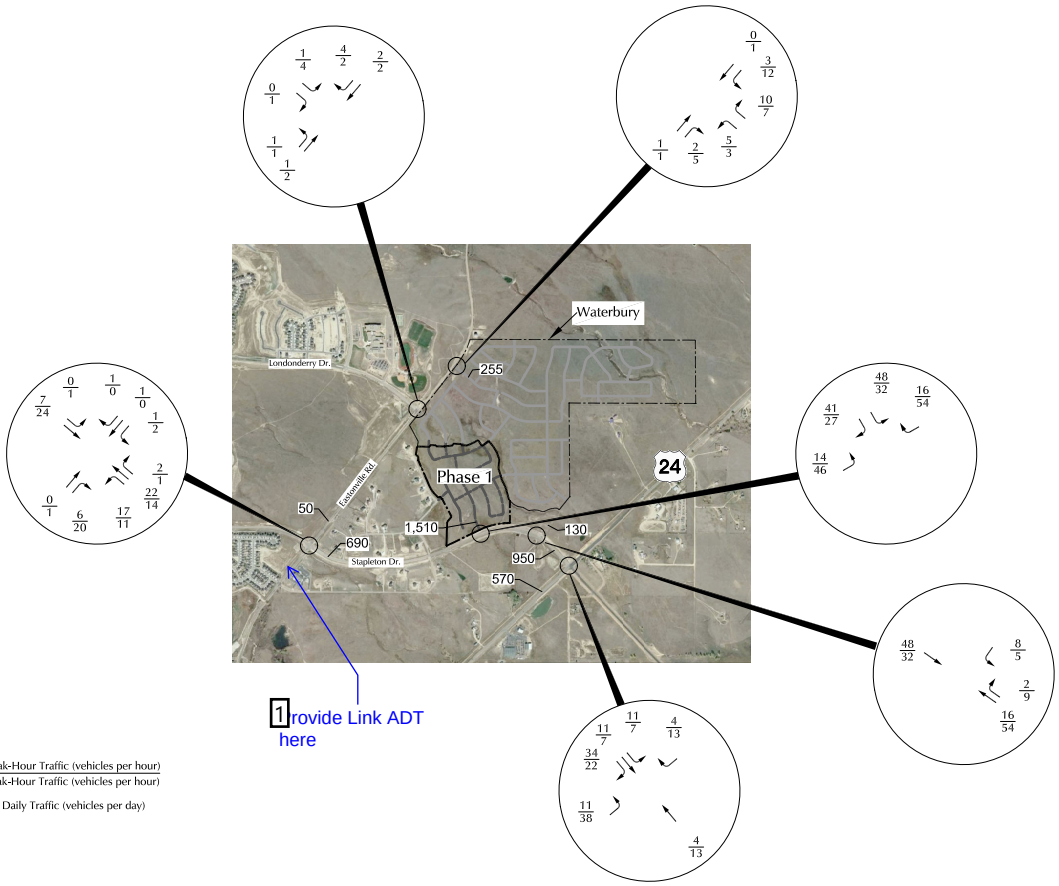
Page: 32

Number: 1 Author: dsdrice Subject: Callout Date: 6/14/2021 10:35:45 AM

Provide Link ADT here

Author: kdferrin Subject: Sticky Note Date: 9/28/2021 3:58:10 PM

LSC Response: The additional information has been added as requested.



LEGEND:

$\frac{XX}{XX}$ = $\frac{\text{AM Weekday Peak-Hour Traffic (vehicles per hour)}}{\text{PM Weekday Peak-Hour Traffic (vehicles per hour)}}$

X,XXX= Average Daily Traffic (vehicles per day)

Figure 10

Assignment of Long-Term Site-Generated Traffic

Waterbury Filing Nos 1 and 2 (LSC #204220)

LSC TRANSPORTATION CONSULTANTS, INC.

Page: 33

Number: 1 Author: dsdrice Subject: Callout Date: 6/14/2021 10:35:51 AM

Provide Link ADT here

Author: kdferrin Subject: Sticky Note Date: 9/28/2021 3:58:13 PM

LSC Response: The additional information has been added as requested.

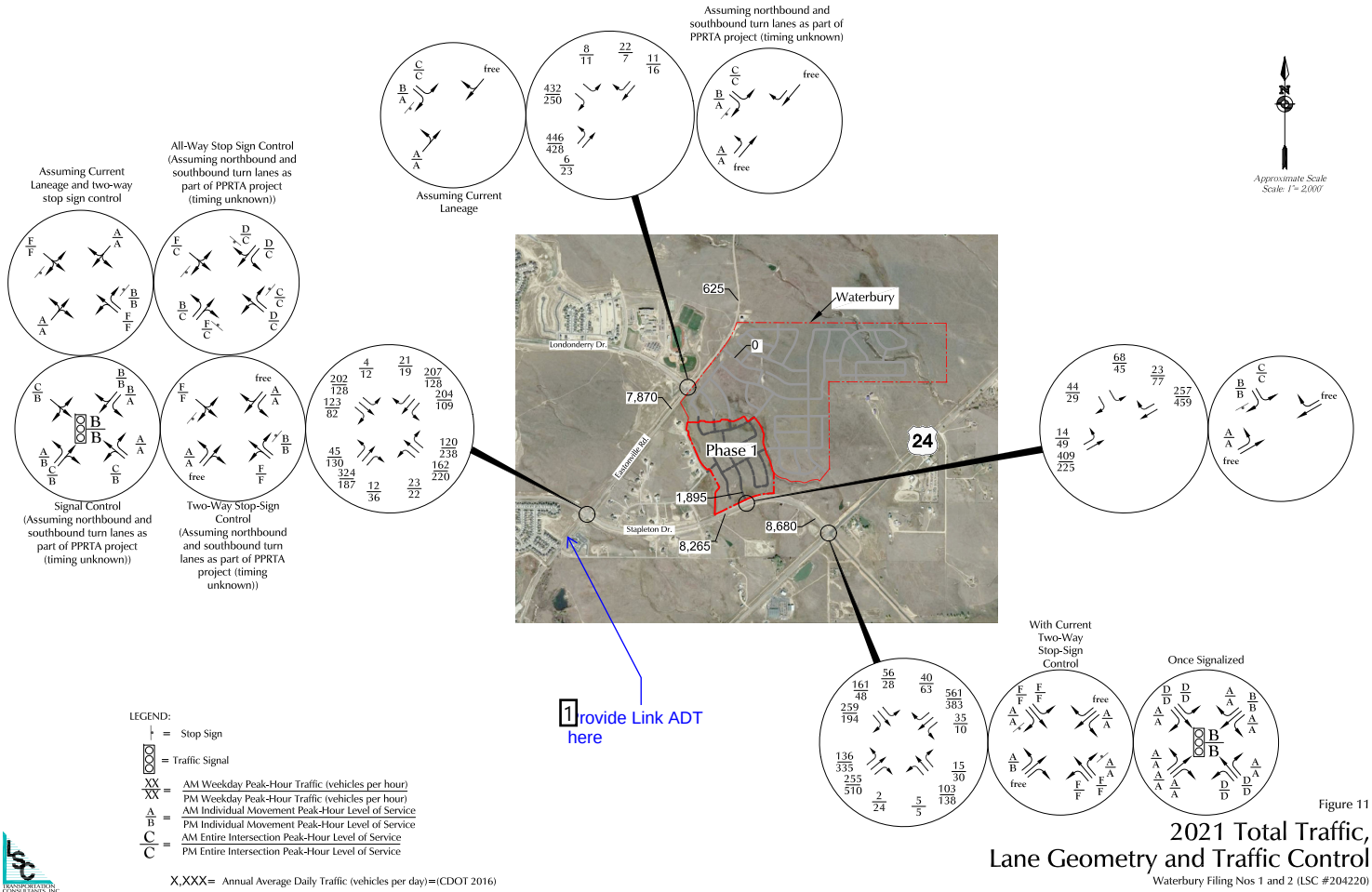


Figure 11

2021 Total Traffic, Lane Geometry and Traffic Control

Waterbury Filing Nos 1 and 2 (LSC #204220)

Page: 34

Number: 1 Author: dsdrice Subject: Callout Date: 6/14/2021 10:36:09 AM

Provide Link ADT here

Author: kdferrin Subject: Sticky Note Date: 9/28/2021 3:58:16 PM

LSC Response: The additional information has been added as requested.

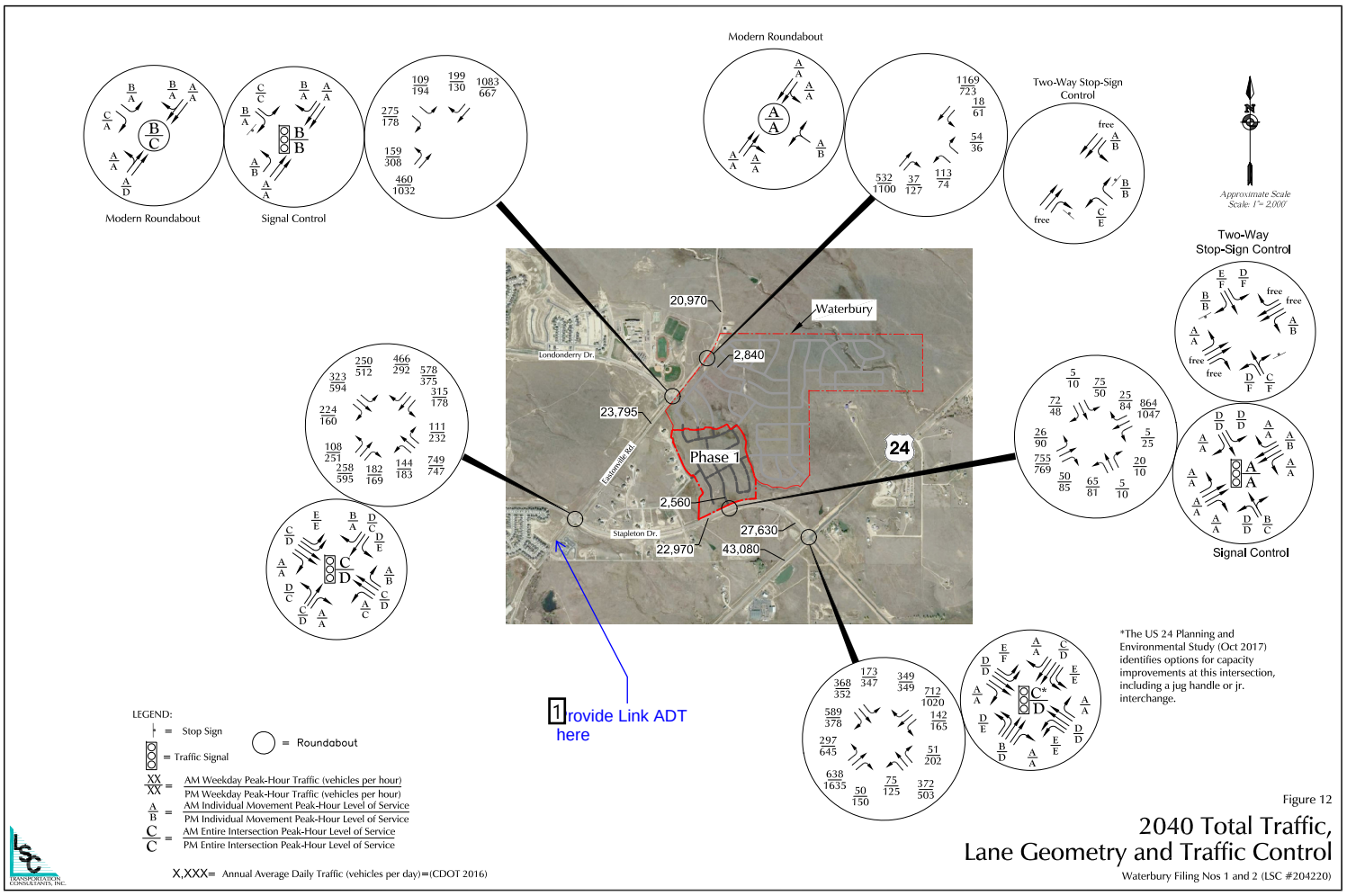


Figure 12

2040 Total Traffic, Lane Geometry and Traffic Control

Waterbury Filing Nos 1 and 2 (LSC #204220)

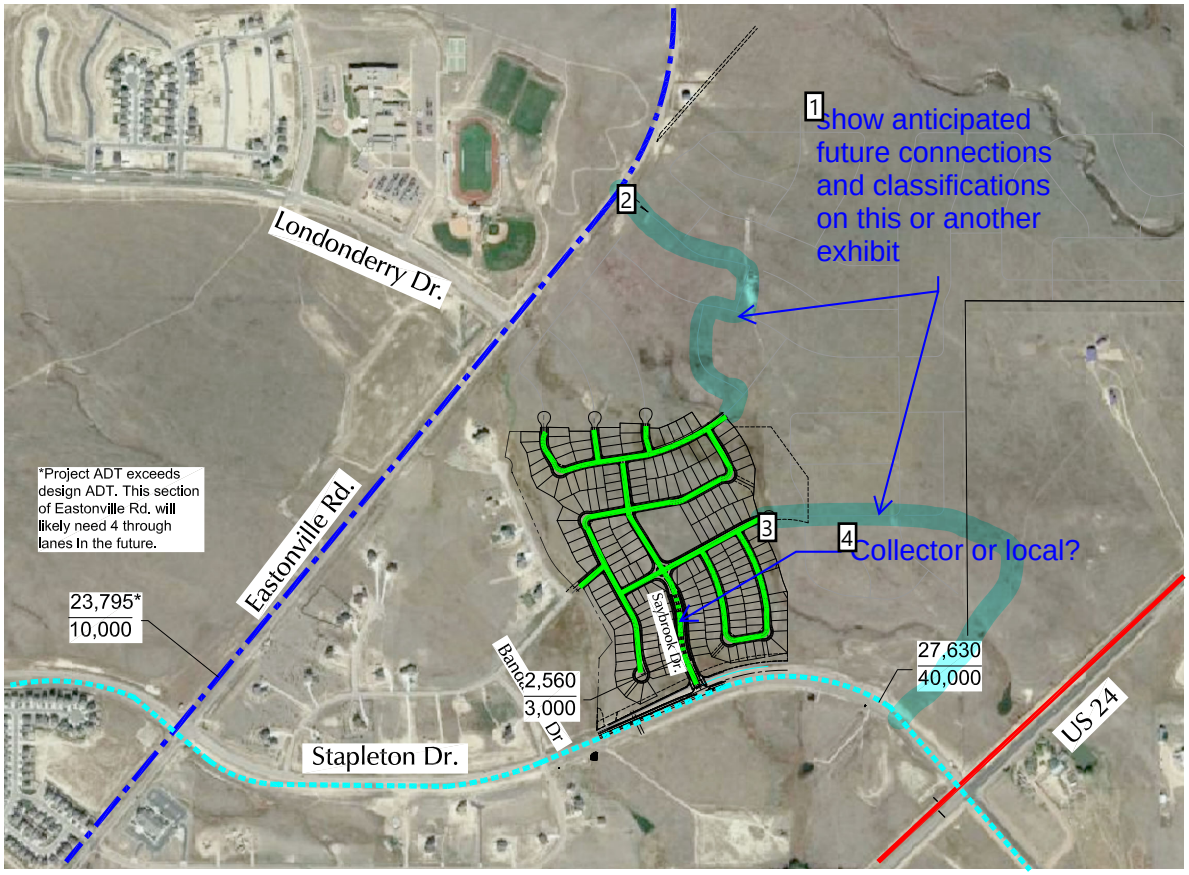
Page: 35

Number: 1 Author: dsdrice Subject: Callout Date: 6/14/2021 11:15:59 AM

Provide Link ADT here

Author: kdferrin Subject: Sticky Note Date: 9/28/2021 3:58:20 PM

LSC Response: The additional information has been added as requested.



Approximate Scale
Scale: NTS

Figure 13

Recommended Street Classification

Waterbury Filing Nos 1 and 2 (LSC #204220)

= Ex-Expressway (CDOT)
= Urban Principal Arterial
= Rural Minor Arterial
= Urban Local
= Urban Residential Collector

$$\frac{XX}{XX} = \frac{\text{Projected 2040 Average Weekday Traffic (veh/day)}}{\text{ECM Design ADT (veh/day)}}$$

LSC TRANSPORTATION CONSULTANTS, INC.

Page: 36

Number: 1 Author: dsdrice Subject: Callout Date: 6/14/2021 12:13:15 PM

show anticipated future connections and classifications on this or another exhibit

Author: kdferrin Subject: Sticky Note Date: 9/28/2021 3:58:23 PM

LSC Response: The additional information has been added as requested.

Number: 2 Author: dsdrice Date: 6/14/2021 12:11:58 PM

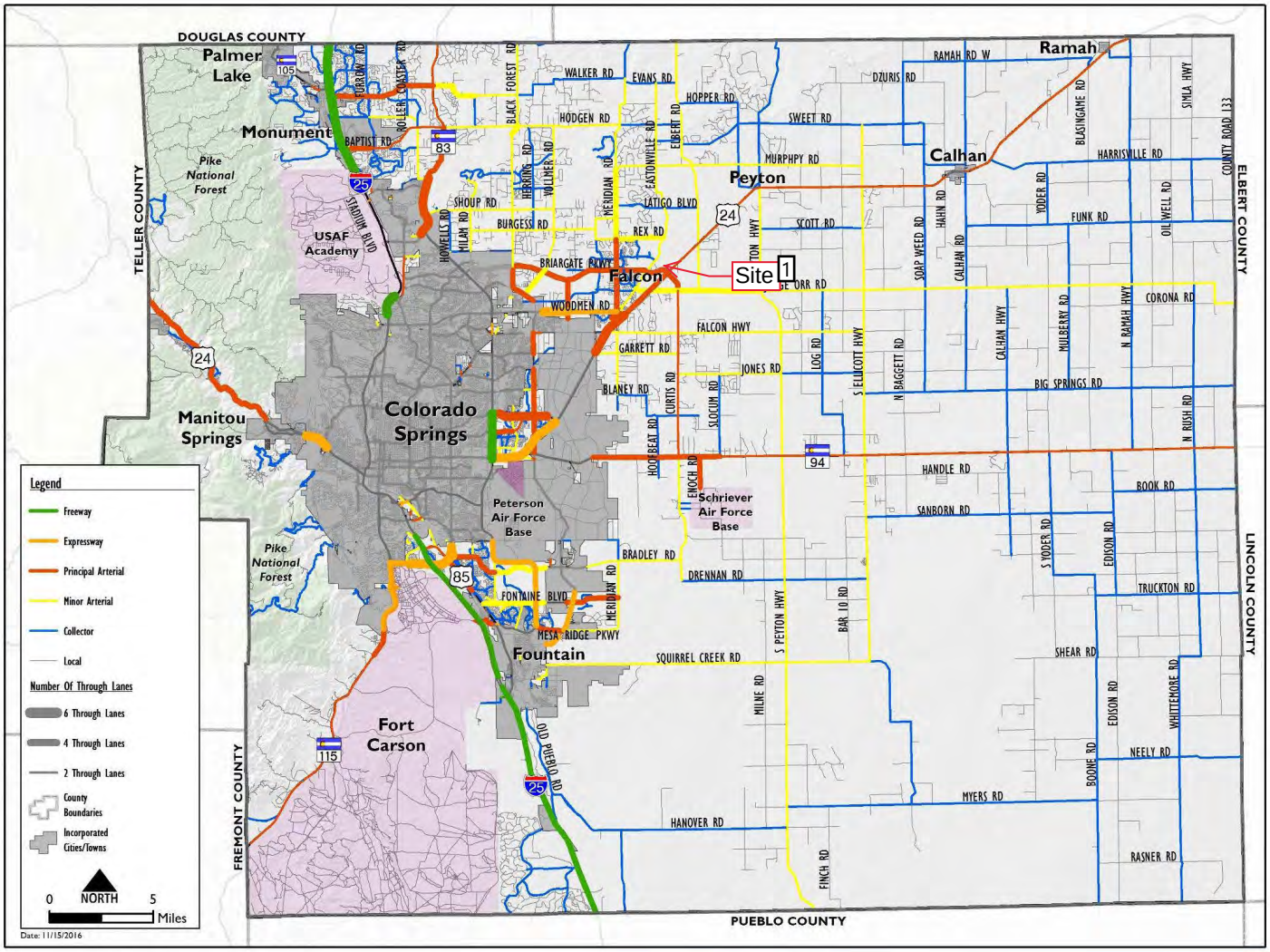
Number: 3 Author: dsdrice Date: 6/14/2021 12:11:25 PM

Number: 4 Author: dsdrice Subject: Callout Date: 6/14/2021 11:18:26 AM

Collector or local?

Author: kdferrin Subject: Sticky Note Date: 9/28/2021 3:58:35 PM

LSC Response: The figure has been revised to make it more clear that the recommended classification for Saybrook Road is Urban Residential Collector.



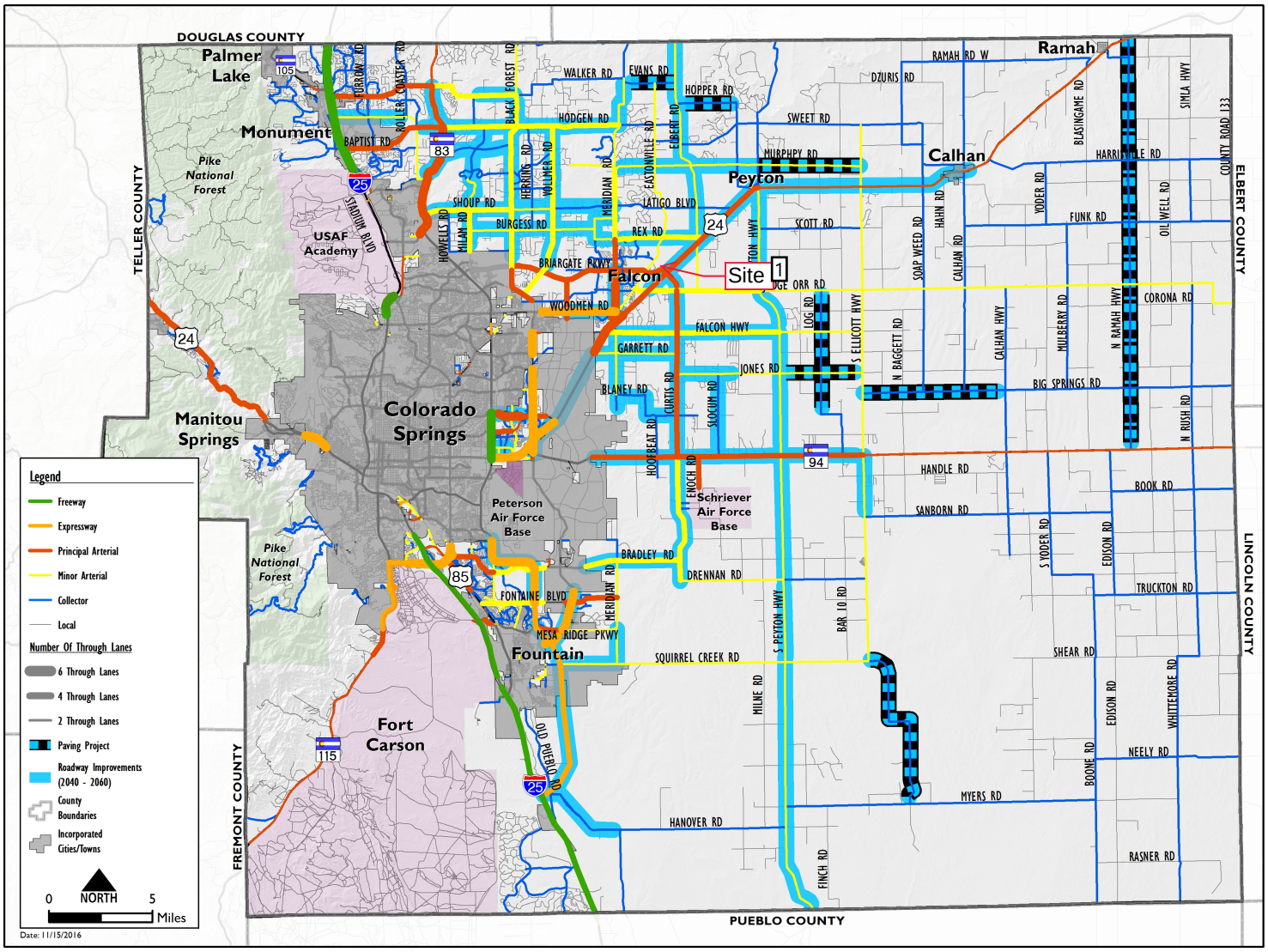
Map 14: 2040 Roadway Plan (Classification and Lanes)

Page: 38

Number: 1 Author: Kirstin Subject: Callout Date: 12/17/2020 11:50:13 AM -07'00'

Site

Map 17: 2060 Corridor Preservation



Page: 39

Number: 1 Author: Kirstin Subject: Callout Date: 12/17/2020 11:49:59 AM -07'00'

Site

Total? Numbers don't match Figure 7. [1]

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	26	755	50	5	864	25	65	5	75	5	72
Future Volume (vph)	26	755	50	5	864	25	65	5	75	5	72
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	NA	Perm
Protected Phases	5	2		1	6			8		4	
Permitted Phases	2		2	6		6	8		4		4
Detector Phase	5	2	2	1	6	6	8	8	4	4	4
Switch Phase											
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	20.0	20.0	10.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	15.0	75.0	75.0	15.0	75.0	75.0	30.0	30.0	30.0	30.0	30.0
Total Split (%)	12.5%	62.5%	62.5%	12.5%	62.5%	62.5%	25.0%	25.0%	25.0%	25.0%	25.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag					
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes					
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	Max	Max	Max	Max	Max
Act Effct Green (s)	84.2	82.8	82.8	81.6	78.2	78.2	25.0	25.0	25.0	25.0	25.0
Actuated g/C Ratio	0.70	0.69	0.69	0.68	0.65	0.65	0.21	0.21	0.21	0.21	0.21
v/c Ratio	0.07	0.34	0.05	0.01	0.41	0.03	0.24	0.08	0.29	0.01	0.20
Control Delay	4.9	6.0	1.1	4.6	6.7	0.2	42.3	18.0	43.2	38.0	9.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	4.9	6.0	1.1	4.6	6.7	0.2	42.3	18.0	43.2	38.0	9.8
LOS	A	A	A	A	A	A	D	B	D	D	A
Approach Delay		5.7			6.5			35.6		27.3	
Approach LOS		A			A			D		C	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 12 (10%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle: 50	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.41	
Intersection Signal Delay: 9.1	Intersection LOS: A
Intersection Capacity Utilization 45.0%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 1010: Stapleton Dr & Saybrook Dr

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Number: 1 Author: dsdrice Subject: Callout Date: 6/14/2021 12:02:21 PM

Total? Numbers don't match Figure 7.

Author: kdferrin Subject: Sticky Note Date: 9/28/2021 3:58:55 PM

LSC Response: The 2040 background traffic LOS reports have been corrected in the updated TIS.