

Academy Martial Arts

Traffic Impact Study

Prepared for:
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JULY 11, 2022

LSC Transportation Consultants
Prepared by: Jeffrey C. Hodsdon, P.E.

LSC #S224130



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July 11, 2022

Elliot Smith
Project Manager
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RE: Academy Martial Arts
Traffic Impact Study
Monument, Colorado
LSC #S224130

Dear Mr. Smith,

LSC Transportation Consultants, Inc. has prepared this traffic impact study (TIS) for the proposed Academy Martial Arts development in Monument, Colorado. The site is located southeast of the intersection of Highway 105 and Morning Canyon Road. The development would include a 4,500-square-foot martial arts facility and 4,500 square feet of tenant retail space. Access would be to Gold Canyon Road.

This report has been prepared for submittal to the Town of Monument, with likely review from El Paso County as well.

REPORT CONTENTS

- Inventory of existing adjacent and nearby area road system. This included surface conditions, functional classifications, roadway widths, lane configurations, traffic control, posted speed limits, pavement markings, intersection and access spacing, roadway and intersection alignments, auxiliary left- and right-turn lanes, intersection sight distances, etc.;
- Estimates of existing morning and late-afternoon peak-hour turning-movement traffic counts at the “study-area” intersections;
- Short-term baseline traffic-volume estimates;
- Review of previously-completed traffic studies in the vicinity of this site for information and findings relative to this development. Other recent studies completed in the area and any applicable data/transferrable information/analysis etc. from previous LSC studies adjacent to the site were also utilized;
- Evaluation of intersection/access sight distance at the proposed access-point;

- Estimates of average weekday and peak-hour trip generation for the proposed development;
- Estimation of directional distribution of site-generated vehicle trips on the area road system, at the study-area intersections, and at the proposed site-access point;
- Projections of site-generated turning-movement traffic volumes at the “study-area” intersections;
- Estimates of short- and long-term background traffic volumes at the study-area intersections and the access point. Total traffic (site traffic plus background traffic) projections at the study-area intersections for the short and long term; Estimated average daily traffic (ADT); Level of service (LOS) analysis at the study-area intersections;
- Evaluation of existing, short-term, and long-term projected intersection volumes to determine the potential need for any new auxiliary right-/left-turn lanes;
- Other recommended improvements/modifications to the study-area roads and intersections; and
- Summary of compiled data, analysis, findings, and recommendations.

SITE DEVELOPMENT AND LAND USE

Figure 2 shows the site access location and the development currently planned for the site. For complete site details, please refer to the attached copy of the site plan. The site is located within the Town of Monument. The site is planned to be developed for 4,500-square-foot martial arts facility and 4,500 square feet of tenant retail space.

The following information about the **martial arts facility** has been provided by the applicant:

- 5-10 employees, with most arriving before 4:00 p.m. classes and staying until 8:30 p.m.
- 1 adult class with about 20 participants from 7:30 – 9:00 a.m.
- 1 adult class with about 20 participants from 12:00 – 1:00 p.m.
- Up to 2 youth classes with 20-30 students every hour from 4:00 – 6:00 p.m.
- Assume 60-70 percent of parents stay on-site for the entire duration of youth classes
- Assume 50 percent of students attend class with siblings (assumes siblings ride in the same vehicle)

The site plan shows the currently planned development of the 9,000-sf building and parking/circulation on the majority of the site. The plan also shows a small portion to remain vacant for this application. The future use of this remainder area is unknown at this time. It may be developed in the future, used for additional parking, or left undeveloped. This remainder area is assumed vacant in this report. This study may need to be updated if/when future plans for development of this area are known and submitted for approval.

The site plan with access location is shown in Figure 2. One full-movement access is planned to Gold Canyon Drive about 180 feet east of Morning Canyon Drive (centerline spacing).

ROADWAY AND TRAFFIC CONDITIONS

Area Roadways

Figure 1 shows the roadways in the vicinity of the site. The major roadways are identified below, followed by a brief description.

Highway 105 is an El Paso County Principal Arterial that extends east from just west of the Knollwood/Highway 105 intersection to SH 83/Walker Road. The road is currently a two-lane roadway with a posted speed limit of 45 miles per hour (mph) adjacent to the site. The road is planned in the El Paso County *Major Transportation Corridor Plan* (MTCP) to be a four-lane roadway by 2040. Additionally, the *Highway 105 Corridor Study – Corridor Preservation Plan* (November 2012) shows the ultimate laneage of the roadway to be four lanes.

State Highway 105 is a Colorado Department of Transportation (CDOT) roadway that runs from the Douglas/El Paso County Line to Jackson Creek Parkway. The CDOT-controlled portion (SH 105) begins immediately west of the intersection with Jackson Creek Parkway (about 100 feet west of the center of the intersection). The roadway is primarily a four-lane roadway through the Town of Monument. The posted speed limit is 45 miles per hour (mph) between Jackson Creek Parkway and just west of the Interstate 25 (I-25) ramps. The intersections of SH 105 with the northbound I-25 ramps and Jackson Creek Parkway are signalized.

Morning Canyon Road is a 36-foot-wide Town of Monument street connecting Highway 105 and Gold Canyon Road. The northbound approach has separate left- and right-turn lanes. The posted speed limit on Morning Canyon Road is 25 mph. The intersection of Highway 105/Morning Canyon is two-way, stop-sign controlled.

Gold Canyon Road is a 24-foot-wide local east/west street extending between Night Blue Circle and Woodmoor Acres Drive. No auxiliary turn lanes exist at the stop-sign-controlled intersection of Gold Canyon Road/Morning Canyon Road. Adjacent to the site, the posted speed limit on Gold Canyon Road is 25 mph.

INTERSECTION SIGHT DISTANCE

A single access point on Gold Canyon Road would provide access to the site and would be a stop-sign-controlled, full-movement intersection.

LSC recorded sight-distance field measurements utilizing a driver's eye height of 3.5 feet and a height of 3.5 feet for northbound and southbound vehicles traveling on Raygor Road. Field-measured sight distances for passenger vehicles at the site-access intersections are as follows:

- Gold Canyon Road/proposed site access
- To the west – unobstructed to Night Blue Circle (715 feet)
- To the east – unobstructed to Woodmoor Acres Drive (925 feet)

The field-measured sight distances meet the prescribed distances of 250 feet and 325 feet in the State Highway Access Code for passenger vehicles and single-unit trucks, respectively (based on the posted speed of 25 mph).

The Town of Monument standards for sight distance must be maintained with the site development.

Existing Traffic Volumes

Existing traffic volumes at the following intersections are shown on Figure 3. The traffic volumes are from traffic counts conducted by LSC. Traffic count reports are attached.

- Highway 105 /Knollwood Boulevard (for balancing Highway 105 traffic on the west side of Morning Canyon Road)
- Highway 105/Morning Canyon Road
 - Tuesday, March 22, 2022 from 6:30 – 8:30 a.m.
 - Tuesday, March 22, 2022 from 4:00 – 6:00 p.m.
- Morning Canyon Road/Gold Canyon Road
 - Tuesday, March 22, 2022 from 6:30 – 8:30 a.m.
 - Tuesday, March 22, 2022 from 4:00 – 6:00 p.m.

Short-Term Baseline Traffic Volumes

Figure 4 shows estimated “short-term baseline” traffic volumes on the study-area roadways and at the study-area intersections. These estimates assume that the currently full-movement intersection of Highway 105/Morning Canyon Road would remain a two-way, Stop-sign-controlled (TWSC), full-movement intersection in the short term and long term. Additionally, the baseline volumes reflect the planned closure of the Monument Academy access connection to the north leg of this intersection. Therefore, the turning movements to/from the north leg only include estimates of church traffic. The high southbound right-turning-movement volume reflected in the count results is not reflected in the baseline traffic estimates.

Previous and other current LSC traffic counts in the study area were also utilized to establish short-term baseline traffic volumes. Short-term baseline estimates are intended to estimate (and compensate for) traffic volumes and travel patterns due to projected short-term development at vacant parcels nearby (including Monument Junction to the west).

TRIP GENERATION

Martial Arts Studio

Typically, trip-generation rates are made using nationally-published trip-generation rates from the Institute of Transportation Engineers (ITE). However, due to the unique nature of the class

schedule for the proposed martial arts studio, LSC estimated site-generated trips based on information provided by the applicant:

- 5-10 employees, with most arriving before 4:00 p.m. classes and staying until 8:30 p.m.
- 1 adult class with about 20 participants from 7:30 – 9:00 a.m.
- 1 adult class with about 20 participants from 12:00 – 1:00 p.m.
- Up to 2 youth classes with 20-30 students every hour from 4:00 – 6:00 p.m.
- Assume 60-70 percent of parents stay on-site for the entire duration of youth classes
- Assume 50 percent of students attend class with siblings (i.e., carpool together)

Based on information from the applicant, the martial arts studio is projected to generate:

- AM peak hour – 25 entering and 1 exiting trips
- PM peak hour – 56 entering and 56 exiting trips
- Daily 24-hour – 371 trips

Tenant/“Inline” Retail Space

Three additional retail spaces totaling 4,500 square feet are also proposed for the site. Estimates of the existing and projected vehicle trips to be generated by the site have been made using the following nationally-published fitted trip-generation rates land-use code “822 – Strip Retail Plaza (< 40,000 Square Feet)” in *Trip Generation, 11th Edition, 2021* by ITE.

- AM peak hour – 9 entering and 6 exiting trips
- PM peak hour – 18 entering and 18 exiting trips
- Daily 24-hour – 305 trips

Total Site Trip Generation

Table 1 below presents a summary of the estimated site trip generation for the 9,000-square-foot building. A detailed trip-generation estimate for the development, including ITE rates where used, is presented in Table 3 (attached).

Table 1: Estimated Site Vehicle-Trip Generation

Analysis Period	Weekday		
	In	Out	Total
Morning Peak Hour	34	7	41
Evening Peak Hour	74	74	148
Daily/24-hour	338	338	676

Based on estimates for the proposed site, the site would generate about 676 external vehicle trips on the average weekday. During the weekday morning peak hour, approximately 34 vehicles would enter and 7 vehicles would exit the site. Approximately 74 entering vehicles and 74 exiting vehicles are projected for the weekday evening peak hour.

TRIP DISTRIBUTION AND ASSIGNMENT

Trip Directional Distribution

Estimating the directional distribution of site-generated vehicle trips to the study-area roads and intersections is a necessary component in determining the site's traffic impacts. Figure 5 shows the percentages of the site-generated vehicle trips projected to be oriented to and from the site's major approaches.

Estimates have been based on the following factors: the proposed land uses, the existing and planned future area road system, the site's geographic location relative to the Town of Monument, the Tri-Lakes area, and the balance of the Pikes Peak region, current traffic-count data, and previously-conducted traffic studies in the vicinity of the site. Additionally, the applicant provided a map showing where current members live, which was used to estimate distributions for the martial arts school.

Site-Generated Traffic

Projected site-generated traffic volumes have been estimated at the following intersections:

- Highway 105/Morning Canyon Road
- Morning Canyon Road/Gold Canyon Road
- Gold Canyon Road/proposed site access

Figure 6 shows the projected site-generated traffic volumes for the weekday morning and afternoon peak hours. Site-generated traffic volumes have been calculated by applying the directional-distribution percentages estimated by LSC (from Figure 5) to the trip-generation estimates (from Table 3).

SHORT-TERM TOTAL TRAFFIC

Figure 7 shows the projected short-term total traffic volumes, which are the sum of short-term baseline traffic volumes (from Figure 4) plus the estimated site-generated traffic (from Figure 6).

2042 BACKGROUND TRAFFIC

Figure 8 shows the background traffic volumes for the year 2042. Background traffic is the traffic estimated to be on the adjacent roadway system without consideration of the proposed development. Background traffic includes the through traffic and the traffic generated by adjacent developments (existing and anticipated future) but assumes zero traffic generated by the site.

Background traffic-volume estimates have also been based on existing and previous traffic-count data, previous work completed in the area by LSC, and projections from the Highway 105 study. LSC has assumed that the currently full-movement intersection of Highway 105/Morning Canyon

Road would remain a stop-sign-controlled, full-movement intersection in the short and long term. Additionally, LSC has assumed that the southbound-right exiting turning movement from Monument Academy is being eliminated (starting with the Fall 2022-2023 school year). Monument Academy will no longer have access to or egress from the north leg of this intersection. Parent vehicles will need to use the Knollwood access. r.

2042 TOTAL TRAFFIC

Figure 9 shows the total traffic volumes for the year 2042 at the study-area intersections, which are the sum of the 2042 background traffic volumes (from Figure 8) plus the site-generated traffic volumes (from Figure 9).

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. Table 2 shows the level of service delay ranges for signalized and unsignalized intersections.

Table 2: 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.

Detailed Synchro reports are attached. A summary of LOS during the weekday morning and evening peak hours for the following unsignalized intersections is shown in the following figures:

- Figure 3: Existing Traffic, Lane Geometry, Traffic Control, and LOS
- Figure 4: Short-Term Baseline Traffic, Lane Geometry, Traffic Control, and LOS
- Figure 7: Short-Term Total Traffic, Lane Geometry, Traffic Control, and LOS
- Figure 8: 2042 Background Traffic, Lane Geometry, Traffic Control, and LOS
- Figure 9: 2042 Background + Site Traffic, Lane Geometry, Traffic Control, and LOS

The following intersections have been analyzed to determine the projected intersection levels of service for short- and long-term traffic scenarios for the morning and evening peak-hour time periods:

- Highway 105/Morning Canyon Road
- Morning Canyon Road/Gold Canyon Road
- Gold Canyon Road/proposed site access

Highway 105/Morning Canyon Road

LSC has assumed that the intersection of Highway 105/Morning Canyon Road will remain a stop-sign-controlled intersection through the long term. This is based on the most recent Highway 105 Traffic Study by HDR (pages from this report have been attached for reference). The northbound-left/through turning movement is projected to operate at LOS F during both peak hours in all scenarios, with or without the addition of site-generated traffic. All other individual turning movements and approaches at the study-area intersections listed above are projected to operate at LOS C or better through the 20-year horizon, with or without the addition of site-generated traffic.

Although the level of service is projected to be F during peak hours for the (exiting) northbound-left/through turning movement, the signal at Highway 105/Knollwood generates gaps in eastbound traffic that are helpful to drivers wanting to make the northbound-to-westbound left turn. Also, there are alternatives to this left-turn movement, should drivers opt for them during peak Highway 105 traffic periods. The local street system connects to Knollwood Drive (and the signal at Highway 105/Knollwood) via alternate routes:

- Via Night Blue Circle and Cipriani Loop: This route to the signal at Highway 105/Knollwood will be available for motorists departing the site, and wishing to travel to the west, by turning right out of the site and proceeding straight through the Morning Canyon/Gold Canyon intersection, then right at Mining Way, followed by a right onto Woodmoor Acres Drive.
- Via Mining Way and Woodmoor Acres Drive: This route to the signal at Highway 105/Knollwood will be available for motorists departing the site, and wishing to travel to the west, by turning left out of the site, then right at Mining Way, followed by a right onto Woodmoor Acres Drive.

Also, the separate northbound right-turn lane will allow drivers to turn right instead of left as they approach the Highway 105 intersection.

TRAFFIC SIGNAL WARRANT ANALYSIS

The intersection of Highway 105/Morning Canyon Road has been analyzed to evaluate the potential for meeting a warrant(s) for a traffic control signal in the future. The combination of major street approach volumes (includes the sum of eastbound and westbound approach volumes) and minor street left-turn volumes (greater of the northbound or southbound approach volume each hour) were analyzed to determine if the combination would exceed the threshold criteria for Four-Hour Vehicular Volume Traffic Signal Warrants and applicable other warrants in the 2009 Manual on Uniform Traffic Control Devices (MUTCD).

Five separate one-hour periods within the following morning, early-afternoon, and late-afternoon/evening periods have been analyzed:

- 6:30 a.m. – 7:30 a.m.
- 7:30 a.m. -- 8:30 a.m.
- 2:35 p.m. – 3:35 p.m.
- 4:00 p.m. – 5:00 p.m.
- 5:00 p.m. - 6:30 p.m.

Note: For the signal-warrant evaluation, only left-turning-movement volumes have been included in the side-street volumes, as there is a separate right-turn lane with an eastbound acceleration lane.

Short-Term Baseline

Results from the four-hour traffic-signal warrant analysis for the short-term baseline scenario are shown in the Warrant 2, Four-Hour Vehicular-Volume (MUTCD Figure 4C-1) signal-warrant chart in Appendix Figure 1. Zero major-/minor-street-volume data points exceeded the minimum threshold curve for an intersection with “two or more lanes” for the major-street approaches and one lane for the minor-street approach (higher-volume minor street). As a result, the Four-Hour Vehicular-Volume Traffic-Signal Warrant threshold at the intersection of Highway 105/Morning Canyon Road is **not** projected to be exceeded, based on the short-term baseline traffic scenario.

Major- and minor-street volumes shown in Appendix Figure 1 are summarized in Table 3 below.

Table 3: Major/Minor Volumes for 4-Hour Signal Warrants (Short-Term Baseline)

Start	End	Major Street Volume	Minor Street Volume	4-Hour Warrant Met?
6:30	7:30	856	33	No
7:30	8:30	1236	42	No
2:35	3:35	1282	27	No
4:00	5:00	1311	20	No
5:00	6:00	1151	15	No
<i># of hours meeting respective warrant thresholds/hours required to satisfy the warrant (warrant satisfied?)</i>				<i>0 / 5 (No)</i>

Short-Term Total

Results from the four-hour traffic-signal warrant analysis for the short-term total scenario are shown in the Warrant 2, Four-Hour Vehicular-Volume (MUTCD Figure 4C-1) signal-warrant chart in Appendix Figure 2. Two separate major-/minor-street-volume data points exceeded the minimum threshold curve for an intersection with “two or more” lanes for the major-street approaches and one lane for the minor-street approach (higher-volume minor street). As a result, the Four-Hour Vehicular Volume

Traffic Signal Warrant threshold at the intersection of Highway 105/Morning Canyon Road is **not** projected to be exceeded, based on the short-term total traffic scenario.

Major- and minor-street volumes shown in Appendix Figure 2 are summarized in Table 4 below.

Table 4: Major/Minor Volumes for 4-Hour Signal Warrants (Short-Term Total)

Start	End	Major Street Volume	Minor Street Volume	4-Hour Warrant Met?
6:30	7:30	866	35	No
7:30	8:30	1263	47	No
2:35	3:35	1294	36	No
4:00	5:00	1379	69	Yes
5:00	6:00	1223	66	Yes
<i># of hours meeting respective warrant thresholds/hours required to satisfy the warrant (warrant satisfied?)</i>				<i>2 / 5 (No)</i>

2042 Background

Results from the four-hour traffic-signal warrant analysis for the 2042 background scenario are shown in the Warrant 2, Four-Hour Vehicular-Volume (MUTCD Figure 4C-1) signal-warrant chart in Appendix Figure 3. Zero major-/minor-street-volume data points exceeded the minimum threshold curve for an intersection with two lanes for the major street approaches and one lane for the minor street approach (higher-volume minor street). As a result, the Four-Hour Vehicular Volume Traffic Signal Warrant threshold at the intersection of Highway 105/Morning Canyon Road is **not** projected to be exceeded, based on the short-term baseline traffic scenario.

Major- and minor-street-volumes shown in Appendix Figure 3 are summarized in Table 5 below.

Table 5: Major/Minor Volumes for 4-Hour Signal Warrants (2042 Background)

Start	End	Major Street Volume	Minor Street Volume	4-Hour Warrant Met?
6:30	7:30	1603	31	No
7:30	8:30	2209	28	No
2:35	3:35	2175	34	No
4:00	5:00	2228	25	No
5:00	6:00	1957	19	No
<i># of hours meeting respective warrant thresholds/hours required to satisfy the warrant (warrant satisfied?)</i>				<i>0 / 5 (No)</i>

2042 Total

Results from the four-hour traffic-signal warrant analysis for the 2042 background-plus-site-generated traffic scenario are shown in the Warrant 2, Four-Hour Vehicular-Volume (MUTCD Figure 4C-1) signal-warrant chart in Appendix Figure 4. Two separate major-/minor-street-volume data points exceeded the minimum threshold curve for an intersection with two lanes for the major approach and one lane for the minor approach (higher-volume minor street). As a result, the Four-Hour Vehicular-Volume Traffic-Signal Warrant threshold at the intersection of Highway 105/Morning Canyon Road is **not** projected to be exceeded, based on the short-term baseline traffic scenario.

Major- and minor-street volumes shown in Appendix Figure 4 are summarized in Table 6 below.

Table 6: Major/Minor Volumes for 4-Hour Signal Warrants (2042 Total)

Start	End	Major Street Volume	Minor Street Volume	4-Hour Warrant Met?
6:30	7:30	1613	34	No
7:30	8:30	2236	30	No
2:35	3:35	2187	43	No
4:00	5:00	2296	74	Yes
5:00	6:00	2028	70	Yes
<i># of hours meeting respective warrant thresholds/hours required to satisfy the warrant (warrant satisfied?)</i>				<i>2 / 5 (No)</i>

AUXILIARY TURN-LANE NEEDS ANALYSIS

Highway 105/Morning Canyon Road

Note: Eastbound right-turn deceleration, eastbound right-turn acceleration, and westbound left-turn deceleration lanes already exist at the intersection of Highway 105/Morning Canyon Road and are planned to be “replaced/relocated” (shifted south) with the El Paso County Highway 105 project. The following describes the turn-lane needs with the addition of this project, per criteria and presents a comparison to the auxiliary turn-lane improvements shown for the Highway 105 project in the latest *Highway 105 Corridor* traffic report. Based on this evaluation and comparison, the improvements planned would accommodate the site-generated traffic and the applicant would not need to expand on the improvements already planned for the intersection with the County project.

Highway 105 is classified as a 4-lane Rural Principal Arterial with a posted speed limit of 45 mph in the vicinity of Morning Canyon Road. As previously mentioned, Highway 105/Morning Canyon

Road is shown in the latest *Highway 105 Corridor* traffic study received from El Paso County. Stop sign control is shown for the northbound approach on Morning Canyon Road.

Westbound Left-Turn Deceleration Lane

Left-turn deceleration lanes are required on Principal Arterials with a projected peak-hour ingress turning volume of 10 vehicles per hour (vph) or higher. Based on projected long-term total volumes, a westbound left-turn lane would still be required at the reconstructed intersection of Highway 105/Morning Canyon Road, based on the short-term and long-term projections. This would be part of the Highway 105 project. Per criteria in Table 2-26 of the *ECM*, and a design speed of 45 mph, left-turn deceleration lanes should consist of the following:

- 425-foot total lane length
- 195 feet of full-width lane
- 180-foot transition taper
- 50 feet of storage length (for stop-controlled intersections)

This would be part of the Highway 105 project , which shows this turn lane as 580 feet total, consisting of 285 feet of full-width lane and a 295-foot transition taper.

Eastbound Right-Turn Deceleration Lane

Right-turn deceleration lanes are required on Principal Arterials with a projected peak-hour ingress turning volume of 25 vph or higher. Based on projected long-term total volumes, the *ECM* threshold requiring the addition of an eastbound right-turn deceleration lane would still be met at the reconfigured intersection of Highway 105/Morning Canyon Road.

Per criteria in the *ECM*, and a design speed of 45 mph, right-turn deceleration lanes should consist of the following design:

- 375-foot total lane length
- 195 feet of full-width lane
- 180-foot transition taper

This would be part of the Highway 105 project, which shows this turn lane as 470 feet total, consisting of 270 feet of full-width lane and a 200-foot transition taper.

Morning Canyon Road/Gold Canyon Road

No auxiliary turn lanes would be required on any approach at the intersection of Morning Canyon Road/Gold Canyon Road following the addition of site-generated traffic.

Gold Canyon Road/Proposed Site Access

No auxiliary turn lanes would be required on any approach at the proposed site access to Gold Canyon Road following the addition of site-generated traffic.

SUMMARY OF FINDINGS AND RECOMMENDATIONS

Trip Generation

- The site is projected to generate about 676 vehicle trips on the average weekday, with about 338 vehicles entering and 338 vehicles exiting the site in a 24-hour period.
- During the morning peak hour, about 34 vehicles would enter and 7 vehicles would exit the site.
- Approximately 74 vehicles would enter and 74 vehicles would exit the site during the afternoon peak hour.

Projected Levels of Service

- Although the level of service at Highway 105/Morning Canyon is projected to be F during peak hours for the projected LOS for the (exiting) northbound-left/through turning-movement lane, the signal at Highway 105/Knollwood generates gaps in eastbound traffic that are helpful to drivers wanting to make the northbound-to-westbound left turn. Also, there are alternatives to this left-turn movement, should drivers opt for them during peak Highway 105 traffic periods. The local street system connects to Knollwood Drive via Night Blue Circle and Cipriani Loop. This route to the signal at Knollwood will be available for motorists departing the site, and wishing to travel to the west, by turning left out of the site, then right at Knollwood Drive/Cipriani Loop. Also, the separate northbound right-turn lane will allow drivers to turn right instead of left as they approach the Highway 105 intersection. Please refer to the “Level of Service” section for more detail.

Auxiliary Turn Lanes

- Please refer to the “Auxiliary Turn-Lane Analysis” section for more detail.

Traffic Signal Warrant Analysis

- The Four-Hour Vehicular Volume Traffic Signal Warrant threshold at the intersection of Highway 105/Morning Canyon Road is **not** projected to be exceeded during any short-term or long-term traffic scenario analyzed. Please refer to the “Traffic Signal Warrant Analysis” section for more detail.

* * * * *

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/JAB:jas

Enclosures: Table 3
Figure 1 - Figure 9
Traffic Count Reports
Synchro Level of Service Reports
Site Plan
Highway 105 Traffic Study by HDR

Table 3



Table 7: Detailed Trip Generation Estimate

ITE		Value	Units ¹	Trip Generation Rates ²				Driveway Trips Generated				% Primary Trips	% Pass-By + Diverted Trips	Total External Trips Generated								
Code	Description			Average Weekday	A.M. In	A.M. Out	P.M. In	P.M. Out	Average Weekday	A.M. In	A.M. Out			P.M. In	P.M. Out	Average Weekday	A.M. In	A.M. Out	P.M. In	P.M. Out		
Based on Information from Applicant																						
-	Martial Arts Studio	4.500	KSF	-	-	-	-	-	371	25	1	56	56	100%	0%	371	25	1	56	56		
Based on ITE Rates (Remaining Square Footage in 9,000-Square-Foot Building)																						
822	Strip Retail Plaza (< 40 KSF)	4.500	KSF	67.72	1.79	1.19	4.01	4.01	305	9	6	18	18	10%	90%	274	7	5	16	16		
									Site Total	676	34	7	74	74			Site Total	645	32	6	72	72

¹ DU = dwelling units, KSF = 1,000 square feet

² Source: *Trip Generation, 11th Edition (2021)* by the Institute of Transportation Engineers (ITE)

Revised by LSC on 06/10/2022

Figures 1-9



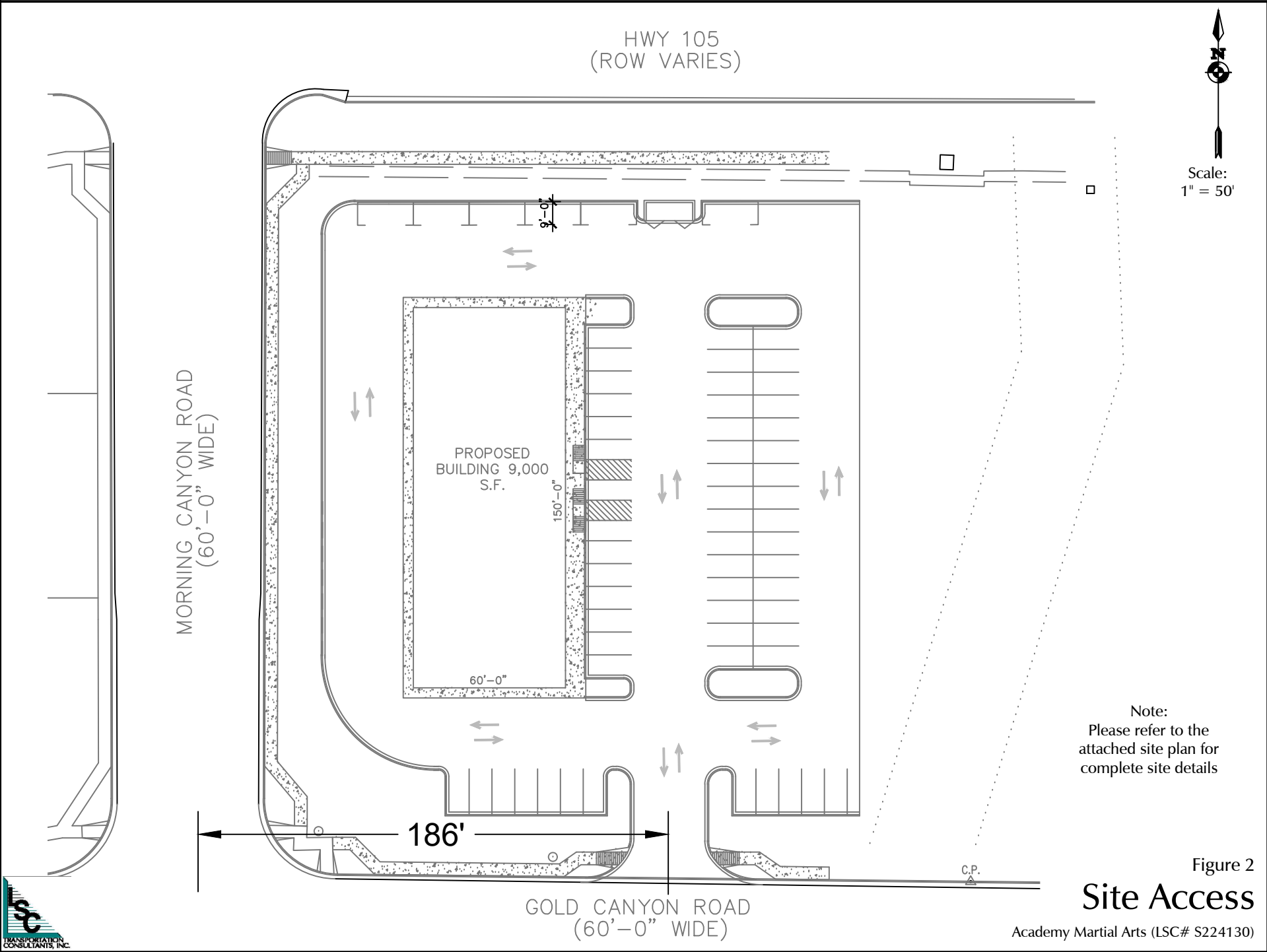


1" = 300'
scale

Figure 1

Vicinity Map

Academy Martial Arts (LSC# S224130)



HWY 105
(ROW VARIES)

MORNING CANYON ROAD
(60'-0" WIDE)

PROPOSED
BUILDING 9,000
S.F.

60'-0"

150'-0"

186'

GOLD CANYON ROAD
(60'-0" WIDE)

C.P.



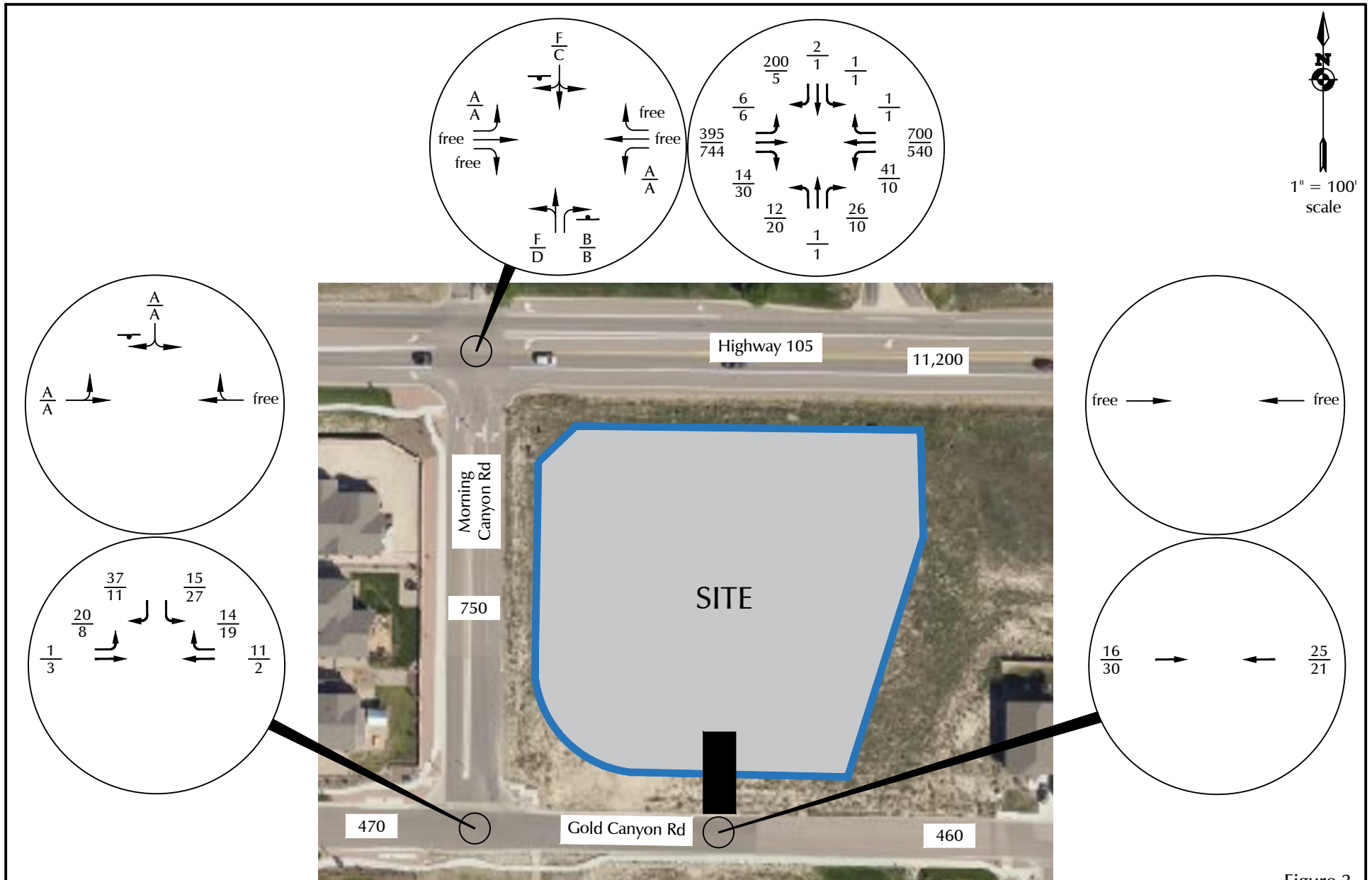
Scale:
1" = 50'

Note:
Please refer to the
attached site plan for
complete site details

Figure 2
Site Access

Academy Martial Arts (LSC# S224130)





$\frac{X}{X}$ = AM Individual Movement Peak-Hour LOS
 $\frac{X}{X}$ = PM Individual Movement Peak-Hour LOS
 $\frac{XX}{XX}$ = AM Weekday Peak-Hour Traffic (Veh/Hour)
 $\frac{XX}{XX}$ = PM Weekday Peak-Hour Traffic (Veh/Hour)
 X,XXX = Average Daily Traffic (Vehicles/Day)

Peak Periods Analyzed:
 AM = 7:15-8:15
 PM = 4:00-5:00

= Stop Sign

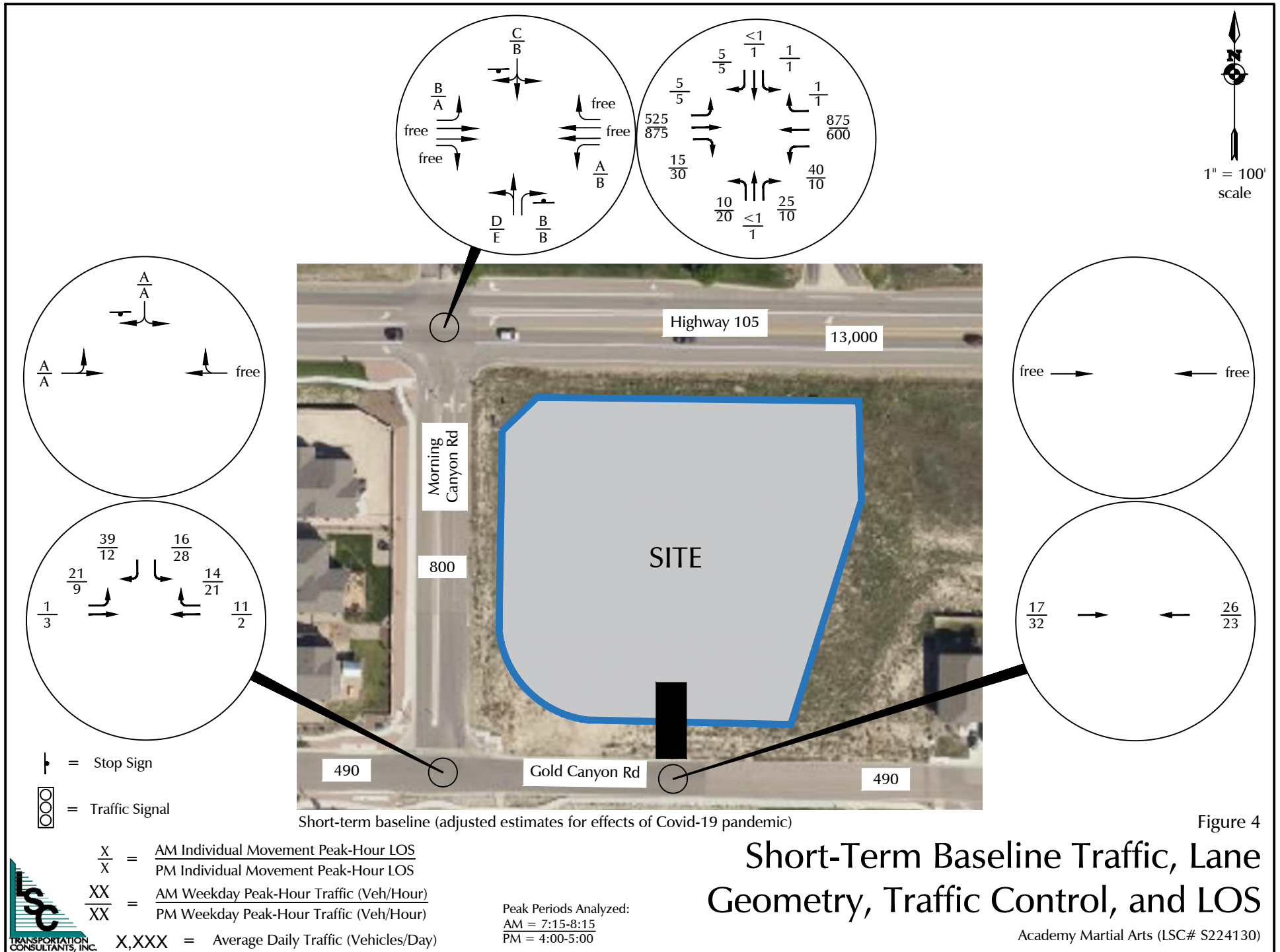
April 2022 Traffic Counts, Lane Geometry, Traffic Control, and LOS

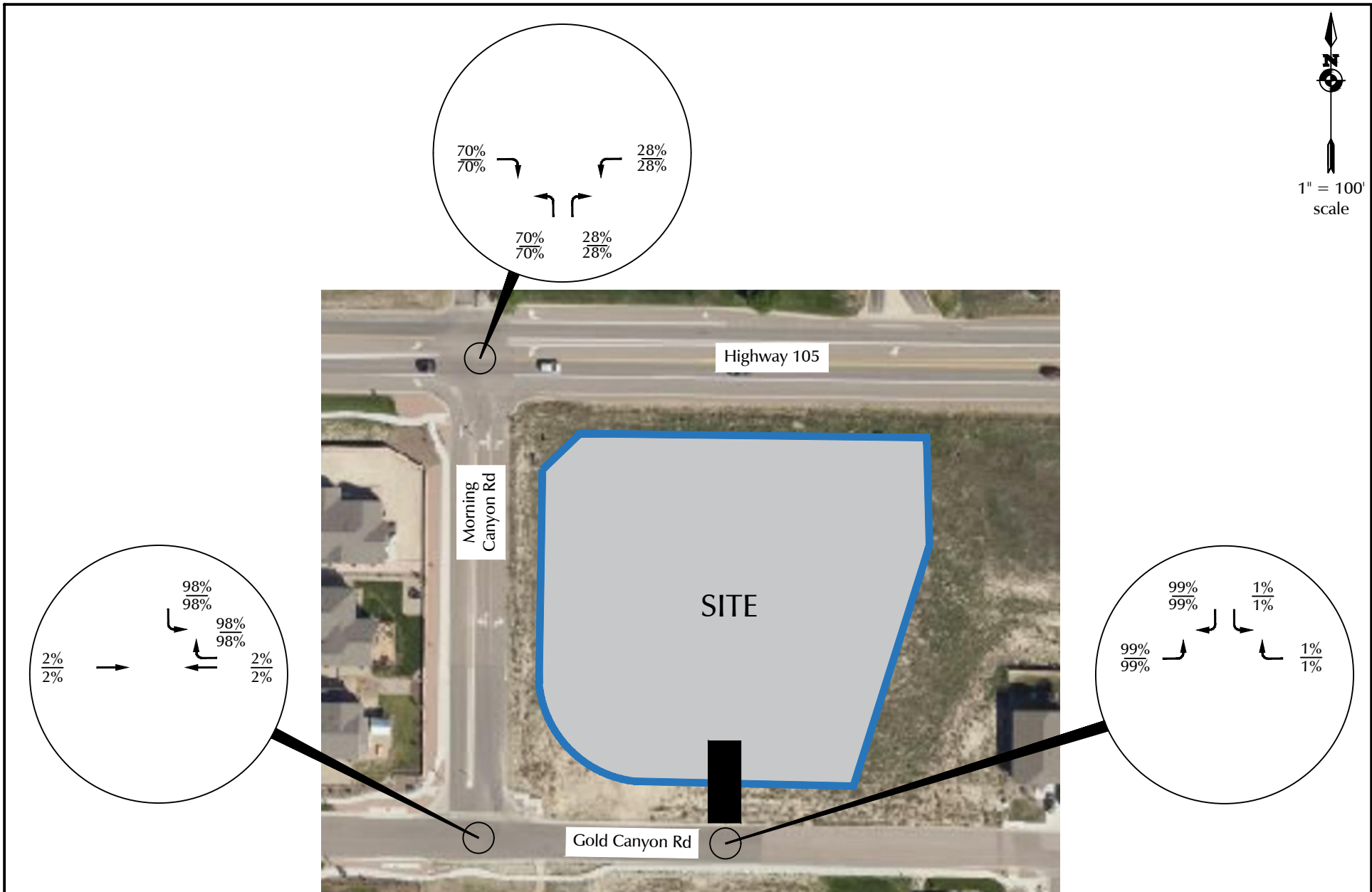
Figure 3

Counts by LSC (April 2022)

Academy Martial Arts (LSC# S224130)







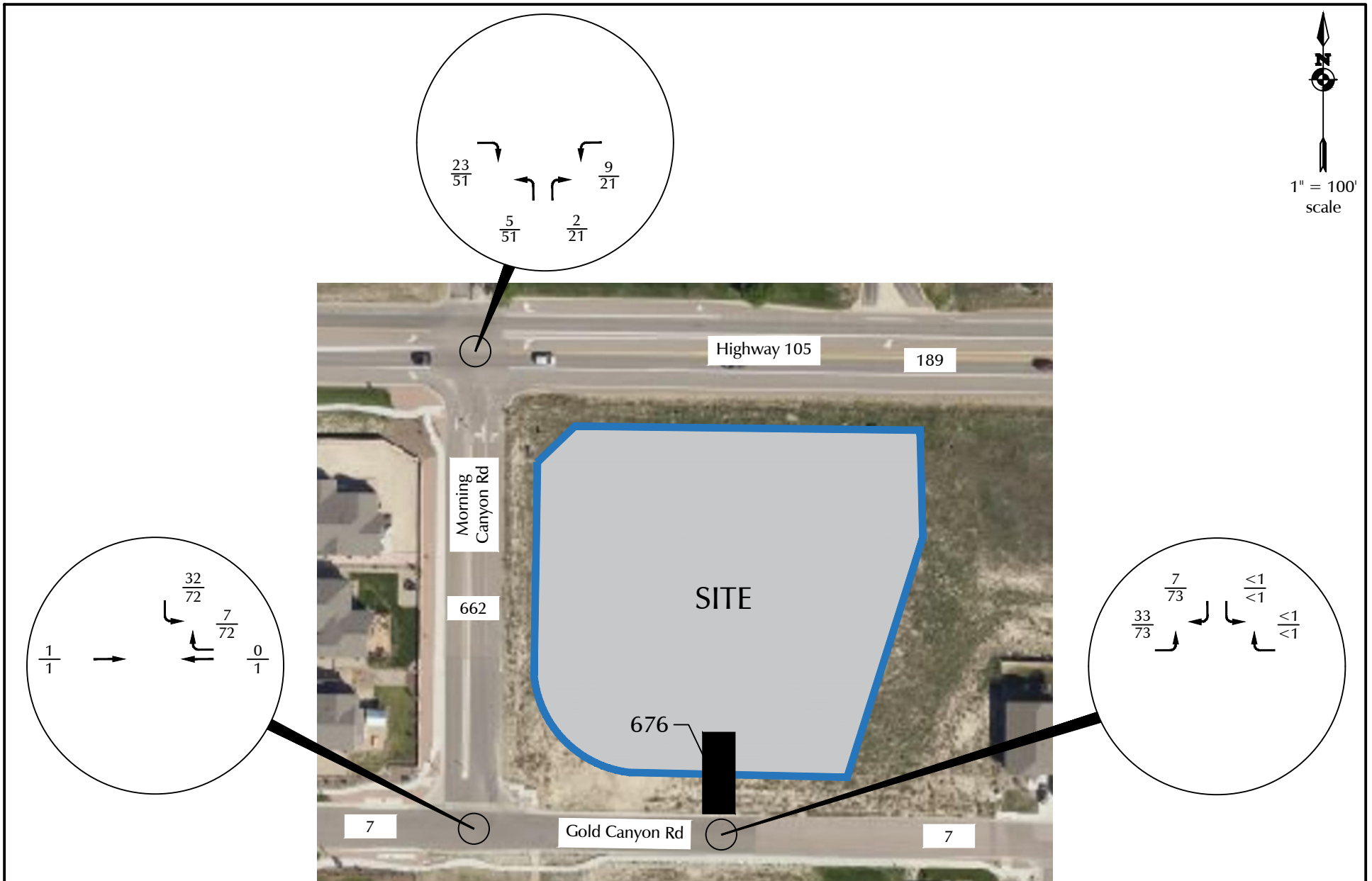
1" = 100'
scale

Figure 5
Directional Distribution

Academy Martial Arts (LSC# S224130)



XX% = A.M. Peak Hour % Distribution of Site-Generated Trips
XX% = P.M. Peak Hour % Distribution of Site-Generated Trips



$\frac{XX}{XX}$ = AM Weekday Peak-Hour Traffic (Veh/Hour)
 $\frac{XX}{XX}$ = PM Weekday Peak-Hour Traffic (Veh/Hour)
 X,XXX = Average Daily Traffic (Vehicles/Day)

Figure 6
Site Generated Traffic

Academy Martial Arts (LSC# S224130)

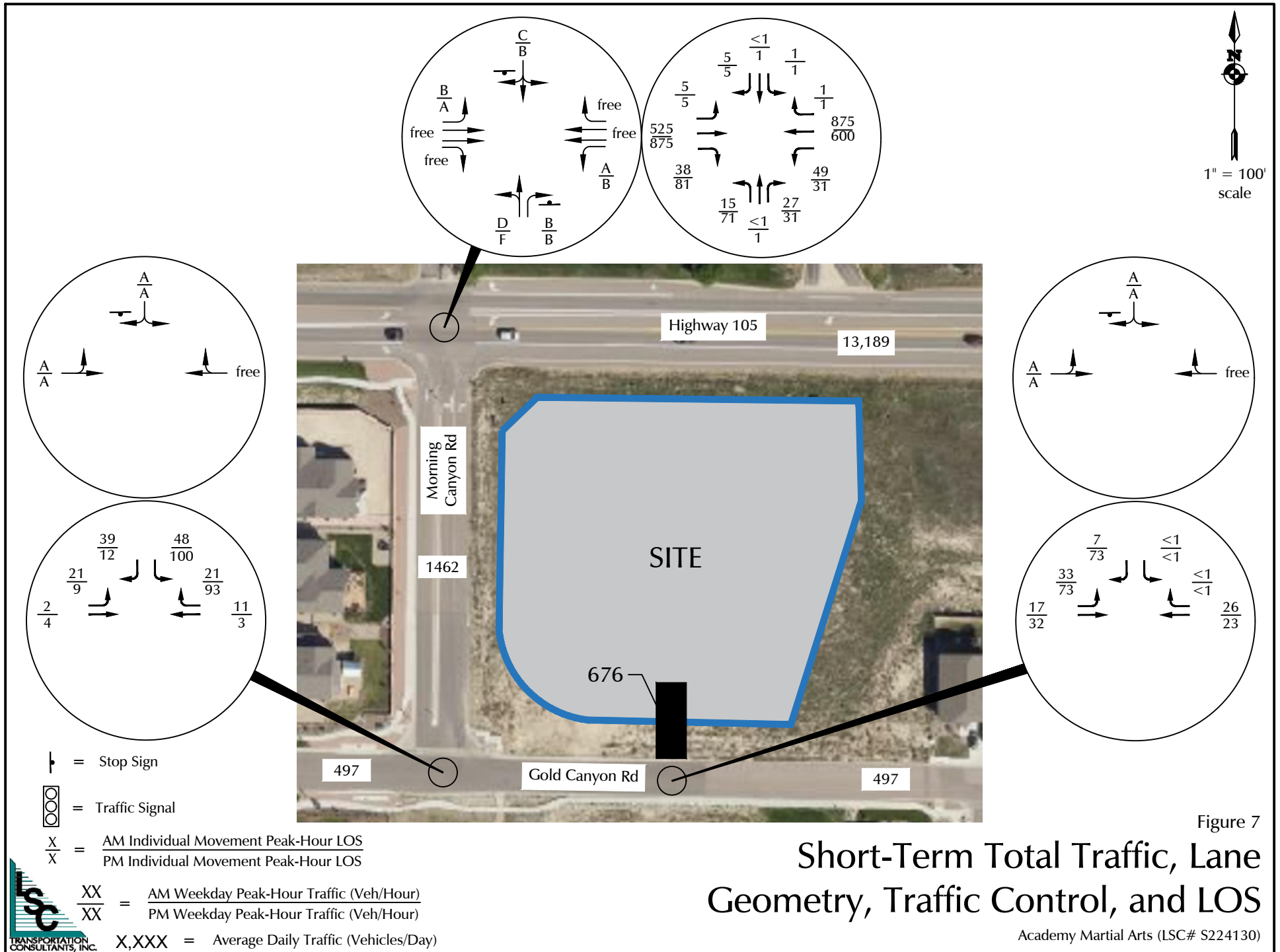


Figure 7
**Short-Term Total Traffic, Lane
 Geometry, Traffic Control, and LOS**

Academy Martial Arts (LSC# S224130)

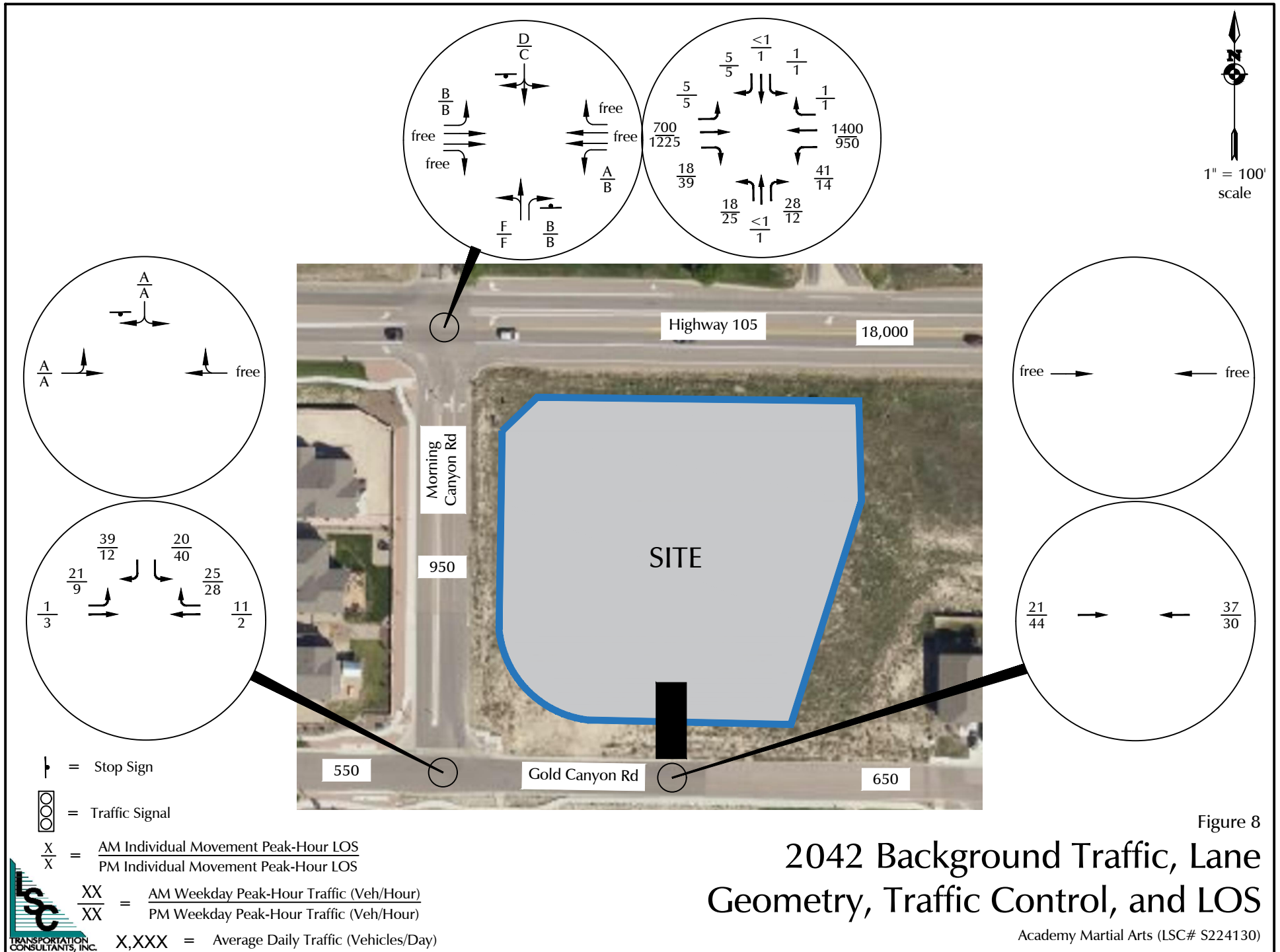


Figure 8
 2042 Background Traffic, Lane
 Geometry, Traffic Control, and LOS

Academy Martial Arts (LSC# S224130)

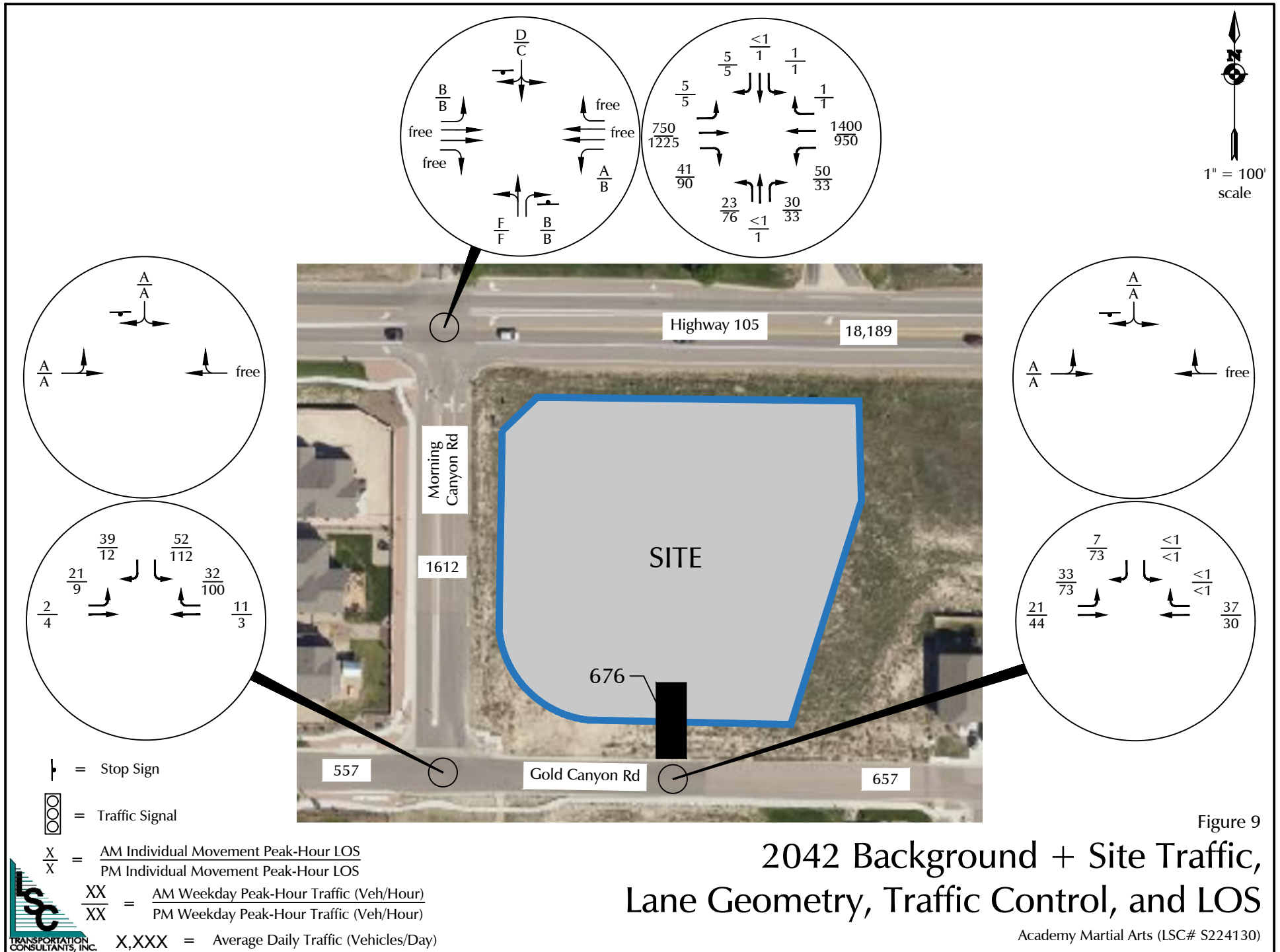


Figure 9
 2042 Background + Site Traffic,
 Lane Geometry, Traffic Control, and LOS

Traffic Counts



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File Name : Morning Canyon - Hwy 105 AM 3-22

Site Code : S224130

Start Date : 3/29/2022

Page No : 1

Groups Printed- Bank 1

Start Time	Southbound					Hwy 105 Westbound					Morning Canyon Rd Northbound					Hwy 105 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	0	0	0	0	2	0	1	0	3	0	0	0	0	0	3
06:35 AM	0	0	0	0	0	0	0	0	0	0	1	0	2	0	3	1	0	0	0	0	1
06:40 AM	0	0	0	0	0	0	0	0	0	0	1	0	1	0	2	0	0	0	0	0	2
06:45 AM	0	0	0	0	0	0	0	0	0	0	1	0	5	0	6	0	0	0	0	0	6
*** BREAK ***																					
06:55 AM	0	0	0	0	0	0	0	0	0	0	1	0	2	0	3	1	0	0	0	0	1
Total	0	0	0	0	0	0	0	0	0	0	6	0	11	0	17	2	0	0	0	0	2
07:00 AM	0	0	0	0	0	0	0	0	0	0	1	0	4	0	5	0	0	0	0	0	5
*** BREAK ***																					
07:10 AM	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	2	0	0	0	0	4
07:15 AM	0	0	0	0	0	0	0	0	0	0	1	0	5	0	6	0	0	0	0	0	6
07:20 AM	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0	0	0	0	2
07:25 AM	0	0	0	0	0	0	0	1	0	1	1	0	1	0	2	3	0	0	0	0	6
07:30 AM	0	0	0	0	0	0	0	0	0	0	2	0	2	0	4	0	0	0	0	0	4
07:35 AM	0	0	0	0	0	0	0	2	0	2	2	0	0	0	2	2	0	0	0	0	6
07:40 AM	0	0	0	0	0	0	0	9	0	9	2	0	0	0	2	1	0	0	0	0	12
07:45 AM	0	0	0	0	0	0	0	7	0	7	6	0	1	0	7	1	0	0	0	0	15
07:50 AM	0	0	0	0	0	0	0	7	0	7	1	0	0	0	1	0	0	0	0	0	8
07:55 AM	0	0	0	0	0	0	0	0	0	0	3	0	0	0	3	2	0	0	0	0	5
Total	0	0	0	0	0	0	0	27	0	27	19	0	15	0	34	12	0	0	0	0	12
08:00 AM	0	0	0	0	0	0	0	4	0	4	5	0	0	0	5	4	0	0	0	0	13
08:05 AM	0	0	0	0	0	0	0	4	0	4	2	0	0	0	2	0	0	0	0	0	6
08:10 AM	0	0	0	0	0	0	0	3	0	3	1	0	0	0	1	0	0	0	0	0	4
08:15 AM	0	0	0	0	0	0	0	3	0	3	1	0	0	0	1	0	0	0	0	0	4
08:20 AM	0	0	0	0	0	0	0	1	0	1	0	0	1	0	1	0	0	0	0	0	2
08:25 AM	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	2
Grand Total	0	0	0	0	0	0	0	42	0	42	34	0	29	0	63	18	0	0	0	0	123
Apprch %	0	0	0	0	0	0	0	100	0	100	54	0	46	0	100	100	0	0	0	0	
Total %	0	0	0	0	0	0	0	34.1	0	34.1	27.6	0	23.6	0	51.2	14.6	0	0	0	0	14.6

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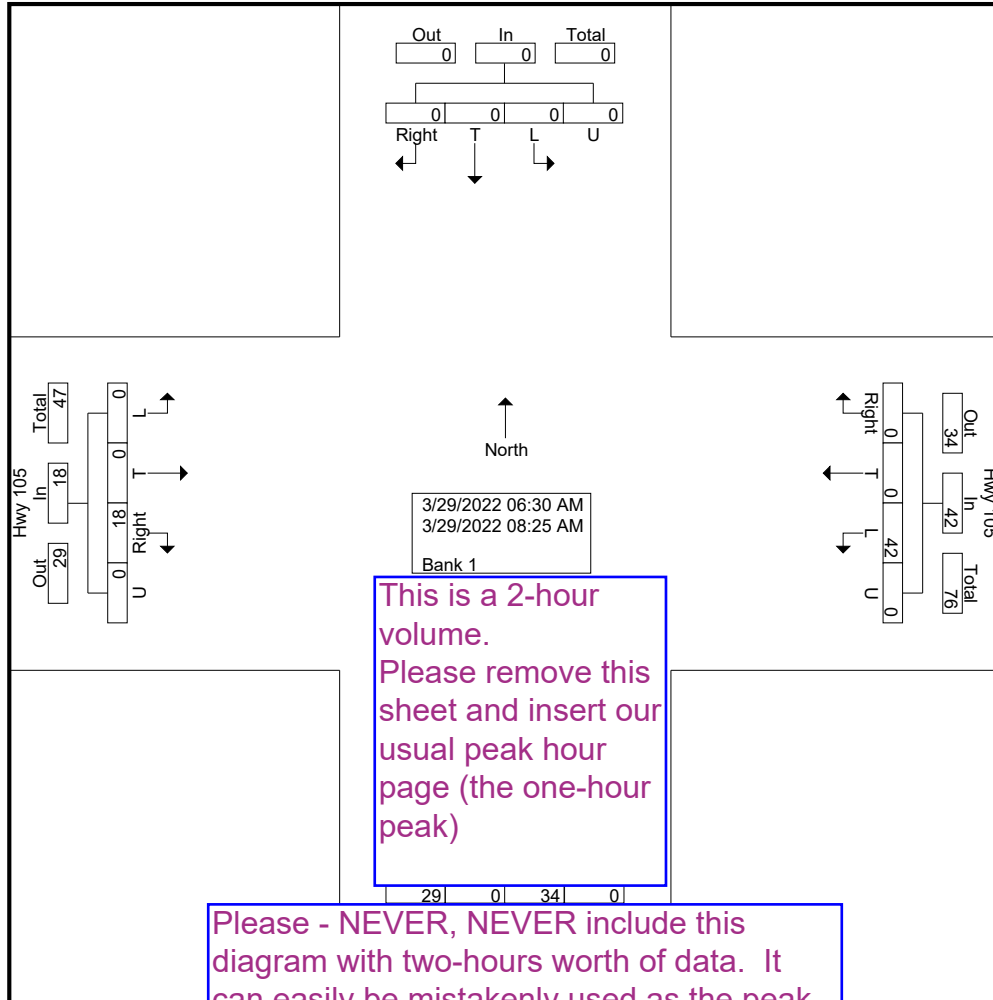
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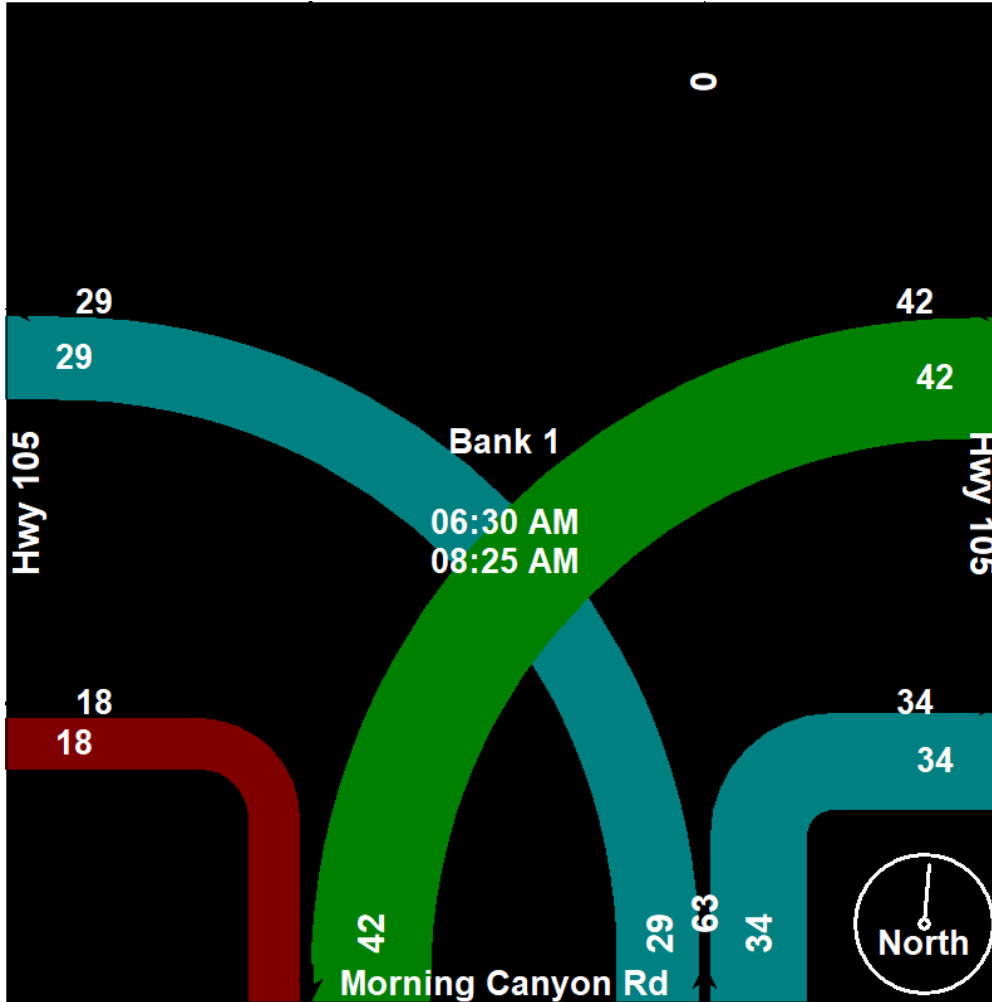
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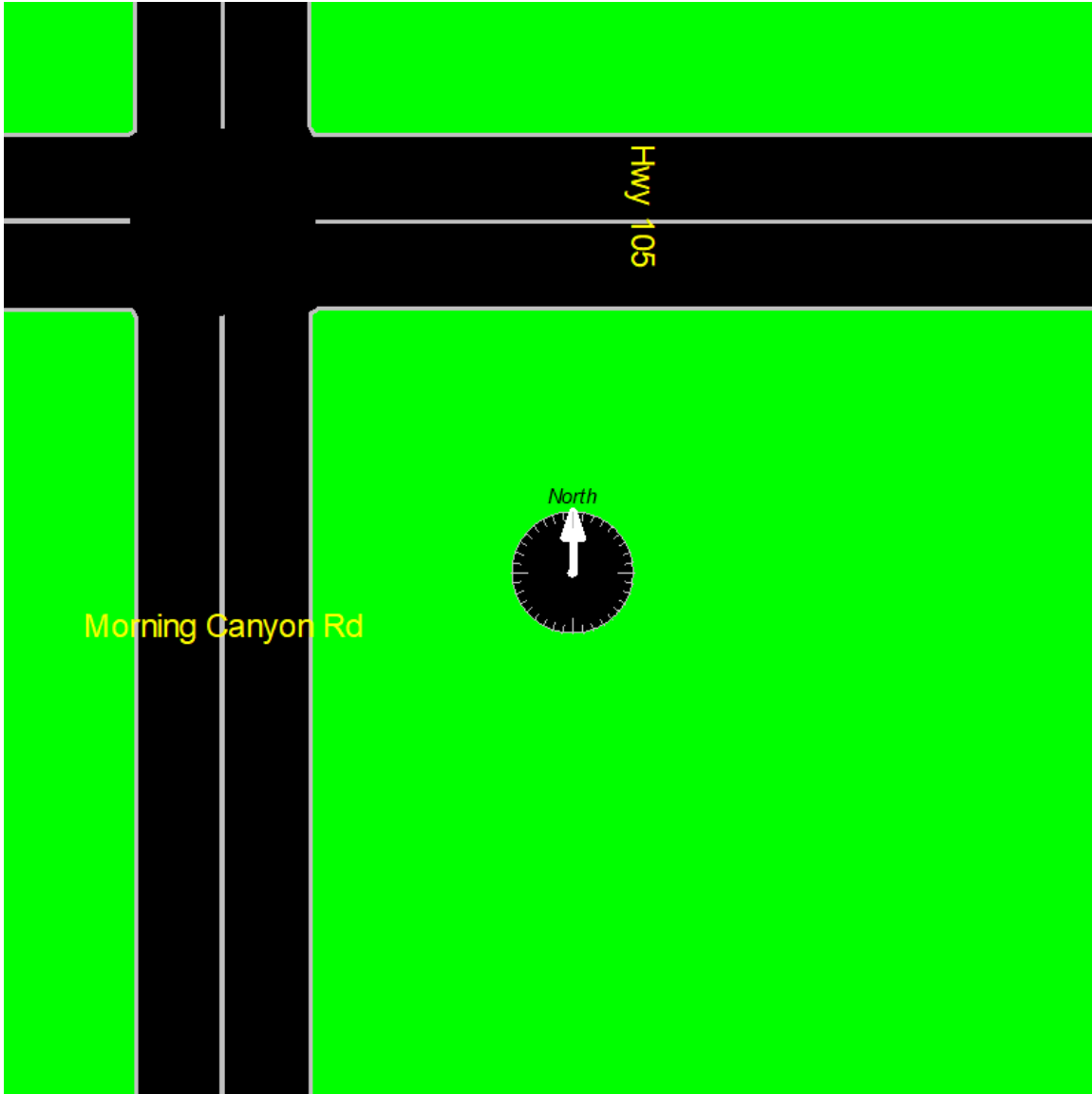
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Page No : 1

Groups Printed- Bank 1

Start Time	Southbound					Hwy 105 Westbound					Morning Canyon Rd Northbound					Hwy 105 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	
03:45 PM	0	0	0	0	0	0	0	1	0	1	0	0	1	0	1	2	0	0	0	2	4
03:50 PM	0	0	0	0	0	0	0	2	0	2	1	0	1	0	2	1	0	0	0	1	5
03:55 PM	0	0	0	0	0	0	0	2	0	2	1	0	2	0	3	2	0	0	0	2	7
Total	0	0	0	0	0	0	0	5	0	5	2	0	4	0	6	5	0	0	0	5	16
04:00 PM	0	0	0	0	0	0	0	1	0	1	0	0	2	0	2	1	0	0	0	1	4
04:05 PM	0	0	0	0	0	0	0	2	0	2	2	0	1	0	3	2	0	0	0	2	7
04:10 PM	0	0	0	0	0	0	0	0	0	0	1	0	1	0	2	8	0	0	0	8	10
04:15 PM	0	0	0	0	0	0	0	1	0	1	1	0	1	0	2	0	0	0	0	0	3
04:20 PM	0	0	0	0	0	0	0	2	0	2	2	0	4	0	6	5	0	0	0	5	13
04:25 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	3	0	0	0	3	4
04:30 PM	0	0	0	0	0	0	0	1	0	1	0	0	4	0	4	1	0	0	0	1	6
04:35 PM	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3	1	0	0	0	1	4
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04:45 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	1	2
04:50 PM	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	1	0	0	0	1	3
04:55 PM	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	4	0	0	0	4	5
Total	0	0	0	0	0	0	0	9	0	9	8	0	20	0	28	29	0	0	0	29	66
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05:05 PM	0	0	0	0	0	0	0	0	0	0	2	0	1	0	3	2	0	0	0	2	5
05:10 PM	0	0	0	0	0	0	0	1	0	1	1	0	0	0	1	3	0	0	0	3	5
05:15 PM	0	0	0	0	0	0	0	1	0	1	2	0	1	0	3	4	0	0	0	4	8
05:20 PM	0	0	0	0	0	0	0	2	0	2	0	0	5	0	5	0	0	0	0	0	7
05:25 PM	0	0	0	0	0	0	0	1	0	1	2	0	1	0	3	6	0	0	0	6	10
05:30 PM	0	0	0	0	0	0	0	1	0	1	0	0	1	0	1	2	0	0	0	2	4
05:35 PM	0	0	0	0	0	0	0	0	0	0	1	0	1	0	2	2	0	0	0	2	4
05:40 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	2	0	0	0	2	3
05:45 PM	0	0	0	0	0	0	0	1	0	1	0	0	1	0	1	1	0	0	0	1	3
05:50 PM	0	0	0	0	0	0	0	0	0	0	1	0	3	0	4	2	0	0	0	2	6
Grand Total	0	0	0	0	0	0	0	22	0	22	19	0	39	0	58	58	0	0	0	58	138
Apprch %	0	0	0	0		0	0	100	0		32.8	0	67.2	0		100	0	0	0		
Total %	0	0	0	0	0	0	0	15.9	0	15.9	13.8	0	28.3	0	42	42	0	0	0	42	

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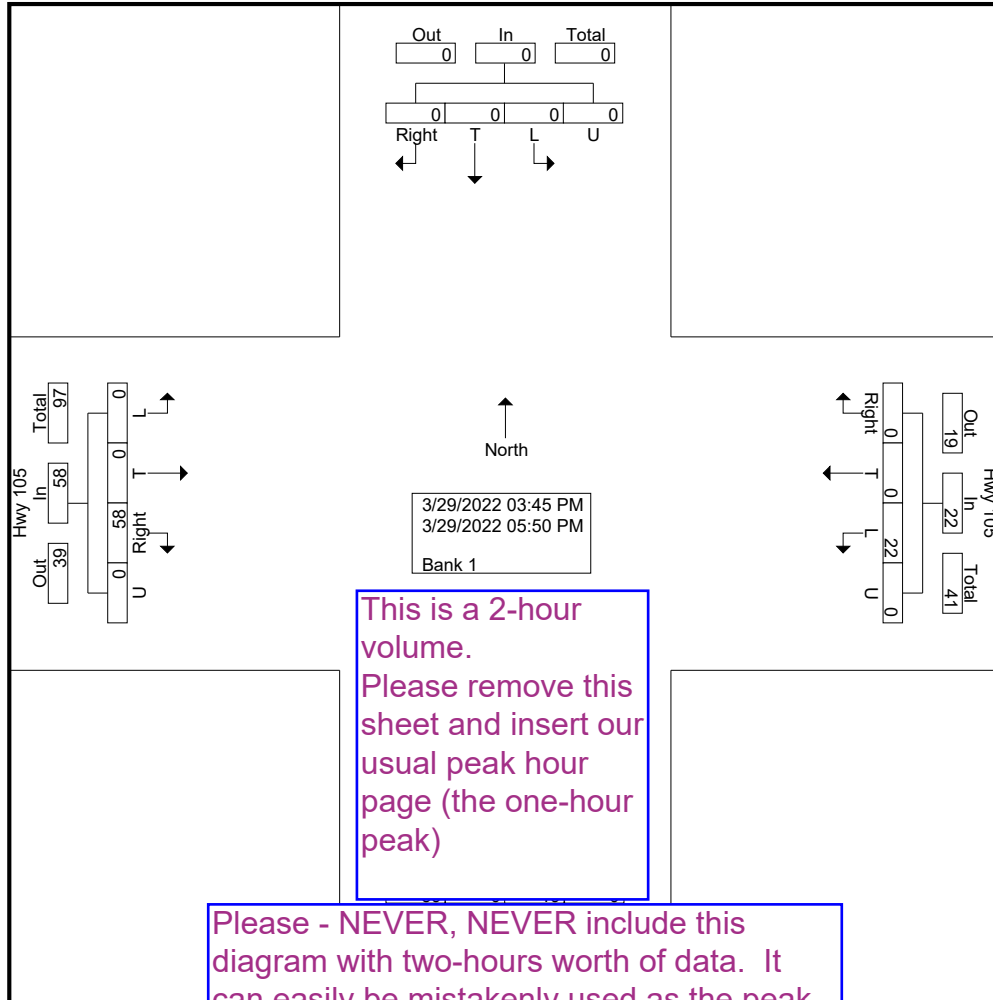
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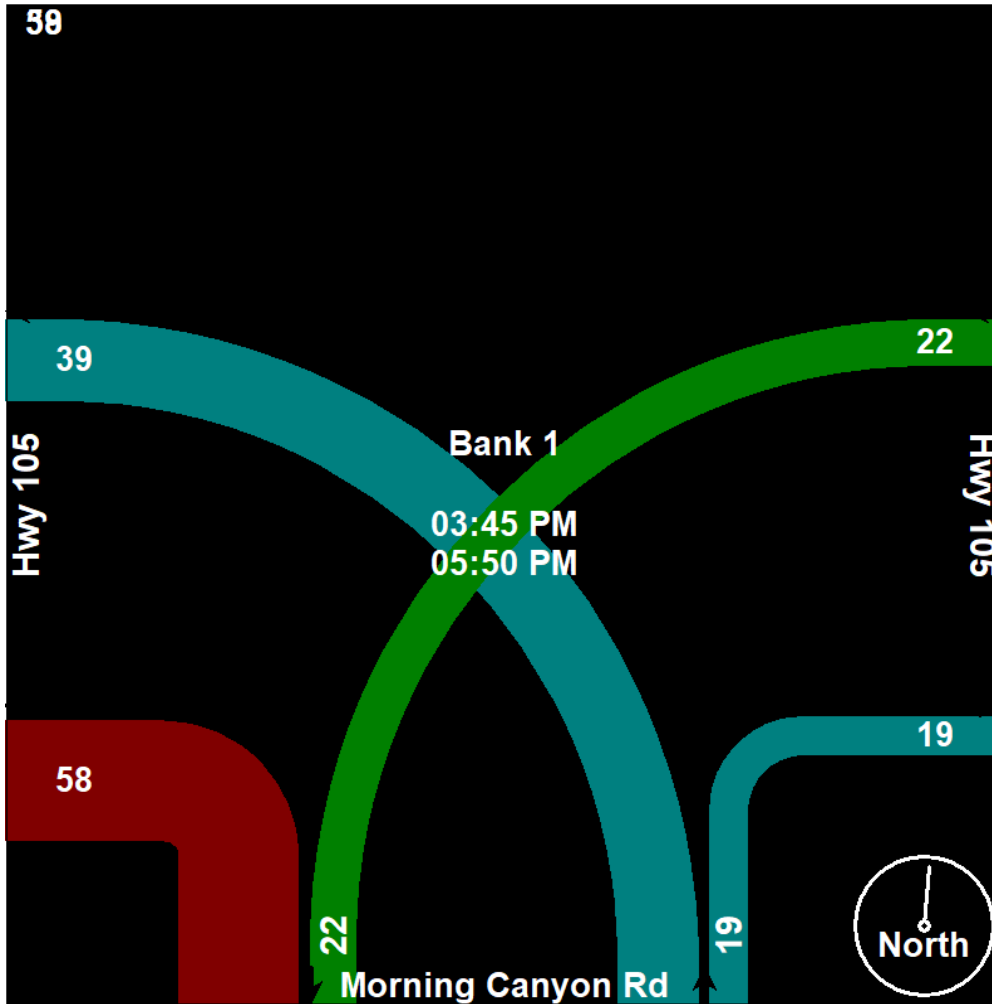
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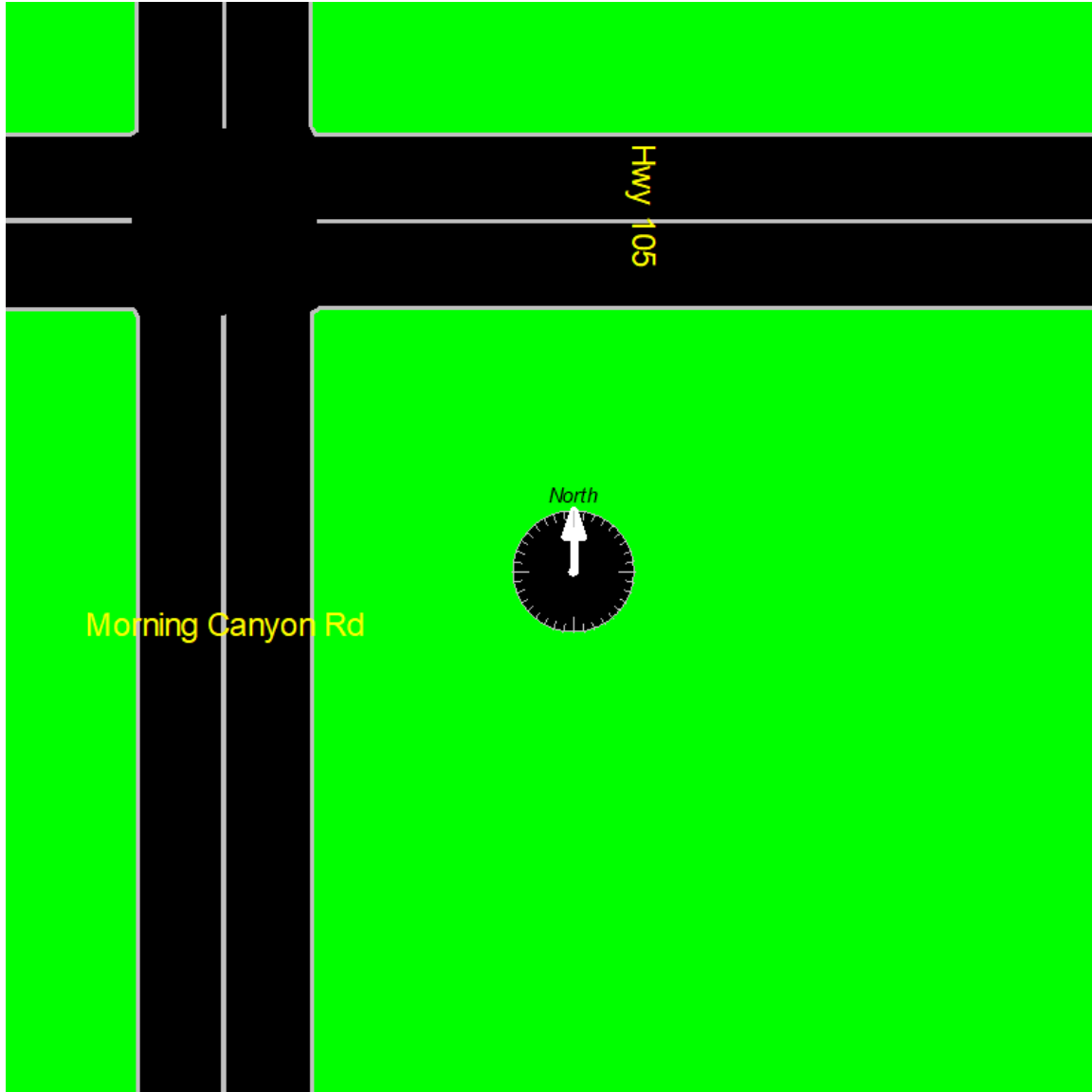
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Select File/Preference in the Main Scree Start Date : 3/29/2022

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Groups Printed- Unshifted

Start Time	Southbound					Gold Canyon Rd Westbound					Morning Canyon Rd Northbound					Gold Canyon Rd 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	1	0	1	3	0	0	0	3	0	1	0	0	1	0	0	0	0	0	5
06:35 AM	0	0	0	0	0	3	0	0	0	3	0	0	0	0	0	0	0	0	0	0	3
06:40 AM	0	0	0	0	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	2
06:45 AM	0	0	0	0	0	6	0	0	0	6	0	0	0	0	0	0	0	0	0	0	6
*** BREAK ***																					
06:55 AM	0	0	1	0	1	3	0	0	1	4	0	0	0	0	0	0	0	0	0	0	5
Total	0	0	2	0	2	17	0	0	1	18	0	1	0	0	1	0	0	0	0	0	21
07:00 AM	0	0	0	0	0	4	0	0	0	4	0	0	0	0	0	0	1	1	0	2	6
*** BREAK ***																					
07:10 AM	1	0	1	0	2	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	4
07:15 AM	0	0	1	0	1	5	0	0	0	5	0	0	0	0	0	1	0	1	0	2	8
07:20 AM	1	0	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
07:25 AM	1	0	3	0	4	1	0	0	0	1	0	0	0	0	0	0	0	2	0	2	7
07:30 AM	0	0	0	0	0	3	1	0	0	4	0	0	0	0	0	0	0	0	0	0	4
07:35 AM	2	0	1	0	3	1	0	0	0	1	0	0	0	0	0	0	0	1	0	1	5
07:40 AM	9	0	1	1	11	0	5	0	0	5	0	0	0	0	0	0	0	2	0	2	18
07:45 AM	5	0	2	0	7	1	0	0	0	1	0	0	0	0	0	0	1	5	0	6	14
07:50 AM	7	0	0	0	7	1	1	0	0	2	0	0	0	0	0	0	0	0	0	0	9
07:55 AM	1	0	2	0	3	0	1	0	0	1	0	0	0	0	0	0	0	3	0	3	7
Total	27	0	12	1	40	18	8	0	0	26	0	0	0	0	0	1	2	15	0	18	84
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08:05 AM	4	0	0	0	4	1	1	0	0	2	0	0	0	0	0	0	0	0	0	0	6
08:10 AM	3	0	0	0	3	0	1	0	0	1	0	0	0	0	0	0	0	1	0	1	5
08:15 AM	3	0	0	0	3	0	1	0	0	1	0	0	0	0	0	0	0	1	0	1	5
08:20 AM	1	0	0	0	1	1	3	0	0	4	0	0	0	0	0	0	0	0	0	0	5
08:25 AM	0	0	0	0	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	2
Grand Total	42	0	18	1	61	40	15	0	1	56	0	1	0	0	1	1	2	22	0	25	143
Apprch %	68.9	0	29.5	1.6		71.4	26.8	0	1.8		0	100	0	0		4	8	88	0		
Total %	29.4	0	12.6	0.7	42.7	28	10.5	0	0.7	39.2	0	0.7	0	0	0.7	0.7	1.4	15.4	0	17.5	

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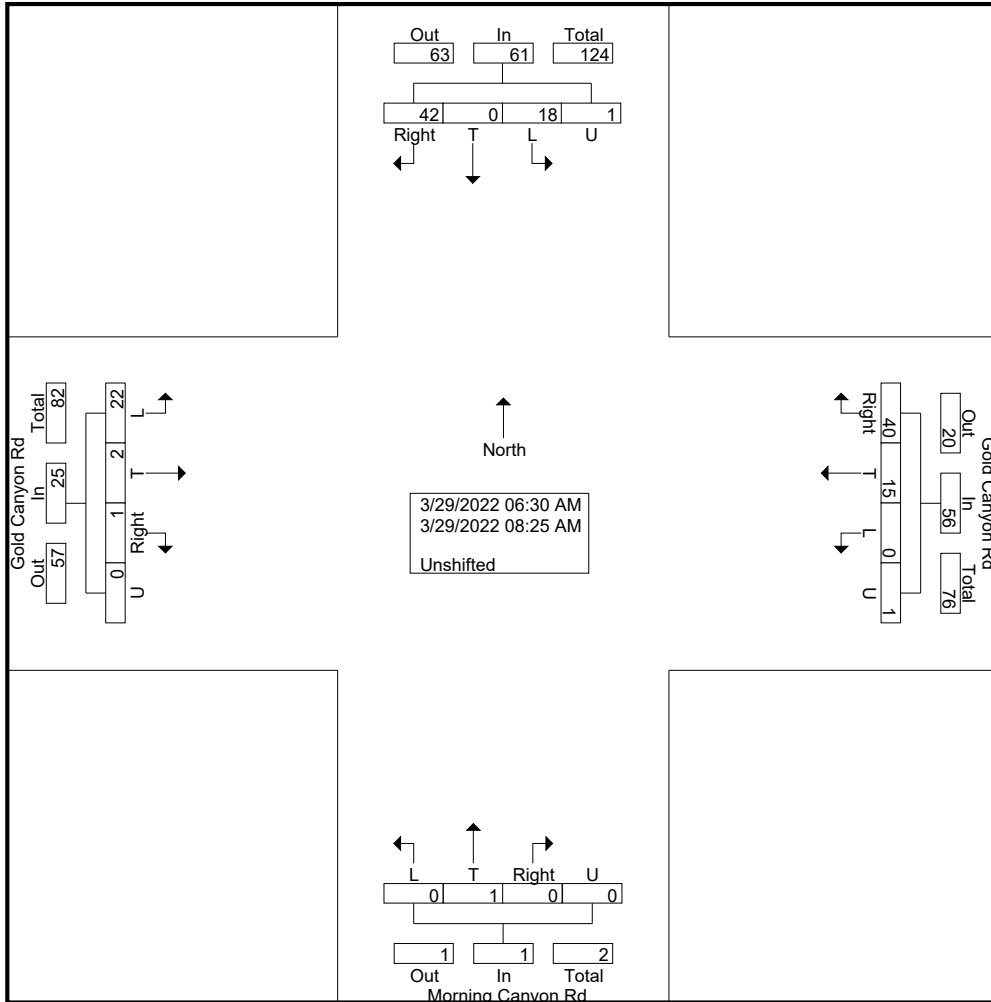
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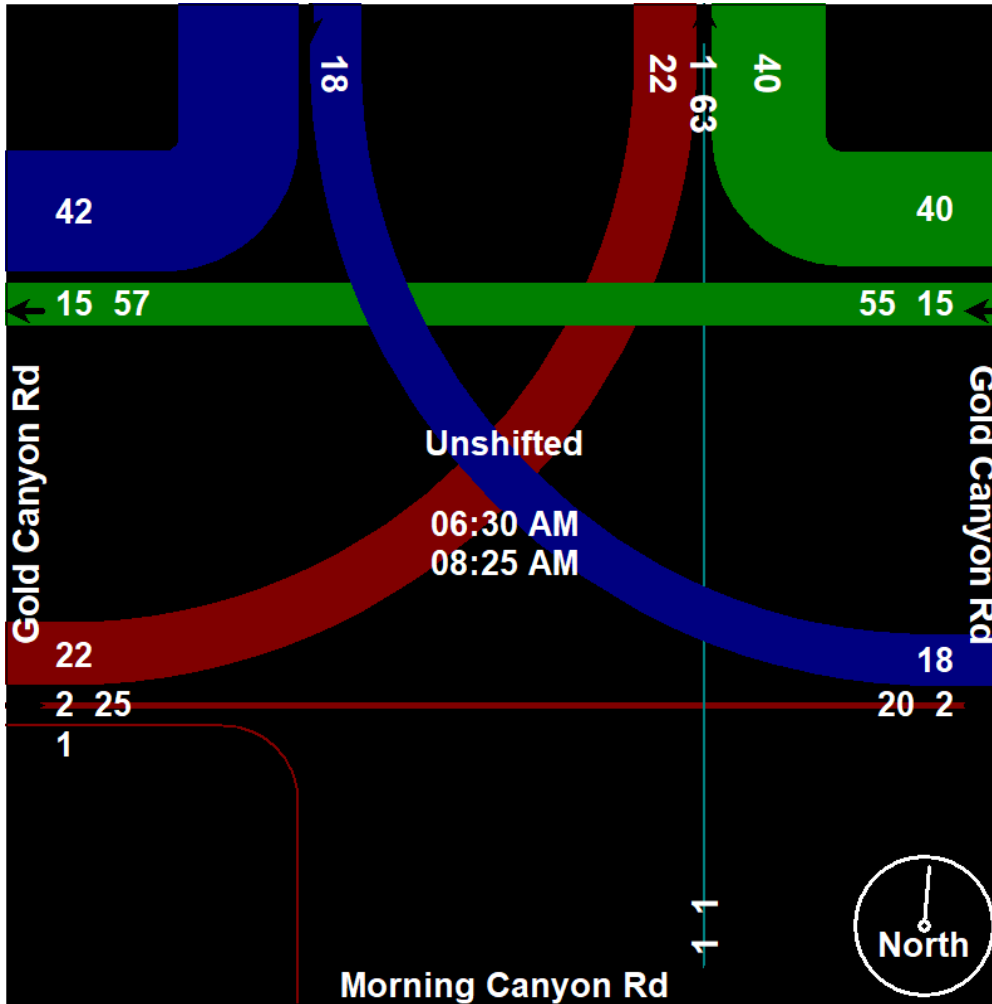
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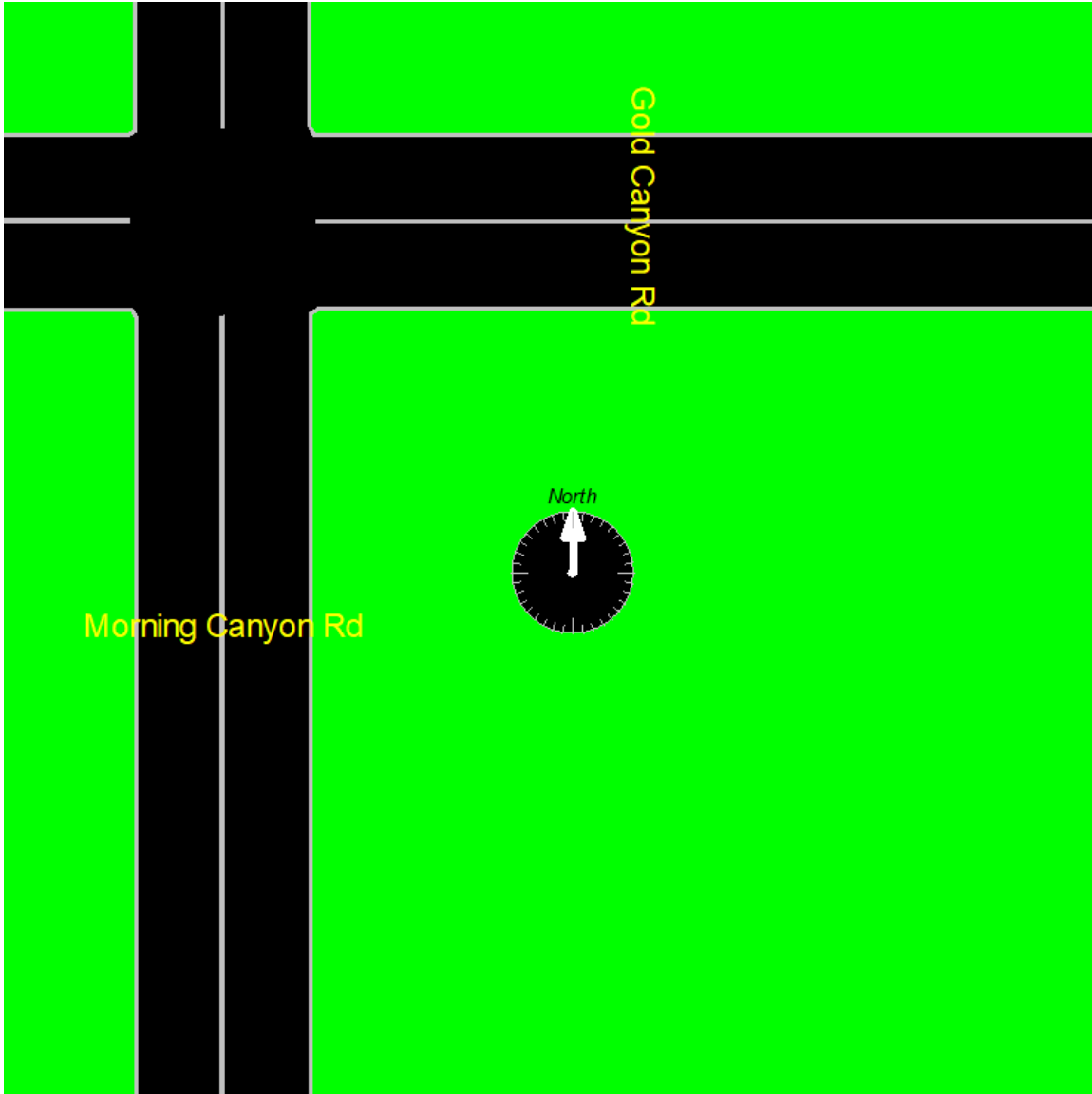
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Groups Printed- Unshifted

Start Time	Morning Canyon Rd Southbound					Gold Canyon Rd Westbound					Northbound					Gold Canyon Rd 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	
03:45 PM	1	0	2	0	3	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	4
03:50 PM	2	0	1	0	3	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	5
03:55 PM	1	0	2	0	3	3	0	0	0	3	0	0	0	0	0	0	0	0	0	0	6
Total	4	0	5	0	9	6	0	0	0	6	0	0	0	0	0	0	0	0	0	0	15
04:00 PM	2	0	1	0	3	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	5
04:05 PM	2	0	2	0	4	2	0	0	0	2	0	0	0	0	0	0	0	1	0	1	7
04:10 PM	3	0	5	0	8	1	0	0	0	1	0	0	0	0	0	0	0	1	0	1	10
04:15 PM	0	0	0	1	1	1	1	0	0	2	0	0	0	0	0	0	1	0	0	1	4
04:20 PM	1	0	5	0	6	2	0	0	0	2	0	0	0	0	0	0	0	4	0	4	12
04:25 PM	1	0	3	0	4	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	5
04:30 PM	1	0	1	0	2	3	1	0	0	4	0	0	0	0	0	0	1	1	0	2	8
04:35 PM	0	0	1	0	1	3	0	0	0	3	0	0	0	0	0	0	0	0	0	0	4
04:40 PM	0	0	2	0	2	1	0	0	0	1	0	0	0	0	0	0	0	1	0	1	4
04:45 PM	0	0	2	0	2	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	3
04:50 PM	0	0	1	0	1	2	0	0	0	2	0	0	0	0	0	0	1	0	0	1	4
04:55 PM	1	0	4	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
Total	11	0	27	1	39	19	2	0	0	21	0	0	0	0	0	0	3	8	0	11	71
05:00 PM	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
05:05 PM	0	0	1	0	1	2	0	0	0	2	0	0	0	0	0	0	0	1	0	1	4
05:10 PM	2	0	2	0	4	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	5
05:15 PM	2	0	2	0	4	3	0	0	0	3	0	0	0	0	0	0	0	1	0	1	8
05:20 PM	0	0	3	0	3	1	0	0	0	1	0	0	0	0	0	0	0	2	0	2	6
05:25 PM	3	0	4	0	7	3	2	0	0	5	0	0	0	0	0	0	0	1	0	1	13
05:30 PM	0	0	3	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
05:35 PM	0	0	2	0	2	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	4
05:40 PM	1	0	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	3
05:45 PM	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
05:50 PM	0	0	1	0	1	4	0	0	0	4	0	0	0	0	0	0	0	0	0	0	5
Grand Total	24	0	53	1	78	41	4	0	0	45	0	0	0	0	0	0	3	14	0	17	140
Apprch %	30.8	0	67.9	1.3		91.1	8.9	0	0		0	0	0	0		0	17.6	82.4	0		
Total %	17.1	0	37.9	0.7	55.7	29.3	2.9	0	0	32.1	0	0	0	0	0	0	2.1	10	0	12.1	

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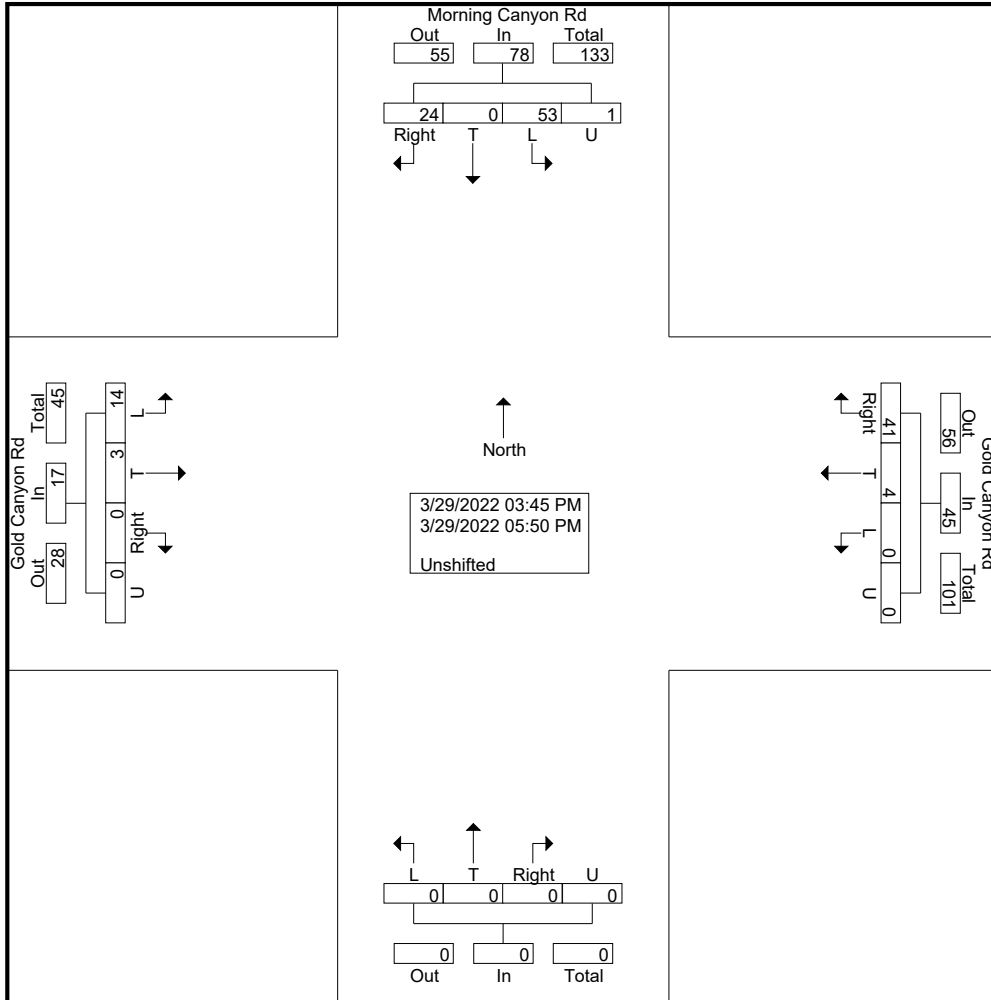
2504 E. Pikes Peak Ave, Suite 304
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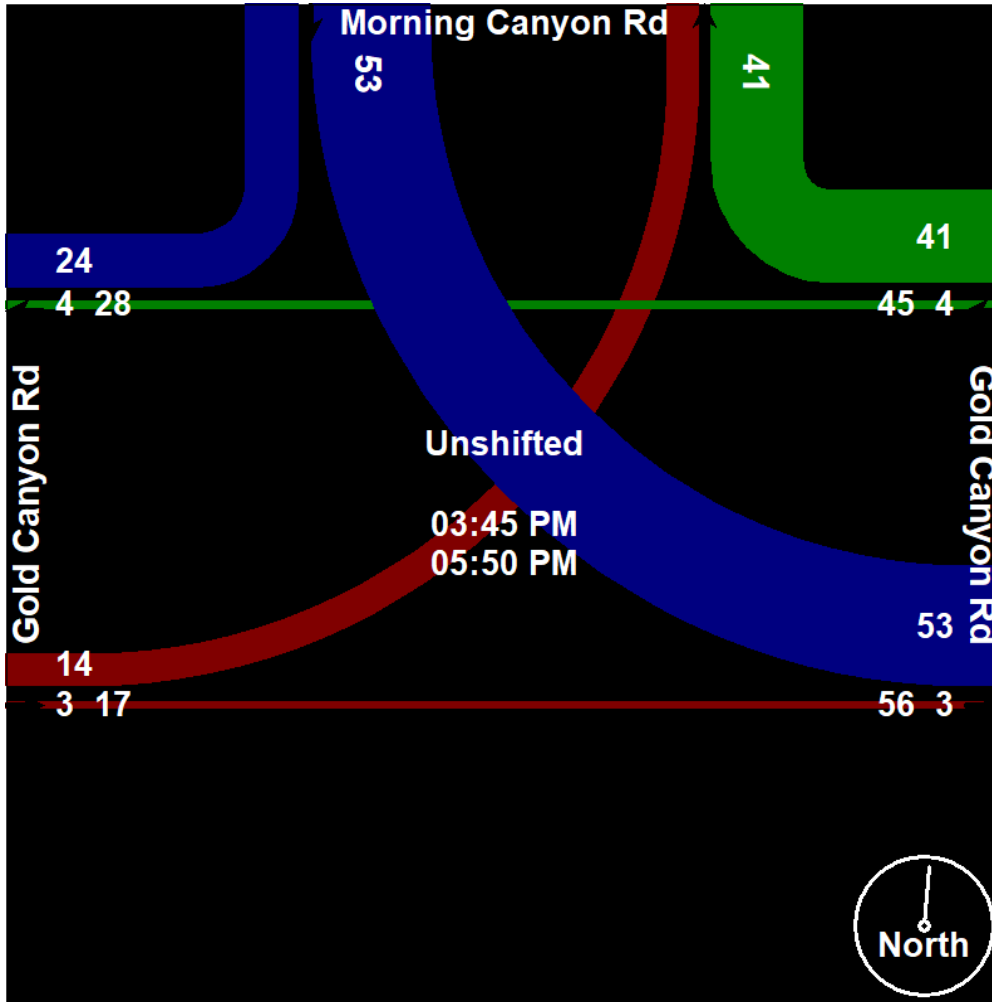
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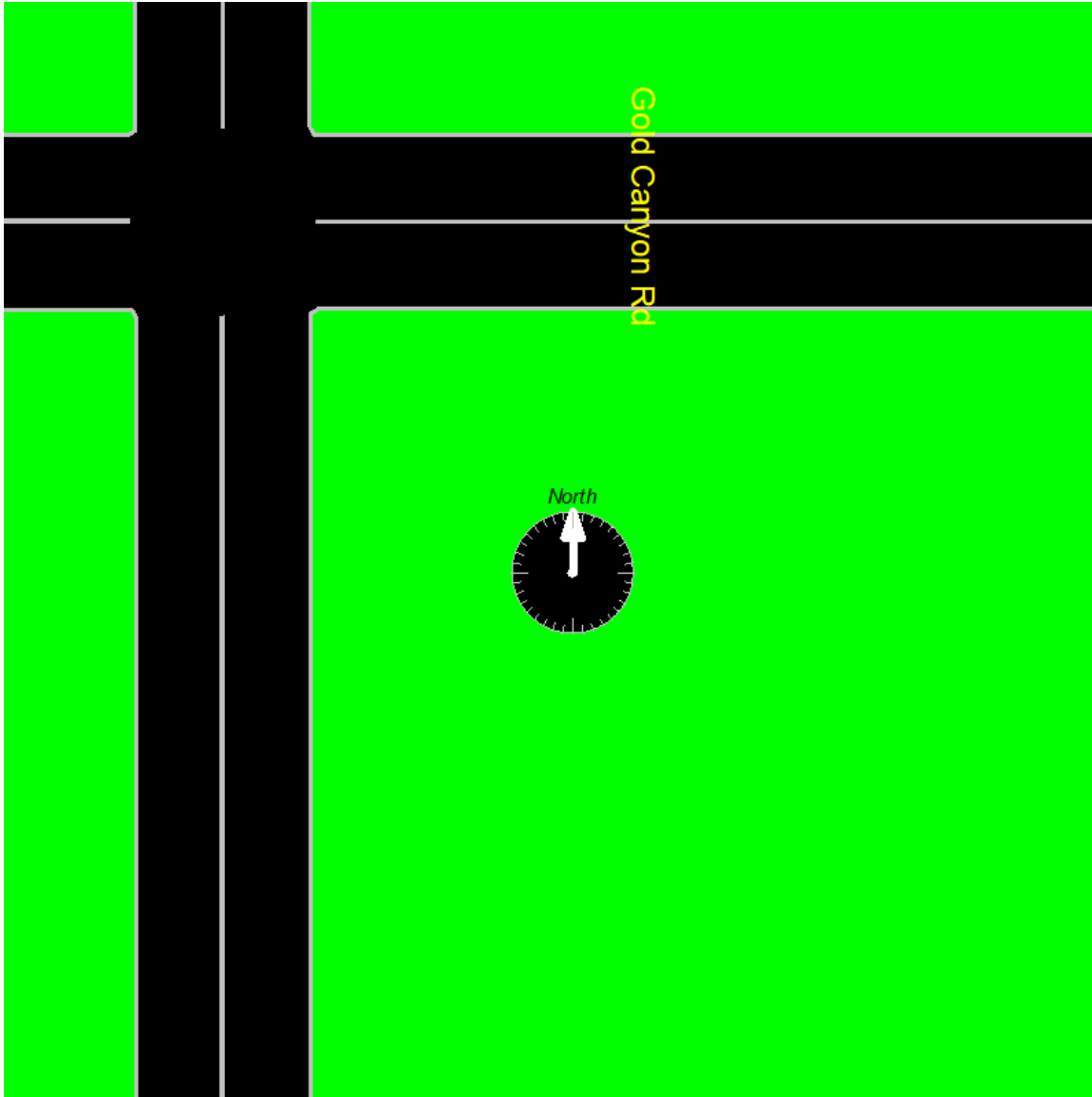
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Synchro Levels of Service



Intersection												
Int Delay, s/veh	68.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↖	↖	↗	↖		↖	↖		↔	
Traffic Vol, veh/h	6	395	14	41	623	1	12	1	23	1	2	304
Future Vol, veh/h	6	395	14	41	623	1	12	1	23	1	2	304
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	520	-	335	480	-	155	-	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	93	93	93	78	78	78	50	50	50
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	7	429	15	44	670	1	15	1	29	2	4	608

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	671	0	0	444	0	0	1508	1202	429	1224	1216	670
Stage 1	-	-	-	-	-	-	443	443	-	758	758	-
Stage 2	-	-	-	-	-	-	1065	759	-	466	458	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	919	-	-	1116	-	-	99	185	626	156	181	~ 457
Stage 1	-	-	-	-	-	-	594	576	-	399	415	-
Stage 2	-	-	-	-	-	-	269	415	-	577	567	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	919	-	-	1116	-	-	-	176	626	143	172	~ 457
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	176	-	143	172	-
Stage 1	-	-	-	-	-	-	589	571	-	396	399	-
Stage 2	-	-	-	-	-	-	-	399	-	544	562	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.1			0.5						204.2		
HCM LOS							-			F		

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	626	919	-	-	1116	-	-	449
HCM Lane V/C Ratio	-	0.047	0.007	-	-	0.04	-	-	1.367
HCM Control Delay (s)	-	11	8.9	-	-	8.4	-	-	204.2
HCM Lane LOS	-	B	A	-	-	A	-	-	F
HCM 95th %tile Q(veh)	-	0.1	0	-	-	0.1	-	-	28.7

Notes
 ~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection						
Int Delay, s/veh	6.1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↶	↷		↶	↷
Traffic Vol, veh/h	20	1	11	14	15	37
Future Vol, veh/h	20	1	11	14	15	37
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
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	83	83
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	26	1	14	18	18	45

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	32	0	-	0	76 23
Stage 1	-	-	-	-	23 -
Stage 2	-	-	-	-	53 -
Critical Hdwy	4.12	-	-	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	2.218	-	-	-	3.518 3.318
Pot Cap-1 Maneuver	1580	-	-	-	927 1054
Stage 1	-	-	-	-	1000 -
Stage 2	-	-	-	-	970 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1580	-	-	-	912 1054
Mov Cap-2 Maneuver	-	-	-	-	912 -
Stage 1	-	-	-	-	984 -
Stage 2	-	-	-	-	970 -

Approach	EB	WB	SB
HCM Control Delay, s	7	0	8.8
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1580	-	-	-	1009
HCM Lane V/C Ratio	0.016	-	-	-	0.062
HCM Control Delay (s)	7.3	0	-	-	8.8
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Intersection												
Int Delay, s/veh	1.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↙	↑	↗	↙	↑	↗		↙	↗		↔	
Traffic Vol, veh/h	6	650	30	10	465	1	20	1	10	1	1	5
Future Vol, veh/h	6	650	30	10	465	1	20	1	10	1	1	5
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	520	-	335	480	-	155	-	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	92	92	92	78	78	78	78	78	78
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	6	699	32	11	505	1	26	1	13	1	1	6

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	506	0	0	731	0	0	1242	1239	699	1261	1270	505
Stage 1	-	-	-	-	-	-	711	711	-	527	527	-
Stage 2	-	-	-	-	-	-	531	528	-	734	743	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1059	-	-	873	-	-	152	175	440	147	168	567
Stage 1	-	-	-	-	-	-	424	436	-	535	528	-
Stage 2	-	-	-	-	-	-	532	528	-	412	422	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1059	-	-	873	-	-	147	172	440	140	165	567
Mov Cap-2 Maneuver	-	-	-	-	-	-	147	172	-	140	165	-
Stage 1	-	-	-	-	-	-	421	433	-	532	521	-
Stage 2	-	-	-	-	-	-	518	521	-	397	419	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.1			0.2			27.8			16.6		
HCM LOS							D			C		

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	148	440	1059	-	-	873	-	-	318
HCM Lane V/C Ratio	0.182	0.029	0.006	-	-	0.012	-	-	0.028
HCM Control Delay (s)	34.7	13.4	8.4	-	-	9.2	-	-	16.6
HCM Lane LOS	D	B	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.6	0.1	0	-	-	0	-	-	0.1

Intersection						
Int Delay, s/veh	5.6					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	9	3	2	21	28	12
Future Vol, veh/h	9	3	2	21	28	12
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
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, %	2	2	2	2	2	2
Mvmt Flow	12	4	3	27	36	15

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	30	0	-	0	45 17
Stage 1	-	-	-	-	17 -
Stage 2	-	-	-	-	28 -
Critical Hdwy	4.12	-	-	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	2.218	-	-	-	3.518 3.318
Pot Cap-1 Maneuver	1583	-	-	-	965 1062
Stage 1	-	-	-	-	1006 -
Stage 2	-	-	-	-	995 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1583	-	-	-	957 1062
Mov Cap-2 Maneuver	-	-	-	-	957 -
Stage 1	-	-	-	-	998 -
Stage 2	-	-	-	-	995 -

Approach	EB	WB	SB
HCM Control Delay, s	5.5	0	8.9
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1583	-	-	-	986
HCM Lane V/C Ratio	0.007	-	-	-	0.052
HCM Control Delay (s)	7.3	0	-	-	8.9
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Intersection												
Int Delay, s/veh	0.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	525	15	40	875	0	10	0	25	1	0	5
Future Vol, veh/h	5	525	15	40	875	0	10	0	25	1	0	5
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	520	-	335	480	-	155	-	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	93	93	93	78	78	78	50	50	50
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	5	571	16	43	941	0	13	0	32	2	0	10

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	941	0	0	587	0	0	1138	1608	286	1323	1624	471
Stage 1	-	-	-	-	-	-	581	581	-	1027	1027	-
Stage 2	-	-	-	-	-	-	557	1027	-	296	597	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	724	-	-	984	-	-	156	104	711	114	102	539
Stage 1	-	-	-	-	-	-	467	498	-	251	310	-
Stage 2	-	-	-	-	-	-	482	310	-	688	490	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	724	-	-	984	-	-	147	99	711	105	97	539
Mov Cap-2 Maneuver	-	-	-	-	-	-	147	99	-	105	97	-
Stage 1	-	-	-	-	-	-	464	495	-	249	296	-
Stage 2	-	-	-	-	-	-	452	296	-	652	487	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.1			0.4			16.4			16.7		
HCM LOS							C			C		

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	147	711	724	-	-	984	-	-	319
HCM Lane V/C Ratio	0.087	0.045	0.008	-	-	0.044	-	-	0.038
HCM Control Delay (s)	31.8	10.3	10	-	-	8.8	-	-	16.7
HCM Lane LOS	D	B	B	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.3	0.1	0	-	-	0.1	-	-	0.1

Intersection						
Int Delay, s/veh	6.2					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↶	↷		↶	↷
Traffic Vol, veh/h	21	1	11	14	16	39
Future Vol, veh/h	21	1	11	14	16	39
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
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	83	83
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	27	1	14	18	19	47

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	32	0	-	0	78 23
Stage 1	-	-	-	-	23 -
Stage 2	-	-	-	-	55 -
Critical Hdwy	4.12	-	-	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	2.218	-	-	-	3.518 3.318
Pot Cap-1 Maneuver	1580	-	-	-	925 1054
Stage 1	-	-	-	-	1000 -
Stage 2	-	-	-	-	968 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1580	-	-	-	909 1054
Mov Cap-2 Maneuver	-	-	-	-	909 -
Stage 1	-	-	-	-	983 -
Stage 2	-	-	-	-	968 -

Approach	EB	WB	SB
HCM Control Delay, s	7	0	8.8
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1580	-	-	-	1007
HCM Lane V/C Ratio	0.017	-	-	-	0.066
HCM Control Delay (s)	7.3	0	-	-	8.8
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0.1	-	-	-	0.2

Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↶	↷		↶	
Traffic Vol, veh/h	0	17	26	0	0	0
Future Vol, veh/h	0	17	26	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
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	83	83
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	22	33	0	0	0

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	33	0	-	0	55 33
Stage 1	-	-	-	-	33 -
Stage 2	-	-	-	-	22 -
Critical Hdwy	4.12	-	-	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	2.218	-	-	-	3.518 3.318
Pot Cap-1 Maneuver	1579	-	-	-	953 1041
Stage 1	-	-	-	-	989 -
Stage 2	-	-	-	-	1001 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1579	-	-	-	953 1041
Mov Cap-2 Maneuver	-	-	-	-	953 -
Stage 1	-	-	-	-	989 -
Stage 2	-	-	-	-	1001 -

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

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1579	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	-	0
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	-

Intersection												
Int Delay, s/veh	0.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	875	30	10	600	1	20	0	10	1	0	5
Future Vol, veh/h	5	875	30	10	600	1	20	0	10	1	0	5
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	520	-	335	480	-	155	-	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	92	92	92	78	78	78	78	78	78
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	5	941	32	11	652	1	26	0	13	1	0	6

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	653	0	0	973	0	0	1299	1626	471	1155	1657	326
Stage 1	-	-	-	-	-	-	951	951	-	674	674	-
Stage 2	-	-	-	-	-	-	348	675	-	481	983	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	930	-	-	704	-	-	119	101	539	152	97	670
Stage 1	-	-	-	-	-	-	279	336	-	410	452	-
Stage 2	-	-	-	-	-	-	641	451	-	535	325	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	930	-	-	704	-	-	116	99	539	146	95	670
Mov Cap-2 Maneuver	-	-	-	-	-	-	116	99	-	146	95	-
Stage 1	-	-	-	-	-	-	278	334	-	408	445	-
Stage 2	-	-	-	-	-	-	625	444	-	519	323	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0.2			33.7			13.8		
HCM LOS							D			B		

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	116	539	930	-	-	704	-	-	419
HCM Lane V/C Ratio	0.221	0.024	0.006	-	-	0.015	-	-	0.018
HCM Control Delay (s)	44.6	11.8	8.9	-	-	10.2	-	-	13.8
HCM Lane LOS	E	B	A	-	-	B	-	-	B
HCM 95th %tile Q(veh)	0.8	0.1	0	-	-	0	-	-	0.1

Intersection						
Int Delay, s/veh	5.6					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	9	3	2	21	28	12
Future Vol, veh/h	9	3	2	21	28	12
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
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, %	2	2	2	2	2	2
Mvmt Flow	12	4	3	27	36	15

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	30	0	-	0	45 17
Stage 1	-	-	-	-	17 -
Stage 2	-	-	-	-	28 -
Critical Hdwy	4.12	-	-	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	2.218	-	-	-	3.518 3.318
Pot Cap-1 Maneuver	1583	-	-	-	965 1062
Stage 1	-	-	-	-	1006 -
Stage 2	-	-	-	-	995 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1583	-	-	-	957 1062
Mov Cap-2 Maneuver	-	-	-	-	957 -
Stage 1	-	-	-	-	998 -
Stage 2	-	-	-	-	995 -

Approach	EB	WB	SB
HCM Control Delay, s	5.5	0	8.9
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1583	-	-	-	986
HCM Lane V/C Ratio	0.007	-	-	-	0.052
HCM Control Delay (s)	7.3	0	-	-	8.9
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↶	↷		↶	
Traffic Vol, veh/h	0	32	23	0	0	0
Future Vol, veh/h	0	32	23	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
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, %	2	2	2	2	2	2
Mvmt Flow	0	41	29	0	0	0

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	29	0	-	0	70 29
Stage 1	-	-	-	-	29 -
Stage 2	-	-	-	-	41 -
Critical Hdwy	4.12	-	-	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	2.218	-	-	-	3.518 3.318
Pot Cap-1 Maneuver	1584	-	-	-	934 1046
Stage 1	-	-	-	-	994 -
Stage 2	-	-	-	-	981 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1584	-	-	-	934 1046
Mov Cap-2 Maneuver	-	-	-	-	934 -
Stage 1	-	-	-	-	994 -
Stage 2	-	-	-	-	981 -

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

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1584	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	-	0
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	-

Intersection												
Int Delay, s/veh	1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	525	38	49	875	1	15	0	27	1	0	5
Future Vol, veh/h	5	525	38	49	875	1	15	0	27	1	0	5
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	520	-	335	480	-	155	-	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	78	78	78	78	78	78
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	5	565	41	53	941	1	19	0	35	1	0	6

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	942	0	0	606	0	0	1152	1623	283	1340	1663	471
Stage 1	-	-	-	-	-	-	575	575	-	1047	1047	-
Stage 2	-	-	-	-	-	-	577	1048	-	293	616	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	724	-	-	968	-	-	153	102	714	111	96	539
Stage 1	-	-	-	-	-	-	470	501	-	244	303	-
Stage 2	-	-	-	-	-	-	469	303	-	691	480	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	724	-	-	968	-	-	144	96	714	101	90	539
Mov Cap-2 Maneuver	-	-	-	-	-	-	144	96	-	101	90	-
Stage 1	-	-	-	-	-	-	467	497	-	242	286	-
Stage 2	-	-	-	-	-	-	438	286	-	653	477	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.1			0.5			18.7			16.8		
HCM LOS							C			C		

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	144	714	724	-	-	968	-	-	313
HCM Lane V/C Ratio	0.134	0.048	0.007	-	-	0.054	-	-	0.025
HCM Control Delay (s)	33.8	10.3	10	-	-	8.9	-	-	16.8
HCM Lane LOS	D	B	B	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.4	0.2	0	-	-	0.2	-	-	0.1

Intersection						
Int Delay, s/veh	6.6					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	21	2	11	21	48	39
Future Vol, veh/h	21	2	11	21	48	39
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
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	83	83
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	27	3	14	27	58	47

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	41	0	-	0	85 28
Stage 1	-	-	-	-	28 -
Stage 2	-	-	-	-	57 -
Critical Hdwy	4.12	-	-	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	2.218	-	-	-	3.518 3.318
Pot Cap-1 Maneuver	1568	-	-	-	916 1047
Stage 1	-	-	-	-	995 -
Stage 2	-	-	-	-	966 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1568	-	-	-	900 1047
Mov Cap-2 Maneuver	-	-	-	-	900 -
Stage 1	-	-	-	-	978 -
Stage 2	-	-	-	-	966 -

Approach	EB	WB	SB
HCM Control Delay, s	6.7	0	9.2
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1568	-	-	-	960
HCM Lane V/C Ratio	0.017	-	-	-	0.109
HCM Control Delay (s)	7.3	0	-	-	9.2
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0.1	-	-	-	0.4

Intersection						
Int Delay, s/veh	3.6					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↶	↷		↶	
Traffic Vol, veh/h	33	17	26	0	0	7
Future Vol, veh/h	33	17	26	0	0	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	83	83	78	78	78	78
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	40	20	33	0	0	9

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	33	0	-	0	133 33
Stage 1	-	-	-	-	33 -
Stage 2	-	-	-	-	100 -
Critical Hdwy	4.12	-	-	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	2.218	-	-	-	3.518 3.318
Pot Cap-1 Maneuver	1579	-	-	-	861 1041
Stage 1	-	-	-	-	989 -
Stage 2	-	-	-	-	924 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1579	-	-	-	839 1041
Mov Cap-2 Maneuver	-	-	-	-	839 -
Stage 1	-	-	-	-	963 -
Stage 2	-	-	-	-	924 -

Approach	EB	WB	SB
HCM Control Delay, s	4.8	0	8.5
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1579	-	-	-	1041
HCM Lane V/C Ratio	0.025	-	-	-	0.009
HCM Control Delay (s)	7.3	0	-	-	8.5
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0.1	-	-	-	0

Intersection												
Int Delay, s/veh	7.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	875	81	31	600	1	71	0	31	1	0	5
Future Vol, veh/h	5	875	81	31	600	1	71	0	31	1	0	5
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	520	-	335	480	-	155	-	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	93	93	93	78	78	78	78	78	78
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	5	951	88	33	645	1	91	0	40	1	0	6

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	646	0	0	1039	0	0	1350	1673	476	1197	1760	323
Stage 1	-	-	-	-	-	-	961	961	-	711	711	-
Stage 2	-	-	-	-	-	-	389	712	-	486	1049	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	935	-	-	665	-	-	109	95	535	141	84	673
Stage 1	-	-	-	-	-	-	275	333	-	390	434	-
Stage 2	-	-	-	-	-	-	606	434	-	531	303	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	935	-	-	665	-	-	103	90	535	125	79	673
Mov Cap-2 Maneuver	-	-	-	-	-	-	103	90	-	125	79	-
Stage 1	-	-	-	-	-	-	274	331	-	388	412	-
Stage 2	-	-	-	-	-	-	570	412	-	489	301	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0.5			97.4			14.4		
HCM LOS							F			B		

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	103	535	935	-	-	665	-	-	389
HCM Lane V/C Ratio	0.884	0.074	0.006	-	-	0.05	-	-	0.02
HCM Control Delay (s)	134.6	12.3	8.9	-	-	10.7	-	-	14.4
HCM Lane LOS	F	B	A	-	-	B	-	-	B
HCM 95th %tile Q(veh)	5.1	0.2	0	-	-	0.2	-	-	0.1

Intersection						
Int Delay, s/veh	5.2					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↖	↗		↘	
Traffic Vol, veh/h	9	4	3	93	100	12
Future Vol, veh/h	9	4	3	93	100	12
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	78	78	83	83	83	83
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	12	5	4	112	120	14

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	116	0	-	0	89 60
Stage 1	-	-	-	-	60 -
Stage 2	-	-	-	-	29 -
Critical Hdwy	4.12	-	-	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	2.218	-	-	-	3.518 3.318
Pot Cap-1 Maneuver	1473	-	-	-	912 1005
Stage 1	-	-	-	-	963 -
Stage 2	-	-	-	-	994 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1473	-	-	-	905 1005
Mov Cap-2 Maneuver	-	-	-	-	905 -
Stage 1	-	-	-	-	955 -
Stage 2	-	-	-	-	994 -

Approach	EB	WB	SB
HCM Control Delay, s	5.2	0	9.6
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1473	-	-	-	915
HCM Lane V/C Ratio	0.008	-	-	-	0.147
HCM Control Delay (s)	7.5	0	-	-	9.6
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.5

Intersection						
Int Delay, s/veh	5.9					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↶	↷		↶	↷
Traffic Vol, veh/h	73	32	23	1	1	73
Future Vol, veh/h	73	32	23	1	1	73
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	83	83	78	78	83	83
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	88	39	29	1	1	88

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	30	0	-	0	245 30
Stage 1	-	-	-	-	30 -
Stage 2	-	-	-	-	215 -
Critical Hdwy	4.12	-	-	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	2.218	-	-	-	3.518 3.318
Pot Cap-1 Maneuver	1583	-	-	-	743 1044
Stage 1	-	-	-	-	993 -
Stage 2	-	-	-	-	821 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1583	-	-	-	701 1044
Mov Cap-2 Maneuver	-	-	-	-	701 -
Stage 1	-	-	-	-	936 -
Stage 2	-	-	-	-	821 -

Approach	EB	WB	SB
HCM Control Delay, s	5.2	0	8.8
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1583	-	-	-	1037
HCM Lane V/C Ratio	0.056	-	-	-	0.086
HCM Control Delay (s)	7.4	0	-	-	8.8
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0.2	-	-	-	0.3

Intersection												
Int Delay, s/veh	1.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	750	18	41	1400	1	18	0	28	1	0	5
Future Vol, veh/h	5	750	18	41	1400	1	18	0	28	1	0	5
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	520	-	335	480	-	155	-	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	95	95	95	78	78	78	78	78	78
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	5	806	19	43	1474	1	23	0	36	1	0	6

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1475	0	0	825	0	0	1639	2377	403	1973	2395	737
Stage 1	-	-	-	-	-	-	816	816	-	1560	1560	-
Stage 2	-	-	-	-	-	-	823	1561	-	413	835	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	453	-	-	801	-	-	66	34	597	37	33	361
Stage 1	-	-	-	-	-	-	337	389	-	117	171	-
Stage 2	-	-	-	-	-	-	334	171	-	587	381	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	453	-	-	801	-	-	62	32	597	33	31	361
Mov Cap-2 Maneuver	-	-	-	-	-	-	62	32	-	33	31	-
Stage 1	-	-	-	-	-	-	333	385	-	116	162	-
Stage 2	-	-	-	-	-	-	310	162	-	546	377	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.1			0.3			43.8			33.1		
HCM LOS							E			D		

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	62	597	453	-	-	801	-	-	136
HCM Lane V/C Ratio	0.372	0.06	0.012	-	-	0.054	-	-	0.057
HCM Control Delay (s)	94.1	11.4	13	-	-	9.8	-	-	33.1
HCM Lane LOS	F	B	B	-	-	A	-	-	D
HCM 95th %tile Q(veh)	1.4	0.2	0	-	-	0.2	-	-	0.2

Intersection						
Int Delay, s/veh	5.7					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↶	↷		↶	↷
Traffic Vol, veh/h	21	1	11	25	20	39
Future Vol, veh/h	21	1	11	25	20	39
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
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	83	83
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	27	1	14	32	24	47

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	46	0	-	0	85 30
Stage 1	-	-	-	-	30 -
Stage 2	-	-	-	-	55 -
Critical Hdwy	4.12	-	-	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	2.218	-	-	-	3.518 3.318
Pot Cap-1 Maneuver	1562	-	-	-	916 1044
Stage 1	-	-	-	-	993 -
Stage 2	-	-	-	-	968 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1562	-	-	-	900 1044
Mov Cap-2 Maneuver	-	-	-	-	900 -
Stage 1	-	-	-	-	976 -
Stage 2	-	-	-	-	968 -

Approach	EB	WB	SB
HCM Control Delay, s	7	0	8.9
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1562	-	-	-	990
HCM Lane V/C Ratio	0.017	-	-	-	0.072
HCM Control Delay (s)	7.3	0	-	-	8.9
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0.1	-	-	-	0.2

Intersection												
Int Delay, s/veh	2.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	1225	39	14	950	1	25	0	12	1	0	5
Future Vol, veh/h	5	1225	39	14	950	1	25	0	12	1	0	5
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	520	-	335	480	-	155	-	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	78	78	78	78	78	78
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	5	1289	41	15	1000	1	32	0	15	1	0	6

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1001	0	0	1330	0	0	1829	2330	645	1685	2370	500
Stage 1	-	-	-	-	-	-	1299	1299	-	1030	1030	-
Stage 2	-	-	-	-	-	-	530	1031	-	655	1340	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	687	-	-	515	-	-	48	37	415	61	34	516
Stage 1	-	-	-	-	-	-	171	230	-	250	309	-
Stage 2	-	-	-	-	-	-	500	309	-	421	220	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	687	-	-	515	-	-	46	36	415	57	33	516
Mov Cap-2 Maneuver	-	-	-	-	-	-	46	36	-	57	33	-
Stage 1	-	-	-	-	-	-	170	228	-	248	300	-
Stage 2	-	-	-	-	-	-	479	300	-	402	218	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0.2			130.1			22		
HCM LOS							F			C		

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	46	415	687	-	-	515	-	-	220
HCM Lane V/C Ratio	0.697	0.037	0.008	-	-	0.029	-	-	0.035
HCM Control Delay (s)	185.9	14	10.3	-	-	12.2	-	-	22
HCM Lane LOS	F	B	B	-	-	B	-	-	C
HCM 95th %tile Q(veh)	2.7	0.1	0	-	-	0.1	-	-	0.1

Intersection						
Int Delay, s/veh	5.6					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	9	3	2	28	40	12
Future Vol, veh/h	9	3	2	28	40	12
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
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	83	83
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	12	4	3	36	48	14

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	39	0	-	0	49 21
Stage 1	-	-	-	-	21 -
Stage 2	-	-	-	-	28 -
Critical Hdwy	4.12	-	-	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	2.218	-	-	-	3.518 3.318
Pot Cap-1 Maneuver	1571	-	-	-	960 1056
Stage 1	-	-	-	-	1002 -
Stage 2	-	-	-	-	995 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1571	-	-	-	952 1056
Mov Cap-2 Maneuver	-	-	-	-	952 -
Stage 1	-	-	-	-	994 -
Stage 2	-	-	-	-	995 -

Approach	EB	WB	SB
HCM Control Delay, s	5.5	0	9
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1571	-	-	-	974
HCM Lane V/C Ratio	0.007	-	-	-	0.064
HCM Control Delay (s)	7.3	0	-	-	9
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Intersection												
Int Delay, s/veh	1.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑	↗	↘	↑↑	↗		↘	↗		↔	
Traffic Vol, veh/h	1	750	41	50	1400	5	23	0	30	1	0	5
Future Vol, veh/h	1	750	41	50	1400	5	23	0	30	1	0	5
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	520	-	335	480	-	155	-	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	95	95	95	83	83	83	50	50	50
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	806	44	53	1474	5	28	0	36	2	0	10

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1479	0	0	850	0	0	1651	2393	403	1985	2432	737
Stage 1	-	-	-	-	-	-	808	808	-	1580	1580	-
Stage 2	-	-	-	-	-	-	843	1585	-	405	852	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	451	-	-	784	-	-	65	33	597	36	31	361
Stage 1	-	-	-	-	-	-	341	392	-	114	168	-
Stage 2	-	-	-	-	-	-	325	167	-	593	374	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	451	-	-	784	-	-	60	31	597	32	29	361
Mov Cap-2 Maneuver	-	-	-	-	-	-	60	31	-	32	29	-
Stage 1	-	-	-	-	-	-	340	391	-	114	157	-
Stage 2	-	-	-	-	-	-	295	156	-	556	373	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0.3			53.6			34.7		
HCM LOS							F			D		

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	60	597	451	-	-	784	-	-	133
HCM Lane V/C Ratio	0.462	0.061	0.002	-	-	0.067	-	-	0.09
HCM Control Delay (s)	108.6	11.4	13	-	-	9.9	-	-	34.7
HCM Lane LOS	F	B	B	-	-	A	-	-	D
HCM 95th %tile Q(veh)	1.8	0.2	0	-	-	0.2	-	-	0.3

Intersection						
Int Delay, s/veh	6.3					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	21	2	11	32	52	39
Future Vol, veh/h	21	2	11	32	52	39
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
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	83	83
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	27	3	14	41	63	47

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	55	0	-	0	92 35
Stage 1	-	-	-	-	35 -
Stage 2	-	-	-	-	57 -
Critical Hdwy	4.12	-	-	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	2.218	-	-	-	3.518 3.318
Pot Cap-1 Maneuver	1550	-	-	-	908 1038
Stage 1	-	-	-	-	987 -
Stage 2	-	-	-	-	966 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1550	-	-	-	893 1038
Mov Cap-2 Maneuver	-	-	-	-	893 -
Stage 1	-	-	-	-	970 -
Stage 2	-	-	-	-	966 -

Approach	EB	WB	SB
HCM Control Delay, s	6.7	0	9.3
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1550	-	-	-	950
HCM Lane V/C Ratio	0.017	-	-	-	0.115
HCM Control Delay (s)	7.4	0	-	-	9.3
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0.1	-	-	-	0.4

Intersection						
Int Delay, s/veh	3.1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↶	↷		↶	
Traffic Vol, veh/h	33	21	37	1	1	7
Future Vol, veh/h	33	21	37	1	1	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	83	83	78	78	78	78
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	40	25	47	1	1	9

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	48	0	-	0	153 48
Stage 1	-	-	-	-	48 -
Stage 2	-	-	-	-	105 -
Critical Hdwy	4.12	-	-	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	2.218	-	-	-	3.518 3.318
Pot Cap-1 Maneuver	1559	-	-	-	839 1021
Stage 1	-	-	-	-	974 -
Stage 2	-	-	-	-	919 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1559	-	-	-	817 1021
Mov Cap-2 Maneuver	-	-	-	-	817 -
Stage 1	-	-	-	-	949 -
Stage 2	-	-	-	-	919 -

Approach	EB	WB	SB
HCM Control Delay, s	4.5	0	8.7
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1559	-	-	-	990
HCM Lane V/C Ratio	0.026	-	-	-	0.01
HCM Control Delay (s)	7.4	0	-	-	8.7
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0.1	-	-	-	0

Intersection												
Int Delay, s/veh	28.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	1225	90	35	950	1	76	0	33	1	0	5
Future Vol, veh/h	5	1225	90	35	950	1	76	0	33	1	0	5
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	520	-	335	480	-	155	-	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	83	83	83	78	78	78
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	5	1289	95	37	1000	1	92	0	40	1	0	6

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1001	0	0	1384	0	0	1873	2374	645	1729	2468	500
Stage 1	-	-	-	-	-	-	1299	1299	-	1074	1074	-
Stage 2	-	-	-	-	-	-	574	1075	-	655	1394	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	687	-	-	491	-	-	~44	34	415	57	30	516
Stage 1	-	-	-	-	-	-	171	230	-	235	294	-
Stage 2	-	-	-	-	-	-	471	294	-	421	207	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	687	-	-	491	-	-	~41	31	415	48	28	516
Mov Cap-2 Maneuver	-	-	-	-	-	-	~41	31	-	48	28	-
Stage 1	-	-	-	-	-	-	170	228	-	233	272	-
Stage 2	-	-	-	-	-	-	430	272	-	378	206	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.5	\$ 546	24
HCM LOS			F	C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	41	415	687	-	-	491	-	-	197
HCM Lane V/C Ratio	2.233	0.096	0.008	-	-	0.075	-	-	0.039
HCM Control Delay (s)	\$ 776.8	14.6	10.3	-	-	12.9	-	-	24
HCM Lane LOS	F	B	B	-	-	B	-	-	C
HCM 95th %tile Q(veh)	9.8	0.3	0	-	-	0.2	-	-	0.1

Notes
 ~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection						
Int Delay, s/veh	5.3					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↶	↷		↶	↷
Traffic Vol, veh/h	9	4	3	100	112	12
Future Vol, veh/h	9	4	3	100	112	12
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	78	78	83	83	83	83
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	12	5	4	120	135	14

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	124	0	-	0	93 64
Stage 1	-	-	-	-	64 -
Stage 2	-	-	-	-	29 -
Critical Hdwy	4.12	-	-	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	2.218	-	-	-	3.518 3.318
Pot Cap-1 Maneuver	1463	-	-	-	907 1000
Stage 1	-	-	-	-	959 -
Stage 2	-	-	-	-	994 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1463	-	-	-	900 1000
Mov Cap-2 Maneuver	-	-	-	-	900 -
Stage 1	-	-	-	-	951 -
Stage 2	-	-	-	-	994 -

Approach	EB	WB	SB
HCM Control Delay, s	5.2	0	9.7
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1463	-	-	-	909
HCM Lane V/C Ratio	0.008	-	-	-	0.164
HCM Control Delay (s)	7.5	0	-	-	9.7
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.6

Intersection						
Int Delay, s/veh	5.3					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↶	↷		↶	↷
Traffic Vol, veh/h	73	44	30	1	1	73
Future Vol, veh/h	73	44	30	1	1	73
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	83	83	78	78	83	83
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	88	53	38	1	1	88

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	39	0	-	0	268 39
Stage 1	-	-	-	-	39 -
Stage 2	-	-	-	-	229 -
Critical Hdwy	4.12	-	-	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	2.218	-	-	-	3.518 3.318
Pot Cap-1 Maneuver	1571	-	-	-	721 1033
Stage 1	-	-	-	-	983 -
Stage 2	-	-	-	-	809 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1571	-	-	-	679 1033
Mov Cap-2 Maneuver	-	-	-	-	679 -
Stage 1	-	-	-	-	926 -
Stage 2	-	-	-	-	809 -

Approach	EB	WB	SB
HCM Control Delay, s	4.6	0	8.8
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1571	-	-	-	1026
HCM Lane V/C Ratio	0.056	-	-	-	0.087
HCM Control Delay (s)	7.4	0	-	-	8.8
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0.2	-	-	-	0.3

Site Plan



SITE PLAN CERTIFICATION BLOCKS

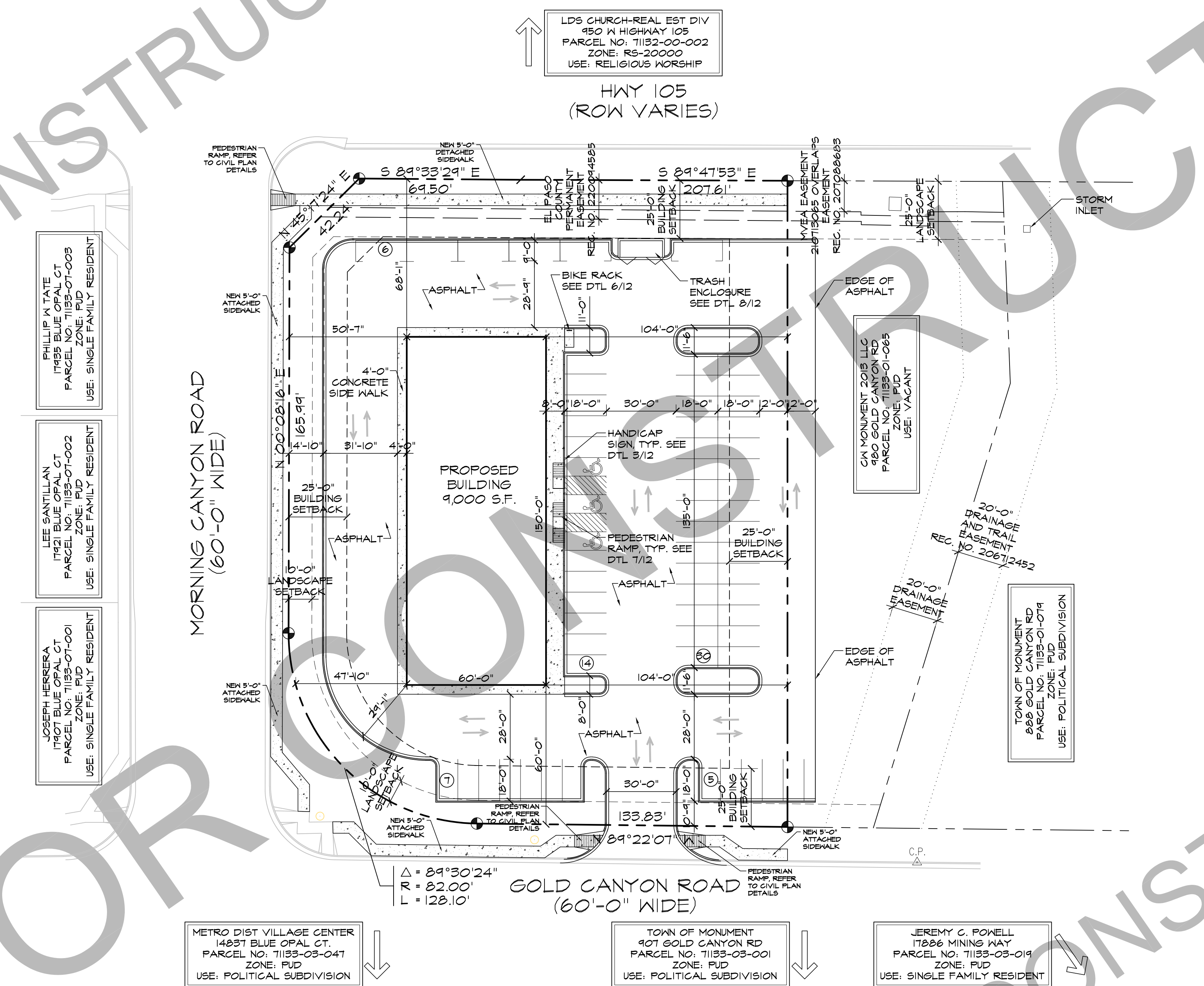
OWNERSHIP CERTIFICATION:
 KNOW ALL MEN BY THESE PRESENTS, THAT BEING THE OWNER(S), OF THE FOLLOWING DESCRIBED TRACT OF LAND:
 ACADEMY MARTIAL ARTS, LOT 9-10 FILING NO. 4
 THE UNDERSIGNED ARE ALL OF THE OWNERS OF CERTAIN LANDS KNOWN AS _____ IN THE TOWN OF MONUMENT.
 OWNER(S) SIGNATURE(S) (NOTARIZED): _____

 STATE OF COLORADO) ss:
 COUNTY OF EL PASO)
 SIGNED THIS _____ DAY OF _____, 20____ COUNTY _____, STATE _____
 NOTARY SIGNATURE _____
 MY COMMISSION EXPIRES _____
TITLE CERTIFICATION:
 I, _____ AN AUTHORIZED REPRESENTATIVE OF _____ A TITLE INSURANCE COMPANY LICENSED TO DO BUSINESS IN THE STATE OF COLORADO, HAVE MADE AN EXAMINATION OF THE PUBLIC RECORDS AND STATE THAT ALL OWNERS, MORTGAGEES, AND LIENHOLDERS OF THE PROPERTY ARE LISTED IN THE CERTIFICATE OF OWNERSHIP AND LIENHOLDER SUBORDINATION CERTIFICATE.
 AUTHORIZED SIGNATURE (NOTARIZED SIGNATURE) _____
 SIGNED THIS _____ DAY OF _____, 20____
 STATE OF COLORADO) ss:
 COUNTY OF EL PASO)
 SIGNED THIS _____ DAY OF _____, 20____ COUNTY _____, STATE _____
 NOTARY SIGNATURE _____
 MY COMMISSION EXPIRES _____
SURVEYOR'S CERTIFICATE
 I, _____ A LICENSED PROFESSIONAL LAND SURVEYOR IN THE STATE OF COLORADO, DO HEREBY CERTIFY THAT THE SURVEY AND LEGAL DESCRIPTION REPRESENTED BY THE SITE PLAN WAS MADE UNDER MY SUPERVISION AND THE MONUMENTS SHOWN HEREON ACTUALLY EXIST AND THIS SITE PLAN ACCURATELY REPRESENTS THAT SURVEY.
 LICENSED LAND SURVEYOR _____
TOWN CERTIFICATION
 TOWN APPROVAL
 THE SITE PLAN FOR THE _____ IS APPROVED THIS _____ DAY OF 20____.
 DIRECTOR OF PLANNING _____ DATE _____
RECORDING:
 STATE OF COLORADO)
 COUNTY OF EL PASO) ss
 I HEREBY CERTIFY THAT THIS INSTRUMENT WAS FILED FOR RECORD IN MY OFFICE AT _____ O'CLOCK _____ M, THIS _____ DAY OF _____ A.D., AND IS DULY RECORDED AT RECEPTION NO. _____ OF THE RECORDS OF EL PASO COUNTY, COLORADO.
 BY: _____ DEPUTY
 SURCHARGE: _____
 FEE: _____

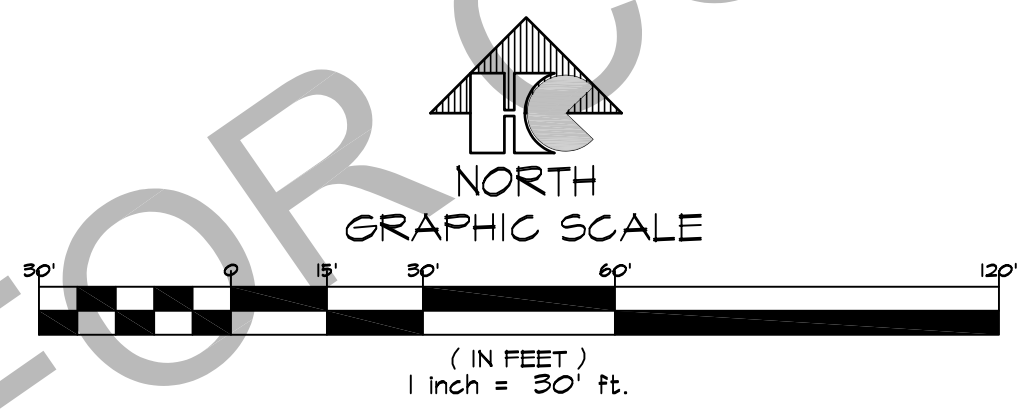
THE PRELIMINARY / FINAL PD SITE PLAN FOR ACADEMY MARTIAL ARTS, LOT 9-10 RETAIL/ MARTIAL ARTS SCHOOL PLANNED DEVELOPMENT IS APPROVED BY THE BOARD OF TRUSTEES OF THE TOWN OF MONUMENT, COLORADO ON THIS _____ DAY OF _____, 20____.
 MAYOR _____ DATE _____
 ATTEST: _____
 TOWN CLERK _____ DATE _____

FLOOD PLAIN STATEMENT
 THIS PROPERTY IS NOT LOCATED WITHIN FEMA DESIGNATED SPECIAL FLOOD HAZARD AREA "X" AREAS DETERMINED TO BE OUTSIDE THE 500-YEAR FLOODPLAIN AS INDICATED ON THE FLOOD INSURANCE RATE MAP (FIRM) FOR EL PASO COUNTY, COLORADO AND INCORPORATED AREAS-MAP NUMBER 080410216 & EFFECTIVE DECEMBER 7, 2018

**ACADEMY MARTIAL ARTS, LOT 9-10
 FILING NO. 4 PD SITE PLAN**



① SITE PLAN
 SCALE: 1"=30'-0"



- GENERAL SITE NOTES**
- REFER TO LANDSCAPE DRAWINGS FOR DECORATIVE PAVING, LANDSCAPING AND IRRIGATION.
 - REFER TO CIVIL DRAWINGS FOR SITE GRADING, DRAINAGE, CATCH BASINS, PAVING DETAILS, SITE UTILITIES, CURB AND GUTTER SWALES AND HORIZONTAL CONTROL DIMENSIONS.
 - REFER TO ELECTRICAL DRAWINGS FOR TRANSFORMER, SITE LIGHTING, SWITCH GEAR AND ALL OTHER RELATED ELECTRICAL INFORMATION AND DETAILS.
 - PROVIDE POSITIVE DRAINAGE AWAY FROM BUILDING. REFER TO CIVIL DRAWINGS.
 - REFER TO CIVIL DRAWINGS FOR POINT OF CONNECTIONS TO OFF-SITE UTILITIES.
 - CONCRETE WALKS SHALL RECEIVE CONTROL JOINTS AT 5'-0" O.C. BETWEEN EXPANSION JOINTS UNLESS NOTED OTHERWISE.
 - PROVIDE EXPANSION JOINTS AT 50'-0" ON WALKS AND 100'-0" AT CURBS.
 - REFER TO SOILS REPORT FOR PERIMETER DRAIN REQUIREMENTS.
 - SIGNS TO BE APPROVED SEPARATELY VIA SIGN PERMIT SUBMITTED TO THE DEVELOPMENT SERVICES DEPARTMENT.

DRAWING INDEX

- 1 OF 12 - SITE PLAN & NOTES, PROJECT INFORMATION, DRAWING INDEX
- 2 OF 12 - SITE DETAILS
- 3 OF 12 - SITE UTILITY PLAN
- 4 OF 12 - SITE GRADING AND EROSION CONTROL PLAN
- 5 OF 12 - CIVIL NOTES AND DETAILS
- 6 OF 12 - LANDSCAPE PLAN
- 7 OF 12 - LANDSCAPE DETAILS AND NOTES
- 8 OF 12 - IRRIGATION PLAN
- 9 OF 12 - IRRIGATION DETAILS
- 10 OF 12 - IRRIGATION DETAILS AND NOTES
- 11 OF 12 - IRRIGATION DETAILS AND NOTES
- 12 OF 12 - BUILDING ELEVATIONS

VICINITY MAP



PROJECT INFORMATION

PROPERTY INFORMATION
 OWNER NAME: CH MONUMENT 2018 LLC
 4675 MACARTHUR CT., STE 1270
 NEWPORT BEACH, CA 92660
 LEGAL DESCRIPTION: LOT 9, 10 VILLAGE CENTER AT WOODMOOR FIL NO 4
 PARCEL NUMBER: 71133-06-007
 ZONING: PD
 LOT SIZE: 57,182 SF (1.32 ACRES)
 CURRENT USE: VACANT
 FLOODPLAIN STATEMENT: ZONE X (MAP NO. 080410216G, DATED DECEMBER 7, 2018)

BUILDING INFORMATION
 NEW BUILDING AREA: 9,000 SF
 BUILDING OCCUPANCY: M/A-S
 TYPE OF CONSTRUCTION: II-B
 FIRE SYSTEMS: NONE
 AREA SEPARATION WALLS: NONE

ZONING CODE STUDY
 PROPOSED PRINCIPAL USE: RETAIL/ MARTIAL ARTS SCHOOL
 STRUCTURAL COVERAGE OF LOT: 15%
 PAVEMENT COVERAGE: 74%
 NEW BUILDING STRUCTURAL HEIGHT: 18'-0" (35'-0" MAX)
 FRONT YARD SETBACK: 25'-0"
 SIDE YARD SETBACK: 25'-0"
 REAR YARD SETBACK: 25'-0"

REQUIRED PARKING SPACES
 RETAIL-1 SPACE/300 SF: 4200 / 300 SF
 RECREATION CENTER-1 SPACE/150 SF: 4800 / 150 SF
 H.C.-(TOTAL PARKING SPACES): 32
 TOTAL PARKING SPACES REQUIRED: 49
 TOTAL PARKING PROVIDED: 60
 NEW STANDARD SPACES PROVIDED: 57
 H.C. SPACES PROVIDED: 3
 (SEE DETAIL 1/2 FOR DIMENSIONS)

DEVELOPMENT SCHEDULE
 CONSTRUCTION: FALL 2022
 LANDSCAPING: SPRING 2022

DEVELOPMENT APPLICANT
 COMPANY: HAMMERS CONSTRUCTION, INC.
 1411 WOOLSEY HEIGHTS
 COLO. SPES., CO 80915
 PHONE NUMBER: (719)-570-1544
 FAX NUMBER: (719)-570-1008
 APPLICANT NAME: LISA PETERSON
 APPLICANT E-MAIL: lpeterson@hammersconstruction.com

SITE LEGEND

- PROPERTY LINE
- RIGHT OF WAY
- BUILDING SETBACK
- LANDSCAPE SETBACK
- UTILITY EASEMENT
- DRAINAGE EASEMENT
- NEW SIDEWALK LOCATIONS
- W/ CONTROL JOINTS @ 5'-0" O.C.
- PROPERTY CORNER
- TRAFFIC FLOW
- WALL PACK LIGHTING
- SIGN
- MANHOLE
- ELECTRICAL TRANSFORMER
- EXISTING FIRE HYDRANT
- PROPOSED FIRE HYDRANT

HAMMERS CONSTRUCTION INC.
 COMMERCIAL GENERAL CONTRACTORS SPECIALIZING IN DESIGN/BUILD
 PRESIDENT: STEVE R. HAMMERS
 VICE PRES. DAVID J. HAMMERS
 1411 WOOLSEY HEIGHTS
 COLORADO SPRINGS, CO 80915
 (719) 570-1599 FAX (719) 570-7008
 www.hammersconstruction.com

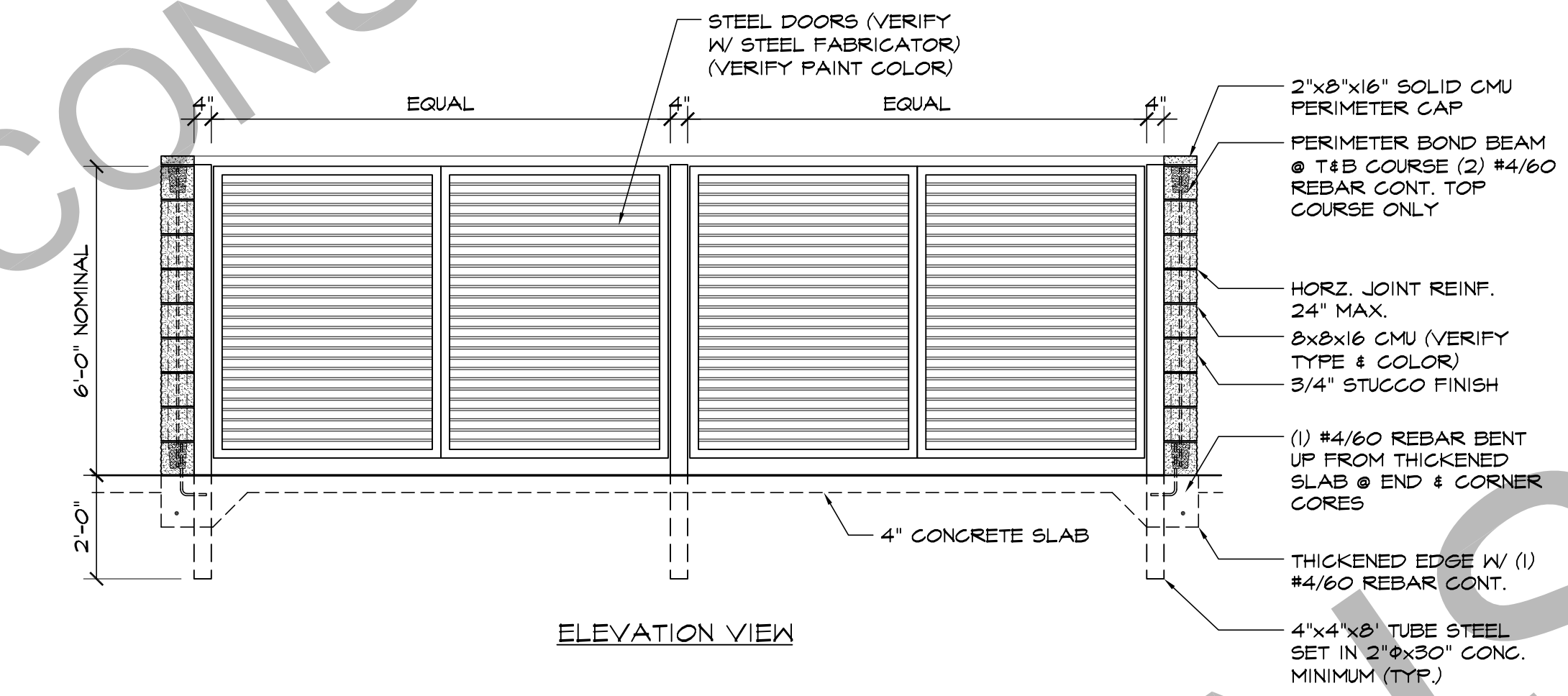
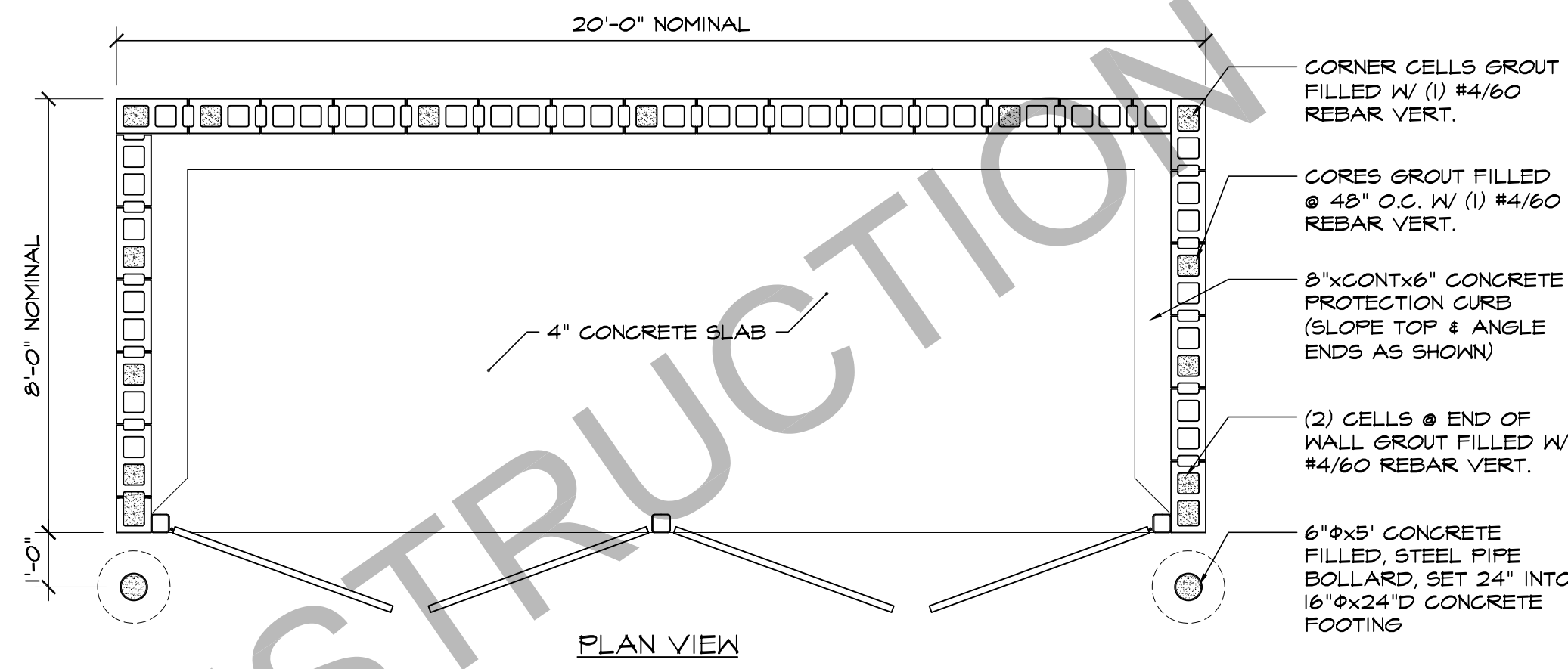
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ACAD. MARTIAL ARTS NEW BUILDING
 980 GOLD CANYON ROAD
 MONUMENT, CO 80132
 EL PASO COUNTY, COLORADO

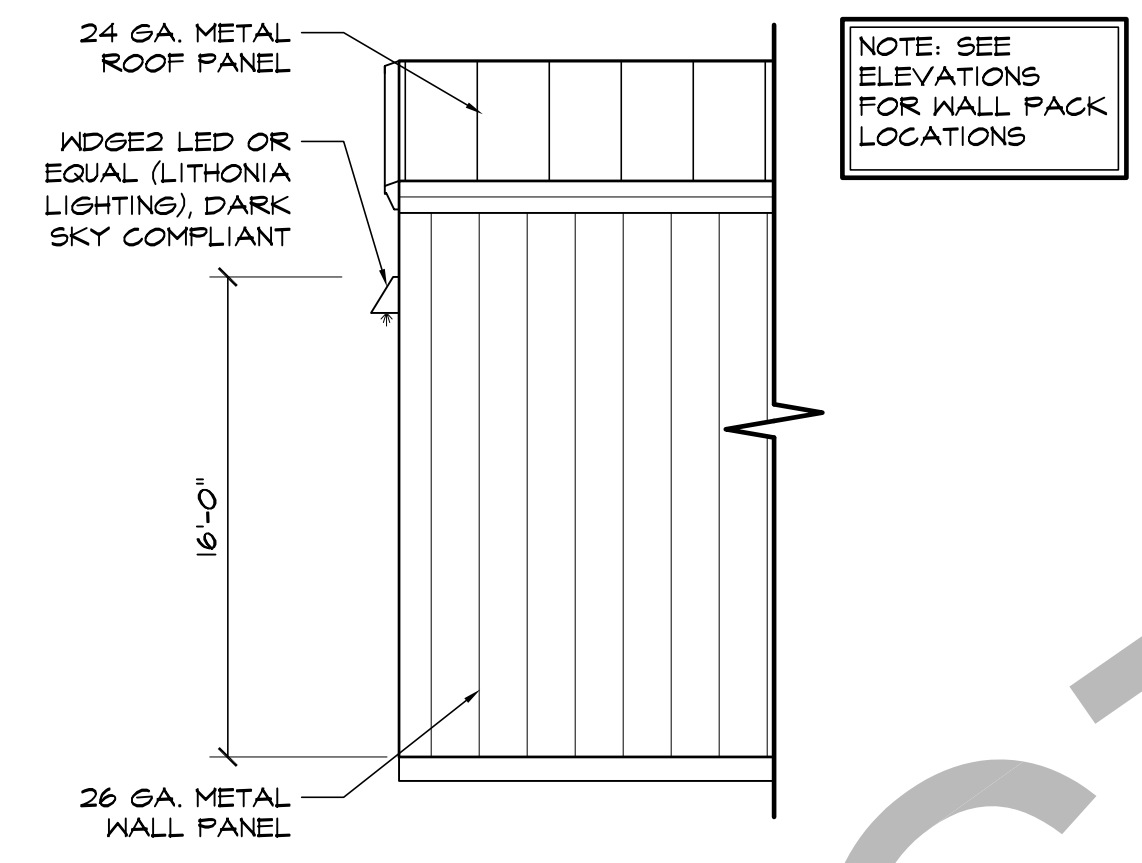
NOT FOR CONSTRUCTION

DATE: JUNE 7, 2022
 DRAWN BY: W. VENEROS
 PROJ. MGR: E. SMITH
 SCALE: SEE PLAN
 APPROVED BY:
 JOB NO: 1245

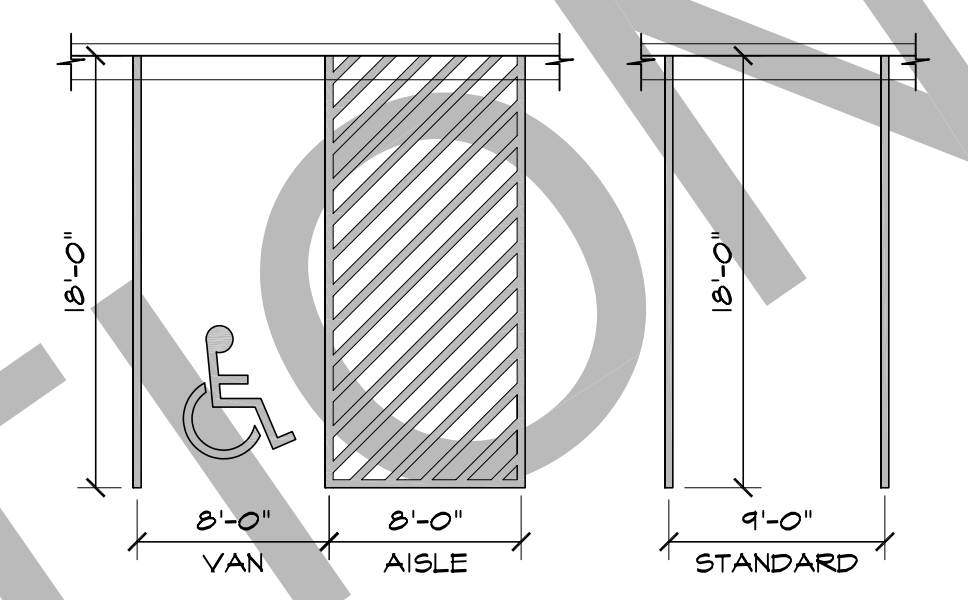
- RESUBMITTALS:**
- ▲
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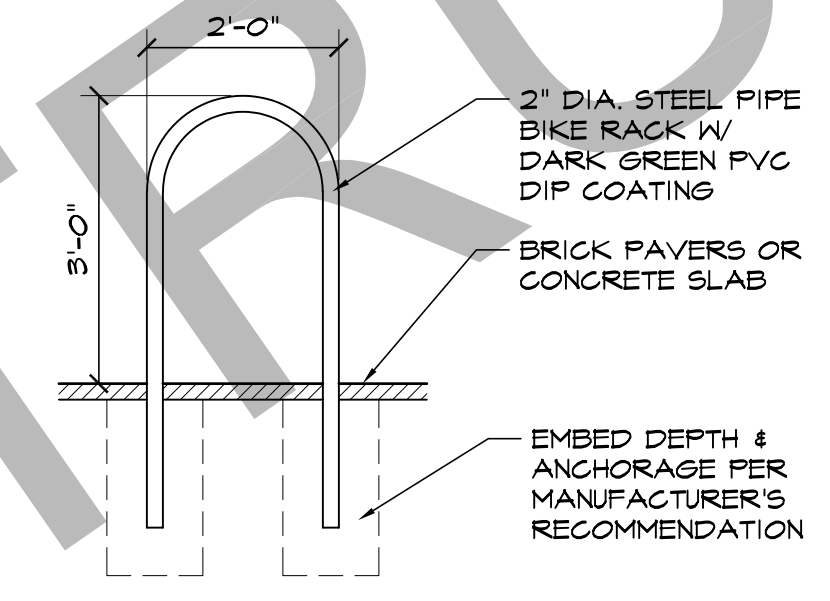
8 CMU TRASH ENCLURE DETAIL
SCALE: 3/8"=1'-0"



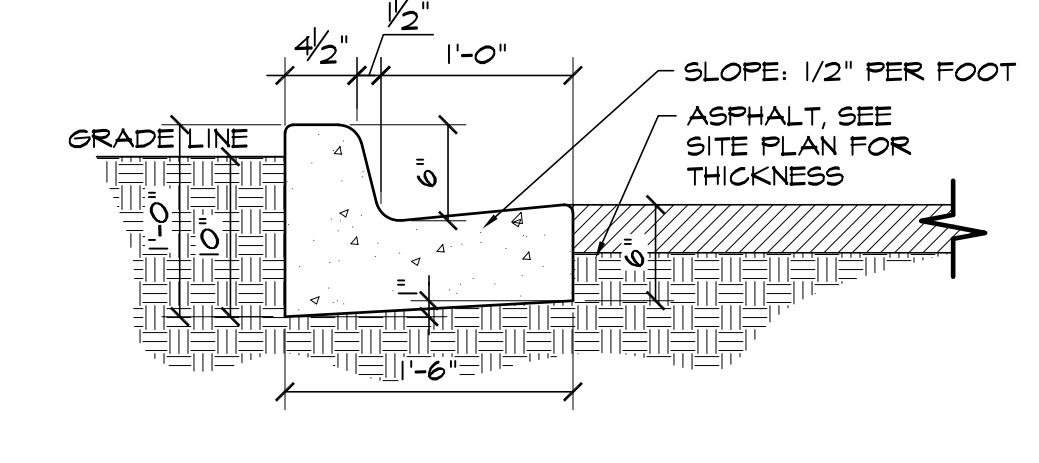
5 WALL PACK LIGHT DETAIL
SCALE: 1/4"=1'-0"



1 ADA / STANDARD PARKING
SCALE: 1/8"=1'-0"

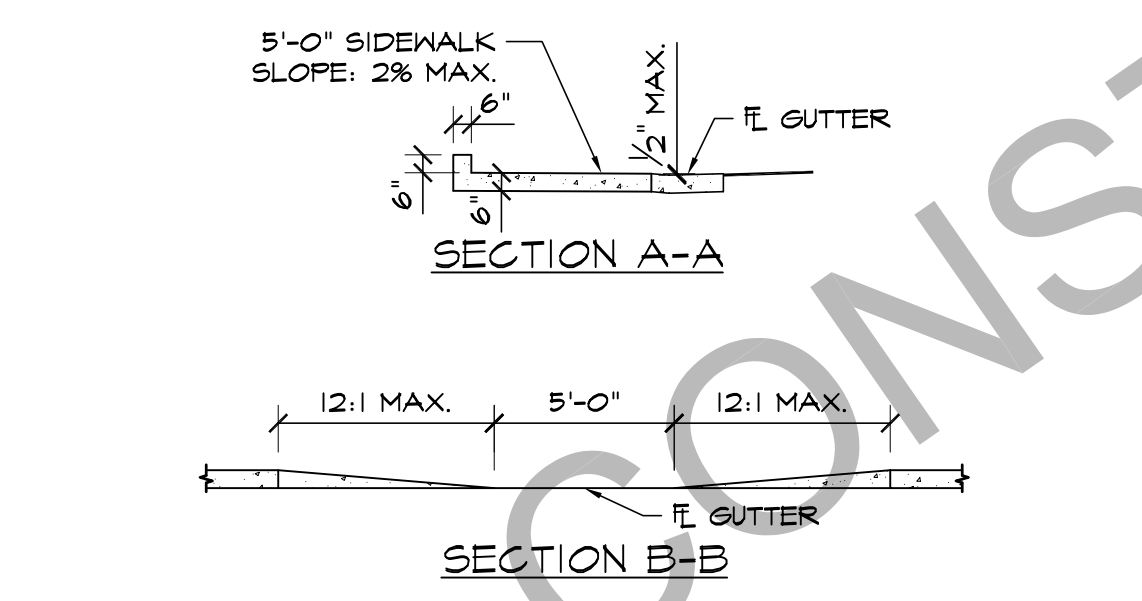
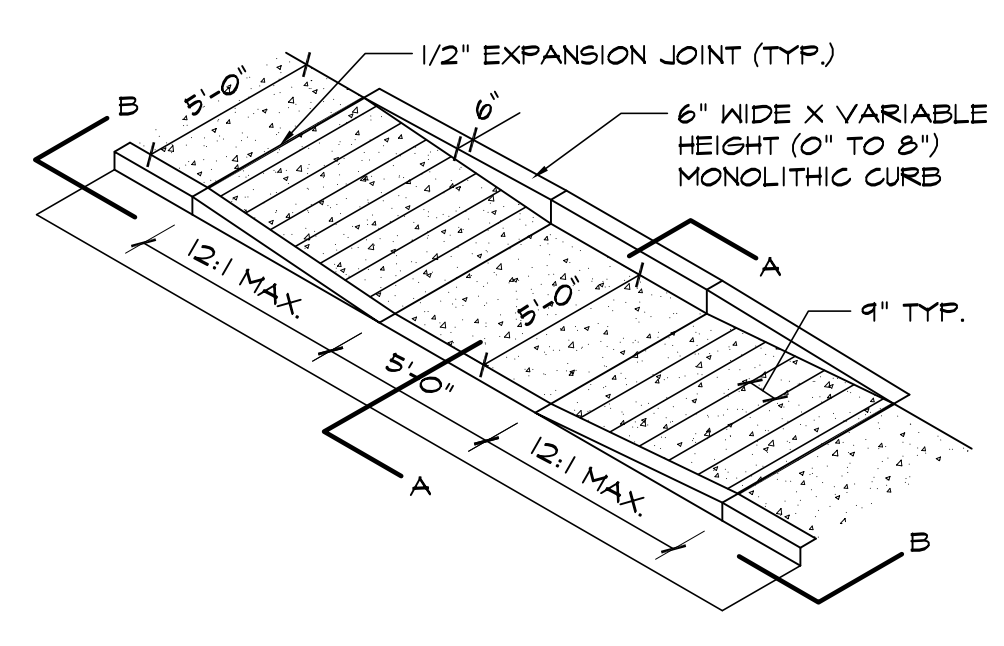


6 BIKE RACK
SCALE: 1/2"=1'-0"



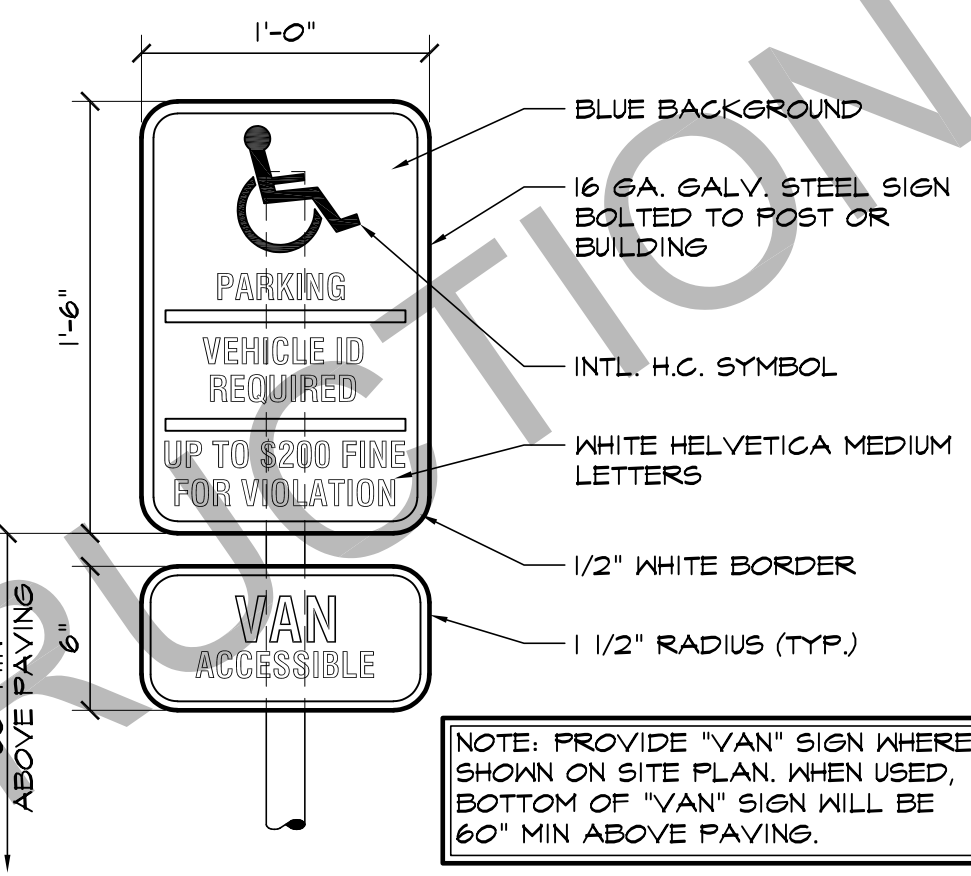
2 TYPE 3 CURB
SCALE: 1"=1'-0"

NOTE:
-ALL INTERNAL CURB THIS TYPE UNLESS NOTED OTHERWISE.
-SEE CIVIL PLANS FOR CARRY OR SPILL CURB LOCATIONS



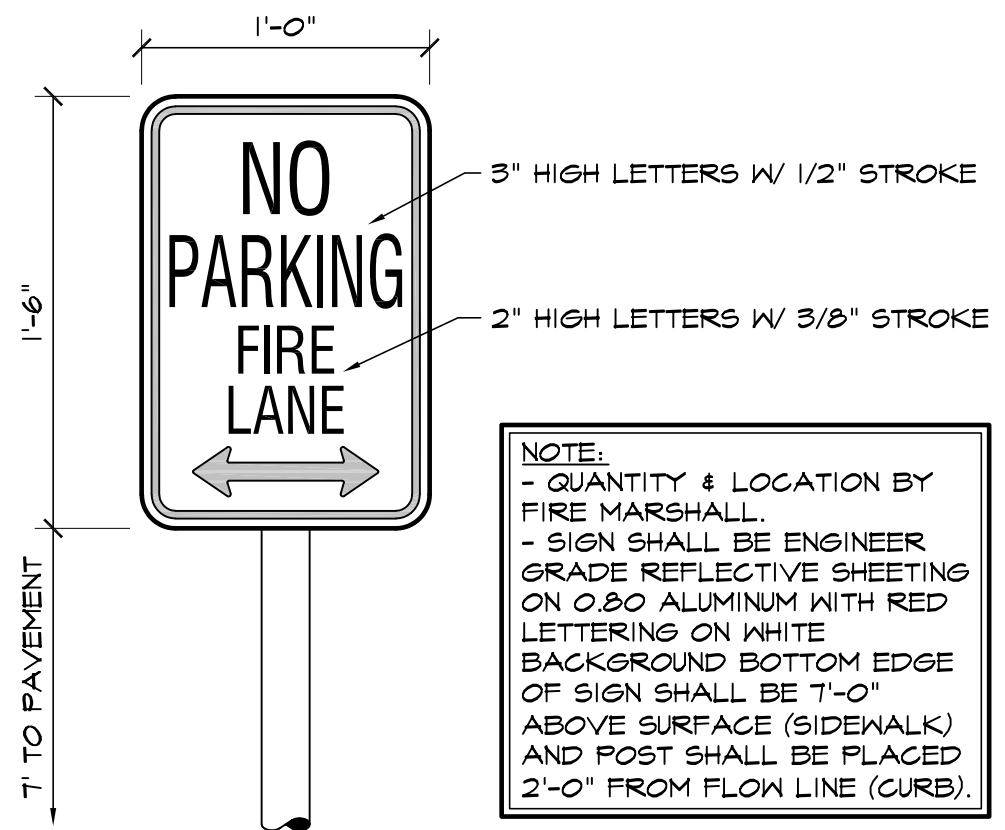
GENERAL NOTES:
1. ALL WORK TO BE DONE IN ACCORDANCE WITH CURRENT TOWN OF MONUMENT SPRINGS ENGINEERING DIVISION STANDARD SPECIFICATIONS.
2. SIDEWALK CROSS-SLOPE: 1/4"/FT.
3. CONTRACTOR TO OBTAIN REQUIRED CONCRETE PERMIT AND RAMP PERMIT AT ENGINEERING DIVISION INSPECTION OFFICE PRIOR TO CONSTRUCTION.
4. CONTRACTOR TO NOTIFY ENGINEERING DIVISION INSPECTION OFFICE AT LEAST 24 HOURS PRIOR TO PLACEMENT OF ANY CONCRETE.
5. THE RAMP SURFACES SHALL BE FINISHED WITH A COARSE BROOM FINISH, PARALLEL WITH THE SCORING, IN ACCORDANCE WITH SECTION 504.05E OF THE STANDARD SPECIFICATIONS.
6. CONTRACTOR SHALL STAMP THE COMPANY NAME AND CONSTRUCTION DATE WITHIN THE PEDESTRIAN RAMP AREA.
7. PEDESTRIAN TRAVELWAY AND/OR LOCATION OF EXISTING OR FUTURE PEDESTRIAN RAMPS ON OPPOSITE CORNERS SHALL BE REVIEWED BEFORE CONSTRUCTING NEW RAMPS. NEW RAMPS SHALL ALIGN WITH EXISTING RAMPS AND PEDESTRIAN TRAVELWAY.

7 PEDESTRIAN RAMP DETAIL D-8J
SCALE: 3/16"=1'-0"



3 HANDICAPPED PARKING SIGN
SCALE: 1 1/2"=1'-0"

NOTE: PROVIDE "VAN" SIGN WHERE SHOWN ON SITE PLAN. WHEN USED, BOTTOM OF "VAN" SIGN WILL BE 60" MIN ABOVE PAVING.



4 FIRE LANE SIGN
SCALE: 1 1/2"=1'-0"

NOTE:
- QUANTITY & LOCATION BY FIRE MARSHALL.
- SIGN SHALL BE ENGINEER GRADE REFLECTIVE SHEETING ON 0.80 ALUMINUM WITH RED LETTERING ON WHITE BACKGROUND BOTTOM EDGE OF SIGN SHALL BE 1'-0" ABOVE SURFACE (SIDEWALK) AND POST SHALL BE PLACED 2'-0" FROM FLOW LINE (CURB).

HAMMERS CONSTRUCTION INC.
COMMERCIAL GENERAL CONTRACTORS SPECIALIZING IN DESIGN/BUILD
PRESIDENT: STEVE R. HAMMERS
VICE PRES: DAVID J. HAMMERS
1411 WOOLSEY HEIGHTS
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ACAD. MARTIAL ARTS
NEW BUILDING
980 GOLD CANYON ROAD
MONUMENT, CO 80132
EL PASO COUNTY, COLORADO

NOT FOR CONSTRUCTION

NOT FOR CONSTRUCTION

DATE: JUNE 7, 2022
DRAWN BY: W. VENEROS
PROJ. MGR: E. SMITH
SCALE: SEE PLAN
APPROVED BY:
JOB NO: 1295

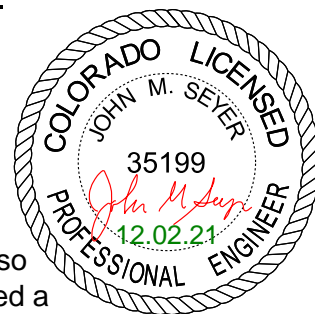
RESUBMITTALS:

3-25-21 / COMMENTS 2-24-21
4-5-21 / COMMENTS 3-31-21

Pages from Highway 105 Traffic Study by HDR



Cover Page for
Reference - See next
(Page 19).



El Paso County Highway 105 Traffic Study Update

Overview and Background

HDR completed the *Highway 105 Corridor Study, Corridor Preservation Plan* for El Paso County Department of Public Services in May 2013. As part of this study, HDR prepared a traffic study for the five-mile Highway 105 Corridor between I-25 and State Highway 83 (SH 83). HDR is under contract to El Paso County for the preliminary and final design of both phases of the Highway 105 Project, including Project A, which is the one-mile segment of Highway 105 extending from east of the I-25 on/off ramps to Lake Woodmoor Drive, and Projects B-E, which is the remainder of the corridor to SH 83. The design is based on the recommendations made in the 2013 Corridor Preservation Plan, as well as the subsequent recommendations made in two site-specific updates to the traffic study since then: one in December 2018 to document any changes in traffic conditions and analyses since the 2013 traffic study, and a second in November 2019 to perform detailed analysis of the Gold Canyon Road intersection, aka Morning Canyon Road. These documents concluded that Project A should be constructed as a four-lane section with left-turn lanes at each intersection, while Projects B-E should be constructed as a two-lane section with left-turn lanes at each intersection. During the planning process, the County and CDOT also discussed the potential for planning for future widening of Projects B-E to a four-lane section.

The limits of the traffic studies in 2018 and 2019 were wholly contained within Project A and were performed without gathering more recent traffic volumes. Since the traffic volumes that were gathered from 2004 thru 2011 for the 2013 study, the corridor has seen appreciable growth in housing, enrollments at the Monument Charter Academy have grown, and traffic volumes have increased along SH 83. This update to these traffic studies, referred to as the “Study Update,” intends to affirm the conclusions made in the original study and determine if design of the four-lane option along Projects B-E should continue. See **Figure 1 – Study Area** for a map of the project limits of this Study Update. Below is a summary of the previous conclusions to be reviewed in this Study Update:

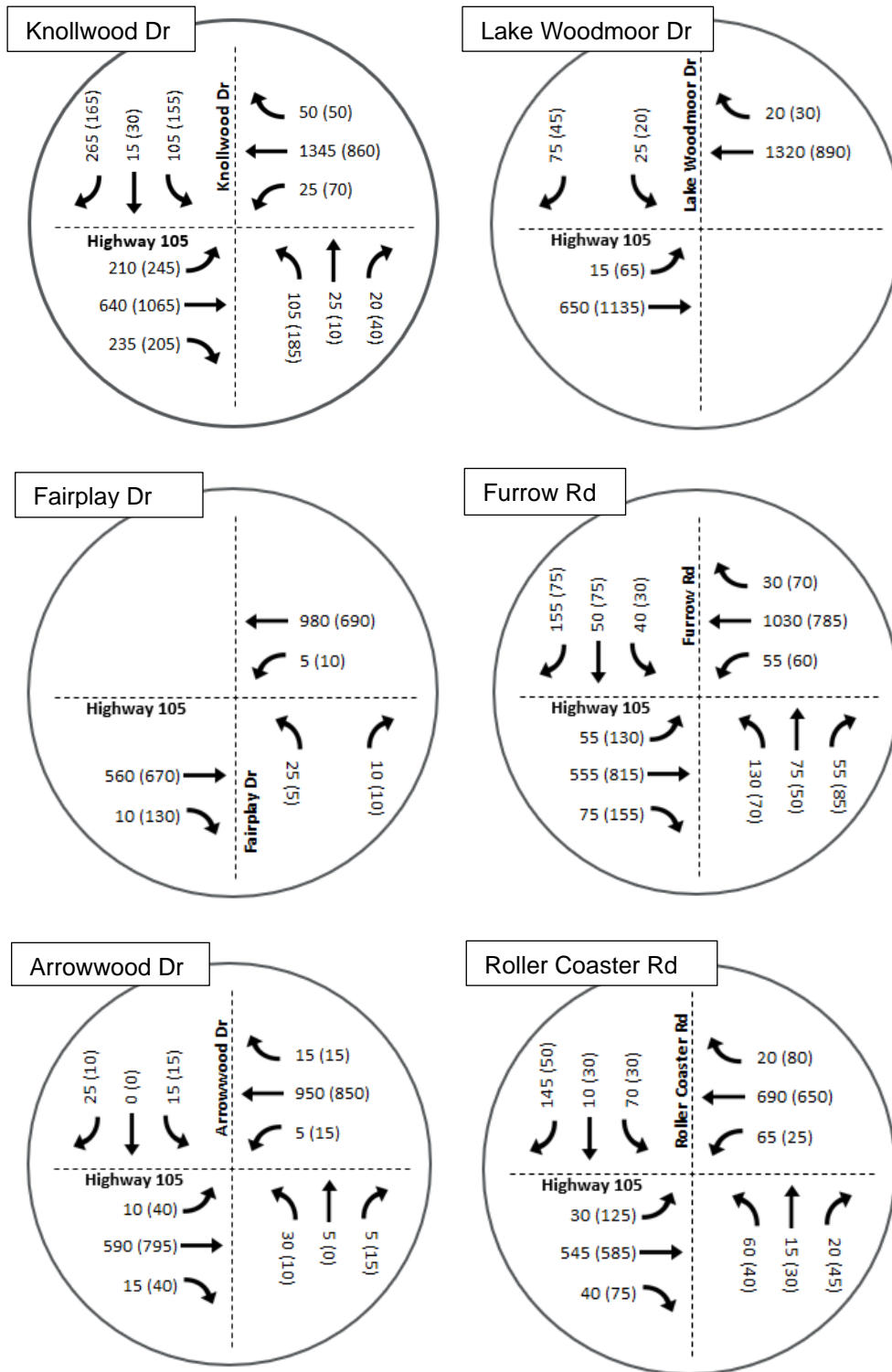
- Highway 105 Thru Lanes
 - Project A: Four lanes
 - Projects B-E: Two lanes, divided in the interim; four lanes, divided in the future
- Lake Woodmoor Drive, Fairplay Drive, Furrow Road, Roller Coaster Road, SH 83 Intersections
 - Consider traffic signal or modern roundabout control during design phase

1. DATA COLLECTION

Project Limits

The project limits of this Study Update extend from Knollwood Drive on the west to SH 83 on the east. Most of the intersections along this stretch of Highway 105 are minor, two-way, stop-controlled intersections that are projected to carry very few cars on the minor legs. Through conversations with County staff, it was determined that including these minor intersections would not be necessary, so the intersections studied included only those considered major intersections and could experience levels of delay that may require a change in recommended traffic control. As such, below is a list of the intersections that were studied as part of this Study Update:

Figure 2: 2040 Peak Hour Turning Movements



5. CHURCH/SCHOOL ACCESS AT MORNING CANYON ROAD

As documented in the 2018 and 2019 traffic study updates, the County has concerns about the safety of the Highway 105 intersection with Morning Canyon Road, particularly with respect to the northern leg of the intersection that provides access to the LDS Church and Monument Academy. These concerns include traffic to/from the school and the potential need for a westbound right-turn deceleration lane.

Monument Academy Traffic Flow. There are operational and safety concerns along Highway 105 due to excessive traffic queues attempting to enter the school during morning drop-off times and afternoon pick-up times. The following is an excerpt from the 2019 traffic study update:

“Access to Monument Charter Academy during morning school arrival periods and afternoon dismissal periods presents some significant operational problems. Due to insufficient storage capacity on campus, traffic queues develop in both directions along Highway 105 at the private access during these periods. The queuing is particularly problematic during the afternoon school dismissal period along EB Highway 105 where left-turning traffic queues several hundred feet to the west of the intersection along the Highway 105 median while waiting to access the school/church driveway and parking areas. This results in left-turn traffic decelerating in the through lane, which impedes eastbound through traffic. Traffic also queues along the WB Highway 105 right-turn lane east of the intersection. This results in the right-turn traffic decelerating in the through lane, which impedes westbound through traffic...”

After several discussions with school staff and church staff and after performing operational analyses on several access options and on-site circulation options, below is the preferred alternative:

- The existing access at Morning Canyon Road will remain in its current configuration to maintain full-movement access
- The connection between the church access and the school will be closed to vehicular traffic; this access will be reconfigured as an emergency access for the school
- Monument Academy access will be taken along Village Ridge Point, via Knollwood Drive
- Monument Academy’s on-site traffic circulation will include a primary access lane around the north side of the school and a secondary access lane adjacent to the retaining wall on the south side of the school

The Knollwood Drive and Village Ridge Point intersection has limited sight distance to the north due to horizontal curvature and physical features that occlude driver visibility to approaching southbound traffic. Converting this intersection to a single-lane modern roundabout would mitigate this issue and enhance the capacity of the intersection.

Westbound Deceleration Lane. Travel speeds along Highway 105 raise concern about high volumes of church traffic reducing speed in a thru lane to gain access to the church. Projected traffic volumes turning right from westbound Highway 105 to the church are high enough to exceed the County’s threshold to warrant an exclusive right-turn deceleration lane. After discussing whether the County’s standard for warranting a deceleration lane was applicable to a weekend, the County determined that indeed it would apply, particularly given the high speeds along Highway 105. Therefore, a westbound right-turn deceleration lane will be included at a length consistent with County standards.