

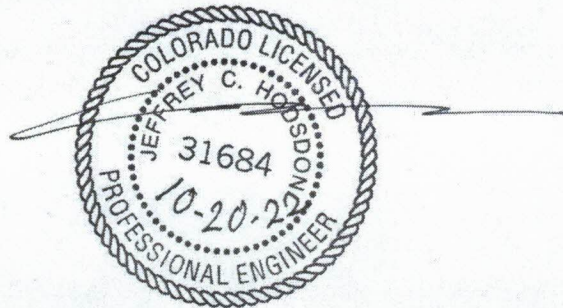
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Ellicott Sand and Gravel
 Traffic Impact Analysis
 PCD File No. AL2014
 (LSC #194980)
 October 20, 2022

Also provide PPR234

Traffic Engineer's Statement

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



Developer's Statement

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

Christina R. Wilson

11/04/2022
 Date



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October 20, 2022

Christine Wilson
Ellicott Sand & Gravel
c/o Mr. Bruce Humphries
<via email>

RE: Ellicott Sand and Gravel
El Paso County, CO
Traffic Impact Analysis
LSC #194980
PCD File No. AL2014

Dear Ms. Wilson,

LSC Transportation Consultants, Inc. has prepared this traffic impact study for the proposed Schubert Ranch/Ellicott Sand & Gravel extraction operation in El Paso County, Colorado. The site is located west of Baggett Road and north (and south) of Sanborn Road. One access is proposed to Sanborn Road about 2,280 feet west of the intersection of Baggett Road/Sanborn Road.

The proposed haul route would have trucks utilize State Highway (SH) 94 to/from the west, Ellicott Highway between SH 94 and Sanborn Road, and the segment of Sanborn Road west of the site access. Initially and in the short term, an average of about 30 truck trips per day is anticipated to be generated during the peak summer season.

This updated transportation memorandum has been prepared for submittal to the El Paso County Planning and Community Development department. A previous traffic impact analysis was submitted for this site, dated December 6, 2021.

REPORT CONTENTS

The report contains the following:

- Existing roadway and traffic conditions adjacent to and in the vicinity of the site, including the intersection lane geometries, traffic controls, posted speed limits, functional classifications, intersection spacing and alignment, sight distances, etc.
- Existing peak-hour turning-movement traffic counts at the intersections of SH 94/Ellicott Highway and Ellicott Highway/Sanborn Road.

why only short term? The previous study analyzed short, intermediate and long-term impacts.

- Estimates of the proposed mineral extraction operation's peak-hour and daily trip generation for the short term, including trips by vehicle type.
- Estimated directional distribution of mine-generated trips on roadway haulage. An employee distribution is also provided.
- Estimated assignment of peak-hour and daily site-generated traffic volumes on the study-area roadways providing access to/from the site, including the following intersections:
 - State Highway 94/Ellicott Highway
 - Ellicott Highway/Sanborn Road
 - Sanborn Road/proposed site access
- Resulting traffic impacts of the proposed sand and gravel operation on the roadways along the haul route, relative to the El Paso County's *Engineering Criteria Manual (ECM)* "design ADTs."
- Intersection levels of service analysis at intersections along the proposed haul route:
 - State Highway 94/Ellicott Highway
 - Ellicott Highway/Sanborn Road
 - Sanborn Road/proposed site access
- Auxiliary right-/left-turn lane analysis at the following intersections, based on the projected volumes and criteria in the *ECM* and the *State Highway Access Code*:
 - State Highway 94/Baggett Road
 - Baggett Road/Sanborn Road
 - Sanborn Road/proposed site access
- Findings and recommendations

Provide intermediate and long term analysis as previously done.

SAND & GRAVEL PIT SITE LOCATION & ACCESS

As shown in Figure 1 and Figure 2, the proposed Schubert Ranch/Ellicott Sand & Gravel extraction operation in El Paso County, Colorado is located west of Baggett Road and north (and south) of Sanborn Road. The 783-acre site is within the larger parcel identified by El Paso County parcel ID No. 2400000276 and the 40-acre smaller parcel (parcel ID no. 2400000275).

The proposed access would be located approximately 2,280 feet west of the intersection of Baggett Road/Sanborn Road. This access is for Stage I of the operation. The applicant will request different access points in the future as the active mining areas change in the future (subsequent "Stages"). Likely accesses for future stages are shown in the **attached access exhibit** from the letter of intent. The applicant would be required to obtain a new driveway permit from El Paso County for any future access. Future access for future stages may require a transportation memorandum.

Different access points may require additional roadway improvements and revised/new haul route agreement

LSC has utilized a comparable land use (an existing, operating similar mining land use) with data and known operating characteristics for trip-generation estimating purposes. This similar land use is the Pueblo County mine.

comparable land use is irrelevant. soil types, weather, local use more important.

The estimated annual production for the Schubert Sand Mine and the typical production at the Pueblo County mine (250,000 tons per year) are similar. Both the proposed mine and the Pueblo County mine extract sand.

The total mining areas are not similar, nor are the mining methods, since the deposits are not similar. Approximately 35 acres of the 1,440 acres available for mining have been affected during the Pueblo County mine's 37 years of operation. None of the proposed Schubert Sand Mine approved permit area's 733.7 acres has been disturbed at this time.

commentary: not true

Under a Regular (112) Operation Construction Material Permit, an operator is not limited to an annual production. The only limit is the amount of surface disturbance allowed, based on the amount of reclamation bond posted and the affected area approved for mining.

As an additional point, construction-materials production is seasonal, based on weather, and demand for the product mined. Typically, the construction season is variable by year and geographical location. For example, the Pueblo area has a slightly longer construction season than the Colorado Springs area. Therefore, the Colorado Springs demand for construction materials may result in a lower production.

2023/2024

Be aware that a driveway and gate was recently installed without County permission. Please coordinate with the applicant to ensure that the access location indicated in this study matches what was recently installed.

PROPOSED DAILY OPERATIONS

Initial/Short Term (2022/2023)

Hours of operation for the mine will remain from 7:00 a.m. – 7:00 p.m. or sunrise-to-sunset, depending on time of year. Empty haul vehicles would begin arriving around 7:00 a.m. each weekday and depart shortly after being loaded. Drivers would transport raw materials to the west via SH 94. Initially and in the short-term future, the pit would be operated in a manner similar to the mine in Pueblo County. The applicant has provided truck trip-generation data recorded for July and August 2020. The complete data set is attached for reference in Appendix A.

Based on the Pueblo County pit data, an average of 15 empty trucks would arrive at the site for loading each day and up to 15 loaded trucks would leave the mine each day.

Table 1 below summarizes the initial and short-term average entering truck trips by hour of the day, based on the Pueblo County pit data. The initial and short-term truck-trip counts at the proposed Ellicott site are anticipated to be comparable to the Pueblo County mine site, although shifted to begin at 7:00 a.m. for this El Paso County pit.

Table 1: Initial/Short-Term Entering Trucks by Hour of the Day

Hourly Period		Short Term Trucks to Enter the Site
Start Time	End Time	Entering Trucks (Average)
7:00	8:00	2
8:00	9:00	2
9:00	10:00	2
10:00	11:00	1
11:00	12:00	2
12:00	13:00	1
13:00	14:00	2
14:00	15:00	1
15:00	16:00	1
16:00	17:00	1
17:00	18:00	0
18:00	19:00	0
Total Daily Entering Trucks		15

No trucks (empty or loaded) would be parked on-site overnight. Thus, haul vehicles would originate from offsite location(s) each morning and return to offsite location(s) each afternoon.

Per the applicant, up to 6 employees (including 2 loaders, 2 operators, 1 crusher, and another staff member) would remain on-site throughout the day. These employees would drive to the proposed mine each morning using their personal vehicles and leave during the late-afternoon using their personal vehicles. Employee personal vehicles are anticipated to arrive slightly before heavy vehicles would arrive to begin preparing for the day's workload.

APPLICANT-PROPOSED HAUL ROUTE

Exceeds allowable weight of 85k lbs on non-interstate highways (CRS 42-4-507)

The haul route described below (and shown in Figure 3) is proposed by the applicant. Approximately half of the haul trips (loaded and empty) would be controlled by Ellicott, while the other half would be operated by outside hauling companies. The applicant will direct the trucking company and outside hauling companies to use this specific route when departing the site, which may be used for truck loads up to 88,000 pounds gross vehicle weight (GVW):

1. From the mine entrance, turn right and continue westbound on Sanborn for 1.5 miles.
2. Turn right onto Ellicott Highway and continue northbound for 3.0 miles.
3. Turn left onto State Highway 94 and travel west. Note: there may be rare instances where the trucks turn east, to deliver to jobs east of the mine site.

Truck drivers would be required to travel to the site using this route in the reverse direction.

See attached comments from DPW's Highway Division regarding haul route.

SIGHT DISTANCE

Access sight distance is acceptable at the proposed entrance on Sanborn Road, meeting all sight-distance requirements in the *ECM*. No horizontal or vertical sight-distance issues exist at key intersections along the proposed haul route, including:

- Sanborn Road/proposed site access
- State Highway 94/Ellicott Highway
- Ellicott Highway/Sanborn Road

Based on a 45-mile-per-hour (mph) posted speed limit, sight distances for both approaches on Sanborn Road from the proposed site-access location exceed the required 680-foot requirement for multi-unit trucks, per *ECM* Table 2-35.

ROADWAYS AND TRAFFIC CONDITIONS

Area Roadways

Major roadways in the site vicinity are shown in Figure 1 and identified below, followed by a brief description of each. Roadway functional classifications are shown in Figure 4, while detailed existing roadway conditions are shown in Figure 5.

State Highway (SH) 94 is a two-lane, paved rural highway with a posted speed limit of 45 mph in the vicinity of Ellicott Highway. The highway extends east from US Highway (Hwy) 24 near Peterson Air Force Base about 85 miles to Highway 287 in Cheyenne County. CDOT classifies SH 94 as an NR-A highway west of Ellicott Highway and R-A east of Ellicott Highway. CDOT has identified the governing document with respect to access management for SH 94 in the vicinity of the site as the *State Highway 94 Access Management Plan (2012)*. The El Paso County 2040 *Major Transportation Corridors Plan (MTCP)* identifies SH 94 as a two-lane Principal Arterial in the Ellicott area. The *MTCP 2060 Corridor Preservation Plan* identifies SH 94 as a future four-lane Principal Arterial. However, future right-of-way needs will be identified by CDOT.

Ellicott Highway is classified as a two-lane Minor Arterial on the 2040 El Paso County *MTCP*. The posted speed limit on Ellicott Highway south of SH 94 is 45 mph. Auxiliary left-turn lanes currently exist on the eastbound and westbound approaches at the two-way stop-controlled (TWSC) intersection of Ellicott Highway/SH 94.

Baggett Road is classified as a two-lane Rural Local roadway on the 2040 El Paso County *MTCP*. No auxiliary lanes currently exist at the TWSC intersection of Baggett Road/SH 94. Currently, Baggett Road is a 24-foot-wide gravel roadway with 4-foot shoulders and 60 feet of right-of-way (ROW). The posted speed limit on Baggett Road is 45 mph. (Please note, Baggett is not proposed as a haul route at this time.)

Sanborn Road is classified as a two-lane Collector on the 2040 El Paso County *MTCP*. No auxiliary lanes currently exist at the TWSC intersections of Baggett Road/Sanborn Road and Sanborn Road/Ellicott Highway. Currently, Sanborn Road is a 32-foot-wide gravel roadway with 4-foot shoulders and 90 feet of ROW. The posted speed limit on Sanborn Road is 45 mph.

Handle Road is classified as a two-lane Rural Local street on the 2040 El Paso County *MTCP*. No auxiliary lanes currently exist at the TWSC intersection of Handle Road/Baggett Road. Currently, Handle Road is a 24-foot-wide gravel roadway with 4-foot shoulders and a 60-foot ROW. The posted speed limit on Handle Road is 45 mph.

Ellicott Road is classified as a two-lane Rural Local roadway on the 2040 El Paso County *MTCP*. No auxiliary lanes currently exist at the TWSC intersections of Handle Road/Ellicott Road and Sanborn Road/Ellicott Road. Currently, Ellicott Road is paved north of Handle Road and has a gravel roadway surface to the south. A 24-foot-wide roadway with 4-foot shoulders and a 60-foot ROW, Ellicott Road has a posted speed limit of 45 mph.

Existing Traffic Volumes

Vehicular turning-movement counts were conducted at the following intersections:

- State Highway 94/Ellicott Highway
 - Wednesday, March 30, 2022 from 6:30 to 8:30 a.m.
 - Wednesday, March 30, 2022 from 4:00 to 6:00 p.m.
- Ellicott Highway/Sanborn Road
 - Wednesday, July 27, 2022 from 6:30 to 8:30 a.m.
 - Tuesday, July 26, 2022 from 4:00 to 6:00 p.m.

Existing morning and evening weekday peak-hour traffic volumes at these intersections are shown in Figure 6. Raw count reports are attached.

TRIP GENERATION

Short Term

Typically, site-generated vehicle trips for proposed land uses are estimated using the nationally-published trip-generation rates from *Trip Generation, 10th Edition, 2017* by the Institute of Transportation Engineers (ITE). ITE Land use 140-Manufacturing has been selected to estimate the trip generation for this mining operation. Rates based on “acres” have been selected for the trip-generation estimate. The anticipated area of active mining and processing has been used – estimated at about 1.25 acres. Although the proposed haul route has changed since the previous submittal, no modifications were made to short-term trip-generation estimates, as shown in Table 2.

To verify the trip-generation estimate, the resulting calculated estimate was compared to the actual trip generation from the Pueblo County mine. Minor adjustments to the ITE rates for manufacturing were made, based on these actual mining data. Appendix A contains the raw data from the Pueblo site and calculation tables converting truck-scale data to trip-generation estimates.

The projected area of mining disturbance is less than 1.25 acres. Each of the five phases will consist of mini phases of approximately 1.15 acres (500 feet long by 100 feet wide). Assuming an annual production of 250,000 tons per year starting in year 2, the 1.15 acres of disturbance per mini phase will result in approximately 4.6 months of production. Therefore, a total of 3.0 acres are estimated to be affected by mining during the second full 12 months of production (2.6 mini phases). This assumes no decrease in production during limited-construction winter months.

The applicant has indicated that this pit will operate similarly to the one in Pueblo County, with comparable trip generation – at least in the short term. There will be a difference in operating hours, with this El Paso County pit beginning operations at 7:00 a.m.

- Thirty (30) haul-truck trips per day are expected in the short term on the average weekday (half entering and exiting every 24 hours).
- Approximately 44 total vehicle trips (haul trips and employee trips combined) are expected in the short term on the average weekday (half entering and exiting every 24 hours).
- During the morning peak hour, 3 total vehicles are projected to enter the mine site, while 2 total vehicles are projected to exit.
- Approximately 2 vehicles would enter, and 3 total vehicles would exit the mine site during the afternoon peak hour.

Table 2: Estimated Site Vehicle-Trip Generation

ITE Code	Description	Value	Units	Trip Generation Rates ¹				Driveway Trips Generated					
				Average Weekday	A.M.		P.M.		Average Weekday	A.M.		P.M.	
				In	Out	In	Out	In	Out	In	Out		
Existing (Pueblo Site)													
				Pueblo Site -- Current Total Trips				42	3	2	1	4	
				Existing Average Truck Trips -- Count Data				30	2	2	0	0	
				Existing Estimated Other Trips -- Estimated by LSC				12	1	0	1	4	
Short-Term (Ellicott Site)													
<u>Trip Generation Estimate (Short Term - Initial Operation) - ITE Rates</u>													
140	Manufacturing	1.250	Acres	34.91	4.00	0.73	1.82	2.55	44	5	1	2	3
<u>Trip Generation Estimate (Short Term - Initial Operation) - w/ Minor Adjustments to ITE Rates</u>													
140	Manufacturing	1.250	Acres	34.91	2.40	1.60	1.60	2.40	44	3	2	2	3
				Short-Term -- Trucks				30	2	2	1	1	
				Short-Term -- Passenger Vehicles				14	1	0	1	2	

Trip Distribution and Assignment

An estimate of directional distribution of site-generated vehicle trips to the study-area roads is a necessary component in determining the site's traffic impacts. Figure 7 shows the estimated distribution/proportion of mine-generated trips on the area roadway network. Haul-vehicle distribution and passenger-vehicle distribution splits are shown separately.

Note: Previous directional-distribution estimates were adjusted, based on the new haul route, as all trucks would access the site via Ellicott Highway rather than Baggett Road.

Estimates were based on the following factors: the proposed haul route and employee trip routing provided by the applicant, the area roadway system that will provide access to the site, and the site's geographic location. The truck distribution reflects the applicant's requirement for haul-vehicle drivers to utilize the proposed designated haul route.

Site-Generated Traffic

Short Term

The short-term mine-generated traffic volumes at the following intersections have been calculated by applying the distribution percentages (from Figure 7) to the short-term trip-generation estimates (from Figure 8).

- State Highway 94/Ellicott Highway
- Ellicott Highway/Sanborn Road
- Sanborn Road/proposed site access

Figure 8 shows the short-term projected mine-generated daily traffic volumes at these intersections for the weekday morning and evening peak hours. The figure also shows the projected mine-generated average daily volumes during the peak summer months.

Existing-Plus-Site-Generated Traffic Volumes

Figure 9 shows the sum of the existing traffic volumes (from Figure 6) and short-term site-generated peak-hour and daily traffic volumes (shown in Figure 8). These volumes represent the projected short-term total traffic. Also shown (at the intersection of SH 94/Ellicott Highway) are applicable projected short-term total "passenger-car-equivalent" turning-movement traffic volumes.

LEVEL OF SERVICE ANALYSIS

Level of service (LOS) is a quantitative measure of the level of congestion or delay at an intersection and is indicated on a scale from "A" to "F." LOS A is indicative of little congestion or delay. LOS F indicates a high level of congestion or delay. Please refer to the Synchro reports

(attached) for additional details. Table 3 shows the level of service delay ranges for signalized and unsignalized intersections.

Table 3: Intersection Levels of Service Delay Ranges

Level of Service	Signalized Intersections	Unsignalized Intersections
	Average Control Delay (seconds per vehicle)	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 following intersections have been analyzed to determine the projected short-term (following the opening of mining operations) LOS for the key intersection turning movements:

- State Highway 94/Ellicott Highway
- Ellicott Highway/Sanborn Road
- Sanborn Road/proposed site access

Summaries of existing and existing-plus-site traffic scenario levels of service during the weekday morning and evening peak hours are shown in the following figures:

- Figure 6: Existing Traffic, Lane Geometry, Traffic Control, and LOS
- Figure 9: Existing + Site Traffic, Lane Geometry, Traffic Control, and LOS

Please refer to the Synchro reports (attached) for additional details.

State Highway 94/Ellicott Highway

Short-Term

All individual turning movements and minor-street single-lane approaches currently operate at and are projected to remain at LOS C or better upon site buildout, if the intersection were to remain two-way stop-sign-controlled in the short term.

Please provide analysis with the total traffic at full production of the development (long term).

Ellicott Highway/Sanborn Road

All single-lane approaches at the intersection of Ellicott Highway/Sanborn Road are projected to operate at LOS A during the short term, with or without the addition of site-generated traffic

Sanborn Road/Site Access

All single-lane approaches at the proposed site access on Sanborn Road are projected to operate at LOS A during the short term. Stop-sign control was assumed on the southbound approach.

AUXILIARY TURN-LANE NEEDS EVALUATION

State Highway 94/Ellicott Highway (CDOT Intersection)

Please also analyze northbound to west bound turn lane along Ellicott Hwy.

Passenger-Car-Equivalent Peak-Hour Turning Movements

Passenger-car-equivalent (PCE) turning movements at the State Highway intersection have been calculated per Section 2.3.4.e of the Colorado State Highway Access Code by applying a factor of 3 to the projected site-generated volumes for trucks only. These PCE volumes have been calculated as required by CDOT for traffic volumes at the intersection controlled by CDOT (specifically, for vehicles turning from State Highway 94 onto Ellicott Highway). The PCE factor of 3 was not applied to trips associated with workers accessing the site using their personal vehicles.

According to criteria in the *State Highway Access Code*, exclusive auxiliary turn lanes shall be provided for any access on an R-A highway with a projected peak-hour ingress exceeding the following turning volume thresholds:

- Left-turn lane – 10 vehicles per hour (vph) or greater
- Right-turn lane – 25 vph or greater

Eastbound-Right Turn Lane

Currently, well over 25 vehicles turn eastbound-right from SH 94 onto Ellicott Highway during both peak hours, as shown on Figure 6. As such, the turning-volume threshold for auxiliary right-turn lanes is currently exceeded for the eastbound approach. An eastbound-right turn lane is currently prescribed by the Access Code, even without the addition of site-generated traffic. State Highway Access Code criteria prescribes a lane length for right-turn deceleration lanes of 273 feet plus a 162-foot-long transition taper for 45-mph roadways. This lane was not added with previous CDOT projects, as there appears to be no available right-of-way and existing property improvements exist relatively close to the highway. CDOT may require an escrow contribution for a future turn lane.

Be sure to contact CDOT regarding any requirements. Previously an access permit was identified to be needed by CDOT.

Short-Term

Westbound-Left Turn Lane

This should be arterial/Collector as Ellicott Highway is an arterial roadway and Sanborn a Collector. (thresholds are the same for both classifications)

There is currently a 390-foot westbound-left turn lane on SH 94 approaching Ellicott Highway, consisting of 275 feet of deceleration length plus a 115-foot taper. Based on *Access Code* criteria, this westbound-left turn lane would be required to be 597 feet long, consisting of 435 feet of deceleration length plus a 162-foot taper (13.5:1 ratio). This lane is currently 232 feet short of the minimum westbound-left turn lane criteria, per the *Access Code*. This left-turn lane is not part of the designated haul route, but as noted above, there may be rare instances where the trucks may deliver to jobs east of the mine site.

El Paso County Intersections

According to criteria in the *Engineering Criteria Manual*, exclusive auxiliary turn lanes shall be provided at intersections/access point on a Collector roadway with a projected peak-hour ingress exceeding the following turning-volume thresholds:

- Left-turn lane – 25 vehicles per hour (vph)
- Right-turn lane – 50 vph or greater

Ellicott Highway/Sanborn Road

Auxiliary right- or left-turn lanes would **not** be required on any approach at the intersection of Ellicott Highway/Sanborn Road, based on projected short-term site-generated traffic volumes and criteria in the *ECM*.

Site-Access Point on Sanborn Road

No auxiliary right- or left-turn lanes would be required at the proposed site-access point on Sanborn Road, based on projected short-term site-generated traffic volumes and criteria in the *ECM*.

AVERAGE DAILY TRAFFIC IMPACTS RELATIVE TO ROADWAY DESIGN ADT BY CLASSIFICATION

El Paso County Roadway Segments

Note: The County *ECM* does not specify a requirement to adjust for passenger-car equivalents when calculating ADTs for use in evaluating against the design ADT by classification.

The projected buildout average daily traffic (ADT) impacts have been compared to the roadway design ADTs shown in Tables 2-4 and 2-5 of the *ECM*. Figure 4 shows existing roadway classifications along the haul route and has been provided as a general reference. The actual

Please also include long term analysis of trip generation. As previous TIS discussed once the mining operation is at full production the trip generation will increase

current roadway capacities for specific roadway segments may differ from these *ECM*-identified "Design ADT" values for County-standard roadways by classification.

Please refer to Figure 9 which presents the estimated short-term total ADTs along the haul route.

Sanborn Road

Based on recent 2021 traffic data on Sanborn Road just east of Ellicott Highway, this gravel road segment portion of the haul route already exceeds the 200 ADT threshold (design ADT of a Rural Gravel roadway). The site-generated traffic would add about 42 trips per day for a total short-term ADT of about 342.

2021 data for the segment just west of Baggett Road indicates a volume of 75 vehicles per day. The site-generated traffic would add about 42 trips per day for a total short-term ADT of about 117. This volume would not exceed the 200 ADT threshold (design ADT of a Rural Gravel roadway).

This project's traffic added to the existing volume is **not** projected to bring the roadway segment on Sanborn Road between the site access and Ellicott Highway to a volume over 200 ADT **during the short term**.

DESIGN-VEHICLE ACCOMMODATION AT HAUL-ROUTE INTERSECTIONS AND ALONG ROADWAYS

Intersections

The conclusion does not make sense when it is stated that a portion of the proposed haul route exceeds the 200 ADT threshold. ECM requires conversion to paved above 200 ADT.

The largest anticipated haul vehicles should be considered the "design vehicle" for purposes of evaluating the geometry of existing intersections along the anticipated haul route. Key intersections along the haul route have been analyzed to determine if corner-radius and potentially other geometric improvements would be needed to meet criteria 2.3.7.G of the El Paso County *Engineering Criteria Manual*.

LSC has completed an AutoTurn analysis to determine the radii necessary to accommodate the design vehicle (WB-40) at key offsite intersections along the haul route. Detailed AutoTurn Figures 1 and 2 are attached, which depict the entering and exiting vehicle-movement wheel and overhang paths. The criteria for truck turning paths at intersections are included in the *ECM*.

Ellicott Highway/Sanborn Road

Based on the AutoTurn results, a minor expansion of the radius would be needed on the northeast corner of the intersection, as shown in the exhibit.

SH 94/Ellicott Highway

Based on the AutoTurn results, the existing radius on the southwest corner would accommodate a WB-40 vehicle turning eastbound-right from SH 94 onto southbound Ellicott Highway. Similarly, no modifications would be required for the northbound-left turning movement from Ellicott Highway onto westbound SH 94, as the intersection could accommodate a WB-40 design vehicle.

Sanborn Road/Proposed Site Access

provide radii
recommendations for
the site access.

- Note: The northwest corner radius will need to be designed to accommodate right-turning, WB-40 multi-unit-truck haul vehicles exiting the site.
- Note: The eastbound left-turning movement should also be designed to accommodate WB-40, multi-unit trucks, as the current haul route shows all trucks entering from the east.

FINDINGS AND CONCLUSIONS

Land Use (Applicant-Provided Programming Information)

The applicant has provided LSC with operations information including the anticipated number of haul trucks per day, hours and days of operation, and employee counts. This trip-generation estimate has been verified with this information.

Trip Generation Estimate

No modifications to the previous short-term trip-generation estimate have been made since the previous submittal for this site, dated December 6, 2021:

- The proposed mining operation would generate an average of 30 haul-truck trips on the average weekday (one-half entering and one-half exiting in a 24-hour period).
- Per information provided by the applicant, an average of 15 empty trucks will arrive at the site for loading each day and 15 loaded trucks will leave the mine each day.
- Additionally, about 14 passenger-vehicle trips (employees, visitors, etc.) are projected. Most employees will arrive prior to the morning peak hour and the trips estimate assumes more dispersed exiting employee trips in the afternoon/early evening - depending on demand daily variability.

Proposed Haul Route

Please refer to Figure 3 for a map detailing the proposed haul route between the mine and destinations west of the site (which is the direction of the major, potential market).

Level of Service Analysis

All individual turning movements/approaches at the following intersection currently operate at and are projected to remain at LOS C or better through the short term, with or without the addition of site-generated traffic:

- State Highway 94/Ellicott Highway
- Ellicott Highway/Sanborn Road
- Sanborn Road/proposed site access

Auxiliary Turn Lanes

Please refer to the “Auxiliary Turn-Lane Needs Evaluation” section above for a detailed auxiliary turn-lane needs assessment. No auxiliary turn lanes would be needed at County intersections in short term. CDOT may require an escrow contribution toward a future eastbound right-turn deceleration lane at the CDOT intersection of SH 94/Ellicott Highway.

Average Daily Traffic Impacts Relative to Roadway Design ADT (by Classification)

Sanborn Road just east of Ellicott Highway: this gravel road segment of the haul route already exceeds the 200 ADT threshold (design ADT of a Rural Gravel roadway). Please refer to the above section for additional details.

The short-term volume is not projected to exceed the 200 ADT threshold (design ADT of a Rural Gravel roadway) on the segment of Sanborn Road between East Ellicott Road South and Baggett Road (adjacent to the site).

Haul-Vehicle (Design Vehicle) Accommodation

Please refer to the section “Design-Vehicle Accommodation at Haul-Route Intersections and Along Roadways” for evaluation of intersection corner radii and recommended improvements to accommodate the multi-unit haul trucks.

El Paso County Roadway Improvement Fee Program

This development will be subject to participation in the El Paso County Roadway Improvement Fee Program. TIS comments indicated the following:

The County would recommend that the fee be calculated based on the ITE land use (140) of Manufacturing with the units of measure being per acre. Since the proposed mining land use is not directly in the ITE manual a determination from the County administrator would be required. Per the Road impact fee implementation document the timing and payment obligation is triggered by the final land use approval required

This is the site development plan application. Please inform staff if a an independent study will be requested to begin that process.

Please submit a revised deviation request as the location of this access does not match the one on the previous request submitted with the special use application. Address access spacing with the existing access road to the west of this proposed access.

(i.e., at the site development plan application). Staff recommends that the final calculation be provided at that stage as we will know exactly what will be proposed with the first phase of development and a determination can be made at that time by the County Administrator. Alternatively, a request may be made to the County Administrator as to whether an independent study per the road implementation document would be allowed to be submitted.

Note: The El Paso County Roadway Improvement Fee calculation will be provided at a later date with the site development plan application.

LIST OF DEVIATIONS REQUESTED

The following deviation request form has been prepared:

Already took access prior to deviation request?

- Access is not permitted on a Rural Major Collector, per ECM Table 2-5. The applicant is requesting site access on Sanborn Road, a Rural Major Collector.

* * * * *

Please contact me if you have any question

Note: Sanborn road is schedule for road improvements and paving per the 2016 MTCP 2040 Plan State whether the MTCP or other approved corridor study calls for the construction of improvements in the immediate area.

Respectfully Submitted,

LSC TRANSPORTATION CONSULTANTS, INC.

By: Jeffrey C. Hodsdon, P.E.
Principal

JCH/JAB:jas

Table 4: 2040 Roadway Improvement Projects

Project ID	Road Segment	Segment		PPRTA Project	Urban vs. Rural	Existing Conditions		Future Conditions		Total Cost
		Beginning	End			Lanes	Functional Class	Lanes	Functional Class	
P9	Sanborn Rd	Ellicott Hwy	Baggett Rd		Rural	2	Gravel Road	2	Unimproved County Road	\$1,566,000

- Enclosures:
- Figure 1 – Figure 9
 - Traffic Count Reports
 - LOS Synchro Reports
 - Appendix A (Pueblo County Pit Tr
 - Access Exhibit by Stage



Figures 1-9





Not to scale

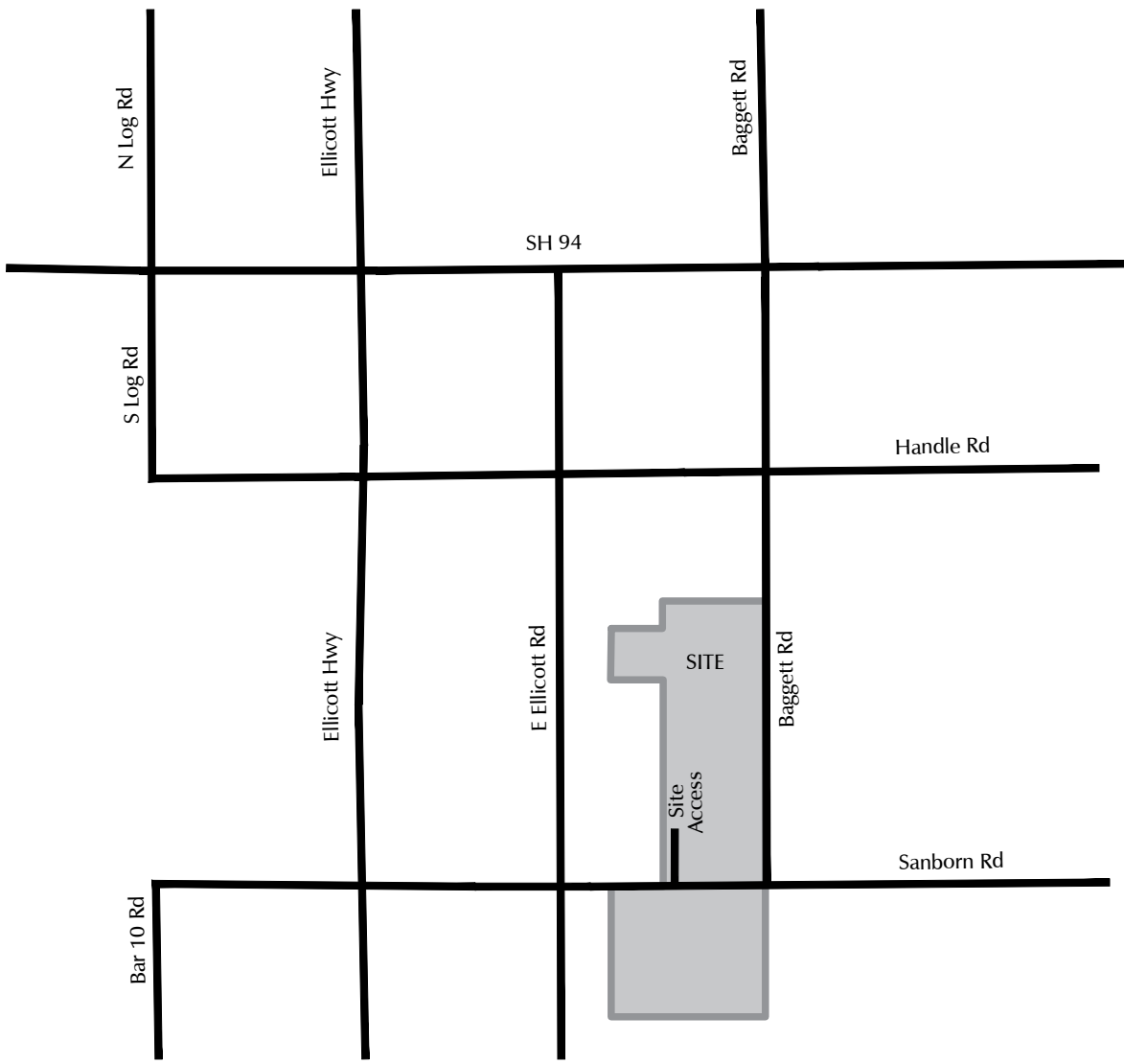


Figure 1
Vicinity Map

Ellicott Sand + Gravel (LSC# 194980)



Not to Scale

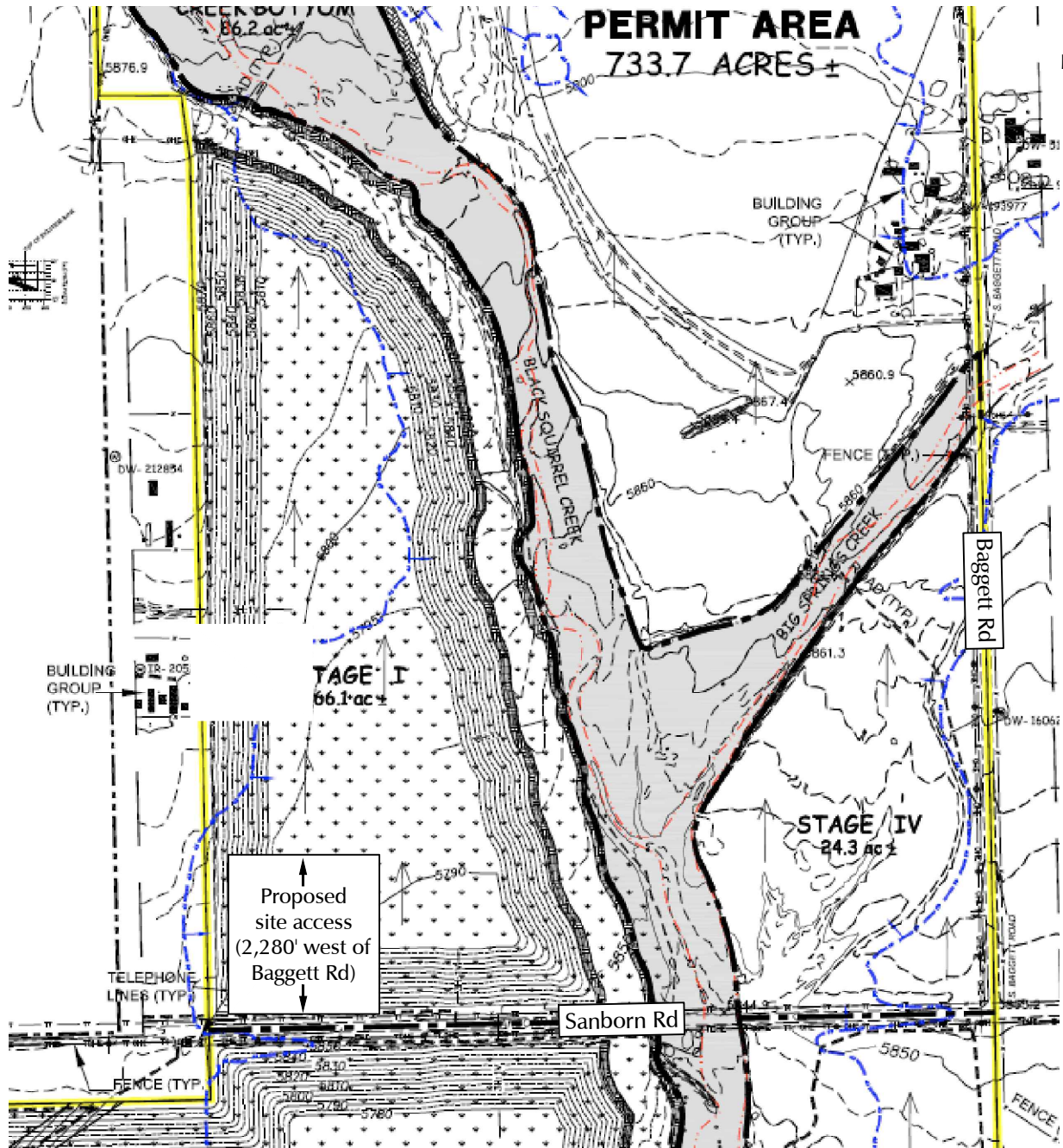
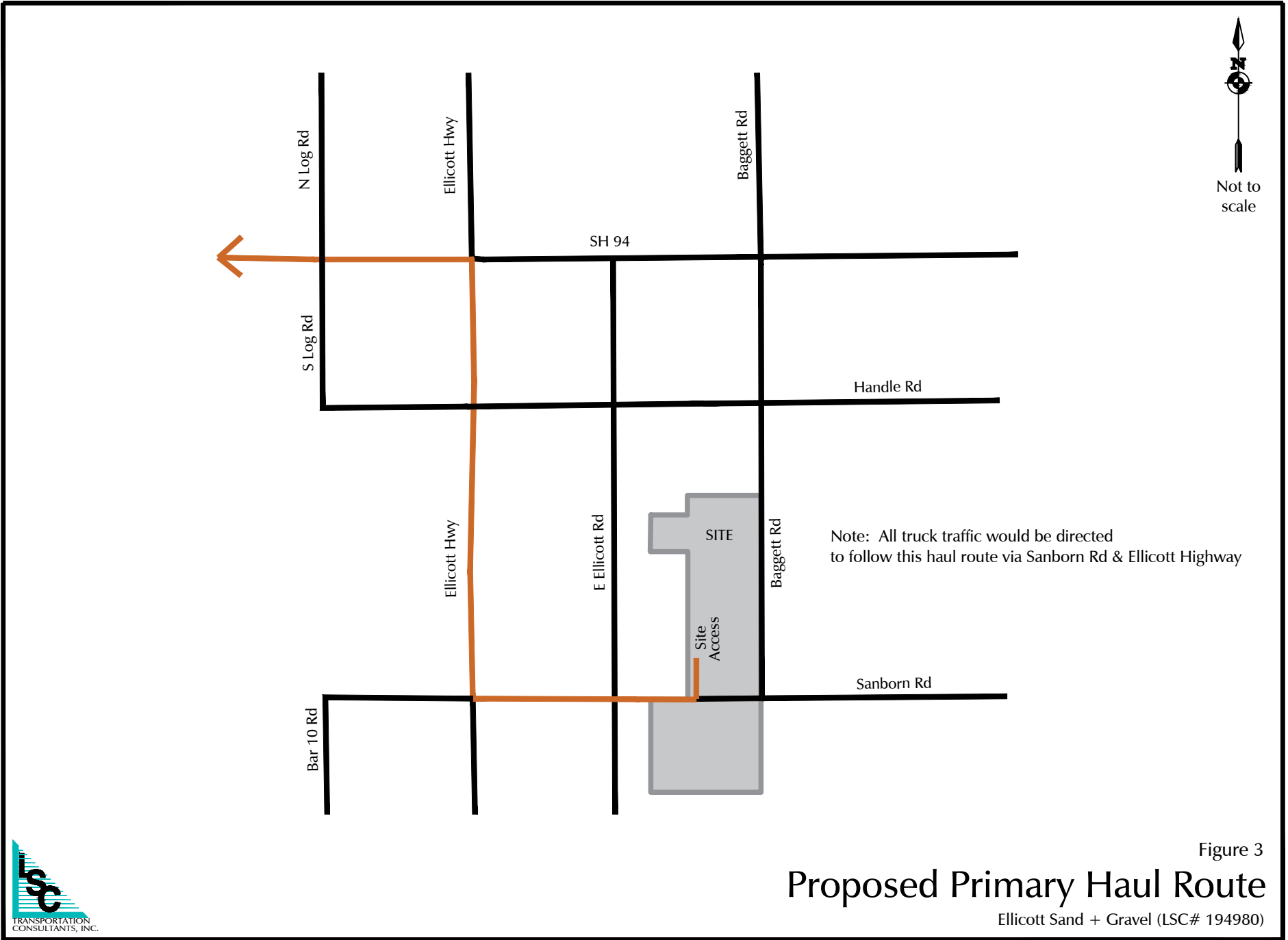


Figure 2

Site Plan

Ellicott Sand + Gravel (LSC# 194980)



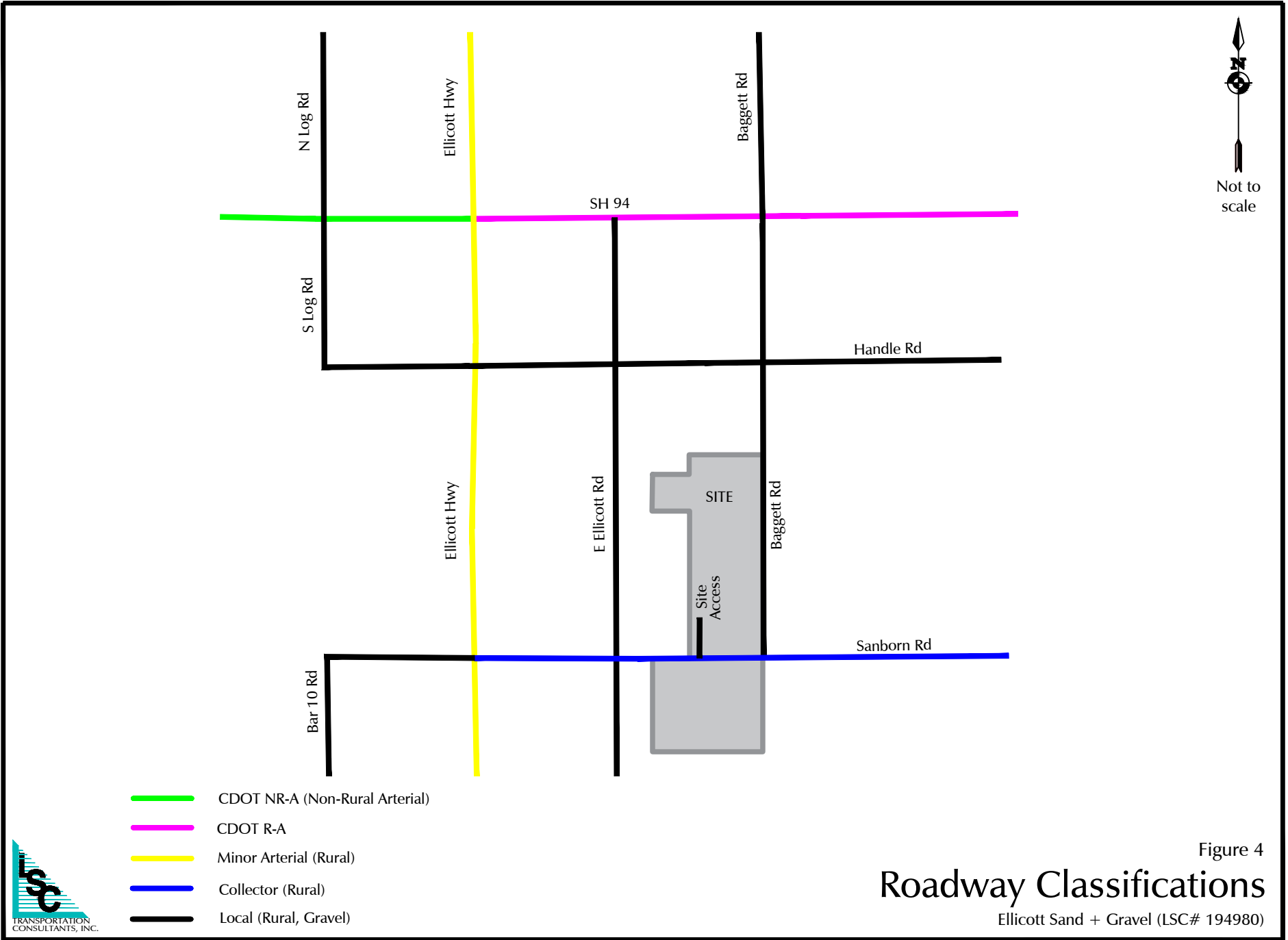


Not to scale

Note: All truck traffic would be directed to follow this haul route via Sanborn Rd & Ellicott Highway

Figure 3
Proposed Primary Haul Route
 Ellicott Sand + Gravel (LSC# 194980)





- CDOT NR-A (Non-Rural Arterial)
- CDOT R-A
- Minor Arterial (Rural)
- Collector (Rural)
- Local (Rural, Gravel)

Figure 4
Roadway Classifications
 Ellicott Sand + Gravel (LSC# 194980)



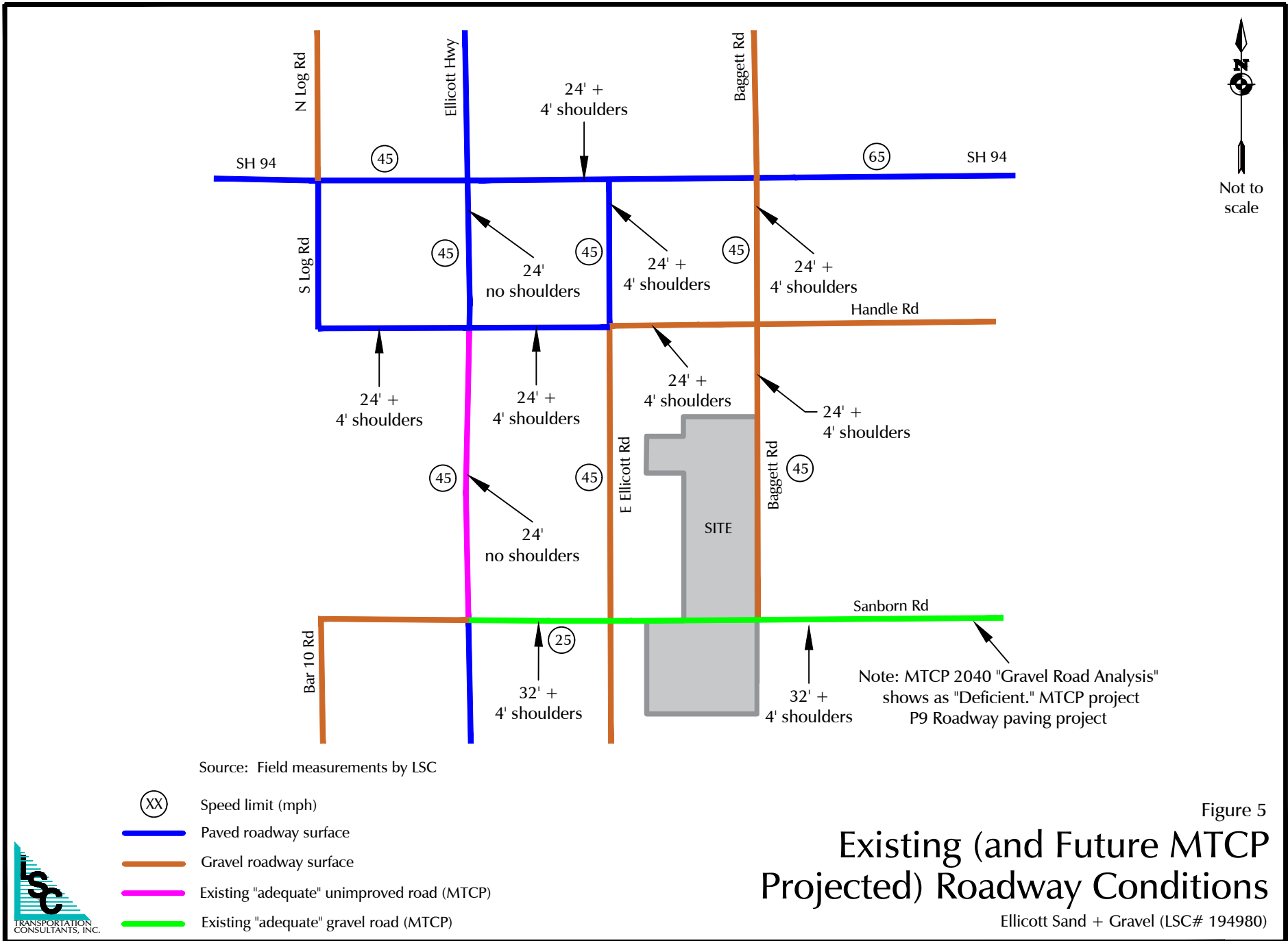


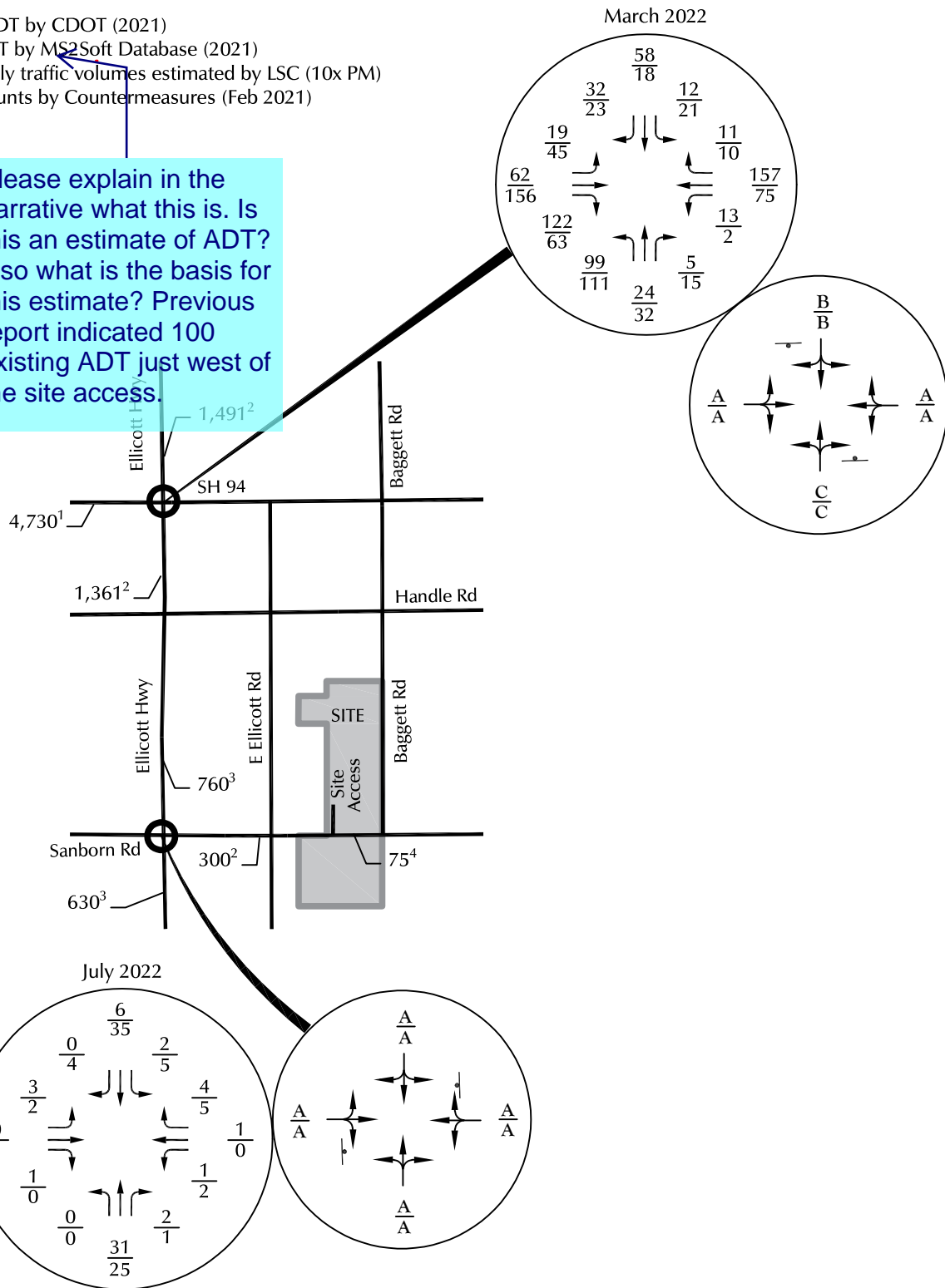
Figure 5
Existing (and Future MTCP Projected) Roadway Conditions

Ellicott Sand + Gravel (LSC# 194980)



- ¹ AADT by CDOT (2021)
- ² ADT by MS2Soft Database (2021)
- ³ Daily traffic volumes estimated by LSC (10x PM)
- ⁴ Counts by Countermeasures (Feb 2021)

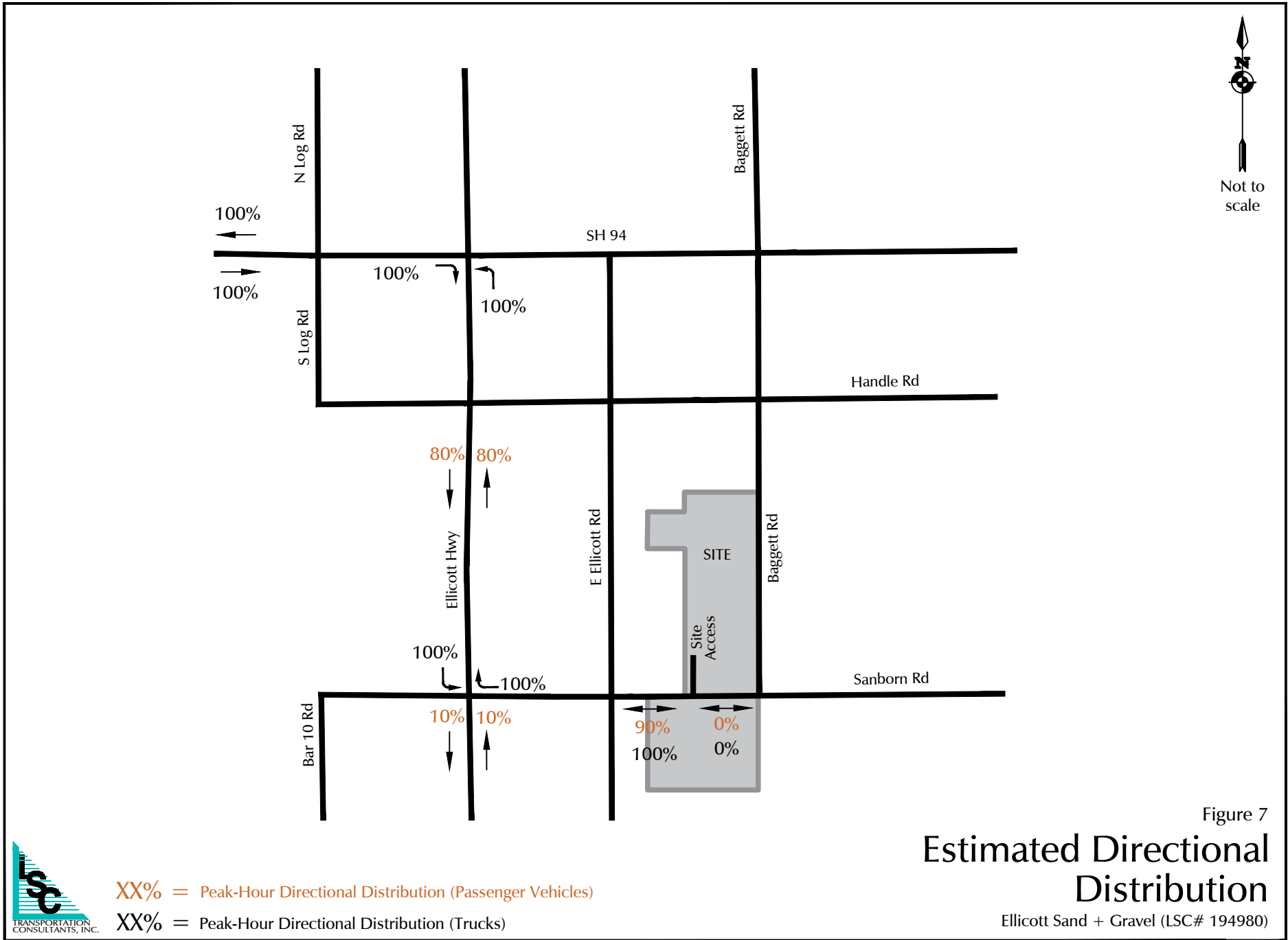
Please explain in the narrative what this is. Is this an estimate of ADT? if so what is the basis for this estimate? Previous report indicated 100 existing ADT just west of the site access.



- $\frac{XX}{XX}$ = AM Weekday Peak-Hour Traffic (vehicles per hour)
- $\frac{XX}{XX}$ = PM Weekday Peak-Hour Traffic (vehicles per hour)
- X,XXX = Average Daily Traffic (vehicles per day) (estimates by LSC (10x PM))
- $\frac{X}{X}$ = AM Individual Movement Peak-Hour LOS
- $\frac{X}{X}$ = PM Individual Movement Peak-Hour LOS
- $\frac{X}{X}$ = AM Entire Intersection Peak-Hour LOS
- $\frac{X}{X}$ = PM Entire Intersection Peak-Hour LOS
- ⊥ = Stop Sign



Figure 6
Existing Traffic Volumes, Lane Geometry, Traffic Control, and LOS
 Ellicott Sand + Gravel (LSC# 194980)



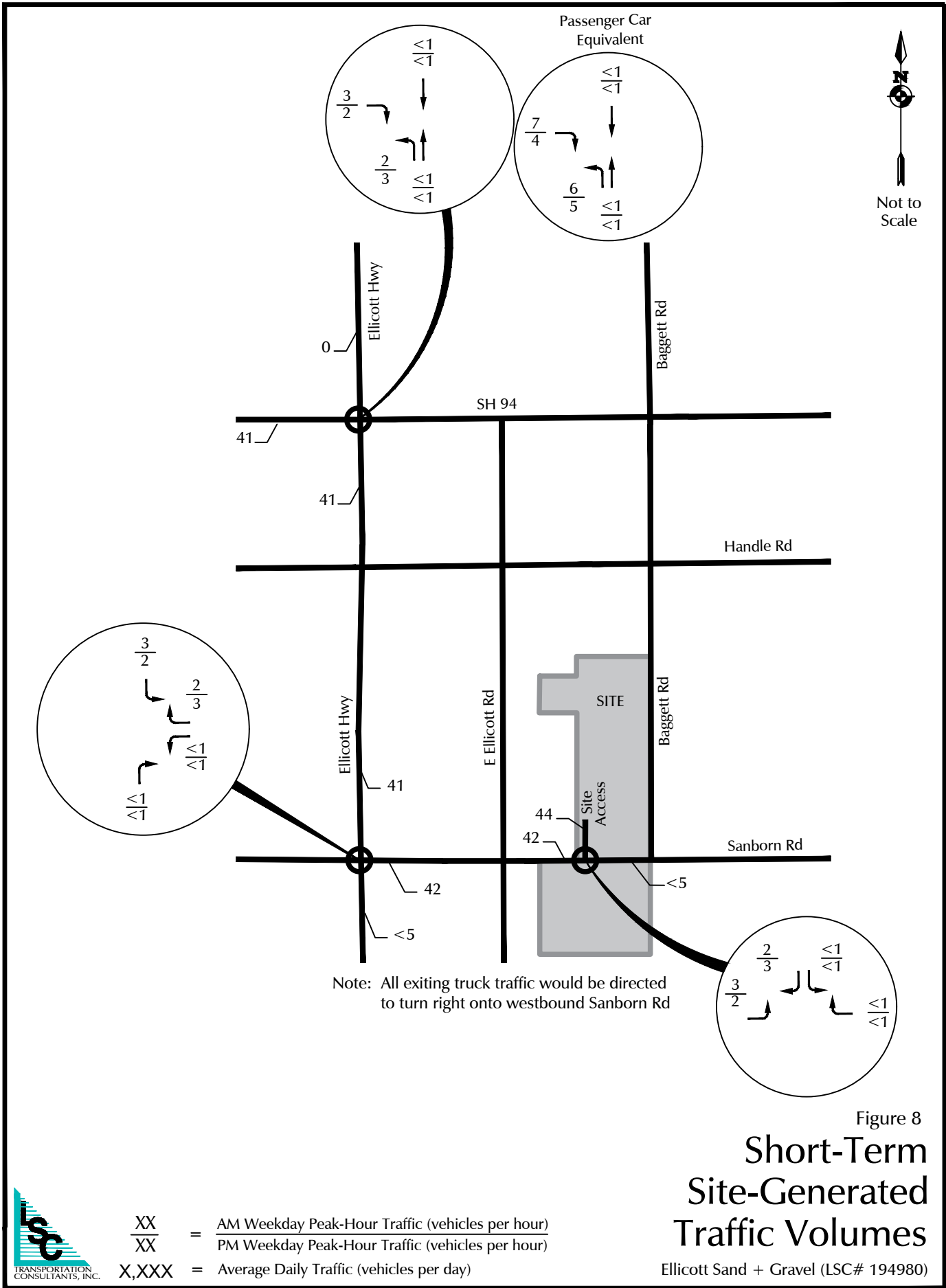


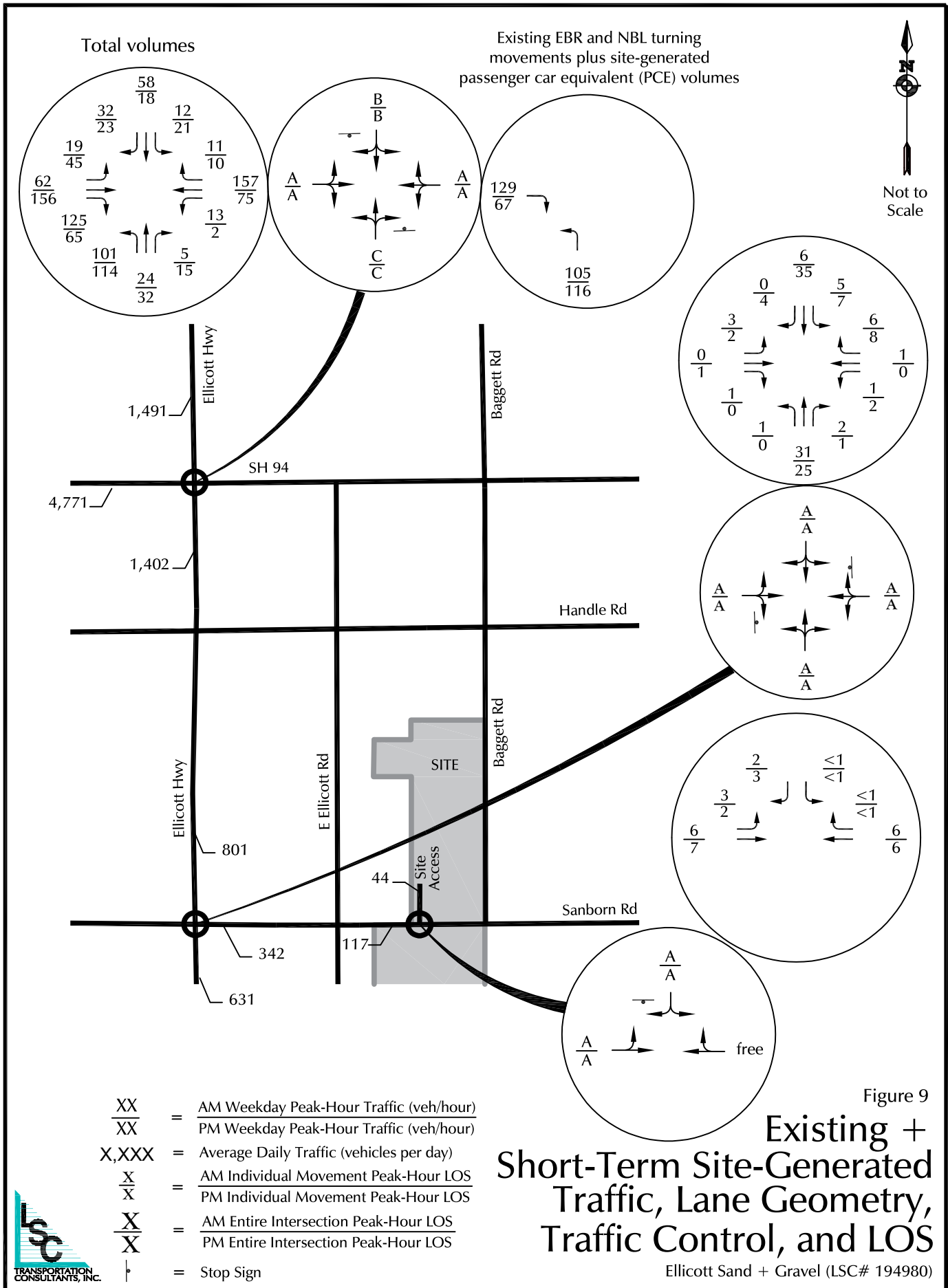
Figure 8

Short-Term Site-Generated Traffic Volumes

Ellicott Sand + Gravel (LSC# 194980)

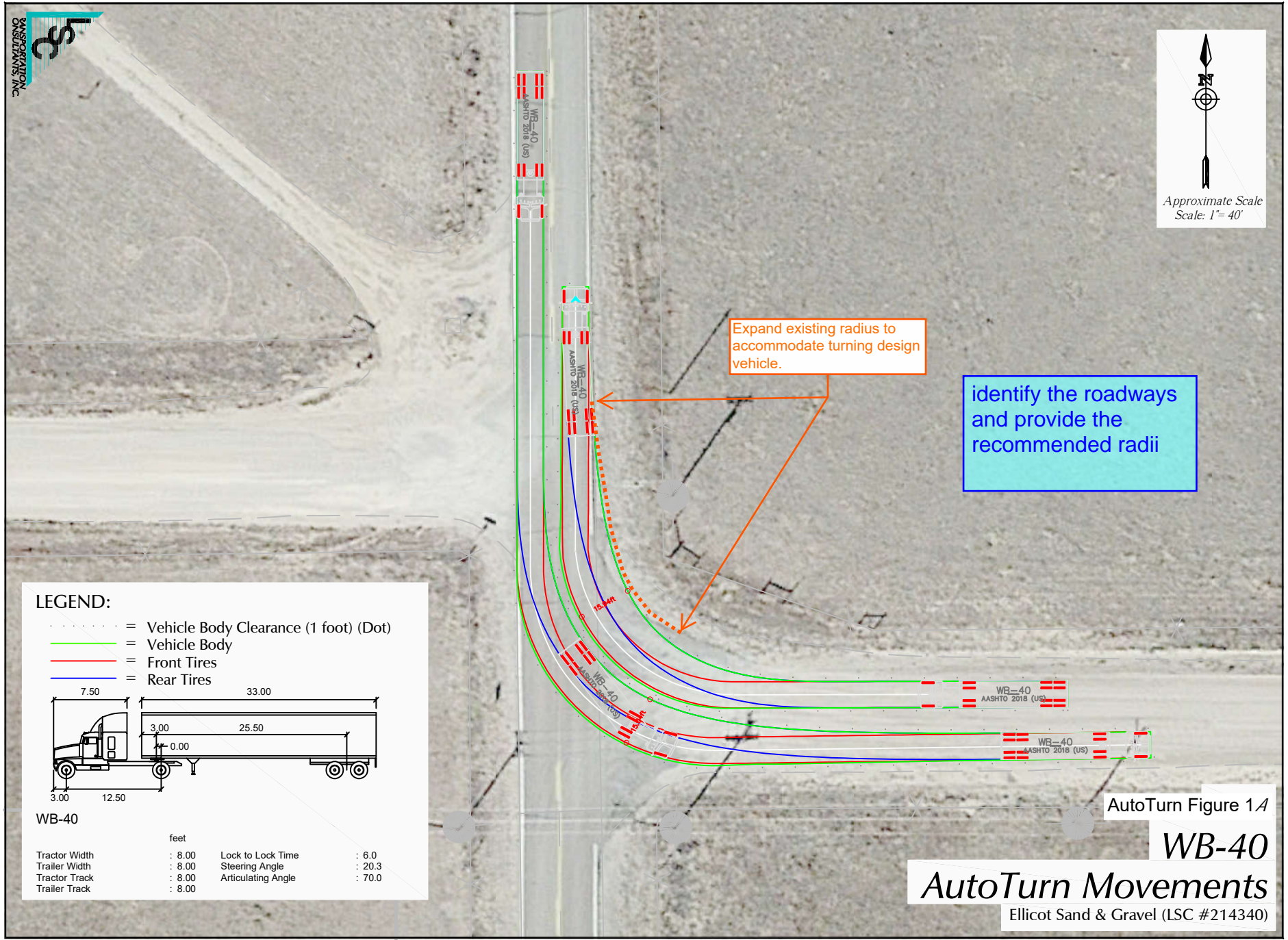


$\frac{XX}{XX}$ = AM Weekday Peak-Hour Traffic (vehicles per hour)
 $\frac{XX}{XX}$ = PM Weekday Peak-Hour Traffic (vehicles per hour)
 X,XXX = Average Daily Traffic (vehicles per day)



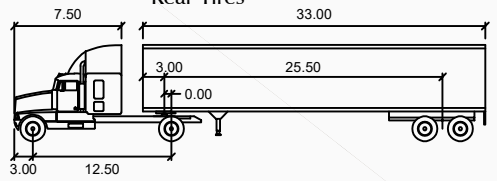
- $\frac{XX}{XX}$ = AM Weekday Peak-Hour Traffic (veh/hour)
PM Weekday Peak-Hour Traffic (veh/hour)
- X,XXX = Average Daily Traffic (vehicles per day)
- $\frac{X}{X}$ = AM Individual Movement Peak-Hour LOS
PM Individual Movement Peak-Hour LOS
- $\frac{X}{X}$ = AM Entire Intersection Peak-Hour LOS
PM Entire Intersection Peak-Hour LOS
- ⊥ = Stop Sign





LEGEND:

- - - - - = Vehicle Body Clearance (1 foot) (Dot)
- = Vehicle Body
- = Front Tires
- = Rear Tires



WB-40

	feet	
Tractor Width	: 8.00	Lock to Lock Time : 6.0
Trailer Width	: 8.00	Steering Angle : 20.3
Tractor Track	: 8.00	Articulating Angle : 70.0
Trailer Track	: 8.00	

Expand existing radius to accommodate turning design vehicle.

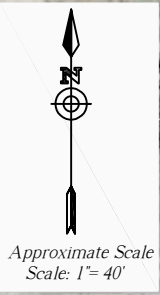
identify the roadways and provide the recommended radii

AutoTurn Figure 1A

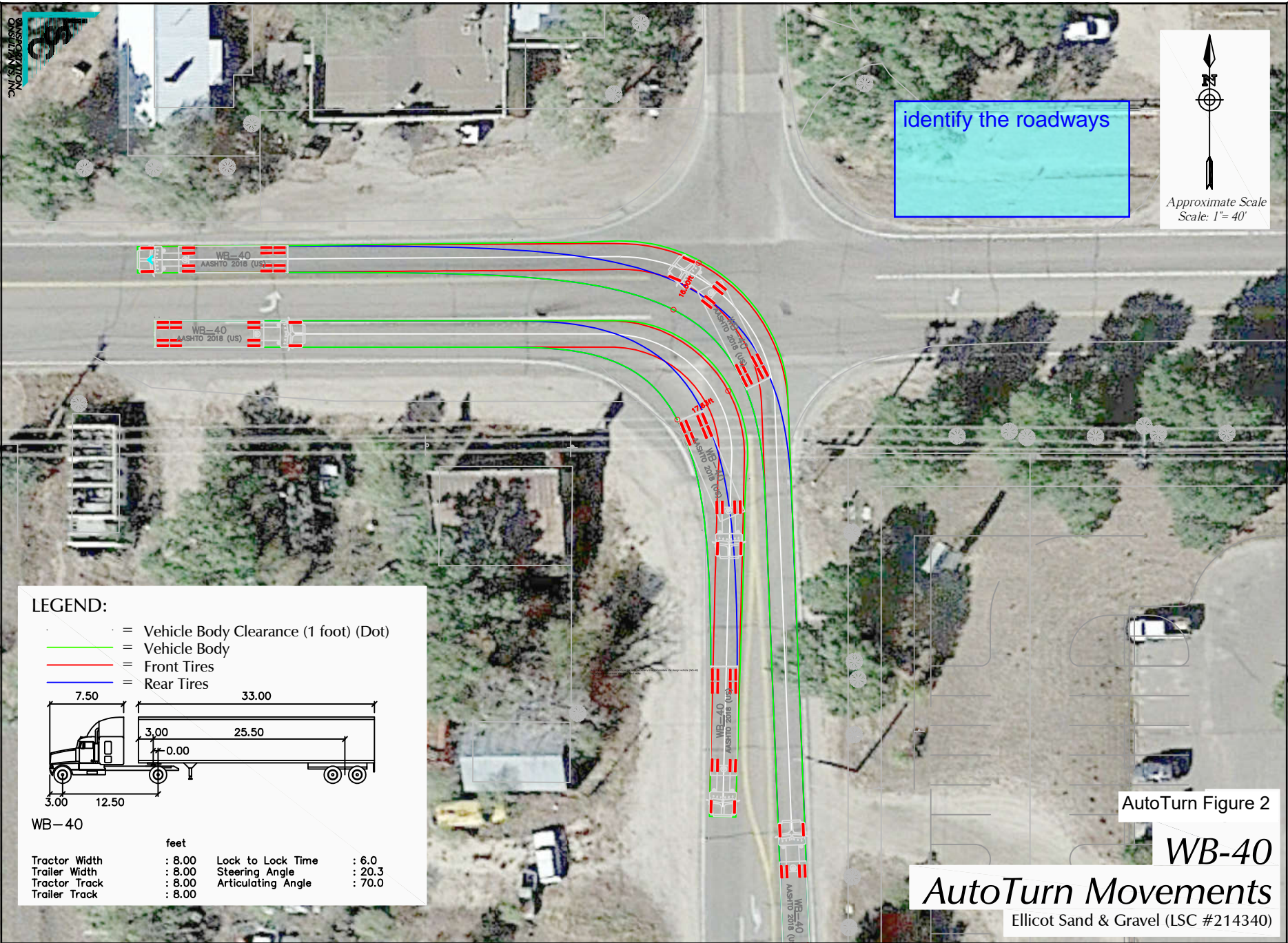
WB-40

AutoTurn Movements

Ellicot Sand & Gravel (LSC #214340)

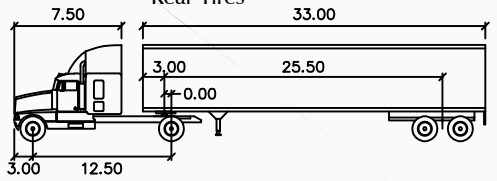


identify the roadways



LEGEND:

- = Vehicle Body Clearance (1 foot) (Dot)
- = Vehicle Body
- = Front Tires
- = Rear Tires



WB-40

feet			
Tractor Width	: 8.00	Lock to Lock Time	: 6.0
Trailer Width	: 8.00	Steering Angle	: 20.3
Tractor Track	: 8.00	Articulating Angle	: 70.0
Trailer Track	: 8.00		

AutoTurn Figure 2

WB-40

AutoTurn Movements

Ellicot Sand & Gravel (LSC #214340)

Traffic Counts



LSC Transportation Consultants, Inc.

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

File Name : Ellicott Hwy - Hwy 94 AM 3-22

Site Code : S224120

Start Date : 3/30/2022

Page No : 1

Groups Printed- Unshifted

Start Time	Ellicott Hwy Southbound					Hwy 94 Westbound					Ellicott Hwy Northbound					Hwy 94 Eastbound					Int. Total
	Right	T	L	U	App. Total	Right	T	L	U	App. Total	Right	T	L	U	App. Total	Right	T	L	U	App. Total	
06:30 AM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1
06:35 AM	5	3	0	0	8	1	16	0	0	17	0	0	4	0	4	1	3	0	0	4	33
06:40 AM	5	1	1	0	7	2	13	0	0	15	0	3	5	0	8	1	1	0	0	2	32
06:45 AM	6	1	0	0	7	3	9	0	0	12	0	0	6	0	6	3	3	3	0	9	34
06:50 AM	3	0	0	0	3	0	12	1	0	13	0	1	3	0	4	2	7	1	0	10	30
06:55 AM	7	3	2	0	12	1	15	0	0	16	0	1	3	0	4	5	4	1	0	10	42
Total	26	8	3	0	37	7	66	1	0	74	0	5	21	0	26	12	18	5	0	35	172
07:00 AM	5	5	1	0	11	2	16	0	0	18	0	0	3	0	3	4	3	1	0	8	40
07:05 AM	4	1	1	0	6	0	14	3	0	17	0	1	6	0	7	6	2	1	0	9	39
07:10 AM	4	1	2	0	7	2	16	3	0	21	0	0	2	0	2	3	6	3	0	12	42
07:15 AM	3	4	2	0	9	0	15	0	0	15	0	0	4	0	4	4	1	1	0	6	34
07:20 AM	3	6	3	0	12	0	12	0	0	12	0	0	6	0	6	16	5	2	0	23	53
07:25 AM	2	4	1	0	7	0	14	2	0	16	0	3	10	0	13	10	4	2	0	16	52
07:30 AM	3	8	0	0	11	1	14	1	0	16	1	2	8	0	11	14	6	2	0	22	60
07:35 AM	3	7	1	0	11	1	9	2	0	12	1	4	11	0	16	23	7	1	0	31	70
07:40 AM	3	11	0	0	14	1	11	0	0	12	1	7	9	0	17	19	5	1	0	25	68
07:45 AM	1	4	0	0	5	1	11	1	0	13	1	2	8	0	11	11	3	2	0	16	45
07:50 AM	0	4	0	0	4	2	17	1	0	20	1	4	18	0	23	7	5	1	0	13	60
07:55 AM	1	3	1	0	5	1	8	0	0	9	0	1	14	0	15	5	15	2	0	22	51
Total	32	58	12	0	102	11	157	13	0	181	5	24	99	0	128	122	62	19	0	203	614
08:00 AM	1	4	1	0	6	1	11	2	0	14	0	1	8	0	9	2	3	2	0	7	36
08:05 AM	3	2	0	0	5	1	10	0	0	11	1	2	11	0	14	0	2	1	0	3	33
08:10 AM	1	1	0	0	2	2	13	1	0	16	0	0	1	0	1	1	5	3	0	9	28
08:15 AM	1	2	0	0	3	3	6	0	0	9	1	2	2	0	5	0	6	2	0	8	25
08:20 AM	4	1	1	0	6	1	7	0	0	8	1	1	5	0	7	1	3	1	0	5	26
08:25 AM	0	0	0	0	0	3	12	2	0	17	0	1	4	0	5	1	2	2	0	5	27
Grand Total	68	76	17	0	161	29	282	19	0	330	8	36	151	0	195	139	101	35	0	275	961
Apprch %	42.2	47.2	10.6	0		8.8	85.5	5.8	0		4.1	18.5	77.4	0		50.5	36.7	12.7	0		
Total %	7.1	7.9	1.8	0	16.8	3	29.3	2	0	34.3	0.8	3.7	15.7	0	20.3	14.5	10.5	3.6	0	28.6	

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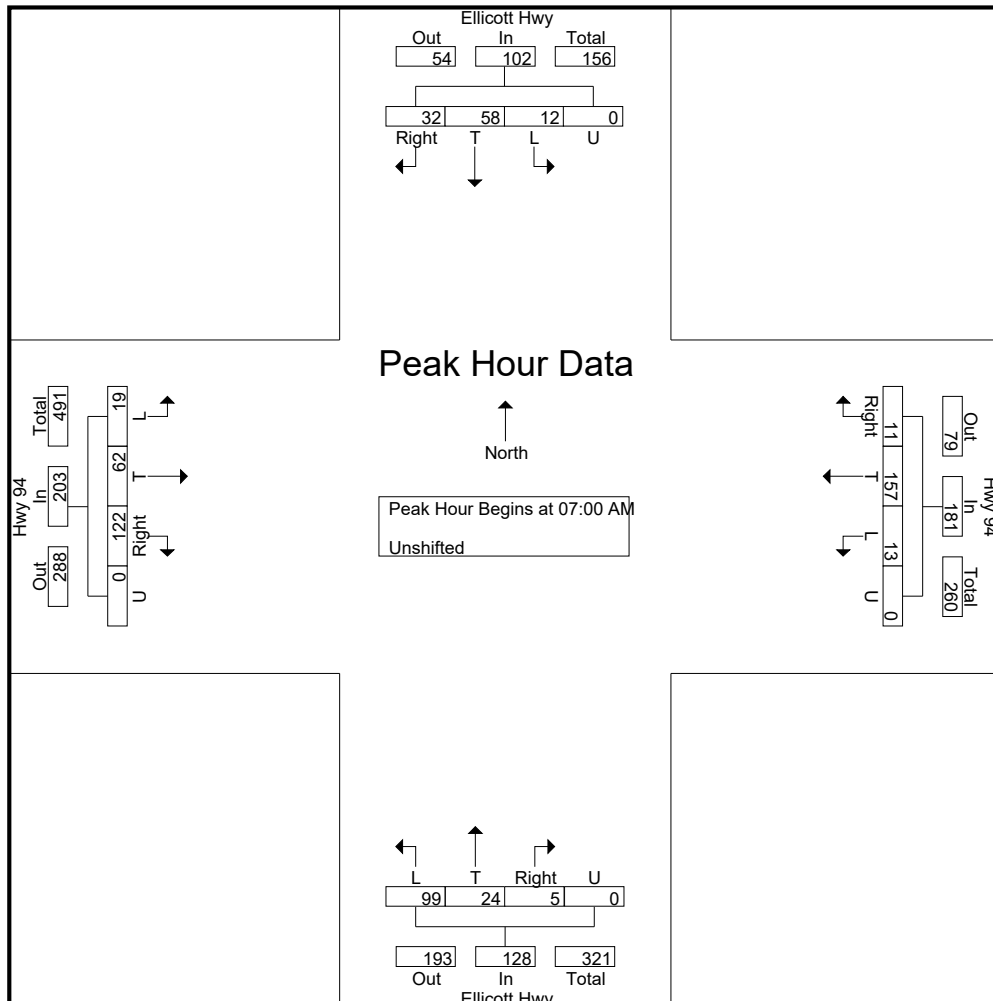
File Name : Ellicott Hwy - Hwy 94 AM 3-22

Site Code : S224120

Start Date : 3/30/2022

Page No : 2

Start Time	Ellicott Hwy Southbound					Hwy 94 Westbound					Ellicott Hwy Northbound					Hwy 94 Eastbound					Int. Total
	Right	T	L	U	App. Total	Right	T	L	U	App. Total	Right	T	L	U	App. Total	Right	T	L	U	App. Total	
Peak Hour Analysis From 06:30 AM to 08:25 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	5	5	1	0	11	2	16	0	0	18	0	0	3	0	3	4	3	1	0	8	40
07:05 AM	4	1	1	0	6	0	14	3	0	17	0	1	6	0	7	6	2	1	0	9	39
07:10 AM	4	1	2	0	7	2	16	3	0	21	0	0	2	0	2	3	6	3	0	12	42
07:15 AM	3	4	2	0	9	0	15	0	0	15	0	0	4	0	4	4	1	1	0	6	34
07:20 AM	3	6	3	0	12	0	12	0	0	12	0	0	6	0	6	16	5	2	0	23	53
07:25 AM	2	4	1	0	7	0	14	2	0	16	0	3	10	0	13	10	4	2	0	16	52
07:30 AM	3	8	0	0	11	1	14	1	0	16	1	2	8	0	11	14	6	2	0	22	60
07:35 AM	3	7	1	0	11	1	9	2	0	12	1	4	11	0	16	23	7	1	0	31	70
07:40 AM	3	11	0	0	14	1	11	0	0	12	1	7	9	0	17	19	5	1	0	25	68
07:45 AM	1	4	0	0	5	1	11	1	0	13	1	2	8	0	11	11	3	2	0	16	45
07:50 AM	0	4	0	0	4	2	17	1	0	20	1	4	18	0	23	7	5	1	0	13	60
07:55 AM	1	3	1	0	5	1	8	0	0	9	0	1	14	0	15	5	15	2	0	22	51
Total Volume	32	58	12	0	102	11	157	13	0	181	5	24	99	0	128	122	62	19	0	203	614
% App. Total	31.4	56.9	11.8	0		6.1	86.7	7.2	0		3.9	18.8	77.3	0		60.1	30.5	9.4	0		
PHF	.533	.439	.333	.000	.607	.458	.770	.361	.000	.718	.417	.286	.458	.000	.464	.442	.344	.528	.000	.546	.731



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File Name : Ellicott Hwy - Hwy 94 AM 3-22

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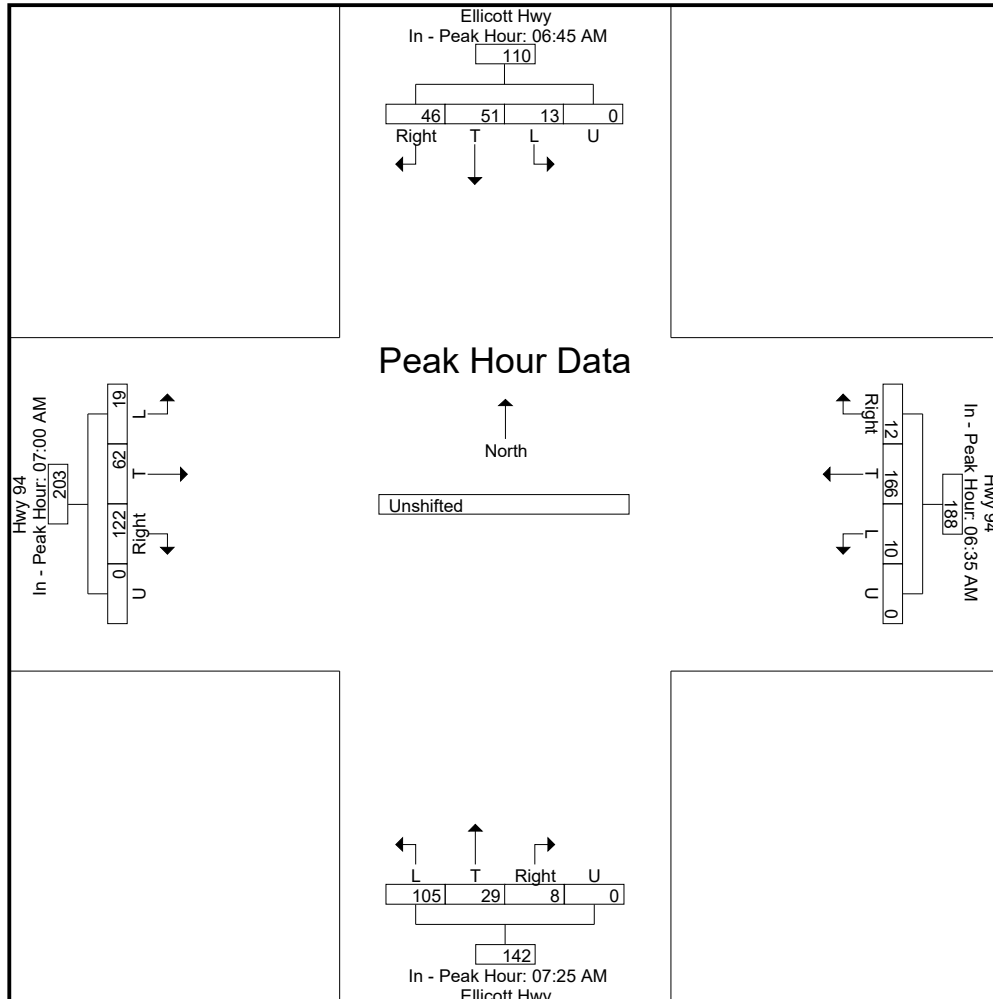
Page No : 3

Start Time	Ellicott Hwy Southbound					Hwy 94 Westbound					Ellicott Hwy Northbound					Hwy 94 Eastbound					Int. Total
	Right	T	L	U	App. Total	Right	T	L	U	App. Total	Right	T	L	U	App. Total	Right	T	L	U	App. Total	

Peak Hour Analysis From 06:30 AM to 08:25 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	06:45 AM					06:35 AM					07:25 AM					07:00 AM				
+0 mins.	6	1	0	0	7	1	16	0	0	17	0	3	10	0	13	4	3	1	0	8
+5 mins.	3	0	0	0	3	2	13	0	0	15	1	2	8	0	11	6	2	1	0	9
+10 mins.	7	3	2	0	12	3	9	0	0	12	1	4	11	0	16	3	6	3	0	12
+15 mins.	5	5	1	0	11	0	12	1	0	13	1	7	9	0	17	4	1	1	0	6
+20 mins.	4	1	1	0	6	1	15	0	0	16	1	2	8	0	11	16	5	2	0	23
+25 mins.	4	1	2	0	7	2	16	0	0	18	1	4	18	0	23	10	4	2	0	16
+30 mins.	3	4	2	0	9	0	14	3	0	17	0	1	14	0	15	14	6	2	0	22
+35 mins.	3	6	3	0	12	2	16	3	0	21	0	1	8	0	9	23	7	1	0	31
+40 mins.	2	4	1	0	7	0	15	0	0	15	1	2	11	0	14	19	5	1	0	25
+45 mins.	3	8	0	0	11	0	12	0	0	12	0	0	1	0	1	11	3	2	0	16
+50 mins.	3	7	1	0	11	0	14	2	0	16	1	2	2	0	5	7	5	1	0	13
+55 mins.	3	11	0	0	14	1	14	1	0	16	1	1	5	0	7	5	15	2	0	22
Total Volume	46	51	13	0	110	12	166	10	0	188	8	29	105	0	142	122	62	19	0	203
% App. Total	41.8	46.4	11.8	0		6.4	88.3	5.3	0		5.6	20.4	73.9	0		60.1	30.5	9.4	0	
PHF	.548	.386	.361	.000	.655	.333	.865	.278	.000	.746	.667	.345	.486	.000	.514	.442	.344	.528	.000	.546



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Groups Printed- Unshifted

Start Time	Ellicott Hwy Southbound					Hwy 94 Westbound					Ellicott Hwy Northbound					Hwy 94 Eastbound					Int. Total
	Right	T	L	U	App. Total	Right	T	L	U	App. Total	Right	T	L	U	App. Total	Right	T	L	U	App. Total	
04:00 PM	2	0	1	0	3	0	7	0	0	7	1	1	8	0	10	5	10	2	0	17	37
04:05 PM	1	3	4	0	8	2	8	1	0	11	0	6	19	0	25	4	12	4	0	20	64
04:10 PM	2	1	3	0	6	0	5	1	0	6	2	1	15	0	18	8	10	1	0	19	49
04:15 PM	3	1	0	0	4	1	9	0	0	10	4	5	17	0	26	5	14	4	0	23	63
04:20 PM	2	1	3	0	6	2	7	0	0	9	0	5	16	0	21	3	18	7	0	28	64
04:25 PM	5	0	0	0	5	1	13	0	0	14	2	2	5	0	9	6	20	3	0	29	57
04:30 PM	0	1	2	0	3	1	7	0	0	8	0	5	2	0	7	2	11	2	0	15	33
04:35 PM	1	4	4	0	9	1	3	0	0	4	2	1	7	0	10	5	14	4	0	23	46
04:40 PM	1	1	1	0	3	0	5	0	0	5	2	3	8	0	13	1	9	4	0	14	35
04:45 PM	1	1	3	0	5	0	1	0	0	1	1	1	6	0	8	13	13	6	0	32	46
04:50 PM	5	3	0	0	8	1	5	0	0	6	1	2	6	0	9	8	13	5	0	26	49
04:55 PM	0	2	0	0	2	1	5	0	0	6	0	0	2	0	2	3	12	3	0	18	28
Total	23	18	21	0	62	10	75	2	0	87	15	32	111	0	158	63	156	45	0	264	571
05:00 PM	1	1	3	0	5	3	9	0	0	12	1	2	3	0	6	4	15	2	0	21	44
05:05 PM	3	2	3	0	8	2	8	1	0	11	2	1	8	0	11	4	18	2	0	24	54
05:10 PM	1	4	3	0	8	0	9	0	0	9	1	1	8	0	10	5	9	7	0	21	48
05:15 PM	1	2	0	0	3	2	3	0	0	5	0	1	3	0	4	4	17	5	0	26	38
05:20 PM	2	5	3	0	10	0	13	0	0	13	1	0	2	0	3	3	10	5	0	18	44
05:25 PM	2	1	0	0	3	2	8	0	0	10	1	3	3	0	7	13	16	3	0	32	52
05:30 PM	4	2	2	0	8	0	4	0	0	4	1	1	4	0	6	7	16	3	0	26	44
05:35 PM	1	0	1	0	2	0	3	0	0	3	0	0	6	0	6	4	13	8	0	25	36
05:40 PM	1	1	4	0	6	1	5	0	0	6	0	0	10	0	10	7	11	2	0	20	42
05:45 PM	2	1	3	0	6	0	1	0	0	1	1	1	4	0	6	3	15	1	0	19	32
05:50 PM	0	2	2	0	4	1	2	0	0	3	1	4	6	0	11	3	15	5	0	23	41
05:55 PM	3	0	1	0	4	3	2	1	0	6	0	4	7	0	11	3	10	6	0	19	40
Total	21	21	25	0	67	14	67	2	0	83	9	18	64	0	91	60	165	49	0	274	515
Grand Total	44	39	46	0	129	24	142	4	0	170	24	50	175	0	249	123	321	94	0	538	1086
Apprch %	34.1	30.2	35.7	0		14.1	83.5	2.4	0		9.6	20.1	70.3	0		22.9	59.7	17.5	0		
Total %	4.1	3.6	4.2	0	11.9	2.2	13.1	0.4	0	15.7	2.2	4.6	16.1	0	22.9	11.3	29.6	8.7	0	49.5	

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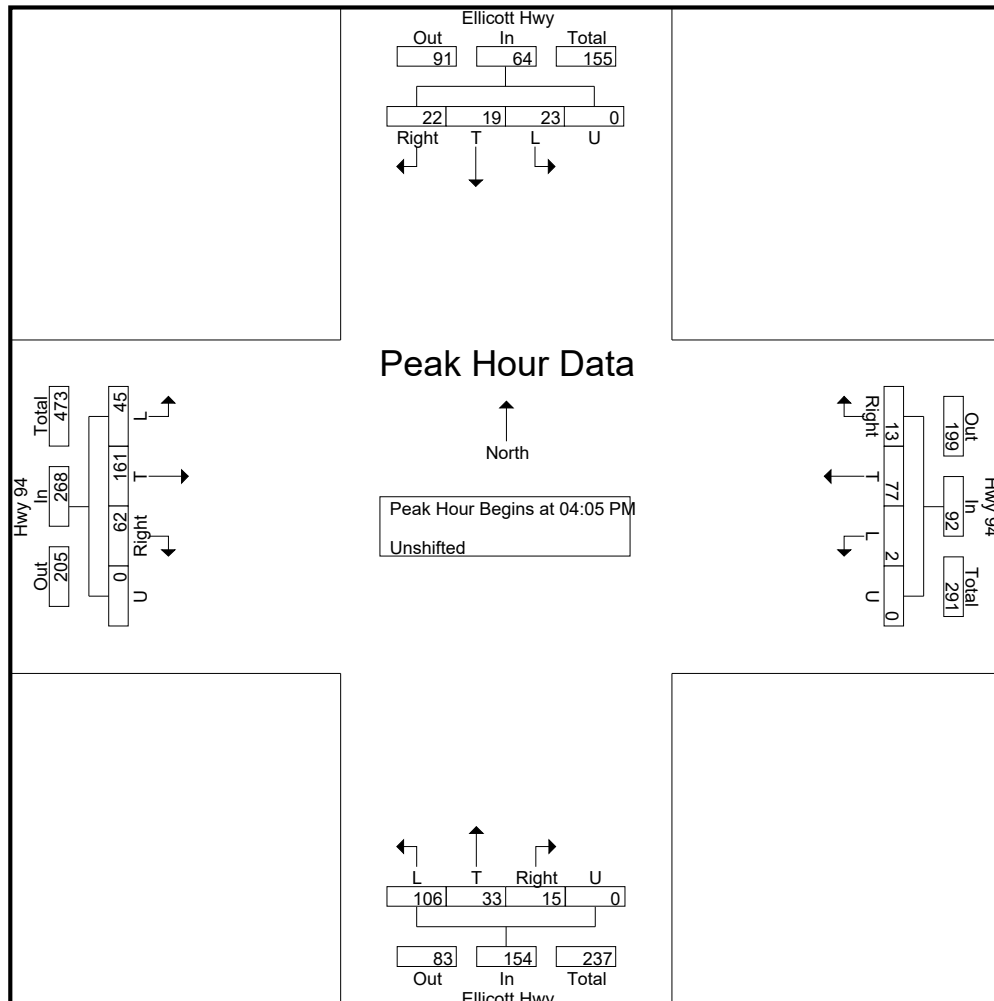
File Name : Ellicott Hwy - Hwy 94 PM 3-22

Site Code : S224120

Start Date : 3/30/2022

Page No : 2

Start Time	Ellicott Hwy Southbound					Hwy 94 Westbound					Ellicott Hwy Northbound					Hwy 94 Eastbound					Int. Total
	Right	T	L	U	App. Total	Right	T	L	U	App. Total	Right	T	L	U	App. Total	Right	T	L	U	App. Total	
Peak Hour Analysis From 04:00 PM to 05:55 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:05 PM																					
04:05 PM	1	3	4	0	8	2	8	1	0	11	0	6	19	0	25	4	12	4	0	20	64
04:10 PM	2	1	3	0	6	0	5	1	0	6	2	1	15	0	18	8	10	1	0	19	49
04:15 PM	3	1	0	0	4	1	9	0	0	10	4	5	17	0	26	5	14	4	0	23	63
04:20 PM	2	1	3	0	6	2	7	0	0	9	0	5	16	0	21	3	18	7	0	28	64
04:25 PM	5	0	0	0	5	1	13	0	0	14	2	2	5	0	9	6	20	3	0	29	57
04:30 PM	0	1	2	0	3	1	7	0	0	8	0	5	2	0	7	2	11	2	0	15	33
04:35 PM	1	4	4	0	9	1	3	0	0	4	2	1	7	0	10	5	14	4	0	23	46
04:40 PM	1	1	1	0	3	0	5	0	0	5	2	3	8	0	13	1	9	4	0	14	35
04:45 PM	1	1	3	0	5	0	1	0	0	1	1	1	6	0	8	13	13	6	0	32	46
04:50 PM	5	3	0	0	8	1	5	0	0	6	1	2	6	0	9	8	13	5	0	26	49
04:55 PM	0	2	0	0	2	1	5	0	0	6	0	0	2	0	2	3	12	3	0	18	28
05:00 PM	1	1	3	0	5	3	9	0	0	12	1	2	3	0	6	4	15	2	0	21	44
Total Volume	22	19	23	0	64	13	77	2	0	92	15	33	106	0	154	62	161	45	0	268	578
% App. Total	34.4	29.7	35.9	0		14.1	83.7	2.2	0		9.7	21.4	68.8	0		23.1	60.1	16.8	0		
PHF	.367	.396	.479	.000	.593	.361	.494	.167	.000	.548	.313	.458	.465	.000	.494	.397	.671	.536	.000	.698	.753



LSC Transportation Consultants, Inc.

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

File Name : Ellicott Hwy - Hwy 94 PM 3-22

Site Code : S224120

Start Date : 3/30/2022

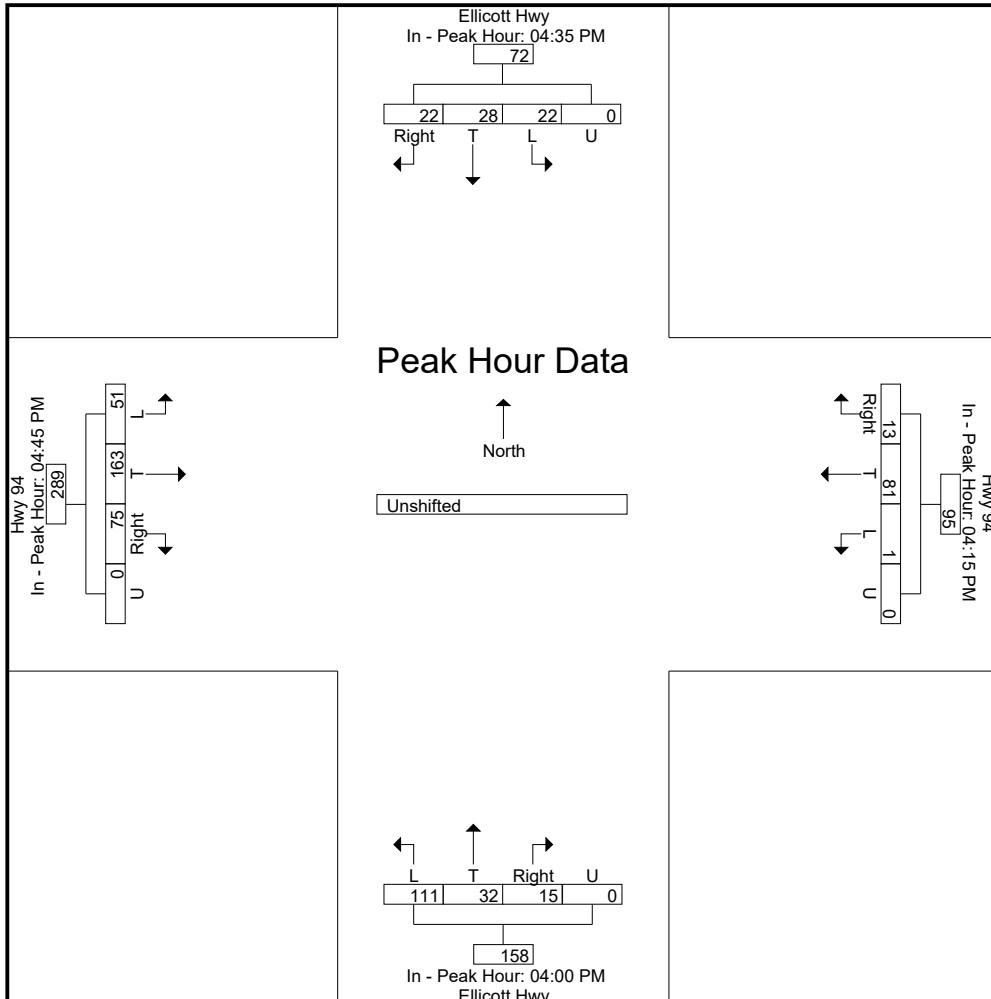
Page No : 3

Start Time	Ellicott Hwy Southbound					Hwy 94 Westbound					Ellicott Hwy Northbound					Hwy 94 Eastbound					Int. Total
	Right	T	L	U	App. Total	Right	T	L	U	App. Total	Right	T	L	U	App. Total	Right	T	L	U	App. Total	

Peak Hour Analysis From 04:00 PM to 05:55 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	04:35 PM					04:15 PM					04:00 PM					04:45 PM				
+0 mins.	1	4	4	0	9	1	9	0	0	10	1	1	8	0	10	13	13	6	0	32
+5 mins.	1	1	1	0	3	2	7	0	0	9	0	6	19	0	25	8	13	5	0	26
+10 mins.	1	1	3	0	5	1	13	0	0	14	2	1	15	0	18	3	12	3	0	18
+15 mins.	5	3	0	0	8	1	7	0	0	8	4	5	17	0	26	4	15	2	0	21
+20 mins.	0	2	0	0	2	1	3	0	0	4	0	5	16	0	21	4	18	2	0	24
+25 mins.	1	1	3	0	5	0	5	0	0	5	2	2	5	0	9	5	9	7	0	21
+30 mins.	3	2	3	0	8	0	1	0	0	1	0	5	2	0	7	4	17	5	0	26
+35 mins.	1	4	3	0	8	1	5	0	0	6	2	1	7	0	10	3	10	5	0	18
+40 mins.	1	2	0	0	3	1	5	0	0	6	2	3	8	0	13	13	16	3	0	32
+45 mins.	2	5	3	0	10	3	9	0	0	12	1	1	6	0	8	7	16	3	0	26
+50 mins.	2	1	0	0	3	2	8	1	0	11	1	2	6	0	9	4	13	8	0	25
+55 mins.	4	2	2	0	8	0	9	0	0	9	0	0	2	0	2	7	11	2	0	20
Total Volume	22	28	22	0	72	13	81	1	0	95	15	32	111	0	158	75	163	51	0	289
% App. Total	30.6	38.9	30.6	0		13.7	85.3	1.1	0		9.5	20.3	70.3	0		26	56.4	17.6	0	
PHF	.367	.467	.458	.000	.600	.361	.519	.083	.000	.565	.313	.444	.487	.000	.506	.481	.755	.531	.000	.753



LSC Transportation Consultants, Inc.

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

File Name : Ellicott Hwy - Sanborn Rd AM

Site Code : S194980

Start Date : 7/27/2022

Page No : 1

Groups Printed- Unshifted

Start Time	Ellicott Hwy Southbound					Sanborn Rd Westbound					Ellicott Hwy Northbound					Sanborn Rd Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
06:30	1	1	0	0	2	1	0	0	0	1	1	7	0	0	8	0	0	2	0	2	13
06:45	0	3	0	0	3	2	0	0	0	2	0	12	0	0	12	0	0	1	0	1	18
Total	1	4	0	0	5	3	0	0	0	3	1	19	0	0	20	0	0	3	0	3	31
07:00	0	2	0	0	2	1	0	0	0	1	0	10	0	0	10	0	0	1	0	1	14
07:15	0	3	0	0	3	1	1	0	0	2	0	7	0	0	7	0	0	1	0	1	13
07:30	0	0	1	0	1	2	0	1	0	3	1	10	0	0	11	0	0	0	0	0	15
07:45	0	1	1	0	2	0	0	0	0	0	1	4	0	0	5	1	0	1	0	2	9
Total	0	6	2	0	8	4	1	1	0	6	2	31	0	0	33	1	0	3	0	4	51
08:00	1	3	0	0	4	2	0	0	0	2	0	7	0	0	7	1	0	0	0	1	14
08:15	0	3	0	0	3	1	0	0	0	1	1	4	0	0	5	0	0	2	0	2	11
Grand Total	2	16	2	0	20	10	1	1	0	12	4	61	0	0	65	2	0	8	0	10	107
Apprch %	10	80	10	0		83.3	8.3	8.3	0		6.2	93.8	0	0		20	0	80	0		
Total %	1.9	15	1.9	0	18.7	9.3	0.9	0.9	0	11.2	3.7	57	0	0	60.7	1.9	0	7.5	0	9.3	

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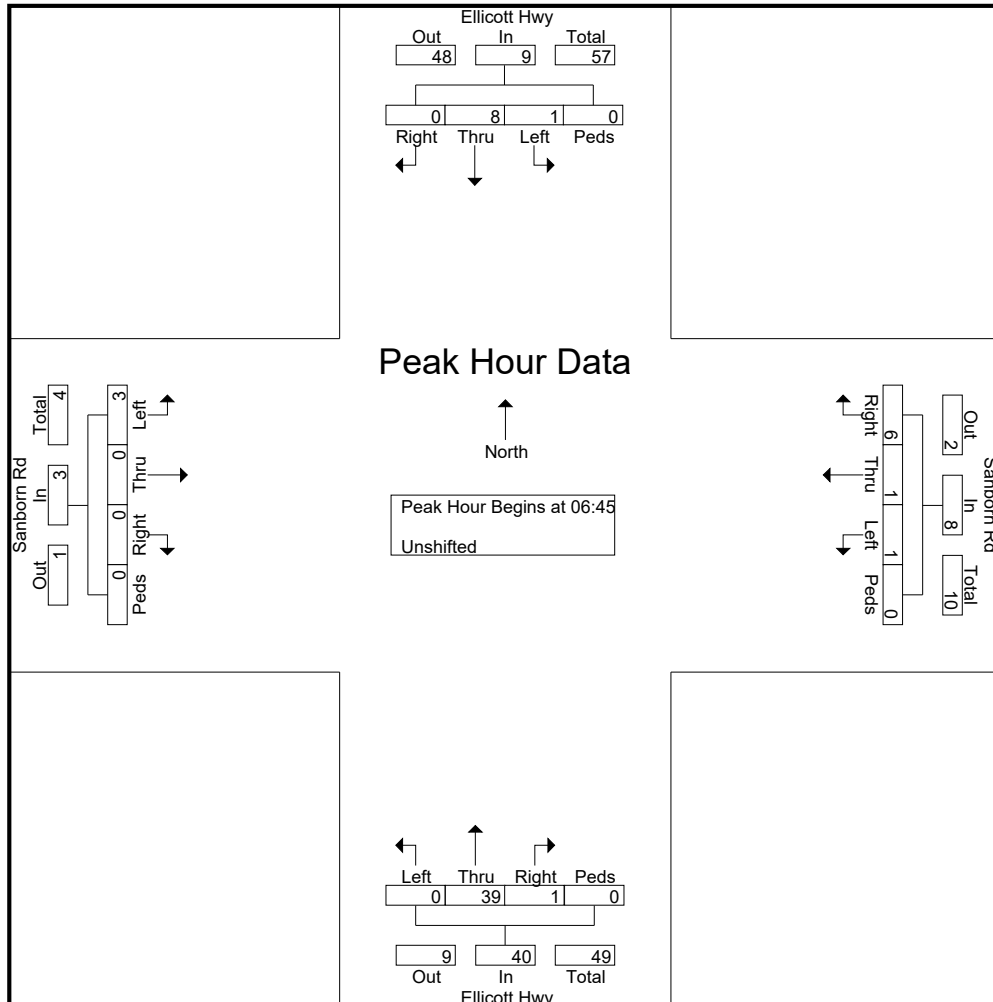
File Name : Ellicott Hwy - Sanborn Rd AM

Site Code : S194980

Start Date : 7/27/2022

Page No : 2

Start Time	Ellicott Hwy Southbound					Sanborn Rd Westbound					Ellicott Hwy Northbound					Sanborn Rd Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
Peak Hour Analysis From 6:30:00 AM to 8:15:00 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 6:45:00 AM																					
6:45:00 AM	0	3	0	0	3	2	0	0	0	2	0	12	0	0	12	0	0	1	0	1	18
7:00:00 AM	0	2	0	0	2	1	0	0	0	1	0	10	0	0	10	0	0	1	0	1	14
7:15:00 AM	0	3	0	0	3	1	1	0	0	2	0	7	0	0	7	0	0	1	0	1	13
7:30:00 AM	0	0	1	0	1	2	0	1	0	3	1	10	0	0	11	0	0	0	0	0	15
Total Volume	0	8	1	0	9	6	1	1	0	8	1	39	0	0	40	0	0	3	0	3	60
% App. Total	0	88.9	11.1	0		75	12.5	12.5	0		2.5	97.5	0	0		0	0	100	0		
PHF	.000	.667	.250	.000	.750	.750	.250	.250	.000	.667	.250	.813	.000	.000	.833	.000	.000	.750	.000	.750	.833



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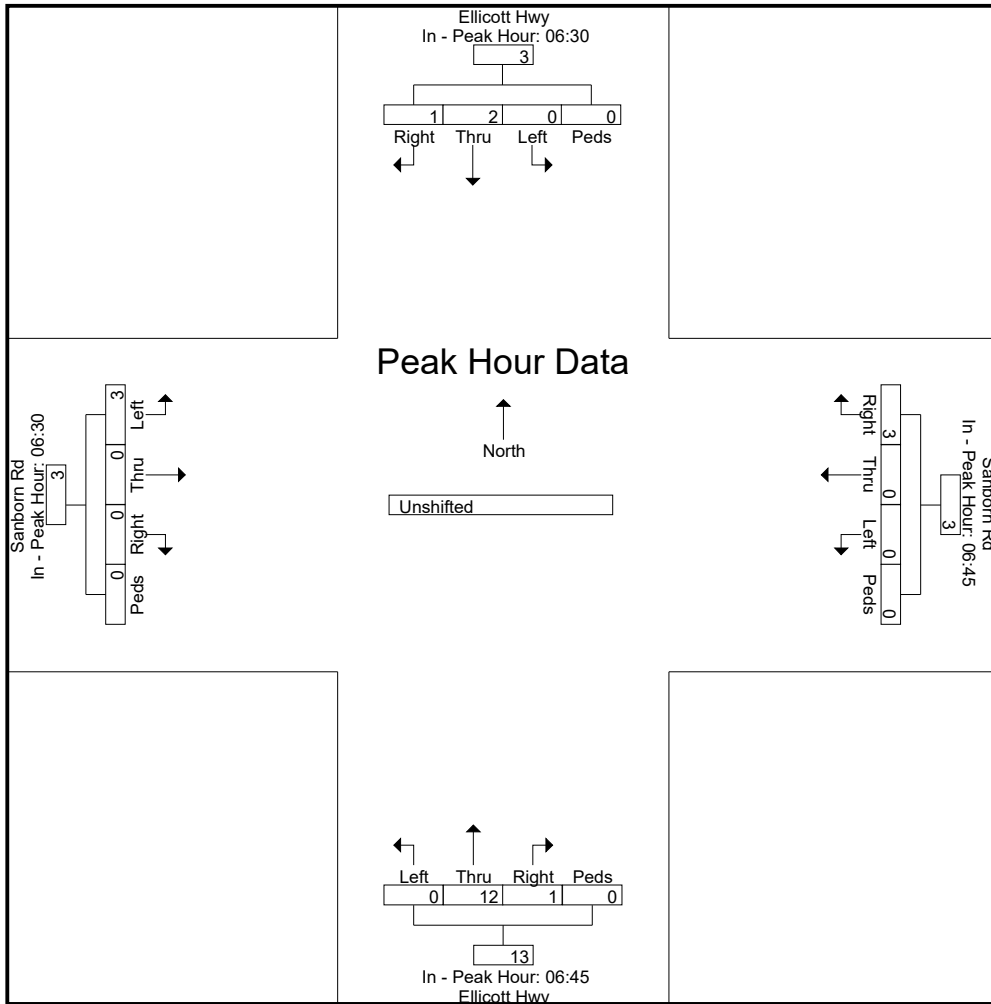
2504 E. Pikes Peak Ave, Suite 304
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 719-633-2868

File Name : Ellicott Hwy - Sanborn Rd AM
 Site Code : S194980
 Start Date : 7/27/2022
 Page No : 3

Start Time	Ellicott Hwy Southbound					Sanborn Rd Westbound					Ellicott Hwy Northbound					Sanborn Rd Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	

Peak Hour Analysis From 6:30:00 AM to 8:15:00 AM - Peak 1 of 1
 Peak Hour for Each Approach Begins at:

	6:30:00 AM					6:45:00 AM					6:45:00 AM					6:30:00 AM				
+0 mins.	1	1	0	0	2	2	0	0	0	2	0	12	0	0	12	0	0	2	0	2
+5 mins.	0	3	0	0	3	1	0	0	0	1	0	10	0	0	10	0	0	1	0	1
+10 mins.	0	2	0	0	2	1	1	0	0	2	0	7	0	0	7	0	0	1	0	1
+15 mins.	0	3	0	0	3	2	0	1	0	3	1	10	0	0	11	0	0	1	0	1
Total Volume	1	9	0	0	10	6	1	1	0	8	1	39	0	0	40	0	0	5	0	5
% App. Total	10	90	0	0		75	12.5	12.5	0		2.5	97.5	0	0		0	0	100	0	
PHF	.250	.750	.000	.000	.833	.750	.250	.250	.000	.667	.250	.813	.000	.000	.833	.000	.000	.625	.000	.625



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2504 E. Pikes Peak Ave, Suite 304
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File Name : Ellicott Hwy - Sanborn Rd PM

Site Code : S194980

Start Date : 7/26/2022

Page No : 1

Groups Printed- Unshifted

Start Time	Ellicott Hwy Southbound					Sanborn Rd Westbound					Ellicott Hwy Northbound					Sanborn Rd Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
16:00	2	9	0	0	11	1	0	2	0	3	1	5	0	0	6	0	0	1	0	1	21
16:15	1	6	2	0	9	3	0	0	0	3	0	8	0	0	8	0	0	1	0	1	21
16:30	0	9	2	0	11	1	0	0	0	1	0	6	0	0	6	0	1	0	0	1	19
16:45	1	11	1	0	13	0	0	0	0	0	0	6	0	0	6	0	0	0	0	0	19
Total	4	35	5	0	44	5	0	2	0	7	1	25	0	0	26	0	1	2	0	3	80
17:00	2	9	1	0	12	0	0	0	0	0	1	6	0	0	7	0	0	1	0	1	20
17:15	1	7	1	0	9	0	0	0	0	0	2	4	0	0	6	0	0	1	0	1	16
17:30	0	9	5	0	14	2	0	0	0	2	1	7	0	0	8	0	0	0	0	0	24
17:45	0	16	2	0	18	0	0	0	0	0	0	8	0	0	8	0	0	0	0	0	26
Total	3	41	9	0	53	2	0	0	0	2	4	25	0	0	29	0	0	2	0	2	86
Grand Total	7	76	14	0	97	7	0	2	0	9	5	50	0	0	55	0	1	4	0	5	166
Apprch %	7.2	78.4	14.4	0		77.8	0	22.2	0		9.1	90.9	0	0		0	20	80	0		
Total %	4.2	45.8	8.4	0	58.4	4.2	0	1.2	0	5.4	3	30.1	0	0	33.1	0	0.6	2.4	0	3	

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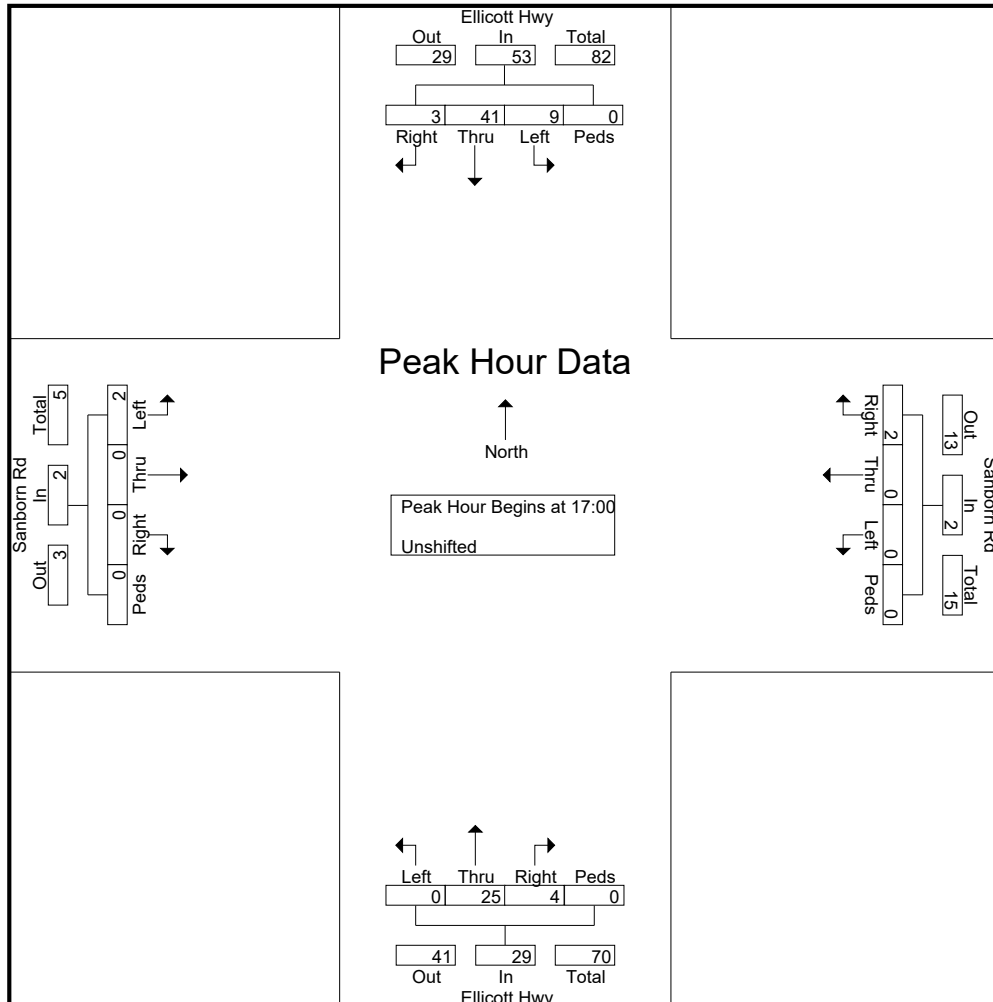
File Name : Ellicott Hwy - Sanborn Rd PM

Site Code : S194980

Start Date : 7/26/2022

Page No : 2

Start Time	Ellicott Hwy Southbound					Sanborn Rd Westbound					Ellicott Hwy Northbound					Sanborn Rd Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
Peak Hour Analysis From 4:00:00 PM to 5:45:00 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 5:00:00 PM																					
5:00:00 PM	2	9	1	0	12	0	0	0	0	0	1	6	0	0	7	0	0	1	0	1	20
5:15:00 PM	1	7	1	0	9	0	0	0	0	0	2	4	0	0	6	0	0	1	0	1	16
5:30:00 PM	0	9	5	0	14	2	0	0	0	2	1	7	0	0	8	0	0	0	0	0	24
5:45:00 PM	0	16	2	0	18	0	0	0	0	0	0	8	0	0	8	0	0	0	0	0	26
Total Volume	3	41	9	0	53	2	0	0	0	2	4	25	0	0	29	0	0	2	0	2	86
% App. Total	5.7	77.4	17	0		100	0	0	0		13.8	86.2	0	0		0	0	100	0		
PHF	.375	.641	.450	.000	.736	.250	.000	.000	.000	.250	.500	.781	.000	.000	.906	.000	.000	.500	.000	.500	.827



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File Name : Ellicott Hwy - Sanborn Rd PM

Site Code : S194980

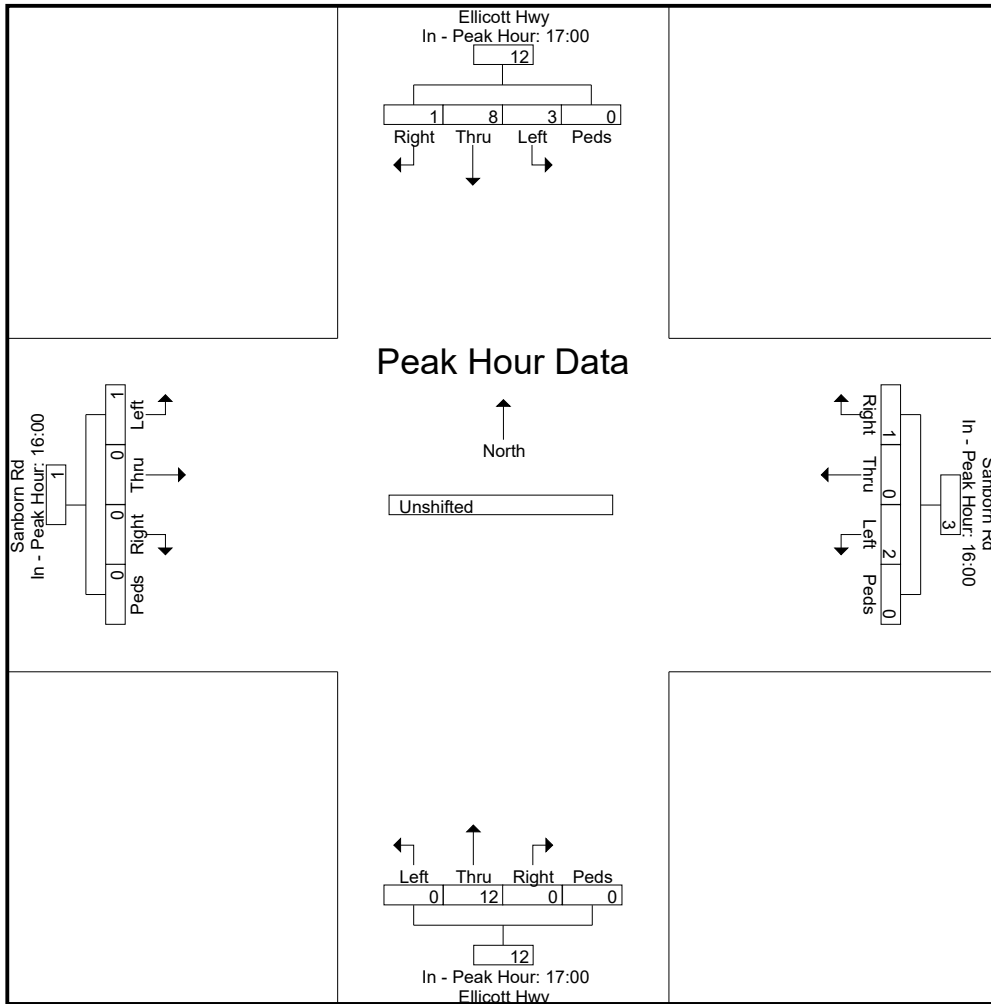
Start Date : 7/26/2022

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Start Time	Ellicott Hwy Southbound					Sanborn Rd Westbound					Ellicott Hwy Northbound					Sanborn Rd Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	

Peak Hour Analysis From 4:00:00 PM to 5:45:00 PM - Peak 1 of 1
 Peak Hour for Each Approach Begins at:

	5:00:00 PM					4:00:00 PM					5:00:00 PM					4:00:00 PM				
+0 mins.	2	9	1	0	12	1	0	2	0	3	1	6	0	0	7	0	0	1	0	1
+5 mins.	1	7	1	0	9	3	0	0	0	3	2	4	0	0	6	0	0	1	0	1
+10 mins.	0	9	5	0	14	1	0	0	0	1	1	7	0	0	8	0	1	0	0	1
+15 mins.	0	16	2	0	18	0	0	0	0	0	0	8	0	0	8	0	0	0	0	0
Total Volume	3	41	9	0	53	5	0	2	0	7	4	25	0	0	29	0	1	2	0	3
% App. Total	5.7	77.4	17	0		71.4	0	28.6	0		13.8	86.2	0	0		0	33.3	66.7	0	
PHF	.375	.641	.450	.000	.736	.417	.000	.250	.000	.583	.500	.781	.000	.000	.906	.000	.250	.500	.000	.750



Levels of Service



Intersection												
Int Delay, s/veh	6.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗			↕			↕	
Traffic Vol, veh/h	19	62	122	13	157	11	99	24	5	12	58	32
Future Vol, veh/h	19	62	122	13	157	11	99	24	5	12	58	32
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	130	-	-	285	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	83	83	83	83	83	83
Heavy Vehicles, %	7	7	7	7	7	7	7	7	7	7	7	7
Mvmt Flow	22	71	140	15	180	13	119	29	6	14	70	39

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	193	0	0	211	0	0	456	408	141	420	472	187
Stage 1	-	-	-	-	-	-	185	185	-	217	217	-
Stage 2	-	-	-	-	-	-	271	223	-	203	255	-
Critical Hdwy	4.17	-	-	4.17	-	-	7.17	6.57	6.27	7.17	6.57	6.27
Critical Hdwy Stg 1	-	-	-	-	-	-	6.17	5.57	-	6.17	5.57	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.17	5.57	-	6.17	5.57	-
Follow-up Hdwy	2.263	-	-	2.263	-	-	3.563	4.063	3.363	3.563	4.063	3.363
Pot Cap-1 Maneuver	1351	-	-	1330	-	-	506	525	894	535	483	842
Stage 1	-	-	-	-	-	-	805	737	-	774	714	-
Stage 2	-	-	-	-	-	-	724	710	-	788	687	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1351	-	-	1330	-	-	419	511	894	498	470	842
Mov Cap-2 Maneuver	-	-	-	-	-	-	419	511	-	498	470	-
Stage 1	-	-	-	-	-	-	792	725	-	762	706	-
Stage 2	-	-	-	-	-	-	615	702	-	739	676	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.7			0.6			17.4			13.4		
HCM LOS							C			B		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	443	1351	-	-	1330	-	-	550
HCM Lane V/C Ratio	0.348	0.016	-	-	0.011	-	-	0.223
HCM Control Delay (s)	17.4	7.7	-	-	7.7	-	-	13.4
HCM Lane LOS	C	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	1.5	0	-	-	0	-	-	0.8

HCM 6th TWSC
 9: Ellicott Hwy & Bar 10 Rd/Sanborn Rd

Existing
 AM

Intersection												
Int Delay, s/veh	2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	3	0	1	1	1	4	0	31	2	2	6	0
Future Vol, veh/h	3	0	1	1	1	4	0	31	2	2	6	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	78	78	78	78	78	78	78	78	78	78	78	78
Heavy Vehicles, %	7	7	7	7	7	7	7	7	7	7	7	7
Mvmt Flow	4	0	1	1	1	5	0	40	3	3	8	0

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	59	57	8	57	56	42	8	0	0	43	0	0
Stage 1	14	14	-	42	42	-	-	-	-	-	-	-
Stage 2	45	43	-	15	14	-	-	-	-	-	-	-
Critical Hdwy	7.17	6.57	6.27	7.17	6.57	6.27	4.17	-	-	4.17	-	-
Critical Hdwy Stg 1	6.17	5.57	-	6.17	5.57	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.17	5.57	-	6.17	5.57	-	-	-	-	-	-	-
Follow-up Hdwy	3.563	4.063	3.363	3.563	4.063	3.363	2.263	-	-	2.263	-	-
Pot Cap-1 Maneuver	925	824	1060	928	826	1015	1580	-	-	1534	-	-
Stage 1	993	874	-	960	850	-	-	-	-	-	-	-
Stage 2	956	849	-	992	874	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	918	822	1060	925	824	1015	1580	-	-	1534	-	-
Mov Cap-2 Maneuver	918	822	-	925	824	-	-	-	-	-	-	-
Stage 1	993	872	-	960	850	-	-	-	-	-	-	-
Stage 2	950	849	-	989	872	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	8.8		8.8		0		1.8	
HCM LOS	A		A					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1580	-	-	950	962	1534	-	-
HCM Lane V/C Ratio	-	-	-	0.005	0.008	0.002	-	-
HCM Control Delay (s)	0	-	-	8.8	8.8	7.4	0	-
HCM Lane LOS	A	-	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0	0	-	-

Intersection												
Int Delay, s/veh	6.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗			↕			↕	
Traffic Vol, veh/h	45	156	63	2	75	10	111	32	15	21	18	23
Future Vol, veh/h	45	156	63	2	75	10	111	32	15	21	18	23
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	130	-	-	285	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	83	83	83	87	87	87	83	83	83
Heavy Vehicles, %	7	7	7	7	7	7	7	7	7	7	7	7
Mvmt Flow	49	170	68	2	90	12	128	37	17	25	22	28

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	102	0	0	238	0	0	427	408	204	429	436	96
Stage 1	-	-	-	-	-	-	302	302	-	100	100	-
Stage 2	-	-	-	-	-	-	125	106	-	329	336	-
Critical Hdwy	4.17	-	-	4.17	-	-	7.17	6.57	6.27	7.17	6.57	6.27
Critical Hdwy Stg 1	-	-	-	-	-	-	6.17	5.57	-	6.17	5.57	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.17	5.57	-	6.17	5.57	-
Follow-up Hdwy	2.263	-	-	2.263	-	-	3.563	4.063	3.363	3.563	4.063	3.363
Pot Cap-1 Maneuver	1459	-	-	1300	-	-	529	525	824	528	506	947
Stage 1	-	-	-	-	-	-	697	655	-	894	803	-
Stage 2	-	-	-	-	-	-	867	798	-	674	633	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1459	-	-	1300	-	-	483	506	824	475	488	947
Mov Cap-2 Maneuver	-	-	-	-	-	-	483	506	-	475	488	-
Stage 1	-	-	-	-	-	-	673	633	-	864	801	-
Stage 2	-	-	-	-	-	-	818	796	-	601	611	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	1.3			0.2			16			12		
HCM LOS							C			B		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	508	1459	-	-	1300	-	-	588
HCM Lane V/C Ratio	0.357	0.034	-	-	0.002	-	-	0.127
HCM Control Delay (s)	16	7.6	-	-	7.8	-	-	12
HCM Lane LOS	C	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	1.6	0.1	-	-	0	-	-	0.4

HCM 6th TWSC
9: Ellicott Hwy & Bar 10 Rd/Sanborn Rd

Existing
PM

Intersection												
Int Delay, s/veh	1.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	2	1	0	2	0	5	0	25	1	5	35	4
Future Vol, veh/h	2	1	0	2	0	5	0	25	1	5	35	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	78	78	78	78	78	78	78	78	78	78	78	78
Heavy Vehicles, %	7	7	7	7	7	7	7	7	7	7	7	7
Mvmt Flow	3	1	0	3	0	6	0	32	1	6	45	5

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	96	93	48	93	95	33	50	0	0	33	0	0
Stage 1	60	60	-	33	33	-	-	-	-	-	-	-
Stage 2	36	33	-	60	62	-	-	-	-	-	-	-
Critical Hdwy	7.17	6.57	6.27	7.17	6.57	6.27	4.17	-	-	4.17	-	-
Critical Hdwy Stg 1	6.17	5.57	-	6.17	5.57	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.17	5.57	-	6.17	5.57	-	-	-	-	-	-	-
Follow-up Hdwy	3.563	4.063	3.363	3.563	4.063	3.363	2.263	-	-	2.263	-	-
Pot Cap-1 Maneuver	875	788	1007	879	786	1026	1525	-	-	1547	-	-
Stage 1	939	835	-	971	858	-	-	-	-	-	-	-
Stage 2	967	858	-	939	833	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	867	785	1007	875	783	1026	1525	-	-	1547	-	-
Mov Cap-2 Maneuver	867	785	-	875	783	-	-	-	-	-	-	-
Stage 1	939	832	-	971	858	-	-	-	-	-	-	-
Stage 2	961	858	-	934	830	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	9.3		8.7		0		0.8	
HCM LOS	A		A					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1525	-	-	838	978	1547	-	-
HCM Lane V/C Ratio	-	-	-	0.005	0.009	0.004	-	-
HCM Control Delay (s)	0	-	-	9.3	8.7	7.3	0	-
HCM Lane LOS	A	-	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0	0	-	-

Intersection												
Int Delay, s/veh	6.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗			↕			↕	
Traffic Vol, veh/h	19	62	125	13	157	11	101	24	5	12	58	32
Future Vol, veh/h	19	62	125	13	157	11	101	24	5	12	58	32
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	130	-	-	285	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	83	83	83	83	83	83
Heavy Vehicles, %	7	7	7	7	7	7	7	7	7	7	7	7
Mvmt Flow	22	71	144	15	180	13	122	29	6	14	70	39

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	193	0	0	215	0	0	458	410	143	422	476	187
Stage 1	-	-	-	-	-	-	187	187	-	217	217	-
Stage 2	-	-	-	-	-	-	271	223	-	205	259	-
Critical Hdwy	4.17	-	-	4.17	-	-	7.17	6.57	6.27	7.17	6.57	6.27
Critical Hdwy Stg 1	-	-	-	-	-	-	6.17	5.57	-	6.17	5.57	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.17	5.57	-	6.17	5.57	-
Follow-up Hdwy	2.263	-	-	2.263	-	-	3.563	4.063	3.363	3.563	4.063	3.363
Pot Cap-1 Maneuver	1351	-	-	1326	-	-	505	524	891	533	480	842
Stage 1	-	-	-	-	-	-	803	736	-	774	714	-
Stage 2	-	-	-	-	-	-	724	710	-	786	684	-
Platoon blocked, %		-	-	-	-	-						
Mov Cap-1 Maneuver	1351	-	-	1326	-	-	418	510	891	496	467	842
Mov Cap-2 Maneuver	-	-	-	-	-	-	418	510	-	496	467	-
Stage 1	-	-	-	-	-	-	790	724	-	762	706	-
Stage 2	-	-	-	-	-	-	615	702	-	737	673	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.7			0.6			17.5			13.5		
HCM LOS							C			B		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	442	1351	-	-	1326	-	-	547
HCM Lane V/C Ratio	0.354	0.016	-	-	0.011	-	-	0.225
HCM Control Delay (s)	17.5	7.7	-	-	7.7	-	-	13.5
HCM Lane LOS	C	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	1.6	0	-	-	0	-	-	0.9

Intersection						
Int Delay, s/veh	5.2					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↶	↷		↶	
Traffic Vol, veh/h	3	6	6	0	0	2
Future Vol, veh/h	3	6	6	0	0	2
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	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	78	78	78	78	78	78
Heavy Vehicles, %	7	7	7	7	7	7
Mvmt Flow	4	8	8	0	0	3

Major/Minor	Minor2	Major2		
Conflicting Flow All	8	8	-	0
Stage 1	8	8	-	-
Stage 2	0	0	-	-
Critical Hdwy	6.47	6.57	-	-
Critical Hdwy Stg 1	5.47	5.57	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	3.563	4.063	-	-
Pot Cap-1 Maneuver	1000	877	-	-
Stage 1	1002	879	-	-
Stage 2	-	-	-	-
Platoon blocked, %			-	-
Mov Cap-1 Maneuver	1000	0	-	-
Mov Cap-2 Maneuver	1000	0	-	-
Stage 1	1002	0	-	-
Stage 2	-	0	-	-

Approach	EB	WB
HCM Control Delay, s	8.6	0
HCM LOS	A	

Minor Lane/Major Mvmt	EBLn1	WBT	WBR
Capacity (veh/h)	1000	-	-
HCM Lane V/C Ratio	0.012	-	-
HCM Control Delay (s)	8.6	-	-
HCM Lane LOS	A	-	-
HCM 95th %tile Q(veh)	0	-	-

Intersection												
Int Delay, s/veh	2.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	3	0	1	1	1	6	1	31	2	5	6	0
Future Vol, veh/h	3	0	1	1	1	6	1	31	2	5	6	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	78	78	78	78	78	78	78	78	78	78	78	78
Heavy Vehicles, %	7	7	7	7	7	7	7	7	7	7	7	7
Mvmt Flow	4	0	1	1	1	8	1	40	3	6	8	0

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	68	65	8	65	64	42	8	0	0	43	0	0
Stage 1	20	20	-	44	44	-	-	-	-	-	-	-
Stage 2	48	45	-	21	20	-	-	-	-	-	-	-
Critical Hdwy	7.17	6.57	6.27	7.17	6.57	6.27	4.17	-	-	4.17	-	-
Critical Hdwy Stg 1	6.17	5.57	-	6.17	5.57	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.17	5.57	-	6.17	5.57	-	-	-	-	-	-	-
Follow-up Hdwy	3.563	4.063	3.363	3.563	4.063	3.363	2.263	-	-	2.263	-	-
Pot Cap-1 Maneuver	912	816	1060	917	817	1015	1580	-	-	1534	-	-
Stage 1	986	869	-	958	848	-	-	-	-	-	-	-
Stage 2	953	848	-	985	869	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	900	812	1060	912	813	1015	1580	-	-	1534	-	-
Mov Cap-2 Maneuver	900	812	-	912	813	-	-	-	-	-	-	-
Stage 1	985	866	-	957	847	-	-	-	-	-	-	-
Stage 2	943	847	-	980	866	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	8.9		8.7		0.2		3.3	
HCM LOS	A		A					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1580	-	-	935	971	1534	-	-
HCM Lane V/C Ratio	0.001	-	-	0.005	0.011	0.004	-	-
HCM Control Delay (s)	7.3	0	-	8.9	8.7	7.4	0	-
HCM Lane LOS	A	A	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0	0	-	-

Intersection												
Int Delay, s/veh	6.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗			↕			↕	
Traffic Vol, veh/h	45	156	65	2	75	10	114	32	15	21	18	23
Future Vol, veh/h	45	156	65	2	75	10	114	32	15	21	18	23
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	130	-	-	285	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	83	83	83	87	87	87	83	83	83
Heavy Vehicles, %	7	7	7	7	7	7	7	7	7	7	7	7
Mvmt Flow	49	170	71	2	90	12	131	37	17	25	22	28

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	102	0	0	241	0	0	429	410	206	431	439	96
Stage 1	-	-	-	-	-	-	304	304	-	100	100	-
Stage 2	-	-	-	-	-	-	125	106	-	331	339	-
Critical Hdwy	4.17	-	-	4.17	-	-	7.17	6.57	6.27	7.17	6.57	6.27
Critical Hdwy Stg 1	-	-	-	-	-	-	6.17	5.57	-	6.17	5.57	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.17	5.57	-	6.17	5.57	-
Follow-up Hdwy	2.263	-	-	2.263	-	-	3.563	4.063	3.363	3.563	4.063	3.363
Pot Cap-1 Maneuver	1459	-	-	1297	-	-	528	524	822	526	504	947
Stage 1	-	-	-	-	-	-	695	654	-	894	803	-
Stage 2	-	-	-	-	-	-	867	798	-	672	631	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1459	-	-	1297	-	-	482	505	822	473	486	947
Mov Cap-2 Maneuver	-	-	-	-	-	-	482	505	-	473	486	-
Stage 1	-	-	-	-	-	-	671	632	-	864	801	-
Stage 2	-	-	-	-	-	-	818	796	-	599	610	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	1.3			0.2			16.2			12		
HCM LOS							C			B		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	506	1459	-	-	1297	-	-	586
HCM Lane V/C Ratio	0.366	0.034	-	-	0.002	-	-	0.127
HCM Control Delay (s)	16.2	7.6	-	-	7.8	-	-	12
HCM Lane LOS	C	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	1.7	0.1	-	-	0	-	-	0.4

Intersection						
Int Delay, s/veh	5.2					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↶	↷		↶	
Traffic Vol, veh/h	2	7	6	0	0	3
Future Vol, veh/h	2	7	6	0	0	3
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	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	78	78	78	78	78	78
Heavy Vehicles, %	7	7	7	7	7	7
Mvmt Flow	3	9	8	0	0	4

Major/Minor	Minor2	Major2		
Conflicting Flow All	8	8	-	0
Stage 1	8	8	-	-
Stage 2	0	0	-	-
Critical Hdwy	6.47	6.57	-	-
Critical Hdwy Stg 1	5.47	5.57	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	3.563	4.063	-	-
Pot Cap-1 Maneuver	1000	877	-	-
Stage 1	1002	879	-	-
Stage 2	-	-	-	-
Platoon blocked, %			-	-
Mov Cap-1 Maneuver	1000	0	-	-
Mov Cap-2 Maneuver	1000	0	-	-
Stage 1	1002	0	-	-
Stage 2	-	0	-	-

Approach	EB	WB
HCM Control Delay, s	8.6	0
HCM LOS	A	

Minor Lane/Major Mvmt	EBLn1	WBT	WBR
Capacity (veh/h)	1000	-	-
HCM Lane V/C Ratio	0.012	-	-
HCM Control Delay (s)	8.6	-	-
HCM Lane LOS	A	-	-
HCM 95th %tile Q(veh)	0	-	-

Intersection												
Int Delay, s/veh	2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	2	1	0	2	0	8	0	25	1	7	35	4
Future Vol, veh/h	2	1	0	2	0	8	0	25	1	7	35	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	78	78	78	78	78	78	78	78	78	78	78	78
Heavy Vehicles, %	7	7	7	7	7	7	7	7	7	7	7	7
Mvmt Flow	3	1	0	3	0	10	0	32	1	9	45	5

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	104	99	48	99	101	33	50	0	0	33	0	0
Stage 1	66	66	-	33	33	-	-	-	-	-	-	-
Stage 2	38	33	-	66	68	-	-	-	-	-	-	-
Critical Hdwy	7.17	6.57	6.27	7.17	6.57	6.27	4.17	-	-	4.17	-	-
Critical Hdwy Stg 1	6.17	5.57	-	6.17	5.57	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.17	5.57	-	6.17	5.57	-	-	-	-	-	-	-
Follow-up Hdwy	3.563	4.063	3.363	3.563	4.063	3.363	2.263	-	-	2.263	-	-
Pot Cap-1 Maneuver	864	782	1007	871	780	1026	1525	-	-	1547	-	-
Stage 1	932	830	-	971	858	-	-	-	-	-	-	-
Stage 2	965	858	-	932	829	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	851	777	1007	866	775	1026	1525	-	-	1547	-	-
Mov Cap-2 Maneuver	851	777	-	866	775	-	-	-	-	-	-	-
Stage 1	932	825	-	971	858	-	-	-	-	-	-	-
Stage 2	955	858	-	925	824	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.4	8.7	0	1.1
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1525	-	-	825	989	1547	-	-
HCM Lane V/C Ratio	-	-	-	0.005	0.013	0.006	-	-
HCM Control Delay (s)	0	-	-	9.4	8.7	7.3	0	-
HCM Lane LOS	A	-	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0	0	-	-

Appendix A



Hourly Period		Pueblo Pit Data - Average Number of Entering Trucks		
Start Time	End Time	Average	July	August
5:00	6:00	1.3	1.6	0.9
6:00	7:00	2.1	2.1	2.2
7:00	8:00	2.0	1.9	2.1
8:00	9:00	1.1	0.6	1.6
9:00	10:00	1.9	1.4	2.3
10:00	11:00	0.8	0.6	1.1
11:00	12:00	2.0	1.1	2.8
12:00	13:00	1.1	0.9	1.2
13:00	14:00	2.1	1.7	2.4
14:00	15:00	0.8	0.6	1.0

Hourly Period		Pueblo Pit Data - Average Number of Trucks Entering and Exiting		
Start Time	End Time	Average	July	August
5:00	6:00	2.6	3.3	1.9
6:00	7:00	4.3	4.1	4.4
7:00	8:00	3.9	3.8	4.1
8:00	9:00	2.2	1.2	3.2
9:00	10:00	3.7	2.7	4.7
10:00	11:00	1.7	1.2	2.1
11:00	12:00	3.9	2.2	5.6
12:00	13:00	2.1	1.8	2.4
13:00	14:00	4.2	3.4	4.9
14:00	15:00	1.7	1.3	2.0

Hourly Period		Pueblo Pit Data - Average Number of Entering Trucks
Start Time	End Time	
5:00	6:00	1
6:00	7:00	2
7:00	8:00	2
8:00	9:00	1
9:00	10:00	2
10:00	11:00	1
11:00	12:00	2
12:00	13:00	1
13:00	14:00	2
14:00	15:00	1
Daily Average July & Aug.		15
*Pueblo Actual Recorded Data		
Note: These are just data tables. This table is not the same as Table 1 in the report		

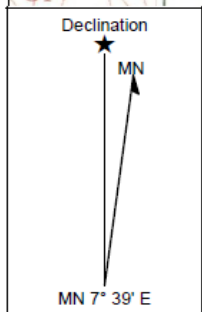
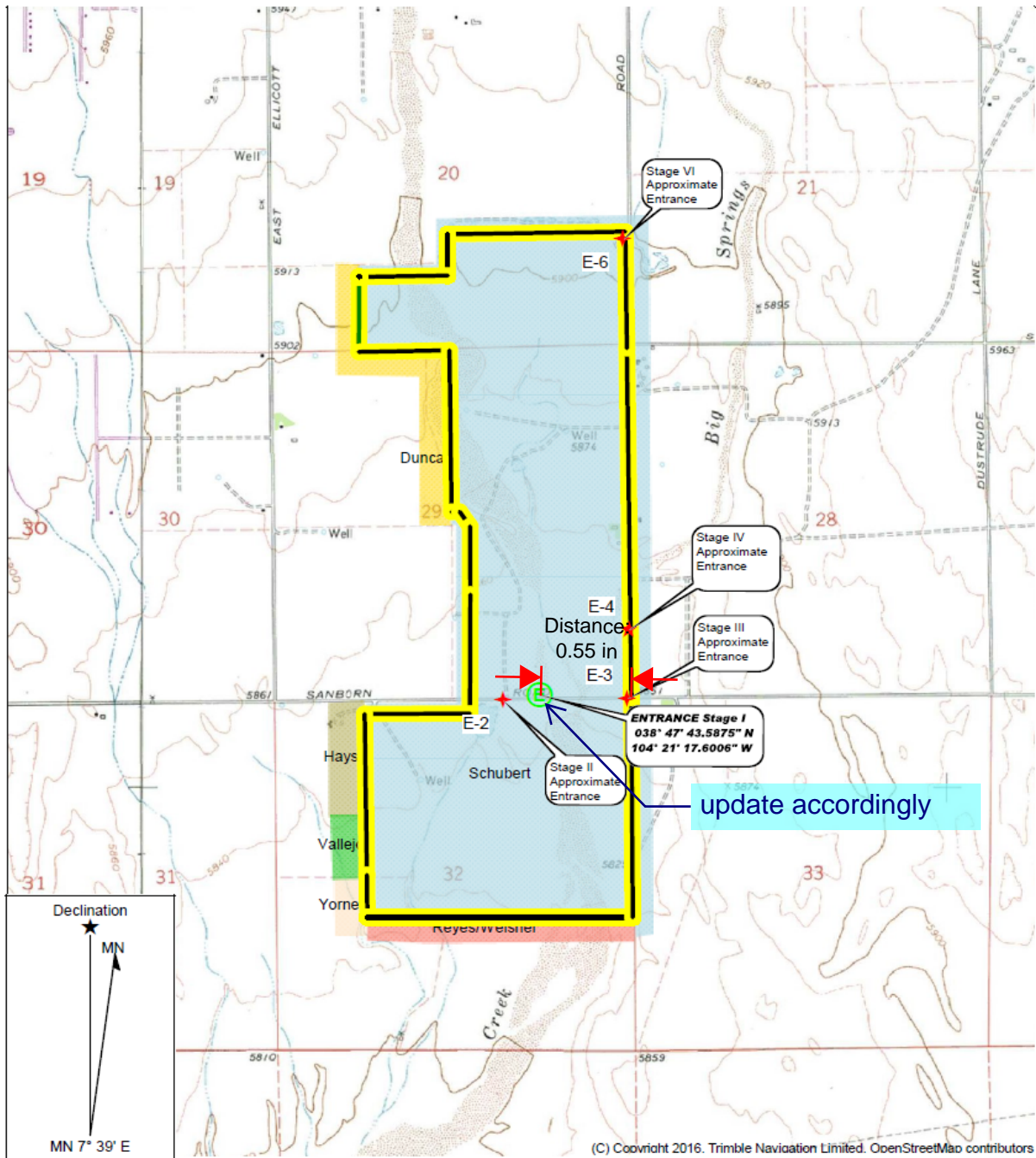
Access Exhibit





RPM, Inc.

Vicinity Map:



Quad. Name: BIG SPRINGS RANCH
 Date: 03/03/20
 Scale: 1 inch = 2,000 ft.

Part of the S1/2N1/2SE1/4, S1/2SE1/4, and SE1/4SW1/4 of Section 20, and The E1/2E1/2 and NW1/4NE1/4 and parts of the SW1/4NE1/4, SW1/4SE1/4, and NW1/4SE1/4 of Section 29 and The E1/2NE1/4, SW1/4NE1/4, & SE1/4NW1/4, and parts of the NW1/4NE1/4 & NE1/4NW1/4, Section 32, Township 14 South, Range 62 West, 6th P.M. El Paso County, Colorado Containing 733.7 acres more or less.

ELLICOTT SAND AND GRAVEL LLC
SCHUBERT RANCH SAND
RESOURCE
MAP EXHIBIT B - VICINITY MAP