



March 18, 2019

El Paso County Development Services  
2880 International Circle, Suite 110  
Colorado Springs, CO 80910

ATTN: Ms. Kari Parsons, Planner II

RE: Midtown Collection at Hannah Ridge Filing No's 1 & 2  
Traffic Letter (PUDSP-19-004, SF-19-006, SF-19-007)

Dear Kari:

CCES has prepared this traffic summary letter for Filings 1 & 2 of the Midtown Collection at Hannah Ridge development. The site is located north of Constitution Avenue and west of Hannah Ridge Drive in El Paso County, Colorado. Filing 1 is planned to contain 61 lots for a unique new community single-family homes. Filing 2 contains 28 single-family lots. LSC completed a traffic impact study dated November 27, 2007 for the overall Hannah Ridge at Feathergrass Preliminary Plan.

The conceptual street layout for these filings matches the Preliminary Plan Amendment with one additional public road access east of Horsemanship Court.

#### TRIP GENERATION

Estimates of the vehicle-trips expected to be generated by Filing No's. 1 & 2 have been made using the nationally published trip generation rates found in *Trip Generation, 9<sup>th</sup> Edition, 2012* by the Institute of Transportation Engineers (ITE) as reflected in prior LSC documents and is reflected below:

Filing Number	Lots	Average Weekday new vehicle trips (9.52 trips per lot)
1	61	581
2	28	267

As the 2007 LSC report identified these proposed Filing 1 and 2 Development areas as containing 205 multi-family sites, and only 89 are proposed, there will be a reduction in anticipated traffic from 1201 ADT to 848 ADT (See attached).

At this time, Filing No. 1 will be the first plat to record in this series.

#### ESCROW FOR FUTURE TRAFFIC SIGNAL

Prior to the recent adoption of the amended El Paso County Impact Fee Program, an escrow had been established to support the installation of the signal at Constitution Avenue and Hannah Ridge Drive. The approved fee amendment now captures signalized intersection costs, so no formal escrow contributions will be required.

**ROADWAY IMPROVEMENT FEE PROGRAM**

This development is subject to fees established by the El Paso County Road Impact Fee Program per El Paso County Resolution Number 12-389 as well as the recent amendment. Based on a per-lot up-front building permit fee of \$1,221 per dwelling unit for PID #2, the total building permit fee amount would be \$74,480 for Filing 1 and \$34,188 for Filings 2.

Prior to the recordation of any plat (1 or 2), an updated Traffic Signal Warrant Analysis for the intersection of Hannah Ridge Drive and Constitution Avenue will be prepared and submitted for review and approval by El Paso County Development Services. The prior warrant analysis just completed for Filing 5, 6 & 7 indicated warrants had not been met.

If any questions regarding this summary of findings based upon prior analysis, please let me know.

Respectfully submitted,

Classic Consulting Engineers & Surveyors, LLC



Kyle R. Campbell, P.E.  
Division Manager



Hannah Ridge Sketch Plan Amendment/  
Preliminary Plan  
Updated Traffic Impact Analysis

November 27, 2007



November 27, 2007

Sand Creek Investments  
c/o Mr. Danny Mientka, Jr.  
Manager  
The Equity Group  
90 South Cascade Avenue, Suite 1500  
Colorado Springs, Colorado 80903

RE: Hannah Ridge Sketch Plan  
Amendment/Preliminary Plan  
Updated Traffic Impact Analysis  
LSC #074850

Dear Mr. Mientka:

In response to your request, LSC Transportation Consultants, Inc. has prepared this updated traffic impact analysis for the proposed Hannah Ridge Sketch Plan Amendment and Preliminary Plan. As shown on Figure 1, the site is located north and south of Constitution Avenue and west of Marksheffel Road in El Paso County, Colorado. The site is planned to contain a mix of residential and commercial uses. Site access is proposed to Hannah Ridge Drive, Akers Drive, and Shawnee Drive; all of which currently extend or will extend north from Constitution Avenue. The Preliminary Plan includes only the single-family residential portion of the Sketch Plan (Phases 1, 2, and 3).

## **REPORT CONTENTS**

This report is a Sketch Plan-level master traffic study. The report will also serve as the Preliminary Plan traffic study, since the Sketch Plan Amendment and Preliminary Plans are being submitted simultaneously to El Paso County. The report contains the following:

- The existing roadway and traffic conditions in the vicinity of the site including the roadway widths, surface conditions, intersection spacing, lane geometries, traffic controls, posted speed limits, etc.
- The existing peak-hour traffic volumes at the Constitution Avenue/Marksheffel Road, Constitution Avenue/Hannah Ridge Drive, Constitution Avenue/Akers Drive, Constitution Avenue/Shawnee Drive, and Constitution Avenue/Peterson Road intersections and at the El Paso County Department of Transportation (DOT) access west of Marksheffel Road

- The projected average weekday and peak-hour vehicle-trips to be generated by the site
- The assignment of the projected traffic volumes to the adjacent roadways
- The projected future background and resulting total traffic volumes on the adjacent roadways
- The projected future average daily traffic volumes and levels of service at the site access points and key intersections in the vicinity of the site
- A vehicle queuing analysis
- The projected resulting traffic impacts
- The recommended functional classifications and lane geometries for the site's internal streets
- The recommended roadway system improvements to mitigate the traffic impacts

#### **LAND USE AND ACCESS**

The area west of the site is predominately residential. The area north of the site is primarily zoned industrial. The Jessica Heights development, which is planned to contain a mix of residential, commercial, and office uses, is currently under construction south of Constitution Avenue.

Figure 2 shows the Sketch Plan area. North of Constitution Avenue, the Sketch Plan shows about 48.77 acres of single-family houses (354 dwelling units), 12.43 acres of multi-family uses (205 dwelling units), and 36.86 acres for commercial uses (with an estimated 400,000 square feet of retail space). A 70,000-square-foot grocery store was assumed to be located at the northwest corner of the Constitution Avenue/Marksheffel Road intersection as part of the 400,000 square feet of retail space. The 12.9-acre parcel on the southwest corner of the Constitution Avenue/Marksheffel Road intersection is planned to be developed for commercial uses, with an estimated 141,000 square feet of retail space.

Figure 2 also shows the proposed phasing of the development. The single-family portion of the development includes Phases 1, 2, and 3. The multi-family portion of the development is Phase 4. The commercial portion of the development is Phase 5.

Previously approved site access is planned to Akers Drive, an extension of Hannah Ridge Drive north of Constitution Avenue, an extension of Shawnee Drive north of Constitution Avenue, a right-in/right-out access on the north side of Constitution Avenue between Marksheffel Road and Akers Drive, and a right-in only access on the south side of Constitution Avenue between Marksheffel Road and Akers Drive. Additionally, a right-in only access is proposed on the east side of Akers Drive north of Constitution Avenue.

## ROADWAY AND TRAFFIC CONDITIONS

### Area Roadways

The major roadways in the vicinity of the site are shown on Figure 1, and are described below.

- **Constitution Avenue** is a Principal Arterial adjacent to the site extending from Paseo Road east to US Highway (US) 24. In the vicinity of the site, Constitution Avenue has two through lanes in each direction plus continuous right-turn lanes. There are existing curb returns and left-turn lanes at the planned access points along Constitution Avenue. The posted speed limit on Constitution Avenue in the vicinity of the site is 50 miles per hour (mph).
- **Marksheffel Road** is a two-lane roadway extending north from C&S Road to Woodmen Road. Marksheffel Road is designated as a six-lane Principal Arterial on the *El Paso County Major Transportation Corridors Plan (MTCF)*. Marksheffel Road was recently widened to four lanes between US 24 and Colorado Tech Drive. The Constitution Avenue/Marksheffel Road intersection is currently signalized. The posted speed limit on Marksheffel Road in the vicinity of the site is 40 mph.
- **Hannah Ridge Drive** is a Collector extending north from Palmer Park Boulevard through Jessica Heights to Constitution Avenue. Hannah Ridge Drive will be extended north of Constitution Avenue through the Hannah Ridge development. The Constitution Avenue/Hannah Ridge Drive intersection is planned to be signalized in the future.
- **Akers Drive** is a Non-Residential Collector extending between Constitution Avenue and North Carefree Circle west of Marksheffel Road. The posted speed limit on Akers Drive is 35 mph.
- **Shawnee Drive** is a 38-foot wide two-lane street extending north from Mineola Street to Constitution Avenue. Shawnee Drive is planned to be extended north of Constitution Avenue through the Hannah Ridge development. The posted speed limit on Shawnee Drive is 30 mph.

### Existing Traffic Volumes

Figure 3 shows the existing peak-hour traffic volumes at the Constitution Avenue/Marksheffel Road, Constitution Avenue/Hannah Ridge Drive, Constitution Avenue/Akers Drive, Constitution Avenue/Shawnee Drive, and Constitution Avenue/Peterson Road intersections. The traffic volumes are from the attached manual traffic counts conducted by LSC in August 2006, June 2007, and September 2007. Figure 3 also shows the existing peak-hour and average daily traffic volumes on the El Paso County DOT access road west of Marksheffel Road, which are from machine traffic counts conducted by LSC in February 2006.

## **TRIP GENERATION**

The traffic volumes to be generated by the site were estimated using the trip generation rates from *Trip Generation, 7th Edition, 2003* by the Institute of Transportation Engineers (ITE). Table 1 shows the average weekday and peak-hour trip generation estimates.

The total number of external trips generated by the commercial uses was reduced to account for the pass-by phenomenon. A pass-by trip is one made by a motorist who would already be on an adjacent roadway regardless of the proposed development, but who stops in at the site while passing by. The motorist would then continue on his or her way to a final destination in the original direction. The pass-by percentages shown in Table 1 are from the *Trip Generation Handbook - An ITE Proposed Recommended Practice, 2<sup>nd</sup> Edition, 2004* by ITE.

The Preliminary Plan is projected to generate about 3,390 new vehicle-trips on the average weekday, with about half entering and half exiting the site. During the morning peak hour, which generally occurs for one hour between 6:30 and 8:30 a.m., about 65 vehicles would enter and 200 vehicles would exit the site. During the afternoon peak hour, which generally occurs for one hour between 4:15 and 6:15 p.m., about 225 vehicles would enter and 130 vehicles would exit the site.

The full Sketch Plan is projected to generate about 18,410 new vehicle-trips on the average weekday, with about half entering and half exiting the site. During the morning peak hour, about 465 vehicles would enter and 520 vehicles would exit the site. During the afternoon peak hour, about 1,275 vehicles would enter and 1,185 vehicles would exit the site.

## **TRIP DISTRIBUTION AND ASSIGNMENT**

The directional distribution of the site-generated traffic volumes on the adjacent roadways is one of the most important factors in determining the site's traffic impacts. Figure 4 shows the directional distribution estimates for the site-generated traffic volumes. The estimates represent the percentages of the site-generated traffic volumes projected to be oriented to and from the site's major approaches. The directional distribution estimates for the primary (destination) trips were based on the following factors: the site's location with respect to the City of Colorado Springs, Peterson Air Force Base to the south, the developing area to the east; the roadway system serving the site; the site's proposed land uses; and the existing traffic counts. The pass-by trips were assigned based, in large part, on the magnitude and direction of the existing traffic volumes on the adjacent roadways.

## **SITE-GENERATED TRAFFIC**

When the directional distribution percentages (from Figure 4) were applied to the trip generation estimates (from Table 1), the resulting site-generated traffic volumes were determined. Figure 5 shows the Preliminary Plan site-generated traffic volumes. Figure 6 shows the site-generated traffic volumes from the residential portion of the site (both single-family and multi-family). Figure 7

shows the site-generated traffic volumes from the commercial portion of the site. Figure 8 shows the buildout site-generated traffic volumes.

### **2015 BACKGROUND TRAFFIC**

Figure 9 shows the projected background traffic volumes for the year 2015. Background traffic is the traffic estimated to be on the adjacent roadways without consideration of the proposed development. The 2015 background traffic volume estimates were determined by assuming a linear growth rate between the existing traffic volumes (from Figure 3) and the 2030 background traffic volumes (from Figure 12).

### **2015 TOTAL TRAFFIC**

Figures 10 and 11 show the total traffic volumes for the year 2015 after completion of the Preliminary Plan and the full Sketch Plan, respectively. The 2015 total traffic volumes are the sum of the site-generated traffic volumes (from Figures 5 and 8) and the 2015 background traffic volumes (from Figure 9).

### **2030 BACKGROUND TRAFFIC**

Figure 12 shows the projected background traffic volumes for the year 2030. The 2030 background traffic volumes include the estimated traffic volumes to be generated by future developments north of the site along Akers Drive, as well as the Jessica Heights, Wilshire, and Living Waters developments. The 2030 background traffic volumes were based on LSC's previous studies in the area including the Living Waters, Constitution Business Park, Jessica Heights, Wilshire, Bjornsrud, and Rolling Hills Ranch developments. A map showing the locations of the area developments is attached.

The Wilson & Company traffic projections for the Marksheffel Road corridor were not used in this study. Their projections for the Constitution Avenue/Marksheffel Road intersection are about 19 percent higher than what is shown in this study, and showed eight through lanes on Marksheffel Road through the Constitution Avenue intersection (as well as triple southbound left-turn lanes) in order to achieve acceptable levels of service. The *El Paso County MTCP* shows Marksheffel Road as only a six-lane roadway.

### **2030 TOTAL TRAFFIC**

Figure 13 shows the total traffic volumes for the year 2030. The 2030 total traffic volumes are the sum of the buildout site-generated traffic volumes (from Figure 8) and the 2030 background traffic volumes (from Figure 12).



## **PROJECTED LEVELS OF SERVICE**

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

The key intersections in the vicinity of the site were analyzed to determine the projected levels of service for the 2015 background, 2015 total, 2030 background and 2030 total traffic volumes based on the unsignalized and signalized method of analysis procedures from the *Highway Capacity Manual, 2000 Edition* by the Transportation Research Board. The year 2030 analysis assumed that Marksheffel Road and Constitution Road were widened to three through lanes in each direction. Figures 14 through 18 show the level of service analysis results. All of the analyzed intersections are projected to operate at acceptable levels of service during the peak hours through the year 2030. The level of service reports are attached.

As requested by El Paso County staff, the Constitution Avenue/Akers Drive intersection was analyzed with a protected-only southbound left-turn movement, in addition to the original analysis that assumed a protected-permissive southbound left-turn movement. The level of service and queuing would still be acceptable at the intersection with a protected-only southbound left-turn movement. During the afternoon peak hour in the year 2030 however, about four seconds of green signal time would need to be shifted from Constitution Avenue to the southbound left-turn movement. The level of service reports are attached for 2015 total buildout and 2030 total traffic volumes. The southbound left-turn movement was analyzed as protected-permissive because the intersection would operate more efficiently that way, given there would be relatively light through traffic volume across Constitution Avenue on Akers Drive. Moreover, the northbound conflicting vehicle approach speeds would not be as high as in the case of Arterials.

## **QUEUING ANALYSIS**

Table 2 shows the 95<sup>th</sup> percentile vehicle queue lengths in the vicinity of the site as reported by Synchro, based on the afternoon peak-hour 2015 and 2030 total traffic volumes (from Figures 11 and 13). Table 2 also shows the existing and recommended lane lengths for each queue. All of the queues shown could be accommodated based on the intersection spacing. The queuing analysis results are shown on the level of service reports.

## **PROGRESSION ANALYSIS**

The progression analysis of Constitution Avenue originally included in the *September 28, 2006 Hannah Ridge Sketch Plan Updated Traffic Impact Analysis Report* by LSC has been included in this report. LSC prepared a traffic model of Constitution Avenue between Marksheffel Road and Hannah Ridge Drive using Synchro/SimTraffic. The model was used to complete an arterial progression analysis on Constitution Avenue. The future buildout lane geometries, estimated signal timings, and 2030 total morning and afternoon peak-hour traffic volumes were entered into the

model. The bandwidth percentages indicate the percentage of time that a motorist could travel through the series of traffic signals. The projected progression bandwidths on Constitution Avenue between Marksheffel Road and Hannah Ridge Drive are about 22 percent during the morning peak hour and about 16 percent during the afternoon peak hour. The time-space diagrams are attached.

## **PERCENT IMPACTS**

Based on the 2030 total traffic volumes, the site-generated traffic volumes would constitute 4.6 percent of the traffic at the Constitution Avenue/Marksheffel Road intersection during the morning peak hour and about 10.3 percent during the afternoon peak hour. Based on the 2030 total traffic volumes, the site-generated traffic volumes would constitute about five percent of the traffic on Marksheffel Road north of Constitution Avenue and about six percent of the traffic on Marksheffel Road south of Constitution Avenue.

## **DEVIATIONS FROM ECM STANDARDS**

The following would require deviations from the *El Paso County Engineering Criteria Manual (ECM)* standards based on the intersection spacing along Constitution Avenue: the left-turn lane lengths on Constitution Avenue between Hannah Ridge Drive and Akers Drive, and all westbound right-turn acceleration lane lengths along the property frontage (except at Shawnee Drive). Given the intersection spacing, it would not be possible to provide the full acceleration lengths and would not be practical to provide the full deceleration lengths.

The roadway's safety and operation would not be impacted by these deviations. The proposed left-turn lanes on Constitution Avenue are long enough to accommodate the projected vehicle queue lengths. Since the Constitution Avenue/Hannah Ridge Drive and Constitution Avenue/Akers Drive intersections would be signalized, the traffic turning right onto Constitution Avenue would be able to turn on the green phase and turn right on red, taking advantage of gaps created by the other traffic signals in the corridor. As Constitution Avenue is an urban corridor with intersection spacings of less than one-half mile, it is more appropriate not to have acceleration lanes.

Figures 19 and 20 show the recommended auxiliary turn-lane lengths along Constitution Avenue. The intersection locations and spacing were previously set. The left-turn configurations were based on balancing the lane lengths according to the turning traffic volumes and vehicle stacking. The turn lane tapers on Constitution Avenue between Marksheffel Road and Akers Drive and between Hannah Ridge Drive and Akers Drive were modified to maximize the turn lane lengths.

## **SCHOOL TRANSPORTATION**

A meeting was held on October 9, 2007 with the School District 49 administration and transportation director and the City of Colorado Springs school traffic safety engineer. The following conclusions were reached regarding the transportation of elementary school children to and from the proposed Hannah Ridge residential neighborhood. Initially, the elementary school children would attend

Remington Elementary School located northwest of the site. Depending on the results of the bus service index analysis, students would either walk to Remington Elementary School or be bused by School District 49. If the BSI analysis indicates the neighborhood does not meet the thresholds for bus service, the walk route to Remington Elementary School would most likely be west to the Rock Island Trail, south to the junction with Constitution Avenue, west along the north side of Constitution Avenue to either Canada Drive or Peterson Road, and then north along a designated walk route between Hannah Ridge Drive and Remington Elementary School.

Should a combination of increases in enrollment at Remington Elementary School and/or continued growth in the Claremont Ranch, Wilshire, Jessica Heights, Hannah Ridge sub-area result in children from the Hannah Ridge neighborhood having to change schools, the most logical change would be to bus the children to the elementary school within the Claremont Ranch development, which is a district "growth school." The School District 49 transportation department will not allow the buses to make a left turn from a stop-sign onto Constitution Avenue. Therefore, a traffic signal at the Constitution Avenue/Akers Drive intersection would be beneficial in school bus routing, since the buses could use the signalized intersection to turn left onto Constitution Avenue. School bus routing should be a consideration in evaluating the traffic signal warrants for the Constitution Avenue/Akers Drive intersection, which would likely warrant a traffic signal before the Constitution Avenue/Hannah Ridge Drive intersection would.

As further growth occurs in this sub-area and should School District 49 construct a school on the ten acres in the Jessica Heights development south of Constitution Avenue, children from the Hannah Ridge neighborhood may be bused to this future school. The consensus of the October 9<sup>th</sup> meeting was that the children should not walk across Constitution Avenue to and from this possible future Jessica Heights development school due to the functional classification and design speed of Constitution Avenue. There would be safety issues even with a signalized crossing supplemented by crossing guards and a 20 mph school zone with flashing yellow beacons. Grade-separated pedestrian options were also eliminated, due to the frequency of intersections and the difficulty in forcing use of the grade-separation. The cost of a grade separation would also be very high relative to the number of children served by the grade separation.

## **CONCLUSIONS AND RECOMMENDATIONS**

### **Trip Generation**

1. The Preliminary Plan is projected to generate about 3,390 new vehicle-trips on the average weekday, with about half entering and half exiting the site. During the morning peak hour, about 65 vehicles would enter and 200 vehicles would exit the site. During the afternoon peak hour, about 225 vehicles would enter and 130 vehicles would exit the site.
2. The full Sketch Plan is projected to generate about 18,410 new vehicle-trips on the average weekday, with about half entering and half exiting the site. During the morning peak hour,

about 465 vehicles would enter and 520 vehicles would exit the site. During the afternoon peak hour, about 1,275 vehicles would enter and 1,185 vehicles would exit the site.

### **Projected Levels of Service**

3. All of the analyzed intersections are projected to operate at acceptable levels of service during the peak hours through the year 2030.

### **Queuing Analysis**

4. All of the analyzed queues in the vicinity of the site could be accommodated based on the intersection spacing.

### **Percent Impacts**

5. Based on the 2030 total traffic volumes, the site-generated traffic volumes would constitute 4.6 percent of the traffic at the Constitution Avenue/Marksheffel Road intersection during the morning peak hour and about 10.3 percent during the afternoon peak hour. Based on the 2030 total traffic volumes, the site-generated traffic volumes would constitute about five percent of the traffic on Marksheffel Road north of Constitution Avenue and about six percent of the traffic on Marksheffel Road south of Constitution Avenue.

### **Functional Classifications**

6. Figure 21 shows the recommended functional classifications for the site's internal streets.

### **School Transportation**

7. Initially, the elementary school children living in the Hannah Ridge development would attend Remington Elementary School located northwest of the site. Depending on the results of the bus service index analysis, students would either walk to Remington Elementary School or be bused by School District 49.
8. Should a combination of increases in enrollment at Remington Elementary School and/or continued growth in the Claremont Ranch, Wilshire, Jessica Heights, Hannah Ridge sub-area result in the children from the Hannah Ridge development having to change schools, the most logical change would be to bus the children to the elementary school within the Claremont Ranch development, which is a district "growth school." The School District 49 transportation department will not allow the buses to make a left turn from a stop-sign onto Constitution Avenue. Therefore, a traffic signal at the Constitution Avenue/Akers Drive intersection would be beneficial in school bus routing, since the buses could use the signalized intersection to turn left onto Constitution Avenue. School bus routing should be a consideration in evaluating the traffic signal warrants for the Constitution Avenue/Akers

Drive intersection, which would likely warrant a traffic signal before the Constitution Avenue/Hannah Ridge Drive intersection would.

9. As further growth occurs in this sub-area and should School District 49 construct a school on the ten acres in the Jessica Heights development south of Constitution Avenue, children from the Hannah Ridge development may be bused to this future school. The children should not walk across Constitution Avenue to and from this possible future Jessica Heights development school due to the functional classification and design speed of Constitution Avenue. There would be safety issues even with a signalized crossing supplemented by crossing guards and a 20 mph school zone with flashing yellow beacons.

### **Constitution Avenue/Canada Drive Traffic Impact**

10. The site-generated traffic volumes from the Hannah Ridge development would contribute 165 vehicles to the westbound approach at the Constitution Avenue/Canada Drive intersection during the morning peak hour and 320 vehicles during the afternoon peak hour, as shown on Figure 8. The projected 2030 total traffic volume for the westbound approach would be 1,645 vehicles during the morning peak hour and 1,735 vehicles during the afternoon peak hour, as shown on Figure 13. The resulting traffic impact by the Hannah Ridge development would be 10 percent during the morning peak hour and 18 percent during the afternoon peak hour. These traffic impacts are less than the 30 percent requirement for a minor off-site intersection to be included in the study area.

### **Recommended Roadway Improvements**

11. Table 3 summarizes the recommended roadway improvements.

#### Constitution Avenue

12. Figures 19 and 20 show the recommended lane configuration along Constitution Avenue for the short term and long term, respectively.
13. Constitution Avenue is currently striped for three through lanes in each direction. As an interim condition before Constitution Avenue is widened, the third westbound through lane should be re-striped for right-turn deceleration lanes approaching Hannah Ridge Drive and Shawnee Drive. There is adequate width on Constitution Avenue for two 12-foot wide westbound through lanes and one 14-foot wide westbound right-turn lane.
14. Crosswalks should be provided on Constitution Avenue when the intersections along Constitution Avenue are signalized.

Constitution Avenue/Marksheffel Road

15. There is an existing eastbound left-turn lane on Constitution Avenue approaching Marksheffel Road. In the future, Constitution Avenue may need to be widened to provide dual eastbound left-turn lanes with a length of 440 feet plus transition taper. The need for widening would be due to the general growth in this region, and should be part of a regional improvement plan with contribution from all of the area developers. Based on the 2030 total traffic volumes, the site is projected to contribute about 13 percent of the eastbound left-turn movement traffic volume at the Constitution Avenue/Marksheffel Road intersection during the morning peak hour and 25 percent during the afternoon peak hour.
16. There is an existing northbound left-turn lane on Marksheffel Road approaching Constitution Avenue. In the future, Marksheffel Road may need to be widened to provide dual northbound left-turn lanes. The need for widening is due to the general growth in this region and should be part of a regional improvement plan with contribution from all of the area developers. Based on the 2030 total traffic volumes, the site is projected to contribute about 19 percent of the northbound left-turn movement traffic volume at the Constitution Avenue/Marksheffel Road intersection during the morning peak hour and 35 percent during the afternoon peak hour.

Constitution Avenue/Hannah Ridge Drive

17. The southbound approach at the Constitution Avenue/Hannah Ridge Drive intersection should be designed to provide exclusive left-turn, through, and right-turn lanes. The southbound lanes would need to be designed in order to align with the planned dual northbound left-turn lanes.
18. The existing eastbound left-turn lane on Constitution Avenue approaching Hannah Ridge Drive is currently about 235 feet. The lane should be extended to 300 feet in order to meet the *El Paso County ECM* requirements based on the site's buildout.

Constitution Avenue/Akers Drive

19. El Paso County has committed to signaling the Constitution Avenue/Akers Drive intersection when the traffic signal warrants are met.
20. Figure 22 shows the proposed lane geometry on Akers Drive between Constitution Avenue and the first site access intersection. The right-in access off of Akers Drive should be designed in such a way as to allow easy entry into the site. The access radius should be relatively large. There should be adequate space within the site for vehicles to exit the right lane in a smooth and efficient manner and to enter without obstruction or on-site conflicts. The site should be designed in such a way as to make the right-in access serve only the pad site at the southeast corner of the Akers Drive/Hunter Jumper Drive intersection, since it

would not be desirable to have the “cut-through” site traffic entering at the right-in access rather than at Hunter Jumper Drive.

21. The level of service analysis of the intersections along Akers Drive assumed a painted center median on Akers Drive, in order to allow for two-stage left-turn movements from the side streets onto Akers Drive.
22. The northbound approach at the Constitution Avenue/Akers Drive intersection should be designed to provide exclusive left-turn, through, and right-turn lanes. The northbound lanes would need to be designed in order to align with the dual southbound left-turn lanes.
23. The existing eastbound left-turn lane on Constitution Avenue approaching Akers Drive is currently about 260 feet. The lane should be extended to 320 feet. Ultimately, dual left-turn lanes would likely be needed.

#### Constitution Avenue/Shawnee Drive

24. El Paso County staff may require a three-quarter median island be constructed on Constitution Avenue at Shawnee Drive to prevent the northbound and southbound left-turn and through movements. This median island would prohibit the existing northbound left-turn movements onto westbound Constitution Avenue and the future northbound through movements into the Hannah Ridge development. To access the Hannah Ridge development from northbound Shawnee Drive, motorists would turn right onto Constitution Avenue and then turn left onto northbound Hannah Ridge Drive.
25. The existing eastbound left-turn lane on Constitution Avenue approaching Shawnee Drive is currently about 300 feet. The lane should be extended to 330 feet in order to meet the *El Paso County ECM* requirements.
26. The southbound to westbound right-turn acceleration lane on Constitution Avenue extending from Shawnee Drive should be 580 feet plus a 180-foot taper in order to meet the *El Paso County ECM* requirements.

#### Peterson Road

27. Eventually, a northbound right-turn deceleration lane on Peterson Road approaching Constitution Avenue may be needed to maintain acceptable levels of service for the northbound approach. This improvement would not be needed for level of service reasons based on the Hannah Ridge Preliminary Plan. The lack of a northbound right-turn deceleration lane is an existing deficiency. The lane is currently warranted based on the existing traffic volumes since the northbound right-turn traffic volume exceeds 50 vehicles per hour. The Hannah Ridge development should not be responsible for correcting this existing deficiency. The Hannah Ridge developer contributed to the cost of constructing the

initial Constitution Avenue/Peterson Road intersection. A right-turn lane was not required by El Paso County as part of this initial construction. Even if the Hannah Ridge development was constructed under its previous industrial zoning, it would have contributed northbound right-turn movements at the intersection (about 60 during the morning peak hour).

\* \* \* \* \*

We trust this updated traffic impact analysis will assist you in gaining approval of the proposed Hannah Ridge Sketch Plan Amendment and Preliminary Plan. Please contact me if you have any questions or need further assistance.

Sincerely,

LSC TRANSPORTATION CONSULTANTS, INC.

By \_\_\_\_\_  
Jeffrey C. Hodsdon, P.E., PTOE  
Principal



JCH:EJL:rf

- Enclosures:
- Tables 1-3
  - Figures 1-22
  - Traffic Count Reports
  - Levels of Service Reports
  - Time-Space Diagrams
  - Map of Area Developments



**Table 1  
Hannah Ridge Sketch Plan Amendment/Preliminary Plan  
Trip Generation Estimates**

Land Use Code	Land Use Description	Trip Generation Units	Trip Generation Rates <sup>(1)</sup>						Total Trips Generated						New Trips Generated	
			Average Weekday Traffic		Morning Peak Hour		Afternoon Peak Hour		Average Weekday Traffic		Morning Peak Hour		Afternoon Peak Hour		Pass-By Trips <sup>(2)</sup>	Average New Weekday Traffic
			In	Out	In	Out	In	Out	In	Out	In	Out				
<b>Preliminary Plan</b>																
210	Single-Family Detached Housing	354 DU <sup>(3)</sup>	9.57	0.19	0.56	0.64	0.37	0.37	3,388	66	199	225	132	0%	3,388	
<b>Sketch Plan</b>																
210	Single-Family Detached Housing	354 DU	9.57	0.19	0.56	0.64	0.37	0.37	3,388	66	199	225	132	0%	3,388	
230	Residential Condominium/Townhouse	205 DU	5.86	0.07	0.37	0.35	0.17	0.17	1,201	15	75	71	35	0%	1,201	
820	Shopping Center <sup>(4)</sup>	330 KSF <sup>(5)</sup>	41.80	0.55	0.35	1.88	2.03	2.03	13,795	181	116	619	671	28%	9,933	
850	Supermarket	70 KSF	86.83	2.89	1.84	5.13	4.93	4.93	6,078	202	129	359	345	36%	3,890	
<b>Total</b>									<b>24,462</b>	<b>465</b>	<b>519</b>	<b>1,274</b>	<b>1,183</b>		<b>18,412</b>	

**Notes:**

- (1) Source: "Trip Generation, 7th Edition, 2003" by the Institute of Transportation Engineers (ITE)
- (2) Source: "Trip Generation Handbook - An ITE Proposed Recommended Practice, 2nd Edition, 2004" by ITE
- (3) DU = dwelling unit
- (4) Shopping center rates were based on the ITE best-fit curve formula using the square footage of the entire commercial area (400 KSF)
- (5) KSF = thousand square feet

Source: LSC Transportation Consultants, Inc.

**Table 2**  
**Hannah Ridge Sketch Plan Amendment/Preliminary Plan**  
**95<sup>th</sup> Percentile Queue Lengths <sup>(1)</sup>**

<b>Intersection</b>	<b>Approach <sup>(2)</sup></b>	<b>2015 PM Peak-Hour Queue Length</b>	<b>2030 PM Peak-Hour Queue Length</b>	<b>Existing Lane Length</b>	<b>Proposed Lane Length</b>
Constitution Avenue/ Marksheffel Road	EB LT	395	310	515 (single)	440 2015-single 2030-dual
Constitution Avenue/ Hannah Ridge Drive	EB LT	5	5	235 (single)	300 (single)
	WB LT	75	230	255 (single)	275 (single)
Constitution Avenue/ Akers Drive	EB LT	305	215	260 (single)	320 2015-single 2030-dual
	WB LT	90	120	260 (single)	425 (single)
	SB LT	210	245	385 (dual)	385 (dual)
Constitution Avenue/ Shawnee Drive	EB LT	15	15	300 (single)	330 (single)
Akers Drive/ Hunter Jumper Drive	NB LT	15	40	170 (single)	170 (single)

Notes:

(1) Shown in feet

(2) NB = northbound, SB = southbound, EB = eastbound, WB = westbound, LT = left turn

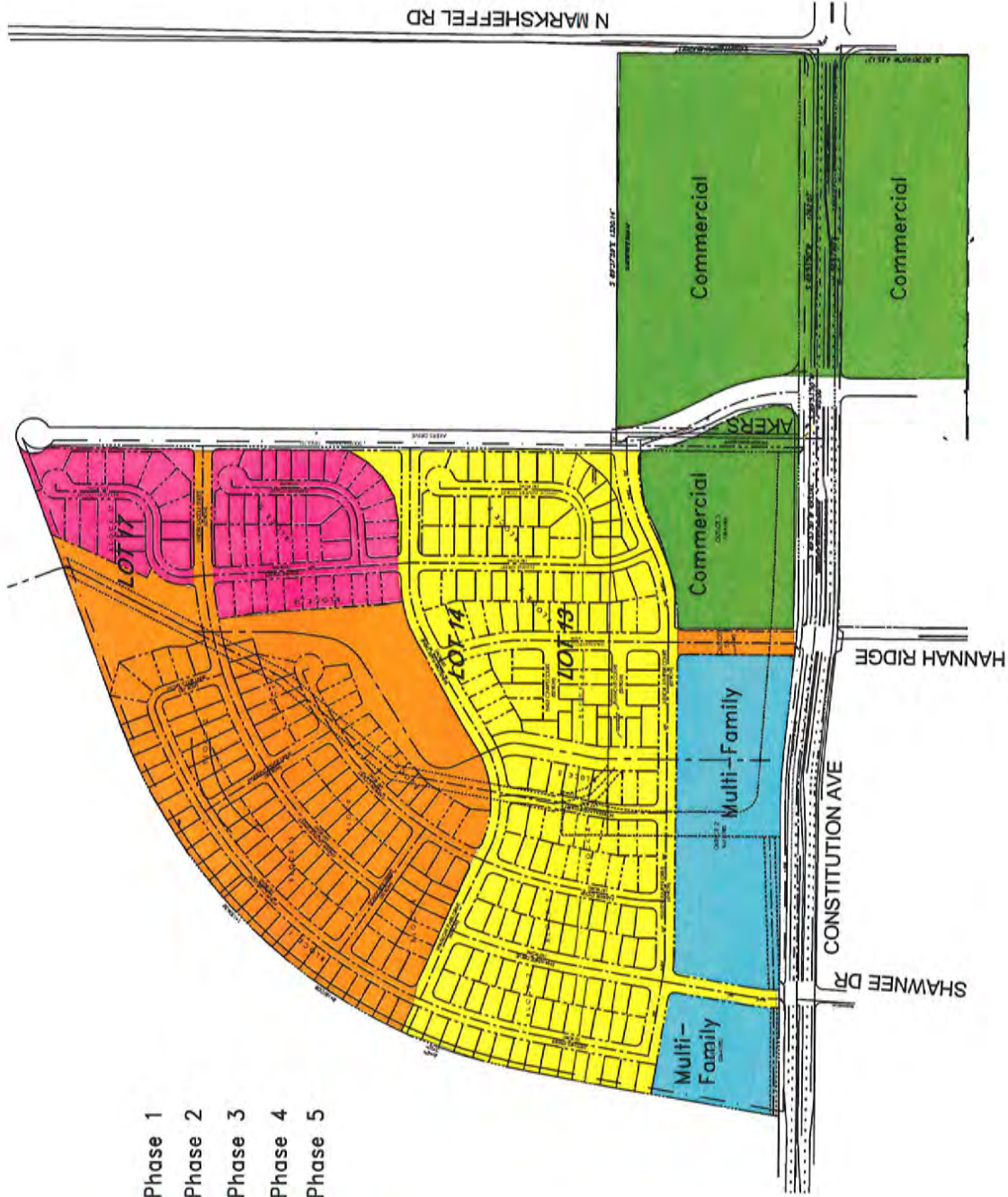
Source: LSC Transportation Consultants, Inc.

**Table 3  
Hannah Ridge Sketch Plan Amendment/Preliminary Plan  
Roadway Improvements**

Improvement	Type	Timing	Phase	Responsibility
Re-stripe outside westbound through lane on Constitution Avenue for acceleration/deceleration lanes approaching Hannah Ridge Drive and Shawnee Drive	Re-stripping	When Hannah Ridge Drive and Shawnee Drive are extended north of Constitution Avenue	Shawnee - Phase 1 Hannah Ridge - Phase 2	Applicant and/or Metro District
Lengthen eastbound left-turn lane on Constitution Avenue approaching Shawnee Drive	Auxiliary lane	When Shawnee Drive is extended north of Constitution Avenue	Phase 1	Applicant and/or Metro District
Lengthen westbound right-turn acceleration lane on Constitution Avenue from Shawnee Drive	Auxiliary lane	When Shawnee Drive is extended north of Constitution Avenue	Phase 1	Applicant and/or Metro District
Lengthen eastbound left-turn lane on Constitution Avenue approaching Hannah Ridge Drive	Auxiliary lane	When Hannah Ridge Drive is extended north of Constitution Avenue	Phase 2	Applicant and/or Metro District
Signalization of Constitution Avenue/Akers Drive intersection	Traffic signal	When warranted	—	El Paso County
Signalization of Constitution Avenue/Hannah Ridge Drive intersection	Traffic signal	When warranted	—	Developments north and south of Constitution Avenue
Signalization of Akers Drive/Hunter Jumper Drive intersection	Traffic signal	When warranted	Phase 5	Applicant and/or Metro District
Construct dual eastbound left-turn lanes on Constitution Avenue approaching Akers Drive	Auxiliary lane	When needed	Phase 5	Developments and other trip generators along Akers Drive north of Constitution Avenue
Construct dual eastbound left-turn lanes on Constitution Avenue approaching Marksheffel Road	Auxiliary lane	When needed	Phase 5	Master planned
Widen Constitution Avenue to six-lane cross section	Roadway segment	When needed	Phase 5	Master planned
Construct northbound right-turn deceleration lane on Peterson Road approaching Constitution Avenue	Auxiliary lane	Existing deficiency	—	Master planned
Widen Marksheffel Road to four-lane cross section with eventual widening to six-lane cross section	Roadway segment	Pikes Peak Rural Transportation Authority (PPRTA) project	—	Master planned
Construct dual westbound, northbound, and southbound left-turn lanes at Marksheffel Road/Constitution Avenue intersection	Auxiliary lane	PPRTA project	—	Master planned

Source: LSC Transportation Consultants, Inc.



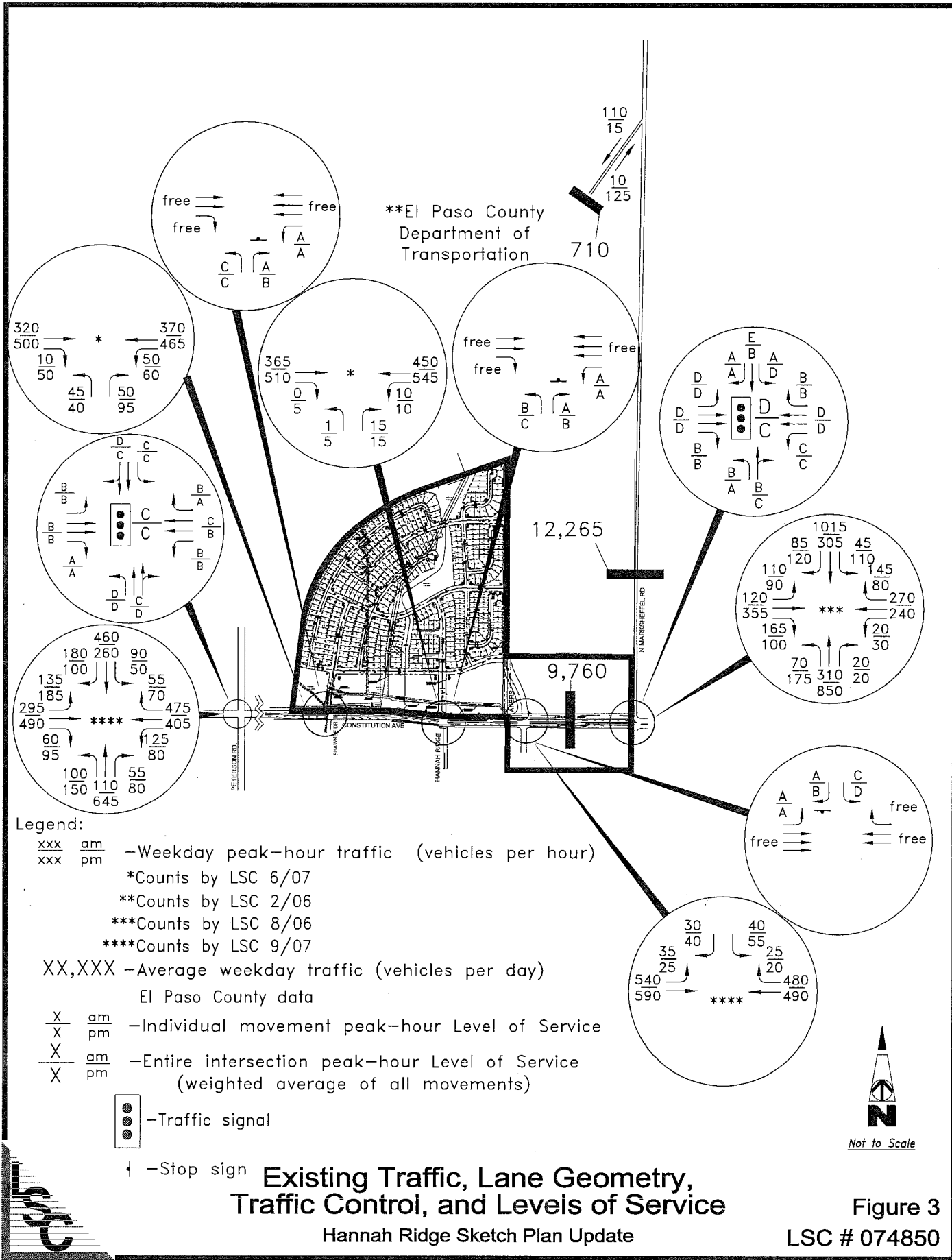


- Phase 1
- Phase 2
- Phase 3
- Phase 4
- Phase 5



Figure 2  
LSC # 074850

Site Plan  
Hannah Ridge Sketch Plan Update



\*\*El Paso County  
Department of  
Transportation

110  
15  
10  
125  
710

12,265

9,760

**Legend:**  
 xxx am - Weekday peak-hour traffic (vehicles per hour)  
 xxx pm  
 \*Counts by LSC 6/07  
 \*\*Counts by LSC 2/06  
 \*\*\*Counts by LSC 8/06  
 \*\*\*\*Counts by LSC 9/07  
 XX,XXX - Average weekday traffic (vehicles per day)  
 El Paso County data  
 X am - Individual movement peak-hour Level of Service  
 X pm  
 X am - Entire intersection peak-hour Level of Service  
 X pm (weighted average of all movements)

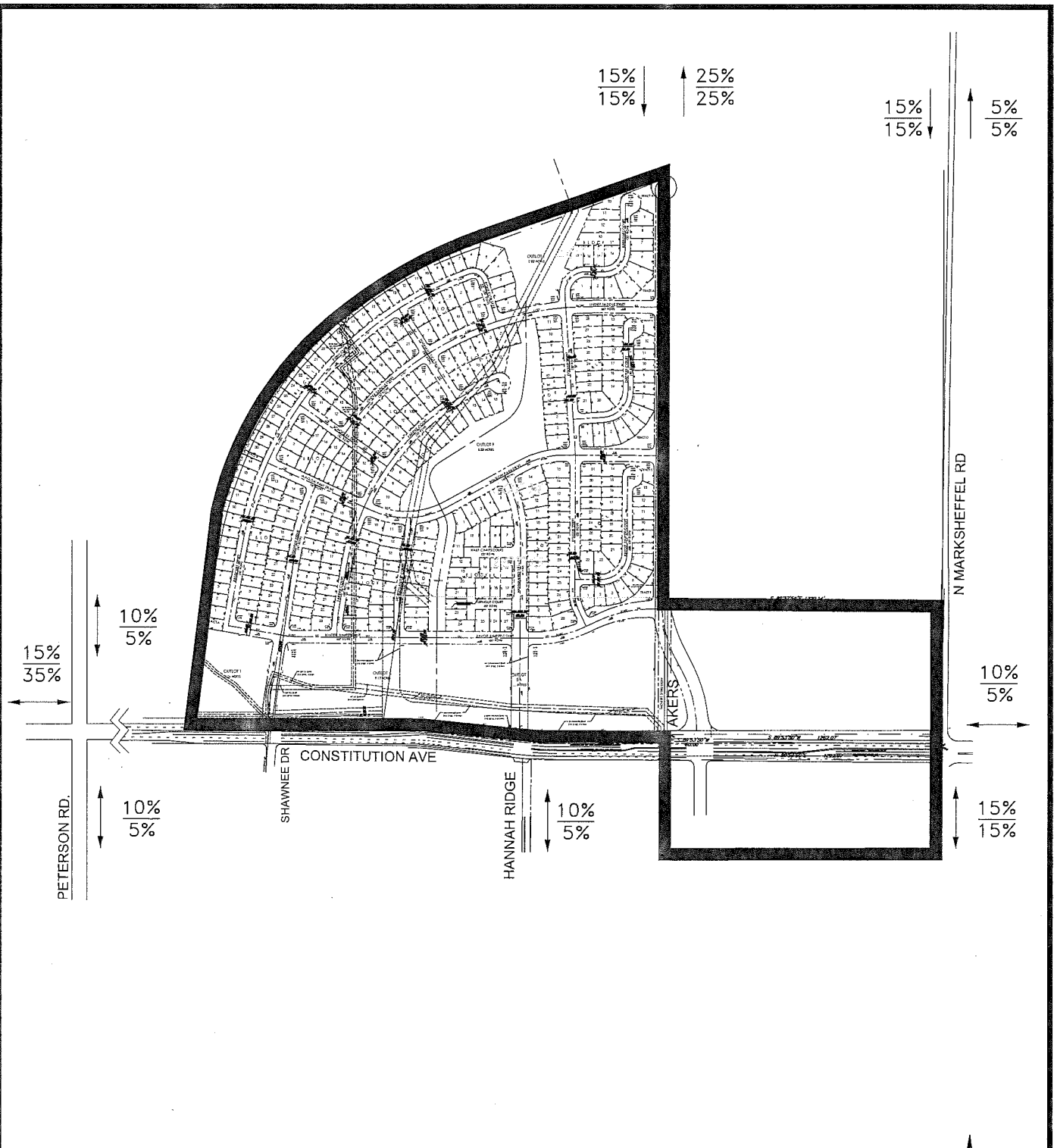
● - Traffic signal  
 † - Stop sign

Not to Scale

**Existing Traffic, Lane Geometry,  
Traffic Control, and Levels of Service**

Hannah Ridge Sketch Plan Update

Figure 3  
 LSC # 074850



Legend:

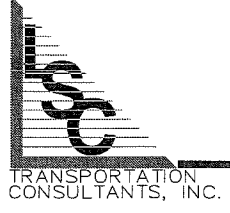
- XX% - Directional distribution of primary commercial site-generated traffic
- XX% - Directional distribution of residential site-generated traffic

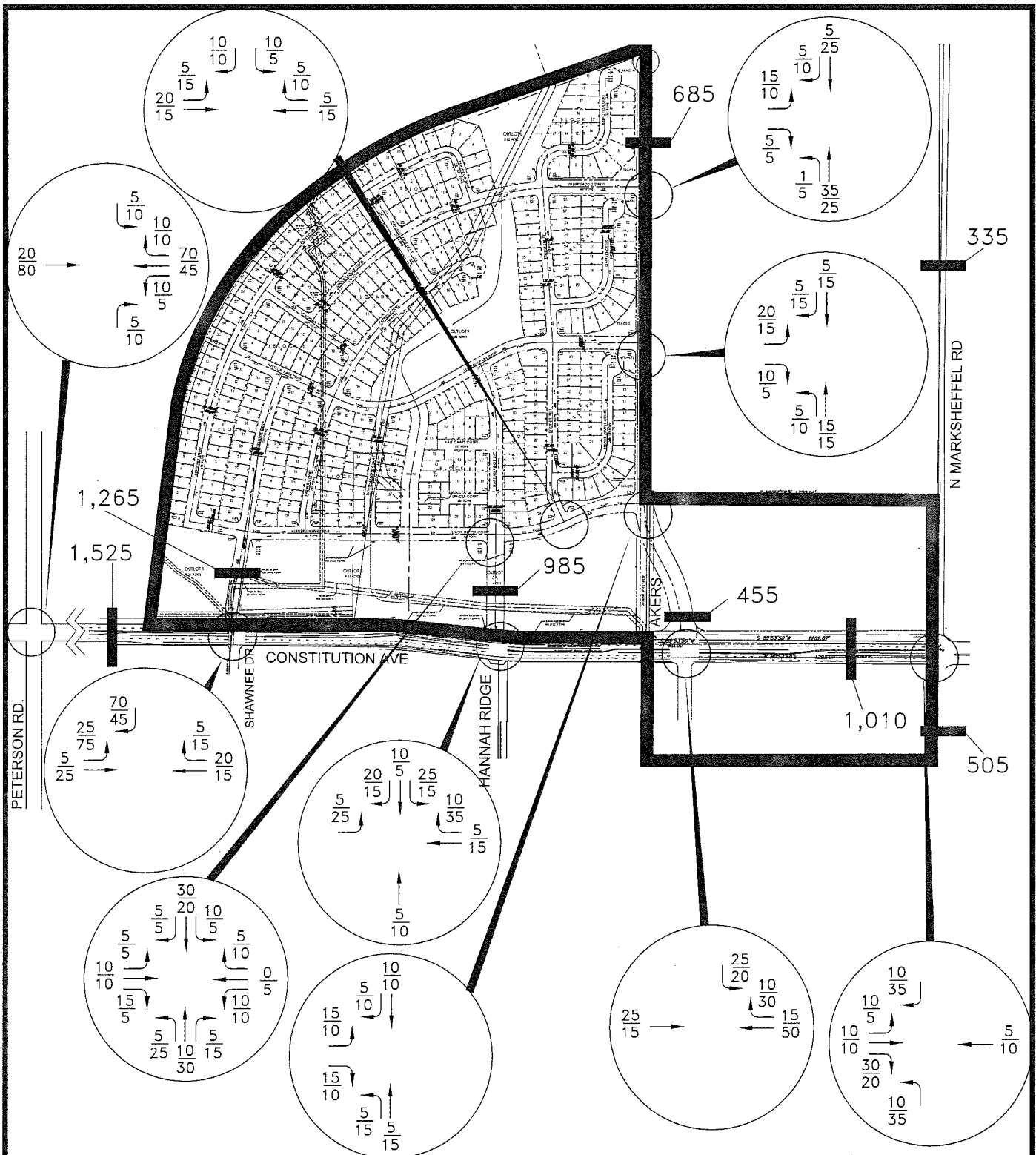


Not to Scale

**Directional Distribution**  
**Hannah Ridge Sketch Plan Update**

**Figure 4**  
**LSC # 074850**





Legend:

$\frac{xxx}{xxx}$   $\frac{am}{pm}$  - Weekday peak-hour traffic (vehicles per hour)

XX,XXX - Average weekday traffic (vehicles per day)



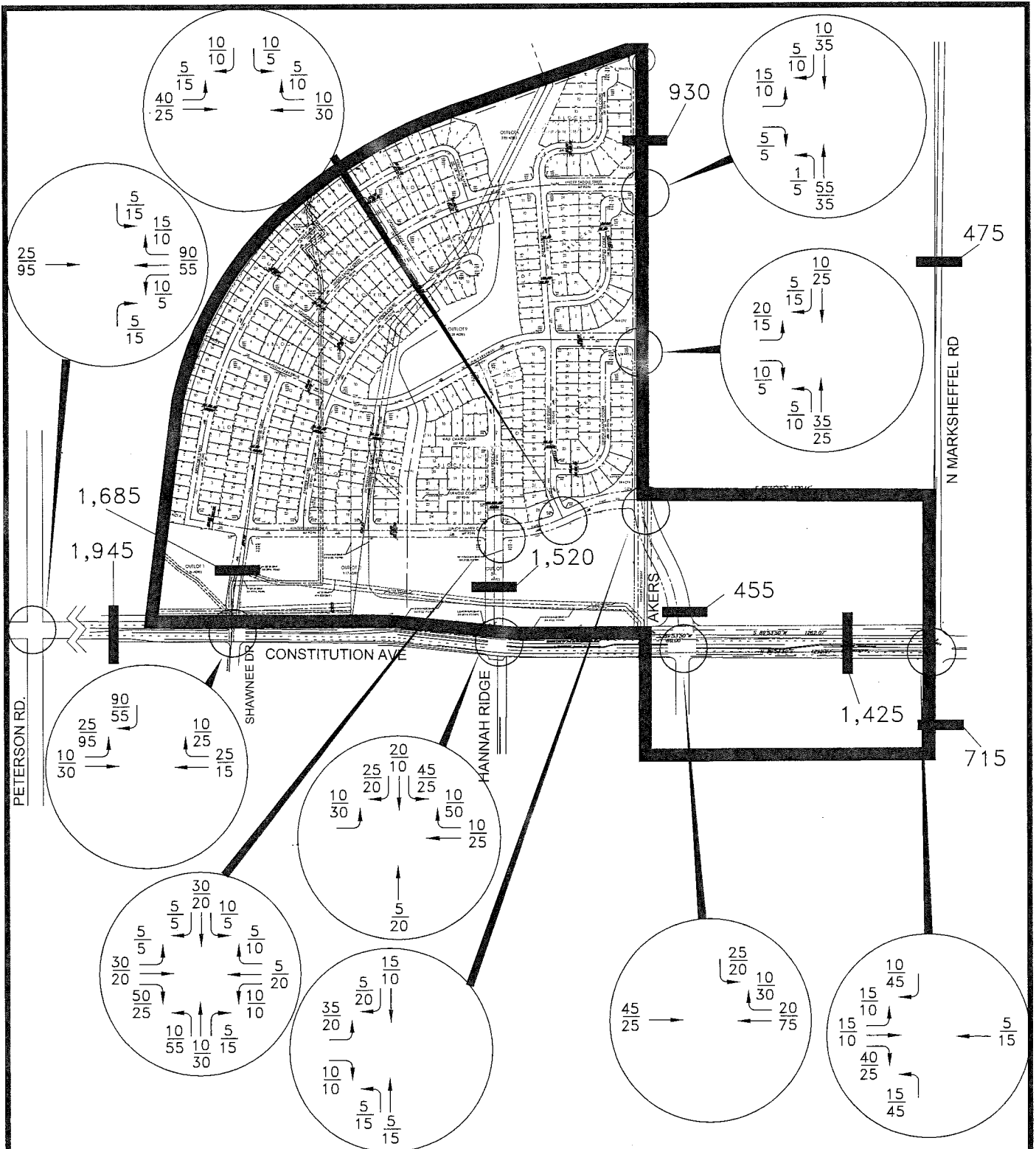
Not to Scale  
Figure 5

Single Family Site-Generated Traffic

Hannah Ridge Sketch Plan Update

LSC # 074850





**Legend:**

xxx am - Weekday peak-hour traffic (vehicles per hour)  
 xxx pm

XX,XXX - Average weekday traffic (vehicles per day)



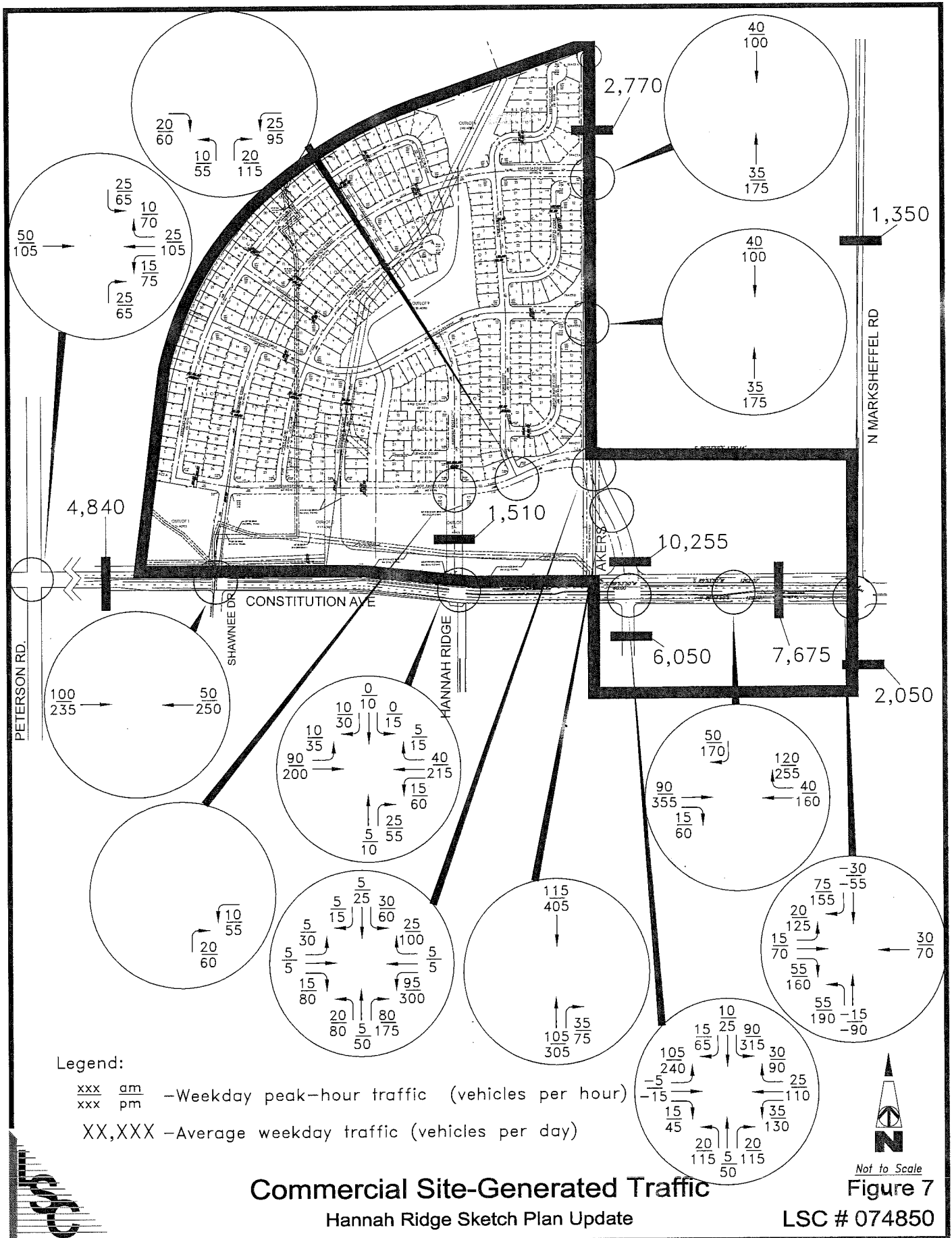
Not to Scale

**Residential Site-Generated Traffic**

Hannah Ridge Sketch Plan Update

**Figure 6**

LSC # 074850



Legend:

xxx am / xxx pm - Weekday peak-hour traffic (vehicles per hour)

XX,XXX - Average weekday traffic (vehicles per day)

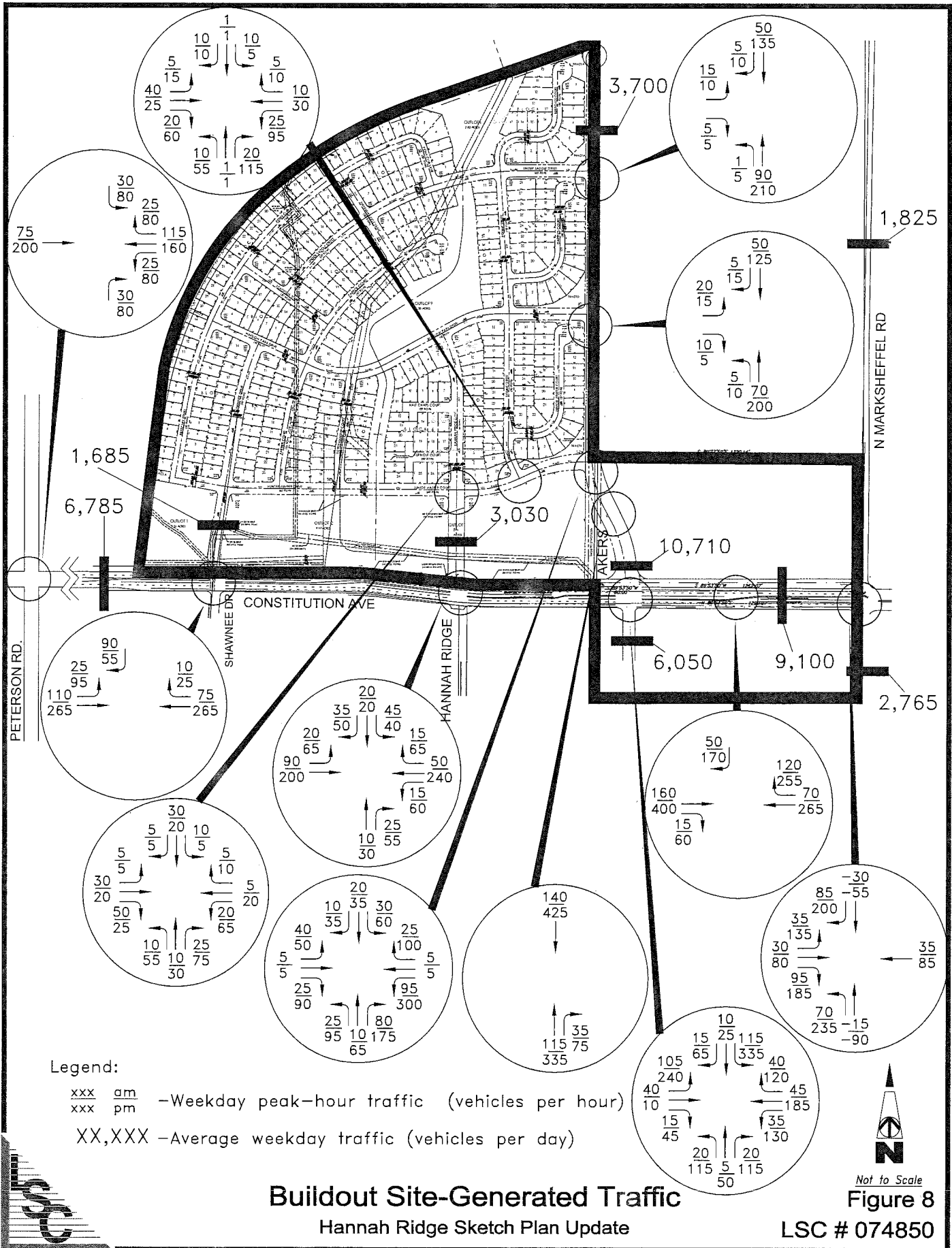
### Commercial Site-Generated Traffic

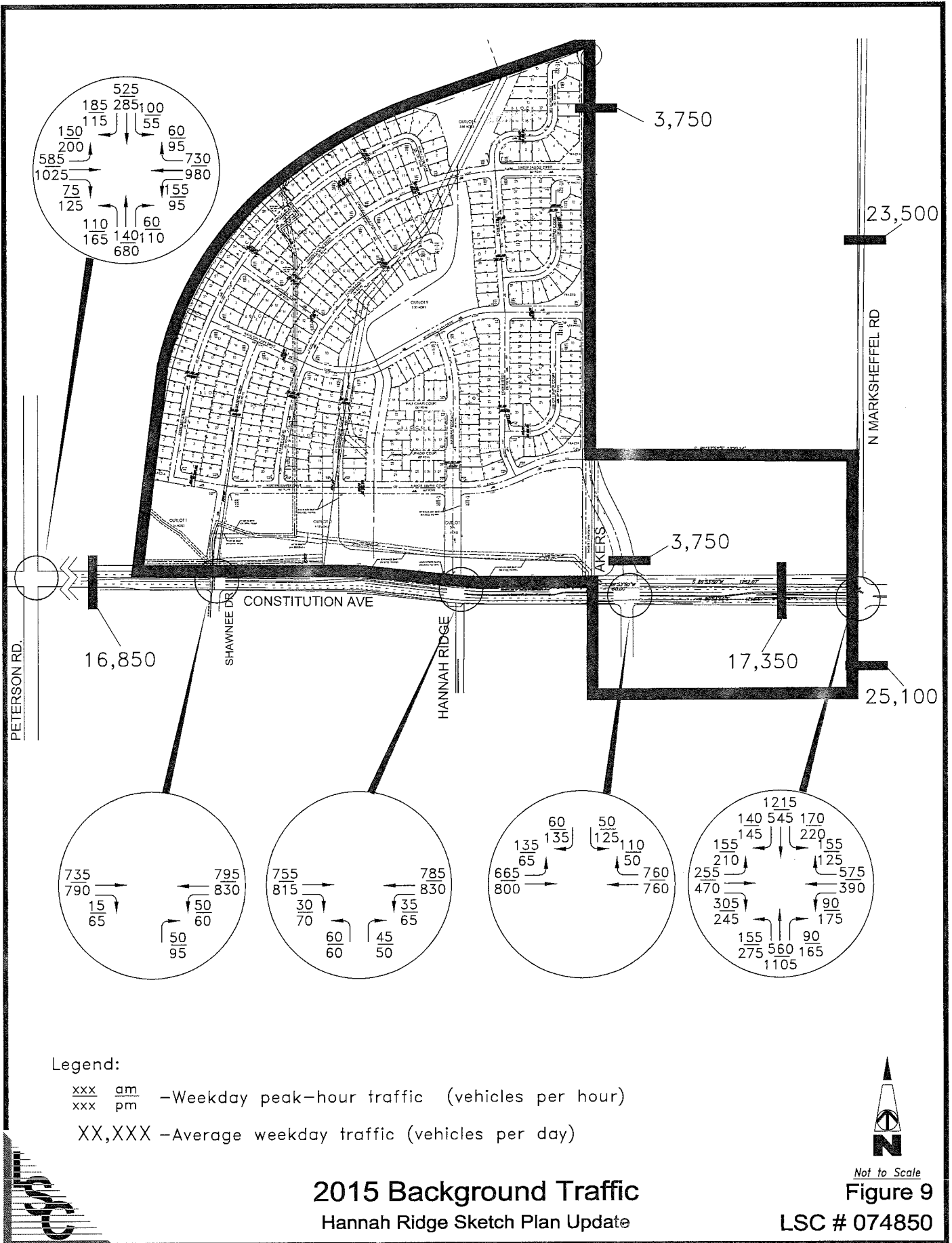
Hannah Ridge Sketch Plan Update

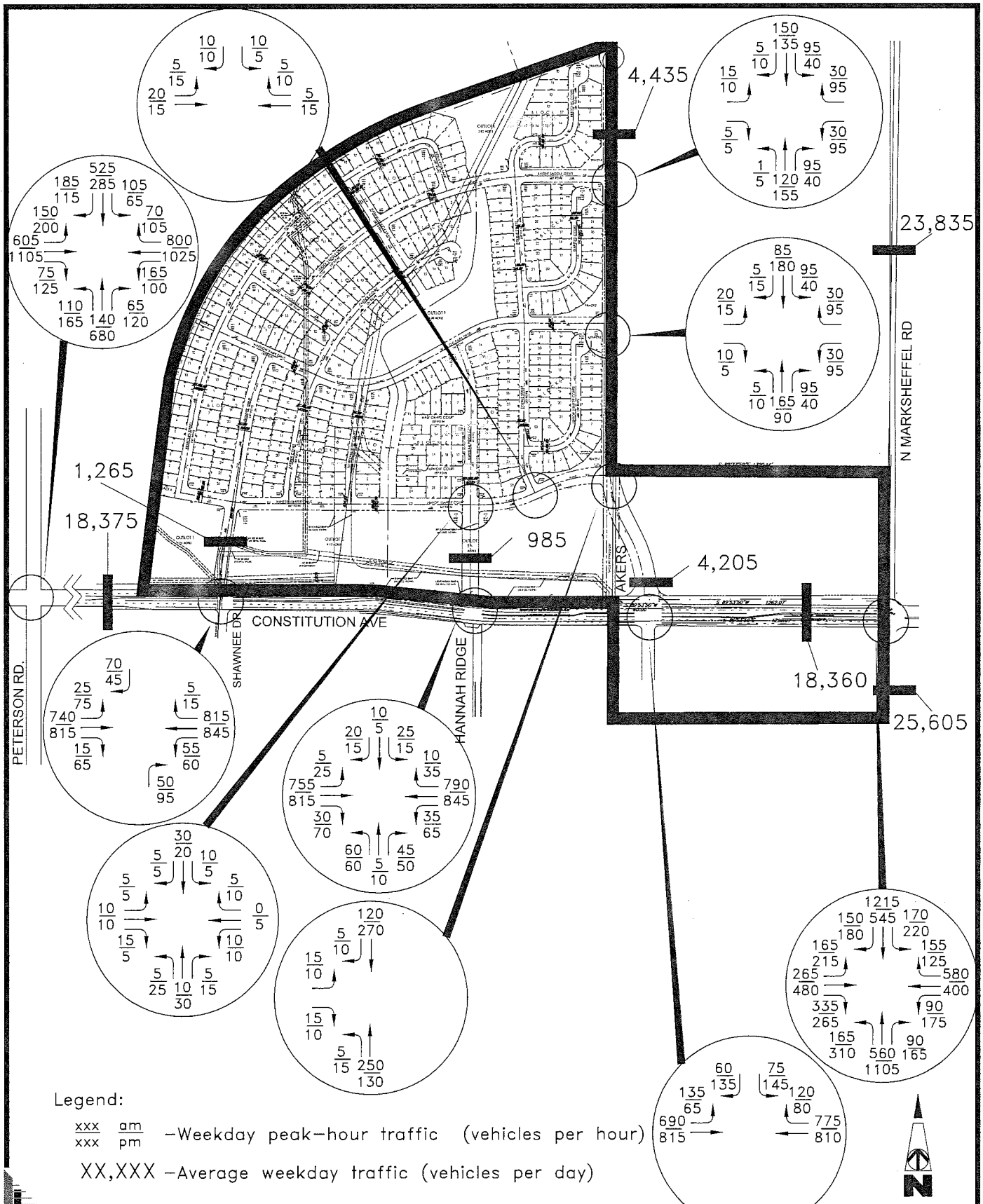
Not to Scale

Figure 7

LSC # 074850



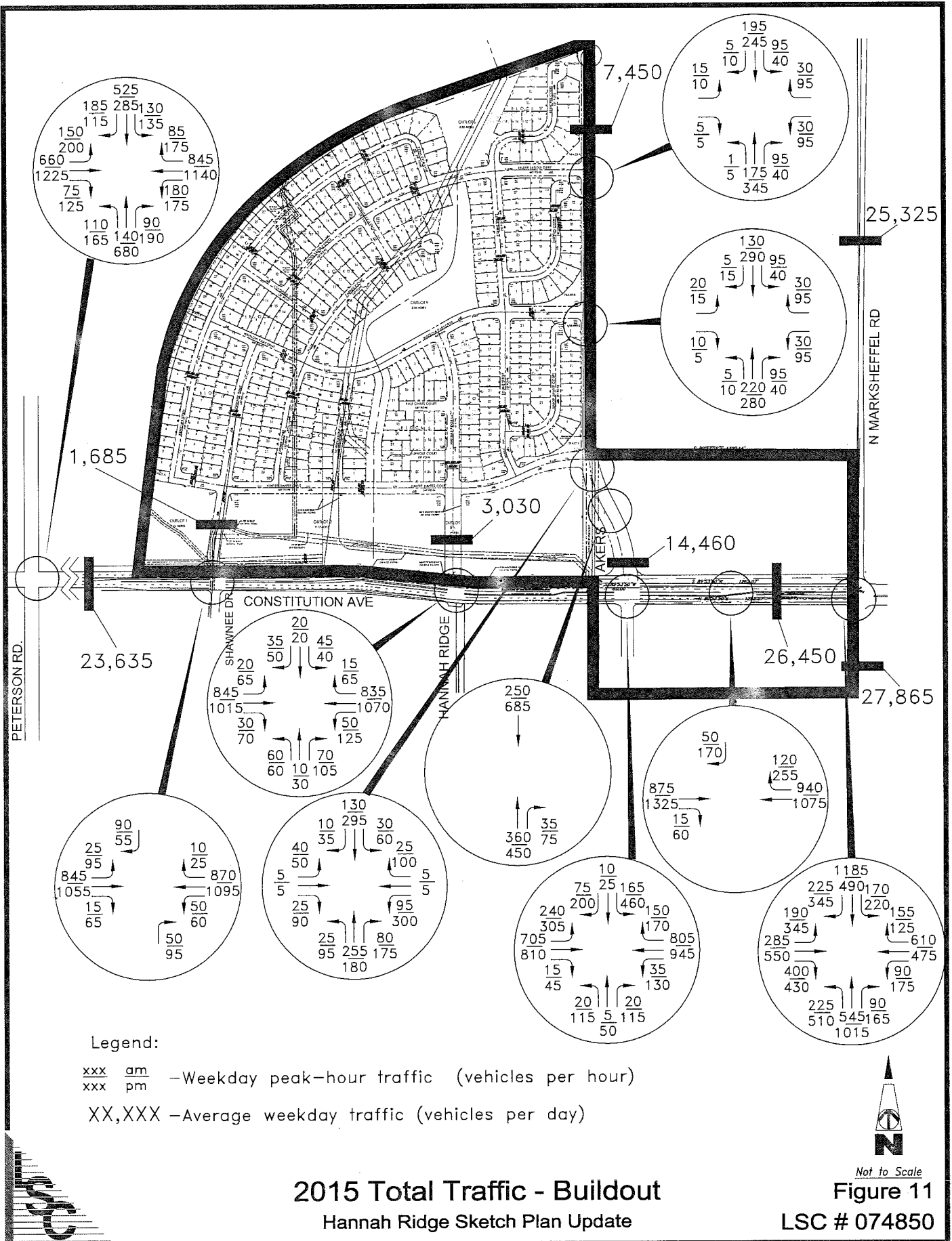




**2015 Total Traffic - Preliminary Plan**  
 Hannah Ridge Sketch Plan Update

Not to Scale  
**Figure 10**

**LSC # 074850**



Legend:

xxx am - Weekday peak-hour traffic (vehicles per hour)  
 xxx pm

XX,XXX - Average weekday traffic (vehicles per day)



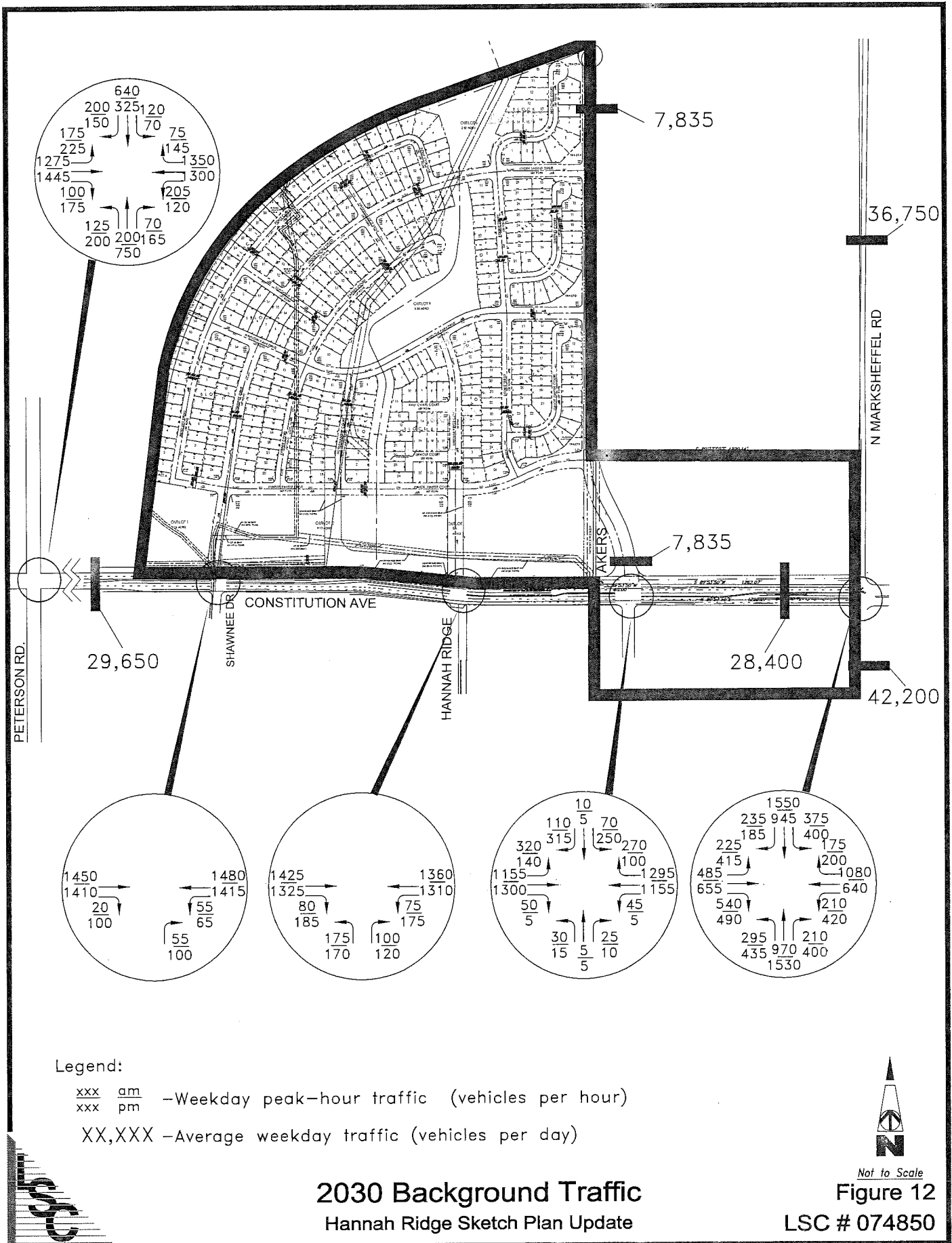
Not to Scale

## 2015 Total Traffic - Buildout

### Hannah Ridge Sketch Plan Update

Figure 11

LSC # 074850



Legend:

xxx am - Weekday peak-hour traffic (vehicles per hour)  
 xxx pm

XX,XXX - Average weekday traffic (vehicles per day)

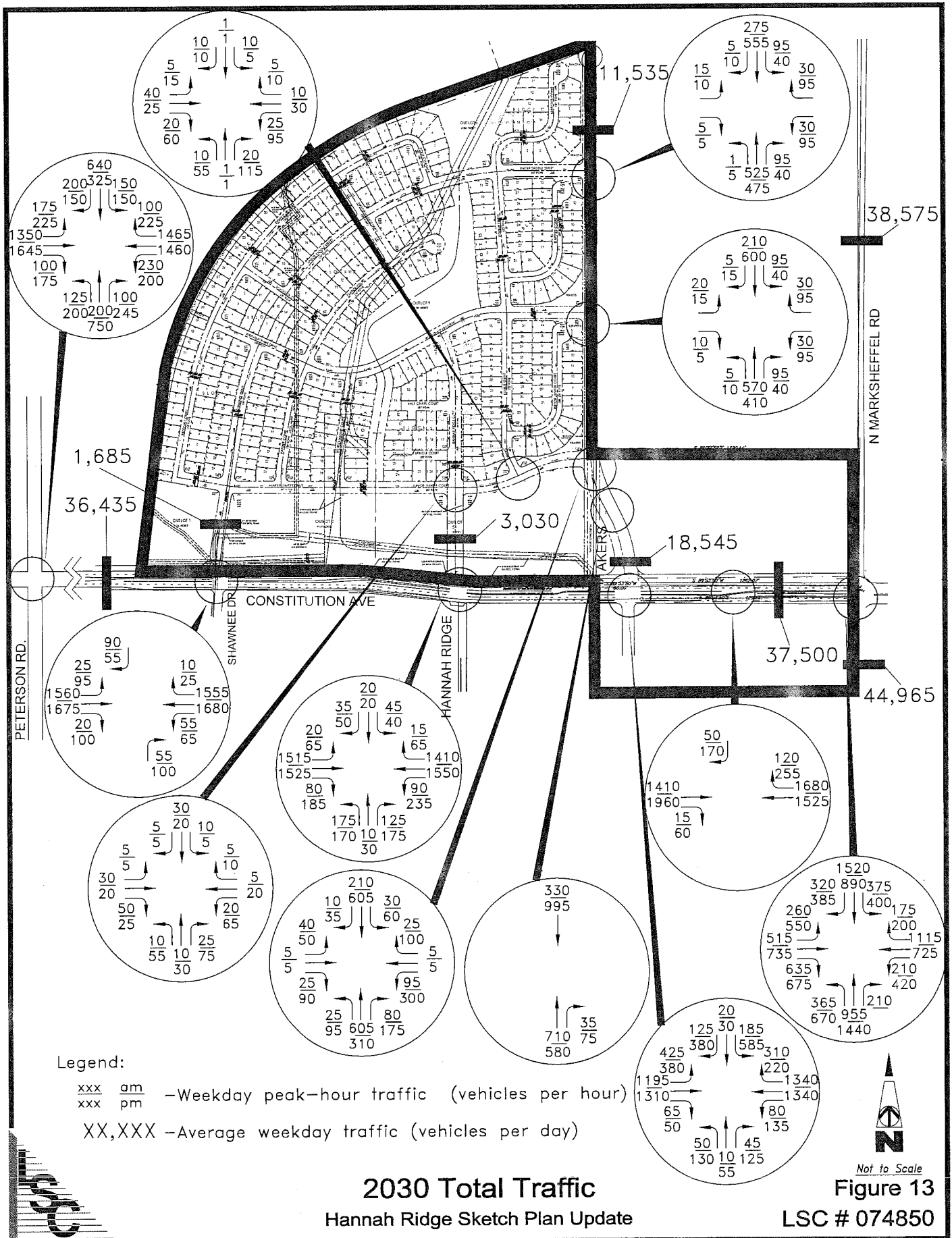


Not to Scale

**2030 Background Traffic**  
 Hannah Ridge Sketch Plan Update

Figure 12

LSC # 074850



**Legend:**

xxx am - Weekday peak-hour traffic (vehicles per hour)  
 xxx pm

XX,XXX - Average weekday traffic (vehicles per day)



TRANSPORTATION  
CONSULTANTS, INC.

**2030 Total Traffic**  
 Hannah Ridge Sketch Plan Update

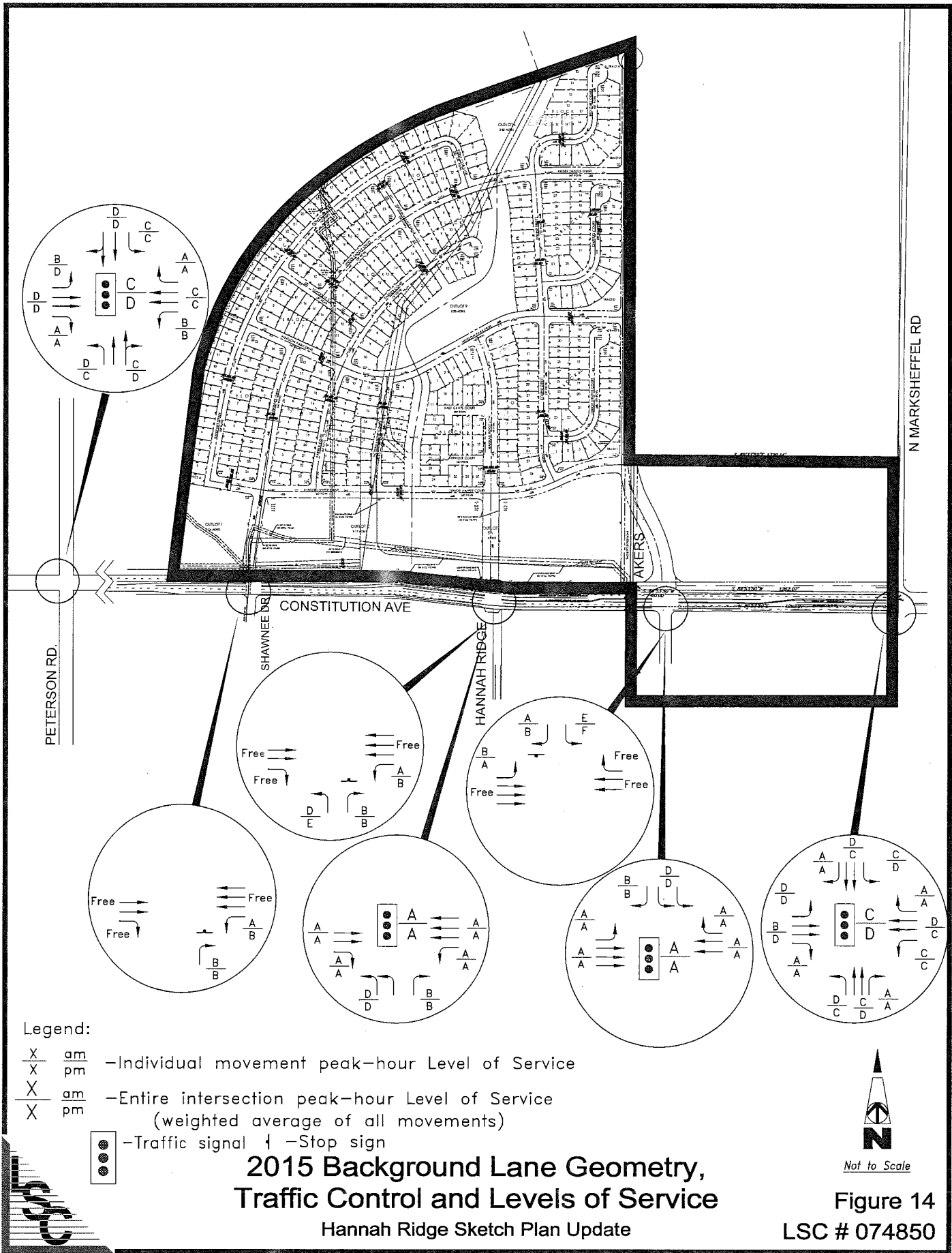


Not to Scale

**Figure 13**

**LSC # 074850**



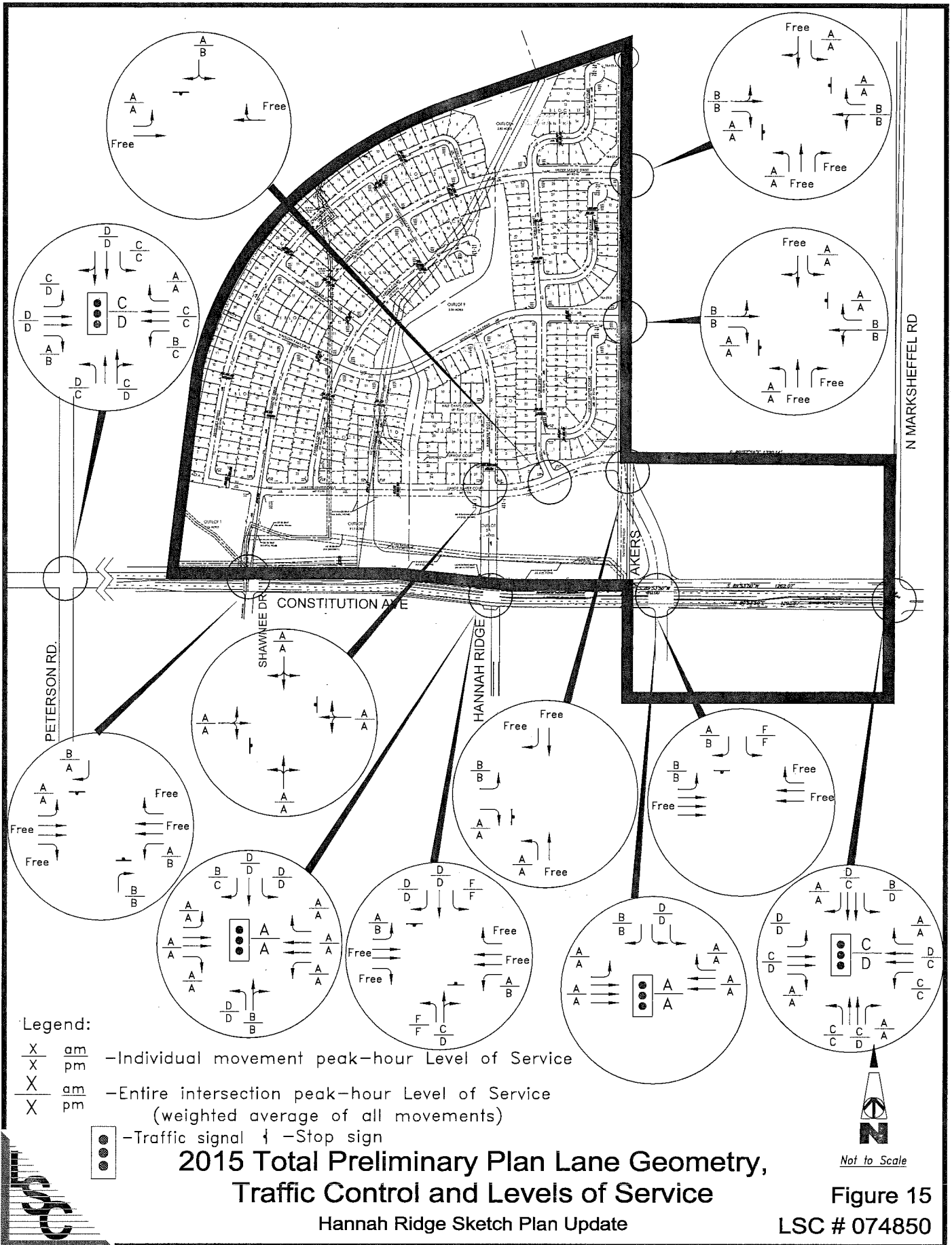


**2015 Background Lane Geometry,  
Traffic Control and Levels of Service**  
Hannah Ridge Sketch Plan Update



Not to Scale

**Figure 14**  
**LSC # 074850**



N MARKSHEFFEL RD

PETERSON RD.

CONSTITUTION AVE

SHAWNEE DR

HANNAH RIDGE

WAKERS

Legend:

- $\frac{X}{X}$  am - Individual movement peak-hour Level of Service
- $\frac{X}{X}$  pm
- $\frac{X}{X}$  am - Entire intersection peak-hour Level of Service
- $\frac{X}{X}$  pm (weighted average of all movements)
- Traffic signal
- Stop sign

**2015 Total Preliminary Plan Lane Geometry, Traffic Control and Levels of Service**

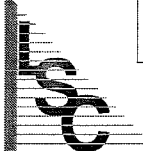
Hannah Ridge Sketch Plan Update



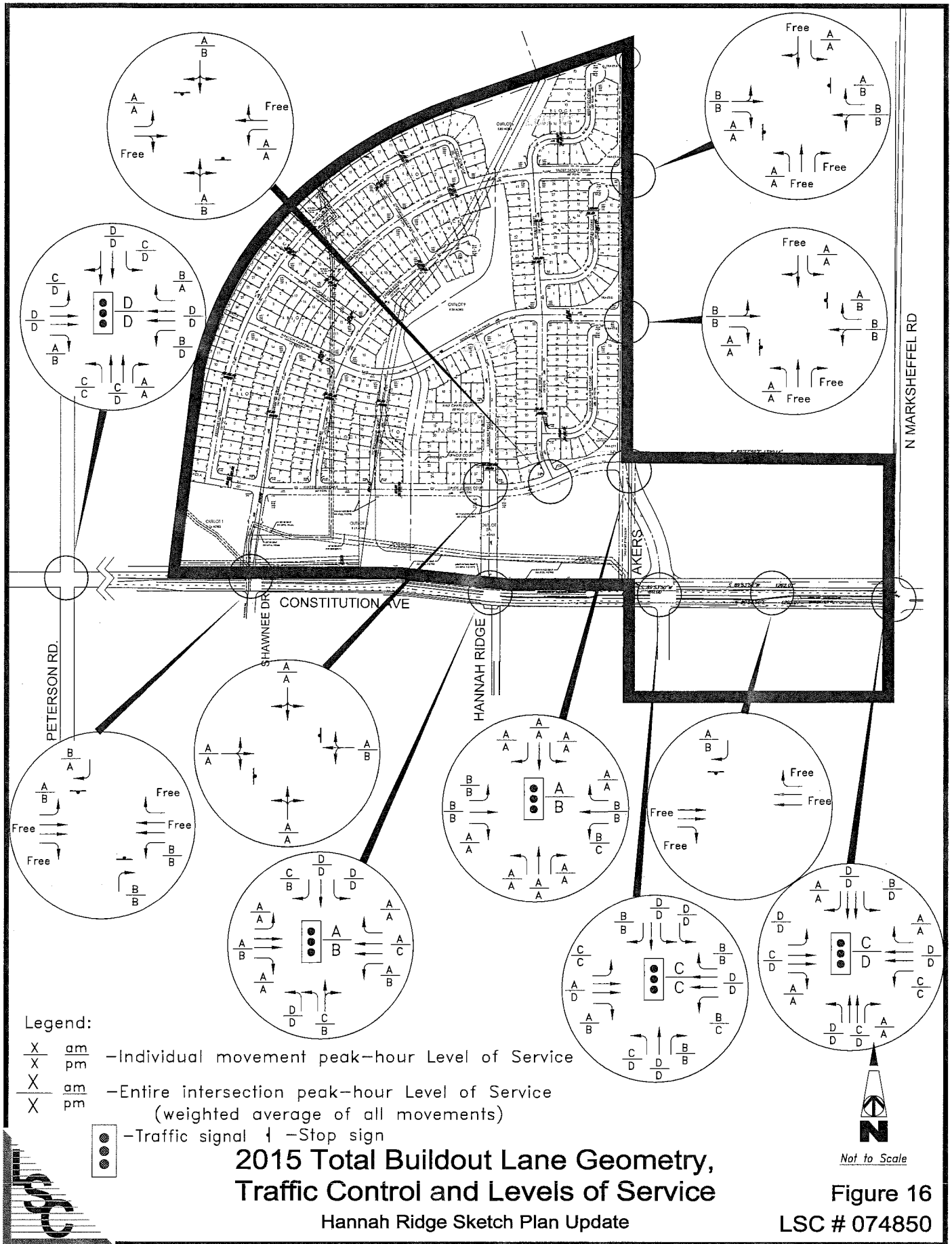
Not to Scale

Figure 15

LSC # 074850



TRANSPORTATION CONSULTANTS, INC.



Legend:

- $\frac{X}{X}$  am - Individual movement peak-hour Level of Service
- $\frac{X}{X}$  pm
- $\frac{X}{X}$  am - Entire intersection peak-hour Level of Service
- $\frac{X}{X}$  pm (weighted average of all movements)
- Traffic signal
- Stop sign

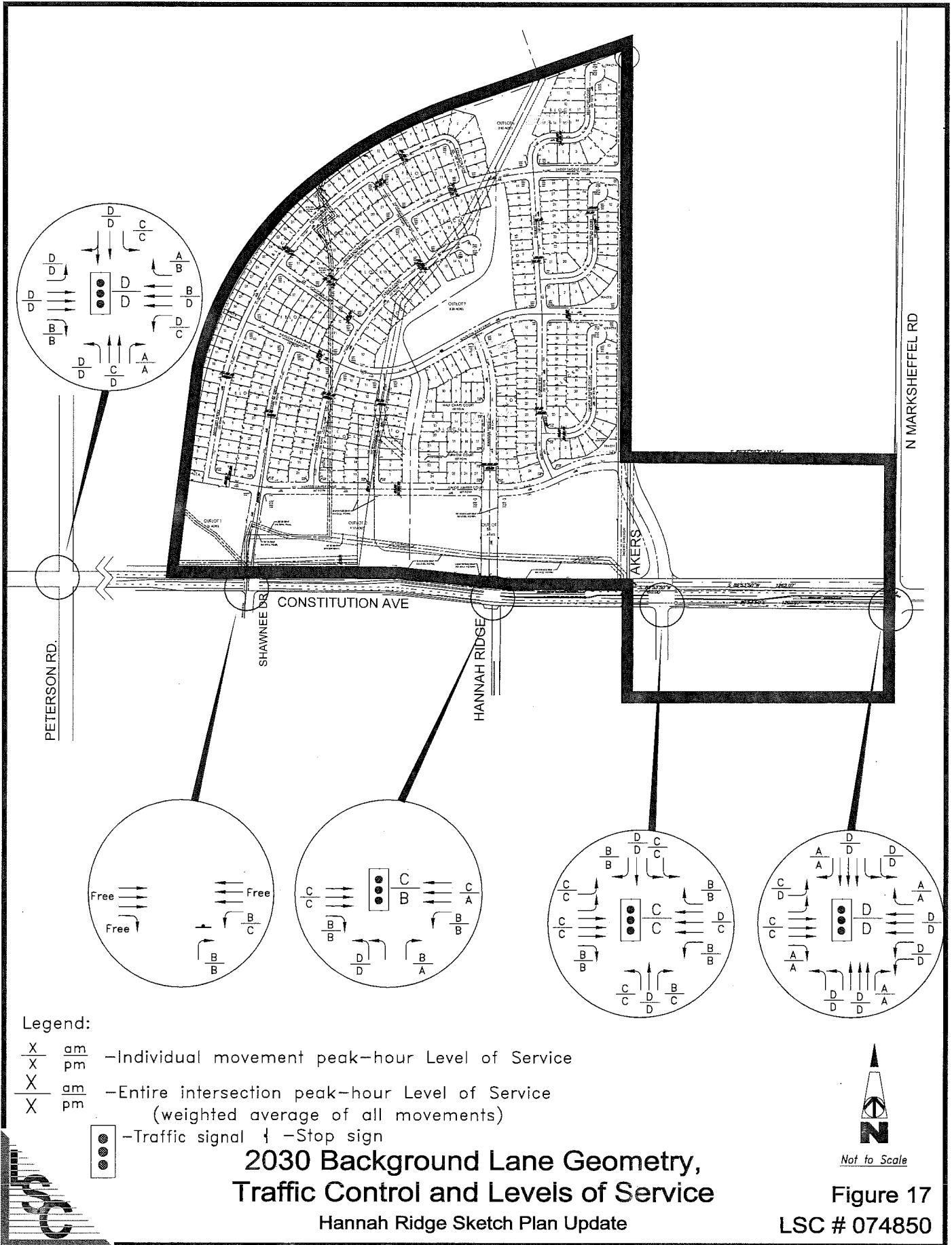
## 2015 Total Buildout Lane Geometry, Traffic Control and Levels of Service

Hannah Ridge Sketch Plan Update

Not to Scale

Figure 16

LSC # 074850



N MARKSHEFFEL RD

PETERSON RD.

SHAWNEE DR CONSTITUTION AVE

HANNAH RIDGE

Legend:

- $\frac{X}{X}$  am - Individual movement peak-hour Level of Service
- $\frac{X}{X}$  pm
- $\frac{am}{X}$  - Entire intersection peak-hour Level of Service
- $\frac{pm}{X}$  (weighted average of all movements)

- Traffic signal
- Stop sign

### 2030 Background Lane Geometry, Traffic Control and Levels of Service

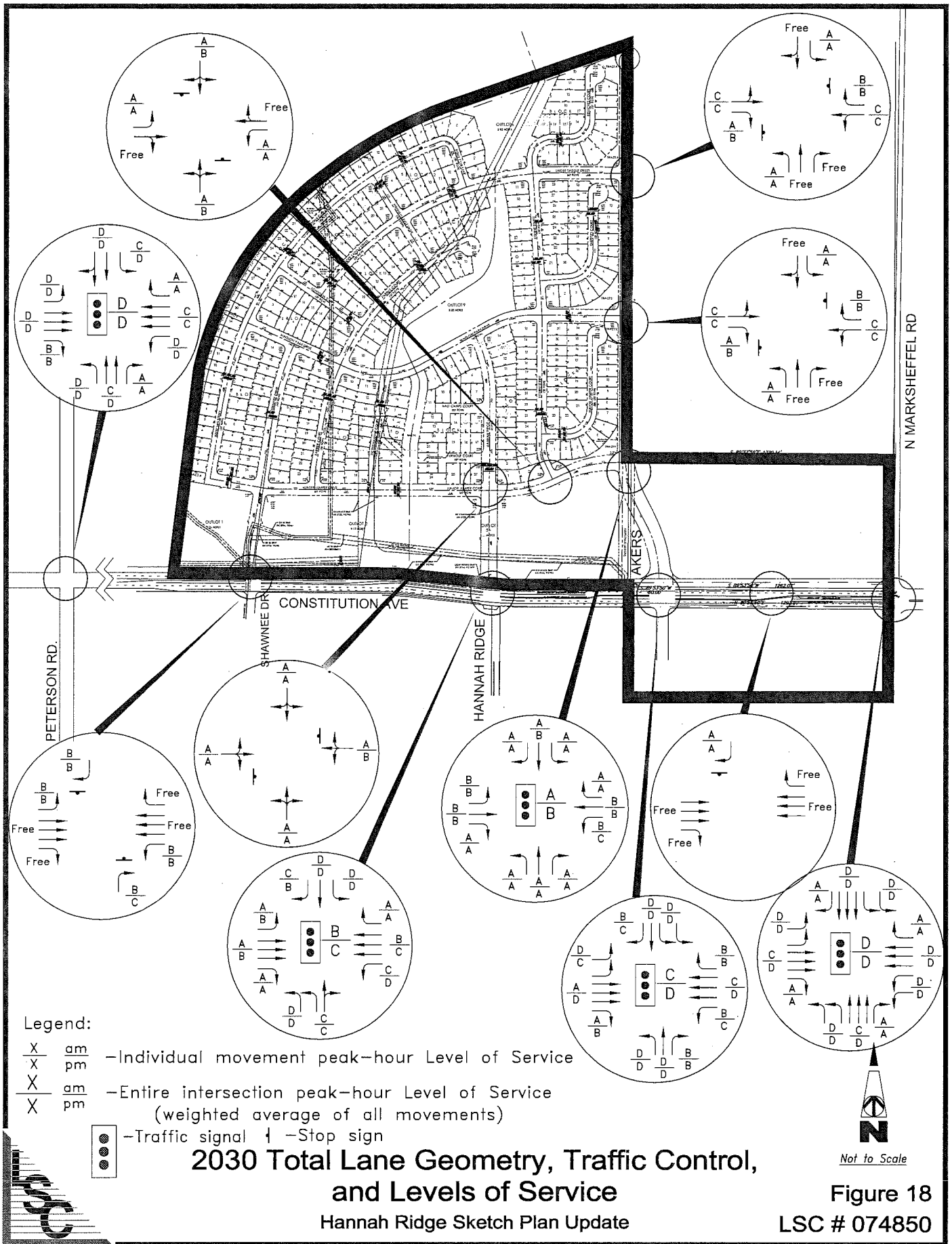
Hannah Ridge Sketch Plan Update



Not to Scale

Figure 17

LSC # 074850



Legend:

- $\frac{X}{X}$   $\frac{am}{pm}$  - Individual movement peak-hour Level of Service
- $\frac{X}{X}$   $\frac{am}{pm}$  - Entire intersection peak-hour Level of Service (weighted average of all movements)
- Traffic signal - Stop sign

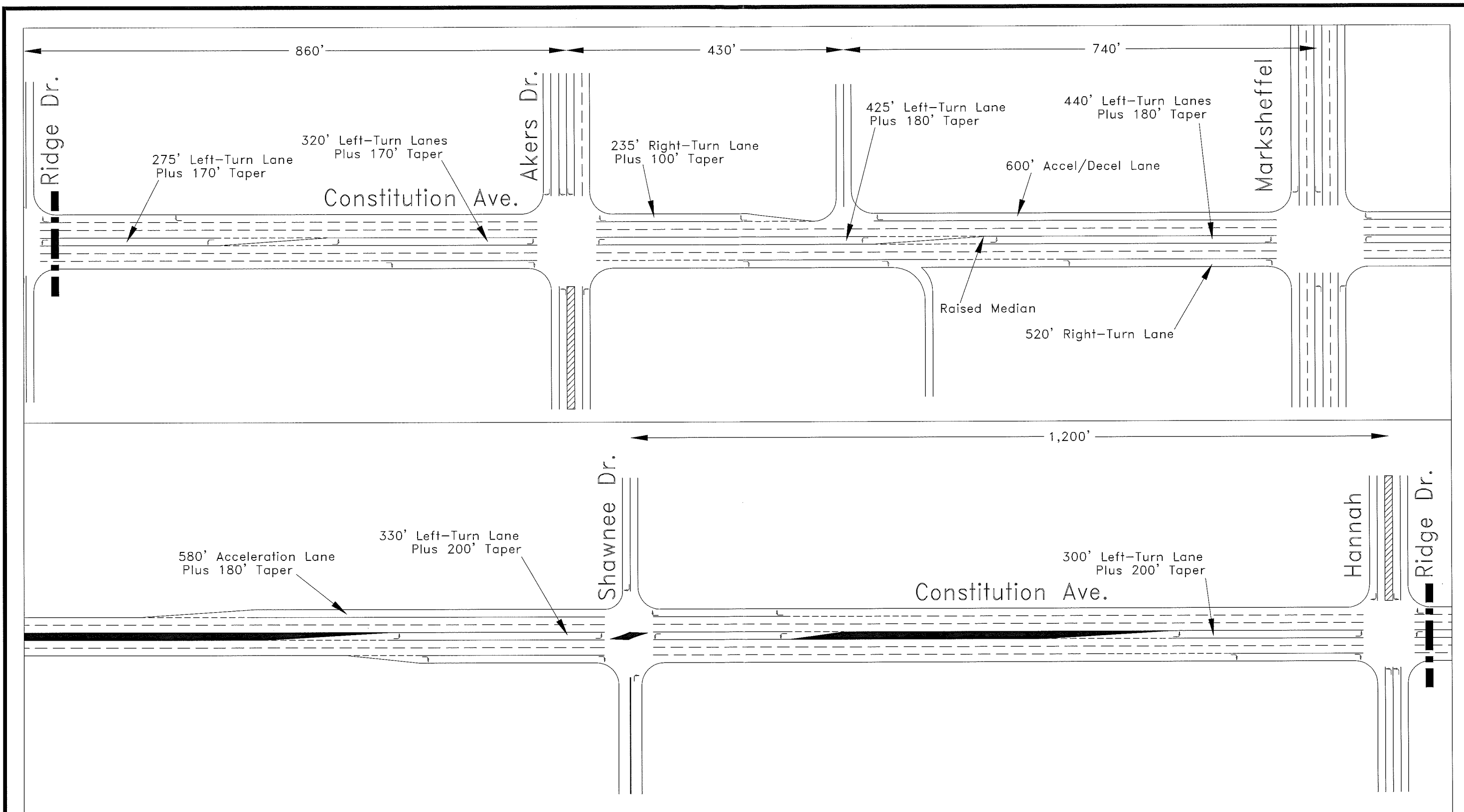
## 2030 Total Lane Geometry, Traffic Control, and Levels of Service

Hannah Ridge Sketch Plan Update

Not to Scale

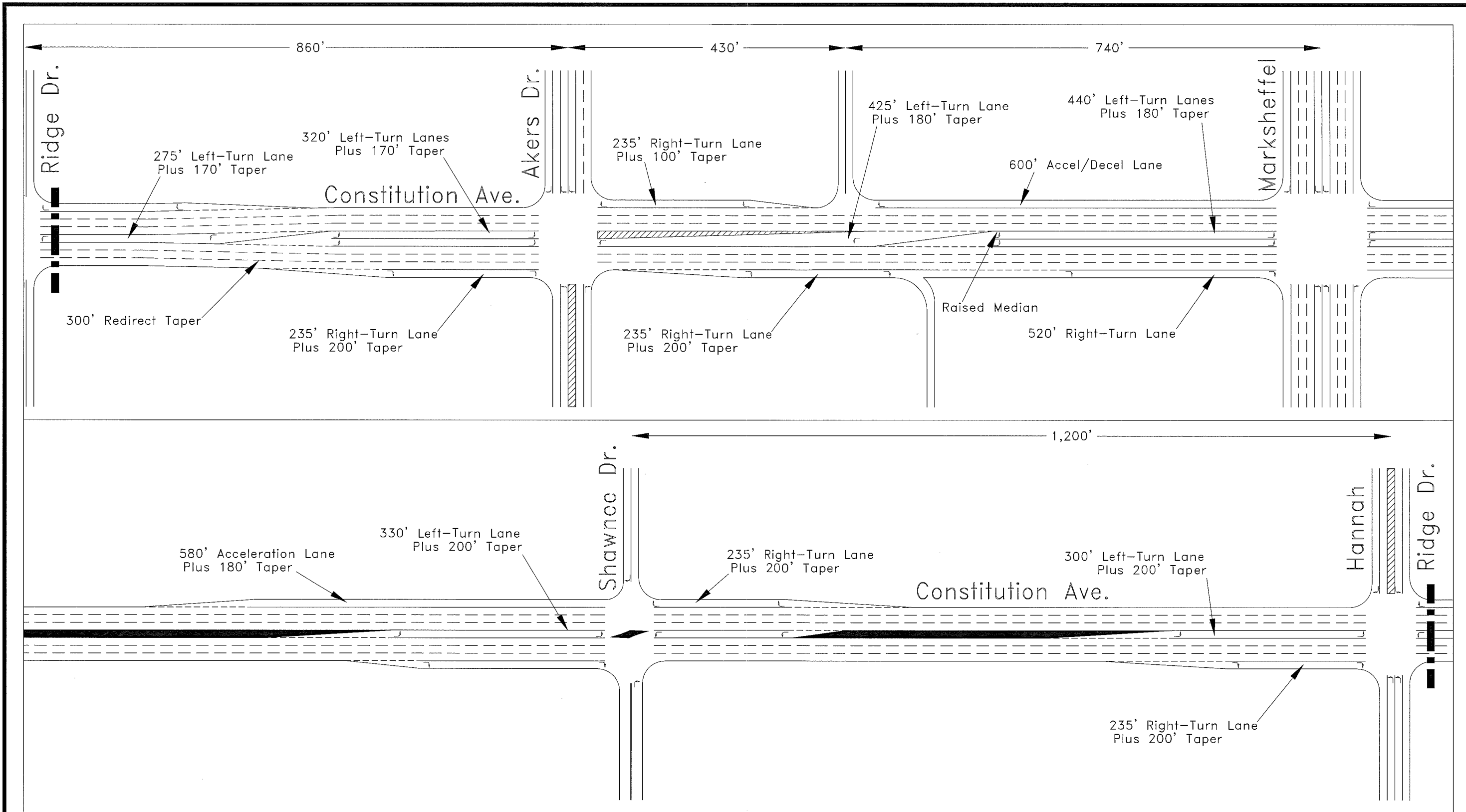
Figure 18

LSC # 074850



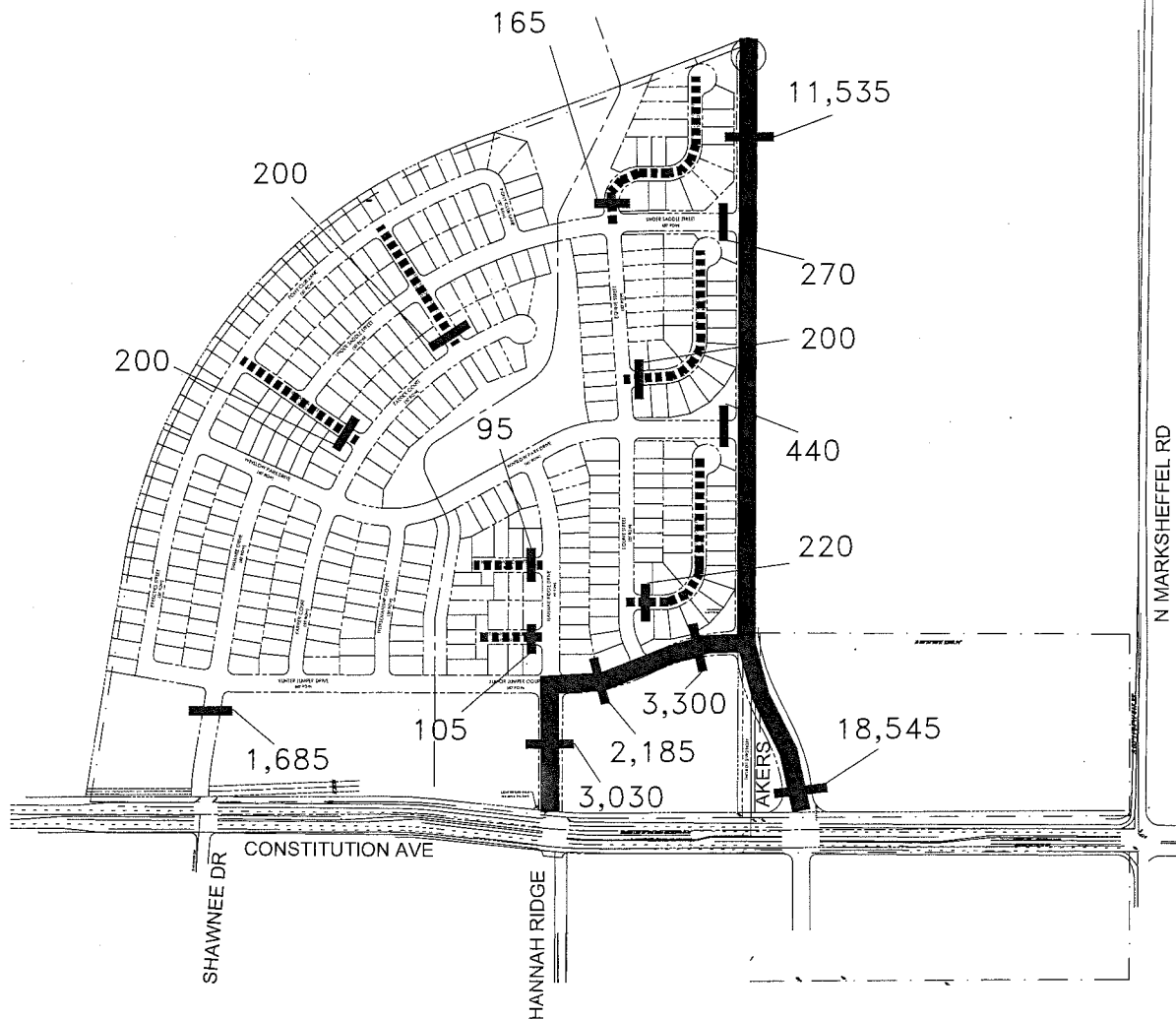
Recommended Short-Term Lane Geometry of Constitution Avenue  
 Hannah Ridge Sketch Plan Update

Figure 19  
 LSC # 074850



**Recommended Long-Term Lane Geometry of Constitution Avenue**  
 Hannah Ridge Sketch Plan Update

**Figure 20**  
 LSC # 074850



Legend:

— Non-Residential Collector

..... Local-Low Volume Street

(Remaining streets are local streets)

XX,XXX - Average weekday traffic (vehicles per day)



Not to Scale

## Recommended Functional Classification

### Hannah Ridge Sketch Plan Update

Figure 21  
LSC # 074850



170' northbound  
left-turn lane

250'

centerline spacing  
Akers Dr.

This access point will  
be further evaluated  
and designed with the  
Preliminary Plan for the  
commercial site

665'

centerline spacing

385' dual southbound  
left-turn lanes -  
striped out as shown  
until needed

Constitution Ave.



*Not to Scale*

## Proposed Lane Geometry Akers Drive

Hannah Ridge Sketch Plan Update

Figure 22

LSC # 074850

Outbound

Begin Time	Bikes	Cars & Trls	2 Axle Long	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>5 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
12:00 02/20	*	*	*	*	*	*	*	*	*	*	*	*	*
01:00	*	*	*	*	*	*	*	*	*	*	*	*	*
02:00	*	*	*	*	*	*	*	*	*	*	*	*	*
03:00	*	*	*	*	*	*	*	*	*	*	*	*	*
04:00	*	*	*	*	*	*	*	*	*	*	*	*	*
05:00	*	*	*	*	*	*	*	*	*	*	*	*	*
06:00	*	*	*	*	*	*	*	*	*	*	*	*	*
07:00	*	*	*	*	*	*	*	*	*	*	*	*	*
08:00	*	*	*	*	*	*	*	*	*	*	*	*	*
09:00	*	*	*	*	*	*	*	*	*	*	*	*	*
10:00	*	*	*	*	*	*	*	*	*	*	*	*	*
11:00	*	*	*	*	*	*	*	*	*	*	*	*	*
12:00 pm	1	8	14	0	2	1	2	0	0	0	1	0	29
01:00	0	8	6	0	1	3	3	0	2	0	1	0	25
02:00	2	10	7	0	0	1	2	0	1	1	0	0	25
03:00	0	6	8	0	1	3	2	1	0	0	0	0	21
04:00	1	47	43	0	7	6	10	0	1	1	0	1	118
05:00	0	3	4	0	0	0	0	0	0	0	0	0	7
06:00	0	1	2	0	0	0	0	0	0	0	0	0	3
07:00	0	1	2	0	0	0	0	0	0	0	0	0	3
08:00	0	0	0	0	0	0	0	0	1	0	0	0	1
09:00	0	0	1	0	0	0	0	0	0	0	0	0	1
10:00	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00	0	0	1	0	0	0	0	0	0	0	0	0	1
Day Totals	4	84	88	*	11	14	19	1	5	2	3	1	234
12:00 02/21	0	1	3	0	0	0	0	0	0	0	0	0	4
01:00	0	1	2	0	1	0	0	0	0	0	0	0	4
02:00	0	0	3	0	0	0	0	0	0	0	0	0	3
03:00	0	0	0	0	0	0	0	0	0	0	0	0	0
04:00	0	1	2	0	0	0	0	0	0	0	0	0	3
05:00	0	0	0	0	0	0	0	0	0	0	0	0	0
06:00	0	2	1	0	0	0	0	0	0	0	0	0	3
07:00	0	5	1	0	0	0	0	0	1	1	0	0	8
08:00	4	7	12	0	2	2	5	1	5	2	3	2	48
09:00	0	4	9	0	1	0	1	0	2	1	1	0	19
10:00	0	3	5	0	0	2	2	0	0	1	0	0	13
11:00	1	15	10	0	3	3	3	0	0	0	1	0	36
12:00 pm	1	11	8	0	0	0	1	1	0	0	0	0	22
01:00	1	7	4	0	0	0	0	0	0	3	0	0	15
02:00	0	6	3	0	0	2	1	0	0	1	0	0	13
03:00	0	5	9	0	0	2	1	0	0	1	0	0	18
04:00	0	61	42	0	5	10	3	1	0	0	1	2	125
05:00	0	5	1	0	0	0	0	0	0	0	0	0	6
06:00	0	0	3	0	0	1	0	0	0	0	0	0	4
07:00	0	0	2	0	0	0	0	0	0	0	0	0	2
08:00	0	1	1	0	0	1	0	0	0	0	0	0	3
09:00	0	1	0	0	0	0	0	0	0	0	0	0	1
10:00	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00	0	0	2	0	0	0	0	0	0	0	0	0	2
Day Totals	7	136	123	*	12	23	17	3	7	10	6	4	352

21% trucks

El Paso Count D.O.T. access  
w/o Marksheffel Rd.

LSC Transportation Consultants  
Traffic Counts  
Automated

Site Code : 000000000000  
Start Date: 02/20/2006  
File I.D. : CLASS-DOT-3  
Page : 2

Begin Time	Outbound														Total
	Bikes	Cars & 2 Tlrs	2 Axle Long	2 Axle Buses	3 Axle Tire	4 Axle Single	5 Axle Single	5 Axle Double	5 Axle Double	>5 Axle Double	<6 Axle Multi	6 Axle Multi	>6 Axle Multi		
12:00 02/22	0	0	2	0	0	0	0	0	0	0	0	0	0	0	2
01:00	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
02:00	0	0	2	0	0	0	0	0	0	0	0	0	0	0	2
03:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:00	0	2	3	0	1	0	0	0	0	0	0	0	0	0	6
07:00	0	6	2	0	0	0	0	0	1	0	1	0	0	1	11
08:00	2	6	2	0	0	7	7	0	5	2	3	1	3	3	38
09:00	1	5	6	0	2	4	1	0	0	0	3	0	0	0	22
10:00	1	6	6	0	1	5	3	0	2	1	2	0	0	0	27
11:00	3	12	6	0	1	5	2	0	1	0	0	0	0	0	30
12:00 pm	0	5	4	0	0	0	0	0	0	0	0	0	0	0	9
Totals	18	262	244	0	28	59	49	4	21	15	18	6	10		734
Percent	2.4%	35.6%	33.2%	.0%	3.8%	8.0%	6.6%	.5%	2.8%	2.0%	2.4%	.8%	1.3%		

Outbound

Begin Time	Bikes	Cars & 2 Trs	2 Axle Long	Buses 6 Tire	2 Axle 3 Tire	3 Axle Single	4 Axle Single	<5 Axle Double	5 Axle Double	>5 Axle Double	<6 Axle Multi	6 Axle Multi	>6 Axle Multi	Total
11:00 am	*	*	*	*	*	*	*	*	*	*	*	*	*	*
11:15	*	*	*	*	*	*	*	*	*	*	*	*	*	*
11:30	1	3	1	0	0	1	0	0	0	0	0	0	0	6
11:45	0	1	4	0	0	0	0	1	0	0	1	0	0	7
Hour Total														13
12:00 pm	0	5	8	0	0	1	1	0	0	0	0	0	0	15
12:15	1	2	1	0	0	0	0	0	0	0	0	0	0	4
12:30	0	0	4	0	2	0	0	0	0	0	0	0	0	6
12:45	0	1	1	0	0	0	1	0	0	0	1	0	0	4
Hour Total	1	8	14	0	2	1	2	0	0	0	1	0	0	29
01:00 pm	0	2	0	0	0	0	1	0	0	0	0	0	0	3
01:15	0	1	3	0	1	1	1	0	0	0	0	0	0	7
01:30	0	3	3	0	0	1	1	0	1	0	1	0	1	11
01:45	0	2	0	0	0	1	0	0	1	0	0	0	0	4
Hour Total	0	8	6	0	1	3	3	0	2	0	1	0	1	25
02:00 pm	1	0	0	0	0	0	0	0	1	1	0	0	0	3
02:15	0	4	2	0	0	1	2	0	0	0	0	0	0	9
02:30	0	4	5	0	0	0	0	0	0	0	1	0	0	10
02:45	1	2	0	0	0	0	0	0	0	0	0	0	0	3
Hour Total	2	10	7	0	0	1	2	0	1	1	1	0	0	25
03:00 pm	0	0	3	0	0	1	0	1	0	0	0	0	0	5
03:15	0	2	1	0	0	0	0	0	0	0	0	0	0	3
03:30	0	1	0	0	0	1	2	0	0	0	0	0	0	4
03:45	0	3	4	0	1	1	0	0	0	0	0	0	0	9
Hour Total	0	6	8	0	1	3	2	1	0	0	0	0	0	21
04:00 pm	0	8	8	0	2	0	1	0	0	0	0	1	0	20
04:15	1	32	29	0	5	6	9	0	1	1	0	0	1	85
04:30	0	6	5	0	0	0	0	0	0	0	0	0	0	11
04:45	0	1	1	0	0	0	0	0	0	0	0	0	0	2
Hour Total	1	47	43	0	7	6	10	0	1	1	0	1	1	118
05:00 pm	0	2	3	0	0	0	0	0	0	0	0	0	0	5
05:15	0	1	1	0	0	0	0	0	0	0	0	0	0	2
05:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hour Total	0	3	4	0	0	0	0	0	0	0	0	0	0	7
06:00 pm	0	1	0	0	0	0	0	0	0	0	0	0	0	1
06:15	0	0	1	0	0	0	0	0	0	0	0	0	0	1
06:30	0	0	1	0	0	0	0	0	0	0	0	0	0	1
06:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hour Total	0	1	2	0	0	0	0	0	0	0	0	0	0	3

125  
17% trucks



Begin Time	Outbound													Total
	Bikes	Cars & 2 Trls	2 Axle Long	2 Axle Buses	3 Axle Tire	4 Axle Single	5 Axle Single	5 Axle Double	5 Axle Double	5 Axle Double	6 Axle Multi	6 Axle Multi	6 Axle Multi	
03:00 am	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hour Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:00 am	0	1	2	0	0	0	0	0	0	0	0	0	0	3
04:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hour Total	0	1	2	0	0	0	0	0	0	0	0	0	0	3
05:00 am	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hour Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:00 am	0	1	0	0	0	0	0	0	0	0	0	0	0	1
06:15	0	0	1	0	0	0	0	0	0	0	0	0	0	1
06:30	0	1	0	0	0	0	0	0	0	0	0	0	0	1
06:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hour Total	0	2	1	0	0	0	0	0	0	0	0	0	0	3
07:00 am	0	2	0	0	0	0	0	0	0	0	0	0	0	2
07:15	0	1	1	0	0	0	0	0	0	0	0	0	0	2
07:30	0	2	0	0	0	0	0	0	0	1	0	0	0	3
07:45	0	0	0	0	0	0	0	0	0	0	1	0	0	1
Hour Total	0	5	1	0	0	0	0	0	0	1	1	0	0	8
08:00 am	0	1	7	0	0	0	1	1	0	0	1	0	0	11
08:15	2	3	1	0	1	1	2	0	2	2	2	1	2	19
08:30	0	2	2	0	1	1	2	0	1	0	0	1	0	10
08:45	2	1	2	0	0	0	0	0	2	0	0	1	0	8
Hour Total	4	7	12	0	2	2	5	1	5	2	3	3	2	48
09:00 am	0	0	3	0	0	0	1	0	1	1	1	0	0	7
09:15	0	2	3	0	0	0	0	0	1	0	0	0	0	6
09:30	0	0	3	0	1	0	0	0	0	0	0	0	0	4
09:45	0	2	0	0	0	0	0	0	0	0	0	0	0	2
Hour Total	0	4	9	0	1	0	1	0	2	1	1	0	0	19
10:00 am	0	0	2	0	0	0	0	0	0	1	0	0	0	3
10:15	0	2	3	0	0	1	0	0	0	0	0	0	0	6
10:30	0	0	0	0	0	1	1	0	0	0	0	0	0	2
10:45	0	1	0	0	0	0	1	0	0	0	0	0	0	2
Hour Total	0	3	5	0	0	2	2	0	0	1	0	0	0	13

7  
17% Trucks

Begin Time	Cars & 2 Axle			2 Axle 3 Axle 4 Axle			<5 Axl 5 Axle >5 Axl			<6 Axl 6 Axle >6 Axl			Total	
	Bikes	Tlrs	Long	Buses	6 Tire	Single	Single	Double	Double	Double	Multi	Multi		Multi
11:00 am	0	0	1	0	0	1	0	0	0	0	0	0	0	2
11:15	0	3	1	0	2	0	1	0	0	0	0	0	0	7
11:30	1	9	6	0	1	1	2	0	0	0	0	0	0	20
11:45	0	3	2	0	0	1	0	0	0	0	0	1	0	7
Hour Total	1	15	10	0	3	3	3	0	0	0	0	1	0	36
12:00 pm	0	5	3	0	0	0	0	0	0	0	0	0	0	8
12:15	0	1	0	0	0	0	0	0	0	0	0	0	0	1
12:30	0	0	2	0	0	0	0	0	0	0	0	0	0	2
12:45	1	5	3	0	0	0	1	1	0	0	0	0	0	11
Hour Total	1	11	8	0	0	0	1	1	0	0	0	0	0	22
01:00 pm	0	4	3	0	0	0	0	0	0	2	0	0	0	9
01:15	0	1	0	0	0	0	0	0	0	0	0	0	0	1
01:30	0	1	1	0	0	0	0	0	0	1	0	0	0	3
01:45	1	1	0	0	0	0	0	0	0	0	0	0	0	2
Hour Total	1	7	4	0	0	0	0	0	0	3	0	0	0	15
02:00 pm	0	2	2	0	0	0	1	0	0	1	0	0	0	6
02:15	0	2	1	0	0	2	0	0	0	0	0	0	0	5
02:30	0	2	0	0	0	0	0	0	0	0	0	0	0	2
02:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hour Total	0	6	3	0	0	2	1	0	0	1	0	0	0	13
03:00 pm	0	0	3	0	0	0	0	0	0	0	0	0	0	3
03:15	0	0	1	0	0	0	0	0	0	0	0	0	0	1
03:30	0	3	2	0	0	0	1	0	0	1	0	0	0	7
03:45	0	2	3	0	0	2	0	0	0	0	0	0	0	7
Hour Total	0	5	9	0	0	2	1	0	0	1	0	0	0	18
04:00 pm	0	9	11	0	1	2	0	0	0	0	0	0	1	24
04:15	0	37	23	0	2	8	1	1	0	0	1	0	1	74
04:30	0	10	7	0	1	0	1	0	0	0	0	0	0	19
04:45	0	5	1	0	1	0	1	0	0	0	0	0	0	8
Hour Total	0	61	42	0	5	10	3	1	0	0	1	0	2	125
05:00 pm	0	2	0	0	0	0	0	0	0	0	0	0	0	2
05:15	0	1	1	0	0	0	0	0	0	0	0	0	0	2
05:30	0	1	0	0	0	0	0	0	0	0	0	0	0	1
05:45	0	1	0	0	0	0	0	0	0	0	0	0	0	1
Hour Total	0	5	1	0	0	0	0	0	0	0	0	0	0	6
06:00 pm	0	0	1	0	0	0	0	0	0	0	0	0	0	1
06:15	0	0	1	0	0	0	0	0	0	0	0	0	0	1
06:30	0	0	1	0	0	0	0	0	0	0	0	0	0	1
06:45	0	0	0	0	0	1	0	0	0	0	0	0	0	1
Hour Total	0	0	3	0	0	1	0	0	0	0	0	0	0	4

4 1/2 miles





Begin Time	Outbound														Total
	Bikes	Cars & 2 Trlr	2 Axle Long	2 Axle Buses	3 Axle Tire	4 Axle Single	5 Axl Double	5 Axle Double	5 Axle Double	6 Axl Multi	6 Axle Multi	6 Axle Multi	>6 Axl	>6 Axl	
03:00 am	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hour Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:00 am	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hour Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00 am	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hour Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:00 am	0	0	3	0	0	0	0	0	0	0	0	0	0	0	3
06:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:30	0	1	0	0	1	0	0	0	0	0	0	0	0	0	2
06:45	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Hour Total	0	2	3	0	1	0	0	0	0	0	0	0	0	0	6
07:00 am	0	1	1	0	0	0	0	0	0	0	0	0	0	0	2
07:15	0	3	1	0	0	0	0	0	0	0	0	0	0	0	4
07:30	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
07:45	0	1	0	0	0	0	0	0	1	0	1	0	1	0	4
Hour Total	0	6	2	0	0	0	0	0	1	0	1	0	1	0	11
08:00 am	1	2	2	0	0	0	1	0	1	1	2	1	1	1	12
08:15	1	1	0	0	0	3	3	0	2	1	1	0	1	1	13
08:30	0	1	0	0	0	3	2	0	1	0	0	0	1	0	8
08:45	0	2	0	0	0	1	1	0	1	0	0	0	0	0	5
Hour Total	2	6	2	0	0	7	7	0	5	2	3	1	3	0	38
09:00 am	0	1	4	0	1	1	1	0	0	0	1	0	0	0	9
09:15	1	1	2	0	0	1	0	0	0	0	0	0	0	0	5
09:30	0	3	0	0	1	1	0	0	0	0	2	0	0	0	7
09:45	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
Hour Total	1	5	6	0	2	4	1	0	0	0	3	0	0	0	22
10:00 am	0	0	1	0	1	2	1	0	0	1	0	0	0	0	6
10:15	0	3	2	0	0	1	1	0	1	0	2	0	0	0	10
10:30	0	1	2	0	0	0	0	0	0	0	0	0	0	0	3
10:45	1	2	1	0	0	2	1	0	1	0	0	0	0	0	8
Hour Total	1	6	6	0	1	5	3	0	2	1	2	0	0	0	27

8  
0.7 trucks

El Paso Count D.O.T. access  
w/o Marksheffel Rd.

LSC Transportation Consultants  
Traffic Counts  
Automated

Site Code : 00000000000  
Start Date: 02/20/2006  
File I.D. : CLASS-DOT-3  
Page : 7

Begin Time	Outbound														Total
	Bikes	Cars & 2 Tlrs	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>5 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi		
11:00 am	1	2	2	0	0	0	1	0	0	0	0	0	0	6	
11:15	1	1	0	0	0	3	1	0	0	0	0	0	0	6	
11:30	0	6	2	0	1	2	0	0	1	0	0	0	0	12	
11:45	1	3	2	0	0	0	0	0	0	0	0	0	0	6	
Hour Total	3	12	6	0	1	5	2	0	1	0	0	0	0	30	
12:00 pm	0	5	3	0	0	0	0	0	0	0	0	0	0	8	
Totals	19	266	248	0	28	60	49	5	21	15	19	6	10	746	
Percent	2.5%	35.6%	33.2%	.0%	3.7%	8.0%	6.5%	.6%	2.8%	2.0%	2.5%	.8%	1.3%		

Begin Time	Inbound													Total
	Bikes	Cars & 2 Trls	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>5 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	
12:00 02/22	*	*	*	*	*	*	*	*	*	*	*	*	*	*
01:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
02:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
03:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
04:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
05:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
06:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
07:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
08:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
09:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
10:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
11:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
12:00 pm	0	14	12	0	0	1	0	1	0	0	0	0	0	28
01:00	1	12	5	0	2	3	0	2	1	0	0	0	0	26
02:00	0	6	7	0	3	3	0	3	2	0	0	0	0	24
03:00	0	7	10	0	12	5	0	1	4	0	1	0	0	40
04:00	0	12	6	0	0	0	0	0	0	0	0	0	0	18
05:00	0	3	0	0	0	0	0	0	0	0	0	0	0	3
06:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:00	0	1	0	0	0	0	0	0	0	0	0	0	0	1
08:00	0	0	0	0	0	0	0	0	0	0	0	1	0	1
09:00	0	1	0	0	0	0	0	0	0	0	0	0	0	2
10:00	0	2	0	0	0	0	0	0	0	0	0	0	0	2
11:00	0	3	0	0	0	0	0	0	0	0	0	0	0	3
Day Totals	1	61	40	*	17	12	*	7	7	*	1	1	*	147
12:00 02/23	0	4	1	0	0	0	0	0	0	0	0	0	0	5
01:00	0	5	0	0	0	0	0	0	0	0	0	0	0	5
02:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:00	0	3	0	0	0	0	0	0	0	0	0	0	0	3
04:00	0	1	0	0	0	0	0	0	0	0	0	0	0	1
05:00	0	2	2	0	0	0	0	0	0	0	0	0	0	4
06:00	0	9	11	0	2	0	0	0	0	0	0	0	0	22
07:00	0	69	36	0	2	0	0	0	1	0	0	0	0	108
08:00	0	7	5	0	0	0	0	0	1	1	1	0	0	14
09:00	0	12	7	0	0	0	0	1	1	0	0	0	0	21
10:00	0	10	3	0	2	1	0	0	0	0	0	0	0	16
11:00	0	11	7	0	2	0	0	1	0	0	0	0	0	21
12:00 pm	0	10	7	0	2	0	0	0	0	0	0	0	0	19
01:00	0	9	10	0	1	0	0	1	0	0	0	0	0	21
02:00	0	10	5	0	1	0	0	2	0	0	0	0	0	18
03:00	0	11	14	0	11	5	0	2	9	0	1	0	0	53
04:00	0	8	2	0	0	0	0	0	0	0	0	0	0	10
05:00	0	2	0	0	0	0	0	0	0	0	0	0	0	2
06:00	0	1	1	0	0	0	0	0	0	0	0	0	0	2
07:00	0	1	0	0	0	0	0	0	0	0	0	0	0	1
08:00	0	2	0	0	1	0	0	0	0	0	0	0	0	3
09:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:00	0	1	0	0	0	0	0	0	0	0	0	0	0	1
11:00	0	5	0	0	0	0	0	0	0	0	0	0	0	5
Day Totals	*	193	111	*	24	6	*	7	12	1	1	*	*	355

0% trucks

0% trucks

8% trucks

El Paso County D.O.T. access  
w/o Marksheffel Rd.

LSC Transportation Consultants  
Traffic Counts  
Automated

Site Code : 00000000000  
Start Date: 02/22/2006  
File I.D. : C:\MY DOCUMENT  
Page : 2

Begin Time	Inbound														Total	
	Bikes	Cars & 2 Tlrs	2 Axle Long	2 Axle Buses	3 Axle Tire	4 Axle Single	5 Axle Double	5 Axle Double	5 Axle Double	6 Axle Multi	6 Axle Multi	6 Axle Multi	6 Axle Multi	6 Axle Multi		
12:00 02/24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:00	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2
03:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00	0	2	3	0	0	0	0	0	0	0	0	0	0	0	0	5
06:00	1	8	10	0	1	0	0	0	0	0	0	0	0	0	0	20
07:00	0	70	31	0	3	0	0	1	0	0	0	0	0	0	0	105
08:00	0	3	2	0	1	3	0	0	0	0	0	0	0	0	1	10
09:00	0	5	1	0	2	7	0	0	1	0	0	0	0	0	0	16
10:00	0	7	4	0	4	4	0	0	0	1	0	0	0	0	0	20
11:00	1	6	5	0	3	6	0	0	0	0	0	0	0	0	0	21
12:00 pm	1	2	1	0	1	0	0	0	0	0	0	0	0	0	0	5
Totals	4	359	208	0	56	38	0	15	20	2	2	1	1	1	1	706
Percent	.5%	50.8%	29.4%	.0%	7.9%	5.3%	.0%	2.1%	2.8%	.2%	.2%	.1%	.1%	.1%	.1%	





Begin Time	Inbound													Total
	Bikes	Cars & 2 Trls	2 Axle Long	2 Buses	3 Axle Tire	4 Axle Single	5 Axle Single	5 Axle Double	5 Axle Double	6 Axle Double	6 Axle Multi	6 Axle Multi	6 Axle Multi	
03:00 am	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:15	0	1	0	0	0	0	0	0	0	0	0	0	0	0
03:30	0	1	0	0	0	0	0	0	0	0	0	0	0	0
03:45	0	1	0	0	0	0	0	0	0	0	0	0	0	0
Hour Total	0	3	0	0	0	0	0	0	0	0	0	0	0	0
04:00 am	0	1	0	0	0	0	0	0	0	0	0	0	0	0
04:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hour Total	0	1	0	0	0	0	0	0	0	0	0	0	0	0
05:00 am	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45	0	2	2	0	0	0	0	0	0	0	0	0	0	0
Hour Total	0	2	2	0	0	0	0	0	0	0	0	0	0	0
06:00 am	0	2	0	0	0	0	0	0	0	0	0	0	0	0
06:15	0	0	2	0	1	0	0	0	0	0	0	0	0	0
06:30	0	2	3	0	0	0	0	0	0	0	0	0	0	0
06:45	0	5	6	0	1	0	0	0	0	0	0	0	0	0
Hour Total	0	9	11	0	2	0	0	0	0	0	0	0	0	0
07:00 am	0	14	8	0	0	0	0	0	1	0	0	0	0	0
07:15	0	25	17	0	0	0	0	0	0	0	0	0	0	0
07:30	0	28	7	0	2	0	0	0	0	0	0	0	0	0
07:45	0	2	4	0	0	0	0	0	0	0	0	0	0	0
Hour Total	0	69	36	0	2	0	0	0	1	0	0	0	0	0
08:00 am	0	4	2	0	0	0	0	0	0	0	0	0	0	0
08:15	0	3	2	0	0	0	0	0	1	1	0	0	0	0
08:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45	0	0	1	0	0	0	0	0	0	0	0	0	0	0
Hour Total	0	7	5	0	0	0	0	0	1	1	0	0	0	0
09:00 am	0	2	0	0	0	0	0	0	0	0	0	0	0	0
09:15	0	7	3	0	0	0	0	1	0	0	0	0	0	0
09:30	0	0	3	0	0	0	0	0	1	0	0	0	0	0
09:45	0	3	1	0	0	0	0	0	0	0	0	0	0	0
Hour Total	0	12	7	0	0	0	0	1	1	0	0	0	0	0
10:00 am	0	5	0	0	0	1	0	0	0	0	0	0	0	0
10:15	0	1	1	0	1	0	0	0	0	0	0	0	0	0
10:30	0	2	0	0	0	0	0	0	0	0	0	0	0	0
10:45	0	2	2	0	1	0	0	0	0	0	0	0	0	0
Hour Total	0	10	3	0	2	1	0	0	0	0	0	0	0	0

114  
10:45







Begin Time	Inbound													Total
	Bikes	Cars & 2 Trls	2 Axle Long	2 Axle Buses	3 Axle Tire	4 Axle Single	5 Axle Single	5 Axle Double	5 Axle Double	6 Axle Double	6 Axle Multi	6 Axle Multi	6 Axle Multi	
03:00 am	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hour Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:00 am	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hour Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00 am	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15	0	0	1	0	0	0	0	0	0	0	0	0	0	1
05:30	0	1	0	0	0	0	0	0	0	0	0	0	0	1
05:45	0	1	2	0	0	0	0	0	0	0	0	0	0	3
Hour Total	0	2	3	0	0	0	0	0	0	0	0	0	0	5
06:00 am	0	1	0	0	0	0	0	0	0	0	0	0	0	1
06:15	0	2	1	0	1	0	0	0	0	0	0	0	0	4
06:30	0	3	4	0	0	0	0	0	0	0	0	0	0	7
06:45	1	2	5	0	0	0	0	0	0	0	0	0	0	8
Hour Total	1	8	10	0	1	0	0	0	0	0	0	0	0	20
07:00 am	0	14	9	0	1	0	0	0	0	0	0	0	0	24
07:15	0	26	13	0	0	0	0	0	0	0	0	0	0	39
07:30	0	25	9	0	2	0	0	1	0	0	0	0	0	37
07:45	0	5	0	0	0	0	0	0	0	0	0	0	0	5
Hour Total	0	70	31	0	3	0	0	1	0	0	0	0	0	105
08:00 am	0	2	1	0	0	0	0	0	0	0	0	0	0	3
08:15	0	1	0	0	1	1	0	0	0	0	0	0	1	4
08:30	0	0	0	0	0	1	0	0	0	0	0	0	0	1
08:45	0	0	1	0	0	1	0	0	0	0	0	0	0	2
Hour Total	0	3	2	0	1	3	0	0	0	0	0	0	1	10
09:00 am	0	0	1	0	1	2	0	0	1	0	0	0	0	5
09:15	0	2	0	0	0	0	0	0	0	0	0	0	0	2
09:30	0	2	0	0	0	2	0	0	0	0	0	0	0	4
09:45	0	1	0	0	1	3	0	0	0	0	0	0	0	5
Hour Total	0	5	1	0	2	7	0	0	1	0	0	0	0	16
10:00 am	0	0	0	0	1	2	0	0	0	1	0	0	0	4
10:15	0	4	1	0	1	0	0	0	0	0	0	0	0	6
10:30	0	2	0	0	1	0	0	0	0	0	0	0	0	3
10:45	0	1	3	0	1	2	0	0	0	0	0	0	0	7
Hour Total	0	7	4	0	4	4	0	0	0	1	0	0	0	20

108  
1 1/2 Buses

El Paso County D.O.T. access  
w/o Marksheffel Rd.

LSC Transportation Consultants  
Traffic Counts  
Automated

Site Code : 00000000000  
Start Date: 02/22/2006  
File I.D. : C:\MY DOCUMENT  
Page : 7

Begin Time	Inbound														Total
	Bikes	Cars & 2 Tlrs	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axle Double	5 Axle Double	>5 Axle Double	<6 Axle Multi	6 Axle Multi	>6 Axle Multi		
11:00 am	0	2	2	0	0	1	0	0	0	0	0	0	0	0	5
11:15	0	1	0	0	1	2	0	0	0	0	0	0	0	0	4
11:30	1	0	2	0	0	2	0	0	0	0	0	0	0	0	5
11:45	0	3	1	0	2	1	0	0	0	0	0	0	0	0	7
Hour Total	1	6	5	0	3	6	0	0	0	0	0	0	0	0	21
12:00 pm	1	2	1	0	1	0	0	0	0	0	0	0	0	0	5
Totals	4	363	210	0	57	40	1	16	20	2	2	1	1		717
Percent	.5%	50.6%	29.2%	.0%	7.9%	5.5%	.1%	2.2%	2.7%	.2%	.2%	.1%	.1%		

LSC Transportation Consultants, Inc.  
Intersection Counts

516 N. Tejon St.  
Colorado Springs, CO 80903  
Phone (719) 633-2868  
E-mail: lsc@lscs.com

File Name : MW87MZ~T  
Site Code : 00817061  
Start Date : 08/17/2006  
Page No : 1

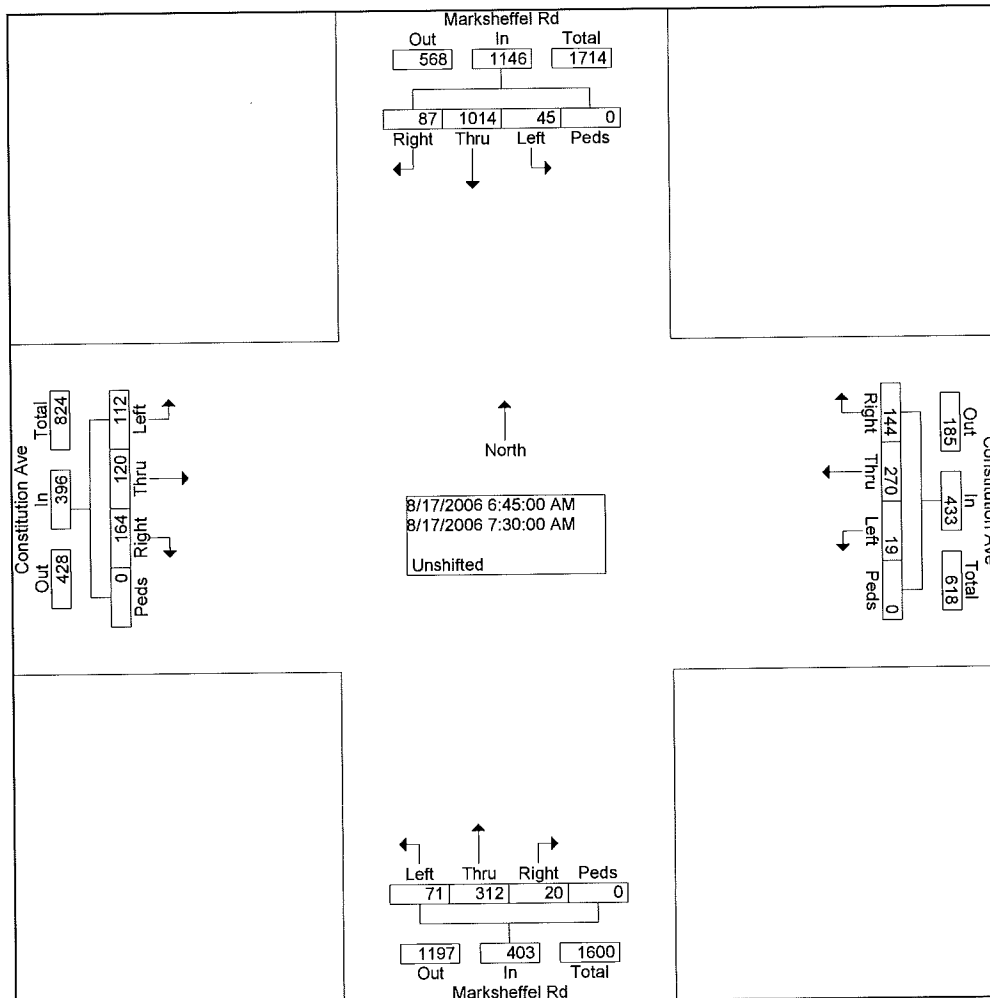
Groups Printed- Unshifted

Start Time	Marksheffel Rd From North				Constitution Ave From East				Marksheffel Rd From South				Constitution Ave From West				Int. Total	
	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds		
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
06:30 AM	17	219	5	0	34	54	3	0	5	80	21	0	47	29	24	0		538
06:45 AM	22	237	13	0	33	61	5	0	6	97	25	0	44	39	27	0		609
Total	39	456	18	0	67	115	8	0	11	177	46	0	91	68	51	0		1147
07:00 AM	19	260	17	0	37	70	4	0	3	67	11	0	38	28	23	0		577
07:15 AM	22	278	7	0	38	67	5	0	3	82	8	0	43	24	29	0		606
07:30 AM	24	239	8	0	36	72	5	0	8	66	27	0	39	29	33	0		586
07:45 AM	27	172	16	0	38	77	4	0	9	75	26	0	29	28	27	0		528
Total	92	949	48	0	149	286	18	0	23	290	72	0	149	109	112	0		2297
08:00 AM	22	129	8	0	25	60	12	0	10	63	23	0	21	35	32	0		440
08:15 AM	22	98	10	0	26	48	6	0	11	45	13	0	27	31	19	0		356
Grand Total	175	1632	84	0	267	509	44	0	55	575	154	0	288	243	214	0		4240
Apprch %	9.3	86.3	4.4	0.0	32.6	62.1	5.4	0.0	7.0	73.3	19.6	0.0	38.7	32.6	28.7	0.0		
Total %	4.1	38.5	2.0	0.0	6.3	12.0	1.0	0.0	1.3	13.6	3.6	0.0	6.8	5.7	5.0	0.0		

LSC Transportation Consultants, Inc.  
Intersection Counts

File Name : MW87MZ~T  
Site Code : 00817061  
Start Date : 08/17/2006  
Page No : 2

Start Time	Marksheffel Rd From North					Constitution Ave From East					Marksheffel Rd From South					Constitution Ave From West					Int. Total
	Rig ht	Thru	Left	Pe ds	App. Total	Rig ht	Thru	Left	Pe ds	App. Total	Rig ht	Thru	Left	Pe ds	App. Total	Rig ht	Thru	Left	Pe ds	App. Total	
Peak Hour From 06:30 AM to 08:15 AM - Peak 1 of 1																					
Intersection	06:45 AM																				
Volume	87	1014	45	0	1146	144	270	19	0	433	20	312	71	0	403	164	120	112	0	396	2378
Percent	7.6	88.5	3.9	0.0		33.3	62.4	4.4	0.0		5.0	77.4	17.6	0.0		41.4	30.3	28.3	0.0		
06:45 Volume	22	237	13	0	272	33	61	5	0	99	6	97	25	0	128	44	39	27	0	110	609
Peak Factor																					
High Int. Volume	07:15 AM					07:30 AM					06:45 AM					06:45 AM					
Volume	22	278	7	0	307	36	72	5	0	113	6	97	25	0	128	44	39	27	0	110	0.976
Peak Factor	0.93					0.95					0.78					0.90					
	3					8					7					0					



LSC Transportation Consultants, Inc.  
Intersection Counts

516 N. Tejon St.  
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File Name : MW87MZ~U  
Site Code : 00816062  
Start Date : 08/16/2006  
Page No : 1

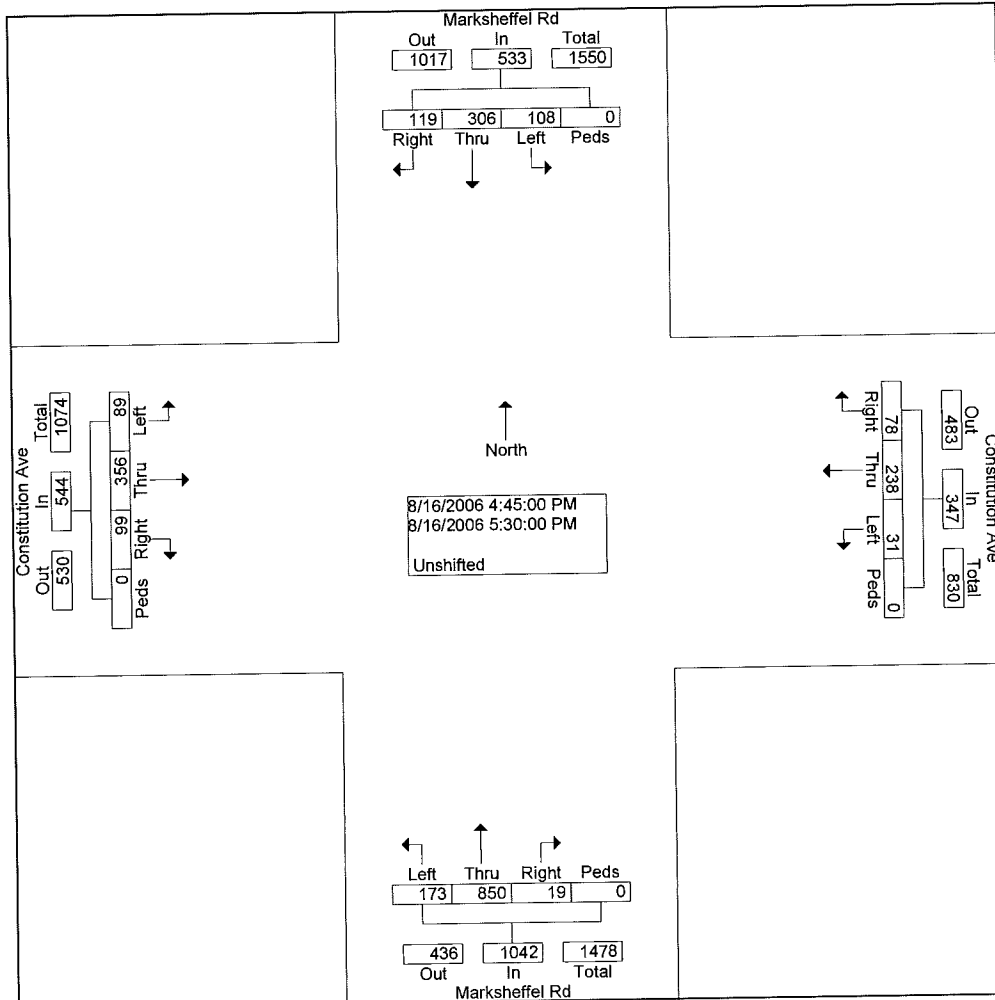
Groups Printed- Unshifted

Start Time	Marksheffel Rd From North				Constitution Ave From East				Marksheffel Rd From South				Constitution Ave From West				Int. Total	
	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds		
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
04:15 PM	21	55	21	0	16	45	5	0	7	195	47	0	28	76	20	0		536
04:30 PM	40	46	22	0	21	45	11	0	3	209	42	0	29	59	22	0		549
04:45 PM	21	81	22	0	17	60	8	0	6	230	40	0	30	73	17	0		605
Total	82	182	65	0	54	150	24	0	16	634	129	0	87	208	59	0		1690
05:00 PM	50	82	26	0	22	58	13	0	7	226	49	0	23	65	23	0		644
05:15 PM	28	66	22	0	22	67	6	0	4	205	46	0	25	112	28	0		631
05:30 PM	20	77	38	0	17	53	4	0	2	189	38	0	21	106	21	0		586
05:45 PM	10	62	18	0	11	43	2	0	1	154	28	0	30	95	20	0		474
Total	108	287	104	0	72	221	25	0	14	774	161	0	99	378	92	0		2335
06:00 PM	20	43	15	0	13	48	1	0	1	105	24	0	21	95	15	0		401
Grand Total	210	512	184	0	139	419	50	0	31	1513	314	0	207	681	166	0		4426
Apprch %	23.2	56.5	20.3	0.0	22.9	68.9	8.2	0.0	1.7	81.4	16.9	0.0	19.6	64.6	15.7	0.0		
Total %	4.7	11.6	4.2	0.0	3.1	9.5	1.1	0.0	0.7	34.2	7.1	0.0	4.7	15.4	3.8	0.0		

LSC Transportation Consultants, Inc.  
Intersection Counts

File Name : MW87MZ~U  
Site Code : 00816062  
Start Date : 08/16/2006  
Page No : 2

Start Time	Marksheffel Rd From North					Constitution Ave From East					Marksheffel Rd From South					Constitution Ave From West					Int. Total
	Rig ht	Thru	Left	Pe ds	App. Total	Rig ht	Thru	Left	Pe ds	App. Total	Rig ht	Thru	Left	Pe ds	App. Total	Rig ht	Thru	Left	Pe ds	App. Total	
Peak Hour From 04:15 PM to 06:00 PM - Peak 1 of 1																					
Intersection	04:45 PM																				
Volume	119	306	108	0	533	78	238	31	0	347	19	850	173	0	1042	99	356	89	0	544	2466
Percent	22.3	57.4	20.3	0.0		22.5	68.6	8.9	0.0		1.8	81.6	16.6	0.0		18.2	65.4	16.4	0.0		
05:00 Volume	50	82	26	0	158	22	58	13	0	93	7	226	49	0	282	23	65	23	0	111	644
Peak Factor	0.957																				
High Int. Volume	05:00 PM					05:15 PM					05:00 PM					05:15 PM					
Peak Factor	50	82	26	0	158	22	67	6	0	95	7	226	49	0	282	25	112	28	0	165	0.82
	0.84					0.91					0.92					0.84					4
	3					3					4					4					



LSC Transportation Consultants, Inc.  
 516 N. Tejon St.  
 Colorado Springs, CO  
 (719) 633-2868

File Name : Hannah Ridge 2  
 Site Code : 00614071  
 Start Date : 06/14/2007  
 Page No : 1

Groups Printed- Unshifted

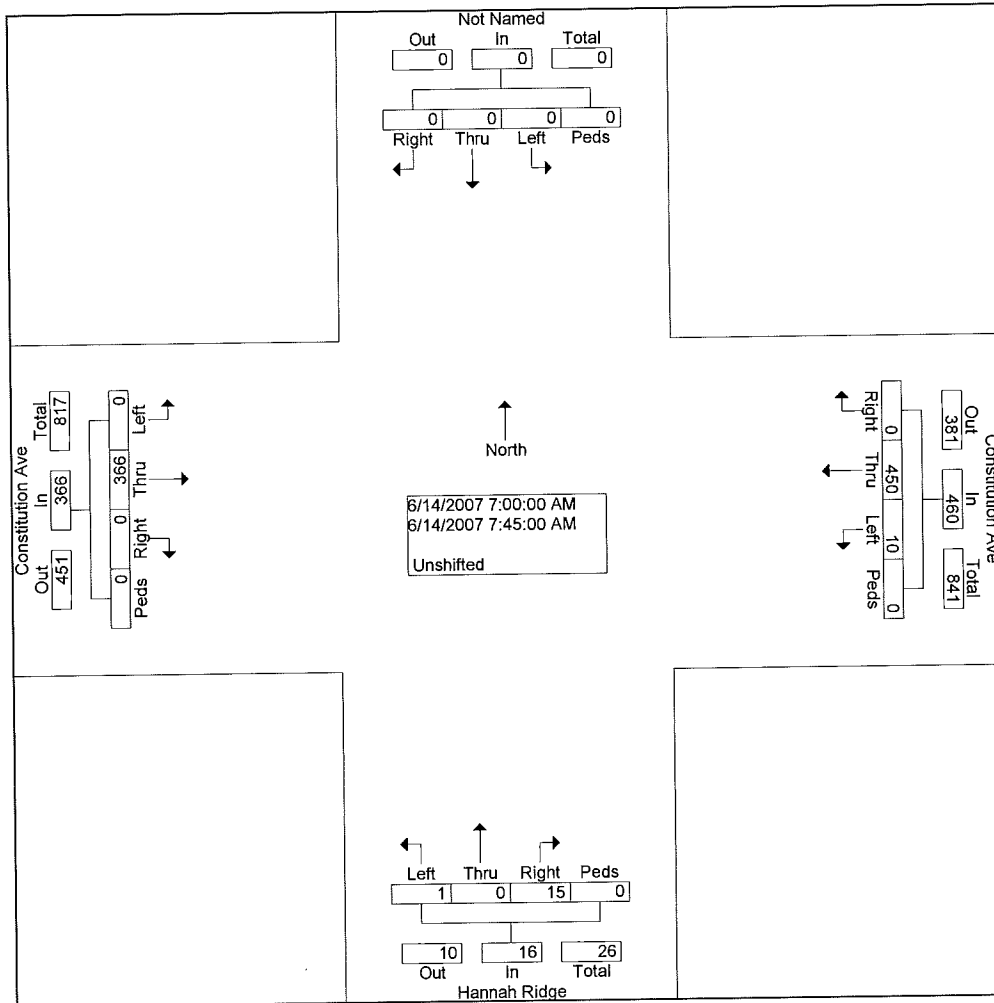
Start Time	From North				Constitution Ave From East				Hannah Ridge From South				Constitution Ave From West				Int. Total
	Righ t	Thru	Left	Ped s	Righ t	Thru	Left	Ped s	Righ t	Thru	Left	Ped s	Righ t	Thru	Left	Ped s	
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
06:30 AM	0	0	0	0	0	81	1	0	3	0	0	0	0	85	0	0	170
06:45 AM	0	0	0	0	0	89	5	0	5	0	0	0	0	110	0	0	209
Total	0	0	0	0	0	170	6	0	8	0	0	0	0	195	0	0	379
07:00 AM	0	0	0	0	0	92	3	0	3	0	1	0	0	89	0	0	188
07:15 AM	0	0	0	0	0	93	1	0	6	0	0	0	0	97	0	0	197
07:30 AM	0	0	0	0	0	139	4	0	3	0	0	0	0	100	0	0	246
07:45 AM	0	0	0	0	0	126	2	0	3	0	0	0	0	80	0	0	211
Total	0	0	0	0	0	450	10	0	15	0	1	0	0	366	0	0	842
08:00 AM	0	0	0	0	0	97	2	0	0	0	3	0	2	77	0	0	181
08:15 AM	0	0	0	0	0	78	2	0	2	0	1	0	0	71	0	0	154
Grand Total	0	0	0	0	0	795	20	0	25	0	5	0	2	709	0	0	1556
Apprch %	0.0	0.0	0.0	0.0	0.0	97.5	2.5	0.0	83.3	0.0	16.7	0.0	0.3	99.7	0.0	0.0	
Total %	0.0	0.0	0.0	0.0	0.0	51.1	1.3	0.0	1.6	0.0	0.3	0.0	0.1	45.6	0.0	0.0	



LSC Transportation Consultants, Inc.  
 516 N. Tejon St.  
 Colorado Springs, CO  
 (719) 633-2868

File Name : Hannah Ridge 2  
 Site Code : 00614071  
 Start Date : 06/14/2007  
 Page No : 2

Start Time	From North					Constitution Ave From East					Hannah Ridge From South					Constitution Ave From West					Int. Total
	Rig ht	Thru	Lef t	Pe ds	App. Total	Rig ht	Thru	Lef t	Pe ds	App. Total	Rig ht	Thru	Lef t	Pe ds	App. Total	Rig ht	Thru	Lef t	Pe ds	App. Total	
Peak Hour	From 06:30 AM to 08:15 AM - Peak 1 of 1																				
Intersection	07:00 AM																				
Volume	0	0	0	0	0	0	45	10	0	460	15	0	1	0	16	0	36	0	0	366	842
Percent	0.0	0.0	0.0	0.0		0.0	97.8	2.2	0.0		93.8	0.0	6.3	0.0		0.0	10.0	0.0	0.0		
07:30 Volume	0	0	0	0	0	0	13	4	0	143	3	0	0	0	3	0	10	0	0	100	246
Peak Factor	0.856																				
High Int.	6:15:00 AM					07:30 AM					07:15 AM					07:30 AM					
Volume	0	0	0	0	0	0	13	4	0	143	6	0	0	0	6	0	10	0	0	100	
Peak Factor						0.80					0.66					0.91					
						4					7					5					



LSC Transportation Consultants, Inc.  
 516 N. Tejon St.  
 Colorado Springs, CO  
 (719) 633-2868

File Name : Hannah Ridge 1  
 Site Code : 00613072  
 Start Date : 06/13/2007  
 Page No : 1

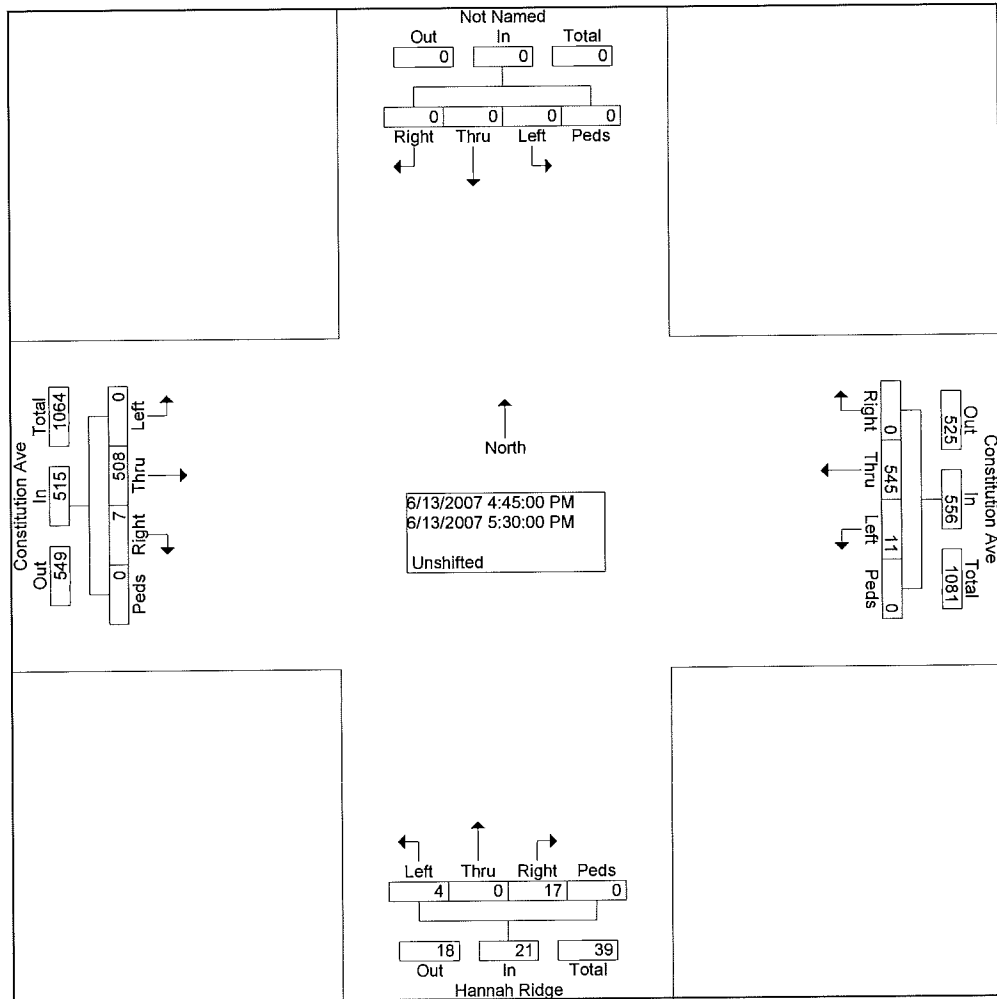
Groups Printed- Unshifted

Start Time	From North				Constitution Ave From East				Hannah Ridge From South				Constitution Ave From West				Int. Total
	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
04:15 PM	0	0	0	0	0	113	7	0	4	0	0	0	1	129	0	0	254
04:30 PM	0	0	0	0	0	111	2	0	7	0	0	0	2	116	0	0	238
04:45 PM	0	0	0	0	0	151	4	0	4	0	1	0	1	123	0	0	284
Total	0	0	0	0	0	375	13	0	15	0	1	0	4	368	0	0	776
05:00 PM	0	0	0	0	0	150	3	0	7	0	2	0	0	113	0	0	275
05:15 PM	0	0	0	0	0	131	2	0	2	0	1	0	2	150	0	0	288
05:30 PM	0	0	0	0	0	113	2	0	4	0	0	0	4	122	0	0	245
05:45 PM	0	0	0	0	0	82	1	0	12	0	1	0	1	134	0	0	231
Total	0	0	0	0	0	476	8	0	25	0	4	0	7	519	0	0	1039
06:00 PM	0	0	0	0	0	92	2	0	5	0	3	0	0	115	0	0	217
Grand Total	0	0	0	0	0	943	23	0	45	0	8	0	11	1002	0	0	2032
Apprch %	0.0	0.0	0.0	0.0	0.0	97.6	2.4	0.0	84.9	0.0	15.1	0.0	1.1	98.9	0.0	0.0	
Total %	0.0	0.0	0.0	0.0	0.0	46.4	1.1	0.0	2.2	0.0	0.4	0.0	0.5	49.3	0.0	0.0	

LSC Transportation Consultants, Inc.  
 516 N. Tejon St.  
 Colorado Springs, CO  
 (719) 633-2868

File Name : Hannah Ridge 1  
 Site Code : 00613072  
 Start Date : 06/13/2007  
 Page No : 2

Start Time	From North					Constitution Ave From East					Hannah Ridge From South					Constitution Ave From West					Int. Total				
	Rig ht	Thr u	Lef t	Pe ds	App. Total	Rig ht	Thr u	Lef t	Pe ds	App. Total	Rig ht	Thr u	Lef t	Pe ds	App. Total	Rig ht	Thr u	Lef t	Pe ds	App. Total					
Peak Hour	From 04:15 PM to 06:00 PM - Peak 1 of 1																								
Intersection	04:45 PM																								
Volume	0	0	0	0	0	0	54	11	0	556	17	0	4	0	21	7	50	8	0	0	515	1092			
Percent	0.0	0.0	0.0	0.0		0.0	98.	2.0	0.0		81.	0.0	19.	0.0		1.4	98.	6	0.0	0.0					
05:15 Volume	0	0	0	0	0	0	13	2	0	133	2	0	1	0	3	2	15	0	0	0	152	288			
Peak Factor	0.948																								
High Int.	4:00:00 PM					04:45 PM					05:00 PM					05:15 PM									
Volume	0	0	0	0	0	0	15	4	0	155	7	0	2	0	9	2	15	0	0	0	152				
Peak Factor	0.89										0.58					0.84									
											7					3					7				



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File Name : Constitution 3  
 Site Code : 00912071  
 Start Date : 09/12/2007  
 Page No : 1

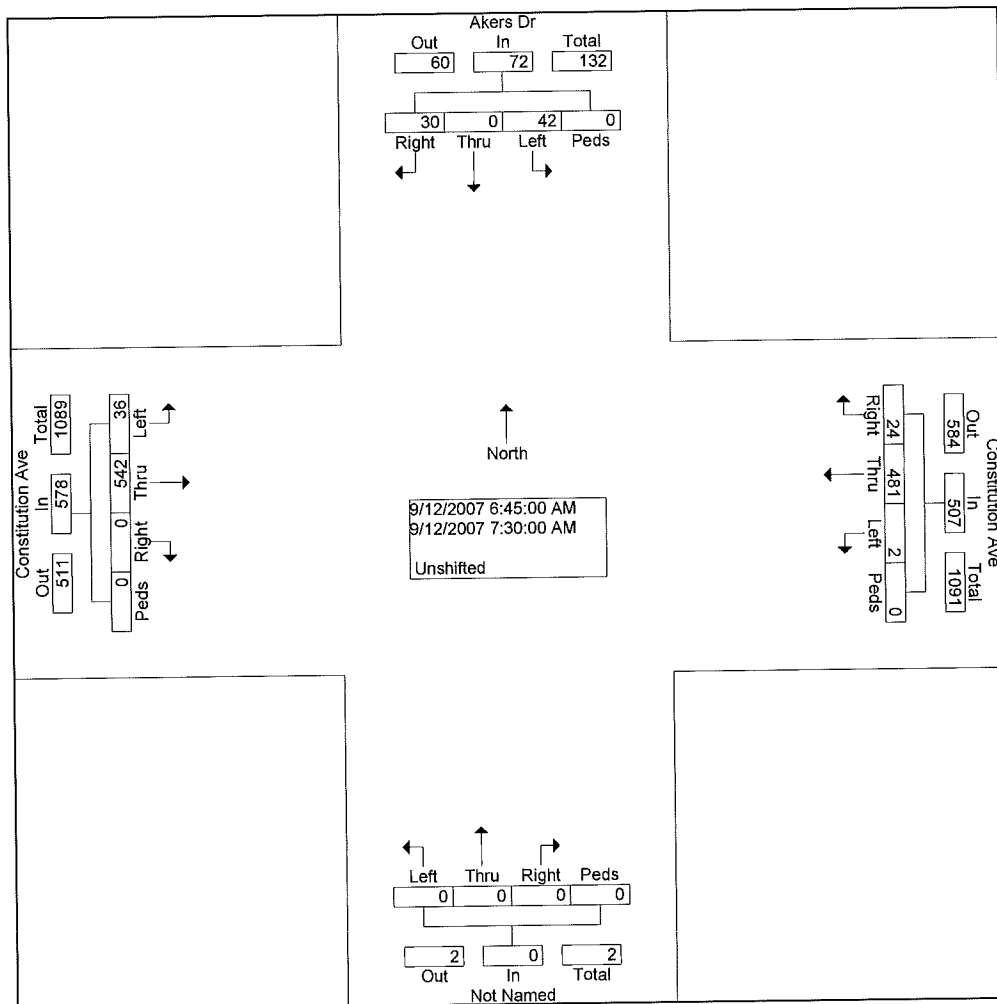
Groups Printed- Unshifted

Start Time	Akers Dr From North				Constitution Ave From East				From South				Constitution Ave From West				Int. Total
	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
06:30 AM	0	0	3	0	4	96	0	0	0	0	0	0	0	122	5	0	230
06:45 AM	4	0	8	0	9	103	0	0	0	0	0	0	0	150	18	0	292
Total	4	0	11	0	13	199	0	0	0	0	0	0	0	272	23	0	522
07:00 AM	12	0	9	0	5	105	2	0	0	0	0	0	0	149	8	0	290
07:15 AM	6	0	13	0	8	129	0	0	0	0	0	0	0	119	7	0	282
07:30 AM	8	0	12	0	2	144	0	0	0	0	0	0	0	124	3	0	293
07:45 AM	8	0	10	0	4	144	1	0	0	0	0	0	0	118	7	0	292
Total	34	0	44	0	19	522	3	0	0	0	0	0	0	510	25	0	1157
08:00 AM	7	0	8	0	9	133	0	0	0	0	0	0	0	97	7	0	261
08:15 AM	8	0	6	0	8	105	0	0	0	0	0	0	0	99	5	0	231
Grand Total	53	0	69	0	49	959	3	0	0	0	0	0	0	978	60	0	2171
Apprch %	43.4	0.0	56.6	0.0	4.8	94.9	0.3	0.0	0.0	0.0	0.0	0.0	0.0	94.2	5.8	0.0	
Total %	2.4	0.0	3.2	0.0	2.3	44.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	45.0	2.8	0.0	

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File Name : Constitution 3  
 Site Code : 00912071  
 Start Date : 09/12/2007  
 Page No : 2

Start Time	Akers Dr From North					Constitution Ave From East					From South					Constitution Ave From West					Int. Total
	Rig ht	Thr u	Left	Ped s	App. Total	Rig ht	Thr u	Left	Ped s	App. Total	Rig ht	Thr u	Left	Ped s	App. Total	Rig ht	Thr u	Left	Ped s	App. Total	
Peak Hour From 06:30 AM to 08:15 AM - Peak 1 of 1																					
Intersection	06:45 AM																				
Volume	30	0	42	0	72	24	481	2	0	507	0	0	0	0	0	0	542	36	0	578	1157
Percent	41.7	0.0	58.3	0.0		4.7	94.9	0.4	0.0		0.0	0.0	0.0	0.0		0.0	93.8	6.2	0.0		
07:30 Volume Peak Factor	8	0	12	0	20	2	144	0	0	146	0	0	0	0	0	0	124	3	0	127	293
High Int. Volume Peak Factor	07:00 AM					07:30 AM					6:15:00 AM					06:45 AM					0.987
	12	0	9	0	21	2	144	0	0	146	0	0	0	0	0	0	150	18	0	168	0.86
																					0



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File Name : constitution 4  
 Site Code : 00912072  
 Start Date : 09/12/2007  
 Page No : 1

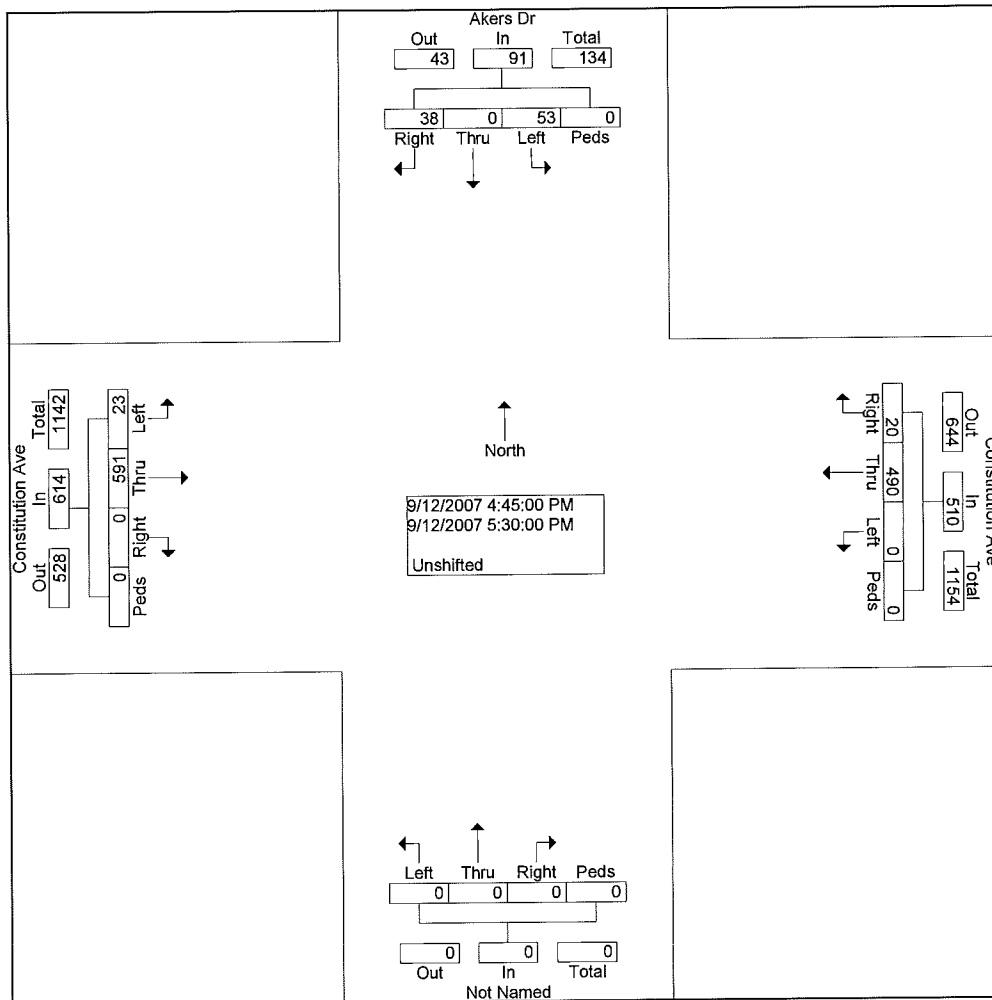
Groups Printed- Unshifted

Start Time	Akers Dr From North				Constitution Ave From East				From South				Constitution Ave From West				Int. Total
	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
04:15 PM	2	0	5	0	16	115	0	0	0	0	0	0	0	140	3	0	281
04:30 PM	5	0	7	0	9	101	0	0	0	0	0	0	0	142	3	0	267
04:45 PM	4	0	6	0	4	106	0	0	0	0	0	0	0	135	4	0	259
Total	11	0	18	0	29	322	0	0	0	0	0	0	0	417	10	0	807
05:00 PM	26	0	40	0	7	145	0	0	0	0	0	0	0	160	6	0	384
05:15 PM	6	0	3	0	6	122	0	0	0	0	0	0	0	137	7	0	281
05:30 PM	2	0	4	0	3	117	0	0	0	0	0	0	0	159	6	0	291
05:45 PM	1	0	1	0	1	103	0	0	0	0	0	0	0	128	2	0	236
Total	35	0	48	0	17	487	0	0	0	0	0	0	0	584	21	0	1192
06:00 PM	5	0	4	0	1	116	0	0	0	0	0	0	0	122	5	0	253
Grand Total	51	0	70	0	47	925	0	0	0	0	0	0	0	1123	36	0	2252
Apprch %	42.1	0.0	57.9	0.0	4.8	95.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	96.9	3.1	0.0	
Total %	2.3	0.0	3.1	0.0	2.1	41.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	49.9	1.6	0.0	

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File Name : constitution 4  
 Site Code : 00912072  
 Start Date : 09/12/2007  
 Page No : 2

Start Time	Akers Dr From North					Constitution Ave From East					From South					Constitution Ave From West					Int. Total
	Rig ht	Thru	Left	Ped s	App. Total	Rig ht	Thru	Left	Ped s	App. Total	Rig ht	Thru	Left	Ped s	App. Total	Rig ht	Thru	Left	Ped s	App. Total	
Peak Hour From 04:15 PM to 06:00 PM - Peak 1 of 1																					
Intersection	04:45 PM																				
Volume	38	0	53	0	91	20	490	0	0	510	0	0	0	0	0	0	591	23	0	614	1215
Percent	41.8	0.0	58.2	0.0		3.9	96.1	0.0	0.0		0.0	0.0	0.0	0.0		0.0	96.3	3.7	0.0		
05:00 Volume	26	0	40	0	66	7	145	0	0	152	0	0	0	0	0	0	160	6	0	166	384
Peak Factor																					
High Int. Volume	05:00 PM					05:00 PM					4:00:00 PM					05:00 PM					0.791
Peak Factor	26	0	40	0	66	7	145	0	0	152	0	0	0	0	0	0	160	6	0	166	0.925



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File Name : Shawnee 2  
 Site Code : 00619071  
 Start Date : 06/19/2007  
 Page No : 1

Groups Printed- Unshifted

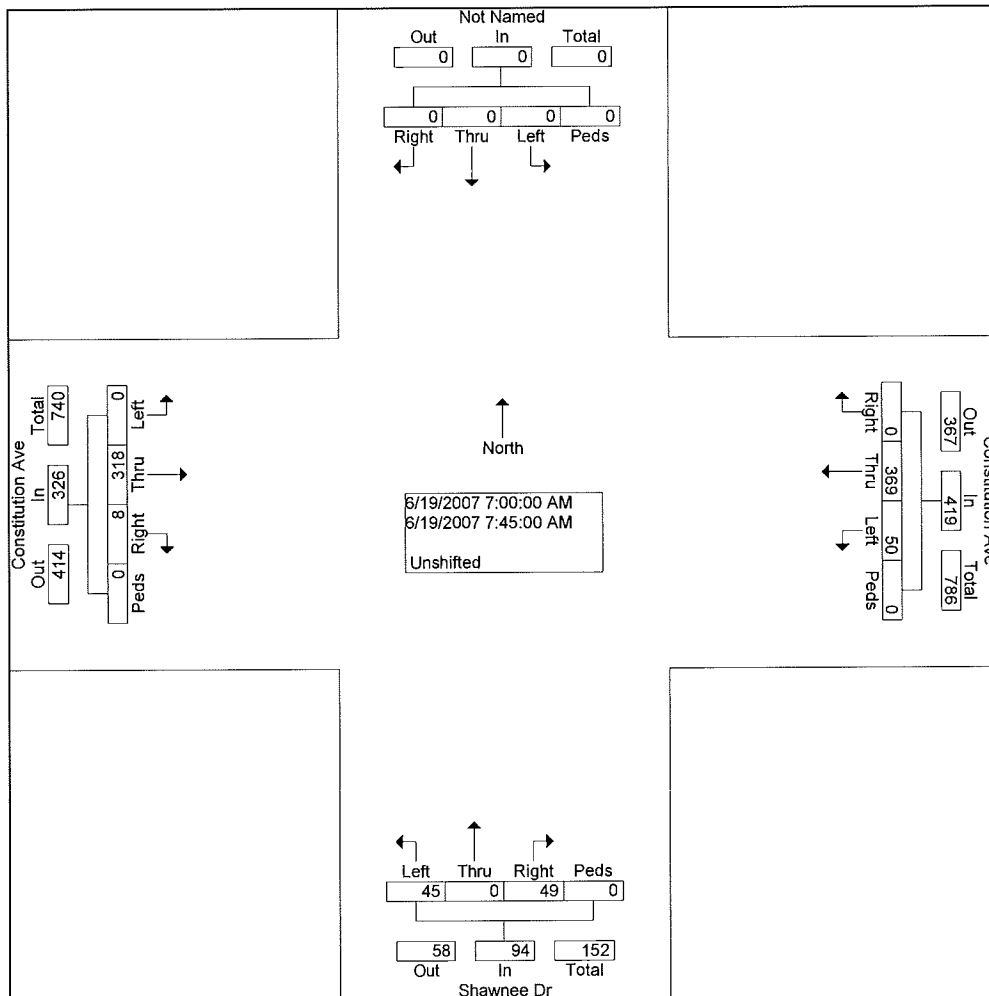
Start Time	From North				Constitution Ave From East				Shawnee Dr From South				Constitution Ave From West				Int. Total
	Righ t	Thru	Left	Ped s	Righ t	Thru	Left	Ped s	Righ t	Thru	Left	Ped s	Righ t	Thru	Left	Ped s	
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
06:30 AM	0	0	0	0	0	69	6	0	15	0	6	0	2	76	0	0	174
06:45 AM	0	0	0	0	0	71	9	0	16	0	6	0	4	81	1	0	188
Total	0	0	0	0	0	140	15	0	31	0	12	0	6	157	1	0	362
07:00 AM	0	0	0	0	0	73	13	0	10	0	13	0	2	98	0	0	209
07:15 AM	0	0	0	0	0	92	13	0	15	0	8	0	1	73	0	0	202
07:30 AM	0	0	0	0	0	108	15	0	8	0	14	0	0	72	0	0	217
07:45 AM	0	0	0	0	0	96	9	0	16	0	10	0	5	75	0	0	211
Total	0	0	0	0	0	369	50	0	49	0	45	0	8	318	0	0	839
08:00 AM	0	0	0	0	0	74	10	0	7	0	9	0	3	50	0	0	153
08:15 AM	0	0	0	0	0	73	13	0	7	0	15	0	2	53	0	0	163
Grand Total	0	0	0	0	0	656	88	0	94	0	81	0	19	578	1	0	1517
Apprch %	0.0	0.0	0.0	0.0	0.0	88.2	11.8	0.0	53.7	0.0	46.3	0.0	3.2	96.7	0.2	0.0	
Total %	0.0	0.0	0.0	0.0	0.0	43.2	5.8	0.0	6.2	0.0	5.3	0.0	1.3	38.1	0.1	0.0	



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File Name : Shawnee 2  
 Site Code : 00619071  
 Start Date : 06/19/2007  
 Page No : 2

Start Time	From North					Constitution Ave From East					Shawnee Dr From South					Constitution Ave From West					Int. Total
	Rig ht	Thr u	Lef t	Pe ds	App. Total	Rig ht	Thr u	Lef t	Pe ds	App. Total	Rig ht	Thr u	Lef t	Pe ds	App. Total	Rig ht	Thr u	Lef t	Pe ds	App. Total	
Peak Hour From 06:30 AM to 08:15 AM - Peak 1 of 1																					
Intersection	07:00 AM																				
Volume	0	0	0	0	0	0	369	50	0	419	49	0	45	0	94	8	318	0	0	326	839
Percent	0.0	0.0	0.0	0.0		0.0	88.1	11.9	0.0		52.1	0.0	47.9	0.0		2.5	97.5	0.0	0.0		
07:30 Volume	0	0	0	0	0	0	108	15	0	123	8	0	14	0	22	0	72	0	0	72	217
Peak Factor	0.967																				
High Int.	6:15:00 AM					07:30 AM					07:45 AM					07:00 AM					
Volume	0	0	0	0	0	0	108	15	0	123	16	0	10	0	26	2	98	0	0	100	
Peak Factor						0.85					0.90					0.81					
						2					4					5					



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File Name : Shawnee 1  
 Site Code : 00618072  
 Start Date : 06/18/2007  
 Page No : 1

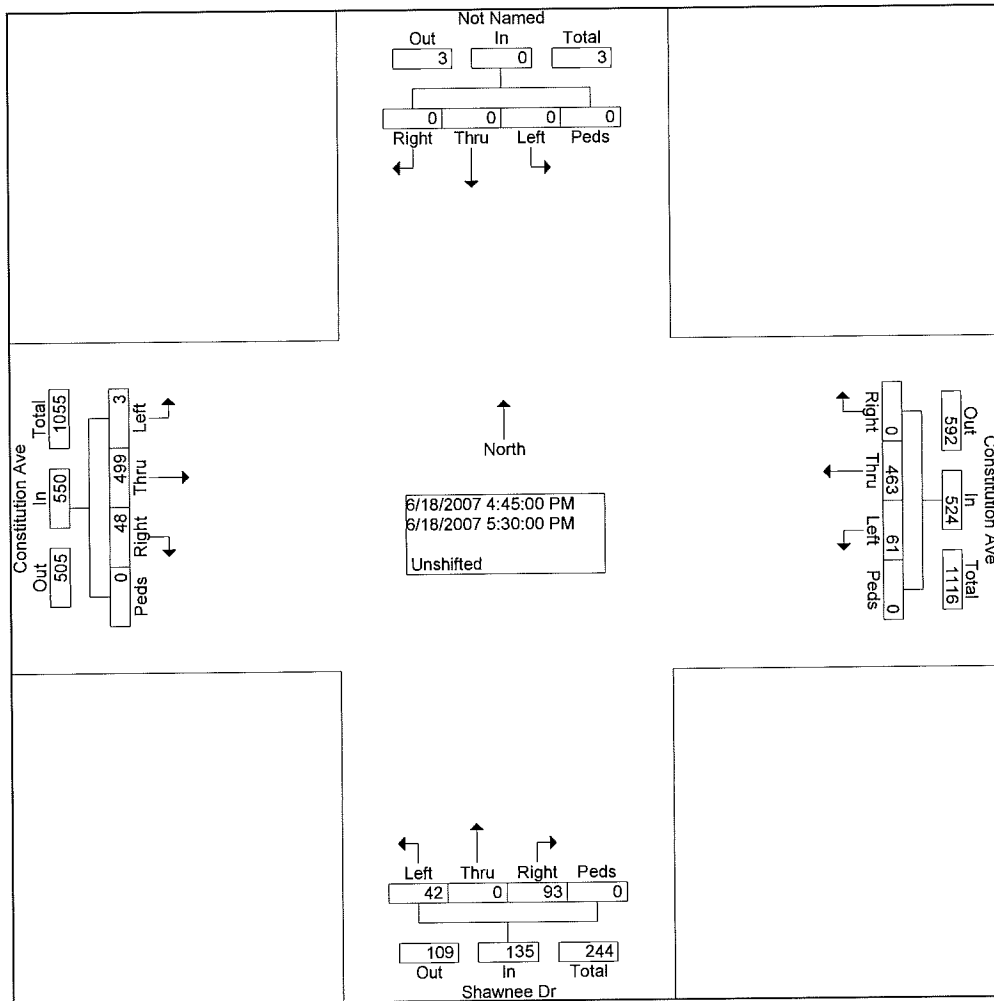
Groups Printed- Unshifted

Start Time	From North				Constitution Ave From East				Shawnee Dr From South				Constitution Ave From West				Int. Total
	Righ t	Thru	Left	Ped s	Righ t	Thru	Left	Ped s	Righ t	Thru	Left	Ped s	Righ t	Thru	Left	Ped s	
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
04:15 PM	0	0	0	0	0	92	11	0	12	0	8	0	17	99	0	0	239
04:30 PM	0	0	0	0	0	99	16	0	22	0	10	0	15	92	0	0	254
04:45 PM	0	0	0	0	0	121	12	0	25	0	11	0	12	119	1	0	301
Total	0	0	0	0	0	312	39	0	59	0	29	0	44	310	1	0	794
05:00 PM	0	0	0	0	0	124	23	0	18	0	9	0	13	138	0	0	325
05:15 PM	0	0	0	0	0	118	13	0	23	0	11	0	12	109	1	0	287
05:30 PM	0	0	0	0	0	100	13	0	27	0	11	0	11	133	1	0	296
05:45 PM	0	0	0	0	0	97	10	0	18	0	8	0	17	113	0	0	263
Total	0	0	0	0	0	439	59	0	86	0	39	0	53	493	2	0	1171
06:00 PM	0	0	0	0	0	90	10	0	16	0	8	0	16	119	0	0	259
Grand Total	0	0	0	0	0	841	108	0	161	0	76	0	113	922	3	0	2224
Apprch %	0.0	0.0	0.0	0.0	0.0	88.6	11.4	0.0	67.9	0.0	32.1	0.0	10.9	88.8	0.3	0.0	
Total %	0.0	0.0	0.0	0.0	0.0	37.8	4.9	0.0	7.2	0.0	3.4	0.0	5.1	41.5	0.1	0.0	

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File Name : Shawnee 1  
 Site Code : 00618072  
 Start Date : 06/18/2007  
 Page No : 2

Start Time	From North					Constitution Ave From East					Shawnee Dr From South					Constitution Ave From West					Int. Total
	Rig ht	Thr u	Lef t	Pe ds	App. Total	Rig ht	Thr u	Lef t	Pe ds	App. Total	Rig ht	Thr u	Lef t	Pe ds	App. Total	Rig ht	Thr u	Lef t	Pe ds	App. Total	
Peak Hour From 04:15 PM to 06:00 PM - Peak 1 of 1																					
Intersection	04:45 PM																				
Volume	0	0	0	0	0	0	46	61	0	524	93	0	42	0	135	48	49	3	0	550	1209
Percent	0.0	0.0	0.0	0.0		0.0	88.4	11.6	0.0		68.9	0.0	31.1	0.0		8.7	90.7	0.5	0.0		
05:00 Volume	0	0	0	0	0	0	12	23	0	147	18	0	9	0	27	13	13	0	0	151	325
Peak Factor	0.930																				
High Int.	4:00:00 PM					05:00 PM					05:30 PM					05:00 PM					
Volume	0	0	0	0	0	0	12	23	0	147	27	0	11	0	38	13	13	0	0	151	
Peak Factor	0.891										0.888					0.911					



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File Name : Constitution 1  
 Site Code : 00911071  
 Start Date : 09/11/2007  
 Page No : 1

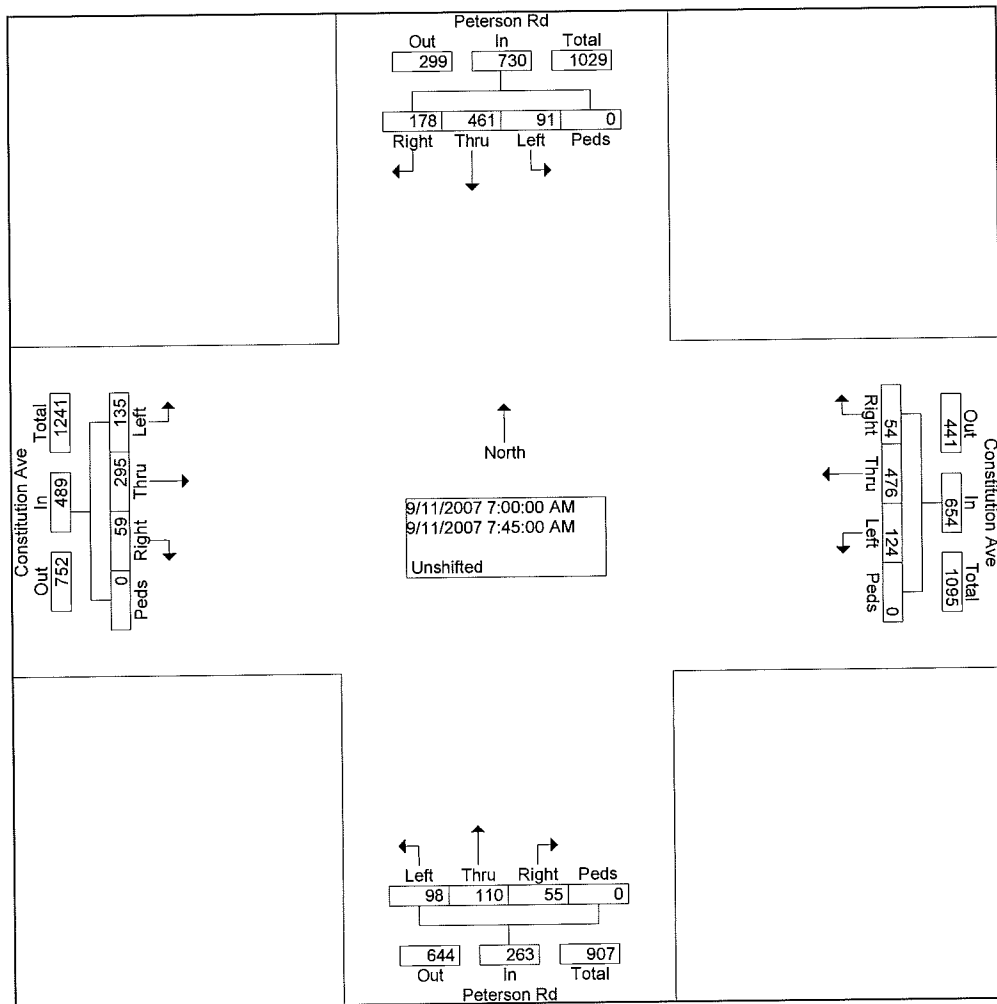
Groups Printed- Unshifted

Start Time	Peterson Rd From North				Constitution Ave From East				Peterson Rd From South				Constitution Ave From West				Int. Total
	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
06:30 AM	30	102	16	0	18	102	20	0	15	44	22	0	10	63	23	0	465
06:45 AM	35	114	37	0	18	112	19	0	11	35	13	0	16	94	16	0	520
Total	65	216	53	0	36	214	39	0	26	79	35	0	26	157	39	0	985
07:00 AM	37	102	29	0	9	102	22	0	22	24	23	0	6	72	11	0	459
07:15 AM	41	117	25	0	10	118	23	0	9	31	24	0	18	70	14	0	500
07:30 AM	57	129	22	0	14	133	51	0	10	26	28	0	14	74	54	0	612
07:45 AM	43	113	15	0	21	123	28	0	14	29	23	0	21	79	56	0	565
Total	178	461	91	0	54	476	124	0	55	110	98	0	59	295	135	0	2136
08:00 AM	33	42	7	0	11	93	18	0	12	41	15	0	23	61	32	0	388
08:15 AM	30	53	13	0	13	82	6	0	14	36	25	0	16	58	21	0	367
Grand Total	306	772	164	0	114	865	187	0	107	266	173	0	124	571	227	0	3876
Apprch %	24.6	62.2	13.2	0.0	9.8	74.2	16.0	0.0	19.6	48.7	31.7	0.0	13.4	61.9	24.6	0.0	
Total %	7.9	19.9	4.2	0.0	2.9	22.3	4.8	0.0	2.8	6.9	4.5	0.0	3.2	14.7	5.9	0.0	

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File Name : Constitution 1  
 Site Code : 00911071  
 Start Date : 09/11/2007  
 Page No : 2

Start Time	Peterson Rd From North					Constitution Ave From East					Peterson Rd From South					Constitution Ave From West					Int. Total				
	Rig ht	Thr u	Left	Ped s	App. Total	Rig ht	Thr u	Left	Ped s	App. Total	Rig ht	Thr u	Left	Ped s	App. Total	Rig ht	Thr u	Left	Ped s	App. Total					
Peak Hour From 06:30 AM to 08:15 AM - Peak 1 of 1																									
Intersection	07:00 AM																								
Volume	178	461	91	0	730	54	476	124	0	654	55	110	98	0	263	59	295	135	0	489	2136				
Percent	24.4	63.2	12.5	0.0		8.3	72.8	19.0	0.0		20.9	41.8	37.3	0.0		12.1	60.3	27.6	0.0						
07:30 Volume	57	129	22	0	208	14	133	51	0	198	10	26	28	0	64	14	74	54	0	142	612				
Peak Factor																									
High Int. Volume	07:30 AM					07:30 AM					07:00 AM					07:45 AM									
Peak Factor	57	129	22	0	208	14	133	51	0	198	22	24	23	0	69	21	79	56	0	156	0.87	0.82	0.95	0.78	4



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File Name : Constitution 2  
 Site Code : 00911072  
 Start Date : 09/11/2007  
 Page No : 1

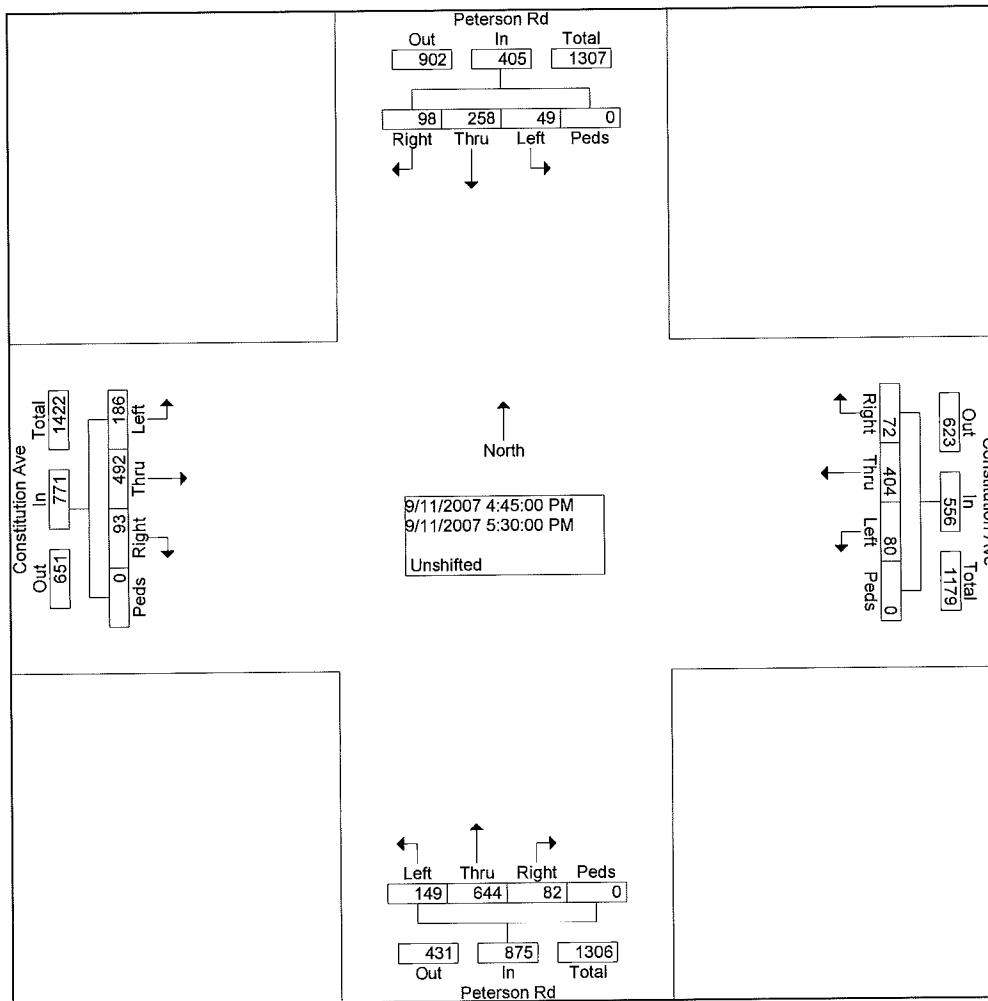
Groups Printed- Unshifted

Start Time	Peterson Rd From North				Constitution Ave From East				Peterson Rd From South				Constitution Ave From West				Int. Total
	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
04:15 PM	30	56	8	0	12	73	13	0	11	132	44	0	26	97	39	0	541
04:30 PM	25	64	7	0	10	107	19	0	10	151	36	0	27	105	54	0	615
04:45 PM	31	57	15	0	18	104	19	0	13	128	38	0	26	119	40	0	608
Total	86	177	30	0	40	284	51	0	34	411	118	0	79	321	133	0	1764
05:00 PM	24	58	15	0	20	114	29	0	14	158	49	0	28	125	60	0	694
05:15 PM	15	51	3	0	13	100	20	0	24	180	36	0	24	143	41	0	650
05:30 PM	28	92	16	0	21	86	12	0	31	178	26	0	15	105	45	0	655
05:45 PM	20	49	9	0	17	107	16	0	17	120	32	0	14	137	57	0	595
Total	87	250	43	0	71	407	77	0	86	636	143	0	81	510	203	0	2594
06:00 PM	29	55	11	0	15	87	8	0	12	111	24	0	21	97	52	0	522
Grand Total	202	482	84	0	126	778	136	0	132	1158	285	0	181	928	388	0	4880
Apprch %	26.3	62.8	10.9	0.0	12.1	74.8	13.1	0.0	8.4	73.5	18.1	0.0	12.1	62.0	25.9	0.0	
Total %	4.1	9.9	1.7	0.0	2.6	15.9	2.8	0.0	2.7	23.7	5.8	0.0	3.7	19.0	8.0	0.0	

LSC Transportation Consultants, Inc.  
 516 N. Tejon St.  
 Colorado Springs, CO  
 (719) 633-2868

File Name : Constitution 2  
 Site Code : 00911072  
 Start Date : 09/11/2007  
 Page No : 2

Start Time	Peterson Rd From North					Constitution Ave From East					Peterson Rd From South					Constitution Ave From West					Int. Total
	Rig ht	Thr u	Left	Ped s	App. Total	Rig ht	Thr u	Left	Ped s	App. Total	Rig ht	Thr u	Left	Ped s	App. Total	Rig ht	Thr u	Left	Ped s	App. Total	
Peak Hour From 04:15 PM to 06:00 PM - Peak 1 of 1																					
Intersection	04:45 PM																				
Volume	98	258	49	0	405	72	404	80	0	556	82	644	149	0	875	93	492	186	0	771	2607
Percent	24.2	63.7	12.1	0.0		12.9	72.7	14.4	0.0		9.4	73.6	17.0	0.0		12.1	63.8	24.1	0.0		
05:00 Volume	24	58	15	0	97	20	114	29	0	163	14	158	49	0	221	28	125	60	0	213	694
Peak Factor	0.939																				
High Int. Peak	05:30 PM					05:00 PM					05:15 PM					05:00 PM					
Volume	28	92	16	0	136	20	114	29	0	163	24	180	36	0	240	28	125	60	0	213	
Peak Factor	0.744					0.853					0.911					0.905					



Lanes, Volumes, Timings  
1: Constitution & Marksheffel

Existing Traffic  
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	110	120	165	20	270	145	70	310	20	45	1015	85
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	515		0	250		250	400		0	350		350
Storage Lanes	1		1	1		1	1		0	1		1
Taper Length (ft)	180		180	200		100	200		100	200		100
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850		0.991				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	1846	0	1770	1863	1583
Flt Permitted	0.434			0.668			0.074			0.429		
Satd. Flow (perm)	808	3539	1583	1244	3539	1583	138	1846	0	799	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			183			151		5				91
Link Speed (mph)		50			50			55			55	
Link Distance (ft)		1177			825			961			1309	
Travel Time (s)		16.1			11.3			11.9			16.2	
Peak Hour Factor	0.90	0.90	0.90	0.96	0.96	0.96	0.79	0.79	0.79	0.93	0.93	0.93
Adj. Flow (vph)	122	133	183	21	281	151	89	392	25	48	1091	91
Shared Lane Traffic (%)												
Lane Group Flow (vph)	122	133	183	21	281	151	89	417	0	48	1091	91
Turn Type	pm+pt		Perm	pm+pt		Perm	pm+pt			pm+pt		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2			6		6
Detector Phase	7	4	4	3	8	8	5	2		1	6	6
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Minimum Split (s)	9.0	20.0	20.0	9.0	20.0	20.0	9.0	23.0		9.0	23.0	23.0
Total Split (s)	10.0	20.0	20.0	10.0	20.0	20.0	10.0	60.0	0.0	10.0	60.0	60.0
Total Split (%)	10.0%	20.0%	20.0%	10.0%	20.0%	20.0%	10.0%	60.0%	0.0%	10.0%	60.0%	60.0%
Maximum Green (s)	5.0	13.0	13.0	5.0	13.0	13.0	5.0	53.0		5.0	53.0	53.0
Yellow Time (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.0		3.0	5.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-3.0	0.0	-1.0	-3.0	0.0	-1.0	-3.0	-3.0	-1.0	-3.0	0.0
Total Lost Time (s)	4.0	4.0	7.0	4.0	4.0	7.0	4.0	4.0	1.0	4.0	4.0	7.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	Max	Max	Max	Max	Max	Max	Max	C-Max		Max	C-Max	C-Max
Act Effct Green (s)	22.0	16.0	13.0	22.0	16.0	13.0	62.0	56.0		62.0	56.0	53.0
Actuated g/C Ratio	0.22	0.16	0.13	0.22	0.16	0.13	0.62	0.56		0.62	0.56	0.53
v/c Ratio	0.52	0.23	0.50	0.07	0.50	0.45	0.49	0.40		0.09	1.05	0.10
Control Delay	34.1	32.6	8.3	28.6	41.8	11.4	18.8	13.8		6.4	64.1	2.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	34.1	32.6	8.3	28.6	41.8	11.4	18.8	13.8		6.4	64.1	2.8
LOS	C	C	A	C	D	B	B	B		A	E	A
Approach Delay		22.9			31.0			14.7			57.4	
Approach LOS		C			C			B			E	



Lanes, Volumes, Timings  
 1: Constitution & Marksheffel

Existing Traffic  
 AM Peak Hour

Intersection Summary

Area Type: Other  
 Cycle Length: 100  
 Actuated Cycle Length: 100  
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green  
 Natural Cycle: 90  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 1.05  
 Intersection Signal Delay: 38.8  
 Intersection Capacity Utilization 81.7%  
 Analysis Period (min) 15

Intersection LOS: D  
 ICU Level of Service D

Splits and Phases: 1: Constitution & Marksheffel

ø1	ø2	ø3	ø4
10 s	60 s	10 s	20 s
ø5	ø6	ø7	ø8
10 s	60 s	10 s	20 s

Lanes, Volumes, Timings  
1: Constitution & Marksheffel

Existing Traffic  
PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	90	355	100	30	240	80	175	850	20	110	305	120
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	515		0	250		250	400		0	350		350
Storage Lanes	1		1	1		1	1		0	1		1
Taper Length (ft)	180		180	200		100	200		100	200		100
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fr <sub>t</sub>			0.850			0.850		0.997				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	1857	0	1770	1863	1583
Flt Permitted	0.462			0.286			0.473			0.074		
Satd. Flow (perm)	861	3539	1583	533	3539	1583	881	1857	0	138	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			122			88		2				143
Link Speed (mph)		50			50			55			55	
Link Distance (ft)		1177			825			961			1309	
Travel Time (s)		16.1			11.3			11.9			16.2	
Peak Hour Factor	0.82	0.82	0.82	0.91	0.91	0.91	0.92	0.92	0.92	0.84	0.84	0.84
Adj. Flow (vph)	110	433	122	33	264	88	190	924	22	131	363	143
Shared Lane Traffic (%)												
Lane Group Flow (vph)	110	433	122	33	264	88	190	946	0	131	363	143
Turn Type	pm+pt		Perm	pm+pt		Perm	pm+pt			pm+pt		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2			6		6
Detector Phase	7	4	4	3	8	8	5	2		1	6	6
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Minimum Split (s)	9.0	20.0	20.0	9.0	20.0	20.0	9.0	23.0		9.0	23.0	23.0
Total Split (s)	10.0	20.0	20.0	10.0	20.0	20.0	10.0	60.0	0.0	10.0	60.0	60.0
Total Split (%)	10.0%	20.0%	20.0%	10.0%	20.0%	20.0%	10.0%	60.0%	0.0%	10.0%	60.0%	60.0%
Maximum Green (s)	5.0	13.0	13.0	5.0	13.0	13.0	5.0	53.0		5.0	53.0	53.0
Yellow Time (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.0		3.0	5.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-3.0	0.0	-1.0	-3.0	0.0	-1.0	-3.0	-3.0	-1.0	-3.0	0.0
Total Lost Time (s)	4.0	4.0	7.0	4.0	4.0	7.0	4.0	4.0	1.0	4.0	4.0	7.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	Max	Max	Max	Max	Max	Max	Max	C-Max		Max	C-Max	C-Max
Act Effect Green (s)	22.0	16.0	13.0	22.0	16.0	13.0	62.0	56.0		62.0	56.0	53.0
Actuated g/C Ratio	0.22	0.16	0.13	0.22	0.16	0.13	0.62	0.56		0.62	0.56	0.53
v/c Ratio	0.45	0.77	0.39	0.17	0.47	0.31	0.32	0.91		0.72	0.35	0.16
Control Delay	30.0	41.9	9.8	30.3	41.2	12.0	8.2	34.0		37.2	13.2	2.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	30.0	41.9	9.8	30.3	41.2	12.0	8.2	34.0		37.2	13.2	2.5
LOS	C	D	A	C	D	B	A	C		D	B	A
Approach Delay		34.0			33.6			29.7			15.7	
Approach LOS		C			C			C			B	









Lanes, Volumes, Timings  
 1: Constitution & Marksheffel

Existing Traffic  
 PM Peak Hour

Intersection Summary

Area Type:	Other
Cycle Length:	100
Actuated Cycle Length:	100
Offset:	0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle:	90
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.91
Intersection Signal Delay:	28.1
Intersection LOS:	C
Intersection Capacity Utilization:	78.5%
ICU Level of Service:	D
Analysis Period (min):	15

Splits and Phases: 1: Constitution & Marksheffel

 ø1	 ø2	 ø3	 ø4
10 s	60 s	10 s	20 s
 ø5	 ø6	 ø7	 ø8
10 s	60 s	10 s	20 s

Lanes, Volumes, Timings  
1: Constitution & Marksheffel









2015 Background Traffic  
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	155	255	305	90	575	155	155	560	90	170	1215	140
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	440		0	350		350	350		350	350		350
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (ft)	180		180	200		100	200		100	200		100
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.178			0.587			0.091			0.318		
Satd. Flow (perm)	332	3539	1583	1093	3539	1583	170	3539	1583	592	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			321			163			95			98
Link Speed (mph)		50			50			55			55	
Link Distance (ft)		1170			825			961			1309	
Travel Time (s)		16.0			11.3			11.9			16.2	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	163	268	321	95	605	163	163	589	95	179	1279	147
Shared Lane Traffic (%)												
Lane Group Flow (vph)	163	268	321	95	605	163	163	589	95	179	1279	147
Turn Type	pm+pt		Free	pm+pt		Free	pm+pt		Perm	pm+pt		Free
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		Free	8		Free	2		2	6		Free
Detector Phase	7	4		3	8		5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Minimum Split (s)	9.0	20.0		9.0	20.0		9.0	23.0	23.0	9.0	23.0	
Total Split (s)	20.0	45.0	0.0	10.0	35.0	0.0	15.0	50.0	50.0	15.0	50.0	0.0
Total Split (%)	16.7%	37.5%	0.0%	8.3%	29.2%	0.0%	12.5%	41.7%	41.7%	12.5%	41.7%	0.0%
Maximum Green (s)	15.0	38.0		5.0	28.0		10.0	43.0	43.0	10.0	43.0	
Yellow Time (s)	3.0	5.0		3.0	5.0		3.0	5.0	5.0	3.0	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	-1.0	-3.0	0.0	-1.0	-3.0	0.0	-1.0	-3.0	-3.0	-1.0	-3.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	Max	Max		Max	Max		Max	C-Max	C-Max	Max	C-Max	
Act Effct Green (s)	51.0	41.0	120.0	37.0	31.0	120.0	57.0	46.0	46.0	57.0	46.0	120.0
Actuated g/C Ratio	0.42	0.34	1.00	0.31	0.26	1.00	0.48	0.38	0.38	0.48	0.38	1.00
v/c Ratio	0.49	0.22	0.20	0.26	0.66	0.10	0.72	0.43	0.14	0.46	0.94	0.09
Control Delay	39.3	18.6	0.3	24.3	43.9	0.1	41.5	28.6	5.2	20.4	50.2	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.3	18.6	0.3	24.3	43.9	0.1	41.5	28.6	5.2	20.4	50.2	0.1
LOS	D	B	A	C	D	A	D	C	A	C	D	A
Approach Delay		15.2			33.5			28.5			42.3	
Approach LOS		B			C			C			D	

Intersection Summary

Area Type:	Other
Cycle Length:	120
Actuated Cycle Length:	120
Offset:	37 (31%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle:	65
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.94
Intersection Signal Delay:	32.6
Intersection LOS:	C
Intersection Capacity Utilization	80.0%
ICU Level of Service	D
Analysis Period (min)	15

Splits and Phases: 1: Constitution & Marksheffel

 ø1	 ø2	 ø3	 ø4
15 s	50 s	10 s	45 s
 ø5	 ø6	 ø7	 ø8
15 s	50 s	20 s	35 s

Lanes, Volumes, Timings  
1: Constitution & Marksheffel

2015 Background Traffic  
PM Peak Hour









Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	210	470	245	175	390	125	275	1105	165	220	545	145
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	440		0	350		350	350		350	350		350
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (ft)	180		180	200		100	200		100	200		100
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.413			0.347			0.303			0.103		
Satd. Flow (perm)	769	3539	1583	646	3539	1583	564	3539	1583	192	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			258			132			174			153
Link Speed (mph)		50			50			55			55	
Link Distance (ft)		1170			825			961			1309	
Travel Time (s)		16.0			11.3			11.9			16.2	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.97	0.95	0.95	0.95	0.95
Adj. Flow (vph)	221	495	258	184	411	132	289	1139	174	232	574	153
Shared Lane Traffic (%)												
Lane Group Flow (vph)	221	495	258	184	411	132	289	1139	174	232	574	153
Turn Type	pm+pt		Free	pm+pt		Free	pm+pt		Perm	pm+pt		Free
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		Free	8		Free	2		2	6		Free
Detector Phase	7	4		3	8		5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Minimum Split (s)	9.0	20.0		9.0	20.0		9.0	23.0	23.0	9.0	23.0	
Total Split (s)	13.0	43.0	0.0	13.0	43.0	0.0	19.0	45.0	45.0	19.0	45.0	0.0
Total Split (%)	10.8%	35.8%	0.0%	10.8%	35.8%	0.0%	15.8%	37.5%	37.5%	15.8%	37.5%	0.0%
Maximum Green (s)	8.0	36.0		8.0	36.0		14.0	38.0	38.0	14.0	38.0	
Yellow Time (s)	3.0	5.0		3.0	5.0		3.0	5.0	5.0	3.0	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	-1.0	-3.0	0.0	-1.0	-3.0	0.0	-1.0	-3.0	-3.0	-1.0	-3.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	Max	Max		Max	Max		Max	C-Max	C-Max	Max	C-Max	
Act Effct Green (s)	48.0	39.0	120.0	48.0	39.0	120.0	56.0	41.0	41.0	56.0	41.0	120.0
Actuated g/C Ratio	0.40	0.32	1.00	0.40	0.32	1.00	0.47	0.34	0.34	0.47	0.34	1.00
v/c Ratio	0.58	0.43	0.16	0.54	0.36	0.08	0.70	0.94	0.27	0.81	0.47	0.10
Control Delay	45.7	50.3	0.2	28.6	32.0	0.1	28.4	54.0	5.1	49.6	32.6	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	45.7	50.3	0.2	28.6	32.0	0.1	28.4	54.0	5.1	49.6	32.6	0.1
LOS	D	D	A	C	C	A	C	D	A	D	C	A
Approach Delay		36.0			25.4			44.1			31.6	
Approach LOS		D			C			D			C	

Intersection Summary

Area Type: Other  
 Cycle Length: 120  
 Actuated Cycle Length: 120  
 Offset: 19 (16%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green  
 Natural Cycle: 65  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.94  
 Intersection Signal Delay: 36.2  
 Intersection Capacity Utilization 78.8%  
 Analysis Period (min) 15

Intersection LOS: D  
 ICU Level of Service D

Splits and Phases: 1: Constitution & Marksheffel

 Ø1	 Ø2	 Ø3	 Ø4
19 s	45 s	13 s	43 s
 Ø5	 Ø6	 Ø7	 Ø8
19 s	45 s	13 s	43 s

Lanes, Volumes, Timings  
1: Constitution & Marksheffel

2015 Total Traffic - Preliminary Plan  
AM Peak Hour









Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	165	265	335	90	580	155	165	560	90	170	1215	150
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	440		0	350		350	350		350	350		350
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (ft)	180		180	200		100	200		100	200		100
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Fr <sub>t</sub>			0.850			0.850			0.850			0.850
Fl <sub>t</sub> Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	3539	1583	1770	3539	1583
Fl <sub>t</sub> Permitted	0.198			0.502			0.095			0.302		
Satd. Flow (perm)	369	3539	1583	935	3539	1583	177	3539	1583	563	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			353			163			95			106
Link Speed (mph)		50			50			55			55	
Link Distance (ft)		1170			825			961			1309	
Travel Time (s)		16.0			11.3			11.9			16.2	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	174	279	353	95	611	163	174	589	95	179	1279	158
Shared Lane Traffic (%)												
Lane Group Flow (vph)	174	279	353	95	611	163	174	589	95	179	1279	158
Turn Type	pm+pt		Free	pm+pt		Free	pm+pt		Perm	pm+pt		Free
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		Free	8		Free	2		2	6		Free
Detector Phase	7	4		3	8		5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Minimum Split (s)	9.0	20.0		9.0	20.0		9.0	23.0	23.0	9.0	23.0	
Total Split (s)	17.0	35.0	0.0	17.0	35.0	0.0	19.0	48.0	48.0	20.0	49.0	0.0
Total Split (%)	14.2%	29.2%	0.0%	14.2%	29.2%	0.0%	15.8%	40.0%	40.0%	16.7%	40.8%	0.0%
Maximum Green (s)	12.0	28.0		12.0	28.0		14.0	41.0	41.0	15.0	42.0	
Yellow Time (s)	3.0	5.0		3.0	5.0		3.0	5.0	5.0	3.0	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	-1.0	-3.0	0.0	-1.0	-3.0	0.0	-1.0	-3.0	-3.0	-1.0	-3.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	Max	Max		Max	Max		Max	C-Max	C-Max	Max	C-Max	
Act Effct Green (s)	44.0	31.0	120.0	44.0	31.0	120.0	59.0	44.0	44.0	61.0	45.0	120.0
Actuated g/C Ratio	0.37	0.26	1.00	0.37	0.26	1.00	0.49	0.37	0.37	0.51	0.38	1.00
v/c Ratio	0.61	0.31	0.22	0.22	0.67	0.10	0.61	0.45	0.15	0.40	0.96	0.10
Control Delay	44.6	26.2	0.3	24.4	44.1	0.1	32.1	30.3	5.5	17.5	54.5	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.6	26.2	0.3	24.4	44.1	0.1	32.1	30.3	5.5	17.5	54.5	0.1
LOS	D	C	A	C	D	A	C	C	A	B	D	A
Approach Delay		18.8			33.7			27.9			45.1	
Approach LOS		B			C			C			D	



Intersection Summary

Area Type:	Other
Cycle Length:	120
Actuated Cycle Length:	120
Offset:	37 (31%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle:	65
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.96
Intersection Signal Delay:	34.1
Intersection LOS:	C
Intersection Capacity Utilization	81.2%
ICU Level of Service	D
Analysis Period (min)	15

Splits and Phases: 1: Constitution & Marksheffel

 ø1	 ø2	 ø3	 ø4
20 s	48 s	17 s	35 s
 ø5	 ø6	 ø7	 ø8
19 s	49 s	17 s	35 s

Lanes, Volumes, Timings  
1: Constitution & Marksheffel









2015 Total Traffic - Preliminary Plan  
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	215	480	265	175	400	125	310	1105	165	220	545	180
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	440		0	350		350	350		350	350		350
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (ft)	180		180	200		100	200		100	200		100
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Fr't			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.405			0.340			0.303			0.103		
Satd. Flow (perm)	754	3539	1583	633	3539	1583	564	3539	1583	192	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			279			132			174			189
Link Speed (mph)		50			50			55			55	
Link Distance (ft)		1170			825			961			1309	
Travel Time (s)		16.0			11.3			11.9			16.2	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.97	0.95	0.95	0.95	0.95
Adj. Flow (vph)	226	505	279	184	421	132	326	1139	174	232	574	189
Shared Lane Traffic (%)												
Lane Group Flow (vph)	226	505	279	184	421	132	326	1139	174	232	574	189
Turn Type	pm+pt		Free	pm+pt		Free	pm+pt		Perm	pm+pt		Free
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		Free	8		Free	2		2	6		Free
Detector Phase	7	4		3	8		5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Minimum Split (s)	9.0	20.0		9.0	20.0		9.0	23.0	23.0	9.0	23.0	
Total Split (s)	13.0	43.0	0.0	13.0	43.0	0.0	19.0	45.0	45.0	19.0	45.0	0.0
Total Split (%)	10.8%	35.8%	0.0%	10.8%	35.8%	0.0%	15.8%	37.5%	37.5%	15.8%	37.5%	0.0%
Maximum Green (s)	8.0	36.0		8.0	36.0		14.0	38.0	38.0	14.0	38.0	
Yellow Time (s)	3.0	5.0		3.0	5.0		3.0	5.0	5.0	3.0	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	-1.0	-3.0	0.0	-1.0	-3.0	0.0	-1.0	-3.0	-3.0	-1.0	-3.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	Max	Max		Max	Max		Max	C-Max	C-Max	Max	C-Max	
Act Effct Green (s)	48.0	39.0	120.0	48.0	39.0	120.0	56.0	41.0	41.0	56.0	41.0	120.0
Actuated g/C Ratio	0.40	0.32	1.00	0.40	0.32	1.00	0.47	0.34	0.34	0.47	0.34	1.00
v/c Ratio	0.60	0.44	0.18	0.54	0.37	0.08	0.79	0.94	0.27	0.81	0.47	0.12
Control Delay	45.7	49.8	0.2	28.9	32.2	0.1	34.6	54.0	5.1	49.6	32.6	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	45.7	49.8	0.2	28.9	32.2	0.1	34.6	54.0	5.1	49.6	32.6	0.2
LOS	D	D	A	C	C	A	C	D	A	D	C	A
Approach Delay		35.2			25.6			44.9			30.4	
Approach LOS		D			C			D			C	

Intersection Summary

























Area Type:	Other
Cycle Length:	120
Actuated Cycle Length:	120
Offset:	19 (16%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle:	65
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.94
Intersection Signal Delay:	36.1
Intersection LOS:	D
Intersection Capacity Utilization:	79.0%
ICU Level of Service:	D
Analysis Period (min):	15

Splits and Phases: 1: Constitution & Marksheffel

 ø1	 ø2	 ø3	 ø4
19 s	45 s	13 s	43 s
 ø5	 ø6	 ø7	 ø8
19 s	45 s	13 s	43 s

Lanes, Volumes, Timings  
1: Constitution & Marksheffel









2015 Total Traffic - Buildout  
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	190	285	400	90	610	155	225	545	90	170	1185	225
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	440		0	350		350	350		350	350		350
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (ft)	180		180	200		100	200		100	200		100
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Fr			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.175			0.479			0.095			0.318		
Satd. Flow (perm)	326	3539	1583	892	3539	1583	177	3539	1583	592	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			421			163			95			163
Link Speed (mph)		50			50			55			55	
Link Distance (ft)		730			825			961			1309	
Travel Time (s)		10.0			11.3			11.9			16.2	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	200	300	421	95	642	163	237	574	95	179	1247	237
Shared Lane Traffic (%)												
Lane Group Flow (vph)	200	300	421	95	642	163	237	574	95	179	1247	237
Turn Type	pm+pt		Free	pm+pt		Free	pm+pt		Perm	pm+pt		Free
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		Free	8		Free	2		2	6		Free
Detector Phase	7	4		3	8		5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Minimum Split (s)	9.0	20.0		9.0	20.0		9.0	23.0	23.0	9.0	23.0	
Total Split (s)	17.0	35.0	0.0	17.0	35.0	0.0	20.0	48.0	48.0	20.0	48.0	0.0
Total Split (%)	14.2%	29.2%	0.0%	14.2%	29.2%	0.0%	16.7%	40.0%	40.0%	16.7%	40.0%	0.0%
Maximum Green (s)	12.0	28.0		12.0	28.0		15.0	41.0	41.0	15.0	41.0	
Yellow Time (s)	3.0	5.0		3.0	5.0		3.0	5.0	5.0	3.0	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	-1.0	-3.0	0.0	-1.0	-3.0	0.0	-1.0	-3.0	-3.0	-1.0	-3.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	Max	Max		Max	Max		Max	C-Max	C-Max	Max	C-Max	
Act Effct Green (s)	44.0	31.0	120.0	44.0	31.0	120.0	60.0	44.0	44.0	60.0	44.0	120.0
Actuated g/C Ratio	0.37	0.26	1.00	0.37	0.26	1.00	0.50	0.37	0.37	0.50	0.37	1.00
v/c Ratio	0.72	0.33	0.27	0.23	0.70	0.10	0.79	0.44	0.15	0.40	0.96	0.15
Control Delay	49.2	30.3	0.5	24.5	45.2	0.1	47.1	30.1	5.5	17.4	54.7	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	49.2	30.3	0.5	24.5	45.2	0.1	47.1	30.1	5.5	17.4	54.7	0.2
LOS	D	C	A	C	D	A	D	C	A	B	D	A
Approach Delay		20.8			34.8			32.0			42.9	
Approach LOS		C			C			C			D	

Intersection Summary

Area Type:	Other
Cycle Length:	120
Actuated Cycle Length:	120
Offset:	37 (31%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle:	75
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.96
Intersection Signal Delay:	34.4
Intersection LOS:	C
Intersection Capacity Utilization:	85.9%
ICU Level of Service:	E
Analysis Period (min):	15

Splits and Phases: 1: Constitution & Marksheffel

 ø1	 ø2	 ø3	 ø4
20 s	48 s	17 s	35 s
 ø5	 ø6	 ø7	 ø8
20 s	48 s	17 s	35 s

Lanes, Volumes, Timings  
1: Constitution & Marksheffel









2015 Total Traffic - Buildout  
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	345	550	430	175	475	125	510	1015	165	220	490	345
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	440		0	350		350	350		350	350		350
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (ft)	180		180	200		100	200		100	200		100
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Fr't			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.182			0.190			0.198			0.160		
Satd. Flow (perm)	339	3539	1583	354	3539	1583	369	3539	1583	298	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			453			132			174			363
Link Speed (mph)		50			50			55			55	
Link Distance (ft)		730			825			961			1309	
Travel Time (s)		10.0			11.3			11.9			16.2	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.97	0.95	0.95	0.95	0.95
Adj. Flow (vph)	363	579	453	184	500	132	537	1046	174	232	516	363
Shared Lane Traffic (%)												
Lane Group Flow (vph)	363	579	453	184	500	132	537	1046	174	232	516	363
Turn Type	pm+pt		Free	pm+pt		Free	pm+pt		Perm	pm+pt		Free
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		Free	8		Free	2		2	6		Free
Detector Phase	7	4		3	8		5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Minimum Split (s)	9.0	20.0		9.0	20.0		9.0	23.0	23.0	9.0	23.0	
Total Split (s)	26.0	28.0	0.0	25.0	27.0	0.0	36.0	48.0	48.0	19.0	31.0	0.0
Total Split (%)	21.7%	23.3%	0.0%	20.8%	22.5%	0.0%	30.0%	40.0%	40.0%	15.8%	25.8%	0.0%
Maximum Green (s)	21.0	21.0		20.0	20.0		31.0	41.0	41.0	14.0	24.0	
Yellow Time (s)	3.0	5.0		3.0	5.0		3.0	5.0	5.0	3.0	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	-1.0	-3.0	0.0	-1.0	-3.0	0.0	-1.0	-3.0	-3.0	-1.0	-3.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	Max	Max		Max	Max		Max	C-Max	C-Max	Max	C-Max	
Act Effct Green (s)	46.0	24.0	120.0	44.0	23.0	120.0	63.0	44.0	44.0	42.0	27.0	120.0
Actuated g/C Ratio	0.38	0.20	1.00	0.37	0.19	1.00	0.52	0.37	0.37	0.35	0.22	1.00
v/c Ratio	0.93	0.82	0.29	0.49	0.74	0.08	0.95	0.81	0.25	0.81	0.65	0.23
Control Delay	53.8	50.8	0.4	28.5	53.1	0.1	54.9	40.0	4.7	51.3	46.6	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.8	50.8	0.4	28.5	53.1	0.1	54.9	40.0	4.7	51.3	46.6	0.3
LOS	D	D	A	C	D	A	D	D	A	D	D	A
Approach Delay		35.2			39.0			41.1			32.5	
Approach LOS		D			D			D			C	

Intersection Summary

Area Type:	Other
Cycle Length:	120
Actuated Cycle Length:	120
Offset:	19 (16%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle:	90
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.95
Intersection Signal Delay:	37.2
Intersection Capacity Utilization:	87.4%
Analysis Period (min):	15
Intersection LOS:	D
ICU Level of Service:	E

Splits and Phases: 1: Constitution & Marksheffel

 ø1	 ø2	 ø3	 ø4
19 s	48 s	25 s	28 s
 ø5	 ø6	 ø7	 ø8
36 s	31 s	26 s	27 s

Lanes, Volumes, Timings  
1: Constitution & Marksheffel

2030 Background Traffic  
AM Peak Hour

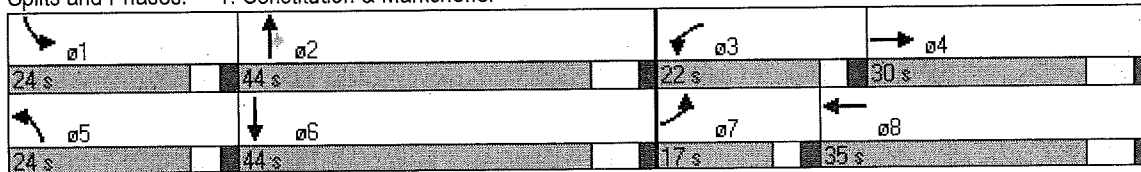
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	225	485	540	210	1080	175	295	970	210	375	1550	235
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	440		350	350		350	350		350	350		350
Storage Lanes	2		1	2		1	2		1	2		1
Taper Length (ft)	180		180	200		100	200		100	200		100
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.91	1.00
Fr't			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3433	5085	1583	3433	5085	1583	3433	5085	1583	3433	5085	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3433	5085	1583	3433	5085	1583	3433	5085	1583	3433	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			525			184			221			186
Link Speed (mph)		50			50			55			55	
Link Distance (ft)		1170			825			961			1309	
Travel Time (s)		16.0			11.3			11.9			16.2	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	237	511	568	221	1137	184	311	1021	221	395	1632	247
Shared Lane Traffic (%)												
Lane Group Flow (vph)	237	511	568	221	1137	184	311	1021	221	395	1632	247
Turn Type	Prot		Free	Prot		Free	Prot		Perm	Prot		Free
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free			Free			2			Free
Detector Phase	7	4		3	8		5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Minimum Split (s)	9.0	20.0		9.0	20.0		9.0	23.0	23.0	9.0	23.0	
Total Split (s)	17.0	30.0	0.0	22.0	35.0	0.0	24.0	44.0	44.0	24.0	44.0	0.0
Total Split (%)	14.2%	25.0%	0.0%	18.3%	29.2%	0.0%	20.0%	36.7%	36.7%	20.0%	36.7%	0.0%
Maximum Green (s)	12.0	23.0		17.0	28.0		19.0	37.0	37.0	19.0	37.0	
Yellow Time (s)	3.0	5.0		3.0	5.0		3.0	5.0	5.0	3.0	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	-1.0	-3.0	0.0	-1.0	-3.0	0.0	-1.0	-3.0	-3.0	-1.0	-3.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	Max	Max		Max	Max		Max	C-Max	C-Max	Max	C-Max	
Act Effct Green (s)	13.0	26.0	120.0	18.0	31.0	120.0	20.0	40.0	40.0	20.0	40.0	120.0
Actuated g/C Ratio	0.11	0.22	1.00	0.15	0.26	1.00	0.17	0.33	0.33	0.17	0.33	1.00
v/c Ratio	0.64	0.46	0.36	0.43	0.87	0.12	0.54	0.60	0.33	0.69	0.96	0.16
Control Delay	27.1	34.5	5.9	49.3	50.6	0.1	49.9	35.2	5.1	54.2	54.2	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.1	34.5	5.9	49.3	50.6	0.1	49.9	35.2	5.1	54.2	54.2	0.2
LOS	C	C	A	D	D	A	D	D	A	D	D	A
Approach Delay		20.8			44.4			33.8			48.3	
Approach LOS		C			D			C			D	



Intersection Summary

Area Type:	Other
Cycle Length:	120
Actuated Cycle Length:	120
Offset:	37 (31%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle:	65
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.96
Intersection Signal Delay:	38.6
Intersection LOS:	D
Intersection Capacity Utilization	79.0%
ICU Level of Service	D
Analysis Period (min)	15

Splits and Phases: 1: Constitution & Marksheffel



Lanes, Volumes, Timings  
1: Constitution & Marksheffel









2030 Background Traffic  
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	415	655	490	420	640	200	435	1530	400	400	945	185
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	440		350	350		350	350		350	350		350
Storage Lanes	2		1	2		1	2		1	2		1
Taper Length (ft)	180		180	200		100	200		100	200		100
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.91	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3433	5085	1583	3433	5085	1583	3433	5085	1583	3433	5085	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3433	5085	1583	3433	5085	1583	3433	5085	1583	3433	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			515			211			398			195
Link Speed (mph)		50			50			55			55	
Link Distance (ft)		1170			825			961			1309	
Travel Time (s)		16.0			11.3			11.9			16.2	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.97	0.95	0.95	0.95	0.95
Adj. Flow (vph)	437	689	516	442	674	211	458	1577	421	421	995	195
Shared Lane Traffic (%)												
Lane Group Flow (vph)	437	689	516	442	674	211	458	1577	421	421	995	195
Turn Type	Prot		Free	Prot		Free	Prot		Perm	Prot		Free
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free			Free			2			Free
Detector Phase	7	4		3	8		5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Minimum Split (s)	9.0	20.0		9.0	20.0		9.0	23.0	23.0	9.0	23.0	
Total Split (s)	26.0	26.0	0.0	26.0	26.0	0.0	33.0	43.0	43.0	25.0	35.0	0.0
Total Split (%)	21.7%	21.7%	0.0%	21.7%	21.7%	0.0%	27.5%	35.8%	35.8%	20.8%	29.2%	0.0%
Maximum Green (s)	21.0	19.0		21.0	19.0		28.0	36.0	36.0	20.0	28.0	
Yellow Time (s)	3.0	5.0		3.0	5.0		3.0	5.0	5.0	3.0	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	-1.0	-3.0	0.0	-1.0	-3.0	0.0	-1.0	-3.0	-3.0	-1.0	-3.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	Max	Max		Max	Max		Max	C-Max	C-Max	Max	C-Max	
Act Effct Green (s)	22.0	22.0	120.0	22.0	22.0	120.0	29.0	39.0	39.0	21.0	31.0	120.0
Actuated g/C Ratio	0.18	0.18	1.00	0.18	0.18	1.00	0.24	0.32	0.32	0.18	0.26	1.00
v/c Ratio	0.69	0.74	0.33	0.70	0.72	0.13	0.55	0.95	0.54	0.70	0.76	0.12
Control Delay	52.9	28.8	1.2	52.8	51.2	0.2	42.8	53.5	6.6	53.6	45.4	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.9	28.8	1.2	52.8	51.2	0.2	42.8	53.5	6.6	53.6	45.4	0.2
LOS	D	C	A	D	D	A	D	D	A	D	D	A
Approach Delay		26.6			43.6			43.5			42.1	
Approach LOS		C			D			D			D	

Intersection Summary

























Area Type:	Other
Cycle Length:	120
Actuated Cycle Length:	120
Offset:	19 (16%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle:	80
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.95
Intersection Signal Delay:	39.2
Intersection LOS:	D
Intersection Capacity Utilization	78.9%
ICU Level of Service	D
Analysis Period (min)	15

Splits and Phases: 1: Constitution & Marksheffel

 ø1	 ø2	 ø3	 ø4
25 s	43 s	26 s	26 s
 ø5	 ø6	 ø7	 ø8
33 s	35 s	26 s	26 s

Lanes, Volumes, Timings  
1: Constitution & Marksheffel

2030 Total Traffic  
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	260	515	635	210	1115	175	365	955	210	375	1520	320
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	440		350	350		350	350		350	350		350
Storage Lanes	2		1	2		1	2		1	2		1
Taper Length (ft)	180		180	200		100	200		100	200		100
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.91	1.00
Fr't			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3433	5085	1583	3433	5085	1583	3433	5085	1583	3433	5085	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3433	5085	1583	3433	5085	1583	3433	5085	1583	3433	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			525			184			221			259
Link Speed (mph)		50			50			55			55	
Link Distance (ft)		730			825			961			1309	
Travel Time (s)		10.0			11.3			11.9			16.2	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	274	542	668	221	1174	184	384	1005	221	395	1600	337
Shared Lane Traffic (%)												
Lane Group Flow (vph)	274	542	668	221	1174	184	384	1005	221	395	1600	337
Turn Type	Prot		Free	Prot		Free	Prot		Perm	Prot		Free
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free			Free			2			Free
Detector Phase	7	4		3	8		5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Minimum Split (s)	9.0	20.0		9.0	20.0		9.0	23.0	23.0	9.0	23.0	
Total Split (s)	17.0	30.0	0.0	22.0	35.0	0.0	24.0	44.0	44.0	24.0	44.0	0.0
Total Split (%)	14.2%	25.0%	0.0%	18.3%	29.2%	0.0%	20.0%	36.7%	36.7%	20.0%	36.7%	0.0%
Maximum Green (s)	12.0	23.0		17.0	28.0		19.0	37.0	37.0	19.0	37.0	
Yellow Time (s)	3.0	5.0		3.0	5.0		3.0	5.0	5.0	3.0	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	-1.0	-3.0	0.0	-1.0	-3.0	0.0	-1.0	-3.0	-3.0	-1.0	-3.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	Max	Max		Max	Max		Max	C-Max	C-Max	Max	C-Max	
Act Effct Green (s)	13.0	26.0	120.0	18.0	31.0	120.0	20.0	40.0	40.0	20.0	40.0	120.0
Actuated g/C Ratio	0.11	0.22	1.00	0.15	0.26	1.00	0.17	0.33	0.33	0.17	0.33	1.00
v/c Ratio	0.74	0.49	0.42	0.43	0.89	0.12	0.67	0.59	0.33	0.69	0.94	0.21
Control Delay	50.2	31.9	5.0	49.3	52.8	0.1	53.5	35.0	5.1	54.2	51.3	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	50.2	31.9	5.0	49.3	52.8	0.1	53.5	35.0	5.1	54.2	51.3	0.3
LOS	D	C	A	D	D	A	D	C	A	D	D	A
Approach Delay		23.2			46.2			35.3			44.4	
Approach LOS		C			D			D			D	

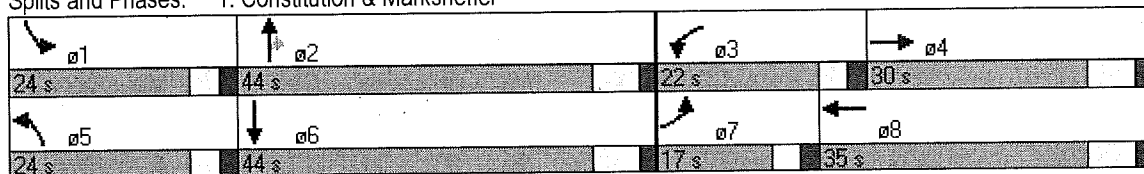
Lanes, Volumes, Timings  
 1: Constitution & Marksheffel

2030 Total Traffic  
 AM Peak Hour

Intersection Summary

Area Type:	Other
Cycle Length:	120
Actuated Cycle Length:	120
Offset:	37 (31%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle:	75
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.94
Intersection Signal Delay:	38.2
Intersection LOS:	D
Intersection Capacity Utilization:	82.1%
ICU Level of Service:	E
Analysis Period (min):	15

Splits and Phases: 1: Constitution & Marksheffel



Lanes, Volumes, Timings  
1: Constitution & Marksheffel

2030 Total Traffic  
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	550	735	675	420	725	200	670	1440	400	400	890	385
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	440		350	350		350	350		350	350		350
Storage Lanes	2		1	2		1	2		1	2		1
Taper Length (ft)	180		180	200		100	200		100	200		100
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.91	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3433	5085	1583	3433	5085	1583	3433	5085	1583	3433	5085	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3433	5085	1583	3433	5085	1583	3433	5085	1583	3433	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			533			211			391			405
Link Speed (mph)		50			50			55				55
Link Distance (ft)		730			825			961				1309
Travel Time (s)		10.0			11.3			11.9				16.2
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.97	0.95	0.95	0.95	0.95
Adj. Flow (vph)	579	774	711	442	763	211	705	1485	421	421	937	405
Shared Lane Traffic (%)												
Lane Group Flow (vph)	579	774	711	442	763	211	705	1485	421	421	937	405
Turn Type	Prot		Free	Prot		Free	Prot		Perm	Prot		Free
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free			Free			2			Free
Detector Phase	7	4		3	8		5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Minimum Split (s)	9.0	20.0		9.0	20.0		9.0	23.0	23.0	9.0	23.0	
Total Split (s)	27.0	28.0	0.0	26.0	27.0	0.0	33.0	41.0	41.0	25.0	33.0	0.0
Total Split (%)	22.5%	23.3%	0.0%	21.7%	22.5%	0.0%	27.5%	34.2%	34.2%	20.8%	27.5%	0.0%
Maximum Green (s)	22.0	21.0		21.0	20.0		28.0	34.0	34.0	20.0	26.0	
Yellow Time (s)	3.0	5.0		3.0	5.0		3.0	5.0	5.0	3.0	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	-1.0	-3.0	0.0	-1.0	-3.0	0.0	-1.0	-3.0	-3.0	-1.0	-3.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	Max	Max		Max	Max		Max	C-Max	C-Max	Max	C-Max	
Act Effct Green (s)	23.0	24.0	120.0	22.0	23.0	120.0	29.0	37.0	37.0	21.0	29.0	120.0
Actuated g/C Ratio	0.19	0.20	1.00	0.18	0.19	1.00	0.24	0.31	0.31	0.18	0.24	1.00
v/c Ratio	0.88	0.76	0.45	0.70	0.78	0.13	0.85	0.95	0.55	0.70	0.76	0.26
Control Delay	49.1	43.3	1.8	52.8	52.6	0.2	54.4	54.0	7.4	53.6	47.1	0.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	49.1	43.3	1.8	52.8	52.6	0.2	54.4	54.0	7.4	53.6	47.1	0.4
LOS	D	D	A	D	D	A	D	D	A	D	D	A
Approach Delay		30.6			44.9			46.6			37.9	
Approach LOS		C			D			D			D	
Queue Length 50th (ft)	172	228	31	167	207	0	270	411	16	159	248	0

Lanes, Volumes, Timings  
1: Constitution & Marksheffel

2030 Total Traffic  
PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	#310	272	40	224	256	0	#361	#510	101	215	300	0
Internal Link Dist (ft)		650			745			881			1229	
Turn Bay Length (ft)	440		350	350		350	350		350	350		350
Base Capacity (vph)	658	1017	1583	629	975	1583	830	1568	759	601	1229	1583
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.88	0.76	0.45	0.70	0.78	0.13	0.85	0.95	0.55	0.70	0.76	0.26

Intersection Summary

Area Type: Other  
 Cycle Length: 120  
 Actuated Cycle Length: 120  
 Offset: 19 (16%), Referenced to phase 2:NBT and 6:SBT, Start of Green  
 Natural Cycle: 90  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.95  
 Intersection Signal Delay: 40.1  
 Intersection Capacity Utilization 82.3%  
 Analysis Period (min) 15  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

Intersection LOS: D  
 ICU Level of Service E

Splits and Phases: 1: Constitution & Marksheffel

ø1 25 s	ø2 41 s	ø3 26 s	ø4 28 s
ø5 33 s	ø6 33 s	ø7 27 s	ø8 27 s

HCM Unsignalized Intersection Capacity Analysis  
 6: Constitution & Hannah Ridge

Existing Traffic  
 AM Peak Hour



Movement	EBT	EBR	WBL	WBT	NBL	NBR	
Lane Configurations	↑↑	↑	↓	↑↑↑	↓	↑	
Volume (veh/h)	365	0	10	450	1	15	
Sign Control	Free			Free	Stop		
Grade	0%			0%	0%		
Peak Hour Factor	0.92	0.92	0.80	0.80	0.67	0.67	
Hourly flow rate (vph)	397	0	12	562	1	22	
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)							
Median type	None			None			
Median storage (veh)							
Upstream signal (ft)							
pX, platoon unblocked							
vC, conflicting volume			397			609	198
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol			397			609	198
tC, single (s)			4.1			6.8	6.9
tC, 2 stage (s)							
tF (s)			2.2			3.5	3.3
p0 queue free %			99			100	97
cM capacity (veh/h)			1158			422	809

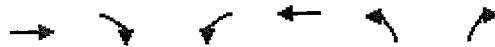
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	WB 4	NB 1	NB 2
Volume Total	198	198	0	12	188	188	188	1	22
Volume Left	0	0	0	12	0	0	0	1	0
Volume Right	0	0	0	0	0	0	0	0	22
cSH	1700	1700	1700	1158	1700	1700	1700	422	809
Volume to Capacity	0.12	0.12	0.00	0.01	0.11	0.11	0.11	0.00	0.03
Queue Length 95th (ft)	0	0	0	1	0	0	0	0	2
Control Delay (s)	0.0	0.0	0.0	8.1	0.0	0.0	0.0	13.6	9.6
Lane LOS				A				B	A
Approach Delay (s)	0.0		0.2				9.8		
Approach LOS							A		

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	20.1%	ICU Level of Service	A
Analysis Period (min)	15		



HCM Unsignalized Intersection Capacity Analysis  
 6: Constitution & Hannah Ridge

Existing Traffic  
 PM Peak Hour



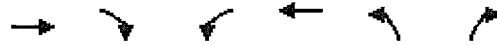
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↑	↑↑↑	↑	↑
Volume (veh/h)	510	5	10	545	5	15
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.85	0.85	0.90	0.90	0.58	0.58
Hourly flow rate (vph)	600	6	11	606	9	26
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			606		824	300
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			606		824	300
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		97	96
cM capacity (veh/h)			968		308	696

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	WB 4	NB 1	NB 2
Volume Total	300	300	6	11	202	202	202	9	26
Volume Left	0	0	0	11	0	0	0	9	0
Volume Right	0	0	6	0	0	0	0	0	26
cSH	1700	1700	1700	968	1700	1700	1700	308	696
Volume to Capacity	0.18	0.18	0.00	0.01	0.12	0.12	0.12	0.03	0.04
Queue Length 95th (ft)	0	0	0	1	0	0	0	2	3
Control Delay (s)	0.0	0.0	0.0	8.8	0.0	0.0	0.0	17.0	10.4
Lane LOS				A				C	B
Approach Delay (s)	0.0			0.2				12.0	
Approach LOS								B	

Intersection Summary		
Average Delay		0.4
Intersection Capacity Utilization	24.1%	ICU Level of Service
Analysis Period (min)		15
		A

HCM Unsignalized Intersection Capacity Analysis  
6: Constitution & Hannah Ridge

2015 Background Traffic  
AM Peak Hour



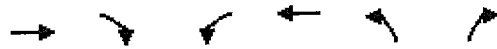
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↓	↑↑↑	↓	↑
Volume (veh/h)	755	30	35	785	60	45
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	795	32	37	826	63	47
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			826		1144	397
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			826		1144	397
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			95		66	92
cM capacity (veh/h)			800		184	602

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	WB 4	NB 1	NB 2	
Volume Total	397	397	32	37	275	275	275	63	47	
Volume Left	0	0	0	37	0	0	0	63	0	
Volume Right	0	0	32	0	0	0	0	0	47	
cSH	1700	1700	1700	800	1700	1700	1700	184	602	
Volume to Capacity	0.23	0.23	0.02	0.05	0.16	0.16	0.16	0.34	0.08	
Queue Length 95th (ft)	0	0	0	4	0	0	0	36	6	
Control Delay (s)	0.0	0.0	0.0	9.7	0.0	0.0	0.0	34.4	11.5	
Lane LOS				A					D	B
Approach Delay (s)	0.0			0.4				24.6		
Approach LOS								C		

Intersection Summary	
Average Delay	1.7
Intersection Capacity Utilization	37.5%
ICU Level of Service	A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis  
6: Constitution & Hannah Ridge

2015 Background Traffic  
PM Peak Hour



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↑	↑↑↑	↑	↑
Volume (veh/h)	815	70	65	830	60	50
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	858	74	68	874	63	53
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			932		1286	429
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			932		1286	429
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			91		55	91
cM capacity (veh/h)			730		141	574

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	WB 4	NB 1	NB 2	
Volume Total	429	429	74	68	291	291	291	63	53	
Volume Left	0	0	0	68	0	0	0	63	0	
Volume Right	0	0	74	0	0	0	0	0	53	
cSH	1700	1700	1700	730	1700	1700	1700	141	574	
Volume to Capacity	0.25	0.25	0.04	0.09	0.17	0.17	0.17	0.45	0.09	
Queue Length 95th (ft)	0	0	0	8	0	0	0	50	8	
Control Delay (s)	0.0	0.0	0.0	10.4	0.0	0.0	0.0	49.5	11.9	
Lane LOS				B					E	B
Approach Delay (s)	0.0			0.8				32.4		
Approach LOS								D		

Intersection Summary	
Average Delay	2.2
Intersection Capacity Utilization	39.5%
ICU Level of Service	A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis  
6: Constitution & Hannah Ridge

2015 Total Traffic - Preliminary Plan  
AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↙	↑↑	↗	↙	↑↑	↗	↙	↑	↗	↙	↑	↗
Volume (veh/h)	5	755	30	35	790	10	60	5	45	25	10	20
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	5	795	32	37	832	11	63	5	47	26	11	21
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												6
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	842			826			1300	1721	397	1363	1742	416
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	842			826			1300	1721	397	1363	1742	416
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			95			36	94	92	71	87	96
cM capacity (veh/h)	789			800			99	84	602	90	81	586

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	WB 4	NB 1	NB 2	SB 1	SB 2
Volume Total	5	397	397	32	37	416	416	11	63	53	26	32
Volume Left	5	0	0	0	37	0	0	0	63	0	26	0
Volume Right	0	0	0	32	0	0	0	11	0	47	0	21
cSH	789	1700	1700	1700	800	1700	1700	1700	99	372	90	244
Volume to Capacity	0.01	0.23	0.23	0.02	0.05	0.24	0.24	0.01	0.64	0.14	0.29	0.13
Queue Length 95th (ft)	1	0	0	0	4	0	0	0	78	12	27	11
Control Delay (s)	9.6	0.0	0.0	0.0	9.7	0.0	0.0	0.0	90.5	16.3	61.0	26.2
Lane LOS	A				A				F	C	F	D
Approach Delay (s)	0.1				0.4				56.8		42.0	
Approach LOS									F		E	

Intersection Summary												
Average Delay				5.0								
Intersection Capacity Utilization			45.2%		ICU Level of Service				A			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis  
 6: Constitution & Hannah Ridge

2015 Total Traffic - Preliminary Plan  
 PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↙	↑↑	↗	↙	↑↑	↗	↙	↑	↗	↙	↑	↗
Volume (veh/h)	25	815	70	65	845	35	60	10	50	15	5	15
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	26	858	74	68	889	37	63	11	53	16	5	16
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												6
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	926			932			1495	1974	429	1566	2011	445
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	926			932			1495	1974	429	1566	2011	445
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	96			91			8	80	91	70	90	97
cM capacity (veh/h)	734			730			69	54	574	53	51	561

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	WB 4	NB 1	NB 2	SB 1	SB 2
Volume Total	26	429	429	74	68	445	445	37	63	63	16	21
Volume Left	26	0	0	0	68	0	0	0	63	0	16	0
Volume Right	0	0	0	74	0	0	0	37	0	53	0	16
cSH	734	1700	1700	1700	730	1700	1700	1700	69	220	53	204
Volume to Capacity	0.04	0.25	0.25	0.04	0.09	0.26	0.26	0.02	0.92	0.29	0.30	0.10
Queue Length 95th (ft)	3	0	0	0	8	0	0	0	113	29	26	9
Control Delay (s)	10.1	0.0	0.0	0.0	10.4	0.0	0.0	0.0	186.8	27.9	100.5	29.6
Lane LOS	B				B				F	D	F	D
Approach Delay (s)	0.3				0.7				107.3		60.0	
Approach LOS									F		F	

Intersection Summary

Average Delay	7.9
Intersection Capacity Utilization	46.7%
ICU Level of Service	A
Analysis Period (min)	15

Lanes, Volumes, Timings  
6: Constitution & Hannah Ridge

2015 Background Traffic  
AM Peak Hour



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↓	↑↑↑	↓	↑
Volume (vph)	755	30	35	785	60	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	275		85	0
Storage Lanes		1	1		2	1
Taper Length (ft)		180	120		85	100
Lane Util. Factor	0.95	1.00	1.00	0.91	0.97	1.00
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3539	1583	1770	5085	3433	1583
Flt Permitted			0.346		0.950	
Satd. Flow (perm)	3539	1583	645	5085	3433	1583
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		32				47
Link Speed (mph)	50			50	30	
Link Distance (ft)	1189			864	592	
Travel Time (s)	16.2			11.8	13.5	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	795	32	37	826	63	47
Shared Lane Traffic (%)						
Lane Group Flow (vph)	795	32	37	826	63	47
Turn Type		Perm	Perm			custom
Protected Phases	4			8	5	5
Permitted Phases		4	8			5
Detector Phase	4	4	8	8	5	5
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	22.0	22.0	22.0	22.0	9.0	9.0
Total Split (s)	100.0	100.0	100.0	100.0	20.0	20.0
Total Split (%)	83.3%	83.3%	83.3%	83.3%	16.7%	16.7%
Maximum Green (s)	94.0	94.0	94.0	94.0	15.0	15.0
Yellow Time (s)	4.0	4.0	4.0	4.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-3.0	-3.0	-1.0	-3.0	-1.0	-1.0
Total Lost Time (s)	3.0	3.0	5.0	3.0	4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	C-Max	C-Max	C-Max	C-Max	None	None
Walk Time (s)	5.0	5.0	5.0	5.0		
Flash Dont Walk (s)	11.0	11.0	11.0	11.0		
Pedestrian Calls (#/hr)	0	0	0	0		
Act Effct Green (s)	107.1	107.1	105.5	107.1	8.6	8.6
Actuated g/C Ratio	0.89	0.89	0.88	0.89	0.07	0.07
v/c Ratio	0.25	0.02	0.07	0.18	0.26	0.30
Control Delay	0.3	0.0	2.1	1.4	54.8	19.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	0.3	0.0	2.1	1.4	54.8	19.7
LOS	A	A	A	A	D	B

Lanes, Volumes, Timings  
 6: Constitution & Hannah Ridge

2015 Background Traffic  
 AM Peak Hour



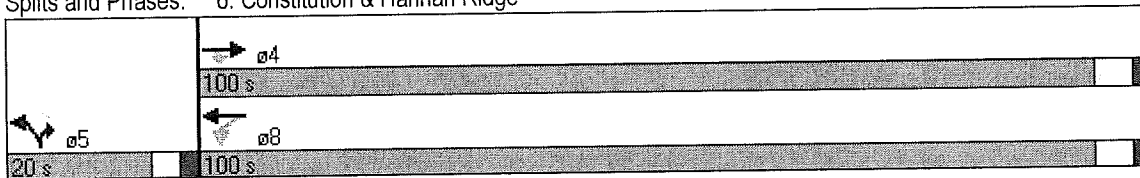
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Approach Delay	0.3			1.4	39.8	
Approach LOS	A			A	D	

Intersection Summary

Area Type: Other  
 Cycle Length: 120  
 Actuated Cycle Length: 120  
 Offset: 74 (62%), Referenced to phase 4:EBT and 8:WBTL, Start of Green  
 Natural Cycle: 40  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.30  
 Intersection Signal Delay: 3.3  
 Intersection Capacity Utilization 38.4%  
 Analysis Period (min) 15

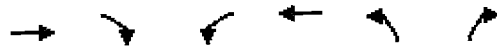
Intersection LOS: A  
 ICU Level of Service A

Splits and Phases: 6: Constitution & Hannah Ridge



Lanes, Volumes, Timings  
6: Constitution & Hannah Ridge

2015 Background Traffic  
PM Peak Hour



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↓	↑↑↑	↓	↑
Volume (vph)	815	70	65	830	60	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	275		85	0
Storage Lanes		1	1		2	1
Taper Length (ft)		180	120		85	100
Lane Util. Factor	0.95	1.00	1.00	0.91	0.97	1.00
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3539	1583	1770	5085	3433	1583
Flt Permitted			0.314		0.950	
Satd. Flow (perm)	3539	1583	585	5085	3433	1583
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		74				53
Link Speed (mph)	50			50	30	
Link Distance (ft)	1189			864	592	
Travel Time (s)	16.2			11.8	13.5	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	858	74	68	874	63	53
Shared Lane Traffic (%)						
Lane Group Flow (vph)	858	74	68	874	63	53
Turn Type		Perm	Perm			custom
Protected Phases	4			8	5	5
Permitted Phases		4	8			5
Detector Phase	4	4	8	8	5	5
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	22.0	22.0	22.0	22.0	9.0	9.0
Total Split (s)	100.0	100.0	100.0	100.0	20.0	20.0
Total Split (%)	83.3%	83.3%	83.3%	83.3%	16.7%	16.7%
Maximum Green (s)	94.0	94.0	94.0	94.0	15.0	15.0
Yellow Time (s)	4.0	4.0	4.0	4.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-3.0	-3.0	-1.0	-3.0	-1.0	-1.0
Total Lost Time (s)	3.0	3.0	5.0	3.0	4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	C-Max	C-Max	C-Max	C-Max	Max	Max
Walk Time (s)	5.0	5.0	5.0	5.0		
Flash Dont Walk (s)	11.0	11.0	11.0	11.0		
Pedestrian Calls (#/hr)	0	0	0	0		
Act Effct Green (s)	97.0	97.0	95.0	97.0	16.0	16.0
Actuated g/C Ratio	0.81	0.81	0.79	0.81	0.13	0.13
v/c Ratio	0.30	0.06	0.15	0.21	0.14	0.21
Control Delay	1.1	0.1	2.2	1.5	46.8	14.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	1.1	0.1	2.2	1.5	46.8	14.4
LOS	A	A	A	A	D	B



Lanes, Volumes, Timings  
 6: Constitution & Hannah Ridge

2015 Background Traffic  
 PM Peak Hour



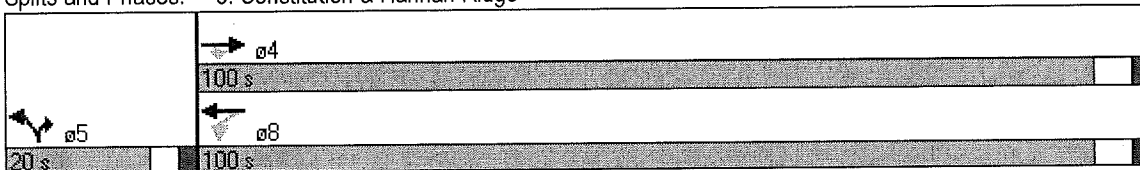
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Approach Delay	1.0			1.5	32.0	
Approach LOS	A			A	C	

Intersection Summary

Area Type: Other  
 Cycle Length: 120  
 Actuated Cycle Length: 120  
 Offset: 67 (56%), Referenced to phase 4:EBT and 8:WBTL, Start of Green  
 Natural Cycle: 40  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.30  
 Intersection Signal Delay: 3.1  
 Intersection Capacity Utilization 40.3%  
 Analysis Period (min) 15

Intersection LOS: A  
 ICU Level of Service A

Splits and Phases: 6: Constitution & Hannah Ridge



Lanes, Volumes, Timings  
6: Constitution & Hannah Ridge

2015 Total Traffic - Preliminary Plan  
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	5	755	30	35	790	10	60	5	45	25	10	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	385		0	275		0	85		140	150		150
Storage Lanes	1		1	1		1	1		0	1		1
Taper Length (ft)	200		180	120		25	85		100	25		25
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fr't			0.850			0.850		0.864				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	1609	0	1770	1863	1583
Flt Permitted	0.324			0.338			0.750			0.723		
Satd. Flow (perm)	604	3539	1583	630	3539	1583	1397	1609	0	1347	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			32			11		47				21
Link Speed (mph)		50			50			30				30
Link Distance (ft)		1189			864			592				490
Travel Time (s)		16.2			11.8			13.5				11.1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	5	795	32	37	832	11	63	5	47	26	11	21
Shared Lane Traffic (%)												
Lane Group Flow (vph)	5	795	32	37	832	11	63	52	0	26	11	21
Turn Type	Perm		Perm	Perm		Perm	Perm			Perm		Perm
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8	2			6		6
Detector Phase	4	4	4	8	8	8	2	2		6	6	6
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Minimum Split (s)	23.0	23.0	23.0	23.0	23.0	23.0	21.0	21.0		21.0	21.0	21.0
Total Split (s)	99.0	99.0	99.0	99.0	99.0	99.0	21.0	21.0	0.0	21.0	21.0	21.0
Total Split (%)	82.5%	82.5%	82.5%	82.5%	82.5%	82.5%	17.5%	17.5%	0.0%	17.5%	17.5%	17.5%
Maximum Green (s)	92.0	92.0	92.0	92.0	92.0	92.0	16.0	16.0		16.0	16.0	16.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	3.0	3.0		3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-3.0	-3.0	-1.0	-3.0	-3.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	6.0	4.0	4.0	6.0	4.0	4.0	4.0	4.0	3.0	4.0	4.0	4.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	C-Max	C-Max	C-Max	C-Max	C-Max	C-Max	Max	Max		Max	Max	Max
Walk Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0		11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0	0	0		0	0	0
Act Effct Green (s)	93.0	95.0	95.0	93.0	95.0	95.0	17.0	17.0		17.0	17.0	17.0
Actuated g/C Ratio	0.78	0.79	0.79	0.78	0.79	0.79	0.14	0.14		0.14	0.14	0.14
v/c Ratio	0.01	0.28	0.03	0.08	0.30	0.01	0.32	0.19		0.14	0.04	0.09
Control Delay	0.6	0.7	0.0	3.4	2.4	1.1	51.3	16.8		47.2	45.1	18.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	0.6	0.7	0.0	3.4	2.4	1.1	51.3	16.8		47.2	45.1	18.2
LOS	A	A	A	A	A	A	D	B		D	D	B

Lanes, Volumes, Timings  
 6: Constitution & Hannah Ridge

2015 Total Traffic - Preliminary Plan  
 AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		0.7			2.4			35.7			36.3	
Approach LOS		A			A			D			D	

Intersection Summary

Area Type: Other  
 Cycle Length: 120  
 Actuated Cycle Length: 120  
 Offset: 73 (61%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green  
 Natural Cycle: 45  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.32  
 Intersection Signal Delay: 4.7  
 Intersection Capacity Utilization 45.7%  
 Analysis Period (min) 15

Intersection LOS: A  
 ICU Level of Service A

Splits and Phases: 6: Constitution & Hannah Ridge

ø2	ø4
21 s	99 s
ø6	ø8
21 s	99 s

Lanes, Volumes, Timings  
6: Constitution & Hannah Ridge

2015 Total Traffic - Preliminary Plan  
PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	25	815	70	65	845	35	60	10	50	15	5	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	385		0	275		0	85		140	150		150
Storage Lanes	1		1	1		1	1		0	1		1
Taper Length (ft)	200		180	120		25	85		100	25		25
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fr't			0.850			0.850		0.876				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Sat'd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	1632	0	1770	1863	1583
Flt Permitted	0.304			0.314			0.754			0.715		
Sat'd. Flow (perm)	566	3539	1583	585	3539	1583	1405	1632	0	1332	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Sat'd. Flow (RTOR)			74			37		53				16
Link Speed (mph)		50			50			30				30
Link Distance (ft)		1189			864			592				490
Travel Time (s)		16.2			11.8			13.5				11.1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	26	858	74	68	889	37	63	11	53	16	5	16
Shared Lane Traffic (%)												
Lane Group Flow (vph)	26	858	74	68	889	37	63	64	0	16	5	16
Turn Type	Perm		Perm	Perm		Perm	Perm			Perm		Perm
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8	2			6		6
Detector Phase	4	4	4	8	8	8	2	2		6	6	6
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Minimum Split (s)	23.0	23.0	23.0	23.0	23.0	23.0	21.0	21.0		21.0	21.0	21.0
Total Split (s)	99.0	99.0	99.0	99.0	99.0	99.0	21.0	21.0	0.0	21.0	21.0	21.0
Total Split (%)	82.5%	82.5%	82.5%	82.5%	82.5%	82.5%	17.5%	17.5%	0.0%	17.5%	17.5%	17.5%
Maximum Green (s)	92.0	92.0	92.0	92.0	92.0	92.0	16.0	16.0		16.0	16.0	16.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	3.0	3.0		3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-3.0	-3.0	-1.0	-3.0	-3.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	6.0	4.0	4.0	6.0	4.0	4.0	4.0	4.0	3.0	4.0	4.0	4.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	C-Max	C-Max	C-Max	C-Max	C-Max	C-Max	Max	Max		Max	Max	Max
Walk Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0		11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0	0	0		0	0	0
Act Effct Green (s)	93.0	95.0	95.0	93.0	95.0	95.0	17.0	17.0		17.0	17.0	17.0
Actuated g/C Ratio	0.78	0.79	0.79	0.78	0.79	0.79	0.14	0.14		0.14	0.14	0.14
v/c Ratio	0.06	0.31	0.06	0.15	0.32	0.03	0.32	0.23		0.08	0.02	0.07
Control Delay	1.6	1.4	0.1	3.7	2.4	0.5	51.2	17.9		46.2	44.6	20.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	1.6	1.4	0.1	3.7	2.4	0.5	51.2	17.9		46.2	44.6	20.1
LOS	A	A	A	A	A	A	D	B		D	D	C

Lanes, Volumes, Timings  
6: Constitution & Hannah Ridge

2015 Total Traffic - Preliminary Plan  
PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		1.3			2.4			34.5			34.7	
Approach LOS		A			A			C			C	

Intersection Summary

Area Type: Other  
 Cycle Length: 120  
 Actuated Cycle Length: 120  
 Offset: 64 (53%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green  
 Natural Cycle: 45  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.32  
 Intersection Signal Delay: 4.4  
 Intersection Capacity Utilization 48.3%  
 Analysis Period (min) 15

Intersection LOS: A  
ICU Level of Service A

Splits and Phases: 6: Constitution & Hannah Ridge

02	04
21 s	99 s
06	08
21 s	99 s

Lanes, Volumes, Timings  
6: Constitution & Hannah Ridge

2015 Total Traffic - Buildout  
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	20	845	30	50	835	15	60	10	70	45	20	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	385		0	275		0	85		140	75		75
Storage Lanes	1		1	1		1	2		0	1		1
Taper Length (ft)	200		180	120		25	85		100	25		25
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.97	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850		0.869				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	3433	1619	0	1770	1863	1583
Flt Permitted	0.274			0.270			0.950			0.585		
Satd. Flow (perm)	510	3539	1583	503	3539	1583	3433	1619	0	1090	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			32			16		74				37
Link Speed (mph)		50			50			30				30
Link Distance (ft)		1189			864			592				490
Travel Time (s)		16.2			11.8			13.5				11.1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	21	889	32	53	879	16	63	11	74	47	21	37
Shared Lane Traffic (%)												
Lane Group Flow (vph)	21	889	32	53	879	16	63	85	0	47	21	37
Turn Type	pm+pt		Perm	pm+pt		Perm	Prot			pm+pt		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8				6		6
Detector Phase	7	4	4	3	8	8	5	2		1	6	6
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Minimum Split (s)	9.0	22.0	22.0	9.0	22.0	22.0	9.0	13.0		9.0	13.0	13.0
Total Split (s)	10.0	80.0	80.0	10.0	80.0	80.0	17.0	13.0	0.0	17.0	13.0	13.0
Total Split (%)	8.3%	66.7%	66.7%	8.3%	66.7%	66.7%	14.2%	10.8%	0.0%	14.2%	10.8%	10.8%
Maximum Green (s)	5.0	73.0	73.0	5.0	73.0	73.0	12.0	8.0		12.0	8.0	8.0
Yellow Time (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	3.0		3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-3.0	-3.0	-1.0	-3.0	-3.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	Max	C-Max	C-Max	Max	C-Max	C-Max	Max	Max		Max	Max	Max
Act Effct Green (s)	82.0	76.0	76.0	82.0	76.0	76.0	13.0	9.0		22.0	9.0	9.0
Actuated g/C Ratio	0.68	0.63	0.63	0.68	0.63	0.63	0.11	0.08		0.18	0.08	0.08
v/c Ratio	0.05	0.40	0.03	0.13	0.39	0.02	0.17	0.45		0.17	0.15	0.24
Control Delay	4.8	8.5	2.3	2.9	4.8	0.7	49.9	23.1		39.7	54.6	20.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	4.8	8.5	2.3	2.9	4.8	0.7	49.9	23.1		39.7	54.6	20.2
LOS	A	A	A	A	A	A	D	C		D	D	C
Approach Delay		8.2			4.6			34.5			35.8	
Approach LOS		A			A			C			D	









Lanes, Volumes, Timings  
 6: Constitution & Hannah Ridge

2015 Total Traffic - Buildout  
 AM Peak Hour

Intersection Summary

Area Type:	Other
Cycle Length:	120
Actuated Cycle Length:	120
Offset:	32 (27%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green
Natural Cycle:	55
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.45
Intersection Signal Delay:	9.8
Intersection Capacity Utilization	45.9%
Analysis Period (min)	15
Intersection LOS:	A
ICU Level of Service	A

Splits and Phases: 6: Constitution & Hannah Ridge

 ø1	 ø2	 ø3	 ø4
17 s	13 s	10 s	80 s
 ø5	 ø6	 ø7	 ø8
17 s	13 s	10 s	80 s

Lanes, Volumes, Timings  
6: Constitution & Hannah Ridge

2015 Total Traffic - Buildout  
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	65	1015	70	125	1070	65	60	30	105	40	20	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	385		0	275		0	85		140	75		75
Storage Lanes	1		1	1		1	2		0	1		1
Taper Length (ft)	200		180	120		25	85		100	25		25
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.97	1.00	1.00	1.00	1.00	1.00
Fr <sub>t</sub>			0.850			0.850		0.884				0.850
Fl <sub>t</sub> Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	3433	1647	0	1770	1863	1583
Fl <sub>t</sub> Permitted	0.213			0.180			0.950			0.666		
Satd. Flow (perm)	397	3539	1583	335	3539	1583	3433	1647	0	1241	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			74			68		111				53
Link Speed (mph)		50			50			30				30
Link Distance (ft)		1189			864			592				490
Travel Time (s)		16.2			11.8			13.5				11.1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	68	1068	74	132	1126	68	63	32	111	42	21	53
Shared Lane Traffic (%)												
Lane Group Flow (vph)	68	1068	74	132	1126	68	63	143	0	42	21	53
Turn Type	pm+pt		Perm	pm+pt		Perm	Prot			pm+pt		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8				6		6
Detector Phase	7	4	4	3	8	8	5	2		1	6	6
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Minimum Split (s)	9.0	22.0	22.0	9.0	22.0	22.0	9.0	15.0		9.0	13.0	13.0
Total Split (s)	9.0	73.0	73.0	16.0	80.0	80.0	18.0	21.0	0.0	10.0	13.0	13.0
Total Split (%)	7.5%	60.8%	60.8%	13.3%	66.7%	66.7%	15.0%	17.5%	0.0%	8.3%	10.8%	10.8%
Maximum Green (s)	4.0	66.0	66.0	11.0	73.0	73.0	13.0	16.0		5.0	8.0	8.0
Yellow Time (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	3.0		3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-3.0	-3.0	-1.0	-3.0	-3.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	Max	C-Max	C-Max	Max	C-Max	C-Max	Max	Max		Max	Max	Max
Act Effct Green (s)	74.0	69.0	69.0	85.0	76.0	76.0	14.0	17.0		15.0	9.0	9.0
Actuated g/C Ratio	0.62	0.58	0.58	0.71	0.63	0.63	0.12	0.14		0.12	0.08	0.08
v/c Ratio	0.23	0.52	0.08	0.35	0.50	0.07	0.16	0.43		0.23	0.15	0.32
Control Delay	4.5	12.0	1.6	10.2	25.5	8.2	48.8	18.2		41.0	54.6	19.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	4.5	12.0	1.6	10.2	25.5	8.2	48.8	18.2		41.0	54.6	19.2
LOS	A	B	A	B	C	A	D	B		D	D	B
Approach Delay		10.9			23.1			27.6			33.5	
Approach LOS		B			C			C			C	



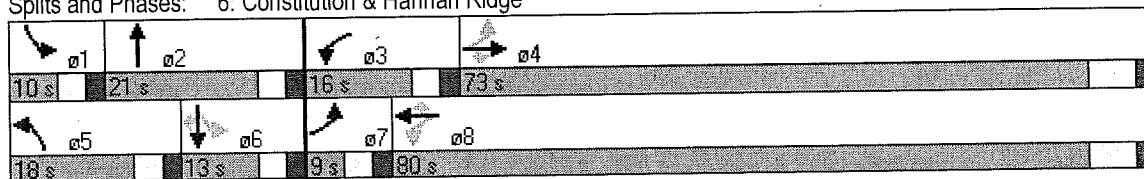
Lanes, Volumes, Timings  
 6: Constitution & Hannah Ridge

2015 Total Traffic - Buildout  
 PM Peak Hour

Intersection Summary

Area Type: Other  
 Cycle Length: 120  
 Actuated Cycle Length: 120  
 Offset: 99 (83%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green  
 Natural Cycle: 60  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.52  
 Intersection Signal Delay: 18.7  
 Intersection LOS: B  
 Intersection Capacity Utilization 59.7%  
 ICU Level of Service B  
 Analysis Period (min) 15

Splits and Phases: 6: Constitution & Hannah Ridge



Lanes, Volumes, Timings  
6: Constitution & Hannah Ridge

2030 Background Traffic  
AM Peak Hour

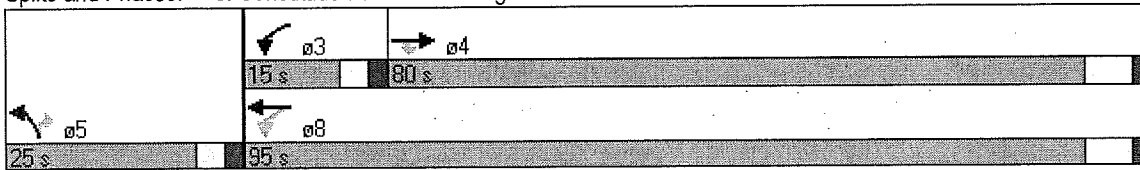


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑	↗	↖	↑↑↑	↖	↗
Volume (vph)	1425	80	75	1360	175	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		300	275		85	0
Storage Lanes		1	1		2	1
Taper Length (ft)		180	120		85	100
Lane Util. Factor	0.91	1.00	1.00	0.91	0.97	1.00
Frt		0.850				0.850
Fit Protected			0.950		0.950	
Satd. Flow (prot)	5085	1583	1770	5085	3433	1583
Fit Permitted			0.122		0.950	
Satd. Flow (perm)	5085	1583	227	5085	3433	1583
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		84				105
Link Speed (mph)	50			50	30	
Link Distance (ft)	1189			864	592	
Travel Time (s)	16.2			11.8	13.5	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	1500	84	79	1432	184	105
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1500	84	79	1432	184	105
Turn Type		Perm	pm+pt			Perm
Protected Phases	4		3	8	5	
Permitted Phases		4	8			5
Detector Phase	4	4	3	8	5	5
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	22.0	22.0	9.0	22.0	9.0	9.0
Total Split (s)	80.0	80.0	15.0	95.0	25.0	25.0
Total Split (%)	66.7%	66.7%	12.5%	79.2%	20.8%	20.8%
Maximum Green (s)	73.0	73.0	10.0	88.0	20.0	20.0
Yellow Time (s)	5.0	5.0	3.0	5.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-3.0	-3.0	-1.0	-3.0	-1.0	-1.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	C-Max	C-Max	Max	C-Max	Max	Max
Act Effct Green (s)	76.0	76.0	91.0	91.0	21.0	21.0
Actuated g/C Ratio	0.63	0.63	0.76	0.76	0.18	0.18
v/c Ratio	0.47	0.08	0.25	0.37	0.31	0.29
Control Delay	32.7	13.0	14.3	21.8	44.8	10.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.7	13.0	14.3	21.8	44.8	10.2
LOS	C	B	B	C	D	B
Approach Delay	31.7			21.4	32.2	
Approach LOS	C			C	C	

Intersection Summary

Area Type:	Other
Cycle Length:	120
Actuated Cycle Length:	120
Offset:	0 (0%), Referenced to phase 4:EBT and 8:WBTL, Start of Green
Natural Cycle:	40
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.47
Intersection Signal Delay:	27.1
Intersection Capacity Utilization	46.7%
Analysis Period (min)	15
	Intersection LOS: C
	ICU Level of Service A

Splits and Phases: 6: Constitution & Hannah Ridge



Lanes, Volumes, Timings  
6: Constitution & Hannah Ridge

2030 Background Traffic  
PM Peak Hour

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑	↗	↙	↑↑↑	↖	↗
Volume (vph)	1325	185	175	1310	170	120
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		300	275		85	0
Storage Lanes		1	1		2	1
Taper Length (ft)		180	120		85	100
Lane Util. Factor	0.91	1.00	1.00	0.91	0.97	1.00
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	5085	1583	1770	5085	3433	1583
Flt Permitted			0.141		0.950	
Satd. Flow (perm)	5085	1583	263	5085	3433	1583
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		195				126
Link Speed (mph)	50			50	30	
Link Distance (ft)	1189			864	592	
Travel Time (s)	16.2			11.8	13.5	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	1395	195	184	1379	179	126
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1395	195	184	1379	179	126
Turn Type		Perm	pm+pt			Perm
Protected Phases	4		3	8	5	
Permitted Phases		4	8			5
Detector Phase	4	4	3	8	5	5
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	22.0	22.0	9.0	22.0	9.0	9.0
Total Split (s)	80.0	80.0	15.0	95.0	25.0	25.0
Total Split (%)	66.7%	66.7%	12.5%	79.2%	20.8%	20.8%
Maximum Green (s)	73.0	73.0	10.0	88.0	20.0	20.0
Yellow Time (s)	5.0	5.0	3.0	5.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-3.0	-3.0	-1.0	-3.0	-1.0	-1.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	C-Max	C-Max	Max	C-Max	Max	Max
Act Effect Green (s)	76.0	76.0	91.0	91.0	21.0	21.0
Actuated g/C Ratio	0.63	0.63	0.76	0.76	0.18	0.18
v/c Ratio	0.43	0.18	0.54	0.36	0.30	0.33
Control Delay	29.6	12.8	19.6	4.1	44.6	9.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.6	12.8	19.6	4.1	44.6	9.8
LOS	C	B	B	A	D	A
Approach Delay	27.6			5.9	30.3	
Approach LOS	C			A	C	

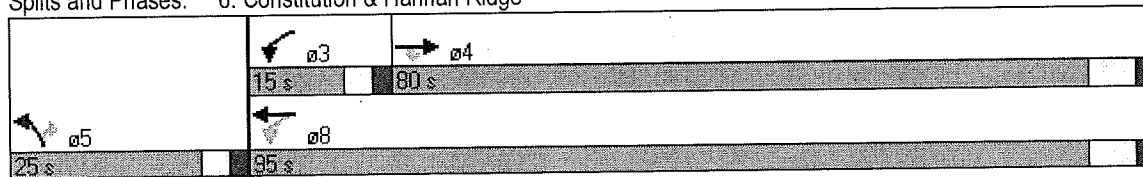
Lanes, Volumes, Timings  
 6: Constitution & Hannah Ridge

2030 Background Traffic  
 PM Peak Hour

Intersection Summary

Area Type: Other  
 Cycle Length: 120  
 Actuated Cycle Length: 120  
 Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBTL, Start of Green  
 Natural Cycle: 40  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.54  
 Intersection Signal Delay: 18.0  
 Intersection LOS: B  
 Intersection Capacity Utilization 50.1%  
 ICU Level of Service A  
 Analysis Period (min) 15

Splits and Phases: 6: Constitution & Hannah Ridge



Lanes, Volumes, Timings  
6: Constitution & Hannah Ridge

2030 Total Traffic  
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	20	1515	80	90	1410	15	175	10	125	45	20	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	385		300	275		0	85		140	75		75
Storage Lanes	1		1	1		1	2		0	1		1
Taper Length (ft)	200		180	120		25	85		100	25		25
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	0.97	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850		0.862				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	5085	1583	1770	5085	1583	3433	1606	0	1770	1863	1583
Flt Permitted	0.131			0.113			0.950			0.444		
Satd. Flow (perm)	244	5085	1583	210	5085	1583	3433	1606	0	827	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			84			16		132				37
Link Speed (mph)		50			50			30				30
Link Distance (ft)		1189			864			592				490
Travel Time (s)		16.2			11.8			13.5				11.1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	21	1595	84	95	1484	16	184	11	132	47	21	37
Shared Lane Traffic (%)												
Lane Group Flow (vph)	21	1595	84	95	1484	16	184	143	0	47	21	37
Turn Type	pm+pt		Perm	pm+pt		Perm	Prot			pm+pt		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8				6		6
Detector Phase	7	4	4	3	8	8	5	2		1	6	6
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Minimum Split (s)	9.0	22.0	22.0	9.0	22.0	22.0	9.0	13.0		9.0	13.0	13.0
Total Split (s)	9.0	80.0	80.0	9.0	80.0	80.0	18.0	13.0	0.0	18.0	13.0	13.0
Total Split (%)	7.5%	66.7%	66.7%	7.5%	66.7%	66.7%	15.0%	10.8%	0.0%	15.0%	10.8%	10.8%
Maximum Green (s)	4.0	73.0	73.0	4.0	73.0	73.0	13.0	8.0		13.0	8.0	8.0
Yellow Time (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	3.0		3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-3.0	-3.0	-1.0	-3.0	-3.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	Max	C-Max	C-Max	Max	C-Max	C-Max	Max	Max		Max	Max	Max
Act Effct Green (s)	81.0	76.0	76.0	81.0	76.0	76.0	14.0	9.0		23.0	9.0	9.0
Actuated g/C Ratio	0.68	0.63	0.63	0.68	0.63	0.63	0.12	0.08		0.19	0.08	0.08
v/c Ratio	0.09	0.50	0.08	0.46	0.46	0.02	0.46	0.59		0.17	0.15	0.24
Control Delay	1.3	1.8	0.1	22.5	11.6	4.9	53.6	21.5		39.0	54.6	20.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	1.3	1.8	0.1	22.5	11.6	4.9	53.6	21.5		39.0	54.6	20.2
LOS	A	A	A	C	B	A	D	C		D	D	C
Approach Delay		1.7			12.2			39.5			35.5	
Approach LOS		A			B			D			D	

Lanes, Volumes, Timings  
 6: Constitution & Hannah Ridge

2030 Total Traffic  
 AM Peak Hour

Intersection Summary

Area Type:	Other
Cycle Length:	120
Actuated Cycle Length:	120
Offset:	32 (27%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green
Natural Cycle:	55
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.59
Intersection Signal Delay:	10.5
Intersection LOS:	B
Intersection Capacity Utilization	59.2%
ICU Level of Service	B
Analysis Period (min)	15

Splits and Phases: 6: Constitution & Hannah Ridge

ø1	ø2	ø3	ø4
18 s	13 s	9 s	80 s
ø5	ø6	ø7	ø8
18 s	13 s	9 s	80 s

Lanes, Volumes, Timings  
6: Constitution & Hannah Ridge

2030 Total Traffic  
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	65	1525	185	235	1550	65	170	30	175	40	20	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	385		300	275		0	85		140	75		75
Storage Lanes	1		1	1		1	2		0	1		1
Taper Length (ft)	200		180	120		25	85		100	25		25
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	0.97	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850		0.872				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	5085	1583	1770	5085	1583	3433	1624	0	1770	1863	1583
Flt Permitted	0.118			0.094			0.950			0.481		
Satd. Flow (perm)	220	5085	1583	175	5085	1583	3433	1624	0	896	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			195			68		145				53
Link Speed (mph)		50			50			30			30	
Link Distance (ft)		1189			864			592			490	
Travel Time (s)		16.2			11.8			13.5			11.1	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	68	1605	195	247	1632	68	179	32	184	42	21	53
Shared Lane Traffic (%)												
Lane Group Flow (vph)	68	1605	195	247	1632	68	179	216	0	42	21	53
Turn Type	pm+pt		Perm	pm+pt		Perm	Prot			pm+pt		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8				6		6
Detector Phase	7	4	4	3	8	8	5	2		1	6	6
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Minimum Split (s)	9.0	22.0	22.0	9.0	22.0	22.0	9.0	15.0		9.0	13.0	13.0
Total Split (s)	9.0	73.0	73.0	16.0	80.0	80.0	18.0	21.0	0.0	10.0	13.0	13.0
Total Split (%)	7.5%	60.8%	60.8%	13.3%	66.7%	66.7%	15.0%	17.5%	0.0%	8.3%	10.8%	10.8%
Maximum Green (s)	4.0	66.0	66.0	11.0	73.0	73.0	13.0	16.0		5.0	8.0	8.0
Yellow Time (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	3.0		3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-3.0	-3.0	-1.0	-3.0	-3.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	Max	C-Max	C-Max	Max	C-Max	C-Max	Max	Max		Max	Max	Max
Act Effct Green (s)	74.0	69.0	69.0	85.0	76.0	76.0	14.0	17.0		15.0	9.0	9.0
Actuated g/C Ratio	0.62	0.58	0.58	0.71	0.63	0.63	0.12	0.14		0.12	0.08	0.08
v/c Ratio	0.34	0.55	0.20	0.87	0.51	0.07	0.45	0.61		0.27	0.15	0.32
Control Delay	11.7	13.6	2.3	38.4	24.9	8.2	53.3	24.9		42.2	54.6	19.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	11.7	13.6	2.3	38.4	24.9	8.2	53.3	24.9		42.2	54.6	19.2
LOS	B	B	A	D	C	A	D	C		D	D	B
Approach Delay		12.3			26.0			37.8			34.0	
Approach LOS		B			C			D			C	
Queue Length 50th (ft)	6	430	23	139	430	22	67	50		26	16	0



Lanes, Volumes, Timings  
6: Constitution & Hannah Ridge

2030 Total Traffic  
PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	m7	m440	m27	m#231	456	m33	105	133		57	42	41
Internal Link Dist (ft)		1109			784			512			410	
Turn Bay Length (ft)	385		300	275			85			75		75
Base Capacity (vph)	200	2924	993	283	3221	1028	401	355		156	140	168
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.34	0.55	0.20	0.87	0.51	0.07	0.45	0.61		0.27	0.15	0.32

Intersection Summary

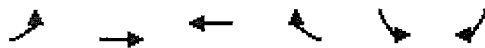
Area Type: Other  
 Cycle Length: 120  
 Actuated Cycle Length: 120  
 Offset: 99 (83%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green  
 Natural Cycle: 60  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.87  
 Intersection Signal Delay: 21.4  
 Intersection Capacity Utilization 71.5%  
 Analysis Period (min) 15  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.  
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: Constitution & Hannah Ridge

ø1	ø2	ø3	ø4
10 s	21 s	16 s	73 s
ø5	ø6	ø7	ø8
18 s	13 s	9 s	80 s

HCM Unsignalized Intersection Capacity Analysis  
 14: Constitution & Akers

Existing Traffic  
 AM Peak Hour



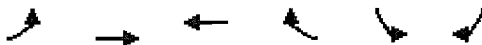
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↵	↑↑↑	↑↑	↵	↵	↵
Volume (veh/h)	35	540	480	25	40	30
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.86	0.86	0.87	0.87	0.86	0.86
Hourly flow rate (vph)	41	628	552	29	47	35
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)			1177			
pX, platoon unblocked	0.97				0.97	0.97
vC, conflicting volume	580				842	276
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	502				772	188
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	96				85	96
cM capacity (veh/h)	1025				312	797

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	SB 1	SB 2
Volume Total	41	209	209	209	276	276	29	47	35
Volume Left	41	0	0	0	0	0	0	47	0
Volume Right	0	0	0	0	0	0	29	0	35
cSH	1025	1700	1700	1700	1700	1700	1700	312	797
Volume to Capacity	0.04	0.12	0.12	0.12	0.16	0.16	0.02	0.15	0.04
Queue Length 95th (ft)	3	0	0	0	0	0	0	13	3
Control Delay (s)	8.7	0.0	0.0	0.0	0.0	0.0	0.0	18.5	9.7
Lane LOS	A							C	A
Approach Delay (s)	0.5				0.0			14.8	
Approach LOS								B	

Intersection Summary		
Average Delay		1.2
Intersection Capacity Utilization	29.9%	ICU Level of Service A
Analysis Period (min)		15

HCM Unsignalized Intersection Capacity Analysis  
 14: Constitution & Akers

Existing Traffic  
 PM Peak Hour



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↵	↑↑↑	↑↑	↗	↵	↗
Volume (veh/h)	25	590	490	20	55	40
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.93	0.93	0.84	0.84	0.35	0.35
Hourly flow rate (vph)	27	634	583	24	157	114
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)			1177			
pX, platoon unblocked	0.97				0.97	0.97
vC, conflicting volume	607				849	292
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	544				791	220
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	97				49	85
cM capacity (veh/h)	995				310	764

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	SB 1	SB 2
Volume Total	27	211	211	211	292	292	24	157	114
Volume Left	27	0	0	0	0	0	0	157	0
Volume Right	0	0	0	0	0	0	24	0	114
cSH	995	1700	1700	1700	1700	1700	1700	310	764
Volume to Capacity	0.03	0.12	0.12	0.12	0.17	0.17	0.01	0.51	0.15
Queue Length 95th (ft)	2	0	0	0	0	0	0	68	13
Control Delay (s)	8.7	0.0	0.0	0.0	0.0	0.0	0.0	28.0	10.5
Lane LOS	A							D	B
Approach Delay (s)	0.4				0.0			20.7	
Approach LOS								C	

Intersection Summary		
Average Delay		3.8
Intersection Capacity Utilization	30.2%	ICU Level of Service
Analysis Period (min)		15
		A

HCM Unsignalized Intersection Capacity Analysis  
4: Constitution & Akers

2015 Background Traffic  
AM Peak Hour



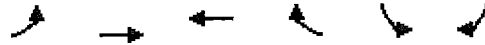
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↘	↑↑↑	↑↑	↗	↘	↗
Volume (veh/h)	135	665	760	110	50	60
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	142	700	800	116	53	63
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)			1170			
pX, platoon unblocked	0.87				0.87	0.87
vC, conflicting volume	916				1318	400
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	613				1073	23
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	83				66	93
cM capacity (veh/h)	840				156	916

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	SB 1	SB 2
Volume Total	142	233	233	233	400	400	116	53	63
Volume Left	142	0	0	0	0	0	0	53	0
Volume Right	0	0	0	0	0	0	116	0	63
cSH	840	1700	1700	1700	1700	1700	1700	156	916
Volume to Capacity	0.17	0.14	0.14	0.14	0.24	0.24	0.07	0.34	0.07
Queue Length 95th (ft)	15	0	0	0	0	0	0	35	6
Control Delay (s)	10.2	0.0	0.0	0.0	0.0	0.0	0.0	39.4	9.2
Lane LOS	B							E	A
Approach Delay (s)	1.7				0.0			22.9	
Approach LOS								C	

Intersection Summary	
Average Delay	2.2
Intersection Capacity Utilization	41.8%
ICU Level of Service	A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis  
 4: Constitution & Akers

2015 Background Traffic  
 PM Peak Hour



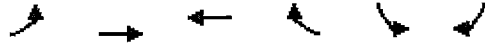
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↙	↑↑↑	↑↑	↘	↙	↘
Volume (veh/h)	65	800	760	50	125	135
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.90	0.90
Hourly flow rate (vph)	68	842	800	53	139	150
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)			1170			
pX, platoon unblocked	0.94				0.94	0.94
vC, conflicting volume	853				1218	400
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	708				1097	225
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	92				22	79
cM capacity (veh/h)	831				178	729

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	SB 1	SB 2
Volume Total	68	281	281	281	400	400	53	139	150
Volume Left	68	0	0	0	0	0	0	139	0
Volume Right	0	0	0	0	0	0	53	0	150
cSH	831	1700	1700	1700	1700	1700	1700	178	729
Volume to Capacity	0.08	0.17	0.17	0.17	0.24	0.24	0.03	0.78	0.21
Queue Length 95th (ft)	7	0	0	0	0	0	0	129	19
Control Delay (s)	9.7	0.0	0.0	0.0	0.0	0.0	0.0	73.3	11.2
Lane LOS	A							F	B
Approach Delay (s)	0.7				0.0			41.0	
Approach LOS								E	

Intersection Summary									
Average Delay									6.1
Intersection Capacity Utilization				41.5%		ICU Level of Service			A
Analysis Period (min)				15					

HCM Unsignalized Intersection Capacity Analysis  
 4: Constitution & Akers

2015 Total Traffic - Preliminary Plan  
 AM Peak Hour



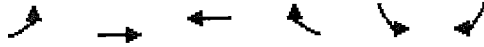
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↙	↑↑↑	↑↑	↗	↙	↗
Volume (veh/h)	135	690	775	120	75	60
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	142	726	816	126	79	63
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)			1170			
pX, platoon unblocked	0.87				0.87	0.87
vC, conflicting volume	942				1342	408
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	642				1100	30
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	83				47	93
cM capacity (veh/h)	819				149	906

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	SB 1	SB 2
Volume Total	142	242	242	242	408	408	126	79	63
Volume Left	142	0	0	0	0	0	0	79	0
Volume Right	0	0	0	0	0	0	126	0	63
cSH	819	1700	1700	1700	1700	1700	1700	149	906
Volume to Capacity	0.17	0.14	0.14	0.14	0.24	0.24	0.07	0.53	0.07
Queue Length 95th (ft)	16	0	0	0	0	0	0	65	6
Control Delay (s)	10.3	0.0	0.0	0.0	0.0	0.0	0.0	53.6	9.3
Lane LOS	B							F	A
Approach Delay (s)	1.7				0.0			33.9	
Approach LOS								D	

Intersection Summary									
Average Delay									3.2
Intersection Capacity Utilization			43.1%			ICU Level of Service			A
Analysis Period (min)			15						

HCM Unsignalized Intersection Capacity Analysis  
 4: Constitution & Akers

2015 Total Traffic - Preliminary Plan  
 PM Peak Hour



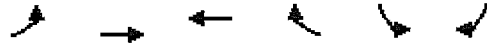
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↙	↑↑↑	↑↑	↘	↙	↘
Volume (veh/h)	65	815	810	80	145	135
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.93	0.93
Hourly flow rate (vph)	68	858	853	84	156	145
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)			1170			
pX, platoon unblocked	0.94				0.94	0.94
vC, conflicting volume	937				1275	426
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	800				1161	256
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	91				3	79
cM capacity (veh/h)	768				161	697

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	SB 1	SB 2
Volume Total	68	286	286	286	426	426	84	156	145
Volume Left	68	0	0	0	0	0	0	156	0
Volume Right	0	0	0	0	0	0	84	0	145
cSH	768	1700	1700	1700	1700	1700	1700	161	697
Volume to Capacity	0.09	0.17	0.17	0.17	0.25	0.25	0.05	0.97	0.21
Queue Length 95th (ft)	7	0	0	0	0	0	0	183	19
Control Delay (s)	10.1	0.0	0.0	0.0	0.0	0.0	0.0	119.3	11.5
Lane LOS	B							F	B
Approach Delay (s)	0.7				0.0			67.3	
Approach LOS								F	

Intersection Summary									
Average Delay									9.7
Intersection Capacity Utilization				44.0%		ICU Level of Service			A
Analysis Period (min)				15					

Lanes, Volumes, Timings  
4: Constitution & Akers

2015 Background Traffic  
AM Peak Hour

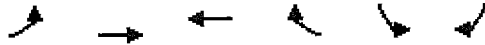


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↵	↑↑↑	↑↑	↶	↵↶	↶
Volume (vph)	135	665	760	110	50	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	320			0	385	0
Storage Lanes	1			1	2	1
Taper Length (ft)	120			150	150	25
Lane Util. Factor	1.00	0.91	0.95	1.00	0.97	1.00
Frt				0.850		0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	5085	3539	1583	3433	1583
Flt Permitted	0.345				0.950	
Satd. Flow (perm)	643	5085	3539	1583	3433	1583
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				116		63
Link Speed (mph)		50	50		35	
Link Distance (ft)		864	1170		807	
Travel Time (s)		11.8	16.0		15.7	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	142	700	800	116	53	63
Shared Lane Traffic (%)						
Lane Group Flow (vph)	142	700	800	116	53	63
Turn Type	Perm			Perm		custom
Protected Phases		4	8		1	1
Permitted Phases	4			8		1
Detector Phase	4	4	8	8	1	1
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	22.0	22.0	22.0	22.0	9.0	9.0
Total Split (s)	100.0	100.0	100.0	100.0	20.0	20.0
Total Split (%)	83.3%	83.3%	83.3%	83.3%	16.7%	16.7%
Maximum Green (s)	94.0	94.0	94.0	94.0	15.0	15.0
Yellow Time (s)	4.0	4.0	4.0	4.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-3.0	-3.0	-3.0	-1.0	-1.0
Total Lost Time (s)	5.0	3.0	3.0	3.0	4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	C-Max	C-Max	C-Max	C-Max	None	None
Walk Time (s)	5.0	5.0	5.0	5.0		
Flash Dont Walk (s)	11.0	11.0	11.0	11.0		
Pedestrian Calls (#/hr)	0	0	0	0		
Act Effct Green (s)	105.7	107.3	107.3	107.3	8.4	8.4
Actuated g/C Ratio	0.88	0.89	0.89	0.89	0.07	0.07
v/c Ratio	0.25	0.15	0.25	0.08	0.22	0.37
Control Delay	1.8	0.4	0.4	0.1	54.2	19.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	1.8	0.4	0.4	0.1	54.2	19.1
LOS	A	A	A	A	D	B



Lanes, Volumes, Timings  
 4: Constitution & Akers

2015 Background Traffic  
 AM Peak Hour



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Approach Delay		0.6	0.4		35.2	
Approach LOS		A	A		D	

Intersection Summary

Area Type: Other  
 Cycle Length: 120  
 Actuated Cycle Length: 120  
 Offset: 73 (61%), Referenced to phase 4:EBTL and 8:WBT, Start of Green  
 Natural Cycle: 40  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.37  
 Intersection Signal Delay: 2.6  
 Intersection Capacity Utilization 42.7%  
 Analysis Period (min) 15

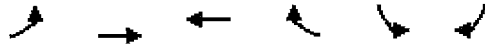
Intersection LOS: A  
 ICU Level of Service A

Splits and Phases: 4: Constitution & Akers

1	4
20 s	100 s
	8
	100 s

Lanes, Volumes, Timings  
4: Constitution & Akers

2015 Background Traffic  
PM Peak Hour



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	65	800	760	50	125	135
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	320			0	385	0
Storage Lanes	1			1	2	1
Taper Length (ft)	120			150	150	25
Lane Util. Factor	1.00	0.91	0.95	1.00	0.97	1.00
Fr't				0.850		0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	5085	3539	1583	3433	1583
Flt Permitted	0.335				0.950	
Satd. Flow (perm)	624	5085	3539	1583	3433	1583
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				53		150
Link Speed (mph)		50	50		35	
Link Distance (ft)		864	1170		814	
Travel Time (s)		11.8	16.0		15.9	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.90	0.90
Adj. Flow (vph)	68	842	800	53	139	150
Shared Lane Traffic (%)						
Lane Group Flow (vph)	68	842	800	53	139	150
Turn Type	Perm			Perm		custom
Protected Phases		4	8		1	1
Permitted Phases	4			8		1
Detector Phase	4	4	8	8	1	1
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	22.0	22.0	22.0	22.0	9.0	9.0
Total Split (s)	100.0	100.0	100.0	100.0	20.0	20.0
Total Split (%)	83.3%	83.3%	83.3%	83.3%	16.7%	16.7%
Maximum Green (s)	94.0	94.0	94.0	94.0	15.0	15.0
Yellow Time (s)	4.0	4.0	4.0	4.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-3.0	-3.0	-3.0	-1.0	-1.0
Total Lost Time (s)	5.0	3.0	3.0	3.0	4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	C-Max	C-Max	C-Max	C-Max	Max	Max
Walk Time (s)	5.0	5.0	5.0	5.0		
Flash Dont Walk (s)	11.0	11.0	11.0	11.0		
Pedestrian Calls (#/hr)	0	0	0	0		
Act Effct Green (s)	95.0	97.0	97.0	97.0	16.0	16.0
Actuated g/C Ratio	0.79	0.81	0.81	0.81	0.13	0.13
v/c Ratio	0.14	0.20	0.28	0.04	0.30	0.44
Control Delay	1.6	0.9	1.7	0.2	49.0	11.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	1.6	0.9	1.7	0.2	49.0	11.7
LOS	A	A	A	A	D	B



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Approach Delay		1.0	1.6		29.7	
Approach LOS		A	A		C	

**Intersection Summary**

Area Type: Other  
 Cycle Length: 120  
 Actuated Cycle Length: 120  
 Offset: 71 (59%), Referenced to phase 4:EBTL and 8:WBT, Start of Green  
 Natural Cycle: 40  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.44  
 Intersection Signal Delay: 5.3  
 Intersection Capacity Utilization 39.0%  
 Analysis Period (min) 15

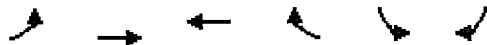
Intersection LOS: A  
 ICU Level of Service A

Splits and Phases: 4: Constitution & Akers

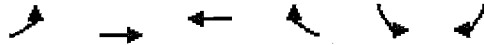
Ø1	Ø4
20 s	100 s
	Ø8
	100 s

Lanes, Volumes, Timings  
4: Constitution & Akers

2015 Total Traffic - Preliminary Plan  
AM Peak Hour



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	135	690	775	120	75	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	320			0	385	0
Storage Lanes	1			1	2	1
Taper Length (ft)	120			150	150	25
Lane Util. Factor	1.00	0.91	0.95	1.00	0.97	1.00
Frt				0.850		0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	5085	3539	1583	3433	1583
Flt Permitted	0.329				0.950	
Satd. Flow (perm)	613	5085	3539	1583	3433	1583
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				126		63
Link Speed (mph)		50	50		35	
Link Distance (ft)		864	1170		665	
Travel Time (s)		11.8	16.0		13.0	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	142	726	816	126	79	63
Shared Lane Traffic (%)						
Lane Group Flow (vph)	142	726	816	126	79	63
Turn Type	Perm			Perm		custom
Protected Phases		4	8		1	1
Permitted Phases	4			8		1
Detector Phase	4	4	8	8	1	1
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	22.0	22.0	22.0	22.0	9.0	9.0
Total Split (s)	100.0	100.0	100.0	100.0	20.0	20.0
Total Split (%)	83.3%	83.3%	83.3%	83.3%	16.7%	16.7%
Maximum Green (s)	94.0	94.0	94.0	94.0	15.0	15.0
Yellow Time (s)	4.0	4.0	4.0	4.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-3.0	-3.0	-3.0	-1.0	-1.0
Total Lost Time (s)	5.0	3.0	3.0	3.0	4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	C-Max	C-Max	C-Max	C-Max	Max	Max
Walk Time (s)	5.0	5.0	5.0	5.0		
Flash Dont Walk (s)	11.0	11.0	11.0	11.0		
Pedestrian Calls (#/hr)	0	0	0	0		
Act Effct Green (s)	95.0	97.0	97.0	97.0	16.0	16.0
Actuated g/C Ratio	0.79	0.81	0.81	0.81	0.13	0.13
v/c Ratio	0.29	0.18	0.29	0.10	0.17	0.24
Control Delay	2.7	0.9	1.0	0.1	47.2	13.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	2.7	0.9	1.0	0.1	47.2	13.7
LOS	A	A	A	A	D	B



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Approach Delay		1.2	0.9		32.4	
Approach LOS		A	A		C	

**Intersection Summary**

Area Type: Other  
 Cycle Length: 120  
 Actuated Cycle Length: 120  
 Offset: 76 (63%), Referenced to phase 4:EBTL and 8:WBT, Start of Green  
 Natural Cycle: 40  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.29  
 Intersection Signal Delay: 3.3  
 Intersection Capacity Utilization 43.1%  
 Analysis Period (min) 15

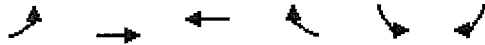
Intersection LOS: A  
 ICU Level of Service A

Splits and Phases: 4: Constitution & Akers

ø1	ø4
20 s	100 s
	ø8
	100 s

Lanes, Volumes, Timings  
4: Constitution & Akers

2015 Total Traffic - Preliminary Plan  
PM Peak Hour



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	65	815	810	80	145	135
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	320			0	385	0
Storage Lanes	1			1	2	1
Taper Length (ft)	120			150	150	25
Lane Util. Factor	1.00	0.91	0.95	1.00	0.97	1.00
Frt				0.850		0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	5085	3539	1583	3433	1583
Flt Permitted	0.315				0.950	
Satd. Flow (perm)	587	5085	3539	1583	3433	1583
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				84		145
Link Speed (mph)		50	50		35	
Link Distance (ft)		864	1170		665	
Travel Time (s)		11.8	16.0		13.0	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.93	0.93
Adj. Flow (vph)	68	858	853	84	156	145
Shared Lane Traffic (%)						
Lane Group Flow (vph)	68	858	853	84	156	145
Turn Type	Perm			Perm		custom
Protected Phases		4	8		1	1
Permitted Phases	4			8		1
Detector Phase	4	4	8	8	1	1
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	22.0	22.0	22.0	22.0	9.0	9.0
Total Split (s)	100.0	100.0	100.0	100.0	20.0	20.0
Total Split (%)	83.3%	83.3%	83.3%	83.3%	16.7%	16.7%
Maximum Green (s)	94.0	94.0	94.0	94.0	15.0	15.0
Yellow Time (s)	4.0	4.0	4.0	4.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-3.0	-3.0	-3.0	-1.0	-1.0
Total Lost Time (s)	5.0	3.0	3.0	3.0	4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	C-Max	C-Max	C-Max	C-Max	Max	Max
Walk Time (s)	5.0	5.0	5.0	5.0		
Flash Dont Walk (s)	11.0	11.0	11.0	11.0		
Pedestrian Calls (#/hr)	0	0	0	0		
Act Effct Green (s)	95.0	97.0	97.0	97.0	16.0	16.0
Actuated g/C Ratio	0.79	0.81	0.81	0.81	0.13	0.13
v/c Ratio	0.15	0.21	0.30	0.06	0.34	0.43
Control Delay	1.9	1.2	1.8	0.2	49.6	11.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	1.9	1.2	1.8	0.2	49.6	11.8
LOS	A	A	A	A	D	B

Lanes, Volumes, Timings  
 4: Constitution & Akers

2015 Total Traffic - Preliminary Plan  
 PM Peak Hour



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Approach Delay		1.2	1.7		31.4	
Approach LOS		A	A		C	

Intersection Summary

Area Type: Other  
 Cycle Length: 120  
 Actuated Cycle Length: 120  
 Offset: 65 (54%), Referenced to phase 4:EBTL and 8:WBT, Start of Green  
 Natural Cycle: 40  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.43  
 Intersection Signal Delay: 5.6  
 Intersection Capacity Utilization 41.0%  
 Analysis Period (min) 15

Intersection LOS: A  
 ICU Level of Service A

Splits and Phases: 4: Constitution & Akers

ø1	ø4
20 s	100 s
	ø8
	100 s

Lanes, Volumes, Timings  
4: Constitution & Akers

2015 Total Traffic - Buildout  
AM Peak Hour









Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	240	705	15	35	805	150	20	5	20	165	10	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	320		0	425		0	350		350	385		195
Storage Lanes	1		1	1		1	1		1	2		1
Taper Length (ft)	120		180	180		150	25		25	150		25
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	1863	1583	3433	1863	1583
Flt Permitted	0.200			0.370			0.750			0.623		
Satd. Flow (perm)	373	3539	1583	689	3539	1583	1397	1863	1583	2251	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			16			158			21			79
Link Speed (mph)		50			50			35				35
Link Distance (ft)		864			440			568				665
Travel Time (s)		11.8			6.0			11.1				13.0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	253	742	16	37	847	158	21	5	21	174	11	79
Shared Lane Traffic (%)												
Lane Group Flow (vph)	253	742	16	37	847	158	21	5	21	174	11	79
Turn Type	pm+pt		Perm	pm+pt		Perm	pm+pt		Perm	pm+pt		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	9.0	23.0	23.0	9.0	23.0	23.0	9.0	15.0	15.0	9.0	20.0	20.0
Total Split (s)	25.0	75.0	75.0	10.0	60.0	60.0	15.0	20.0	20.0	15.0	20.0	20.0
Total Split (%)	20.8%	62.5%	62.5%	8.3%	50.0%	50.0%	12.5%	16.7%	16.7%	12.5%	16.7%	16.7%
Maximum Green (s)	20.0	68.0	68.0	5.0	53.0	53.0	10.0	15.0	15.0	10.0	15.0	15.0
Yellow Time (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-3.0	-3.0	-1.0	-3.0	-3.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	Max	C-Max	C-Max	None	C-Max	C-Max	None	Max	Max	Max	Max	Max
Act Effct Green (s)	81.0	75.0	75.0	62.0	56.0	56.0	23.7	16.0	16.0	30.3	25.9	25.9
Actuated g/C Ratio	0.68	0.62	0.62	0.52	0.47	0.47	0.20	0.13	0.13	0.25	0.22	0.22
v/c Ratio	0.51	0.34	0.02	0.09	0.51	0.19	0.07	0.02	0.09	0.26	0.03	0.20
Control Delay	21.7	4.4	0.7	17.2	44.0	18.4	34.4	45.6	18.6	36.2	42.4	14.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.7	4.4	0.7	17.2	44.0	18.4	34.4	45.6	18.6	36.2	42.4	14.6
LOS	C	A	A	B	D	B	C	D	B	D	D	B
Approach Delay		8.7			39.2			28.5			30.0	
Approach LOS		A			D			C			C	



Intersection Summary

























Area Type:	Other
Cycle Length:	120
Actuated Cycle Length:	120
Offset:	65 (54%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green
Natural Cycle:	65
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.51
Intersection Signal Delay:	24.9
Intersection Capacity Utilization	56.9%
Analysis Period (min)	15
	Intersection LOS: C
	ICU Level of Service B

Splits and Phases: 4: Constitution & Akers

 ø1	 ø2	 ø3	 ø4
15 s	20 s	10 s	75 s
 ø5	 ø6	 ø7	 ø8
15 s	20 s	25 s	60 s

Lanes, Volumes, Timings  
4: Constitution & Akers

2015 Total Traffic - Buildout  
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	305	810	45	130	945	170	115	50	115	460	25	200
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	320		0	425		0	350		350	385		195
Storage Lanes	1		1	1		1	1		1	2		1
Taper Length (ft)	120		180	180		150	25		25	150		25
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	1863	1583	3433	1863	1583
Flt Permitted	0.124			0.316			0.740			0.552		
Satd. Flow (perm)	231	3539	1583	589	3539	1583	1378	1863	1583	1995	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			47			179			121			211
Link Speed (mph)		50			50			35				35
Link Distance (ft)		864			440			568				665
Travel Time (s)		11.8			6.0			11.1				13.0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	321	853	47	137	995	179	121	53	121	484	26	211
Shared Lane Traffic (%)												
Lane Group Flow (vph)	321	853	47	137	995	179	121	53	121	484	26	211
Turn Type	pm+pt		Perm	pm+pt		Perm	pm+pt		Perm	pm+pt		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	9.0	23.0	23.0	9.0	23.0	23.0	9.0	15.0	15.0	9.0	20.0	20.0
Total Split (s)	25.0	66.0	66.0	12.0	53.0	53.0	15.0	17.0	17.0	25.0	27.0	27.0
Total Split (%)	20.8%	55.0%	55.0%	10.0%	44.2%	44.2%	12.5%	14.2%	14.2%	20.8%	22.5%	22.5%
Maximum Green (s)	20.0	59.0	59.0	7.0	46.0	46.0	10.0	12.0	12.0	20.0	22.0	22.0
Yellow Time (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-3.0	-3.0	-1.0	-3.0	-3.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	Max	C-Max	C-Max	Max	C-Max	C-Max	Max	Max	Max	Max	Max	Max
Act Effct Green (s)	74.0	62.0	62.0	57.0	49.0	49.0	24.0	13.0	13.0	38.0	23.0	23.0
Actuated g/C Ratio	0.62	0.52	0.52	0.48	0.41	0.41	0.20	0.11	0.11	0.32	0.19	0.19
v/c Ratio	0.78	0.47	0.06	0.38	0.69	0.24	0.39	0.26	0.43	0.55	0.07	0.45
Control Delay	34.2	35.1	15.6	21.0	44.3	12.9	35.0	52.9	13.8	36.7	42.1	13.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.2	35.1	15.6	21.0	44.3	12.9	35.0	52.9	13.8	36.7	42.1	13.2
LOS	C	D	B	C	D	B	D	D	B	D	D	B
Approach Delay		34.1			37.5			29.5			30.1	
Approach LOS		C			D			C			C	

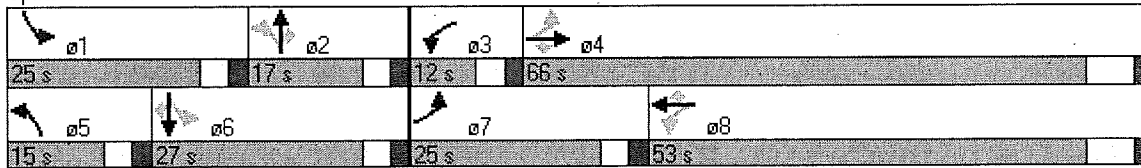
Lanes, Volumes, Timings  
 4: Constitution & Akers

2015 Total Traffic - Buildout  
 PM Peak Hour

Intersection Summary

Area Type:	Other
Cycle Length:	120
Actuated Cycle Length:	120
Offset:	48 (40%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green
Natural Cycle:	70
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.78
Intersection Signal Delay:	34.2
Intersection Capacity Utilization:	72.8%
Analysis Period (min):	15
	Intersection LOS: C
	ICU Level of Service C

Splits and Phases: 4: Constitution & Akers



Lanes, Volumes, Timings  
4: Constitution & Akers

2015 Total Traffic - Buildout  
AM Peak Hour (Protected-Only)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	240	705	15	35	805	150	20	5	20	165	10	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	320		0	425		0	350		350	385		195
Storage Lanes	1		1	1		1	1		1	2		1
Taper Length (ft)	120		180	180		150	25		25	150		25
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Frnt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	1863	1583	3433	1863	1583
Flt Permitted	0.200			0.370			0.750			0.950		
Satd. Flow (perm)	373	3539	1583	689	3539	1583	1397	1863	1583	3433	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			16			158			21			79
Link Speed (mph)		50			50			35				35
Link Distance (ft)		864			440			568				665
Travel Time (s)		11.8			6.0			11.1				13.0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	253	742	16	37	847	158	21	5	21	174	11	79
Shared Lane Traffic (%)												
Lane Group Flow (vph)	253	742	16	37	847	158	21	5	21	174	11	79
Turn Type	pm+pt		Perm	pm+pt		Perm	pm+pt		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	9.0	23.0	23.0	9.0	23.0	23.0	9.0	15.0	15.0	9.0	20.0	20.0
Total Split (s)	25.0	75.0	75.0	10.0	60.0	60.0	15.0	20.0	20.0	15.0	20.0	20.0
Total Split (%)	20.8%	62.5%	62.5%	8.3%	50.0%	50.0%	12.5%	16.7%	16.7%	12.5%	16.7%	16.7%
Maximum Green (s)	20.0	68.0	68.0	5.0	53.0	53.0	10.0	15.0	15.0	10.0	15.0	15.0
Yellow Time (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-3.0	-3.0	-1.0	-3.0	-3.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	Max	C-Max	C-Max	None	C-Max	C-Max	None	Max	Max	Max	Max	Max
Act Effct Green (s)	81.0	75.0	75.0	62.0	56.0	56.0	23.7	16.0	16.0	11.0	25.9	25.9
Actuated g/C Ratio	0.68	0.62	0.62	0.52	0.47	0.47	0.20	0.13	0.13	0.09	0.22	0.22
v/c Ratio	0.51	0.34	0.02	0.09	0.51	0.19	0.07	0.02	0.09	0.55	0.03	0.20
Control Delay	21.7	4.4	0.7	17.2	44.0	18.4	34.4	45.6	18.6	54.1	42.4	14.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.7	4.4	0.7	17.2	44.0	18.4	34.4	45.6	18.6	54.1	42.4	14.6
LOS	C	A	A	B	D	B	C	D	B	D	D	B
Approach Delay		8.7			39.2			28.5			41.8	
Approach LOS		A			D			C			D	
Queue Length 50th (ft)	74	105	0	18	306	34	12	3	0	63	7	0

Lanes, Volumes, Timings  
 4: Constitution & Akers

2015 Total Traffic - Buildout  
 AM Peak Hour (Protected-Only)



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	120	143	m1	m29	377	m87	33	16	24	101	25	56
Internal Link Dist (ft)		784			360			488			585	
Turn Bay Length (ft)	320			425			350		350	385		195
Base Capacity (vph)	496	2212	995	410	1652	823	349	248	229	315	402	404
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.51	0.34	0.02	0.09	0.51	0.19	0.06	0.02	0.09	0.55	0.03	0.20

Intersection Summary

























Area Type: Other  
 Cycle Length: 120  
 Actuated Cycle Length: 120  
 Offset: 65 (54%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green  
 Natural Cycle: 65  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.55  
 Intersection Signal Delay: 26.2  
 Intersection LOS: C  
 Intersection Capacity Utilization 56.9%  
 ICU Level of Service B  
 Analysis Period (min) 15  
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Constitution & Akers

ø1	ø2	ø3	ø4
15 s	20 s	10 s	75 s
ø5	ø6	ø7	ø8
15 s	20 s	25 s	60 s

Lanes, Volumes, Timings  
4: Constitution & Akers

2015 Total Traffic - Buildout  
PM Peak Hour (Protected-Only)

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	305	810	45	130	945	170	115	50	115	460	25	200
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	320		0	425		0	350		350	385		195
Storage Lanes	1		1	1		1	1		1	2		1
Taper Length (ft)	120		180	180		150	25		25	150		25
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Fr't			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	1863	1583	3433	1863	1583
Flt Permitted	0.124			0.316			0.740			0.950		
Satd. Flow (perm)	231	3539	1583	589	3539	1583	1378	1863	1583	3433	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			47			179			121			211
Link Speed (mph)		50			50			35			35	
Link Distance (ft)		864			440			568			665	
Travel Time (s)		11.8			6.0			11.1			13.0	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	321	853	47	137	995	179	121	53	121	484	26	211
Shared Lane Traffic (%)												
Lane Group Flow (vph)	321	853	47	137	995	179	121	53	121	484	26	211
Turn Type	pm+pt		Perm	pm+pt		Perm	pm+pt		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	9.0	23.0	23.0	9.0	23.0	23.0	9.0	15.0	15.0	9.0	20.0	20.0
Total Split (s)	25.0	66.0	66.0	12.0	53.0	53.0	15.0	17.0	17.0	25.0	27.0	27.0
Total Split (%)	20.8%	55.0%	55.0%	10.0%	44.2%	44.2%	12.5%	14.2%	14.2%	20.8%	22.5%	22.5%
Maximum Green (s)	20.0	59.0	59.0	7.0	46.0	46.0	10.0	12.0	12.0	20.0	22.0	22.0
Yellow Time (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-3.0	-3.0	-1.0	-3.0	-3.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	Max	C-Max	C-Max	Max	C-Max	C-Max	Max	Max	Max	Max	Max	Max
Act Effct Green (s)	74.0	62.0	62.0	57.0	49.0	49.0	24.0	13.0	13.0	21.0	23.0	23.0
Actuated g/C Ratio	0.62	0.52	0.52	0.48	0.41	0.41	0.20	0.11	0.11	0.18	0.19	0.19
v/c Ratio	0.78	0.47	0.06	0.38	0.69	0.24	0.39	0.26	0.43	0.81	0.07	0.45
Control Delay	34.2	35.1	15.6	21.0	44.3	12.9	35.0	52.9	13.8	52.7	42.1	13.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.2	35.1	15.6	21.0	44.3	12.9	35.0	52.9	13.8	52.7	42.1	13.2
LOS	C	D	B	C	D	B	D	D	B	D	D	B
Approach Delay		34.1			37.5			29.5			40.8	
Approach LOS		C			D			C			D	
Queue Length 50th (ft)	231	341	17	65	361	27	69	38	0	178	17	12

Lanes, Volumes, Timings  
4: Constitution & Akers

2015 Total Traffic - Buildout  
PM Peak Hour (Protected-Only)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	#305	398	m46	m92	m423	m65	118	80	57	#245	m35	m74
Internal Link Dist (ft)		784			360			488			585	
Turn Bay Length (ft)	320			425			350		350	385		195
Base Capacity (vph)	412	1828	841	359	1445	752	312	202	279	601	357	474
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.78	0.47	0.06	0.38	0.69	0.24	0.39	0.26	0.43	0.81	0.07	0.45

Intersection Summary

Area Type: Other  
 Cycle Length: 120  
 Actuated Cycle Length: 120  
 Offset: 48 (40%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green  
 Natural Cycle: 70  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.81  
 Intersection Signal Delay: 36.3  
 Intersection Capacity Utilization 72.8%  
 Analysis Period (min) 15  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.  
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Constitution & Akers

φ1	φ2	φ3	φ4
25 s	17 s	12 s	66 s
φ5	φ6	φ7	φ8
15 s	27 s	25 s	53 s

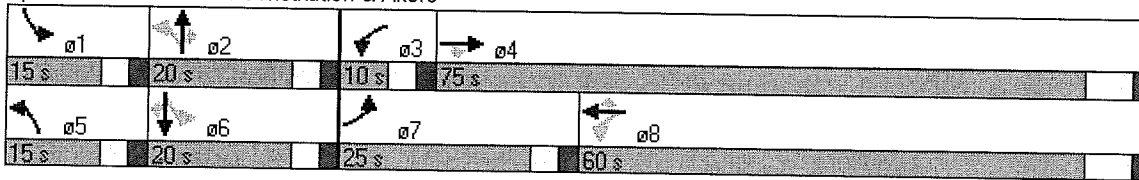
	↖	→	↗	↖	←	↖	↖	↑	↗	↘	↓	↘
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖↖	↖↖↖	↖	↖	↖↖↖	↖	↖	↑	↖	↖↖	↑	↖
Volume (vph)	320	1155	50	45	1295	270	30	5	25	70	10	110
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	320		350	425		235	350		350	385		195
Storage Lanes	2		1	1		1	1		1	2		1
Taper Length (ft)	120		180	180		150	25		25	150		25
Lane Util. Factor	0.97	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		0.950
Satd. Flow (prot)	3433	5085	1583	1770	5085	1583	1770	1863	1583	3433	1863	1583
Flt Permitted	0.950			0.219			0.750			0.617		
Satd. Flow (perm)	3433	5085	1583	408	5085	1583	1397	1863	1583	2230	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			53			284			26			116
Link Speed (mph)		50			50			35			35	
Link Distance (ft)		864			1170			568			912	
Travel Time (s)		11.8			16.0			11.1			17.8	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	337	1216	53	47	1363	284	32	5	26	74	11	116
Shared Lane Traffic (%)												
Lane Group Flow (vph)	337	1216	53	47	1363	284	32	5	26	74	11	116
Turn Type	Prot		Perm	pm+pt		Perm	pm+pt		Perm	pm+pt		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4	8		8	2		2	6		6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	9.0	23.0	23.0	9.0	23.0	23.0	9.0	15.0	15.0	9.0	20.0	20.0
Total Split (s)	25.0	75.0	75.0	10.0	60.0	60.0	15.0	20.0	20.0	15.0	20.0	20.0
Total Split (%)	20.8%	62.5%	62.5%	8.3%	50.0%	50.0%	12.5%	16.7%	16.7%	12.5%	16.7%	16.7%
Maximum Green (s)	20.0	68.0	68.0	5.0	53.0	53.0	10.0	15.0	15.0	10.0	15.0	15.0
Yellow Time (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-3.0	-3.0	-1.0	-3.0	-3.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	Max	C-Max	C-Max	None	C-Max	C-Max	None	Max	Max	Max	Max	Max
Act Effct Green (s)	21.0	73.0	73.0	62.0	56.0	56.0	24.2	16.0	16.0	29.8	23.2	23.2
Actuated g/C Ratio	0.18	0.61	0.61	0.52	0.47	0.47	0.20	0.13	0.13	0.25	0.19	0.19
v/c Ratio	0.56	0.39	0.05	0.17	0.57	0.32	0.10	0.02	0.11	0.11	0.03	0.29
Control Delay	23.7	31.2	14.6	18.5	45.0	19.5	34.8	45.6	17.7	34.3	44.3	10.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.7	31.2	14.6	18.5	45.0	19.5	34.8	45.6	17.7	34.3	44.3	10.3
LOS	C	C	B	B	D	B	C	D	B	C	D	B
Approach Delay		29.1			40.0			28.6			21.0	
Approach LOS		C			D			C			C	



Intersection Summary

Area Type:	Other
Cycle Length:	120
Actuated Cycle Length:	120
Offset:	65 (54%), Referenced to phase 4:EBT and 8:WBTL, Start of Green
Natural Cycle:	65
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.57
Intersection Signal Delay:	33.8
Intersection Capacity Utilization:	52.8%
Analysis Period (min):	15
	Intersection LOS: C
	ICU Level of Service A

Splits and Phases: 4: Constitution & Akers



Lanes, Volumes, Timings  
4: Constitution & Akers

2030 Background Traffic  
PM Peak Hour









Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	140	1300	5	5	1155	100	15	5	10	250	5	315
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	320		350	425		235	350		350	385		195
Storage Lanes	2		1	1		1	1		1	2		1
Taper Length (ft)	120		180	180		150	25		25	150		25
Lane Util. Factor	0.97	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Frnt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3433	5085	1583	1770	5085	1583	1770	1863	1583	3433	1863	1583
Flt Permitted	0.950			0.139			0.754			0.577		
Satd. Flow (perm)	3433	5085	1583	259	5085	1583	1405	1863	1583	2085	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			5			105			11			269
Link Speed (mph)		50			50			35			35	
Link Distance (ft)		864			1170			568			878	
Travel Time (s)		11.8			16.0			11.1			17.1	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	147	1368	5	5	1216	105	16	5	11	263	5	332
Shared Lane Traffic (%)												
Lane Group Flow (vph)	147	1368	5	5	1216	105	16	5	11	263	5	332
Turn Type	Prot		Perm	pm+pt		Perm	pm+pt		Perm	pm+pt		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4	8		8	2		2	6		6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	9.0	23.0	23.0	9.0	23.0	23.0	9.0	15.0	15.0	9.0	20.0	20.0
Total Split (s)	16.0	66.0	66.0	12.0	62.0	62.0	15.0	17.0	17.0	25.0	27.0	27.0
Total Split (%)	13.3%	55.0%	55.0%	10.0%	51.7%	51.7%	12.5%	14.2%	14.2%	20.8%	22.5%	22.5%
Maximum Green (s)	11.0	59.0	59.0	7.0	55.0	55.0	10.0	12.0	12.0	20.0	22.0	22.0
Yellow Time (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-3.0	-3.0	-1.0	-3.0	-3.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	Max	C-Max	C-Max	Max	C-Max	C-Max	Max	Max	Max	Max	Max	Max
Act Effct Green (s)	12.0	62.0	62.0	66.0	58.0	58.0	24.0	13.0	13.0	38.0	23.0	23.0
Actuated g/C Ratio	0.10	0.52	0.52	0.55	0.48	0.48	0.20	0.11	0.11	0.32	0.19	0.19
v/c Ratio	0.43	0.52	0.01	0.02	0.49	0.13	0.05	0.02	0.06	0.29	0.01	0.64
Control Delay	24.2	29.9	11.6	18.4	32.3	13.7	29.7	48.4	24.4	31.4	39.6	15.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.2	29.9	11.6	18.4	32.3	13.7	29.7	48.4	24.4	31.4	39.6	15.9
LOS	C	C	B	B	C	B	C	D	C	C	D	B
Approach Delay		29.3			30.8			30.8			22.9	
Approach LOS		C			C			C			C	

4: Constitution & Akers

Intersection Summary

Area Type: Other  
 Cycle Length: 120  
 Actuated Cycle Length: 120  
 Offset: 48 (40%), Referenced to phase 4:EBT and 8:WBTL, Start of Green  
 Natural Cycle: 65  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.64  
 Intersection Signal Delay: 28.8  
 Intersection LOS: C  
 Intersection Capacity Utilization 55.2%  
 ICU Level of Service B  
 Analysis Period (min) 15

Splits and Phases: 4: Constitution & Akers

 ø1	 ø2	 ø3	 ø4
25 s	17 s	12 s	66 s
 ø5	 ø6	 ø7	 ø8
15 s	27 s	16 s	62 s

Lanes, Volumes, Timings  
4: Constitution & Akers

2030 Total Traffic  
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	425	1195	65	80	1340	310	50	10	45	185	20	125
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	320		350	425		235	350		350	385		195
Storage Lanes	2		1	1		1	1		1	2		1
Taper Length (ft)	120		180	180		150	25		25	150		25
Lane Util. Factor	0.97	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3433	5085	1583	1770	5085	1583	1770	1863	1583	3433	1863	1583
Flt Permitted	0.950			0.209			0.744			0.635		
Satd. Flow (perm)	3433	5085	1583	389	5085	1583	1386	1863	1583	2295	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			68			326			47			132
Link Speed (mph)		50			50			35				35
Link Distance (ft)		864			440			568				665
Travel Time (s)		11.8			6.0			11.1				13.0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	447	1258	68	84	1411	326	53	11	47	195	21	132
Shared Lane Traffic (%)												
Lane Group Flow (vph)	447	1258	68	84	1411	326	53	11	47	195	21	132
Turn Type	Prot		Perm	pm+pt		Perm	pm+pt		Perm	pm+pt		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4	8		8	2		2	6		6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	9.0	23.0	23.0	9.0	23.0	23.0	9.0	15.0	15.0	9.0	20.0	20.0
Total Split (s)	25.0	75.0	75.0	10.0	60.0	60.0	15.0	20.0	20.0	15.0	20.0	20.0
Total Split (%)	20.8%	62.5%	62.5%	8.3%	50.0%	50.0%	12.5%	16.7%	16.7%	12.5%	16.7%	16.7%
Maximum Green (s)	20.0	68.0	68.0	5.0	53.0	53.0	10.0	15.0	15.0	10.0	15.0	15.0
Yellow Time (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-3.0	-3.0	-1.0	-3.0	-3.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	Max	C-Max	C-Max	None	C-Max	C-Max	None	Max	Max	Max	Max	Max
Act Effct Green (s)	21.0	73.0	73.0	62.0	56.0	56.0	25.0	16.0	16.0	28.9	20.1	20.1
Actuated g/C Ratio	0.18	0.61	0.61	0.52	0.47	0.47	0.21	0.13	0.13	0.24	0.17	0.17
v/c Ratio	0.74	0.41	0.07	0.31	0.59	0.36	0.17	0.04	0.19	0.30	0.07	0.35
Control Delay	52.6	5.3	0.8	16.2	32.9	11.3	35.7	46.0	15.0	37.0	47.0	14.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.6	5.3	0.8	16.2	32.9	11.3	35.7	46.0	15.0	37.0	47.0	14.8
LOS	D	A	A	B	C	B	D	D	B	D	D	B
Approach Delay		17.1			28.3			27.9			29.2	
Approach LOS		B			C			C			C	

Lanes, Volumes, Timings  
 4: Constitution & Akers




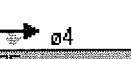
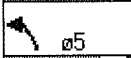



2030 Total Traffic  
 AM Peak Hour

Intersection Summary

Area Type: Other  
 Cycle Length: 120  
 Actuated Cycle Length: 120  
 Offset: 73 (61%), Referenced to phase 4:EBT and 8:WBTL, Start of Green  
 Natural Cycle: 65  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.74  
 Intersection Signal Delay: 23.5  
 Intersection Capacity Utilization 60.0%  
 Analysis Period (min) 15
































Intersection LOS: C  
 ICU Level of Service B

Splits and Phases: 4: Constitution & Akers

 ø1	 ø2	 ø3	 ø4
15 s	20 s	10 s	75 s
 ø5	 ø6	 ø7	 ø8
15 s	20 s	25 s	60 s

Lanes, Volumes, Timings  
4: Constitution & Akers

2030 Total Traffic  
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	  			  					  		
Volume (vph)	380	1310	50	135	1340	220	130	55	125	585	30	380
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	320		350	425		235	350		350	385		195
Storage Lanes	2		1	1		1	1		1	2		1
Taper Length (ft)	120		180	180		150	25		25	150		25
Lane Util. Factor	0.97	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3433	5085	1583	1770	5085	1583	1770	1863	1583	3433	1863	1583
Flt Permitted	0.950			0.162			0.736			0.550		
Satd. Flow (perm)	3433	5085	1583	302	5085	1583	1371	1863	1583	1988	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			53			232			130			293
Link Speed (mph)		50			50			35			35	
Link Distance (ft)		864			440			568			665	
Travel Time (s)		11.8			6.0			11.1			13.0	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	400	1379	53	142	1411	232	137	58	132	616	32	400
Shared Lane Traffic (%)												
Lane Group Flow (vph)	400	1379	53	142	1411	232	137	58	132	616	32	400
Turn Type	Prot		Perm	pm+pt		Perm	pm+pt		Perm	pm+pt		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4	8		8	2		2	6		6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	9.0	23.0	23.0	9.0	23.0	23.0	9.0	15.0	15.0	9.0	20.0	20.0
Total Split (s)	25.0	66.0	66.0	12.0	53.0	53.0	15.0	17.0	17.0	25.0	27.0	27.0
Total Split (%)	20.8%	55.0%	55.0%	10.0%	44.2%	44.2%	12.5%	14.2%	14.2%	20.8%	22.5%	22.5%
Maximum Green (s)	20.0	59.0	59.0	7.0	46.0	46.0	10.0	12.0	12.0	20.0	22.0	22.0
Yellow Time (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-3.0	-3.0	-1.0	-3.0	-3.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	Max	C-Max	C-Max	Max	C-Max	C-Max	Max	Max	Max	Max	Max	Max
Act Effct Green (s)	21.0	62.0	62.0	57.0	49.0	49.0	24.0	13.0	13.0	38.0	23.0	23.0
Actuated g/C Ratio	0.18	0.52	0.52	0.48	0.41	0.41	0.20	0.11	0.11	0.32	0.19	0.19
v/c Ratio	0.67	0.52	0.06	0.59	0.68	0.30	0.44	0.29	0.46	0.70	0.09	0.74
Control Delay	32.5	36.4	15.5	34.5	52.3	19.1	36.4	53.4	14.3	36.3	38.4	20.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.5	36.4	15.5	34.5	52.3	19.1	36.4	53.4	14.3	36.3	38.4	20.5
LOS	C	D	B	C	D	B	D	D	B	D	D	C
Approach Delay		35.0			46.6			30.5			30.4	
Approach LOS		C			D			C			C	
Queue Length 50th (ft)	165	387	20	90	386	71	78	42	1	188	19	70

Lanes, Volumes, Timings  
4: Constitution & Akers

2030 Total Traffic  
PM Peak Hour

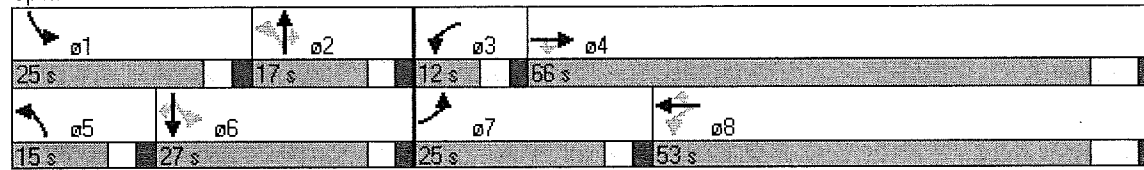


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	215	428	m50	m120	440	m116	131	85	61	244	m31	158
Internal Link Dist (ft)		784			360			488			585	
Turn Bay Length (ft)	320		350	425		235	350		350	385		195
Base Capacity (vph)	601	2627	844	241	2076	784	311	202	287	882	357	540
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.67	0.52	0.06	0.59	0.68	0.30	0.44	0.29	0.46	0.70	0.09	0.74

Intersection Summary

Area Type: Other  
 Cycle Length: 120  
 Actuated Cycle Length: 120  
 Offset: 48 (40%), Referenced to phase 4:EBT and 8:WBTL, Start of Green  
 Natural Cycle: 65  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.74  
 Intersection Signal Delay: 37.9  
 Intersection Capacity Utilization 70.1%  
 Analysis Period (min) 15  
 m Volume for 95th percentile queue is metered by upstream signal.  
 Intersection LOS: D  
 ICU Level of Service C

Splits and Phases: 4: Constitution & Akers



Lanes, Volumes, Timings  
4: Constitution & Akers

2030 Total Traffic  
AM Peak Hour (Protected-Only)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	425	1195	65	80	1340	310	50	10	45	185	20	125
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	320		350	425		235	350		350	385		195
Storage Lanes	2		1	1		1	1		1	2		1
Taper Length (ft)	120		180	180		150	25		25	150		25
Lane Util. Factor	0.97	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Fr't			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Sat'd. Flow (prot)	3433	5085	1583	1770	5085	1583	1770	1863	1583	3433	1863	1583
Flt Permitted	0.950			0.209			0.744			0.950		
Sat'd. Flow (perm)	3433	5085	1583	389	5085	1583	1386	1863	1583	3433	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Sat'd. Flow (RTOR)			68			326			47			132
Link Speed (mph)		50			50			35				35
Link Distance (ft)		864			440			568				665
Travel Time (s)		11.8			6.0			11.1				13.0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	447	1258	68	84	1411	326	53	11	47	195	21	132
Shared Lane Traffic (%)												
Lane Group Flow (vph)	447	1258	68	84	1411	326	53	11	47	195	21	132
Turn Type	Prot		Perm	pm+pt		Perm	pm+pt		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4	8		8	2		2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	9.0	23.0	23.0	9.0	23.0	23.0	9.0	15.0	15.0	9.0	20.0	20.0
Total Split (s)	25.0	75.0	75.0	10.0	60.0	60.0	15.0	19.0	19.0	16.0	20.0	20.0
Total Split (%)	20.8%	62.5%	62.5%	8.3%	50.0%	50.0%	12.5%	15.8%	15.8%	13.3%	16.7%	16.7%
Maximum Green (s)	20.0	68.0	68.0	5.0	53.0	53.0	10.0	14.0	14.0	11.0	15.0	15.0
Yellow Time (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-3.0	-3.0	-1.0	-3.0	-3.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	Max	C-Max	C-Max	None	C-Max	C-Max	None	Max	Max	Max	Max	Max
Act Effct Green (s)	21.0	73.0	73.0	62.0	56.0	56.0	24.0	15.0	15.0	12.0	20.1	20.1
Actuated g/C Ratio	0.18	0.61	0.61	0.52	0.47	0.47	0.20	0.12	0.12	0.10	0.17	0.17
v/c Ratio	0.74	0.41	0.07	0.31	0.59	0.36	0.17	0.05	0.20	0.57	0.07	0.35
Control Delay	52.6	5.3	0.8	16.2	32.9	11.3	35.9	46.9	15.4	54.4	47.0	14.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.6	5.3	0.8	16.2	32.9	11.3	35.9	46.9	15.4	54.4	47.0	14.8
LOS	D	A	A	B	C	B	D	D	B	D	D	B
Approach Delay		17.1			28.3			28.3			38.9	
Approach LOS		B			C			C			D	
Queue Length 50th (ft)	112	139	1	37	260	66	32	8	0	67	15	0



Lanes, Volumes, Timings  
 4: Constitution & Akers

2030 Total Traffic  
 AM Peak Hour (Protected-Only)



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	185	175	m3	m52	310	m104	66	26	36	109	42	70
Internal Link Dist (ft)		784			360			488			585	
Turn Bay Length (ft)	320		350	425		235	350		350	385		195
Base Capacity (vph)	601	3094	989	270	2373	913	336	233	239	343	311	375
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.74	0.41	0.07	0.31	0.59	0.36	0.16	0.05	0.20	0.57	0.07	0.35

Intersection Summary

























Area Type: Other  
 Cycle Length: 120  
 Actuated Cycle Length: 120  
 Offset: 73 (61%), Referenced to phase 4:EBT and 8:WBTL, Start of Green  
 Natural Cycle: 65  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.74  
 Intersection Signal Delay: 24.3  
 Intersection Capacity Utilization 60.0%  
 Analysis Period (min) 15  
 Intersection LOS: C  
 ICU Level of Service B  
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Constitution & Akers

ø1	ø2	ø3	ø4
16 s	19 s	10 s	75 s
ø5	ø6	ø7	ø8
15 s	20 s	25 s	60 s

Lanes, Volumes, Timings  
4: Constitution & Akers

2030 Total Traffic  
PM Peak Hour (Protected-Only)

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	380	1310	50	135	1340	220	130	55	125	585	30	380
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	320		350	425		235	350		350	385		195
Storage Lanes	2		1	1		1	1		1	2		1
Taper Length (ft)	120		180	180		150	25		25	150		25
Lane Util. Factor	0.97	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3433	5085	1583	1770	5085	1583	1770	1863	1583	3433	1863	1583
Flt Permitted	0.950			0.144			0.736			0.950		
Satd. Flow (perm)	3433	5085	1583	268	5085	1583	1371	1863	1583	3433	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			53			232			120			261
Link Speed (mph)		50			50			35				35
Link Distance (ft)		864			440			568				665
Travel Time (s)		11.8			6.0			11.1				13.0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	400	1379	53	142	1411	232	137	58	132	616	32	400
Shared Lane Traffic (%)												
Lane Group Flow (vph)	400	1379	53	142	1411	232	137	58	132	616	32	400
Turn Type	Prot		Perm	pm+pt		Perm	pm+pt		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4	8		8	2		2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	9.0	23.0	23.0	9.0	23.0	23.0	9.0	15.0	15.0	9.0	20.0	20.0
Total Split (s)	22.0	62.0	62.0	12.0	52.0	52.0	15.0	17.0	17.0	29.0	31.0	31.0
Total Split (%)	18.3%	51.7%	51.7%	10.0%	43.3%	43.3%	12.5%	14.2%	14.2%	24.2%	25.8%	25.8%
Maximum Green (s)	17.0	55.0	55.0	7.0	45.0	45.0	10.0	12.0	12.0	24.0	26.0	26.0
Yellow Time (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-3.0	-3.0	-1.0	-3.0	-3.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	Max	C-Max	C-Max	Max	C-Max	C-Max	Max	Max	Max	Max	Max	Max
Act Effct Green (s)	18.0	58.0	58.0	56.0	48.0	48.0	24.0	13.0	13.0	25.0	27.0	27.0
Actuated g/C Ratio	0.15	0.48	0.48	0.47	0.40	0.40	0.20	0.11	0.11	0.21	0.22	0.22
v/c Ratio	0.78	0.56	0.07	0.63	0.69	0.30	0.44	0.29	0.47	0.86	0.08	0.72
Control Delay	40.2	39.5	17.0	40.3	54.8	20.2	33.9	53.4	17.1	53.7	35.8	22.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.2	39.5	17.0	40.3	54.8	20.2	33.9	53.4	17.1	53.7	35.8	22.0
LOS	D	D	B	D	D	C	C	D	B	D	D	C
Approach Delay		39.0			49.2			30.6			41.1	
Approach LOS		D			D			C			D	
Queue Length 50th (ft)	167	389	20	96	397	74	74	42	9	210	19	100

Lanes, Volumes, Timings  
4: Constitution & Akers

2030 Total Traffic  
PM Peak Hour (Protected-Only)



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	#219	431	m50	m131	450	m120	124	85	69	#326	m30	189
Internal Link Dist (ft)		784			360			488			585	
Turn Bay Length (ft)	320		350	425		235	350		350	385		195
Base Capacity (vph)	515	2458	793	225	2034	772	311	202	278	715	419	558
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.78	0.56	0.07	0.63	0.69	0.30	0.44	0.29	0.47	0.86	0.08	0.72

Intersection Summary

Area Type: Other  
 Cycle Length: 120  
 Actuated Cycle Length: 120  
 Offset: 48 (40%), Referenced to phase 4:EBT and 8:WBTL, Start of Green  
 Natural Cycle: 70  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.86  
 Intersection Signal Delay: 42.5  
 Intersection Capacity Utilization 70.1%  
 Analysis Period (min) 15  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.  
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Constitution & Akers

φ1	φ2	φ3	φ4
29 s	17 s	12 s	62 s
φ5	φ6	φ7	φ8
15 s	31 s	22 s	52 s

HCM Unsignalized Intersection Capacity Analysis  
 9: Constitution & Shawnee

Existing Traffic  
 AM Peak Hour



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↑	↑↑↑	↑	↑
Volume (veh/h)	320	10	50	370	45	50
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.82	0.82	0.85	0.85	0.90	0.90
Hourly flow rate (vph)	390	12	59	435	50	56
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			402		653	195
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			402		653	195
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			95		87	93
cM capacity (veh/h)			1153		380	813

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	WB 4	NB 1	NB 2	
Volume Total	195	195	12	59	145	145	145	50	56	
Volume Left	0	0	0	59	0	0	0	50	0	
Volume Right	0	0	12	0	0	0	0	0	56	
cSH	1700	1700	1700	1153	1700	1700	1700	380	813	
Volume to Capacity	0.11	0.11	0.01	0.05	0.09	0.09	0.09	0.13	0.07	
Queue Length 95th (ft)	0	0	0	4	0	0	0	11	5	
Control Delay (s)	0.0	0.0	0.0	8.3	0.0	0.0	0.0	15.9	9.8	
Lane LOS				A					C	A
Approach Delay (s)	0.0			1.0				12.7		
Approach LOS								B		

Intersection Summary		
Average Delay		1.8
Intersection Capacity Utilization	25.5%	ICU Level of Service A
Analysis Period (min)		15

HCM Unsignalized Intersection Capacity Analysis  
 9: Constitution & Shawnee

Existing Traffic  
 PM Peak Hour



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↓	↑↑↑	↓	↑
Volume (veh/h)	500	50	60	465	40	95
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.91	0.91	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	549	55	67	522	45	107
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			604		858	275
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			604		858	275
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			93		84	85
cM capacity (veh/h)			969		275	723

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	WB 4	NB 1	NB 2	
Volume Total	275	275	55	67	174	174	174	45	107	
Volume Left	0	0	0	67	0	0	0	45	0	
Volume Right	0	0	55	0	0	0	0	0	107	
cSH	1700	1700	1700	969	1700	1700	1700	275	723	
Volume to Capacity	0.16	0.16	0.03	0.07	0.10	0.10	0.10	0.16	0.15	
Queue Length 95th (ft)	0	0	0	6	0	0	0	14	13	
Control Delay (s)	0.0	0.0	0.0	9.0	0.0	0.0	0.0	20.6	10.8	
Lane LOS				A					C	B
Approach Delay (s)	0.0			1.0					13.7	
Approach LOS									B	

Intersection Summary			
Average Delay	2.0		
Intersection Capacity Utilization	30.5%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis  
 9: Constitution & Shawnee

2015 Background Traffic  
 AM Peak Hour



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↓	↑↑↑		↑
Volume (veh/h)	735	15	50	795	0	50
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	774	16	53	837	0	53
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			789		1158	387
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			789		1158	387
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			94		100	91
cM capacity (veh/h)			826		177	612

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	WB 4	NB 1
Volume Total	387	387	16	53	279	279	279	53
Volume Left	0	0	0	53	0	0	0	0
Volume Right	0	0	16	0	0	0	0	53
cSH	1700	1700	1700	826	1700	1700	1700	612
Volume to Capacity	0.23	0.23	0.01	0.06	0.16	0.16	0.16	0.09
Queue Length 95th (ft)	0	0	0	5	0	0	0	7
Control Delay (s)	0.0	0.0	0.0	9.7	0.0	0.0	0.0	11.4
Lane LOS				A				B
Approach Delay (s)	0.0			0.6			11.4	
Approach LOS							B	

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	30.3%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis  
 9: Constitution & Shawnee

2015 Background Traffic  
 PM Peak Hour



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↑	↑↑↑		↑
Volume (veh/h)	790	65	60	830	0	95
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	832	68	63	874	0	100
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			900		1249	416
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			900		1249	416
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			92		100	83
cM capacity (veh/h)			751		151	586

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	WB 4	NB 1
Volume Total	416	416	68	63	291	291	291	100
Volume Left	0	0	0	63	0	0	0	0
Volume Right	0	0	68	0	0	0	0	100
cSH	1700	1700	1700	751	1700	1700	1700	586
Volume to Capacity	0.24	0.24	0.04	0.08	0.17	0.17	0.17	0.17
Queue Length 95th (ft)	0	0	0	7	0	0	0	15
Control Delay (s)	0.0	0.0	0.0	10.2	0.0	0.0	0.0	12.4
Lane LOS				B				
Approach Delay (s)	0.0			0.7				12.4
Approach LOS								B

Intersection Summary	
Average Delay	1.0
Intersection Capacity Utilization	34.4%
ICU Level of Service	A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis  
 9: Constitution & Shawnee

2015 Total Traffic - Preliminary Plan  
 AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↙	↑↑	↗	↙	↑↑	↗			↗			↗
Volume (veh/h)	25	740	15	50	815	5	0	0	50	0	0	70
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	26	779	16	53	858	5	0	0	53	0	0	74
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	863			795			1439	1800	389	1458	1811	429
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	863			795			1439	1800	389	1458	1811	429
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			94			100	100	91	100	100	87
cM capacity (veh/h)	775			822			76	71	609	77	70	574

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	WB 4	NB 1	SB 1
Volume Total	26	389	389	16	53	429	429	5	53	74
Volume Left	26	0	0	0	53	0	0	0	0	0
Volume Right	0	0	0	16	0	0	0	5	53	74
cSH	775	1700	1700	1700	822	1700	1700	1700	609	574
Volume to Capacity	0.03	0.23	0.23	0.01	0.06	0.25	0.25	0.00	0.09	0.13
Queue Length 95th (ft)	3	0	0	0	5	0	0	0	7	11
Control Delay (s)	9.8	0.0	0.0	0.0	9.7	0.0	0.0	0.0	11.5	12.2
Lane LOS	A				A				B	B
Approach Delay (s)	0.3				0.6				11.5	12.2
Approach LOS									B	B

Intersection Summary	
Average Delay	1.2
Intersection Capacity Utilization	33.5%
ICU Level of Service	A
Analysis Period (min)	15



HCM Unsignalized Intersection Capacity Analysis  
 9: Constitution & Shawnee

2015 Total Traffic - Preliminary Plan  
 PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↵	↕↕	↵	↵	↕↕	↵			↵			↵
Volume (veh/h)	75	815	65	60	845	15	0	0	95	0	0	45
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	79	858	68	63	889	16	0	0	100	0	0	47
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	905			926			1634	2047	429	1703	2100	445
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	905			926			1634	2047	429	1703	2100	445
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	89			91			100	100	83	100	100	92
cM capacity (veh/h)	747			734			53	45	574	42	42	561

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	WB 4	NB 1	SB 1
Volume Total	79	429	429	68	63	445	445	16	100	47
Volume Left	79	0	0	0	63	0	0	0	0	0
Volume Right	0	0	0	68	0	0	0	16	100	47
cSH	747	1700	1700	1700	734	1700	1700	1700	574	561
Volume to Capacity	0.11	0.25	0.25	0.04	0.09	0.26	0.26	0.01	0.17	0.08
Queue Length 95th (ft)	9	0	0	0	7	0	0	0	16	7
Control Delay (s)	10.4	0.0	0.0	0.0	10.4	0.0	0.0	0.0	12.6	12.0
Lane LOS	B				B				B	B
Approach Delay (s)	0.8				0.7				12.6	12.0
Approach LOS									B	B

Intersection Summary	
Average Delay	1.6
Intersection Capacity Utilization	35.1%
ICU Level of Service	A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis  
 9: Constitution & Shawnee

2015 Total Traffic - Buildout  
 AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑	↗	↘	↑↑	↗			↗			↗
Volume (veh/h)	25	845	15	50	870	10	0	0	50	0	0	90
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	26	889	16	53	916	11	0	0	53	0	0	95
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)					1189							
pX, platoon unblocked	0.89						0.89	0.89		0.89	0.89	0.89
vC, conflicting volume	926			905			1600	1974	445	1571	1979	458
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	679			905			1433	1851	445	1401	1857	155
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			93			100	100	91	100	100	88
cM capacity (veh/h)	812			747			68	59	561	75	58	771

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	WB 4	NB 1	SB 1
Volume Total	26	445	445	16	53	458	458	11	53	95
Volume Left	26	0	0	0	53	0	0	0	0	0
Volume Right	0	0	0	16	0	0	0	11	53	95
cSH	812	1700	1700	1700	747	1700	1700	1700	561	771
Volume to Capacity	0.03	0.26	0.26	0.01	0.07	0.27	0.27	0.01	0.09	0.12
Queue Length 95th (ft)	3	0	0	0	6	0	0	0	8	10
Control Delay (s)	9.6	0.0	0.0	0.0	10.2	0.0	0.0	0.0	12.1	10.3
Lane LOS	A				B				B	B
Approach Delay (s)	0.3				0.5				12.1	10.3
Approach LOS									B	B

Intersection Summary	
Average Delay	1.2
Intersection Capacity Utilization	36.3%
ICU Level of Service	A
Analysis Period (min)	15

# HCM Unsignalized Intersection Capacity Analysis

2015 Total Traffic - Buildout

## 9: Constitution & Shawnee

PM Peak Hour



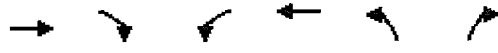
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↙	↑↑	↘	↙	↑↑	↘		↑	↘			↘
Volume (veh/h)	95	1055	65	60	1095	25	0	0	95	0	0	55
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	100	1111	68	63	1153	26	0	0	100	0	0	58
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)					1189							
pX, platoon unblocked	0.84						0.84	0.84		0.84	0.84	0.84
vC, conflicting volume	1179			1179			2071	2616	555	2134	2658	576
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	820			1179			1888	2540	555	1964	2590	99
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	85			89			100	100	79	100	100	93
cM capacity (veh/h)	672			588			27	17	475	20	16	784

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	WB 4	NB 1	SB 1
Volume Total	100	555	555	68	63	576	576	26	100	58
Volume Left	100	0	0	0	63	0	0	0	0	0
Volume Right	0	0	0	68	0	0	0	26	100	58
cSH	672	1700	1700	1700	588	1700	1700	1700	475	784
Volume to Capacity	0.15	0.33	0.33	0.04	0.11	0.34	0.34	0.02	0.21	0.07
Queue Length 95th (ft)	13	0	0	0	9	0	0	0	20	6
Control Delay (s)	11.3	0.0	0.0	0.0	11.9	0.0	0.0	0.0	14.6	10.0
Lane LOS	B				B				B	A
Approach Delay (s)	0.9				0.6				14.6	10.0
Approach LOS									B	A

Intersection Summary	
Average Delay	1.5
Intersection Capacity Utilization	42.2%
ICU Level of Service	A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis  
 9: Constitution & Shawnee

2030 Background Traffic  
 AM Peak Hour



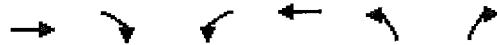
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑	↗	↘	↑↑↑		↗
Volume (veh/h)	1450	20	55	1480	0	55
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	1526	21	58	1558	0	58
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)	1189					
pX, platoon unblocked	0.92					
vC, conflicting volume			1547		2161	509
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1547		1971	509
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			86		100	89
cM capacity (veh/h)			425		44	509

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	WB 4	NB 1
Volume Total	509	509	509	21	58	519	519	519	58
Volume Left	0	0	0	0	58	0	0	0	0
Volume Right	0	0	0	21	0	0	0	0	58
cSH	1700	1700	1700	1700	425	1700	1700	1700	509
Volume to Capacity	0.30	0.30	0.30	0.01	0.14	0.31	0.31	0.31	0.11
Queue Length 95th (ft)	0	0	0	0	12	0	0	0	10
Control Delay (s)	0.0	0.0	0.0	0.0	14.8	0.0	0.0	0.0	13.0
Lane LOS					B				
Approach Delay (s)	0.0				0.5				
Approach LOS							B		

Intersection Summary									
Average Delay			0.5						
Intersection Capacity Utilization			38.1%		ICU Level of Service			A	
Analysis Period (min)	15								

HCM Unsignalized Intersection Capacity Analysis  
 9: Constitution & Shawnee

2030 Background Traffic  
 PM Peak Hour



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑	↑	↑	↑↑↑		↑
Volume (veh/h)	1410	100	65	1415	0	100
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	1484	105	68	1489	0	105
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)	1189					
pX, platoon unblocked	0.93					
vC, conflicting volume	1589			2118	495	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1589			1946	495	
tC, single (s)	4.1			6.8	6.9	
tC, 2 stage (s)						
tF (s)	2.2			3.5	3.3	
p0 queue free %	83			100	80	
cM capacity (veh/h)	409			44	520	

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	WB 4	NB 1
Volume Total	495	495	495	105	68	496	496	496	105
Volume Left	0	0	0	0	68	0	0	0	0
Volume Right	0	0	0	105	0	0	0	0	105
cSH	1700	1700	1700	1700	409	1700	1700	1700	520
Volume to Capacity	0.29	0.29	0.29	0.06	0.17	0.29	0.29	0.29	0.20
Queue Length 95th (ft)	0	0	0	0	15	0	0	0	19
Control Delay (s)	0.0	0.0	0.0	0.0	15.6	0.0	0.0	0.0	13.7
Lane LOS					C	B			
Approach Delay (s)	0.0				0.7	13.7			
Approach LOS						B			

Intersection Summary										
Average Delay	0.8									
Intersection Capacity Utilization	40.1%			ICU Level of Service				A		
Analysis Period (min)	15									

HCM Unsignalized Intersection Capacity Analysis  
 9: Constitution & Shawnee

2030 Total Traffic  
 AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↙	↑↑	↗	↙	↑↑	↗	0	0	↗	0	0	↗
Volume (veh/h)	25	1040	20	55	1035	10	0	0	55	0	0	90
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	26	1095	21	58	1089	11	0	0	58	0	0	95
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1100			1116			1903	2363	547	1863	2374	545
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1100			1116			1903	2363	547	1863	2374	545
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	96			91			100	100	88	100	100	80
cM capacity (veh/h)	630			622			30	30	481	36	30	483

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	WB 4	NB 1	SB 1
Volume Total	26	547	547	21	58	545	545	11	58	95
Volume Left	26	0	0	0	58	0	0	0	0	0
Volume Right	0	0	0	21	0	0	0	11	58	95
cSH	630	1700	1700	1700	622	1700	1700	1700	481	483
Volume to Capacity	0.04	0.32	0.32	0.01	0.09	0.32	0.32	0.01	0.12	0.20
Queue Length 95th (ft)	3	0	0	0	8	0	0	0	10	18
Control Delay (s)	11.0	0.0	0.0	0.0	11.4	0.0	0.0	0.0	13.5	14.3
Lane LOS	B				B				B	B
Approach Delay (s)	0.3				0.6				13.5	14.3
Approach LOS									B	B

Intersection Summary	
Average Delay	1.3
Intersection Capacity Utilization	40.8%
ICU Level of Service	A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis  
 9: Constitution & Shawnee

2030 Total Traffic  
 PM Peak Hour



























Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↙	↕	↘	↙	↕	↘			↗			↗
Volume (veh/h)	95	1115	100	65	1120	25	0	0	100	0	0	55
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	100	1174	105	68	1179	26	0	0	105	0	0	58
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1205			1279			2158	2716	587	2208	2795	589
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1205			1279			2158	2716	587	2208	2795	589
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	83			87			100	100	77	100	100	87
cM capacity (veh/h)	575			539			18	15	453	15	13	451

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	WB 4	NB 1	SB 1
Volume Total	100	587	587	105	68	589	589	26	105	58
Volume Left	100	0	0	0	68	0	0	0	0	0
Volume Right	0	0	0	105	0	0	0	26	105	58
cSH	575	1700	1700	1700	539	1700	1700	1700	453	451
Volume to Capacity	0.17	0.35	0.35	0.06	0.13	0.35	0.35	0.02	0.23	0.13
Queue Length 95th (ft)	16	0	0	0	11	0	0	0	22	11
Control Delay (s)	12.6	0.0	0.0	0.0	12.7	0.0	0.0	0.0	15.3	14.2
Lane LOS	B				B				C	B
Approach Delay (s)	0.9				0.7				15.3	14.2
Approach LOS									C	B

Intersection Summary	
Average Delay	1.6
Intersection Capacity Utilization	43.7%
ICU Level of Service	A
Analysis Period (min)	15

Lanes, Volumes, Timings  
4: Constitution & Peterson

Existing Traffic  
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	135	295	60	125	475	55	100	110	55	90	460	180
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	260		0	220		585	225		0	150		0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850			0.850		0.950			0.958	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	3362	0	1770	3391	0
Flt Permitted	0.389			0.525			0.155			0.642		
Satd. Flow (perm)	725	3539	1583	978	3539	1583	289	3362	0	1196	3391	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			77			66		58			55	
Link Speed (mph)		50			50			35			35	
Link Distance (ft)		638			1720			418			432	
Travel Time (s)		8.7			23.5			8.1			8.4	
Peak Hour Factor	0.78	0.78	0.78	0.83	0.83	0.83	0.95	0.95	0.95	0.88	0.88	0.88
Adj. Flow (vph)	173	378	77	151	572	66	105	116	58	102	523	205
Shared Lane Traffic (%)												
Lane Group Flow (vph)	173	378	77	151	572	66	105	174	0	102	728	0
Turn Type	pm+pt		Perm	pm+pt		Perm	pm+pt			pm+pt		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2			6		
Detector Phase	7	4	4	3	8	8	5	2		1	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Minimum Split (s)	9.0	23.0	23.0	9.0	23.0	23.0	9.0	22.0		9.0	22.0	
Total Split (s)	10.0	50.0	50.0	10.0	50.0	50.0	10.0	30.0	0.0	10.0	30.0	0.0
Total Split (%)	10.0%	50.0%	50.0%	10.0%	50.0%	50.0%	10.0%	30.0%	0.0%	10.0%	30.0%	0.0%
Maximum Green (s)	5.0	43.0	43.0	5.0	43.0	43.0	5.0	24.0		5.0	24.0	
Yellow Time (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	4.0		3.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	7.0	7.0	5.0	7.0	7.0	5.0	6.0	4.0	5.0	6.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Max		None	Max	
Walk Time (s)		5.0	5.0		5.0	5.0		5.0			5.0	
Flash Dont Walk (s)		11.0	11.0		11.0	11.0		11.0			11.0	
Pedestrian Calls (#/hr)		0	0		0	0		0			0	
Act Effct Green (s)	50.0	43.0	43.0	50.0	43.0	43.0	31.0	26.0		30.0	24.0	
Actuated g/C Ratio	0.50	0.43	0.43	0.50	0.43	0.43	0.31	0.26		0.30	0.24	
v/c Ratio	0.42	0.25	0.11	0.29	0.38	0.09	0.64	0.19		0.26	0.85	
Control Delay	15.5	18.7	4.4	19.5	30.9	13.2	43.3	20.5		25.1	44.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	15.5	18.7	4.4	19.5	30.9	13.2	43.3	20.5		25.1	44.5	
LOS	B	B	A	B	C	B	D	C		C	D	



Lanes, Volumes, Timings  
 4: Constitution & Peterson

Existing Traffic  
 AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		16.1			27.2			29.1			42.1	
Approach LOS		B			C			C			D	

Intersection Summary

Area Type: Other  
 Cycle Length: 100  
 Actuated Cycle Length: 100  
 Offset: 0 (0%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green  
 Natural Cycle: 65  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.85  
 Intersection Signal Delay: 29.6  
 Intersection Capacity Utilization 63.8%  
 Analysis Period (min) 15

























Intersection LOS: C  
 ICU Level of Service B

Splits and Phases: 4: Constitution & Peterson

ø1	ø2	ø3	ø4
10 s	30 s	10 s	50 s
ø5	ø6	ø7	ø8
10 s	30 s	10 s	50 s

Lanes, Volumes, Timings  
4: Constitution & Peterson

Existing Traffic  
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	185	490	95	80	405	70	150	645	80	50	260	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	260		0	220		585	225		0	150		0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Fr't			0.850			0.850		0.983			0.958	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	3479	0	1770	3391	0
Flt Permitted	0.442			0.423			0.339			0.160		
Satd. Flow (perm)	823	3539	1583	788	3539	1583	631	3479	0	298	3391	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			104			82		13			53	
Link Speed (mph)		50			50			35			35	
Link Distance (ft)		638			1720			418			432	
Travel Time (s)		8.7			23.5			8.1			8.4	
Peak Hour Factor	0.91	0.91	0.91	0.85	0.85	0.85	0.91	0.91	0.91	0.74	0.74	0.74
Adj. Flow (vph)	203	538	104	94	476	82	165	709	88	68	351	135
Shared Lane Traffic (%)												
Lane Group Flow (vph)	203	538	104	94	476	82	165	797	0	68	486	0
Turn Type	pm+pt		Perm	pm+pt		Perm	pm+pt			pm+pt		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2			6		
Detector Phase	7	4	4	3	8	8	5	2		1	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Minimum Split (s)	9.0	23.0	23.0	9.0	23.0	23.0	9.0	22.0		9.0	22.0	
Total Split (s)	10.0	50.0	50.0	10.0	50.0	50.0	10.0	30.0	0.0	10.0	30.0	0.0
Total Split (%)	10.0%	50.0%	50.0%	10.0%	50.0%	50.0%	10.0%	30.0%	0.0%	10.0%	30.0%	0.0%
Maximum Green (s)	5.0	43.0	43.0	5.0	43.0	43.0	5.0	24.0		5.0	24.0	
Yellow Time (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	4.0		3.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	7.0	7.0	5.0	7.0	7.0	5.0	6.0	4.0	5.0	6.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Max		None	Max	
Walk Time (s)		5.0	5.0		5.0	5.0		5.0			5.0	
Flash Dont Walk (s)		11.0	11.0		11.0	11.0		11.0			11.0	
Pedestrian Calls (#/hr)		0	0		0	0		0			0	
Act Effct Green (s)	51.0	45.0	45.0	50.0	43.0	43.0	31.0	26.0		30.0	24.0	
Actuated g/C Ratio	0.51	0.45	0.45	0.50	0.43	0.43	0.31	0.26		0.30	0.24	
v/c Ratio	0.43	0.34	0.14	0.21	0.31	0.11	0.65	0.87		0.42	0.57	
Control Delay	16.0	19.2	4.0	19.1	31.8	14.2	39.8	47.6		30.3	32.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	16.0	19.2	4.0	19.1	31.8	14.2	39.8	47.6		30.3	32.7	
LOS	B	B	A	B	C	B	D	D		C	C	

Lanes, Volumes, Timings  
 4: Constitution & Peterson

Existing Traffic  
 PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		16.5			27.8			46.2			32.4	
Approach LOS		B			C			D			C	

Intersection Summary

Area Type: Other  
 Cycle Length: 100  
 Actuated Cycle Length: 100  
 Offset: 0 (0%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green  
 Natural Cycle: 65  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.87  
 Intersection Signal Delay: 31.4  
 Intersection Capacity Utilization 64.3%  
 Analysis Period (min) 15

























Intersection LOS: C  
 ICU Level of Service C

Splits and Phases: 4: Constitution & Peterson

ø1	ø2	ø3	ø4
10 s	30 s	10 s	50 s
ø5	ø6	ø7	ø8
10 s	30 s	10 s	50 s

Lanes, Volumes, Timings  
31: Constitution & Peterson

2015 Background Traffic  
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	150	585	75	155	730	60	110	140	60	100	525	185
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	260		175	220		175	225		0	150		0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850			0.850		0.955			0.961	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	3380	0	1770	3401	0
Flt Permitted	0.328			0.268			0.138			0.620		
Satd. Flow (perm)	611	3539	1583	499	3539	1583	257	3380	0	1155	3401	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			79			63		52			39	
Link Speed (mph)		50			50			35			35	
Link Distance (ft)		663			1710			618			418	
Travel Time (s)		9.0			23.3			12.0			8.1	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	158	616	79	163	768	63	116	147	63	105	553	195
Shared Lane Traffic (%)												
Lane Group Flow (vph)	158	616	79	163	768	63	116	210	0	105	748	0
Turn Type	pm+pt		Perm	pm+pt		Perm	pm+pt			pm+pt		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2			6		
Detector Phase	7	4	4	3	8	8	5	2		1	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Minimum Split (s)	9.0	23.0	23.0	9.0	23.0	23.0	9.0	22.0		9.0	22.0	
Total Split (s)	15.0	46.0	46.0	25.0	56.0	56.0	14.0	35.0	0.0	14.0	35.0	0.0
Total Split (%)	12.5%	38.3%	38.3%	20.8%	46.7%	46.7%	11.7%	29.2%	0.0%	11.7%	29.2%	0.0%
Maximum Green (s)	10.0	39.0	39.0	20.0	49.0	49.0	9.0	29.0		9.0	29.0	
Yellow Time (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	4.0		3.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	7.0	7.0	5.0	7.0	7.0	5.0	6.0	4.0	5.0	6.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	Max	C-Max	C-Max	Max	C-Max	C-Max	Max	Max		Max	Max	
Walk Time (s)		5.0	5.0		5.0	5.0		5.0			5.0	
Flash Dont Walk (s)		11.0	11.0		11.0	11.0		11.0			11.0	
Pedestrian Calls (#/hr)		0	0		0	0		0			0	
Act Effct Green (s)	51.0	39.0	39.0	66.0	49.0	49.0	39.0	29.0		39.0	29.0	
Actuated g/C Ratio	0.42	0.32	0.32	0.55	0.41	0.41	0.32	0.24		0.32	0.24	
v/c Ratio	0.44	0.54	0.14	0.34	0.53	0.09	0.59	0.25		0.25	0.88	
Control Delay	18.9	35.2	6.8	17.4	23.2	6.2	38.8	28.2		27.5	54.4	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	18.9	35.2	6.8	17.4	23.2	6.2	38.8	28.2		27.5	54.4	
LOS	B	D	A	B	C	A	D	C		C	D	

Lanes, Volumes, Timings  
 31: Constitution & Peterson

2015 Background Traffic  
 AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		29.5			21.2			32.0			51.0	
Approach LOS		C			C			C			D	

Intersection Summary

Area Type: Other  
 Cycle Length: 120  
 Actuated Cycle Length: 120  
 Offset: 39 (33%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green  
 Natural Cycle: 65  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.88  
 Intersection Signal Delay: 33.1  
 Intersection Capacity Utilization 74.2%  
 Analysis Period (min) 15

Intersection LOS: C  
 ICU Level of Service D

Splits and Phases: 31: Constitution & Peterson

Ø1	Ø2	Ø3	Ø4
14 s	35 s	25 s	46 s
Ø5	Ø6	Ø7	Ø8
14 s	35 s	15 s	56 s

Lanes, Volumes, Timings  
31: Constitution & Peterson

2015 Background Traffic  
PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	200	1025	125	95	980	95	165	680	110	55	285	115
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	260		175	220		175	225		0	150		0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850			0.850		0.979			0.957	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	3465	0	1770	3387	0
Flt Permitted	0.118			0.111			0.341			0.138		
Satd. Flow (perm)	220	3539	1583	207	3539	1583	635	3465	0	257	3387	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			90			71		15			47	
Link Speed (mph)		50			50			35			35	
Link Distance (ft)		663			1747			618			418	
Travel Time (s)		9.0			23.8			12.0			8.1	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	211	1079	132	100	1032	100	174	716	116	58	300	121
Shared Lane Traffic (%)												
Lane Group Flow (vph)	211	1079	132	100	1032	100	174	832	0	58	421	0
Turn Type	pm+pt		Perm	pm+pt		Perm	pm+pt			pm+pt		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2			6		
Detector Phase	7	4	4	3	8	8	5	2		1	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Minimum Split (s)	9.0	23.0	23.0	9.0	23.0	23.0	9.0	22.0		9.0	22.0	
Total Split (s)	18.0	53.0	53.0	17.0	52.0	52.0	15.0	39.0	0.0	11.0	35.0	0.0
Total Split (%)	15.0%	44.2%	44.2%	14.2%	43.3%	43.3%	12.5%	32.5%	0.0%	9.2%	29.2%	0.0%
Maximum Green (s)	13.0	46.0	46.0	12.0	45.0	45.0	10.0	33.0		6.0	29.0	
Yellow Time (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	4.0		3.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	7.0	7.0	5.0	7.0	7.0	5.0	6.0	4.0	5.0	6.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	Max	C-Max	C-Max	Max	C-Max	C-Max	Max	Max		Max	Max	
Walk Time (s)		5.0	5.0		5.0	5.0		5.0			5.0	
Flash Dont Walk (s)		11.0	11.0		11.0	11.0		11.0			11.0	
Pedestrian Calls (#/hr)		0	0		0	0		0			0	
Act Effct Green (s)	61.0	46.0	46.0	59.0	45.0	45.0	44.0	33.0		36.0	29.0	
Actuated g/C Ratio	0.51	0.38	0.38	0.49	0.38	0.38	0.37	0.28		0.30	0.24	
v/c Ratio	0.75	0.80	0.20	0.39	0.78	0.16	0.53	0.86		0.38	0.49	
Control Delay	38.5	38.1	9.8	18.8	32.2	6.0	32.8	51.1		32.1	36.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	38.5	38.1	9.8	18.8	32.2	6.0	32.8	51.1		32.1	36.9	
LOS	D	D	A	B	C	A	C	D		C	D	

Lanes, Volumes, Timings  
 31: Constitution & Peterson

2015 Background Traffic  
 PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		35.6			29.0			48.0			36.3	
Approach LOS		D			C			D			D	

**Intersection Summary**

Area Type: Other  
 Cycle Length: 120  
 Actuated Cycle Length: 120  
 Offset: 39 (33%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green  
 Natural Cycle: 80  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.86  
 Intersection Signal Delay: 36.7  
 Intersection Capacity Utilization 83.0%  
 Analysis Period (min) 15

Intersection LOS: D  
 ICU Level of Service E

Splits and Phases: 31: Constitution & Peterson

φ1	φ2	φ3	φ4
11 s	39 s	17 s	53 s
φ5	φ6	φ7	φ8
15 s	35 s	18 s	52 s

Lanes, Volumes, Timings  
31: Constitution & Peterson

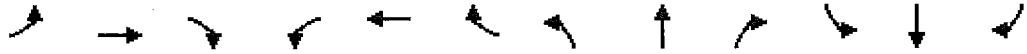
2015 Total Traffic - Preliminary Plan  
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	150	605	75	165	800	70	110	140	65	105	525	185
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	260		175	220		175	225		0	150		0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850			0.850		0.953			0.961	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	3373	0	1770	3401	0
Flt Permitted	0.282			0.256			0.138			0.615		
Satd. Flow (perm)	525	3539	1583	477	3539	1583	257	3373	0	1146	3401	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			79			68		60			39	
Link Speed (mph)		50			50			35			35	
Link Distance (ft)		663			2111			618			418	
Travel Time (s)		9.0			28.8			12.0			8.1	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	158	637	79	174	842	74	116	147	68	111	553	195
Shared Lane Traffic (%)												
Lane Group Flow (vph)	158	637	79	174	842	74	116	215	0	111	748	0
Turn Type	pm+pt		Perm	pm+pt		Perm	pm+pt			pm+pt		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2			6		
Detector Phase	7	4	4	3	8	8	5	2		1	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Minimum Split (s)	9.0	23.0	23.0	9.0	23.0	23.0	9.0	22.0		9.0	22.0	
Total Split (s)	15.0	46.0	46.0	25.0	56.0	56.0	14.0	35.0	0.0	14.0	35.0	0.0
Total Split (%)	12.5%	38.3%	38.3%	20.8%	46.7%	46.7%	11.7%	29.2%	0.0%	11.7%	29.2%	0.0%
Maximum Green (s)	10.0	39.0	39.0	20.0	49.0	49.0	9.0	29.0		9.0	29.0	
Yellow Time (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	4.0		3.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	7.0	7.0	5.0	7.0	7.0	5.0	6.0	4.0	5.0	6.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	Max	C-Max	C-Max	Max	C-Max	C-Max	Max	Max		Max	Max	
Walk Time (s)		5.0	5.0		5.0	5.0		5.0			5.0	
Flash Dont Walk (s)		11.0	11.0		11.0	11.0		11.0			11.0	
Pedestrian Calls (#/hr)		0	0		0	0		0			0	
Act Effct Green (s)	51.0	39.0	39.0	66.0	49.0	49.0	39.0	29.0		39.0	29.0	
Actuated g/C Ratio	0.42	0.32	0.32	0.55	0.41	0.41	0.32	0.24		0.32	0.24	
v/c Ratio	0.48	0.55	0.14	0.36	0.58	0.11	0.59	0.25		0.26	0.88	
Control Delay	20.0	35.6	6.8	16.5	21.5	3.8	38.8	27.1		27.7	54.4	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	20.0	35.6	6.8	16.5	21.5	3.8	38.8	27.1		27.7	54.4	
LOS	C	D	A	B	C	A	D	C		C	D	



Lanes, Volumes, Timings  
 31: Constitution & Peterson

2015 Total Traffic - Preliminary Plan  
 AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		30.2			19.5			31.2			50.9	
Approach LOS		C			B			C			D	

**Intersection Summary**

Area Type: Other  
 Cycle Length: 120  
 Actuated Cycle Length: 120  
 Offset: 39 (33%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green  
 Natural Cycle: 65  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.88  
 Intersection Signal Delay: 32.2  
 Intersection Capacity Utilization 76.1%  
 Analysis Period (min) 15

Intersection LOS: C  
 ICU Level of Service D

Splits and Phases: 31: Constitution & Peterson

φ1	φ2	φ3	φ4
14 s	35 s	25 s	46 s
φ5	φ6	φ7	φ8
14 s	35 s	15 s	56 s

Lanes, Volumes, Timings  
31: Constitution & Peterson

2015 Total Traffic - Preliminary Plan  
PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	200	1105	125	100	1025	105	165	680	120	65	285	115
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	260		175	220		175	225		0	150		0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850			0.850		0.978			0.957	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	3461	0	1770	3387	0
Flt Permitted	0.100			0.089			0.341			0.138		
Satd. Flow (perm)	186	3539	1583	166	3539	1583	635	3461	0	257	3387	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			84			75		16			47	
Link Speed (mph)		50			50			35			35	
Link Distance (ft)		663			2111			618			418	
Travel Time (s)		9.0			28.8			12.0			8.1	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	211	1163	132	105	1079	111	174	716	126	68	300	121
Shared Lane Traffic (%)												
Lane Group Flow (vph)	211	1163	132	105	1079	111	174	842	0	68	421	0
Turn Type	pm+pt		Perm	pm+pt		Perm	pm+pt			pm+pt		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2			6		
Detector Phase	7	4	4	3	8	8	5	2		1	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Minimum Split (s)	9.0	23.0	23.0	9.0	23.0	23.0	9.0	22.0		9.0	22.0	
Total Split (s)	18.0	53.0	53.0	17.0	52.0	52.0	15.0	39.0	0.0	11.0	35.0	0.0
Total Split (%)	15.0%	44.2%	44.2%	14.2%	43.3%	43.3%	12.5%	32.5%	0.0%	9.2%	29.2%	0.0%
Maximum Green (s)	13.0	46.0	46.0	12.0	45.0	45.0	10.0	33.0		6.0	29.0	
Yellow Time (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	4.0		3.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	7.0	7.0	5.0	7.0	7.0	5.0	6.0	4.0	5.0	6.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	Max	C-Max	C-Max	Max	C-Max	C-Max	Max	Max		Max	Max	
Walk Time (s)		5.0	5.0		5.0	5.0		5.0			5.0	
Flash Dont Walk (s)		11.0	11.0		11.0	11.0		11.0			11.0	
Pedestrian Calls (#/hr)		0	0		0	0		0			0	
Act Effct Green (s)	61.0	46.0	46.0	59.0	45.0	45.0	44.0	33.0		36.0	29.0	
Actuated g/C Ratio	0.51	0.38	0.38	0.49	0.38	0.38	0.37	0.28		0.30	0.24	
v/c Ratio	0.79	0.86	0.20	0.43	0.81	0.17	0.53	0.87		0.44	0.49	
Control Delay	46.2	41.6	10.8	24.8	34.7	7.1	32.8	52.0		34.3	36.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	46.2	41.6	10.8	24.8	34.7	7.1	32.8	52.0		34.3	36.9	
LOS	D	D	B	C	C	A	C	D		C	D	

Lanes, Volumes, Timings  
 31: Constitution & Peterson

2015 Total Traffic - Preliminary Plan  
 PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		39.5			31.5			48.7			36.5	
Approach LOS		D			C			D			D	

Intersection Summary

























Area Type: Other  
 Cycle Length: 120  
 Actuated Cycle Length: 120  
 Offset: 39 (33%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green  
 Natural Cycle: 90  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.87  
 Intersection Signal Delay: 39.0  
 Intersection LOS: D  
 Intersection Capacity Utilization 84.8%  
 ICU Level of Service E  
 Analysis Period (min) 15

Splits and Phases: 31: Constitution & Peterson

Phase	Duration	Phase	Duration
ø1	11 s	ø3	17 s
ø2	39 s	ø4	53 s
ø5	15 s	ø7	18 s
ø6	35 s	ø8	52 s

Lanes, Volumes, Timings  
31: Constitution & Peterson

2015 Total Traffic - Buildout  
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	150	660	75	180	845	85	110	140	90	130	525	185
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	260		175	220		175	225		225	150		0
Storage Lanes	1		1	1		1	1		1	1		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Frt			0.850			0.850			0.850		0.961	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	3539	1583	1770	3401	0
Flt Permitted	0.166			0.239			0.172			0.659		
Satd. Flow (perm)	309	3539	1583	445	3539	1583	320	3539	1583	1228	3401	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			77			69			95		41	
Link Speed (mph)		50			50			35			35	
Link Distance (ft)		663			2111			618			418	
Travel Time (s)		9.0			28.8			12.0			8.1	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	158	695	79	189	889	89	116	147	95	137	553	195
Shared Lane Traffic (%)												
Lane Group Flow (vph)	158	695	79	189	889	89	116	147	95	137	748	0
Turn Type	pm+pt		Perm	pm+pt		Perm	pm+pt		Perm	pm+pt		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Minimum Split (s)	9.0	23.0	23.0	9.0	23.0	23.0	9.0	22.0	22.0	9.0	22.0	
Total Split (s)	18.0	46.0	46.0	20.0	48.0	48.0	14.0	40.0	40.0	14.0	40.0	0.0
Total Split (%)	15.0%	38.3%	38.3%	16.7%	40.0%	40.0%	11.7%	33.3%	33.3%	11.7%	33.3%	0.0%
Maximum Green (s)	13.0	39.0	39.0	15.0	41.0	41.0	9.0	34.0	34.0	9.0	34.0	
Yellow Time (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	7.0	7.0	5.0	7.0	7.0	5.0	6.0	6.0	5.0	6.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	Max	C-Max	C-Max	Max	C-Max	C-Max	Max	Max	Max	Max	Max	
Walk Time (s)		5.0	5.0		5.0	5.0		5.0	5.0		5.0	
Flash Dont Walk (s)		11.0	11.0		11.0	11.0		11.0	11.0		11.0	
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	
Act Effct Green (s)	54.0	39.0	39.0	58.0	41.0	41.0	44.0	34.0	34.0	44.0	34.0	
Actuated g/C Ratio	0.45	0.32	0.32	0.48	0.34	0.34	0.37	0.28	0.28	0.37	0.28	
v/c Ratio	0.53	0.60	0.14	0.50	0.74	0.15	0.51	0.15	0.18	0.28	0.75	
Control Delay	23.4	36.7	7.3	19.6	44.4	13.4	31.1	32.7	7.3	24.8	42.6	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	23.4	36.7	7.3	19.6	44.4	13.4	31.1	32.7	7.3	24.8	42.6	
LOS	C	D	A	B	D	B	C	C	A	C	D	

Lanes, Volumes, Timings  
 31: Constitution & Peterson

2015 Total Traffic - Buildout  
 AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		32.0			38.0			25.4			39.8	
Approach LOS		C			D			C			D	

Intersection Summary

Area Type: Other  
 Cycle Length: 120  
 Actuated Cycle Length: 120  
 Offset: 39 (33%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green  
 Natural Cycle: 65  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.75  
 Intersection Signal Delay: 35.5  
 Intersection Capacity Utilization 77.4%  
 Analysis Period (min) 15
























Intersection LOS: D  
 ICU Level of Service D

Splits and Phases: 31: Constitution & Peterson

φ1	φ2	φ3	φ4
14 s	40 s	20 s	46 s
φ5	φ6	φ7	φ8
14 s	40 s	18 s	48 s

Lanes, Volumes, Timings  
31: Constitution & Peterson

2015 Total Traffic - Buildout  
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	200	1225	125	175	1140	175	165	680	190	135	285	115
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	260		175	220		175	225		225	150		0
Storage Lanes	1		1	1		1	1		1	1		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Frnt			0.850			0.850			0.850		0.957	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	3539	1583	1770	3387	0
Flt Permitted	0.087			0.089			0.375			0.159		
Satd. Flow (perm)	162	3539	1583	166	3539	1583	699	3539	1583	296	3387	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			76			112			200		47	
Link Speed (mph)		50			50			35			35	
Link Distance (ft)		663			2111			618			418	
Travel Time (s)		9.0			28.8			12.0			8.1	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	211	1289	132	184	1200	184	174	716	200	142	300	121
Shared Lane Traffic (%)												
Lane Group Flow (vph)	211	1289	132	184	1200	184	174	716	200	142	421	0
Turn Type	pm+pt		Perm	pm+pt		Perm	pm+pt		Perm	pm+pt		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Minimum Split (s)	9.0	23.0	23.0	9.0	23.0	23.0	9.0	22.0	22.0	9.0	22.0	
Total Split (s)	18.0	53.0	53.0	17.0	52.0	52.0	15.0	36.0	36.0	14.0	35.0	0.0
Total Split (%)	15.0%	44.2%	44.2%	14.2%	43.3%	43.3%	12.5%	30.0%	30.0%	11.7%	29.2%	0.0%
Maximum Green (s)	13.0	46.0	46.0	12.0	45.0	45.0	10.0	30.0	30.0	9.0	29.0	
Yellow Time (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	7.0	7.0	5.0	7.0	7.0	5.0	6.0	6.0	5.0	6.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	Max	C-Max	C-Max	Max	C-Max	C-Max	Max	Max	Max	Max	Max	Max
Walk Time (s)		5.0	5.0		5.0	5.0		5.0	5.0		5.0	
Flash Dont Walk (s)		11.0	11.0		11.0	11.0		11.0	11.0		11.0	
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	
Act Effct Green (s)	61.0	46.0	46.0	59.0	45.0	45.0	41.0	30.0	30.0	39.0	29.0	
Actuated g/C Ratio	0.51	0.38	0.38	0.49	0.38	0.38	0.34	0.25	0.25	0.32	0.24	
v/c Ratio	0.82	0.95	0.20	0.76	0.90	0.28	0.53	0.81	0.37	0.69	0.49	
Control Delay	52.8	51.4	12.0	48.5	39.5	6.1	33.0	50.6	6.9	44.4	36.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	52.8	51.4	12.0	48.5	39.5	6.1	33.0	50.6	6.9	44.4	36.9	
LOS	D	D	B	D	D	A	C	D	A	D	D	

Lanes, Volumes, Timings  
 31: Constitution & Peterson

2015 Total Traffic - Buildout  
 PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		48.4			36.6			39.8			38.8	
Approach LOS		D			D			D			D	

Intersection Summary

Area Type: Other  
 Cycle Length: 120  
 Actuated Cycle Length: 120  
 Offset: 39 (33%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green  
 Natural Cycle: 90  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.95  
 Intersection Signal Delay: 41.5  
 Intersection Capacity Utilization 89.0%  
 Analysis Period (min) 15

Intersection LOS: D  
 ICU Level of Service E

Splits and Phases: 31: Constitution & Peterson

ø1	ø2	ø3	ø4
14 s	36 s	17 s	53 s
ø5	ø6	ø7	ø8
15 s	35 s	18 s	52 s

Lanes, Volumes, Timings  
31: Constitution & Peterson

2030 Background Traffic  
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	175	1275	100	205	1350	75	125	200	70	120	640	200
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	260		175	220		175	225		225	150		0
Storage Lanes	1		1	1		1	1		1	1		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Frt			0.850			0.850			0.850		0.964	
Fit Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	5085	1583	1770	5085	1583	1770	3539	1583	1770	3412	0
Fit Permitted	0.111			0.098			0.118			0.620		
Satd. Flow (perm)	207	5085	1583	183	5085	1583	220	3539	1583	1155	3412	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			73			55			74		35	
Link Speed (mph)		50			50			35			35	
Link Distance (ft)		663			2111			618			418	
Travel Time (s)		9.0			28.8			12.0			8.1	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	184	1342	105	216	1421	79	132	211	74	126	674	211
Shared Lane Traffic (%)												
Lane Group Flow (vph)	184	1342	105	216	1421	79	132	211	74	126	885	0
Turn Type	pm+pt		Perm	pm+pt		Perm	pm+pt		Perm	pm+pt		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Minimum Split (s)	9.0	23.0	23.0	9.0	23.0	23.0	9.0	22.0	22.0	9.0	22.0	
Total Split (s)	18.0	43.0	43.0	23.0	48.0	48.0	14.0	40.0	40.0	14.0	40.0	0.0
Total Split (%)	15.0%	35.8%	35.8%	19.2%	40.0%	40.0%	11.7%	33.3%	33.3%	11.7%	33.3%	0.0%
Maximum Green (s)	13.0	36.0	36.0	18.0	41.0	41.0	9.0	34.0	34.0	9.0	34.0	
Yellow Time (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	7.0	7.0	5.0	7.0	7.0	5.0	6.0	6.0	5.0	6.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	Max	C-Max	C-Max	Max	C-Max	C-Max	Max	Max	Max	Max	Max	Max
Walk Time (s)		5.0	5.0		5.0	5.0		5.0	5.0		5.0	
Flash Dont Walk (s)		11.0	11.0		11.0	11.0		11.0	11.0		11.0	
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	
Act Effct Green (s)	51.0	36.0	36.0	61.0	41.0	41.0	44.0	34.0	34.0	44.0	34.0	
Actuated g/C Ratio	0.42	0.30	0.30	0.51	0.34	0.34	0.37	0.28	0.28	0.37	0.28	
v/c Ratio	0.72	0.88	0.20	0.65	0.82	0.14	0.67	0.21	0.15	0.27	0.89	
Control Delay	41.5	47.8	12.7	53.3	17.9	1.6	41.2	33.5	7.9	24.5	52.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	41.5	47.8	12.7	53.3	17.9	1.6	41.2	33.5	7.9	24.5	52.0	
LOS	D	D	B	D	B	A	D	C	A	C	D	



Lanes, Volumes, Timings  
 31: Constitution & Peterson

2030 Background Traffic  
 AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		44.8			21.6			31.4			48.6	
Approach LOS		D			C			C			D	

**Intersection Summary**

Area Type: Other  
 Cycle Length: 120  
 Actuated Cycle Length: 120  
 Offset: 39 (33%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green  
 Natural Cycle: 80  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.89  
 Intersection Signal Delay: 36.1  
 Intersection Capacity Utilization 86.2%  
 Analysis Period (min) 15

Intersection LOS: D  
 ICU Level of Service E

Splits and Phases: 31: Constitution & Peterson

φ1	φ2	φ3	φ4
14 s	40 s	23 s	43 s
φ5	φ6	φ7	φ8
14 s	40 s	18 s	48 s

Lanes, Volumes, Timings  
31: Constitution & Peterson

2030 Background Traffic  
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	225	1445	175	120	1300	145	200	750	165	70	325	150
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	260		175	220		175	225		225	150		0
Storage Lanes	1		1	1		1	1		1	1		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Fr't			0.850			0.850			0.850		0.953	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	5085	1583	1770	5085	1583	1770	3539	1583	1770	3373	0
Flt Permitted	0.095			0.098			0.319			0.132		
Satd. Flow (perm)	177	5085	1583	183	5085	1583	594	3539	1583	246	3373	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			122			111			172		61	
Link Speed (mph)		50			50			35			35	
Link Distance (ft)		663			2111			618			418	
Travel Time (s)		9.0			28.8			12.0			8.1	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	237	1521	184	126	1368	153	211	789	174	74	342	158
Shared Lane Traffic (%)												
Lane Group Flow (vph)	237	1521	184	126	1368	153	211	789	174	74	500	0
Turn Type	pm+pt		Perm	pm+pt		Perm	pm+pt		Perm	pm+pt		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Minimum Split (s)	9.0	23.0	23.0	9.0	23.0	23.0	9.0	22.0	22.0	9.0	22.0	
Total Split (s)	20.0	49.0	49.0	19.0	48.0	48.0	15.0	38.0	38.0	14.0	37.0	0.0
Total Split (%)	16.7%	40.8%	40.8%	15.8%	40.0%	40.0%	12.5%	31.7%	31.7%	11.7%	30.8%	0.0%
Maximum Green (s)	15.0	42.0	42.0	14.0	41.0	41.0	10.0	32.0	32.0	9.0	31.0	
Yellow Time (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	7.0	7.0	5.0	7.0	7.0	5.0	6.0	6.0	5.0	6.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	Max	C-Max	C-Max	Max	C-Max	C-Max	Max	Max	Max	Max	Max	
Walk Time (s)		5.0	5.0		5.0	5.0		5.0	5.0		5.0	
Flash Dont Walk (s)		11.0	11.0		11.0	11.0		11.0	11.0		11.0	
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	
Act Effct Green (s)	59.0	42.0	42.0	57.0	41.0	41.0	43.0	32.0	32.0	41.0	31.0	
Actuated g/C Ratio	0.49	0.35	0.35	0.48	0.34	0.34	0.36	0.27	0.27	0.34	0.26	
v/c Ratio	0.83	0.85	0.29	0.46	0.79	0.25	0.68	0.84	0.32	0.37	0.55	
Control Delay	52.6	42.0	11.4	27.1	41.8	15.0	38.7	50.6	6.9	29.1	36.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	52.6	42.0	11.4	27.1	41.8	15.0	38.7	50.6	6.9	29.1	36.1	
LOS	D	D	B	C	D	B	D	D	A	C	D	

Lanes, Volumes, Timings  
 31: Constitution & Peterson

2030 Background Traffic  
 PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		40.4			38.2			42.0			35.2	
Approach LOS		D			D			D			D	

Intersection Summary

























Area Type: Other  
 Cycle Length: 120  
 Actuated Cycle Length: 120  
 Offset: 39 (33%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green  
 Natural Cycle: 80  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.85  
 Intersection Signal Delay: 39.5  
 Intersection Capacity Utilization 81.6%  
 Analysis Period (min) 15  
 Intersection LOS: D  
 ICU Level of Service D

Splits and Phases: 31: Constitution & Peterson

ø1	ø2	ø3	ø4
14 s	38 s	19 s	49 s
ø5	ø6	ø7	ø8
15 s	37 s	20 s	48 s

Lanes, Volumes, Timings  
31: Constitution & Peterson

2030 Total Traffic  
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	175	1350	100	230	1465	100	125	200	100	150	640	200
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	260		175	220		175	225		225	150		0
Storage Lanes	1		1	1		1	1		1	1		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Frnt			0.850			0.850			0.850		0.964	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	5085	1583	1770	5085	1583	1770	3539	1583	1770	3412	0
Flt Permitted	0.111			0.098			0.121			0.601		
Satd. Flow (perm)	207	5085	1583	183	5085	1583	225	3539	1583	1120	3412	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			69			68			105			35
Link Speed (mph)		50			50			35			35	
Link Distance (ft)		663			2111			618			418	
Travel Time (s)		9.0			28.8			12.0			8.1	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	184	1421	105	242	1542	105	132	211	105	158	674	211
Shared Lane Traffic (%)												
Lane Group Flow (vph)	184	1421	105	242	1542	105	132	211	105	158	885	0
Turn Type	pm+pt		Perm	pm+pt		Perm	pm+pt		Perm	pm+pt		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Minimum Split (s)	9.0	23.0	23.0	9.0	23.0	23.0	9.0	22.0	22.0	9.0	22.0	
Total Split (s)	19.0	43.0	43.0	24.0	48.0	48.0	13.0	39.0	39.0	14.0	40.0	0.0
Total Split (%)	15.8%	35.8%	35.8%	20.0%	40.0%	40.0%	10.8%	32.5%	32.5%	11.7%	33.3%	0.0%
Maximum Green (s)	14.0	36.0	36.0	19.0	41.0	41.0	8.0	33.0	33.0	9.0	34.0	
Yellow Time (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	7.0	7.0	5.0	7.0	7.0	5.0	6.0	6.0	5.0	6.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	Max	C-Max	C-Max	Max	C-Max	C-Max	Max	Max	Max	Max	Max	Max
Walk Time (s)		5.0	5.0		5.0	5.0		5.0	5.0		5.0	
Flash Dont Walk (s)		11.0	11.0		11.0	11.0		11.0	11.0		11.0	
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	
Act Effct Green (s)	52.0	36.0	36.0	62.0	41.0	41.0	42.0	33.0	33.0	44.0	34.0	
Actuated g/C Ratio	0.43	0.30	0.30	0.52	0.34	0.34	0.35	0.28	0.28	0.37	0.28	
v/c Ratio	0.68	0.93	0.20	0.70	0.89	0.18	0.73	0.22	0.21	0.34	0.89	
Control Delay	37.8	52.7	13.6	46.3	34.0	9.7	48.0	34.3	7.2	26.5	52.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	37.8	52.7	13.6	46.3	34.0	9.7	48.0	34.3	7.2	26.5	52.0	
LOS	D	D	B	D	C	A	D	C	A	C	D	

Lanes, Volumes, Timings  
 31: Constitution & Peterson

2030 Total Traffic  
 AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		48.7			34.2			32.0			48.1	
Approach LOS		D			C			C			D	

Intersection Summary

























Area Type: Other  
 Cycle Length: 120  
 Actuated Cycle Length: 120  
 Offset: 114 (95%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green  
 Natural Cycle: 90  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.93  
 Intersection Signal Delay: 41.7  
 Intersection Capacity Utilization 89.0%  
 Analysis Period (min) 15  
 Intersection LOS: D  
 ICU Level of Service E

Splits and Phases: 31: Constitution & Peterson

ø1	ø2	ø3	ø4
14 s	39 s	24 s	43 s
ø5	ø6	ø7	ø8
13 s	40 s	19 s	48 s

Lanes, Volumes, Timings  
31: Constitution & Peterson

2030 Total Traffic  
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	225	1645	175	200	1460	225	200	750	245	150	325	150
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	260		175	220		175	225		225	150		0
Storage Lanes	1		1	1		1	1		1	1		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Fr't			0.850			0.850			0.850		0.953	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	5085	1583	1770	5085	1583	1770	3539	1583	1770	3373	0
Flt Permitted	0.095			0.098			0.319			0.132		
Satd. Flow (perm)	177	5085	1583	183	5085	1583	594	3539	1583	246	3373	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			107			153			254		61	
Link Speed (mph)		50			50			35			35	
Link Distance (ft)		663			2111			618			418	
Travel Time (s)		9.0			28.8			12.0			8.1	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	237	1732	184	211	1537	237	211	789	258	158	342	158
Shared Lane Traffic (%)												
Lane Group Flow (vph)	237	1732	184	211	1537	237	211	789	258	158	500	0
Turn Type	pm+pt		Perm	pm+pt		Perm	pm+pt		Perm	pm+pt		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Minimum Split (s)	9.0	23.0	23.0	9.0	23.0	23.0	9.0	22.0	22.0	9.0	22.0	
Total Split (s)	20.0	49.0	49.0	19.0	48.0	48.0	15.0	38.0	38.0	14.0	37.0	0.0
Total Split (%)	16.7%	40.8%	40.8%	15.8%	40.0%	40.0%	12.5%	31.7%	31.7%	11.7%	30.8%	0.0%
Maximum Green (s)	15.0	42.0	42.0	14.0	41.0	41.0	10.0	32.0	32.0	9.0	31.0	
Yellow Time (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	7.0	7.0	5.0	7.0	7.0	5.0	6.0	6.0	5.0	6.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	Max	C-Max	C-Max	Max	C-Max	C-Max	Max	Max	Max	Max	Max	
Walk Time (s)		5.0	5.0		5.0	5.0		5.0	5.0		5.0	
Flash Dont Walk (s)		11.0	11.0		11.0	11.0		11.0	11.0		11.0	
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	
Act Effct Green (s)	59.0	42.0	42.0	57.0	41.0	41.0	43.0	32.0	32.0	41.0	31.0	
Actuated g/C Ratio	0.49	0.35	0.35	0.48	0.34	0.34	0.36	0.27	0.27	0.34	0.26	
v/c Ratio	0.83	0.97	0.29	0.78	0.88	0.37	0.68	0.84	0.42	0.80	0.55	
Control Delay	52.6	54.5	13.3	48.7	34.7	7.9	38.7	50.6	6.8	54.8	36.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	52.6	54.5	13.3	48.7	34.7	7.9	38.7	50.6	6.8	54.8	36.1	
LOS	D	D	B	D	C	A	D	D	A	D	D	

Lanes, Volumes, Timings  
 31: Constitution & Peterson

2030 Total Traffic  
 PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		50.8			33.0			39.6			40.6	
Approach LOS		D			C			D			D	
Queue Length 50th (ft)	126	480	40	66	456	72	111	304	2	81	154	
Queue Length 95th (ft)	#262	#594	96	#214	504	112	174	382	67	#178	211	
Internal Link Dist (ft)		583			2031			538			338	
Turn Bay Length (ft)	260		175	220		175	225		225	150		
Base Capacity (vph)	286	1780	624	272	1737	642	311	944	608	198	917	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.83	0.97	0.29	0.78	0.88	0.37	0.68	0.84	0.42	0.80	0.55	

Intersection Summary

Area Type: Other  
 Cycle Length: 120  
 Actuated Cycle Length: 120  
 Offset: 39 (33%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green  
 Natural Cycle: 90  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.97  
 Intersection Signal Delay: 41.5  
 Intersection Capacity Utilization 91.1%  
 Analysis Period (min) 15  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

Splits and Phases: 31: Constitution & Peterson

ø1	ø2	ø3	ø4
14 s	38 s	19 s	49 s
ø5	ø6	ø7	ø8
15 s	37 s	20 s	48 s

HCM Unsignalized Intersection Capacity Analysis  
 8: Constitution & right-in/right-out

2015 Total Traffic - Buildout  
 AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↗		↑↑	↗						↗
Volume (veh/h)	0	875	15	0	940	120	0	0	0	0	0	50
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	921	16	0	989	126	0	0	0	0	0	53
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)		440			730							
pX, platoon unblocked	0.85			0.86			0.92	0.92	0.86	0.92	0.92	0.85
vC, conflicting volume	1116			937			1468	2037	461	1450	1926	495
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	782			599			647	1265	45	627	1145	51
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	100	100	94
cM capacity (veh/h)	706			837			307	154	872	338	182	855













Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	SB 1
Volume Total	461	461	16	495	495	126	53
Volume Left	0	0	0	0	0	0	0
Volume Right	0	0	16	0	0	126	53
cSH	1700	1700	1700	1700	1700	1700	855
Volume to Capacity	0.27	0.27	0.01	0.29	0.29	0.07	0.06
Queue Length 95th (ft)	0	0	0	0	0	0	5
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	9.5
Lane LOS							A
Approach Delay (s)	0.0			0.0			9.5
Approach LOS							A

Intersection Summary			
Average Delay		0.2	
Intersection Capacity Utilization		36.0%	ICU Level of Service A
Analysis Period (min)		15	



HCM Unsignalized Intersection Capacity Analysis  
 8: Constitution & right-in/right-out

2015 Total Traffic - Buildout  
 PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↗		↑↑	↗						↗
Volume (veh/h)	0	1325	60	0	1075	255	0	0	0	0	0	170
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	1395	63	0	1132	268	0	0	0	0	0	179
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)		440			730							
pX, platoon unblocked	0.89			0.72			0.78	0.78	0.72	0.78	0.78	0.89
vC, conflicting volume	1400			1458			2139	2795	697	1829	2589	566
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1206			867			1267	2111	0	868	1846	271
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	100	100	72
cM capacity (veh/h)	512			558			71	39	784	192	57	648

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	SB 1
Volume Total	697	697	63	566	566	268	179
Volume Left	0	0	0	0	0	0	0
Volume Right	0	0	63	0	0	268	179
cSH	1700	1700	1700	1700	1700	1700	648
Volume to Capacity	0.41	0.41	0.04	0.33	0.33	0.16	0.28
Queue Length 95th (ft)	0	0	0	0	0	0	28
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	12.7
Lane LOS							B
Approach Delay (s)	0.0			0.0			12.7
Approach LOS							B

Intersection Summary			
Average Delay		0.7	
Intersection Capacity Utilization		46.9%	ICU Level of Service A
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis  
 8: Constitution & right-in/right-out

2030 Total Traffic  
 AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↗		↑↑↑	↗						↗
Volume (veh/h)	0	1410	15	0	1680	120	0	0	0	0	0	50
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	1484	16	0	1768	126	0	0	0	0	0	53
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)		440			730							
pX, platoon unblocked	0.79			0.86			0.86	0.86	0.86	0.86	0.86	0.79
vC, conflicting volume	1895			1500			2126	3379	495	2263	3268	589
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1196			1020			645	2106	0	805	1977	0
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	100	100	94
cM capacity (veh/h)	457			583			287	44	935	235	52	855
Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	WB 4	SB 1			
Volume Total	495	495	495	16	589	589	589	126	53			
Volume Left	0	0	0	0	0	0	0	0	0			
Volume Right	0	0	0	16	0	0	0	126	53			
cSH	1700	1700	1700	1700	1700	1700	1700	1700	855			
Volume to Capacity	0.29	0.29	0.29	0.01	0.35	0.35	0.35	0.07	0.06			
Queue Length 95th (ft)	0	0	0	0	0	0	0	0	5			
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.5			
Lane LOS									A			
Approach Delay (s)	0.0				0.0				9.5			
Approach LOS									A			
<b>Intersection Summary</b>												
Average Delay			0.1									
Intersection Capacity Utilization			42.5%		ICU Level of Service				A			
Analysis Period (min)			15									

# HCM Unsignalized Intersection Capacity Analysis

2030 Total Traffic

## 8: Constitution & right-in/right-out

PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↗		↑↑↑	↗						↗
Volume (veh/h)	0	1960	60	0	1525	255	0	0	0	0	0	170
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	2063	63	0	1605	268	0	0	0	0	0	179
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh												
Upstream signal (ft)		440			730							
pX, platoon unblocked	0.88			0.69			0.75	0.75	0.69	0.75	0.75	0.88
vC, conflicting volume	1874			2126			2777	3937	688	2293	3732	535
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1516			1068			1132	2675	0	488	2402	0
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	100	100	81
cM capacity (veh/h)	384			448			96	16	750	348	25	954

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	WB 4	SB 1
Volume Total	688	688	688	63	535	535	535	268	179
Volume Left	0	0	0	0	0	0	0	0	0
Volume Right	0	0	0	63	0	0	0	268	179
cSH	1700	1700	1700	1700	1700	1700	1700	1700	954
Volume to Capacity	0.40	0.40	0.40	0.04	0.31	0.31	0.31	0.16	0.19
Queue Length 95th (ft)	0	0	0	0	0	0	0	0	17
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.6
Lane LOS									A
Approach Delay (s)	0.0				0.0				9.6
Approach LOS									A

Intersection Summary		
Average Delay		0.4
Intersection Capacity Utilization	46.7%	ICU Level of Service
Analysis Period (min)		15

HCM Unsignalized Intersection Capacity Analysis  
 16: Hunter Jumper & Hannah Ridge

2015 Total Traffic - Preliminary Plan  
 AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Volume (veh/h)	5	10	15	10	0	5	5	10	5	10	30	5
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	5	11	16	11	0	5	5	11	5	11	32	5
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	84	82	34	100	82	13	37			16		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	84	82	34	100	82	13	37			16		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	99	99	98	99	100	100	100			99		
cM capacity (veh/h)	891	801	1039	853	801	1067	1574			1602		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	32	16	21	47
Volume Left	5	11	5	11
Volume Right	16	5	5	5
cSH	922	914	1574	1602
Volume to Capacity	0.03	0.02	0.00	0.01
Queue Length 95th (ft)	3	1	0	0
Control Delay (s)	9.0	9.0	1.8	1.7
Lane LOS	A	A	A	A
Approach Delay (s)	9.0	9.0	1.8	1.7
Approach LOS	A	A		

Intersection Summary			
Average Delay		4.7	
Intersection Capacity Utilization		13.3%	ICU Level of Service A
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis  
 16: Hunter Jumper & Hannah Ridge

2015 Total Traffic - Preliminary Plan  
 PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Volume (veh/h)	5	10	5	10	5	10	25	30	15	5	20	5
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	5	11	5	11	5	11	26	32	16	5	21	5
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	139	134	24	137	129	39	26			47		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	139	134	24	137	129	39	26			47		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	99	99	100	99	99	99	98			100		
cM capacity (veh/h)	805	742	1053	808	746	1032	1588			1560		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	21	26	74	32
Volume Left	5	11	26	5
Volume Right	5	11	16	5
cSH	818	869	1588	1560
Volume to Capacity	0.03	0.03	0.02	0.00
Queue Length 95th (ft)	2	2	1	0
Control Delay (s)	9.5	9.3	2.7	1.2
Lane LOS	A	A	A	A
Approach Delay (s)	9.5	9.3	2.7	1.2
Approach LOS	A	A		

Intersection Summary			
Average Delay		4.5	
Intersection Capacity Utilization		17.4%	ICU Level of Service A
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis  
 16: Hunter Jumper & Hannah Ridge

2015 Total Traffic - Buildout  
 AM Peak Hour



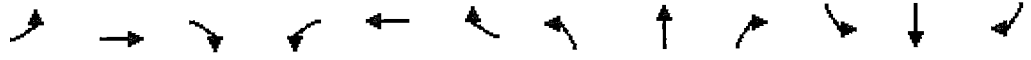
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Volume (veh/h)	5	30	50	20	5	5	10	10	25	10	30	5
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	5	32	53	21	5	5	11	11	26	11	32	5
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)								490				
pX, platoon unblocked												
vC, conflicting volume	108	113	34	168	103	24	37			37		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	108	113	34	168	103	24	37			37		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	99	96	95	97	99	100	99			99		
cM capacity (veh/h)	853	767	1039	724	777	1053	1574			1574		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	89	32	47	47
Volume Left	5	21	11	11
Volume Right	53	5	26	5
cSH	913	773	1574	1574
Volume to Capacity	0.10	0.04	0.01	0.01
Queue Length 95th (ft)	8	3	1	1
Control Delay (s)	9.4	9.9	1.7	1.7
Lane LOS	A	A	A	A
Approach Delay (s)	9.4	9.9	1.7	1.7
Approach LOS	A	A		

Intersection Summary			
Average Delay		6.1	
Intersection Capacity Utilization		18.5%	ICU Level of Service A
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis  
 16: Hunter Jumper & Hannah Ridge

2015 Total Traffic - Buildout  
 PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Volume (veh/h)	5	20	25	65	20	10	55	30	75	5	20	5
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	5	21	26	68	21	11	58	32	79	5	21	5
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)								490				
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	242	261	24	258	224	71	26			111		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	242	261	24	258	224	71	26			111		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	99	97	98	89	97	99	96			100		
cM capacity (veh/h)	666	618	1053	640	648	991	1588			1479		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	53	100	168	32
Volume Left	5	68	58	5
Volume Right	26	11	79	5
cSH	786	667	1588	1479
Volume to Capacity	0.07	0.15	0.04	0.00
Queue Length 95th (ft)	5	13	3	0
Control Delay (s)	9.9	11.3	2.7	1.3
Lane LOS	A	B	A	A
Approach Delay (s)	9.9	11.3	2.7	1.3
Approach LOS	A	B		

Intersection Summary			
Average Delay		6.1	
Intersection Capacity Utilization		34.5%	ICU Level of Service A
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis  
 16: Hunter Jumper & Hannah Ridge

2030 Total Traffic  
 AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Volume (veh/h)	5	30	50	20	5	5	10	10	25	10	30	5
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	5	32	53	21	5	5	11	11	26	11	32	5
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)								490				
pX, platoon unblocked												
vC, conflicting volume	108	113	34	168	103	24	37			37		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	108	113	34	168	103	24	37			37		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	99	96	95	97	99	100	99			99		
cM capacity (veh/h)	853	767	1039	724	777	1053	1574			1574		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	89	32	47	47
Volume Left	5	21	11	11
Volume Right	53	5	26	5
cSH	913	773	1574	1574
Volume to Capacity	0.10	0.04	0.01	0.01
Queue Length 95th (ft)	8	3	1	1
Control Delay (s)	9.4	9.9	1.7	1.7
Lane LOS	A	A	A	A
Approach Delay (s)	9.4	9.9	1.7	1.7
Approach LOS	A	A		

Intersection Summary			
Average Delay		6.1	
Intersection Capacity Utilization		18.5%	ICU Level of Service A
Analysis Period (min)		15	



HCM Unsignalized Intersection Capacity Analysis  
 16: Hunter Jumper & Hannah Ridge

2030 Total Traffic  
 PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Volume (veh/h)	5	20	25	65	20	10	55	30	75	5	20	5
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	5	21	26	68	21	11	58	32	79	5	21	5
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)								490				
pX, platoon unblocked												
vC, conflicting volume	242	261	24	258	224	71	26			111		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	242	261	24	258	224	71	26			111		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	99	97	98	89	97	99	96			100		
cM capacity (veh/h)	666	618	1053	640	648	991	1588			1479		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	53	100	168	32
Volume Left	5	68	58	5
Volume Right	26	11	79	5
cSH	786	667	1588	1479
Volume to Capacity	0.07	0.15	0.04	0.00
Queue Length 95th (ft)	5	13	3	0
Control Delay (s)	9.9	11.3	2.7	1.3
Lane LOS	A	B	A	A
Approach Delay (s)	9.9	11.3	2.7	1.3
Approach LOS	A	B		

Intersection Summary			
Average Delay		6.1	
Intersection Capacity Utilization		34.5%	ICU Level of Service A
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis  
 28: Hunter Jumper & Akers

2015 Total Traffic - Preliminary Plan  
 AM Peak Hour



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↙	↗	↙	↑	↑	↗
Volume (veh/h)	15	15	5	250	120	5
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	16	16	5	263	126	5
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	400	126	132			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	400	126	132			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	97	98	100			
cM capacity (veh/h)	604	924	1454			

Direction, Lane #	EB 1	EB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	16	16	5	263	126	5
Volume Left	16	0	5	0	0	0
Volume Right	0	16	0	0	0	5
cSH	604	924	1454	1700	1700	1700
Volume to Capacity	0.03	0.02	0.00	0.15	0.07	0.00
Queue Length 95th (ft)	2	1	0	0	0	0
Control Delay (s)	11.1	9.0	7.5	0.0	0.0	0.0
Lane LOS	B	A	A			
Approach Delay (s)	10.0		0.1		0.0	
Approach LOS	B					

Intersection Summary						
Average Delay			0.8			
Intersection Capacity Utilization			23.2%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis  
 28: Hunter Jumper & Akers

2015 Total Traffic - Preliminary Plan  
 PM Peak Hour



























Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	10	10	15	130	270	10
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	11	11	16	137	284	11
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	453	284	295			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	453	284	295			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	98	99	99			
cM capacity (veh/h)	558	755	1267			

Direction, Lane #	EB 1	EB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	11	11	16	137	284	11
Volume Left	11	0	16	0	0	0
Volume Right	0	11	0	0	0	11
cSH	558	755	1267	1700	1700	1700
Volume to Capacity	0.02	0.01	0.01	0.08	0.17	0.01
Queue Length 95th (ft)	1	1	1	0	0	0
Control Delay (s)	11.6	9.8	7.9	0.0	0.0	0.0
Lane LOS	B	A	A			
Approach Delay (s)	10.7		0.8		0.0	
Approach LOS	B					

Intersection Summary						
Average Delay			0.7			
Intersection Capacity Utilization			24.2%	ICU Level of Service	A	
Analysis Period (min)			15			

Lanes, Volumes, Timings  
28: Hunter Jumper & Akers

2015 Total Traffic - Buildout  
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	40	5	25	95	5	25	25	255	80	30	130	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		100	0		0	170		0	200		155
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (ft)	25		25	25		25	150		25	25		160
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	1863	1583	1770	1863	1583
Flt Permitted	0.754			0.754			0.669			0.588		
Satd. Flow (perm)	1405	1863	1583	1405	1863	1583	1246	1863	1583	1095	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			26			26			84			11
Link Speed (mph)		25			25			35			35	
Link Distance (ft)		350			319			665			738	
Travel Time (s)		9.5			8.7			13.0			14.4	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	42	5	26	100	5	26	26	268	84	32	137	11
Shared Lane Traffic (%)												
Lane Group Flow (vph)	42	5	26	100	5	26	26	268	84	32	137	11
Turn Type	Perm		Perm	Perm		Perm	Perm		Perm	Perm		Perm
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	4	4	4	8	8	8	2	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0
Total Split (s)	21.0	21.0	21.0	21.0	21.0	21.0	39.0	39.0	39.0	39.0	39.0	39.0
Total Split (%)	35.0%	35.0%	35.0%	35.0%	35.0%	35.0%	65.0%	65.0%	65.0%	65.0%	65.0%	65.0%
Maximum Green (s)	16.0	16.0	16.0	16.0	16.0	16.0	34.0	34.0	34.0	34.0	34.0	34.0
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	Max	Max	Max	Max	Max	Max	C-Max	C-Max	C-Max	C-Max	C-Max	C-Max
Walk Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Act Effct Green (s)	17.0	17.0	17.0	17.0	17.0	17.0	35.0	35.0	35.0	35.0	35.0	35.0
Actuated g/C Ratio	0.28	0.28	0.28	0.28	0.28	0.28	0.58	0.58	0.58	0.58	0.58	0.58
v/c Ratio	0.11	0.01	0.06	0.25	0.01	0.06	0.04	0.25	0.09	0.05	0.13	0.01
Control Delay	17.2	16.0	6.6	18.7	15.6	7.6	2.8	5.0	1.0	5.7	6.0	3.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.2	16.0	6.6	18.7	15.6	7.6	2.8	5.0	1.0	5.7	6.0	3.1
LOS	B	B	A	B	B	A	A	A	A	A	A	A

Lanes, Volumes, Timings  
 28: Hunter Jumper & Akers

2015 Total Traffic - Buildout  
 AM Peak Hour



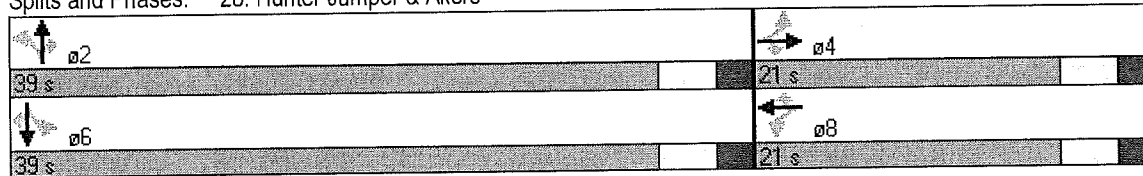
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		13.3			16.4			3.9			5.8	
Approach LOS		B			B			A			A	

Intersection Summary

Area Type: Other  
 Cycle Length: 60  
 Actuated Cycle Length: 60  
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green  
 Natural Cycle: 45  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.25  
 Intersection Signal Delay: 7.4  
 Intersection Capacity Utilization 38.7%  
 Analysis Period (min) 15

Intersection LOS: A  
 ICU Level of Service A

Splits and Phases: 28: Hunter Jumper & Akers



Lanes, Volumes, Timings  
28: Hunter Jumper & Akers

2015 Total Traffic - Buildout  
PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	50	5	90	300	5	100	95	180	175	60	295	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		100	0		0	170		0	200		155
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (ft)	25		25	25		25	150		25	25		160
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	1863	1583	1770	1863	1583
Flt Permitted	0.754			0.754			0.547			0.639		
Satd. Flow (perm)	1405	1863	1583	1405	1863	1583	1019	1863	1583	1190	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			95			105			184			37
Link Speed (mph)		25			25			35			35	
Link Distance (ft)		350			319			665			738	
Travel Time (s)		9.5			8.7			13.0			14.4	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	53	5	95	316	5	105	100	189	184	63	311	37
Shared Lane Traffic (%)												
Lane Group Flow (vph)	53	5	95	316	5	105	100	189	184	63	311	37
Turn Type	Perm		Perm	Perm		Perm	Perm		Perm	Perm		Perm
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	4	4	4	8	8	8	2	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0
Total Split (s)	22.0	22.0	22.0	22.0	22.0	22.0	38.0	38.0	38.0	38.0	38.0	38.0
Total Split (%)	36.7%	36.7%	36.7%	36.7%	36.7%	36.7%	63.3%	63.3%	63.3%	63.3%	63.3%	63.3%
Maximum Green (s)	17.0	17.0	17.0	17.0	17.0	17.0	33.0	33.0	33.0	33.0	33.0	33.0
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	Max	Max	Max	Max	Max	Max	C-Max	C-Max	C-Max	C-Max	C-Max	C-Max
Walk Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Act Effct Green (s)	18.0	18.0	18.0	18.0	18.0	18.0	34.0	34.0	34.0	34.0	34.0	34.0
Actuated g/C Ratio	0.30	0.30	0.30	0.30	0.30	0.30	0.57	0.57	0.57	0.57	0.57	0.57
v/c Ratio	0.13	0.01	0.18	0.75	0.01	0.19	0.17	0.18	0.19	0.09	0.29	0.04
Control Delay	15.9	15.0	3.7	32.8	14.8	5.0	4.9	4.6	1.2	6.4	7.7	2.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.9	15.0	3.7	32.8	14.8	5.0	4.9	4.6	1.2	6.4	7.7	2.5
LOS	B	B	A	C	B	A	A	A	A	A	A	A

Lanes, Volumes, Timings  
 28: Hunter Jumper & Akers

2015 Total Traffic - Buildout  
 PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		8.3			25.7			3.3			7.0	
Approach LOS		A			C			A			A	

Intersection Summary

Area Type: Other  
 Cycle Length: 60  
 Actuated Cycle Length: 60  
 Offset: 39 (65%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green  
 Natural Cycle: 45  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.75  
 Intersection Signal Delay: 11.4  
 Intersection Capacity Utilization 54.1%  
 Analysis Period (min) 15

























Intersection LOS: B  
 ICU Level of Service A

Splits and Phases: 28: Hunter Jumper & Akers

 ø2 38 s	 ø4 22 s
 ø6 38 s	 ø8 22 s

Lanes, Volumes, Timings  
28: Hunter Jumper & Akers

2030 Total Traffic  
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	40	5	25	95	5	25	25	605	80	30	210	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		100	0		0	170		0	200		155
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (ft)	25		25	25		25	150		25	25		160
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fr't			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	1863	1583	1770	1863	1583
Flt Permitted	0.754			0.754			0.620			0.306		
Satd. Flow (perm)	1405	1863	1583	1405	1863	1583	1155	1863	1583	570	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			26			26			84			11
Link Speed (mph)		25			25			35			35	
Link Distance (ft)		350			319			665			738	
Travel Time (s)		9.5			8.7			13.0			14.4	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	42	5	26	100	5	26	26	637	84	32	221	11
Shared Lane Traffic (%)												
Lane Group Flow (vph)	42	5	26	100	5	26	26	637	84	32	221	11
Turn Type	Perm		Perm	Perm		Perm	Perm		Perm	Perm		Perm
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	4	4	4	8	8	8	2	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0
Total Split (s)	21.0	21.0	21.0	21.0	21.0	21.0	39.0	39.0	39.0	39.0	39.0	39.0
Total Split (%)	35.0%	35.0%	35.0%	35.0%	35.0%	35.0%	65.0%	65.0%	65.0%	65.0%	65.0%	65.0%
Maximum Green (s)	16.0	16.0	16.0	16.0	16.0	16.0	34.0	34.0	34.0	34.0	34.0	34.0
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	Max	Max	Max	Max	Max	Max	C-Max	C-Max	C-Max	C-Max	C-Max	C-Max
Walk Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Act Effct Green (s)	17.0	17.0	17.0	17.0	17.0	17.0	35.0	35.0	35.0	35.0	35.0	35.0
Actuated g/C Ratio	0.28	0.28	0.28	0.28	0.28	0.28	0.58	0.58	0.58	0.58	0.58	0.58
v/c Ratio	0.11	0.01	0.06	0.25	0.01	0.06	0.04	0.59	0.09	0.10	0.20	0.01
Control Delay	16.8	15.8	6.2	18.7	15.6	7.6	1.5	9.9	0.2	6.4	6.5	3.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.8	15.8	6.2	18.7	15.6	7.6	1.5	9.9	0.2	6.4	6.5	3.1
LOS	B	B	A	B	B	A	A	A	A	A	A	A



Lanes, Volumes, Timings  
 28: Hunter Jumper & Akers

2030 Total Traffic  
 AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		12.9			16.4			8.6			6.4	
Approach LOS		B			B			A			A	

**Intersection Summary**

Area Type: Other  
 Cycle Length: 60  
 Actuated Cycle Length: 60  
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green  
 Natural Cycle: 50  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.59  
 Intersection Signal Delay: 9.2      Intersection LOS: A  
 Intersection Capacity Utilization 50.4%      ICU Level of Service A  
 Analysis Period (min) 15

Splits and Phases: 28: Hunter Jumper & Akers

ø2	ø4
39 s	21 s
ø6	ø8
39 s	21 s

Lanes, Volumes, Timings  
28: Hunter Jumper & Akers

2030 Total Traffic  
PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	50	5	90	300	5	100	95	310	175	60	605	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		100	0		0	170		0	200		155
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (ft)	25		25	25		25	150		25	25		160
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fr't			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	1863	1583	1770	1863	1583
Flt Permitted	0.754			0.754			0.296			0.534		
Satd. Flow (perm)	1405	1863	1583	1405	1863	1583	551	1863	1583	995	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			95			105			184			37
Link Speed (mph)		25			25			35			35	
Link Distance (ft)		350			319			665			738	
Travel Time (s)		9.5			8.7			13.0			14.4	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	53	5	95	316	5	105	100	326	184	63	637	37
Shared Lane Traffic (%)												
Lane Group Flow (vph)	53	5	95	316	5	105	100	326	184	63	637	37
Turn Type	Perm		Perm	Perm		Perm	Perm		Perm	Perm		Perm
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	4	4	4	8	8	8	2	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0
Total Split (s)	22.0	22.0	22.0	22.0	22.0	22.0	38.0	38.0	38.0	38.0	38.0	38.0
Total Split (%)	36.7%	36.7%	36.7%	36.7%	36.7%	36.7%	63.3%	63.3%	63.3%	63.3%	63.3%	63.3%
Maximum Green (s)	17.0	17.0	17.0	17.0	17.0	17.0	33.0	33.0	33.0	33.0	33.0	33.0
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	Max	Max	Max	Max	Max	Max	C-Max	C-Max	C-Max	C-Max	C-Max	C-Max
Walk Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Act Effct Green (s)	18.0	18.0	18.0	18.0	18.0	18.0	34.0	34.0	34.0	34.0	34.0	34.0
Actuated g/C Ratio	0.30	0.30	0.30	0.30	0.30	0.30	0.57	0.57	0.57	0.57	0.57	0.57
v/c Ratio	0.13	0.01	0.18	0.75	0.01	0.19	0.32	0.31	0.19	0.11	0.60	0.04
Control Delay	16.2	15.0	4.0	32.8	14.8	5.0	9.9	7.2	1.3	6.7	11.6	2.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.2	15.0	4.0	32.8	14.8	5.0	9.9	7.2	1.3	6.7	11.6	2.5
LOS	B	B	A	C	B	A	A	A	A	A	B	A

Lanes, Volumes, Timings  
28: Hunter Jumper & Akers

2030 Total Traffic  
PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		8.6			25.7			5.8			10.7	
Approach LOS		A			C			A			B	
Queue Length 50th (ft)	15	1	1	102	1	0	52	76	0	9	135	0
Queue Length 95th (ft)	m30	m6	m21	#217	8	29	m39	154	2	24	224	10
Internal Link Dist (ft)		270			239			585			658	
Turn Bay Length (ft)	100		100				170			200		155
Base Capacity (vph)	422	559	541	422	559	548	312	1056	977	564	1056	913
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.01	0.18	0.75	0.01	0.19	0.32	0.31	0.19	0.11	0.60	0.04

Intersection Summary

Area Type: Other  
 Cycle Length: 60  
 Actuated Cycle Length: 60  
 Offset: 39 (65%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green  
 Natural Cycle: 50  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.75  
 Intersection Signal Delay: 12.3  
 Intersection Capacity Utilization 70.4%  
 Analysis Period (min) 15  
 Intersection LOS: B  
 ICU Level of Service C

# 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.  
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 28: Hunter Jumper & Akers

#2	#4
38 s	22 s
#6	#8
38 s	22 s

HCM Unsignalized Intersection Capacity Analysis  
 22: Under Saddle & Akers

2015 Total Traffic - Preliminary Plan  
 AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔	↗		↔	↗	↖	↑	↖	↖	↖	↖
Volume (veh/h)	15	0	5	30	0	30	1	120	95	95	150	10
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	16	0	5	32	0	32	1	126	100	100	158	11
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage veh								2			2	
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	523	592	163	492	497	126	168			226		
vC1, stage 1 conf vol	363	363		128	128							
vC2, stage 2 conf vol	160	228		363	368							
vCu, unblocked vol	523	592	163	492	497	126	168			226		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)	6.1	5.5		6.1	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	97	100	99	95	100	97	100			93		
cM capacity (veh/h)	557	513	882	576	547	924	1409			1342		

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	16	5	32	32	1	126	100	100	168
Volume Left	16	0	32	0	1	0	0	100	0
Volume Right	0	5	0	32	0	0	100	0	11
cSH	557	882	576	924	1409	1700	1700	1342	1700
Volume to Capacity	0.03	0.01	0.05	0.03	0.00	0.07	0.06	0.07	0.10
Queue Length 95th (ft)	2	0	4	3	0	0	0	6	0
Control Delay (s)	11.7	9.1	11.6	9.0	7.6	0.0	0.0	7.9	0.0
Lane LOS	B	A	B	A	A			A	
Approach Delay (s)	11.0		10.3		0.0			2.9	
Approach LOS	B		B						

Intersection Summary		
Average Delay		2.9
Intersection Capacity Utilization	26.9%	ICU Level of Service A
Analysis Period (min)		15

HCM Unsignalized Intersection Capacity Analysis  
 22: Under Saddle & Akers

2015 Total Traffic - Preliminary Plan  
 PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↖	↗		↖	↗	↖	↑	↗	↖	↗	
Volume (veh/h)	10	0	5	95	0	95	5	155	40	40	135	10
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	11	0	5	100	0	100	5	163	42	42	142	11
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								TWLT			TWLT	
Median storage (veh)								2			2	
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	505	447	147	405	411	163	153			205		
vC1, stage 1 conf vol	232	232		174	174							
vC2, stage 2 conf vol	274	216		232	237							
vCu, unblocked vol	505	447	147	405	411	163	153			205		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)	6.1	5.5		6.1	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	98	100	99	85	100	89	100			97		
cM capacity (veh/h)	558	605	900	677	628	882	1428			1366		

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	11	5	100	100	5	163	42	42	153
Volume Left	11	0	100	0	5	0	0	42	0
Volume Right	0	5	0	100	0	0	42	0	11
cSH	558	900	677	882	1428	1700	1700	1366	1700
Volume to Capacity	0.02	0.01	0.15	0.11	0.00	0.10	0.02	0.03	0.09
Queue Length 95th (ft)	1	0	13	10	0	0	0	2	0
Control Delay (s)	11.6	9.0	11.2	9.6	7.5	0.0	0.0	7.7	0.0
Lane LOS	B	A	B	A	A			A	
Approach Delay (s)	10.7		10.4		0.2			1.7	
Approach LOS	B		B						

Intersection Summary	
Average Delay	4.2
Intersection Capacity Utilization	33.4%
ICU Level of Service	A
Analysis Period (min)	15

# HCM Unsignalized Intersection Capacity Analysis

2015 Total Traffic - Buildout

## 22: Under Saddle & Akers

AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↖	↗		↖	↗	↖	↑	↗	↖	↗	
Volume (veh/h)	15	0	5	30	0	30	1	175	95	95	195	10
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	16	0	5	32	0	32	1	184	100	100	205	11
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage (veh)								2			2	
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	628	697	211	597	602	184	216			284		
vC1, stage 1 conf vol	411	411		186	186							
vC2, stage 2 conf vol	218	286		411	416							
vCu, unblocked vol	628	697	211	597	602	184	216			284		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)	6.1	5.5		6.1	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	97	100	99	94	100	96	100			92		
cM capacity (veh/h)	509	474	830	533	512	858	1354			1278		

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	16	5	32	32	1	184	100	100	216
Volume Left	16	0	32	0	1	0	0	100	0
Volume Right	0	5	0	32	0	0	100	0	11
cSH	509	830	533	858	1354	1700	1700	1278	1700
Volume to Capacity	0.03	0.01	0.06	0.04	0.00	0.11	0.06	0.08	0.13
Queue Length 95th (ft)	2	0	5	3	0	0	0	6	0
Control Delay (s)	12.3	9.4	12.2	9.4	7.7	0.0	0.0	8.1	0.0
Lane LOS	B	A	B	A	A			A	
Approach Delay (s)	11.6		10.8		0.0			2.6	
Approach LOS	B		B						

Intersection Summary		
Average Delay		2.5
Intersection Capacity Utilization	32.8%	ICU Level of Service
Analysis Period (min)		15
		A

HCM Unsignalized Intersection Capacity Analysis  
22: Under Saddle & Akers

2015 Total Traffic - Buildout  
PM Peak Hour



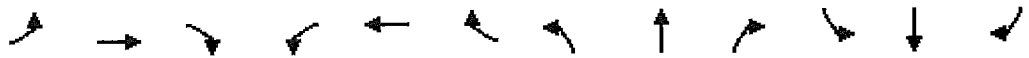
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↖	↗		↖	↗	↖	↑	↗	↖	↗	
Volume (veh/h)	10	0	5	95	0	95	5	345	40	40	245	10
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	11	0	5	100	0	100	5	363	42	42	258	11
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage (veh)								2			2	
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	821	763	263	721	726	363	268			405		
vC1, stage 1 conf vol	347	347		374	374							
vC2, stage 2 conf vol	474	416		347	353							
vCu, unblocked vol	821	763	263	721	726	363	268			405		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)	6.1	5.5		6.1	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	97	100	99	81	100	85	100			96		
cM capacity (veh/h)	405	478	775	523	506	682	1295			1153		

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	11	5	100	100	5	363	42	42	268
Volume Left	11	0	100	0	5	0	0	42	0
Volume Right	0	5	0	100	0	0	42	0	11
cSH	405	775	523	682	1295	1700	1700	1153	1700
Volume to Capacity	0.03	0.01	0.19	0.15	0.00	0.21	0.02	0.04	0.16
Queue Length 95th (ft)	2	1	17	13	0	0	0	3	0
Control Delay (s)	14.1	9.7	13.5	11.2	7.8	0.0	0.0	8.2	0.0
Lane LOS	B	A	B	B	A			A	
Approach Delay (s)	12.6		12.3		0.1			1.1	
Approach LOS	B		B						

Intersection Summary		
Average Delay		3.3
Intersection Capacity Utilization	43.4%	ICU Level of Service A
Analysis Period (min)		15

HCM Unsignalized Intersection Capacity Analysis  
 22: Under Saddle & Akers

2030 Total Traffic  
 AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↖	↗		↖	↗	↖	↑	↗	↖	↖	
Volume (veh/h)	15	0	5	30	0	30	1	525	95	95	275	10
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	16	0	5	32	0	32	1	553	100	100	289	11
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage (veh)								2			2	
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1081	1149	295	1049	1055	553	300			653		
vC1, stage 1 conf vol	495	495		555	555							
vC2, stage 2 conf vol	586	655		495	500							
vCu, unblocked vol	1081	1149	295	1049	1055	553	300			653		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)	6.1	5.5		6.1	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	95	100	99	92	100	94	100			89		
cM capacity (veh/h)	322	321	745	389	389	533	1261			934		

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	16	5	32	32	1	553	100	100	300
Volume Left	16	0	32	0	1	0	0	100	0
Volume Right	0	5	0	32	0	0	100	0	11
cSH	322	745	389	533	1261	1700	1700	934	1700
Volume to Capacity	0.05	0.01	0.08	0.06	0.00	0.33	0.06	0.11	0.18
Queue Length 95th (ft)	4	1	7	5	0	0	0	9	0
Control Delay (s)	16.8	9.9	15.1	12.2	7.9	0.0	0.0	9.3	0.0
Lane LOS	C	A	C	B	A			A	
Approach Delay (s)	15.0		13.6		0.0			2.3	
Approach LOS	C		B						

Intersection Summary		
Average Delay		1.9
Intersection Capacity Utilization	51.2%	ICU Level of Service
Analysis Period (min)		15
		A



HCM Unsignalized Intersection Capacity Analysis  
 22: Under Saddle & Akers

2030 Total Traffic  
 PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↖	↗		↖	↗	↖	↑	↗	↖	↖	
Volume (veh/h)	10	0	5	95	0	95	5	475	40	40	555	10
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	11	0	5	100	0	100	5	500	42	42	584	11
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								TWLTL		TWLTL		
Median storage (veh)								2		2		
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1284	1226	589	1184	1189	500	595			542		
vC1, stage 1 conf vol	674	674		511	511							
vC2, stage 2 conf vol	611	553		674	679							
vCu, unblocked vol	1284	1226	589	1184	1189	500	595			542		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)	6.1	5.5		6.1	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	96	100	99	72	100	82	99			96		
cM capacity (veh/h)	286	349	508	353	363	571	981			1027		

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	11	5	100	100	5	500	42	42	595
Volume Left	11	0	100	0	5	0	0	42	0
Volume Right	0	5	0	100	0	0	42	0	11
cSH	286	508	353	571	981	1700	1700	1027	1700
Volume to Capacity	0.04	0.01	0.28	0.18	0.01	0.29	0.02	0.04	0.35
Queue Length 95th (ft)	3	1	29	16	0	0	0	3	0
Control Delay (s)	18.1	12.2	19.2	12.6	8.7	0.0	0.0	8.7	0.0
Lane LOS	C	B	C	B	A			A	
Approach Delay (s)	16.1		15.9		0.1			0.6	
Approach LOS	C		C						

Intersection Summary		
Average Delay	2.7	
Intersection Capacity Utilization	51.8%	ICU Level of Service A
Analysis Period (min)	15	

HCM Unsignalized Intersection Capacity Analysis  
 15: Winslow Park & Akers

2015 Total Traffic - Preliminary Plan  
 AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↖	↗		↖	↗	↖	↑	↗	↖	↗	
Volume (veh/h)	20	0	10	30	0	30	5	165	95	95	85	5
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	21	0	11	32	0	32	5	174	100	100	89	5
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			TWLTL	
Median storage (veh)											2	
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	508	576	92	484	479	174	95			274		
vC1, stage 1 conf vol	292	292		184	184							
vC2, stage 2 conf vol	216	284		300	295							
vCu, unblocked vol	508	576	92	484	479	174	95			274		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)	6.1	5.5		6.1	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	96	100	99	95	100	96	100			92		
cM capacity (veh/h)	568	514	965	600	571	870	1499			1289		

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	21	11	32	32	5	174	100	100	95
Volume Left	21	0	32	0	5	0	0	100	0
Volume Right	0	11	0	32	0	0	100	0	5
cSH	568	965	600	870	1499	1700	1700	1289	1700
Volume to Capacity	0.04	0.01	0.05	0.04	0.00	0.10	0.06	0.08	0.06
Queue Length 95th (ft)	3	1	4	3	0	0	0	6	0
Control Delay (s)	11.6	8.8	11.3	9.3	7.4	0.0	0.0	8.0	0.0
Lane LOS	B	A	B	A	A			A	
Approach Delay (s)	10.6		10.3		0.1			4.1	
Approach LOS	B		B						

Intersection Summary		
Average Delay		3.2
Intersection Capacity Utilization	32.3%	ICU Level of Service
Analysis Period (min)		15
		A

HCM Unsignalized Intersection Capacity Analysis  
 15: Winslow Park & Akers

2015 Total Traffic - Preliminary Plan  
 PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕	↗	↖	↑	↖	↖	↖	
Volume (veh/h)	15	0	5	95	0	95	10	90	40	40	180	15
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	16	0	5	100	0	100	11	95	42	42	189	16
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			TWLTL	
Median storage veh											2	
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	497	439	197	395	405	95	205			137		
vC1, stage 1 conf vol	282	282		116	116							
vC2, stage 2 conf vol	216	158		279	289							
vCu, unblocked vol	497	439	197	395	405	95	205			137		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)	6.1	5.5		6.1	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	97	100	99	85	100	90	99			97		
cM capacity (veh/h)	578	604	844	659	612	962	1366			1447		

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	16	5	100	100	11	95	42	42	205
Volume Left	16	0	100	0	11	0	0	42	0
Volume Right	0	5	0	100	0	0	42	0	16
cSH	578	844	659	962	1366	1700	1700	1447	1700
Volume to Capacity	0.03	0.01	0.15	0.10	0.01	0.06	0.02	0.03	0.12
Queue Length 95th (ft)	2	0	13	9	1	0	0	2	0
Control Delay (s)	11.4	9.3	11.4	9.2	7.7	0.0	0.0	7.6	0.0
Lane LOS	B	A	B	A	A			A	
Approach Delay (s)	10.9		10.3		0.5			1.3	
Approach LOS	B		B						

Intersection Summary		
Average Delay	4.4	
Intersection Capacity Utilization	29.0%	ICU Level of Service A
Analysis Period (min)	15	

HCM Unsignalized Intersection Capacity Analysis  
 15: Winslow Park & Akers

2015 Total Traffic - Buildout  
 AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↖	↗		↖	↗	↖	↑	↗	↖	↖	
Volume (veh/h)	20	0	10	30	0	30	5	220	95	95	130	5
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	21	0	11	32	0	32	5	232	100	100	137	5
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			TWLTL	
Median storage (veh)											2	
Upstream signal (ft)								738				
pX, platoon unblocked												
vC, conflicting volume	613	682	139	589	584	232	142			332		
vC1, stage 1 conf vol	339	339		242	242							
vC2, stage 2 conf vol	274	342		347	342							
vCu, unblocked vol	613	682	139	589	584	232	142			332		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)	6.1	5.5		6.1	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	96	100	99	94	100	96	100			92		
cM capacity (veh/h)	515	474	909	551	531	808	1441			1228		

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	21	11	32	32	5	232	100	100	142
Volume Left	21	0	32	0	5	0	0	100	0
Volume Right	0	11	0	32	0	0	100	0	5
cSH	515	909	551	808	1441	1700	1700	1228	1700
Volume to Capacity	0.04	0.01	0.06	0.04	0.00	0.14	0.06	0.08	0.08
Queue Length 95th (ft)	3	1	5	3	0	0	0	7	0
Control Delay (s)	12.3	9.0	11.9	9.6	7.5	0.0	0.0	8.2	0.0
Lane LOS	B	A	B	A	A			A	
Approach Delay (s)	11.2		10.8		0.1			3.4	
Approach LOS	B		B						

Intersection Summary		
Average Delay	2.8	
Intersection Capacity Utilization	35.2%	ICU Level of Service A
Analysis Period (min)	15	

HCM Unsignalized Intersection Capacity Analysis  
 15: Winslow Park & Akers

2015 Total Traffic - Buildout  
 PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕	↗	↖	↑	↗	↖	↕	
Volume (veh/h)	15	0	5	95	0	95	10	280	40	40	290	15
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	16	0	5	100	0	100	11	295	42	42	305	16
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			TWLTL	
Median storage (veh)											2	
Upstream signal (ft)								738				
pX, platoon unblocked												
vC, conflicting volume	813	755	313	711	721	295	321			337		
vC1, stage 1 conf vol	397	397		316	316							
vC2, stage 2 conf vol	416	358		395	405							
vCu, unblocked vol	813	755	313	711	721	295	321			337		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)	6.1	5.5		6.1	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	96	100	99	81	100	87	99			97		
cM capacity (veh/h)	426	484	727	520	501	745	1239			1222		

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	16	5	100	100	11	295	42	42	321
Volume Left	16	0	100	0	11	0	0	42	0
Volume Right	0	5	0	100	0	0	42	0	16
cSH	426	727	520	745	1239	1700	1700	1222	1700
Volume to Capacity	0.04	0.01	0.19	0.13	0.01	0.17	0.02	0.03	0.19
Queue Length 95th (ft)	3	1	18	12	1	0	0	3	0
Control Delay (s)	13.8	10.0	13.6	10.6	7.9	0.0	0.0	8.1	0.0
Lane LOS	B	A	B	B	A			A	
Approach Delay (s)	12.8		12.1		0.2			0.9	
Approach LOS	B		B						

Intersection Summary		
Average Delay		3.3
Intersection Capacity Utilization	41.4%	ICU Level of Service A
Analysis Period (min)		15

HCM Unsignalized Intersection Capacity Analysis  
 15: Winslow Park & Akers

2030 Total Traffic  
 AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕	↗	↖	↑	↖	↖	↖	
Volume (veh/h)	20	0	10	30	0	30	5	570	95	95	210	5
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	21	0	11	32	0	32	5	600	100	100	221	5
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			TWLTL	
Median storage (veh)											2	
Upstream signal (ft)								738				
pX, platoon unblocked	0.80	0.80		0.80	0.80	0.80				0.80		
vC, conflicting volume	1066	1134	224	1042	1037	600	226			700		
vC1, stage 1 conf vol	424	424		611	611							
vC2, stage 2 conf vol	642	711		432	426							
vCu, unblocked vol	960	1045	224	930	924	381	226			505		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)	6.1	5.5		6.1	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	93	100	99	92	100	94	100			88		
cM capacity (veh/h)	317	299	816	391	386	536	1342			852		

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	21	11	32	32	5	600	100	100	226
Volume Left	21	0	32	0	5	0	0	100	0
Volume Right	0	11	0	32	0	0	100	0	5
cSH	317	816	391	536	1342	1700	1700	852	1700
Volume to Capacity	0.07	0.01	0.08	0.06	0.00	0.35	0.06	0.12	0.13
Queue Length 95th (ft)	5	1	7	5	0	0	0	10	0
Control Delay (s)	17.1	9.5	15.0	12.1	7.7	0.0	0.0	9.8	0.0
Lane LOS	C	A	C	B	A			A	
Approach Delay (s)	14.6		13.6		0.1			3.0	
Approach LOS	B		B						

Intersection Summary	
Average Delay	2.1
Intersection Capacity Utilization	53.6%
ICU Level of Service	A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis  
 15: Winslow Park & Akers

2030 Total Traffic  
 PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↖	↗		↖	↗	↖	↑	↗	↖	↗	
Volume (veh/h)	15	0	5	95	0	95	10	410	40	40	600	15
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	16	0	5	100	0	100	11	432	42	42	632	16
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			TWLTL	
Median storage veh											2	
Upstream signal (ft)								738				
pX, platoon unblocked	0.96	0.96		0.96	0.96	0.96				0.96		
vC, conflicting volume	1276	1218	639	1174	1184	432	647			474		
vC1, stage 1 conf vol	724	724		453	453							
vC2, stage 2 conf vol	553	495		721	732							
vCu, unblocked vol	1268	1208	639	1161	1172	391	647			435		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)	6.1	5.5		6.1	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	95	100	99	71	100	84	99			96		
cM capacity (veh/h)	295	346	476	343	352	634	938			1084		

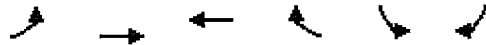
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	16	5	100	100	11	432	42	42	647
Volume Left	16	0	100	0	11	0	0	42	0
Volume Right	0	5	0	100	0	0	42	0	16
cSH	295	476	343	634	938	1700	1700	1084	1700
Volume to Capacity	0.05	0.01	0.29	0.16	0.01	0.25	0.02	0.04	0.38
Queue Length 95th (ft)	4	1	30	14	1	0	0	3	0
Control Delay (s)	17.9	12.7	19.8	11.7	8.9	0.0	0.0	8.5	0.0
Lane LOS	C	B	C	B	A			A	
Approach Delay (s)	16.6		15.8		0.2			0.5	
Approach LOS	C		C						

Intersection Summary

Average Delay	2.8
Intersection Capacity Utilization	51.8%
ICU Level of Service	A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis  
 29: Hunter Jumper & Martingale

2015 Total Traffic - Preliminary Plan  
 AM Peak Hour



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↵	↑	↵		↵	
Volume (veh/h)	5	20	5	5	10	10
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	5	21	5	5	11	11
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	11				39	8
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	11				39	8
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				99	99
cM capacity (veh/h)	1609				969	1074

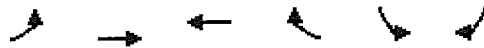
Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	5	21	11	21
Volume Left	5	0	0	11
Volume Right	0	0	5	11
cSH	1609	1700	1700	1019
Volume to Capacity	0.00	0.01	0.01	0.02
Queue Length 95th (ft)	0	0	0	2
Control Delay (s)	7.2	0.0	0.0	8.6
Lane LOS	A			A
Approach Delay (s)	1.4		0.0	8.6
Approach LOS				A

Intersection Summary			
Average Delay		3.8	
Intersection Capacity Utilization		14.2%	ICU Level of Service A
Analysis Period (min)		15	



HCM Unsignalized Intersection Capacity Analysis  
 29: Hunter Jumper & Martingale

2015 Total Traffic - Preliminary Plan  
 PM Peak Hour



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	15	15	15	10	5	10
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	16	16	16	11	5	11
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	26				68	21
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	26				68	21
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				99	99
cM capacity (veh/h)	1588				927	1056

Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	16	16	26	16
Volume Left	16	0	0	5
Volume Right	0	0	11	11
cSH	1588	1700	1700	1009
Volume to Capacity	0.01	0.01	0.02	0.02
Queue Length 95th (ft)	1	0	0	1
Control Delay (s)	7.3	0.0	0.0	8.6
Lane LOS	A			A
Approach Delay (s)	3.6		0.0	8.6
Approach LOS				A

Intersection Summary			
Average Delay		3.4	
Intersection Capacity Utilization		17.5%	ICU Level of Service A
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis  
 29: Hunter Jumper & Martingale

2015 Total Traffic - Buildout  
 AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	5	40	20	25	10	5	10	1	20	10	1	10
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	5	42	21	26	11	5	11	1	21	11	1	11
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh												
Upstream signal (ft)					350							
pX, platoon unblocked												
vC, conflicting volume	16			63			137	132	53	140	139	13
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	16			63			137	132	53	140	139	13
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			98			99	100	98	99	100	99
cM capacity (veh/h)	1602			1539			811	744	1015	799	736	1067

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	5	63	26	16	33	22
Volume Left	5	0	26	0	11	11
Volume Right	0	21	0	5	21	11
cSH	1602	1700	1539	1700	929	904
Volume to Capacity	0.00	0.04	0.02	0.01	0.04	0.02
Queue Length 95th (ft)	0	0	1	0	3	2
Control Delay (s)	7.3	0.0	7.4	0.0	9.0	9.1
Lane LOS	A		A		A	A
Approach Delay (s)	0.6		4.6		9.0	9.1
Approach LOS					A	A

Intersection Summary		
Average Delay		4.4
Intersection Capacity Utilization	18.1%	ICU Level of Service A
Analysis Period (min)		15

HCM Unsignalized Intersection Capacity Analysis  
 29: Hunter Jumper & Martingale

2015 Total Traffic - Buildout  
 PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	15	25	60	95	30	10	55	1	115	5	1	10
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	16	26	63	100	32	11	58	1	121	5	1	11
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)					350							
pX, platoon unblocked												
vC, conflicting volume	42			89			332	332	58	416	358	37
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	42			89			332	332	58	416	358	37
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			93			90	100	88	99	100	99
cM capacity (veh/h)	1567			1506			578	543	1008	453	525	1035

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	16	89	100	42	180	17
Volume Left	16	0	100	0	58	5
Volume Right	0	63	0	11	121	11
cSH	1567	1700	1506	1700	810	708
Volume to Capacity	0.01	0.05	0.07	0.02	0.22	0.02
Queue Length 95th (ft)	1	0	5	0	21	2
Control Delay (s)	7.3	0.0	7.6	0.0	10.7	10.2
Lane LOS	A		A		B	B
Approach Delay (s)	1.1		5.3		10.7	10.2
Approach LOS					B	B

Intersection Summary

Average Delay	6.7
Intersection Capacity Utilization	32.2%
ICU Level of Service	A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis  
 29: Hunter Jumper & Martingale

2030 Total Traffic  
 AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	5	40	20	25	10	5	10	1	20	10	1	10
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	5	42	21	26	11	5	11	1	21	11	1	11
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)					350							
pX, platoon unblocked												
vC, conflicting volume	16			63			137	132	53	140	139	13
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	16			63			137	132	53	140	139	13
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			98			99	100	98	99	100	99
cM capacity (veh/h)	1602			1539			811	744	1015	799	736	1067

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	5	63	26	16	33	22
Volume Left	5	0	26	0	11	11
Volume Right	0	21	0	5	21	11
cSH	1602	1700	1539	1700	929	904
Volume to Capacity	0.00	0.04	0.02	0.01	0.04	0.02
Queue Length 95th (ft)	0	0	1	0	3	2
Control Delay (s)	7.3	0.0	7.4	0.0	9.0	9.1
Lane LOS	A		A		A	A
Approach Delay (s)	0.6		4.6		9.0	9.1
Approach LOS					A	A

Intersection Summary						
Average Delay			4.4			
Intersection Capacity Utilization			18.1%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis  
 29: Hunter Jumper & Martingale

2030 Total Traffic  
 PM Peak Hour



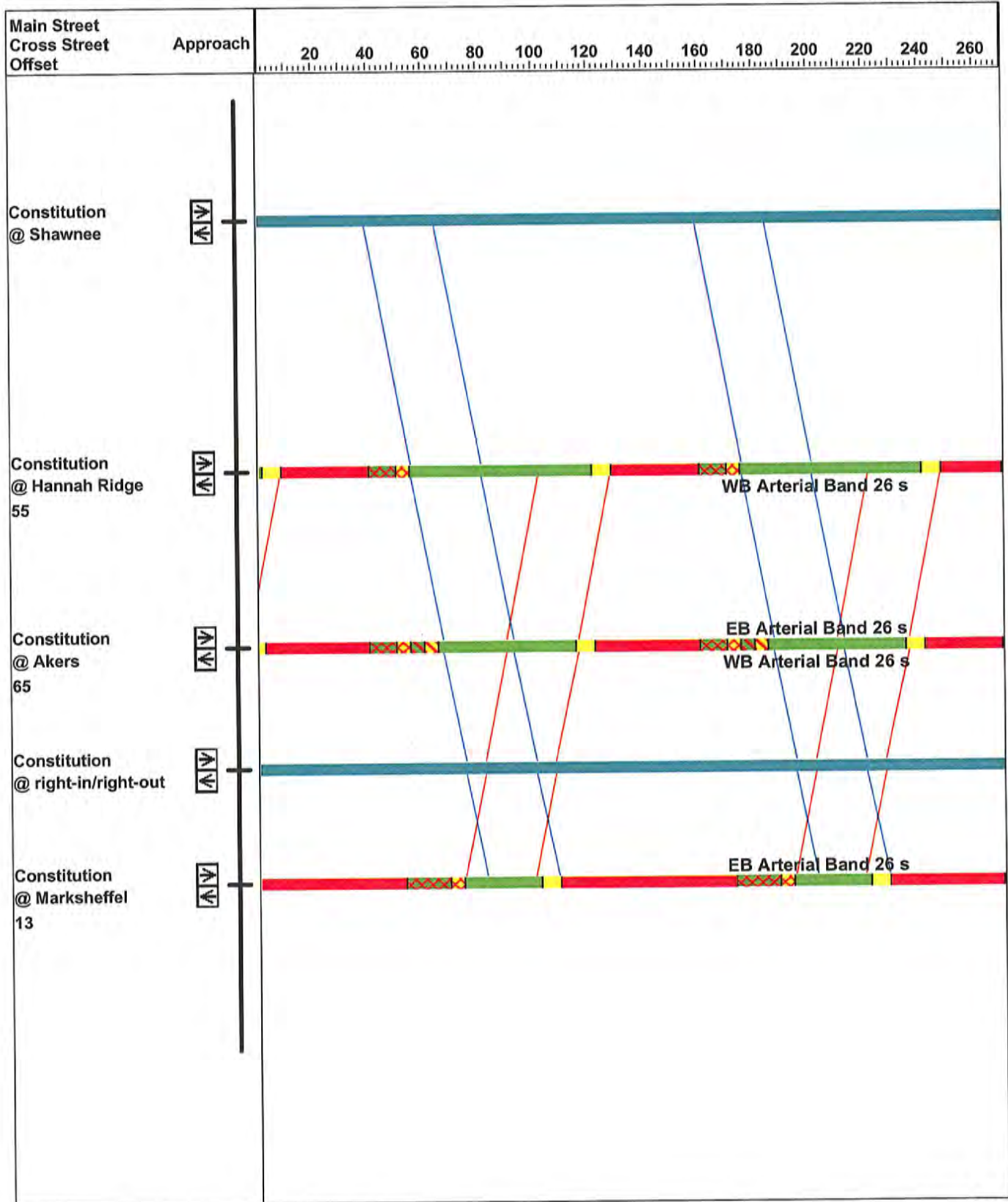
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	15	25	60	95	30	10	55	1	115	5	1	10
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	16	26	63	100	32	11	58	1	121	5	1	11
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)					350							
pX, platoon unblocked												
vC, conflicting volume	42			89			332	332	58	416	358	37
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	42			89			332	332	58	416	358	37
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			93			90	100	88	99	100	99
cM capacity (veh/h)	1567			1506			578	543	1008	453	525	1035

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	16	89	100	42	180	17
Volume Left	16	0	100	0	58	5
Volume Right	0	63	0	11	121	11
cSH	1567	1700	1506	1700	810	708
Volume to Capacity	0.01	0.05	0.07	0.02	0.22	0.02
Queue Length 95th (ft)	1	0	5	0	21	2
Control Delay (s)	7.3	0.0	7.6	0.0	10.7	10.2
Lane LOS	A		A		B	B
Approach Delay (s)	1.1		5.3		10.7	10.2
Approach LOS					B	B

Intersection Summary		
Average Delay		6.7
Intersection Capacity Utilization	32.2%	ICU Level of Service A
Analysis Period (min)		15

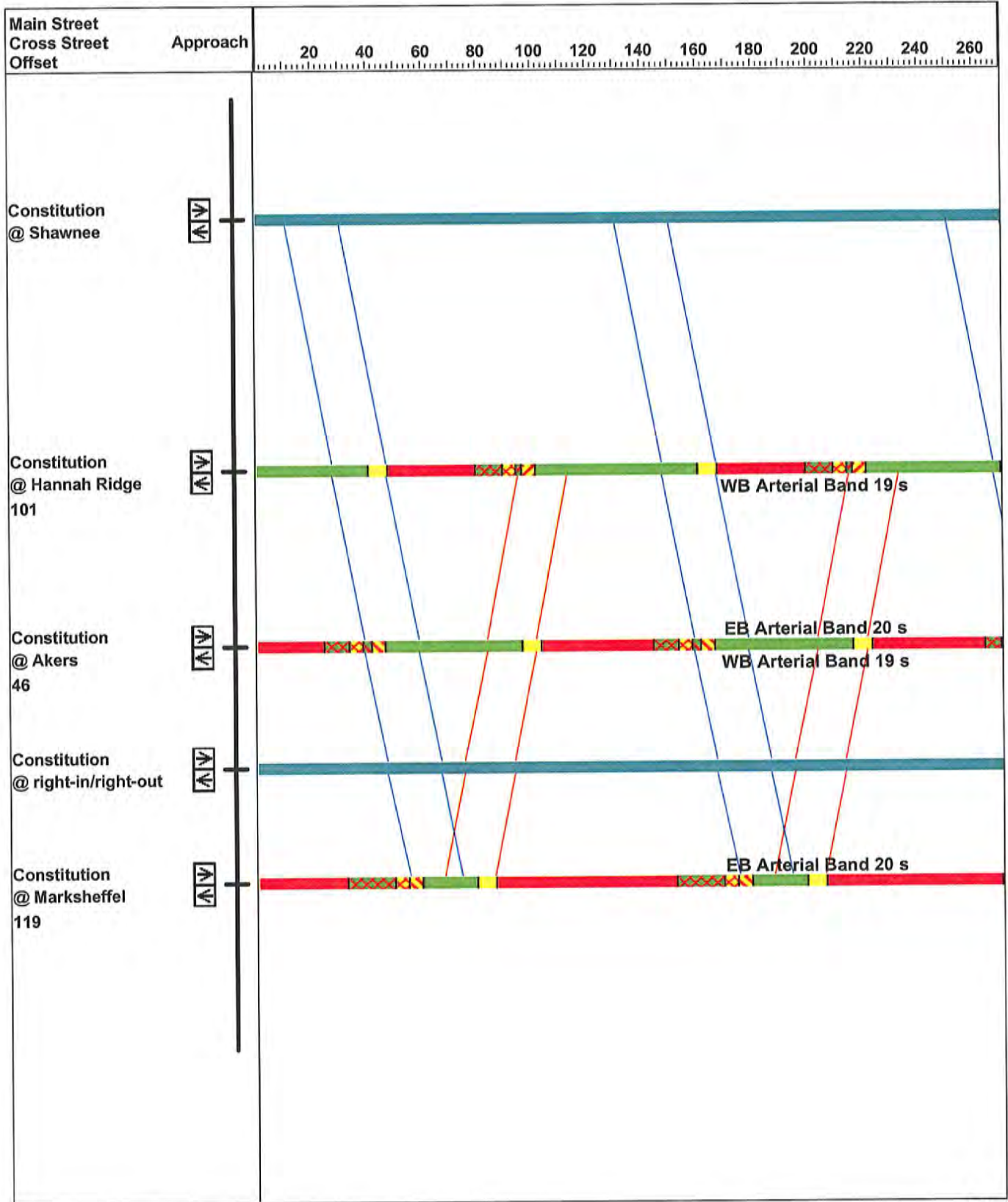
Time-Space Diagram - Constitution

2030 Total Traffic  
AM Peak Hour



Time-Space Diagram - Constitution

2030 Total Traffic  
PM Peak Hour



# Map of Area Developments

1. Living Waters
2. Constitution Business Park
3. Jessica Heights
4. Wilshire
5. Bjornrud Site
6. Rolling Hills Ranch

