Waterview East Commercial

Traffic Impact and Access Analysis

Prepared for:
CPR Entitlements, LLC
31 N Tejon St #500,
Colorado Springs, CO 80903

Contact: Mr. P. A. Koscielski, Manager

AUGUST 10, 2022

LSC Transportation Consultants
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LSC #S214970

PUDSP-22-009

Include signature page for engineer and developer

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CDOT Memorandum

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August 10, 2022

Mr. P. A. Koscielski, Manager
CPR Entitlements, LLC
31 N Tejon St #500,
Colorado Springs, CO 80903

RE: Waterview East Commercial
Traffic Impact and Access Analysis
El Paso County, CO
LSC #S214970

Dear Mr. Koscielski,

In response to your request, LSC Transportation Consultants, Inc. has prepared this traffic impact and access analysis for proposed Waterview East Commercial development. As shown in Figure 1, the site is located southeast of the intersection of Powers Boulevard and Bradley Road in El Paso County, Colorado.

REPORT CONTENTS

This report has been prepared to address the project's traffic impact at the proposed access points and adjacent intersections.

This report contains the following:

- The existing street and traffic conditions in the site's vicinity including the street widths, lane geometries, traffic controls, and existing traffic counts at key area intersections;
- The projected future background traffic volumes, which include estimates of traffic from other area development projects and increases in through traffic on the adjacent arterial streets;
- The estimated average weekday and peak-hour trip generation;
- The estimated directional distribution of site-generated trips and the projected site-generated traffic volumes;
- Estimates of the resulting total traffic volumes on the adjacent streets and intersections; and
- The projected levels of service at the site access point and adjacent intersections.

PREVIOUS TRAFFIC REPORTS COMPLETED IN THE AREA

The site was included as part of the *Springs at Waterview East Preliminary Traffic Impact Analysis* dated August 24, 2018.

State that the list of studies is in an appendix and list name it's under

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. Figure 2 shows the location of the other known developments in the area.

LAND USE AND ACCESS

The site location is shown in Figure 1. Figure 2 presents a context map showing other area developments. The site plan for the Villages at Waterview East Commercial is shown in Figure 3.

delete Villages

Land Use

Figure 3 shows the proposed site plan for 22-acre Waterview East Commercial development. The 2018 Springs at Waterview East TIS assumed the site would be developed with about 148,000 square feet of general-retail floor space. The site is now planned to be developed with about 174,000 square feet of floor space including a mix of general retail, fast food restaurant, gas station, and mini storage uses.

Access

See comments on deviation request in regards to RI/RO access.

Two full-movement access points are proposed to Frontside Drive, an Urban Non-Residential Collector. As shown on Figure 3, the proposed access spacing exceeds 330 feet, which is the allowed spacing for Urban Non-Residential Collectors when intersecting local roadways. An additional right-in/right-out-only access is proposed to Legacy Hill Drive about 305 feet south of Bradley Road. This access will require a deviation to the El Paso County Access Code. Figure 4 shows the location of the proposed right-in/right-out access.

Sight Distance

Figure 5 shows the sight distance analysis for the proposed access points to Frontside Drive. Based on a design speed of 40 miles per hour (mph) and the criteria contained in Table 2-21 of the *Engineering Criteria Manual* (*ECM)*, the required intersection sight distance at these intersections is 445 feet. The required stopping sight distance from *ECM* Table 2-17 is 305 feet. As shown in Figure 5, the intersection sight-distance requirement can be met at both intersections. In order for the stopping sight distance requirement to be met for northbound traffic approaching the southwest access, the area between the curb and the sight will need to be kept free of other obstructions (such as rear privacy fencing, landscaping, and backyard/patio amenities) that would restrict the drivers' line of sight. Landscaping should be low — about

18 inches or lower in height — to the east of the passenger vehicle lines of sight shown. Please refer to *ECM* Sections 2.3.6.G.1 and 2.

Figure 6 shows the sight-distance analysis for the proposed right-in/right-out-only access to Legacy Hill Drive. Based on a design speed of 40 miles per hour (mph) and the criteria contained in Table 2-21 of the *ECM*, the required intersection sight distance is 445 feet. As shown in Figure 6, this requirement can be met for southbound through traffic on Legacy Hill Drive. Traffic turning either right or left from Bradley Road will be travelling at a lower speed. Based on a turning speed of 25 mph or less, the required intersection sight distance from Table 2-21 of the *ECM* is 280 feet. This requirement can be met with the proposed spacing. Based on a design speed of 40 miles per hour (mph) and the criteria contained in Table 2-17 of the *ECM*, the required stopping sight distance is 305 feet. As shown in Figure 4, this requirement can be met for southbound through traffic on Legacy Hill Drive. Traffic turning either right or left from Bradley Road will be travelling at a lower speed. Based on a turning speed of 25 mph or less, the required stopping sight distance from Table 2-17 of the *ECM* is 155 feet. This requirement can be met with the proposed spacing.

Figure 6

STREET AND TRAFFIC CONDITIONS

Area Streets

The adjacent streets 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 with the site location identified on them have been attached to this report.

- **Powers Boulevard** (State Highway 21) is classified as a Freeway (FW). Powers Boulevard is one of the region's main north/south corridors. Powers Boulevard has a center median and a posted speed limit of 60 miles per hour (mph) north of Crestera Parkway. South of this point, the posted speed limit is 65 mph. Powers Boulevard is ultimately planned to be converted to a Freeway with grade-separated intersections.
- **Bradley Road** is shown with a Minor Arterial classification east of Grinnell Boulevard on the 2016 2040 El Paso County *Major Transportation Corridors Plan (MTCP)*. Adjacent to the site, Bradley Road is a four-lane roadway with a 50-mph posted speed limit and has an edge-of-asphalt median, left-turn lanes, and rural paved shoulders. There is a short existing section of raised median approaching Powers Boulevard. The 2040 *MTCP* includes the construction of Bradley Road between Grinnell Boulevard and Powers Boulevard in the 2040 roadway improvement B-list projects.
- **Marksheffel Road** extends north from the Link Road/C&S Road intersection in Fountain, Colorado to north of Woodmen Road. It has recently been upgraded north and south of Bradley Road with a PPRTA project and is shown as a four-lane Expressway on the *MTCP*. The posted speed limit on Marksheffel Road in the vicinity of Bradley Road is 55 mph.

Existing Traffic Volumes

Figure 7 shows the traffic volumes at the intersections of Powers Boulevard/Bradley Road and Marksheffel Road/Bradley Road, based on the attached traffic counts conducted by LSC in March 2021. Figure 7 also shows the 2019 Colorado Department of Transportation (CDOT) Average Annual Daily Traffic Volume (AADT) on Powers Boulevard and estimates of the average daily traffic volume on Bradley Road based on the peak-hour traffic counts.

CDOT data base has newer counts, please update

Existing Levels of Service

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 represents control delay of less than 10 seconds for unsignalized and signalized intersections. LOS F represents control delay of more than 50 seconds for unsignalized intersections and more than 80 seconds for signalized intersections. Table 1 shows the level of service delay ranges.

Table 1: Intersection Levels of Service Delay Ranges

Level of Service	Signalized Intersections: Average Control Delay (seconds per vehicle)	Unsignalized Intersections: Average Control Delay (seconds per vehicle)[1]
A	10.0 sec or less	10.0 sec or less
B	10.1-20.0 sec	10.1-15.0 sec
C	20.1-35.0 sec	15.1-25.0 sec
D	35.1-55.0 sec	25.1-35.0 sec
E	55.1-80.0 sec	35.1-50.0 sec
F	80.1 sec or more	50.1 sec or more

(1) For unsignalized intersections if V/C ratio is greater than 1.0 the level of service is LOS F regardless of the projected average control delay per vehicle.

The intersections of Powers/Bradley and Marksheffel/Bradley have been analyzed using Synchro. Figure 7 shows the level of service analysis results.

All movements at these intersections are currently operating at LOS D or better during the peak hours.

Provide signal counts at Legacy Hill/Bradley Road intersection.

BACKGROUND TRAFFIC

Background traffic is the traffic estimated to be on the adjacent roadways and at adjacent intersections without the proposed development's trip generation of site-generated traffic volumes. Background traffic includes the through traffic and the traffic generated by nearby developments but assumes zero traffic generated by the site.

Has the TIS addendum (PCD Proj # PUDSP-21-003, Rev April 16, 2021) for the whole of Aspen Ridge development been reviewed in conjunction with these other reports?

Figure 8 shows the projected short-term (Year 2026) background traffic volumes. Historical counts showed that the morning peak-hour counts recorded in March 2021 were low. It has been noted that the COVID-19 pandemic continues to impact primarily morning counts. Based on historical count data, a 25 percent increase was applied to all the existing morning count data, while a 5-percent increase was applied to the existing afternoon counts. These increases were based on comparing data recorded in February 2020 and February 2021 at CDOT ATR 103648. These traffic volumes are based on the existing traffic volumes shown in Figure 5, assuming a growth rate of 1 percent per year. The short-term background traffic volumes also include additional traffic projected to be generated by development of The Trails at Aspen Ridge Filing No. 1, the Trails at Aspen Ridge PUD and Villages at Waterview North. The projected additional traffic volumes were taken from traffic impact studies prepared by LSC.

Figure 7

Figure 9 shows the projected 2040 background traffic volumes. The 2040 background traffic volumes were based on recent traffic studies completed by LSC in the vicinity of the site. These volumes assume buildout of The Trails at Aspen Ridge Filing No. 1, the Trails at Aspen Ridge PUD, Villages at Waterview North located north of Bradley Road, the Waterview North RM-12 rezone located on the southeast corner of Bradley/Legacy Hill (P-21), and Bradley Heights. The 2040 background traffic volumes do not include any traffic projected to be generated by the Waterview East Commercial. The long-term background volumes assume Bradley Road has been constr rs Boulevard.

At a minimum, update the long-range horizon to 2042. Per B.2.2. Long range is 20-25 years.

TRIP G

The site-generated vehicle trips were estimated using the nationally-publishe rates from *Trip Generation, 11th Edition, 2021* by the Institute of Transportatio Table 2 shows the average weekday and peak-hour trip-generation estimates. T a comparison to the trip-generation estimate assumed in the Waterview North Sketch Plan Master TIS.

Please explain how trips have been reduced when area of buildings has increased

The total number of vehicle trips generated by the land uses has been reduced to account for the internal vehicle trips made within the site between land uses, without use of the external streets surrounding the site. Table 2 shows the number of internal trips assumed for each land use.

The total number of vehicle trips generated has also been reduced to take into account the "pass-by" phenomena. A pass-by trip is made by a motorist who would already be on the adjacent roadways regardless of the proposed development, but who stops in at the site while passing by. The motorist would then continue on his or her way to a final destination in the original direction. The pass-by percentages shown in Table 2 are from the *Trip Generation Handbook - An ITE Proposed Recommended Practice, 3rd Edition*, 2017 by ITE.

As there are limited existing mass-transit options in the vicinity of the site, no reductions were assumed to account for multimodal travel.

At buildout, Waterview East Commercial is projected to generate about 6,695 new external vehicle trips on the average weekday, with about half entering and half exiting the site. This is about 1,954 more trips than were assumed for the same area in the recent traffic studies completed by LSC in the area, including studies for the Trails at Aspen Ridge and Waterview North. During the morning peak hour, which generally occurs for one hour between 6:30 and 8:30 a.m., about 425 vehicles would enter and 375 vehicles would exit the site. During the afternoon peak hour, which generally occurs for one hour between 4:15 and 6:15 p.m., about 500 vehicles would enter and 514 vehicles would exit the site.

TRIP DISTRIBUTION AND ASSIGNMENT

The directional distribution of the site-generated traffic volumes on the adjacent roadway system is one of the most important factors in determining the traffic impacts of the site. Figure 10 shows the short-term and long-term directional distributions of traffic projected to be generated site.

The short-term directional-distribution estimates were based on the existing area roadway system and the traffic counts. The long-term directional-distribution estimates were based on the anticipated regional development and future roadway networks including the construction of Bradley Road between Grinnell Street and Powers Boulevard.

This distribution was estimated with a focus on peak-hour trip assignment, as the intersection analysis is based on peak-hour volumes.

- The distribution percentages to/from the east account for:
  - Some longer trip lengths by commuters;
  - The proximity of this development to Marksheffel Road;
  - Anticipated use of Marksheffel Road north as a viable alternative to Powers to/from many destinations east of and within the Powers Boulevard corridor. Powers Boulevard intersections experience congestion during peak hours. Marksheffel has recently been upgraded north and south of Bradley with a PPRTA project, which has increased its attractiveness as a north/south travel route;
  - Bradley to/from the east being the route to Schriever Air Force Base and the improved east gate of Peterson Air Force Base; and
  - Development occurring in the Marksheffel corridor and, over time, the number of trip destinations continuing to increase.
- The distribution percentages to/from the Bradley Heights connection account for:
  - Planned alternative street connections within Bradley Heights to Bradley Road and Marksheffel Road (south);
  - Future trip destinations within Bradley Heights;
  - The school and some potential future commercial within Lorson Ranch to the southeast;
  - The long-term distribution split accounts for a north-south road connection between Bradley Heights and Fontaine Boulevard, as shown on the Banning Lewis Master Plan

and the City of Colorado Springs Intermodal Transportation Plan. This includes trips oriented to the south and southeast.

- The percentages to/from the south on Powers account for trips from the south and southwest, paired with destinations primarily in Fountain and Fort Carson, as well as the south connection to Interstate 25.
- The percentages to/from the north on Powers primarily account for trips using Milton Proby Parkway and the Powers Boulevard corridor for travel.

When the distribution percentages (from Figure 10) are applied to the trip-generation estimates (from Table 2), the resulting site-generated traffic volumes can be determined. Figures 11 and 12 show the projected short-term and long-term site-generated traffic volumes, respectively.

BUILDOUT TOTAL TRAFFIC

Figure 13 shows the projected short-term total traffic volumes. The short-term total traffic volumes are the sum of the short-term background traffic volumes (from Figure 8) plus the short-term site-generated traffic volumes (from Figure 11).

Figure 14 shows the projected 2040 total traffic volumes. The 2040 total traffic volumes are the sum of the 2040 background traffic volumes (from Figure 9) plus the long-term site-generated traffic volumes (from Figure 12).

PROJECTED LEVELS OF SERVICE

The key area intersections have been analyzed to determine the projected levels of service for the short-term and 2040 background and short-term and 2040 total traffic volumes. The signalized intersections of Powers/Bradley, Legacy Hill/Bradley, and Marksheffel/Bradley were analyzed using Synchro. The site access points to Frontside Drive and the intersection of Legacy Hill/Frontside were analyzed based on the unsignalized method of analysis from the *Highway Capacity Manual, 6th Edition* by the Transportation Research Board. Figures 8, 9, 13 and 14 show the results of the level of service analysis. The level of service reports are attached.

Powers/Bradley

The intersection of Powers/Bradley is currently signalized and is operating at a satisfactory level of service. All movements at this intersection are projected to operate at LOS D or better during the peak hours, based on the short-term total traffic volumes. The short-term analysis assumes the addition of a second southbound left-turn lane. By 2040, it was assumed that the section of Bradley Road between Goldfield Drive and Powers Boulevard would be constructed. Based on the 2040 total traffic volumes shown and the lane geometry shown in Figure 13, the intersection is projected to operate at an overall LOS D during the peak hours. However, some of the minor movements are projected to operate at LOS E during the peak hours. It is common for left-turn and side-street through movements to have projected delays in the LOS E or F range, as

signal-coordination timing plans generally give priority to moving through traffic. This often results in higher delay for left-turn and side-street movements and can result in movement/approach delays in the E or F range even though they are projected to have sufficient capacity for the projected traffic volumes. Note: This intersection is planned to be converted to a grade-separated interchange in the long-term future.

Legacy Hill/Bradley

The intersection of Bradley Road/Legacy Hill Drive is projected to operate at LOS D or better during the peak hours for all movements as a signal-controlled intersection, based on the projected short-term and 2040 total traffic volumes.

Legacy Hill/Right-in/Right-out Access

The eastbound right-turn movement at the proposed right-in/right-out access is projected to operate at LOS C or better during the peak hours, based on the projected short-term and 2040 total traffic volumes.

Marksheffel/Bradley

The intersection of Marksheffel/Bradley is currently signalized and is operating at a satisfactory level of service. All movements are projected to continue to operate at an acceptable level of service (LOS D or better), based on the projected short-term total traffic volumes. By 2040, the eastbound left-turn movement is projected to operate at LOS E during the peak hours, even with the addition of dual eastbound left-turn lanes and protected phasing.

Legacy Hill/Frontside

The intersection of Legacy Hill/Frontside is a one-lane modern roundabout. All approaches are projected to operate at LOS C or better during the peak hours, based on the projected short-term and 2040 total traffic volumes.

Frontside Access Points

All of the proposed access points to Frontside Drive are projected to operate at an acceptable level of service (LOS B or better for all movements) as stop-sign-controlled intersections.

QUEUING ANALYSIS

A queuing analysis was performed using Synchro/SimTraffic to determine the storage length needed to accommodate the projected northbound queues on Legacy Hill Drive approaching Bradley Road, based on the 2040 total traffic volumes. The 2040 total morning and afternoon

peak-ho ntered into the Synchro model. The simulation was run five times. T ached.

The pro nd left-turn queue on Legacy Hill Drive approaching Bradley Road is norning peak hour and 299 feet in the afternoon peak hour.

I believe a CDOT access permit will be required of the commercial development. Confirm and state as such if so.

FUTURE SH 21A (POWERS BOULEVARD)/BRADLEY ROAD INTERCHANGE ESCROW

CDOT has indicated in comments dated August 3, 2020 (for an adjacent project), that escrow funds will be required as a term and condition of access permit for a portion of the future SH 21A (Powers Boulevard)/Bradley Road interchange, based on a pro-rata share. An escrow analysis will be part of the requirements of the access permit process.

Include discussion of ROW dedication/preservation for future interchange.

DEVIATIONS

Attached is the signal estimate prepared with Trails at Aspen Ridge. At the time this assumed 100% responsibility by the developer since no other development had yet to submit development application that impacts the intersection.

Provide an adjusted breakdown on proportional impact and escrow between the residential and commercial development.

ing Criteria Manual will be required for the proposed l Drive about 305 feet south of Bradley Road.

nts in the vicinity of the site is presented in Table 3. ovements to the northbound right-turn deceleration dley Road, based on a memorandum from CDOT dated July 2, 2021 regarding Trails at Aspen ridge - Access Submittal Planning Comments. A copy of this memorandum has been attached.

* * * * *

Address County Road Impact Fees

Address this develoment's portion of the Bradley/Legacy intersection signal cost and installation

Address pedestrian/bicycle routes and accomodations

Address access to public transportation services where available

Provide signal warrant analysis of Bradley/Legacy Hill based on existing plus the commercial development. Identify the specific number of trips or commercial ksf that would likely trigger signal installation.

At this time the signal is near warrant. It was expected to be warranted with buildout of Trails at Aspen Ridge Filing 2. However the commercial development may trigger the warrant before the residential. If that is the case, then the commercial development would be required to install the signal. Signal plans have already been prepared by the Trails at Aspen Ridge developer and approved by the County.

Please contact me if you have any questions regarding this report.

Respectfully Submitted,

LSC TRANSPORTATION CONSULTANTS, INC.

By Jeffrey C. Hodsdon, P.E.
Principal

JCH/KDF:jas

Enclosures: Tables 2-3
Figures 1-15
Traffic Count Reports
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CDOT Memorandum

Tables 2-3

TRANSPORTATION
CONSULTANTS, INC.

Explain/show calculations to demonstrate that the simple 10% reduction is appropriate. Would the NCHRP's method for determining internal capture be the appropriate method? Which method provides the conservative results?

Passby values selected seems very high. It's understandable if it's on a main corridor however existing vehicles that would have been on Legacy Hill or Frontside Dr is limited to the home owners within Trails at Aspen Ridge. Provide detailed explanation why the given percentage is used.

Table 2
Trip Generation Estimate
Waterview East

Planning Area	Land Use Code	Land Use Description	Trip Generation Units	Trip Generation Rates [1] Average Weekday Traffic	Morning Peak-Hour In	Morning Peak-Hour Out	Afternoon Peak-Hour In	Afternoon Peak-Hour Out	Total Trips Generated Average Weekday Traffic	Morning Peak-Hour In	Morning Peak-Hour Out	Afternoon Peak-Hour In	Afternoon Peak-Hour Out	Internal Trips [2]	Total Internal Trips Generated Average Weekday Traffic	Morning Peak-Hour In	Morning Peak-Hour Out	Afternoon Peak-Hour In	Afternoon Peak-Hour Out	Total External Trips Generated Average Weekday Traffic	Morning Peak-Hour In	Morning Peak-Hour Out	Afternoon Peak-Hour In	Afternoon Peak-Hour Out	Pass-by Trip Percent [2]	Total Passby Trips Generated Average Weekday Traffic	Morning Peak-Hour In	Morning Peak-Hour Out	Afternoon Peak-Hour In	Afternoon Peak-Hour Out	Total New "External" Trips Generated Average Weekday Traffic	Morning Peak-Hour In	Morning Peak-Hour Out	Afternoon Peak-Hour In	Afternoon Peak-Hour Out
Trip Generation Estimate For Waterview East																																		
P-17	821	Shopping Plaza (40-150 KSF With Supermarket)	59.392 KSF [3]	100.75	2.19	1.34	4.64	5.03	5,984	130	80	276	299	10%	598	13	8	28	30	5,386	117	72	248	269	34%	1,831	32	32	88	88	3,555	85	40	160	181
	934	Fast-Food Restaurant with Drive-Through Window	6.5 KSF	467.48	22.75	21.86	17.18	15.85	3,039	148	142	112	103	10%	304	15	14	11	10	2,735	133	128	101	93	50%	1,368	65	65	49	49	1,367	68	63	52	44
	945	Gasoline/Service Station with Convenience Market [4]	12 VFP	345.75	15.80	15.80	13.45	13.45	4,149	190	190	161	161	10%	415	19	19	16	16	3,734	171	171	145	145	56%	2,091	96	96	81	81	1,643	75	75	64	64
	151	Mini-Warehouse	100 KSF	1.45	0.05	0.04	0.07	0.08	145	5	4	7	8	10%	15	1	0	1	1	130	4	4	6	7	0%	0	0	0	0	0	130	4	4	6	7
		Total Trip Generation Estimate for P-14, P15, and P-19 (Waterview North)							**13,317**	**473**	**416**	**556**	**571**		**1,332**	**48**	**41**	**56**	**57**	**11,985**	**425**	**375**	**500**	**514**		**5,290**	**193**	**193**	**218**	**218**	**6,695**	**232**	**182**	**282**	**296**
Trip Generation Estimate for the Waterview North RM-12 Rezone Site (Not a part of the currently proposed development)																																		
P-21	220	Multifamily Housing Low-Rise	60 DU [5]	7.32	0.11	0.35	0.35	0.21	439	6	21	21	12	0%	0	0	0	0	0	439	6	21	21	12	0%	0	0	0	0	0	439	6	21	21	12
		Total Trip Generation Estimate for P-17 & P-21							**13,756**	**479**	**437**	**577**	**583**		**1,332**	**48**	**41**	**56**	**57**	**12,424**	**431**	**396**	**521**	**526**		**5,290**	**193**	**193**	**218**	**218**	**7,134**	**238**	**203**	**303**	**308**
Trip Generation Estimate Assumed in the *Trails at Aspen Ridge Fil No. 1 and PUD Updated Traffic Impact Analysis* by LSC dated December 12, 2019																																		
P-17 & P-21	820	Shopping Center	148 KSF	53.03	0.95	0.58	2.36	2.55	7,849	140	86	349	378	0%	0	0	0	0	0	7,849	140	86	349	378	34%	2,669	38	38	123	123	5,180	102	47	225	254
		Change in Trip Generation Estimate for P-17 & P-21							**5,907**	**339**	**351**	**229**	**206**							**4,575**	**291**	**310**	**173**	**149**		**2,621**	**155**	**155**	**95**	**95**	**1,954**	**137**	**156**	**78**	**54**

Notes:
(1) Source: based on *Trip Generation* , 11th Edition, 2021 by the Institute of Transportation Engineers (ITE)
(2) Source: "Trip Generation Handbook - An ITE Proposed Recommended Practice 3rd Edition, September 2017" by ITE
(3) KSF = 1,000 square feet
(4) The trip generation rates used are for Convenience Store/Gas Stations with a 5,500 to 10,000 square foot convenience store
(5) DU = dwelling unit

Source: LSC Transportation Consultants, Inc. Jul-22

Found report dated Oct 2019 & Signed 12/5/19 but it did not include estimates for commercial parcel. Please include more information showing where this data came from. (Reference County Project #, copy of table from that report, etc)

Table 3
Improvements Table
Waterview East Commercial

Improvement	Timing /"Trigger Point(s)"	Required Length	Proposed Length	Responsibility[1]
Traffic Signals				
Traffic Signal Installation - Installation of the traffic signal at Legacy Hill Drive/Bradley Road.	As determined by El Paso County Public Works - typically this is when traffic signal warrants are met, however traffic signal warrants are guidelines and the actual timing of installation is at the discretion of El Paso County Public Works. An Eight-Hour Vehicular Volume Traffic Signal Warrant is projected to be met once any of the following levels of development are reached: 31% of the Trails at Aspen Ridge (242 DUs) 23% of the commercial portion of Springs at Waterview East 57% of the non-residential portion of the Villages at Waterview North Not anticipated with only the residential portion of the Villages at Waterview North A warrant may be met sooner if the residential and non-residential portions of either Villages at Waterview North or the Trails at Aspen Ridge and Springs at Waterview East are developed concurrently.These trigger points/timing estimates and the need for the signal are subject to change and would be evaluated with each final plat application. County public works approval is required for signal installation.	- - -	- - -	This intersection is considered an eligible improvement under the El Paso County Road Impact Fee Program (Please refer to the attached draft minutes of the County Fee Program Advisory Committe dated April 23, 2020 regarding this intersection.)
Auxiliary Turn Lanes				
Powers/Bradley				
Reconstruct the Powers Boulevard median north of Bradley Road to provide dual southbound left-turn lanes. The existing mast arm will need to be lengthened for the second left turn.	With this development if not completed by other development(s) as part of the CDOT access permit process.	- - -	- - -	Applicant and other area developments; also, this could potentially be considered a "regional improvement (potentially eligible for credit within the fee program) ." To be evaluated with each final plat if not completed sooner by another development
Northbound right-turn deceleration and acceleration lane improvements as noted in a memo from CDOT dated July 2, 2021 regarding Trails at Aspen Ridge - Access Submittal Planning Comments[1]	With this development if not completed by other development(s) as part of the CDOT access permit process.	- - -	- - -	Applicant and other area developments; also, this could potentially be considered a "regional improvement (potentially eligible for credit within the fee program) ." To be evaluated with each final plat if not completed sooner by another development
The CDOT comment letter dated July 2, 2021 regarding the Trails at Aspen Ridge indicates the following requirement: Escrow funds for a portion of the future SH21A(Powers Blvd.) / Bradley Rd. interchange	As part of the CDOT access permit process	- - -	- - -	This has been identified by CDOT as a requirement for all area developments (presumaby) which will impact Powers/Bradley.
Bradley/Marksheffel				
Potential (if required) fair-share contribution or reconstruction to provide dual eastbound left-turn lanes on Bradley Road approaching Marksheffel Road	The timing of this improvement could be evaluated with each final plat.	- - -	- - -	Applicant and potentially other area developments; also, this could potentially be considered a "regional improvement (potentially eligible for credit within the fee program) ."
Legacy Hill/Right-in/Right-out Only Access				
Southbound right-turn deceleration lane on Legacy Hill Drive approaching the right-in only access	southbbound right-turn volume of 50 vehicles per hour	205' plus 160' ta	update. See comment on the deviation request	Applicant
Frontside/Northeast Access				
Nortbound left-turn lane on Frontside Drive approaching the northeast access	northboundbound left-turn volume of 25 vehicles per hour	205' plus 160' taper	Construct Frontside Drive a center two-way, left-turn west of Legacy Hill Drive	Applicant
Southbound right-turn decleration lane on Frontside Drive approaching the northeast access	southboundbound right-turn volume of 50 vehicles per hour	155' plus 160' taper	155' plus 160' taper	Applicant
Frontside/Southwest Access				
Nortbound left-turn lane on Frontside Drive approaching the southwest access	northboundbound left-turn volume of 25 vehicles per hour	205' plus 160' taper	Construct Frontside Drive a center two-way, left-turn west of Legacy Hill Drive	Applicant
Southbound right-turn decleration lane on Frontside Drive approaching the southwest access	southboundbound right-turn volume of 50 vehicles per hour	Not required	none	Applicant

Notes:

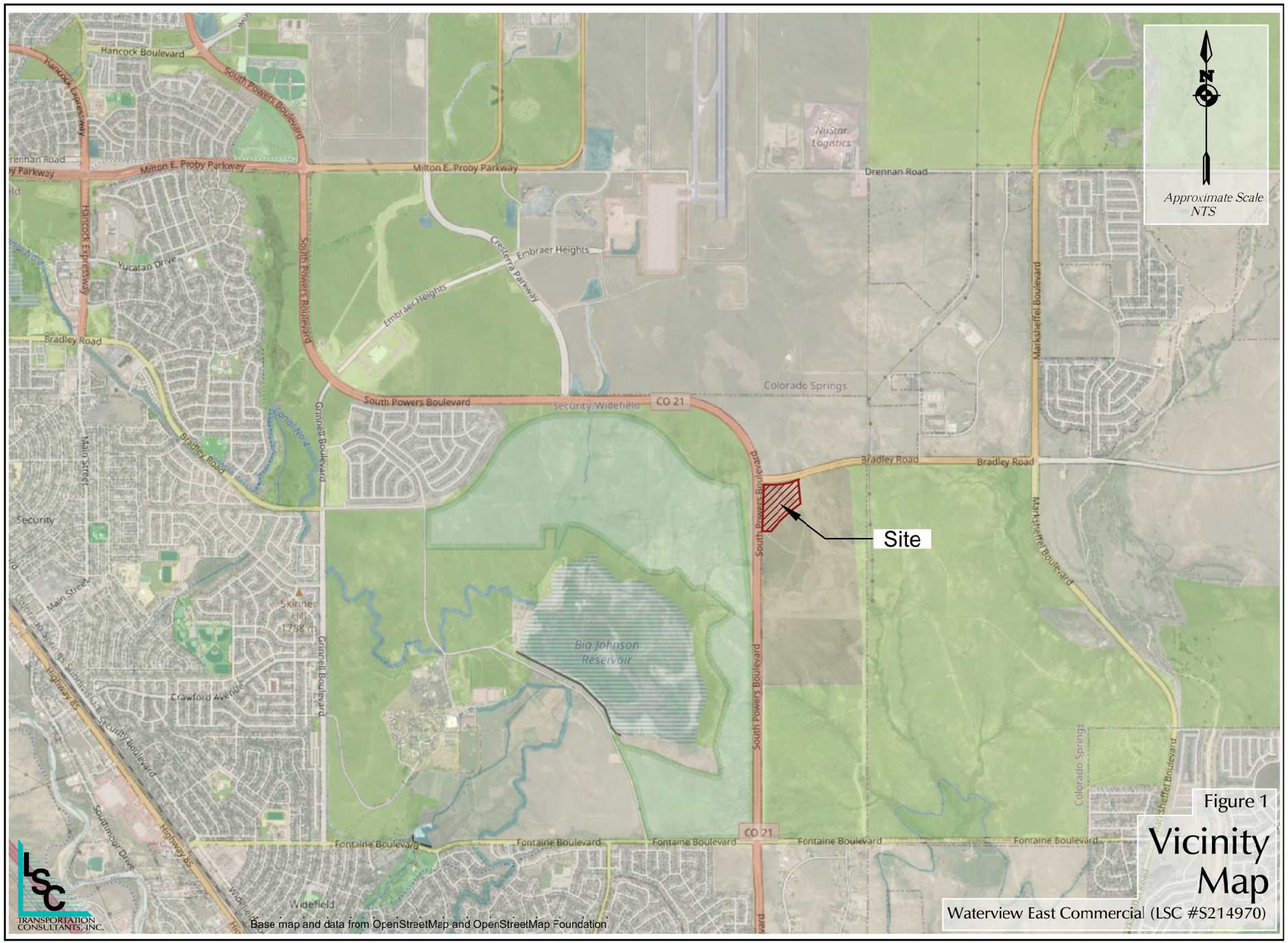
(1) A copy of this memorandum has been attached

Source: LSC Transportation Consultants, Inc.

Jul-22

Figures 1-15

TRANSPORTATION
CONSULTANTS, INC.


Hancock Boulevard
Hancock Expressway
South Powers Boulevard
Milton E. Proby Parkway
Drennan Road
NuStar Logistics
Yucatan Drive
Embraer Heights
Crestera Parkway
Bradley Road
Marksheffel Boulevard
Colorado Springs
Security-Widefield
CO 21
Grinnell Boulevard
Main Street
Security
Site
Skinner Hill 1758 m
Big Johnson Reservoir
Crawford Avenue
Highway 85
Security Boulevard
Southmoor Drive
Fontaine Boulevard
Widefield
N
Approximate Scale
NTS
Figure 1
Vicinity Map
Waterview East Commercial (LSC #S214970)
LSC TRANSPORTATION CONSULTANTS, INC.
Base map and data from OpenStreetMap and OpenStreetMap Foundation

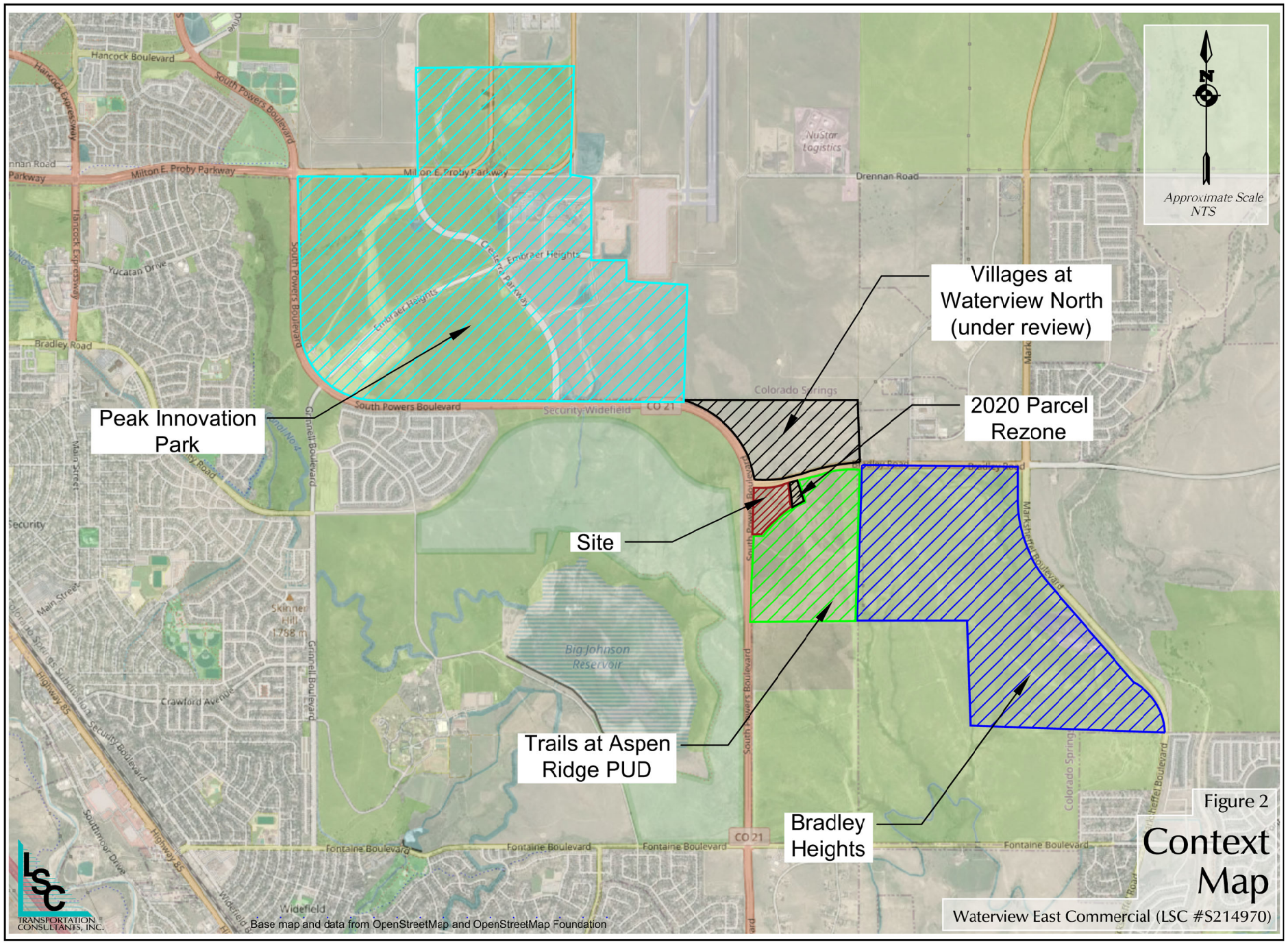
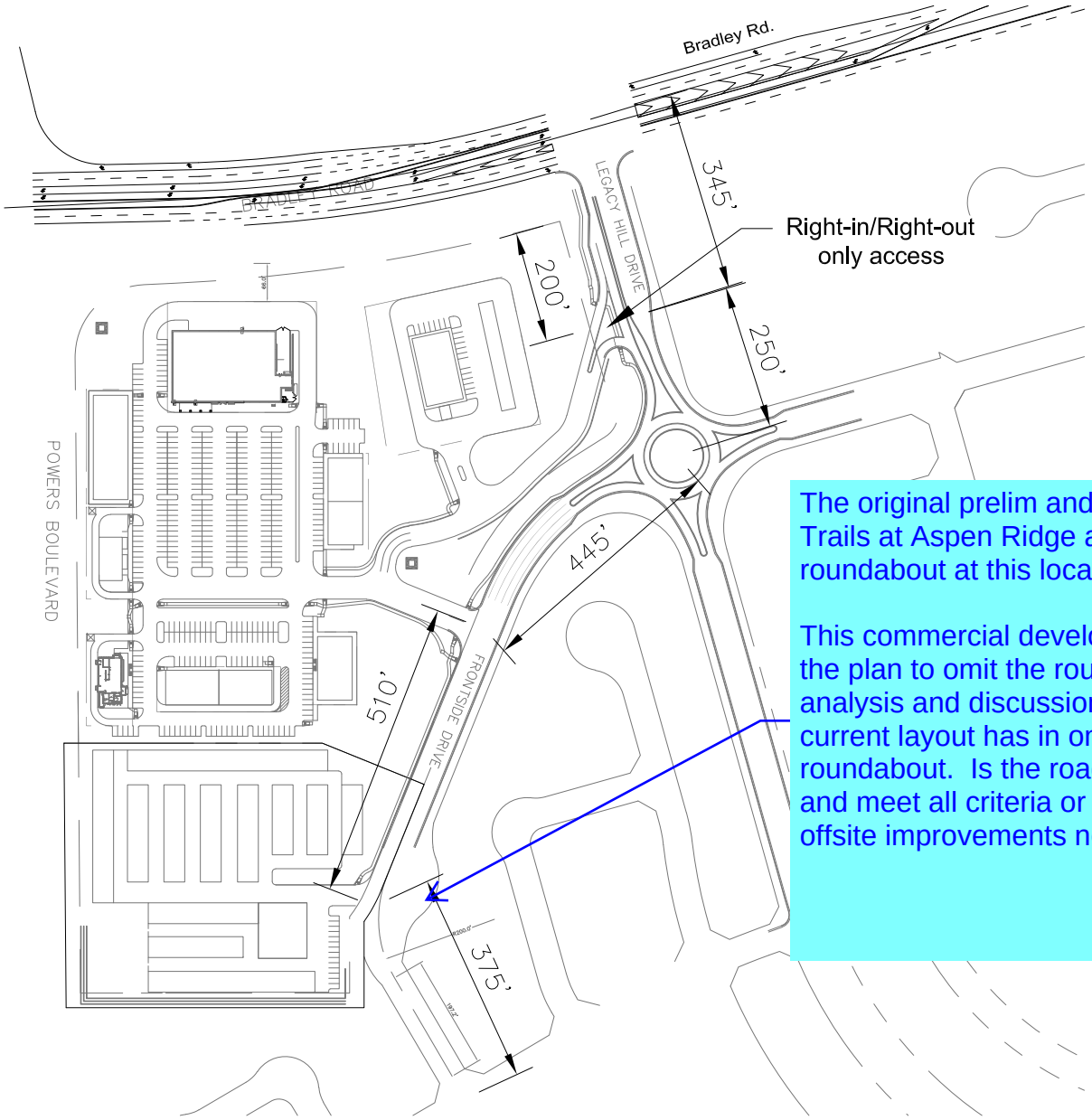


Figure 2

Context Map

Waterview East Commercial (LSC #S214970)



The original prelim and the PUDSP for Trails at Aspen Ridge anticipated a roundabout at this location.

This commercial development is revising the plan to omit the roundabout. Provide analysis and discussion of the impact the current layout has in omitting the roundabout. Is the road alignment sufficient and meet all criteria or are there additional offsite improvements needed?

N

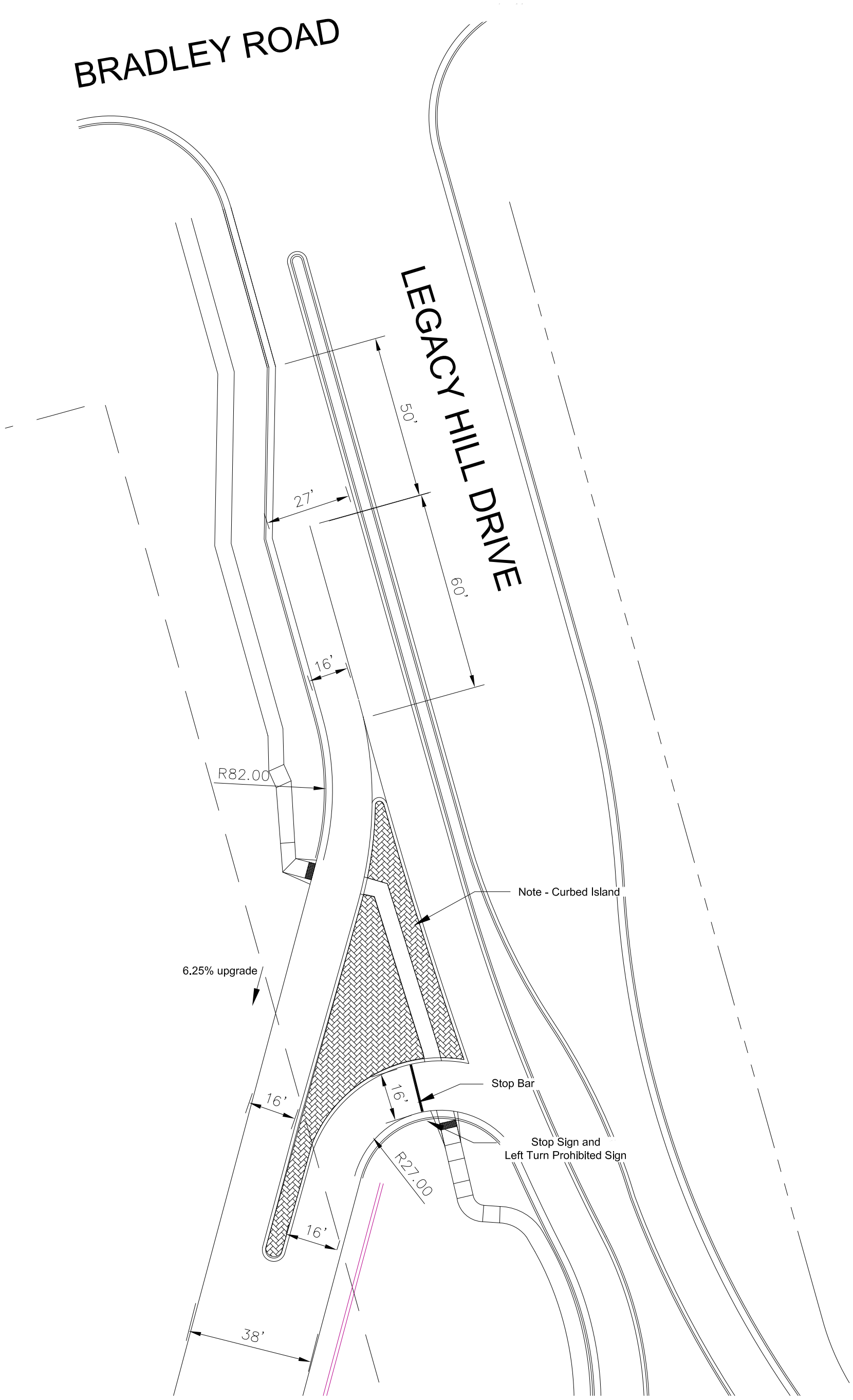
Approximate Scale
1" = 300'

TRANSPORTATION CONSULTANTS, INC.

Figure 3

Site Plan

Waterview East Commercial (LSC #S214970)



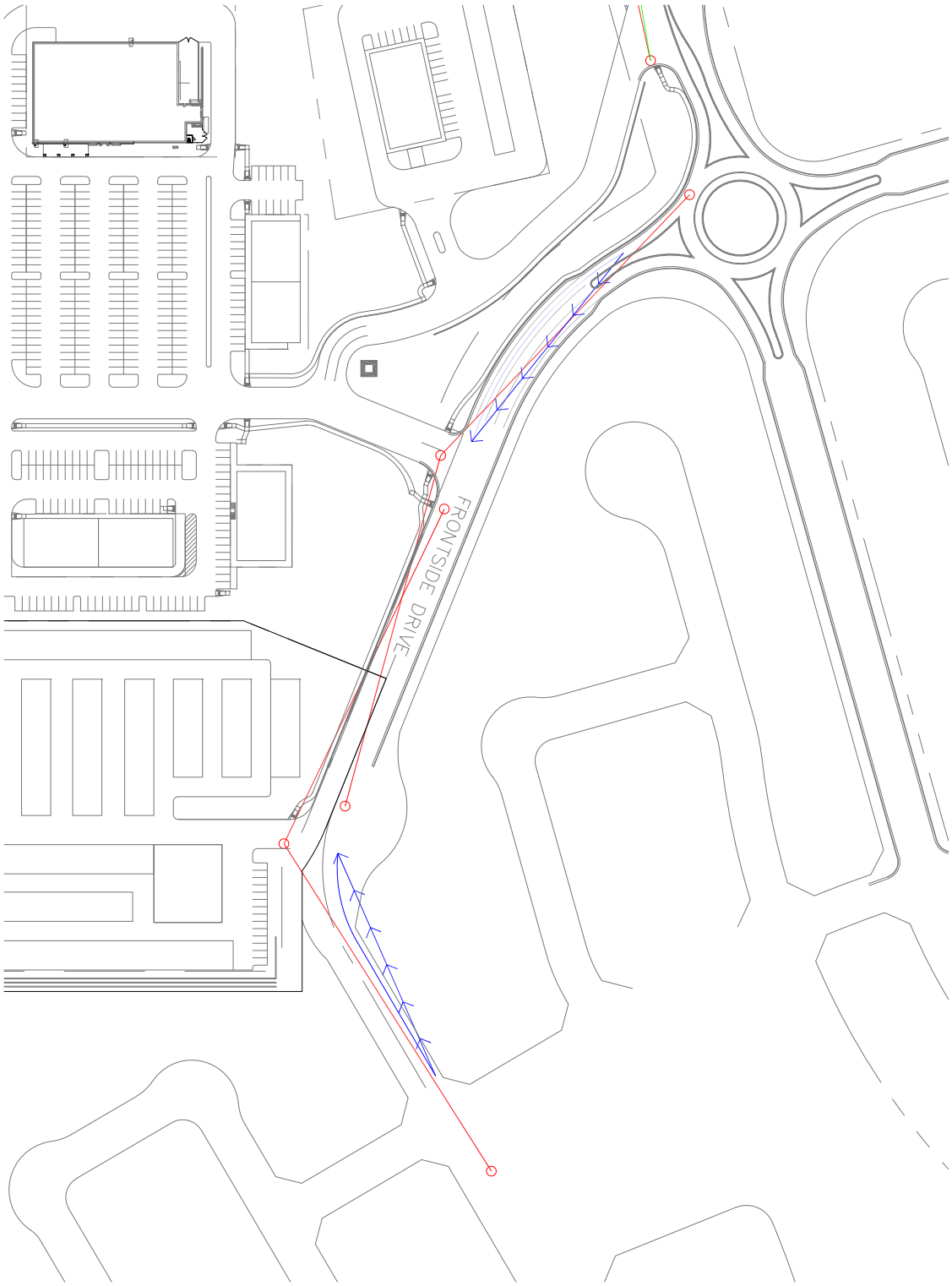
Approximate Scale
1" = 30'

TRANSPORTATION CONSULTANTS, INC.

Figure 4

RI/RO Access Design

Waterview East Commercial (LSC #S214970)



Approximate Scale
1" = 200'

= 445' intersection sight distance (based on a design speed of 40mph)

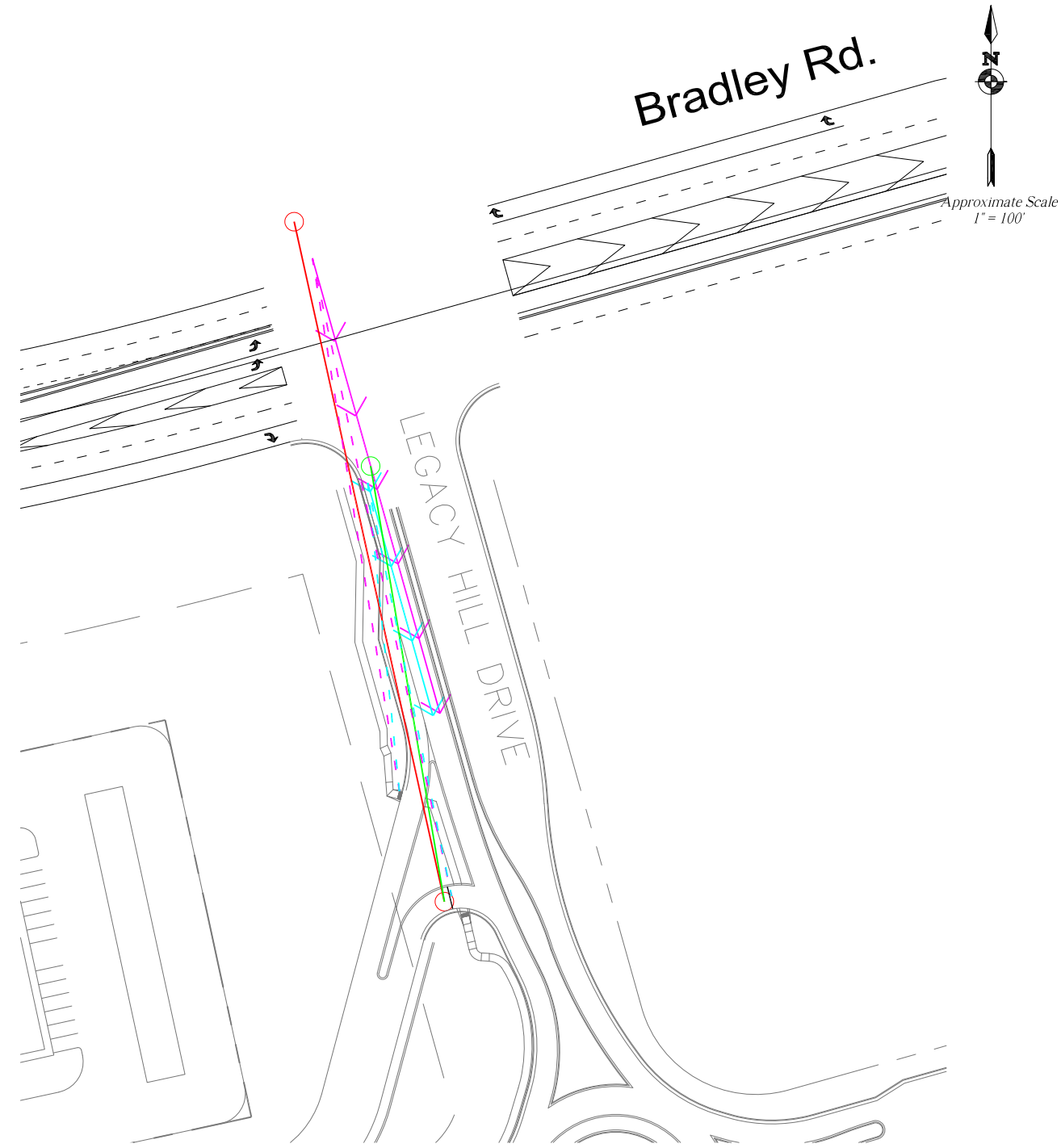
= 305' stopping sight distance (based on a design speed of 40mph)

Figure 5

Sight Distance Analysis Frontside Dr.

Waterview East Commercial (LSC #S214970)

LSC TRANSPORTATION CONSULTANTS, INC.



= 445' intersection sight distance (based on a design speed of 40mph)

= 280' intersection sight distance (based on a turning speed of 25mph)

= 155' stopping sight distance (based on a turning speed of 25mph)

= 305' stopping sight distance (based on a design speed of 40mph for through traffic)

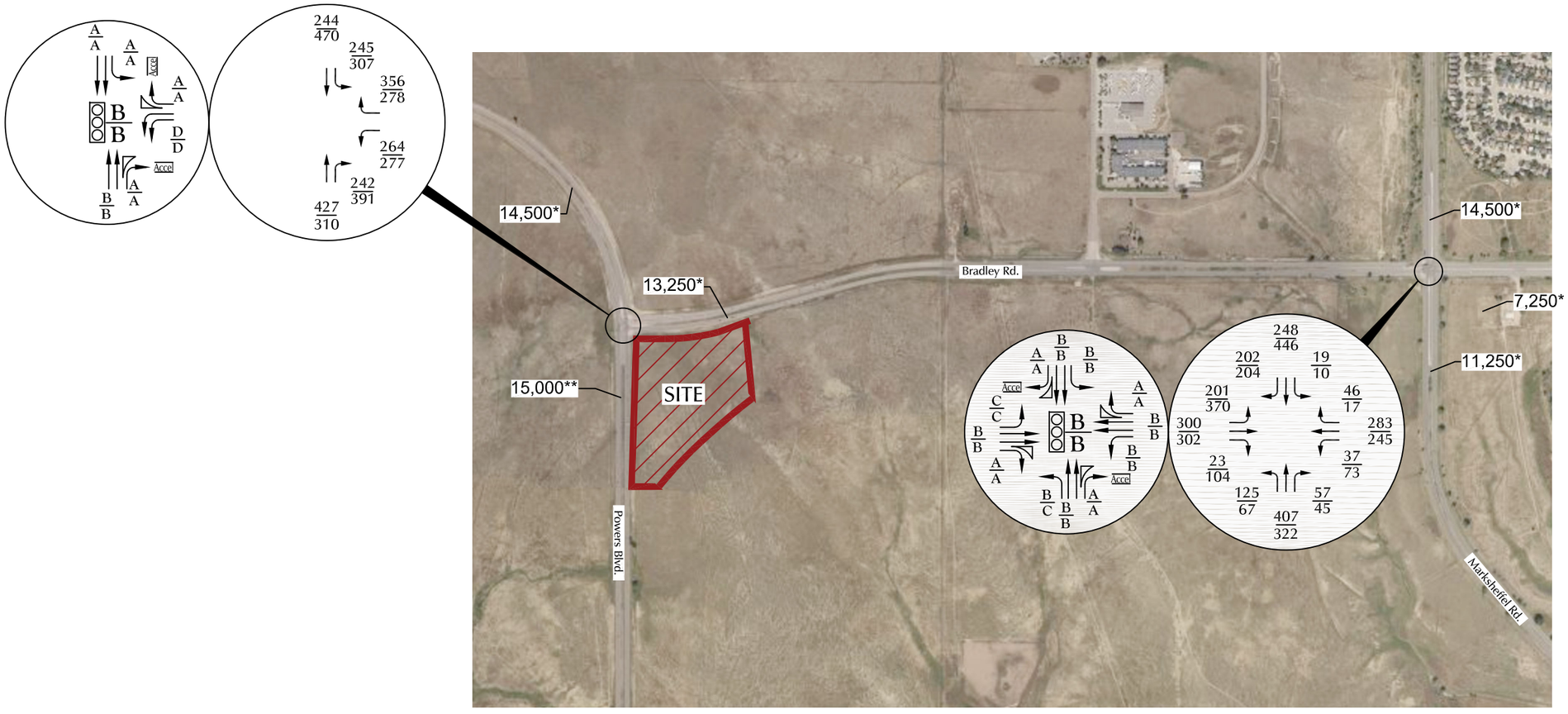
= Lines of sight to downstream near-side ped ramp and to right out portion of access (vehicle entry point to Legacy Hill Dr.

Figure 6

Sight Distance Analysis - Legacy Hill Dr.

Waterview East Commercial (LSC #S214970)

LSC TRANSPORTATION CONSULTANTS, INC.



Approximate Scale
Scale: 1"= 1,000'

LEGEND:

= Traffic Signal

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

A/B = AM Individual Movement Peak-Hour Level of Service / PM Individual Movement Peak-Hour Level of Service

C/C = AM Entire Intersection Peak-Hour Level of Service / PM Entire Intersection Peak-Hour Level of Service

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

* Estimate by LSC
** 2019 AADT CDOT

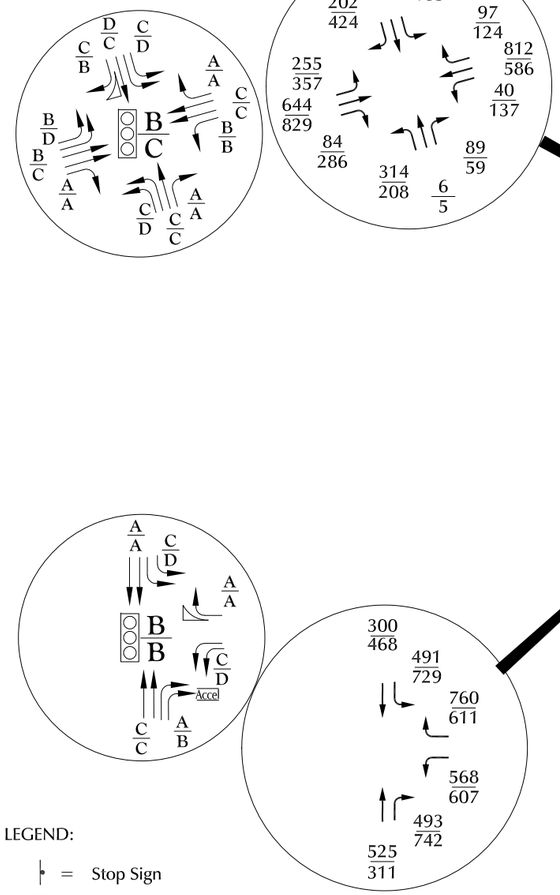
Update with newer count information

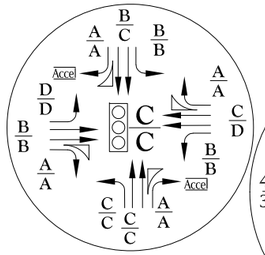
TRANSPORTATION CONSULTANTS, INC.

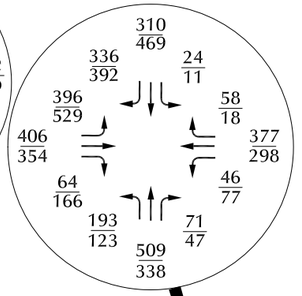
Figure 7

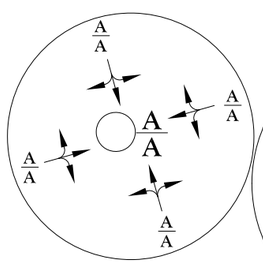
Existing Traffic, Lane Geometry, Traffic Control and Level of Service

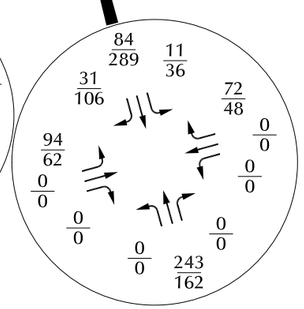
Waterview East Commercial (LSC #S214970)

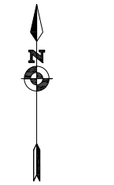












Approximate Scale
Scale: 1"= 1,000'

Include street names (Figures 8 thru 15)

LEGEND:

= Stop Sign

= Traffic Signal = Modern Roundabout

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

$\frac{A}{B}$ = $\frac{\text{AM Individual Movement Peak-Hour Level of Service}}{\text{PM Individual Movement Peak-Hour Level of Service}}$

$\frac{C}{C}$ = $\frac{\text{AM Entire Intersection Peak-Hour Level of Service}}{\text{PM Entire Intersection Peak-Hour Level of Service}}$

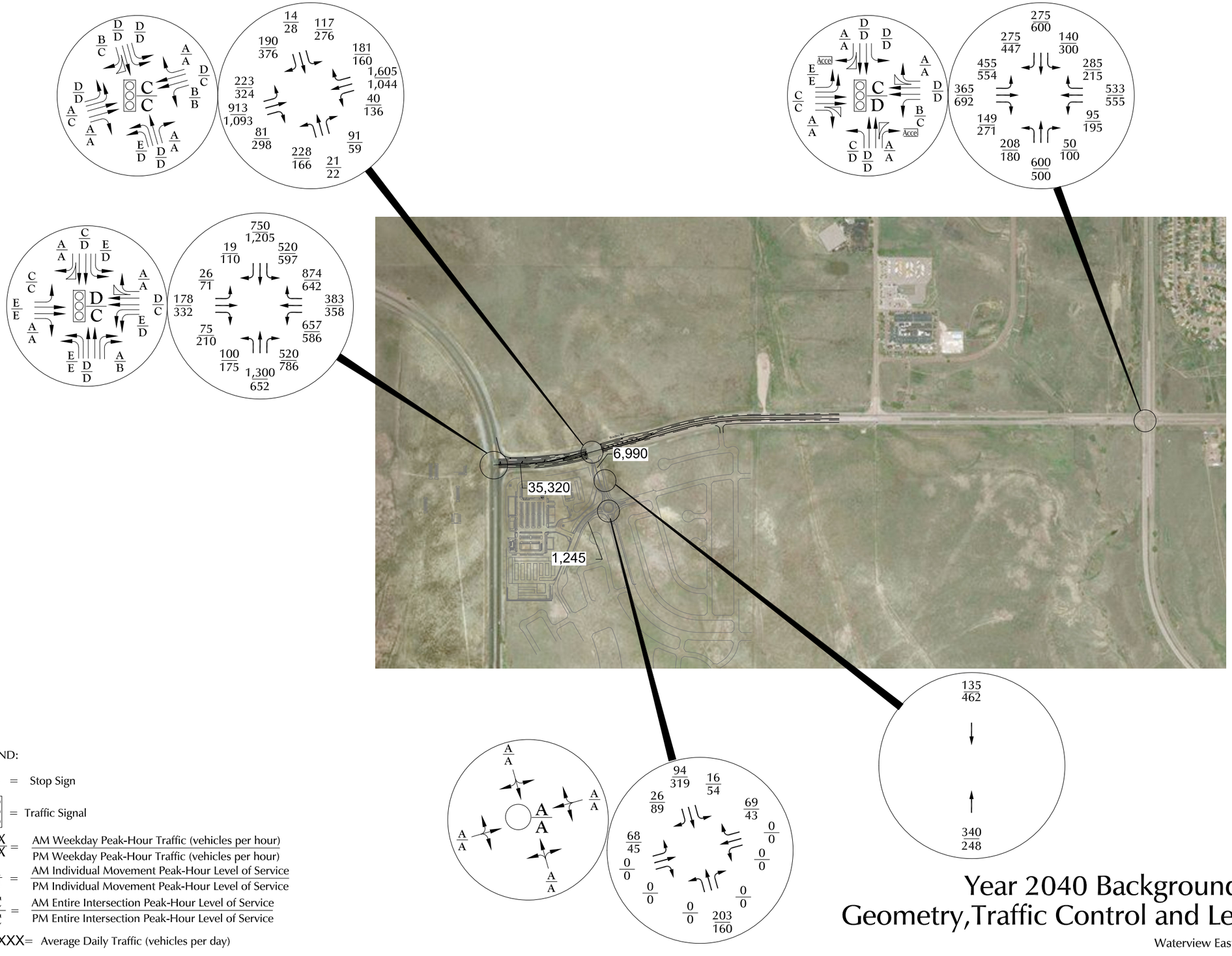
X,XXX= Average Daily Traffic (vehicles per day)

TRANSPORTATION CONSULTANTS, INC.

Figure 8

Short-Term Background Traffic, Traffic Control, Lane Geometry, and LOS

Waterview East Commercial (LSC #S214970)



Approximate Scale
Scale: 1" = 1,000'

LEGEND:

= Stop Sign

= Traffic Signal

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

A/B = AM Individual Movement Peak-Hour Level of Service / PM Individual Movement Peak-Hour Level of Service

C/C = AM Entire Intersection Peak-Hour Level of Service / PM Entire Intersection Peak-Hour Level of Service

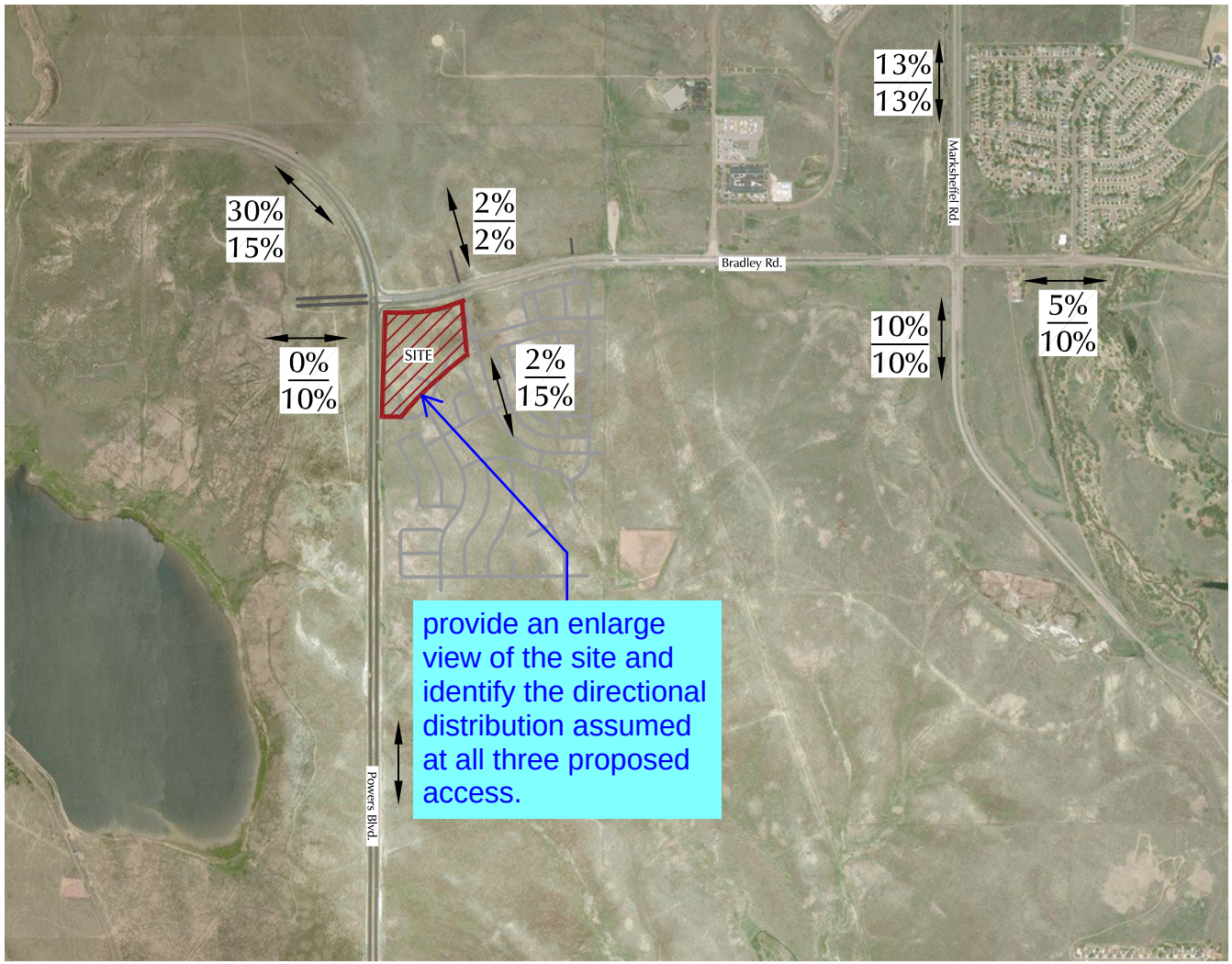
X,XXX= Average Daily Traffic (vehicles per day)

TRANSPORTATION CONSULTANTS, INC.

Figure 9

Year 2040 Background Traffic, Lane Geometry,Traffic Control and Level of Service

Waterview East Commercial (LSC #S214970)



N

Approximate Scale
Scale: 1"= 2,000'

LEGEND:

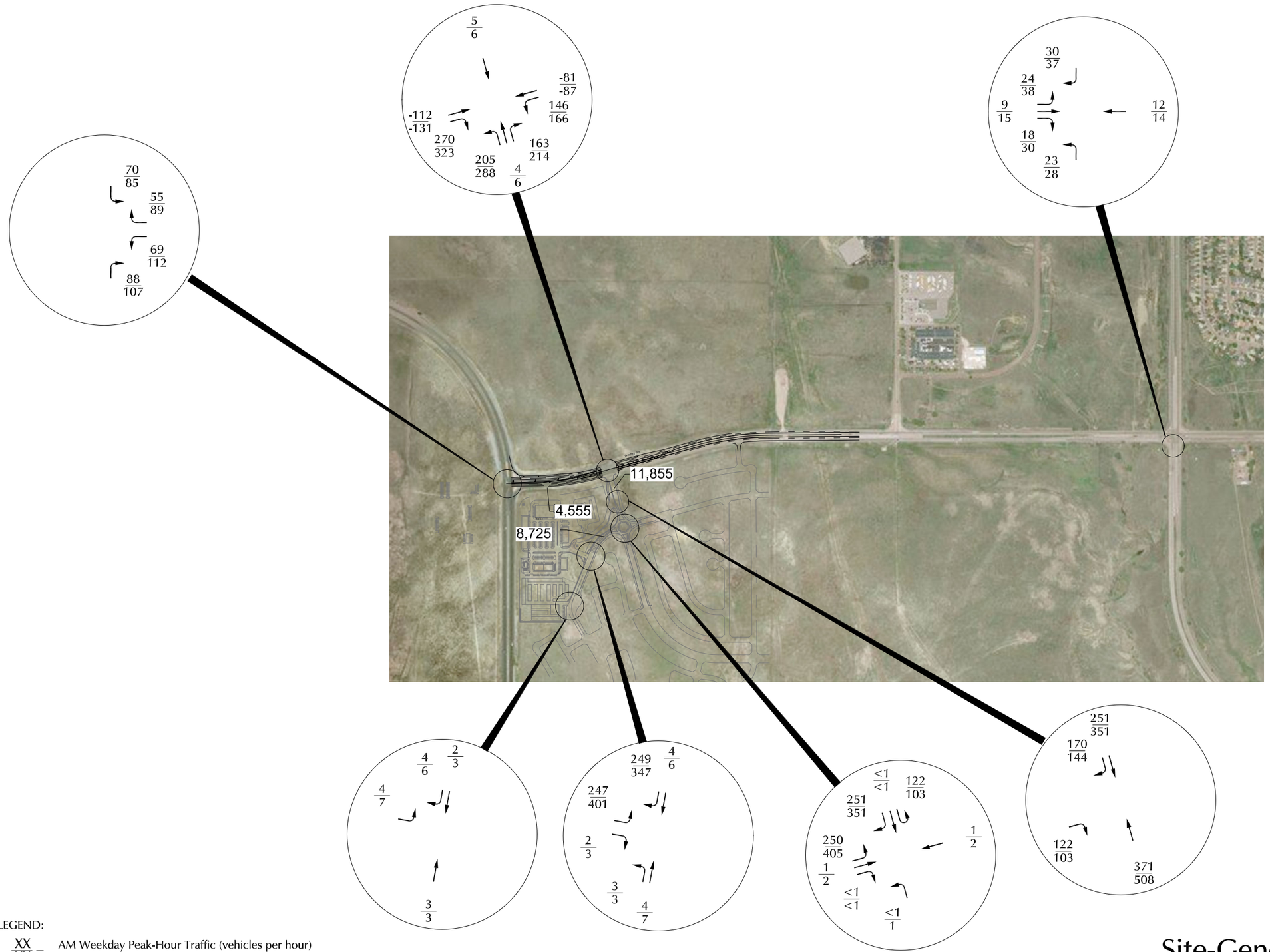
$\frac{XX\%}{XX\%}$ = Short-Term Percent Directional Distribution / Long-Term Percent Directional Distribution

LSC TRANSPORTATION CONSULTANTS, INC.

Figure 10

Directional Distribution of Site Generated Traffic

Waterview East Commercial (LSC #S214970)



Approximate Scale
Scale: 1"= 1,000'

LEGEND:

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

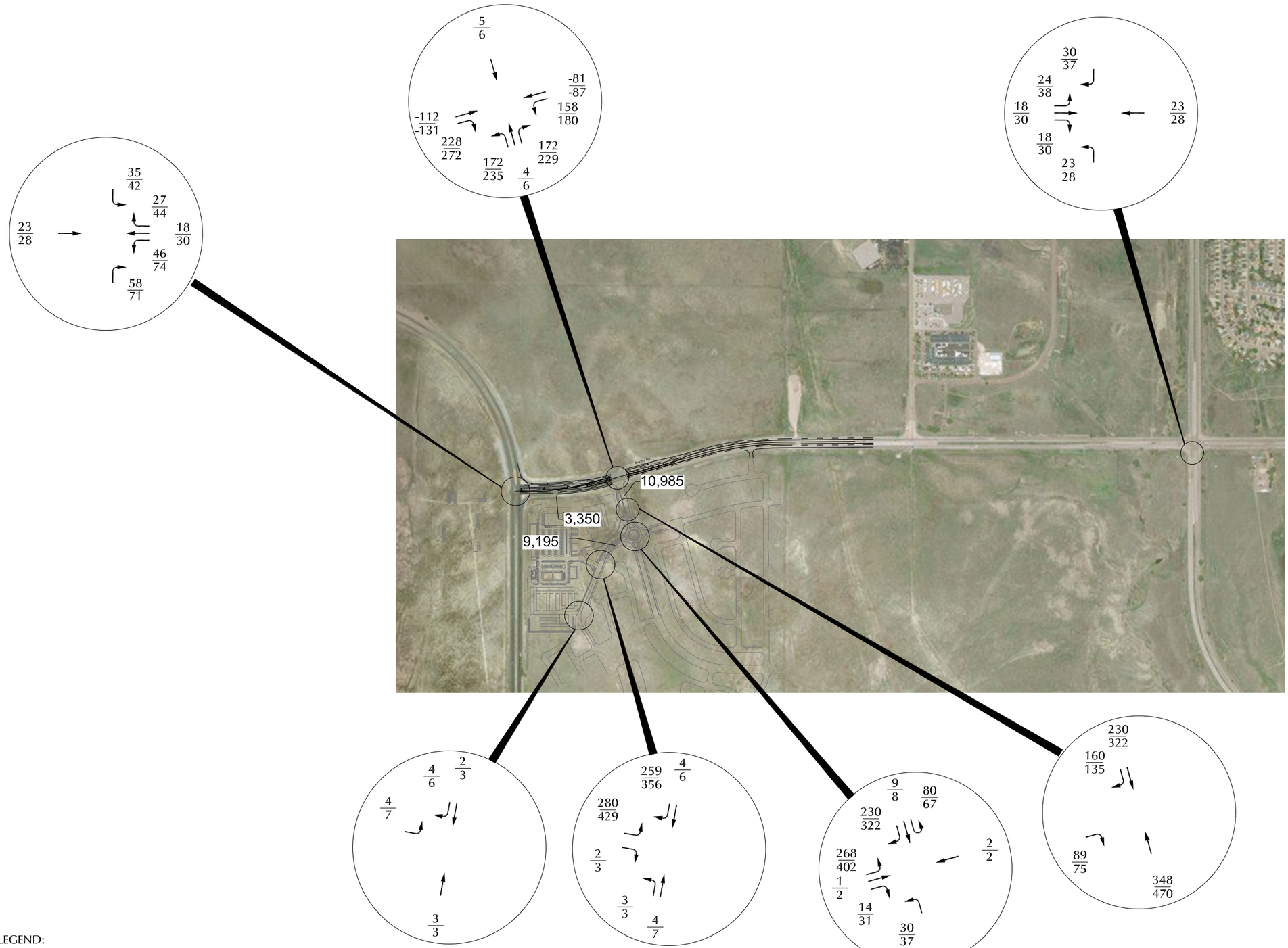
X,XXX= Average Daily Traffic (vehicles per day)

TRANSPORTATION CONSULTANTS, INC.

Figure 11

Short-Term Site-Generated Traffic

Waterview East Commercial (LSC #S214970)



Approximate Scale
Scale: 1"= 1,000'

LEGEND:

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

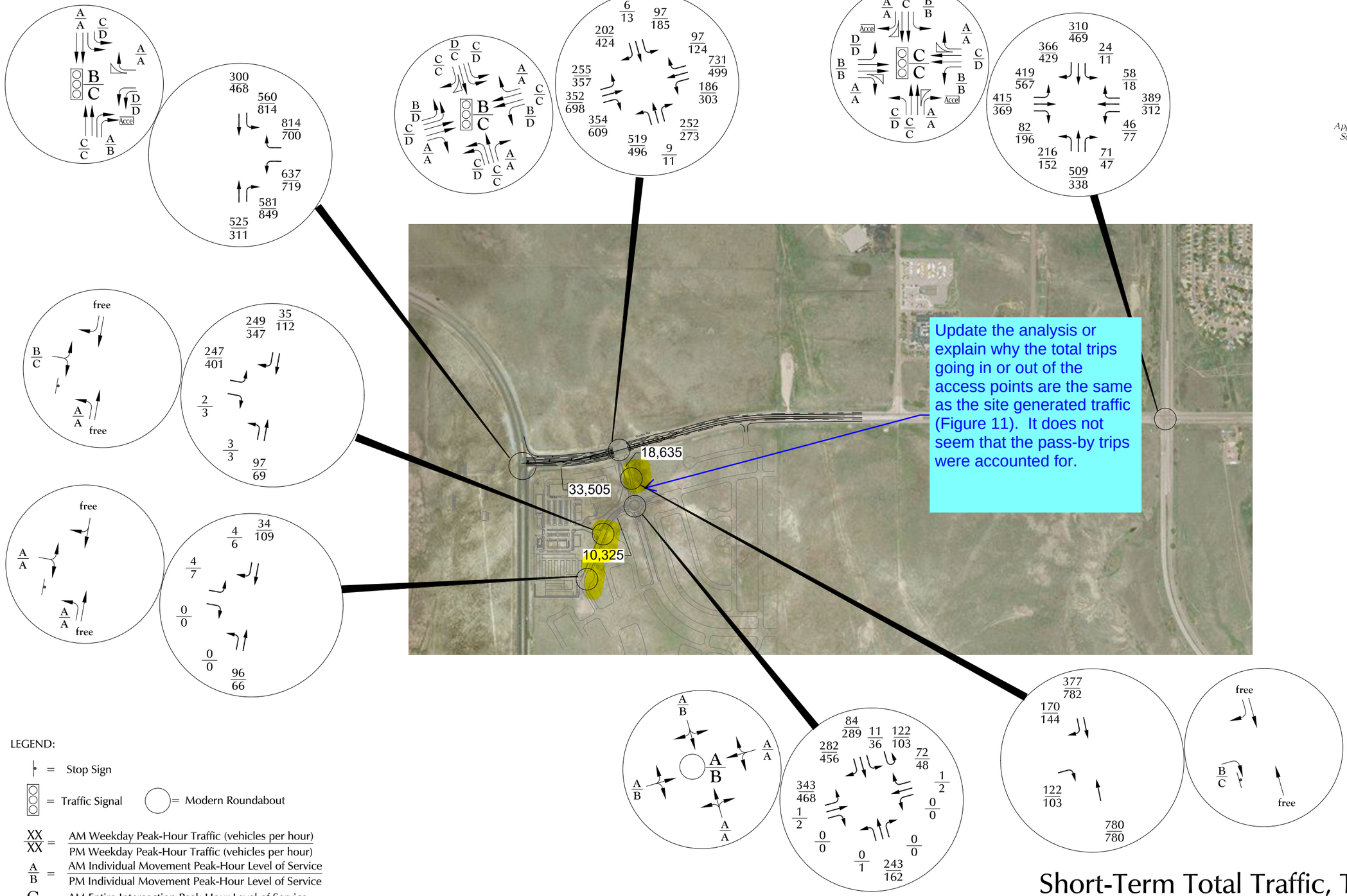
X,XXX= Average Daily Traffic (vehicles per day)

TRANSPORTATION CONSULTANTS, INC.

Figure 12

Long-Term Site-Generated Traffic

Waterview East Commercial (LSC #S214970)



Approximate Scale
Scale: 1"= 1,000'

LEGEND:

= Stop Sign

= Traffic Signal = Modern Roundabout

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

A/B = AM Individual Movement Peak-Hour Level of Service / PM Individual Movement Peak-Hour Level of Service

C/C = AM Entire Intersection Peak-Hour Level of Service / PM Entire Intersection Peak-Hour Level of Service

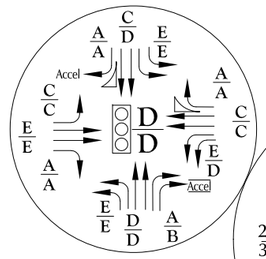
X,XXX= Average Daily Traffic (vehicles per day)

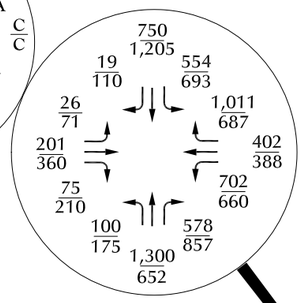
TRANSPORTATION CONSULTANTS, INC.

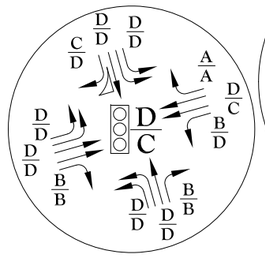
Figure 13

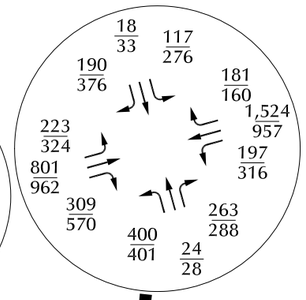
Short-Term Total Traffic, Traffic Control, Lane Geometry, and LOS

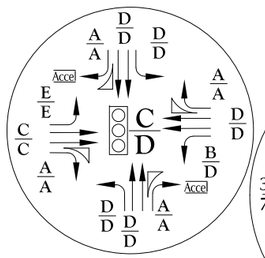
Waterview East Commercial (LSC #S214970)

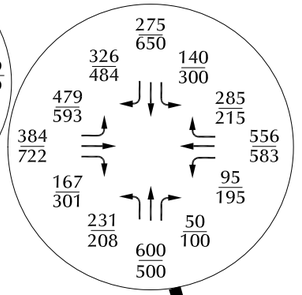


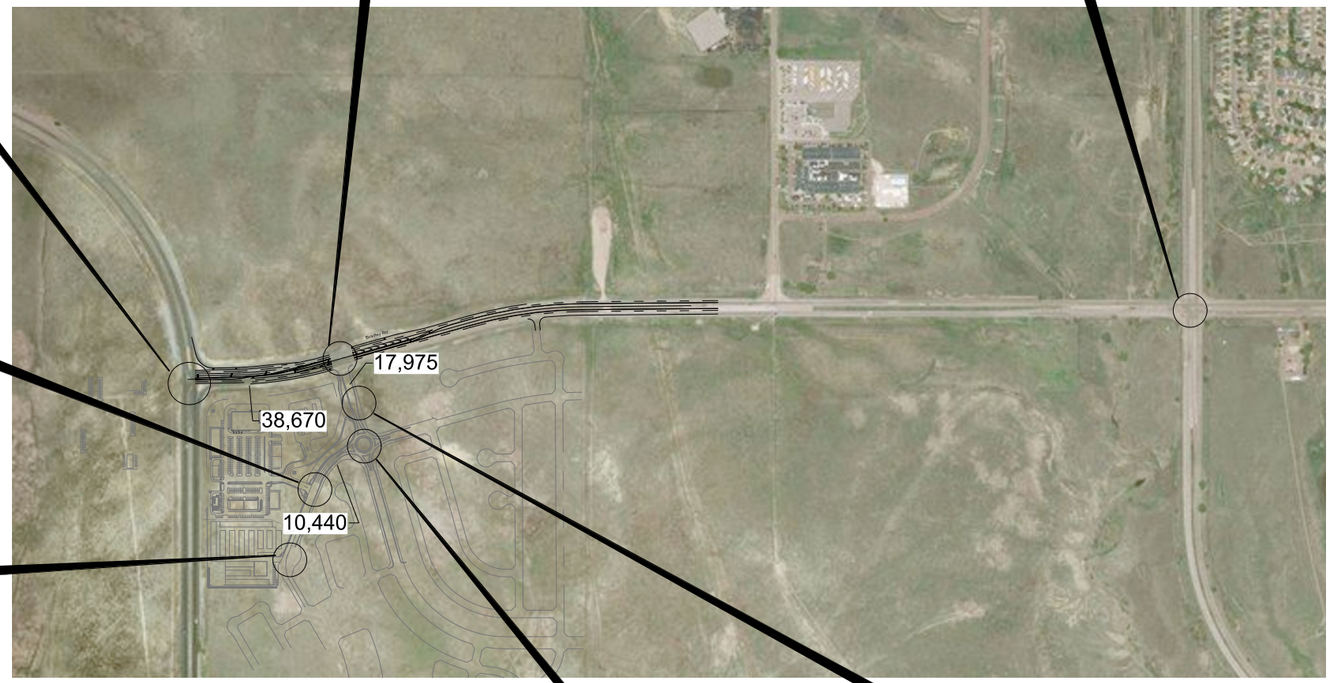


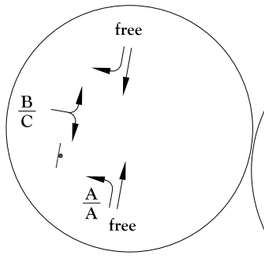


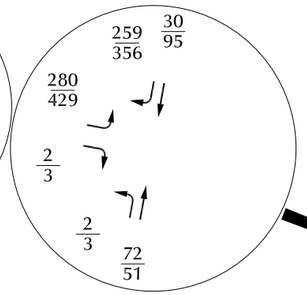


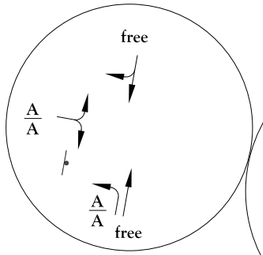


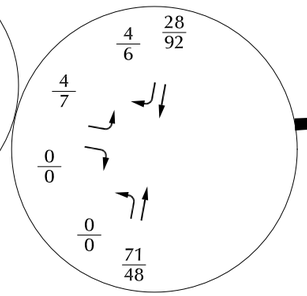


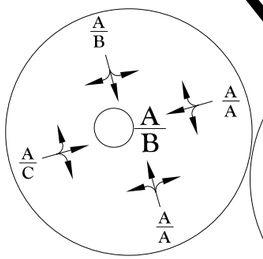


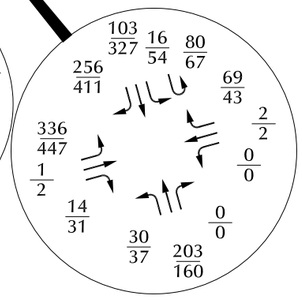


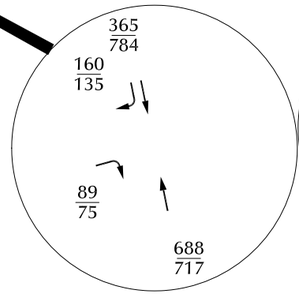


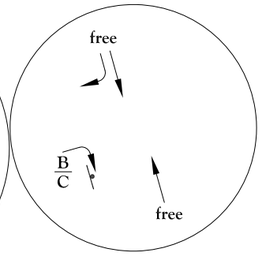












LEGEND:

= Stop Sign

= Traffic Signal = Modern Roundabout

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

$\frac{A}{B}$ = $\frac{\text{AM Individual Movement Peak-Hour Level of Service}}{\text{PM Individual Movement Peak-Hour Level of Service}}$

$\frac{C}{C}$ = $\frac{\text{AM Entire Intersection Peak-Hour Level of Service}}{\text{PM Entire Intersection Peak-Hour Level of Service}}$

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

TRANSPORTATION CONSULTANTS, INC.

Approximate Scale
Scale: 1"= 1,000'

Figure 14

Long-Term Total Traffic, Traffic Control, Lane Geometry, and LOS

Waterview East Commercial (LSC #S214970)

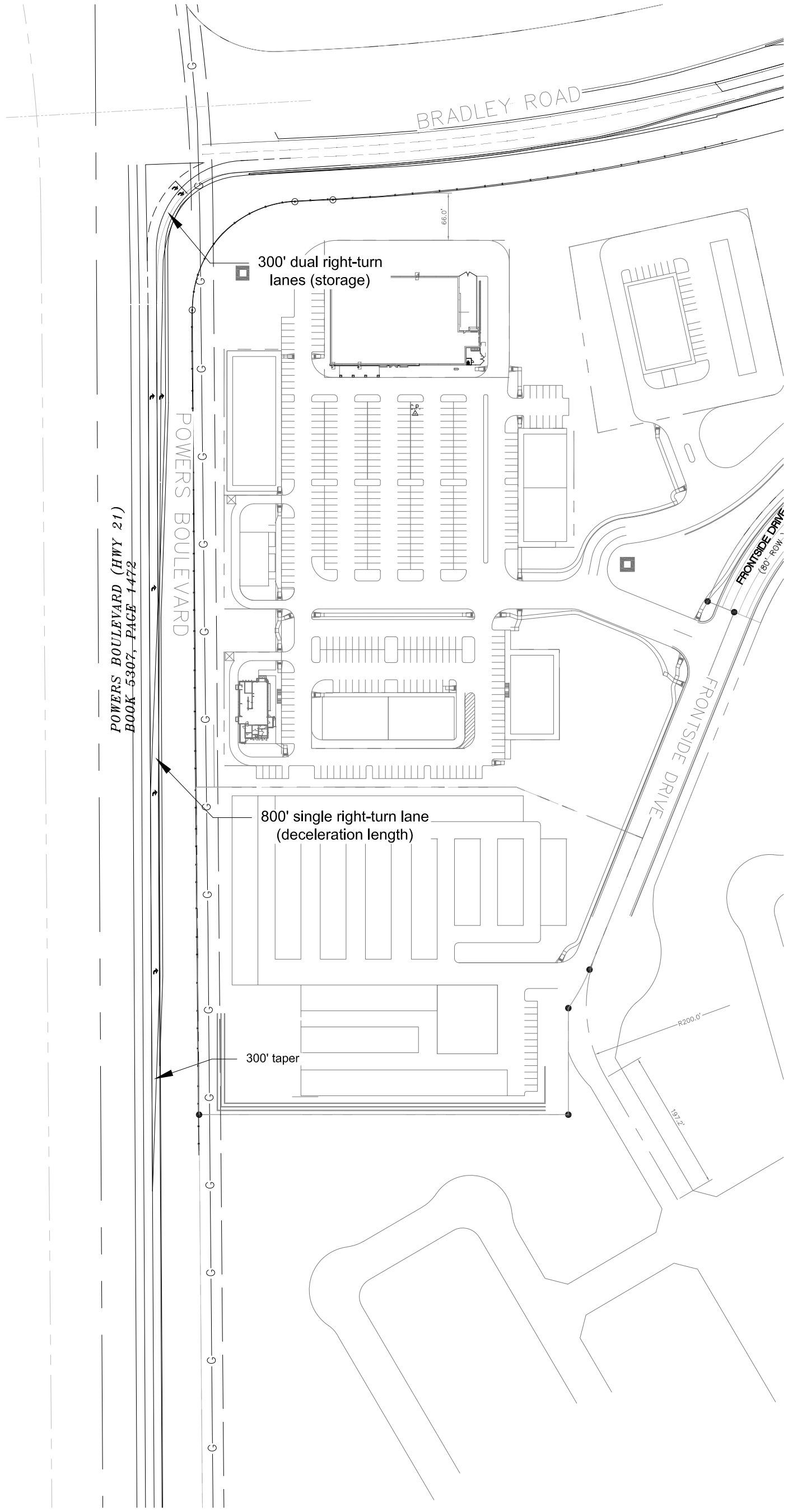


Figure 15

Recommended Powers/Bradley Northbound Right-turn Deceleration Lane Improvement

Waterview East Commercial (LSC #S214970)

LSC TRANSPORTATION CONSULTANTS, INC.

Traffic Counts

TRANSPORTATION
CONSULTANTS, INC.

LSC Transportation Consultants, Inc.

2504 E Pikes Peak Ave, Suite 304
Colorado Springs, CO 80909
719-633-2868

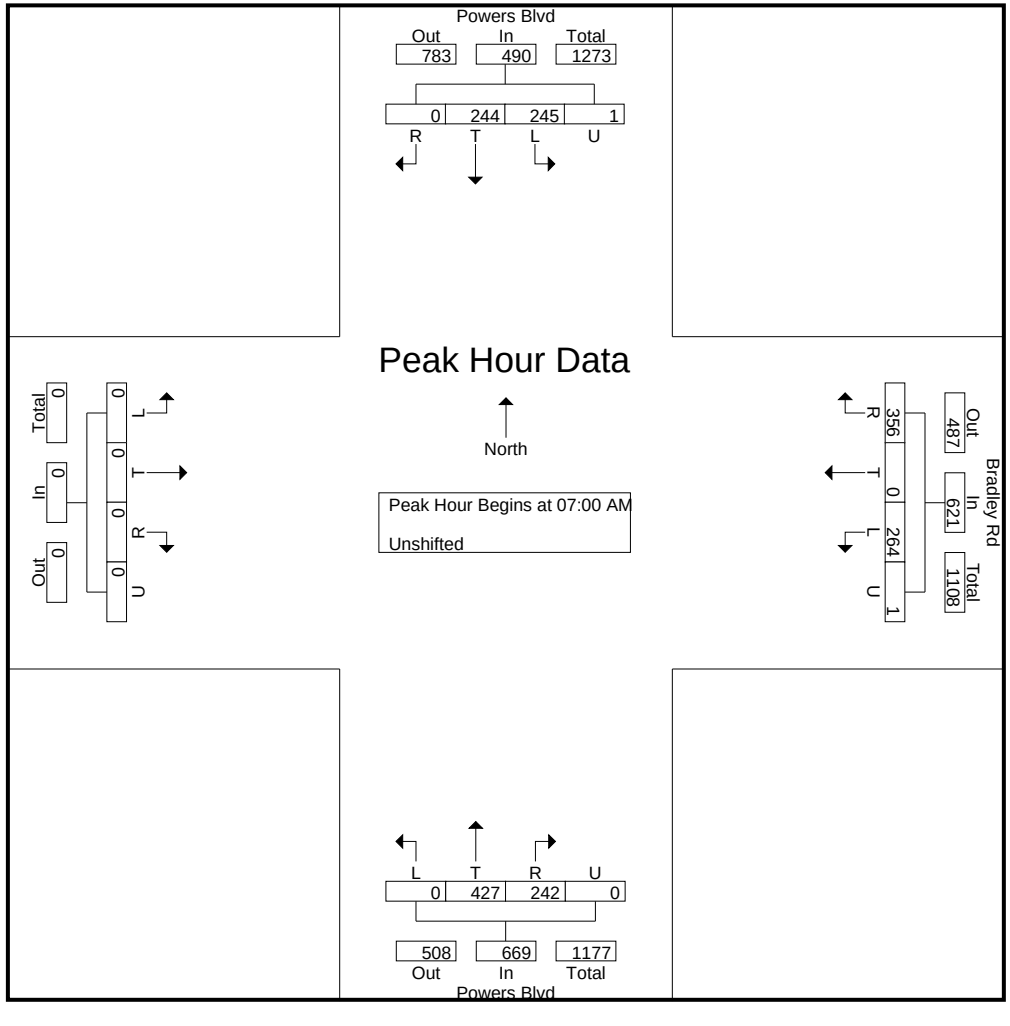
File Name : Powers Blvd - Bradley Rd AM
Site Code : S214180
Start Date : 3/16/2021
Page No : 1

Groups Printed- Unshifted

	Powers Blvd Southbound					Bradley Rd Westbound					Powers Blvd Northbound					Eastbound					
Start Time	**L**	**T**	**R**	**U**	**App. Total**	**L**	**T**	**R**	**U**	**App. Total**	**L**	**T**	**R**	**U**	**App. Total**	**L**	**T**	**R**	**U**	**App. Total**	**Int. Total**
07:00 AM	65	72	0	0	137	62	0	89	0	151	0	117	67	0	184	0	0	0	0	0	472
07:15 AM	60	45	0	1	106	71	0	99	0	170	0	115	58	0	173	0	0	0	0	0	449
07:30 AM	64	60	0	0	124	64	0	89	1	154	0	101	70	0	171	0	0	0	0	0	449
07:45 AM	56	67	0	0	123	67	0	79	0	146	0	94	47	0	141	0	0	0	0	0	410
Total	245	244	0	1	490	264	0	356	1	621	0	427	242	0	669	0	0	0	0	0	1780
08:00 AM	55	57	0	0	112	92	0	53	0	145	0	104	57	0	161	0	0	0	0	0	418
08:15 AM	60	67	0	0	127	74	0	46	2	122	0	97	55	0	152	0	0	0	0	0	401
08:30 AM	62	59	0	1	122	67	0	55	0	122	0	71	56	0	127	0	0	0	0	0	371
08:45 AM	59	74	0	0	133	48	0	48	0	96	0	63	38	1	102	0	0	0	0	0	331
Total	236	257	0	1	494	281	0	202	2	485	0	335	206	1	542	0	0	0	0	0	1521
Grand Total	481	501	0	2	984	545	0	558	3	1106	0	762	448	1	1211	0	0	0	0	0	3301
Apprch %	48.9	50.9	0	0.2		49.3	0	50.5	0.3		0	62.9	37	0.1		0	0	0	0		
Total %	14.6	15.2	0	0.1	29.8	16.5	0	16.9	0.1	33.5	0	23.1	13.6	0	36.7	0	0	0	0	0	

LSC Transportation Consultants, Inc.
2504 E Pikes Peak Ave, Suite 304
Colorado Springs, CO 80909
719-633-2868

File Name : Powers Blvd - Bradley Rd AM
Site Code : S214180
Start Date : 3/16/2021
Page No : 3



LSC Transportation Consultants, Inc.

2504 E Pikes Peak Ave, Suite 304
Colorado Springs, CO 80909
719-633-2868

File Name : Powers Blvd - Bradley Rd PM
Site Code : S214180
Start Date : 3/16/2021
Page No : 1

Groups Printed- Unshifted

	Powers Blvd Southbound					Bradley Rd Westbound					Powers Blvd Northbound					Eastbound					
Start Time	**L**	**T**	**R**	**U**	**App. Total**	**L**	**T**	**R**	**U**	**App. Total**	**L**	**T**	**R**	**U**	**App. Total**	**L**	**T**	**R**	**U**	**App. Total**	**Int. Total**
04:00 PM	72	109	0	0	181	54	0	75	0	129	0	72	75	0	147	0	0	0	0	0	457
04:15 PM	68	105	0	0	173	74	0	82	0	156	0	85	102	0	187	0	0	0	0	0	516
04:30 PM	87	110	0	0	197	72	0	73	1	146	0	78	111	0	189	0	0	0	0	0	532
04:45 PM	69	128	0	0	197	71	0	60	0	131	0	73	100	0	173	0	0	0	0	0	501
Total	296	452	0	0	748	271	0	290	1	562	0	308	388	0	696	0	0	0	0	0	2006
05:00 PM	83	127	0	0	210	60	0	63	0	123	0	74	78	0	152	0	0	0	0	0	485
05:15 PM	75	110	0	0	185	58	0	45	0	103	0	76	102	0	178	0	0	0	0	0	466
05:30 PM	61	111	0	0	172	55	0	49	0	104	0	69	106	0	175	0	0	0	0	0	451
05:45 PM	59	97	0	0	156	52	0	44	0	96	0	86	73	0	159	0	0	0	0	0	411
Total	278	445	0	0	723	225	0	201	0	426	0	305	359	0	664	0	0	0	0	0	1813
Grand Total	574	897	0	0	1471	496	0	491	1	988	0	613	747	0	1360	0	0	0	0	0	3819
Apprch %	39	61	0	0		50.2	0	49.7	0.1		0	45.1	54.9	0		0	0	0	0		
Total %	15	23.5	0	0	38.5	13	0	12.9	0	25.9	0	16.1	19.6	0	35.6	0	0	0	0	0	

LSC Transportation Consultants, Inc.
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File Name : Powers Blvd - Bradley Rd PM
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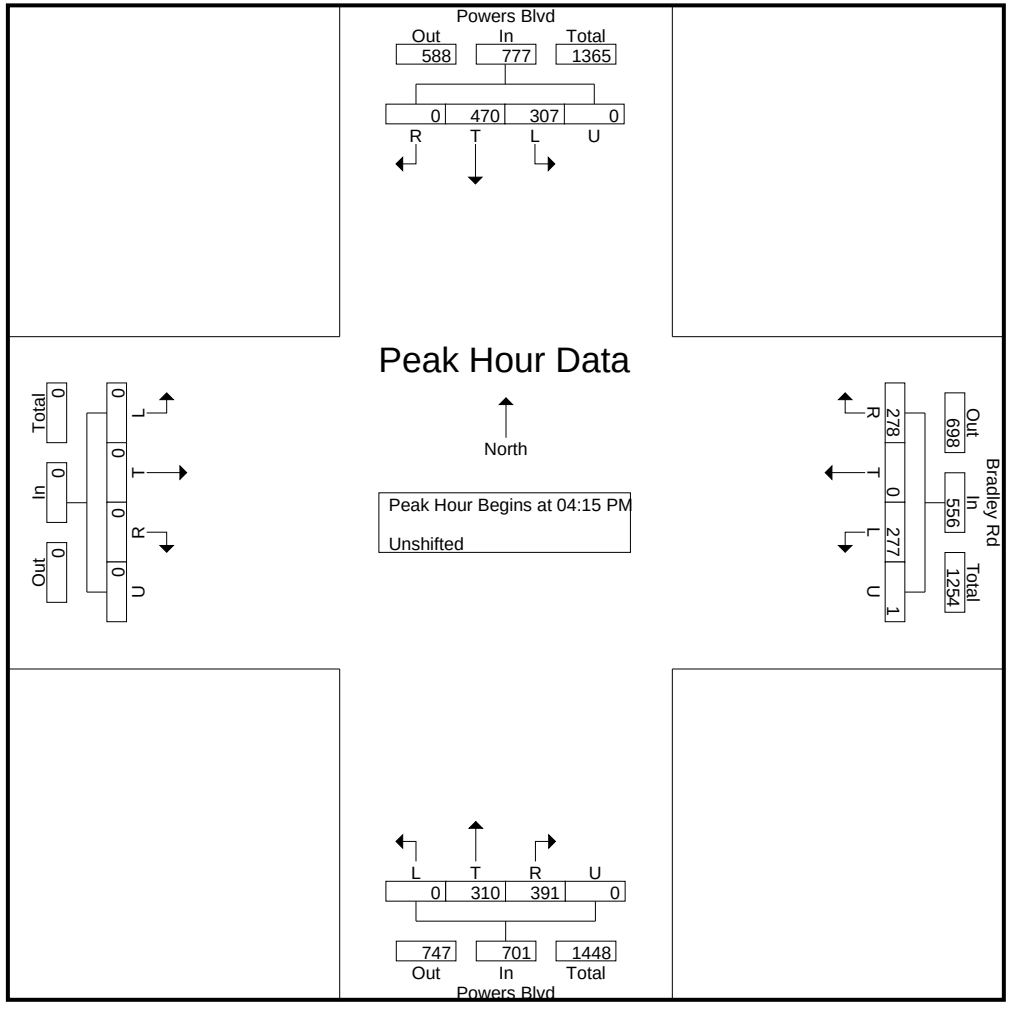

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2504 E Pikes Peak Ave, Suite 304
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719-633-2868

File Name : Marksheffel Rd - Bradley Rd AM
Site Code : S214180
Start Date : 3/11/2021
Page No : 1

Groups Printed- Unshifted

	Marksheffel Rd Southbound					Bradley Rd Westbound					Marksheffel Rd Northbound					Bradley Rd Eastbound					
Start Time	**L**	**T**	**R**	**U**	**App. Total**	**L**	**T**	**R**	**U**	**App. Total**	**L**	**T**	**R**	**U**	**App. Total**	**L**	**T**	**R**	**U**	**App. Total**	**Int. Total**
07:00 AM	9	55	30	0	94	8	82	21	1	112	27	103	20	0	150	25	63	4	0	92	448
07:15 AM	7	57	54	2	120	8	49	7	0	64	27	96	14	0	137	47	73	4	0	124	445
07:30 AM	0	71	58	0	129	8	55	7	0	70	43	106	12	0	161	62	86	3	0	151	511
07:45 AM	3	65	60	0	128	13	97	11	0	121	28	102	11	0	141	67	78	12	0	157	547
Total	19	248	202	2	471	37	283	46	1	367	125	407	57	0	589	201	300	23	0	524	1951
08:00 AM	6	53	63	0	122	10	60	3	0	73	16	67	8	0	91	39	67	4	0	110	396
08:15 AM	1	47	52	0	100	4	42	3	0	49	14	63	8	1	86	38	44	5	0	87	322
08:30 AM	3	44	60	1	108	1	46	2	1	50	21	74	9	1	105	32	63	8	0	103	366
08:45 AM	0	30	36	0	66	3	47	9	1	60	14	64	4	1	83	28	70	6	0	104	313
Total	10	174	211	1	396	18	195	17	2	232	65	268	29	3	365	137	244	23	0	404	1397
09:00 AM	0	14	39	0	53	4	34	1	0	39	9	48	1	0	58	19	35	8	0	62	212
Grand Total	29	436	452	3	920	59	512	64	3	638	199	723	87	3	1012	357	579	54	0	990	3560
Apprch %	3.2	47.4	49.1	0.3		9.2	80.3	10	0.5		19.7	71.4	8.6	0.3		36.1	58.5	5.5	0		
Total %	0.8	12.2	12.7	0.1	25.8	1.7	14.4	1.8	0.1	17.9	5.6	20.3	2.4	0.1	28.4	10	16.3	1.5	0	27.8	

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File Name : Marksheffel Rd - Bradley Rd AM
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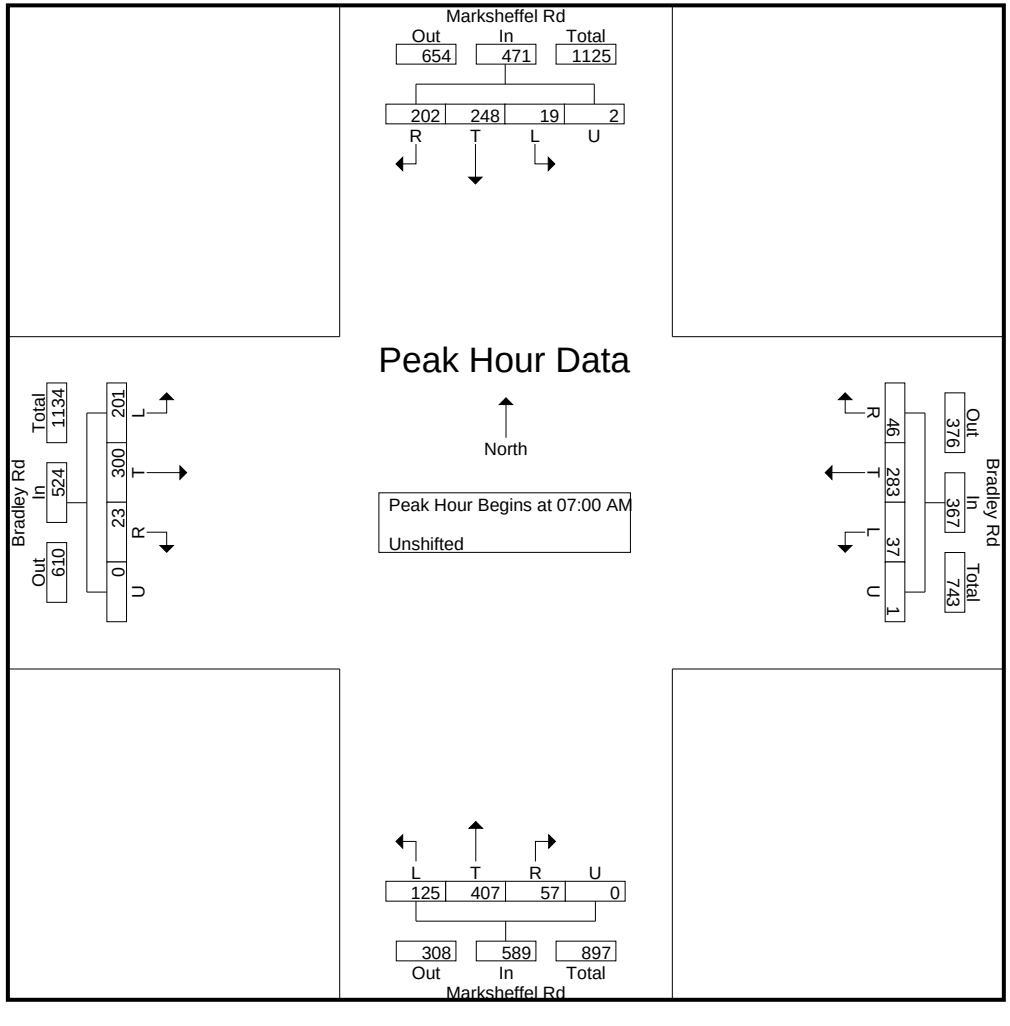

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File Name : Marksheffel Rd - Bradley Rd PM
Site Code : S214180
Start Date : 3/18/2021
Page No : 1

Groups Printed- Unshifted

	Marksheffel Rd Southbound					Bradley Rd Westbound					Marksheffel Rd Northbound					Bradley Rd Eastbound					
Start Time	**L**	**T**	**R**	**U**	**App. Total**	**L**	**T**	**R**	**U**	**App. Total**	**L**	**T**	**R**	**U**	**App. Total**	**L**	**T**	**R**	**U**	**App. Total**	**Int. Total**
04:00 PM	3	83	50	3	139	13	52	4	0	69	17	89	12	0	118	75	69	22	0	166	492
04:15 PM	1	110	34	2	147	32	66	4	0	102	27	93	16	0	136	90	68	26	1	185	570
04:30 PM	2	108	66	1	177	13	47	5	0	65	16	55	6	0	77	104	80	28	0	212	531
04:45 PM	4	100	59	0	163	20	69	6	0	95	16	92	15	0	123	88	78	23	0	189	570
Total	10	401	209	6	626	78	234	19	0	331	76	329	49	0	454	357	295	99	1	752	2163
05:00 PM	3	128	45	0	176	8	63	2	0	73	8	82	8	2	100	88	76	27	0	191	540
05:15 PM	4	113	65	0	182	12	42	3	0	57	18	95	10	0	123	102	59	16	0	177	539
05:30 PM	5	97	47	0	149	9	45	4	0	58	8	79	11	1	99	69	53	19	0	141	447
05:45 PM	5	119	36	0	160	7	38	5	0	50	15	78	15	1	109	50	66	19	1	136	455
Total	17	457	193	0	667	36	188	14	0	238	49	334	44	4	431	309	254	81	1	645	1981
Grand Total	27	858	402	6	1293	114	422	33	0	569	125	663	93	4	885	666	549	180	2	1397	4144
Apprch %	2.1	66.4	31.1	0.5		20	74.2	5.8	0		14.1	74.9	10.5	0.5		47.7	39.3	12.9	0.1		
Total %	0.7	20.7	9.7	0.1	31.2	2.8	10.2	0.8	0	13.7	3	16	2.2	0.1	21.4	16.1	13.2	4.3	0	33.7	

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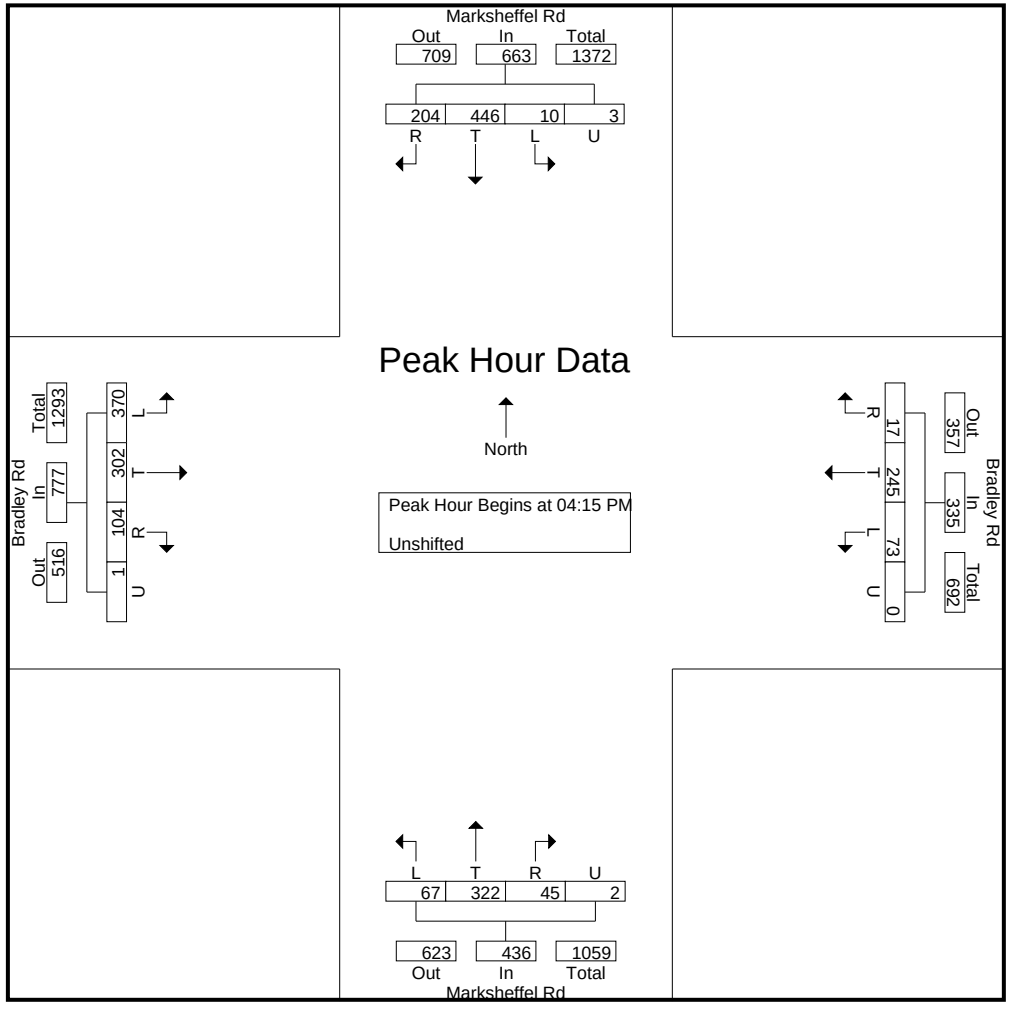


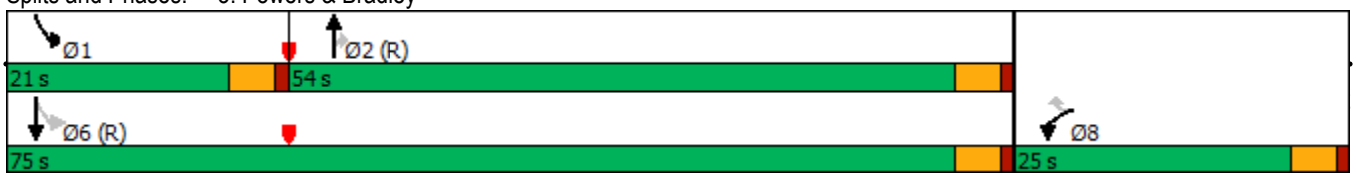
Levels of Service

TRANSPORTATION
CONSULTANTS, INC.

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	264	356	427	242	245	244
Future Volume (vph)	264	356	427	242	245	244
Satd. Flow (prot)	1770	1583	3539	1583	1770	3539
Flt Permitted	0.950				0.420	
Satd. Flow (perm)	1770	1583	3539	1583	782	3539
Satd. Flow (RTOR)		387		266		
Peak Hour Factor	0.92	0.92	0.91	0.91	0.89	0.89
Shared Lane Traffic (%)						
Lane Group Flow (vph)	287	387	469	266	275	274
Turn Type	Prot	Perm	NA	Perm	pm+pt	NA
Protected Phases	8		2		1	6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	2	1	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	9.5	22.5
Total Split (s)	25.0	25.0	54.0	54.0	21.0	75.0
Total Split (%)	25.0%	25.0%	54.0%	54.0%	21.0%	75.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	Yes	
Recall Mode	None	None	C-Min	C-Min	None	C-Min
Act Effct Green (s)	21.9	21.9	53.0	53.0	69.1	69.1
Actuated g/C Ratio	0.22	0.22	0.53	0.53	0.69	0.69
v/c Ratio	0.74	0.60	0.25	0.28	0.42	0.11
Control Delay	47.7	7.2	14.7	3.0	8.5	6.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.7	7.2	14.7	3.0	8.5	6.0
LOS	D	A	B	A	A	A
Approach Delay	24.5		10.5			7.3
Approach LOS	C		B			A

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green	
Natural Cycle: 55	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.74	
Intersection Signal Delay: 14.4	Intersection LOS: B
Intersection Capacity Utilization 51.3%	ICU Level of Service A
Analysis Period (min) 15	

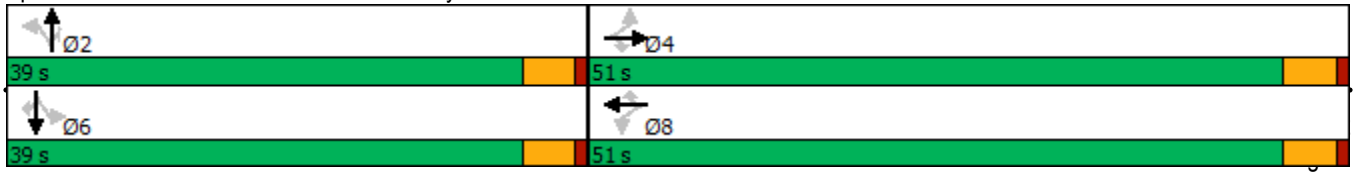
Splits and Phases: 3: Powers & Bradley



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	201	300	23	37	283	46	125	407	57	19	248	202
Future Volume (vph)	201	300	23	37	283	46	125	407	57	19	248	202
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.510			0.519			0.585			0.493		
Satd. Flow (perm)	950	3539	1583	967	3539	1583	1090	3539	1583	918	3539	1583
Satd. Flow (RTOR)			28			61			62			220
Peak Hour Factor	0.83	0.83	0.83	0.76	0.76	0.76	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)												
Lane Group Flow (vph)	242	361	28	49	372	61	136	442	62	21	270	220
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	4	4	4	8	8	8	2	2	2	6	6	6
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	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	51.0	51.0	51.0	51.0	51.0	51.0	39.0	39.0	39.0	39.0	39.0	39.0
Total Split (%)	56.7%	56.7%	56.7%	56.7%	56.7%	56.7%	43.3%	43.3%	43.3%	43.3%	43.3%	43.3%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
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	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None	None	None	None	None	Max	Max	Max	Max	Max	Max
Act Effct Green (s)	22.5	22.5	22.5	22.5	22.5	22.5	35.1	35.1	35.1	35.1	35.1	35.1
Actuated g/C Ratio	0.34	0.34	0.34	0.34	0.34	0.34	0.53	0.53	0.53	0.53	0.53	0.53
v/c Ratio	0.76	0.30	0.05	0.15	0.31	0.11	0.24	0.24	0.07	0.04	0.15	0.24
Control Delay	34.7	16.1	5.3	15.1	16.2	4.3	12.9	10.8	4.1	11.6	10.4	2.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.7	16.1	5.3	15.1	16.2	4.3	12.9	10.8	4.1	11.6	10.4	2.8
LOS	C	B	A	B	B	A	B	B	A	B	B	A
Approach Delay		22.7			14.6			10.6			7.2	
Approach LOS		C			B			B			A	

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 66.7	
Natural Cycle: 45	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.76	
Intersection Signal Delay: 14.1	Intersection LOS: B
Intersection Capacity Utilization 49.4%	ICU Level of Service A
Analysis Period (min) 15	

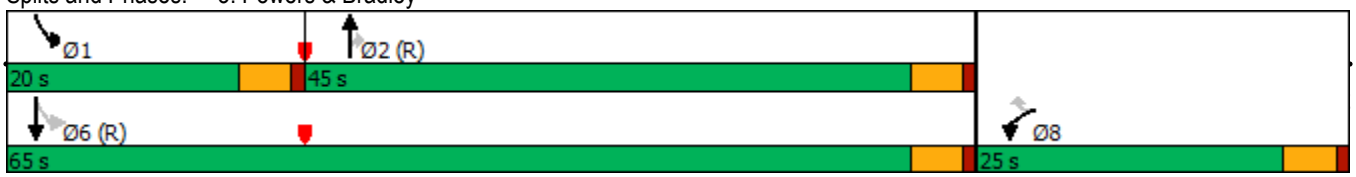
Splits and Phases: 5: Marksheffel & Bradley



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	277	278	310	391	307	470
Future Volume (vph)	277	278	310	391	307	470
Satd. Flow (prot)	1770	1583	3539	1583	1770	3539
Flt Permitted	0.950				0.491	
Satd. Flow (perm)	1770	1583	3539	1583	915	3539
Satd. Flow (RTOR)		302		420		
Peak Hour Factor	0.92	0.92	0.93	0.93	0.92	0.92
Shared Lane Traffic (%)						
Lane Group Flow (vph)	301	302	333	420	334	511
Turn Type	Prot	Perm	NA	Perm	pm+pt	NA
Protected Phases	8		2		1	6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	2	1	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	9.5	22.5
Total Split (s)	25.0	25.0	45.0	45.0	20.0	65.0
Total Split (%)	27.8%	27.8%	50.0%	50.0%	22.2%	72.2%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	Yes	
Recall Mode	None	None	C-Min	C-Min	None	C-Min
Act Effct Green (s)	20.8	20.8	42.8	42.8	60.2	60.2
Actuated g/C Ratio	0.23	0.23	0.48	0.48	0.67	0.67
v/c Ratio	0.74	0.51	0.20	0.43	0.45	0.22
Control Delay	42.7	6.3	16.1	3.7	9.1	6.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.7	6.3	16.1	3.7	9.1	6.7
LOS	D	A	B	A	A	A
Approach Delay	24.5		9.2			7.6
Approach LOS	C		A			A

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.74	
Intersection Signal Delay: 12.8	Intersection LOS: B
Intersection Capacity Utilization 52.2%	ICU Level of Service A
Analysis Period (min) 15	

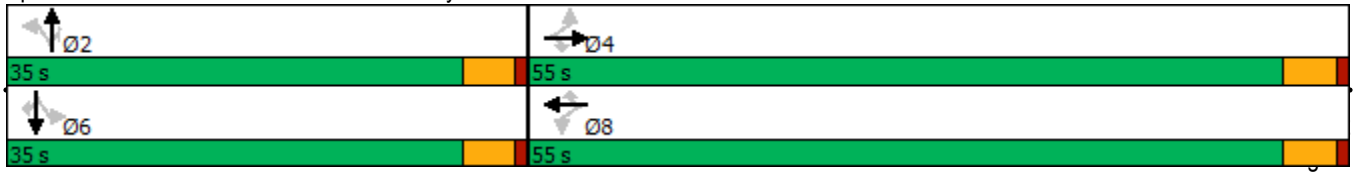
Splits and Phases: 3: Powers & Bradley



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	370	302	104	73	245	17	67	322	45	10	446	204
Future Volume (vph)	370	302	104	73	245	17	67	322	45	10	446	204
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.579			0.554			0.420			0.521		
Satd. Flow (perm)	1079	3539	1583	1032	3539	1583	782	3539	1583	970	3539	1583
Satd. Flow (RTOR)			113			20			52			234
Peak Hour Factor	0.92	0.92	0.92	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Shared Lane Traffic (%)												
Lane Group Flow (vph)	402	328	113	84	282	20	77	370	52	11	513	234
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	4	4	4	8	8	8	2	2	2	6	6	6
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	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	55.0	55.0	55.0	55.0	55.0	55.0	35.0	35.0	35.0	35.0	35.0	35.0
Total Split (%)	61.1%	61.1%	61.1%	61.1%	61.1%	61.1%	38.9%	38.9%	38.9%	38.9%	38.9%	38.9%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
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	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None	None	None	None	None	Max	Max	Max	Max	Max	Max
Act Effct Green (s)	33.0	33.0	33.0	33.0	33.0	33.0	31.3	31.3	31.3	31.3	31.3	31.3
Actuated g/C Ratio	0.45	0.45	0.45	0.45	0.45	0.45	0.43	0.43	0.43	0.43	0.43	0.43
v/c Ratio	0.83	0.21	0.15	0.18	0.18	0.03	0.23	0.25	0.07	0.03	0.34	0.29
Control Delay	32.5	11.7	2.5	11.8	11.4	4.2	20.5	16.8	6.3	18.1	17.5	4.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.5	11.7	2.5	11.8	11.4	4.2	20.5	16.8	6.3	18.1	17.5	4.1
LOS	C	B	A	B	B	A	C	B	A	B	B	A
Approach Delay		20.4			11.1			16.2			13.4	
Approach LOS		C			B			B			B	

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 73.6	
Natural Cycle: 55	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.83	
Intersection Signal Delay: 16.0	Intersection LOS: B
Intersection Capacity Utilization 58.8%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 5: Marksheffel & Bradley



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	568	760	525	493	491	300
Future Volume (vph)	568	760	525	493	491	300
Turn Type	Prot	Free	NA	pt+ov	Prot	NA
Protected Phases	8		2	2 8	1	6
Permitted Phases		Free				
Detector Phase	8		2	2 8	1	6
Switch Phase						
Minimum Initial (s)	4.0		4.0		4.0	4.0
Minimum Split (s)	9.0		9.0		9.0	9.0
Total Split (s)	20.0		60.0		20.0	80.0
Total Split (%)	20.0%		60.0%		20.0%	80.0%
Yellow Time (s)	3.0		3.0		3.0	3.0
All-Red Time (s)	2.0		2.0		2.0	2.0
Lost Time Adjust (s)	0.0		0.0		0.0	0.0
Total Lost Time (s)	5.0		5.0		5.0	5.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None		None		None	None
Act Effct Green (s)	15.1	63.8	18.6	38.7	15.1	38.7
Actuated g/C Ratio	0.24	1.00	0.29	0.61	0.24	0.61
v/c Ratio	0.76	0.52	0.56	0.32	0.68	0.16
Control Delay	31.5	1.2	21.1	6.4	28.4	5.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.5	1.2	21.1	6.4	28.4	5.5
LOS	C	A	C	A	C	A
Approach Delay	14.2		14.0			19.7
Approach LOS	B		B			B

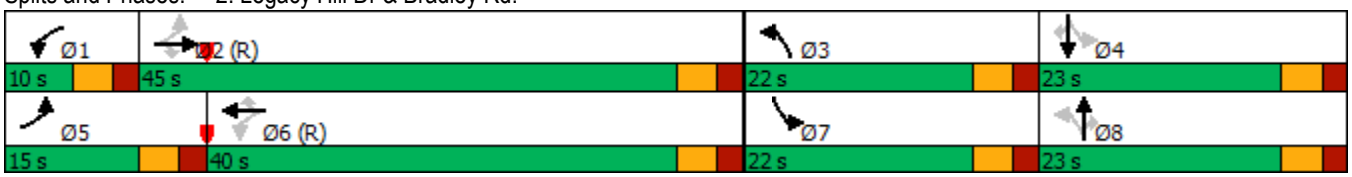
Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 63.8	
Natural Cycle: 50	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.76	
Intersection Signal Delay: 15.5	Intersection LOS: B
Intersection Capacity Utilization 57.2%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 1: Powers & Bradley Rd.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	255	644	84	40	812	97	314	6	89	97	2	202
Future Volume (vph)	255	644	84	40	812	97	314	6	89	97	2	202
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6		6	8		8	4		4
Detector Phase	5	2	2	1	6	6	3	8	8	7	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	5.0
Minimum Split (s)	10.0	23.0	23.0	10.0	23.0	23.0	10.0	23.0	23.0	10.0	23.0	23.0
Total Split (s)	15.0	45.0	45.0	10.0	40.0	40.0	22.0	23.0	23.0	22.0	23.0	23.0
Total Split (%)	15.0%	45.0%	45.0%	10.0%	40.0%	40.0%	22.0%	23.0%	23.0%	22.0%	23.0%	23.0%
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	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	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	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	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	None
Act Effct Green (s)	60.1	53.9	53.9	53.0	46.7	46.7	29.1	16.3	16.3	17.7	9.9	9.9
Actuated g/C Ratio	0.60	0.54	0.54	0.53	0.47	0.47	0.29	0.16	0.16	0.18	0.10	0.10
v/c Ratio	0.43	0.37	0.11	0.11	0.53	0.14	0.49	0.02	0.29	0.21	0.01	0.77
Control Delay	11.5	16.2	1.9	10.9	22.1	3.4	29.5	31.3	5.3	25.9	36.5	30.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.5	16.2	1.9	10.9	22.1	3.4	29.5	31.3	5.3	25.9	36.5	30.2
LOS	B	B	A	B	C	A	C	C	A	C	D	C
Approach Delay		13.7			19.5			24.2			28.9	
Approach LOS		B			B			C			C	

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 9 (9%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle: 70	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.77	
Intersection Signal Delay: 19.2	Intersection LOS: B
Intersection Capacity Utilization 57.8%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 2: Legacy Hill Dr & Bradley Rd.



Intersection	
Intersection Delay, s/veh	4.3
Intersection LOS	A

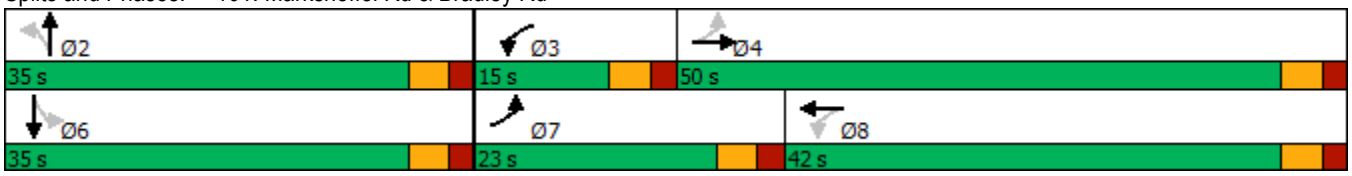
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	102	78	264	137
Demand Flow Rate, veh/h	104	80	269	140
Vehicles Circulating, veh/h	105	373	116	0
Vehicles Exiting, veh/h	35	12	93	453
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	3.7	4.7	4.9	3.5
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	104	80	269	140
Cap Entry Lane, veh/h	1240	943	1226	1380
Entry HV Adj Factor	0.981	0.975	0.980	0.980
Flow Entry, veh/h	102	78	264	137
Cap Entry, veh/h	1216	920	1202	1352
V/C Ratio	0.084	0.085	0.219	0.101
Control Delay, s/veh	3.7	4.7	4.9	3.5
LOS	A	A	A	A
95th %tile Queue, veh	0	0	1	0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	396	406	64	46	377	58	193	509	71	24	310	336
Future Volume (vph)	396	406	64	46	377	58	193	509	71	24	310	336
Turn Type	pm+pt	NA	Free	pm+pt	NA	Free	Perm	NA	Free	Perm	NA	Free
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4		Free	8		Free	2		Free	6		Free
Detector Phase	7	4		3	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	4.0		5.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	11.0	21.0		10.0	21.0		21.0	21.0		21.0	21.0	
Total Split (s)	23.0	50.0		15.0	42.0		35.0	35.0		35.0	35.0	
Total Split (%)	23.0%	50.0%		15.0%	42.0%		35.0%	35.0%		35.0%	35.0%	
Yellow Time (s)	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	
Lost Time Adjust (s)	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	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Act Effct Green (s)	39.5	29.8	79.6	23.3	16.4	79.6	30.1	30.1	79.6	30.1	30.1	79.6
Actuated g/C Ratio	0.50	0.37	1.00	0.29	0.21	1.00	0.38	0.38	1.00	0.38	0.38	1.00
v/c Ratio	0.91	0.37	0.05	0.18	0.68	0.05	0.55	0.41	0.05	0.10	0.25	0.23
Control Delay	40.2	19.8	0.1	13.1	34.0	0.1	27.3	20.0	0.1	18.8	18.3	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.2	19.8	0.1	13.1	34.0	0.1	27.3	20.0	0.1	18.8	18.3	0.3
LOS	D	B	A	B	C	A	C	C	A	B	B	A
Approach Delay		27.7			27.9			20.0			9.3	
Approach LOS		C			C			C			A	

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 79.6	
Natural Cycle: 60	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.91	
Intersection Signal Delay: 21.6	Intersection LOS: C
Intersection Capacity Utilization 68.3%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 101: Marksheffel Rd & Bradley Rd



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	607	611	311	742	729	468
Future Volume (vph)	607	611	311	742	729	468
Turn Type	Prot	Free	NA	pt+ov	Prot	NA
Protected Phases	8		2	2 8	1	6
Permitted Phases		Free				
Detector Phase	8		2	2 8	1	6
Switch Phase						
Minimum Initial (s)	4.0		4.0		4.0	4.0
Minimum Split (s)	9.0		9.0		9.0	9.0
Total Split (s)	30.0		37.0		33.0	70.0
Total Split (%)	30.0%		37.0%		33.0%	70.0%
Yellow Time (s)	3.0		3.0		3.0	3.0
All-Red Time (s)	2.0		2.0		2.0	2.0
Lost Time Adjust (s)	0.0		0.0		0.0	0.0
Total Lost Time (s)	5.0		5.0		5.0	5.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None		None		None	None
Act Effct Green (s)	21.9	84.1	22.6	49.8	24.0	51.8
Actuated g/C Ratio	0.26	1.00	0.27	0.59	0.29	0.62
v/c Ratio	0.74	0.42	0.35	0.48	0.81	0.23
Control Delay	35.5	0.8	26.6	10.4	36.8	7.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	35.5	0.8	26.6	10.4	36.8	7.6
LOS	D	A	C	B	D	A
Approach Delay	18.1		15.2			25.3
Approach LOS	B		B			C

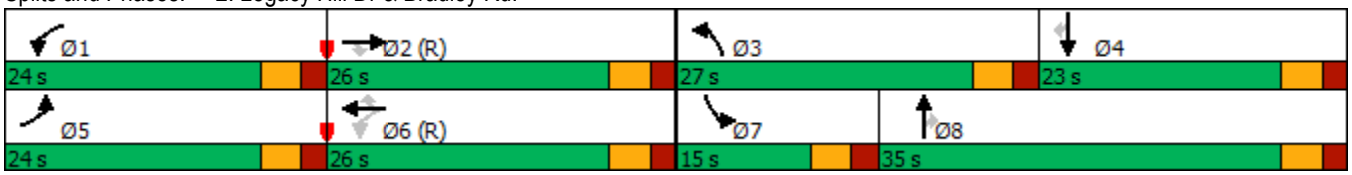
Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 84.1	
Natural Cycle: 60	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.81	
Intersection Signal Delay: 19.7	Intersection LOS: B
Intersection Capacity Utilization 59.2%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 1: Powers & Bradley Rd.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	357	829	286	137	586	124	208	5	59	185	8	424
Future Volume (vph)	357	829	286	137	586	124	208	5	59	185	8	424
Turn Type	Prot	NA	Perm	pm+pt	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2	6		6			8			4
Detector Phase	5	2	2	1	6	6	3	8	8	7	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	5.0
Minimum Split (s)	10.0	23.0	23.0	10.0	23.0	23.0	10.0	23.0	23.0	10.0	23.0	23.0
Total Split (s)	24.0	26.0	26.0	24.0	26.0	26.0	27.0	35.0	35.0	15.0	23.0	23.0
Total Split (%)	24.0%	26.0%	26.0%	24.0%	26.0%	26.0%	27.0%	35.0%	35.0%	15.0%	23.0%	23.0%
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	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	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	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	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	None
Act Effct Green (s)	16.8	44.1	44.1	48.4	37.9	37.9	12.4	15.5	15.5	12.0	12.9	12.9
Actuated g/C Ratio	0.17	0.44	0.44	0.48	0.38	0.38	0.12	0.16	0.16	0.12	0.13	0.13
v/c Ratio	0.73	0.60	0.38	0.47	0.48	0.20	0.58	0.02	0.19	0.53	0.04	0.84
Control Delay	47.1	26.9	4.7	17.4	28.3	3.0	46.5	28.6	1.4	47.6	32.8	19.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.1	26.9	4.7	17.4	28.3	3.0	46.5	28.6	1.4	47.6	32.8	19.6
LOS	D	C	A	B	C	A	D	C	A	D	C	B
Approach Delay		27.5			22.5			36.4			28.2	
Approach LOS		C			C			D			C	

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBTL, Start of Green	
Natural Cycle: 70	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.84	
Intersection Signal Delay: 27.1	Intersection LOS: C
Intersection Capacity Utilization 60.9%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 2: Legacy Hill Dr & Bradley Rd.



Intersection	
Intersection Delay, s/veh	5.2
Intersection LOS	A

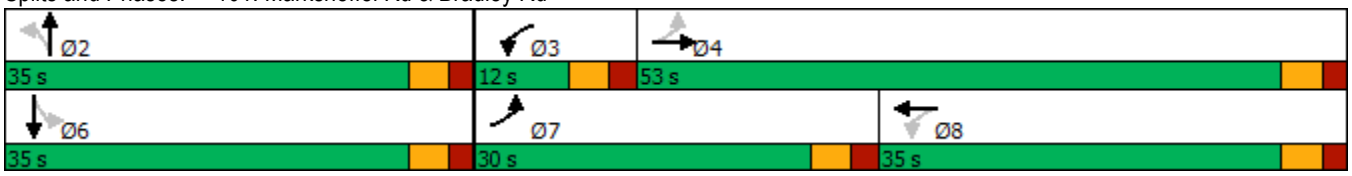
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	67	52	176	468
Demand Flow Rate, veh/h	68	53	180	477
Vehicles Circulating, veh/h	360	248	108	0
Vehicles Exiting, veh/h	117	40	320	301
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	4.5	3.8	4.2	5.8
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	68	53	180	477
Cap Entry Lane, veh/h	956	1071	1236	1380
Entry HV Adj Factor	0.985	0.981	0.980	0.981
Flow Entry, veh/h	67	52	176	468
Cap Entry, veh/h	942	1051	1212	1353
V/C Ratio	0.071	0.049	0.146	0.346
Control Delay, s/veh	4.5	3.8	4.2	5.8
LOS	A	A	A	A
95th %tile Queue, veh	0	0	1	2

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	529	354	166	77	298	18	123	338	47	11	469	392
Future Volume (vph)	529	354	166	77	298	18	123	338	47	11	469	392
Turn Type	pm+pt	NA	Free	pm+pt	NA	Free	Perm	NA	Free	Perm	NA	Free
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4		Free	8		Free	2		Free	6		Free
Detector Phase	7	4		3	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	4.0		5.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	10.0	21.0		10.0	21.0		21.0	21.0		21.0	21.0	
Total Split (s)	30.0	53.0		12.0	35.0		35.0	35.0		35.0	35.0	
Total Split (%)	30.0%	53.0%		12.0%	35.0%		35.0%	35.0%		35.0%	35.0%	
Yellow Time (s)	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	
Lost Time Adjust (s)	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	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Act Effct Green (s)	43.1	33.7	83.2	19.9	13.2	83.2	30.0	30.0	83.2	30.0	30.0	83.2
Actuated g/C Ratio	0.52	0.41	1.00	0.24	0.16	1.00	0.36	0.36	1.00	0.36	0.36	1.00
v/c Ratio	0.92	0.28	0.12	0.30	0.61	0.01	0.53	0.29	0.03	0.04	0.42	0.28
Control Delay	37.5	18.0	0.2	16.4	37.6	0.0	31.3	20.2	0.0	18.9	21.7	0.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.5	18.0	0.2	16.4	37.6	0.0	31.3	20.2	0.0	18.9	21.7	0.5
LOS	D	B	A	B	D	A	C	C	A	B	C	A
Approach Delay		25.0			31.7			21.0			12.1	
Approach LOS		C			C			C			B	

Intersection Summary			
Cycle Length: 100			
Actuated Cycle Length: 83.2			
Natural Cycle: 70			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.92			
Intersection Signal Delay: 21.2		Intersection LOS: C	
Intersection Capacity Utilization 74.0%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 101: Marksheffel Rd & Bradley Rd



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	637	814	525	581	560	300
Future Volume (vph)	637	814	525	581	560	300
Turn Type	Prot	Free	NA	pt+ov	Prot	NA
Protected Phases	8		2	2 8	1	6
Permitted Phases		Free				
Detector Phase	8		2	2 8	1	6
Switch Phase						
Minimum Initial (s)	4.0		4.0		4.0	4.0
Minimum Split (s)	9.0		9.0		9.0	9.0
Total Split (s)	20.0		60.0		20.0	80.0
Total Split (%)	20.0%		60.0%		20.0%	80.0%
Yellow Time (s)	3.0		3.0		3.0	3.0
All-Red Time (s)	2.0		2.0		2.0	2.0
Lost Time Adjust (s)	0.0		0.0		0.0	0.0
Total Lost Time (s)	5.0		5.0		5.0	5.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None		None		None	None
Act Effct Green (s)	15.1	64.4	19.2	39.3	15.1	39.3
Actuated g/C Ratio	0.23	1.00	0.30	0.61	0.23	0.61
v/c Ratio	0.86	0.56	0.55	0.37	0.78	0.16
Control Delay	38.3	1.4	20.8	6.9	32.9	5.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.3	1.4	20.8	6.9	32.9	5.5
LOS	D	A	C	A	C	A
Approach Delay	17.6		13.5			23.4
Approach LOS	B		B			C

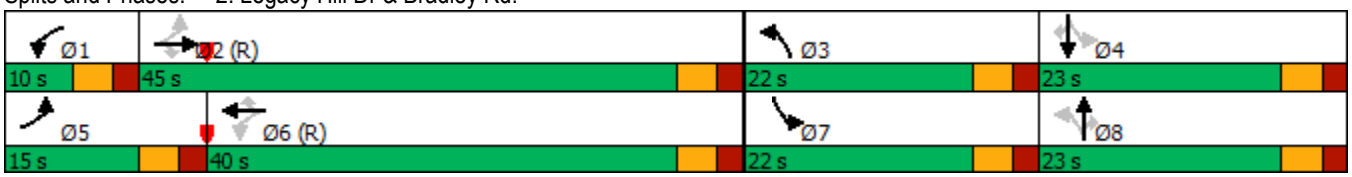
Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 64.4	
Natural Cycle: 55	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.86	
Intersection Signal Delay: 17.7	Intersection LOS: B
Intersection Capacity Utilization 61.2%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 1: Powers & Bradley Rd.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	255	532	354	186	731	97	519	9	252	97	6	202
Future Volume (vph)	255	532	354	186	731	97	519	9	252	97	6	202
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6		6	8		8	4		4
Detector Phase	5	2	2	1	6	6	3	8	8	7	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	5.0
Minimum Split (s)	10.0	23.0	23.0	10.0	23.0	23.0	10.0	23.0	23.0	10.0	23.0	23.0
Total Split (s)	15.0	45.0	45.0	10.0	40.0	40.0	22.0	23.0	23.0	22.0	23.0	23.0
Total Split (%)	15.0%	45.0%	45.0%	10.0%	40.0%	40.0%	22.0%	23.0%	23.0%	22.0%	23.0%	23.0%
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	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	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	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	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	None
Act Effct Green (s)	52.4	43.2	43.2	51.0	42.5	42.5	33.3	20.6	20.6	19.1	11.5	11.5
Actuated g/C Ratio	0.52	0.43	0.43	0.51	0.42	0.42	0.33	0.21	0.21	0.19	0.12	0.12
v/c Ratio	0.43	0.38	0.45	0.49	0.53	0.15	0.69	0.03	0.53	0.20	0.03	0.77
Control Delay	13.3	20.9	3.8	18.7	24.2	3.5	30.9	29.3	7.4	23.4	36.0	34.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.3	20.9	3.8	18.7	24.2	3.5	30.9	29.3	7.4	23.4	36.0	34.1
LOS	B	C	A	B	C	A	C	C	A	C	D	C
Approach Delay		13.6			21.0			23.3			30.7	
Approach LOS		B			C			C			C	

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 9 (9%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle: 70	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.77	
Intersection Signal Delay: 19.9	Intersection LOS: B
Intersection Capacity Utilization 61.5%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 2: Legacy Hill Dr & Bradley Rd.



Intersection	
Int Delay, s/veh	1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	122	0	780	377	170
Future Vol, veh/h	0	122	0	780	377	170
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	133	0	848	410	185

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	410	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.22	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.318	-	-	-	-
Pot Cap-1 Maneuver	0	642	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	642	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.1	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	642	-	-
HCM Lane V/C Ratio	-	0.207	-	-
HCM Control Delay (s)	-	12.1	-	-
HCM Lane LOS	-	B	-	-
HCM 95th %tile Q(veh)	-	0.8	-	-

Intersection	
Intersection Delay, s/veh	7.1
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	374	79	264	543
Demand Flow Rate, veh/h	381	81	269	554
Vehicles Circulating, veh/h	241	785	529	1
Vehicles Exiting, veh/h	314	13	93	865
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	7.0	7.5	8.5	6.4
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	381	81	269	554
Cap Entry Lane, veh/h	1079	620	804	1378
Entry HV Adj Factor	0.982	0.975	0.980	0.981
Flow Entry, veh/h	374	79	264	544
Cap Entry, veh/h	1059	604	789	1352
V/C Ratio	0.353	0.131	0.334	0.402
Control Delay, s/veh	7.0	7.5	8.5	6.4
LOS	A	A	A	A
95th %tile Queue, veh	2	0	1	2

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	4	0	0	96	34	4
Future Vol, veh/h	4	0	0	96	34	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	100	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	0	0	104	37	4

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	143	39	41	0	-	0
Stage 1	39	-	-	-	-	-
Stage 2	104	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	850	1033	1568	-	-	-
Stage 1	983	-	-	-	-	-
Stage 2	920	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	850	1033	1568	-	-	-
Mov Cap-2 Maneuver	818	-	-	-	-	-
Stage 1	983	-	-	-	-	-
Stage 2	920	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.4	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1568	-	818	-	-
HCM Lane V/C Ratio	-	-	0.005	-	-
HCM Control Delay (s)	0	-	9.4	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Int Delay, s/veh	4.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	247	2	3	97	35	249
Future Vol, veh/h	247	2	3	97	35	249
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	100	-	-	200
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	268	2	3	105	38	271

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	149	38	309	0	-	0
Stage 1	38	-	-	-	-	-
Stage 2	111	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	843	1034	1252	-	-	-
Stage 1	984	-	-	-	-	-
Stage 2	914	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	841	1034	1252	-	-	-
Mov Cap-2 Maneuver	812	-	-	-	-	-
Stage 1	982	-	-	-	-	-
Stage 2	914	-	-	-	-	-

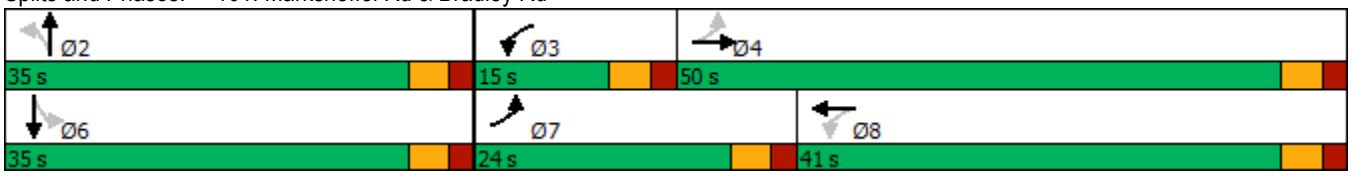
Approach	EB	NB	SB
HCM Control Delay, s	11.6	0.2	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1252	-	813	-	-
HCM Lane V/C Ratio	0.003	-	0.333	-	-
HCM Control Delay (s)	7.9	-	11.6	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	1.5	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	419	415	82	46	389	58	216	509	71	24	310	366
Future Volume (vph)	419	415	82	46	389	58	216	509	71	24	310	366
Turn Type	pm+pt	NA	Free	pm+pt	NA	Free	Perm	NA	Free	Perm	NA	Free
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4		Free	8		Free	2		Free	6		Free
Detector Phase	7	4		3	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	4.0		5.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	11.0	21.0		10.0	21.0		21.0	21.0		21.0	21.0	
Total Split (s)	24.0	50.0		15.0	41.0		35.0	35.0		35.0	35.0	
Total Split (%)	24.0%	50.0%		15.0%	41.0%		35.0%	35.0%		35.0%	35.0%	
Yellow Time (s)	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	
Lost Time Adjust (s)	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	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Act Effct Green (s)	41.1	31.4	81.2	23.9	17.0	81.2	30.1	30.1	81.2	30.1	30.1	81.2
Actuated g/C Ratio	0.51	0.39	1.00	0.29	0.21	1.00	0.37	0.37	1.00	0.37	0.37	1.00
v/c Ratio	0.94	0.37	0.06	0.18	0.69	0.05	0.64	0.42	0.05	0.10	0.26	0.25
Control Delay	46.7	19.5	0.1	13.1	34.7	0.1	31.7	20.9	0.1	19.6	19.1	0.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	46.7	19.5	0.1	13.1	34.7	0.1	31.7	20.9	0.1	19.6	19.1	0.4
LOS	D	B	A	B	C	A	C	C	A	B	B	A
Approach Delay		30.2			28.6			22.0			9.3	
Approach LOS		C			C			C			A	

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 81.2	
Natural Cycle: 60	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.94	
Intersection Signal Delay: 23.1	Intersection LOS: C
Intersection Capacity Utilization 71.2%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 101: Marksheffel Rd & Bradley Rd



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	719	700	311	849	814	468
Future Volume (vph)	719	700	311	849	814	468
Turn Type	Prot	Free	NA	pt+ov	Prot	NA
Protected Phases	8		2	2 8	1	6
Permitted Phases		Free				
Detector Phase	8		2	2 8	1	6
Switch Phase						
Minimum Initial (s)	4.0		4.0		4.0	4.0
Minimum Split (s)	9.0		9.0		9.0	9.0
Total Split (s)	30.0		37.0		33.0	70.0
Total Split (%)	30.0%		37.0%		33.0%	70.0%
Yellow Time (s)	3.0		3.0		3.0	3.0
All-Red Time (s)	2.0		2.0		2.0	2.0
Lost Time Adjust (s)	0.0		0.0		0.0	0.0
Total Lost Time (s)	5.0		5.0		5.0	5.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None		None		None	None
Act Effct Green (s)	24.4	93.0	26.7	56.1	26.8	58.5
Actuated g/C Ratio	0.26	1.00	0.29	0.60	0.29	0.63
v/c Ratio	0.87	0.48	0.33	0.54	0.89	0.23
Control Delay	45.7	1.0	27.1	11.9	45.6	7.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	45.7	1.0	27.1	11.9	45.6	7.7
LOS	D	A	C	B	D	A
Approach Delay	23.7		16.0			31.7
Approach LOS	C		B			C

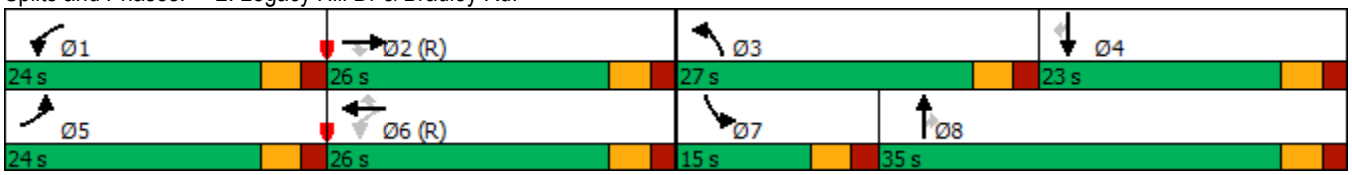
Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 93	
Natural Cycle: 60	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.89	
Intersection Signal Delay: 24.1	Intersection LOS: C
Intersection Capacity Utilization 64.8%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 1: Powers & Bradley Rd.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	357	698	609	303	499	124	496	11	273	185	13	424
Future Volume (vph)	357	698	609	303	499	124	496	11	273	185	13	424
Turn Type	Prot	NA	Perm	pm+pt	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2	6		6			8			4
Detector Phase	5	2	2	1	6	6	3	8	8	7	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	5.0
Minimum Split (s)	10.0	23.0	23.0	10.0	23.0	23.0	10.0	23.0	23.0	10.0	23.0	23.0
Total Split (s)	24.0	26.0	26.0	24.0	26.0	26.0	27.0	35.0	35.0	15.0	23.0	23.0
Total Split (%)	24.0%	26.0%	26.0%	24.0%	26.0%	26.0%	27.0%	35.0%	35.0%	15.0%	23.0%	23.0%
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	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	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	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	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	None
Act Effct Green (s)	16.8	26.9	26.9	46.9	28.6	28.6	20.6	25.0	25.0	9.7	14.1	14.1
Actuated g/C Ratio	0.17	0.27	0.27	0.47	0.29	0.29	0.21	0.25	0.25	0.10	0.14	0.14
v/c Ratio	0.73	0.83	0.75	0.89	0.54	0.25	0.83	0.03	0.50	0.66	0.06	0.90
Control Delay	47.2	45.9	8.8	51.1	34.7	3.4	48.8	25.3	6.1	53.5	35.0	31.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.2	45.9	8.8	51.1	34.7	3.4	48.8	25.3	6.1	53.5	35.0	31.1
LOS	D	D	A	D	C	A	D	C	A	D	C	C
Approach Delay		32.4			35.9			33.5			37.9	
Approach LOS		C			D			C			D	

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBTL, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.90	
Intersection Signal Delay: 34.3	Intersection LOS: C
Intersection Capacity Utilization 71.2%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 2: Legacy Hill Dr & Bradley Rd.



Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	103	0	780	782	144
Future Vol, veh/h	0	103	0	780	782	144
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	112	0	848	850	157

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	850	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.22	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.318	-	-	-	-
Pot Cap-1 Maneuver	0	360	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	360	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	19.5	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	360	-	-
HCM Lane V/C Ratio	-	0.311	-	-
HCM Control Delay (s)	-	19.5	-	-
HCM Lane LOS	-	C	-	-
HCM 95th %tile Q(veh)	-	1.3	-	-

Intersection	
Intersection Delay, s/veh	12.4
Intersection LOS	B

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	511	54	177	961
Demand Flow Rate, veh/h	521	55	181	980
Vehicles Circulating, veh/h	474	814	675	3
Vehicles Exiting, veh/h	509	42	320	866
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	13.9	7.2	8.5	12.5
Approach LOS	B	A	A	B

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	521	55	181	980
Cap Entry Lane, veh/h	851	602	693	1376
Entry HV Adj Factor	0.981	0.981	0.981	0.980
Flow Entry, veh/h	511	54	177	960
Cap Entry, veh/h	835	590	680	1348
V/C Ratio	0.612	0.091	0.261	0.712
Control Delay, s/veh	13.9	7.2	8.5	12.5
LOS	B	A	A	B
95th %tile Queue, veh	4	0	1	7

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	7	0	0	66	109	6
Future Vol, veh/h	7	0	0	66	109	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	100	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	8	0	0	72	118	7

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	194	122	125	0	-	0
Stage 1	122	-	-	-	-	-
Stage 2	72	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	795	929	1462	-	-	-
Stage 1	903	-	-	-	-	-
Stage 2	951	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	795	929	1462	-	-	-
Mov Cap-2 Maneuver	784	-	-	-	-	-
Stage 1	903	-	-	-	-	-
Stage 2	951	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.6	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1462	-	784	-	-
HCM Lane V/C Ratio	-	-	0.01	-	-
HCM Control Delay (s)	0	-	9.6	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Int Delay, s/veh	6.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	401	3	3	69	112	347
Future Vol, veh/h	401	3	3	69	112	347
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	100	-	-	200
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	436	3	3	75	122	377

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	203	122	499	0	-	0
Stage 1	122	-	-	-	-	-
Stage 2	81	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	786	929	1065	-	-	-
Stage 1	903	-	-	-	-	-
Stage 2	942	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	784	929	1065	-	-	-
Mov Cap-2 Maneuver	777	-	-	-	-	-
Stage 1	900	-	-	-	-	-
Stage 2	942	-	-	-	-	-

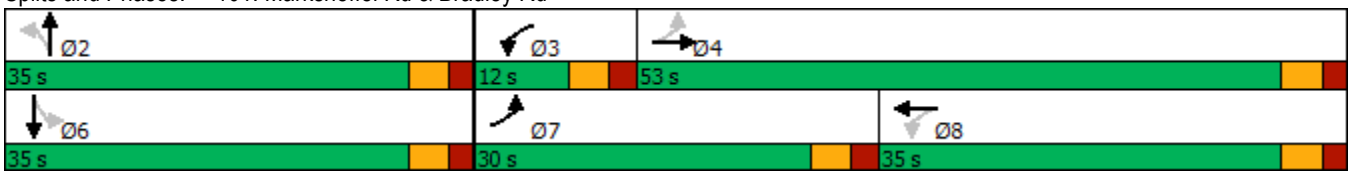
Approach	EB	NB	SB
HCM Control Delay, s	15.5	0.3	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1065	-	778	-	-
HCM Lane V/C Ratio	0.003	-	0.564	-	-
HCM Control Delay (s)	8.4	-	15.5	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0	-	3.6	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	567	369	196	77	312	18	152	338	47	11	469	429
Future Volume (vph)	567	369	196	77	312	18	152	338	47	11	469	429
Turn Type	pm+pt	NA	Free	pm+pt	NA	Free	Perm	NA	Free	Perm	NA	Free
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4		Free	8		Free	2		Free	6		Free
Detector Phase	7	4		3	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	4.0		5.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	10.0	21.0		10.0	21.0		21.0	21.0		21.0	21.0	
Total Split (s)	30.0	53.0		12.0	35.0		35.0	35.0		35.0	35.0	
Total Split (%)	30.0%	53.0%		12.0%	35.0%		35.0%	35.0%		35.0%	35.0%	
Yellow Time (s)	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	
Lost Time Adjust (s)	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	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Act Effct Green (s)	43.7	34.2	83.7	20.3	13.6	83.7	30.0	30.0	83.7	30.0	30.0	83.7
Actuated g/C Ratio	0.52	0.41	1.00	0.24	0.16	1.00	0.36	0.36	1.00	0.36	0.36	1.00
v/c Ratio	0.99	0.29	0.14	0.30	0.62	0.01	0.67	0.29	0.03	0.04	0.42	0.31
Control Delay	52.4	18.0	0.2	16.3	37.7	0.0	39.1	20.4	0.0	19.2	22.0	0.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.4	18.0	0.2	16.3	37.7	0.0	39.1	20.4	0.0	19.2	22.0	0.5
LOS	D	B	A	B	D	A	D	C	A	B	C	A
Approach Delay		32.2			31.9			23.9			11.8	
Approach LOS		C			C			C			B	

Intersection Summary			
Cycle Length: 100			
Actuated Cycle Length: 83.7			
Natural Cycle: 80			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.99			
Intersection Signal Delay: 24.5		Intersection LOS: C	
Intersection Capacity Utilization 78.1%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 101: Marksheffel Rd & Bradley Rd



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	26	178	75	657	383	984	100	1300	520	520	750	19
Future Volume (vph)	26	178	75	657	383	984	100	1300	520	520	750	19
Turn Type	pm+pt	NA	Free	Prot	NA	Free	Prot	NA	pt+ov	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2	2 3	1	6	
Permitted Phases	4		Free			Free						6
Detector Phase	7	4		3	8		5	2	2 3	1	6	6
Switch Phase												
Minimum Initial (s)	4.0	10.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Minimum Split (s)	9.0	15.0		9.0	9.0		9.0	9.0		9.0	9.0	9.0
Total Split (s)	11.0	19.0		33.0	41.0		15.0	55.0		23.0	63.0	63.0
Total Split (%)	8.5%	14.6%		25.4%	31.5%		11.5%	42.3%		17.7%	48.5%	48.5%
Yellow Time (s)	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
Lost Time Adjust (s)	-1.0	-1.0		-2.0	-1.0		-1.0	-2.0		-2.0	-2.0	-1.0
Total Lost Time (s)	4.0	4.0		3.0	4.0		4.0	3.0		3.0	3.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None		None	None		None	None		C-Max	None	None
Act Effct Green (s)	20.0	13.1	130.0	29.5	39.0	130.0	9.9	52.0	82.5	22.4	63.5	62.5
Actuated g/C Ratio	0.15	0.10	1.00	0.23	0.30	1.00	0.08	0.40	0.63	0.17	0.49	0.48
v/c Ratio	0.14	0.53	0.05	0.87	0.37	0.64	0.39	0.95	0.30	0.91	0.45	0.02
Control Delay	31.3	60.8	0.1	71.1	41.9	5.0	61.5	52.2	8.3	73.1	23.3	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.3	60.8	0.1	71.1	41.9	5.0	61.5	52.2	8.3	73.1	23.3	0.1
LOS	C	E	A	E	D	A	E	D	A	E	C	A
Approach Delay		41.7			33.5			40.8			43.1	
Approach LOS		D			C			D			D	

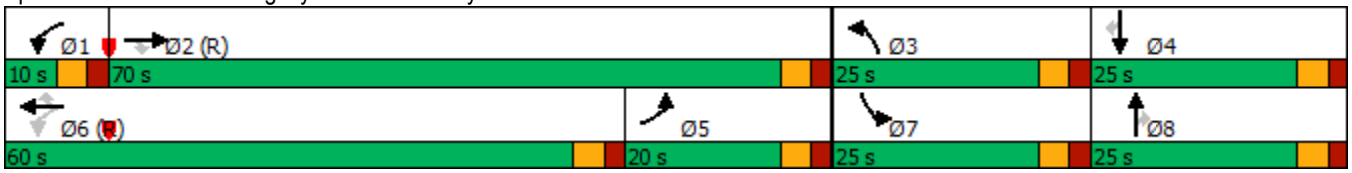
Intersection Summary	
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 125 (96%), Referenced to phase 1:SBL, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.95	
Intersection Signal Delay: 38.7	Intersection LOS: D
Intersection Capacity Utilization 91.2%	ICU Level of Service F
Analysis Period (min) 15	

Splits and Phases: 1: Powers & Bradley Rd

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	223	913	81	40	1605	181	228	21	91	117	14	190
Future Volume (vph)	223	913	81	40	1605	181	228	21	91	117	14	190
Turn Type	Prot	NA	Perm	pm+pt	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2	6		6			8			4
Detector Phase	5	2	2	1	6	6	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	15.0	5.0	5.0	15.0	10.0	10.0
Minimum Split (s)	10.0	10.0	10.0	10.0	10.0	10.0	20.0	10.0	10.0	20.0	15.0	15.0
Total Split (s)	20.0	70.0	70.0	10.0	60.0	60.0	25.0	25.0	25.0	25.0	25.0	25.0
Total Split (%)	15.4%	53.8%	53.8%	7.7%	46.2%	46.2%	19.2%	19.2%	19.2%	19.2%	19.2%	19.2%
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	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	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lag	Lag	Lag	Lead	Lead	Lead	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	None
Act Effct Green (s)	16.0	79.4	79.4	69.3	69.3	69.3	16.8	12.7	12.7	16.0	11.8	11.8
Actuated g/C Ratio	0.12	0.61	0.61	0.53	0.53	0.53	0.13	0.10	0.10	0.12	0.09	0.09
v/c Ratio	0.56	0.44	0.08	0.15	0.90	0.21	0.54	0.12	0.34	0.29	0.09	0.61
Control Delay	39.2	8.0	0.5	16.6	34.9	8.4	57.7	53.7	5.2	53.9	54.5	15.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.2	8.0	0.5	16.6	34.9	8.4	57.7	53.7	5.2	53.9	54.5	15.7
LOS	D	A	A	B	C	A	E	D	A	D	D	B
Approach Delay		13.2			31.9			43.3			31.3	
Approach LOS		B			C			D			C	

Intersection Summary	
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 102 (78%), Referenced to phase 2:EBT and 6:WBTL, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.90	
Intersection Signal Delay: 26.8	Intersection LOS: C
Intersection Capacity Utilization 73.9%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 2: Legacy Hill Dr & Bradley Rd



Intersection	
Intersection Delay, s/veh	4.0
Intersection LOS	A

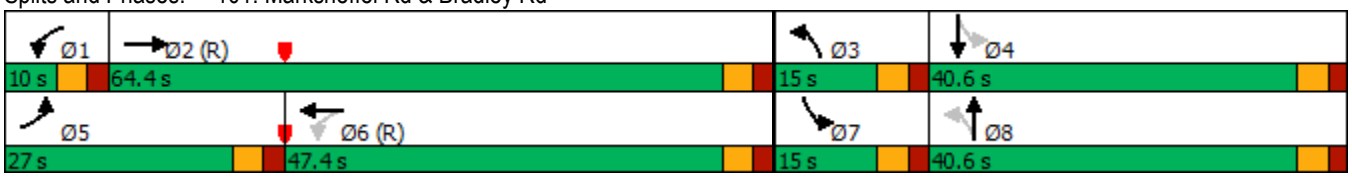
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	74	75	221	146
Demand Flow Rate, veh/h	75	76	225	149
Vehicles Circulating, veh/h	120	300	92	0
Vehicles Exiting, veh/h	29	17	103	376
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	3.5	4.3	4.5	3.5
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	75	76	225	149
Cap Entry Lane, veh/h	1221	1016	1256	1380
Entry HV Adj Factor	0.987	0.987	0.980	0.980
Flow Entry, veh/h	74	75	221	146
Cap Entry, veh/h	1205	1003	1232	1352
V/C Ratio	0.061	0.075	0.179	0.108
Control Delay, s/veh	3.5	4.3	4.5	3.5
LOS	A	A	A	A
95th %tile Queue, veh	0	0	1	0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	455	365	149	95	533	285	208	600	50	140	275	296
Future Volume (vph)	455	365	149	95	533	285	208	600	50	140	275	296
Turn Type	Prot	NA	Free	pm+pt	NA	Free	pm+pt	NA	Free	pm+pt	NA	Free
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			Free	6		Free	8		Free	4		Free
Detector Phase	5	2		1	6		3	8		7	4	
Switch Phase												
Minimum Initial (s)	5.0	4.0		5.0	4.0		5.0	4.0		5.0	4.0	
Minimum Split (s)	10.0	21.0		10.0	21.0		10.0	21.0		10.0	21.0	
Total Split (s)	27.0	64.4		10.0	47.4		15.0	40.6		15.0	40.6	
Total Split (%)	20.8%	49.5%		7.7%	36.5%		11.5%	31.2%		11.5%	31.2%	
Yellow Time (s)	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	
Lost Time Adjust (s)	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	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	C-Max		None	C-Max		None	Max		None	Max	
Act Effct Green (s)	21.1	59.4	130.0	48.3	43.3	130.0	45.9	35.9	130.0	45.3	35.6	130.0
Actuated g/C Ratio	0.16	0.46	1.00	0.37	0.33	1.00	0.35	0.28	1.00	0.35	0.27	1.00
v/c Ratio	0.86	0.24	0.10	0.26	0.48	0.19	0.55	0.65	0.03	0.60	0.30	0.20
Control Delay	68.9	22.0	0.1	19.7	36.3	0.3	35.0	45.2	0.0	37.6	38.4	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	68.9	22.0	0.1	19.7	36.3	0.3	35.0	45.2	0.0	37.6	38.4	0.3
LOS	E	C	A	B	D	A	C	D	A	D	D	A
Approach Delay		40.6			23.3			40.1			22.3	
Approach LOS		D			C			D			C	

Intersection Summary	
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBTL, Start of Green	
Natural Cycle: 65	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.86	
Intersection Signal Delay: 32.1	Intersection LOS: C
Intersection Capacity Utilization 68.7%	ICU Level of Service C
Analysis Period (min) 15	

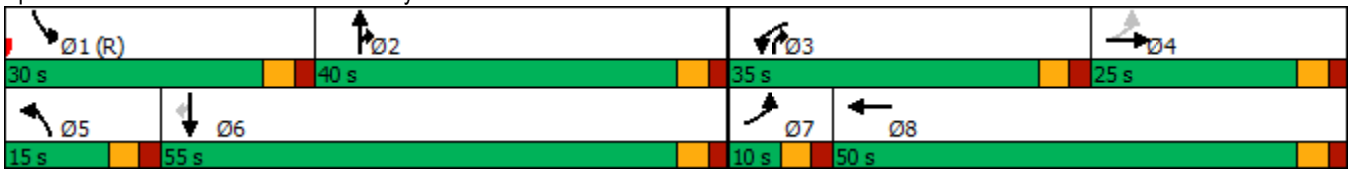
Splits and Phases: 101: Marksheffel Rd & Bradley Rd



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	71	332	210	586	358	642	175	652	786	597	1205	110
Future Volume (vph)	71	332	210	586	358	642	175	652	786	597	1205	110
Turn Type	pm+pt	NA	Free	Prot	NA	Free	Prot	NA	pt+ov	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2	2 3	1	6	
Permitted Phases	4		Free			Free						6
Detector Phase	7	4		3	8		5	2	2 3	1	6	6
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Minimum Split (s)	9.0	9.0		9.0	9.0		9.0	9.0		9.0	9.0	9.0
Total Split (s)	10.0	25.0		35.0	50.0		15.0	40.0		30.0	55.0	55.0
Total Split (%)	7.7%	19.2%		26.9%	38.5%		11.5%	30.8%		23.1%	42.3%	42.3%
Yellow Time (s)	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
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0		-1.0	-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None		None	None		None	Max		C-Max	Max	Max
Act Effct Green (s)	24.5	18.5	130.0	29.1	43.6	130.0	11.3	36.0	68.1	30.4	55.1	55.1
Actuated g/C Ratio	0.19	0.14	1.00	0.22	0.34	1.00	0.09	0.28	0.52	0.23	0.42	0.42
v/c Ratio	0.34	0.69	0.14	0.79	0.31	0.42	0.60	0.69	0.54	0.77	0.83	0.15
Control Delay	31.0	60.5	0.2	48.5	23.6	0.7	66.2	46.2	18.9	54.7	40.1	2.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.0	60.5	0.2	48.5	23.6	0.7	66.2	46.2	18.9	54.7	40.1	2.3
LOS	C	E	A	D	C	A	E	D	B	D	D	A
Approach Delay		36.4			23.5			35.1			42.5	
Approach LOS		D			C			D			D	

Intersection Summary	
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 1 (1%), Referenced to phase 1:SBL, Start of Green	
Natural Cycle: 65	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.83	
Intersection Signal Delay: 34.5	Intersection LOS: C
Intersection Capacity Utilization 77.5%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 1: Powers & Bradley Rd



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	324	1093	298	136	1044	160	166	22	59	276	28	376
Future Volume (vph)	324	1093	298	136	1044	160	166	22	59	276	28	376
Turn Type	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2	6		6	8		8	4		4
Detector Phase	5	2	2	1	6	6	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	10.0	10.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	10.0	10.0	10.0	15.0	15.0	10.0	10.0	10.0	10.0	10.0	10.0
Total Split (s)	30.0	67.0	67.0	20.0	57.0	57.0	20.0	24.0	24.0	19.0	23.0	23.0
Total Split (%)	23.1%	51.5%	51.5%	15.4%	43.8%	43.8%	15.4%	18.5%	18.5%	14.6%	17.7%	17.7%
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	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	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	None
Act Effct Green (s)	19.2	78.1	78.1	79.3	69.1	69.1	22.4	11.8	11.8	28.5	13.9	13.9
Actuated g/C Ratio	0.15	0.60	0.60	0.61	0.53	0.53	0.17	0.09	0.09	0.22	0.11	0.11
v/c Ratio	0.68	0.54	0.29	0.43	0.58	0.19	0.33	0.14	0.23	0.48	0.15	0.84
Control Delay	52.3	27.4	7.7	12.5	24.1	5.3	42.0	53.0	1.9	43.8	51.4	25.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.3	27.4	7.7	12.5	24.1	5.3	42.0	53.0	1.9	43.8	51.4	25.7
LOS	D	C	A	B	C	A	D	D	A	D	D	C
Approach Delay		28.7			20.7			33.4			34.1	
Approach LOS		C			C			C			C	

Intersection Summary	
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 67 (52%), Referenced to phase 2:EBT and 6:WBTL, Start of Green	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.84	
Intersection Signal Delay: 27.2	Intersection LOS: C
Intersection Capacity Utilization 66.9%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 2: Legacy Hill Dr & Bradley Rd

Intersection	
Intersection Delay, s/veh	5.4
Intersection LOS	A

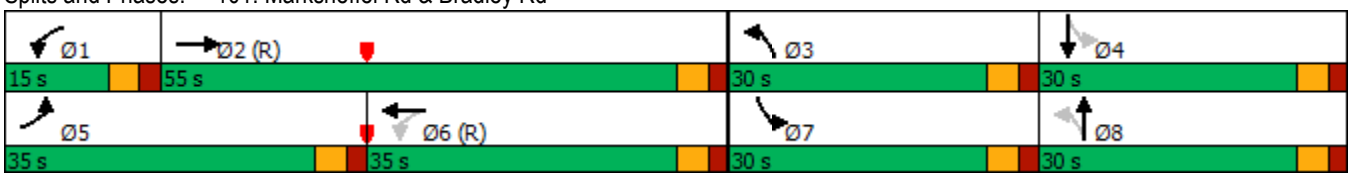
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	49	47	174	503
Demand Flow Rate, veh/h	50	48	177	513
Vehicles Circulating, veh/h	414	227	110	0
Vehicles Exiting, veh/h	99	60	354	275
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	4.6	3.7	4.2	6.1
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	50	48	177	513
Cap Entry Lane, veh/h	905	1095	1233	1380
Entry HV Adj Factor	0.980	0.979	0.980	0.981
Flow Entry, veh/h	49	47	174	503
Cap Entry, veh/h	887	1072	1209	1353
V/C Ratio	0.055	0.044	0.144	0.372
Control Delay, s/veh	4.6	3.7	4.2	6.1
LOS	A	A	A	A
95th %tile Queue, veh	0	0	1	2

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	554	692	271	195	555	215	180	500	100	300	650	447
Future Volume (vph)	554	692	271	195	555	215	180	500	100	300	650	447
Turn Type	Prot	NA	Free	pm+pt	NA	Free	pm+pt	NA	Free	pm+pt	NA	Free
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			Free	6		Free	8		Free	4		Free
Detector Phase	5	2		1	6		3	8		7	4	
Switch Phase												
Minimum Initial (s)	5.0	4.0		5.0	4.0		5.0	4.0		5.0	4.0	
Minimum Split (s)	10.0	21.0		10.0	21.0		10.0	21.0		10.0	21.0	
Total Split (s)	35.0	55.0		15.0	35.0		30.0	30.0		30.0	30.0	
Total Split (%)	26.9%	42.3%		11.5%	26.9%		23.1%	23.1%		23.1%	23.1%	
Yellow Time (s)	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	
Lost Time Adjust (s)	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	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	C-Max		None	C-Max		None	Max		None	Max	
Act Effct Green (s)	26.5	50.0	130.0	43.4	33.5	130.0	43.8	28.6	130.0	54.7	34.8	130.0
Actuated g/C Ratio	0.20	0.38	1.00	0.33	0.26	1.00	0.34	0.22	1.00	0.42	0.27	1.00
v/c Ratio	0.83	0.53	0.18	0.65	0.64	0.14	0.64	0.68	0.07	0.81	0.72	0.30
Control Delay	60.5	32.8	0.3	33.7	47.4	0.2	35.6	52.3	0.1	44.7	49.1	0.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	60.5	32.8	0.3	33.7	47.4	0.2	35.6	52.3	0.1	44.7	49.1	0.5
LOS	E	C	A	C	D	A	D	D	A	D	D	A
Approach Delay		37.1			34.1			41.8			32.6	
Approach LOS		D			C			D			C	

Intersection Summary	
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBTL, Start of Green	
Natural Cycle: 75	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.83	
Intersection Signal Delay: 35.9	Intersection LOS: D
Intersection Capacity Utilization 78.3%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 101: Marksheffel Rd & Bradley Rd



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	26	201	75	702	402	1011	100	1300	578	554	750	19
Future Volume (vph)	26	201	75	702	402	1011	100	1300	578	554	750	19
Turn Type	pm+pt	NA	Free	Prot	NA	Free	Prot	NA	pt+ov	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2	2 3	1	6	
Permitted Phases	4		Free			Free						6
Detector Phase	7	4		3	8		5	2	2 3	1	6	6
Switch Phase												
Minimum Initial (s)	4.0	10.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Minimum Split (s)	9.0	15.0		9.0	9.0		9.0	9.0		9.0	9.0	9.0
Total Split (s)	10.0	20.0		32.0	42.0		15.0	54.0		24.0	63.0	63.0
Total Split (%)	7.7%	15.4%		24.6%	32.3%		11.5%	41.5%		18.5%	48.5%	48.5%
Yellow Time (s)	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
Lost Time Adjust (s)	-1.0	-1.0		-2.0	-1.0		-1.0	-2.0		-2.0	-2.0	-1.0
Total Lost Time (s)	4.0	4.0		3.0	4.0		4.0	3.0		3.0	3.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None		None	None		None	None		C-Max	None	None
Act Effct Green (s)	19.8	13.8	130.0	29.0	39.8	130.0	10.0	51.0	81.0	23.2	63.2	62.2
Actuated g/C Ratio	0.15	0.11	1.00	0.22	0.31	1.00	0.08	0.39	0.62	0.18	0.49	0.48
v/c Ratio	0.15	0.56	0.05	0.94	0.38	0.65	0.40	0.96	0.33	0.92	0.44	0.02
Control Delay	31.5	61.0	0.1	69.2	34.9	5.8	61.5	54.4	9.8	74.7	23.4	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.5	61.0	0.1	69.2	34.9	5.8	61.5	54.4	9.8	74.7	23.4	0.1
LOS	C	E	A	E	C	A	E	D	A	E	C	A
Approach Delay		43.3			32.4			41.7			44.5	
Approach LOS		D			C			D			D	

Intersection Summary	
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 125 (96%), Referenced to phase 1:SBL, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.96	
Intersection Signal Delay: 39.0	Intersection LOS: D
Intersection Capacity Utilization 93.4%	ICU Level of Service F
Analysis Period (min) 15	

Splits and Phases: 1: Powers & Bradley Rd

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	223	801	309	197	1524	181	400	24	263	117	18	190
Future Volume (vph)	223	801	309	197	1524	181	400	24	263	117	18	190
Turn Type	Prot	NA	Perm	pm+pt	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2	6		6			8			4
Detector Phase	5	2	2	1	6	6	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	23.0	5.0	5.0	15.0	10.0	10.0
Minimum Split (s)	10.0	10.0	10.0	10.0	10.0	10.0	30.0	10.0	10.0	20.0	15.0	15.0
Total Split (s)	20.0	62.0	62.0	15.0	57.0	57.0	31.0	33.0	33.0	20.0	22.0	22.0
Total Split (%)	15.4%	47.7%	47.7%	11.5%	43.8%	43.8%	23.8%	25.4%	25.4%	15.4%	16.9%	16.9%
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	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	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	None
Act Effct Green (s)	14.6	64.5	64.5	73.6	61.8	61.8	24.6	21.7	21.7	16.0	13.0	13.0
Actuated g/C Ratio	0.11	0.50	0.50	0.57	0.48	0.48	0.19	0.17	0.17	0.12	0.10	0.10
v/c Ratio	0.61	0.48	0.34	0.53	0.95	0.23	0.65	0.08	0.58	0.29	0.10	0.68
Control Delay	50.0	35.2	14.6	17.4	46.8	7.3	53.8	44.5	11.9	53.9	52.8	27.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	50.0	35.2	14.6	17.4	46.8	7.3	53.8	44.5	11.9	53.9	52.8	27.1
LOS	D	D	B	B	D	A	D	D	B	D	D	C
Approach Delay		32.9			40.0			37.4			38.2	
Approach LOS		C			D			D			D	

Intersection Summary	
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 75 (58%), Referenced to phase 2:EBT and 6:WBTL, Start of Green	
Natural Cycle: 110	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.95	
Intersection Signal Delay: 37.2	Intersection LOS: D
Intersection Capacity Utilization 76.6%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 2: Legacy Dr & Bradley Rd

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	89	0	688	365	160
Future Vol, veh/h	0	89	0	688	365	160
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	97	0	748	397	174

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	397	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.22	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.318	-	-	-	-
Pot Cap-1 Maneuver	0	652	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	652	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.5	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	652	-	-
HCM Lane V/C Ratio	-	0.148	-	-
HCM Control Delay (s)	-	11.5	-	-
HCM Lane LOS	-	B	-	-
HCM 95th %tile Q(veh)	-	0.5	-	-

Intersection	
Intersection Delay, s/veh	6.8
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	381	77	254	494
Demand Flow Rate, veh/h	388	78	259	504
Vehicles Circulating, veh/h	220	720	479	36
Vehicles Exiting, veh/h	320	18	129	762
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	6.9	6.8	7.8	6.3
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	388	78	259	504
Cap Entry Lane, veh/h	1103	662	847	1330
Entry HV Adj Factor	0.982	0.987	0.979	0.980
Flow Entry, veh/h	381	77	254	494
Cap Entry, veh/h	1083	653	829	1304
V/C Ratio	0.352	0.118	0.306	0.379
Control Delay, s/veh	6.9	6.8	7.8	6.3
LOS	A	A	A	A
95th %tile Queue, veh	2	0	1	2

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	4	0	0	71	28	4
Future Vol, veh/h	4	0	0	71	28	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	100	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	0	0	77	30	4

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	109	32	34	0	-	0
Stage 1	32	-	-	-	-	-
Stage 2	77	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	888	1042	1578	-	-	-
Stage 1	991	-	-	-	-	-
Stage 2	946	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	888	1042	1578	-	-	-
Mov Cap-2 Maneuver	844	-	-	-	-	-
Stage 1	991	-	-	-	-	-
Stage 2	946	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.3	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1578	-	844	-	-
HCM Lane V/C Ratio	-	-	0.005	-	-
HCM Control Delay (s)	0	-	9.3	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Int Delay, s/veh	5.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	280	2	3	72	30	259
Future Vol, veh/h	280	2	3	72	30	259
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	100	-	-	200
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	304	2	3	78	33	282

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	117	33	315	0	-	0
Stage 1	33	-	-	-	-	-
Stage 2	84	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	879	1041	1245	-	-	-
Stage 1	989	-	-	-	-	-
Stage 2	939	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	877	1041	1245	-	-	-
Mov Cap-2 Maneuver	837	-	-	-	-	-
Stage 1	987	-	-	-	-	-
Stage 2	939	-	-	-	-	-

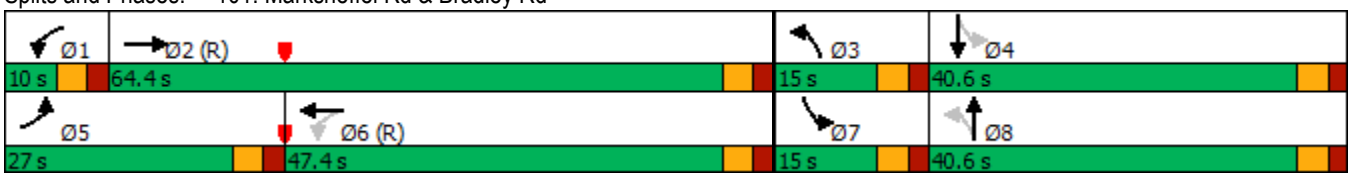
Approach	EB	NB	SB
HCM Control Delay, s	11.8	0.3	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1245	-	838	-	-
HCM Lane V/C Ratio	0.003	-	0.366	-	-
HCM Control Delay (s)	7.9	-	11.8	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	1.7	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	479	384	167	95	556	285	231	600	50	140	275	326
Future Volume (vph)	479	384	167	95	556	285	231	600	50	140	275	326
Turn Type	Prot	NA	Free	pm+pt	NA	Free	pm+pt	NA	Free	pm+pt	NA	Free
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			Free	6		Free	8		Free	4		Free
Detector Phase	5	2		1	6		3	8		7	4	
Switch Phase												
Minimum Initial (s)	5.0	4.0		5.0	4.0		5.0	4.0		5.0	4.0	
Minimum Split (s)	10.0	21.0		10.0	21.0		10.0	21.0		10.0	21.0	
Total Split (s)	27.0	64.4		10.0	47.4		15.0	40.6		15.0	40.6	
Total Split (%)	20.8%	49.5%		7.7%	36.5%		11.5%	31.2%		11.5%	31.2%	
Yellow Time (s)	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	
Lost Time Adjust (s)	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	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	C-Max		None	C-Max		None	Max		None	Max	
Act Effct Green (s)	21.5	59.4	130.0	47.9	42.9	130.0	45.9	35.9	130.0	45.3	35.6	130.0
Actuated g/C Ratio	0.17	0.46	1.00	0.37	0.33	1.00	0.35	0.28	1.00	0.35	0.27	1.00
v/c Ratio	0.89	0.25	0.11	0.26	0.50	0.19	0.61	0.65	0.03	0.60	0.30	0.22
Control Delay	71.9	22.2	0.1	19.8	36.9	0.3	37.4	45.2	0.0	37.6	38.4	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	71.9	22.2	0.1	19.8	36.9	0.3	37.4	45.2	0.0	37.6	38.4	0.3
LOS	E	C	A	B	D	A	D	D	A	D	D	A
Approach Delay		41.7			24.0			40.6			21.5	
Approach LOS		D			C			D			C	

Intersection Summary	
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBTL, Start of Green	
Natural Cycle: 65	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.89	
Intersection Signal Delay: 32.6	Intersection LOS: C
Intersection Capacity Utilization 70.0%	ICU Level of Service C
Analysis Period (min) 15	

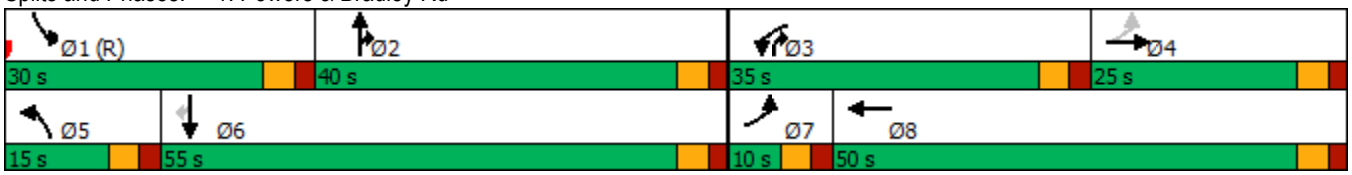
Splits and Phases: 101: Marksheffel Rd & Bradley Rd



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	71	360	210	660	388	687	175	652	857	639	1205	110
Future Volume (vph)	71	360	210	660	388	687	175	652	857	639	1205	110
Turn Type	pm+pt	NA	Free	Prot	NA	Free	Prot	NA	pt+ov	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2	2 3	1	6	
Permitted Phases	4		Free			Free						6
Detector Phase	7	4		3	8		5	2	2 3	1	6	6
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Minimum Split (s)	9.0	9.0		9.0	9.0		9.0	9.0		9.0	9.0	9.0
Total Split (s)	10.0	25.0		35.0	50.0		15.0	40.0		30.0	55.0	55.0
Total Split (%)	7.7%	19.2%		26.9%	38.5%		11.5%	30.8%		23.1%	42.3%	42.3%
Yellow Time (s)	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
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0		-1.0	-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None		None	None		None	Max		C-Max	Max	Max
Act Effct Green (s)	25.1	19.1	130.0	30.3	45.4	130.0	11.1	36.0	69.3	28.6	53.6	53.6
Actuated g/C Ratio	0.19	0.15	1.00	0.23	0.35	1.00	0.09	0.28	0.53	0.22	0.41	0.41
v/c Ratio	0.34	0.73	0.14	0.85	0.32	0.45	0.62	0.69	0.58	0.87	0.85	0.15
Control Delay	30.5	61.5	0.2	54.7	27.5	0.7	67.1	46.2	19.5	62.8	42.1	2.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.5	61.5	0.2	54.7	27.5	0.7	67.1	46.2	19.5	62.8	42.1	2.3
LOS	C	E	A	D	C	A	E	D	B	E	D	A
Approach Delay		38.0			27.2			34.8			46.7	
Approach LOS		D			C			C			D	

Intersection Summary	
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 1 (1%), Referenced to phase 1:SBL, Start of Green	
Natural Cycle: 75	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.87	
Intersection Signal Delay: 36.8	Intersection LOS: D
Intersection Capacity Utilization 80.4%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 1: Powers & Bradley Rd



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	324	962	570	316	957	160	401	28	288	276	33	376
Future Volume (vph)	324	962	570	316	957	160	401	28	288	276	33	376
Turn Type	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2	6		6	8		8	4		4
Detector Phase	5	2	2	1	6	6	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	10.0	10.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	10.0	10.0	10.0	15.0	15.0	10.0	10.0	10.0	10.0	10.0	10.0
Total Split (s)	25.0	65.0	65.0	20.0	60.0	60.0	20.0	25.0	25.0	20.0	25.0	25.0
Total Split (%)	19.2%	50.0%	50.0%	15.4%	46.2%	46.2%	15.4%	19.2%	19.2%	15.4%	19.2%	19.2%
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	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	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	None
Act Effct Green (s)	18.6	63.5	63.5	77.7	61.3	61.3	35.6	19.7	19.7	32.6	18.2	18.2
Actuated g/C Ratio	0.14	0.49	0.49	0.60	0.47	0.47	0.27	0.15	0.15	0.25	0.14	0.14
v/c Ratio	0.70	0.59	0.56	0.87	0.60	0.20	0.53	0.10	0.64	0.39	0.13	0.92
Control Delay	51.5	35.9	10.1	42.7	28.4	6.1	39.3	47.5	14.9	36.6	48.4	48.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.5	35.9	10.1	42.7	28.4	6.1	39.3	47.5	14.9	36.6	48.4	48.8
LOS	D	D	B	D	C	A	D	D	B	D	D	D
Approach Delay		30.7			29.1			29.8			43.8	
Approach LOS		C			C			C			D	

Intersection Summary	
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 67 (52%), Referenced to phase 2:EBT and 6:WBTL, Start of Green	
Natural Cycle: 65	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.92	
Intersection Signal Delay: 32.0	Intersection LOS: C
Intersection Capacity Utilization 72.2%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 2: Legacy Dr & Bradley Rd

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	75	0	717	784	135
Future Vol, veh/h	0	75	0	717	784	135
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	82	0	779	852	147

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	852	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.22	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.318	-	-	-	-
Pot Cap-1 Maneuver	0	359	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	359	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	17.9	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	359	-	-
HCM Lane V/C Ratio	-	0.227	-	-
HCM Control Delay (s)	-	17.9	-	-
HCM Lane LOS	-	C	-	-
HCM 95th %tile Q(veh)	-	0.9	-	-

Intersection	
Intersection Delay, s/veh	13.1
Intersection LOS	B

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	522	49	214	934
Demand Flow Rate, veh/h	533	50	218	952
Vehicles Circulating, veh/h	496	788	632	43
Vehicles Exiting, veh/h	499	62	397	795
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	15.1	6.9	8.7	13.2
Approach LOS	C	A	A	B

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	533	50	218	952
Cap Entry Lane, veh/h	832	618	724	1321
Entry HV Adj Factor	0.979	0.979	0.979	0.981
Flow Entry, veh/h	522	49	214	933
Cap Entry, veh/h	815	605	709	1295
V/C Ratio	0.641	0.081	0.301	0.721
Control Delay, s/veh	15.1	6.9	8.7	13.2
LOS	C	A	A	B
95th %tile Queue, veh	5	0	1	7

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	7	0	0	48	92	6
Future Vol, veh/h	7	0	0	48	92	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	100	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	8	0	0	52	100	7

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	156	104	107	0	-	0
Stage 1	104	-	-	-	-	-
Stage 2	52	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	835	951	1484	-	-	-
Stage 1	920	-	-	-	-	-
Stage 2	970	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	835	951	1484	-	-	-
Mov Cap-2 Maneuver	810	-	-	-	-	-
Stage 1	920	-	-	-	-	-
Stage 2	970	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.5	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1484	-	810	-	-
HCM Lane V/C Ratio	-	-	0.009	-	-
HCM Control Delay (s)	0	-	9.5	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Int Delay, s/veh	7.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	429	3	3	51	95	356
Future Vol, veh/h	429	3	3	51	95	356
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	100	-	-	200
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	466	3	3	55	103	387

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	164	103	490	0	-	0
Stage 1	103	-	-	-	-	-
Stage 2	61	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	827	952	1073	-	-	-
Stage 1	921	-	-	-	-	-
Stage 2	962	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	825	952	1073	-	-	-
Mov Cap-2 Maneuver	804	-	-	-	-	-
Stage 1	918	-	-	-	-	-
Stage 2	962	-	-	-	-	-

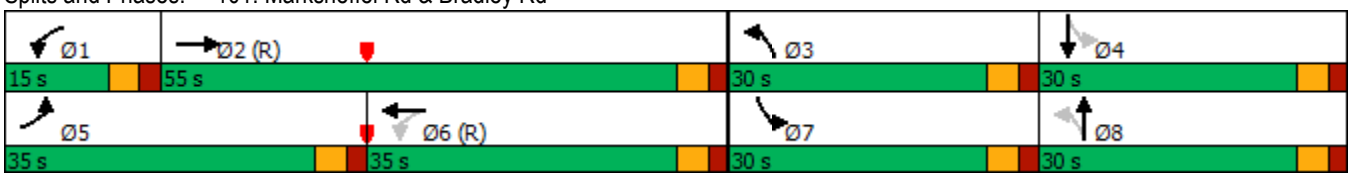
Approach	EB	NB	SB
HCM Control Delay, s	15.5	0.5	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1073	-	805	-	-
HCM Lane V/C Ratio	0.003	-	0.583	-	-
HCM Control Delay (s)	8.4	-	15.5	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0	-	3.8	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	593	722	301	195	583	215	208	500	100	300	650	484
Future Volume (vph)	593	722	301	195	583	215	208	500	100	300	650	484
Turn Type	Prot	NA	Free	pm+pt	NA	Free	pm+pt	NA	Free	pm+pt	NA	Free
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			Free	6		Free	8		Free	4		Free
Detector Phase	5	2		1	6		3	8		7	4	
Switch Phase												
Minimum Initial (s)	5.0	4.0		5.0	4.0		5.0	4.0		5.0	4.0	
Minimum Split (s)	10.0	21.0		10.0	21.0		10.0	21.0		10.0	21.0	
Total Split (s)	35.0	55.0		15.0	35.0		30.0	30.0		30.0	30.0	
Total Split (%)	26.9%	42.3%		11.5%	26.9%		23.1%	23.1%		23.1%	23.1%	
Yellow Time (s)	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	
Lost Time Adjust (s)	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	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	C-Max		None	C-Max		None	Max		None	Max	
Act Effct Green (s)	27.5	50.0	130.0	42.5	32.5	130.0	45.8	28.6	130.0	54.0	32.9	130.0
Actuated g/C Ratio	0.21	0.38	1.00	0.33	0.25	1.00	0.35	0.22	1.00	0.42	0.25	1.00
v/c Ratio	0.86	0.56	0.20	0.68	0.69	0.14	0.71	0.68	0.07	0.81	0.77	0.32
Control Delay	62.1	33.3	0.3	35.5	49.6	0.2	39.9	52.3	0.1	45.2	52.2	0.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	62.1	33.3	0.3	35.5	49.6	0.2	39.9	52.3	0.1	45.2	52.2	0.5
LOS	E	C	A	D	D	A	D	D	A	D	D	A
Approach Delay		37.7			36.2			42.6			33.3	
Approach LOS		D			D			D			C	

Intersection Summary	
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBTL, Start of Green	
Natural Cycle: 80	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.86	
Intersection Signal Delay: 36.9	Intersection LOS: D
Intersection Capacity Utilization 80.1%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 101: Marksheffel Rd & Bradley Rd



Queuing Reports

TRANSPORTATION
CONSULTANTS, INC.

Queuing and Blocking Report

Intersection: 2: Legacy Dr & Bradley Rd

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB
Directions Served	L	L	T	T	R	L	T	T	R	L	L	T
Maximum Queue (ft)	211	198	294	321	300	325	1278	1265	225	251	301	221
Average Queue (ft)	109	66	218	233	79	232	962	1028	151	123	175	41
95th Queue (ft)	181	149	290	302	228	426	1538	1515	303	217	278	181
Link Distance (ft)			926	926	926		1231	1231				436
Upstream Blk Time (%)							8	15				1
Queuing Penalty (veh)							73	141				5
Storage Bay Dist (ft)	450	450				300			200	300	300	
Storage Blk Time (%)						0	31	50	0	0	1	
Queuing Penalty (veh)						0	61	90	1	0	4	

Intersection: 2: Legacy Dr & Bradley Rd

Movement	NB	SB	SB	SB	SB
Directions Served	R	L	L	T	R
Maximum Queue (ft)	111	89	104	55	201
Average Queue (ft)	29	29	56	15	101
95th Queue (ft)	90	72	94	44	174
Link Distance (ft)				601	601
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	300	300	300		
Storage Blk Time (%)					
Queuing Penalty (veh)					

Queuing and Blocking Report

Intersection: 2: Legacy Dr & Bradley Rd

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB
Directions Served	L	L	T	T	R	L	T	T	R	L	L	T
Maximum Queue (ft)	278	360	433	435	446	325	997	893	225	287	299	217
Average Queue (ft)	152	119	309	327	245	222	437	374	70	143	167	35
95th Queue (ft)	240	278	396	407	422	389	933	809	192	232	250	116
Link Distance (ft)			926	926	926		1231	1231				436
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	450	450				300			200	300	300	
Storage Blk Time (%)			0			26	2	11	0	0	0	
Queuing Penalty (veh)			0			127	5	18	0	0	0	

Intersection: 2: Legacy Dr & Bradley Rd

Movement	NB	SB	SB	SB	SB
Directions Served	R	L	L	T	R
Maximum Queue (ft)	188	152	169	81	366
Average Queue (ft)	52	81	102	33	180
95th Queue (ft)	133	143	158	71	323
Link Distance (ft)				601	601
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	300	300	300		
Storage Blk Time (%)					
Queuing Penalty (veh)					

Appendix Table 1

TRANSPORTATION
CONSULTANTS, INC.

Appendix Table 1
Area Trafffic Impact Studies
Waterview East Commercial

Study	Consultant	Date
Bradley Heights Trip Generation Letter	LSC Transportation Consultants, Inc.	September 11, 2014
Springs at Waterview East Preliminary Plan Traffic Impact and Access Analysis	LSC Transportation Consultants, Inc.	August 24, 2018
Trails as Aspen Ridge Filing No. 1 and PUD Updated Traffic Impact and Access Analysis	LSC Transportation Consultants, Inc.	December 12, 2019
Redemption Hill Church Traffic Impact Study	LSC Transportation Consultants, Inc.	April 13, 2020
Peak Innovation Park	Kimley Horn and Associates, Inc.	April 2020
Waterview North Sketch Plan Amendment and RM-12 Rezone Master Traffic Impact Analysis	LSC Transportation Consultants, Inc.	November 17, 2020
Bradley Heights Filing #1 Traffic Impact Analysis	LSC Transportation Consultants, Inc.	May 19, 2021
Villages at Waterview North Preliminary Plan Traffic Impact Analysis	LSC Transportation Consultants, Inc.	June 27, 2021
Source: LSC Transportation Consultants, Inc. ***(July 2022)***		

MTCP Maps

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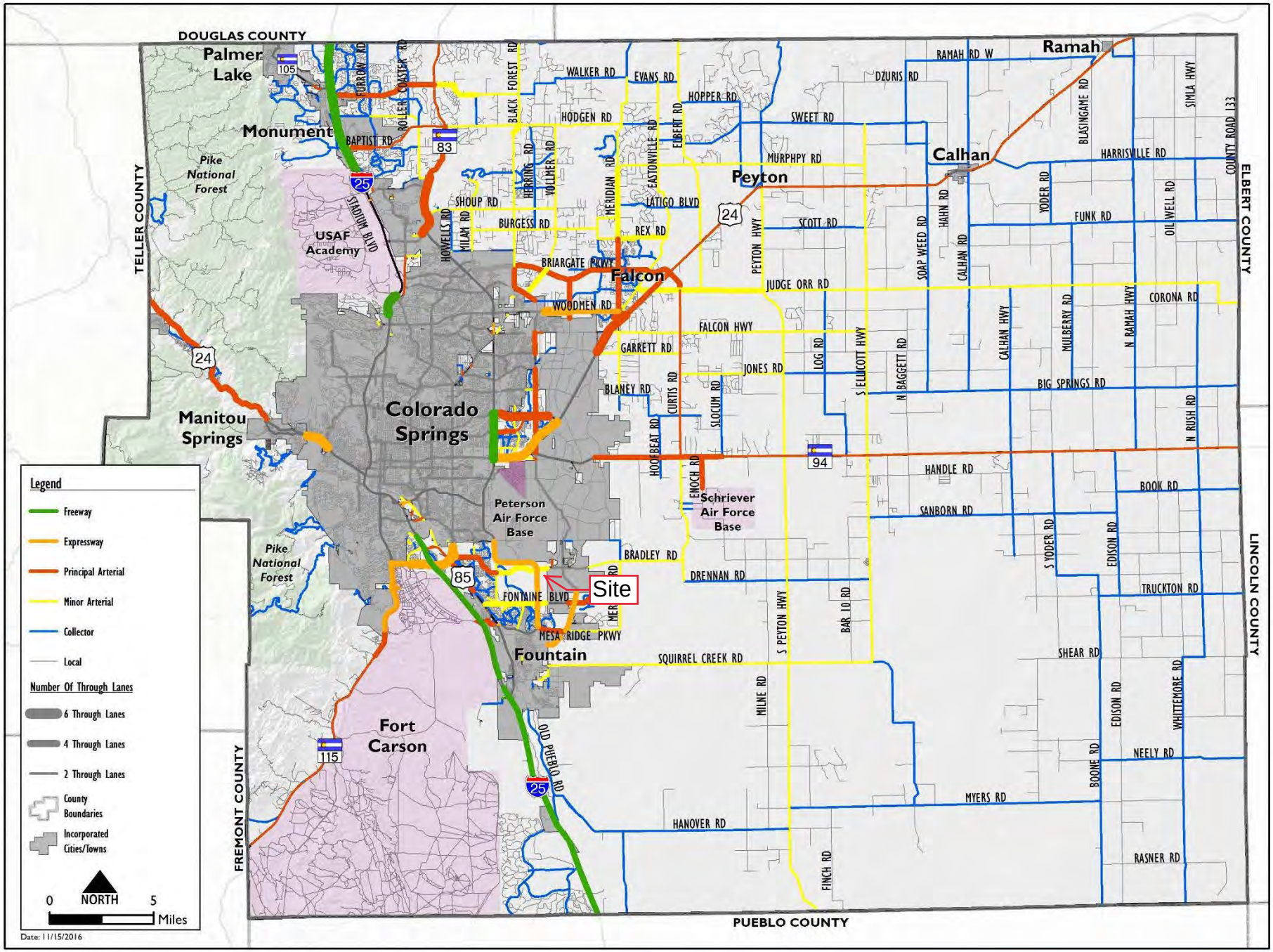
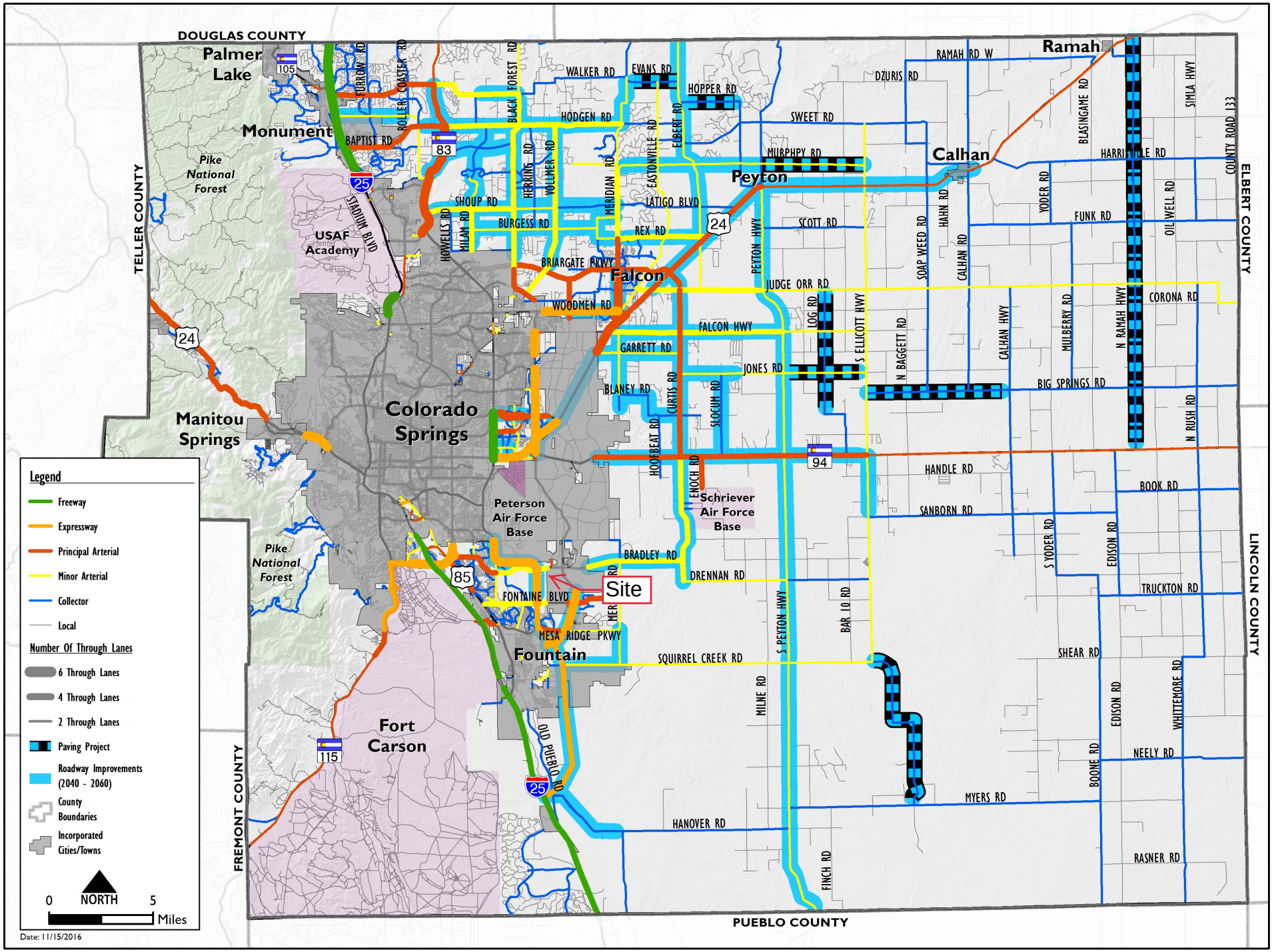


Map 14: 2040 Roadway Plan (Classification and Lanes)

Map 17: 2060 Corridor Preservation



Road Impact Fee Advisory Committee Meeting Minutes

TRANSPORTATION
CONSULTANTS, INC.

EL PASO COUNTY

Department of Public Works
Engineering ~ Highway Division ~ Fleet Services

ROAD IMPACT FEE ADVISORY COMMITTEE
MEETING MINUTES

Date: **April 23, 2019 (1:30 PM – 3:30 PM)**

Where: Remote meeting

Members Present: Jeff Mark, Jennifer Irvine, Craig Dossey, Ryan Watson, Randy Case, Steve Hicks, Joan Lucia-Treese, Jerry Novak, Nikki Simmons

Others Present: Victoria Chavez, Lori Seago, Jason Alwine, Tim Buschar, Jeff Hodsdon, Matt Dunston, Duncan Bremer, Brian Long

1. Call to order

Mr. Case called the meeting to order at 1:39 PM.

2. Introductions

3. Fee Advisory Committee Approved the Agenda

The Fee Committee unanimously approved the agenda with the date corrected for the meeting notes.

4. Approval of minutes, January 30 Meeting – Vote

Mr. Dossey moved, and Ms. Irvine seconded the motion to approve the January meeting minutes as amended. The vote was unanimous.

5. Eligible Improvements Requests – Discussion/Vote

It was determined that the Furrow Road extension was already included in the fee program as potentially eligible. There may or may not be potentially eligible improvements at the intersection of Furrow and Higby. There may be potentially eligible improvements on Walker Road. However, it is likely that the roundabout as the access to the school is not is not eligible. As listed improvements, there is no role for the committee at this time. The applicants and staff should work together to develop a preliminary credit agreement. After construction and acceptance of the improvements by EPC, the applicant can apply for credits per the process outlined in the Implementation Document.

6. Signal Request for Bradley Road and Legacy Hill Drive – Discussion/Vote

Mr. Alwine described the Trails at Aspen Ridge Filing 2. As part of the filing is built, it is likely that a signal will be needed on Bradley Road and Legacy Hill Drive. There are many acres of vacant land both north and south of Bradley Roads that may develop. Mr. Alwine presented the percent of traffic from nearby developments that will contribute to the need for the signal at this location. Mr. Dossey moved that the signal meets the criteria in the Implementation Document and recommends that the signal be included as an eligible improvement. Ms. Lucia-Treese seconded the motion and it passed unanimously.

7. Public comments on items not on the agenda

There were no public comments.

8. Items for Future Agendas

The committee would like to discuss a format for presentation of improvement requests to the committee, reimbursement requests, bringing credit agreements to the committee as an information item and reevaluating the unit cost prices.

9. Adjourn

Mr. Case closed the meeting.

CDOT Memorandum

TRANSPORTATION
CONSULTANTS, INC.

COLORADO
Department of Transportation
Region 2 Permits
5615 Wills Blvd.
Pueblo, CO 81008-2349

July 2, 2021

SH 21A/Bradley Rd.
El Paso County

Gilbert LaForce
El Paso County Planning & Community Development - Engineering
2880 International Circle, Suite 110
Colorado Springs, CO 80910

Victoria Chavez
El Paso County Planning & Community Development
2880 International Circle, Suite 110
Colorado Springs, CO 80910

RE: Trails at Aspen Ridge – Access Permit Submittal Planning Comments

Dear Gilbert and Victoria,

I am in receipt of an access permit application for The Trails at Aspen Ridge formerly Springs East at Waterview and is located to the east of the development of Waterview East Preliminary Plan, but still within the existing boundary of that development. Vehicular access to the development is from the intersection and future interchange at SH21/Powers Blvd. and Bradley Rd. and then east approximately 550-feet from the curvature touchdown point to the new signalized full movement intersection of Bradley Rd and Legacy Hill Dr.

This mixed use, multi phased development is on a total of approximately 195.25-acres with proposed 852-single-family residential lots within six different filings. There are 166.89-acres of residential lots and 28.36-acres of commercial parcels. The development is located east of SH21/Powers Blvd between the intersection with Bradley Rd. and Fontaine Blvd. on the southeast portion of the Waterview East Preliminary Plan area in El Paso County. CDOT staff comments are as follows;

Traffic Operations:

Previous planning comments were never addressed and the roadway improvements listed below are required at the intersection of SH21/Power Blvd. and Bradley Rd intersection and future interchange.

a) An additional left turn lane from southbound SH21A/Powers Blvd. to eastbound Bradley Rd. shall be required. This requirement creates a southbound dual left traffic movement. The construction plans will require adjustment to the existing traffic signal, extending the arm to cover the additional southbound left turn lane. The Engineer will need to confirm that the existing traffic signal pole and caisson can support a longer arm. Otherwise, the entire signal pole will need replaced with the access permit.
b) Once the forth leg of the intersection is introduced, additional right and left turn lanes/aux lanes and through lanes eastbound will be required and roadway widening in mainline SH21 may be required.

c) An additional right turn lane from northbound SH21/Powers Blvd. to eastbound Bradley Rd. shall be required. This requirement creates a northbound dual right turn traffic movement.
d) Both northbound right turning traffic lanes from SH21/Powers Blvd onto eastbound Bradley Rd. shall be signalized controlled.
e) Highway widening shall be required to add the additional auxiliary lane along SH21/Powers Blvd. and on Bradley Rd.
f) The northbound right turn lane shall be extended further south to allow for additional queuing for the dual right turn movement onto eastbound Bradley Rd. from SH21a/Powers Blvd.
g) The eastbound to northbound free right turn acceleration lane from Bradley Rd. onto SH21/Powers Blvd. shall be extended to the north to allow for additional merging traffic; refer to CDOT access code for proper acceleration lane length and taper.
h) Additional traffic controlling devices shall be installed while the roadway improvements are being constructed. This may require additional signal heads, longer mast arms, updated traffic controller.
i) CDOT requests additional right of way dedication for the required improvements and the future interchange from the SE quadrant, the SW quadrant and the NW quadrant of the development.

Hydraulics:

The Master Development Drainage Report for Trails at Aspen Ridge dated September 2020 has been reviewed by a CDOT Hydraulics Engineer. Their comments follow:

a) No impacts to CDOT infrastructure.

Access:

I have reviewed the submitted access application packet and have the following comments.

a) Section 2.6(3) of the State Highway Access Code, states that if the proposed vehicle volumes increase by 20 percent or more a State Highway Access Permit will be required for the connection of Bradley Road east to SH21A between Developer, El Paso County and CDOT. El Paso County will be the Permittee and the Development will be the Applicant as directed by EPC. **An Access Permit has been submitted to CDOT on 04/15/2021 and the Department has deemed the submittal acceptable**.
b) There will be no direct access from the north/south traveling roadways section of SH21 to the western boundary of the Trails at Aspen Ridge development. The only access points will be from local roadways off of Bradley Rd. and Fontaine Blvd. onto Legecy Hills Blvd. a proposed signalized intersection.
c) The Bradley Rd. and Legacy Hill Drive intersection may be converted to RI/RO in the future if traffic issues arise or future traffic warrants are met to close this proposed full movement intersection.
d) Escrow funds will be required for a portion of the future SH21A/Powers Blvd. and Bradley Rd. interchange based on a pro-rata share determined by the traffic impact study. Please add Excel spreadsheet to view and track the escrow required.
e) Intersection improvements will be required of the development and recorded as part of the Access Permit.
f) Right of Way donations shall be recorded as part of the Access Permitting process in coordination with CDOT Right of Way.

Additionally,

a) On-premise and off-premise signing shall comply with the current Colorado Outdoor Advertising Act, sections 43-1-401 to 421, C.R.S., and all rules and regulations pertaining to outdoor advertising. Please contact Mr. Todd Ausbun at (719) 696-1403 for any questions regarding advertising devices.
b) Any utility work within the state highway right of way will require a utility permit from the CDOT. Information for obtaining a utility permit can also be obtained by contacting Mr. Ausbun.

Please contact me in Pueblo at (719) 546-5732 or (719) 248-0905 with any questions.

Sincerely,

Arthur Gonzales
CDOT R2 - Access Manager

Xc: Victoria Chavez - El Paso County
Elizabeth Nijkamp/Jeff Rice
Ferguson
Bauer
Stecklein
Whitleff/Biren
Ausbun
Vigil/Regalado/file

Traffic Impact Study V1.pdf Markup Summary

Callout (22)

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Author: Kirstin
Date: 1/26/2022 2:37:50 PM
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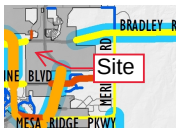

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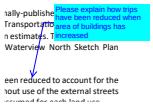

Subject: Callout
Page Label: 8
Author: CDurham
Date: 10/11/2022 1:00:04 PM
Status:
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Please explain how trips have been reduced when area of buildings has increased

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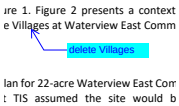

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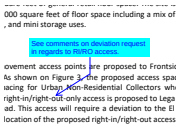
delete Villages



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See comments on deviation request in regards to RI/RO access.

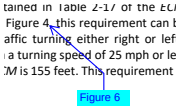

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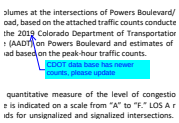
Figure 6



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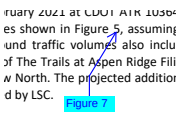
CDOT data base has newer counts, please update



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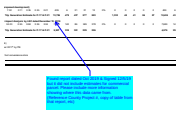
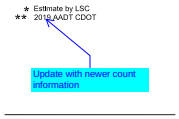
Space:

Figure 7



Subject: Callout
Page Label: 15
Author: CDurham
Date: 10/12/2022 9:42:28 AM
Status:
Color:
Layer:
Space:

Found report dated Oct 2019 & Signed 12/5/19 but it did not include estimates for commercial parcel. Please include more information showing where this data came from. (Reference County Project #, copy of table from that report, etc)



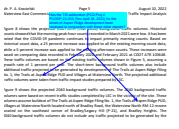
Subject: Callout
Page Label: 24
Author: CDurham
Date: 10/12/2022 9:55:00 AM
Status:
Color:
Layer:
Space:

Update with newer count information

Subject: Callout
Page Label: 5
Author: CDurham
Date: 10/12/2022 9:59:21 AM
Status:
Color:
Layer:
Space:

State that the list of studies is in an appendix and list name it's under

---



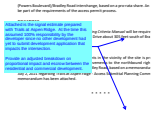
Subject: Callout
Page Label: 8
Author: CDurham
Date: 10/13/2022 11:58:00 AM
Status:
Color:
Layer:
Space:

Has the TIS addendum (PCD Proj # PUDSP-21-003, Rev April 16, 2021) for the whole of Aspen Ridge development been reviewed in conjunction with these other reports?

Subject: Callout
Page Label: 20
Author: dsdlaforce
Date: 10/13/2022 12:06:42 PM
Status:
Color:
Layer:
Space:

The original prelim and the PUDSP for Trails at Aspen Ridge anticipated a roundabout at this location.

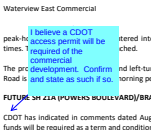
This commercial development is revising the plan to omit the roundabout. Provide analysis and discussion of the impact the current layout has in omitting the roundabout. Is the road alignment sufficient and meet all criteria or are there additional offsite improvements needed?



Subject: Callout
Page Label: 12
Author: dsdlaforce
Date: 10/13/2022 12:08:16 PM
Status:
Color:
Layer:
Space:

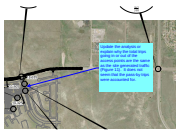
Attached is the signal estimate prepared with Trails at Aspen Ridge. At the time this assumed 100% responsibility by the developer since no other development had yet to submit development application that impacts the intersection.

Provide an adjusted breakdown on proportional impact and escrow between the residential and commercial development.



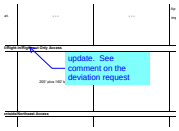
Subject: Callout
Page Label: 12
Author: dsdlaforce
Date: 10/13/2022 12:09:50 PM
Status:
Color:
Layer:
Space:

I believe a CDOT access permit will be required of the commercial development. Confirm and state as such if so.



Subject: Callout
Page Label: 30
Author: dsdlaforce
Date: 10/13/2022 12:16:22 PM
Status:
Color:
Layer:
Space:

Update the analysis or explain why the total trips going in or out of the access points are the same as the site generated traffic (Figure 11). It does not seem that the pass-by trips were accounted for.

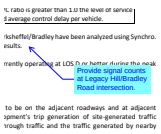


Subject: Callout
Page Label: 16
Author: dsdlaforce
Date: 10/13/2022 12:38:26 PM
Status:
Color:
Layer:
Space:

update. See comment on the deviation request

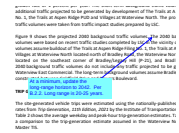
Subject: Callout
Page Label: 27
Author: dsdlaforce
Date: 10/13/2022 12:39:59 PM
Status:
Color:
Layer:
Space:

provide an enlarge view of the site and identify the directional distribution assumed at all three proposed access.



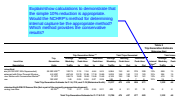
Subject: Callout
Page Label: 7
Author: dsdlaforce
Date: 10/13/2022 9:05:55 AM
Status:
Color:
Layer:
Space:

Provide signal counts at Legacy Hill/Bradley Road intersection.



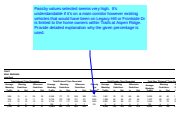
Subject: Callout
Page Label: 8
Author: dsdlaforce
Date: 10/13/2022 9:12:59 AM
Status:
Color:
Layer:
Space:

At a minimum, update the long-range horizon to 2042. Per B.2.2. Long range is 20-25 years.



Subject: Callout
Page Label: 15
Author: dsdlaforce
Date: 10/13/2022 9:50:27 AM
Status:
Color:
Layer:
Space:

Explain/show calculations to demonstrate that the simple 10% reduction is appropriate. Would the NCHRP's method for determining internal capture be the appropriate method? Which method provides the conservative results?



Subject: Callout
Page Label: 15
Author: dsdlaforce
Date: 10/13/2022 9:54:23 AM
Status:
Color:
Layer:
Space:

Passby values selected seems very high. It's understandable if it's on a main corridor however existing vehicles that would have been on Legacy Hill or Frontside Dr is limited to the home owners within Trails at Aspen Ridge. Provide detailed explanation why the given percentage is used.

File Attachment (2)

Subject: File Attachment
Page Label: 12
Author: dsdlaforce
Date: 10/13/2022 11:15:46 AM
Status:
Color:
Layer:
Space:

Subject: File Attachment
Page Label: 12
Author: dsdlaforce
Date: 10/13/2022 11:15:48 AM
Status:
Color:
Layer:
Space:

Highlight (1)

Subject: Highlight
Page Label: 30
Author: dsdlaforce
Date: 10/13/2022 12:15:50 PM
Status:
Color:
Layer:
Space:

Text Box (10)

PUDSP-22-009

Subject: Text Box
Page Label: 1
Author: CDurham
Date: 10/11/2022 10:37:00 AM
Status:
Color:
Layer:
Space:

PUDSP-22-009

Include signature page for engineer

Subject: Text Box
Page Label: 1
Author: CDurham
Date: 10/11/2022 10:37:38 AM
Status:
Color:
Layer:
Space:

Include signature page for engineer

---

020 (for an adjacent project), that escrow
ss permit for a portion of the future SH 21A
on a pro-rata share. An escrow analysis will
ess. Include discussion of ROW dedication/preservation for future interchange.

r *Manual* will be required for the proposed
ut 305 feet south of Bradley Road.

Subject: Text Box
Page Label: 12
Author: CDurham
Date: 10/12/2022 10:17:17 AM
Status:
Color:
Layer:
Space:

Include discussion of ROW dedication/preservation for future interchange.

---

lane on Powers Boulevard approaching Bradley Rc
July 2, 2021 regarding Trails at Aspen ridge - Acce
memorandum has been attached.

Address County Road Impact Fees

Subject: Text Box
Page Label: 12
Author: CDurham
Date: 10/12/2022 9:46:56 AM
Status:
Color:
Layer:
Space:

Address County Road Impact Fees

Address this develoment's portion of the Bradley/Legacy intersection signal cost and installation

Subject: Text Box
Page Label: 12
Author: CDurham
Date: 10/12/2022 9:51:13 AM
Status:
Color:
Layer:
Space:

Address this develoment's portion of the Bradley/Legacy intersection signal cost and installation

Subject: Text Box
Page Label: 12
Author: CDurham
Date: 10/12/2022 9:51:17 AM
Status:
Color:
Layer:
Space:

Address pedestrian/bicycle routes and accomodations

Subject: Text Box
Page Label: 12
Author: CDurham
Date: 10/12/2022 9:51:19 AM
Status:
Color:
Layer:
Space:

Address access to public transportation services where available

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Subject: Text Box
Page Label: 25
Author: CDurham
Date: 10/12/2022 9:56:05 AM
Status:
Color:
Layer:
Space:

Include street names (Figures 8 thru 15)

Subject: Text Box
Page Label: 12
Author: dsdlaforce
Date: 10/13/2022 11:08:35 AM
Status:
Color:
Layer:
Space:

Provide signal warrant analysis of Bradley/Legacy Hill based on existing plus the commercial development. Identify the specific number of trips or commercial ksf that would likely trigger signal installation.

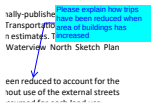
At this time the signal is near warrant. It was expected to be warranted with buildout of Trails at Aspen Ridge Filing 2. However the commercial development may trigger the warrant before the residential. If that is the case, then the commercial development would be required to install the signal. Signal plans have already been prepared by the Trails at Aspen Ridge developer and approved by the County.

Subject: Text Box
Page Label: 1
Author: dsdlaforce
Date: 10/13/2022 8:05:15 AM
Status:
Color:
Layer:
Space:

and developer

Traffic Impact Study V1.pdf Markup Summary

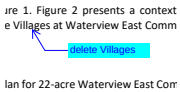
Callout (20)



Subject: Callout
Page Label: 8
Author: CDurham
Date: 10/11/2022 1:00:04 PM
Status:
Color:
Layer:
Space:

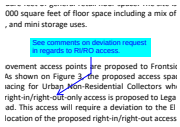
Please explain how trips have been reduced when area of buildings has increased

---



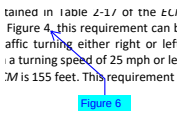
Subject: Callout
Page Label: 5
Author: CDurham
Date: 10/11/2022 11:33:48 AM
Status:
Color:
Layer:
Space:

delete Villages



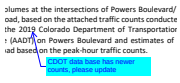
Subject: Callout
Page Label: 5
Author: CDurham
Date: 10/11/2022 11:36:10 AM
Status:
Color:
Layer:
Space:

See comments on deviation request in regards to RI/RO access.



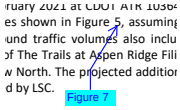
Subject: Callout
Page Label: 6
Author: CDurham
Date: 10/11/2022 11:42:13 AM
Status:
Color:
Layer:
Space:

Figure 6



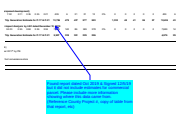
Subject: Callout
Page Label: 7
Author: CDurham
Date: 10/11/2022 11:49:37 AM
Status:
Color:
Layer:
Space:

CDOT data base has newer counts, please update



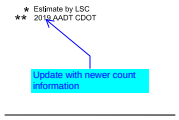
Subject: Callout
Page Label: 8
Author: CDurham
Date: 10/11/2022 11:54:11 AM
Status:
Color:
Layer:
Space:

Figure 7



Subject: Callout
Page Label: 15
Author: CDurham
Date: 10/12/2022 9:42:28 AM
Status:
Color:
Layer:
Space:

Found report dated Oct 2019 & Signed 12/5/19 but it did not include estimates for commercial parcel. Please include more information showing where this data came from. (Reference County Project #, copy of table from that report, etc)



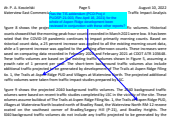
Subject: Callout
Page Label: 24
Author: CDurham
Date: 10/12/2022 9:55:00 AM
Status:
Color:
Layer:
Space:

Update with newer count information

Subject: Callout
Page Label: 5
Author: CDurham
Date: 10/12/2022 9:59:21 AM
Status:
Color:
Layer:
Space:

State that the list of studies is in an appendix and list name it's under

---



Subject: Callout
Page Label: 8
Author: CDurham
Date: 10/13/2022 11:58:00 AM
Status:
Color:
Layer:
Space:

Has the TIS addendum (PCD Proj # PUDSP-21-003, Rev April 16, 2021) for the whole of Aspen Ridge development been reviewed in conjunction with these other reports?

Subject: Callout
Page Label: 20
Author: dsdlaforce
Date: 10/13/2022 12:06:42 PM
Status:
Color:
Layer:
Space:

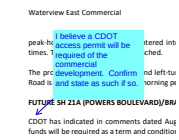
The original prelim and the PUDSP for Trails at Aspen Ridge anticipated a roundabout at this location.

This commercial development is revising the plan to omit the roundabout. Provide analysis and discussion of the impact the current layout has in omitting the roundabout. Is the road alignment sufficient and meet all criteria or are there additional offsite improvements needed?

Subject: Callout
Page Label: 12
Author: dsdlaforce
Date: 10/13/2022 12:08:16 PM
Status:
Color:
Layer:
Space:

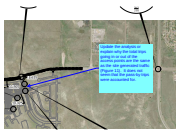
Attached is the signal estimate prepared with Trails at Aspen Ridge. At the time this assumed 100% responsibility by the developer since no other development had yet to submit development application that impacts the intersection.

Provide an adjusted breakdown on proportional impact and escrow between the residential and commercial development.



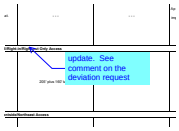
Subject: Callout
Page Label: 12
Author: dsdlaforce
Date: 10/13/2022 12:09:50 PM
Status:
Color:
Layer:
Space:

I believe a CDOT access permit will be required of the commercial development. Confirm and state as such if so.



Subject: Callout
Page Label: 30
Author: dsdlaforce
Date: 10/13/2022 12:16:22 PM
Status:
Color:
Layer:
Space:

Update the analysis or explain why the total trips going in or out of the access points are the same as the site generated traffic (Figure 11). It does not seem that the pass-by trips were accounted for.

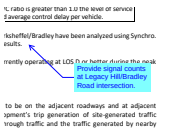


Subject: Callout
Page Label: 16
Author: dsdlaforce
Date: 10/13/2022 12:38:26 PM
Status:
Color:
Layer:
Space:

update. See comment on the deviation request

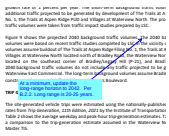
Subject: Callout
Page Label: 27
Author: dsdlaforce
Date: 10/13/2022 12:39:59 PM
Status:
Color:
Layer:
Space:

provide an enlarge view of the site and identify the directional distribution assumed at all three proposed access.



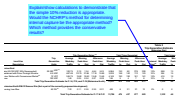
Subject: Callout
Page Label: 7
Author: dsdlaforce
Date: 10/13/2022 9:05:55 AM
Status:
Color:
Layer:
Space:

Provide signal counts at Legacy Hill/Bradley Road intersection.



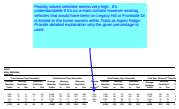
Subject: Callout
Page Label: 8
Author: dsdlaforce
Date: 10/13/2022 9:12:59 AM
Status:
Color:
Layer:
Space:

At a minimum, update the long-range horizon to 2042. Per B.2.2. Long range is 20-25 years.



Subject: Callout
Page Label: 15
Author: dsdlaforce
Date: 10/13/2022 9:50:27 AM
Status:
Color:
Layer:
Space:

Explain/show calculations to demonstrate that the simple 10% reduction is appropriate. Would the NCHRP's method for determining internal capture be the appropriate method? Which method provides the conservative results?



Subject: Callout
Page Label: 15
Author: dsdlaforce
Date: 10/13/2022 9:54:23 AM
Status:
Color:
Layer:
Space:

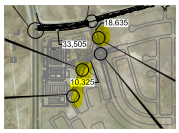
Passby values selected seems very high. It's understandable if it's on a main corridor however existing vehicles that would have been on Legacy Hill or Frontside Dr is limited to the home owners within Trails at Aspen Ridge. Provide detailed explanation why the given percentage is used.

File Attachment (2)

Subject: File Attachment
Page Label: 12
Author: dsdlaforce
Date: 10/13/2022 11:15:46 AM
Status:
Color:
Layer:
Space:

Subject: File Attachment
Page Label: 12
Author: dsdlaforce
Date: 10/13/2022 11:15:48 AM
Status:
Color:
Layer:
Space:

Highlight (1)

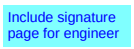


Subject: Highlight
Page Label: 30
Author: dsdlaforce
Date: 10/13/2022 12:15:50 PM
Status:
Color:
Layer:
Space:

Text Box (10)

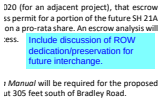
Subject: Text Box
Page Label: 1
Author: CDurham
Date: 10/11/2022 10:37:00 AM
Status:
Color:
Layer:
Space:

PUDSP-22-009



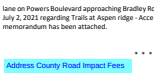
Subject: Text Box
Page Label: 1
Author: CDurham
Date: 10/11/2022 10:37:38 AM
Status:
Color:
Layer:
Space:

Include signature page for engineer



Subject: Text Box
Page Label: 12
Author: CDurham
Date: 10/12/2022 10:17:17 AM
Status:
Color:
Layer:
Space:

Include discussion of ROW dedication/preservation for future interchange.



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Author: CDurham
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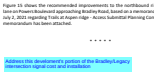
Address County Road Impact Fees



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Author: CDurham
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Address this develoment's portion of the Bradley/Legacy intersection signal cost and installation

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Address pedestrian/bicycle routes and accomodations

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Page Label: 12
Author: CDurham
Date: 10/12/2022 9:51:19 AM
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Address access to public transportation services where available

Include street names (Figures 8 thru 15)

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Author: CDurham
Date: 10/12/2022 9:56:05 AM
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Include street names (Figures 8 thru 15)

Subject: Text Box
Page Label: 12
Author: dsdlaforce
Date: 10/13/2022 11:08:35 AM
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Provide signal warrant analysis of Bradley/Legacy Hill based on existing plus the commercial development. Identify the specific number of trips or commercial ksf that would likely trigger signal installation.

At this time the signal is near warrant. It was expected to be warranted with buildout of Trails at Aspen Ridge Filing 2. However the commercial development may trigger the warrant before the residential. If that is the case, then the commercial development would be required to install the signal. Signal plans have already been prepared by the Trails at Aspen Ridge developer and approved by the County.

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and developer

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and developer