

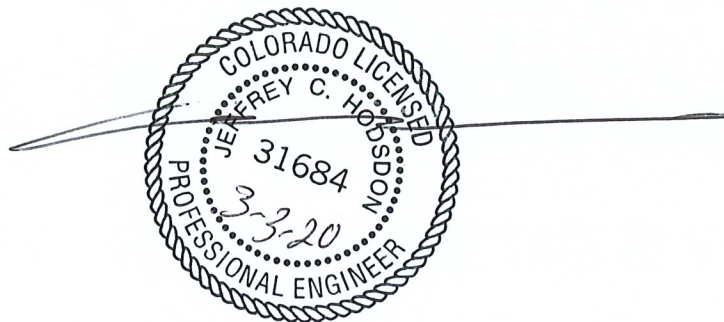


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Monument Academy  
Traffic Impact Analysis  
PCD File No. U192/PPR19009  
(LSC #184820)  
March 2, 2020

**Traffic Engineer's Statement**

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



**Developer's Statement**

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

\_\_\_\_\_

\_\_\_\_\_  
Date



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March 2, 2020

Mr. Mark McWilliams  
Monument Academy  
1150 Village Ridge Point  
Monument, CO 80132

RE: Monument Academy  
El Paso County, Colorado  
Traffic Impact Study  
LSC #184820

Dear Mr. McWilliams:

LSC Transportation Consultants, Inc. has prepared this updated traffic impact study for the proposed development to be located east of State Highway (SH) 83 and south of Walker Road in El Paso County, Colorado. The site location is shown in Figure 1.

## **REPORT CONTENTS**

The report contains the following:

- Recent/current street and traffic conditions in the vicinity of the site for identification of existing and planned street widths, lane geometries, traffic controls, posted speed limits, street classification, etc.
- Existing traffic volumes at the key intersections in the vicinity of the site and estimates of 2040 background traffic volumes
- The projected average weekday and peak-hour vehicle trips to be generated by the proposed development
- The assignment of the projected trips to the existing and planned street system
- The resulting short-term and 2040 total traffic volumes on the street system
- The resulting traffic impacts: The traffic impacts have been quantified by determining the future levels of service at the intersection of SH 83/Walker, the future intersection of Walker Road and Jane Lundeen Drive (a proposed north-south collector), and the proposed site access point intersections
- Recommendations for street functional classification, traffic controls, and auxiliary turn lanes

## **RECENT TRAFFIC STUDIES**

The proposed Walden Preserve 2 development is located southeast of the currently proposed site. LSC prepared a traffic impact study (TIS) for the entire development dated September 14, 2014 and an addendum report for the Colorado Department of Transportation (CDOT) dated November 3, 2014. A transportation memorandum was prepared for Filing No. 4 dated March 14, 2019. The overall TIS assumed the currently proposed site would be developed with a middle school. The TIS also assumed Pinehurst Circle would extend northeast to Walker Road and did not assume direct access to SH 83 between Walden Way and Walker Road.

LSC also recently completed the traffic reports for the Rollin' Ridge development located southwest of Highway 83/Hodgen Road, and Settlers' View/Abert Ranch located generally northwest of Hodgen/Steppler. The current study is consistent with these reports.

## **SITE DEVELOPMENT, LAND USE, AND ACCESS**

The site is located south of Walker Road and east of SH 83. Access is proposed via an extension of Pinehurst Circle that will continue from the approved extension through the approved Walden development located east of the site to SH 83 about 1,675 feet south of Walker Road. The intersection with SH 83 would be restricted to right-in only. A new north-south Urban Non-Residential Collector (Jane Lundeen Drive) is planned to be extended north through the site to Walker Road about 700 feet east of SH 83.

### **Short-Term Land Use and Access**

The short-term development is planned to include a charter school with the potential to ultimately serve up to 1,000 students. The school's charter is for a maximum of 826 students, but this report takes a conservative approach and assumes 1,000 students for the traffic analysis. The school would need to amend their charter to increase enrollment above 826 students. The site plan is shown in Figure 2. Phase 1 is planned to open in August 2020 and the enrollment will be 118 students per grade in grades 6 to 9 (472 students). The traffic analysis in this report uses a conservative estimate of 600 students in grades 6 to 9. Phase 2 (representing site "buildout") is planned to open 2025 and will comprise up to an additional 354 students (118 per grade in grades 10-12). The traffic analysis in this report uses a conservative estimate of 400 students in grades 10-12.

Faculty and staff are expected to total about 75 (Phases 1 and 2). This school anticipates use of two busses which will provide transportation between the campus to the west at Highway 105/Knollwood and this site.

**This report assumes staggered start times for the school to distribute the peak impacts.** The number of students and the school start/end times are key assumptions of this analysis and report. If these key factors/assumptions change, there may be additional impacts that may require additional needed improvements.

The YMCA that was previously planned to share building space with the charter school is no longer planned for inclusion. However, this report has retained this land use in the event it is added in the future. The previous plans proposed an initial phase with about 12,000 square feet of floor space including gyms, fitness centers, multi-purpose rooms, group exercise space, community meeting space, etc. The YMCA anticipated approximately 330 daily gate visits (members who scan in) with an additional 50-100 users such as community classes, school groups, etc. An additional 20,000 square feet comprising mostly a competitive aquatics center was previously planned as a future phase.

Two full-movement access points are proposed to Jane Lundeen and one full-movement access point is proposed to Pinehurst Circle. Figure 2 shows the proposed spacing. The spacing of these access points will require a deviation from the *El Paso County Engineering Criteria Manual (ECM)*.

### Site Circulation

Figures 3a, 3b and 3c show options for site circulation for the proposed school. The north parking lot is planned for school staff and student parking. The south parking lot is planned for school staff and visitor parking. This parking area will also be the location of student pick-ups and drop-offs by private (parent) vehicles. Plans based on 826 students (allowable under the school charter) and 1,000 students (matching the conservative assumption for the traffic analysis) have been provided. These are intended to demonstrate one or two ways in which the on-site vehicle stacking requirements could be met. One plan shows use of both south access points and one plan shows use of only the southeast access point.

### School Internal Queuing Estimates – Parent Pick up and Drop Off Periods

Figures 3a, 3b and 3c also present the calculated on-site vehicle stacking requirements during the parent pick-up and drop off periods. These are based on calculations using the North Carolina MSTA School Traffic Calculator. Copies of the calculation sheets are attached.

The queue distances depicted in the figures meet the NC MSTA-calculated requirement for “high traffic demand” queue distance.

Exiting traffic at the southeast school access to Pinehurst Circle will likely need to be restricted to right-out traffic turning movements only to prevent a significant amount of cut-through traffic on Pinehurst Circle for motorists wishing to travel south. Pinehurst Circle is a Rural Local road through the Walden Preserve development to the south. El Paso County staff does not believe access control will be feasible to limit eastbound traffic. Staff would prefer access to be restricted using striping and signing within the school parking lot only. As such, the left-out restriction will likely need to be enforced by school administration/staff. **LSC recommends implementation of the plan shown in Figure 3** or a variation thereof. This plan is conceptual only and specific details will need to be evaluated – such as vehicle paths, turning radii, parking operations during peak times, etc.



## **Pedestrian and Bicycle Plan**

Figure 4 shows the proposed pedestrian & bicycle plan. There are currently no pedestrian facilities on the adjacent roadways. Sidewalks are proposed to be constructed in phases on the east side of Jane Lundeen to provide for pedestrian access. A trail connection will be provided to the Walden trail to the southeast.

## **Sight Distance**

The existing sight distance along Walker Road at the proposed Jane Lundeen intersection location has been field measured by LSC. The sight distance is about 420 feet to/from the west and about 440 feet to/from the east along Walker Road. The ECM prescribed sight distance for a 50-mph design speed is 555 feet. Figure 5 shows the existing profile along Walker Road at this location. The sight distance at Walker/Jane Lundeen will be addressed as part of construction drawing submittal. Sight distance exhibit for the roundabout will be provided following final confirmation of the roundabout geometry and in conjunction with the roadway profile for Walker Road as part of the design process.

Figures 6 through 89 shows a sight distance analysis for the proposed access points. The analysis for the access points to Jane Lundeen is based on a posted speed of 35 miles per hour (mph) and a two-lane roadway. The analysis for the access point to Pinehurst Circle is based on a design speed limit of 30 mph and a two-lane roadway.

The available sight distance at the south site access to Jane Lundeen to the south is restricted to 283 feet. This is less than the required sight distance based on a posted speed limit of 35 mph. However, as the intersection of Jane Lundeen and Pinehurst Circle is planned to be constructed as a one-lane mini roundabout all traffic approaching from the south will be traveling at a lower speed as they exit the roundabout. Based on a slower exiting speed the available sight distance for the south Jane Lundeen site access would be adequate.

## **Long-Term Land Use and Access**

The areas west and south of the proposed school are currently zoned RR-5 in the Black Forest Master Plan. Per review comments by El Paso County and CDOT this study assumes these parcels are rezoned and developed with a more intense mix of retail and office uses.

## **ROADWAY AND TRAFFIC CONDITIONS**

### **Area Roadways**

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

- **State Highway 83** extends from Colorado Springs north to Parker and areas of southeast Denver. Near the site, SH 83 is classified as a Regional Highway (R-A). At this location SH 83 is a two-lane rural highway with two- to four-foot shoulders and a speed limit of 60 miles per hour (mph). The intersection with Walker Road is signalized.
- **Highway 105** is a Principal Arterial that extends east from Interstate 25 to State Highway 83. Highway 105 is currently a two-lane roadway but the *Major Transportation Corridors Plan* (MTCP) shows a future four-lane cross section.
- **Walker Road** is a paved, “unimproved” rural roadway that extends east from Highway 83. Walker Road currently is a two-lane roadway. Walker Road is shown as a 4-lane Minor Arterial roadway on the *2016 MTCP Update and 2040 Roadway Plan*.
- **Shannon Road** is a cul-de-sac which extends north from Walker Road about 890 feet east of SH 83. Shannon Road serves five lots that are currently zoned RR-5. There are existing single-family homes on two of the lots and a farm implement shop building on one of the lots. The remaining two lots are currently vacant. The proposed configuration of Shannon Road has been addressed as part of the interim roundabout design and in this report.

### Planned CDOT and County Projects

CDOT has indicated that a passing lane project is planned on SH 83 just north of Walker Road in both directions of SH 83. It is our understanding that the northbound right turn acceleration lane north of Walker Road will be extended north as a second northbound through lane. The segment would also provide two southbound through lanes through the project segment. However, this second southbound through lane would not extend through the Highway 105/SH 83/Walker Road intersection.

The Highway 105 Corridor Study Corridor Preservation Plan for El Paso County Department of Public Services dated November 2012 (revised May 2013) shows future expansion of Highway 105 to one through lane per direction plus a center left turn median area (painted) west of SH 83.

### Existing Traffic Volumes

Figure 9 shows the recent traffic volumes at the intersections of SH 83/Walker. Figure 10 shows the existing traffic volumes during the anticipated school start time (7:15 am to 8:15 am) school dismissal time (2:15 to 3:15 pm) and the typical afternoon peak hour. These traffic volumes were based on traffic counts conducted by LSC in August 2018. Figure 9 also shows the recent traffic volumes at the intersection of SH 83/Hodgen based on traffic counts conducted by LSC in June 2017. The traffic count reports are attached.

### Existing Levels of Service

Level of service (LOS) is a quantitative measure of the level of congestion or delay at an intersection. Level of service is indicated on a scale from "A" to "F." LOS A represents control delay of less than 10 seconds for unsignalized and signalized intersections. LOS F represents control delay of more than 50 seconds for unsignalized intersections and more than 80 seconds for signalized intersections. Table 1 shows the level of service delay ranges.

**Table 1: Intersection Levels of Service Delay Ranges**

Level of Service	Signalized Intersections	Unsignalized Intersections
	Average Control Delay (Seconds per Vehicle)	Average Control Delay (Seconds per Vehicle) <sup>1</sup>
A	≤ 10.0	≤ 10.0
B	10.1 - 20.0	10.1 - 15.0
C	20.1 - 35.0	15.1 - 25.0
D	35.1 - 55.0	25.1 - 35.0
E	55.1 - 80.0	35.1 - 50.0
F	≥ 80.1	≥ 50.1
<sup>1</sup> For unsignalized intersections, if v/c is > 1.00, then LOS is LOS F, regardless of the projected average control delay per vehicle		

The intersections of SH 83/Highway 105/Walker and SH 83/Hodgen were analyzed to determine the existing levels of service using Synchro. The peak hour factors used for each approach are based on the traffic volumes for the peak fifteen minutes of the entire intersection. If the peak 15 minutes for an approach occurs during an interval other than the peak fifteen minutes of the entire intersection, the suggested peak hour value based on the total approach volume from Table 9-1 of the Synchro Studio 10 User Guide was used instead. Figure 9 shows the level of service analysis results. As shown on the figure, all movements at these intersections are level of service D or better during the peak hours. The level of service (LOS) reports are attached.

### Crash History

The intersection of SH 83/Walker/Highway 105 was converted from two-way, stop sign control to traffic signal control in January 2018. There have been 12 crashes reported at this intersection since the traffic signal has been fully operational (four in 2018 and eight in 2019). Of these 12 crashes, five involved a northbound left-turn vehicle and a southbound through vehicle. The northbound left-turn movement currently has protected/permissive phasing. Five of the crashes involved vehicles traveling in the same direction (four in the northbound through lanes and one in the northbound left-turn lane). One crash involved a southbound vehicle running a red light and one involved an eastbound vehicle running a red light due to the signal head being obscured by snow.

The intersection of Hodgen/SH 83 is traffic signal controlled. There have been 27 reported crashes at this intersection since 2017 (seven in 2017, twelve in 2018 and eight in 2019). Of the 27 reported crashes, 20 of them were rear-end crashes involving vehicles traveling in the same direction. Two of the crashes involved a northbound left-turning vehicle and a southbound through vehicle. One crash was a side swipe involving a vehicle moving from the southbound through lane to the southbound left-turn lane. The other four crashes involved a westbound through vehicle running the red light, a single car losing traction, a vehicle hitting another vehicle while making a wide right turn and a crash when the signal was operating with a flashing red/flashing yellow condition.

No crashes were reported at the intersection of Walker/Shannon from 2017 to 2019.

## **BACKGROUND TRAFFIC**

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

Figure 10 shows the short-term (year 2025) background traffic volumes. The background volumes are estimate by LSC based on the existing traffic volumes shown in Figure 9 with a yearly growth rate of two percent per year.

Figure 11 shows the projected 2040 background traffic volumes. The 2040 background traffic volumes are estimates by LSC based on the Colorado Department of Transportation (CDOT) twenty-year growth factor (about three percent per year) on SH 83 adjacent to the site and previous work completed by LSC in the area including work done for the Walden development. Projected additional traffic volumes due to the development of Walden Preserve and other area developments have been adjusted based on the currently proposed right-in only access at Pinehurst/SH 83.

The 2040 background traffic volumes assume the parcels just west and south of the site and the parcels north of Walker Road are rezoned as shown in the Black Forest Master Plan and developed with a more intense mix of retail and office uses. Appendix Table 1 shows a trip generation estimate for the future potential land uses. These estimates have been made using the nationally published trip generation rates found in *Trip Generation, 10th Edition, 2017* by the Institute of Transportation Engineers (ITE). Off-peak trip generation rates are based on hourly distribution tables published by ITE in August 2018. Appendix Figure 1 shows the long-term directional distribution estimates for the potential future land uses.

## **TRIP GENERATION**

Estimates of the traffic volumes expected to be generated by the site have been made by LSC in conjunction with input from El Paso County staff. The estimates were based on the nationally

published trip generation rates found in *Trip Generation, 10<sup>th</sup> Edition, 2017* by the Institute of Transportation Engineers (ITE) and *The MSTA School Calculator* provided by Municipal and School Transportation Assistance; Traffic Management Unit, Transportation Mobility and Safety, Division of Highways, North Carolina Department of Transportation. Table 2 shows the results of the trip generation estimates. Off-peak trip generation rates are based on hourly distribution tables published by ITE in August 2018.

As shown in Table 2, the site is projected to generate about 3,402 new vehicle-trips on the average weekday, with about one-half of the vehicles entering and one-half of the vehicles exiting in a 24-hour period. During the morning peak hour of the school (7:15-8:15 am), about 738 vehicles would enter and 534 vehicles would exit the site. During the mid-afternoon peak hour of the school (2:15-3:15 pm), about 379 vehicles would enter and 502 vehicles would exit the site. During the afternoon peak hour of the adjacent street traffic (5:00-6:00 pm), about 106 vehicles would enter and 149 vehicles would exit the site.

### **TRIP DISTRIBUTION AND ASSIGNMENT**

The charter school plans to stagger the start and ending times for the middle school and high school by at least 30 minutes. Table 3 shows the estimated hourly distribution of school related traffic during the morning and midafternoon peak hours of school-related traffic. The hourly distribution shown are estimates by LSC based on manual traffic counts conducted by LSC at existing schools located within El Paso County, Colorado.

The directional distribution of the site-generated traffic volumes on the street and roadway system serving the site is one of the most important factors in determining the site's traffic impacts. Figure 12 shows the directional distribution estimates for the Phase 1 and 2 site-generated traffic volumes.

The estimates have been based on the following factors: the recent traffic count data; the site's location with respect to the nearby residential, employment, commercial, and activity centers; the site's proposed land use; the site's proposed access points; and the phasing of the existing and future roadway system serving the site.

The short-term distribution estimate assumes the new section of Pinehurst Circle has been constructed east from SH 83 to the east boundary of the site but does not connect to the Walden development. The long-term distribution estimate assumes Pinehurst Circle has been completed from Walden Way to the SH 83.

When the distribution percentages (from Figure 12) were applied to the trip generation estimates (from Table 2), the site-generated traffic volumes on the area roadways were determined. Figures 13 and 14 show the short-term and long-term site-generated traffic volumes following buildout of the Phase 2 school and YMCA, respectively. These short-term and long-term site-generated traffic volumes assume the proposed intersection of Pinehurst Circle/SH 83 restricted to right-in turning movements only.

## **PROJECTED TOTAL TRAFFIC**

### **Short Term**

Figure 15 shows the short-term total traffic volumes at all the study area intersections following buildout of Phase 2. These volumes are the sum of the short-term background traffic volumes (from Figure 10) plus the short-term site-generated traffic volumes (from Figure 13). These volumes assume the section of Pinehurst Circle has been constructed from SH 83 through the site to the school access only and does not connect to the existing section south of Walden Way. The short-term total traffic volumes also assume the intersection of Pinehurst Circle/SH 83 is restricted to right-in only.

### **Long Term (2040)**

Figure 17 shows the 2040 total traffic volumes. These volumes are the sum of the 2040 background traffic volumes (from Figure 11) plus the long-term Phase 1 and 2 site-generated traffic volumes (from Figure 14). These volumes assume Pinehurst Circle has been extended from its current terminus through the approved Walden development and the currently proposed development to SH 83. The 2040 total traffic volumes assume the parcels just west and south of the site and north of Walker road are rezoned to what is shown in the Black Forest Master Plan and developed with a more intense mix of retail and office uses. The 2040 total traffic volumes also assume the proposed right-in only intersection of Pinehurst Circle/SH 83.

## **PROJECTED LEVELS OF SERVICE**

The intersections of SH 83/Walker and SH 83/Hodgen, the proposed intersections of Jane Lundeen with Walker Road and Pinehurst Circle, and the Phase 1 and 2 site access points have been analyzed to determine the projected levels of service for the short-term and 2040 background and total traffic volumes, based on the signalized method of analysis from Synchro and the unsignalized method of analysis procedures outlined in the *Highway Capacity Manual, 6<sup>th</sup> Edition* by the Transportation Research Board. The level of service reports are attached.

The peak hour factors used in the analysis assume the middle school bell schedule runs from about 7:30 am to 2:30 pm and the high school bell schedule runs from about 8:00 am to 3:00 pm. The peak fifteen minutes of traffic projected to be generated by the YMCA and future land uses during each of the three hours analyzed was assumed to occur during the existing peak fifteen minutes of the adjacent street traffic for that hour. Tables 4a through 9b show the peak hour factor calculations for the intersection of SH 83/Walker/Highway 105 and Walker/Jane Lundeen for the 2025 and 2040 morning, midday, and afternoon peak hours.

The results of the analysis for the projected 2025 and 2040 traffic volumes are shown in Tables 10 and 11, respectively.

### **SH 83/Walker/Highway 105**

The existing traffic signal plan for the intersection of SH 83/Walker/Highway 105 only provides a permitted phase for the eastbound and westbound traffic. With the addition of the site-generated traffic, it will be necessary to also provide a protected (protected/permissive) phase for the westbound left-turn. It will be necessary to provide separate eastbound and westbound left-turn lanes at this intersection with this development. With these improvements, the intersection is projected to operate at an overall LOS D or better during the peak hours based on the projected short-term total traffic volumes. The westbound left-turn movement is projected to operate at LOS E during the morning peak hour.

This report assumes that the parcels east and south of the site and north of Walker Road will have been rezoned from what is shown in the Black Forest Master Plan and developed with a more intense mix of retail and office uses by 2040. It was also assumed that the intersection of SH 83/Walker/Highway 105 would be improved to provide dual westbound left-turn lanes and two through lanes in all directions. Based on the assumed lane geometry and the projected 2040 total traffic volumes shown in Figure 16 this intersection is projected to operate at an overall LOS D or better during the peak hours. Some of the minor movements are projected to operate at LOS E during the morning and midday peak hours.

**Note: The LOS analysis results are based on signal timing assumptions within the model – specifically the allowable signal phase time for the side street. CDOT would need to find these assumptions acceptable for use in the field.**

### **Hodgen/SH 83**

All movements at the intersection of Hodgen/SH 83 are projected to operate at LOS D or better during the peak hours based on the projected short-term total traffic volumes. By 2040, it was assumed that this intersection would be improved to provide two northbound and southbound through lanes (based on the MTCP which shows four through lanes south of Hodgen Road by 2040); dual southbound left-turn lanes and an exclusive southbound right-turn lane; and dual westbound left-turn lanes. All movements at the intersection of SH 83/Hodgen are projected to operate at LOS D or better, based on the projected 2040 total traffic volumes and the assumed future lane geometry.

### **Walker/Jane Lundeen**

The intersection of Walker/Jane Lundeen is planned to be constructed as a modern roundabout. This roundabout is being designed to be expandable to a multi-lane roundabout to accommodate a future four-lane Walker Road in the future. All movements at this intersection are projected to operate at LOS C or better during the peak hours based on the projected 2025 and 2040 total traffic volumes. Also, please refer to the roundabout design report for Rodel analysis results.

### **Pinehurst/Jane Lundeen**

The intersection of Pinehurst/Jane Lundeen is planned to be constructed as a one-lane mini roundabout. All movements at this intersection are projected to operate at LOS C or better during the peak hours, based on the projected 2025 and 2040 total traffic volumes. Also, please refer to the roundabout design report for Rodel analysis results.

### **Site Access Points**

The site access points to Pinehurst Circle and Jane Lundeen are projected to operate at LOS B or better for all movements during the peak hours based on the projected short-term total traffic volumes as stop sign-controlled intersections. If the parcels west of the site are rezoned to what is shown in the Black Forest Master Plan and developed with a more intense mix of retail and office uses the site access points to Jane Lundeen may no longer operate at a satisfactory level of service as stop sign-controlled intersections. Alternate traffic control such as traffic signals or roundabouts would likely allow for these access points to operate at a satisfactory level of service. Appropriate alternatives should be considered once development plans are submitted for the parcels west of the site. Please refer to Deviation No. 2 for additional discussion.

### **Pedestrian/Bicycle Level of Service**

The results of a pedestrian level of service analysis for intersections along Jane Lundeen are attached. The results indicate primarily A and B levels of service with no reported LOS below C. These are based on estimates of vehicular and pedestrian traffic. Pedestrian traffic may vary from these estimates and will depend on a number of factors including the type of development in the future in the vicinity of the school.

### **VEHICLE QUEUING ANALYSIS**

#### **State Highway 83/Walker Road**

Table 12 shows the projected 95th percentile queue lengths for the westbound left-turn and through lanes on Walker Road approaching SH 83, based on the projected 2025 and 2040 total peak hour. As shown in Table 12, the projected 95th percentile queue for the westbound left-turn and through lanes could be accommodated by the proposed spacing of Jane Lundeen.

Please refer to the roundabout reports for the projected queuing from the Rodel analysis at the Walker Road roundabout and the Pinehurst/Jane Lundeen mini roundabout.

### **STREET CLASSIFICATIONS**

Figure 17 shows the recommended street classifications in the vicinity of the site.



Walker Road is currently shown as a Four-Lane Minor Arterial on the MTCP 2040 Roadway Plan. As shown on Figure 15 the projected 2025 average weekday traffic volume (ADT) on Walker Road just east of SH 83 is 4,960 vehicles per day. The design ADT for an Urban Four-Lane Minor Arterial is 20,000 vehicles per day. The design ADT for an Urban Residential Collector, which provides one lane in each direction is 10,000 vehicles per day. As the projected volume on Walker Road in the foreseeable future is well below 10,000 vehicles per day, LSC and the applicant are proposing a two-through-lane (one in each direction) facility plus auxiliary turn lanes for Phases 1 and 2, as shown in the attached Lane Exhibits. ROW will be preserved for potential future roadway widening for additional lanes. This will likely need to be evaluated if/when the parcels east and south of the site and/or north of Walker Road are rezoned and developed with more intense land uses than the current RR-5 zoning would allow.

## **PHASING OF TRAFFIC CONTROL**

### **SH 83/Walker Road**

The existing traffic signal plan only provides a permitted phase for the eastbound and westbound traffic. With the addition of the site-generated traffic it will be necessary to also provide a protected phase for the westbound left-turn movement.

### **Jane Lundeen**

The intersection of Jane Lundeen/Walker is planned to be constructed as modern one-lane roundabout. The intersection of Jane Lundeen/Pinehurst is planned to be constructed as a one-lane mini roundabout. The site access points to Jane Lundeen are proposed to be two-way, stop sign-controlled. If the parcels west of Jane Lundeen are rezoned and developed for a more intense use than the current RR-5 zoning allows for alternate traffic control will likely need to be considered for these access points.

## **PHASING AND TRIGGERS FOR WALKER ROAD IMPROVEMENTS**

Table 13 shows a summary of the off-site improvements needed in the vicinity of the site. A modern roundabout will be constructed at the Walker/Jane Lundeen intersection with the initial phase of the school. Please refer to the roundabout design report for details. The addition of eastbound and westbound left-turn lanes on Walker/Highway 105 at SH 83 will be required with the initial development. Also, a northbound right-turn deceleration lane on Highway 83 will be required at the proposed Pinehurst Circle Right-in-only access from SH 83.

## **SHANNON ROAD CONNECTION PHASING**

- Short Term: The roundabout design shows the conversion of Shannon Road/Walker Road intersection to a three-quarter-movement intersection in the short term. The applicant and staff have collaborated on this design as part of the roundabout design. The left-in movement from eastbound Walker would be permitted by constructing a mountable section of raised

median (low, beveled curb and textured concrete). The southbound left would be prohibited, but the southbound left is easily accommodated via an indirect left turn via the roundabout (U-turn). Should issues arise, the intersection may need to be posted for right-in/right-out movements only.

- Long Term: The vision for the planned roundabout at Jane Lundeen/Walker would include realignment of Shannon Road to the north leg of the roundabout in conjunction with future development on the north side of Walker Road. This would result in full movement access for Shannon residents and future development north of Walker Road. The existing Shannon Road connection to Walker would be closed.

## **SIGNING AND STRIPING RECOMMENDATIONS**

- The striping and signing plan will be included with the construction drawing set, but the following are recommendations for the preparation of the signing & striping plans, particularly with respect to this proposed school area.
- The striping on the approaches and through the roundabout and mini roundabout will be based on the lanage shown in the roundabout design reports. All approaches to the roundabouts will be Yield sign controlled. All established pedestrian crossings within the splitter islands of the Walker Road/Jane Lundeen roundabout and Pinehurst/Jane Ludeen mini roundabouts should be signed with a school pedestrian crossing sign. Initially, it is unlikely that a high number of pedestrians would cross at these roundabouts. However, as the area develops in the future north of Walker, south of Pinehurst, and west of Jane Lundeen, and depending on the number of Monument Academy students using these crossings, the signs may need to be changed to a fluorescent yellow-green color for added emphasis. Also, advance pedestrian warning signs may also need to be added.

**Note:** LSC recommends that the school notify parents **not** to utilize Shannon Drive as a parent-pick up and drop off loop. This would add school pedestrian traffic across the east leg of the roundabout. Fluorescent yellow-green school crossing signs may be needed across this leg of the intersection. LSC recommends that the school review the home addresses of students to identify students who may walk to school and cross at the roundabouts.

- LSC recommends placement of “No Parking or Standing” signs along Jane Lundeen Drive at to discourage and prohibit parent pickup/drop-off along Jane Lundeen. The school should direct parents to utilize an established on-site pick up and drop off plan.
- Jane Lundeen Drive should generally be striped with a center, painted median (two sets of dual yellow pavement stripes. Southbound left-turn lanes should be utilized at each of the two school access points. The lane transition tapers would be in the form of an approximately 100-foot gap in the striping along the southbound lane preceded by a section of dashed yellow/solid striping adjacent to the southbound through lane. For the section just north of the south access, this striping would extend up to the south edge of the north access. For the section between the north access and the roundabout, there should be a section with two sets of solid dual yellow stripes south of the roundabout. The detailed lengths will be depicted on the striping plan for construction.

- The section of Pinehurst Circle just west of the west school access should be striped for an eastbound left-turn lane, preceded by a gap in the striping and a section of two sets of dual yellow striping extending back to the splitter island of the mini roundabout.
- As additional development occurs on the west side of Jane Lundeen, the striping will likely need to be modified accordingly. Changes would be addressed with those applications for development.
- Signed and marked Pedestrian crossings across Jane Lundeen may also be necessary in the future, with development on the west side of the street, particularly if businesses attracting students are developed (such as restaurants or a shops). Logical crossing locations would be across the south legs of the access intersections, at a new mini roundabout intersection (future, as per staff comment), or potentially at a mid-block location(s).

### **DESIGN OF THE RIGHT-IN ONLY ON SH 83**

The applicant is proposing a right-in only access design with large radii. This design not only functions to take up the grade east of the highway, but also provides well-defined channelization of the northbound right-in turning movement. The intersection will look less like a typical urban right-in-only access intersection, rather a right-turn-only northbound quasi “ramp.” The design of the right-in only access will be part of the CDOT access permitting process.

### **ROW DEDICATION AND PRESERVATION**

#### **CDOT Right-of-Way along SH 83**

A portion of Tract B along Hwy 83 will be preserved for future right-of-way to accommodate the potential need for the future expansion of Highway 83 to four lanes. Specific requirements will be identified as part of the access permit and will be shown on the plat for Tract B.

#### **County ROW along Walker Road**

The applicant is showing a 20-foot right-of-way dedication along the south side of Walker Road plus an additional 40 feet of right-of-way preservation for future right-of way. These are shown on the attached Walker Road Plan and Profile exhibit by JPS.

Based on the analysis/laneage requirements, the above combination of dedication plus preservation would accommodate the anticipated “worst-case” laneage on Walker Road. This would result in 70-feet south of the centerline of Walker Road. This would accommodate an Urban Minor Arterial (two-through lanes in each direction plus a left-turn painted median) which requires a 50-foot half right-of-way, plus an additional 20 feet for one-half of an additional left-turn lane (assuming a median area with dual left turn lanes approaching Highway 83), and a continuous right-turn lane in the eastbound direction. Assuming similar right-of-way dedication and preservation on the north side, the ultimate ROW could be 140 feet. This assumes a future urban cross section for the section along the property frontage. Given the proposed roundabout and higher-intensity development, an urban cross section is reasonable.

## **SAFETY ANALYSIS**

Reported crash data is presented in the existing conditions section of this report.

The project and associated road and intersection improvements have been recommended to enhance safety and capacity. Separate, exclusive eastbound and westbound left-turn lanes are recommended at the Walker/SH 105 intersection. A CDOT-standard northbound right turn deceleration lane will be constructed at the proposed right-in-only access to Pinehurst – this “speed change lane” will remove turning traffic from the through lane.

The plan has been updated to show a modern roundabout at Walker/Jane Lundeen and mini roundabout at Jane Lundeen/Pinehurst. The roundabouts will mitigate the limited sight distance in hilly terrain, calm traffic speeds, and reduce conflict points. Generally, the types of traffic crashes at roundabout intersections are lower speed, “lower angle”-type and lower severity when compared to conventional intersections.

## **NEIGHBORHOOD AND PUBLIC INPUT ISSUES**

The following revisions to the plans for the school will help to address area neighborhood and public concerns regarding Highway 83 and the added school traffic.

- The change in the Pinehurst/SH 83 access to a **right-in-only** will allow northbound school traffic and eventually neighborhood traffic to exit Highway 83 before arriving at the SH 83/Walker intersection without introducing left turns or right out traffic movements onto the highway.
- The applicant will implement exclusive eastbound/westbound left-turn lanes and associated separate left-turn phases at the intersection of SH 83/Walker Road. This will increase capacity and improve the flow, as with separate left-turn lanes eastbound and westbound motorists will more quickly and easily be able to determine if a vehicle on the opposite approach intends to turn left or travel straight across the intersection.
- The school will implement staggered start times for middle and high school grades. This will be very effective in distributing the peak period impacts of school traffic at the adjacent and nearby intersections and the impacts will be distributed over two time periods each in the morning and midafternoon.
- A modern roundabout will be constructed at the new intersection of Walker Road/Jane Lundeen Drive. This roundabout will have a number of benefits to the public traveling along Walker Road as well as for the neighborhood to the south (via Pinehurst Circle, once the connection is established with Filing 5 of the Walden Preserve development). The roundabout will result in the following benefits when compared to other intersection options: lower delay, shorter queues, better pedestrian access, slower speeds through the intersection, and mitigation of what would otherwise be poor intersection sight distance.
- The roadway distances from the nearby arterial roadway intersections to the proposed school access points, plus the on-site stacking distance to be provided for parent drop off and pick up, exceeds these distances provided at many other existing schools. The plans for on-site

stacking are included in this report and these plans meet the County-required lengths established with the *MSTA School Calculator* (detailed above).

## **CONCLUSIONS AND RECOMMENDATIONS**

### **Trip Generation**

- Following Phase 2 development of the proposed school, the site is projected to generate about 3,402 new vehicle-trips on the average weekday, with about one-half of the vehicles entering and one-half of the vehicles exiting in a 24-hour period. During the morning peak hour about 738 vehicles would enter and 534 vehicles would exit the site. During the afternoon peak hour of the school about 379 vehicles would enter and 502 vehicles would exit the site. During the afternoon peak hour of the adjacent street traffic, about 106 vehicles would enter and 149 vehicles would exit the site.

### **Deviations**

- The following deviations to the El Paso County Engineering Criteria will be required with the Phase 1 development:
  - Deviation No. 1: Spacing of the proposed public road intersection of Walker Road and Jane Lundeen
  - Deviation No. 2: Spacing of the south access point to Jane Lundeen (driveway) and sight distance for a driveway at the south access point to Jane Lundeen.
  - Deviation No. 3: A reduction in the design speed for the 600-foot section of Pinehurst Circle from SH 83 to Road A to 30 mph based on vertical curve design constraints.
- Notes:
  - LSC considers the addition of eastbound and westbound left-turn lanes on Walker Road and Highway 105 approaching SH 83 to be part of the CDOT controlled intersection and, as such, is not planning to submit a county deviation request.
  - LSC considers the existing shared westbound through and right-turn lane on Walker Road approaching SH 83 to be part of the CDOT controlled intersection and, as such, is not planning to submit a county deviation request.

### **Colorado Department of Transportation Approval**

- CDOT approval will constitute “acceptance/approval” of the TIS report then issuance of access permits for both Walker Road and the proposed Pinehurst right-in-only connection. A Notice-to-Proceed is then required to be issued by CDOT before any use of the access points or work in the CDOT ROW. It is our understanding that the Access Permit Process is 45 days, however if within the first 20 days following the application submittal, CDOT may issue comments and/or request additional information that may extend the 45-day time period for offering an access permit (or denying the application).

### Projected Levels of Service

- Separate eastbound and westbound left-turn lanes will be needed on Highway 105 and Walker Road approaching SH 83 with this development . With the addition of these turn lanes and a assuming separate protected left-turn phase for the westbound left-turn movement, the intersection is projected to operate at a LOS D or better during the peak hours based on the projected short-term total traffic volumes. The westbound left-turn movement is projected to operate at LOS E during the morning peak hour. If the parcels east and south of the site and north of Walker Road are rezoned to what is shown in the Black Forest Master Plan and developed with a more intense mix of retail and office uses than allowed under the current zoning, this intersection will likely need to be improved to provide dual westbound left-turn lanes and two through lanes in each direction to maintain an acceptable level of service in the long-term future. **Note: The LOS analysis results are based on signal timing assumptions within the model – specifically the allowable signal phase time for the side street. CDOT would need to find these assumptions acceptable for use in the field.**
- The intersections of Walker Road/Jane Lundeen and Pinehurst Circle/Jane Lundeen are projected to operate at an acceptable level of service as a one-lane modern roundabout and a one-lane mini roundabout, respectively. Additional right-of-way will be reserved at the intersection of Walker/Jane Lundeen should two eastbound and westbound through lanes be needed on Walker Road in the long-term future.
- The site access points to Pinehurst Circle and Jane Lundeen are projected to operate at a satisfactory level of service as stop sign-controlled intersections based on the projected short-term total traffic volumes. Should the parcels west of Jane Lundeen be rezoned to what is shown in the Black Forest Master Plan and developed with a more intense mix of retail and office uses than allowed under the current zoning alternate traffic control will likely need to be considered for these access points.

### Traffic Circulation

- Figures 3a to 3c shows the circulation plan for the proposed school based on 826 students (allowable under the school charter) and 1,000 students (matching the conservative assumption for the traffic analysis). These are intended to demonstrate one or two ways in which the on-site vehicle stacking requirements could be met. One plan shows use of both south access points and one plan shows use of only the southeast access point.
- Exiting traffic at the southeast school access to Pinehurst Circle will likely need to be restricted to right-out traffic turning movements only to prevent cut-through traffic on Pinehurst Circle to the south by motorists wishing to travel generally south and southwest (beyond the Walden area). Pinehurst Circle is a Rural Local road through the Walden Preserve 2 development to the south.

## **ROW Dedication and Preservation**

A portion of Tract B along Hwy 83 will be preserved for future right-of-way to accommodate the potential need for northbound double left-turn lanes and the future expansion of Highway 83 to four lanes. Specific requirements will be identified as part of the access permit and will be shown on the plat for Tract B.

- The MTCP 2040 Roadway Plan currently classifies Walker Road as a Four-Lane Minor Arterial. Walker Road west of Road A to SH 83 is proposed as a two-through-lane facility plus auxiliary turn lanes (as shown in the attached exhibit) with this project, but with right-of-way preservation to accommodate an expansion of the roadway to a four-lane minor arterial plus auxiliary lanes and a roundabout to accommodate potential future development traffic.

## **Recommendations**

- Table 13 shows a summary of the on-site and off-site improvements needed in the vicinity of the site. Table 13 also identifies the time frame each improvement will likely be needed and the party responsible for that improvement.
- The new internal roads will be constructed to public standards, and the roads will be formally dedicated as public during the upcoming subdivision process. There is no need for ROW acquisition for the initial phase of roadway improvements.
- The proposed future Pinehurst Circle connection to SH 83 and any improvements to the intersection of SH 83/Walker/Highway 105 will require a Colorado Department of Transportation (CDOT) Access permit. Any design features or elements needed for these improvements, including those needed to prohibit left turns at the proposed Pinehurst/SH 83 intersection, will be addressed through the access permit process.
- Based on the existing traffic volumes and the criteria contained in the El Paso County Engineering Criteria Manual (ECM) eastbound and westbound left-turn lanes and a westbound right-turn lane are currently required on Walker Road and Highway 105 approaching SH 83. These are existing deficiencies based on the turning volume thresholds requiring turn lanes.

**Note:** The existing northbound left-turn lane on SH 83 approaching Highway 105 is about 670 feet long (lane plus taper length). Based on the criteria contained in the *State of Colorado Highway Access Code*, the classification of SH 83 as a Regional Highway (R-A), the posted speed limit of 55 mph, and existing volumes, this lane is short of meeting criteria. As the proposed right-out component has been removed from the planned Pinehurst intersection, Monument Academy would not add traffic to this turning movement. Based on short-term volumes a lane length of 775 feet would be required (600 feet for deceleration (including the taper) plus 175 feet for queue/storage). This is an existing deficiency. The proposed school is not projected to add additional vehicles to this lane.

- Based on the projected short-term total traffic volumes and the criteria contained in the *State of Colorado Highway Access Code*, a northbound right-turn deceleration lane would be required on SH 83 approaching Pinehurst Circle. Based on a posted speed limit of 60 miles per hour, the prescribed lane length for the deceleration lane is 400 feet long plus a 300-foot taper.
- CDOT has indicated they will not require a continuous eastbound right turn acceleration/deceleration lane between SH 83 and Jane Lundeen.
- Based on the projected 2040 total traffic volumes and the criteria contained in the ECM, an eastbound left-turn lane would be required on Pinehurst Circle approaching the site access point. Based on a design speed of 30 miles per hour, the prescribed lane length for the deceleration lane is 425 feet long (including 310 feet of stacking distance) plus a 120-foot taper.
- Based on the projected 2040 total traffic volumes and the criteria contained in the ECM, westbound right-turn lanes would **not** be required on Pinehurst Circle approaching the site access point.
- Based on the projected short-term total traffic volumes and the criteria contained in the ECM, a southbound left-turn lane would be required on Jane Lundeen approaching the north (school) site access point. Based on a design speed of 40 miles per hour, the prescribed lane length for the lane is 255 feet long (including 100 feet of stacking distance) plus a 160-foot taper.
- Based on the projected short-term total traffic volumes and the criteria contained in the ECM, a southbound left-turn lane would be required on Jane Lundeen approaching the south site access point. Based on a design speed of 40 miles per hour, the prescribed lane length for the lane is 205 feet long (including 50 feet of stacking distance) plus a 160-foot taper.
- Based on the projected short-term total traffic volumes and the criteria contained in the ECM, a northbound right-turn deceleration lane would be required on Jane Lundeen approaching the north but not the south site access point. Based on a design speed of 40 miles per hour, the prescribed lane length for the lane approaching the north (school) access is 155 feet long plus a 160-foot taper.

#### **Signal Escrow- Walker/SH 105 Intersection**

CDOT has indicated that *“all escrow funds from previous Access Permits be fulfilled and worksheets be updated from previous Access Permit requirements with regard to AP#215017. CDOT requests that El Paso County withhold all Certificates of Occupancy for Walden Preserve and Monument Academy developments until such time this is fulfilled.”*

#### **Transportation Improvement Fee Program**

- The proposed Phase 1 and Phase 2 development will be required to participate in the Countywide Transportation Improvement Fee Program depending on timing of



subdivision recording and building permit issuance.

- Any future development of the areas west and south of Phases 1 and 2 will also be required to participate in the Countywide Transportation Improvement Free Program. These fees should be determined when the final plats are submitted.
- Consideration should be given by the Fee Committee to add the intersection of Highway 83/Walker/Highway 105 to the current list of “eligible State intersections” (eligible for credit/reimbursement) within the fee program. The applicant plans to present this request to the Fee Committee.

### **Development Agreement**

- Staff has indicated that a development agreement will be required with the site development plan (which can be superseded by a subdivision improvement agreement)

\* \* \* \* \*

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

Respectfully Submitted,

LSC TRANSPORTATION CONSULTANTS, INC.

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

JCH:KDF:jas

Enclosures: Tables 2-13  
Figure 1-17  
JPS Plan and Profile Exhibits  
Laneage Exhibits  
Counts  
Level of Service Reports  
Pedestrian Level of Service Reports  
Rodel Reports  
Queuing Reports  
Appendix Table 1  
Internal Trip Capture Estimate  
MSTA School Traffic Calculations  
Crash History

## Tables and Figures

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**Table 2**  
**Trip Generation Estimate**  
**Updated 1/8/2020**  
**Monument Academy**

Land Use Code	Land Use Description	Trip Generation Units	Trip Generation Rates <sup>(1)</sup>							Total Trips Generated						
			Average Weekday Traffic	Morning Peak Hour		Mid-Afternoon Peak Hour		Evening Peak Hour		Average Weekday Traffic	Morning Peak Hour		Mid-Afternoon Peak Hour		Evening Peak Hour	
				In	Out	In	Out	In	Out		In	Out	In	Out	In	Out
Phase 1																
537	Charter Elementary School	600 Students	2.48	0.61	0.54	0.32	0.37	0.05	0.09	1,488	363	321	190	224	29	55
495	Recreational Community Center	12 KSF <sup>(2)</sup>	28.50	3.25	1.67	1.25	1.25	1.92	2.17	342	39	20	15	15	23	26
Total Following Phase 1										1,830	402	341	205	239	52	81
Phase2																
537	Charter Elementary School	600 Students	2.48	0.61	0.54	0.32	0.37	0.05	0.09	1,488	363	321	190	224	29	55
	Incremental additional trips for Grades 10-12 <sup>(3)</sup>	400 Students									309	179	164	253	29	39
N/A	Charter Elementary School Plus High School	1000 Students	2.48	0.67	0.50	0.35	0.48	0.06	0.09	2,480	672	500	354	477	58	94
495	Recreational Community Center	32 KSF	28.81	2.06	1.06	0.78	0.78	1.51	1.70	922	66	34	25	25	48	55
Total Following Phase 2										3,402	738	534	379	502	106	149

Notes:

(1) Source: "Trip Generation, 10th Edition, 2017" by the Institute of Transportation Engineers (ITE); morning and mid-afternoon rates for the school are the "peak hour of the generator" rates.

(2) KSF = thousand square feet of floor space

(3) Estimate by LSC based on the calculated difference of the estimate using The MSTA School Traffic Calculator (Provided by Municipal and School Transportation Assistance; Traffic Management Unit, Transportation Mobility and Safety, Division of Highways, North Carolina Department of Transportation) for 600 students (grades 6-9) and 1,000 students (grades 6-12). The evening peak hour trip generation has been based on ITE land use 536 rates

Source: LSC Transportation Consultants, Inc.

Date: 1/8/2020

**Table 3**  
**Hourly Distribution**

Middle School (Grades 6-8)			High School (Grades 9-12)	
Time	IN	OUT	IN	OUT
7:15 AM	40%	40%	0%	0%
7:30 AM	60%	60%	10%	0%
7:45 AM	0%	0%	45%	40%
8:00 AM	0%	0%	45%	60%
1:45 PM	0%	0%	0%	0%
2:00 PM	25%	0%	0%	0%
2:15 PM	50%	5%	5%	0%
2:30 PM	20%	60%	10%	0%
2:45 PM	5%	30%	45%	20%
3:00 PM	0%	5%	35%	60%
3:15 PM	0%	0%	5%	15%
3:30 PM	0%	0%	0%	5%
2:15-3:15 PM	Percentage			
	75%	100%	95%	80%
	Vehicles Per Hour			
	107	168	200	247

Source:LSC Transportation Consultants, Inc.

**Table 4a**  
**Peak Hour Factor Calculations**  
**With Staggered Start Times**  
**2025 Background + Phases 1&2 AM Peak Hour**  
**SH 83/Walker/Hwy 105**

**Existing**

Movement	EB LT	EB TH	EB RT	NB LT	NB TH	NB RT	SB LT	SB TH	SB RT	WB LT	WB TH	WB RT
<b>Total</b>	<b>34</b>	<b>38</b>	<b>128</b>	<b>156</b>	<b>318</b>	<b>17</b>	<b>10</b>	<b>234</b>	<b>53</b>	<b>46</b>	<b>50</b>	<b>25</b>
<b>PHF</b>	<b>0.87</b>			<b>0.81</b>			<b>0.80</b>			<b>0.67</b>		
<b>7:15 AM</b>	8	5	32	45	107	0	4	63	26	17	18	10
<b>7:30 AM</b>	16	16	42	51	61	5	1	67	9	13	18	6
<b>7:45 AM</b>	2	10	40	32	76	7	3	54	9	8	9	6
<b>8:00 AM</b>	8	7	14	28	74	5	2	50	9	8	5	3

**Middle School (Grades 6-8)**

	IN									OUT		
Total	272									241		
PHF	See Hourly Distribution Table											
Movement	EB LT	EB TH	EB RT	NB LT	NB TH	NB TH	SB LT	SB TH	SB RT	WB LT	WB TH	WB RT
	0.0%	45.0%	0.0%	0.0%	0.0%	0.0%	14.5%	0.0%	0.0%	41.5%	40.0%	12.5%
	0	122	0	0	0	0	39	0	0	100	96	30
7:15 AM	0	49	0	0	0	0	16	0	0	40	38	12
7:30 AM	0	73	0	0	0	0	23	0	0	60	58	18
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0

**High School (Grades 9-12)**

	IN									OUT		
Total	400									259		
PHF	See Hourly Distribution Table											
Movement	EB LT	EB TH	EB RT	NB LT	NB TH	SB LT	SB TH	SB RT	WB LT	WB TH	WB RT	
	0.0%	45.0%	0.0%	0.0%	0.0%	0.0%	14.5%	0.0%	0.0%	41.5%	40.0%	12.5%
	0	180	0	0	0	0	58	0	0	107	104	32
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	18	0	0	0	0	6	0	0	0	0	0
7:45 AM	0	81	0	0	0	0	26	0	0	43	42	13
8:00 AM	0	81	0	0	0	0	26	0	0	64	62	19

**YMCA**

	IN									OUT		
Total	66									34		
PHF	0.85											
Movement	EB LT	EB TH	EB RT	NB LT	NB TH	NB RT	SB LT	SB TH	SB RT	WB LT	WB TH	WB RT
	0.0%	45.0%	0.0%	0.0%	0.0%	0.0%	14.5%	0.0%	0.0%	41.5%	40.0%	12.5%
	0	30	0	0	0	0	10	0	0	14	14	4
7:15 AM	0	9	0	0	0	0	3	0	0	4	4	1
7:30 AM	0	7	0	0	0	0	3	0	0	4	4	1
7:45 AM	0	7	0	0	0	0	2	0	0	3	3	1
8:00 AM	0	7	0	0	0	0	2	0	0	3	3	1

**Additional 2025 Background Traffic**

Movement	EB LT	EB TH	EB RT	NB LT	NB TH	NB RT	SB LT	SB TH	SB RT	WB LT	WB TH	WB RT
<b>Total</b>	<b>4</b>	<b>4</b>	<b>13</b>	<b>16</b>	<b>33</b>	<b>2</b>	<b>1</b>	<b>24</b>	<b>6</b>	<b>5</b>	<b>5</b>	<b>3</b>
<b>PHF</b>	<b>0.87</b>											
<b>7:15 AM</b>	1	1	3	5	11	0	1	6	3	2	2	1
<b>7:30 AM</b>	2	1	5	5	6	1	0	7	1	1	1	1
<b>7:45 AM</b>	0	1	4	3	8	1	0	6	1	1	1	1
<b>8:00 AM</b>	1	1	1	3	8	0	0	5	1	1	1	0

**Total**

Movement	EB LT	EB TH	EB RT	NB LT	NB TH	NB RT	SB LT	SB TH	SB RT	WB LT	WB TH	WB RT
<b>Total</b>	<b>38</b>	<b>374</b>	<b>141</b>	<b>172</b>	<b>351</b>	<b>19</b>	<b>118</b>	<b>258</b>	<b>59</b>	<b>272</b>	<b>269</b>	<b>94</b>
<b>PHF</b>	<b>0.75</b>	<b>0.81</b>	<b>0.75</b>	<b>0.77</b>	<b>0.92</b>	<b>0.79</b>	<b>0.89</b>	<b>0.87</b>	<b>0.87</b>	<b>0.87</b>	<b>0.83</b>	<b>0.90</b>
<b>7:15 AM</b>	9	64	35	50	118	0	24	69	29	63	62	24
<b>7:30 AM</b>	18	115	47	56	67	6	33	74	10	78	81	26
<b>7:45 AM</b>	2	99	44	35	84	8	31	60	10	55	55	21
<b>8:00 AM</b>	9	96	15	31	82	5	30	55	10	76	71	23

**Table 4b**  
**Peak Hour Factor Calculations**  
**With Staggered Start Times**  
**2025 Background + Phases 1 & 2 AM Peak Hour**  
**Walker/Jane Lundeen**

**Existing**

Movement	EB TH	EB RT	WB LT	WB TH	NB LT	NB RT
<b>Total</b>	<b>65</b>	<b>0</b>	<b>0</b>	<b>121</b>	<b>0</b>	<b>0</b>
<b>PHF</b>	<b>0.79</b>					
7:15 AM	9	0	0	45	0	0
7:30 AM	22	0	0	37	0	0
7:45 AM	20	0	0	23	0	0
8:00 AM	14	0	0	16	0	0

**Middle School (Grades 6-8)**

Total	IN				OUT	
	272				241	
PHF	See Hourly Distribution Table					
Movement	EB TH	EB RT	WB LT	WB TH	NB LT	NB RT
Distribution	0.0%	59.5%	4.0%	0.0%	94.0%	6.0%
Total	0	162	11	0	227	14
7:15 AM	0	65	4	0	91	6
7:30 AM	0	97	7	0	136	8
7:45 AM	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0

**High School (Grades 9-12)**

Total	IN				OUT	
	400				259	
PHF	See Hourly Distribution Table					
Movement	EB TH	EB RT	WB LT	WB TH	NB LT	NB RT
Distribution	0.0%	59.5%	4.0%	0.0%	94.0%	6.0%
Total	0	238	16	0	243	16
7:15 AM	0	0	0	0	0	0
7:30 AM	0	24	2	0	0	0
7:45 AM	0	107	7	0	97	6
8:00 AM	0	107	7	0	146	10

**YMCA**

Total	IN				OUT	
	66				34	
PHF	0.85					
Movement	EB TH	EB RT	WB LT	WB TH	NB LT	NB RT
Distribution	0.0%	59.5%	4.0%	0.0%	94.0%	6.0%
Total	0	39	3	0	32	2
7:15 AM	0	11	1	0	9	1
7:30 AM	0	10	1	0	8	1
7:45 AM	0	9	1	0	8	0
8:00 AM	0	9	0	0	7	0

**Additional 2025 Background Traffic**

Movement	EB TH	EB RT	WB LT	WB TH	NB LT	NB RT
<b>Total</b>	<b>7</b>	<b>0</b>	<b>0</b>	<b>13</b>	<b>0</b>	<b>0</b>
<b>PHF</b>	<b>0.71</b>					
7:15 AM	2	0	0	5	0	0
7:30 AM	2	0	0	4	0	0
7:45 AM	2	0	0	2	0	0
8:00 AM	1	0	0	2	0	0

**Total**

Movement	EB TH	EB RT	WB LT	WB TH	NB LT	NB RT
<b>Total</b>	<b>72</b>	<b>439</b>	<b>30</b>	<b>134</b>	<b>502</b>	<b>32</b>
<b>PHF</b>	<b>0.75</b>	<b>0.84</b>	<b>0.75</b>	<b>0.82</b>	<b>0.87</b>	<b>0.89</b>
7:15 AM	11	76	5	50	100	7
7:30 AM	24	131	10	41	144	9
7:45 AM	22	116	8	25	105	6
8:00 AM	15	116	7	18	153	10

Source: LSC Transportation Consultants, Inc.

**Table 5a**  
**Peak Hour Factor Calculations**  
**With Staggered Start Times**  
**2040 AM Peak Hour**  
**SH 83/Walker/Hwy 105**

Existing												
Movement	EB LT	EB TH	EB RT	NB LT	NB TH	NB RT	SB LT	SB TH	SB RT	WB LT	WB TH	WB RT
Total	34	38	128	156	318	17	10	234	53	46	50	25
PHF	0.83											
7:15 AM	8	5	32	45	107	0	4	63	26	17	18	10
7:30 AM	16	16	42	51	61	5	1	67	9	13	18	6
7:45 AM	2	10	40	32	76	7	3	54	9	8	9	6
8:00 AM	8	7	14	28	74	5	2	50	9	8	5	3

	Middle School (Grades 6-8)											
	IN									OUT		
Total	272									241		
PHF	See Hourly Distribution Table											
Movement	EB LT	EB TH	EB RT	NB LT	NB LT	NB TH	SB LT	SB TH	SB RT	WB LT	WB TH	WB RT
	0.0%	45.0%	0.0%	0.0%	0.0%	0.0%	14.5%	0.0%	0.0%	38.3%	40.0%	12.5%
	0	122	0	0	0	0	39	0	0	92	96	30
7:15 AM	0	49	0	0	0	0	16	0	0	37	38	12
7:30 AM	0	73	0	0	0	0	23	0	0	55	58	18
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0

	High School (Grades 9-12)											
	IN									OUT		
Total	400									259		
PHF	See Hourly Distribution Table											
Movement	EB LT	EB TH	EB RT	NB LT	NB TH	NB TH	SB LT	SB TH	SB RT	WB LT	WB TH	WB RT
	0.0%	45.0%	0.0%	0.0%	0.0%	0.0%	14.5%	0.0%	0.0%	38.3%	40.0%	12.5%
	0	180	0	0	0	0	58	0	0	99	104	32
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	18	0	0	0	0	6	0	0	0	0	0
7:45 AM	0	81	0	0	0	0	26	0	0	40	42	13
8:00 AM	0	81	0	0	0	0	26	0	0	59	62	19

	YMCA											
	IN									OUT		
Total	66									34		
PHF	0.85											
Movement	EB LT	EB TH	EB RT	NB LT	NB TH	NB RT	SB LT	SB TH	SB RT	WB LT	WB TH	WB RT
	0.0%	45.0%	0.0%	0.0%	0.0%	0.0%	14.5%	0.0%	0.0%	38.3%	40.0%	12.5%
	0	30	0	0	0	0	10	0	0	13	14	4
7:15 AM	0	9	0	0	0	0	3	0	0	4	4	1
7:30 AM	0	7	0	0	0	0	3	0	0	3	4	1
7:45 AM	0	7	0	0	0	0	2	0	0	3	3	1
8:00 AM	0	7	0	0	0	0	2	0	0	3	3	1

Additional 2040 Background Traffic												
Movement	EB LT	EB TH	EB RT	NB LT	NB TH	NB RT	SB LT	SB TH	SB RT	WB LT	WB TH	WB RT
	17	201	36	38	170	186	123	129	26	280	229	125
PHF	0.92											
7:15 AM	5	55	10	10	46	51	33	35	7	76	62	34
7:30 AM	4	49	9	10	42	45	30	32	7	68	56	31
7:45 AM	4	49	9	9	41	45	30	31	6	68	56	30
8:00 AM	4	48	8	9	41	45	30	31	6	68	55	30

Total												
Movement	EB LT	EB TH	EB RT	NB LT	NB TH	NB RT	SB LT	SB TH	SB RT	WB LT	WB TH	WB RT
Total	51	571	164	194	488	203	240	363	79	530	493	216
PHF	0.92	0.88	0.80	0.80	0.92	0.92	0.92	0.92	0.92	0.93	0.93	0.93
7:15 AM	13	118	42	55	153	51	56	98	33	134	122	57
7:30 AM	20	163	51	61	103	50	63	99	16	139	136	56
7:45 AM	6	147	49	41	117	52	61	85	15	119	110	50
8:00 AM	12	143	22	37	115	50	60	81	15	138	125	53

**Table 5b**  
**Peak Hour Factor Calculations**  
**With Staggered Start Times**  
**2040 AM Peak Hour**  
**Walker/Jane Lundeen**

**Existing**

Movement	EB LT	EB TH	EB RT	WB LT	WB TH	WB RT	NB LT	NB TH	NB RT	SB LT	SB TH	SB RT
<b>Total</b>	<b>0</b>	<b>65</b>	<b>0</b>	<b>0</b>	<b>121</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>PHF</b>	<b>0.79</b>											
<b>7:15 AM</b>	0	9	0	0	45	0	0	0	0	0	0	0
<b>7:30 AM</b>	0	22	0	0	37	0	0	0	0	0	0	0
<b>7:45 AM</b>	0	20	0	0	23	0	0	0	0	0	0	0
<b>8:00 AM</b>	0	14	0	0	16	0	0	0	0	0	0	0

**Middle School**

Total	IN						OUT					
	272						241					
PHF	See Hourly Distribution Table											
Movement	EB LT	EB TH	EB RT	WB LT	WB TH	WB RT	NB LT	NB TH	NB RT	SB LT	SB TH	SB RT
Distribution	0.0%	0.0%	59.5%	4.0%	0.0%	0.0%	90.8%	0.0%	6.0%	0.0%	0.0%	0.0%
Total	0	0	162	11	0	0	219	0	14	0	0	0
7:15 AM	0	0	65	4	0	0	88	0	6	0	0	0
7:30 AM	0	0	97	7	0	0	131	0	8	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0

**High School**

Total	IN						OUT					
	400						259					
PHF	See Hourly Distribution Table											
Movement	EB LT	EB TH	EB RT	WB LT	WB TH	WB RT	NB LT	NB TH	NB RT	SB LT	SB TH	SB RT
Distribution	0.0%	0.0%	59.5%	4.0%	0.0%	0.0%	90.8%	0.0%	6.0%	0.0%	0.0%	0.0%
Total	0	0	238	16	0	0	235	0	16	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	24	2	0	0	0	0	0	0	0	0
7:45 AM	0	0	107	7	0	0	94	0	6	0	0	0
8:00 AM	0	0	107	7	0	0	141	0	10	0	0	0

**YMCA**

Total	IN						OUT					
	66						34					
PHF	0.85											
Movement	EB LT	EB TH	EB RT	WB LT	WB TH	WB RT	NB LT	NB TH	NB RT	SB LT	SB TH	SB RT
Distribution	0.0%	0.0%	59.5%	4.0%	0.0%	0.0%	90.8%	0.0%	6.0%	0.0%	0.0%	0.0%
Total	0	0	39	3	0	0	31	0	2	0	0	0
7:15 AM	0	0	11	1	0	0	9	0	1	0	0	0
7:30 AM	0	0	10	1	0	0	8	0	1	0	0	0
7:45 AM	0	0	9	1	0	0	7	0	0	0	0	0
8:00 AM	0	0	9	0	0	0	7	0	0	0	0	0

**Additional 2040 Background Traffic**

Movement	EB LT	EB TH	EB RT	WB LT	WB TH	WB RT	NB LT	NB TH	NB RT	SB LT	SB TH	SB RT
<b>Total</b>	<b>123</b>	<b>13</b>	<b>374</b>	<b>41</b>	<b>28</b>	<b>7</b>	<b>464</b>	<b>1</b>	<b>23</b>	<b>4</b>	<b>0</b>	<b>142</b>
<b>PHF</b>	<b>0.92</b>											
<b>7:15 AM</b>	33	4	102	11	8	2	126	0	6	1	0	39
<b>7:30 AM</b>	30	3	91	10	7	2	113	1	6	1	0	35
<b>7:45 AM</b>	30	3	91	10	7	2	113	0	6	1	0	34
<b>8:00 AM</b>	30	3	90	10	6	1	112	0	5	1	0	34

**Total**

Movement	EB LT	EB TH	EB RT	WB LT	WB TH	WB RT	NB LT	NB TH	NB RT	SB LT	SB TH	SB RT
<b>Total</b>	<b>123</b>	<b>78</b>	<b>813</b>	<b>71</b>	<b>149</b>	<b>7</b>	<b>949</b>	<b>1</b>	<b>55</b>	<b>4</b>	<b>0</b>	<b>142</b>
<b>PHF</b>	<b>0.93</b>	<b>0.78</b>	<b>0.93</b>	<b>0.89</b>	<b>0.85</b>	<b>0.87</b>	<b>0.93</b>	<b>0.93</b>	<b>0.93</b>	<b>0.83</b>	<b>0.83</b>	<b>0.83</b>
<b>7:15 AM</b>	33	13	178	16	53	2	223	0	13	1	0	39
<b>7:30 AM</b>	30	25	222	20	44	2	252	1	15	1	0	35
<b>7:45 AM</b>	30	23	207	18	30	2	214	0	12	1	0	34
<b>8:00 AM</b>	30	17	206	17	22	1	260	0	15	1	0	34



**Table 6a**  
**Peak Hour Factor Calculations**  
**With Staggered Start Times**  
**2025 Background + Phases 1&2 School Midday Peak Hour**  
**SH 83/Walker/Hwy 105**

**Existing**

Movement	EB LT	EB TH	EB RT	NB LT	NB TH	NB RT	SB LT	SB TH	SB RT	WB LT	WB TH	WB RT
<b>Total</b>	<b>49</b>	<b>48</b>	<b>123</b>	<b>128</b>	<b>223</b>	<b>22</b>	<b>16</b>	<b>247</b>	<b>36</b>	<b>16</b>	<b>46</b>	<b>12</b>
<b>PHF</b>	0.93			0.95			0.87			0.78		
<b>2:15 PM</b>	9	4	32	33	44	6	3	69	13	5	15	5
<b>2:30 PM</b>	8	16	33	33	57	4	3	56	3	3	9	3
<b>2:45 PM</b>	16	14	29	31	61	6	5	61	10	4	11	2
<b>3:00 PM</b>	16	14	29	31	61	6	5	61	10	4	11	2

**Middle School (Grades 6-8)**

	IN									OUT		
Total	143									168		
PHF	See Hourly Distribution Table											
Movement	EB LT	EB TH	EB RT	NB LT	NB TH	NB TH	SB LT	SB TH	SB RT	WB LT	WB TH	WB RT
	0.0%	45.0%	0.0%	0.0%	0.0%	0.0%	14.5%	0.0%	0.0%	41.5%	40.0%	12.5%
	0	64	0	0	0	0	21	0	0	70	67	21
2:15 PM	0	32	0	0	0	0	11	0	0	4	3	1
2:30 PM	0	13	0	0	0	0	4	0	0	42	40	13
2:45 PM	0	3	0	0	0	0	1	0	0	21	20	6
3:00 PM	0	0	0	0	0	0	0	0	0	4	3	1

**High School (Grades 9-12)**

	IN									OUT		
Total	211									309		
PHF	See Hourly Distribution Table											
Movement	EB LT	EB TH	EB RT	NB LT	NB TH	SB LT	SB TH	SB RT	WB LT	WB TH	WB RT	
	0.0%	45.0%	0.0%	0.0%	0.0%	0.0%	14.5%	0.0%	0.0%	41.5%	40.0%	12.5%
	0	95	0	0	0	0	31	0	0	128	124	39
2:15 PM	0	5	0	0	0	0	2	0	0	0	0	0
2:30 PM	0	10	0	0	0	0	3	0	0	0	0	0
2:45 PM	0	43	0	0	0	0	14	0	0	26	25	8
3:00 PM	0	33	0	0	0	0	11	0	0	77	74	23

**YMCA**

	IN									OUT		
Total	25									25		
PHF	0.85											
Movement	EB LT	EB TH	EB RT	NB LT	NB TH	NB RT	SB LT	SB TH	SB RT	WB LT	WB TH	WB RT
	0.0%	45.0%	0.0%	0.0%	0.0%	0.0%	14.5%	0.0%	0.0%	41.5%	40.0%	12.5%
	0	11	0	0	0	0	4	0	0	10	10	3
2:15 PM	0	2	0	0	0	0	0	0	0	2	2	0
2:30 PM	0	2	0	0	0	0	1	0	0	2	2	1
2:45 PM	0	4	0	0	0	0	2	0	0	3	3	1
3:00 PM	0	3	0	0	0	0	1	0	0	3	3	1

**Additional 2025 Background Traffic**

Movement	EB LT	EB TH	EB RT	NB LT	NB TH	NB RT	SB LT	SB TH	SB RT	WB LT	WB TH	WB RT
<b>Total</b>	<b>5</b>	<b>5</b>	<b>13</b>	<b>13</b>	<b>23</b>	<b>2</b>	<b>2</b>	<b>26</b>	<b>4</b>	<b>2</b>	<b>5</b>	<b>1</b>
<b>PHF</b>	0.93											
<b>2:15 PM</b>	1	0	3	4	5	1	0	8	2	1	2	1
<b>2:30 PM</b>	1	2	4	3	6	0	0	6	0	0	0	0
<b>2:45 PM</b>	2	2	3	3	6	1	1	6	1	1	2	0
<b>3:00 PM</b>	1	1	3	3	6	0	1	6	1	0	1	0

**Total**

Movement	EB LT	EB TH	EB RT	NB LT	NB TH	NB RT	SB LT	SB TH	SB RT	WB LT	WB TH	WB RT
<b>Total</b>	<b>54</b>	<b>203</b>	<b>136</b>	<b>141</b>	<b>246</b>	<b>24</b>	<b>68</b>	<b>273</b>	<b>40</b>	<b>202</b>	<b>226</b>	<b>68</b>
<b>PHF</b>	<b>0.87</b>	<b>0.87</b>	<b>0.87</b>	<b>0.87</b>	<b>0.87</b>	<b>0.87</b>	<b>0.87</b>	<b>0.87</b>	<b>0.91</b>	<b>0.57</b>	<b>0.61</b>	<b>0.63</b>
<b>2:15 PM</b>	10	43	35	37	49	7	16	77	15	12	22	7
<b>2:30 PM</b>	9	43	37	36	63	4	11	62	3	47	51	17
<b>2:45 PM</b>	18	66	32	34	67	7	23	67	11	55	61	17
<b>3:00 PM</b>	17	51	32	34	67	6	18	67	11	88	92	27

**Table 6b**  
**Peak Hour Factor Calculations**  
**With Staggered Start Times**  
**2025 Background + Phases 1&2 School Midday Peak Hour**  
**Walker/Jane Lundeen**

**Existing**

Movement	EB TH	EB RT	WB LT	WB TH	NB LT	NB RT
<b>Total</b>	<b>86</b>	<b>0</b>	<b>0</b>	<b>74</b>	<b>0</b>	<b>0</b>
<b>PHF</b>	<b>0.95</b>					
<b>2:15 PM</b>	13	0	0	25	0	0
<b>2:30 PM</b>	23	0	0	15	0	0
<b>2:45 PM</b>	25	0	0	17	0	0
<b>3:00 PM</b>	25	0	0	17	0	0

**Middle School (Grades 6-8)**

Total	IN				OUT	
	143				168	
PHF	See Hourly Distribution Table					
Movement	EB TH	EB RT	WB LT	WB TH	NB LT	NB RT
Distribution	0.0%	59.5%	4.0%	0.0%	94.0%	6.0%
Total	0	85	6	0	158	10
2:15 PM	0	43	3	0	8	1
2:30 PM	0	17	1	0	95	6
2:45 PM	0	4	0	0	47	3
3:00 PM	0	0	0	0	8	1

**High School (Grade 9)**

Total	IN				OUT	
	211				309	
PHF	See Hourly Distribution Table					
Movement	EB TH	EB RT	WB LT	WB TH	NB LT	NB RT
Distribution	0.0%	59.5%	4.0%	0.0%	94.0%	6.0%
Total	0	126	8	0	290	19
2:15 PM	0	6	0	0	0	0
2:30 PM	0	13	1	0	0	0
2:45 PM	0	57	4	0	58	4
3:00 PM	0	44	3	0	174	11

**YMCA**

Total	IN				OUT	
	25				25	
PHF	0.85					
Movement	EB TH	EB RT	WB LT	WB TH	NB LT	NB RT
Distribution	0.0%	59.5%	4.0%	0.0%	94.0%	6.0%
Total	0	15	1	0	24	1
2:15 PM	0	3	0	0	5	0
2:30 PM	0	3	0	0	5	0
2:45 PM	0	5	1	0	8	1
3:00 PM	0	4	0	0	6	0

**Additional 2025 Background Traffic**

Movement	EB TH	EB RT	WB LT	WB TH	NB LT	NB RT
<b>Total</b>	<b>9</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>0</b>	<b>0</b>
<b>PHF</b>	<b>0.85</b>					
<b>2:15 PM</b>	2	0	0	3	0	0
<b>2:30 PM</b>	2	0	0	1	0	0
<b>2:45 PM</b>	3	0	0	2	0	0
<b>3:00 PM</b>	2	0	0	2	0	0

**Total**

Movement	EB TH	EB RT	WB LT	WB TH	NB LT	NB RT
<b>Total</b>	<b>95</b>	<b>199</b>	<b>13</b>	<b>82</b>	<b>414</b>	<b>27</b>
<b>PHF</b>	<b>0.87</b>	<b>0.87</b>	<b>0.83</b>	<b>0.83</b>	<b>0.55</b>	<b>0.56</b>
<b>2:15 PM</b>	15	52	3	28	13	1
<b>2:30 PM</b>	25	33	2	16	100	6
<b>2:45 PM</b>	28	66	5	19	113	8
<b>3:00 PM</b>	27	48	3	19	188	12

Source: LSC Transportation Consultants, Inc.

**Table 7a**  
**Trip Distribution and Assignment**  
**With Staggered Start Times**  
**2040 Midday School Peak Hour**  
**SH 83/Walker/Hwy 105**

Existing												
Movement	EB LT	EB TH	EB RT	NB LT	NB TH	NB RT	SB LT	SB TH	SB RT	WB LT	WB TH	WB RT
Total	49	48	123	128	223	22	16	247	36	16	46	12
PHF	0.97											
2:15 PM	9	4	32	33	44	6	3	69	13	5	15	5
2:30 PM	8	16	33	33	57	4	3	56	3	3	9	3
2:45 PM	16	14	29	31	61	6	5	61	10	4	11	2
3:00 PM	16	14	29	31	61	6	5	61	10	4	11	2

	Middle School (Grades 6-8)											
	IN									OUT		
Total	143									168		
PHF	See Hourly Distribution Table											
Movement	EB LT	EB TH	EB RT	NB LT	NB LT	NB TH	SB LT	SB TH	SB RT	WB LT	WB TH	WB RT
	0.0%	45.0%	0.0%	0.0%	0.0%	0.0%	14.5%	0.0%	0.0%	38.3%	40.0%	12.5%
	0	64	0	0	0	0	21	0	0	64	67	21
2:15 PM	0	32	0	0	0	0	11	0	0	3	3	1
2:30 PM	0	13	0	0	0	0	4	0	0	38	40	13
2:45 PM	0	3	0	0	0	0	1	0	0	19	20	6
3:00 PM	0	0	0	0	0	0	0	0	0	3	3	1

	High School (Grades 9-12)											
	IN									OUT		
Total	211									309		
PHF	See Hourly Distribution Table											
Movement	EB LT	EB TH	EB RT	NB LT	NB TH	NB TH	SB LT	SB TH	SB RT	WB LT	WB TH	WB RT
	0.0%	45.0%	0.0%	0.0%	0.0%	0.0%	14.5%	0.0%	0.0%	38.3%	40.0%	12.5%
	0	95	0	0	0	0	31	0	0	118	124	39
2:15 PM	0	5	0	0	0	0	2	0	0	0	0	0
2:30 PM	0	10	0	0	0	0	3	0	0	0	0	0
2:45 PM	0	43	0	0	0	0	14	0	0	24	25	8
3:00 PM	0	33	0	0	0	0	11	0	0	71	74	23

	YMCA											
	IN									OUT		
Total	25									25		
PHF	0.85											
Movement	EB LT	EB TH	EB RT	NB LT	NB TH	NB RT	SB LT	SB TH	SB RT	WB LT	WB TH	WB RT
	0.0%	45.0%	0.0%	0.0%	0.0%	0.0%	14.5%	0.0%	0.0%	38.3%	40.0%	12.5%
	0	11	0	0	0	0	4	0	0	10	10	3
2:15 PM	0	2	0	0	0	0	1	0	0	2	2	0
2:30 PM	0	3	0	0	0	0	1	0	0	2	2	1
2:45 PM	0	3	0	0	0	0	1	0	0	3	3	1
3:00 PM	0	3	0	0	0	0	1	0	0	3	3	1

Additional 2040 Background Traffic												
Movement	EB LT	EB TH	EB RT	NB LT	NB TH	NB RT	SB LT	SB TH	SB RT	WB LT	WB TH	WB RT
	24	214	25	21	102	201	148	114	17	317	293	142
PHF	0.92											
2:15 PM	6	52	6	5	25	49	36	28	4	77	71	34
2:30 PM	6	52	6	5	25	49	36	28	4	77	71	34
2:45 PM	7	58	7	6	28	55	40	31	5	86	80	39
3:00 PM	5	52	6	5	24	48	36	27	4	77	71	35

Total												
Movement	EB LT	EB TH	EB RT	NB LT	NB TH	NB RT	SB LT	SB TH	SB RT	WB LT	WB TH	WB RT
Total	73	412	148	149	325	223	214	361	53	501	514	209
PHF	0.92	0.85	0.92	0.92	0.91	0.91	0.92	0.92	0.92	0.92	0.92	0.93
2:15 PM	15	95	38	38	69	55	53	97	17	87	91	40
2:30 PM	14	94	39	38	82	53	47	84	7	120	122	51
2:45 PM	23	121	36	37	89	61	61	92	15	136	139	56
3:00 PM	21	102	35	36	85	54	53	88	14	158	162	62

Source: LSC Transportation Consultants, Inc.

**Table 7b**  
**Peak Hour Factor Calculations**  
**With Staggered Start Times**  
**2040 Midday School Peak Hour**  
**Walker/Jane Lundeen**

**Existing**

Movement	EB LT	EB TH	EB RT	WB LT	WB TH	WB RT	NB LT	NB TH	NB RT	SB LT	SB TH	SB RT
<b>Total</b>	<b>0</b>	<b>86</b>	<b>0</b>	<b>0</b>	<b>74</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>PHF</b>	0.95											
<b>2:15 PM</b>	0	13	0	0	25	0	0	0	0	0	0	0
<b>2:30 PM</b>	0	23	0	0	15	0	0	0	0	0	0	0
<b>2:45 PM</b>	0	25	0	0	17	0	0	0	0	0	0	0
<b>3:00 PM</b>	0	25	0	0	17	0	0	0	0	0	0	0

**Middle School (Grades 6-8)**

Total	IN						OUT					
	143						168					
PHF	See Hourly Distribution Table											
Movement	EB LT	EB TH	EB RT	WB LT	WB TH	WB RT	NB LT	NB TH	NB RT	SB LT	SB TH	SB RT
Distribution	0.0%	0.0%	59.5%	4.0%	0.0%	0.0%	90.8%	0.0%	6.0%	0.0%	0.0%	0.0%
Total	0	0	85	6	0	0	153	0	10	0	0	0
2:15 PM	0	0	43	3	0	0	8	0	1	0	0	0
2:30 PM	0	0	17	1	0	0	92	0	6	0	0	0
2:45 PM	0	0	4	0	0	0	46	0	3	0	0	0
3:00 PM	0	0	0	0	0	0	8	0	1	0	0	0

**High School (Grades 9-12)**

Total	IN						OUT					
	211						309					
PHF	See Hourly Distribution Table											
Movement	EB LT	EB TH	EB RT	WB LT	WB TH	WB RT	NB LT	NB TH	NB RT	SB LT	SB TH	SB RT
Distribution	0.0%	0.0%	59.5%	4.0%	0.0%	0.0%	90.8%	0.0%	6.0%	0.0%	0.0%	0.0%
Total	0	0	126	8	0	0	281	0	19	0	0	0
2:15 PM	0	0	6	0	0	0	0	0	0	0	0	0
2:30 PM	0	0	13	1	0	0	0	0	0	0	0	0
2:45 PM	0	0	57	4	0	0	56	0	4	0	0	0
3:00 PM	0	0	44	3	0	0	169	0	11	0	0	0

**YMCA**

Total	IN						OUT					
	25						25					
PHF	0.85											
Movement	EB LT	EB TH	EB RT	WB LT	WB TH	WB RT	NB LT	NB TH	NB RT	SB LT	SB TH	SB RT
Distribution	0.0%	0.0%	59.5%	4.0%	0.0%	0.0%	90.8%	0.0%	6.0%	0.0%	0.0%	0.0%
Total	0	0	15	1	0	0	23	0	2	0	0	0
2:15 PM	0	0	4	0	0	0	5	0	0	0	0	0
2:30 PM	0	0	4	0	0	0	5	0	0	0	0	0
2:45 PM	0	0	4	0	0	0	7	0	1	0	0	0
3:00 PM	0	0	3	1	0	0	6	0	1	0	0	0

**Additional 2040 Background Traffic**

Movement	EB LT	EB TH	EB RT	WB LT	WB TH	WB RT	NB LT	NB TH	NB RT	SB LT	SB TH	SB RT
<b>Total</b>	<b>159</b>	<b>0</b>	<b>405</b>	<b>38</b>	<b>11</b>	<b>8</b>	<b>584</b>	<b>1</b>	<b>40</b>	<b>8</b>	<b>1</b>	<b>157</b>
<b>PHF</b>	0.92											
<b>2:15 PM</b>	39	0	98	9	3	2	142	0	10	2	0	38
<b>2:30 PM</b>	39	0	98	9	3	2	142	0	10	2	0	38
<b>2:45 PM</b>	43	0	110	10	3	2	159	1	11	2	0	43
<b>3:00 PM</b>	38	0	99	10	2	2	141	0	9	2	1	38

**Total**

Movement	EB LT	EB TH	EB RT	WB LT	WB TH	WB RT	NB LT	NB TH	NB RT	SB LT	SB TH	SB RT
<b>Total</b>	<b>159</b>	<b>86</b>	<b>604</b>	<b>51</b>	<b>85</b>	<b>8</b>	<b>986</b>	<b>1</b>	<b>68</b>	<b>8</b>	<b>1</b>	<b>157</b>
<b>PHF</b>	<b>0.92</b>	<b>0.86</b>	<b>0.92</b>	<b>0.83</b>	<b>0.83</b>	<b>0.83</b>	<b>0.76</b>	<b>0.93</b>	<b>0.77</b>	<b>0.83</b>	<b>0.83</b>	<b>0.83</b>
<b>2:15 PM</b>	39	13	151	12	28	2	155	0	11	2	0	38
<b>2:30 PM</b>	39	23	132	11	18	2	239	0	16	2	0	38
<b>2:45 PM</b>	43	25	175	14	20	2	268	1	19	2	0	43
<b>3:00 PM</b>	38	25	146	14	19	2	324	0	22	2	1	38

**Table 8a**  
**Peak Hour Factor Calculations**  
**2025 Background + Phases 1&2 PM Peak Hour**  
**SH 83/Walker/Hwy 105**

**Existing**

Movement	EB LT	EB TH	EB RT	NB LT	NB TH	NB RT	SB LT	SB TH	SB RT	WB LT	WB TH	WB RT
<b>Total</b>	<b>57</b>	<b>52</b>	<b>155</b>	<b>140</b>	<b>310</b>	<b>49</b>	<b>26</b>	<b>429</b>	<b>69</b>	<b>21</b>	<b>57</b>	<b>14</b>
<b>PHF</b>	0.94			0.86			0.92			0.83		
<b>5:00 PM</b>	9	16	45	40	94	11	8	102	19	3	11	5
<b>5:15 PM</b>	19	11	44	35	60	14	6	82	13	5	19	4
<b>5:30 PM</b>	11	13	30	38	89	15	4	136	22	11	15	4
<b>5:45 PM</b>	18	12	36	27	67	9	8	109	15	2	12	1

**School (Grades 6-12)**

<b>IN</b>													<b>OUT</b>	
<b>Total</b>	58												94	
<b>PHF</b>	0.92													
Movement	EB LT	EB TH	EB RT	NB LT	NB TH	NB RT	SB LT	SB TH	SB RT	WB LT	WB TH	WB RT		
	0.0%	40.0%	0.0%	0.0%	0.0%	0.0%	12.0%	0.0%	0.0%	36.5%	42.5%	13.5%		
	<b>0</b>	<b>23</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>7</b>	<b>0</b>	<b>0</b>	<b>34</b>	<b>40</b>	<b>13</b>		
<b>5:00 PM</b>	0	6	0	0	0	0	2	0	0	9	11	4		
<b>5:15 PM</b>	0	6	0	0	0	0	2	0	0	9	10	3		
<b>5:30 PM</b>	0	6	0	0	0	0	2	0	0	8	10	3		
<b>5:45 PM</b>	0	5	0	0	0	0	1	0	0	8	9	3		

**YMCA**

<b>IN</b>													<b>OUT</b>	
<b>Total</b>	48												55	
<b>PHF</b>	0.85													
Movement	EB LT	EB TH	EB RT	NB LT	NB TH	NB RT	SB LT	SB TH	SB RT	WB LT	WB TH	WB RT		
	0.0%	40.0%	0.0%	0.0%	0.0%	0.0%	12.0%	0.0%	0.0%	36.5%	42.5%	13.5%		
	<b>0</b>	<b>19</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>20</b>	<b>23</b>	<b>7</b>		
<b>5:00 PM</b>	0	6	0	0	0	0	2	0	0	6	7	3		
<b>5:15 PM</b>	0	5	0	0	0	0	2	0	0	5	6	2		
<b>5:30 PM</b>	0	4	0	0	0	0	1	0	0	5	5	1		
<b>5:45 PM</b>	0	4	0	0	0	0	1	0	0	4	5	1		

**Additional 2025 Background Traffic**

Movement	EB LT	EB TH	EB RT	NB LT	NB TH	NB RT	SB LT	SB TH	SB RT	WB LT	WB TH	WB RT
	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Total</b>	<b>6</b>	<b>5</b>	<b>17</b>	<b>15</b>	<b>32</b>	<b>5</b>	<b>3</b>	<b>45</b>	<b>7</b>	<b>2</b>	<b>6</b>	<b>1</b>
<b>PHF</b>	0.94											
<b>5:00 PM</b>	1	2	5	4	10	1	1	11	2	0	1	1
<b>5:15 PM</b>	2	1	5	4	6	1	1	9	1	1	2	0
<b>5:30 PM</b>	1	1	3	4	9	2	0	14	2	1	2	0
<b>5:45 PM</b>	2	1	4	3	7	1	1	11	2	0	1	0

**Total**

Movement	EB LT	EB TH	EB RT	NB LT	NB TH	NB RT	SB LT	SB TH	SB RT	WB LT	WB TH	WB RT
<b>Total</b>	<b>63</b>	<b>99</b>	<b>172</b>	<b>155</b>	<b>342</b>	<b>54</b>	<b>42</b>	<b>474</b>	<b>76</b>	<b>77</b>	<b>126</b>	<b>35</b>
<b>PHF</b>	<b>0.87</b>	<b>0.83</b>	<b>0.86</b>	<b>0.88</b>	<b>0.82</b>	<b>0.92</b>	<b>0.81</b>	<b>0.92</b>	<b>0.90</b>	<b>0.87</b>	<b>0.87</b>	<b>0.67</b>
<b>5:00 PM</b>	10	30	50	44	104	12	13	113	21	18	30	13
<b>5:15 PM</b>	21	23	49	39	66	15	11	91	14	20	37	9
<b>5:30 PM</b>	12	24	33	42	98	17	7	150	24	25	32	8
<b>5:45 PM</b>	20	22	40	30	74	10	11	120	17	14	27	5

Source: LSC Transportation Consultants, Inc.

**Table 8b**  
**Peak Hour Factor Calculations**  
**2025 Background + Phases 1&2 PM Peak Hour**  
**Walker/Jane Lundeen**

**Existing**

Movement	EB TH	EB RT	WB LT	WB TH	NB LT	NB RT
<b>Total</b>	<b>127</b>	<b>0</b>	<b>0</b>	<b>92</b>	<b>0</b>	<b>0</b>
<b>PHF</b>	<b>0.88</b>					
<b>5:00 PM</b>	35	0	0	19	0	0
<b>5:15 PM</b>	31	0	0	28	0	0
<b>5:30 PM</b>	32	0	0	30	0	0
<b>5:45 PM</b>	29	0	0	15	0	0

**School (Grades 6-12)**

Total	IN				OUT	
	58				94	
PHF	0.92					
Movement	EB TH	EB RT	WB LT	WB TH	NB LT	NB RT
Distribution	0.0%	52.0%	3.0%	0.0%	92.5%	7.5%
Total	0	30	2	0	87	7
5:00 PM	0	8	1	0	24	2
5:15 PM	0	8	1	0	21	1
5:30 PM	0	7	0	0	21	2
5:45 PM	0	7	0	0	21	2

**YMCA**

Total	IN				OUT	
	48				55	
PHF	0.85					
Movement	EB TH	EB RT	WB LT	WB TH	NB LT	NB RT
Distribution	0.0%	52.0%	3.0%	0.0%	92.5%	7.5%
Total	0	25	1	0	51	4
5:00 PM	0	7	1	0	15	1
5:15 PM	0	6	0	0	12	1
5:30 PM	0	6	0	0	12	1
5:45 PM	0	6	0	0	12	1

**Additional 2025 Background Traffic**

Movement	EB TH	EB RT	WB LT	WB TH	NB LT	NB RT
<b>Total</b>	<b>13</b>	<b>0</b>	<b>0</b>	<b>9</b>	<b>0</b>	<b>0</b>
<b>PHF</b>	<b>0.88</b>					
<b>5:00 PM</b>	4	0	0	2	0	0
<b>5:15 PM</b>	3	0	0	2	0	0
<b>5:30 PM</b>	3	0	0	3	0	0
<b>5:45 PM</b>	3	0	0	2	0	0

**Total**

Movement	EB TH	EB RT	WB LT	WB TH	NB LT	NB RT
<b>Total</b>	<b>140</b>	<b>55</b>	<b>3</b>	<b>101</b>	<b>138</b>	<b>11</b>
<b>PHF</b>	<b>0.90</b>	<b>0.92</b>	<b>0.83</b>	<b>0.83</b>	<b>0.88</b>	<b>0.92</b>
<b>5:00 PM</b>	39	15	2	21	39	3
<b>5:15 PM</b>	34	14	1	30	33	2
<b>5:30 PM</b>	35	13	0	33	33	3
<b>5:45 PM</b>	32	13	0	17	33	3

Source: LSC Transportation Consultants, Inc.

**Table 9a**  
**Peak Hour Factor Calculations**  
**2040 PM Peak Hour**  
**SH 83/Walker/Hwy 105**

Existing												
Movement	EB LT	EB TH	EB RT	NB LT	NB TH	NB RT	SB LT	SB TH	SB RT	WB LT	WB TH	WB RT
Total	57	52	155	140	310	49	26	429	69	21	57	14
PHF	0.89											
5:00 PM	9	16	45	40	94	11	8	102	19	3	11	5
5:15 PM	19	11	44	35	60	14	6	82	13	5	19	4
5:30 PM	11	13	30	38	89	15	4	136	22	11	15	4
5:45 PM	18	12	36	27	67	9	8	109	15	2	12	1

	School (Grades 6-12)											
	IN									OUT		
Total	58									94		
PHF	0.92											
Movement	EB LT	EB TH	EB RT	NB LT	NB LT	NB TH	SB LT	SB TH	SB RT	WB LT	WB TH	WB RT
	0.0%	40.0%	0.0%	0.0%	0.0%	0.0%	12.0%	0.0%	0.0%	33.3%	42.5%	13.5%
	0	23	0	0	0	0	7	0	0	31	40	13
5:00 PM	0	6	0	0	0	0	2	0	0	8	11	4
5:15 PM	0	6	0	0	0	0	2	0	0	8	10	3
5:30 PM	0	6	0	0	0	0	2	0	0	8	10	3
5:45 PM	0	5	0	0	0	0	1	0	0	7	9	3

	YMCA											
	IN									OUT		
Total	48									55		
PHF	0.85											
Movement	EB LT	EB TH	EB RT	NB LT	NB TH	NB RT	SB LT	SB TH	SB RT	WB LT	WB TH	WB RT
	0.0%	40.0%	0.0%	0.0%	0.0%	0.0%	12.0%	0.0%	0.0%	33.3%	42.5%	13.5%
	0	19	0	0	0	0	6	0	0	18	23	7
5:00 PM	0	6	0	0	0	0	2	0	0	6	7	3
5:15 PM	0	5	0	0	0	0	2	0	0	4	6	2
5:30 PM	0	4	0	0	0	0	1	0	0	4	5	1
5:45 PM	0	4	0	0	0	0	1	0	0	4	5	1

Additional 2040 Background Traffic												
Movement	EB LT	EB TH	EB RT	NB LT	NB TH	NB RT	SB LT	SB TH	SB RT	WB LT	WB TH	WB RT
	28	235	49	37	175	233	202	205	34	391	348	151
PHF	0.92											
5:00 PM	8	64	14	11	48	64	55	56	10	107	95	42
5:15 PM	7	57	12	9	43	57	49	50	8	95	85	37
5:30 PM	7	57	12	9	42	56	49	50	8	95	84	36
5:45 PM	6	57	11	8	42	56	49	49	8	94	84	36

Total												
Movement	EB LT	EB TH	EB RT	NB LT	NB TH	NB RT	SB LT	SB TH	SB RT	WB LT	WB TH	WB RT
Total	85	329	204	177	485	282	241	634	103	461	468	185
PHF	0.92	0.89	0.86	0.87	0.85	0.94	0.90	0.93	0.89	0.93	0.94	0.86
5:00 PM	17	92	59	51	142	75	67	158	29	124	124	54
5:15 PM	26	79	56	44	103	71	59	132	21	112	120	46
5:30 PM	18	80	42	47	131	71	56	186	30	118	114	44
5:45 PM	24	78	47	35	109	65	59	158	23	107	110	41

Source:LSC Transportation Consultants, Inc.

**Table 9b**  
**Peak Hour Factor Calculations**  
**2040 PM Peak Hour**  
**Walker/Jane Lundeen**

**Existing**

Movement	EB LT	EB TH	EB RT	WB LT	WB TH	WB RT	NB LT	NB TH	NB RT	SB LT	SB TH	SB RT
<b>Total</b>	<b>0</b>	<b>127</b>	<b>0</b>	<b>0</b>	<b>92</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>PHF</b>	<b>0.88</b>											
<b>5:00 PM</b>	0	35	0	0	19	0	0	0	0	0	0	0
<b>5:15 PM</b>	0	31	0	0	28	0	0	0	0	0	0	0
<b>5:30 PM</b>	0	32	0	0	30	0	0	0	0	0	0	0
<b>5:45 PM</b>	0	29	0	0	15	0	0	0	0	0	0	0

**School (Grades 6-12)**

Total	IN						OUT					
	58						94					
PHF	0.92											
Movement	EB LT	EB TH	EB RT	WB LT	WB TH	WB RT	NB LT	NB TH	NB RT	SB LT	SB TH	SB RT
Distribution	0.0%	0.0%	52.0%	3.0%	0.0%	0.0%	88.7%	0.0%	7.5%	0.0%	0.0%	0.0%
Total	0	0	30	2	0	0	83	0	7	0	0	0
5:00 PM	0	0	8	1	0	0	23	0	2	0	0	0
5:15 PM	0	0	8	1	0	0	20	0	1	0	0	0
5:30 PM	0	0	7	0	0	0	20	0	2	0	0	0
5:45 PM	0	0	7	0	0	0	20	0	2	0	0	0

**YMCA**

Total	IN						OUT					
	48						55					
PHF	0.85											
Movement	EB LT	EB TH	EB RT	WB LT	WB TH	WB RT	NB LT	NB TH	NB RT	SB LT	SB TH	SB RT
Distribution	0.0%	0.0%	52.0%	3.0%	0.0%	0.0%	88.7%	0.0%	7.5%	0.0%	0.0%	0.0%
Total	0	0	25	1	0	0	49	0	4	0	0	0
5:00 PM	0	0	7	0	0	0	14	0	1	0	0	0
5:15 PM	0	0	6	1	0	0	11	0	1	0	0	0
5:30 PM	0	0	6	0	0	0	12	0	1	0	0	0
5:45 PM	0	0	6	0	0	0	12	0	1	0	0	0

**Additional 2040 Background Traffic**

Movement	EB LT	EB TH	EB RT	WB LT	WB TH	WB RT	NB LT	NB TH	NB RT	SB LT	SB TH	SB RT
<b>Total</b>	<b>194</b>	<b>21</b>	<b>455</b>	<b>34</b>	<b>26</b>	<b>6</b>	<b>701</b>	<b>1</b>	<b>44</b>	<b>7</b>	<b>1</b>	<b>163</b>
<b>PHF</b>	<b>0.92</b>											
<b>5:00 PM</b>	53	6	124	9	7	2	190	1	12	2	1	44
<b>5:15 PM</b>	47	5	111	9	7	2	171	0	10	1	0	39
<b>5:30 PM</b>	47	5	110	8	6	1	170	0	11	2	0	40
<b>5:45 PM</b>	47	5	110	8	6	1	170	0	11	2	0	40

**Total**

Movement	EB LT	EB TH	EB RT	WB LT	WB TH	WB RT	NB LT	NB TH	NB RT	SB LT	SB TH	SB RT
<b>Total</b>	<b>194</b>	<b>148</b>	<b>510</b>	<b>37</b>	<b>118</b>	<b>6</b>	<b>833</b>	<b>1</b>	<b>55</b>	<b>7</b>	<b>1</b>	<b>163</b>
<b>PHF</b>	<b>0.92</b>	<b>0.90</b>	<b>0.92</b>	<b>0.93</b>	<b>0.83</b>	<b>0.83</b>	<b>0.92</b>	<b>0.92</b>	<b>0.92</b>	<b>0.83</b>	<b>0.83</b>	<b>0.83</b>
<b>5:00 PM</b>	53	41	139	10	26	2	227	1	15	2	1	44
<b>5:15 PM</b>	47	36	125	11	35	2	202	0	12	1	0	39
<b>5:30 PM</b>	47	37	123	8	36	1	202	0	14	2	0	40
<b>5:45 PM</b>	47	34	123	8	21	1	202	0	14	2	0	40

Source: LSC Transportation Consultants, Inc.



**Table 10**  
**Level of Service Analysis**  
**2025 Traffic**  
**Monument Academy**

Intersection	Traffic Control	Existing			2025 Background			2025 Total		
		AM	Midday	PM	AM	Midday	PM	AM	Midday	PM
SH 83/Hwy 105/Walker										
Eastbound Left	Traffic Signal	D	D	D	D	D	D	C	D	D
Eastbound Through								D	D	D
Eastbound Right		A	A	A	A	A	A	A	A	A
Westbound Left		D	D	D	D	D	D	E	D	C
Westbound Through and Right								B	C	C
Northbound Left		A	A	A	A	A	A	C	B	B
Northbound Through		A	A	A	A	A	A	D	C	B
Northbound Right		A	A	A	A	A	A	A	A	A
Southbound Left		A	A	A	A	A	A	C	B	A
Southbound Through		B	B	B	B	B	B	C	C	C
Southbound Right	A	A	A	A	A	A	A	A	A	
Overall		B	B	B	B	B	B	C	C	B
SH 83/Hodgen										
Eastbound Left	Traffic Signal	C	---	D	D	---	D	D	---	D
Eastbound Through		B	---	C	B	---	C	D	---	C
Eastbound Right		A	---	A	A	---	A	A	---	A
Westbound Left		C	---	D	D	---	D	D	---	D
Westbound Through		B	---	C	C	---	C	C	---	D
Westbound Right		A	---	A	A	---	A	B	---	A
Northbound Left		A	---	A	A	---	B	C	---	B
Northbound Through		B	---	C	C	---	C	A	---	C
Northbound Right		A	---	A	A	---	A	B	---	A
Southbound Left		A	---	B	A	---	B	C	---	B
Southbound Through/Right	B	---	B	C	---	C	A	---	C	
Overall		B	---	B	C	---	C	C	---	C
Walker/Jane Lundeen										
Eastbound	Roundabout	---	---	---	---	---	---	A	A	A
Westbound		---	---	---	---	---	---	A	A	A
Northbound		---	---	---	---	---	---	A	B	A
Overall		---	---	---	---	---	---	A	A	A
Pinehurst/Jane Lundeen										
Eastbound	Roundabout	---	---	---	---	---	---	A	A	A
Westbound		---	---	---	---	---	---	A	A	A
Southbound		---	---	---	---	---	---	A	A	A
Overall		---	---	---	---	---	---	A	A	A
North Site Access/Jane Lundeen										
Westbound	TWSC	---	---	---	---	---	---	A	C	A
Southbound Left		---	---	---	---	---	---	A	A	A
South Site Access/Jane Lundeen										
Westbound	TWSC	---	---	---	---	---	---	B	B	A
Southbound Left		---	---	---	---	---	---	A	A	A
Site Access/Pinehurst										
Eastbound Left	TWSC	---	---	---	---	---	---	A	A	A
Southbound		---	---	---	---	---	---	B	B	A

Source: LSC Transportation Consultants, Inc.

**Table 11**  
**Level of Service Analysis**  
**2040 Traffic**  
**Monument Academy**

Intersection	Traffic Control	2040 Background			2040 Total		
		AM	Midday	PM	AM	Midday	PM
SH 83/Hwy 105/Walker							
Eastbound Left	Traffic Signal	D	D	E	D	D	E
Eastbound Through (2)		D	D	D	E	D	D
Eastbound Right		A	A	A	A	A	A
Westbound Left (2)		D	D	D	E	E	E
Westbound Through (2)		C	C	C	C	C	C
Westbound Right		A	A	A	A	A	A
Northbound Left (2)		B	B	C	C	C	C
Northbound Through (2)		C	C	C	D	C	D
Northbound Right		A	A	A	A	A	A
Southbound Left		B	B	C	C	B	C
Southbound Through (2)		C	C	C	C	C	C
Southbound Right		A	A	A	A	A	A
Overall			C	C	C	C	C
SH 83/Hodgen							
Eastbound Left	Traffic Signal	C	---	D	C	---	D
Eastbound Through		D	---	D	D	---	D
Eastbound Right		A	---	A	A	---	A
Westbound Left (2)		D	---	D	D	---	D
Westbound Through		D	---	D	D	---	D
Westbound Right		A	---	A	A	---	A
Northbound Left		B	---	C	B	---	C
Northbound Through (2)		C	---	C	C	---	C
Northbound Right		A	---	B	A	---	B
Southbound Left (2)		D	---	D	D	---	D
Southbound Through (2)		C	---	C	C	---	C
Southbound Right		A	---	A	A	---	A
Overall			C	---	C	C	---
Walker/Jane Lundeen							
Eastbound	Roundabout	A	A	A	A	A	A
Westbound		A	A	B	C	C	B
Northbound Left		A	A	A	B	C	B
Northbound Left/Through/Right		A	A	A	A	B	A
Southbound		A	A	B	B	C	B
Overall		A	A	A	A	B	A
Pinehurst/Jane Lundeen							
Eastbound	Roundabout	A	A	A	C	A	A
Westbound		A	A	A	B	A	A
Northbound		A	A	A	B	A	A
Southbound		A	A	A	A	A	A
Overall		A	A	A	B	A	A
North Site Access/Jane Lundeen							
Northbound Left	TWSC	A	A	A	A	A	A
Eastbound		B	B	C	F	F	E
Westbound		---	---	---	A	D	B
Southbound Left		---	---	---	B	A	A
South Site Access/Jane Lundeen							
Northbound Left	TWSC	A	A	A	A	A	A
Eastbound		B	B	B	F	F	C
Westbound		---	---	---	C	B	B
Southbound Left		---	---	---	A	A	A
Site Access/Pinehurst							
Eastbound Left	TWSC	---	---	---	A	A	A
Southbound		---	---	---	B	B	A

Source: LSC Transportation Consultants, Inc.

**Table 12**  
**Queuing Analysis**  
**SH 83/Highway 105/Walker**  
**Monument Academy**

**Projected 95th Percentile Queue Length  
(ft)**

Lane	2025 Total Traffic				2040 Total Traffic		
	AM	Midday	PM		AM	Midday	PM
Westbound Left-Turn	#279	139	139		#302	#332	#281
Westbound Through	222	200	133		415	451	168
Northbound Left-turn	129	90	59		154	113	#150
Northbound Through	329	209	225		238	166	263

# Reported by Synchro: 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.

Source: LSC Transportation Consultants, Inc.

Table 13 Monument Academy Roadway Improvements			
Item #	Improvement	Timing	Responsibility
Roadway Segment Improvements			
1	Construct Jane Lundeen from Pinehurst Circle to Walker Road as an Urban Non-Residential Collector.	Phase 1	Monument Academy
2	Construct Pinehurst Circle from SH 83 to Jane Lundeen as a one-way, Urban Non-Residential Collector (modified) street.	Phase 1	Monument Academy
3	Construct Pinehurst Circle from Jane Lundeen to the east boundary of the Monument Academy site as an Urban Local roadway	Phase 1	Monument Academy
4	Grade Pinehurst Circle from its current terminus in Walden Preserve north to the east boundary of the Monument Academy site. Install all-weather surface for use as an emergency access/utility road.	Phase 1	Monument Academy
5	Construct Pinehurst Circle from its current terminus to the east boundary of the Monument Academy site as a Rural Local roadway.	Intermediate Term	Walden
6	Realign and upgrade Walker Road from SH 83 to Jane Lundeen by adding curb and gutter, and widening to accommodate auxiliary turn lanes and tie into the proposed roundabout. Please refer to the roundabout design report.	Phase 1	Monument Academy
7	Realign and upgrade Walker Road just east of the Jane Lundeen roundabout as shown in the roundabout design report. Please refer to the roundabout design report.	Phase 1	Monument Academy
SH 83/Walker/Highway 105			
8	Add eastbound and westbound left-turn lanes as shown on the attached lane exhibits	Phase 1	Monument Academy
9	Modify the traffic signal. Modification may include adding signal heads for protected-permissive phasing for the westbound left-turn movement and modifying the traffic signal timing plan. Additional mast-arm mounted signs may also be required. Adjustment or modification to <u>existing</u> signal heads and/or other signal infrastructure, including the pole-mounted signal heads may be required to achieve proper clearance from the through lane(s). There is the potential that a signal pole(s) may need to be relocated to achieve proper clearance. This will be addressed at the design stage.	Phase 1	Monument Academy
SH 83/Pinehurst Circle			
10	Construct new intersection as a restricted right-in only access. The applicant is proposing a modified design with large radii. This design not only functions to take up the grade east of the highway, but also provides more defined channelization of the right turning movements. The intersection will look less like a conventional intersection, rather right-turn-only northbound quasi "ramp."-The design of the right-in only access is proceeding as part of the CDOT access permitting process. Design elements were discussed at a recent meeting in late February 2020 with CDOT and El Paso Country staff.	Phase 1	Monument Academy
11	Construct 400' northbound right-turn deceleration lane plus 300' taper on SH 83 approaching Pinehurst Circle.	Phase 1	Monument Academy
Walker Rd./Jane Lundeen			
12	Construct the intersection of Walker/Jane Lundeen as a modern one-lane roundabout (expandable to a multi-lane roundabout) with an eastbound right-turn slip lane. Please refer to the roundabout report for details. Reserve adequate right-of-way as needed for the long-term.	Phase 1	Monument Academy
Pinehurst/Jane Lundeen			
13	Construct the intersection of Pinehurst/Jane Lundeen as a one-lane mini- roundabout. Please refer to the roundabout report for details.	Phase 1	Monument Academy
Pinehurst/Site Access			
14	Construct an eastbound left-turn lane on Pinehurst approaching the site access.	Phase 1	Monument Academy
15	Implement measures such as signing, markings and school directive/ enforcement to effectively force a right-turn only for southbound traffic (exiting the school). If the school can effectively allow left turns only by local residents north of Hodgen Road (and east of SH 83) while prohibiting all other left turning traffic, that would be acceptable. This report includes a circulation plan option (for parent pick-up/drop-off) which shows traffic exiting onto Jane Lundeen (except for local resident traffic).	With Pinehurst Circle connection to its north terminus within Walden Preserve.	Monument Academy
Jane Lundeen/North Site Access			
16	Stripe Jane Lundeen Drive for a southbound left-turn lane <sup>(1)</sup> approaching the north site access. Please refer to the striping/signing section of this report.	Phase 1	Monument Academy
17	Construct a northbound right-turn deceleration lane on Jane Lundeen approaching the north site access.	Phase 1	Monument Academy
Jane Lundeen/South Site Access			
18	Stripe Jane Lundeen Drive for a southbound left-turn lane <sup>(1)</sup> on Jane Lundeen approaching the south site access. Please refer to the striping/signing section of this report.	Phase 1	Monument Academy
Notes:			
(1) The Standard Urban Non-Residential Collector cross-section includes a 12' striped median			
Source: LSC Transportation Consultants, Inc. (Date:3/1/20)			



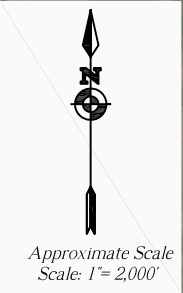


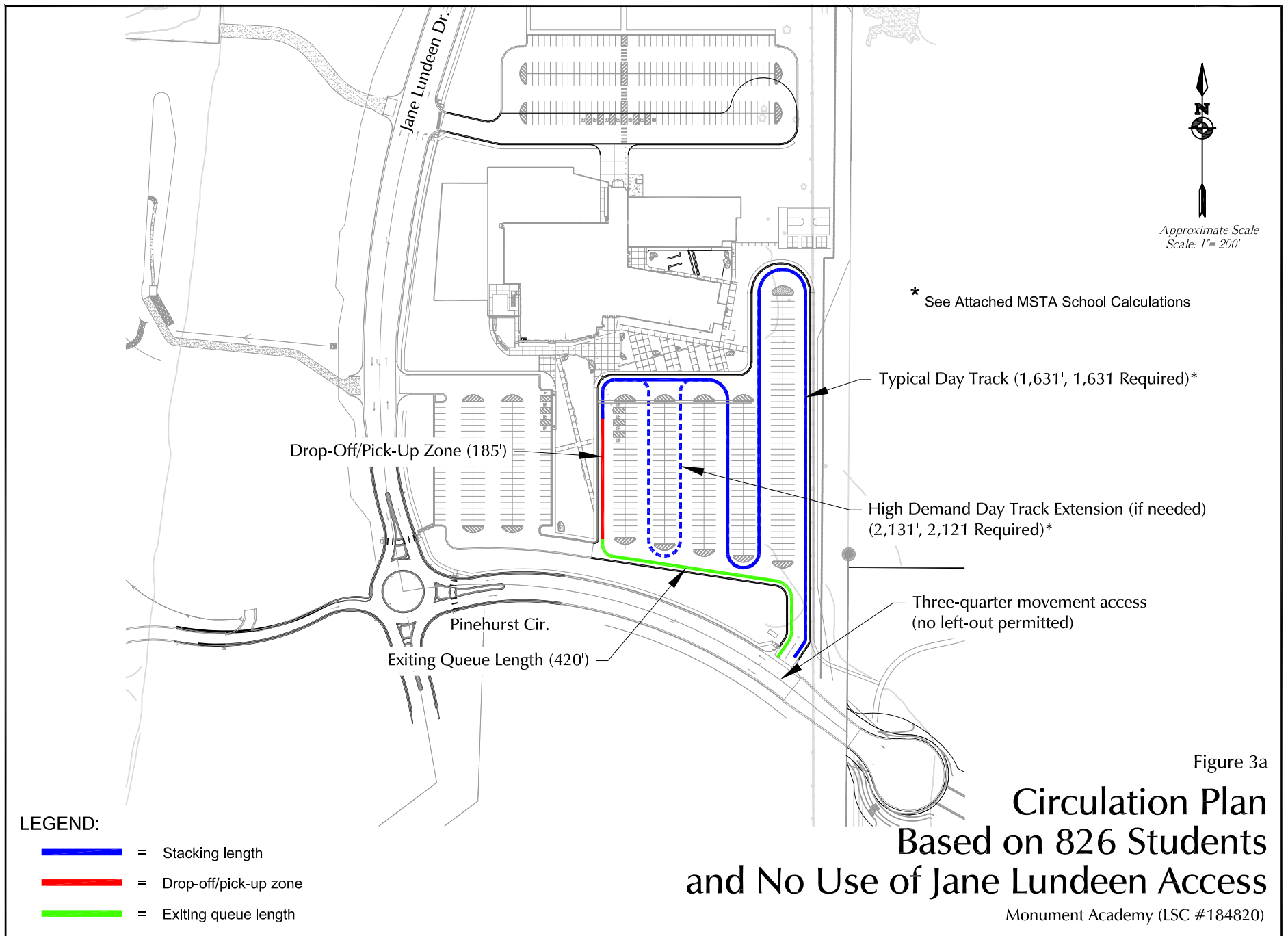
Figure 1

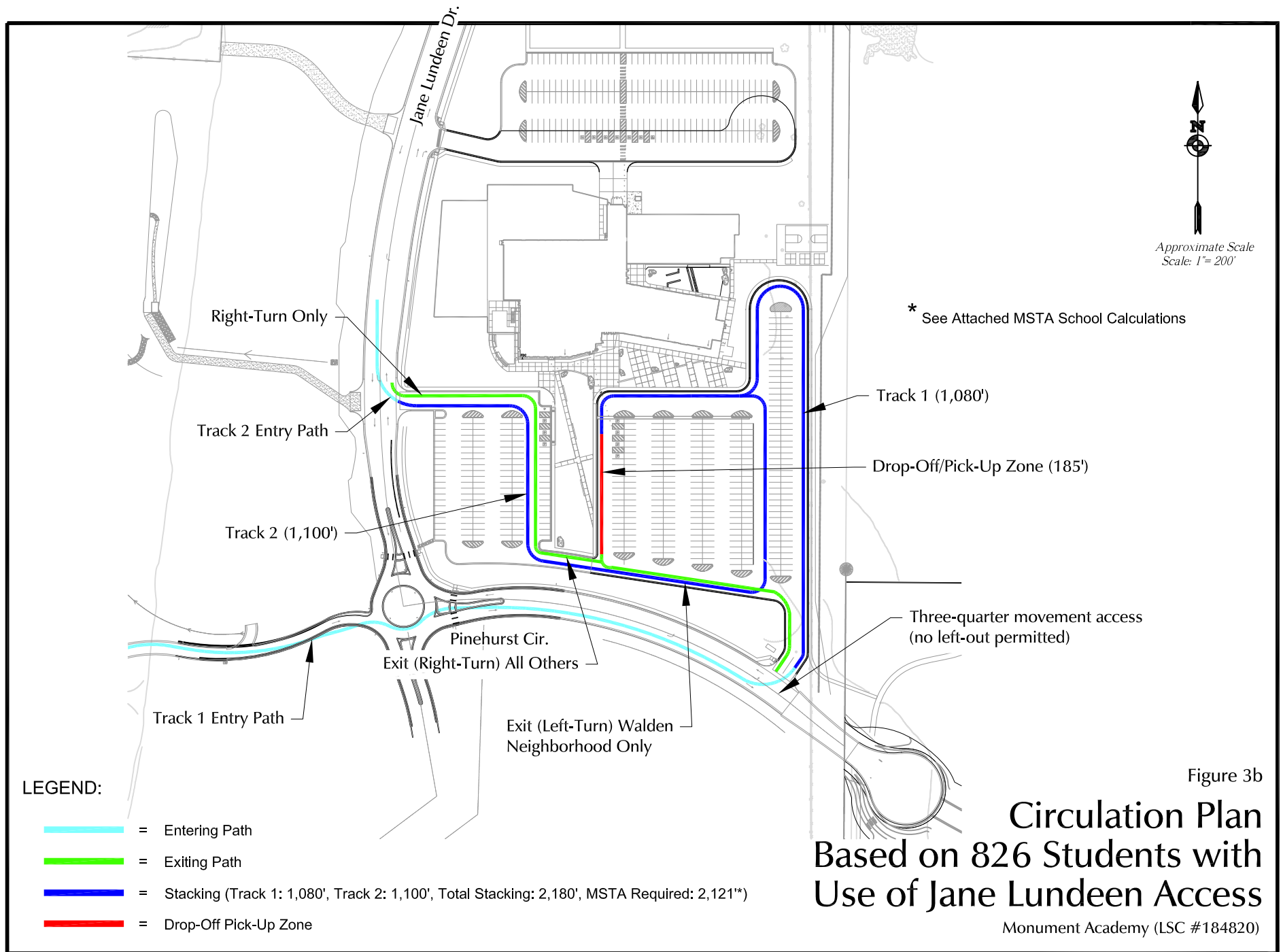
# Vicinity Map

Monument Academy (LSC #184820)

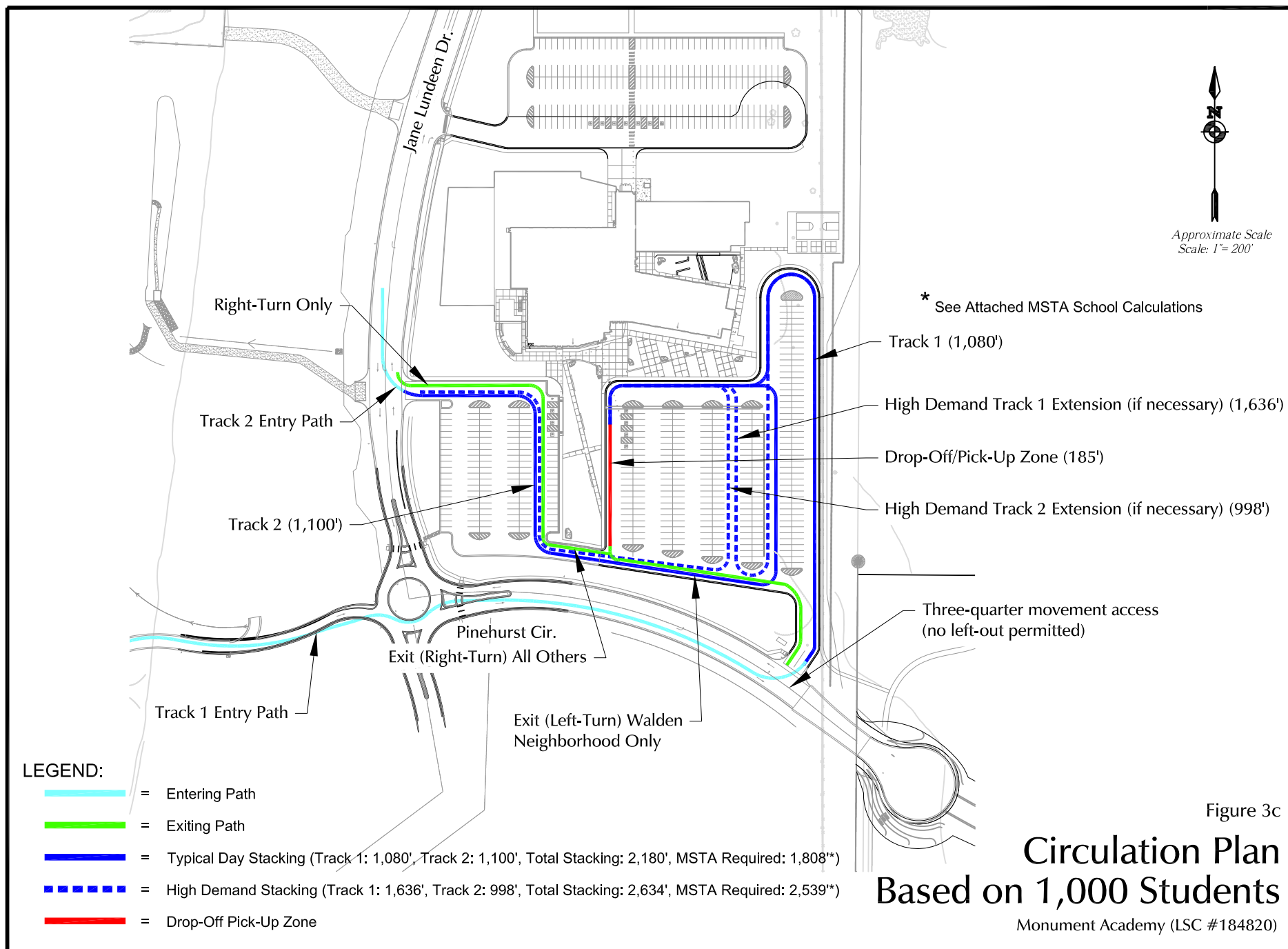


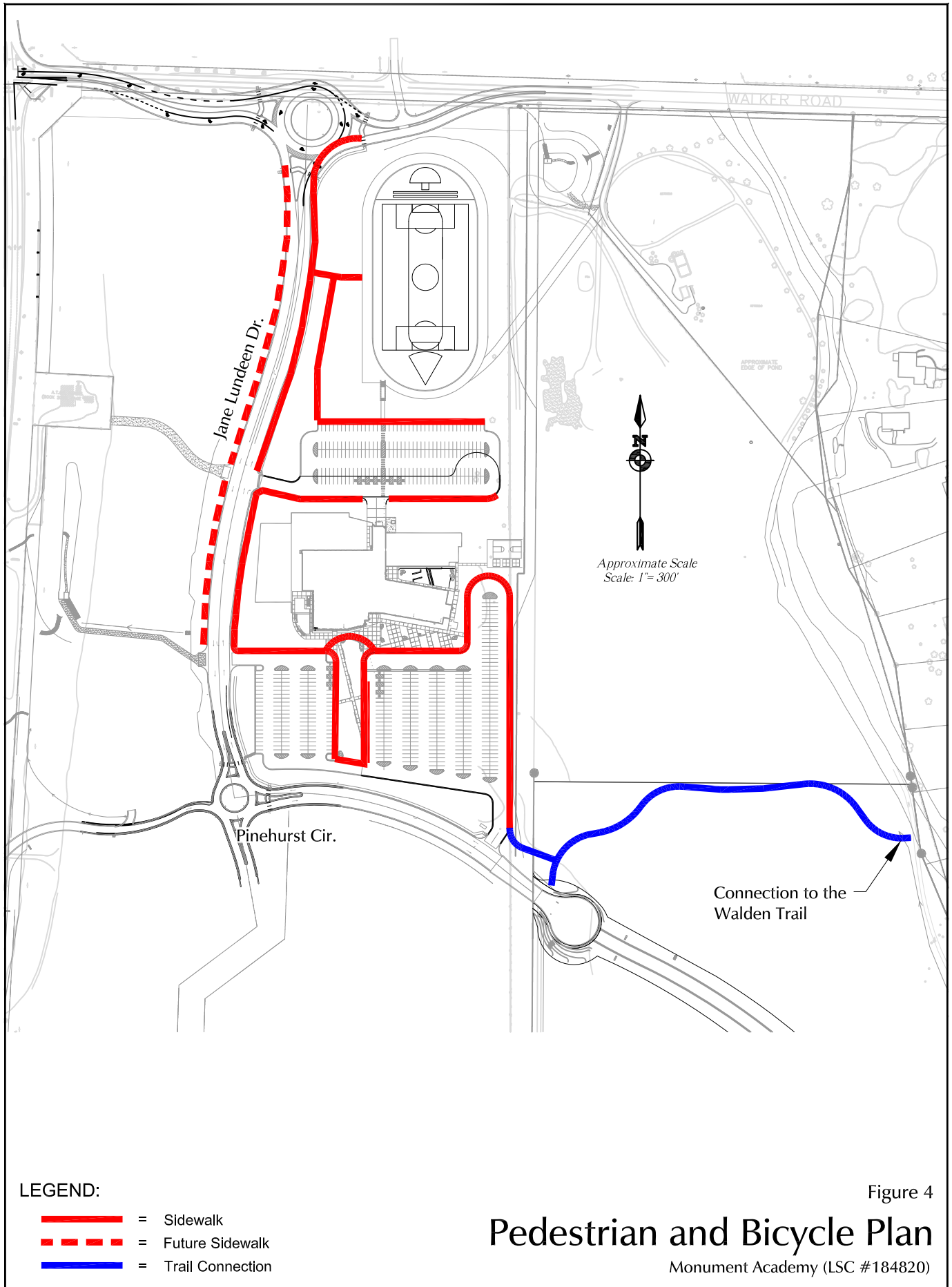












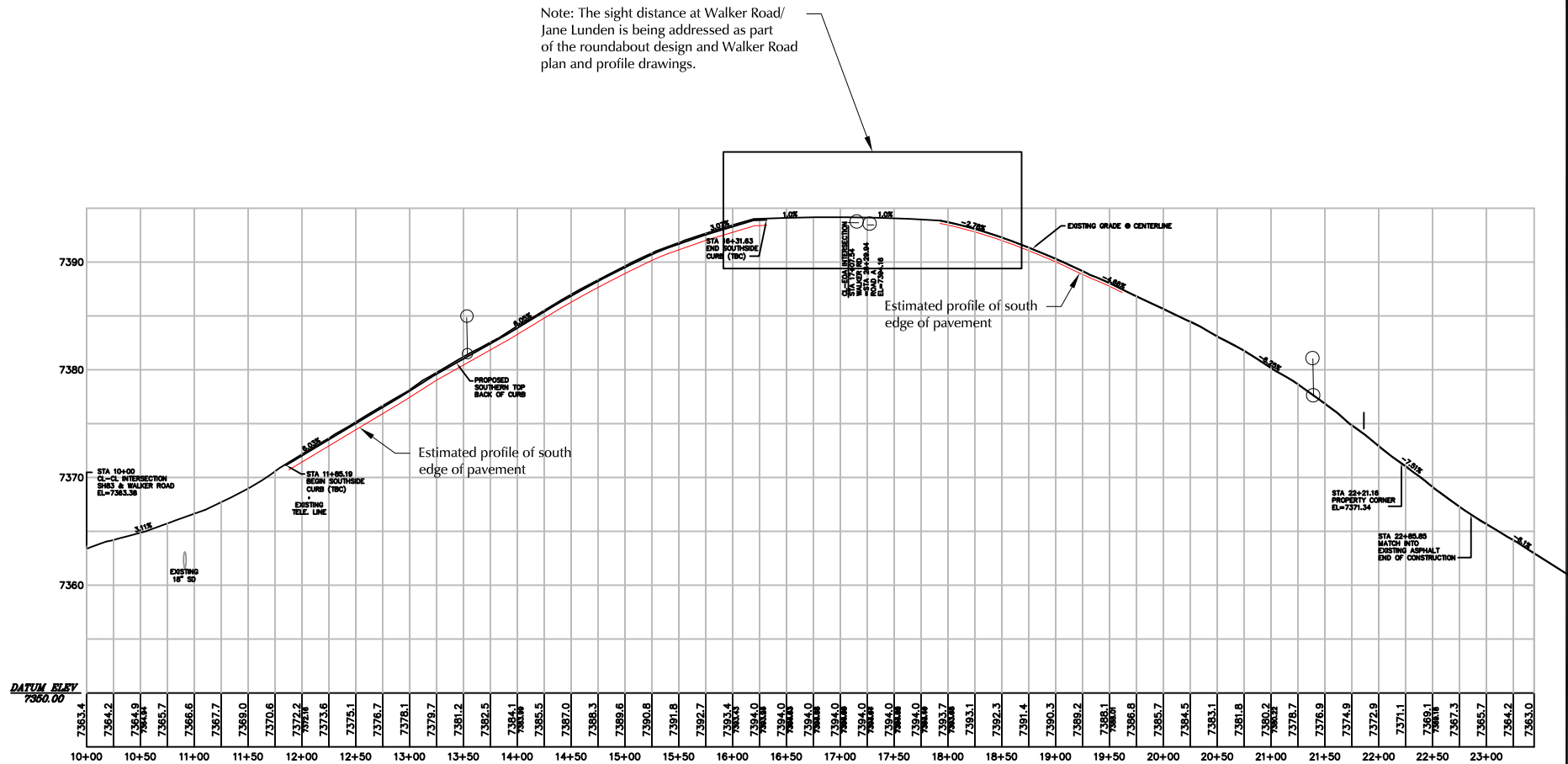


Figure 5  
**Existing Profile**  
**Walker and Jane Lunden**  
 Monument Academy (LSC #184820)

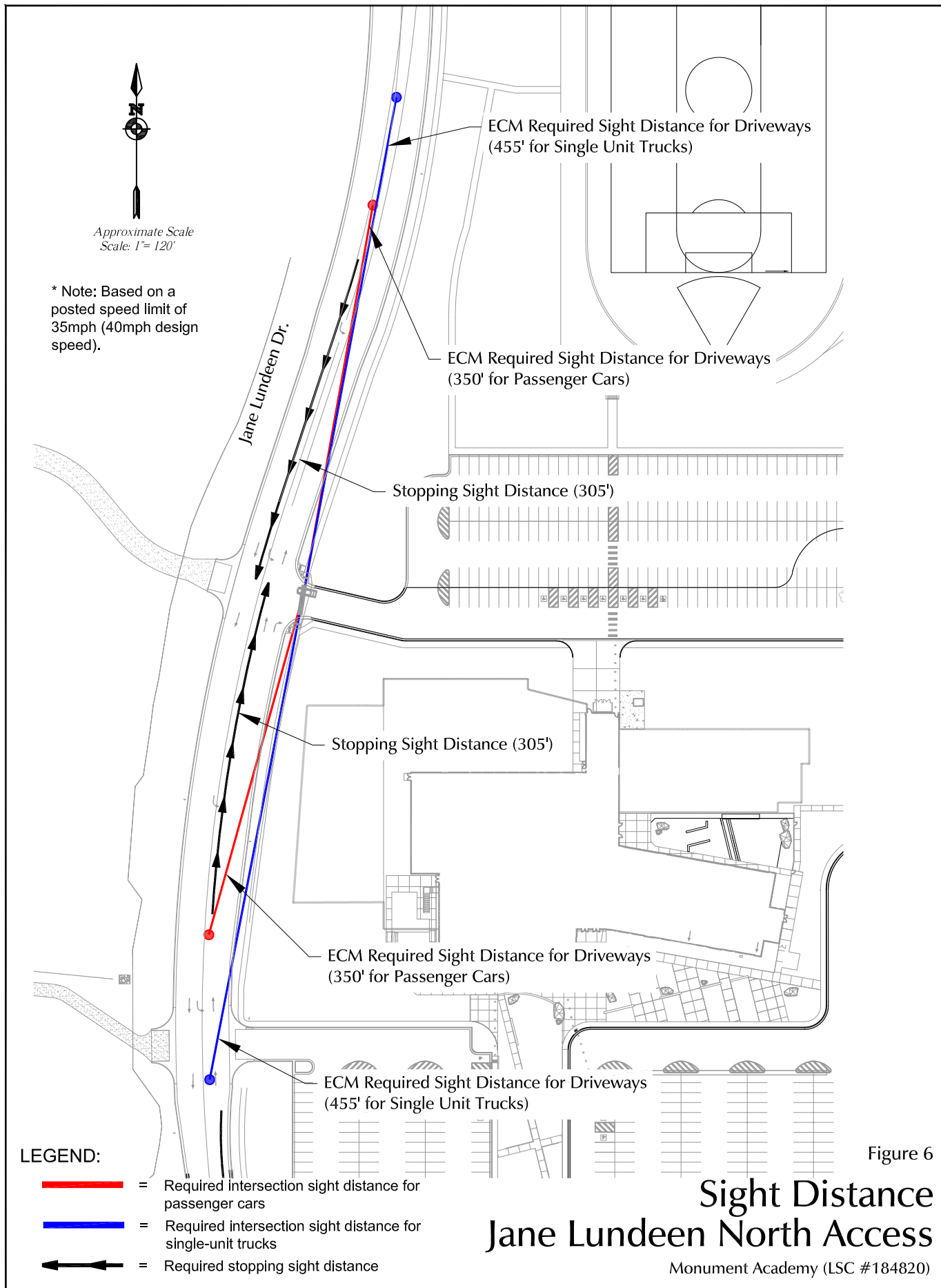
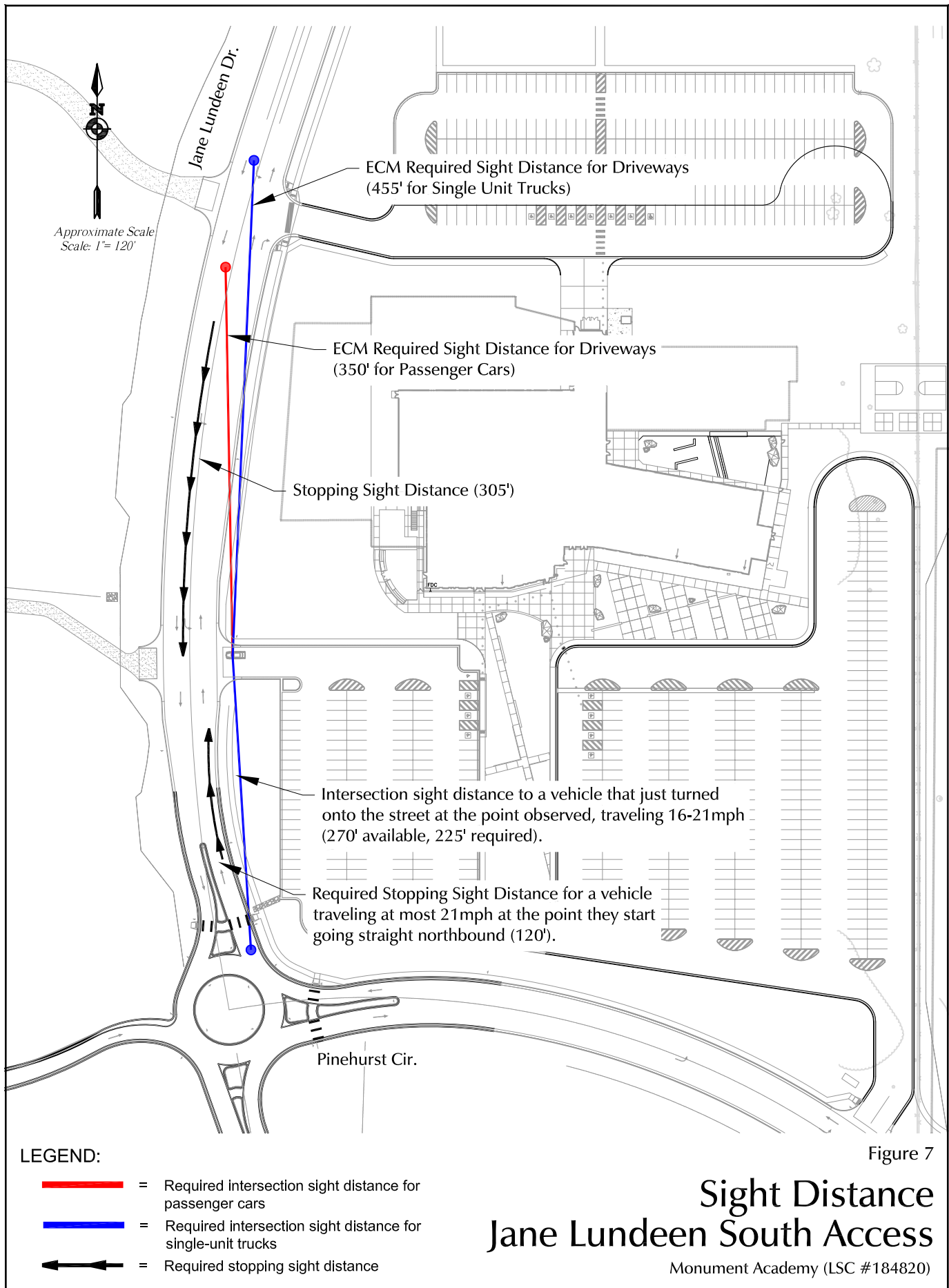


Figure 6



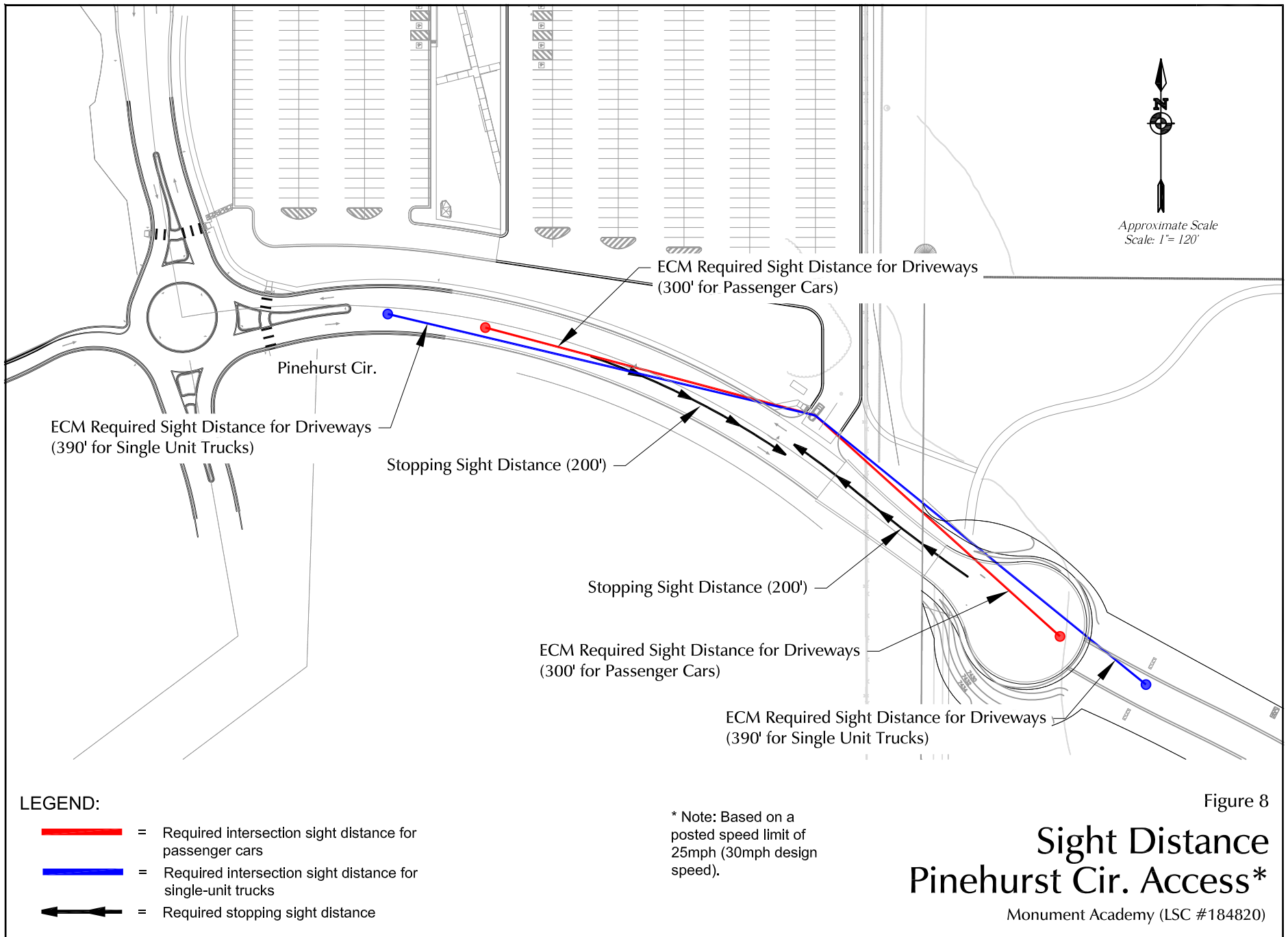


Figure 8

# Sight Distance Pinehurst Cir. Access\*

Monument Academy (LSC #184820)



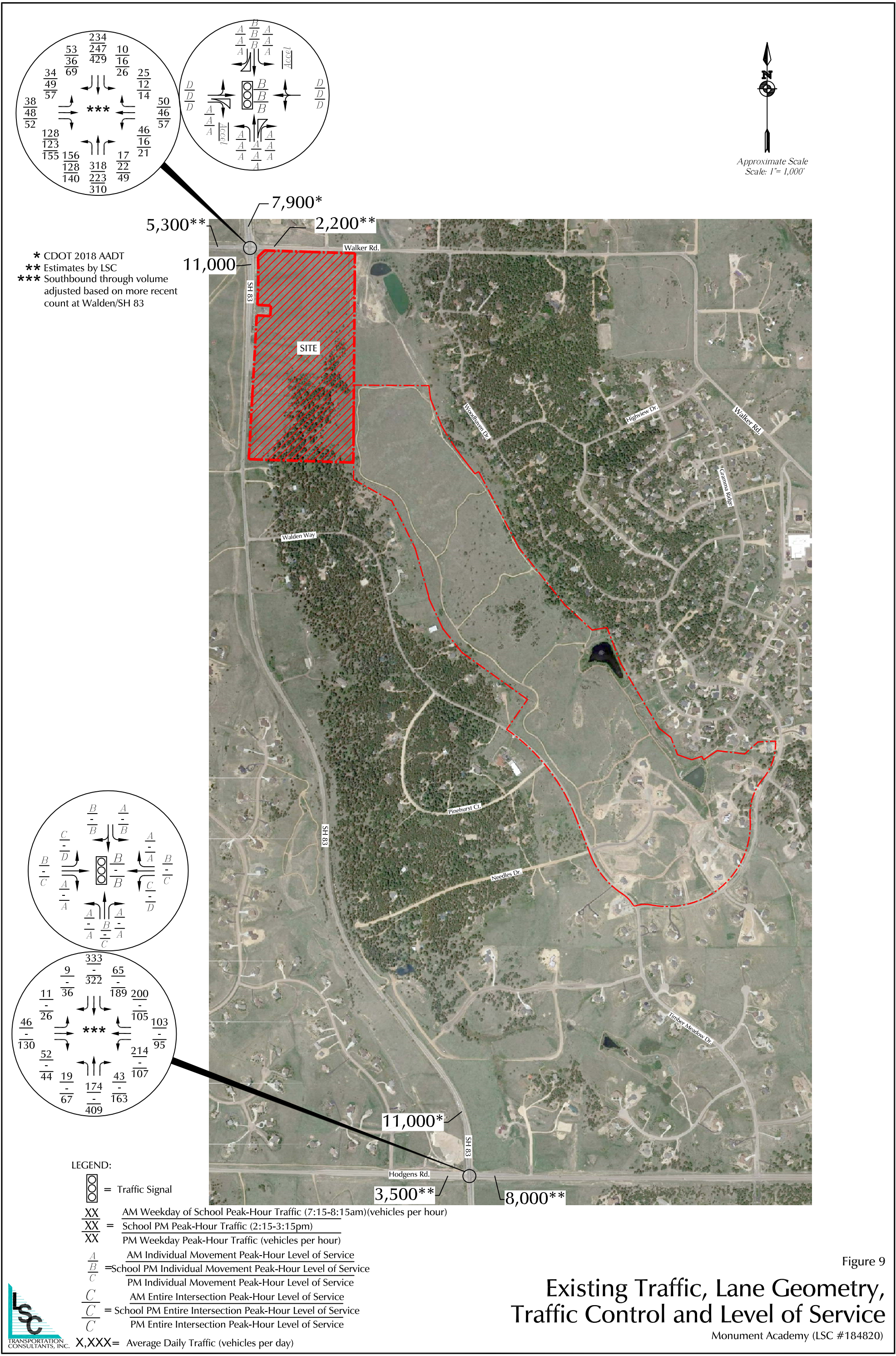
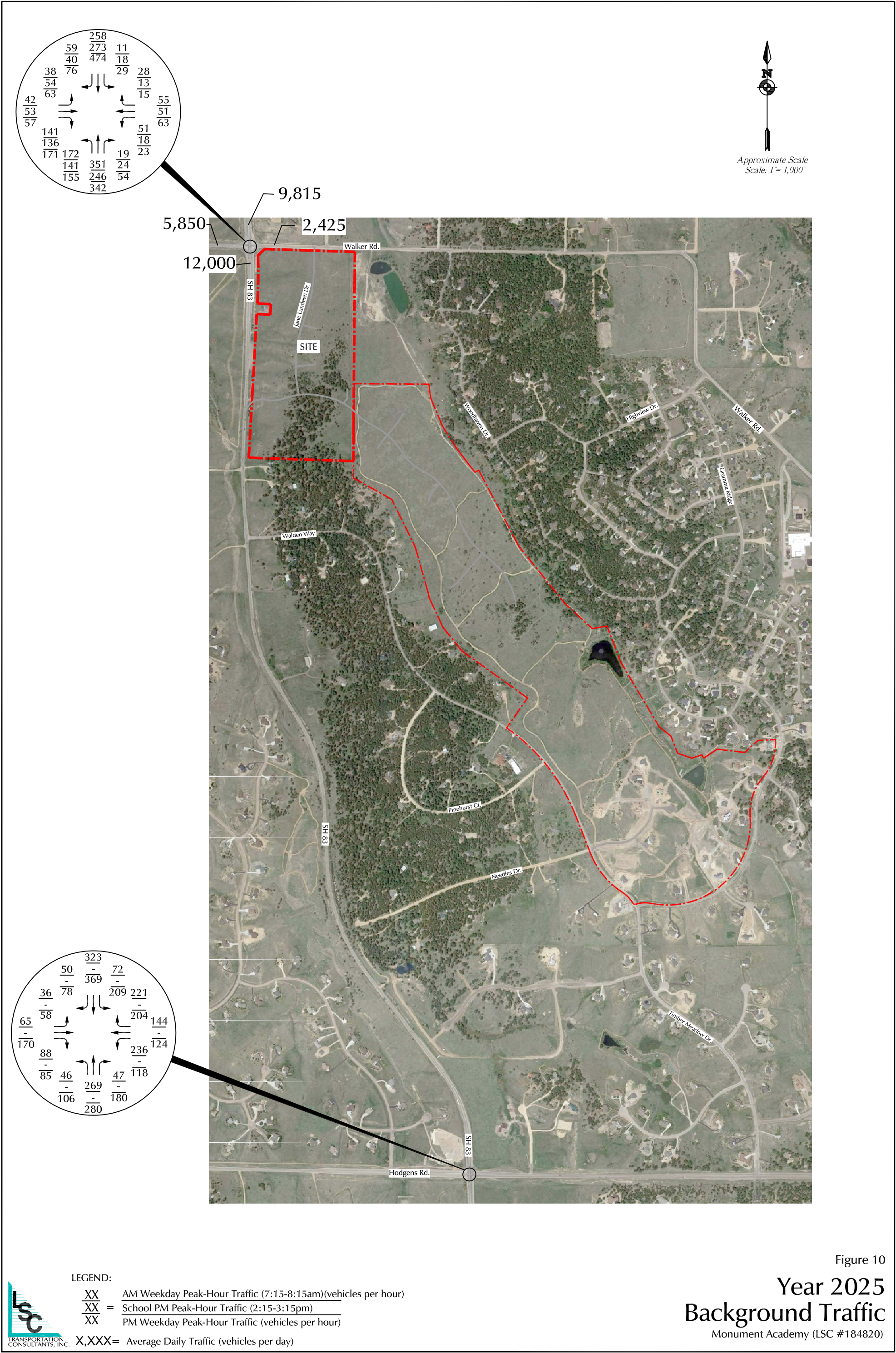


Figure 9

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

Monument Academy (LSC #184820)

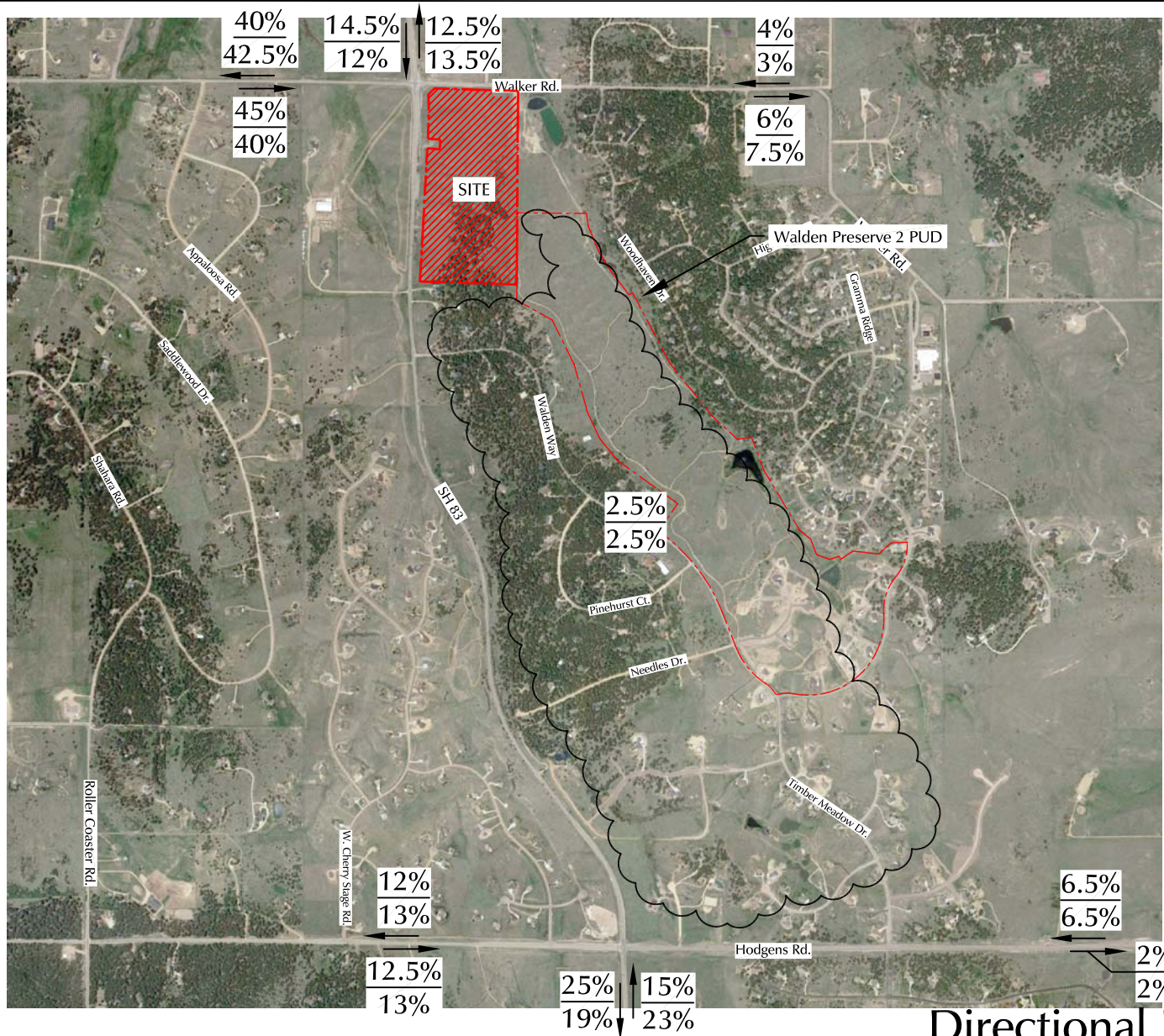











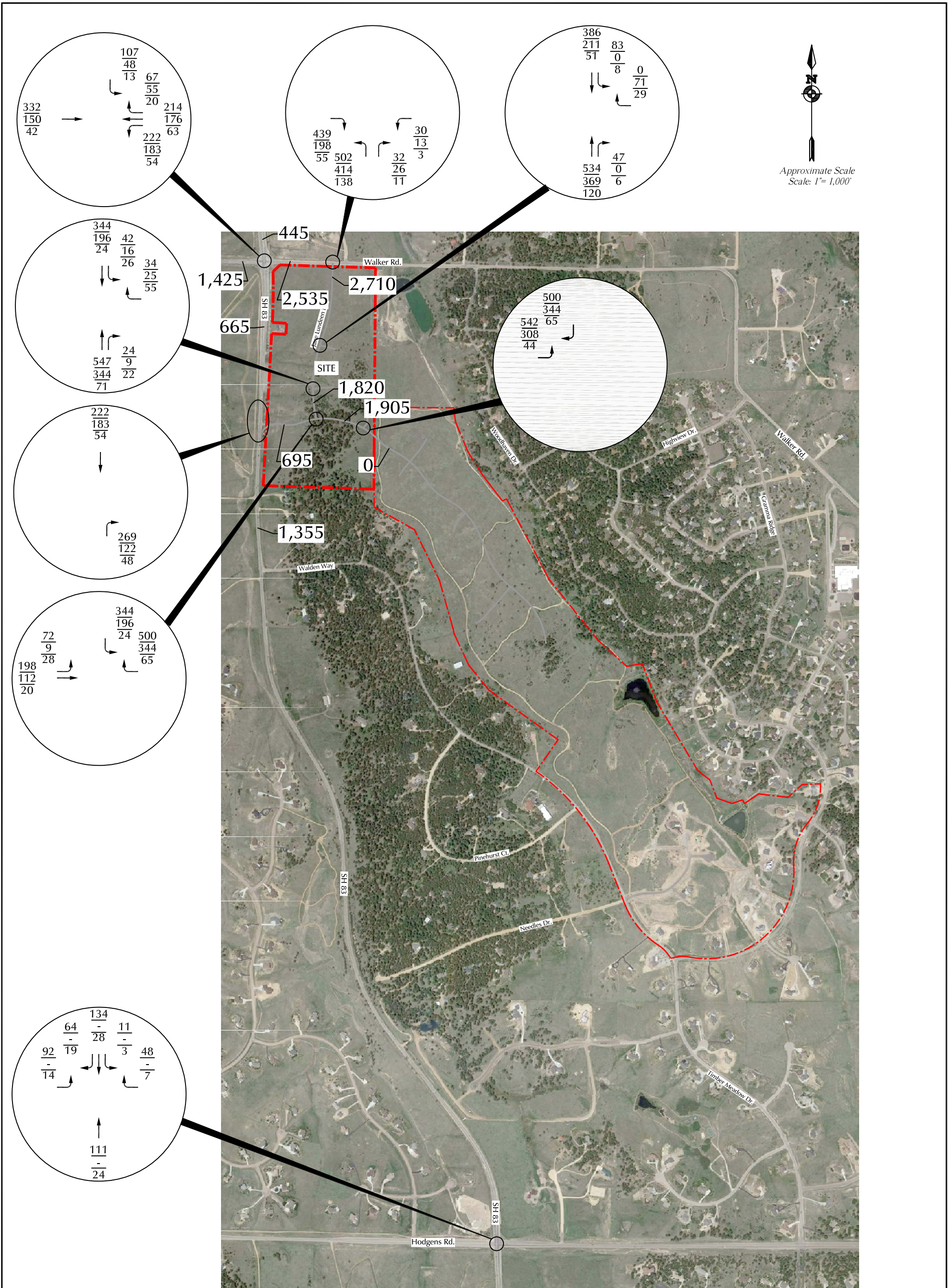


  
 Approximate Scale  
 Scale: 1" = 2,000'

LEGEND:  
  $\frac{XX\%}{XX\%}$  = AM Percent Directional Distribution  
 PM Percent Directional Distribution

Figure 12  
**Directional Distribution  
 of Site-Generated Traffic**  
 Monument Academy (LSC #184820)





LEGEND:

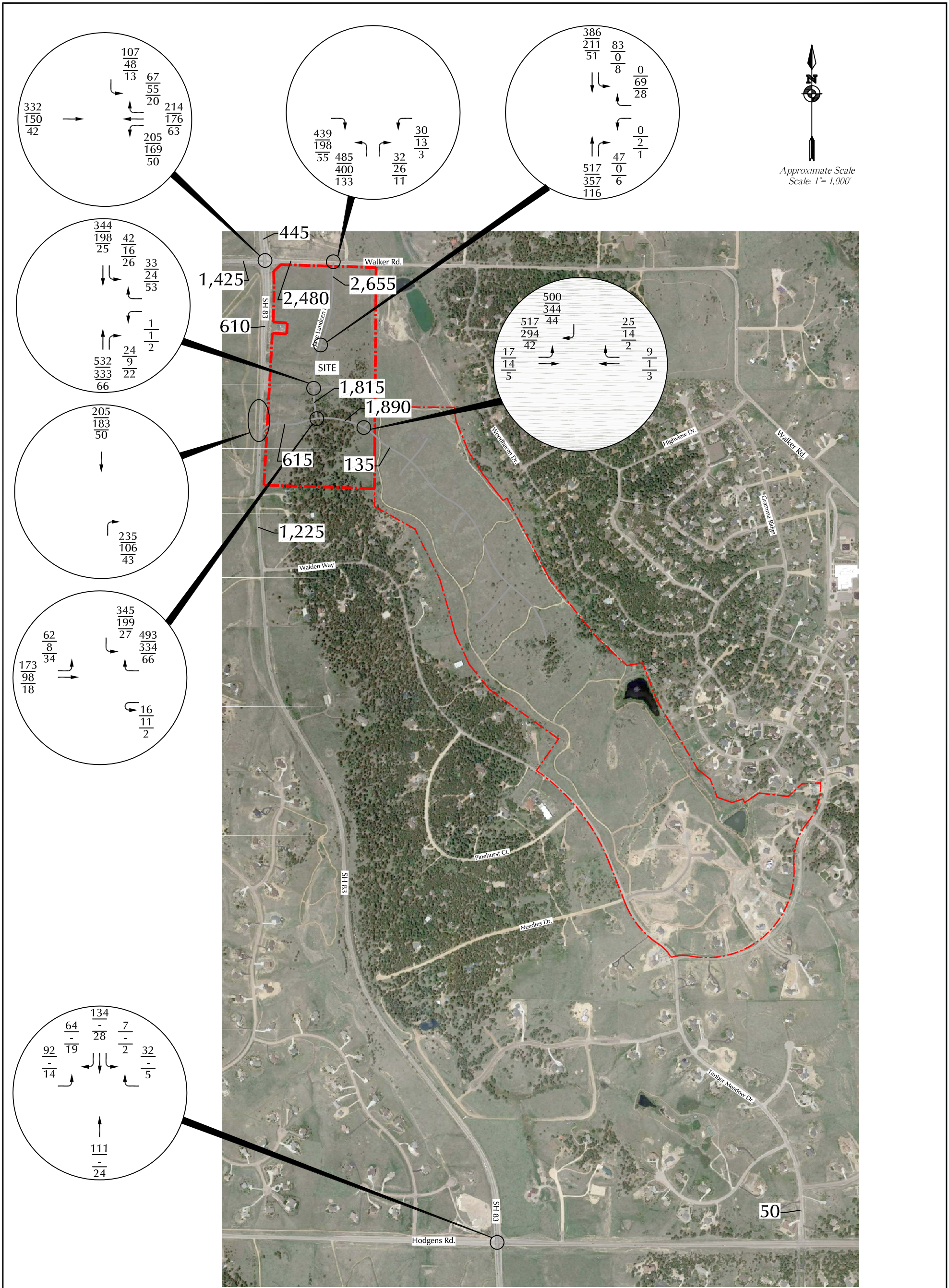
$\frac{XX}{XX}$	AM Weekday Peak-Hour Traffic (7:15-8:15am)(vehicles per hour)
$\frac{XX}{XX}$	School Peak-Hour Traffic (2:15-3:15pm)
$\frac{XX}{XX}$	PM Weekday Peak-Hour Traffic (vehicles per hour)
X,XXX=	Average Daily Traffic (vehicles per day)

Figure 13

## Short-Term Assignment of Phases 1 and 2 Site-Generated Traffic

Monument Academy (LSC #184820)





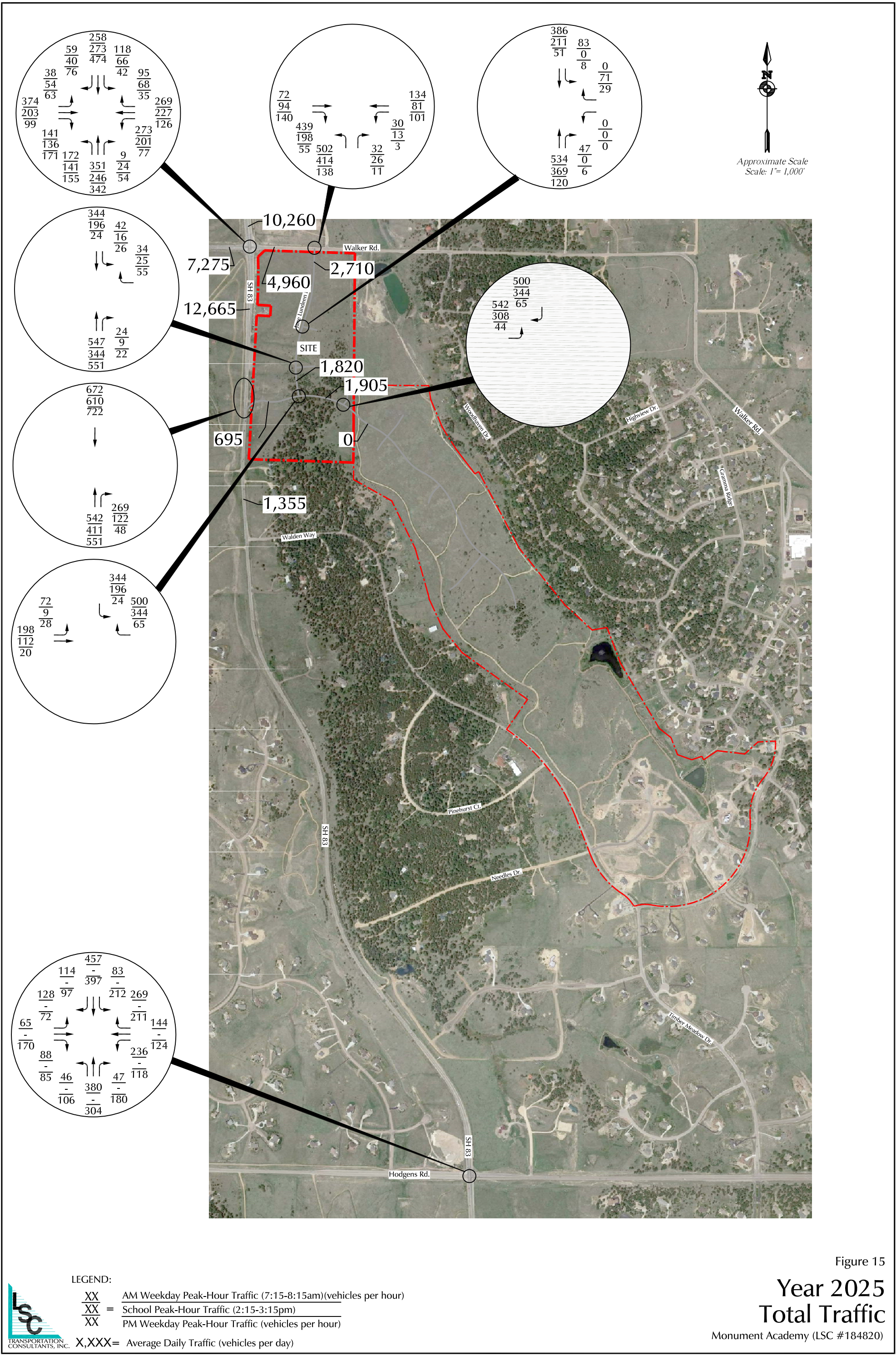
LEGEND:

- XX AM Weekday Peak-Hour Traffic (7:15-8:15am)(vehicles per hour)  
 XX = School Peak-Hour Traffic (2:15-3:15pm)  
 XX PM Weekday Peak-Hour Traffic (vehicles per hour)  
 X,XXX= Average Daily Traffic (vehicles per day)



Figure 14  
**Long-Term Assignment of  
 Phase 1 and 2 Site-Generated Traffic**  
 Monument Academy (LSC #184820)







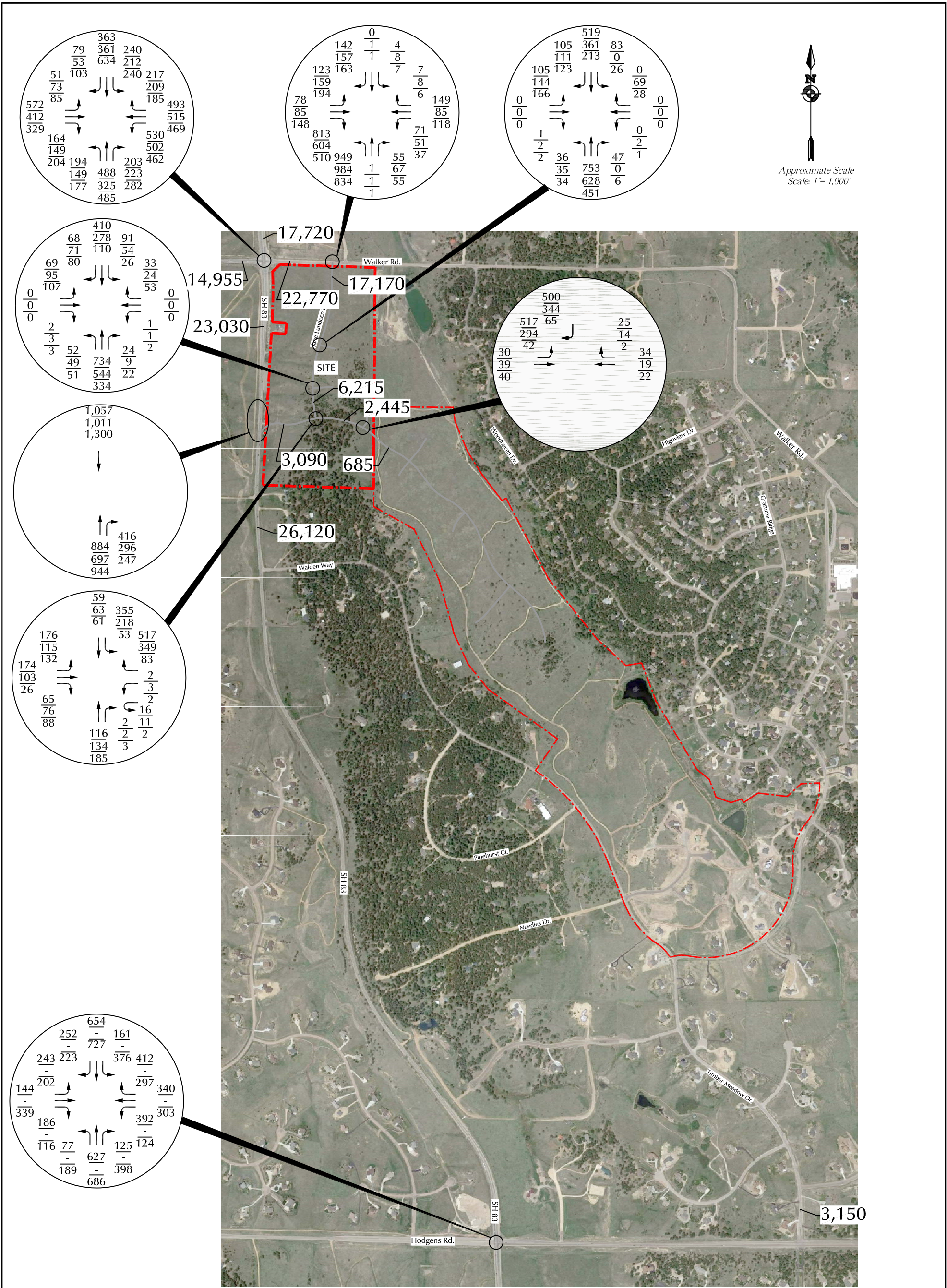
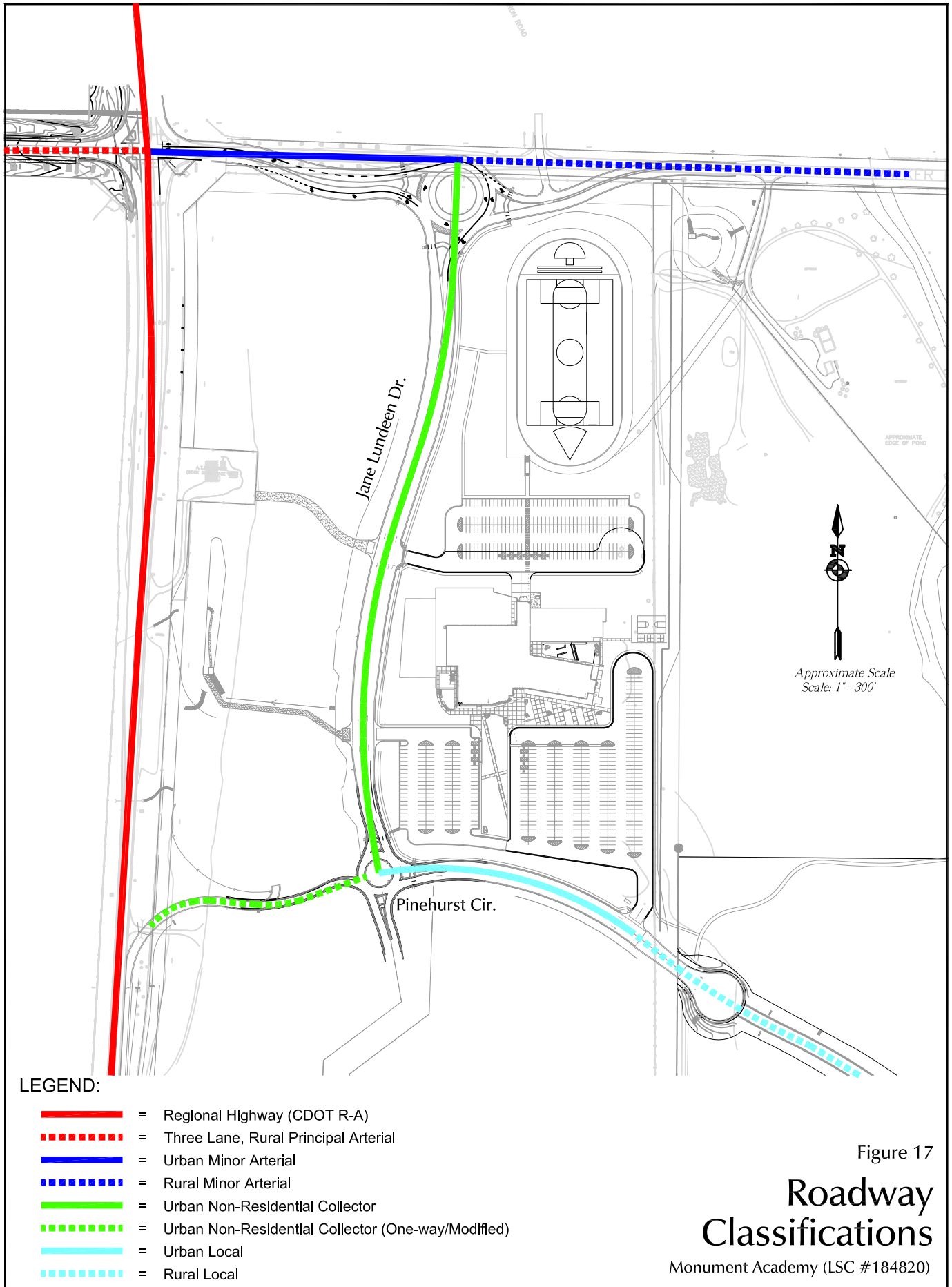


Figure 16

# Year 2040 Total Traffic

Monument Academy (LSC #184820)





# Laneage Exhibits

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School Phases 1&2 Total Traffic Proposed:  
(With Staggered Start Times)

## School Phases 1 & 2 Recommended Lane & Intersection Improvements (conceptual)

Phases 1&2 + Existing Traffic (Staggered Start Times)  
AM Peak Hour

Construct eastbound left  
turn lane 300' plus  
abbreviated reverse curve  
bay taper (about 75')

See Figure 1 (follows this figure)  
Proposed 180' ICD Interim Roundabout

SH 105

Walker Rd

SH 83

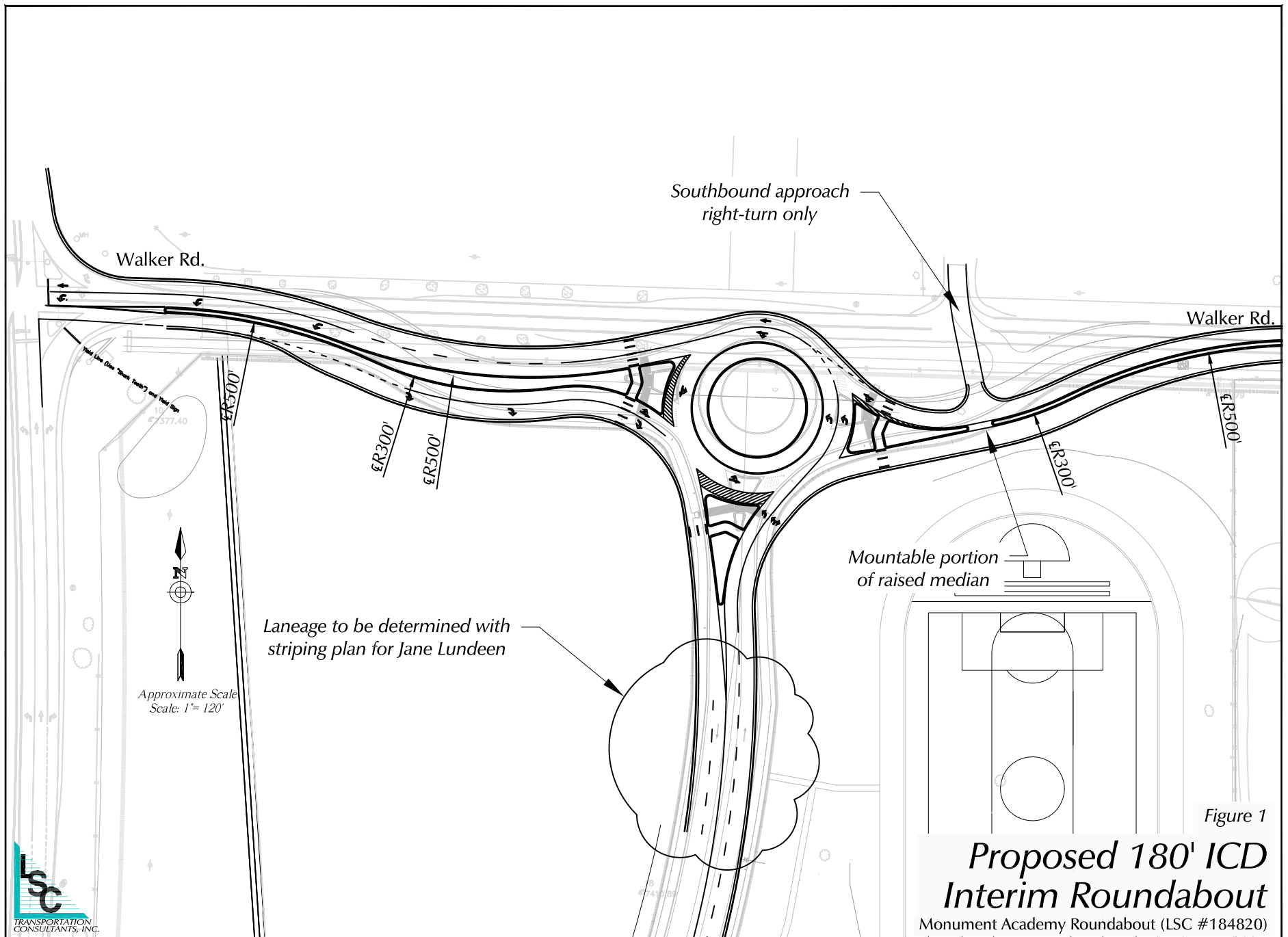
Jane Lundeen

### Queue Lengths

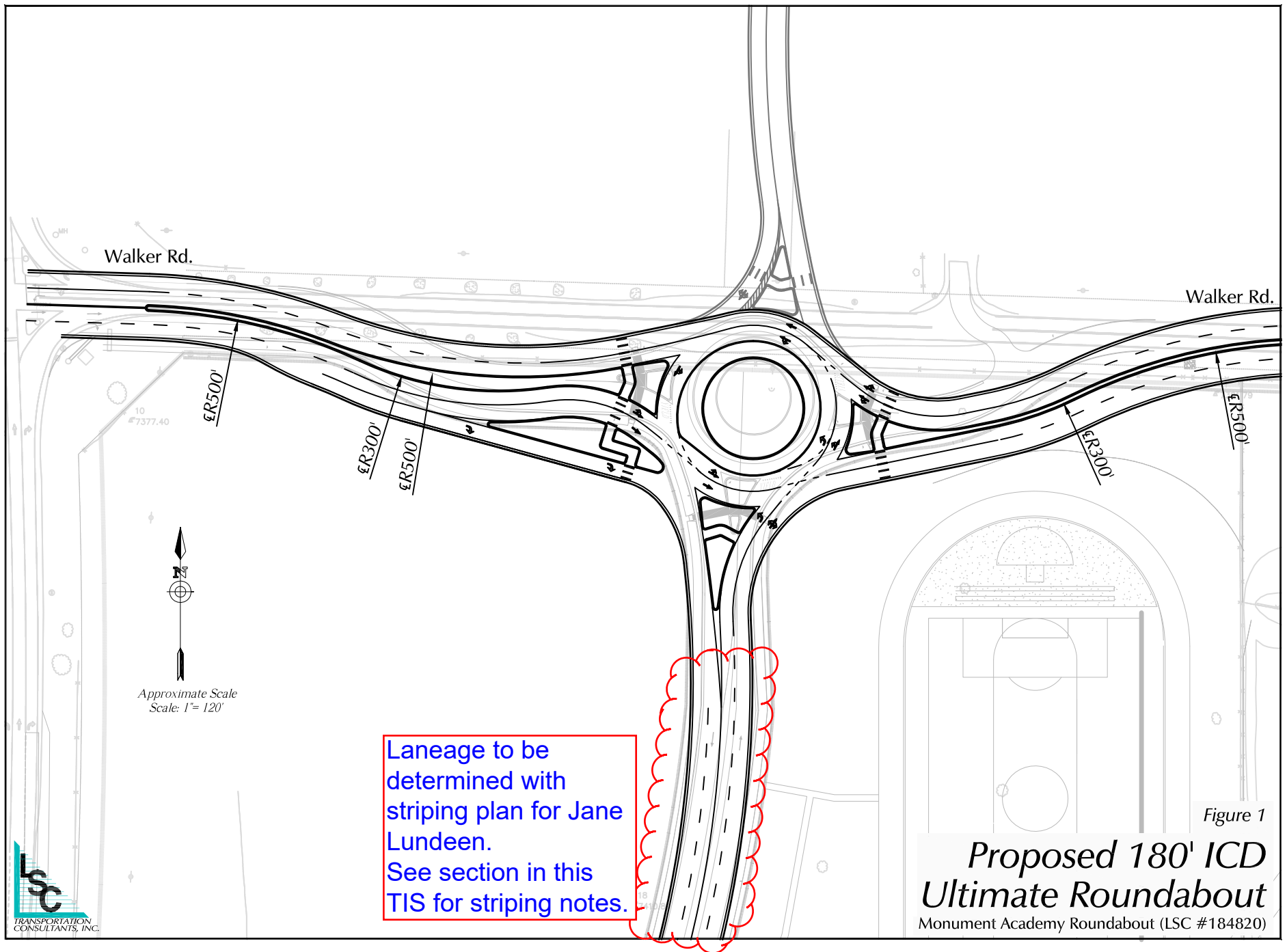
All Intervals

Color	Queue Type
	Average
	95th Percentile
	Max Observed

Pinehurst connection to SH 83  
(Right-in-Only connection) not  
depicted - construct 400'  
northbound right turn  
deceleration lane with 300'  
taper.







# Traffic Counts

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# LSC Transportation Consultants, Inc.

545 E Pikes Peak Ave, Suite 210

Colorado Springs, CO 80905

719-633-2868

File Name : Hwy 83 - Walden Way AM 11-18

Site Code : 184820

Start Date : 11/29/2018

Page No : 1

## Groups Printed- Unshifted

	Hwy 83 Southbound				Walden Way Westbound				Hwy 83 Northbound				Eastbound				Int. Total
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
06:30	0	85	0	0	0	0	4	0	0	91	0	0	0	0	0	0	180
06:45	1	92	0	0	1	0	5	0	0	108	0	0	0	0	0	0	207
Total	1	177	0	0	1	0	9	0	0	199	0	0	0	0	0	0	387
07:00	1	94	0	0	1	0	2	0	0	103	1	0	0	0	0	0	202
07:15	1	114	0	0	1	0	4	0	0	108	0	0	0	0	0	0	228
07:30	1	103	0	0	2	0	6	0	0	104	0	0	0	0	0	0	216
07:45	6	117	0	0	1	0	3	0	0	102	0	0	0	0	0	0	229
Total	9	428	0	0	5	0	15	0	0	417	1	0	0	0	0	0	875
08:00	3	83	0	0	0	0	4	0	0	108	1	0	0	0	0	0	199
08:15	0	101	0	0	1	0	1	0	0	121	0	0	0	0	0	0	224
Grand Total	13	789	0	0	7	0	29	0	0	845	2	0	0	0	0	0	1685
Apprch %	1.6	98.4	0	0	19.4	0	80.6	0	0	99.8	0.2	0	0	0	0	0	
Total %	0.8	46.8	0	0	0.4	0	1.7	0	0	50.1	0.1	0	0	0	0	0	

# LSC Transportation Consultants, Inc.

545 E Pikes Peak Ave, Suite 210

Colorado Springs, CO 80905

719-633-2868

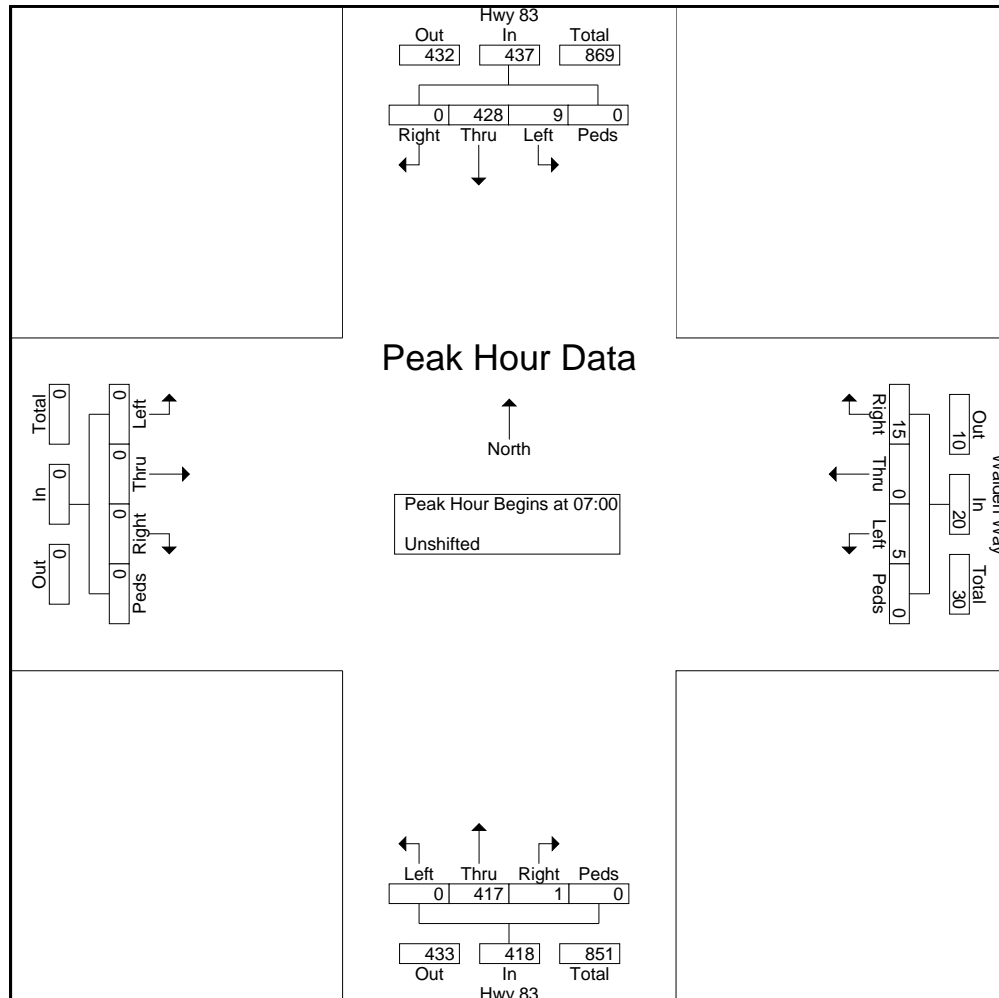
File Name : Hwy 83 - Walden Way AM 11-18

Site Code : 184820

Start Date : 11/29/2018

Page No : 2

	Hwy 83 Southbound					Walden Way Westbound					Hwy 83 Northbound					Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 06:30 to 08:15 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00																					
07:00	1	94	0	0	95	1	0	2	0	3	0	103	1	0	104	0	0	0	0	0	202
07:15	1	114	0	0	115	1	0	4	0	5	0	108	0	0	108	0	0	0	0	0	228
07:30	1	103	0	0	104	2	0	6	0	8	0	104	0	0	104	0	0	0	0	0	216
07:45	6	117	0	0	123	1	0	3	0	4	0	102	0	0	102	0	0	0	0	0	229
Total Volume	9	428	0	0	437	5	0	15	0	20	0	417	1	0	418	0	0	0	0	0	875
% App. Total	2.1	97.9	0	0		25	0	75	0		0	99.8	0.2	0		0	0	0	0		
PHF	.375	.915	.000	.000	.888	.625	.000	.625	.000	.625	.000	.965	.250	.000	.968	.000	.000	.000	.000	.000	.955



**LSC Transportation Consultants, Inc.**

545 E Pikes Peak Ave, Suite 210

Colorado Springs, CO 80905

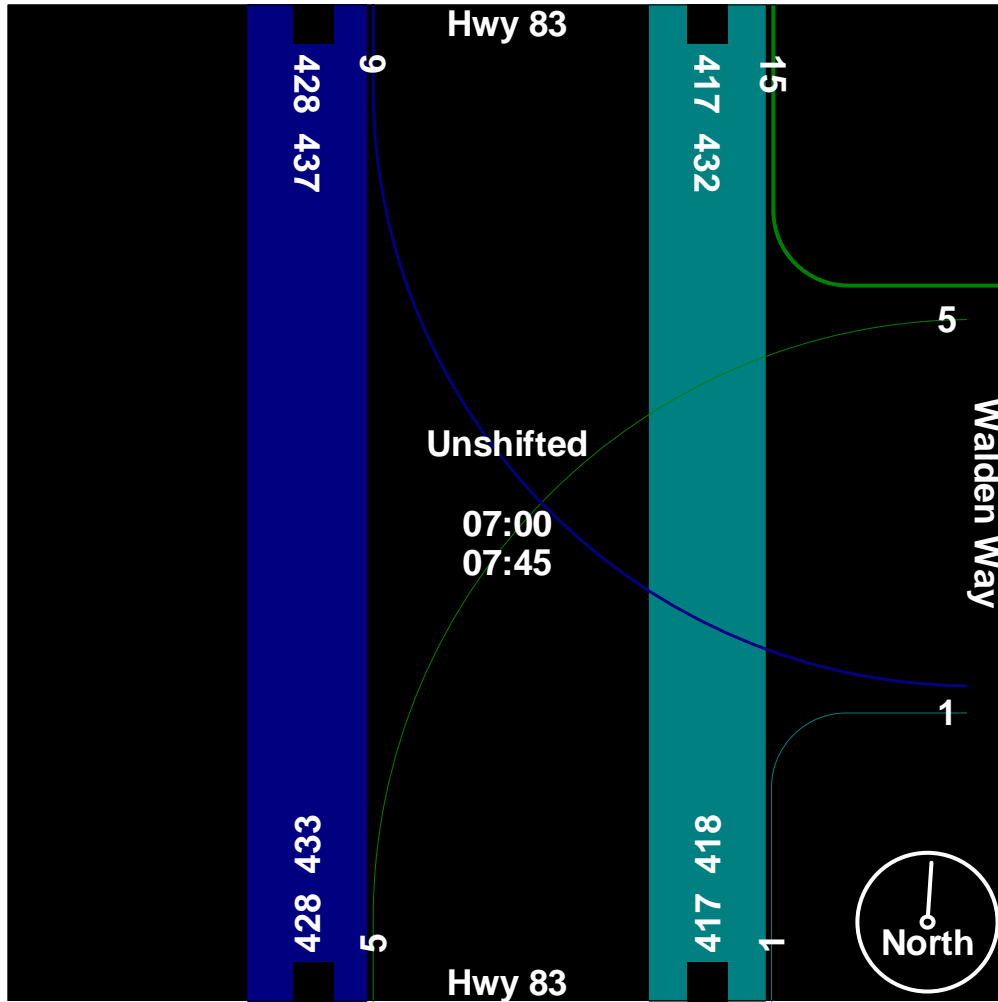
719-633-2868

File Name : Hwy 83 - Walden Way AM 11-18

Site Code : 184820

Start Date : 11/29/2018

Page No : 3





# LSC Transportation Consultants, Inc.

545 E Pikes Peak Ave, Suite 210

Colorado Springs, CO 80905

719-633-2868

File Name : Hwy 83 - Walden Way PM 11-18

Site Code : 184820

Start Date : 11/29/2018

Page No : 1

## Groups Printed- Unshifted

	Hwy 83 Southbound				Walden Way Westbound				Hwy 83 Northbound				Eastbound				
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Int. Total
16:00	3	157	0	0	3	0	2	0	0	109	0	0	0	0	0	0	274
16:15	0	149	0	0	1	0	2	0	0	96	2	0	0	0	0	0	250
16:30	1	149	0	0	0	0	5	0	0	126	1	0	0	0	0	0	282
16:45	2	129	0	0	1	0	4	0	0	108	1	0	0	0	0	0	245
Total	6	584	0	0	5	0	13	0	0	439	4	0	0	0	0	0	1051
17:00	8	169	0	0	0	0	2	0	0	126	0	0	0	0	0	0	305
17:15	0	147	0	0	0	0	0	0	0	117	2	0	0	0	0	0	266
17:30	1	146	0	0	0	0	5	0	0	105	0	0	0	0	0	0	257
17:45	2	134	0	0	0	0	1	0	0	89	0	0	0	0	0	0	226
Total	11	596	0	0	0	0	8	0	0	437	2	0	0	0	0	0	1054
Grand Total	17	1180	0	0	5	0	21	0	0	876	6	0	0	0	0	0	2105
Apprch %	1.4	98.6	0	0	19.2	0	80.8	0	0	99.3	0.7	0	0	0	0	0	
Total %	0.8	56.1	0	0	0.2	0	1	0	0	41.6	0.3	0	0	0	0	0	

# LSC Transportation Consultants, Inc.

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Colorado Springs, CO 80905

719-633-2868

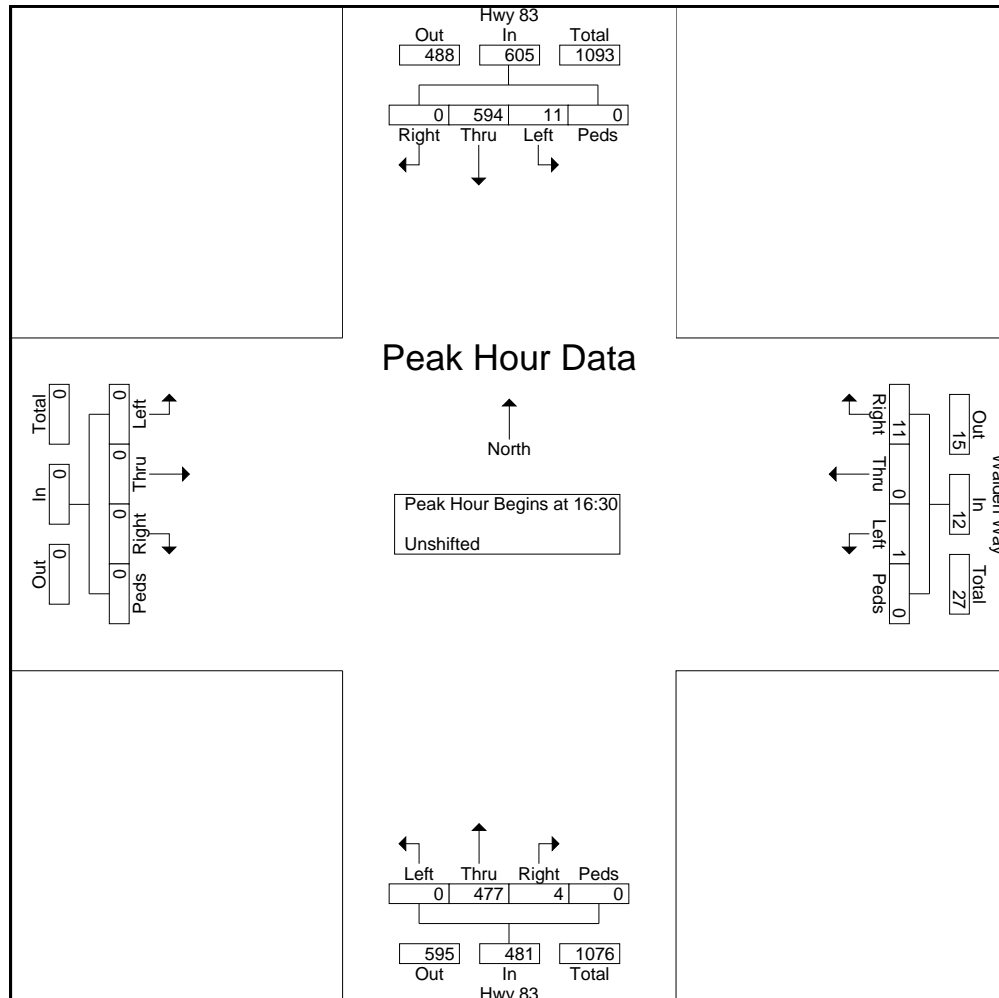
File Name : Hwy 83 - Walden Way PM 11-18

Site Code : 184820

Start Date : 11/29/2018

Page No : 2

	Hwy 83 Southbound					Walden Way Westbound					Hwy 83 Northbound					Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 16:30																					
16:30	1	149	0	0	150	0	0	5	0	5	0	126	1	0	127	0	0	0	0	0	282
16:45	2	129	0	0	131	1	0	4	0	5	0	108	1	0	109	0	0	0	0	0	245
17:00	8	169	0	0	177	0	0	2	0	2	0	126	0	0	126	0	0	0	0	0	305
17:15	0	147	0	0	147	0	0	0	0	0	0	117	2	0	119	0	0	0	0	0	266
Total Volume	11	594	0	0	605	1	0	11	0	12	0	477	4	0	481	0	0	0	0	0	1098
% App. Total	1.8	98.2	0	0		8.3	0	91.7	0		0	99.2	0.8	0		0	0	0	0		
PHF	.344	.879	.000	.000	.855	.250	.000	.550	.000	.600	.000	.946	.500	.000	.947	.000	.000	.000	.000	.000	.900



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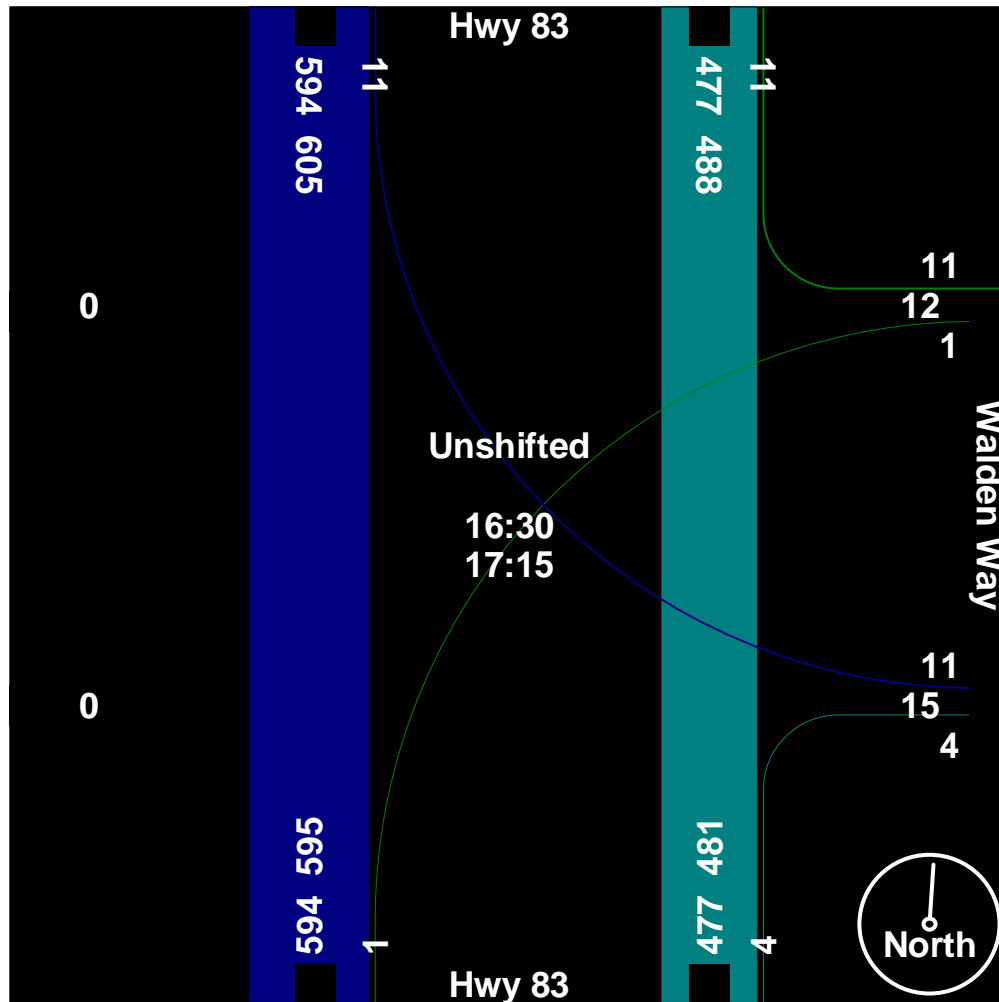
719-633-2868

File Name : Hwy 83 - Walden Way PM 11-18

Site Code : 184820

Start Date : 11/29/2018

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# LSC Transportation Consultants, Inc.

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719-633-2868

File Name : Hwy 83 - Walker Rd AM

Site Code : 184820

Start Date : 8/29/2018

Page No : 1

## Groups Printed- Unshifted

	Hwy 83 Southbound				Walker rd Westbound				Hwy 83 Northbound				CR 105 Eastbound				
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Int. Total
06:30	2	46	5	0	9	9	2	0	17	72	1	0	3	1	19	0	186
06:45	0	52	11	0	10	21	8	0	34	97	1	0	4	0	23	0	261
Total	2	98	16	0	19	30	10	0	51	169	2	0	7	1	42	0	447
07:00	3	60	20	0	8	30	13	0	39	95	2	0	7	3	37	0	317
07:15	4	63	26	0	17	18	10	0	45	107	0	0	8	5	32	0	335
07:30	1	67	9	0	13	18	6	0	51	61	5	0	16	16	42	0	305
07:45	3	54	9	0	8	9	6	0	32	76	7	0	2	10	40	0	256
Total	11	244	64	0	46	75	35	0	167	339	14	0	33	34	151	0	1213
08:00	2	50	9	0	8	5	3	0	28	74	5	0	8	7	14	0	213
08:15	3	50	8	0	2	11	1	0	38	75	9	0	5	7	10	0	219
Grand Total	18	442	97	0	75	121	49	0	284	657	30	0	53	49	217	0	2092
Apprch %	3.2	79.4	17.4	0	30.6	49.4	20	0	29.2	67.7	3.1	0	16.6	15.4	68	0	
Total %	0.9	21.1	4.6	0	3.6	5.8	2.3	0	13.6	31.4	1.4	0	2.5	2.3	10.4	0	

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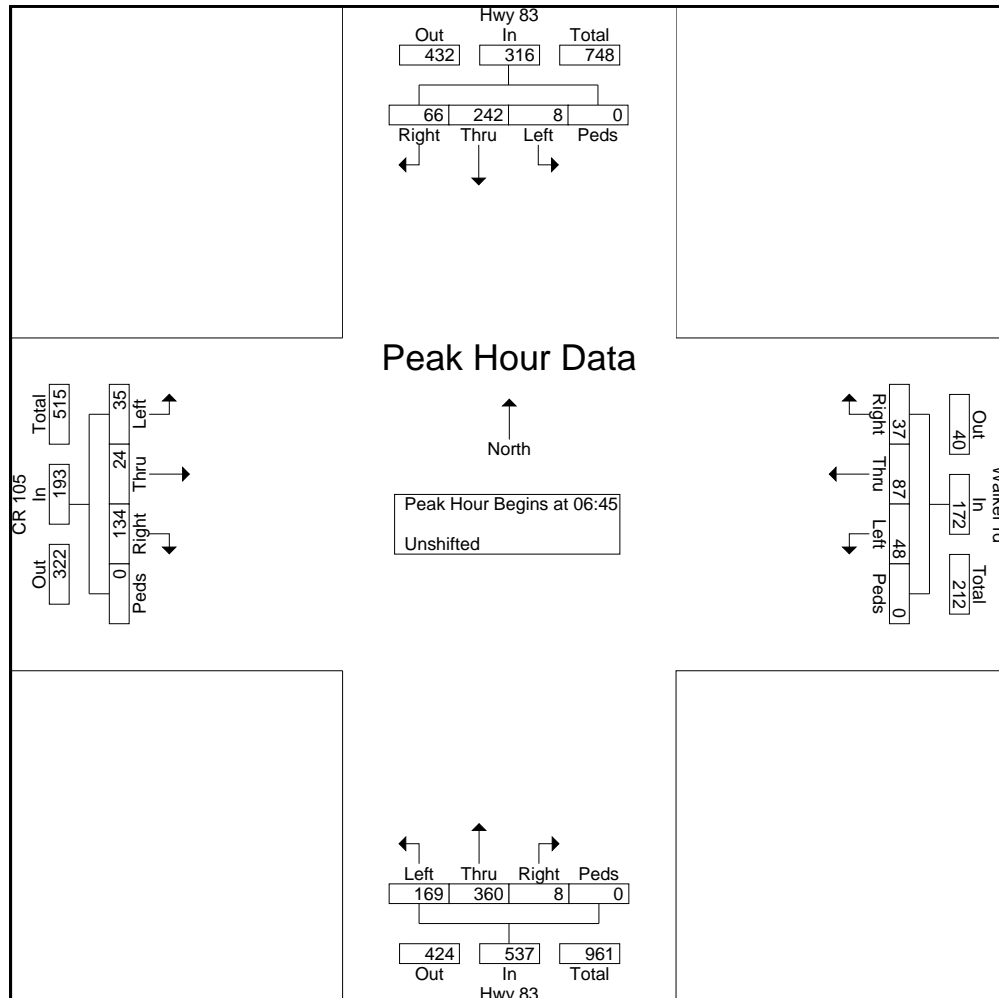
File Name : Hwy 83 - Walker Rd AM

Site Code : 184820

Start Date : 8/29/2018

Page No : 2

	Hwy 83 Southbound					Walker rd Westbound					Hwy 83 Northbound					CR 105 Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 06:30 to 08:15 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 06:45																					
06:45	0	52	11	0	63	10	21	8	0	39	34	97	1	0	132	4	0	23	0	27	261
07:00	3	60	20	0	83	8	30	13	0	51	39	95	2	0	136	7	3	37	0	47	317
07:15	4	63	26	0	93	17	18	10	0	45	45	107	0	0	152	8	5	32	0	45	335
07:30	1	67	9	0	77	13	18	6	0	37	51	61	5	0	117	16	16	42	0	74	305
Total Volume	8	242	66	0	316	48	87	37	0	172	169	360	8	0	537	35	24	134	0	193	1218
% App. Total	2.5	76.6	20.9	0		27.9	50.6	21.5	0		31.5	67	1.5	0		18.1	12.4	69.4	0		
PHF	.500	.903	.635	.000	.849	.706	.725	.712	.000	.843	.828	.841	.400	.000	.883	.547	.375	.798	.000	.652	.909



# LSC Transportation Consultants, Inc.

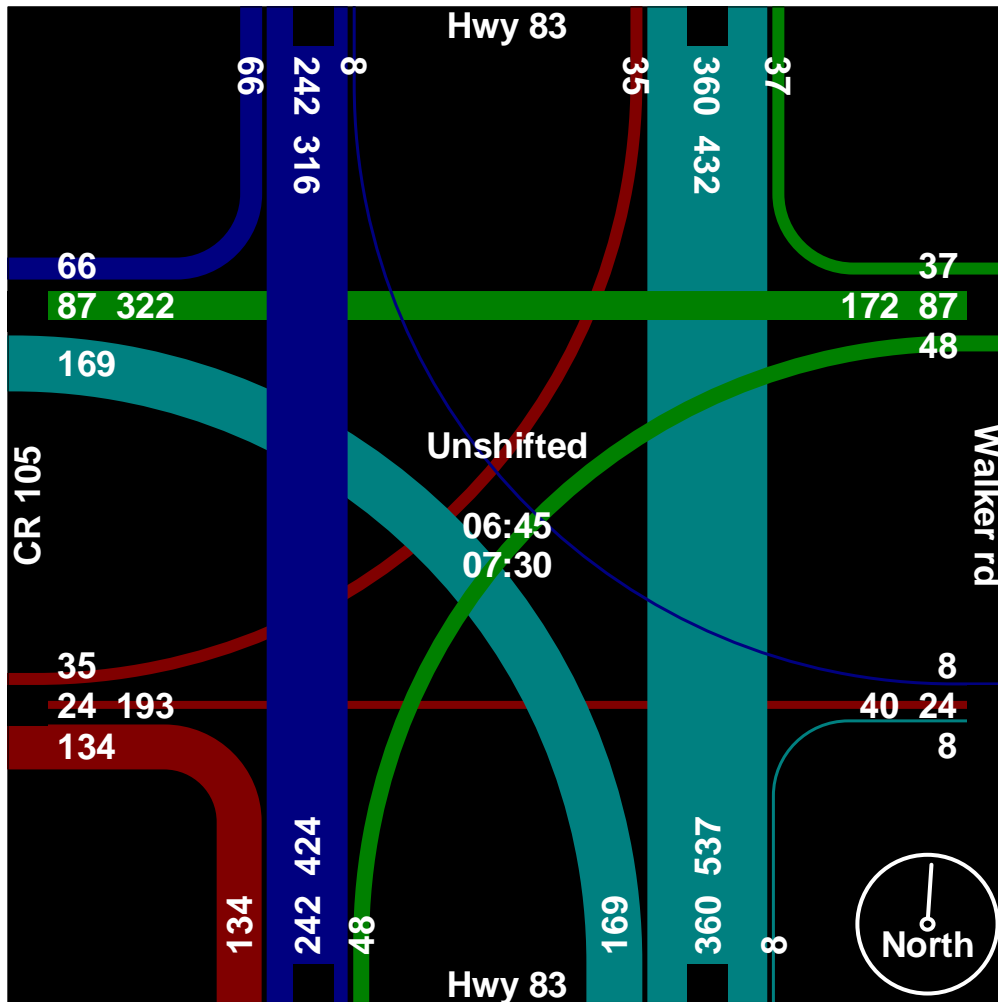
545 E Pikes Peak Ave, Suite 210  
Colorado Springs, CO 80905  
719-633-2868

File Name : Hwy 83 - Walker Rd AM

Site Code : 184820

Start Date : 8/29/2018

Page No : 3



# LSC Transportation Consultants, Inc.

545 E Pikes Peak Ave, Suite 210

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719-633-2868

File Name : Hwy 83 - Walker Rd Mid

Site Code : 00184820

Start Date : 9/5/2018

Page No : 1

## Groups Printed- Unshifted

	Hwy 83 Southbound				Walker Rd Westbound				Hwy 83 Northbound				CR 105 Eastbound				
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Int. Total
13:45	0	65	9	0	2	4	0	0	15	48	2	0	4	8	24	0	181
Total	0	65	9	0	2	4	0	0	15	48	2	0	4	8	24	0	181
14:00	4	75	11	0	3	16	2	0	22	62	6	0	9	10	29	0	249
14:15	3	69	13	0	5	15	5	0	33	44	6	0	9	4	32	0	238
14:30	3	56	3	0	3	9	3	0	33	57	4	0	8	16	33	0	228
14:45	5	61	10	0	4	11	2	0	31	61	6	0	16	14	29	0	250
Total	15	261	37	0	15	51	12	0	119	224	22	0	42	44	123	0	965
Grand Total	15	326	46	0	17	55	12	0	134	272	24	0	46	52	147	0	1146
Apprch %	3.9	84.2	11.9	0	20.2	65.5	14.3	0	31.2	63.3	5.6	0	18.8	21.2	60	0	
Total %	1.3	28.4	4	0	1.5	4.8	1	0	11.7	23.7	2.1	0	4	4.5	12.8	0	

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719-633-2868

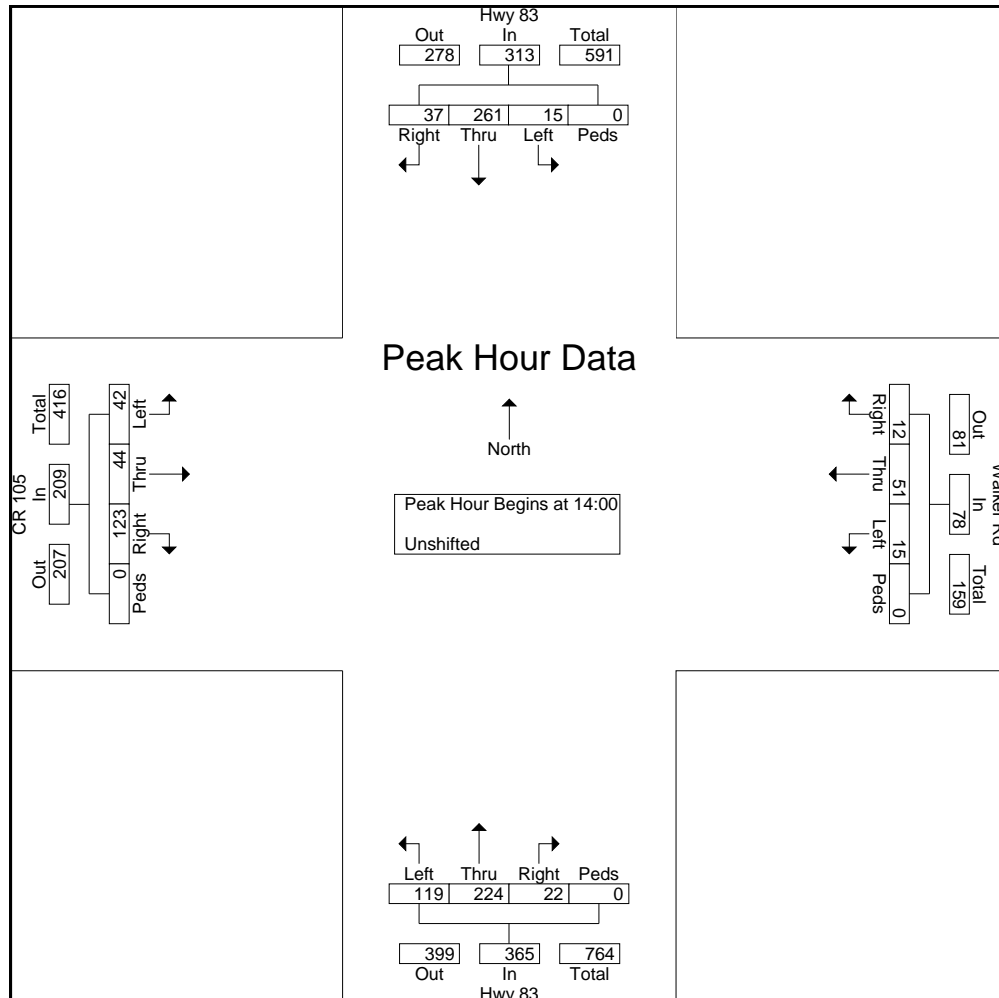
File Name : Hwy 83 - Walker Rd Mid

Site Code : 00184820

Start Date : 9/5/2018

Page No : 2

	Hwy 83 Southbound					Walker Rd Westbound					Hwy 83 Northbound					CR 105 Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 13:45 to 14:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 14:00																					
14:00	4	75	11	0	90	3	16	2	0	21	22	62	6	0	90	9	10	29	0	48	249
14:15	3	69	13	0	85	5	15	5	0	25	33	44	6	0	83	9	4	32	0	45	238
14:30	3	56	3	0	62	3	9	3	0	15	33	57	4	0	94	8	16	33	0	57	228
14:45	5	61	10	0	76	4	11	2	0	17	31	61	6	0	98	16	14	29	0	59	250
Total Volume	15	261	37	0	313	15	51	12	0	78	119	224	22	0	365	42	44	123	0	209	965
% App. Total	4.8	83.4	11.8	0		19.2	65.4	15.4	0		32.6	61.4	6	0		20.1	21.1	58.9	0		
PHF	.750	.870	.712	.000	.869	.750	.797	.600	.000	.780	.902	.903	.917	.000	.931	.656	.688	.932	.000	.886	.965





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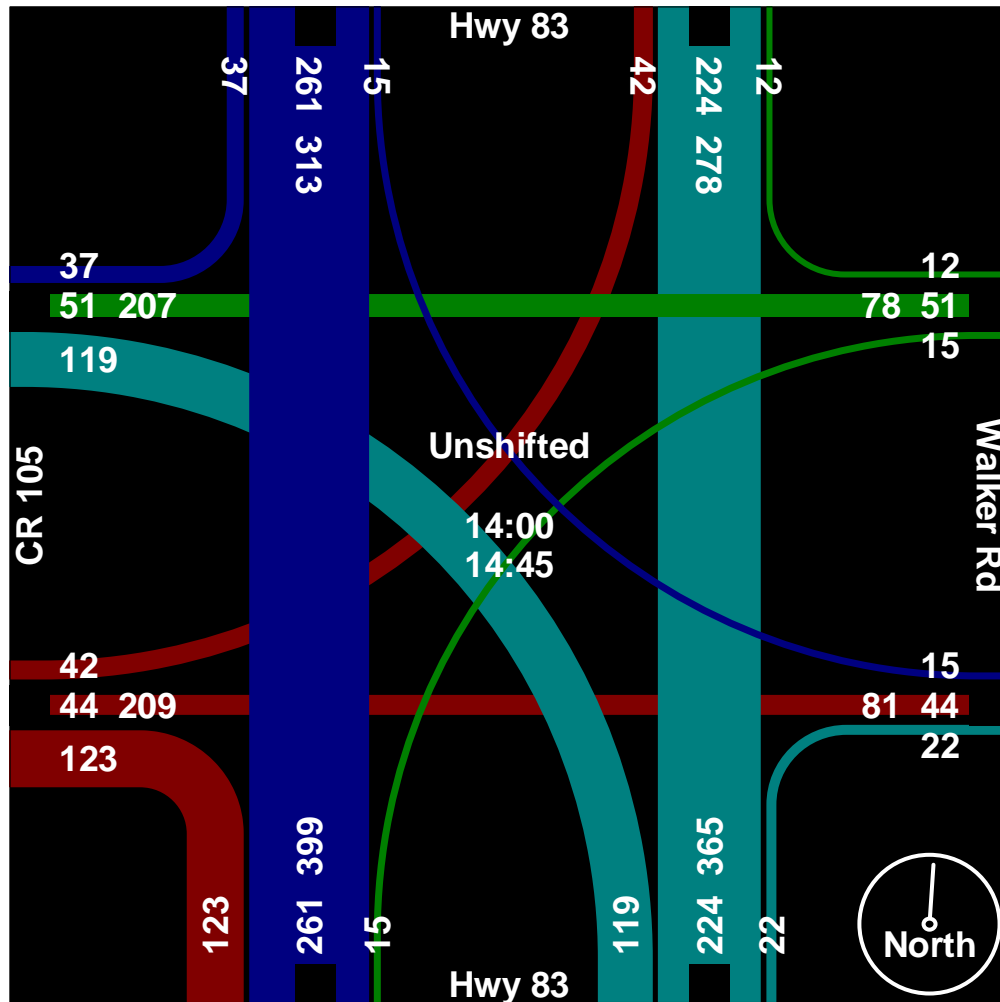
545 E Pikes Peak Ave, Suite 210  
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719-633-2868

File Name : Hwy 83 - Walker Rd Mid

Site Code : 00184820

Start Date : 9/5/2018

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# LSC Transportation Consultants, Inc.

545 E Pikes Peak Ave, Suite 210

Colorado Springs, CO 80905

719-633-2868

File Name : Hwy 83 - Walker Rd PM

Site Code : 184820

Start Date : 8/29/2018

Page No : 1

## Groups Printed- Unshifted

	Hwy 83 Southbound				Walker Rd Westbound				Hwy 83 Northbound				CR 195 Eastbound				
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Int. Total
16:15	3	89	15	0	8	12	1	0	31	98	5	0	11	21	49	0	343
16:30	5	96	16	0	12	14	1	0	30	106	6	0	12	22	54	0	374
16:45	4	101	18	0	6	11	1	0	36	80	7	0	18	17	34	0	333
Total	12	286	49	0	26	37	3	0	97	284	18	0	41	60	137	0	1050
17:00	8	156	19	0	3	11	5	0	40	94	11	0	9	16	45	0	417
17:15	6	147	13	0	5	19	4	0	35	60	14	0	19	11	44	0	377
17:30	4	162	22	0	11	15	4	0	38	89	15	0	11	13	30	0	414
17:45	8	170	15	0	2	12	1	0	27	67	9	0	18	12	36	0	377
Total	26	635	69	0	21	57	14	0	140	310	49	0	57	52	155	0	1585
18:00	0	168	16	0	3	11	1	0	26	69	8	0	17	11	32	0	362
Grand Total	38	1089	134	0	50	105	18	0	263	663	75	0	115	123	324	0	2997
Apprch %	3	86.4	10.6	0	28.9	60.7	10.4	0	26.3	66.2	7.5	0	20.5	21.9	57.7	0	
Total %	1.3	36.3	4.5	0	1.7	3.5	0.6	0	8.8	22.1	2.5	0	3.8	4.1	10.8	0	

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719-633-2868

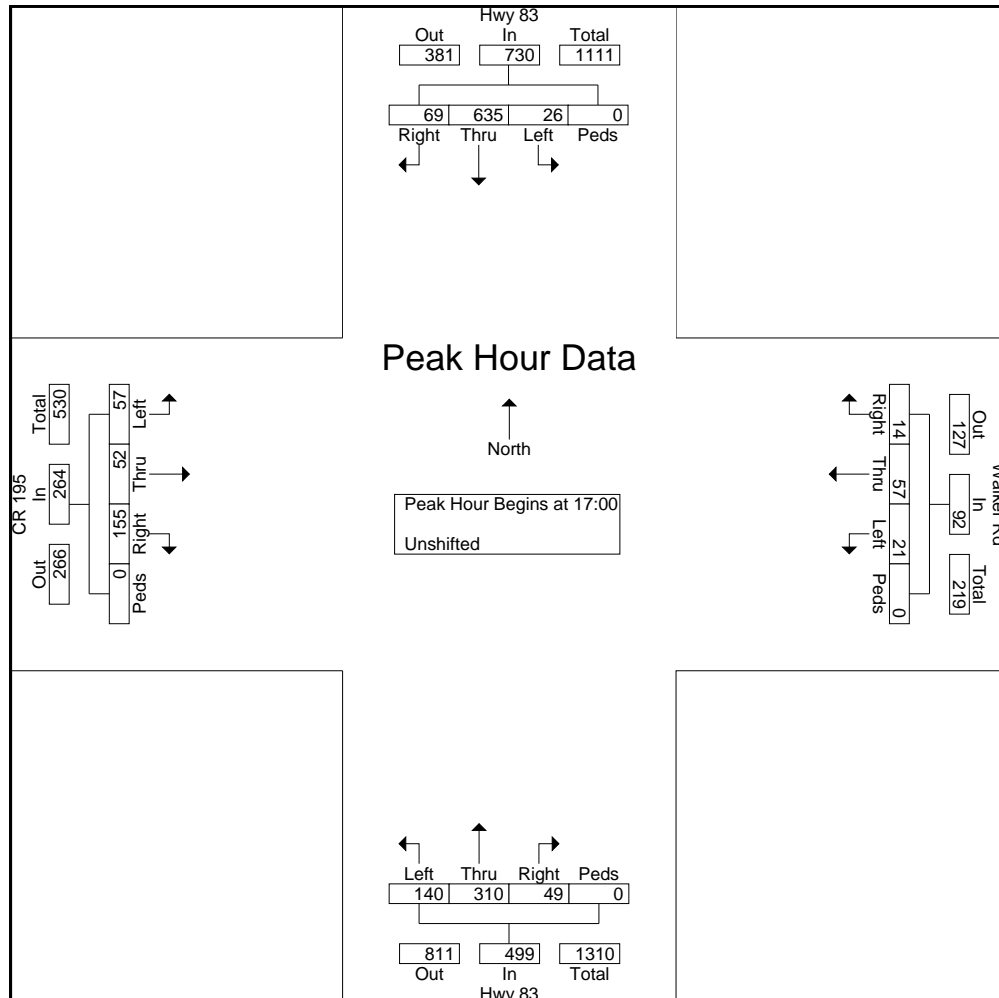
File Name : Hwy 83 - Walker Rd PM

Site Code : 184820

Start Date : 8/29/2018

Page No : 2

	Hwy 83 Southbound					Walker Rd Westbound					Hwy 83 Northbound					CR 195 Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 16:15 to 18:00 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 17:00																					
17:00	8	156	19	0	183	3	11	5	0	19	40	94	11	0	145	9	16	45	0	70	417
17:15	6	147	13	0	166	5	19	4	0	28	35	60	14	0	109	19	11	44	0	74	377
17:30	4	162	22	0	188	11	15	4	0	30	38	89	15	0	142	11	13	30	0	54	414
17:45	8	170	15	0	193	2	12	1	0	15	27	67	9	0	103	18	12	36	0	66	377
Total Volume	26	635	69	0	730	21	57	14	0	92	140	310	49	0	499	57	52	155	0	264	1585
% App. Total	3.6	87	9.5	0		22.8	62	15.2	0		28.1	62.1	9.8	0		21.6	19.7	58.7	0		
PHF	.813	.934	.784	.000	.946	.477	.750	.700	.000	.767	.875	.824	.817	.000	.860	.750	.813	.861	.000	.892	.950



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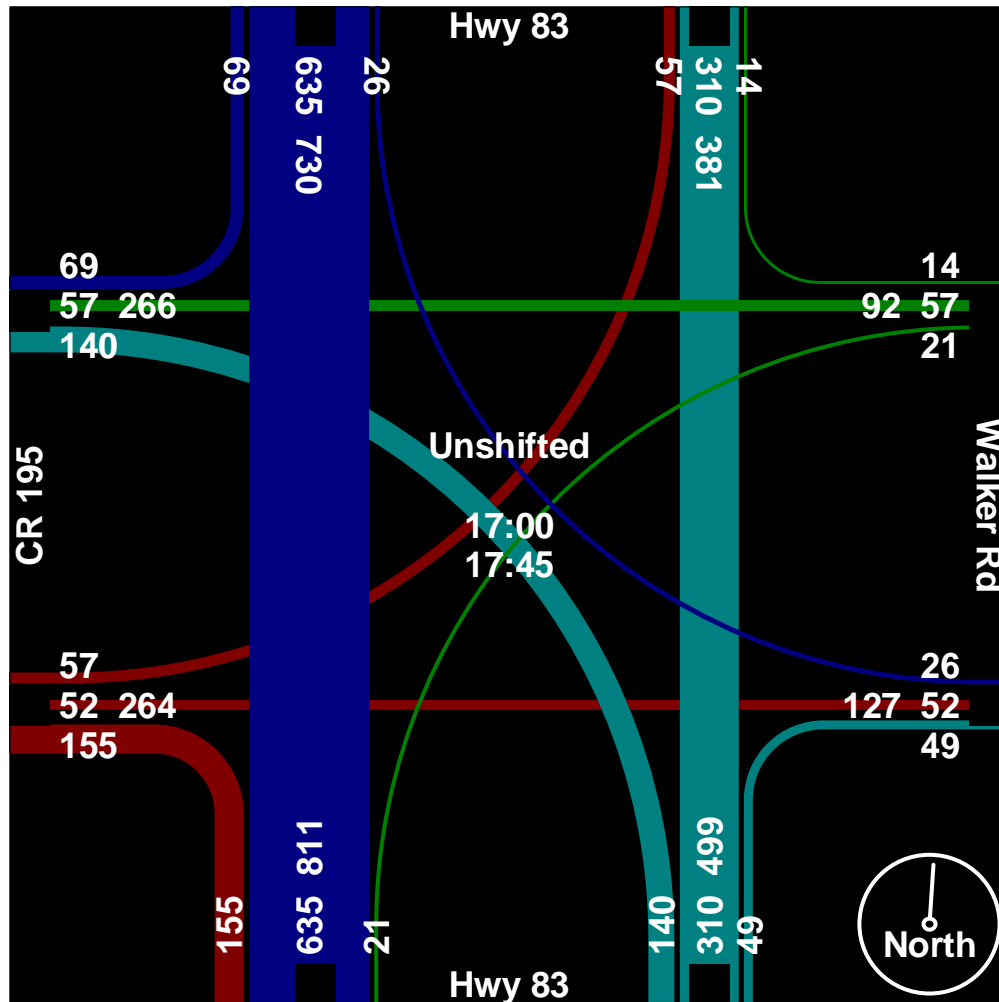
545 E Pikes Peak Ave, Suite 210  
Colorado Springs, CO 80905  
719-633-2868

File Name : Hwy 83 - Walker Rd PM

Site Code : 184820

Start Date : 8/29/2018

Page No : 3



Counts by LSC

LSC Transportation Consultants, Inc.

File Name : Hwy 83 - Hodgen AM

Site Code : 00174470

Start Date : 06/21/2017

Page No : 1

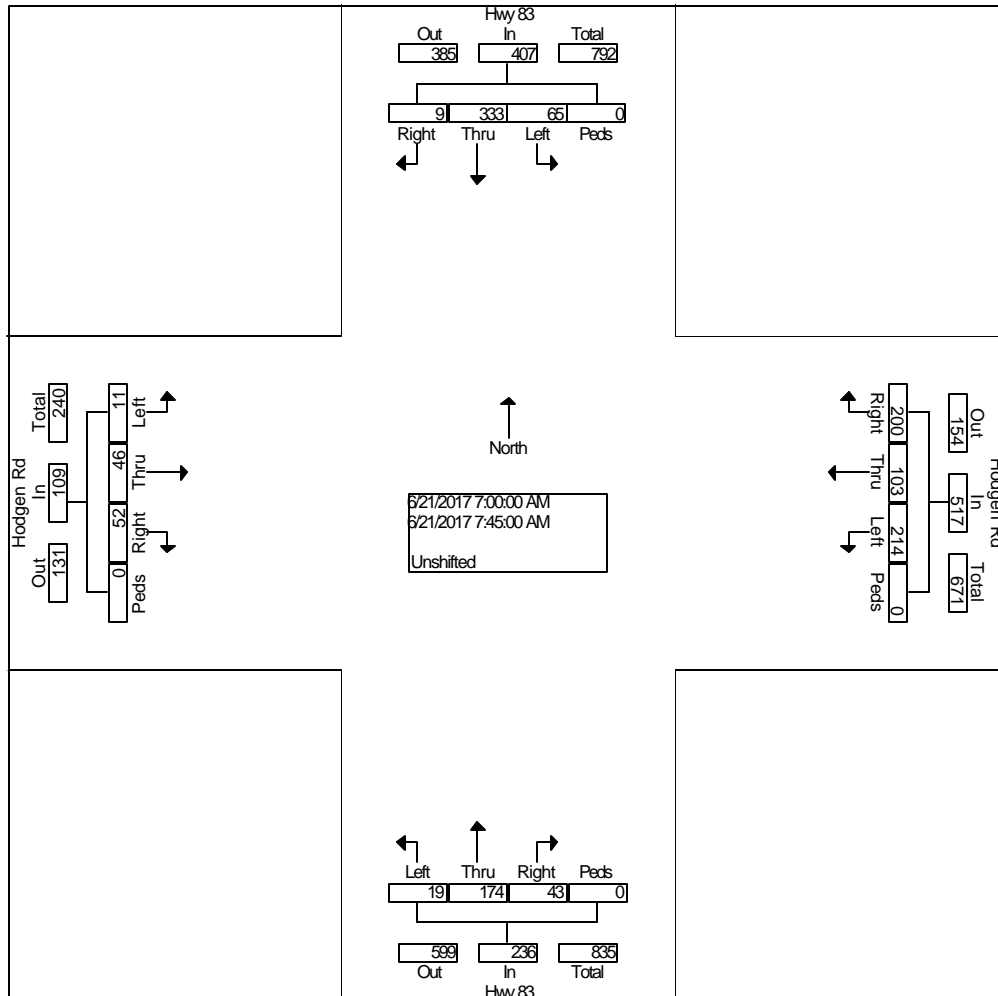
Groups Printed- Unshifted

	Hwy 83 From North				Hodgen Rd From East				Hwy 83 From South				Hodgen Rd From West				Int. Total
Start Time	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	1	44	11	0	36	16	24	0	5	22	2	0	3	3	1	0	168
06:45 AM	3	60	17	0	39	24	41	0	8	50	4	0	6	10	3	0	265
Total	4	104	28	0	75	40	65	0	13	72	6	0	9	13	4	0	433
07:00 AM	1	86	11	0	44	22	50	0	10	41	5	0	13	7	1	0	291
07:15 AM	3	72	18	0	50	19	54	0	8	48	4	0	12	13	0	0	301
07:30 AM	1	105	16	0	57	30	60	0	10	46	4	0	13	18	5	0	365
07:45 AM	4	70	20	0	49	32	50	0	15	39	6	0	14	8	5	0	312
Total	9	333	65	0	200	103	214	0	43	174	19	0	52	46	11	0	1269
08:00 AM	4	62	14	0	34	23	44	0	14	52	6	0	7	6	4	0	270
08:15 AM	2	76	10	0	39	25	42	0	9	62	18	0	11	12	4	0	310
Grand Total	19	575	117	0	348	191	365	0	79	360	49	0	79	77	23	0	2282
Apprch %	2.7	80.9	16.5	0.0	38.5	21.1	40.4	0.0	16.2	73.8	10.0	0.0	44.1	43.0	12.8	0.0	
Total %	0.8	25.2	5.1	0.0	15.2	8.4	16.0	0.0	3.5	15.8	2.1	0.0	3.5	3.4	1.0	0.0	

# Counts by LSC

File Name : Hwy 83 - Hodgen AM  
 Site Code : 00174470  
 Start Date : 06/21/2017  
 Page No : 2

	Hwy 83 From North					Hodgen Rd From East					Hwy 83 From South					Hodgen Rd From West					
Start Time	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	Int. Total
Peak Hour From 06:30 AM to 08:15 AM - Peak 1 of 1																					
Intersection	07:00 AM																				
Volume	9	33	65	0	407	20	10	21	0	517	43	17	19	0	236	52	46	11	0	109	1269
		3				0	3	4				4									
Percent	2.2	81.	16.	0.0		38.	19.	41.	0.0		18.	73.	8.1	0.0		47.	42.	10.	0.0		
		8	0			7	9	4			2	7				7	2	1			
07:30		10																			
Volume	1	5	16	0	122	57	30	60	0	147	10	46	4	0	60	13	18	5	0	36	365
Peak																					
Factor																					0.869
High Int.	07:30 AM					07:30 AM					07:15 AM					07:30 AM					
Volume	1	10	16	0	122	57	30	60	0	147	8	48	4	0	60	13	18	5	0	36	
		5																			
Peak																					
Factor					0.83					0.87					0.98					0.75	
					4					9					3					7	



Counts by LSC

LSC Transportation Consultants, Inc.

File Name : Hwy 83 - Hodgen PM

Site Code : 00174470

Start Date : 06/21/2017

Page No : 1

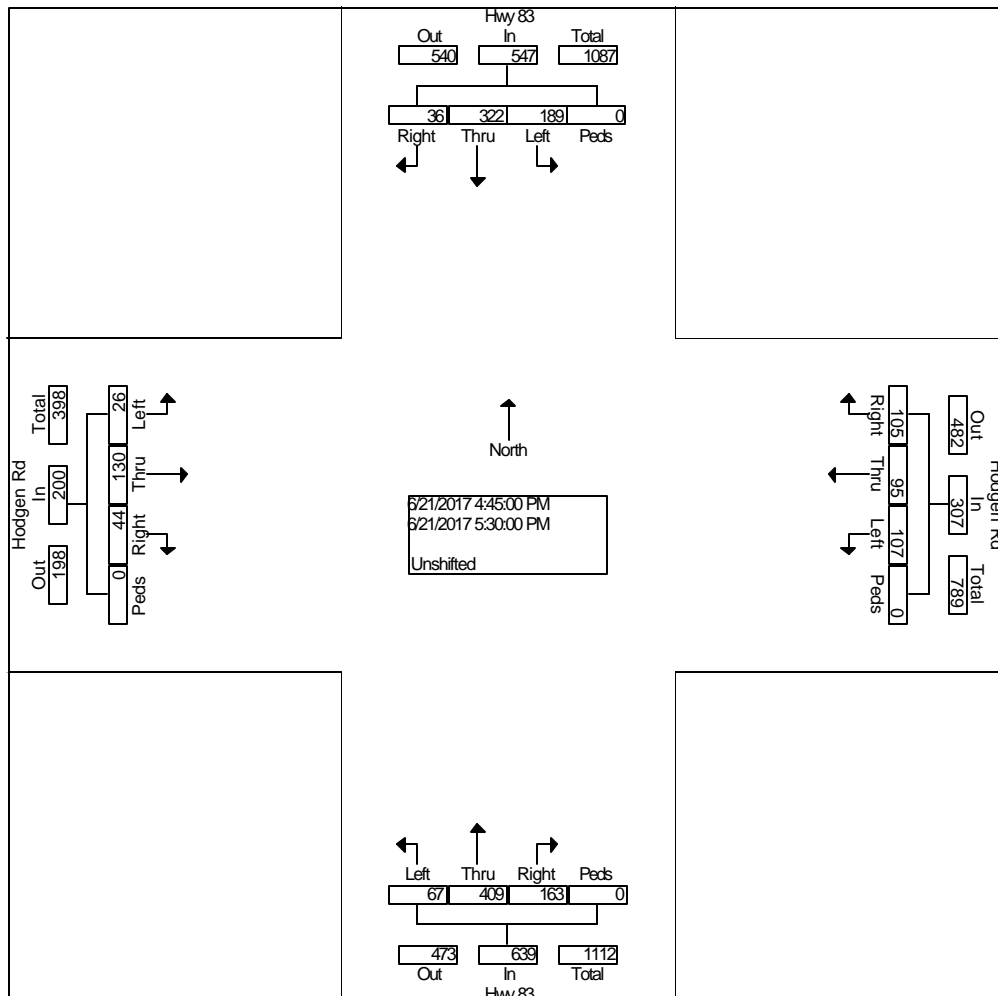
Groups Printed- Unshifted

	Hwy 83 From North				Hodgen Rd From East				Hwy 83 From South				Hodgen Rd From West				Int. Total
Start Time	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	
04:00 PM	2	77	43	0	20	16	15	0	43	89	21	0	8	24	5	0	363
04:15 PM	7	68	53	0	30	22	25	0	32	72	14	0	13	32	3	0	371
04:30 PM	11	97	46	0	27	14	20	0	51	100	10	0	9	27	8	0	420
04:45 PM	8	90	52	0	32	23	28	0	33	95	19	0	9	32	5	0	426
Total	28	332	194	0	109	75	88	0	159	356	64	0	39	115	21	0	1580
05:00 PM	6	70	44	0	22	29	25	0	45	99	15	0	8	39	9	0	411
05:15 PM	10	77	42	0	28	20	25	0	44	102	16	0	18	26	3	0	411
05:30 PM	12	85	51	0	23	23	29	0	41	113	17	0	9	33	9	0	445
05:45 PM	7	84	38	0	25	16	19	0	45	106	13	0	13	37	8	0	411
Total	35	316	175	0	98	88	98	0	175	420	61	0	48	135	29	0	1678
Grand Total	63	648	369	0	207	163	186	0	334	776	125	0	87	250	50	0	3258
Apprch %	5.8	60.0	34.2	0.0	37.2	29.3	33.5	0.0	27.0	62.8	10.1	0.0	22.5	64.6	12.9	0.0	
Total %	1.9	19.9	11.3	0.0	6.4	5.0	5.7	0.0	10.3	23.8	3.8	0.0	2.7	7.7	1.5	0.0	

# Counts by LSC

File Name : Hwy 83 - Hodgen PM  
 Site Code : 00174470  
 Start Date : 06/21/2017  
 Page No : 2

	Hwy 83 From North					Hodgen Rd From East					Hwy 83 From South					Hodgen Rd From West					
Start Time	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	Int. Total
Peak Hour From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Intersection	04:45 PM																				
Volume	36	32	18	0	547	10	95	10	0	307	16	40	67	0	639	44	13	26	0	200	1693
		2	9			5		7			3	9					0				
Percent	6.6	58.	34.	0.0		34.	30.	34.	0.0		25.	64.	10.	0.0		22.	65.	13.	0.0		
		9	6			2	9	9			5	0	5			0	0	0			
05:30																					
Volume	12	85	51	0	148	23	23	29	0	75	41	11	17	0	171	9	33	9	0	51	445
Peak												3									
Factor																					0.951
High Int.	04:45 PM					04:45 PM					05:30 PM					05:00 PM					
Volume	8	90	52	0	150	32	23	28	0	83	41	11	17	0	171	8	39	9	0	56	
												3									
Peak																					
Factor					0.91					0.92					0.93					0.89	
					2					5					4					3	

















# Levels of Service

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Volume  
1: SH 83 & SH 105/Walker Rd

Existing Traffic  
AM Peak Hour (7:15-8:15 AM)





















												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	34	38	128	46	50	25	156	318	17	10	234	53
Future Volume (vph)	34	38	128	46	50	25	156	318	17	10	234	53
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.87	0.87	0.87	0.67	0.67	0.67	0.81	0.81	0.81	0.80	0.80	0.80
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	39	44	147	69	75	37	193	393	21	13	293	66
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	83	147	0	181	0	193	393	21	13	293	66
Intersection Summary												

# Timings

1: SH 83 & SH 105/Walker Rd

## Existing Traffic

AM Peak Hour (7:15-8:15 AM)

											
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	34	38	128	46	50	156	318	17	10	234	53
Future Volume (vph)	34	38	128	46	50	156	318	17	10	234	53
Turn Type	Perm	NA	Free	Perm	NA	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8	5	2		1	6	
Permitted Phases	4		Free	8		2		2	6		6
Detector Phase	4	4		8	8	5	2	2	1	6	6
Switch Phase											
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	11.0	11.0		11.0	11.0	10.0	12.0	12.0	10.0	12.0	12.0
Total Split (s)	30.0	30.0		30.0	30.0	17.0	53.0	53.0	17.0	53.0	53.0
Total Split (%)	30.0%	30.0%		30.0%	30.0%	17.0%	53.0%	53.0%	17.0%	53.0%	53.0%
Yellow Time (s)	4.0	4.0		4.0	4.0	3.0	5.0	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
Lost Time Adjust (s)		0.0			0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		6.0			6.0	5.0	7.0	7.0	5.0	7.0	7.0
Lead/Lag						Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None		None	None	None	Max	Max	None	Max	Max
Act Effect Green (s)		15.1	89.4		15.1	63.3	59.2	59.2	54.0	46.2	46.2
Actuated g/C Ratio		0.17	1.00		0.17	0.71	0.66	0.66	0.60	0.52	0.52
v/c Ratio		0.37	0.09		0.68	0.25	0.32	0.02	0.02	0.30	0.08
Control Delay		37.7	0.1		46.1	5.8	9.0	0.1	5.7	14.8	2.2
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		37.7	0.1		46.1	5.8	9.0	0.1	5.7	14.8	2.2
LOS		D	A		D	A	A	A	A	B	A
Approach Delay		13.7			46.1		7.7			12.2	
Approach LOS		B			D		A			B	

### Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 89.4

Natural Cycle: 50

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.68

Intersection Signal Delay: 14.9

Intersection LOS: B

Intersection Capacity Utilization 49.3%

ICU Level of Service A













Analysis Period (min) 15

Splits and Phases: 1: SH 83 & SH 105/Walker Rd

		
Ø1	Ø2	Ø4
17 s	53 s	30 s
		
Ø5	Ø6	Ø8
17 s	53 s	30 s























Volume  
121: SH 83 & Hodgen Rd

2017 Existing  
AM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	11	46	52	214	103	200	19	174	43	65	333	9
Future Volume (vph)	11	46	52	214	103	200	19	174	43	65	333	9
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.74	0.74	0.74	0.87	0.87	0.87	0.86	0.86	0.86	0.79	0.79	0.79
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	15	62	70	246	118	230	22	202	50	82	422	11
Shared Lane Traffic (%)												
Lane Group Flow (vph)	15	62	70	246	118	230	22	202	50	82	433	0
Intersection Summary												

Timings  
121: SH 83 & Hodgen Rd

2017 Existing  
AM

											
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations											
Traffic Volume (vph)	11	46	52	214	103	200	19	174	43	65	333
Future Volume (vph)	11	46	52	214	103	200	19	174	43	65	333
Turn Type	Prot	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA
Protected Phases	7	4			8		5	2		1	6
Permitted Phases			4	8		8	2		2	6	
Detector Phase	7	4	4	8	8	8	5	2	2	1	6
Switch Phase											
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	11.0	11.0	10.0	10.0	10.0	10.0	12.0	12.0	10.0	12.0
Total Split (s)	10.0	30.0	30.0	20.0	20.0	20.0	10.0	60.0	60.0	10.0	60.0
Total Split (%)	10.0%	30.0%	30.0%	20.0%	20.0%	20.0%	10.0%	60.0%	60.0%	10.0%	60.0%
Yellow Time (s)	3.0	4.0	4.0	3.0	3.0	3.0	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	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	6.0	6.0	5.0	5.0	5.0	5.0	7.0	7.0	5.0	7.0
Lead/Lag	Lead			Lag	Lag	Lag	Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	Min	Min	None	Min
Act Effect Green (s)	5.3	16.2	16.2	15.9	15.9	15.9	19.5	14.7	14.7	21.6	18.8
Actuated g/C Ratio	0.11	0.32	0.32	0.32	0.32	0.32	0.39	0.29	0.29	0.43	0.38
v/c Ratio	0.08	0.10	0.12	0.58	0.20	0.35	0.05	0.37	0.09	0.16	0.62
Control Delay	28.1	15.6	3.2	27.5	18.6	5.6	7.9	17.5	0.3	8.4	17.9
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	28.1	15.6	3.2	27.5	18.6	5.6	7.9	17.5	0.3	8.4	17.9
LOS	C	B	A	C	B	A	A	B	A	A	B
Approach Delay		11.0			17.3			13.6			16.4
Approach LOS		B			B			B			B

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 50.1

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.62

Intersection Signal Delay: 15.7

Intersection LOS: B

Intersection Capacity Utilization 54.9%

ICU Level of Service A













Analysis Period (min) 15

Splits and Phases: 121: SH 83 & Hodgen Rd

		
10 s	60 s	30 s
		
10 s	60 s	10 s 20 s

Volume  
1: SH 83 & SH 105/Walker Rd

Existing + Site-Generated Traffic  
Midday (2-3 PM)





















												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	49	48	123	16	46	12	128	223	22	16	247	36
Future Volume (vph)	49	48	123	16	46	12	128	223	22	16	247	36
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.93	0.93	0.93	0.78	0.78	0.78	0.95	0.95	0.95	0.87	0.87	0.87
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	53	52	132	21	59	15	135	235	23	18	284	41
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	105	132	0	95	0	135	235	23	18	284	41
Intersection Summary												

# Timings

1: SH 83 & SH 105/Walker Rd

Existing + Site-Generated Traffic

Midday (2-3 PM)

											
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	49	48	123	16	46	128	223	22	16	247	36
Future Volume (vph)	49	48	123	16	46	128	223	22	16	247	36
Turn Type	Perm	NA	Free	Perm	NA	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8	5	2		1	6	
Permitted Phases	4		Free	8		2		2	6		6
Detector Phase	4	4		8	8	5	2	2	1	6	6
Switch Phase											
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	11.0	11.0		11.0	11.0	10.0	12.0	12.0	10.0	12.0	12.0
Total Split (s)	30.0	30.0		30.0	30.0	17.0	53.0	53.0	17.0	53.0	53.0
Total Split (%)	30.0%	30.0%		30.0%	30.0%	17.0%	53.0%	53.0%	17.0%	53.0%	53.0%
Yellow Time (s)	4.0	4.0		4.0	4.0	3.0	5.0	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
Lost Time Adjust (s)		0.0			0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		6.0			6.0	5.0	7.0	7.0	5.0	7.0	7.0
Lead/Lag						Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None		None	None	None	Max	Max	None	Max	Max
Act Effect Green (s)		11.0	80.7		10.8	61.0	57.4	57.4	54.5	46.6	46.6
Actuated g/C Ratio		0.14	1.00		0.13	0.76	0.71	0.71	0.68	0.58	0.58
v/c Ratio		0.50	0.08		0.42	0.16	0.18	0.02	0.02	0.26	0.04
Control Delay		41.9	0.1		36.3	4.1	7.5	0.0	4.1	11.2	0.4
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		41.9	0.1		36.3	4.1	7.5	0.0	4.1	11.2	0.4
LOS		D	A		D	A	A	A	A	B	A
Approach Delay		18.6			36.3		5.9			9.5	
Approach LOS		B			D		A			A	

## Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 80.7

Natural Cycle: 40

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.50

Intersection Signal Delay: 12.6

Intersection LOS: B

Intersection Capacity Utilization 45.9%

ICU Level of Service A













Analysis Period (min) 15

Splits and Phases: 1: SH 83 & SH 105/Walker Rd

		
Ø1	Ø2	Ø4
17 s	53 s	30 s
		
Ø5	Ø6	Ø8
17 s	53 s	30 s

Volume  
1: SH 83 & SH 105/Walker Rd

Existing Traffic  
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	57	52	155	21	57	14	140	310	49	26	429	69
Future Volume (vph)	57	52	155	21	57	14	140	310	49	26	429	69
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.94	0.94	0.94	0.83	0.83	0.83	0.86	0.86	0.86	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	61	55	165	25	69	17	163	360	57	28	466	75
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	116	165	0	111	0	163	360	57	28	466	75
Intersection Summary												























# Timings

1: SH 83 & SH 105/Walker Rd

Existing Traffic

PM Peak Hour

											
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	57	52	155	21	57	140	310	49	26	429	69
Future Volume (vph)	57	52	155	21	57	140	310	49	26	429	69
Turn Type	Perm	NA	Free	Perm	NA	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8	5	2		1	6	
Permitted Phases	4		Free	8		2		2	6		6
Detector Phase	4	4		8	8	5	2	2	1	6	6
Switch Phase											
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	11.0	11.0		11.0	11.0	10.0	12.0	12.0	10.0	12.0	12.0
Total Split (s)	30.0	30.0		30.0	30.0	17.0	53.0	53.0	17.0	53.0	53.0
Total Split (%)	30.0%	30.0%		30.0%	30.0%	17.0%	53.0%	53.0%	17.0%	53.0%	53.0%
Yellow Time (s)	4.0	4.0		4.0	4.0	3.0	5.0	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
Lost Time Adjust (s)		0.0			0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		6.0			6.0	5.0	7.0	7.0	5.0	7.0	7.0
Lead/Lag						Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None		None	None	None	Max	Max	None	Max	Max
Act Effect Green (s)		11.7	82.2		11.5	62.2	58.2	58.2	54.7	46.7	46.7
Actuated g/C Ratio		0.14	1.00		0.14	0.76	0.71	0.71	0.67	0.57	0.57
v/c Ratio		0.56	0.10		0.47	0.24	0.27	0.05	0.04	0.44	0.08
Control Delay		44.8	0.1		37.7	4.7	8.4	1.1	4.4	13.9	2.5
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		44.8	0.1		37.7	4.7	8.4	1.1	4.4	13.9	2.5
LOS		D	A		D	A	A	A	A	B	A
Approach Delay		18.6			37.7		6.6			12.0	
Approach LOS		B			D		A			B	

## Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 82.2

Natural Cycle: 50

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.56

Intersection Signal Delay: 13.0




Intersection LOS: B

Intersection Capacity Utilization 57.4%

ICU Level of Service B













Analysis Period (min) 15

Splits and Phases: 1: SH 83 & SH 105/Walker Rd

		
Ø1	Ø2	Ø4
17 s	53 s	30 s
		
Ø5	Ø6	Ø8
17 s	53 s	30 s























Volume  
121: SH 83 & Hodgen Rd

2017 Existing  
PM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	26	130	44	107	95	185	67	409	163	189	322	36
Future Volume (vph)	26	130	44	107	95	185	67	409	163	189	322	36
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.76	0.76	0.76	0.85	0.85	0.85	0.90	0.90	0.90	0.89	0.89	0.89
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	34	171	58	126	112	218	74	454	181	212	362	40
Shared Lane Traffic (%)												
Lane Group Flow (vph)	34	171	58	126	112	218	74	454	181	212	402	0
Intersection Summary												

Timings  
121: SH 83 & Hodgen Rd

2017 Existing  
PM

											
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations											
Traffic Volume (vph)	26	130	44	107	95	185	67	409	163	189	322
Future Volume (vph)	26	130	44	107	95	185	67	409	163	189	322
Turn Type	Prot	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA
Protected Phases	7	4			8		5	2		1	6
Permitted Phases			4	8		8	2		2	6	
Detector Phase	7	4	4	8	8	8	5	2	2	1	6
Switch Phase											
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	11.0	11.0	11.0	10.0	10.0	10.0	10.0	12.0	12.0	10.0	12.0
Total Split (s)	13.0	38.0	38.0	25.0	25.0	25.0	13.0	49.0	49.0	13.0	49.0
Total Split (%)	13.0%	38.0%	38.0%	25.0%	25.0%	25.0%	13.0%	49.0%	49.0%	13.0%	49.0%
Yellow Time (s)	4.0	4.0	4.0	3.0	3.0	3.0	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	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	5.0	5.0	5.0	5.0	7.0	7.0	5.0	7.0
Lead/Lag	Lead			Lag	Lag	Lag	Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	Min	Min	None	Min
Act Effect Green (s)	6.8	16.5	16.5	13.7	13.7	13.7	32.7	23.2	23.2	36.6	30.3
Actuated g/C Ratio	0.10	0.24	0.24	0.20	0.20	0.20	0.48	0.34	0.34	0.54	0.45
v/c Ratio	0.19	0.38	0.13	0.52	0.30	0.44	0.14	0.71	0.27	0.48	0.49
Control Delay	38.9	24.3	2.1	36.7	29.4	7.9	9.2	27.1	4.4	13.2	19.5
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	38.9	24.3	2.1	36.7	29.4	7.9	9.2	27.1	4.4	13.2	19.5
LOS	D	C	A	D	C	A	A	C	A	B	B
Approach Delay		21.3			21.2			19.4			17.3
Approach LOS		C			C			B			B

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 67.5

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.71

Intersection Signal Delay: 19.4

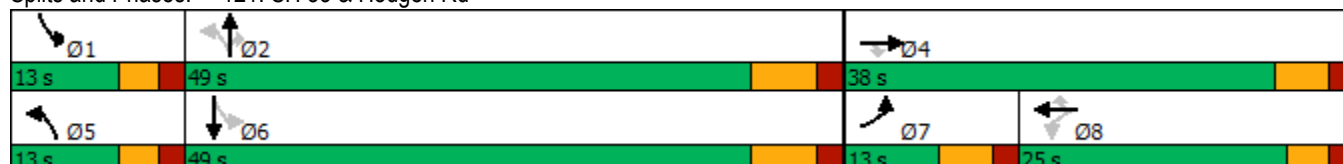
Intersection LOS: B

Intersection Capacity Utilization 63.9%

ICU Level of Service B













Analysis Period (min) 15

Splits and Phases: 121: SH 83 & Hodgen Rd



Volume  
1: SH 83 & SH 105/Walker Rd

Short-Term Background Traffic  
AM School Peak Hour (7:45-8:45 AM)





















												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	38	42	141	51	55	28	172	351	19	11	258	59
Future Volume (vph)	38	42	141	51	55	28	172	351	19	11	258	59
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.87	0.87	0.87	0.67	0.67	0.67	0.81	0.81	0.81	0.80	0.80	0.80
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	44	48	162	76	82	42	212	433	23	14	323	74
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	92	162	0	200	0	212	433	23	14	323	74
Intersection Summary												

# Timings

1: SH 83 & SH 105/Walker Rd

# Short-Term Background Traffic

AM School Peak Hour (7:45-8:45 AM)

											
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	38	42	141	51	55	172	351	19	11	258	59
Future Volume (vph)	38	42	141	51	55	172	351	19	11	258	59
Turn Type	Perm	NA	Free	Perm	NA	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8	5	2		1	6	
Permitted Phases	4		Free	8		2		2	6		6
Detector Phase	4	4		8	8	5	2	2	1	6	6
Switch Phase											
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	11.0	11.0		11.0	11.0	10.0	12.0	12.0	10.0	12.0	12.0
Total Split (s)	30.0	30.0		30.0	30.0	17.0	53.0	53.0	17.0	53.0	53.0
Total Split (%)	30.0%	30.0%		30.0%	30.0%	17.0%	53.0%	53.0%	17.0%	53.0%	53.0%
Yellow Time (s)	4.0	4.0		4.0	4.0	3.0	5.0	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
Lost Time Adjust (s)		0.0			0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		6.0			6.0	5.0	7.0	7.0	5.0	7.0	7.0
Lead/Lag						Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None		None	None	None	Max	Max	None	Max	Max
Act Effect Green (s)		16.3	91.0		16.3	63.6	59.6	59.6	54.0	46.2	46.2
Actuated g/C Ratio		0.18	1.00		0.18	0.70	0.65	0.65	0.59	0.51	0.51
v/c Ratio		0.40	0.10		0.71	0.29	0.36	0.02	0.02	0.34	0.09
Control Delay		38.1	0.1		47.2	6.5	9.8	0.1	6.2	15.9	3.0
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		38.1	0.1		47.2	6.5	9.8	0.1	6.2	15.9	3.0
LOS		D	A		D	A	A	A	A	B	A
Approach Delay		13.9			47.2		8.4			13.3	
Approach LOS		B			D		A			B	

## Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 91

Natural Cycle: 55

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.71

Intersection Signal Delay: 15.7


Intersection LOS: B

Intersection Capacity Utilization 52.2%

ICU Level of Service A

Analysis Period (min) 15













Splits and Phases: 1: SH 83 & SH 105/Walker Rd

		
Ø1	Ø2	Ø4
17 s	53 s	30 s
		
Ø5	Ø6	Ø8
17 s	53 s	30 s

Volume  
121: SH 83 & Hodgen Rd























Short-Term Background Traffic

AM School Peak Hour (7:45-8:45 AM)

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	36	65	88	236	144	221	46	269	47	72	323	50
Future Volume (vph)	36	65	88	236	144	221	46	269	47	72	323	50
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.74	0.74	0.74	0.87	0.87	0.87	0.86	0.86	0.86	0.79	0.79	0.79
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	49	88	119	271	166	254	53	313	55	91	409	63
Shared Lane Traffic (%)												
Lane Group Flow (vph)	49	88	119	271	166	254	53	313	55	91	472	0
Intersection Summary												

Timings  
121: SH 83 & Hodgen Rd

Short-Term Background Traffic  
AM School Peak Hour (7:45-8:45 AM)

											
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations											
Traffic Volume (vph)	36	65	88	236	144	221	46	269	47	72	323
Future Volume (vph)	36	65	88	236	144	221	46	269	47	72	323
Turn Type	Prot	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA
Protected Phases	7	4			8		5	2		1	6
Permitted Phases			4	8		8	2		2	6	
Detector Phase	7	4	4	8	8	8	5	2	2	1	6
Switch Phase											
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	11.0	11.0	10.0	10.0	10.0	10.0	12.0	12.0	10.0	12.0
Total Split (s)	10.0	30.0	30.0	20.0	20.0	20.0	10.0	60.0	60.0	10.0	60.0
Total Split (%)	10.0%	30.0%	30.0%	20.0%	20.0%	20.0%	10.0%	60.0%	60.0%	10.0%	60.0%
Yellow Time (s)	3.0	4.0	4.0	3.0	3.0	3.0	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	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	6.0	6.0	5.0	5.0	5.0	5.0	7.0	7.0	5.0	7.0
Lead/Lag	Lead			Lag	Lag	Lag	Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	Min	Min	None	Min
Act Effect Green (s)	5.4	20.1	20.1	16.1	16.1	16.1	26.3	20.4	20.4	27.5	22.8
Actuated g/C Ratio	0.09	0.32	0.32	0.26	0.26	0.26	0.42	0.33	0.33	0.44	0.37
v/c Ratio	0.32	0.15	0.20	0.80	0.34	0.42	0.15	0.51	0.09	0.19	0.70
Control Delay	38.9	18.7	5.4	49.0	27.0	6.7	9.5	20.8	0.3	9.7	23.8
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	38.9	18.7	5.4	49.0	27.0	6.7	9.5	20.8	0.3	9.7	23.8
LOS	D	B	A	D	C	A	A	C	A	A	C
Approach Delay		16.4			28.2			16.7			21.5
Approach LOS		B			C			B			C

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 62

Natural Cycle: 70

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.80

Intersection Signal Delay: 22.2

Intersection LOS: C

Intersection Capacity Utilization 60.6%

ICU Level of Service B













Analysis Period (min) 15

Splits and Phases: 121: SH 83 & Hodgen Rd



Volume  
1: SH 83 & SH 105/Walker Rd

Short-Term Background Traffic  
Midday (2-3 PM)

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	54	53	136	18	51	13	141	246	24	18	273	40
Future Volume (vph)	54	53	136	18	51	13	141	246	24	18	273	40
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.93	0.93	0.93	0.78	0.78	0.78	0.95	0.95	0.95	0.87	0.87	0.87
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	58	57	146	23	65	17	148	259	25	21	314	46
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	115	146	0	105	0	148	259	25	21	314	46
Intersection Summary												























# Timings

1: SH 83 & SH 105/Walker Rd

# Short-Term Background Traffic

Midday (2-3 PM)

											
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	54	53	136	18	51	141	246	24	18	273	40
Future Volume (vph)	54	53	136	18	51	141	246	24	18	273	40
Turn Type	Perm	NA	Free	Perm	NA	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8	5	2		1	6	
Permitted Phases	4		Free	8		2		2	6		6
Detector Phase	4	4		8	8	5	2	2	1	6	6
Switch Phase											
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	11.0	11.0		11.0	11.0	10.0	12.0	12.0	10.0	12.0	12.0
Total Split (s)	30.0	30.0		30.0	30.0	17.0	53.0	53.0	17.0	53.0	53.0
Total Split (%)	30.0%	30.0%		30.0%	30.0%	17.0%	53.0%	53.0%	17.0%	53.0%	53.0%
Yellow Time (s)	4.0	4.0		4.0	4.0	3.0	5.0	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
Lost Time Adjust (s)		0.0			0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		6.0			6.0	5.0	7.0	7.0	5.0	7.0	7.0
Lead/Lag						Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None		None	None	None	Max	Max	None	Max	Max
Act Effect Green (s)		11.6	81.6		11.3	61.6	57.8	57.8	54.6	46.7	46.7
Actuated g/C Ratio		0.14	1.00		0.14	0.75	0.71	0.71	0.67	0.57	0.57
v/c Ratio		0.54	0.09		0.45	0.18	0.20	0.02	0.03	0.29	0.05
Control Delay		43.7	0.1		36.9	4.3	7.8	0.0	4.3	11.9	0.8
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		43.7	0.1		36.9	4.3	7.8	0.0	4.3	11.9	0.8
LOS		D	A		D	A	A	A	A	B	A
Approach Delay		19.3			36.9		6.2			10.1	
Approach LOS		B			D		A			B	

## Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 81.6

Natural Cycle: 40

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.54

Intersection Signal Delay: 13.1

Intersection LOS: B

Intersection Capacity Utilization 49.0%

ICU Level of Service A













Analysis Period (min) 15

Splits and Phases: 1: SH 83 & SH 105/Walker Rd

		
Ø1	Ø2	Ø4
17 s	53 s	30 s
		
Ø5	Ø6	Ø8
17 s	53 s	30 s

Volume  
1: SH 83 & SH 105/Walker Rd

Short-Term Background Traffic  
PM Peak Hour





















												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	63	57	171	23	63	15	155	342	54	29	474	76
Future Volume (vph)	63	57	171	23	63	15	155	342	54	29	474	76
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.94	0.94	0.94	0.83	0.83	0.83	0.86	0.86	0.86	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	67	61	182	28	76	18	180	398	63	32	515	83
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	128	182	0	122	0	180	398	63	32	515	83
Intersection Summary												

# Timings

## 1: SH 83 & SH 105/Walker Rd

# Short-Term Background Traffic

PM Peak Hour

											
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	63	57	171	23	63	155	342	54	29	474	76
Future Volume (vph)	63	57	171	23	63	155	342	54	29	474	76
Turn Type	Perm	NA	Free	Perm	NA	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8	5	2		1	6	
Permitted Phases	4		Free	8		2		2	6		6
Detector Phase	4	4		8	8	5	2	2	1	6	6
Switch Phase											
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	11.0	11.0		11.0	11.0	10.0	12.0	12.0	10.0	12.0	12.0
Total Split (s)	30.0	30.0		30.0	30.0	17.0	53.0	53.0	17.0	53.0	53.0
Total Split (%)	30.0%	30.0%		30.0%	30.0%	17.0%	53.0%	53.0%	17.0%	53.0%	53.0%
Yellow Time (s)	4.0	4.0		4.0	4.0	3.0	5.0	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
Lost Time Adjust (s)		0.0			0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		6.0			6.0	5.0	7.0	7.0	5.0	7.0	7.0
Lead/Lag						Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None		None	None	None	Max	Max	None	Max	Max
Act Effect Green (s)		12.8	86.1		12.8	61.6	53.8	53.8	54.2	46.2	46.2
Actuated g/C Ratio		0.15	1.00		0.15	0.72	0.62	0.62	0.63	0.54	0.54
v/c Ratio		0.61	0.11		0.50	0.31	0.34	0.06	0.05	0.52	0.09
Control Delay		47.2	0.1		38.6	5.7	10.6	1.5	4.8	16.2	3.1
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		47.2	0.1		38.6	5.7	10.6	1.5	4.8	16.2	3.1
LOS		D	A		D	A	B	A	A	B	A
Approach Delay		19.6			38.6		8.3			13.9	
Approach LOS		B			D		A			B	

## Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 86.1

Natural Cycle: 55

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.61

Intersection Signal Delay: 14.6







Intersection LOS: B

Intersection Capacity Utilization 61.7%

ICU Level of Service B













Analysis Period (min) 15

Splits and Phases: 1: SH 83 & SH 105/Walker Rd

		
Ø1	Ø2	Ø4
17 s	53 s	30 s
		
Ø5	Ø6	Ø8
17 s	53 s	30 s























Volume  
121: SH 83 & Hodgen Rd

Short-Term Background Traffic  
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	58	170	85	118	124	204	106	280	180	209	369	78
Future Volume (vph)	58	170	85	118	124	204	106	280	180	209	369	78
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.76	0.76	0.76	0.85	0.85	0.85	0.90	0.90	0.90	0.89	0.89	0.89
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	76	224	112	139	146	240	118	311	200	235	415	88
Shared Lane Traffic (%)												
Lane Group Flow (vph)	76	224	112	139	146	240	118	311	200	235	503	0
Intersection Summary												

Timings  
121: SH 83 & Hodgen Rd

Short-Term Background Traffic  
PM Peak Hour

											
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations											
Traffic Volume (vph)	58	170	85	118	124	204	106	280	180	209	369
Future Volume (vph)	58	170	85	118	124	204	106	280	180	209	369
Turn Type	Prot	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA
Protected Phases	7	4			8		5	2		1	6
Permitted Phases			4	8		8	2		2	6	
Detector Phase	7	4	4	8	8	8	5	2	2	1	6
Switch Phase											
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	11.0	11.0	11.0	10.0	10.0	10.0	10.0	12.0	12.0	10.0	12.0
Total Split (s)	13.0	38.0	38.0	25.0	25.0	25.0	13.0	49.0	49.0	13.0	49.0
Total Split (%)	13.0%	38.0%	38.0%	25.0%	25.0%	25.0%	13.0%	49.0%	49.0%	13.0%	49.0%
Yellow Time (s)	4.0	4.0	4.0	3.0	3.0	3.0	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	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	5.0	5.0	5.0	5.0	7.0	7.0	5.0	7.0
Lead/Lag	Lead			Lag	Lag	Lag	Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	Min	Min	None	Min
Act Effect Green (s)	7.3	23.6	23.6	15.2	15.2	15.2	35.3	25.1	25.1	37.5	29.5
Actuated g/C Ratio	0.10	0.31	0.31	0.20	0.20	0.20	0.46	0.33	0.33	0.49	0.38
v/c Ratio	0.45	0.39	0.20	0.61	0.40	0.48	0.30	0.51	0.31	0.46	0.71
Control Delay	49.7	24.5	5.9	45.5	34.8	8.2	12.4	24.2	4.3	14.3	28.8
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	49.7	24.5	5.9	45.5	34.8	8.2	12.4	24.2	4.3	14.3	28.8
LOS	D	C	A	D	C	A	B	C	A	B	C
Approach Delay		24.1			25.4			15.7			24.2
Approach LOS		C			C			B			C

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 76.7

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.71

Intersection Signal Delay: 22.1

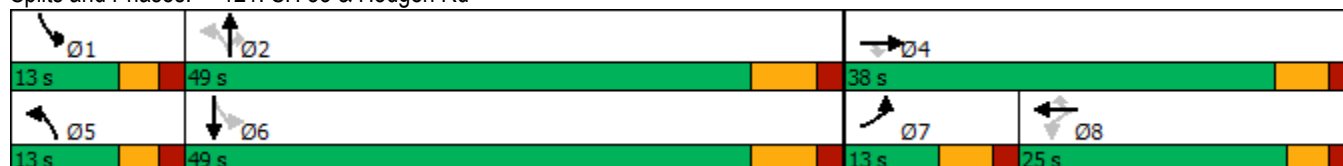
Intersection LOS: C

Intersection Capacity Utilization 64.7%

ICU Level of Service C













Analysis Period (min) 15

Splits and Phases: 121: SH 83 & Hodgen Rd



Volume  
1: SH 83 & SH 105/Walker Rd

2025 Total Traffic  
AM Peak Hour























												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	38	374	141	273	269	95	172	351	19	118	258	59
Future Volume (vph)	38	374	141	273	269	95	172	351	19	118	258	59
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.75	0.81	0.75	0.87	0.83	0.90	0.77	0.92	0.79	0.89	0.87	0.87
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	51	462	188	314	324	106	223	382	24	133	297	68
Shared Lane Traffic (%)												
Lane Group Flow (vph)	51	462	188	314	430	0	223	382	24	133	297	68
Intersection Summary												

# Timings

1: SH 83 & SH 105/Walker Rd

2025 Total Traffic

AM Peak Hour

											
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	38	374	141	273	269	172	351	19	118	258	59
Future Volume (vph)	38	374	141	273	269	172	351	19	118	258	59
Turn Type	Perm	NA	Free	pm+pt	NA	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4		3	8	5	2		1	6	
Permitted Phases	4		Free	8		2		2	6		6
Detector Phase	4	4		3	8	5	2	2	1	6	6
Switch Phase											
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	11.0	11.0		10.0	10.0	10.0	12.0	12.0	10.0	12.0	12.0
Total Split (s)	36.0	36.0		18.0	54.0	11.0	35.0	35.0	11.0	35.0	35.0
Total Split (%)	36.0%	36.0%		18.0%	54.0%	11.0%	35.0%	35.0%	11.0%	35.0%	35.0%
Yellow Time (s)	4.0	4.0		3.0	3.0	3.0	5.0	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
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0		5.0	5.0	5.0	7.0	7.0	5.0	7.0	7.0
Lead/Lag	Lag	Lag		Lead		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes		Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None		None	None	None	Max	Max	None	Max	Max
Act Effect Green (s)	27.2	27.2	97.3	46.2	46.2	36.1	28.1	28.1	36.1	28.1	28.1
Actuated g/C Ratio	0.28	0.28	1.00	0.47	0.47	0.37	0.29	0.29	0.37	0.29	0.29
v/c Ratio	0.19	0.89	0.12	0.95	0.50	0.62	0.71	0.04	0.46	0.55	0.12
Control Delay	28.4	54.2	0.2	60.6	18.8	30.1	40.3	0.2	24.8	34.7	0.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	28.4	54.2	0.2	60.6	18.8	30.1	40.3	0.2	24.8	34.7	0.5
LOS	C	D	A	E	B	C	D	A	C	C	A
Approach Delay		37.8			36.4		35.2			27.4	
Approach LOS		D			D		D			C	

## Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 97.3

Natural Cycle: 80

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.95

Intersection Signal Delay: 34.7








Intersection LOS: C

Intersection Capacity Utilization 79.0%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 1: SH 83 & SH 105/Walker Rd

			
Ø1	Ø2	Ø3	Ø4
11 s	35 s	18 s	36 s
			
Ø5	Ø6	Ø8	
11 s	35 s	54 s	

Volume  
2: Jane Lundeen & Walker Rd

2025 Total Traffic  
AM Peak Hour

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Volume (vph)	72	439	30	134	502	32
Future Volume (vph)	72	439	30	134	502	32
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.75	0.84	0.75	0.82	0.87	0.89
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Adj. Flow (vph)	96	523	40	163	577	36
Shared Lane Traffic (%)						
Lane Group Flow (vph)	619	0	0	203	613	0
Intersection Summary						








HCM 6th Roundabout  
2: Jane Lundeen & Walker Rd

2025 Total Traffic  
AM Peak Hour

Intersection			
Intersection Delay, s/veh	7.4		
Intersection LOS	A		
Approach	EB	WB	NB
Entry Lanes	1	1	1
Conflicting Circle Lanes	2	2	2
Adj Approach Flow, veh/h	619	203	613
Demand Flow Rate, veh/h	631	207	626
Vehicles Circulating, veh/h	41	589	98
Vehicles Exiting, veh/h	755	135	574
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	7.2	6.8	7.8
Approach LOS	A	A	A
Lane	Left	Left	Left
Designated Moves	TR	LT	LR
Assumed Moves	TR	LT	LR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.535	2.535	2.535
Critical Headway, s	4.328	4.328	4.328
Entry Flow, veh/h	631	207	626
Cap Entry Lane, veh/h	1371	861	1307
Entry HV Adj Factor	0.981	0.979	0.979
Flow Entry, veh/h	619	203	613
Cap Entry, veh/h	1346	843	1279
V/C Ratio	0.460	0.240	0.479
Control Delay, s/veh	7.2	6.8	7.8
LOS	A	A	A
95th %tile Queue, veh	2	1	3






Volume  
3: Jane Lundeen & North School Access

2025 Total Traffic  
AM Peak Hour

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Volume (vph)	0	0	534	47	83	386
Future Volume (vph)	0	0	534	47	83	386
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.40	0.40	0.87	0.55	0.55	0.83
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Adj. Flow (vph)	0	0	614	85	151	465
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	614	85	151	465
Intersection Summary						







HCM 6th TWSC  
3: Jane Lundeen & North School Access

2025 Total Traffic  
AM Peak Hour

Intersection						
Int Delay, s/veh	1.1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	534	47	83	386
Future Vol, veh/h	0	0	534	47	83	386
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	155	255	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	40	40	87	55	55	83
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	614	85	151	465
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	1381	614	0	0	699	0
Stage 1	614	-	-	-	-	-
Stage 2	767	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	159	492	-	-	898	-
Stage 1	540	-	-	-	-	-
Stage 2	458	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	132	492	-	-	898	-
Mov Cap-2 Maneuver	223	-	-	-	-	-
Stage 1	449	-	-	-	-	-
Stage 2	458	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	0	0	2.4			
HCM LOS	A					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	-	898	-	
HCM Lane V/C Ratio	-	-	-	0.168	-	
HCM Control Delay (s)	-	-	0	9.8	-	
HCM Lane LOS	-	-	A	A	-	
HCM 95th %tile Q(veh)	-	-	-	0.6	-	





Volume  
4: Jane Lundeen & YMCA Access

2025 Total Traffic  
AM Peak Hour

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Volume (vph)	0	34	547	24	42	344
Future Volume (vph)	0	34	547	24	42	344
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.85	0.85	0.87	0.85	0.85	0.83
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Adj. Flow (vph)	0	40	629	28	49	414
Shared Lane Traffic (%)						
Lane Group Flow (vph)	40	0	657	0	49	414
Intersection Summary						

HCM 6th TWSC  
4: Jane Lundeen & YMCA Access

2025 Total Traffic  
AM Peak Hour

Intersection						
Int Delay, s/veh	0.9					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	34	547	24	42	344
Future Vol, veh/h	0	34	547	24	42	344
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	205	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	85	85	87	85	85	83
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	40	629	28	49	414

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	1155	643	0
Stage 1	643	-	-
Stage 2	512	-	-
Critical Hdwy	6.42	6.22	-
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	-
Pot Cap-1 Maneuver	218	473	-
Stage 1	523	-	-
Stage 2	602	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	206	473	-
Mov Cap-2 Maneuver	332	-	-
Stage 1	495	-	-
Stage 2	602	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.3	0	1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	473	931
HCM Lane V/C Ratio	-	-	0.085	0.053
HCM Control Delay (s)	-	-	13.3	9.1
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	0.3	0.2

Volume  
5: Pinehurst Cir & Jane Lundeen

2025 Total Traffic  
AM Peak Hour









Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Traffic Volume (vph)	72	198	0	500	344	0
Future Volume (vph)	72	198	0	500	344	0
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.83	0.83	0.87	0.87	0.83	0.83
Growth Factor	53%	53%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Adj. Flow (vph)	46	126	0	575	414	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	172	575	0	414	0
Intersection Summary						

Intersection			
Intersection Delay, s/veh	6.4		
Intersection LOS	A		
Approach	EB	WB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	172	575	414
Demand Flow Rate, veh/h	176	586	422
Vehicles Circulating, veh/h	422	47	0
Vehicles Exiting, veh/h	0	551	633
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	6.1	7.2	5.4
Approach LOS	A	A	A
Lane	Left	Left	Left
Designated Moves	LT	R	L
Assumed Moves	LT	R	L
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	176	586	422
Cap Entry Lane, veh/h	897	1315	1380
Entry HV Adj Factor	0.980	0.981	0.981
Flow Entry, veh/h	172	575	414
Cap Entry, veh/h	879	1291	1354
V/C Ratio	0.196	0.446	0.306
Control Delay, s/veh	6.1	7.2	5.4
LOS	A	A	A
95th %tile Queue, veh	1	2	1

Volume  
6: Pinehurst Cir & South School Access

2025 Total Traffic  
AM Peak Hour

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Traffic Volume (vph)	542	0	0	0	0	500
Future Volume (vph)	542	0	0	0	0	500
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.83	0.83	0.87	0.87	0.87	0.87
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Adj. Flow (vph)	653	0	0	0	0	575
Shared Lane Traffic (%)						
Lane Group Flow (vph)	653	0	0	0	575	0
Intersection Summary						







HCM 6th TWSC  
6: Pinehurst Cir & South School Access

2025 Total Traffic  
AM Peak Hour

Intersection

Int Delay, s/veh 10.2

Movement EBL EBT WBT WBR SBL SBR

Lane Configurations						
Traffic Vol, veh/h	542	0	0	0	0	500
Future Vol, veh/h	542	0	0	0	0	500
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	255	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	83	83	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	653	0	0	0	0	575

Major/Minor Major1 Major2 Minor2

Conflicting Flow All	1	0	-	0	1307	1
Stage 1	-	-	-	-	1	-
Stage 2	-	-	-	-	1306	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1622	-	-	-	176	1084
Stage 1	-	-	-	-	1022	-
Stage 2	-	-	-	-	254	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1622	-	-	-	105	1084
Mov Cap-2 Maneuver	-	-	-	-	105	-
Stage 1	-	-	-	-	610	-
Stage 2	-	-	-	-	254	-

Approach EB WB SB

HCM Control Delay, s	8.7	0	12
HCM LOS			B













Minor Lane/Major Mvmt EBL EBT WBT WBR SBLn1

Capacity (veh/h)	1622	-	-	-	1084
HCM Lane V/C Ratio	0.403	-	-	-	0.53
HCM Control Delay (s)	8.7	-	-	-	12
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	2	-	-	-	3.2

# Volume 1: SH 83 & SH 105/Walker Rd

2025 Total Traffic























School Midday Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	54	203	136	201	227	68	141	246	24	66	273	40
Future Volume (vph)	54	203	136	201	227	68	141	246	24	66	273	40
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.87	0.87	0.87	0.57	0.61	0.63	0.87	0.87	0.87	0.87	0.87	0.91
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	62	233	156	353	372	108	162	283	28	76	314	44
Shared Lane Traffic (%)												
Lane Group Flow (vph)	62	233	156	353	480	0	162	283	28	76	314	44
Intersection Summary												

# Timings 1: SH 83 & SH 105/Walker Rd

2025 Total Traffic

School Midday Peak Hour

											
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	54	203	136	201	227	141	246	24	66	273	40
Future Volume (vph)	54	203	136	201	227	141	246	24	66	273	40
Turn Type	Perm	NA	Free	pm+pt	NA	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4		3	8	5	2		1	6	
Permitted Phases	4		Free	8		2		2	6		6
Detector Phase	4	4		3	8	5	2	2	1	6	6
Switch Phase											
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	11.0	11.0		10.0	10.0	10.0	12.0	12.0	10.0	12.0	12.0
Total Split (s)	25.0	25.0		20.0	45.0	13.0	40.0	40.0	15.0	42.0	42.0
Total Split (%)	25.0%	25.0%		20.0%	45.0%	13.0%	40.0%	40.0%	15.0%	42.0%	42.0%
Yellow Time (s)	4.0	4.0		3.0	3.0	3.0	5.0	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
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0		5.0	5.0	5.0	7.0	7.0	5.0	7.0	7.0
Lead/Lag	Lag	Lag		Lead		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes		Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None		None	None	None	Max	Max	None	Max	Max
Act Effect Green (s)	16.1	16.1	97.0	37.0	37.0	45.9	37.6	37.6	44.7	35.0	35.0
Actuated g/C Ratio	0.17	0.17	1.00	0.38	0.38	0.47	0.39	0.39	0.46	0.36	0.36
v/c Ratio	0.41	0.75	0.10	0.88	0.69	0.34	0.39	0.04	0.15	0.47	0.07
Control Delay	44.8	54.6	0.1	48.4	30.1	15.6	25.6	0.1	13.6	27.3	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
Total Delay	44.8	54.6	0.1	48.4	30.1	15.6	25.6	0.1	13.6	27.3	0.2
LOS	D	D	A	D	C	B	C	A	B	C	A
Approach Delay		34.4			37.9		20.7			22.1	
Approach LOS		C			D		C			C	

## Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 97

Natural Cycle: 60

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.88

Intersection Signal Delay: 30.3









Intersection LOS: C

Intersection Capacity Utilization 63.2%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 1: SH 83 & SH 105/Walker Rd

			
15 s	40 s	20 s	25 s
			
13 s	42 s	45 s	

## Volume 2: Jane Lundeen & Walker Rd

2025 Total Traffic  
School Midday Peak Hour

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Volume (vph)	94	198	13	81	414	26
Future Volume (vph)	94	198	13	81	414	26
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.87	0.87	0.83	0.83	0.55	0.56
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Adj. Flow (vph)	108	228	16	98	753	46
Shared Lane Traffic (%)						
Lane Group Flow (vph)	336	0	0	114	799	0
Intersection Summary						







# HCM 6th Roundabout 2: Jane Lundeen & Walker Rd

2025 Total Traffic  
School Midday Peak Hour

Intersection			
Intersection Delay, s/veh	8.7		
Intersection LOS	A		
Approach	EB	WB	NB
Entry Lanes	1	1	1
Conflicting Circle Lanes	2	2	2
Adj Approach Flow, veh/h	336	114	799
Demand Flow Rate, veh/h	343	116	815
Vehicles Circulating, veh/h	16	768	110
Vehicles Exiting, veh/h	868	157	249
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	4.7	6.7	10.7
Approach LOS	A	A	B
Lane	Left	Left	Left
Designated Moves	TR	LT	LR
Assumed Moves	TR	LT	LR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.535	2.535	2.535
Critical Headway, s	4.328	4.328	4.328
Entry Flow, veh/h	343	116	815
Cap Entry Lane, veh/h	1401	739	1293
Entry HV Adj Factor	0.979	0.983	0.980
Flow Entry, veh/h	336	114	799
Cap Entry, veh/h	1372	727	1268
V/C Ratio	0.245	0.157	0.630
Control Delay, s/veh	4.7	6.7	10.7
LOS	A	A	B
95th %tile Queue, veh	1	1	5

### Volume 3: Jane Lundeen & North School Access






2025 Total Traffic  
School Midday Peak Hour

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Volume (vph)	0	71	369	0	0	211
Future Volume (vph)	0	71	369	0	0	211
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.40	0.40	0.55	0.55	0.55	0.74
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Adj. Flow (vph)	0	178	671	0	0	285
Shared Lane Traffic (%)						
Lane Group Flow (vph)	178	0	671	0	0	285
Intersection Summary						









# HCM 6th TWSC 3: Jane Lundeen & North School Access

2025 Total Traffic  
School Midday Peak Hour

Intersection						
Int Delay, s/veh	2.8					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	71	369	0	0	211
Future Vol, veh/h	0	71	369	0	0	211
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	155	255	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	40	40	55	55	55	74
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	178	671	0	0	285
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	956	671	0	0	671	0
Stage 1	671	-	-	-	-	-
Stage 2	285	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	286	456	-	-	919	-
Stage 1	508	-	-	-	-	-
Stage 2	763	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	286	456	-	-	919	-
Mov Cap-2 Maneuver	399	-	-	-	-	-
Stage 1	508	-	-	-	-	-
Stage 2	763	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	17.8	0	0			
HCM LOS	C					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	456	919	-	
HCM Lane V/C Ratio	-	-	0.389	-	-	
HCM Control Delay (s)	-	-	17.8	0	-	
HCM Lane LOS	-	-	C	A	-	
HCM 95th %tile Q(veh)	-	-	1.8	0	-	





## Volume 4: Jane Lundeen & YMCA Access

2025 Total Traffic  
School Midday Peak Hour

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Volume (vph)	0	25	344	9	16	196
Future Volume (vph)	0	25	344	9	16	196
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.85	0.85	0.55	0.85	0.85	0.75
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Adj. Flow (vph)	0	29	625	11	19	261
Shared Lane Traffic (%)						
Lane Group Flow (vph)	29	0	636	0	19	261
Intersection Summary						







# HCM 6th TWSC 4: Jane Lundeen & YMCA Access

2025 Total Traffic  
School Midday Peak Hour

Intersection						
Int Delay, s/veh	0.6					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	25	344	9	16	196
Future Vol, veh/h	0	25	344	9	16	196
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	205	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	85	85	55	85	85	75
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	29	625	11	19	261
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	930	631	0	0	636	0
Stage 1	631	-	-	-	-	-
Stage 2	299	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	297	481	-	-	947	-
Stage 1	530	-	-	-	-	-
Stage 2	752	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	291	481	-	-	947	-
Mov Cap-2 Maneuver	403	-	-	-	-	-
Stage 1	519	-	-	-	-	-
Stage 2	752	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	13	0		0.6		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	481	947	-	
HCM Lane V/C Ratio	-	-	0.061	0.02	-	
HCM Control Delay (s)	-	-	13	8.9	-	
HCM Lane LOS	-	-	B	A	-	
HCM 95th %tile Q(veh)	-	-	0.2	0.1	-	

## Volume 5: Pinehurst Cir & Jane Lundeen

2025 Total Traffic  
School Midday Peak Hour

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Traffic Volume (vph)	9	112	0	344	196	0
Future Volume (vph)	9	112	0	344	196	0
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.75	0.75	0.55	0.55	0.75	0.75
Growth Factor	53%	53%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Adj. Flow (vph)	6	79	0	625	261	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	6	79	0	625	261	0
Intersection Summary						

# HCM 6th Roundabout 5: Pinehurst Cir & Jane Lundeen

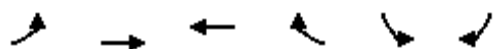
2025 Total Traffic

School Midday Peak Hour

Intersection				
Intersection Delay, s/veh	6.2			
Intersection LOS	A			
Approach	EB		WB	SB
Entry Lanes	2		1	1
Conflicting Circle Lanes	1		1	1
Adj Approach Flow, veh/h	85		625	261
Demand Flow Rate, veh/h	87		638	266
Vehicles Circulating, veh/h	266		6	0
Vehicles Exiting, veh/h	0		347	643
Ped Vol Crossing Leg, #/h	0		0	0
Ped Cap Adj	1.000		1.000	1.000
Approach Delay, s/veh	3.9		7.3	4.3
Approach LOS	A		A	A
Lane	Left	Right	Left	Left
Designated Moves	L	TR	R	L
Assumed Moves	L	TR	R	L
RT Channelized				
Lane Util	0.069	0.931	1.000	1.000
Follow-Up Headway, s	2.535	2.535	2.609	2.609
Critical Headway, s	4.544	4.544	4.976	4.976
Entry Flow, veh/h	6	81	638	266
Cap Entry Lane, veh/h	1115	1115	1371	1380
Entry HV Adj Factor	1.000	0.980	0.980	0.981
Flow Entry, veh/h	6	79	625	261
Cap Entry, veh/h	1115	1093	1343	1354
V/C Ratio	0.005	0.073	0.465	0.193
Control Delay, s/veh	3.3	3.9	7.3	4.3
LOS	A	A	A	A
95th %tile Queue, veh	0	0	3	1

# Volume 6: Pinehurst Cir & South School Access





2025 Total Traffic  
School Midday Peak Hour



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Traffic Volume (vph)	308	0	0	0	0	344
Future Volume (vph)	308	0	0	0	0	344
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.75	0.75	0.75	0.75	0.55	0.55
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Adj. Flow (vph)	411	0	0	0	0	625
Shared Lane Traffic (%)						
Lane Group Flow (vph)	411	0	0	0	625	0
Intersection Summary						

# HCM 6th TWSC 6: Pinehurst Cir & South School Access













2025 Total Traffic  
School Midday Peak Hour

Intersection						
Int Delay, s/veh	10.8					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	308	0	0	0	0	344
Future Vol, veh/h	308	0	0	0	0	344
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	255	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	75	75	75	75	55	55
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	411	0	0	0	0	625
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	1	0	-	0	823	1
Stage 1	-	-	-	-	1	-
Stage 2	-	-	-	-	822	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1622	-	-	-	343	1084
Stage 1	-	-	-	-	1022	-
Stage 2	-	-	-	-	432	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1622	-	-	-	256	1084
Mov Cap-2 Maneuver	-	-	-	-	256	-
Stage 1	-	-	-	-	763	-
Stage 2	-	-	-	-	432	-
Approach	EB	WB		SB		
HCM Control Delay, s	8	0		12.7		
HCM LOS	B					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1622	-	-	-	1084	
HCM Lane V/C Ratio	0.253	-	-	-	0.577	
HCM Control Delay (s)	8	-	-	-	12.7	
HCM Lane LOS	A	-	-	-	B	
HCM 95th %tile Q(veh)	1	-	-	-	3.8	



Volume  
1: SH 83 & SH 105/Walker Rd

2025 Total Traffic  
PM Peak Hour























												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	63	99	171	77	126	35	155	342	54	42	474	76
Future Volume (vph)	63	99	171	77	126	35	155	342	54	42	474	76
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.87	0.83	0.86	0.87	0.87	0.67	0.88	0.82	0.92	0.81	0.92	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	72	119	199	89	145	52	176	417	59	52	515	84
Shared Lane Traffic (%)												
Lane Group Flow (vph)	72	119	199	89	197	0	176	417	59	52	515	84
Intersection Summary												

# Timings

1: SH 83 & SH 105/Walker Rd

2025 Total Traffic

PM Peak Hour

											
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	63	99	171	77	126	155	342	54	42	474	76
Future Volume (vph)	63	99	171	77	126	155	342	54	42	474	76
Turn Type	Perm	NA	Free	pm+pt	NA	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4		3	8	5	2		1	6	
Permitted Phases	4		Free	8		2		2	6		6
Detector Phase	4	4		3	8	5	2	2	1	6	6
Switch Phase											
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	11.0	11.0		10.0	10.0	10.0	12.0	12.0	10.0	12.0	12.0
Total Split (s)	25.0	25.0		20.0	45.0	13.0	40.0	40.0	15.0	42.0	42.0
Total Split (%)	25.0%	25.0%		20.0%	45.0%	13.0%	40.0%	40.0%	15.0%	42.0%	42.0%
Yellow Time (s)	4.0	4.0		3.0	3.0	3.0	5.0	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
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0		5.0	5.0	5.0	7.0	7.0	5.0	7.0	7.0
Lead/Lag	Lag	Lag		Lead		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes		Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None		None	None	None	Max	Max	None	Max	Max
Act Effect Green (s)	10.9	10.9	83.3	22.8	22.8	48.0	41.4	41.4	44.2	35.5	35.5
Actuated g/C Ratio	0.13	0.13	1.00	0.27	0.27	0.58	0.50	0.50	0.53	0.43	0.43
v/c Ratio	0.47	0.49	0.13	0.27	0.39	0.42	0.45	0.07	0.10	0.65	0.11
Control Delay	45.5	42.1	0.2	23.7	23.0	12.4	19.7	0.1	9.6	25.9	1.0
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	45.5	42.1	0.2	23.7	23.0	12.4	19.7	0.1	9.6	25.9	1.0
LOS	D	D	A	C	C	B	B	A	A	C	A
Approach Delay		21.3			23.2		15.9			21.4	
Approach LOS		C			C		B			C	

## Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 83.3

Natural Cycle: 60

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.65

Intersection Signal Delay: 19.8








Intersection LOS: B

Intersection Capacity Utilization 65.6%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 1: SH 83 & SH 105/Walker Rd

			
Ø1	Ø2	Ø3	Ø4
15 s	40 s	20 s	25 s
			
Ø5	Ø6	Ø8	
13 s	42 s	45 s	

Volume  
2: Jane Lundeen & Walker Rd

2025 Total Traffic  
PM Peak Hour

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Volume (vph)	140	55	3	101	138	11
Future Volume (vph)	140	55	3	101	138	11
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.92	0.83	0.83	0.88	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Adj. Flow (vph)	156	60	4	122	157	12
Shared Lane Traffic (%)						
Lane Group Flow (vph)	216	0	0	126	169	0
Intersection Summary						

HCM 6th Roundabout  
2: Jane Lundeen & Walker Rd

2025 Total Traffic  
PM Peak Hour

Intersection			
Intersection Delay, s/veh	3.9		
Intersection LOS	A		
Approach	EB	WB	NB
Entry Lanes	1	1	1
Conflicting Circle Lanes	2	2	2
Adj Approach Flow, veh/h	216	126	169
Demand Flow Rate, veh/h	220	128	172
Vehicles Circulating, veh/h	4	160	159
Vehicles Exiting, veh/h	284	171	65
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	3.8	3.8	4.1
Approach LOS	A	A	A
Lane	Left	Left	Left
Designated Moves	TR	LT	LR
Assumed Moves	TR	LT	LR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.535	2.535	2.535
Critical Headway, s	4.328	4.328	4.328
Entry Flow, veh/h	220	128	172
Cap Entry Lane, veh/h	1415	1240	1241
Entry HV Adj Factor	0.981	0.981	0.983
Flow Entry, veh/h	216	126	169
Cap Entry, veh/h	1389	1216	1219
V/C Ratio	0.155	0.103	0.139
Control Delay, s/veh	3.8	3.8	4.1
LOS	A	A	A
95th %tile Queue, veh	1	0	0






Volume  
3: Jane Lundeen & North School Access

2025 Total Traffic  
PM Peak Hour

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Volume (vph)	0	29	120	6	8	51
Future Volume (vph)	0	29	120	6	8	51
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.88	0.88	0.88	0.85	0.85	0.85
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Adj. Flow (vph)	0	33	136	7	9	60
Shared Lane Traffic (%)						
Lane Group Flow (vph)	33	0	136	7	9	60
Intersection Summary						

HCM 6th TWSC  
3: Jane Lundeen & North School Access

2025 Total Traffic  
PM Peak Hour

Intersection						
Int Delay, s/veh	1.5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	29	120	6	8	51
Future Vol, veh/h	0	29	120	6	8	51
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	155	255	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	88	88	88	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	33	136	7	9	60







Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	214	136	0	0	143
Stage 1	136	-	-	-	-
Stage 2	78	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218
Pot Cap-1 Maneuver	774	913	-	-	1440
Stage 1	890	-	-	-	-
Stage 2	945	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	769	913	-	-	1440
Mov Cap-2 Maneuver	765	-	-	-	-
Stage 1	885	-	-	-	-
Stage 2	945	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.1	0	1
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	913	1440
HCM Lane V/C Ratio	-	-	0.036	0.007
HCM Control Delay (s)	-	-	9.1	7.5
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0

Volume  
4: Jane Lundeen & YMCA Access





2025 Total Traffic  
PM Peak Hour

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Volume (vph)	0	55	71	22	26	24
Future Volume (vph)	0	55	71	22	26	24
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.85	0.85	0.88	0.85	0.85	0.85
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Adj. Flow (vph)	0	65	81	26	31	28
Shared Lane Traffic (%)						
Lane Group Flow (vph)	65	0	107	0	31	28
Intersection Summary						



HCM 6th TWSC  
4: Jane Lundeen & YMCA Access

2025 Total Traffic  
PM Peak Hour

Intersection						
Int Delay, s/veh	3.5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	55	71	22	26	24
Future Vol, veh/h	0	55	71	22	26	24
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	205	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	85	85	88	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	65	81	26	31	28
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	184	94	0	0	107	0
Stage 1	94	-	-	-	-	-
Stage 2	90	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	805	963	-	-	1484	-
Stage 1	930	-	-	-	-	-
Stage 2	934	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	788	963	-	-	1484	-
Mov Cap-2 Maneuver	773	-	-	-	-	-
Stage 1	910	-	-	-	-	-
Stage 2	934	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	9	0		3.9		
HCM LOS	A					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	963	1484	-	
HCM Lane V/C Ratio	-	-	0.067	0.021	-	
HCM Control Delay (s)	-	-	9	7.5	-	
HCM Lane LOS	-	-	A	A	-	
HCM 95th %tile Q(veh)	-	-	0.2	0.1	-	

Volume  
5: Pinehurst Cir & Jane Lundeen

2025 Total Traffic  
PM Peak Hour









Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Traffic Volume (vph)	28	20	0	65	24	0
Future Volume (vph)	28	20	0	65	24	0
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.85	0.85	0.88	0.88	0.85	0.85
Growth Factor	53%	53%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Adj. Flow (vph)	17	12	0	74	28	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	17	12	0	74	28	0
Intersection Summary						

Intersection				
Intersection Delay, s/veh	3.0			
Intersection LOS	A			
Approach	EB		WB	SB
Entry Lanes	2		1	1
Conflicting Circle Lanes	1		1	1
Adj Approach Flow, veh/h	29		74	28
Demand Flow Rate, veh/h	29		75	29
Vehicles Circulating, veh/h	29		17	0
Vehicles Exiting, veh/h	0		41	92
Ped Vol Crossing Leg, #/h	0		0	0
Ped Cap Adj	1.000		1.000	1.000
Approach Delay, s/veh	2.7		3.1	2.9
Approach LOS	A		A	A
Lane	Left	Right	Left	Left
Designated Moves	L	TR	R	L
Assumed Moves	L	TR	R	L
RT Channelized				
Lane Util	0.586	0.414	1.000	1.000
Follow-Up Headway, s	2.535	2.535	2.609	2.609
Critical Headway, s	4.544	4.544	4.976	4.976
Entry Flow, veh/h	17	12	75	29
Cap Entry Lane, veh/h	1383	1383	1356	1380
Entry HV Adj Factor	1.000	0.980	0.987	0.966
Flow Entry, veh/h	17	12	74	28
Cap Entry, veh/h	1383	1356	1338	1332
V/C Ratio	0.012	0.009	0.055	0.021
Control Delay, s/veh	2.7	2.7	3.1	2.9
LOS	A	A	A	A
95th %tile Queue, veh	0	0	0	0

Volume  
6: Pinehurst Cir & South School Access

2025 Total Traffic  
PM Peak Hour





						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Traffic Volume (vph)	44	0	0	0	0	65
Future Volume (vph)	44	0	0	0	0	65
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.85	0.85	0.85	0.85	0.88	0.88
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Adj. Flow (vph)	52	0	0	0	0	74
Shared Lane Traffic (%)						
Lane Group Flow (vph)	52	0	0	0	74	0
Intersection Summary						

HCM 6th TWSC  
6: Pinehurst Cir & South School Access

2025 Total Traffic  
PM Peak Hour

Intersection

Int Delay, s/veh 8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	44	0	0	0	0	65
Future Vol, veh/h	44	0	0	0	0	65
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	255	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	85	85	85	85	88	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	52	0	0	0	0	74













Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	1	0	0 105 1
Stage 1	-	-	- 1 -
Stage 2	-	-	- 104 -
Critical Hdwy	4.12	-	- 6.42 6.22
Critical Hdwy Stg 1	-	-	- 5.42 -
Critical Hdwy Stg 2	-	-	- 5.42 -
Follow-up Hdwy	2.218	-	- 3.518 3.318
Pot Cap-1 Maneuver	1622	-	- 893 1084
Stage 1	-	-	- 1022 -
Stage 2	-	-	- 920 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1622	-	- 864 1084
Mov Cap-2 Maneuver	-	-	- 864 -
Stage 1	-	-	- 989 -
Stage 2	-	-	- 920 -

Approach	EB	WB	SB
HCM Control Delay, s	7.3	0	8.6
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1622	-	-	-	1084
HCM Lane V/C Ratio	0.032	-	-	-	0.068
HCM Control Delay (s)	7.3	-	-	-	8.6
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0.1	-	-	-	0.2























Volume  
121: SH 83 & Hodgen Rd

2025 Total Traffic  
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	72	170	85	118	124	211	106	304	180	212	397	97
Future Volume (vph)	72	170	85	118	124	211	106	304	180	212	397	97
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.76	0.76	0.76	0.85	0.85	0.85	0.90	0.90	0.90	0.89	0.89	0.89
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	95	224	112	139	146	248	118	338	200	238	446	109
Shared Lane Traffic (%)												
Lane Group Flow (vph)	95	224	112	139	146	248	118	338	200	238	555	0
Intersection Summary												

Timings  
121: SH 83 & Hodgen Rd

2025 Total Traffic  
PM Peak Hour

											
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations											
Traffic Volume (vph)	72	170	85	118	124	211	106	304	180	212	397
Future Volume (vph)	72	170	85	118	124	211	106	304	180	212	397
Turn Type	Prot	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA
Protected Phases	7	4			8		5	2		1	6
Permitted Phases			4	8		8	2		2	6	
Detector Phase	7	4	4	8	8	8	5	2	2	1	6
Switch Phase											
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	11.0	11.0	11.0	10.0	10.0	10.0	10.0	12.0	12.0	10.0	12.0
Total Split (s)	14.0	38.0	38.0	24.0	24.0	24.0	13.0	49.0	49.0	13.0	49.0
Total Split (%)	14.0%	38.0%	38.0%	24.0%	24.0%	24.0%	13.0%	49.0%	49.0%	13.0%	49.0%
Yellow Time (s)	4.0	4.0	4.0	3.0	3.0	3.0	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	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	5.0	5.0	5.0	5.0	7.0	7.0	5.0	7.0
Lead/Lag	Lead			Lag	Lag	Lag	Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	Min	Min	None	Min
Act Effect Green (s)	8.2	24.5	24.5	15.3	15.3	15.3	38.4	28.2	28.2	40.8	32.8
Actuated g/C Ratio	0.10	0.30	0.30	0.19	0.19	0.19	0.48	0.35	0.35	0.50	0.41
v/c Ratio	0.53	0.40	0.20	0.64	0.41	0.50	0.33	0.52	0.29	0.48	0.75
Control Delay	53.4	25.8	6.0	49.4	37.1	8.6	12.8	24.2	4.1	14.6	30.1
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	53.4	25.8	6.0	49.4	37.1	8.6	12.8	24.2	4.1	14.6	30.1
LOS	D	C	A	D	D	A	B	C	A	B	C
Approach Delay		26.8			27.0			16.0			25.5
Approach LOS		C			C			B			C

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 80.8

Natural Cycle: 65

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.75

Intersection Signal Delay: 23.5

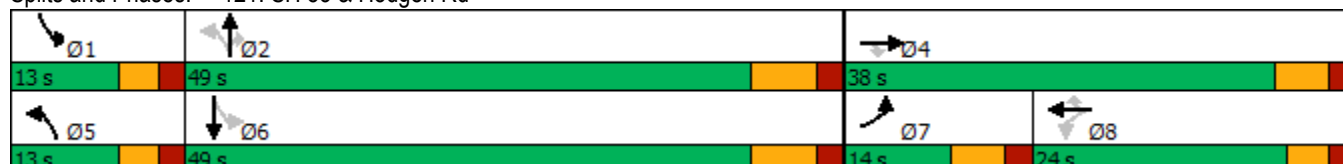
Intersection LOS: C

Intersection Capacity Utilization 67.3%

ICU Level of Service C

Analysis Period (min) 15













Splits and Phases: 121: SH 83 & Hodgen Rd





Volume  
1: SH 83 & SH 105/Walker Rd

2040 Background Traffic  
AM Peak Hour

























												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	51	239	164	326	279	150	194	488	203	133	363	79
Future Volume (vph)	51	239	164	326	279	150	194	488	203	133	363	79
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.88	0.80	0.93	0.93	0.93	0.80	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	55	272	205	351	300	161	243	530	221	145	395	86
Shared Lane Traffic (%)												
Lane Group Flow (vph)	55	272	205	351	300	161	243	530	221	145	395	86
Intersection Summary												

# Timings

## 1: SH 83 & SH 105/Walker Rd

# 2040 Background Traffic

AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	51	239	164	326	279	150	194	488	203	133	363	79
Future Volume (vph)	51	239	164	326	279	150	194	488	203	133	363	79
Turn Type	Perm	NA	Free	Prot	NA	Free	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		Free			Free	2		2	6		6
Detector Phase	4	4		3	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	11.0	11.0		10.0	10.0		10.0	12.0	12.0	10.0	12.0	12.0
Total Split (s)	32.0	32.0		29.0	61.0		13.0	41.0	41.0	18.0	46.0	46.0
Total Split (%)	26.7%	26.7%		24.2%	50.8%		10.8%	34.2%	34.2%	15.0%	38.3%	38.3%
Yellow Time (s)	4.0	4.0		3.0	3.0		3.0	5.0	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
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0		5.0	5.0		5.0	7.0	7.0	5.0	7.0	7.0
Lead/Lag	Lag	Lag		Lead			Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes			Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None		None	None		None	Max	Max	None	Max	Max
Act Effect Green (s)	12.9	12.9	98.5	15.3	34.3	98.5	47.5	37.5	37.5	50.8	39.1	39.1
Actuated g/C Ratio	0.13	0.13	1.00	0.16	0.35	1.00	0.48	0.38	0.38	0.52	0.40	0.40
v/c Ratio	0.39	0.59	0.13	0.66	0.46	0.10	0.46	0.39	0.30	0.31	0.28	0.12
Control Delay	48.5	46.0	0.2	45.7	27.2	0.1	17.5	24.8	4.7	14.0	21.7	2.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	48.5	46.0	0.2	45.7	27.2	0.1	17.5	24.8	4.7	14.0	21.7	2.3
LOS	D	D	A	D	C	A	B	C	A	B	C	A
Approach Delay		28.6			29.8			18.5			17.3	
Approach LOS		C			C			B			B	

## Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 98.5

Natural Cycle: 60

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.66

Intersection Signal Delay: 23.2








Intersection LOS: C

Intersection Capacity Utilization 58.9%

ICU Level of Service B













Analysis Period (min) 15

## Splits and Phases: 1: SH 83 & SH 105/Walker Rd

			
Ø1	Ø2	Ø3	Ø4
18 s	41 s	29 s	32 s
			
Ø5	Ø6	Ø8	
13 s	46 s	61 s	

Volume  
2: Jane Lundeen & Walker Rd

2040 Background Traffic  
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	123	78	374	41	149	7	464	1	23	4	0	142
Future Volume (vph)	123	78	374	41	149	7	464	1	23	4	0	142
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.93	0.78	0.93	0.89	0.85	0.87	0.93	0.93	0.93	0.83	0.83	0.83
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	132	100	402	46	175	8	499	1	25	5	0	171
Shared Lane Traffic (%)							47%					
Lane Group Flow (vph)	0	634	0	0	229	0	264	261	0	0	176	0
Intersection Summary												







HCM 6th Roundabout  
2: Jane Lundeen & Walker Rd

2040 Background Traffic  
AM Peak Hour

Intersection						
Intersection Delay, s/veh	4.4					
Intersection LOS	A					
Approach	EB	WB	NB	SB		
Entry Lanes	1	1	2	1		
Conflicting Circle Lanes	2	2	2	2		
Adj Approach Flow, veh/h	634	229	525	176		
Demand Flow Rate, veh/h	647	233	536	179		
Vehicles Circulating, veh/h	52	645	242	734		
Vehicles Exiting, veh/h	861	132	47	144		
Ped Vol Crossing Leg, #/h	0	0	0	0		
Ped Cap Adj	1.000	1.000	1.000	1.000		
Approach Delay, s/veh	1.5	7.7	5.6	7.5		
Approach LOS	A	A	A	A		
Lane	Left	Bypass	Left	Left	Right	Left
Designated Moves	LT	R	LTR	L	LTR	LTR
Assumed Moves	LT	R	LTR	L	LTR	LTR
RT Channelized	Free					
Lane Util	1.000		1.000	0.530	0.470	1.000
Follow-Up Headway, s	2.535		2.535	2.667	2.535	2.535
Critical Headway, s	4.328	410	4.328	4.645	4.328	4.328
Entry Flow, veh/h	237	1938	233	284	252	179
Cap Entry Lane, veh/h	1359	0.980	821	1080	1156	761
Entry HV Adj Factor	0.979	402	0.981	0.980	0.979	0.983
Flow Entry, veh/h	232	1900	229	278	247	176
Cap Entry, veh/h	1330	0.212	805	1059	1132	748
V/C Ratio	0.174	0.0	0.284	0.263	0.218	0.235
Control Delay, s/veh	4.1	A	7.7	5.9	5.2	7.5
LOS	A	1	A	A	A	A
95th %tile Queue, veh	1		1	1	1	1






Volume  
3: Jane Lundeen & Future Tract B Access

2040 Background Traffic  
AM Peak Hour

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Volume (vph)	105	1	36	236	133	105
Future Volume (vph)	105	1	36	236	133	105
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.93	0.93	0.90	0.93	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Adj. Flow (vph)	113	1	40	254	148	117
Shared Lane Traffic (%)						
Lane Group Flow (vph)	114	0	40	254	148	117
Intersection Summary						







HCM 6th TWSC  
3: Jane Lundeen & Future Tract B Access

2040 Background Traffic  
AM Peak Hour






Intersection						
Int Delay, s/veh	2.6					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	105	1	36	236	133	105
Future Vol, veh/h	105	1	36	236	133	105
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	205	-	-	155
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	90	93	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	113	1	40	254	148	117
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	482	148	265	0	-	0
Stage 1	148	-	-	-	-	-
Stage 2	334	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	543	899	1299	-	-	-
Stage 1	880	-	-	-	-	-
Stage 2	725	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	526	899	1299	-	-	-
Mov Cap-2 Maneuver	578	-	-	-	-	-
Stage 1	853	-	-	-	-	-
Stage 2	725	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	12.7	1.1		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1299	-	580	-	-	
HCM Lane V/C Ratio	0.031	-	0.197	-	-	
HCM Control Delay (s)	7.9	-	12.7	-	-	
HCM Lane LOS	A	-	B	-	-	
HCM 95th %tile Q(veh)	0.1	-	0.7	-	-	

Volume  
4: Jane Lundeen

2040 Background Traffic  
AM Peak Hour













						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Volume (vph)	69	2	52	203	66	68
Future Volume (vph)	69	2	52	203	66	68
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.93	0.93	0.90	0.93	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Adj. Flow (vph)	74	2	58	218	73	76
Shared Lane Traffic (%)						
Lane Group Flow (vph)	76	0	58	218	73	76
Intersection Summary						



Intersection						
Int Delay, s/veh	2.7					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	69	2	52	203	66	68
Future Vol, veh/h	69	2	52	203	66	68
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	205	-	-	155
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	90	93	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	74	2	58	218	73	76
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	407	73	149	0	-	0
Stage 1	73	-	-	-	-	-
Stage 2	334	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	600	989	1432	-	-	-
Stage 1	950	-	-	-	-	-
Stage 2	725	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	575	989	1432	-	-	-
Mov Cap-2 Maneuver	591	-	-	-	-	-
Stage 1	911	-	-	-	-	-
Stage 2	725	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	11.9	1.6		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1432	-	598	-	-	
HCM Lane V/C Ratio	0.04	-	0.128	-	-	
HCM Control Delay (s)	7.6	-	11.9	-	-	
HCM Lane LOS	A	-	B	-	-	
HCM 95th %tile Q(veh)	0.1	-	0.4	-	-	

Volume  
5: Pinehurst Cir & Jane Lundeen













2040 Background Traffic  
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	114	1	65	2	0	24	0	116	2	10	59	0
Future Volume (vph)	114	1	65	2	0	24	0	116	2	10	59	0
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.83	0.83	0.83	0.87	0.87	0.87	0.85	0.85	0.85	0.83	0.83	0.83
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	137	1	78	2	0	28	0	136	2	12	71	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	216	0	0	30	0	0	138	0	0	83	0
Intersection Summary												

Intersection				
Intersection Delay, s/veh	4.1			
Intersection LOS	A			
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	216	30	138	83
Demand Flow Rate, veh/h	221	31	141	84
Vehicles Circulating, veh/h	86	279	153	2
Vehicles Exiting, veh/h	0	15	154	308
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	4.4	3.8	4.1	3.1
Approach LOS	A	A	A	A
Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	221	31	141	84
Cap Entry Lane, veh/h	1264	1038	1180	1377
Entry HV Adj Factor	0.977	0.968	0.981	0.983
Flow Entry, veh/h	216	30	138	83
Cap Entry, veh/h	1235	1005	1158	1354
V/C Ratio	0.175	0.030	0.119	0.061
Control Delay, s/veh	4.4	3.8	4.1	3.1
LOS	A	A	A	A
95th %tile Queue, veh	1	0	0	0

























Volume  
121: SH 83 & Hodgen Rd

2040 Background Traffic  
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	150	144	186	392	340	380	77	516	125	154	520	188
Future Volume (vph)	150	144	186	392	340	380	77	516	125	154	520	188
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	158	152	196	413	358	400	81	543	132	162	547	198
Shared Lane Traffic (%)												
Lane Group Flow (vph)	158	152	196	413	358	400	81	543	132	162	547	198
Intersection Summary												

Timings  
121: SH 83 & Hodgen Rd

2040 Background Traffic  
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	150	144	186	392	340	380	77	516	125	154	520	188
Future Volume (vph)	150	144	186	392	340	380	77	516	125	154	520	188
Turn Type	pm+pt	NA	Perm	Prot	NA	Free	pm+pt	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4			Free	2		2			6
Detector Phase	7	4	4	3	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	11.0	11.0	10.0	11.0		10.0	12.0	12.0	10.0	12.0	12.0
Total Split (s)	19.0	29.0	29.0	22.0	32.0		13.0	34.0	34.0	15.0	36.0	36.0
Total Split (%)	19.0%	29.0%	29.0%	22.0%	32.0%		13.0%	34.0%	34.0%	15.0%	36.0%	36.0%
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0		3.0	5.0	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)	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	6.0	6.0	5.0	6.0		5.0	7.0	7.0	5.0	7.0	7.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None		None	Max	Max	None	Max	Max
Act Effect Green (s)	29.4	17.5	17.5	15.0	21.5	92.0	36.6	27.3	27.3	9.0	31.5	31.5
Actuated g/C Ratio	0.32	0.19	0.19	0.16	0.23	1.00	0.40	0.30	0.30	0.10	0.34	0.34
v/c Ratio	0.49	0.43	0.43	0.74	0.82	0.25	0.21	0.52	0.23	0.48	0.45	0.29
Control Delay	22.6	37.1	7.9	46.0	50.1	0.4	17.0	30.3	5.4	45.9	27.4	5.3
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	22.6	37.1	7.9	46.0	50.1	0.4	17.0	30.3	5.4	45.9	27.4	5.3
LOS	C	D	A	D	D	A	B	C	A	D	C	A
Approach Delay		21.3			31.7			24.6			25.9	
Approach LOS		C			C			C			C	

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 92

Natural Cycle: 60

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.82

Intersection Signal Delay: 26.9

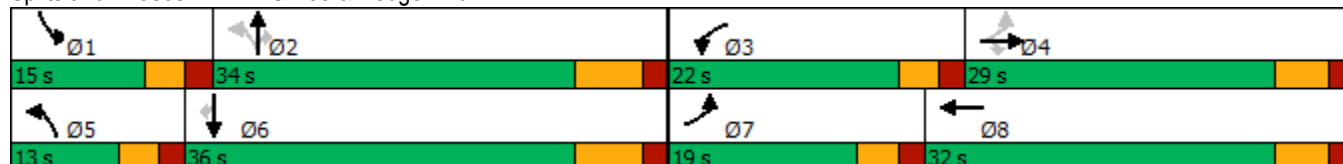
Intersection LOS: C

Intersection Capacity Utilization 64.0%

ICU Level of Service C













Analysis Period (min) 15

Splits and Phases: 121: SH 83 & Hodgen Rd



Volume  
1: SH 83 & SH 105/Walker Rd













2040 Background Traffic  
School Midday Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	73	262	148	333	339	154	149	325	223	164	361	53
Future Volume (vph)	73	262	148	333	339	154	149	325	223	164	361	53
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.85	0.92	0.92	0.92	0.93	0.92	0.91	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	79	308	161	362	368	166	162	357	242	178	392	58
Shared Lane Traffic (%)												
Lane Group Flow (vph)	79	308	161	362	368	166	162	357	242	178	392	58
Intersection Summary												

Volume  
1: SH 83 & SH 105/Walker Rd

2040 Total Traffic (Staggered Start Times)

AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	51	572	164	530	493	217	194	488	203	240	363	79
Future Volume (vph)	51	572	164	530	493	217	194	488	203	240	363	79
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.88	0.80	0.93	0.93	0.93	0.80	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	55	650	205	570	530	233	243	530	221	261	395	86
Shared Lane Traffic (%)												
Lane Group Flow (vph)	55	650	205	570	530	233	243	530	221	261	395	86
Intersection Summary												



























# Timings

## 1: SH 83 & SH 105/Walker Rd

# 2040 Background Traffic

School Midday Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	73	262	148	333	339	154	149	325	223	164	361	53
Future Volume (vph)	73	262	148	333	339	154	149	325	223	164	361	53
Turn Type	Perm	NA	Free	Prot	NA	Free	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		Free			Free	2		2	6		6
Detector Phase	4	4		3	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	11.0	11.0		10.0	10.0		10.0	12.0	12.0	10.0	12.0	12.0
Total Split (s)	38.0	38.0		23.0	61.0		13.0	31.0	31.0	28.0	46.0	46.0
Total Split (%)	31.7%	31.7%		19.2%	50.8%		10.8%	25.8%	25.8%	23.3%	38.3%	38.3%
Yellow Time (s)	4.0	4.0		3.0	3.0		3.0	5.0	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
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0		5.0	5.0		5.0	7.0	7.0	5.0	7.0	7.0
Lead/Lag	Lag	Lag		Lead			Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes			Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None		None	None		None	Max	Max	None	Max	Max
Act Effect Green (s)	14.6	14.6	100.0	15.2	35.8	100.0	46.2	36.2	36.2	51.6	39.1	39.1
Actuated g/C Ratio	0.15	0.15	1.00	0.15	0.36	1.00	0.46	0.36	0.36	0.52	0.39	0.39
v/c Ratio	0.54	0.60	0.10	0.69	0.55	0.10	0.32	0.28	0.33	0.31	0.28	0.08
Control Delay	54.0	45.2	0.1	48.2	28.8	0.1	15.6	25.3	5.1	14.6	22.5	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	54.0	45.2	0.1	48.2	28.8	0.1	15.6	25.3	5.1	14.6	22.5	0.2
LOS	D	D	A	D	C	A	B	C	A	B	C	A
Approach Delay		33.2			31.4			16.8			18.2	
Approach LOS		C			C			B			B	

### Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 100

Natural Cycle: 60

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.69

Intersection Signal Delay: 24.9








Intersection LOS: C

Intersection Capacity Utilization 59.4%

ICU Level of Service B













Analysis Period (min) 15

### Splits and Phases: 1: SH 83 & SH 105/Walker Rd

			
Ø1	Ø2	Ø3	Ø4
28 s	31 s	23 s	38 s
			
Ø5	Ø6	Ø8	
13 s	46 s	61 s	

Volume  
2: Jane Lundeen/Future Access & Walker Rd

2040 Background Traffic  
School Midday Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	159	85	405	38	85	8	584	1	40	8	1	157
Future Volume (vph)	159	85	405	38	85	8	584	1	40	8	1	157
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.86	0.92	0.83	0.83	0.83	0.76	0.93	0.77	0.83	0.83	0.83
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	173	99	440	46	102	10	768	1	52	10	1	189
Shared Lane Traffic (%)							46%					
Lane Group Flow (vph)	0	712	0	0	158	0	415	406	0	0	200	0
Intersection Summary												







HCM 6th Roundabout  
2: Jane Lundeen/Future Access & Walker Rd

2040 Background Traffic  
School Midday Peak Hour

Intersection						
Intersection Delay, s/veh	5.8					
Intersection LOS	A					
Approach	EB	WB	NB	SB		
Entry Lanes	1	1	2	1		
Conflicting Circle Lanes	2	2	2	2		
Adj Approach Flow, veh/h	712	158	821	200		
Demand Flow Rate, veh/h	726	161	837	204		
Vehicles Circulating, veh/h	58	960	287	934		
Vehicles Exiting, veh/h	1080	164	48	187		
Ped Vol Crossing Leg, #/h	0	0	0	0		
Ped Cap Adj	1.000	1.000	1.000	1.000		
Approach Delay, s/veh	1.7	9.1	7.6	10.0		
Approach LOS	A	A	A	A		
Lane	Left	Bypass	Left	Left	Right	Left
Designated Moves	LT	R	LTR	L	LTR	LTR
Assumed Moves	LT	R	LTR	L	LTR	LTR
RT Channelized	Free					
Lane Util	1.000		1.000	0.530	0.470	1.000
Follow-Up Headway, s	2.535		2.535	2.667	2.535	2.535
Critical Headway, s	4.328	449	4.328	4.645	4.328	4.328
Entry Flow, veh/h	277	1938	161	444	393	204
Cap Entry Lane, veh/h	1352	0.980	628	1037	1113	642
Entry HV Adj Factor	0.982	440	0.981	0.980	0.982	0.980
Flow Entry, veh/h	272	1900	158	435	386	200
Cap Entry, veh/h	1327	0.232	616	1016	1092	629
V/C Ratio	0.205	0.0	0.256	0.428	0.353	0.318
Control Delay, s/veh	4.4	A	9.1	8.3	6.8	10.0
LOS	A	1	A	A	A	A
95th %tile Queue, veh	1		1	2	2	1

Volume  
3: Jane Lundeen & Future Tract B Access

2040 Background Traffic  
School Midday Peak Hour






						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Volume (vph)	144	2	35	270	149	111
Future Volume (vph)	144	2	35	270	149	111
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.92	0.92	0.92	0.76	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Adj. Flow (vph)	157	2	38	355	162	121
Shared Lane Traffic (%)						
Lane Group Flow (vph)	159	0	38	355	162	121
Intersection Summary						

HCM 6th TWSC  
3: Jane Lundeen & Future Tract B Access

2040 Background Traffic  
School Midday Peak Hour

Intersection

Int Delay, s/veh 3.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	144	2	35	270	149	111
Future Vol, veh/h	144	2	35	270	149	111
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	205	-	-	155
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	76	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	157	2	38	355	162	121







Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	593	162	283
Stage 1	162	-	-
Stage 2	431	-	-
Critical Hdwy	6.42	6.22	4.12
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	2.218
Pot Cap-1 Maneuver	468	883	1279
Stage 1	867	-	-
Stage 2	655	-	-
Platoon blocked, %			
Mov Cap-1 Maneuver	454	883	1279
Mov Cap-2 Maneuver	519	-	-
Stage 1	841	-	-
Stage 2	655	-	-






Approach	EB	NB	SB
HCM Control Delay, s	14.9	0.8	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1279	-	522	-	-
HCM Lane V/C Ratio	0.03	-	0.304	-	-
HCM Control Delay (s)	7.9	-	14.9	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0.1	-	1.3	-	-

Volume  
4: Jane Lundeen













2040 Background Traffic  
School Midday Peak Hour

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Volume (vph)	95	3	49	211	80	71
Future Volume (vph)	95	3	49	211	80	71
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.92	0.92	0.92	0.76	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Adj. Flow (vph)	103	3	53	278	87	77
Shared Lane Traffic (%)						
Lane Group Flow (vph)	106	0	53	278	87	77
Intersection Summary						

Intersection						
Int Delay, s/veh	2.9					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	95	3	49	211	80	71
Future Vol, veh/h	95	3	49	211	80	71
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	205	-	-	155
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	76	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	103	3	53	278	87	77
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	471	87	164	0	-	0
Stage 1	87	-	-	-	-	-
Stage 2	384	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	551	971	1414	-	-	-
Stage 1	936	-	-	-	-	-
Stage 2	688	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	531	971	1414	-	-	-
Mov Cap-2 Maneuver	559	-	-	-	-	-
Stage 1	901	-	-	-	-	-
Stage 2	688	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	12.8	1.2		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1414	-	566	-	-	
HCM Lane V/C Ratio	0.038	-	0.188	-	-	
HCM Control Delay (s)	7.6	-	12.8	-	-	
HCM Lane LOS	A	-	B	-	-	
HCM 95th %tile Q(veh)	0.1	-	0.7	-	-	

Volume  
5: Pinehurst Cir & Jane Lundeen

2040 Background Traffic  
School Midday Peak Hour













												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	107	5	76	3	0	15	0	134	2	19	63	0
Future Volume (vph)	107	5	76	3	0	15	0	134	2	19	63	0
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.76	0.92	0.92	0.92	0.76	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	116	7	83	3	0	20	0	146	2	21	68	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	206	0	0	23	0	0	148	0	0	89	0
Intersection Summary												



Intersection				
Intersection Delay, s/veh	4.0			
Intersection LOS	A			
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	206	23	148	89
Demand Flow Rate, veh/h	210	23	151	90
Vehicles Circulating, veh/h	93	267	146	3
Vehicles Exiting, veh/h	0	30	157	287
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	4.4	3.6	4.2	3.2
Approach LOS	A	A	A	A
Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	210	23	151	90
Cap Entry Lane, veh/h	1255	1051	1189	1376
Entry HV Adj Factor	0.980	1.000	0.981	0.985
Flow Entry, veh/h	206	23	148	89
Cap Entry, veh/h	1230	1051	1166	1355
V/C Ratio	0.167	0.022	0.127	0.065
Control Delay, s/veh	4.4	3.6	4.2	3.2
LOS	A	A	A	A
95th %tile Queue, veh	1	0	0	0

Volume  
1: SH 83 & SH 105/Walker Rd

2040 Background Traffic  
PM Peak Hour

























												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	85	287	204	412	405	165	177	485	282	228	634	103
Future Volume (vph)	85	287	204	412	405	165	177	485	282	228	634	103
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.89	0.86	0.93	0.94	0.86	0.87	0.85	0.94	0.90	0.93	0.89
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	92	322	237	443	431	192	203	571	300	253	682	116
Shared Lane Traffic (%)												
Lane Group Flow (vph)	92	322	237	443	431	192	203	571	300	253	682	116
Intersection Summary												

# Timings

## 1: SH 83 & SH 105/Walker Rd

# 2040 Background Traffic

PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	85	287	204	412	405	165	177	485	282	228	634	103
Future Volume (vph)	85	287	204	412	405	165	177	485	282	228	634	103
Turn Type	Perm	NA	Free	Prot	NA	Free	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		Free			Free	2		2	6		6
Detector Phase	4	4		3	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	11.0	11.0		10.0	10.0		10.0	12.0	12.0	10.0	12.0	12.0
Total Split (s)	34.0	34.0		25.0	59.0		13.0	33.0	33.0	28.0	48.0	48.0
Total Split (%)	28.3%	28.3%		20.8%	49.2%		10.8%	27.5%	27.5%	23.3%	40.0%	40.0%
Yellow Time (s)	4.0	4.0		3.0	3.0		3.0	5.0	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
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0		5.0	5.0		5.0	7.0	7.0	5.0	7.0	7.0
Lead/Lag	Lag	Lag		Lead			Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes			Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None		None	None		None	Max	Max	None	Max	Max
Act Effect Green (s)	16.7	16.7	106.8	17.8	40.5	106.8	44.9	34.8	34.8	55.1	41.2	41.2
Actuated g/C Ratio	0.16	0.16	1.00	0.17	0.38	1.00	0.42	0.33	0.33	0.52	0.39	0.39
v/c Ratio	0.63	0.58	0.15	0.78	0.32	0.12	0.56	0.50	0.42	0.56	0.50	0.17
Control Delay	62.0	46.2	0.2	53.4	23.7	0.2	25.4	33.2	6.0	20.6	27.7	5.2
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	62.0	46.2	0.2	53.4	23.7	0.2	25.4	33.2	6.0	20.6	27.7	5.2
LOS	E	D	A	D	C	A	C	C	A	C	C	A
Approach Delay		31.7			31.8			24.1			23.5	
Approach LOS		C			C			C			C	

## Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 106.8

Natural Cycle: 55

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.78

Intersection Signal Delay: 27.4

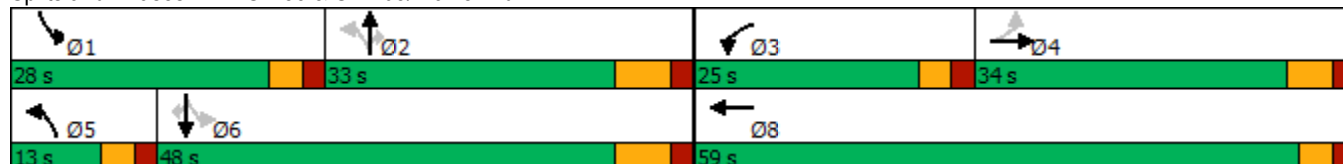
Intersection LOS: C

Intersection Capacity Utilization 66.2%

ICU Level of Service C













Analysis Period (min) 15

## Splits and Phases: 1: SH 83 & SH 105/Walker Rd



Volume  
2: Jane Lundeen/Future Access & Walker Rd

2040 Background Traffic  
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	194	148	455	34	118	6	701	1	44	7	1	163
Future Volume (vph)	194	148	455	34	118	6	701	1	44	7	1	163
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.90	0.92	0.93	0.83	0.83	0.92	0.92	0.92	0.83	0.83	0.83
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	211	164	495	37	142	7	762	1	48	8	1	196
Shared Lane Traffic (%)							46%					
Lane Group Flow (vph)	0	870	0	0	186	0	411	400	0	0	205	0
Intersection Summary												







HCM 6th Roundabout  
2: Jane Lundeen/Future Access & Walker Rd

2040 Background Traffic  
PM Peak Hour

Intersection						
Intersection Delay, s/veh	6.3					
Intersection LOS	A					
Approach	EB	WB	NB	SB		
Entry Lanes	1	1	2	1		
Conflicting Circle Lanes	2	2	2	2		
Adj Approach Flow, veh/h	870	186	811	205		
Demand Flow Rate, veh/h	887	190	827	209		
Vehicles Circulating, veh/h	47	993	390	960		
Vehicles Exiting, veh/h	1122	224	39	223		
Ped Vol Crossing Leg, #/h	0	0	0	0		
Ped Cap Adj	1.000	1.000	1.000	1.000		
Approach Delay, s/veh	2.2	10.3	8.7	10.4		
Approach LOS	A	B	A	B		
Lane	Left	Bypass	Left	Left	Right	Left
Designated Moves	LT	R	LTR	L	LTR	LTR
Assumed Moves	LT	R	LTR	L	LTR	LTR
RT Channelized	Free					
Lane Util	1.000		1.000	0.530	0.470	1.000
Follow-Up Headway, s	2.535		2.535	2.667	2.535	2.535
Critical Headway, s	4.328	505	4.328	4.645	4.328	4.328
Entry Flow, veh/h	382	1938	190	438	389	209
Cap Entry Lane, veh/h	1364	0.980	611	943	1019	628
Entry HV Adj Factor	0.981	495	0.980	0.981	0.980	0.981
Flow Entry, veh/h	375	1900	186	430	381	205
Cap Entry, veh/h	1339	0.261	598	925	999	616
V/C Ratio	0.280	0.0	0.311	0.465	0.382	0.333
Control Delay, s/veh	5.1	A	10.3	9.5	7.7	10.4
LOS	A	1	B	A	A	B
95th %tile Queue, veh	1		1	3	2	1






Volume  
3: Jane Lundeen & Future Tract B Access

2040 Background Traffic  
PM Peak Hour

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Volume (vph)	166	2	34	335	163	123
Future Volume (vph)	166	2	34	335	163	123
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.92	0.92	0.92	0.91	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Adj. Flow (vph)	180	2	37	368	177	134
Shared Lane Traffic (%)						
Lane Group Flow (vph)	182	0	37	368	177	134
Intersection Summary						







HCM 6th TWSC  
3: Jane Lundeen & Future Tract B Access

2040 Background Traffic  
PM Peak Hour






Intersection						
Int Delay, s/veh	3.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	166	2	34	335	163	123
Future Vol, veh/h	166	2	34	335	163	123
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	205	-	-	155
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	91	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	180	2	37	368	177	134
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	619	177	311	0	-	0
Stage 1	177	-	-	-	-	-
Stage 2	442	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	452	866	1249	-	-	-
Stage 1	854	-	-	-	-	-
Stage 2	648	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	438	866	1249	-	-	-
Mov Cap-2 Maneuver	509	-	-	-	-	-
Stage 1	828	-	-	-	-	-
Stage 2	648	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	15.9	0.7		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1249	-	512	-	-	
HCM Lane V/C Ratio	0.03	-	0.357	-	-	
HCM Control Delay (s)	8	-	15.9	-	-	
HCM Lane LOS	A	-	C	-	-	
HCM 95th %tile Q(veh)	0.1	-	1.6	-	-	

Volume  
4: Jane Lundeen

2040 Background Traffic  
PM Peak Hour













						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Volume (vph)	107	3	51	261	85	80
Future Volume (vph)	107	3	51	261	85	80
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.92	0.92	0.92	0.91	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Adj. Flow (vph)	116	3	55	287	92	87
Shared Lane Traffic (%)						
Lane Group Flow (vph)	119	0	55	287	92	87
Intersection Summary						



Intersection						
Int Delay, s/veh	3.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	107	3	51	261	85	80
Future Vol, veh/h	107	3	51	261	85	80
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	205	-	-	155
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	91	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	116	3	55	287	92	87
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	489	92	179	0	-	0
Stage 1	92	-	-	-	-	-
Stage 2	397	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	538	965	1397	-	-	-
Stage 1	932	-	-	-	-	-
Stage 2	679	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	517	965	1397	-	-	-
Mov Cap-2 Maneuver	548	-	-	-	-	-
Stage 1	896	-	-	-	-	-
Stage 2	679	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	13.3	1.2		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1397	-	555	-	-	
HCM Lane V/C Ratio	0.04	-	0.215	-	-	
HCM Control Delay (s)	7.7	-	13.3	-	-	
HCM Lane LOS	A	-	B	-	-	
HCM 95th %tile Q(veh)	0.1	-	0.8	-	-	

Volume  
5: Pinehurst Cir & Jane Lundeen













2040 Background Traffic  
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	98	8	88	2	0	17	0	185	3	26	61	0
Future Volume (vph)	98	8	88	2	0	17	0	185	3	26	61	0
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.91	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	107	9	96	2	0	19	0	201	3	28	66	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	212	0	0	21	0	0	204	0	0	94	0
Intersection Summary												

Intersection				
Intersection Delay, s/veh	4.3			
Intersection LOS	A			
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	212	21	204	94
Demand Flow Rate, veh/h	216	21	208	96
Vehicles Circulating, veh/h	98	314	147	2
Vehicles Exiting, veh/h	0	41	167	333
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	4.4	3.8	4.6	3.2
Approach LOS	A	A	A	A
Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	216	21	208	96
Cap Entry Lane, veh/h	1249	1002	1188	1377
Entry HV Adj Factor	0.981	1.000	0.981	0.976
Flow Entry, veh/h	212	21	204	94
Cap Entry, veh/h	1224	1002	1165	1344
V/C Ratio	0.173	0.021	0.175	0.070
Control Delay, s/veh	4.4	3.8	4.6	3.2
LOS	A	A	A	A
95th %tile Queue, veh	1	0	1	0

























Volume  
121: SH 83 & Hodgen Rd

2040 Background Traffic  
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	188	339	116	124	303	292	189	662	398	374	698	203
Future Volume (vph)	188	339	116	124	303	292	189	662	398	374	698	203
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	198	357	122	131	319	307	199	697	419	394	735	214
Shared Lane Traffic (%)												
Lane Group Flow (vph)	198	357	122	131	319	307	199	697	419	394	735	214
Intersection Summary												

Timings  
121: SH 83 & Hodgen Rd

2040 Background Traffic  
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	188	339	116	124	303	292	189	662	398	374	698	203
Future Volume (vph)	188	339	116	124	303	292	189	662	398	374	698	203
Turn Type	pm+pt	NA	Perm	Prot	NA	Free	pm+pt	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4			Free	2		2			6
Detector Phase	7	4	4	3	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	11.0	11.0	10.0	11.0		10.0	12.0	12.0	10.0	12.0	12.0
Total Split (s)	14.0	31.0	31.0	13.0	30.0		13.0	36.0	36.0	20.0	43.0	43.0
Total Split (%)	14.0%	31.0%	31.0%	13.0%	30.0%		13.0%	36.0%	36.0%	20.0%	43.0%	43.0%
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0		3.0	5.0	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)	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	6.0	6.0	5.0	6.0		5.0	7.0	7.0	5.0	7.0	7.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None		None	Max	Max	None	Max	Max
Act Effect Green (s)	32.1	22.2	22.2	7.7	20.9	96.9	39.7	29.8	29.8	14.2	36.1	36.1
Actuated g/C Ratio	0.33	0.23	0.23	0.08	0.22	1.00	0.41	0.31	0.31	0.15	0.37	0.37
v/c Ratio	0.70	0.84	0.23	0.48	0.79	0.19	0.57	0.64	0.60	0.78	0.56	0.30
Control Delay	36.8	54.0	1.1	49.8	51.2	0.3	22.0	33.0	12.1	52.2	26.7	4.3
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	36.8	54.0	1.1	49.8	51.2	0.3	22.0	33.0	12.1	52.2	26.7	4.3
LOS	D	D	A	D	D	A	C	C	B	D	C	A
Approach Delay		39.4			30.3			24.7			30.6	
Approach LOS		D			C			C			C	

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 96.9

Natural Cycle: 65

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.84

Intersection Signal Delay: 30.1

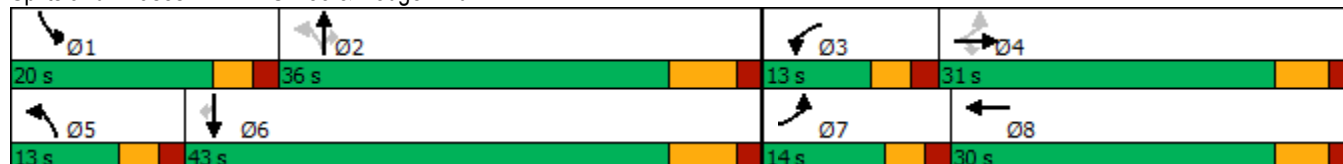
Intersection LOS: C

Intersection Capacity Utilization 75.3%

ICU Level of Service D

Analysis Period (min) 15













Splits and Phases: 121: SH 83 & Hodgen Rd



Volume  
1: SH 83 & SH 105/Walker Rd

2040 Total Traffic (Staggered Start Times)

AM Peak Hour

























												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	51	572	164	530	493	217	194	488	203	240	363	79
Future Volume (vph)	51	572	164	530	493	217	194	488	203	240	363	79
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.88	0.80	0.93	0.93	0.93	0.80	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	55	650	205	570	530	233	243	530	221	261	395	86
Shared Lane Traffic (%)												
Lane Group Flow (vph)	55	650	205	570	530	233	243	530	221	261	395	86
Intersection Summary												

# Timings

1: SH 83 & SH 105/Walker Rd

2040 Total Traffic (Staggered Start Times)

AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	51	572	164	530	493	217	194	488	203	240	363	79
Future Volume (vph)	51	572	164	530	493	217	194	488	203	240	363	79
Turn Type	Perm	NA	Free	Prot	NA	Free	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		Free			Free	2		2	6		6
Detector Phase	4	4		3	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	11.0	11.0		10.0	10.0		10.0	12.0	12.0	10.0	12.0	12.0
Total Split (s)	32.0	32.0		29.0	61.0		13.0	41.0	41.0	18.0	46.0	46.0
Total Split (%)	26.7%	26.7%		24.2%	50.8%		10.8%	34.2%	34.2%	15.0%	38.3%	38.3%
Yellow Time (s)	4.0	4.0		3.0	3.0		3.0	5.0	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
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0		5.0	5.0		5.0	7.0	7.0	5.0	7.0	7.0
Lead/Lag	Lag	Lag		Lead			Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes			Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None		None	None		None	Max	Max	None	Max	Max
Act Effect Green (s)	24.7	24.7	117.4	22.6	53.3	117.4	44.6	34.6	34.6	53.6	39.1	39.1
Actuated g/C Ratio	0.21	0.21	1.00	0.19	0.45	1.00	0.38	0.29	0.29	0.46	0.33	0.33
v/c Ratio	0.30	0.87	0.13	0.86	0.63	0.15	0.58	0.51	0.36	0.67	0.34	0.14
Control Delay	44.6	58.8	0.2	60.4	28.3	0.2	30.0	37.2	6.0	30.6	31.0	2.6
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	44.6	58.8	0.2	60.4	28.3	0.2	30.0	37.2	6.0	30.6	31.0	2.6
LOS	D	E	A	E	C	A	C	D	A	C	C	A
Approach Delay		44.7			37.1			28.5			27.5	
Approach LOS		D			D			C			C	

## Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 117.4

Natural Cycle: 70

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.87

Intersection Signal Delay: 34.9








Intersection LOS: C

Intersection Capacity Utilization 76.9%

ICU Level of Service D

Analysis Period (min) 15













Splits and Phases: 1: SH 83 & SH 105/Walker Rd

			
Ø1	Ø2	Ø3	Ø4
18 s	41 s	29 s	32 s
			
Ø5	Ø6	Ø8	
13 s	46 s	61 s	

Volume  
2: Jane Lundeen & Walker Rd

2040 Total Traffic (Staggered Start Times)

AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	123	78	813	71	149	7	949	1	55	4	0	142
Future Volume (vph)	123	78	813	71	149	7	949	1	55	4	0	142
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.93	0.78	0.93	0.89	0.85	0.87	0.93	0.93	0.93	0.83	0.83	0.83
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	132	100	874	80	175	8	1020	1	59	5	0	171
Shared Lane Traffic (%)							47%					
Lane Group Flow (vph)	0	1106	0	0	263	0	541	539	0	0	176	0
Intersection Summary												



HCM 6th Roundabout  
2: Jane Lundeen & Walker Rd

2040 Total Traffic (Staggered Start Times)

AM Peak Hour













Intersection						
Intersection Delay, s/veh	6.7					
Intersection LOS	A					
Approach	EB	WB	NB	SB		
Entry Lanes	1	1	2	1		
Conflicting Circle Lanes	2	2	2	2		
Adj Approach Flow, veh/h	1106	263	1080	176		
Demand Flow Rate, veh/h	1128	268	1101	179		
Vehicles Circulating, veh/h	87	1176	242	1300		
Vehicles Exiting, veh/h	1392	167	82	144		
Ped Vol Crossing Leg, #/h	0	0	0	0		
Ped Cap Adj	1.000	1.000	1.000	1.000		
Approach Delay, s/veh	0.9	16.8	9.0	14.4		
Approach LOS	A	C	A	B		
Lane	Left	Bypass	Left	Left	Right	Left
Designated Moves	LT	R	LTR	L	LTR	LTR
Assumed Moves	LT	R	LTR	L	LTR	LTR
RT Channelized	Free					
Lane Util	1.000		1.000	0.530	0.470	1.000
Follow-Up Headway, s	2.535		2.535	2.667	2.535	2.535
Critical Headway, s	4.328	891	4.328	4.645	4.328	4.328
Entry Flow, veh/h	237	1938	268	584	517	179
Cap Entry Lane, veh/h	1319	0.980	523	1080	1156	470
Entry HV Adj Factor	0.979	874	0.980	0.980	0.982	0.983
Flow Entry, veh/h	232	1900	263	572	508	176
Cap Entry, veh/h	1291	0.460	512	1059	1135	462
V/C Ratio	0.180	0.0	0.513	0.541	0.447	0.381
Control Delay, s/veh	4.3	A	16.8	10.0	7.9	14.4
LOS	A	3	C	B	A	B
95th %tile Queue, veh	1		3	3	2	2

## Volume

## 2040 Total Traffic (Staggered Start Times)

## 3: Jane Lundeen &amp; Future Tract B Access/North School Access

AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	105	0	1	0	0	0	36	753	47	83	519	105
Future Volume (vph)	105	0	1	0	0	0	36	753	47	83	519	105
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.93	0.93	0.93	0.40	0.40	0.40	0.90	0.93	0.55	0.55	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	113	0	1	0	0	0	40	810	85	151	577	117
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	114	0	0	0	0	40	810	85	151	577	117
Intersection Summary												

Intersection												
Int Delay, s/veh	46.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕	↕	↕	↕	↕
Traffic Vol, veh/h	105	0	1	0	0	0	36	753	47	83	519	105
Future Vol, veh/h	105	0	1	0	0	0	36	753	47	83	519	105
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	205	-	155	255	-	155
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	40	40	40	90	93	55	55	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	113	0	1	0	0	0	40	810	85	151	577	117

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1812	1854	577	1828	1886	810	694	0	0	895	0	0
Stage 1	879	879	-	890	890	-	-	-	-	-	-	-
Stage 2	933	975	-	938	996	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	~ 61	74	516	59	71	380	901	-	-	758	-	-
Stage 1	342	365	-	337	361	-	-	-	-	-	-	-
Stage 2	319	330	-	317	322	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	~ 50	57	516	48	54	380	901	-	-	758	-	-
Mov Cap-2 Maneuver	~ 50	57	-	48	54	-	-	-	-	-	-	-
Stage 1	327	292	-	322	345	-	-	-	-	-	-	-
Stage 2	305	315	-	253	258	-	-	-	-	-	-	-













Approach	EB	WB	NB	SB
HCM Control Delay, s \$ 760.8		0	0.4	2
HCM LOS	F	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	901	-	-	50	-	758	-
HCM Lane V/C Ratio	0.044	-	-	2.28	-	0.199	-
HCM Control Delay (s)	9.2	-	-	\$ 760.8	0	10.9	-
HCM Lane LOS	A	-	-	F	A	B	-
HCM 95th %tile Q(veh)	0.1	-	-	11.7	-	0.7	-

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

Volume  
4: Jane Lundeen & YMCA Access

2040 Total Traffic (Staggered Start Times)  
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	69	0	2	1	0	33	52	734	24	42	410	68
Future Volume (vph)	69	0	2	1	0	33	52	734	24	42	410	68
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.93	0.93	0.93	0.85	0.85	0.85	0.90	0.93	0.85	0.85	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	74	0	2	1	0	39	58	789	28	49	456	76
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	76	0	0	40	0	58	817	0	49	456	76
Intersection Summary												

HCM 6th TWSC  
4: Jane Lundeen & YMCA Access

2040 Total Traffic (Staggered Start Times)  
AM Peak Hour

Intersection												
Int Delay, s/veh	8.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	↕
Traffic Vol, veh/h	69	0	2	1	0	33	52	734	24	42	410	68
Future Vol, veh/h	69	0	2	1	0	33	52	734	24	42	410	68
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	205	-	-	205	-	155
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	85	85	85	90	93	85	85	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	74	0	2	1	0	39	58	789	28	49	456	76

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1493	1487	456	1512	1549	803	532	0	0	817	0	0
Stage 1	554	554	-	919	919	-	-	-	-	-	-	-
Stage 2	939	933	-	593	630	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	102	124	604	98	114	383	1036	-	-	811	-	-
Stage 1	517	514	-	325	350	-	-	-	-	-	-	-
Stage 2	317	345	-	492	475	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	84	110	604	89	101	383	1036	-	-	811	-	-
Mov Cap-2 Maneuver	84	110	-	89	101	-	-	-	-	-	-	-
Stage 1	488	483	-	307	330	-	-	-	-	-	-	-
Stage 2	269	326	-	461	447	-	-	-	-	-	-	-













Approach	EB		WB		NB		SB	
HCM Control Delay, s	153.4		16.6		0.6		0.8	
HCM LOS	F		C					


Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1036	-	-	86	349	811	-
HCM Lane V/C Ratio	0.056	-	-	0.888	0.115	0.061	-
HCM Control Delay (s)	8.7	-	-	153.4	16.6	9.7	-
HCM Lane LOS	A	-	-	F	C	A	-
HCM 95th %tile Q(veh)	0.2	-	-	4.8	0.4	0.2	-

Volume  
5: Pinehurst Cir & Jane Lundeen

2040 Total Traffic (Staggered Start Times)

AM Peak Hour







												
Lane Group	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Traffic Volume (vph)	176	175	65	16	2	0	517	0	116	2	355	59
Future Volume (vph)	176	175	65	16	2	0	517	0	116	2	355	59
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.83	0.83	0.83	0.95	0.87	0.87	0.87	0.85	0.85	0.85	0.83	0.83
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%				0%			0%			0%
Adj. Flow (vph)	212	211	78	17	2	0	594	0	136	2	428	71
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	501	0	0	0	613	0	0	138	0	0	499
Intersection Summary												

	
Lane Group	SBR
Traffic Volume (vph)	0
Future Volume (vph)	0
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Peak Hour Factor	0.83
Growth Factor	100%
Heavy Vehicles (%)	2%
Bus Blockages (#/hr)	0
Parking (#/hr)	
Mid-Block Traffic (%)	
Adj. Flow (vph)	0
Shared Lane Traffic (%)	
Lane Group Flow (vph)	0
Intersection Summary	

Intersection				
Intersection Delay, s/veh	11.8			
Intersection LOS	B			
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	501	613	138	499
Demand Flow Rate, veh/h	511	625	141	509
Vehicles Circulating, veh/h	528	355	885	19
Vehicles Exiting, veh/h	0	671	154	961
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	15.3	13.9	10.0	6.2
Approach LOS	C	B	B	A
Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	511	625	141	509
Cap Entry Lane, veh/h	805	961	560	1353
Entry HV Adj Factor	0.980	0.980	0.981	0.980
Flow Entry, veh/h	501	613	138	499
Cap Entry, veh/h	789	942	549	1326
V/C Ratio	0.635	0.651	0.252	0.376
Control Delay, s/veh	15.3	13.9	10.0	6.2
LOS	C	B	B	A
95th %tile Queue, veh	5	5	1	2

Volume  
6: Pinehurst Cir & South School Access





2040 Total Traffic (Staggered Start Times)  
AM Peak Hour

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Traffic Volume (vph)	517	30	34	25	0	500
Future Volume (vph)	517	30	34	25	0	500
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.83	0.85	0.85	0.83	0.87	0.87
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Adj. Flow (vph)	623	35	40	30	0	575
Shared Lane Traffic (%)						
Lane Group Flow (vph)	623	35	70	0	0	575
Intersection Summary						



HCM 6th TWSC  
6: Pinehurst Cir & South School Access













2040 Total Traffic (Staggered Start Times)  
AM Peak Hour

Intersection						
Int Delay, s/veh	10.1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	517	30	34	25	0	500
Future Vol, veh/h	517	30	34	25	0	500
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	255	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	83	85	85	83	87	87
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	623	35	40	30	0	575
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	70	0	-	0	-	55
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	4.12	-	-	-	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	2.218	-	-	-	-	3.318
Pot Cap-1 Maneuver	1531	-	-	-	0	1012
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1531	-	-	-	-	1012
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	WB		SB		
HCM Control Delay, s	8.5	0		13.1		
HCM LOS				B		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1531	-	-	-	-	1012
HCM Lane V/C Ratio	0.407	-	-	-	-	0.568
HCM Control Delay (s)	9	-	-	-	-	13.1
HCM Lane LOS	A	-	-	-	-	B
HCM 95th %tile Q(veh)	2	-	-	-	-	3.7

Volume  
121: SH 83 & Hodgen Rd

2040 Total Traffic (Staggered Start Times)

























AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	243	144	186	392	340	412	77	627	125	161	654	252
Future Volume (vph)	243	144	186	392	340	412	77	627	125	161	654	252
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	256	152	196	413	358	434	81	660	132	169	688	265
Shared Lane Traffic (%)												
Lane Group Flow (vph)	256	152	196	413	358	434	81	660	132	169	688	265
Intersection Summary												

Timings  
121: SH 83 & Hodgen Rd

2040 Total Traffic (Staggered Start Times)

AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	243	144	186	392	340	412	77	627	125	161	654	252
Future Volume (vph)	243	144	186	392	340	412	77	627	125	161	654	252
Turn Type	pm+pt	NA	Perm	Prot	NA	Free	pm+pt	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4			Free	2		2			6
Detector Phase	7	4	4	3	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	11.0	11.0	10.0	11.0		10.0	12.0	12.0	10.0	12.0	12.0
Total Split (s)	19.0	29.0	29.0	22.0	32.0		13.0	34.0	34.0	15.0	36.0	36.0
Total Split (%)	19.0%	29.0%	29.0%	22.0%	32.0%		13.0%	34.0%	34.0%	15.0%	36.0%	36.0%
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0		3.0	5.0	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)	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	6.0	6.0	5.0	6.0		5.0	7.0	7.0	5.0	7.0	7.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None		None	Max	Max	None	Max	Max
Act Effect Green (s)	33.8	19.7	19.7	15.2	21.9	94.4	36.5	27.2	27.2	9.1	31.5	31.5
Actuated g/C Ratio	0.36	0.21	0.21	0.16	0.23	1.00	0.39	0.29	0.29	0.10	0.33	0.33
v/c Ratio	0.73	0.39	0.40	0.75	0.83	0.27	0.26	0.65	0.24	0.51	0.58	0.38
Control Delay	31.1	35.7	7.5	47.4	51.8	0.4	18.4	34.0	5.5	47.4	30.6	5.2
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	31.1	35.7	7.5	47.4	51.8	0.4	18.4	34.0	5.5	47.4	30.6	5.2
LOS	C	D	A	D	D	A	B	C	A	D	C	A
Approach Delay		24.6			31.8			28.3			27.1	
Approach LOS		C			C			C			C	

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 94.4

Natural Cycle: 60

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.83

Intersection Signal Delay: 28.5

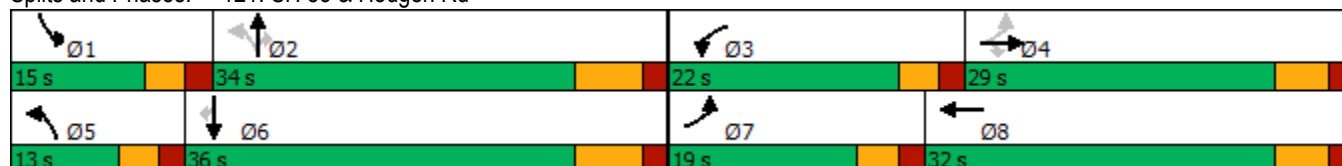
Intersection LOS: C

Intersection Capacity Utilization 72.9%

ICU Level of Service C













Analysis Period (min) 15

Splits and Phases: 121: SH 83 & Hodgen Rd



Volume  
1: SH 83 & SH 105/Walker Rd

2040 Total Traffic  
School Midday Peak Hour

























												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	73	412	148	502	515	209	149	325	223	212	361	53
Future Volume (vph)	73	412	148	502	515	209	149	325	223	212	361	53
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.85	0.92	0.92	0.92	0.93	0.92	0.91	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	79	485	161	546	560	225	162	357	242	230	392	58
Shared Lane Traffic (%)												
Lane Group Flow (vph)	79	485	161	546	560	225	162	357	242	230	392	58
Intersection Summary												

# Timings

1: SH 83 & SH 105/Walker Rd

2040 Total Traffic

School Midday Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	73	412	148	502	515	209	149	325	223	212	361	53
Future Volume (vph)	73	412	148	502	515	209	149	325	223	212	361	53
Turn Type	Perm	NA	Free	Prot	NA	Free	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		Free			Free	2		2	6		6
Detector Phase	4	4		3	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	11.0	11.0		10.0	10.0		10.0	12.0	12.0	10.0	12.0	12.0
Total Split (s)	38.0	38.0		23.0	61.0		13.0	31.0	31.0	28.0	46.0	46.0
Total Split (%)	31.7%	31.7%		19.2%	50.8%		10.8%	25.8%	25.8%	23.3%	38.3%	38.3%
Yellow Time (s)	4.0	4.0		3.0	3.0		3.0	5.0	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
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0		5.0	5.0		5.0	7.0	7.0	5.0	7.0	7.0
Lead/Lag	Lag	Lag		Lead			Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes			Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None		None	None		None	Max	Max	None	Max	Max
Act Effect Green (s)	20.4	20.4	108.5	18.0	44.4	108.5	43.2	33.2	33.2	52.9	39.0	39.0
Actuated g/C Ratio	0.19	0.19	1.00	0.17	0.41	1.00	0.40	0.31	0.31	0.49	0.36	0.36
v/c Ratio	0.52	0.73	0.10	0.96	0.73	0.14	0.36	0.33	0.37	0.44	0.31	0.09
Control Delay	52.4	48.2	0.1	74.6	33.6	0.2	20.3	31.9	6.2	19.5	26.5	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	52.4	48.2	0.1	74.6	33.6	0.2	20.3	31.9	6.2	19.5	26.5	0.3
LOS	D	D	A	E	C	A	C	C	A	B	C	A
Approach Delay		38.0			44.8			21.2			21.9	
Approach LOS		D			D			C			C	

## Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 108.5

Natural Cycle: 60

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.96

Intersection Signal Delay: 33.8

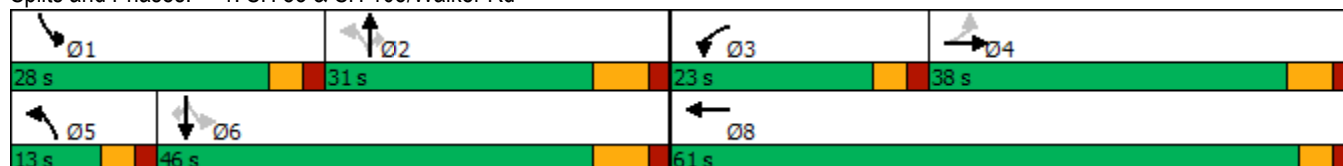
Intersection LOS: C

Intersection Capacity Utilization 71.2%

ICU Level of Service C













Analysis Period (min) 15

Splits and Phases: 1: SH 83 & SH 105/Walker Rd



Volume  
2: Jane Lundeen/Future Access & Walker Rd

2040 Total Traffic  
School Midday Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	159	85	604	51	85	8	984	1	67	8	1	157
Future Volume (vph)	159	85	604	51	85	8	984	1	67	8	1	157
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.86	0.92	0.83	0.83	0.83	0.76	0.93	0.77	0.83	0.83	0.83
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	173	99	657	61	102	10	1295	1	87	10	1	189
Shared Lane Traffic (%)							46%					
Lane Group Flow (vph)	0	929	0	0	173	0	699	684	0	0	200	0
Intersection Summary												













HCM 6th Roundabout  
2: Jane Lundeen/Future Access & Walker Rd

2040 Total Traffic  
School Midday Peak Hour

Intersection						
Intersection Delay, s/veh	10.2					
Intersection LOS	B					
Approach	EB	WB	NB	SB		
Entry Lanes	1	1	2	1		
Conflicting Circle Lanes	2	2	2	2		
Adj Approach Flow, veh/h	929	173	1383	200		
Demand Flow Rate, veh/h	947	176	1411	204		
Vehicles Circulating, veh/h	73	1498	287	1487		
Vehicles Exiting, veh/h	1618	200	63	187		
Ped Vol Crossing Leg, #/h	0	0	0	0		
Ped Cap Adj	1.000	1.000	1.000	1.000		
Approach Delay, s/veh	1.3	18.6	13.5	20.8		
Approach LOS	A	C	B	C		
Lane	Left	Bypass	Left	Left	Right	Left
Designated Moves	LT	R	LTR	L	LTR	LTR
Assumed Moves	LT	R	LTR	L	LTR	LTR
RT Channelized	Free					
Lane Util	1.000		1.000	0.530	0.470	1.000
Follow-Up Headway, s	2.535		2.535	2.667	2.535	2.535
Critical Headway, s	4.328	670	4.328	4.645	4.328	4.328
Entry Flow, veh/h	277	1938	176	748	663	204
Cap Entry Lane, veh/h	1335	0.980	397	1037	1113	401
Entry HV Adj Factor	0.982	657	0.983	0.980	0.980	0.980
Flow Entry, veh/h	272	1900	173	733	650	200
Cap Entry, veh/h	1311	0.346	391	1016	1091	393
V/C Ratio	0.208	0.0	0.443	0.722	0.596	0.509
Control Delay, s/veh	4.5	A	18.6	15.7	11.0	20.8
LOS	A	2	C	C	B	C
95th %tile Queue, veh	1		2	7	4	3

Volume  
3: Jane Lundeen & Future Tract B Access/North School Access

2040 Total Traffic  
School Midday Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	144	0	2	2	0	69	35	628	0	0	361	111
Future Volume (vph)	144	0	2	2	0	69	35	628	0	0	361	111
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.40	0.40	0.40	0.92	0.76	0.55	0.55	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	157	0	2	5	0	173	38	826	0	0	392	121
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	159	0	0	178	0	38	826	0	0	392	121
Intersection Summary												



HCM 6th TWSC  
3: Jane Lundeen & Future Tract B Access/North School Access

2040 Total Traffic  
School Midday Peak Hour

Intersection												
Int Delay, s/veh	77.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↑	↕	↕	↑	↕
Traffic Vol, veh/h	144	0	2	2	0	69	35	628	0	0	361	111
Future Vol, veh/h	144	0	2	2	0	69	35	628	0	0	361	111
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	205	-	155	255	-	155
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	40	40	40	92	76	55	55	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	157	0	2	5	0	173	38	826	0	0	392	121

Major/Minor	Minor2		Minor1		Major1		Major2		Major2		Major2	
Conflicting Flow All	1381	1294	392	1356	1415	826	513	0	0	826	0	0
Stage 1	392	392	-	902	902	-	-	-	-	-	-	-
Stage 2	989	902	-	454	513	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	~ 121	163	657	126	137	372	1052	-	-	805	-	-
Stage 1	633	606	-	332	356	-	-	-	-	-	-	-
Stage 2	297	356	-	586	536	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	~ 63	157	657	122	132	372	1052	-	-	805	-	-
Mov Cap-2 Maneuver	~ 63	157	-	122	132	-	-	-	-	-	-	-
Stage 1	610	606	-	320	343	-	-	-	-	-	-	-
Stage 2	~ 154	343	-	584	536	-	-	-	-	-	-	-













Approach	EB	WB	NB	SB
HCM Control Delay, s	810.8	25.2	0.4	0
HCM LOS	F	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1052	-	-	64 352	805	-	-
HCM Lane V/C Ratio	0.036	-	-	2.48 0.504	-	-	-
HCM Control Delay (s)	8.6	-	-	\$ 810.8 25.2	0	-	-
HCM Lane LOS	A	-	-	F D	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	15.6 2.7	0	-	-

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

Volume  
4: Jane Lundeen & YMCA Access

2040 Total Traffic  
School Midday Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	95	0	3	1	0	24	49	544	9	16	278	71
Future Volume (vph)	95	0	3	1	0	24	49	544	9	16	278	71
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.85	0.85	0.85	0.92	0.76	0.85	0.85	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	103	0	3	1	0	28	53	716	11	19	302	77
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	106	0	0	29	0	53	727	0	19	302	77
Intersection Summary												

HCM 6th TWSC  
4: Jane Lundeen & YMCA Access

2040 Total Traffic  
School Midday Peak Hour

Intersection												
Int Delay, s/veh	6.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	↕
Traffic Vol, veh/h	95	0	3	1	0	24	49	544	9	16	278	71
Future Vol, veh/h	95	0	3	1	0	24	49	544	9	16	278	71
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	205	-	-	205	-	155
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	85	85	85	92	76	85	85	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	103	0	3	1	0	28	53	716	11	19	302	77













Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1182	1173	302	1208	1245	722	379	0	0	727	0	0
Stage 1	340	340	-	828	828	-	-	-	-	-	-	-
Stage 2	842	833	-	380	417	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	167	192	738	160	174	427	1179	-	-	876	-	-
Stage 1	675	639	-	365	386	-	-	-	-	-	-	-
Stage 2	359	384	-	642	591	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	148	179	738	151	163	427	1179	-	-	876	-	-
Mov Cap-2 Maneuver	148	179	-	151	163	-	-	-	-	-	-	-
Stage 1	645	625	-	349	369	-	-	-	-	-	-	-
Stage 2	320	367	-	625	578	-	-	-	-	-	-	-


Approach	EB	WB	NB	SB
HCM Control Delay, s	70.9	14.8	0.6	0.4
HCM LOS	F	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1179	-	-	152 398	876	-	-
HCM Lane V/C Ratio	0.045	-	-	0.701 0.074	0.021	-	-
HCM Control Delay (s)	8.2	-	-	70.9 14.8	9.2	-	-
HCM Lane LOS	A	-	-	F B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	4.1 0.2	0.1	-	-

Volume  
5: Pinehurst Cir & Jane Lundeen

2040 Total Traffic  
School Midday Peak Hour

												
Lane Group	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Traffic Volume (vph)	115	103	76	11	3	0	349	0	134	2	218	63
Future Volume (vph)	115	103	76	11	3	0	349	0	134	2	218	63
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.76	0.92	0.95	0.92	0.92	0.76	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%				0%			0%			0%
Adj. Flow (vph)	125	136	83	12	3	0	459	0	146	2	237	68
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	344	0	0	0	474	0	0	148	0	0	305
Intersection Summary												

	
Lane Group	SBR
Traffic Volume (vph)	0
Future Volume (vph)	0
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Peak Hour Factor	0.92
Growth Factor	100%
Heavy Vehicles (%)	2%
Bus Blockages (#/hr)	0
Parking (#/hr)	
Mid-Block Traffic (%)	
Adj. Flow (vph)	0
Shared Lane Traffic (%)	
Lane Group Flow (vph)	0
Intersection Summary	

Intersection				
Intersection Delay, s/veh	7.2			
Intersection LOS	A			
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	344	474	148	305
Demand Flow Rate, veh/h	352	483	151	311
Vehicles Circulating, veh/h	326	276	520	15
Vehicles Exiting, veh/h	0	395	157	744
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	7.5	8.9	6.5	4.6
Approach LOS	A	A	A	A
Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	352	483	151	311
Cap Entry Lane, veh/h	990	1041	812	1359
Entry HV Adj Factor	0.978	0.981	0.981	0.980
Flow Entry, veh/h	344	474	148	305
Cap Entry, veh/h	968	1021	796	1331
V/C Ratio	0.356	0.464	0.186	0.229
Control Delay, s/veh	7.5	8.9	6.5	4.6
LOS	A	A	A	A
95th %tile Queue, veh	2	3	1	1

Volume  
6: Pinehurst Cir & South School Access

2040 Total Traffic  
School Midday Peak Hour







Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Traffic Volume (vph)	294	28	19	14	0	344
Future Volume (vph)	294	28	19	14	0	344
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.75	0.92	0.92	0.75	0.55	0.55
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Adj. Flow (vph)	392	30	21	19	0	625
Shared Lane Traffic (%)						
Lane Group Flow (vph)	392	30	40	0	0	625
Intersection Summary						

HCM 6th TWSC  
6: Pinehurst Cir & South School Access

2040 Total Traffic  
School Midday Peak Hour

Intersection

Int Delay, s/veh 10.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	294	28	19	14	0	344
Future Vol, veh/h	294	28	19	14	0	344
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	255	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	75	92	92	75	55	55
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	392	30	21	19	0	625













Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	40	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.12	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.218	-	-
Pot Cap-1 Maneuver	1570	-	0
Stage 1	-	-	0
Stage 2	-	-	0
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1570	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	7.5	0	13.5
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1570	-	-	-	1043
HCM Lane V/C Ratio	0.25	-	-	-	0.6
HCM Control Delay (s)	8.1	-	-	-	13.5
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	1	-	-	-	4.2

Volume  
1: SH 83 & SH 105/Walker Rd

2040 Total Traffic  
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	85	329	204	462	469	185	177	485	282	240	634	103
Future Volume (vph)	85	329	204	462	469	185	177	485	282	240	634	103
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.89	0.86	0.93	0.94	0.86	0.87	0.85	0.94	0.90	0.93	0.89
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	92	370	237	497	499	215	203	571	300	267	682	116
Shared Lane Traffic (%)												
Lane Group Flow (vph)	92	370	237	497	499	215	203	571	300	267	682	116
Intersection Summary												



























# Timings

## 1: SH 83 & SH 105/Walker Rd

2040 Total Traffic

PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	85	329	204	462	469	185	177	485	282	240	634	103
Future Volume (vph)	85	329	204	462	469	185	177	485	282	240	634	103
Turn Type	Perm	NA	Free	Prot	NA	Free	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		Free			Free	2		2	6		6
Detector Phase	4	4		3	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	11.0	11.0		10.0	10.0		10.0	12.0	12.0	10.0	12.0	12.0
Total Split (s)	34.0	34.0		25.0	59.0		13.0	33.0	33.0	28.0	48.0	48.0
Total Split (%)	28.3%	28.3%		20.8%	49.2%		10.8%	27.5%	27.5%	23.3%	40.0%	40.0%
Yellow Time (s)	4.0	4.0		3.0	3.0		3.0	5.0	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
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0		5.0	5.0		5.0	7.0	7.0	5.0	7.0	7.0
Lead/Lag	Lag	Lag		Lead			Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes			Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None		None	None		None	Max	Max	None	Max	Max
Act Effect Green (s)	18.0	18.0	109.3	19.0	43.1	109.3	43.9	33.8	33.8	55.4	41.1	41.1
Actuated g/C Ratio	0.16	0.16	1.00	0.17	0.39	1.00	0.40	0.31	0.31	0.51	0.38	0.38
v/c Ratio	0.64	0.63	0.15	0.83	0.36	0.14	0.58	0.52	0.43	0.60	0.51	0.17
Control Delay	63.0	47.6	0.2	57.3	23.8	0.2	27.5	35.5	6.3	22.5	29.0	5.3
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	63.0	47.6	0.2	57.3	23.8	0.2	27.5	35.5	6.3	22.5	29.0	5.3
LOS	E	D	A	E	C	A	C	D	A	C	C	A
Approach Delay		33.6			33.4			25.8			24.8	
Approach LOS		C			C			C			C	

### Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 109.3

Natural Cycle: 60

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.83

Intersection Signal Delay: 29.1

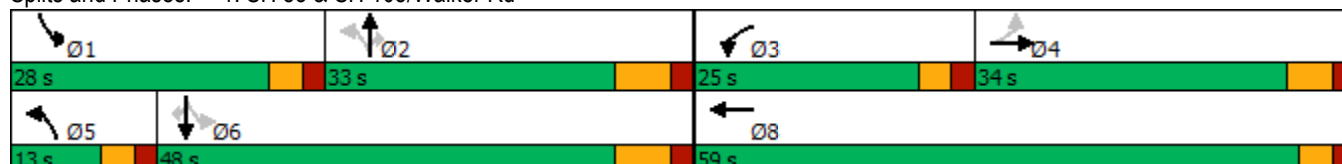
Intersection LOS: C

Intersection Capacity Utilization 68.8%

ICU Level of Service C













Analysis Period (min) 15

### Splits and Phases: 1: SH 83 & SH 105/Walker Rd



Volume  
2: Jane Lundeen/Future Access & Walker Rd

2040 Total Traffic  
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	194	148	510	37	118	6	834	1	55	7	1	163
Future Volume (vph)	194	148	510	37	118	6	834	1	55	7	1	163
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.90	0.92	0.93	0.83	0.83	0.92	0.92	0.92	0.83	0.83	0.83
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	211	164	554	40	142	7	907	1	60	8	1	196
Shared Lane Traffic (%)							46%					
Lane Group Flow (vph)	0	929	0	0	189	0	490	478	0	0	205	0
Intersection Summary												

HCM 6th Roundabout  
2: Jane Lundeen/Future Access & Walker Rd

2040 Total Traffic  
PM Peak Hour













Intersection						
Intersection Delay, s/veh	7.3					
Intersection LOS	A					
Approach	EB	WB	NB	SB		
Entry Lanes	1	1	2	1		
Conflicting Circle Lanes	2	2	2	2		
Adj Approach Flow, veh/h	929	189	968	205		
Demand Flow Rate, veh/h	947	193	987	209		
Vehicles Circulating, veh/h	50	1141	390	1111		
Vehicles Exiting, veh/h	1270	236	42	223		
Ped Vol Crossing Leg, #/h	0	0	0	0		
Ped Cap Adj	1.000	1.000	1.000	1.000		
Approach Delay, s/veh	2.1	12.4	10.2	12.5		
Approach LOS	A	B	B	B		
Lane	Left	Bypass	Left	Left	Right	Left
Designated Moves	LT	R	LTR	L	LTR	LTR
Assumed Moves	LT	R	LTR	L	LTR	LTR
RT Channelized	Free					
Lane Util	1.000		1.000	0.530	0.470	1.000
Follow-Up Headway, s	2.535		2.535	2.667	2.535	2.535
Critical Headway, s	4.328	565	4.328	4.645	4.328	4.328
Entry Flow, veh/h	382	1938	193	523	464	209
Cap Entry Lane, veh/h	1361	0.980	538	943	1019	552
Entry HV Adj Factor	0.981	554	0.980	0.981	0.980	0.981
Flow Entry, veh/h	375	1900	189	513	455	205
Cap Entry, veh/h	1335	0.292	528	925	999	542
V/C Ratio	0.281	0.0	0.359	0.555	0.455	0.378
Control Delay, s/veh	5.1	A	12.4	11.4	8.9	12.5
LOS	A	1	B	B	A	B
95th %tile Queue, veh	1		2	3	2	2

## Volume

2040 Total Traffic

## 3: Jane Lundeen &amp; Future Tract B Access/North School Access

PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	166	0	2	1	0	28	34	451	6	8	213	123
Future Volume (vph)	166	0	2	1	0	28	34	451	6	8	213	123
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.88	0.88	0.88	0.92	0.91	0.85	0.85	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	180	0	2	1	0	32	37	496	7	9	232	134
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	182	0	0	33	0	37	496	7	9	232	134
Intersection Summary												

**Intersection**

Int Delay, s/veh 7.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↗	↗	↗	↗	↗	↗
Traffic Vol, veh/h	166	0	2	1	0	28	34	451	6	8	213	123
Future Vol, veh/h	166	0	2	1	0	28	34	451	6	8	213	123
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	205	-	155	255	-	155
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	88	88	88	92	91	85	85	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	180	0	2	1	0	32	37	496	7	9	232	134













Major/Minor	Minor2		Minor1		Major1		Major2		Major2		Major2	
Conflicting Flow All	840	827	232	888	954	496	366	0	0	503	0	0
Stage 1	250	250	-	570	570	-	-	-	-	-	-	-
Stage 2	590	577	-	318	384	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	285	307	807	264	259	574	1193	-	-	1061	-	-
Stage 1	754	700	-	506	505	-	-	-	-	-	-	-
Stage 2	494	502	-	693	611	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	261	295	807	255	249	574	1193	-	-	1061	-	-
Mov Cap-2 Maneuver	261	295	-	255	249	-	-	-	-	-	-	-
Stage 1	731	694	-	490	489	-	-	-	-	-	-	-
Stage 2	452	486	-	685	606	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	44.8		12		0.6		0.2	
HCM LOS	E		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1193	-	-	263	550	1061	-
HCM Lane V/C Ratio	0.031	-	-	0.694	0.06	0.009	-
HCM Control Delay (s)	8.1	-	-	44.8	12	8.4	-
HCM Lane LOS	A	-	-	E	B	A	-
HCM 95th %tile Q(veh)	0.1	-	-	4.7	0.2	0	-

Volume  
4: Jane Lundeen & YMCA Access

2040 Total Traffic  
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	107	0	3	2	0	53	51	331	22	26	110	80
Future Volume (vph)	107	0	3	2	0	53	51	331	22	26	110	80
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.85	0.85	0.85	0.92	0.91	0.85	0.85	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	116	0	3	2	0	62	55	364	26	31	120	87
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	119	0	0	64	0	55	390	0	31	120	87
Intersection Summary												

HCM 6th TWSC  
4: Jane Lundeen & YMCA Access

2040 Total Traffic  
PM Peak Hour

Intersection												
Int Delay, s/veh	4.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	↕
Traffic Vol, veh/h	107	0	3	2	0	53	51	331	22	26	110	80
Future Vol, veh/h	107	0	3	2	0	53	51	331	22	26	110	80
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	205	-	-	205	-	155
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	85	85	85	92	91	85	85	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	116	0	3	2	0	62	55	364	26	31	120	87













Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	700	682	120	714	756	377	207	0	0	390	0	0
Stage 1	182	182	-	487	487	-	-	-	-	-	-	-
Stage 2	518	500	-	227	269	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	354	372	931	346	337	670	1364	-	-	1169	-	-
Stage 1	820	749	-	562	550	-	-	-	-	-	-	-
Stage 2	541	543	-	776	687	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	305	347	931	327	315	670	1364	-	-	1169	-	-
Mov Cap-2 Maneuver	305	347	-	327	315	-	-	-	-	-	-	-
Stage 1	787	729	-	540	528	-	-	-	-	-	-	-
Stage 2	471	521	-	753	668	-	-	-	-	-	-	-


Approach	EB		WB		NB		SB	
HCM Control Delay, s	23.6		11.2		1		1.1	
HCM LOS	C		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1364	-	-	311	645	1169	-
HCM Lane V/C Ratio	0.041	-	-	0.384	0.1	0.026	-
HCM Control Delay (s)	7.8	-	-	23.6	11.2	8.2	-
HCM Lane LOS	A	-	-	C	B	A	-
HCM 95th %tile Q(veh)	0.1	-	-	1.7	0.3	0.1	-

Volume  
5: Pinehurst Cir & Jane Lundeen

2040 Total Traffic  
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Traffic Volume (vph)	132	26	88	2	2	0	83	0	185	3	53	61
Future Volume (vph)	132	26	88	2	2	0	83	0	185	3	53	61
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.95	0.92	0.92	0.91	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%				0%			0%			0%
Adj. Flow (vph)	143	28	96	2	2	0	91	0	201	3	58	66
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	267	0	0	0	95	0	0	204	0	0	124
Intersection Summary												

	
Lane Group	SBR
Traffic Volume (vph)	0
Future Volume (vph)	0
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Peak Hour Factor	0.92
Growth Factor	100%
Heavy Vehicles (%)	2%
Bus Blockages (#/hr)	0
Parking (#/hr)	
Mid-Block Traffic (%)	
Adj. Flow (vph)	0
Shared Lane Traffic (%)	
Lane Group Flow (vph)	0
Intersection Summary	



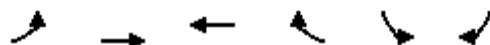
HCM 6th Roundabout  
5: Pinehurst Cir & Jane Lundeen

2040 Total Traffic  
PM Peak Hour

Intersection				
Intersection Delay, s/veh	4.7			
Intersection LOS	A			
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	267	95	204	124
Demand Flow Rate, veh/h	273	97	208	126
Vehicles Circulating, veh/h	130	351	236	4
Vehicles Exiting, veh/h	0	93	167	444
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	5.1	4.7	5.1	3.4
Approach LOS	A	A	A	A
Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	273	97	208	126
Cap Entry Lane, veh/h	1209	965	1085	1374
Entry HV Adj Factor	0.980	0.979	0.981	0.982
Flow Entry, veh/h	267	95	204	124
Cap Entry, veh/h	1184	944	1064	1349
V/C Ratio	0.226	0.101	0.192	0.092
Control Delay, s/veh	5.1	4.7	5.1	3.4
LOS	A	A	A	A
95th %tile Queue, veh	1	0	1	0

Volume  
6: Pinehurst Cir & South School Access

2040 Total Traffic  
PM Peak Hour







Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Traffic Volume (vph)	42	38	22	2	0	65
Future Volume (vph)	42	38	22	2	0	65
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.85	0.92	0.92	0.85	0.88	0.88
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Adj. Flow (vph)	49	41	24	2	0	74
Shared Lane Traffic (%)						
Lane Group Flow (vph)	49	41	26	0	0	74
Intersection Summary						

HCM 6th TWSC  
6: Pinehurst Cir & South School Access

2040 Total Traffic  
PM Peak Hour

Intersection

Int Delay, s/veh 5.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	42	38	22	2	0	65
Future Vol, veh/h	42	38	22	2	0	65
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	255	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	85	92	92	85	88	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	49	41	24	2	0	74













Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	26	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.12	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.218	-	-
Pot Cap-1 Maneuver	1588	-	0
Stage 1	-	-	0
Stage 2	-	-	0
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1588	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	4	0	8.7
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1588	-	-	-	1051
HCM Lane V/C Ratio	0.031	-	-	-	0.07
HCM Control Delay (s)	7.3	-	-	-	8.7
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0.1	-	-	-	0.2

























Volume  
121: SH 83 & Hodgen Rd

2040 Total Traffic  
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	202	339	116	124	303	297	189	686	398	376	727	223
Future Volume (vph)	202	339	116	124	303	297	189	686	398	376	727	223
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	213	357	122	131	319	313	199	722	419	396	765	235
Shared Lane Traffic (%)												
Lane Group Flow (vph)	213	357	122	131	319	313	199	722	419	396	765	235
Intersection Summary												

Timings  
121: SH 83 & Hodgen Rd

2040 Total Traffic  
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	202	339	116	124	303	297	189	686	398	376	727	223
Future Volume (vph)	202	339	116	124	303	297	189	686	398	376	727	223
Turn Type	pm+pt	NA	Perm	Prot	NA	Free	pm+pt	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4			Free	2		2			6
Detector Phase	7	4	4	3	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	11.0	11.0	10.0	11.0		10.0	12.0	12.0	10.0	12.0	12.0
Total Split (s)	14.0	31.0	31.0	13.0	30.0		13.0	36.0	36.0	20.0	43.0	43.0
Total Split (%)	14.0%	31.0%	31.0%	13.0%	30.0%		13.0%	36.0%	36.0%	20.0%	43.0%	43.0%
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0		3.0	5.0	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)	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	6.0	6.0	5.0	6.0		5.0	7.0	7.0	5.0	7.0	7.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None		None	Max	Max	None	Max	Max
Act Effect Green (s)	32.3	22.2	22.2	7.7	20.9	97.0	39.7	29.7	29.7	14.3	36.1	36.1
Actuated g/C Ratio	0.33	0.23	0.23	0.08	0.22	1.00	0.41	0.31	0.31	0.15	0.37	0.37
v/c Ratio	0.75	0.84	0.23	0.48	0.80	0.20	0.60	0.67	0.60	0.78	0.58	0.32
Control Delay	40.7	53.7	1.1	49.8	51.2	0.3	23.0	33.7	12.2	52.3	27.1	4.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.7	53.7	1.1	49.8	51.2	0.3	23.0	33.7	12.2	52.3	27.1	4.3
LOS	D	D	A	D	D	A	C	C	B	D	C	A
Approach Delay		40.4			30.1			25.4			30.4	
Approach LOS		D			C			C			C	

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 97

Natural Cycle: 65

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.84

Intersection Signal Delay: 30.4









Intersection LOS: C

Intersection Capacity Utilization 76.9%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 121: SH 83 & Hodgen Rd

			
Ø1	Ø2	Ø3	Ø4
20 s	36 s	13 s	31 s
			
Ø5	Ø6	Ø7	Ø8
13 s	43 s	14 s	30 s

# Pedestrian Level of Service

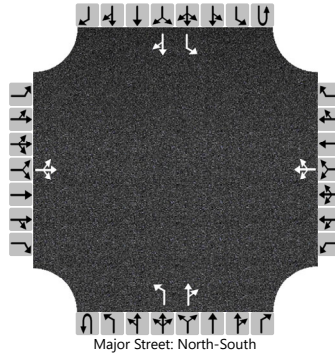
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# HCS7 Two-Way Stop-Control Report

## General Information

Analyst	KDF	Intersection	Jane Lundeen/North School
Agency/Co.		Jurisdiction	El Paso County
Date Performed	2/24/2020	East/West Street	North Site Access
Analysis Year	2040	North/South Street	Jane Lundeen Dr
Time Analyzed	School AM Peak Hour	Peak Hour Factor	1.00
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Monument Academy		

## Lanes



## Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	1	0	0	1	1	0	0	1	1	0
Configuration			LTR				LTR			L		TR		L		TR
Volume (veh/h)		98	0	1		0	0	0		32	700	26		46	467	95
Percent Heavy Vehicles (%)		2	2	2		2	2	2		2				2		
Proportion Time Blocked																
Percent Grade (%)	0				0											
Right Turn Channelized																
Median Type   Storage	Undivided															

## Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2		7.1	6.5	6.2		4.1				4.1		
Critical Headway (sec)		7.12	6.52	6.22		7.12	6.52	6.22		4.12				4.12		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.52	4.02	3.32		3.52	4.02	3.32		2.22				2.22		

## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			99				0			32				46		
Capacity, c (veh/h)			85							838				728		
v/c Ratio			1.17							0.04				0.06		
95% Queue Length, Q <sub>95</sub> (veh)			7.1							0.1				0.2		
Control Delay (s/veh)			239.7							9.5				10.3		
Level of Service (LOS)			F							A				B		
Approach Delay (s/veh)	239.7								0.4				0.8			
Approach LOS	F															

Pedestrian Level of Service				
Flow (ped/hr)	100	100	10	10
Two-Stage Crossing	No	No	No	No
Pedestrian Platooning	No	No	No	No
Conflicting Vehicular Flow (veh/h)			1225	1308
Average Delay (s)	0.4		9.5	10.7
Level of Service (LOS)	A		B	C



# HCS7 Two-Way Stop-Control Report

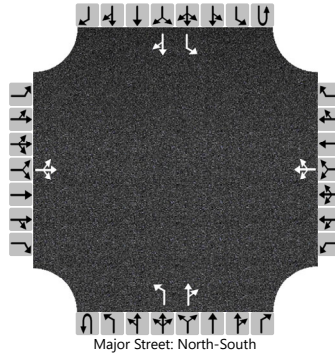
## General Information

Analyst	KDF
Agency/Co.	
Date Performed	2/24/2020
Analysis Year	2040
Time Analyzed	School Miday PM Peak Hour
Intersection Orientation	North-South
Project Description	Monument Academy

## Site Information

Intersection	Jane Lundeen/North School
Jurisdiction	El Paso County
East/West Street	North Site Access
North/South Street	Jane Lundeen Dr
Peak Hour Factor	1.00
Analysis Time Period (hrs)	0.25

## Lanes



## Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	1	0	0	1	1	0	0	1	1	0
Configuration			LTR				LTR			L		TR		L		TR
Volume (veh/h)		132	0	2		1	0	28		32	477	0		0	332	102
Percent Heavy Vehicles (%)		2	2	2		2	2	2		2				2		
Proportion Time Blocked																
Percent Grade (%)	0				0											
Right Turn Channelized																
Median Type   Storage	Undivided															

## Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2		7.1	6.5	6.2		4.1				4.1		
Critical Headway (sec)		7.12	6.52	6.22		7.12	6.52	6.22		4.12				4.12		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.52	4.02	3.32		3.52	4.02	3.32		2.22				2.22		

## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			134				29				32				0	
Capacity, c (veh/h)			170				434				935				902	
v/c Ratio			0.79				0.07				0.03				0.00	
95% Queue Length, Q <sub>95</sub> (veh)			5.2				0.2				0.1				0.0	
Control Delay (s/veh)			77.1				13.9				9.0				9.0	
Level of Service (LOS)			F				B				A				A	
Approach Delay (s/veh)	77.1				13.9				0.6				0.0			
Approach LOS	F				B											

Pedestrian Level of Service				
Flow (ped/hr)	100	100	10	10
Two-Stage Crossing	No	No	No	No
Pedestrian Platooning	No	No	No	No
Conflicting Vehicular Flow (veh/h)			841	911
Average Delay (s)	0.6	0.1	5.1	5.8
Level of Service (LOS)	A	A	B	B

# HCS7 Two-Way Stop-Control Report

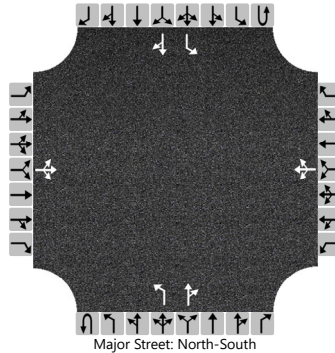
## General Information

Analyst	KDF
Agency/Co.	
Date Performed	2/24/2020
Analysis Year	2040
Time Analyzed	PM Peak Hour of Adj St
Intersection Orientation	North-South
Project Description	Monument Academy

## Site Information

Intersection	Jane Lundeen/North School
Jurisdiction	El Paso County
East/West Street	North Site Access
North/South Street	Jane Lundeen Dr
Peak Hour Factor	1.00
Analysis Time Period (hrs)	0.25

## Lanes



## Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	1	0	0	1	1	0	0	1	1	0
Configuration			LTR				LTR			L		TR		L		TR
Volume (veh/h)		153	0	2		1	0	25		31	410	5		7	196	113
Percent Heavy Vehicles (%)		2	2	2		2	2	2		2				2		
Proportion Time Blocked																
Percent Grade (%)	0				0											
Right Turn Channelized																
Median Type   Storage	Undivided															

## Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2		7.1	6.5	6.2		4.1				4.1		
Critical Headway (sec)		7.12	6.52	6.22		7.12	6.52	6.22		4.12				4.12		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.52	4.02	3.32		3.52	4.02	3.32		2.22				2.22		

## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			155				26				31				7	
Capacity, c (veh/h)			229				478				1040				951	
v/c Ratio			0.68				0.05				0.03				0.01	
95% Queue Length, Q <sub>95</sub> (veh)			4.3				0.2				0.1				0.0	
Control Delay (s/veh)			48.4				13.0				8.6				8.8	
Level of Service (LOS)			E				B				A				A	
Approach Delay (s/veh)	48.4				13.0				0.6				0.2			
Approach LOS	E				B											

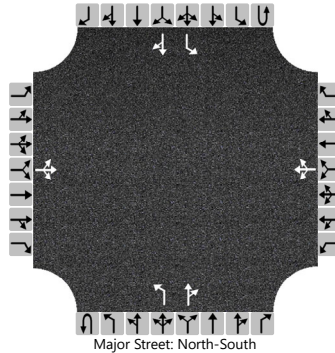
Pedestrian Level of Service				
Flow (ped/hr)	100	100	10	10
Two-Stage Crossing	No	No	No	No
Pedestrian Platooning	No	No	No	No
Conflicting Vehicular Flow (veh/h)			642	726
Average Delay (s)	0.6	0.1	3.5	4.2
Level of Service (LOS)	A	A	A	A

# HCS7 Two-Way Stop-Control Report

## General Information

Analyst	KDF	Intersection	Jane Lundeen/South Site
Agency/Co.		Jurisdiction	El Paso County
Date Performed	2/24/2020	East/West Street	South Site Access
Analysis Year	2040	North/South Street	Jane Lundeen Dr
Time Analyzed	School AM Peak Hour	Peak Hour Factor	1.00
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Monument Academy		

## Lanes



## Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	1	0	0	1	1	0	0	1	1	0
Configuration			LTR				LTR			L		TR		L		TR
Volume (veh/h)		64	0	2		1	0	28		47	683	20		36	369	61
Percent Heavy Vehicles (%)		2	2	2		2	2	2		2				2		
Proportion Time Blocked																
Percent Grade (%)	0				0											
Right Turn Channelized																
Median Type   Storage	Undivided															

## Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2		7.1	6.5	6.2		4.1				4.1		
Critical Headway (sec)		7.12	6.52	6.22		7.12	6.52	6.22		4.12				4.12		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.52	4.02	3.32		3.52	4.02	3.32		2.22				2.22		

## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			66			29				47				36		
Capacity, c (veh/h)			95			318				938				743		
v/c Ratio			0.70			0.09				0.05				0.05		
95% Queue Length, Q <sub>95</sub> (veh)			3.5			0.3				0.2				0.2		
Control Delay (s/veh)			103.5			17.5				9.0				10.1		
Level of Service (LOS)			F			C				A				B		
Approach Delay (s/veh)	103.5				17.5				0.6				0.8			
Approach LOS	F				C											

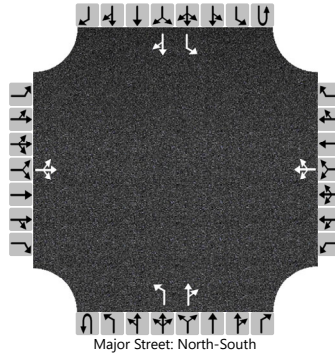
Pedestrian Level of Service				
Flow (ped/hr)	100	100	10	10
Two-Stage Crossing	No	No	No	No
Pedestrian Platooning	No	No	No	No
Conflicting Vehicular Flow (veh/h)			1119	1149
Average Delay (s)	0.3	0.1	8.1	8.5
Level of Service (LOS)	A	A	B	B

# HCS7 Two-Way Stop-Control Report

## General Information

Analyst	KDF	Intersection	Jane Lundeen/South Site
Agency/Co.		Jurisdiction	El Paso County
Date Performed	2/24/2020	East/West Street	South Site Access
Analysis Year	2040	North/South Street	Jane Lundeen Dr
Time Analyzed	School Miday PM Peak Hour	Peak Hour Factor	1.00
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Monument Academy		

## Lanes



## Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	1	0	0	1	1	0	0	1	1	0
Configuration			LTR				LTR			L		TR		L		TR
Volume (veh/h)		87	0	3		1	0	20		44	413	8		14	256	65
Percent Heavy Vehicles (%)		2	2	2		2	2	2		2				2		
Proportion Time Blocked																
Percent Grade (%)	0				0											
Right Turn Channelized																
Median Type   Storage	Undivided															

## Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2		7.1	6.5	6.2		4.1				4.1		
Critical Headway (sec)		7.12	6.52	6.22		7.12	6.52	6.22		4.12				4.12		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.52	4.02	3.32		3.52	4.02	3.32		2.22				2.22		

## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			90				21			44				14		
Capacity, c (veh/h)			204				464			1030				946		
v/c Ratio			0.44				0.05			0.04				0.01		
95% Queue Length, Q <sub>95</sub> (veh)			2.1				0.1			0.1				0.0		
Control Delay (s/veh)			35.8				13.1			8.7				8.9		
Level of Service (LOS)			E				B			A				A		
Approach Delay (s/veh)	35.8				13.1				0.8				0.4			
Approach LOS	E				B											

Pedestrian Level of Service				
Flow (ped/hr)	100	100	10	10
Two-Stage Crossing	No	No	No	No
Pedestrian Platooning	No	No	No	No
Conflicting Vehicular Flow (veh/h)			721	748
Average Delay (s)	0.4	0.1	4.1	4.3
Level of Service (LOS)	A	A	A	A

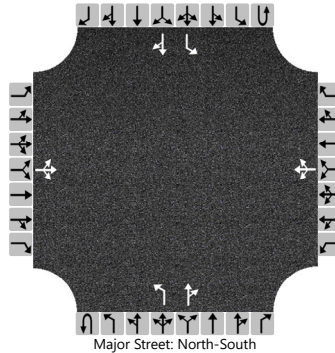


# HCS7 Two-Way Stop-Control Report

## General Information

Analyst	KDF	Intersection	Jane Lundeen/South Site
Agency/Co.		Jurisdiction	El Paso County
Date Performed	2/24/2020	East/West Street	South Site Access
Analysis Year	2040	North/South Street	Jane Lundeen Dr
Time Analyzed	PM Peak Hour of Adj St	Peak Hour Factor	1.00
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Monument Academy		

## Lanes



## Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	1	0	0	1	1	0	0	1	1	0
Configuration			LTR				LTR			L		TR		L		TR
Volume (veh/h)		107	0	3		2	0	53		51	331	22		26	110	80
Percent Heavy Vehicles (%)		2	2	2		2	2	2		2				2		
Proportion Time Blocked																
Percent Grade (%)	0				0											
Right Turn Channelized																
Median Type   Storage	Undivided															

## Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2		7.1	6.5	6.2		4.1				4.1		
Critical Headway (sec)		7.12	6.52	6.22		7.12	6.52	6.22		4.12				4.12		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.52	4.02	3.32		3.52	4.02	3.32		2.22				2.22		

## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			110				55			51				26		
Capacity, c (veh/h)			243				526			1151				1002		
v/c Ratio			0.45				0.10			0.04				0.03		
95% Queue Length, Q <sub>95</sub> (veh)			2.2				0.3			0.1				0.1		
Control Delay (s/veh)			31.5				12.6			8.3				8.7		
Level of Service (LOS)			D				B			A				A		
Approach Delay (s/veh)	31.5				12.6				1.0				1.0			
Approach LOS	D				B											

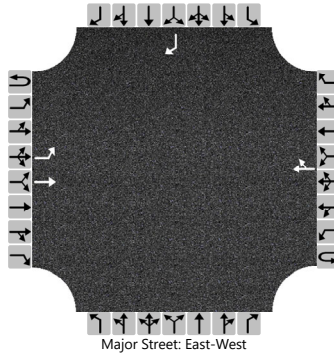
Pedestrian Level of Service				
Flow (ped/hr)	100	100	10	10
Two-Stage Crossing	No	No	No	No
Pedestrian Platooning	No	No	No	No
Conflicting Vehicular Flow (veh/h)			514	547
Average Delay (s)	0.5	0.2	2.6	2.8
Level of Service (LOS)	A	A	A	A

# HCS7 Two-Way Stop-Control Report

## General Information

Analyst	KDF	Intersection	Pinehurst/Site Access
Agency/Co.		Jurisdiction	El Paso County
Date Performed	2/24/2020	East/West Street	Site Access
Analysis Year	2040	North/South Street	Cir
Time Analyzed	School AM Peak Hour	Peak Hour Factor	1.00
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	Monument Academy		

## Lanes



## Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	1	1	0	0	0	1	0		0	0	0		0	0	1
Configuration		L	T					TR								R
Volume (veh/h)		429	26				29	21								435
Percent Heavy Vehicles (%)		2														3
Proportion Time Blocked																
Percent Grade (%)													0			
Right Turn Channelized													No			
Median Type   Storage	Undivided															

## Critical and Follow-up Headways

Base Critical Headway (sec)		4.1														6.2
Critical Headway (sec)		4.12														6.23
Base Follow-Up Headway (sec)		2.2														3.3
Follow-Up Headway (sec)		2.22														3.33

## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		429														435
Capacity, c (veh/h)		1529														984
v/c Ratio		0.28														0.44
95% Queue Length, Q <sub>95</sub> (veh)		1.2														2.3
Control Delay (s/veh)		8.3														11.5
Level of Service (LOS)		A														B
Approach Delay (s/veh)	7.8												11.5			
Approach LOS													B			

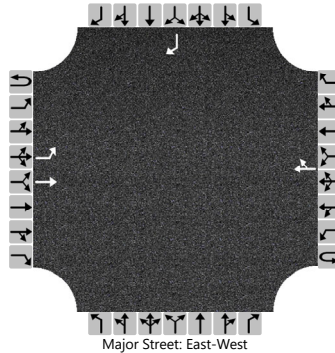
Pedestrian Level of Service				
Flow (ped/hr)	10	10		10
Two-Stage Crossing	No	No		No
Pedestrian Platooning	No	No		No
Conflicting Vehicular Flow (veh/h)	484	76		
Average Delay (s)	2.4	0.3		2.1
Level of Service (LOS)	A	A		A

# HCS7 Two-Way Stop-Control Report

## General Information

Analyst	KDF	Intersection	Pinehurst/Site Access
Agency/Co.		Jurisdiction	El Paso County
Date Performed	2/24/2020	East/West Street	Site Access
Analysis Year	2040	North/South Street	Cir
Time Analyzed	School Midday Peak Hour	Peak Hour Factor	1.00
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	Monument Academy		

## Lanes



## Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	1	1	0	0	0	1	0		0	0	0		0	0	1
Configuration		L	T					TR								R
Volume (veh/h)		221	26				17	11								189
Percent Heavy Vehicles (%)		2														2
Proportion Time Blocked																
Percent Grade (%)													0			
Right Turn Channelized													No			
Median Type   Storage	Undivided															

## Critical and Follow-up Headways

Base Critical Headway (sec)		4.1														6.2
Critical Headway (sec)		4.12														6.22
Base Follow-Up Headway (sec)		2.2														3.3
Follow-Up Headway (sec)		2.22														3.32

## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		221														189
Capacity, c (veh/h)		1557														1009
v/c Ratio		0.14														0.19
95% Queue Length, Q <sub>95</sub> (veh)		0.5														0.7
Control Delay (s/veh)		7.7														9.4
Level of Service (LOS)		A														A
Approach Delay (s/veh)	6.9												9.4			
Approach LOS													A			

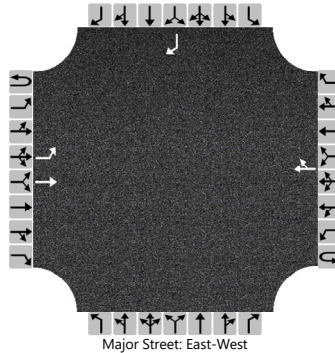
Pedestrian Level of Service				
Flow (ped/hr)	10	10		10
Two-Stage Crossing	No	No		No
Pedestrian Platooning	No	No		No
Conflicting Vehicular Flow (veh/h)	264	54		
Average Delay (s)	1.2	0.2		0.8
Level of Service (LOS)	A	A		A

# HCS7 Two-Way Stop-Control Report

## General Information

Analyst	KDF	Intersection	Pinehurst/Site Access
Agency/Co.		Jurisdiction	El Paso County
Date Performed	2/24/2020	East/West Street	Site Access
Analysis Year	2040	North/South Street	Cir
Time Analyzed	PM Peak Hour of Adj St	Peak Hour Factor	1.00
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	Monument Academy		

## Lanes



## Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	1	1	0	0	0	1	0		0	0	0		0	0	1
Configuration		L	T					TR								R
Volume (veh/h)		36	35				20	2								57
Percent Heavy Vehicles (%)		2														2
Proportion Time Blocked																
Percent Grade (%)													0			
Right Turn Channelized													No			
Median Type   Storage	Undivided															

## Critical and Follow-up Headways

Base Critical Headway (sec)		4.1														6.2
Critical Headway (sec)		4.12														6.22
Base Follow-Up Headway (sec)		2.2														3.3
Follow-Up Headway (sec)		2.22														3.32

## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		36														57
Capacity, c (veh/h)		1565														1010
v/c Ratio		0.02														0.06
95% Queue Length, Q <sub>95</sub> (veh)		0.1														0.2
Control Delay (s/veh)		7.4														8.8
Level of Service (LOS)		A														A
Approach Delay (s/veh)	3.7												8.8			
Approach LOS													A			

Pedestrian Level of Service				
Flow (ped/hr)	10	10		10
Two-Stage Crossing	No	No		No
Pedestrian Platooning	No	No		No
Conflicting Vehicular Flow (veh/h)	91	57		
Average Delay (s)	0.4	0.2		0.2
Level of Service (LOS)	A	A		A



# Rodel Analysis

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# Operational Data

## Main Geometry (ft)

### Approach and Entry Geometry

Leg	Leg Names	Approach Bearing (deg)	Grade Separation G	Half Width V	Approach Lanes n	Entry Width E	Entry Lanes n	Flare Length L'	Entry Radius R	Entry Angle ?
1	Walker Road	0	0	14.00	1	14.00	1	0.00	100.00	23.00
2	Jane Lundeen	90	0	28.00	2	28.00	2	0.00	120.00	19.50
3	Walker Road	180	0	18.00	1	16.00	1	100.00	105.00	27.00

Bypass Geometry

Bypass Approach Geometry (ft)

Leg	Leg Names	Bypass Type	Bypass Flows	V	nv	Vb	nvb	Vt	nvt
1	Walker Road	Yield	439	14	1	14	1	14	1

Traffic Flow Data (veh/hr)

2025 AM Peak Peak Hour Flows

Leg	Leg Names	Turning Flows				Flow Modifiers		
		U-Turn	Exit-2	Exit-1	Bypass	Trucks %	Flow Factor	Peak Hour Factor
1	Walker Road	0	72	0	439	2.0	1.00	0.8
2	Jane Lundeen	0	502	32	0	2.0	1.00	0.9
3	Walker Road	0	30	134	0	2.0	1.00	0.8

## Operational Results

### 2025 AM Peak - 60 minutes

#### Flows and Capacity

Leg	Leg Names	Bypass Type	Flows (veh/hr)					Capacity (veh/hr)			
			Arrival Flow		Opposing Flow		Exit Flow	Capacity		Average VCR	
			Entry	Bypass	Entry	Bypass		Entry	Bypass	Entry	Bypass
1	Walker Road	Yield	72	439	30	30	636	881	982	0.0842	0.4633
2	Jane Lundeen	None	534		72		469	2237		0.2418	
3	Walker Road	None	164		502		104	1106		0.1535	

#### Delays, Queues and Level of Service

Leg	Leg Names	Bypass Type	Average Delay (sec)			95% Queue (veh)		Level of Service		
			Entry	Bypass	Leg	Entry	Bypass	Entry	Bypass	Leg
1	Walker Road	Yield	4.28	6.67	6.33	0.29	3.19	A	A	A
2	Jane Lundeen	None	2.17		2.17	1.03		A		A
3	Walker Road	None	3.69		3.69	0.60		A		A

## 2025 AM Peak - 15 minutes

### Flows and Capacity

Leg	Leg Names	Bypass Type	Flows (veh/hr)					Capacity (veh/hr)			
			Arrival Flow		Opposing Flow		Exit Flow	Capacity		Average VCR	
			Entry	Bypass	Entry	Bypass		Entry	Bypass	Entry	Bypass
1	Walker Road	Yield	90	549	37	37	744	878	978	0.1034	0.5689
2	Jane Lundeen	None	614		90		584	2218		0.2780	
3	Walker Road	None	205		577		127	1072		0.1926	

### Delays, Queues and Level of Service

Leg	Leg Names	Bypass Type	Average Delay (sec)			95% Queue (veh)		Level of Service		
			Entry	Bypass	Leg	Entry	Bypass	Entry	Bypass	Leg
1	Walker Road	Yield	4.11	7.25	6.81	0.29	3.19	A	A	A
2	Jane Lundeen	None	2.18		2.18	1.03		A		A
3	Walker Road	None	3.68		3.68	0.60		A		A

# Global Results

## Performance and Accidents

### 2025 AM Peak Global Performance

Parameter	Units	Entries	Bypasses	Total
Arrive Flows	veh/hr	770	439	1209
Capacity	veh/hr	4224	982	5206
Average Delay	sec/veh	2.69	6.67	4.13
L.O.S. (Signal)	A – F	A	A	A
L.O.S. (Unsig)	A – F	A	A	A
Total Delay	veh.hrs	0.58	0.81	1.39

# Operational Data

## Main Geometry (ft)

### Approach and Entry Geometry

Leg	Leg Names	Approach Bearing (deg)	Grade Separation G	Half Width V	Approach Lanes n	Entry Width E	Entry Lanes n	Flare Length L'	Entry Radius R	Entry Angle ?
1	Walker Road	0	0	14.00	1	14.00	1	0.00	100.00	23.00
2	Jane Lundeen	90	0	28.00	2	28.00	2	0.00	120.00	19.50
3	Walker Road	180	0	18.00	1	16.00	1	100.00	105.00	27.00



Bypass Geometry

Bypass Approach Geometry (ft)

Leg	Leg Names	Bypass Type	Bypass Flows	V	nv	Vb	nvb	Vt	nvt
1	Walker Road	Yield	198	14	1	14	1	14	1

## Traffic Flow Data (veh/hr)

### 2025 OFF Peak Peak Hour Flows

Leg	Leg Names	Turning Flows				Flow Modifiers		
		U-Turn	Exit-2	Exit-1	Bypass	Trucks %	Flow Factor	Peak Hour Factor
1	Walker Road	0	94	0	198	5.0	1.00	0.9
2	Jane Lundeen	0	414	26	0	5.0	1.00	0.6
3	Walker Road	0	13	81	0	5.0	1.00	0.8

## Operational Results

### 2025 OFF Peak - 60 minutes

#### Flows and Capacity

Leg	Leg Names	Bypass Type	Flows (veh/hr)					Capacity (veh/hr)			
			Arrival Flow		Opposing Flow		Exit Flow	Capacity		Average VCR	
			Entry	Bypass	Entry	Bypass		Entry	Bypass	Entry	Bypass
1	Walker Road	Yield	94	198	13	13	495	840	963	0.1139	0.2094
2	Jane Lundeen	None	440		94		211	2086		0.2601	
3	Walker Road	None	94		414		120	1075		0.0919	

#### Delays, Queues and Level of Service

Leg	Leg Names	Bypass Type	Average Delay (sec)			95% Queue (veh)		Level of Service		
			Entry	Bypass	Leg	Entry	Bypass	Entry	Bypass	Leg
1	Walker Road	Yield	4.51	4.65	4.60	0.37	0.81	A	A	A
2	Jane Lundeen	None	2.31		2.31	1.60		A		A
3	Walker Road	None	3.49		3.49	0.34		A		A

## 2025 OFF Peak - 15 minutes

### Flows and Capacity

Leg	Leg Names	Bypass Type	Flows (veh/hr)					Capacity (veh/hr)			
			Arrival Flow		Opposing Flow		Exit Flow	Capacity		Average VCR	
			Entry	Bypass	Entry	Bypass		Entry	Bypass	Entry	Bypass
1	Walker Road	Yield	108	228	16	16	849	838	961	0.1301	0.2391
2	Jane Lundeen	None	800		108		243	2072		0.3876	
3	Walker Road	None	113		752		155	929		0.1228	

### Delays, Queues and Level of Service

Leg	Leg Names	Bypass Type	Average Delay (sec)			95% Queue (veh)		Level of Service		
			Entry	Bypass	Leg	Entry	Bypass	Entry	Bypass	Leg
1	Walker Road	Yield	4.40	4.60	4.54	0.37	0.81	A	A	A
2	Jane Lundeen	None	2.27		2.27	1.60		A		A
3	Walker Road	None	3.74		3.74	0.34		A		A

# Global Results

## Performance and Accidents

### 2025 OFF Peak Global Performance

Parameter	Units	Entries	Bypasses	Total
Arrive Flows	veh/hr	628	198	826
Capacity	veh/hr	4001	963	4964
Average Delay	sec/veh	2.82	4.65	3.25
L.O.S. (Signal)	A – F	A	A	A
L.O.S. (Unsig)	A – F	A	A	A
Total Delay	veh.hrs	0.49	0.26	0.75

# Operational Data

## Main Geometry (ft)

### Approach and Entry Geometry

Leg	Leg Names	Approach Bearing (deg)	Grade Separation G	Half Width V	Approach Lanes n	Entry Width E	Entry Lanes n	Flare Length L'	Entry Radius R	Entry Angle ?
1	Walker Road	0	0	14.00	1	14.00	1	0.00	100.00	23.00
2	Jane Lundeen	90	0	28.00	2	28.00	2	0.00	120.00	19.50
3	Walker Road	180	0	18.00	1	16.00	1	100.00	105.00	27.00

Bypass Geometry

Bypass Approach Geometry (ft)

Leg	Leg Names	Bypass Type	Bypass Flows	V	nv	Vb	nvb	Vt	nvt
1	Walker Road	Yield	55	14	1	14	1	14	1

## Traffic Flow Data (veh/hr)

### 2025 PM Peak Peak Hour Flows

Leg	Leg Names	Turning Flows				Flow Modifiers		
		U-Turn	Exit-2	Exit-1	Bypass	Trucks %	Flow Factor	Peak Hour Factor
1	Walker Road	0	140	0	55	2.0	1.00	0.9
2	Jane Lundeen	0	138	11	0	2.0	1.00	0.9
3	Walker Road	0	3	101	0	2.0	1.00	0.8



## Operational Results

### 2025 PM Peak - 60 minutes

#### Flows and Capacity

Leg	Leg Names	Bypass Type	Flows (veh/hr)					Capacity (veh/hr)			
			Arrival Flow		Opposing Flow		Exit Flow	Capacity		Average VCR	
			Entry	Bypass	Entry	Bypass		Entry	Bypass	Entry	Bypass
1	Walker Road	Yield	140	55	3	3	239	895	996	0.1586	0.0559
2	Jane Lundeen	None	149		140		58	2165		0.0696	
3	Walker Road	None	104		138		151	1267		0.0838	

#### Delays, Queues and Level of Service

Leg	Leg Names	Bypass Type	Average Delay (sec)			95% Queue (veh)		Level of Service		
			Entry	Bypass	Leg	Entry	Bypass	Entry	Bypass	Leg
1	Walker Road	Yield	4.60	3.79	4.37	0.54	0.17	A	A	A
2	Jane Lundeen	None	1.86		1.86	0.24		A		A
3	Walker Road	None	2.99		2.99	0.28		A		A

## 2025 PM Peak - 15 minutes

### Flows and Capacity

Leg	Leg Names	Bypass Type	Flows (veh/hr)					Capacity (veh/hr)			
			Arrival Flow		Opposing Flow		Exit Flow	Capacity		Average VCR	
			Entry	Bypass	Entry	Bypass		Entry	Bypass	Entry	Bypass
1	Walker Road	Yield	156	61	4	4	278	895	996	0.1755	0.0618
2	Jane Lundeen	None	169		155		65	2149		0.0791	
3	Walker Road	None	125		157		168	1259		0.1001	

### Delays, Queues and Level of Service

Leg	Leg Names	Bypass Type	Average Delay (sec)			95% Queue (veh)		Level of Service		
			Entry	Bypass	Leg	Entry	Bypass	Entry	Bypass	Leg
1	Walker Road	Yield	4.53	3.69	4.29	0.54	0.17	A	A	A
2	Jane Lundeen	None	1.82		1.82	0.24		A		A
3	Walker Road	None	2.89		2.89	0.28		A		A

# Global Results

## Performance and Accidents

### 2025 PM Peak Global Performance

Parameter	Units	Entries	Bypasses	Total
Arrive Flows	veh/hr	393	55	448
Capacity	veh/hr	4328	996	5324
Average Delay	sec/veh	3.14	3.79	3.22
L.O.S. (Signal)	A – F	A	A	A
L.O.S. (Unsig)	A – F	A	A	A
Total Delay	veh.hrs	0.34	0.06	0.40

# Operational Data

## Main Geometry (ft)

### Approach and Entry Geometry

Leg	Leg Names	Approach Bearing (deg)	Grade Separation G	Half Width V	Approach Lanes n	Entry Width E	Entry Lanes n	Flare Length L'	Entry Radius R	Entry Angle ?
1	Walker Road	0	0	28.00	2	28.00	2	0.00	100.00	16.00
2	Jane Lundeen	90	0	28.00	2	28.00	2	0.00	120.00	17.00
3	Walker Road	180	0	28.00	2	28.00	2	0.00	100.00	16.00
4	Shannon Road	270	0	18.00	1	16.00	1	100.00	95.00	17.00

Bypass Geometry

Bypass Approach Geometry (ft)

Leg	Leg Names	Bypass Type	Bypass Flows	V	nv	Vb	nvb	Vt	nvt
1	Walker Road	Yield	813	28	2	12	1	40	1

## Traffic Flow Data (veh/hr)

### 2040 AM Peak Peak Hour Flows

Leg	Leg Names	Turning Flows					Flow Modifiers		
		U-Turn	Exit-3	Exit-2	Exit-1	Bypass	Trucks %	Flow Factor	Peak Hour Factor
1	Walker Road	0	123	78	0	813	2.0	1.00	0.9
2	Jane Lundeen	0	949	1	55	0	2.0	1.00	0.9
3	Walker Road	0	71	149	7	0	2.0	1.00	0.9
4	Shannon Road	0	4	0	142	0	2.0	1.00	0.8

## Operational Results

### 2040 AM Peak - 60 minutes

#### Flows and Capacity

Leg	Leg Names	Bypass Type	Flows (veh/hr)					Capacity (veh/hr)			
			Arrival Flow		Opposing Flow		Exit Flow	Capacity		Average VCR	
			Entry	Bypass	Entry	Bypass		Entry	Bypass	Entry	Bypass
1	Walker Road	Yield	201	813	75	75	1240	2404	1047	0.0843	0.8046
2	Jane Lundeen	None	1005		205		883	2491		0.4065	
3	Walker Road	None	227		1073		137	1811		0.1279	
4	Shannon Road	None	146		1169		131	1160		0.1295	

#### Delays, Queues and Level of Service

Leg	Leg Names	Bypass Type	Average Delay (sec)			95% Queue (veh)		Level of Service		
			Entry	Bypass	Leg	Entry	Bypass	Entry	Bypass	Leg
1	Walker Road	Yield	2.58	15.09	12.61	0.42	11.52	A	C	B
2	Jane Lundeen	None	2.46		2.46	2.03		A		A
3	Walker Road	None	3.21		3.21	0.66		A		A
4	Shannon Road	None	3.43		3.43	0.48		A		A

## 2040 AM Peak - 15 minutes

### Flows and Capacity

Leg	Leg Names	Bypass Type	Flows (veh/hr)					Capacity (veh/hr)			
			Arrival Flow		Opposing Flow		Exit Flow	Capacity		Average VCR	
			Entry	Bypass	Entry	Bypass		Entry	Bypass	Entry	Bypass
1	Walker Road	Yield	218	884	87	87	1364	2392	1041	0.0918	0.8779
2	Jane Lundeen	None	1081		223		958	2477		0.4386	
3	Walker Road	None	264		1155		149	1747		0.1521	
4	Shannon Road	None	176		1276		143	1111		0.1595	

### Delays, Queues and Level of Service

Leg	Leg Names	Bypass Type	Average Delay (sec)			95% Queue (veh)		Level of Service		
			Entry	Bypass	Leg	Entry	Bypass	Entry	Bypass	Leg
1	Walker Road	Yield	2.55	17.49	14.53	0.42	11.52	A	C	B
2	Jane Lundeen	None	2.51		2.51	2.03		A		A
3	Walker Road	None	3.22		3.22	0.66		A		A
4	Shannon Road	None	3.45		3.45	0.48		A		A



# Global Results

## Performance and Accidents

### 2040 AM Peak Global Performance

Parameter	Units	Entries	Bypasses	Total
Arrive Flows	veh/hr	1579	813	2392
Capacity	veh/hr	7866	1047	8913
Average Delay	sec/veh	2.67	15.09	6.89
L.O.S. (Signal)	A – F	A	B	A
L.O.S. (Unsig)	A – F	A	C	A
Total Delay	veh.hrs	1.17	3.41	4.58

# Operational Data

## Main Geometry (ft)

### Approach and Entry Geometry

Leg	Leg Names	Approach Bearing (deg)	Grade Separation G	Half Width V	Approach Lanes n	Entry Width E	Entry Lanes n	Flare Length L'	Entry Radius R	Entry Angle ?
1	Walker Road	0	0	28.00	2	28.00	2	0.00	100.00	16.00
2	Jane Lundeen	90	0	28.00	2	28.00	2	0.00	120.00	17.00
3	Walker Road	180	0	28.00	2	28.00	2	0.00	100.00	16.00
4	Shannon Road	270	0	18.00	1	16.00	1	100.00	95.00	17.00

Bypass Geometry

Bypass Approach Geometry (ft)

Leg	Leg Names	Bypass Type	Bypass Flows	V	nv	Vb	nvb	Vt	nvt
1	Walker Road	Yield	813	28	2	12	1	40	1

## Traffic Flow Data (veh/hr)

### 2040 AM Peak Peak Hour Flows

Leg	Leg Names	Turning Flows					Flow Modifiers		
		U-Turn	Exit-3	Exit-2	Exit-1	Bypass	Trucks %	Flow Factor	Peak Hour Factor
1	Walker Road	0	123	78	0	813	2.0	1.00	0.9
2	Jane Lundeen	0	949	1	55	0	2.0	1.00	0.9
3	Walker Road	0	71	149	7	0	2.0	1.00	0.9
4	Shannon Road	0	4	0	142	0	2.0	1.00	0.8

## Operational Results

### 2040 AM Peak - 60 minutes

#### Flows and Capacity

Leg	Leg Names	Bypass Type	Flows (veh/hr)					Capacity (veh/hr)			
			Arrival Flow		Opposing Flow		Exit Flow	Capacity		Average VCR	
			Entry	Bypass	Entry	Bypass		Entry	Bypass	Entry	Bypass
1	Walker Road	Yield	201	813	75	75	1240	2330	971	0.0870	0.8793
2	Jane Lundeen	None	1005		205		882	2417		0.4190	
3	Walker Road	None	227		1073		137	1737		0.1335	
4	Shannon Road	None	146		1169		131	1086		0.1384	

#### Delays, Queues and Level of Service

Leg	Leg Names	Bypass Type	Average Delay (sec)			95% Queue (veh)		Level of Service		
			Entry	Bypass	Leg	Entry	Bypass	Entry	Bypass	Leg
1	Walker Road	Yield	2.67	21.92	18.10	0.44	17.38	A	C	C
2	Jane Lundeen	None	2.59		2.59	2.14		A		A
3	Walker Road	None	3.36		3.36	0.70		A		A
4	Shannon Road	None	3.70		3.70	0.52		A		A

## 2040 AM Peak - 15 minutes

### Flows and Capacity

Leg	Leg Names	Bypass Type	Flows (veh/hr)					Capacity (veh/hr)			
			Arrival Flow		Opposing Flow		Exit Flow	Capacity		Average VCR	
			Entry	Bypass	Entry	Bypass		Entry	Bypass	Entry	Bypass
1	Walker Road	Yield	218	884	87	87	1364	2318	965	0.0948	0.9604
2	Jane Lundeen	None	1081		223		951	2403		0.4522	
3	Walker Road	None	264		1155		149	1673		0.1589	
4	Shannon Road	None	176		1276		143	1037		0.1709	

### Delays, Queues and Level of Service

Leg	Leg Names	Bypass Type	Average Delay (sec)			95% Queue (veh)		Level of Service		
			Entry	Bypass	Leg	Entry	Bypass	Entry	Bypass	Leg
1	Walker Road	Yield	2.63	26.42	21.70	0.44	17.38	A	D	C
2	Jane Lundeen	None	2.64		2.64	2.14		A		A
3	Walker Road	None	3.39		3.39	0.70		A		A
4	Shannon Road	None	3.74		3.74	0.52		A		A

# Global Results

## Performance and Accidents

### 2040 AM Peak Global Performance

Parameter	Units	Entries	Bypasses	Total
Arrive Flows	veh/hr	1579	813	2392
Capacity	veh/hr	7570	971	8541
Average Delay	sec/veh	2.81	21.92	9.30
L.O.S. (Signal)	A – F	A	C	A
L.O.S. (Unsig)	A – F	A	C	A
Total Delay	veh.hrs	1.23	4.95	6.18

# Operational Data

## Main Geometry (ft)

### Approach and Entry Geometry

Leg	Leg Names	Approach Bearing (deg)	Grade Separation G	Half Width V	Approach Lanes n	Entry Width E	Entry Lanes n	Flare Length L'	Entry Radius R	Entry Angle ?
1	Walker Road	0	0	28.00	2	28.00	2	0.00	100.00	16.00
2	Jane Lundeen	90	0	28.00	2	28.00	2	0.00	120.00	17.00
3	Walker Road	180	0	28.00	2	28.00	2	0.00	100.00	16.00
4	Shannon Road	270	0	18.00	1	16.00	1	100.00	95.00	17.00



Bypass Geometry

Bypass Approach Geometry (ft)

Leg	Leg Names	Bypass Type	Bypass Flows	V	nv	Vb	nvb	Vt	nvt
1	Walker Road	Yield	604	28	2	12	1	40	1

## Traffic Flow Data (veh/hr)

### 2040 OFF Peak Peak Hour Flows

Leg	Leg Names	Turning Flows					Flow Modifiers		
		U-Turn	Exit-3	Exit-2	Exit-1	Bypass	Trucks %	Flow Factor	Peak Hour Factor
1	Walker Road	0	159	85	0	604	5.0	1.00	0.9
2	Jane Lundeen	0	984	1	67	0	5.0	1.00	0.8
3	Walker Road	0	51	85	8	0	5.0	1.00	0.8
4	Shannon Road	0	8	1	157	0	5.0	1.00	0.8

## Operational Results

### 2040 OFF Peak - 60 minutes

#### Flows and Capacity

Leg	Leg Names	Bypass Type	Flows (veh/hr)					Capacity (veh/hr)			
			Arrival Flow		Opposing Flow		Exit Flow	Capacity		Average VCR	
			Entry	Bypass	Entry	Bypass		Entry	Bypass	Entry	Bypass
1	Walker Road	Yield	244	604	60	60	1226	2282	1023	0.1079	0.6038
2	Jane Lundeen	None	1052		252		656	2311		0.4742	
3	Walker Road	None	144		1144		160	1632		0.0957	
4	Shannon Road	None	166		1120		168	1102		0.1586	

#### Delays, Queues and Level of Service

Leg	Leg Names	Bypass Type	Average Delay (sec)			95% Queue (veh)		Level of Service		
			Entry	Bypass	Leg	Entry	Bypass	Entry	Bypass	Leg
1	Walker Road	Yield	2.54	8.49	6.78	0.51	4.60	A	A	A
2	Jane Lundeen	None	2.89		2.89	3.64		A		A
3	Walker Road	None	3.59		3.59	0.60		A		A
4	Shannon Road	None	3.67		3.67	0.66		A		A

## 2040 OFF Peak - 15 minutes

### Flows and Capacity

Leg	Leg Names	Bypass Type	Flows (veh/hr)					Capacity (veh/hr)			
			Arrival Flow		Opposing Flow		Exit Flow	Capacity		Average VCR	
			Entry	Bypass	Entry	Bypass		Entry	Bypass	Entry	Bypass
1	Walker Road	Yield	268	664	77	77	1593	2265	1015	0.1190	0.6663
2	Jane Lundeen	None	1384		278		729	2291		0.6077	
3	Walker Road	None	187		1469		191	1385		0.1360	
4	Shannon Road	None	200		1470		186	946		0.2131	

### Delays, Queues and Level of Service

Leg	Leg Names	Bypass Type	Average Delay (sec)			95% Queue (veh)		Level of Service		
			Entry	Bypass	Leg	Entry	Bypass	Entry	Bypass	Leg
1	Walker Road	Yield	2.51	9.14	7.24	0.51	4.60	A	A	A
2	Jane Lundeen	None	3.22		3.22	3.64		A		A
3	Walker Road	None	3.84		3.84	0.60		A		A
4	Shannon Road	None	4.02		4.02	0.66		A		A

# Global Results

## Performance and Accidents

### 2040 OFF Peak Global Performance

Parameter	Units	Entries	Bypasses	Total
Arrive Flows	veh/hr	1606	604	2210
Capacity	veh/hr	7326	1023	8349
Average Delay	sec/veh	2.98	8.49	4.48
L.O.S. (Signal)	A – F	A	A	A
L.O.S. (Unsig)	A – F	A	A	A
Total Delay	veh.hrs	1.33	1.42	2.75

# Operational Data

## Main Geometry (ft)

### Approach and Entry Geometry

Leg	Leg Names	Approach Bearing (deg)	Grade Separation G	Half Width V	Approach Lanes n	Entry Width E	Entry Lanes n	Flare Length L'	Entry Radius R	Entry Angle ?
1	Walker Road	0	0	28.00	2	28.00	2	0.00	100.00	16.00
2	Jane Lundeen	90	0	28.00	2	28.00	2	0.00	120.00	17.00
3	Walker Road	180	0	28.00	2	28.00	2	0.00	100.00	16.00
4	Shannon Road	270	0	18.00	1	16.00	1	100.00	95.00	17.00

Bypass Geometry

Bypass Approach Geometry (ft)

Leg	Leg Names	Bypass Type	Bypass Flows	V	nv	Vb	nvb	Vt	nvt
1	Walker Road	Yield	604	28	2	12	1	40	1

Traffic Flow Data (veh/hr)

2040 OFF Peak Peak Hour Flows

Leg	Leg Names	Turning Flows					Flow Modifiers		
		U-Turn	Exit-3	Exit-2	Exit-1	Bypass	Trucks %	Flow Factor	Peak Hour Factor
1	Walker Road	0	159	85	0	604	5.0	1.00	0.9
2	Jane Lundeen	0	984	1	67	0	5.0	1.00	0.8
3	Walker Road	0	51	85	8	0	5.0	1.00	0.8
4	Shannon Road	0	8	1	157	0	5.0	1.00	0.8



## Operational Results

### 2040 OFF Peak - 60 minutes

#### Flows and Capacity

Leg	Leg Names	Bypass Type	Flows (veh/hr)					Capacity (veh/hr)			
			Arrival Flow		Opposing Flow		Exit Flow	Capacity		Average VCR	
			Entry	Bypass	Entry	Bypass		Entry	Bypass	Entry	Bypass
1	Walker Road	Yield	244	604	60	60	1226	2212	949	0.1114	0.6529
2	Jane Lundeen	None	1052		252		656	2241		0.4892	
3	Walker Road	None	144		1144		160	1562		0.1002	
4	Shannon Road	None	166		1120		168	1032		0.1700	

#### Delays, Queues and Level of Service

Leg	Leg Names	Bypass Type	Average Delay (sec)			95% Queue (veh)		Level of Service		
			Entry	Bypass	Leg	Entry	Bypass	Entry	Bypass	Leg
1	Walker Road	Yield	2.63	10.28	8.08	0.53	5.67	A	B	A
2	Jane Lundeen	None	3.07		3.07	3.90		A		A
3	Walker Road	None	3.78		3.78	0.63		A		A
4	Shannon Road	None	3.97		3.97	0.72		A		A

## 2040 OFF Peak - 15 minutes

### Flows and Capacity

Leg	Leg Names	Bypass Type	Flows (veh/hr)					Capacity (veh/hr)			
			Arrival Flow		Opposing Flow		Exit Flow	Capacity		Average VCR	
			Entry	Bypass	Entry	Bypass		Entry	Bypass	Entry	Bypass
1	Walker Road	Yield	268	664	77	77	1592	2195	941	0.1228	0.7211
2	Jane Lundeen	None	1384		278		728	2222		0.6271	
3	Walker Road	None	187		1469		191	1316		0.1433	
4	Shannon Road	None	200		1470		186	876		0.2303	

### Delays, Queues and Level of Service

Leg	Leg Names	Bypass Type	Average Delay (sec)			95% Queue (veh)		Level of Service		
			Entry	Bypass	Leg	Entry	Bypass	Entry	Bypass	Leg
1	Walker Road	Yield	2.60	11.27	8.77	0.53	5.67	A	B	A
2	Jane Lundeen	None	3.45		3.45	3.90		A		A
3	Walker Road	None	4.07		4.07	0.63		A		A
4	Shannon Road	None	4.41		4.41	0.72		A		A

# Global Results

## Performance and Accidents

### 2040 OFF Peak Global Performance

Parameter	Units	Entries	Bypasses	Total
Arrive Flows	veh/hr	1606	604	2210
Capacity	veh/hr	7047	949	7996
Average Delay	sec/veh	3.16	10.28	5.10
L.O.S. (Signal)	A – F	A	B	A
L.O.S. (Unsig)	A – F	A	B	A
Total Delay	veh.hrs	1.41	1.72	3.13

# Operational Data

## Main Geometry (ft)

### Approach and Entry Geometry

Leg	Leg Names	Approach Bearing (deg)	Grade Separation G	Half Width V	Approach Lanes n	Entry Width E	Entry Lanes n	Flare Length L'	Entry Radius R	Entry Angle ?
1	Walker Road	0	0	28.00	2	28.00	2	0.00	100.00	16.00
2	Jane Lundeen	90	0	28.00	2	28.00	2	0.00	120.00	17.00
3	Walker Road	180	0	28.00	2	28.00	2	0.00	100.00	16.00
4	Shannon Road	270	0	18.00	1	16.00	1	100.00	95.00	17.00

Bypass Geometry

Bypass Approach Geometry (ft)

Leg	Leg Names	Bypass Type	Bypass Flows	V	nv	Vb	nvb	Vt	nvt
1	Walker Road	Yield	510	28	2	12	1	40	1

## Traffic Flow Data (veh/hr)

### 2040 PM Peak Peak Hour Flows

Leg	Leg Names	Turning Flows					Flow Modifiers		
		U-Turn	Exit-3	Exit-2	Exit-1	Bypass	Trucks %	Flow Factor	Peak Hour Factor
1	Walker Road	0	194	148	0	510	2.0	1.00	0.9
2	Jane Lundeen	0	834	1	55	0	2.0	1.00	0.9
3	Walker Road	0	37	118	6	0	2.0	1.00	0.8
4	Shannon Road	0	7	1	163	0	2.0	1.00	0.8

## Operational Results

### 2040 PM Peak - 60 minutes

#### Flows and Capacity

Leg	Leg Names	Bypass Type	Flows (veh/hr)					Capacity (veh/hr)			
			Arrival Flow		Opposing Flow		Exit Flow	Capacity		Average VCR	
			Entry	Bypass	Entry	Bypass		Entry	Bypass	Entry	Bypass
1	Walker Road	Yield	342	510	45	45	1115	2436	1061	0.1418	0.4892
2	Jane Lundeen	None	890		349		548	2379		0.3774	
3	Walker Road	None	161		1029		210	1845		0.0892	
4	Shannon Road	None	171		989		201	1242		0.1414	

#### Delays, Queues and Level of Service

Leg	Leg Names	Bypass Type	Average Delay (sec)			95% Queue (veh)		Level of Service		
			Entry	Bypass	Leg	Entry	Bypass	Entry	Bypass	Leg
1	Walker Road	Yield	2.93	6.45	5.04	0.82	2.84	A	A	A
2	Jane Lundeen	None	2.48		2.48	1.86		A		A
3	Walker Road	None	2.70		2.70	0.40		A		A
4	Shannon Road	None	3.25		3.25	0.53		A		A

## 2040 PM Peak - 15 minutes

### Flows and Capacity

Leg	Leg Names	Bypass Type	Flows (veh/hr)					Capacity (veh/hr)			
			Arrival Flow		Opposing Flow		Exit Flow	Capacity		Average VCR	
			Entry	Bypass	Entry	Bypass		Entry	Bypass	Entry	Bypass
1	Walker Road	Yield	376	560	53	53	1241	2427	1057	0.1558	0.5376
2	Jane Lundeen	None	967		384		604	2351		0.4136	
3	Walker Road	None	189		1121		231	1774		0.1074	
4	Shannon Road	None	206		1089		221	1197		0.1733	

### Delays, Queues and Level of Service

Leg	Leg Names	Bypass Type	Average Delay (sec)			95% Queue (veh)		Level of Service		
			Entry	Bypass	Leg	Entry	Bypass	Entry	Bypass	Leg
1	Walker Road	Yield	2.90	6.70	5.17	0.82	2.84	A	A	A
2	Jane Lundeen	None	2.54		2.54	1.86		A		A
3	Walker Road	None	2.69		2.69	0.40		A		A
4	Shannon Road	None	3.26		3.26	0.53		A		A



# Global Results

## Performance and Accidents

### 2040 PM Peak Global Performance

Parameter	Units	Entries	Bypasses	Total
Arrive Flows	veh/hr	1564	510	2074
Capacity	veh/hr	7902	1061	8963
Average Delay	sec/veh	2.68	6.45	3.61
L.O.S. (Signal)	A – F	A	A	A
L.O.S. (Unsig)	A – F	A	A	A
Total Delay	veh.hrs	1.17	0.91	2.08

# Operational Data

## Main Geometry (ft)

### Approach and Entry Geometry

Leg	Leg Names	Approach Bearing (deg)	Grade Separation G	Half Width V	Approach Lanes n	Entry Width E	Entry Lanes n	Flare Length L'	Entry Radius R	Entry Angle ?
1	Walker Road	0	0	28.00	2	28.00	2	0.00	100.00	16.00
2	Jane Lundeen	90	0	28.00	2	28.00	2	0.00	120.00	17.00
3	Walker Road	180	0	28.00	2	28.00	2	0.00	100.00	16.00
4	Shannon Road	270	0	18.00	1	16.00	1	100.00	95.00	17.00

Bypass Geometry

Bypass Approach Geometry (ft)

Leg	Leg Names	Bypass Type	Bypass Flows	V	nv	Vb	nvb	Vt	nvt
1	Walker Road	Yield	510	28	2	12	1	40	1

## Traffic Flow Data (veh/hr)

### 2040 PM Peak Peak Hour Flows

Leg	Leg Names	Turning Flows					Flow Modifiers		
		U-Turn	Exit-3	Exit-2	Exit-1	Bypass	Trucks %	Flow Factor	Peak Hour Factor
1	Walker Road	0	194	148	0	510	2.0	1.00	0.9
2	Jane Lundeen	0	834	1	55	0	2.0	1.00	0.9
3	Walker Road	0	37	118	6	0	2.0	1.00	0.8
4	Shannon Road	0	7	1	163	0	2.0	1.00	0.8

## Operational Results

### 2040 PM Peak - 60 minutes

#### Flows and Capacity

Leg	Leg Names	Bypass Type	Flows (veh/hr)					Capacity (veh/hr)			
			Arrival Flow		Opposing Flow		Exit Flow	Capacity		Average VCR	
			Entry	Bypass	Entry	Bypass		Entry	Bypass	Entry	Bypass
1	Walker Road	Yield	342	510	45	45	1115	2362	985	0.1463	0.5279
2	Jane Lundeen	None	890		349		548	2305		0.3896	
3	Walker Road	None	161		1029		210	1771		0.0929	
4	Shannon Road	None	171		989		201	1168		0.1505	

#### Delays, Queues and Level of Service

Leg	Leg Names	Bypass Type	Average Delay (sec)			95% Queue (veh)		Level of Service		
			Entry	Bypass	Leg	Entry	Bypass	Entry	Bypass	Leg
1	Walker Road	Yield	3.04	7.47	5.69	0.85	3.32	A	A	A
2	Jane Lundeen	None	2.61		2.61	1.96		A		A
3	Walker Road	None	2.82		2.82	0.42		A		A
4	Shannon Road	None	3.49		3.49	0.57		A		A

## 2040 PM Peak - 15 minutes

### Flows and Capacity

Leg	Leg Names	Bypass Type	Flows (veh/hr)					Capacity (veh/hr)			
			Arrival Flow		Opposing Flow		Exit Flow	Capacity		Average VCR	
			Entry	Bypass	Entry	Bypass		Entry	Bypass	Entry	Bypass
1	Walker Road	Yield	376	560	53	53	1241	2353	982	0.1607	0.5802
2	Jane Lundeen	None	967		384		604	2277		0.4272	
3	Walker Road	None	189		1120		231	1700		0.1121	
4	Shannon Road	None	206		1089		221	1123		0.1848	

### Delays, Queues and Level of Service

Leg	Leg Names	Bypass Type	Average Delay (sec)			95% Queue (veh)		Level of Service		
			Entry	Bypass	Leg	Entry	Bypass	Entry	Bypass	Leg
1	Walker Road	Yield	3.01	7.82	5.89	0.85	3.32	A	A	A
2	Jane Lundeen	None	2.68		2.68	1.96		A		A
3	Walker Road	None	2.82		2.82	0.42		A		A
4	Shannon Road	None	3.51		3.51	0.57		A		A

# Global Results

## Performance and Accidents

### 2040 PM Peak Global Performance

Parameter	Units	Entries	Bypasses	Total
Arrive Flows	veh/hr	1564	510	2074
Capacity	veh/hr	7606	985	8591
Average Delay	sec/veh	2.82	7.47	3.96
L.O.S. (Signal)	A – F	A	A	A
L.O.S. (Unsig)	A – F	A	A	A
Total Delay	veh.hrs	1.22	1.06	2.28

# Queuing Reports

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## Queues

2025 Total Traffic

1: SH 83 &amp; SH 105/Walker Rd

AM Peak Hour

											
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	51	462	188	314	430	223	382	24	133	297	68
v/c Ratio	0.19	0.89	0.12	0.95	0.50	0.62	0.71	0.04	0.46	0.55	0.12
Control Delay	28.4	54.2	0.2	60.6	18.8	30.1	40.3	0.2	24.8	34.7	0.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	28.4	54.2	0.2	60.6	18.8	30.1	40.3	0.2	24.8	34.7	0.5
Queue Length 50th (ft)	24	273	0	130	166	94	220	0	53	162	0
Queue Length 95th (ft)	45	343	0	#279	222	125	329	0	93	238	0
Internal Link Dist (ft)		573			617		655			612	
Turn Bay Length (ft)	300		375	300					475		475
Base Capacity (vph)	294	575	1583	332	916	362	536	557	289	536	557
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	0.17	0.80	0.12	0.95	0.47	0.62	0.71	0.04	0.46	0.55	0.12

## Intersection Summary












# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

# Queues 1: SH 83 & SH 105/Walker Rd












2025 Total Traffic

School Midday Peak Hour

											
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	62	233	156	353	480	162	283	28	76	314	44
v/c Ratio	0.41	0.75	0.10	0.88	0.69	0.34	0.39	0.04	0.15	0.47	0.07
Control Delay	44.8	54.6	0.1	48.4	30.1	15.6	25.6	0.1	13.6	27.3	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
Total Delay	44.8	54.6	0.1	48.4	30.1	15.6	25.6	0.1	13.6	27.3	0.2
Queue Length 50th (ft)	35	139	0	165	236	52	132	0	23	151	0
Queue Length 95th (ft)	73	212	0	139	200	90	209	0	47	226	0
Internal Link Dist (ft)		573			617		655			612	
Turn Bay Length (ft)	300		375	300					475		475
Base Capacity (vph)	178	364	1583	402	752	477	721	700	567	672	662
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	0.35	0.64	0.10	0.88	0.64	0.34	0.39	0.04	0.13	0.47	0.07
Intersection Summary											

Queues  
121: SH 83 & Hodgen Rd

2025 Total Traffic  
PM Peak Hour

											
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	95	224	112	139	146	248	118	338	200	238	555
v/c Ratio	0.53	0.40	0.20	0.64	0.41	0.50	0.33	0.52	0.29	0.48	0.75
Control Delay	53.4	25.8	6.0	49.4	37.1	8.6	12.8	24.2	4.1	14.6	30.1
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	53.4	25.8	6.0	49.4	37.1	8.6	12.8	24.2	4.1	14.6	30.1
Queue Length 50th (ft)	51	91	0	71	71	0	31	143	0	66	268
Queue Length 95th (ft)	#99	144	23	139	133	53	59	225	41	111	404
Internal Link Dist (ft)		341			486			456			215
Turn Bay Length (ft)	450		450	400		400	200		900	650	
Base Capacity (vph)	189	800	743	294	474	588	376	1049	979	502	1026
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	0.50	0.28	0.15	0.47	0.31	0.42	0.31	0.32	0.20	0.47	0.54

Intersection Summary













# 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.

## Queues

## 2040 Total Traffic (Staggered Start Times)

1: SH 83 &amp; SH 105/Walker Rd

AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	55	650	205	570	530	233	243	530	221	261	395	86
v/c Ratio	0.30	0.87	0.13	0.86	0.63	0.15	0.58	0.51	0.36	0.67	0.34	0.14
Control Delay	44.6	58.8	0.2	60.4	28.3	0.2	30.0	37.2	6.0	30.6	31.0	2.6
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	44.6	58.8	0.2	60.4	28.3	0.2	30.0	37.2	6.0	30.6	31.0	2.6
Queue Length 50th (ft)	36	256	0	220	298	0	118	182	0	128	122	0
Queue Length 95th (ft)	77	#322	0	#302	415	0	154	238	59	192	165	19
Internal Link Dist (ft)		1073			617			655			612	
Turn Bay Length (ft)	300		375	350		205				475		475
Base Capacity (vph)	192	784	1583	702	890	1583	422	1042	621	396	1177	605
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	0.29	0.83	0.13	0.81	0.60	0.15	0.58	0.51	0.36	0.66	0.34	0.14

## Intersection Summary

# 95th percentile volume exceeds capacity, queue may be longer.













Queue shown is maximum after two cycles.

## Queues

1: SH 83 &amp; SH 105/Walker Rd

2040 Total Traffic

School Midday Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	79	485	161	546	560	225	162	357	242	230	392	58
v/c Ratio	0.52	0.73	0.10	0.96	0.73	0.14	0.36	0.33	0.37	0.44	0.31	0.09
Control Delay	52.4	48.2	0.1	74.6	33.6	0.2	20.3	31.9	6.2	19.5	26.5	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	52.4	48.2	0.1	74.6	33.6	0.2	20.3	31.9	6.2	19.5	26.5	0.3
Queue Length 50th (ft)	50	168	0	194	323	0	59	98	0	88	101	0
Queue Length 95th (ft)	101	209	0	#332	451	0	113	166	64	157	155	0
Internal Link Dist (ft)	1073				617				655			
Turn Bay Length (ft)	300	375		350	205		475				475	
Base Capacity (vph)	238	1045	1583	570	962	1583	445	1083	652	611	1273	645
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	0.33	0.46	0.10	0.96	0.58	0.14	0.36	0.33	0.37	0.38	0.31	0.09

## Intersection Summary

# 95th percentile volume exceeds capacity, queue may be longer.













Queue shown is maximum after two cycles.

## Queues

1: SH 83 &amp; SH 105/Walker Rd

2040 Total Traffic

PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	92	370	237	497	499	215	203	571	300	267	682	116
v/c Ratio	0.64	0.63	0.15	0.83	0.36	0.14	0.58	0.52	0.43	0.60	0.51	0.17
Control Delay	63.0	47.6	0.2	57.3	23.8	0.2	27.5	35.5	6.3	22.5	29.0	5.3
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	63.0	47.6	0.2	57.3	23.8	0.2	27.5	35.5	6.3	22.5	29.0	5.3
Queue Length 50th (ft)	61	130	0	171	127	0	74	170	0	102	190	0
Queue Length 95th (ft)	118	176	0	#281	168	0	#150	263	73	189	285	38
Internal Link Dist (ft)		573			617			655			612	
Turn Bay Length (ft)	300		375	300		205				475		475
Base Capacity (vph)	224	909	1583	630	1754	1583	350	1095	697	537	1332	669
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	0.41	0.41	0.15	0.79	0.28	0.14	0.58	0.52	0.43	0.50	0.51	0.17

## Intersection Summary

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

## Appendix Table 1

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# Internal Trip Capture Estimate

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NCHRP 684 Internal Trip Capture Estimation Tool					
<b>Project Name:</b>	Walden North	<b>Organization:</b>	LSC Transportation Consultants, Inc.		
<b>Project Location:</b>	SH 83/Walker	<b>Performed By:</b>	KDF		
<b>Scenario Description:</b>	Buildout	<b>Date:</b>	1/16/2019		
<b>Analysis Year:</b>	2040	<b>Checked By:</b>			
<b>Analysis Period:</b>	AM Street Peak Hour	<b>Date:</b>			

Table 1-A: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)						
Land Use	Development Data (For Information Only)			Estimated Vehicle-Trips <sup>3</sup>		
	ITE LUCs <sup>1</sup>	Quantity	Units	Total	Entering	Exiting
Office				224	181	43
Retail				656	361	295
Restaurant				240	124	116
Cinema/Entertainment				0	0	0
Residential				0	0	0
Hotel				0	0	0
All Other Land Uses <sup>2</sup>				0		
				1,120	666	454

Table 2-A: Mode Split and Vehicle Occupancy Estimates						
Land Use	Entering Trips			Exiting Trips		
	Veh. Occ. <sup>4</sup>	% Transit	% Non-Motorized	Veh. Occ. <sup>4</sup>	% Transit	% Non-Motorized
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						
All Other Land Uses <sup>2</sup>						

Table 3-A: Average Land Use Interchange Distances (Feet Walking Distance)						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-A: Internal Person-Trip Origin-Destination Matrix*						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		12	27	0	0	0
Retail	7		38	0	0	0
Restaurant	25	16		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	0	0	0		0
Hotel	0	0	0	0	0	

Table 5-A: Computations Summary			
	Total	Entering	Exiting
All Person-Trips	1,120	666	454
Internal Capture Percentage	22%	19%	28%
External Vehicle-Trips <sup>5</sup>	870	541	329
External Transit-Trips <sup>6</sup>	0	0	0
External Non-Motorized Trips <sup>6</sup>	0	0	0

Table 6-A: Internal Trip Capture Percentages by Land Use		
Land Use	Entering Trips	Exiting Trips
Office	18%	91%
Retail	8%	15%
Restaurant	52%	35%
Cinema/Entertainment	N/A	N/A
Residential	N/A	N/A
Hotel	N/A	N/A

<sup>1</sup> Land Use Codes (LUCs) from <i>Trip Generation Manual</i> , published by the Institute of Transportation Engineers.
<sup>2</sup> Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator.
<sup>3</sup> Enter trips assuming no transit or non-motorized trips (as assumed in ITE <i>Trip Generation Manual</i> ).
<sup>4</sup> Enter vehicle occupancy assumed in Table 1-A vehicle trips. If vehicle occupancy changes for proposed mixed-use project, manual adjustments must be made to Tables 5-A, 9-A (O and D). Enter transit, non-motorized percentages that will result with proposed mixed-use project complete.
<sup>5</sup> Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A.
<sup>6</sup> Person-Trips
*Indicates computation that has been rounded to the nearest whole number.
Estimation Tool Developed by the Texas A&M Transportation Institute - Version 2013.1

NCHRP 684 Internal Trip Capture Estimation Tool					
<b>Project Name:</b>	Walden North	<b>Organization:</b>	LSC Transportation Consultants, Inc.		
<b>Project Location:</b>	SH 83/Walker	<b>Performed By:</b>	KDF		
<b>Scenario Description:</b>	Buildout	<b>Date:</b>	1/16/2019		
<b>Analysis Year:</b>	2040	<b>Checked By:</b>			
<b>Analysis Period:</b>	PM Street Peak Hour	<b>Date:</b>			

Table 1-P: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)						
Land Use	Development Data (For Information Only)			Estimated Vehicle-Trips <sup>3</sup>		
	ITE LUCs <sup>1</sup>	Quantity	Units	Total	Entering	Exiting
Office				275	69	206
Retail				1,004	499	505
Restaurant				202	109	93
Cinema/Entertainment				0	0	0
Residential				0	0	0
Hotel				0	0	0
All Other Land Uses <sup>2</sup>				0	0	0
				1,481	677	804

Table 2-P: Mode Split and Vehicle Occupancy Estimates						
Land Use	Entering Trips			Exiting Trips		
	Veh. Occ. <sup>4</sup>	% Transit	% Non-Motorized	Veh. Occ. <sup>4</sup>	% Transit	% Non-Motorized
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						
All Other Land Uses <sup>2</sup>						

Table 3-P: Average Land Use Interchange Distances (Feet Walking Distance)						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-P: Internal Person-Trip Origin-Destination Matrix*						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		40	2	0	0	0
Retail	10		32	0	0	0
Restaurant	3	38		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	0	0	0		0
Hotel	0	0	0	0	0	

Table 5-P: Computations Summary			
	Total	Entering	Exiting
All Person-Trips	1,481	677	804
Internal Capture Percentage	17%	18%	16%
External Vehicle-Trips <sup>5</sup>	1,231	552	679
External Transit-Trips <sup>6</sup>	0	0	0
External Non-Motorized Trips <sup>6</sup>	0	0	0

Table 6-P: Internal Trip Capture Percentages by Land Use		
Land Use	Entering Trips	Exiting Trips
Office	19%	20%
Retail	16%	8%
Restaurant	31%	44%
Cinema/Entertainment	N/A	N/A
Residential	N/A	N/A
Hotel	N/A	N/A

<sup>1</sup> Land Use Codes (LUCs) from <i>Trip Generation Manual</i> , published by the Institute of Transportation Engineers.
<sup>2</sup> Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator.
<sup>3</sup> Enter trips assuming no transit or non-motorized trips (as assumed in <i>ITE Trip Generation Manual</i> ).
<sup>4</sup> Enter vehicle occupancy assumed in Table 1-P vehicle trips. If vehicle occupancy changes for proposed mixed-use project, manual adjustments must be made.
<sup>5</sup> Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P.
<sup>6</sup> Person-Trips
*Indicates computation that has been rounded to the nearest whole number.
Estimation Tool Developed by the Texas A&M Transportation Institute - Version 2013.1

# MSTA School Traffic Calculations

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# MSTA School Traffic Calculations

AM and PM Peak Traffic Estimates  
(These numbers do not reflect peak hour traffic volumes)

The scenario is listed here on each of these tables. When it says "high school only" or "middle school only" This is related to the staggered start times.

School Name: Middle School Only (based on 1,000 total students 6-12)

Type: **Urban Charter**

Version: 102816

AM Cars / Student	PM Cars / Student	Avg. Car Length	PM At one Time
55.94%	39.15%	22.19	48.67%
52.91%	47.50%	22.19	46.12%
50.08%	47.58%	22.83	55.71%

MSTA School Queue Input					Calculations					
Grade Level	Student Population	Number of Buses	Staff Members	Student Drivers	PM Total Vehicles	PM Peak Vehicles	Average Queue Length	Total AM Trips	Total PM Trips	High Demand Length
K - 10	455	1	36		179	88	1953	546	395	2539
11th										
12th										
Sum >>	455	1	36		179	88	1953	546	395	2539

	Grade K-10								
	AM Trips Generated				PM Trips Generated				
Direction	Parents	Buses	Staff	Trips	Parents	Buses	Staff	Trips	
IN	255	1	36	292	179			179	
OUT	255			255	179	1	36	216	
		AM K-10 Trips		546			PM K-10 Trips		395

Grade 11-12									
AM Trips Generated					PM Trips Generated				
Direction	Parents	Buses	Staff	Trips	Parents	Buses	Staff	Trips	
IN									
OUT									
AM 11th Trips					PM 11th Trips				

Grade 12th									
AM Trips Generated					PM Trips Generated				
Direction	Parents	Buses	Staff	Trips	Parents	Buses	Staff	Trips	
IN									
OUT									
AM 12th Trips					PM 12th Trips				

All AM TRIPS		
In	292	
Out	255	
Total	546	

All PM TRIPS		
In	179	
Out	216	
Total	395	

ADT
941

## NOTES

- Average Queue Length does not include an alternative traffic pattern required for high traffic demand days which is usually 30% additional length.
- Average Queue Length does not include the Student Loading Zone.
- Peak traffic volumes at schools normally occur within a 30-minute time period. (justifying a PHF of 0.5)

# MSTA School Traffic Calculations

AM and PM Peak Traffic Estimates  
(These numbers do not reflect peak hour traffic volumes)

AM Cars / Student	PM Cars / Student	Avg. Car Length	PM At one Time
55.94%	39.15%	22.19	48.67%
52.91%	47.50%	22.19	46.12%
50.08%	47.58%	22.83	55.71%

School Name: High School Only (based on 1,000 total students 6-12)

Type: **Urban Charter**

Version: 102816

MSTA School Queue Input					Calculations					
Grade Level	Student Population	Number of Buses	Staff Members	Student Drivers	PM Total Vehicles	PM Peak Vehicles	Average Queue Length	Total AM Trips	Total PM Trips	High Demand Length
K - 10	280	4	20		110	54	1198	333	240	1558
11th	135	1	15	106	22	11	244	150	166	317
12th	130		14	85	28	16	365	141	155	475
Sum >>	545	1	49	191	160	81	1808	624	561	2350

Grade K-10									
AM Trips Generated					PM Trips Generated				
Direction	Parents	Buses	Staff	Trips	Parents	Buses	Staff	Trips	
IN	157		20	177	110			110	
OUT	157			157	110		20	130	
AM K-10 Trips				333	PM K-10 Trips				240

Grade 11											
AM Trips Generated						PM Trips Generated					
Direction	Parents	Buses	Staff	Student Dvr	Trips	Parents	Buses	Staff	Student Dvr	Trips	
IN	24	1	15	85	125	22				22	
OUT	24				24	22	1	15	106	144	
AM 11th Trips					150	PM 11th Trips					166

Grade 12											
AM Trips Generated						PM Trips Generated					
Direction	Parents	Buses	Staff	Student Dvr	Trips	Parents	Buses	Staff	Student Dvr	Trips	
IN	29		14	68	111	28				28	
OUT	29				29	28		14	85	127	
AM 12th Trips					141	PM 12th Trips					155

All AM TRIPS	In	413
	Out	210
	Total	624

All PM TRIPS	In	160
	Out	401
	Total	561

ADT
573
316
296
1185

**NOTES**

- Average Queue Length does not include an alternative traffic pattern required for high traffic demand days which is usually 30% additional length.
- Average Queue Length does not include the Student Loading Zone.
- Peak traffic volumes at schools normally occur within a 30-minute time period. (justifying a PHF of 0.5)

Calculated 2/24/2020 By: \_\_\_\_\_

# MSTA School Traffic Calculations

AM and PM Peak Traffic Estimates  
(These numbers do not reflect peak hour traffic volumes)

AM Cars / Student	PM Cars / Student	Avg. Car Length	PM At one Time
55.94%	39.15%	22.19	48.67%
52.91%	47.50%	22.19	46.12%
50.08%	47.58%	22.83	55.71%

School Name: Middle School Only (based on 826 total students 6-12)

Type: **Urban Charter**

Version: 102816

MSTA School Queue Input				
Grade Level	Student Population	Number of Buses	Staff Members	Student Drivers
K - 10	354	1	32	
11th				
12th				
Sum >>	354	1	32	

Calculations					
PM Total Vehicles	PM Peak Vehicles	Average Queue Length	Total AM Trips	Total PM Trips	High Demand Length
					30%
139	68	1509	429	311	1962
139	68	1509	429	311	1962

453

Grade K-10								
AM Trips Generated				PM Trips Generated				
Direction	Parents	Buses	Staff	Trips	Parents	Buses	Staff	Trips
IN	198	1	32	231	139			139
OUT	198			198	139	1	32	172
AM K-10 Trips				429	PM K-10 Trips			

Grade 11-12								
AM Trips Generated				PM Trips Generated				
Direction	Parents	Buses	Staff	Trips	Parents	Buses	Staff	Trips
IN								
OUT								
AM 11th Trips					PM 11th Trips			

Grade 12th								
AM Trips Generated				PM Trips Generated				
Direction	Parents	Buses	Staff	Trips	Parents	Buses	Staff	Trips
IN								
OUT								
AM 12th Trips					PM 12th Trips			

All AM TRIPS			All PM TRIPS		
	In	Out		In	Out
		231			139
		198			172
	Total	429		Total	311

ADT
740
740

**NOTES**

- Average Queue Length does not include an alternative traffic pattern required for high traffic demand days which is usually 30% additional length.
- Average Queue Length does not include the Student Loading Zone.
- Peak traffic volumes at schools normally occur within a 30-minute time period. (justifying a PHF of 0.5)

# MSTA School Traffic Calculations

AM and PM Peak Traffic Estimates  
(These numbers do not reflect peak hour traffic volumes)

				School Name: High School Only (based on 826 total students 6-12)						Version: 102816					
				Type: Urban Charter											
				MSTA School Queue Input					Calculations						
AM Cars / Student	PM Cars / Student	Avg. Car Length	PM At one Time	Grade Level	Student Population	Number of Buses	Staff Members	Student Drivers	PM Total Vehicles	PM Peak Vehicles	Average Queue Length	Total AM Trips	Total PM Trips	High Demand Length	
55.94%	39.15%	22.19	48.67%	K - 10	236	3	20		93	46	1021	284	206	30%	
52.91%	47.50%	22.19	46.12%	11th	118	1	11	88	21	10	222	130	142	289	
50.08%	47.58%	22.83	55.71%	12th	118		12	70	29	17	388	127	140	505	
Sum >>					472	1	43	158	143	73	1631	541	488	2121	
									490						
				Grade K-10											
				AM Trips Generated					PM Trips Generated						
				Direction	Parents	Buses	Staff	Trips	Parents	Buses	Staff	Trips			
				IN	132		20	152	93			93			
				OUT	132			132	93		20	113			
				AM K-10 Trips				284	PM K-10 Trips				206		
				Grade 11											
				AM Trips Generated					PM Trips Generated						
				Direction	Parents	Buses	Staff	Student Dvr	Trips	Parents	Buses	Staff	Student Dvr	Trips	
				IN	23	1	11	71	106	21				21	
				OUT	23				23	21	1	11	88	121	
				AM 11th Trips				130	PM 11th Trips				142		
				Grade 12											
				AM Trips Generated					PM Trips Generated						
				Direction	Parents	Buses	Staff	Student Dvr	Trips	Parents	Buses	Staff	Student Dvr	Trips	
				IN	30		12	56	98	29				29	
				OUT	30				30	29		12	70	111	
				AM 12th Trips				127	PM 12th Trips				140		
				All AM TRIPS				In	356	All PM TRIPS				In	143
								Out	185					Out	345
								Total	541					Total	488
												1029			

NOTES

Average Queue Length does not include an alternative traffic pattern required for high traffic demand days which is usually 30% additional length.

Average Queue Length does not include the Student Loading Zone.

Peak traffic volumes at schools normally occur within a 30-minute time period. (justifying a PHF of 0.5)

## NOTES

- Average Queue Length does not include an alternative traffic pattern required for high traffic demand days which is usually 30% additional length.
- Average Queue Length does not include the Student Loading Zone.
- Peak traffic volumes at schools normally occur within a 30-minute time period. (justifying a PHF of 0.5)



# Crash History

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SH 83/Walker/Highway 105									
Year	Month	Day	AccidentTime	NumberKilled	NumberInjured	FIP	ReferencePointName	ReferencePointAtName	AccidentNarrative
2017	1	11	2:36:00 PM	0	0	Property	Colorado Highway 83	Colorado Highway 105	Vehicle #1 was eastbound on Colorado Highway 105. Vehicle #2 was southbound on Colorado Highway 83. The front of vehicle #2 collided with the left side rear of vehicle #1. Vehicles were moved prior to investigation.
2017	3	3	7:51:00 PM	0	1	Injury	Colorado Highway 83	Colorado Highway 105	Vehicle #1 was northbound on Colorado Highway 83 attempting to turn left onto Colorado Highway 105. Vehicle #2 was southbound on Colorado Highway 83. The front of vehicle #2 collided with the right side of vehicle #1 approximately 5.6' north of the median and 12' east of the west road edge of Colorado Highway 83. Vehicle #2 continued southbound for approximately 113' before going off the west side of Colorado Highway 83. Vehicle #1 rotated clockwise approximately 180 degrees coming to final
2017	4	22	9:30:00 PM	0	0	Property	Colorado Highway 83	Colorado Highway 105	Vehicle #1 was westbound on CO Hwy 105 at a stop sign at the intersection with CO Hwy 83. Vehicle #2 was southbound on CO Hwy 83. Vehicle #1 then proceeded west into the intersection to travel west on CO Hwy 105, when its front collided with the left side of Vehicle #2. After impact, Vehicle #1 came to rest in the westbound lane of CO Hwy 105 just west of the intersection. After impact, Vehicle #2 came to rest in the northbound lanes of CO Hwy 83 just south of the intersection.
2017	6	16	4:40:00 PM	0	1	Injury	HIGHWAY 83	HIGHWAY 105	Vehicle 1 was eastbound on Highway 105 at Highway 83. Vehicle 2 was southbound on Highway 83 at Highway 105. Vehicle 1 proceeded from a stop sign and collided its front with the side of vehicle 2. Vehicle 1 rotated clockwise and came to a rest facing west blocking the southbound lane. Vehicle 2 continued southbound and came to a rest facing south partially in the painted median and partially in the southbound lane just south of the intersection.
2017	7	27	5:18:00 PM	0	0	Property	Colorado 83	Colorado 105/Walker Rd	Vehicle #1 was stopped at the intersection of Colorado 105 and Colorado 83. Vehicle #2 was southbound on Colorado 83. Vehicle #1 began to turn left onto Colorado 83 and failed to yield the right of way to Vehicle #2. Driver #2 swerved to the left in attempt to avoid a collision. Vehicle #2 began to yaw for 152' and impacted a delineator post. Vehicle #2 continued another 69' off road and its roof impacted a steel post on a Virtual Messaging System Board. Vehicle #2 came to rest at the point of impact
2017	9	29	1:20:00 PM	0	1	Injury	Colorado 83	Colorado 105	Vehicle 1 was eastbound on Colorado 105 and stopped for a stop sign. Vehicle 2 was southbound on Colorado 83. Vehicle 2 continued southbound and Vehicle 1 turned left onto northbound Colorado 83. Vehicle 2 swerved and struck Vehicle 1, on its left side, with its front. Vehicle 1 traveled southeast 120.6' and off the right side of the roadway. Vehicle 1 came to rest, on its wheels, facing northwest. Vehicle 2 was moved from the scene prior to officer arrival.
2017	9	29	3:36:00 PM	0	0	Property	Colorado Highway 105/ Walker Road	Colorado Highway 83	Vehicle #1 was stopped at the stop sign on Colorado Highway 105 at the intersection with Colorado Highway 83, facing east. Vehicle #2 was stopped at the stop sign on Walker Road at the intersection with Colorado Highway 83, facing west. Vehicle #2 proceeded from the stop sign and was attempting to turn left onto southbound Colorado Highway 83. Vehicle #1 then proceeded from the stop sign and collided its front with the right rear side of vehicle #2. After impact, both vehicles moved to a safe location.
2017	10	11	11:45:00 AM	0	0	Property	Westbound Walker Rd	Highway 83	Vehicle 1 was westbound Walker Rd at Highway 83. The area was under construction and Vehicle 1 had stopped at the intersection as indicated by the posted stop sign and the flagger working the intersection. Vehicle 2 was the same and stopped behind Vehicle 1. A uninvolved cement truck was northbound Highway 83, making a right turn onto eastbound Walker Rd. Vehicle 1 suddenly backed up as the cement truck was making its turn. Vehicle 1 struck its rear with the front of Vehicle 2. The point of impact occurred 25'11" east of Highway 83 and 5'5" to the north of the center, double yellow lane line of Walker Rd. After the impact both vehicles were driven to rest.
2017	10	12	5:00:00 PM	0	0	Property	Colorado Highway 83	Walker Road	Vehicle #1 was eastbound on Highway 105 proceeding from a stop sign. Vehicle #2 was northbound on Colorado Highway 83. Vehicle #3 was westbound on Walker Road stopped at the intersection. The front of vehicle #2 collided with the passenger side of vehicle #1 approximately 18' west of the east road edge of Colorado Highway 83 and 28' south of the north road edge of Walker Road. Vehicle #1 overturned 1/4 times. The top of vehicle #1 collided with the front of vehicle #3. Vehicles were moved prior to
2017	10	15	10:50:00 AM	0	1	Injury	Colorado 83	Colorado 105	Vehicle 1 was eastbound on Colorado 105 approaching Colorado 83. Vehicle 2 was southbound on Colorado 83. Vehicle 1 stopped at the stop sign at Colorado 83 before proceeding to turn left onto northbound Colorado 83. Vehicle 2 was in the southbound thru lane and swerved to the right to avoid Vehicle 1. Vehicle 2 crashed its left front with Vehicle 2's left side rear. The point of impact was 4 feet south of the north road edge of Colorado 105 and 20 feet east of the west road edge of Colorado 83. Vehicle 1 rotated approximately 140 degrees and came to rest facing west blocking the left turn lane of Colorado 83 and the westbound lane of Colorado 105. Vehicle came to rest facing southeast in the paved median on Colorado 83 on the south edge
2017	10	15	6:40:00 PM	0	2	Injury	Highway 83	Highway 105	Vehicle #1 was eastbound Highway 105 and stopped at the posted stop sign at the intersection of Highway 83; vehicle #2 was southbound Highway 83 approaching the intersection with Highway 105. Vehicle # 1 traveled out into the intersection to make a left turn and vehicle # 2 collided its right front with the left side of vehicle # 1. Vehicle # 1 rotated clockwise and came to final rest, on its wheels, facing west. Vehicle # 2 traveled southeast and came to final rest, on its wheels, facing southeast. Both
2017	10	31	11:40:00 AM	0	0	Property	COLORADO 83	COLORADO 105	Vehicle 1 was eastbound on Colorado 105 approaching the intersection with Colorado 83. Vehicle 2 was northbound on Colorado 83. Vehicle 1 disregarded the stop sign and entered the intersection, crossing into the path of Vehicle 2. Vehicle 2 collided its front with the front of Vehicle 1. Vehicle 1 spun around and collided with a delineator post. Both vehicles were moved prior to investigation.
2017	12	17	5:05:00 PM	0	1	Injury	Colorado 83	Walker Road	Vehicle # 1 was traveling westbound Walker Road and stopped at the intersection with Highway 83; vehicle #2 was traveling northbound Highway 83 approaching the intersection with Walker Road. Vehicle # 1 failed to yield right of way and proceeded into the intersection to make a left turn onto southbound Highway 83. Vehicle #2 collided its front with left side of vehicle # 1. After impact, vehicle # 1 traveled northwest and collided its front with a delineator post. Vehicle # 1 continued northwest before colliding its front with a traffic signal pole. Vehicle # 1 came to final rest, on it wheels, facing northwest. Vehicle #2 traveled northwest and came to final rest in the southbound right turn lane for westbound Highway 105.
2018	1	7	5:20:00 PM	0	3	Injury	Highway 83	Highway 105	Vehicle 1 was eastbound on Highway 105 and came to a stop at a flashing red light at the intersection with Highway 83. Traffic on Highway 83 had a flashing yellow light due to new traffic lights being installed, but not fully functional yet. Vehicle 2 was southbound on Highway 83 approaching the intersection with Highway 105. Vehicle 1 observed a vehicle northbound on Highway 83 slow down and stop at the flashing yellow light. Vehicle 1 then proceeded into the intersection 18 feet, but saw Vehicle 2 entering the intersection and came to a stop. Vehicle 2 upon seeing Vehicle 1 drive forward into the intersection skidded for 44 feet and swerved to the right in an attempt to avoid Vehicle 1. Vehicle 2 collided with the driver's side of Vehicle 1. After impact Vehicle 1 travelled an estimated 30 feet to final rest on all four wheels facing east. After impact Vehicle 2 travelled an estimated 20 feet coming to final rest on all four wheels facing southwest. Exact final rest of both vehicles is unknown as both were moved
2018	1	14	4:35:00 PM	0	0	Property	Colorado 83	Walker Road	Vehicle 1 was traveling north on Colorado 83 in the left turn lane at the intersection with Hwy 105 and Walker Road. Vehicle 2 was traveling south on Colorado 83 approaching the intersection with Hwy 105 and Walker Road. Vehicle 1 turned in front of vehicle 2. Vehicle 2 struck vehicle 1 in the left rear passenger side. Both vehicles were driven to a stop on the shoulder.
2018	1	20	6:37:00 PM	0	1	Injury	HIGHWAY 83	HIGHWAY 105	Vehicle #1 was northbound on Colorado Highway 83 in the left turn lane preparing to turn left onto Colorado Highway 105. Vehicle #2 was southbound on Colorado Highway 83 with a green light. Vehicle #1 then began its left turn into the path of Vehicle #2. Vehicle #2's front right then collided into the front right of Vehicle #1. After initial impact, Vehicle #2's right side continued with a right side, side swipe impact onto Vehicle #1's right side. Vehicle #1 then came to rest on its wheels facing southwest on the southwest corner of the intersection. Vehicle #2 came to rest in the southbound lane just south of the intersection facing southwest.
2018	5	13	12:15:00 PM	0	0	Property	HIGHWAY 83	MILEPOINT 27	Vehicle 1 was southbound on Colorado 83. Vehicle 2 was eastbound on Colorado 105 and stopped for a red traffic signal. Vehicle 1 continued southbound and the traffic control signal for its movement turned red. Vehicle 2 turned right onto northbound Colorado 83. Vehicle 1 continued southbound and struck Vehicle 2, on its front, with its right side.
2018	6	4	10:32:00 AM	0	0	Property	HIGHWAY 83	MILEPOINT 27	Vehicles 1 and 2 were northbound on Highway 83 in the left turn lane approaching Highway 105. As the light turned yellow, Vehicle 2 stopped quickly. Vehicle 1 collided its front with the rear of Vehicle 2. Both Vehicles were moved prior to investigation.
2019	4	7	6:52:00 PM	0	0	Property	HIGHWAY 83	MILEPOINT 29	Vehicle#1 was traveling north on Colorado 83 near MilePoint 29 approaching the intersection of Walker Rd. Vehicle#1 began to skid to avoid a Non-Contact vehicle in front of Vehicle#1. Vehicle#1 began to veer right and continued to skid across east and west bound lanes of Walker Rd. Vehicle#1 skid off the right shoulder of Walker Rd impacting an embankment. Vehicle#1 came to rest on it's wheels facing northeast.
2019	4	11	10:39:00 AM	0	0	Property	HIGHWAY 83	MILEPOINT 28	Vehicle #1 was traveling southbound on Colorado 83 approaching County Road 105/Walker Road. Vehicle #2 was stopped on County Road 105 eastbound at Colorado 83. Vehicle #2 proceeded into the intersection. Vehicle #1's front right struck Vehicle #2's front left. Vehicle #1 rotated 1/2 time clockwise and its left rear struck the traffic light pole on the southeast side of the intersection. Both vehicles moved off road east of the intersection prior to my arrival on scene. Snow was covering the traffic signal.
2019	6	9	3:44:00 PM	0	0	Property	83 HWY	MILEPOINT 28	Vehicle #1 was stopped in the middle of the intersection to make left turn onto Highway 105 from Highway 83 (blinking yellow left arrow). Vehicle #2 was traveling southbound on Highway 83 approaching the intersection with Highway 105 (light turned from green to yellow). Vehicle #1 made a left turn onto Highway 85. Vehicle #2 traveled south on Highway 83 through the intersection of Highway 105. Vehicle #1's front collided with vehicle #2's right. Both vehicles were moved prior to investigation
2019	7	10	11:36:00 AM	0	2	Injury	HIGHWAY 83	MILEPOINT 28	Vehicle 1 was northbound on Highway 83, in the left hand turn lane for westbound Highway 105. Vehicle 2 was southbound on Highway 83 approaching the intersection with Highway 83. Vehicle 1 turned left from Highway 83 towards Highway 105 and collided with Vehicle 2 within the intersection. Final rest of Vehicle 1 is unknown as it was moved prior to State Patrol arrival. After impact Vehicle 2 travelled 33 feet, coming to final rest on all four wheels facing southeast.
2019	8	24	2:40:00 PM	0	0	Property	COLORADO 83	MILEPOINT 28	Vehicle #1 was northbound on Highway 83 approaching Highway 105 in the left turn lane. Vehicle #2 was southbound on Highway 83 in the through lane. Both vehicles had a green light. Vehicle #1 attempted to turn left in the path of vehicle #2. Vehicle #2's front collided with the passenger side of vehicle #1. Vehicle #1 rotated counter-clockwise and came to rest in the right turn lane from eastbound Highway 105 to southbound Highway 83 facing west. Vehicle #2 rotated clockwise and came to rest in the
2019	9	14	11:41:00 AM	0	0	Property	HIGHWAY 83	MILEPOINT 28	Vehicle #1 was traveling northbound on Colorado 83 approaching County Road 105. Vehicle #2 was stopped in the northbound lane of Colorado 83 at County Road 105. Vehicle #1's front struck Vehicle #2's rear. Both vehicles moved off road on the east
2019	9	23	2:30:00 PM	0	0	Property	HIGHWAY 83	MILEPOINT 28	Vehicle 1 was northbound on Colorado 83 in Traffic Lane # 2. Vehicle 2 was northbound on Colorado 83, in Traffic Lane # 2, ahead of Vehicle 1. Both vehicles continued northbound. Vehicle 2 slowed for traffic. Vehicle 1 slowed and struck Vehicle 1, on its rear, with its front. All vehicles were moved from the scene after officer arrival.
2019	11	28	7:46:00 PM	0	0	Property	HIGHWAY 83	MILEPOINT 28	Vehicles #1, #2, and #3 were northbound Highway 83 just south of the intersection of Highway 83/Highway 105. Vehicles #2 and #3 were slowing for traffic when Vehicle #1 failed to slow for traffic near the intersection and collided with Vehicle #2, hitting its front bumper against the rear bumper of Vehicle #2. The impact caused Vehicle #2 to collide its front bumper into the rear bumper of Vehicle #3. All 3 vehicles came to final rest on their wheels facing north. All 3 vehicles were moved prior to

## MEMORANDUM

DATE: February 6, 2020

TO: Nina Ruiz, PCD-Project Manager

FROM: Jeff Rice (719-520-7877), PCD-Engineering

SUBJECT: CDR-20-001 (PPR-19-009)– Monument Academy  
Fourth Submittal – **TIS and roundabout design**  
**LSC Responses below and attached (3/2/2020).**

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### **Engineering Division**

Planning and Community Development (PCD)-Engineering reviews plans and reports to ensure general conformance with El Paso County standards and criteria. The project engineer is responsible for compliance with all applicable criteria, including other governmental regulations. Notwithstanding anything depicted in the plans in words or graphic representation, all design and construction related to roads, storm drainage and erosion control shall conform to the standards and requirements of the most recent version of the relevant adopted El Paso County standards, including the Land Development Code (LDC), the Engineering Criteria Manual (ECM), the Drainage Criteria Manual (DCM), and the Drainage Criteria Manual Volume 2 (DCM2). Any deviations from regulations and standards must be requested, and approved by the ECM Administrator, in writing. Any modifications necessary to meet overlooked criteria after-the-fact will be entirely the developer's responsibility to rectify.

The comments include unresolved previous comments and new comments resulting from the re-submittal in **blue bold**. All previous comments that have been resolved have been noted or deleted. A written response to all comments and redlines is required for review of the re-submittal. Please arrange a meeting between the developer's team and County staff to review and discuss these comments and prepared revisions/responses prior to the next submittal. **A 21-day review period will be necessary to complete the review of any additional deviation requests.**

**Note: A response to Engineering comments was not found for the previous TIS review comments.**

### Transportation / Traffic Impact Study

1. See TIS redlines and previous comments on PCD project U-19-002. Resolution of those comments will be completed through this Site Development Plan review. Partially resolved; see remaining/updated redlines. *Partially resolved; see remaining/updated redlines.* **Partially resolved; see remaining/updated redlines.**  
**LSC Response: Please refer to LSC responses below and the itemized responses to the TIS redline comments (attached).**
  - a. Walker Road is identified as Project C9, 4-Lane Minor Arterial, in Table 4 of the 2016 MTCP Update. It remains to be determined what the actual cross-section and limits of ROW will be in the subject segment. The necessary minimum ROW will be between 140 and 180 feet depending on the agreed-upon cross-section and topography (side slopes). This site is anticipated to generate almost half the traffic on Walker Road, not including potential future commercial uses. The total 2040 ADT in the previous report seemed to indicate that the 4-lane cross-section (plus turn lanes) will be necessary, at least to the proposed site access. Further discussion is required. *Anticipated ROW lines resolved for SDP; to be verified with CD approval and subdivision plat.* **See PPR-19-009 comments regarding showing latest design for ultimate ROW.**

- b. Address conflicting left turns from Walker Road to Shannon Road and proposed Road A (previous redline). *Resolved; confirm that the eastbound left turn to Shannon Road from the through lane is anticipated to function properly. (See redlines on preliminary roundabout design).*

**LSC Response: Please refer to the roundabout design report included with this submittal.**

- c. It is unclear between the plans and TIS what the configuration will be at the proposed southeast driveway to Pinehurst Circle. Will a limitation on left turns/southbound traffic be realistic? Please clarify. *(additional comments may follow)*

**LSC Response: As stated in the traffic study, it is our understanding that El Paso County has indicated they prefer access to be restricted, using striping and signing within the school parking lot only. The left-turn out will need to be enforced by school administration/staff. As such, some left-turn movements may occur at this intersection. It is anticipated that most of these left-turn movements will occur outside of the peak hour. During the peak hour, the anticipated heavy eastbound left-turn entering movement will likely encourage local resident drivers to turn right at the access and then make a U-turn at the Pinehurst/Jane Lundeen, in order to travel east on Pinehurst to return to residences in the Walden Preserve, Walden III, and Settlers Ranch subdivision. Also, the TIS presents a recommended circulation plan which directs exiting traffic to the south access on Jane Lundeen. A required right turn only restriction is recommended for this plan during parent drop off and pick up periods.**

- d. **Resolved.**

Note: the TIS was revised to not include potential commercial development on this site which would generate approximately 10,700 additional ADT and result in a cumulative total of about 900 peak hour trips entering and exiting the site during both the afternoon regular and school peak hours as previously estimated. The ultimate complete intersection/ roundabout capacity analyses will need to account for an assumed “highest and best” use of the site. **Resolved.**

2. Provide a complete roundabout design report (for the Walker Road intersection). See CD redlines regarding the roundabout. It is anticipated that the roundabout size will be similar (or closer to) to the Baptist Road (west) roundabout size for the WB-67 design vehicle. Provide when available; to be further addressed at the subdivision stage. Provide when available.

**Partially resolved; see redlines on preliminary roundabout report.**

**LSC Response: Please refer to the roundabout design report included with this submittal.**

3. Resolved

4. Note: Deviation requests will be further addressed with the complete TIS submittal, development agreement, and access permit review; see cursory redlines. *TIS redlines and additional comments will be provided separately. Approval of the deviation requests is critical. Please use the new deviation request form for the resubmittal.*

- a. **Resolved with roundabout design.**

- b. Deviation request #2 (Jane Lundeen Drive access and cross-section) – See redlines. **(previous comments; deviation requests not resubmitted)**

**LSC Response: The following three comments have been addressed within the revised Deviation No.2 as requested.**

- i. *A roundabout may also be desirable at the northernmost parking lot access, aligning with the future commercial access to the west; address as appropriate.*
- ii. *A right-in/right-out only access may be appropriate for the southern, YMCA parking lot access; address this option in the deviation request.*
- iii. *With analysis of potential roundabouts at three locations along this road, address the use raised medians between them which would provide superior safety and traffic management benefits.*

*The use of roundabouts would also negate the need for turn lane additions and allow for a narrower roadway cross-section for a vast majority of the newly constructed roads with widening at the access / intersection locations only for the roundabouts, thereby minimizing intersection and roadway construction costs. Since these are new roads, roundabout constructability would be streamlined and cost effective.*

c. Deviation request #3 (Pinehurst Circle design speed, radius and cross-section) – See comment #5 below and deviation request redlines.

d. **Note: curve radii and posted speeds approaching the Walker Road roundabout need to be addressed.**

**LSC Response: This comment has been addressed with the Walker Road roundabout design report.**

**Include supporting information from the TIS as applicable in the deviation requests.**

5. The traffic on Pinehurst Circle east of Highway 83 is shown to be 1,065 ADT, rising to 5,600 ADT with ultimate development of the area; a Rural Major Collector allows 3,000 ADT. Address the ADT, phasing and ultimate cross-sections in the deviation requests. Since access to Highway 83 is being limited to right-in only, the cross-section for the one-lane cross-section should be sized according to the long term one-way entering traffic. **Address the recommended cross-section for the one-way road design.**

**LSC Response: This was addressed during a recent meeting with CDOT and County staff.**

6. **Resolved.**

7. Address queuing with the school 15-minute peak. **Resolved; provide the MSTA calculations for charter school (see attached form screenshot).**

**LSC Response: The MSTA calculations have been included in the updated TIS.**

8. Address the amount of traffic from Shannon Road. **Unresolved; address on page 4 of the TIS in the “Area Roadways” section.**

**LSC Response: The requested information has been included in the updated TIS.**

9. Provide safety/accident information and analysis. **Unresolved.**

**LSC Response: The requested information has been added to the updated TIS.**

10. Address neighborhood and public input issues. **Unresolved.**

**LSC Response: Added as requested.**

11. Verify coordination with law enforcement (CSP, EPSO) and school officials on the school routing plan. **Provide when available.**

12. Regarding pedestrian and bicycle facilities, include the use of rural road shoulders (as provided for in the EPC typical cross-sections) in the discussion and analysis. Address pedestrian and bicycle LOS. **Unresolved.**

**LSC Response: Discussion added as requested. Pedestrian and bicycle LOS has been added to the TIS.**

13. Provide signing and striping recommendations in the TIS. Specifically address signage recommended for the school vicinity. **Unresolved.**

**LSC Response: Added as requested.**

14. Note: As requested, County Staff have deliberated the MTCP classification of Walker Road as a four-lane arterial and confirm that it is a valid classification for the amount of future traffic anticipated, the type of development, and access locations on the corridor.

**Noted. The roundabout has been designed to be expandable to accommodate four through lanes.**

15. Note: For clarity going forward, this is how Staff sees the phasing:

a. Phase 1a – Onsite grading only

b. Phase 1b – Site development plan with assumed access (Development Agreement needed)

c. Phase 1c – Site development plan with CDs for roads/access configuration

d. Phase 2 – Subdivision, additions to school and YMCA (order ?)

- e. Phase 3 – Connection of Pinehurst Circle to Walden Way
- f. Phase 4 – Additional site development

These assumptions can be adjusted as necessary.

16. (From 12/19/19 e-mail): The spreadsheet total calculations for the 2040 midday appear to have left out the high school trips and it appears that Table 9b (page 9) appears to have the 3:00 to 3:15 pm interval missing from the table. **Partially resolved; see updated redlines on PHF sheets (discussed by phone 2/5/20).**

**LSC Response: The PHF calculation sheets have been corrected as requested.**

#### Construction Plans / Geotechnical Issues (previous comments; CDs not resubmitted)

1. See CD redlines. Partially resolved; see remaining/updated redlines. **Partially resolved; see remaining/updated redlines.**
2. Note: Complete CDs and deviation requests must be submitted for Staff to provide a complete review of the CDs. Unresolved. **Unresolved.**
3. through 5 – Resolved.
6. Provide a master construction phasing plan/map addressing the following: **Unresolved; address with development agreement.**
  - a. Initial access for school construction;
  - b. Timing of right-of-way acquisition for roundabout and Shannon Road (will that property owner be a co-applicant or sell developer the property?);
  - c. Shannon Road (public road) realignment and construction of the roundabout on Walker Road;
  - d. Internal road construction phasing (address cul-de-sac on east end);
  - e. Timing of conveyance of the internal roads to El Paso County.
  - f. ***If the onsite roads are proposed to be phased from local/rural (as shown on the CDs) to collector/urban (per the TIS), this needs to be clearly addressed. The traffic on Pinehurst east of Highway 83 is shown to be 1,065 ADT, rising to 5,600 ADT with ultimate development of the area; a Rural Major Collector allows 3,000 ADT. Address the ADT, phasing and ultimate cross-sections in the deviation requests.***
7. Provide complete construction plans including ROW/easement plans for the roundabout, Walker Road shoulders and ditches and the proposed relocation of Shannon Road to the west. Unresolved. ***For the purposes of Phase 1B, the proposed T intersection at Walker Road and Jane Lundeen Drive is being preliminarily reviewed.***
  - a. ***See deviation request comments above.***
  - b. ***The taper lengths should be based on at least a 45 MPH design speed.***
  - c. ***It appears that off-site easements will be required (on the north side) for the improvements along Walker Road. Show the easements on the plans, provide detailed grading plans and documentation from the property owners that they intend to grant the necessary easements.***
8. Verify that fire hydrant locations meet ECM Section 2.3.5 and Table 2-17 clear zone requirements for the road classifications. Resolved. ***(Verify that the clear zones will be met with ultimate road widths.)***

#### Agreements / Forms / Financial Assurances Estimate / Other (previous comments; items not resubmitted)

1. Resolved.
2. FAE:
  - a. Resolved.
  - b. ***The FAE provided only includes Section 1 items for grading; update to include all improvements required for the SDP (review will continue through Phase 1C).***

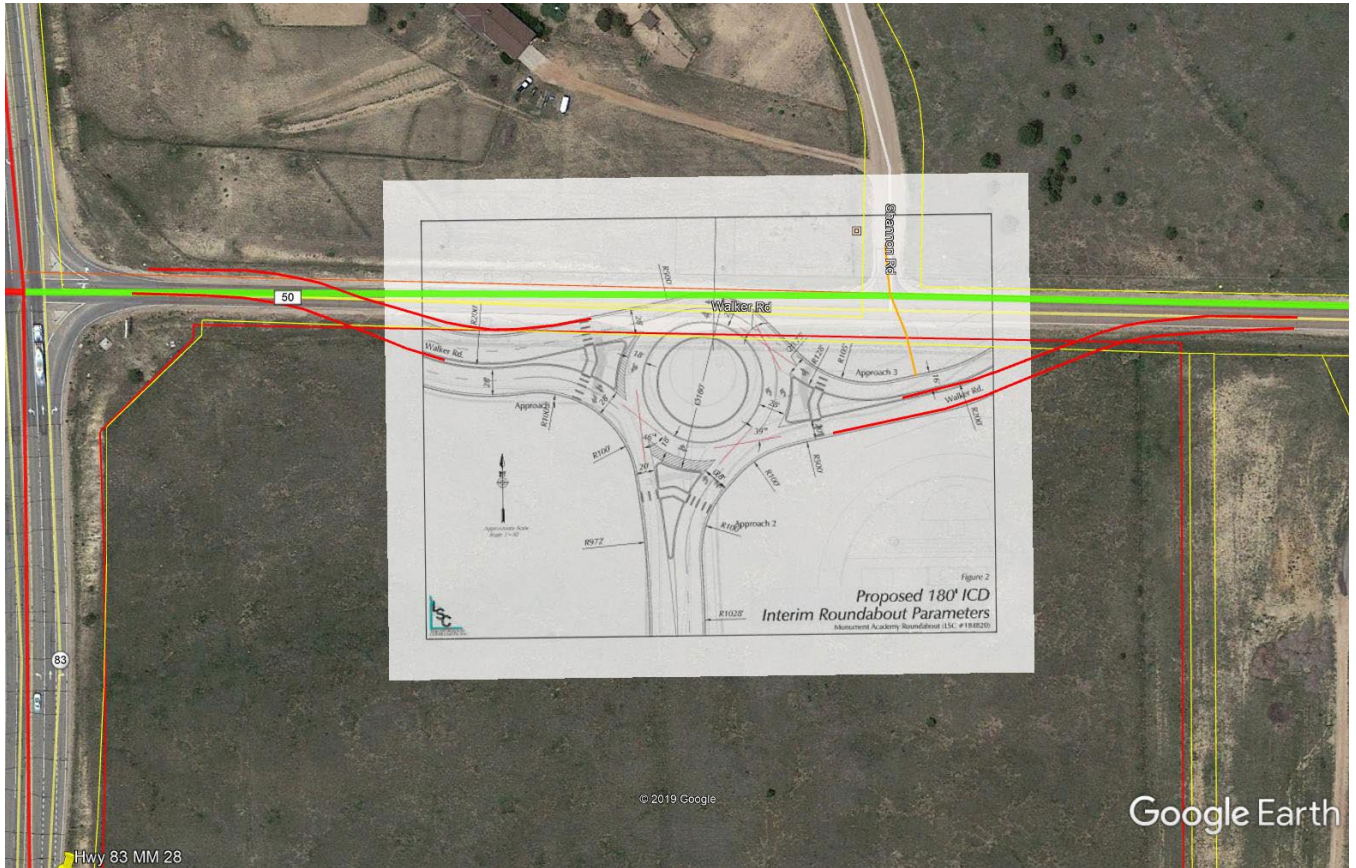
- c. Resolved.
3. See attached Engineering Final Submittal Checklist; the items highlighted in blue will be required prior to the preconstruction meeting.
  4. ***See previous O&M Manual redlines. Provide instructions for all permanent BMPs, including the two sediment basins next to Highway 83.***
  5. ***Update the SWMP as appropriate and submit with checklist prior to the Phase 1B construction.***

Attachments

1. TIS redlines and summary
2. Google Map redlines (below)
3. MSTA form screenshot (below)
4. Engineering Final Submittal Checklist

(Reference also e-mail dated September 17, 2019 as copied in previous comments.)





School Name: _____					Type: <b>Private / Non-urban Charter</b>					Version: 102816				
MSTA School Queue Input					Calculations									
Grade Level	Student Population	Number of Buses	Staff Members	Student Drivers	PM Total Vehicles	PM Peak Vehicles	Average Queue Length	Total AM Trips	Total PM Trips	High Demand Length				
Pre-K & K										30%				
1-10	862		59		227	86	1892	806	513	2460				
11th	50			45	6	3	67	49	57	87				
12th	88		38	113	-4	-3	-68	122	143	-90				
Sum >>	1000		97	158	229	86	1890	977	713	2456				
										566				
Pre-K & K loading is usually park and walk "PM Peak Vehicles" indicates minimum number of parking spaces needed.														
Private & Non-Urban Charter data is based on few to no buses and uses the same percentages for all school types except 11th and 12th grades which makes adjustments for student drivers.														
AM Trips Generated					PM Trips Generated									
Direction	Parents	Buses	Staff	Trips	Parents	Buses	Staff	Trips						
IN														
OUT														
AM Pre-K-K Trips					PM PK-K Trips									
1-10														
AM Trips Generated					PM Trips Generated									
Direction	Parents	Buses	Staff	Trips	Parents	Buses	Staff	Trips						
IN	374		59	433	227			227						
OUT	374			374	227		59	286						
AM K-10 Trips				806	PM K-10 Trips				513					
11th														
AM Trips Generated					PM Trips Generated									
Direction	Parents	Buses	Staff	Student Dvr	Trips	Parents	Buses	Staff	Student Dvr	Trips				
IN	6			36	42	6				6				
OUT	6				6	6			45	51				
AM 11 Trips				49	PM 11 Trips				57					
12th														
AM Trips Generated					PM Trips Generated									
Direction	Parents	Buses	Staff	Student Dvr	Trips	Parents	Buses	Staff	Student Dvr	Trips				
IN	-3		38	91	126	-4				-4				
OUT	-3				-3	-4		38	113	147				
AM 12 Trips				122	PM 12 Trips				143					
										265				

NOTES

- Average Queue Length does not include an alternative traffic pattern required for high traffic demand days which is usually 30% additional length.
- Average Queue Length does not include the Student Loading Zone.
- Peak traffic volumes at schools normally occur within a 30-minute time period. (justifying a PHF of 0.5)

ADT

1319

106

265



Engineering Final Submittal Checklist for Electronic Submittals	
Check Box	Item: Report/Form
<input type="checkbox"/>	Drainage Report (signed)
<input checked="" type="checkbox"/>	PBMP Applicability Form
<input type="checkbox"/>	Traffic Impact Study (signed)
<input type="checkbox"/>	Grading & Erosion Control Plan <b>and checklist</b> (signed)
<input type="checkbox"/>	Street Construction Plans (signed)
<input type="checkbox"/>	Deviation Request (signed)
<input type="checkbox"/>	MS4 Post Construction Form and SDI worksheet DPW POC: John Chavez
<input type="checkbox"/>	Proof of embankment/pond submittal to State Engineer
<input checked="" type="checkbox"/>	ESQCP (signed) DPW POC: John Chavez
<input type="checkbox"/>	* Financial Assurance Estimate, SIA (signed)
<input type="checkbox"/>	* Pond/BMP Maint. Agreement and Easement (signed)
<input type="checkbox"/>	* Operation & Maintenance Manual
<input type="checkbox"/>	AutoCAD base drawing (submitted to DPW)
<input type="checkbox"/>	<del>Pre-Development Site Grading Acknowledgement and Right of Access Form (signed)</del>
<input type="checkbox"/>	Other: <u>Offsite Easements, Other Permits (FEMA LOMR, USACE, Floodplain...), Conditions of Approval, etc.</u>
Pre-Construction Checklist:	
<input type="checkbox"/>	Driveway/Access Permit (Temporary access permits to be obtained from EPC DPW)
<input type="checkbox"/>	Work Within the ROW Permit (DPW or CDOT)
<input type="checkbox"/>	* Stormwater Management Plan (SWMP) <b>and checklist</b> Submit to DSD-Inspection 2 weeks prior to precon
<input type="checkbox"/>	* Colorado Discharge Permit (COR: _____ )
<input type="checkbox"/>	* County Construction Activity Permit
<input type="checkbox"/>	* CDPHE APEN – (if over 25 ac. or 6 mos.)
<input type="checkbox"/>	* Financial Surety (Letter of Credit/Bond/Collateral/Check)
<input type="checkbox"/>	Construction Permit Fee: <i>Site Development Plan Major</i> <span style="float: right;">\$ <b>1,737.00</b></span> (Verify fees with Inspections Supervisor at time of scheduling)
<input type="checkbox"/>	Other: _____

\* - required items to obtain an ESQCP

\*\* - after recordation

Permit Fee and Collateral must be separate checks

Post Construction Submittal Checklist: (ECM 5.10.6)	
<input type="checkbox"/>	As-Built Drawings
<input type="checkbox"/>	Pond Certification Letter
<input type="checkbox"/>	<del>Acceptance Letter for wet utilities</del>

- ☐ = Need final signed version  
 - ☐ = PCD Staff to provide

- ☒ = complete, in file

- ☐ = Need later



13Ap  
LSC TRANSPORTATION CONSULTANTS, INC.  
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Colorado Springs, CO 80903  
(719) 633-2868  
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Monument Academy  
Traffic Impact Analysis  
PCD File No. U192/PPR19009  
(LSC #184820)  
January 10, 2020

**Traffic Engineer's Statement**

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



**Developer's Statement**

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

A handwritten signature in blue ink, likely belonging to the developer, Matthew J. Smith.

January 10, 2020  
Date

## RECENT TRAFFIC STUDIES

The proposed Walden Preserve 2 development is located southeast of the currently proposed site. LSC prepared a traffic impact study (TIS) for the entire development dated September 14, 2014 and an addendum report for the Colorado Department of Transportation (CDOT) dated November 3, 2014. A transportation memorandum was prepared for Filing No. 4 dated March 14, 2019. The overall TIS assumed the currently proposed site would be developed with a middle school. The TIS also assumed Pinehurst Circle would extend northeast to Walker Road and did not assume direct access to SH 83 between Walden Way and Walker Road.

LSC also recently completed the traffic reports for the Rollin' Ridge development located southwest of Highway 83/Hodgen Road, and Settlers' View/Abert Ranch located generally northwest of Hodgen/Steppler. The current study is consistent with these reports.

## SITE DEVELOPMENT, LAND USE, AND ACCESS

1

The site is located south of Walker Road and east of SH 83. Access is proposed via an extension of Pinehurst Circle that will continue from the approved extension through the approved Walden development located east of the site to SH 83 about 1,675 feet south of Walker Road. This intersection would be restricted to right-in only. A new north-south Urban Non-Residential Collector (Jane Lundeen Drive) is planned to be extended north through the site to Walker Road about 700 feet east of SH 83.

### Short-Term Land Use and Access

The short-term development is planned to include a charter school that will support about 1,000 students at buildout. The short-term site plan is shown in Figure 2. Phase 1 is planned to open in August 2020 and will comprise about 600 students in grades 6 to 9. Phase 2 (representing site "buildout") is planned to open 2025 and will comprise an additional 400 students in grades 10-12.

**This report assumes staggered start times for the school to distribute the peak impacts.** The number of students and the school start/end times are key assumptions of this analysis and report. If these key factors/assumptions change, there may be additional impacts that may require additional needed improvements.


The YMCA that was previously planned to share building space with the charter school is no longer planned for inclusion. However, this report has retained this land use in the event it is added in the future. The previous plans proposed an initial phase with about 12,000 square feet of floor space including gyms, fitness centers, multi-purpose rooms, group exercise space, community meeting space, etc. The YMCA anticipated approximately 330 daily gate visits (members who scan in) with an additional 50-100 users such as community classes, school groups, etc. An additional 20,000 square feet comprising mostly a competitive aquatics center was previously planned as a future phase.

# Summary of Comments on Microsoft Word - Monument Academy TIS Jan 2020 w JCH additional changes 1-9-20 2140

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Page: 3

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 Number: 1      Author: dsdrice      Subject: Callout      Date: 1/22/2020 8:31:29 AM

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(at SH 83)

 Author: Kirstin      Subject: Sticky Note      Date: 2/20/2020 9:31:01 AM  
revised as requested

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Two full-movement access points are proposed to Jane Lundeen and one full-movement access point is proposed to Pinehurst Circle. Figure 2 shows the proposed spacing. The spacing of these access points will require a deviation from the *El Paso County Engineering Criteria Manual (ECM)*.

### **Site Circulation**

Figure 3 shows the site circulation plan for the proposed school. The north parking lot is planned for school staff and student parking. The south parking lot is planned for school staff and visitor parking. This parking area will also be the location of student pick-ups and drop-offs by private (parent) vehicles. As shown on Figure 3 the currently proposed plan provides for about 990 feet of on-site stacking length for vehicles plus 245 feet for active pick-up and drop-offs.

Exiting traffic at the southeast school access to Pinehurst Circle will likely need to be restricted to right-out traffic turning movements only to prevent a significant amount of cut-through traffic on Pinehurst Circle for motorists wishing to travel south. Pinehurst Circle is a Rural Local road through the Walden Preserve development to the south. El Paso County has indicated that they prefer access to be restricted using striping and signing within the school parking lot only. As such, the left-out restriction will likely need to be enforced by school administration/staff.

[1]

### **Pedestrian and Bicycle Plan**

Figure 4 shows the proposed pedestrian & bicycle plan. There are currently no pedestrian facilities on the adjacent roadways. Sidewalks are proposed to be constructed in phases on the east side of Jane Lundeen to provide for pedestrian access. A trail connection will be provided to the Walden trail to the southeast.


### **Sight Distance**

The existing sight distance along Walker Road at the proposed Jane Lundeen intersection location has been field measured by LSC. The sight distance is about 420 feet to/from the west and about 440 feet to/from the east along Walker Road. The ECM prescribed sight distance for a 50-mph design speed is 555 feet. Figure 5 shows the existing profile along Walker Road at this location. The sight distance at Walker/Jane Lundeen will be addressed as part of the roundabout design process.

Figures 6 through 9 shows a sight distance analysis for the proposed access points. The analysis for the access points to Jane Lundeen is based on a posted speed of 35 miles per hour (mph) and a two-lane roadway. The analysis for the access point to Pinehurst Circle is based on a design speed limit of 30 mph and a two-lane roadway.


The available sight distance at the south site access to Jane Lundeen to the south is restricted to 283 feet. This is less than the required sight distance based on a posted speed limit of 35 mph. However, as the intersection of Jane Lundeen and Pinehurst Circle is planned to be constructed as a one-lane mini roundabout all traffic approaching from the south will be traveling at a lower

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 Number: 1      Author: dsdrice      Subject: Callout      Date: 1/28/2020 2:48:32 PM

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insert: do not believe access control will be feasible to limit eastbound traffic and

 Author: Kirstin      Subject: Sticky Note      Date: 2/20/2020 9:31:03 AM  
revised as requested

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speed as they exit the roundabout. Based on a slower exiting speed the available sight distance for the south Jane Lundeen site access would be adequate.

### Long-Term Land Use and Access

The areas west and south of the proposed school are currently zoned RR-5 in the Black Forest Master Plan. Per review comments by El Paso County and CDOT this study assumes these parcels are rezoned and developed with a more intense mix of retail and office uses.

## ROADWAY AND TRAFFIC CONDITIONS

### Area Roadways

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

- **State Highway 83** extends from Colorado Springs north to Parker and areas of southeast Denver. Near the site, SH 83 is classified as a Regional Highway (R-A). At this location SH 83 is a two-lane rural highway with two- to four-foot shoulders and a speed limit of 60 miles per hour (mph). The intersection with Walker Road is signalized.
- **Highway 105** is a Principal Arterial that extends east from Interstate 25 to State Highway 83. Highway 105 is currently a two-lane roadway but the *Major Transportation Corridors Plan* (MTCP) shows a future four-lane cross section.
- **Walker Road** is a paved, “unimproved” rural roadway that extends east from Highway 83. Walker Road currently is a two-lane roadway. Walker Road is shown as a 4-lane Minor Arterial roadway on the *2016 MTCP Update*.

1

### Planned CDOT and County Projects


CDOT has indicated that a passing lane project is planned on SH 83 just north of Walker Road in both directions of SH 83. It is our understanding that the northbound right turn acceleration lane north of Walker Road will be extended north as a second northbound through lane. The segment would also provide two southbound through lanes through the project segment. However, this second southbound through lane would not extend through the Highway 105/SH 83/Walker Road intersection.

The Highway 105 Corridor Study Corridor Preservation Plan for El Paso County Department of Public Services dated November 2012 (revised May 2013) shows future expansion of Highway 105 to one through lane per direction plus a center left turn median area (painted) west of SH 83.

### Existing Traffic Volumes


Figure 10 shows the recent traffic volumes at the intersections of SH 83/Walker. Figure 10 shows the existing traffic volumes during the anticipated school start time (7:15 am to 8:15 am) school

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 Number: 1      Author: dsdrice      Subject: Callout      Date: 1/28/2020 2:47:36 PM

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[add: 2040 Roadway Plan](#)

 Author: Kirstin      Subject: Sticky Note      Date: 2/20/2020 9:31:25 AM  
revised as requested

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Figure 11 shows the short-term (year 2025) background traffic volumes. The background volumes are estimate by LSC based on the existing traffic volumes shown in Figure 10 with a yearly growth rate of two percent per year.

Figure 12 shows the projected 2040 background traffic volumes. The 2040 background traffic volumes are estimates by LSC based on the Colorado Department of Transportation (CDOT) twenty-year growth factor (about three percent per year) on SH 83 adjacent to the site and previous work completed by LSC in the area including work done for the Walden development. Projected additional traffic volumes due to the development of Walden Preserve and other area developments have been adjusted based on the currently proposed right-in only access at Pinehurst/SH 83. 1

The 2040 background traffic volumes assume the parcels just west and south of the site and the parcels north of Walker Road are rezoned from what is shown in the Black Forest Master Plan and developed with a more intense mix of retail and office uses. Appendix Table 1 shows a trip generation estimate for the future potential land uses. These estimates have been made using the nationally published trip generation rates found in *Trip Generation, 10th Edition, 2017* by the Institute of Transportation Engineers (ITE). Off-peak trip generation rates are based on hourly distribution tables published by ITE in August 2018. Appendix Figure 1 shows the long-term directional distribution estimates for the potential future land uses.


## TRIP GENERATION

Estimates of the traffic volumes expected to be generated by the site have been made by LSC in conjunction with input from El Paso County staff. The estimates were based on the nationally published trip generation rates found in *Trip Generation, 10<sup>th</sup> Edition, 2017* by the Institute of Transportation Engineers (ITE) and *The MSTA School Calculator* provided by Municipal and School Transportation Assistance; Traffic Management Unit, Transportation Mobility and Safety, Division of Highways, North Carolina Department of Transportation. Table 2 shows the results of the trip generation estimates. Off-peak trip generation rates are based on hourly distribution tables published by ITE in August 2018. 2

As shown in Table 2, the site is projected to generate about 3,402 new vehicle-trips on the average weekday, with about one-half of the vehicles entering and one-half of the vehicles exiting in a 24-hour period. During the morning peak hour, about 738 vehicles would enter and 534 vehicles would exit the site. During the afternoon peak hour, about 379 vehicles would enter and 502 vehicles would exit the site. During the afternoon peak hour of the adjacent street traffic, about 106 vehicles would enter and 149 vehicles would exit the site. 3


## TRIP DISTRIBUTION AND ASSIGNMENT

The charter school plans to stagger the start and ending times for the middle school and high school by at least 30 minutes. Table 3 shows the estimated hourly distribution of school related traffic during the morning and midafternoon peak hours of school-related traffic. The hourly


 Number: 1      Author: dsdrice      Subject: Cloud+      Date: 1/28/2020 2:55:00 PM

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as


 Author: Kirstin      Subject: Sticky Note      Date: 2/20/2020 9:32:13 AM  
revised as requested

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 Number: 2      Author: dsdrice      Subject: Callout      Date: 1/28/2020 3:01:38 PM

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(7:45-8:45?)


 Author: Kirstin      Subject: Sticky Note      Date: 2/20/2020 9:43:58 AM  
The time of the anticipated morning and midday peak hours of the school has been included in the updated TIS (7:15-8:15 am and 2:15-3:15 pm, respectively)

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 Number: 3      Author: dsdrice      Subject: Callout      Date: 1/28/2020 3:02:27 PM

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(4:30-5:30?)

 Author: Kirstin      Subject: Sticky Note      Date: 2/20/2020 10:03:32 AM  
The time of the existing afternoon peak hour of the adjacent street traffic has been included in the updated TIS 5:00 - 6:00 pm)

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distribution shown are estimates by LSC based on manual traffic counts conducted by LSC at existing schools located within El Paso County, Colorado.

The directional distribution of the site-generated traffic volumes on the street and roadway system serving the site is one of the most important factors in determining the site's traffic impacts. Figure 13 shows the directional distribution estimates for the Phase 1 and 2 site-generated traffic volumes.

The estimates have been based on the following factors: the recent traffic count data; the site's location with respect to the nearby residential, employment, commercial, and activity centers; the site's proposed land use; the site's proposed access points; and the phasing of the existing and future roadway system serving the site.

The short-term distribution estimate assumes the new section of Pinehurst Circle has been constructed east from SH 83 to the east boundary of the site but does not connect to the Walden development. The long-term distribution estimate assumes Pinehurst Circle has been completed from Walden Way to the SH 83.

When the distribution percentages (from Figure 13) were applied to the trip generation estimates (from Table 2), the site-generated traffic volumes on the area roadways were determined. Figures 14 and 15 show the short-term and long-term site-generated traffic volumes following buildout of the Phase 2 school and YMCA, respectively. These short-term and long-term site-generated traffic volumes assume the proposed intersection of Pinehurst Circle/SH 83 restricted to right-in turning movements only.

## **PROJECTED TOTAL TRAFFIC**


### **Short Term**

Figure 17 shows the short-term total traffic volumes at all the study area intersections following buildout of Phase 2. These volumes are the sum of the short-term background traffic volumes (from Figure 11) plus the short-term site-generated traffic volumes (from Figure 14). These volumes assume the section of Pinehurst Circle has been constructed from SH 83 through the site to the school access only and does not connect to the existing section south of Walden Way. The short-term total traffic volumes also assume the intersection of Pinehurst Circle/SH 83 is restricted to right-in only.

### **Long Term (2040)**


Figure 18 shows the 2040 total traffic volumes. These volumes are the sum of the 2040 background traffic volumes (from Figure 12) plus the long-term Phase 1 and 2 site-generated traffic volumes (from Figure 15). These volumes assume Pinehurst Circle has been extended from its current terminus through the approved Walden development and the currently proposed development to SH 83. The 2040 total traffic volumes assume the parcels just west and south of the site and north of Walker road are rezoned from what is shown in the Black Forest Master

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 Number: 1      Author: dsdrice      Subject: Cloud+      Date: 1/28/2020 3:08:33 PM

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to

 Author: Kirstin      Subject: Sticky Note      Date: 2/20/2020 10:05:15 AM  
revised as requested

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**Note: The LOS analysis results are based on signal timing assumptions within the model – specifically the allowable signal phase time for the side street. CDOT would need to find these assumptions acceptable for use in the field.**

### **Hodgen/SH 83**

All movements at the intersection of Hodgen/SH 83 are projected to operate at LOS D or better during the peak hours based on the projected short-term total traffic volumes. By 2040, it was assumed that this intersection would be improved to provide two northbound and southbound through lanes (based on the MTCP which shows four through lanes south of Hodgen Road by 2040); dual southbound left-turn lanes and an exclusive southbound right-turn lane; and dual westbound left-turn lanes. All movements at the intersection of SH 83/Hodgen are projected to operate at LOS D or better, based on the projected 2040 total traffic volumes and the assumed future lane geometry.

### **Walker/Jane Lundeen**

The intersection of Walker/Jane Lundeen is planned to be constructed as a modern one-lane roundabout. This roundabout is being designed to be expandable to a multi-lane roundabout in the future. All movements at this intersection are projected to operate at LOS C or better during the peak hours based on the projected 2025 and 2040 total traffic volumes.


### **Pinehurst/Jane Lundeen**

The intersection of Pinehurst/Jane Lundeen is planned to be constructed as a one-lane mini roundabout. All movements at this intersection are projected to operate at LOS C or better during the peak hours, based on the projected 2025 and 2040 total traffic volumes.

### **Site Access Points**


The site access points to Pinehurst Circle and Jane Lundeen are projected to operate at LOS B or better for all movements during the peak hours based on the projected short-term total traffic volumes as stop sign-controlled intersections. If the parcels west of the site are rezoned from what is shown in the Black Forest Master Plan and developed with a more intense mix of retail and office uses the site access points to Jane Lundeen may no longer operate at a satisfactory level of service as stop sign-controlled intersections. Alternate traffic control such as traffic signals or roundabouts would likely allow for these access points to operate at a satisfactory level of service. Appropriate alternatives should be considered once development plans are submitted for the parcels west of the site.

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 Number: 1      Author: dsdrice      Subject: Cloud+      Date: 2/4/2020 8:10:39 PM

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to

 Author: Kirstin      Subject: Sticky Note      Date: 2/20/2020 10:05:35 AM  
revised as requested

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## **VEHICLE QUEUING ANALYSIS**

### **State Highway 83/Walker Road**

Table 12 shows the projected 95th percentile queue lengths for the westbound left-turn and through lanes on Walker Road approaching SH 83, based on the projected 2025 and 2040 total peak hour. As shown in Table 12, the projected 95th percentile queue for the westbound left-turn and through lanes could be accommodated by the proposed spacing of Jane Lundeen.

### **School Internal Queuing – Parent Pick up and Drop Off Periods**


Figure 3 presents the calculated on-site vehicle stacking requirements during the parent pick-up and drop off periods. These are based on calculations using the North Carolina MSTA School Traffic Calculator. A copy of the calculation sheet is attached. The average projected queue length during the middle school pickup and drop-off times is 754 feet. The average queue length does not include the student loading zone. On high traffic demand days, the queue is projected to be 980 feet. The average projected queue length during the high school pickup and drop-off times is 327 feet. On high traffic demand days, the queue is projected to be 425 feet. The currently proposed plan provides for about 990 feet of on-site stacking length for vehicles plus 245 feet for active pick-up and drop-offs. Therefore, the queue distance to be provided meets the NC MSTA-calculated requirement for “high traffic demand” queue distance.


## **STREET CLASSIFICATIONS**

Figure 18 shows the recommended street classifications in the vicinity of the site.


Walker Road is currently shown as a Four-Lane Minor Arterial on the MTCP 2040 Roadway Plan. As shown on Figure 16 the projected 2025 average weekday traffic volume (ADT) on Walker Road just east of SH 83 is 4,960 vehicles per day. The design ADT for an Urban Four-Lane Minor Arterial is 20,000 vehicles per day. The design ADT for an Urban Residential Collector, which provides one lane in each direction is 10,000 vehicles per day. As the projected volume on Walker Road in the foreseeable future is well below 10,000 vehicles per day, LSC and the applicant are proposing a two-through-lane (one in each direction) facility plus auxiliary turn lanes for Phases 1 and 2, as shown in the attached Lane Exhibits. ROW will be preserved for potential future roadway widening for additional lanes. This will likely need to be evaluated if/when the parcels east and south of the site and/or north of Walker Road are rezoned from what is shown in the Black Forest Master Plan and developed with more intense land uses than the current RR-5 zoning would allow.

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 Number: 1      Author: dsdrice      Date: 2/4/2020 8:16:42 PM  
from what is shown in the Black Forest  
Master Plan

 Author: Kirstin      Subject: Sticky Note      Date: 2/20/2020 10:06:02 AM  
revised as requested

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 Number: 2      Author: dsdrice      Subject: Callout      Date: 2/4/2020 8:16:58 PM  
[delete](#)



## **PHASING OF TRAFFIC CONTROL**

### **SH 83/Walker Road**

The existing traffic signal plan only provides a permitted phase for the eastbound and westbound traffic. With the addition of the site-generated traffic it will be necessary to also provide a protected phase for the westbound left-turn movement.

### **Jane Lundeen**

The intersection of Jane Lundeen/Walker is planned to be constructed as modern one-lane roundabout. The intersection of Jane Lundeen/Pinehurst is planned to be constructed as a one-lane mini roundabout. The site access points to Jane Lundeen are proposed to be two-way, stop sign-controlled. If the parcels west of Jane Lundeen are rezoned from what is shown in the Black Forest Master Plan and developed for a more intense use than the current RR-5 zoning allows for alternate traffic control will likely need to be considered for these access points.

[2]

## **PHASING AND TRIGGERS FOR WALKER ROAD IMPROVEMENTS**

Table 13 shows a summary of the off-site improvements needed in the vicinity of the site. As shown in Table 13, a continuous right-turn acceleration/deceleration lane will be needed on Walker Road between SH 83 and Jane Lundeen with the initial development of the site. The addition of eastbound and westbound left-turn lanes on Walker/Highway 105 at SH 83 will also be required with the initial development.

[3]


## **SHANNON ROAD CONNECTION PHASING**


- Short Term: The JPS plan and profile exhibit shows the concept of allowing Shannon Road/Walker Road to remain a full-movement intersection in the short term. Should issues arise, the intersection may need to be posted for right-in/right-out movements only.
- Long Term: The vision for the planned roundabout at Jane Lundeen/Walker would include realignment of Shannon Road to the north leg of the roundabout in conjunction with future development on the north side of Walker Road. This would result in full movement access for Shannon residents and future development north of Walker Road. The existing Shannon Road connection to Walker would be closed.

## **DESIGN OF THE RIGHT-IN ONLY ON SH 83**


The applicant is proposing a right-in only access design with large radii. This design not only functions to take up the grade east of the highway, but also provides well-defined channelization of the northbound right-in turning movement. The intersection will look less like a typical urban right-in-only access intersection, rather a right-turn-only northbound quasi “ramp.” The design of the right-in only access will be part of the CDOT access permitting process.

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 Number: 1      Author: dsdrice      Date: 2/4/2020 8:21:53 PM  
from what is shown in the Black  
Forest Master Plan


 Author: Kirstin      Subject: Sticky Note      Date: 2/20/2020 10:07:30 AM  
revised as requested

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 Number: 2      Author: dsdrice      Subject: Callout      Date: 2/4/2020 8:22:52 PM  
[delete](#)

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 Number: 3      Author: dsdrice      Subject: Callout      Date: 2/4/2020 8:25:16 PM  
[revise as appropriate \(proposed 3/4 with signage?\)](#)

 Author: Kirstin      Subject: Sticky Note      Date: 2/20/2020 10:08:41 AM  
revised as requested

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the intersection is projected to operate at a LOS D or better during the peak hours based on the projected short-term total traffic volumes. The westbound left-turn movement is projected to operate at LOS E during the morning peak hour. If the parcels east and south of the site and north of Walker Road are rezoned from what is shown in the Black Forest Master Plan and developed with a more intense mix of retail and office uses than allowed under the current zoning, this intersection will likely need to be improved to provide dual westbound left-turn lanes and two through lanes in each direction to maintain an acceptable level of service in the long-term future. **Note: The LOS analysis results are based on signal timing assumptions within the model – specifically the allowable signal phase time for the side street. CDOT would need to find these assumptions acceptable for use in the field.**

- The intersections of Walker Road/Jane Lundeen and Pinehurst Circle/Jane Lundeen are projected to operate at an acceptable level of service as a one-lane modern roundabout and a one-lane mini roundabout, respectively. Additional right-of-way will be reserved at the intersection of Walker/Jane Lundeen should two eastbound and westbound through lanes be needed on Walker Road in the long-term future.
- The site access points to Pinehurst Circle and Jane Lundeen are projected to operate at a satisfactory level of service as stop sign-controlled intersections based on the projected short-term total traffic volumes. Should the parcels west of Jane Lundeen be rezoned from what is shown in the Black Forest Master Plan and developed with a more intense mix of retail and office uses than allowed under the current zoning alternate traffic control will likely need to be considered for these access points.


### Traffic Circulation

- Figure 3 shows the circulation plan for the proposed school. The plan provides for about 990 feet of on-site stacking length for vehicles plus 195 feet for active pick-up and drop-offs.
- Exiting traffic at the southeast school access to Pinehurst Circle will likely need to be restricted to right-out traffic turning movements only to prevent cut-through traffic on Pinehurst Circle to the south by motorists wishing to travel generally south and southwest (beyond the Walden area). Pinehurst Circle is a Rural Local road through the Walden Preserve 2 development to the south.

### ROW Dedication and Preservation


- A portion of Tract B along Hwy 83 will be preserved for future right-of-way to accommodate the potential need for northbound double left-turn lanes and the future expansion of Highway 83 to four lanes. Specific requirements will be identified as part of the access permit and will be shown on the plat for Tract B.
- The MTCP 2040 Roadway Plan currently classifies Walker Road as a Four-Lane Minor Arterial. Walker Road west of Road A to SH 83 is proposed as a two-through-lane facility plus auxiliary turn lanes (as shown in the attached exhibit) with this project, but with right-of-way preservation to accommodate an expansion of the roadway to a four-lane minor arterial plus auxiliary lanes and a roundabout to accommodate potential future development traffic.

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 Number: 1      Author: dsdrice      Subject: Callout      Date: 2/5/2020 9:27:39 AM

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to

 Author: Kirstin      Subject: Sticky Note      Date: 2/20/2020 10:09:05 AM  
revised as requested

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 Number: 2      Author: dsdrice      Date: 2/4/2020 8:37:38 PM  
from

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**Table 6a**  
**Peak Hour Factor Calculations**  
**With Staggered Start Times**  
**2025 Background + Phases 1&2 School Midday Peak Hour**  
**SH 83/Walker/Hwy 105**

**Existing**

Movement	EB LT	EB TH	EB RT	NB LT	NB TH	NB RT	SB LT	SB TH	SB RT	WB LT	WB TH	WB RT
<b>Total</b>	<b>49</b>	<b>48</b>	<b>123</b>	<b>128</b>	<b>223</b>	<b>22</b>	<b>16</b>	<b>247</b>	<b>36</b>	<b>16</b>	<b>46</b>	<b>12</b>
<b>PHF</b>	0.93			0.95			0.87			0.78		
<b>2:15 PM</b>	9	4	32	33	44	6	3	69	13	5	15	5
<b>2:30 PM</b>	8	16	33	33	57	4	3	56	3	3	9	3
<b>2:45 PM</b>	16	14	29	31	61	6	5	61	10	4	11	2
<b>3:00 PM</b>	16	14	29	31	61	6	5	61	10	4	11	2

**Middle School (Grades 6-8)**

	IN									OUT		
Total	143									168		
PHF	See Hourly Distribution Table											
Movement	EB LT	EB TH	EB RT	NB LT	NB TH	NB RT	SB LT	SB TH	SB RT	WB LT	WB TH	WB RT
	0.0%	45.0%	0.0%	0.0%	0.0%	0.0%	14.5%	0.0%	0.0%	41.5%	40.0%	12.5%
	0	64	0	0	0	0	21	0	0	70	67	21
2:15 PM	0	32	0	0	0	0	11	0	0	4	3	1
2:30 PM	0	13	0	0	0	0	4	0	0	42	40	13
2:45 PM	0	3	0	0	0	0	1	0	0	21	20	6
3:00 PM	0	0	0	0	0	0	0	0	0	4	3	1

**High School (Grades 9-12)**

	IN									OUT		
Total	211									309		
PHF	See Hourly Distribution Table											
Movement	EB LT	EB TH	EB RT	NB LT	NB TH	SB LT	SB TH	SB RT	WB LT	WB TH	WB RT	
	0.0%	45.0%	0.0%	0.0%	0.0%	0.0%	14.5%	0.0%	0.0%	41.5%	40.0%	12.5%
	0	95	0	0	0	0	31	0	0	128	124	39
2:15 PM	0	5	0	0	0	0	2	0	0	0	0	0
2:30 PM	0	10	0	0	0	0	3	0	0	0	0	0
2:45 PM	0	43	0	0	0	0	14	0	0	26	25	8
3:00 PM	0	33	0	0	0	0	11	0	0	77	74	23

**YMCA**

	IN									OUT		
Total	25									25		
PHF	0.85											
Movement	EB LT	EB TH	EB RT	NB LT	NB TH	NB RT	SB LT	SB TH	SB RT	WB LT	WB TH	WB RT
	0.0%	45.0%	0.0%	0.0%	0.0%	0.0%	14.5%	0.0%	0.0%	41.5%	40.0%	12.5%
	0	11	0	0	0	0	4	0	0	10	10	3
2:15 PM	0	2	0	0	0	0	0	0	0	2	2	0
2:30 PM	0	2	0	0	0	0	1	0	0	2	2	1
2:45 PM	0	4	0	0	0	0	2	0	0	3	3	1
3:00 PM	0	3	0	0	0	0	1	0	0	3	3	1

**Additional 2025 Background Traffic**

Movement	EB LT	EB TH	EB RT	NB LT	NB TH	NB RT	SB LT	SB TH	SB RT	WB LT	WB TH	WB RT
<b>Total</b>	<b>5</b>	<b>5</b>	<b>13</b>	<b>13</b>	<b>23</b>	<b>2</b>	<b>2</b>	<b>26</b>	<b>4</b>	<b>2</b>	<b>5</b>	<b>1</b>
<b>PHF</b>	0.93											
<b>7:15 AM</b>	1	0	3	4	5	1	0	8	2	1	2	1
<b>7:30 AM</b>	1	2	4	3	6	0	0	6	0	0	0	0
<b>7:45 AM</b>	2	2	3	3	6	1	1	6	1	1	2	0
<b>8:00 AM</b>	1	1	3	3	6	0	1	6	1	0	1	0


**Total**

Movement	EB LT	EB TH	EB RT	NB LT	NB TH	NB RT	SB LT	SB TH	SB RT	WB LT	WB TH	WB RT
<b>Total</b>	<b>54</b>	<b>203</b>	<b>136</b>	<b>141</b>	<b>246</b>	<b>24</b>	<b>68</b>	<b>273</b>	<b>40</b>	<b>202</b>	<b>226</b>	<b>68</b>
<b>PHF</b>	<b>0.87</b>	<b>0.87</b>	<b>0.87</b>	<b>0.87</b>	<b>0.87</b>	<b>0.87</b>	<b>0.87</b>	<b>0.87</b>	<b>0.91</b>	<b>0.57</b>	<b>0.61</b>	<b>0.63</b>
<b>2:15 PM</b>	10	43	35	37	49	7	16	77	15	12	22	7
<b>2:30 PM</b>	9	43	37	36	63	4	11	62	3	47	51	17
<b>2:45 PM</b>	18	66	32	34	67	7	23	67	11	55	61	17
<b>3:00 PM</b>	17	51	32	34	67	6	18	67	11	88	92	27

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 Number: 1      Author: dsdrice      Date: 2/5/2020 11:19:03 AM

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 Author: Kirstin      Subject: Sticky Note      Date: 2/20/2020 10:12:24 AM  
The labels in Table 6a have been corrected in the updated TIS

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**Table 6b**  
**Peak Hour Factor Calculations**  
**With Staggered Start Times**  
**2025 Background + Phases 1&2 School Midday Peak Hour**  
**Walker/Jane Lundeen**

**Existing**

Movement	EB TH	EB RT	WB LT	WB TH	NB LT	NB RT
<b>Total</b>	<b>86</b>	<b>0</b>	<b>0</b>	<b>74</b>	<b>0</b>	<b>0</b>
<b>PHF</b>	<b>0.95</b>					
<b>2:15 PM</b>	13	0	0	25	0	0
<b>2:30 PM</b>	23	0	0	15	0	0
<b>2:45 PM</b>	25	0	0	17	0	0
<b>3:00 PM</b>	25	0	0	17	0	0

**Middle School (Grades 6-8)**

Total	IN				OUT	
	143				168	
PHF	See Hourly Distribution Table					
Movement	EB TH	EB RT	WB LT	WB TH	NB LT	NB RT
Distribution	0.0%	59.5%	4.0%	0.0%	94.0%	6.0%
Total	0	85	6	0	158	10
2:15 PM	0	43	3	0	8	1
2:30 PM	0	17	1	0	95	6
2:45 PM	0	4	0	0	47	3
3:00 PM	0	0	0	0	8	1

**High School (Grade 9)**

Total	IN				OUT	
	211				309	
PHF	See Hourly Distribution Table					
Movement	EB TH	EB RT	WB LT	WB TH	NB LT	NB RT
Distribution	0.0%	59.5%	4.0%	0.0%	94.0%	6.0%
Total	0	126	8	0	290	19
2:15 PM	0	6	0	0	0	0
2:30 PM	0	13	1	0	0	0
2:45 PM	0	57	4	0	58	4
3:00 PM	0	44	3	0	174	11

**YMCA**

Total	IN				OUT	
	25				25	
PHF	0.85					
Movement	EB TH	EB RT	WB LT	WB TH	NB LT	NB RT
Distribution	0.0%	59.5%	4.0%	0.0%	94.0%	6.0%
Total	0	15	1	0	24	1
2:15 PM	0	3	0	0	5	0
2:30 PM	0	3	0	0	5	0
2:45 PM	0	5	1	0	8	1
3:00 PM	0	4	0	0	6	0

**Additional 2025 Background Traffic**


Movement	EB TH	EB RT	WB LT	WB TH	NB LT	NB RT
<b>Total</b>	<b>9</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>0</b>	<b>0</b>
<b>PHF</b>	<b>0.85</b>					
<b>7:15 AM</b>	2	0	0	3	0	0
<b>7:30 AM</b>	2	0	0	1	0	0
<b>7:45 AM</b>	3	0	0	2	0	0
<b>8:00 AM</b>	2	0	0	2	0	0

**Total**


Movement	EB TH	EB RT	WB LT	WB TH	NB LT	NB RT
<b>Total</b>	<b>95</b>	<b>199</b>	<b>13</b>	<b>82</b>	<b>414</b>	<b>27</b>
<b>PHF</b>	<b>0.87</b>	<b>0.87</b>	<b>0.83</b>	<b>0.83</b>	<b>0.55</b>	<b>0.56</b>
<b>2:15 PM</b>	15	52	3	28	13	1
<b>2:30 PM</b>	25	33	2	16	100	6
<b>2:45 PM</b>	28	66	5	19	113	8
<b>3:00 PM</b>	27	48	3	19	188	12

Source:LSC Transportation Consultants, Inc.

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 Number: 1      Author: dsdrice      Date: 2/5/2020 12:22:57 PM

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 Author: Kirstin      Subject: Sticky Note      Date: 2/20/2020 10:15:46 AM  
The labels in Table 6b have been corrected in the updated TIS

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**Table 8a**  
**Peak Hour Factor Calculations**  
**2025 Background + Phases 1&2 PM Peak Hour**  
**SH 83/Walker/Hwy 105**

1

**Existing**

Movement	EB LT	EB TH	EB RT	NB LT	NB TH	NB RT	SB LT	SB TH	SB RT	WB LT	WB TH	WB RT
<b>Total</b>	<b>57</b>	<b>52</b>	<b>155</b>	<b>140</b>	<b>310</b>	<b>49</b>	<b>26</b>	<b>219</b>	<b>69</b>	<b>21</b>	<b>57</b>	<b>14</b>
<b>PHF</b>	0.94			0.86			0.92			0.83		
<b>5:00 PM</b>	9	16	45	40	94	11	8	102	19	3	11	5
<b>5:15 PM</b>	19	11	44	35	60	14	6	82	13	5	19	4
<b>5:30 PM</b>	11	13	30	38	89	15	4	136	22	11	15	4
<b>5:45 PM</b>	18	12	36	27	67	9	8	109	15	2	12	1

**School (Grades 6-12)**

<b>IN</b>													<b>OUT</b>	
<b>Total</b>	58												94	
<b>PHF</b>	0.92													
Movement	EB LT	EB TH	EB RT	NB LT	NB TH	NB RT	SB LT	SB TH	SB RT	WB LT	WB TH	WB RT		
	0.0%	40.0%	0.0%	0.0%	0.0%	0.0%	12.0%	0.0%	0.0%	36.5%	42.5%	13.5%		
	<b>0</b>	<b>23</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>7</b>	<b>0</b>	<b>0</b>	<b>34</b>	<b>40</b>	<b>13</b>		
<b>5:00 PM</b>	0	6	0	0	0	0	2	0	0	9	11	4		
<b>5:15 PM</b>	0	6	0	0	0	0	2	0	0	9	10	3		
<b>5:30 PM</b>	0	6	0	0	0	0	2	0	0	8	10	3		
<b>5:45 PM</b>	0	5	0	0	0	0	1	0	0	8	9	3		

**YMCA**

<b>IN</b>													<b>OUT</b>	
<b>Total</b>	48												55	
<b>PHF</b>	0.85													
Movement	EB LT	EB TH	EB RT	NB LT	NB TH	NB RT	SB LT	SB TH	SB RT	WB LT	WB TH	WB RT		
	0.0%	40.0%	0.0%	0.0%	0.0%	0.0%	12.0%	0.0%	0.0%	36.5%	42.5%	13.5%		
	<b>0</b>	<b>19</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>20</b>	<b>23</b>	<b>7</b>		
<b>5:00 PM</b>	0	6	0	0	0	0	2	0	0	6	7	3		
<b>5:15 PM</b>	0	5	0	0	0	0	2	0	0	5	6	2		
<b>5:30 PM</b>	0	4	0	0	0	0	1	0	0	5	5	1		
<b>5:45 PM</b>	0	4	0	0	0	0	1	0	0	4	5	1		

**Additional 2025 Background Traffic**


Movement	EB LT	EB TH	EB RT	NB LT	NB TH	NB RT	SB LT	SB TH	SB RT	WB LT	WB TH	WB RT
	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Total</b>	<b>6</b>	<b>5</b>	<b>17</b>	<b>15</b>	<b>32</b>	<b>5</b>	<b>3</b>	<b>45</b>	<b>7</b>	<b>2</b>	<b>6</b>	<b>1</b>
<b>PHF</b>	0.94											
<b>5:00 PM</b>	1	2	5	4	10	1	1	11	2	0	1	1
<b>5:15 PM</b>	2	1	5	4	6	1	1	9	1	1	2	0
<b>5:30 PM</b>	1	1	3	4	9	2	0	14	2	1	2	0
<b>5:45 PM</b>	2	1	4	3	7	1	1	11	2	0	1	0

**Total**

Movement	EB LT	EB TH	EB RT	NB LT	NB TH	NB RT	SB LT	SB TH	SB RT	WB LT	WB TH	WB RT
<b>Total</b>	<b>63</b>	<b>99</b>	<b>172</b>	<b>155</b>	<b>342</b>	<b>54</b>	<b>42</b>	<b>474</b>	<b>76</b>	<b>77</b>	<b>126</b>	<b>35</b>
<b>PHF</b>	<b>0.87</b>	<b>0.83</b>	<b>0.86</b>	<b>0.88</b>	<b>0.82</b>	<b>0.92</b>	<b>0.81</b>	<b>0.92</b>	<b>0.90</b>	<b>0.87</b>	<b>0.87</b>	<b>0.67</b>
<b>5:00 PM</b>	10	30	50	44	104	12	13	113	21	18	30	13
<b>5:15 PM</b>	21	23	49	39	66	15	11	91	14	20	37	9
<b>5:30 PM</b>	12	24	33	42	98	17	7	150	24	25	32	8
<b>5:45 PM</b>	20	22	40	30	74	10	11	120	17	14	27	5


Source: LSC Transportation Consultants, Inc.

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 Number: 1      Author: dsdrice      Subject: Callout      Date: 2/5/2020 1:46:01 PM


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635

 Author: Kirstin      Subject: Sticky Note      Date: 2/20/2020 10:24:48 AM

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As noted on Figure 10 the afternoon peak hour southbound through volume at the intersection of SH 83/Walker was adjusted to 429 vehicles based on a more current count at the intersection of SH 83/Walden Way. This adjusted volume is also more consistent with traffic counts conducted at SH 83/Hodgen.

 Number: 2      Author: dsdrice      Date: 2/5/2020 1:45:41 PM

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429

**Table 9a**  
**Peak Hour Factor Calculations**  
**2040 PM Peak Hour**  
**SH 83/Walker/Hwy 105**

1

**Existing**

Movement	EB LT	EB TH	EB RT	NB LT	NB TH	NB RT	SB LT	SB TH	SB RT	WB LT	WB TH	WB RT
<b>Total</b>	<b>57</b>	<b>52</b>	<b>155</b>	<b>140</b>	<b>310</b>	<b>49</b>	<b>26</b>	<b>429</b>	<b>69</b>	<b>21</b>	<b>57</b>	<b>14</b>
<b>PHF</b>	<b>0.89</b>											
<b>5:00 PM</b>	9	16	45	40	94	11	8	102	19	3	11	5
<b>5:15 PM</b>	19	11	44	35	60	14	6	82	13	5	19	4
<b>5:30 PM</b>	11	13	30	38	89	15	4	136	22	11	15	4
<b>5:45 PM</b>	18	12	36	27	67	9	8	109	15	2	12	1

**School (Grades 6-12)**

	IN									OUT		
Total	58									94		
PHF	0.92											
Movement	EB LT	EB TH	EB RT	NB LT	NB LT	NB TH	SB LT	SB TH	SB RT	WB LT	WB TH	WB RT
	0.0%	40.0%	0.0%	0.0%	0.0%	0.0%	12.0%	0.0%	0.0%	33.3%	42.5%	13.5%
	0	23	0	0	0	0	7	0	0	31	40	13
5:00 PM	0	6	0	0	0	0	2	0	0	8	11	4
5:15 PM	0	6	0	0	0	0	2	0	0	8	10	3
5:30 PM	0	6	0	0	0	0	2	0	0	8	10	3
5:45 PM	0	5	0	0	0	0	1	0	0	7	9	3

**YMCA**

	IN									OUT		
Total	48									55		
PHF	0.85											
Movement	EB LT	EB TH	EB RT	NB LT	NB TH	NB RT	SB LT	SB TH	SB RT	WB LT	WB TH	WB RT
	0.0%	40.0%	0.0%	0.0%	0.0%	0.0%	12.0%	0.0%	0.0%	33.3%	42.5%	13.5%
	0	19	0	0	0	0	6	0	0	18	23	7
5:00 PM	0	6	0	0	0	0	2	0	0	6	7	3
5:15 PM	0	5	0	0	0	0	2	0	0	4	6	2
5:30 PM	0	4	0	0	0	0	1	0	0	4	5	1
5:45 PM	0	4	0	0	0	0	1	0	0	4	5	1

**Additional 2040 Background Traffic**


Movement	EB LT	EB TH	EB RT	NB LT	NB TH	NB RT	SB LT	SB TH	SB RT	WB LT	WB TH	WB RT
	28	235	49	37	175	233	202	205	34	391	348	151
<b>PHF</b>	<b>0.92</b>											
<b>5:00 PM</b>	8	64	14	11	48	64	55	56	10	107	95	42
<b>5:15 PM</b>	7	57	12	9	43	57	49	50	8	95	85	37
<b>5:30 PM</b>	7	57	12	9	42	56	49	50	8	95	84	36
<b>5:45 PM</b>	6	57	11	8	42	56	49	49	8	94	84	36

**Total**


Movement	EB LT	EB TH	EB RT	NB LT	NB TH	NB RT	SB LT	SB TH	SB RT	WB LT	WB TH	WB RT
<b>Total</b>	<b>85</b>	<b>329</b>	<b>204</b>	<b>177</b>	<b>485</b>	<b>282</b>	<b>241</b>	<b>634</b>	<b>103</b>	<b>461</b>	<b>468</b>	<b>185</b>
<b>PHF</b>	<b>0.92</b>	<b>0.89</b>	<b>0.86</b>	<b>0.87</b>	<b>0.85</b>	<b>0.94</b>	<b>0.90</b>	<b>0.93</b>	<b>0.89</b>	<b>0.93</b>	<b>0.94</b>	<b>0.86</b>
<b>5:00 PM</b>	17	92	59	51	142	75	67	158	29	124	124	54
<b>5:15 PM</b>	26	79	56	44	103	71	59	132	21	112	120	46
<b>5:30 PM</b>	18	80	42	47	131	71	56	186	30	118	114	44
<b>5:45 PM</b>	24	78	47	35	109	65	59	158	23	107	110	41

Source: LSC Transportation Consultants, Inc.

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 Number: 1      Author: dsdrice      Date: 2/5/2020 2:02:37 PM


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 Author: Kirstin      Subject: Sticky Note      Date: 2/20/2020 10:25:33 AM  
See response on Table 8a

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 Number: 1      Author: dsdrice      Subject: Cloud+      Date: 2/6/2020 8:36:06 AM

---

 [Hodgen](#)

 Author: Kirstin      Subject: Sticky Note      Date: 2/20/2020 10:36:56 AM  
The intersection labels on Table 10 have been revised in the updated TIS


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**Table 11**  
**Level of Service Analysis**  
**2040 Traffic**  
**Monument Academy**

Intersection	Traffic Control	2040 Background			2040 Total		
		AM	Midday	PM	AM	Midday	PM
SH 83/Hwy 105/Walker							
Eastbound Left	Traffic Signal	D	D	E	D	D	E
Eastbound Through (2)		D	D	D	E	D	D
Eastbound Right		A	A	A	A	A	A
Westbound Left (2)		D	D	D	E	E	E
Westbound Through (2)		C	C	C	C	C	C
Westbound Right		A	A	A	A	A	A
Northbound Left (2)		B	B	C	C	C	C
Northbound Through (2)		C	C	C	D	C	D
Northbound Right		A	A	A	A	A	A
Southbound Left		B	B	C	C	B	C
Southbound Through (2)		C	C	C	C	C	C
Southbound Right		A	A	A	A	A	A
Overall			C	C	C	C	C
SH 83/Hwy 105/Walker							
Eastbound Left	Traffic Signal	C	---	D	C	---	D
Eastbound Through		D	---	D	D	---	D
Eastbound Right		A	---	A	A	---	A
Westbound Left (2)		D	---	D	D	---	D
Westbound Through		D	---	D	D	---	D
Westbound Right		A	---	A	A	---	A
Northbound Left		B	---	C	B	---	C
Northbound Through (2)		C	---	C	C	---	C
Northbound Right		A	---	B	A	---	B
Southbound Left (2)		D	---	D	D	---	D
Southbound Through (2)		C	---	C	C	---	C
Southbound Right		A	---	A	A	---	A
Overall			C	---	C	C	---
Walker/Jane Lundeen							
Eastbound	Roundabout	A	A	A	A	A	A
Westbound		A	A	B	C	C	B
Northbound Left		A	A	A	B	C	B
Northbound Left/Through/Right		A	A	A	A	B	A
Southbound		A	A	B	B	C	B
Overall		A	A	A	A	B	A
Pinehurst/Jane Lundeen							
Eastbound	Roundabout	A	A	A	C	A	A
Westbound		A	A	A	B	A	A
Northbound		A	A	A	B	A	A
Southbound		A	A	A	A	A	A
Overall		A	A	A	B	A	A
North Site Access/Jane Lundeen							
Northbound Left	TWSC	A	A	A	A	A	A
Eastbound		B	B	C	F	F	E
Westbound		---	---	---	A	D	B
Southbound Left		---	---	---	B	A	A
South Site Access/Jane Lundeen							
Northbound Left	TWSC	A	A	A	A	A	A
Eastbound		B	B	B	F	F	C
Westbound		---	---	---	C	B	B
Southbound Left		---	---	---	A	A	A
Site Access/Pinehurst							
Eastbound Left	TWSC	---	---	---	A	A	A
Southbound		---	---	---	B	B	A


Source: LSC Transportation Consultants, Inc.

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 Number: 1      Author: dsdrice      Subject: Cloud+      Date: 2/6/2020 12:47:48 PM

---

Hodgen

 Author: Kirstin      Subject: Sticky Note      Date: 2/20/2020 10:31:29 AM  
The intersection labels on Table 11 have been revised in the updated TIS

---

 Number: 2      Author: dsdrice      Subject: Highlight      Date: 2/6/2020 2:55:32 PM

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<b>Table 12</b> <b>Queuing Analysis</b> <b>SH 83/Highway 105/Walker</b> <b>Monument Academy</b>						
<b>Projected 95th Percentile Queue Length</b> <b>(ft)</b>						
Lane	2025 Total Traffic			2040 Total Traffic		
	AM	Midday	PM	AM	Midday	PM
Westbound Left-Turn	#279	139	139	#302	#302	#281
Westbound Through	222	200	133	415	451	168
Northbound Left-turn	129	90	59	154	113	#150
Northbound Through	329	209	225	238	166	263

# Reported by Synchro: 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.

Source: LSC Transportation Consultants, Inc.

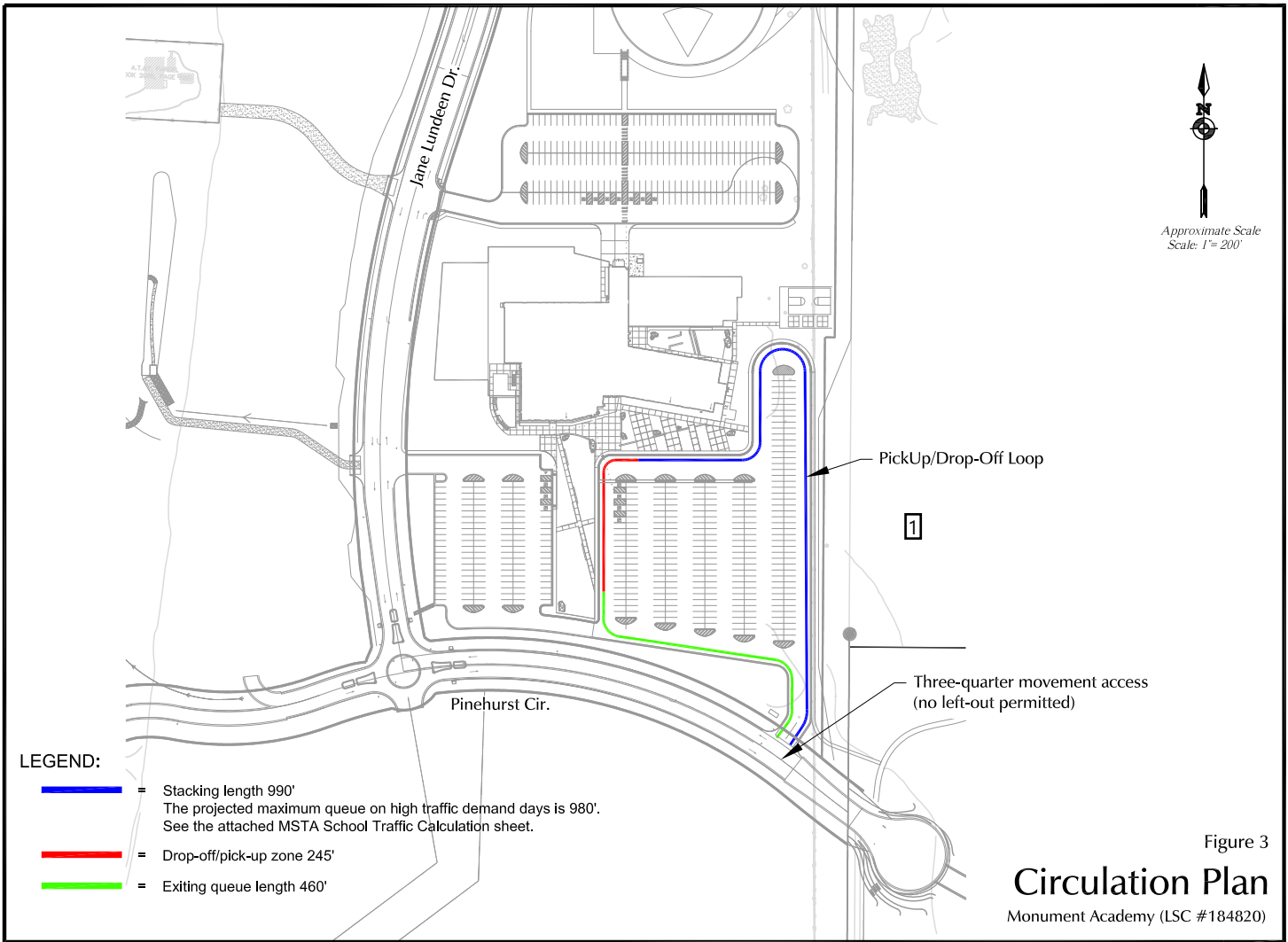
# Reported by Synchro: 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.

Source: LSC Transportation Consultants, Inc.



Table 13 Monument Academy Roadway Improvements			
Item #	Improvement	Timing	Responsibility
<b>Roadway Segment Improvements</b>			
1	Construct Jane Lundeen from Pinehurst Circle to Walker Road as an Urban Non-Residential Collector <sup>(1)</sup> . 1	Phase 1	Monument Academy
2	Construct Pinehurst Circle from SH 83 to Jane Lundeen as a Rural Minor Collector roadway. 2	Phase 1	Monument Academy
3	Construct Pinehurst Circle from Jane Lundeen to the east boundary of the Monument Academy site as an Urban Local roadway <sup>(2)</sup> . 3	Phase 1	Monument Academy
4	Grade Pinehurst Circle from its current terminus to the east boundary of the Monument Academy site. Install all-weather surface for use as an emergency access/utility road. 4	Phase 1	Monument Academy
5	Construct Pinehurst Circle from its current terminus to the east boundary of the Monument Academy site as a Rural Local roadway. 5	Intermediate Term	Walden
6	Upgrade Walker Road from SH 83 to Jane Lundeen by adding curb and gutter along the south side of the roadway and widening to accommodate auxiliary turn lanes. Additional curb and gutter associated with the Jane Lundeen roundabout will be included in the roundabout design. 6	Phase 1	Monument Academy
7	Upgrade Walker Road east of the Jane Lundeen roundabout and splitter islands to add 4' paved shoulders as necessary/applicable. 7	Phase 1	Monument Academy
<b>SH 83/Walker/Highway 105</b>			
8	Add eastbound and westbound left-turn lanes as shown on the attached lane exhibits. 8	Phase 1	Monument Academy
9	Modify the traffic signal. Modification may include adding signal heads for protected-permissive phasing for the westbound left-turn movement and modifying the traffic signal timing plan. Additional mast-arm mounted signs may also be required. Adjustment or modification to existing signal head 9 and/or other signal infrastructure, including the pole-mounted signal heads may be required to achieve proper clearance from the through lane(s). There is the potential that a signal pole(s) may need to be relocated to achieve proper clearance. This can likely be addressed at the design stage.	Phase 1	Monument Academy
<b>SH 83/Pinehurst Circle</b>			
10	Construct new intersection as a restricted right-in only access. The applicant is proposing a modified design with large radii. The design not only functions to take up the grade east of the highway, but also provide 10 pre-defined channelization of the right turning movements. The intersection will look less like a conventional intersection, rather right-turn-only northbound quasi "ramp." The design of the right-in/right-out will be part of the CDOT access permitting process.	Phase 1	Monument Academy
11	Construct 400' northbound right-turn deceleration lane plus 300' taper on SH 83 approaching Pinehurst Circle.	Phase 1	Monument Academy
<b>Walker Rd./Jane Lundeen</b>			
12	Construct a continuous eastbound right-turn acceleration/deceleration lane on Walker Road between SH 83 and Jane Lundeen. 11	Phase 1	Monument Academy (if required by CDOT)
13	Construct the intersection of Walker/Jane Lundeen as a modern one-lane roundabout (expandable to a multi-lane roundabout) with an eastbound right-turn slip lane. Reserve adequate right-of-way as needed for the long-term. 12	Phase 1	Monument Academy
<b>Pinehurst/Jane Lundeen</b>			
14	Construct the intersection of Pinehurst/Jane Lundeen as a one-lane mini-roundabout. 13	Phase 1	Monument Academy
<b>Pinehurst/Site Access</b>			
15	Construct an eastbound left-turn lane on Pinehurst approaching the site access. 14	Phase 1	Monument Academy
16	Implement measures such as signing, markings and school directive/ enforcement to effectively force a right-turn only for southbound traffic (exiting the school). If the school can effectively allow left turns only by local residents north of Hodgen Road (and east of SH 83) while prohibiting all other left turning traffic, that would be acceptable.	With Pinehurst Circle connection to its north terminus within Walden Preserve.	Monument Academy
<b>Jane Lundeen/North Site Access</b>			
17	Construct a southbound left-turn lane <sup>(3)</sup> on Jane Lundeen approaching the north site access.	Phase 1	Monument Academy
18	Construct a northbound right-turn deceleration lane on Jane Lundeen approaching the north site access.	Phase 1	Monument Academy
<b>Jane Lundeen/South Site Access</b>			
19	Construct a southbound left-turn lane <sup>(3)</sup> on Jane Lundeen approaching the south site access.	Phase 1	Monument Academy
Notes: (1) In the short-term curb and gutter would only be constructed on the east side of Jane Lundeen and phased sidewalks locations shown in Figure 4. County maintenance would not occur until complete. The deviation for Jane Lundeen includes the request for phasing of urban street improvements on the west side. (2) Curb and gutter would only be constructed on the north side of Pinehurst. The south side would include a paved shoulder and a roadside ditch. The need for curb, gutter and/or sidewalk would be evaluated with future development on the south side of the road. (3) The Standard Urban Non-Residential Collector cross-section includes a 12' striped median			
Source: LSC Transportation Consultants, Inc. (Date:1/8/20)			

	Number: 1	Author: dsdrice	Subject: Highlight	Date: 2/6/2020 7:53:34 PM
	Number: 2	Author: dsdrice	Subject: Highlight	Date: 2/6/2020 7:53:55 PM
	Number: 3	Author: dsdrice	Subject: Highlight	Date: 2/6/2020 7:54:25 PM
	Number: 4	Author: dsdrice	Subject: Highlight	Date: 2/6/2020 7:55:05 PM
	Number: 5	Author: dsdrice	Subject: Highlight	Date: 2/6/2020 7:55:30 PM
	Number: 6	Author: dsdrice	Subject: Highlight	Date: 2/6/2020 7:56:46 PM
	Number: 7	Author: dsdrice	Subject: Highlight	Date: 2/6/2020 7:57:25 PM
	Number: 8	Author: dsdrice	Subject: Highlight	Date: 2/6/2020 7:59:56 PM
	Number: 9	Author: dsdrice	Subject: Highlight	Date: 2/6/2020 7:59:49 PM
	Number: 10	Author: dsdrice	Subject: Highlight	Date: 2/6/2020 8:00:12 PM
	Number: 11	Author: dsdrice	Subject: Highlight	Date: 2/6/2020 8:02:56 PM
	Number: 12	Author: dsdrice	Subject: Highlight	Date: 2/6/2020 8:03:01 PM
	Number: 13	Author: dsdrice	Subject: Highlight	Date: 2/6/2020 8:03:11 PM
	Number: 14	Author: dsdrice	Subject: Highlight	Date: 2/6/2020 8:03:42 PM
	Number: 15	Author: dsdrice	Subject: Callout	Date: 2/6/2020 8:06:09 PM
<a href="#">delete</a>				
	Author: Kirstin	Subject: Sticky Note	Date: 2/20/2020 10:39:48 AM	
Notes 1 and 2 have been struck from Table 13 in the revised TIS				



[See comment letter.](#)

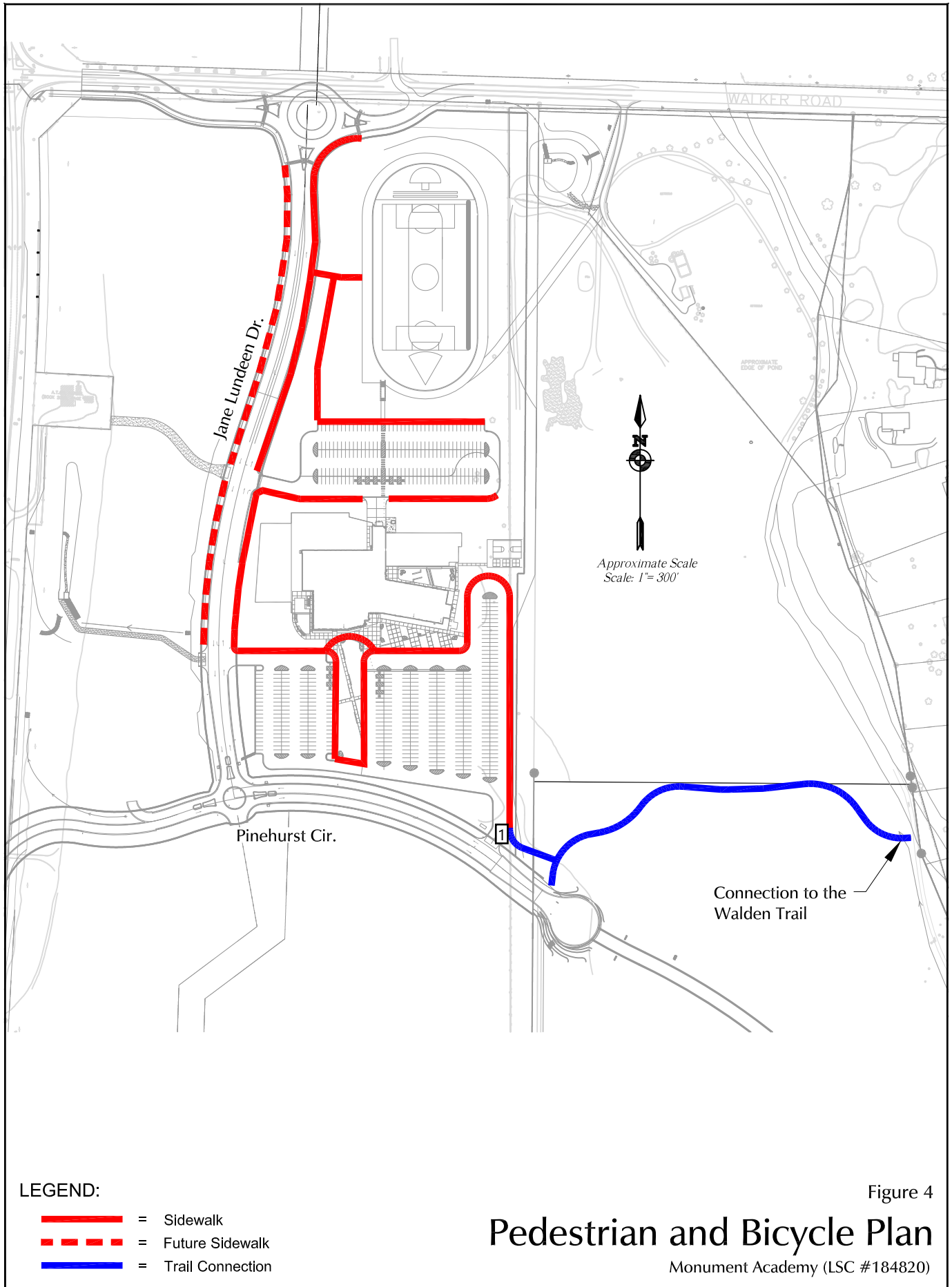


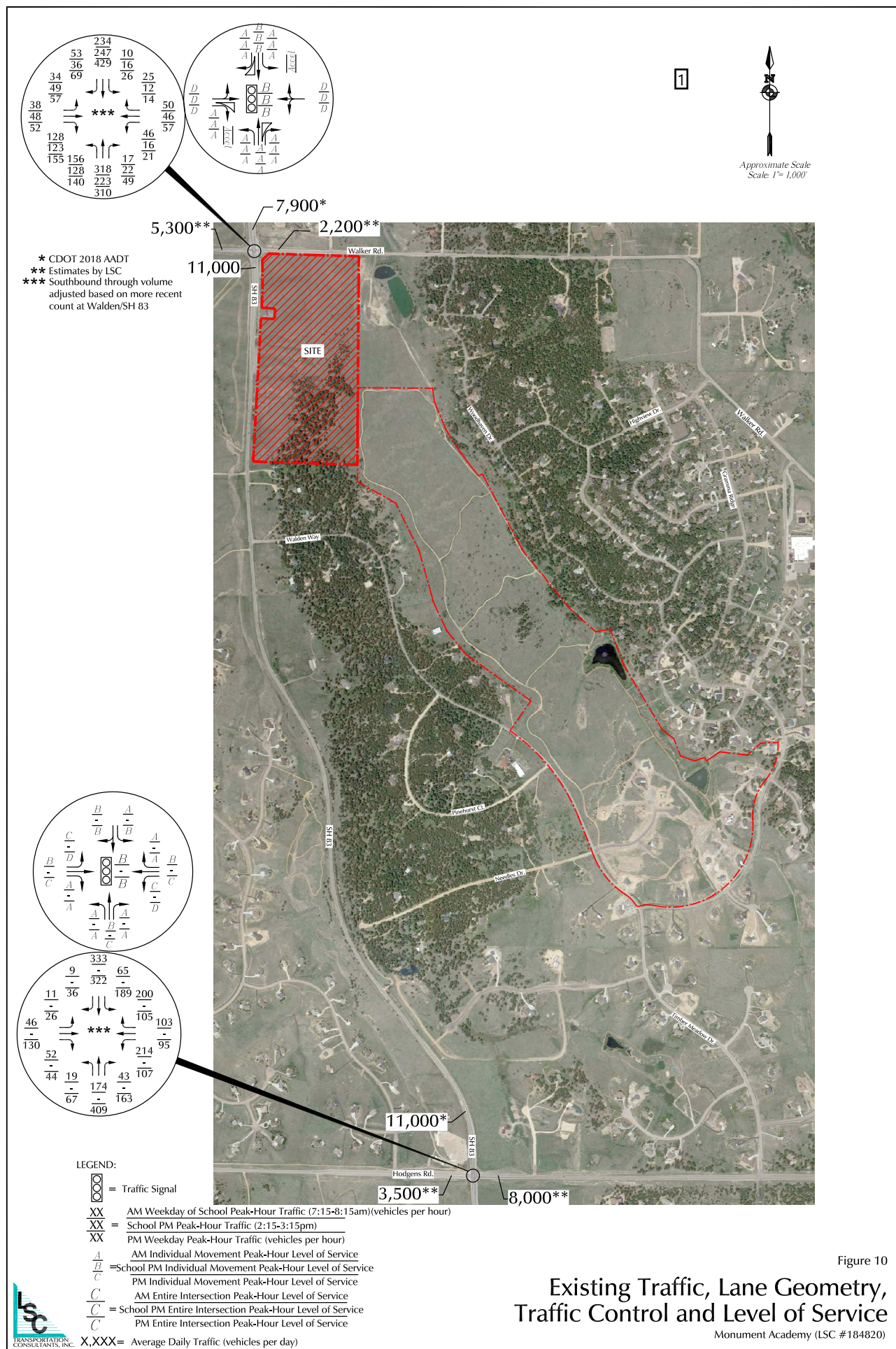
Figure 4

## Pedestrian and Bicycle Plan


Monument Academy (LSC #184820)








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 Number: 1      Author: dsdrice      Subject: Text Box      Date: 2/6/2020 8:22:42 PM

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Figures 10-17 will be checked with next review.

 Author: Kirstin      Subject: Sticky Note      Date: 2/20/2020 10:40:36 AM  
noted

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Note: These projections are based on the recently updated NEATS Study.

LEGEND:

1,000 = Average Daily Traffic



Approximate Scale  
Scale: 1"= 2,000'

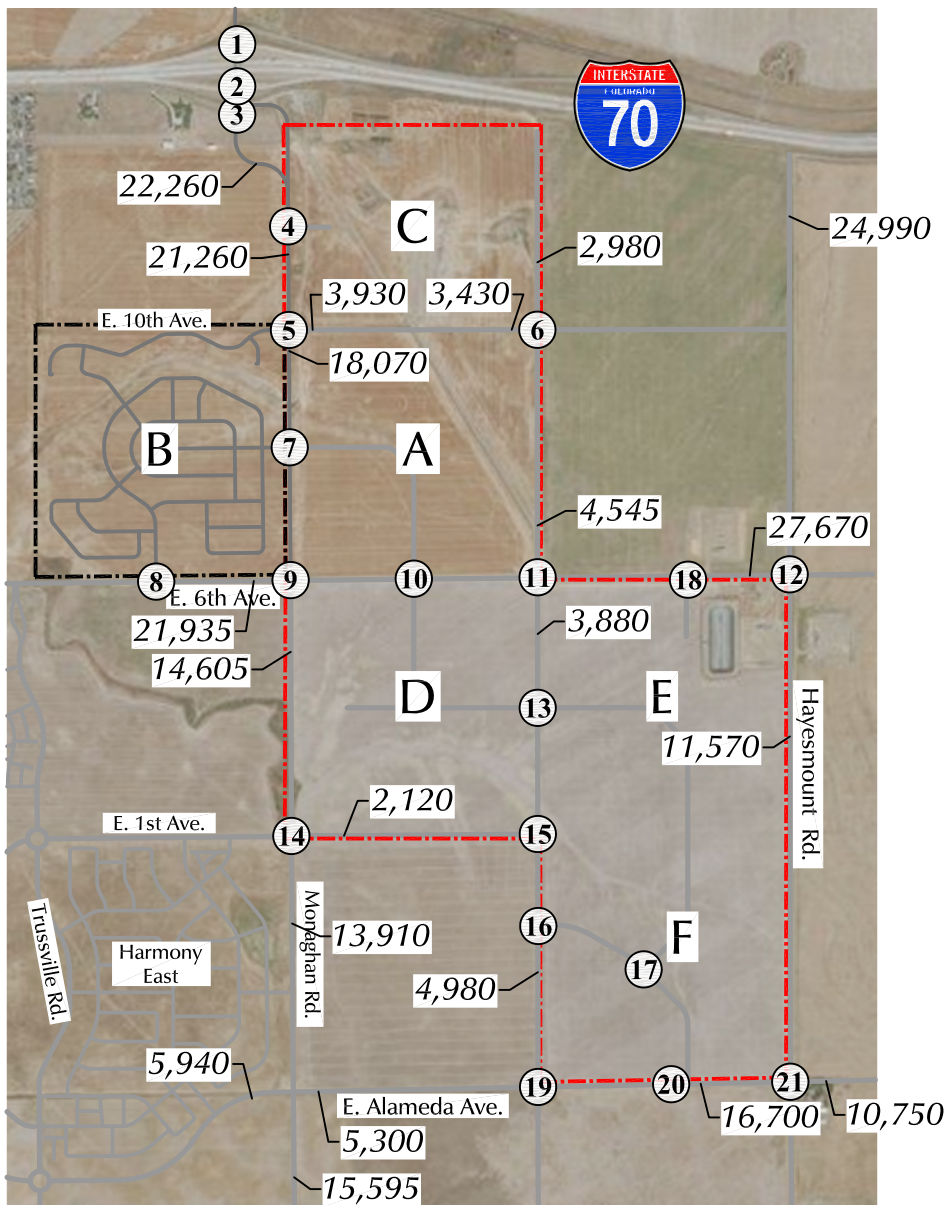



Figure 11

## Buildout Background Daily Traffic Volumes


Sky Ranch Neighborhoods A & B (LSC #181150)

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 Number: 1      Author: dsdrice      Subject: Text Box      Date: 2/6/2020 2:58:57 PM

---

Wrong project.

 Author: Kirstin      Subject: Sticky Note      Date: 2/20/2020 10:40:31 AM  
The correct figure has been included in the revised report


---

# JPS Plan and Profile Exhibits

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1

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 Number: 1      Author: dsdrice      Subject: Text Box      Date: 2/6/2020 8:19:31 PM

---

(Not final)













 Author: Kirstin      Subject: Sticky Note      Date: 2/20/2020 10:49:18 AM  
The date of the exhibits has been noted in the updated TIS

---



Volume  
1: SH 83 & SH 105/Walker Rd

2025 Total Traffic  
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	38	374	141	273	269	95	172	351	19	118	258	59
Future Volume (vph)	38	374	141	273	269	95	172	351	19	118	258	59
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.75	0.81	0.75	0.87	0.83	0.90	0.77	0.92	0.79	0.89	0.87	0.87
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	51	462	188	314	324	106	223	382	24	133	297	68
Shared Lane Traffic (%)												
Lane Group Flow (vph)	51	462	188	314	430	0	223	382	24	133	297	68
Intersection Summary												

1

















# Volume 1: SH 83 & SH 105/Walker Rd

2025 Total Traffic

School Midday Peak Hour













												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	54	203	136	201	227	68	141	246	24	66	273	40
Future Volume (vph)	54	203	136	201	227	68	141	246	24	66	273	40
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.87	0.87	0.87	0.57	0.61	0.63	0.87	0.87	0.87	0.87	0.87	0.91
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	62	233	156	353	372	108	162	283	28	76	314	44
Shared Lane Traffic (%)												
Lane Group Flow (vph)	62	233	156	353	480	0	162	283	28	76	314	44
Intersection Summary												

1



Volume  
1: SH 83 & SH 105/Walker Rd

2025 Total Traffic  
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	63	99	171	77	126	35	155	342	54	42	474	76
Future Volume (vph)	63	99	171	77	126	35	155	342	54	42	474	76
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.87	0.83	0.86	0.87	0.87	0.67	0.88	0.82	0.92	0.81	0.92	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	72	119	199	89	145	52	176	417	59	52	515	84
Shared Lane Traffic (%)												
Lane Group Flow (vph)	72	119	199	89	197	0	176	417	59	52	515	84
Intersection Summary												

1



Volume  
2: Jane Lundeen & Walker Rd

2025 Total Traffic  
PM Peak Hour













	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Volume (vph)	140	55	3	101	138	11
Future Volume (vph)	140	55	3	101	138	11
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.92	0.83	0.83	0.88	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Adj. Flow (vph)	156	60	4	122	157	12
Shared Lane Traffic (%)						
Lane Group Flow (vph)	216	0	0	126	169	0
Intersection Summary						

1



Volume  
2: Jane Lundeen & Walker Rd

2040 Total Traffic (Staggered Start Times)  
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	123	78	813	71	149	7	949	1	55	4	0	142
Future Volume (vph)	123	78	813	71	149	7	949	1	55	4	0	142
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.93	0.78	0.93	0.89	0.85	0.87	0.93	0.93	0.93	0.83	0.83	0.83
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	132	100	874	80	175	8	1020	1	59	5	0	171
Shared Lane Traffic (%)							47%					
Lane Group Flow (vph)	0	1106	0	0	263	0	541	539	0	0	176	0
Intersection Summary												













1





Volume  
2: Jane Lundeen/Future Access & Walker Rd

2040 Total Traffic  
School Midday Peak Hour













												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	159	85	604	51	85	8	984	1	67	8	1	157
Future Volume (vph)	159	85	604	51	85	8	984	1	67	8	1	157
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.86	0.92	0.83	0.83	0.83	0.76	0.93	0.77	0.83	0.83	0.83
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	173	99	657	61	102	10	1295	1	87	10	1	189
Shared Lane Traffic (%)							46%					
Lane Group Flow (vph)	0	929	0	0	173	0	699	684	0	0	200	0
Intersection Summary												

1



Volume  
1: SH 83 & SH 105/Walker Rd

2040 Total Traffic  
PM Peak Hour













												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	85	329	204	462	469	185	177	485	282	240	634	103
Future Volume (vph)	85	329	204	462	469	185	177	485	282	240	634	103
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.89	0.86	0.93	0.94	0.86	0.87	0.85	0.94	0.90	0.93	0.89
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	92	370	237	497	499	215	203	571	300	267	682	116
Shared Lane Traffic (%)												
Lane Group Flow (vph)	92	370	237	497	499	215	203	571	300	267	682	116
Intersection Summary												

1



Volume  
2: Jane Lundeen/Future Access & Walker Rd

2040 Total Traffic  
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	194	148	510	37	118	6	834	1	55	7	1	163
Future Volume (vph)	194	148	510	37	118	6	834	1	55	7	1	163
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.90	0.92	0.93	0.83	0.83	0.92	0.92	0.92	0.83	0.83	0.83
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	211	164	554	40	142	7	907	1	60	8	1	196
Shared Lane Traffic (%)							46%					
Lane Group Flow (vph)	0	929	0	0	189	0	490	478	0	0	205	0
Intersection Summary												

1



# **MSTA School Traffic Calculations** AM and PM Peak Traffic Estimates (These numbers do not reflect peak hour traffic volumes)

1


AM Cars / Student	PM Cars / Student	Avg. Car Length	PM At one Time
36.56%	16.31%	22.19	45.50%
34.58%	14.10%	22.70	51.90%
9.20%	4.30%	24.42	55.71%

**NOTES**

- Average Queue Length **does not** include an alternative traffic pattern required for high traffic demand days which is usually 30% additional length.
- Average Queue Length **does not** include the Student Loading Zone.
- Peak traffic volumes at schools normally occur within a 30-minute time period. (justifying a PHF of 0.5)


School Name: Monument Academy					Version: 102816						
Type: Typical Public with buses											
MSTA School Queue Input					Calculations						
Type School	Student Population	Number of Buses	Staff Members	Student Drivers	PM Total Vehicles	PM Peak Vehicles	Average Queue Length	Total AM Trips	Total PM Trips	High Demand Length	
Elementary										30%	
Middle	450	10	46		64	33	754	357	128	980	
High	550	9	51		158	24	13	327	310	206	425
							1081	667	334	1405	
324											
Elementary School Data											
AM Trips Generated					PM Trips Generated						
Direction	Parents	Buses	Staff	Trips	Parents	Buses	Staff	Trips			
IN											
OUT											
AM Elementary Trips					PM Elementary Trips						
Middle School Data											
AM Trips Generated					PM Trips Generated						
Direction	Parents	Buses	Staff	Trips	Parents	Buses	Staff	Trips			
IN	156		46	202	64			64			
OUT	156			156	64			64			
AM Middle Trips				357	PM Middle Trips				128		
High School Data											
AM Trips Generated					PM Trips Generated						
Direction	Parents	Buses	Staff	Student Dvr	Trips	Parents	Buses	Staff	Student Dvr	Trips	
IN	51		51	158	260	24			158	24	
OUT	51				51	24				182	
AM High Trips				310	PM High Trips				206		
All AM TRIPS				In	461	All PM TRIPS				In	88
				Out	206					Out	246
				Total	667					Total	334
1098											

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 Number: 1      Author: dsdrice      Subject: Text Box      Date: 2/5/2020 2:30:48 PM

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[See comment letter](#)

 Author: Kirstin      Subject: Sticky Note      Date: 3/3/2020 6:57:13 PM  
Updated MSTA School Traffic Calculation sheets have been included in the updated TIS

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