

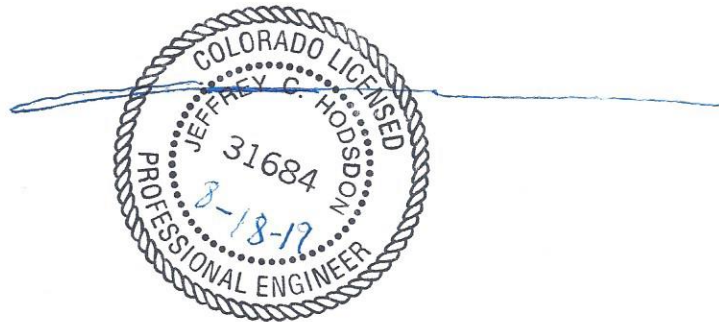


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LSC TRANSPORTATION CONSULTANTS, INC.
545 East Pikes Peak Avenue, Suite 210
Colorado Springs, CO 80903
(719) 633-2868
FAX (719) 633-5430
E-mail: lsc@lsctrans.com
Website: <http://www.lsctrans.com>

Monument Academy
Traffic Impact Analysis
PCD File No. U192/PPR19009
(LSC #184820)
August 16, 2019

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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August 15, 2019

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. Williams:

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 a proposed Road A (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.

SITE DEVELOPMENT, LAND USE, AND ACCESS

Address/compare any changes between those studies and this one. State whether the current study is consistent with those studies and explain any discrepancies.

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/right-out only. A new north-south Urban Non-Residential Collector (Road A) 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 building that will house both a charter school and a YMCA. The short-term site plan is shown in Figure 2. At buildout the charter school is planned to support about 1,000 students. 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.

The YMCA will also be opened in two phases. Phase 1 will be about 12,000 square feet of floor space and will include gyms, fitness centers, multi-purpose rooms, group exercise space, community meeting space, etc. The YMCA anticipates approximately 330 daily gate visits (members who scan in) with an additional 50-100 users such as community classes, school groups, etc. Phase 2 will be an additional 20,000 square feet comprising mostly a competitive aquatics center.

Two full-movement access points are proposed to Road A 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 Signage may be utilized within the school parking lot; however, Staff do not see an MUTCD-compliant solution to limit eastbound traffic on the public road.

Figure 3 shows the site circulation plan for the proposed school and YMCA. The north parking lot is planned for school staff and student parking. The southeast 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 880 feet of on-site stacking length for vehicles plus 195 feet for active pick-up and drop-offs. The southwest lot will primarily be for the YMCA.

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 only. As a physical barrier is not proposed, this study assumed some vehicles will turn left at the access.

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

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 Road A from the YMCA access to Walker Road 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 Road A 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 estimated sight distance along Walker Road at the proposed Road A intersection following the completion of the Phase 1 road improvements. The analysis has been based on a 40-mph design speed (35-mph posted speed instead of the current 45 mph posted speed limit). The analysis is based on the estimated location of the "drivers' eye" on the Road A northbound approach and estimates the line-of-sight passing over the future south edge of pavement (following road widening to the south).

Figures 6 through 10 shows a sight distance analysis for the proposed access points and the intersection of Pinehurst Circle and Road A. The analysis for the access points to Road A 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 YMCA access 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 Road A and Pinehurst Circle is a "T" intersection all traffic approaching from the south will have either just made an eastbound left-turn or westbound right-turn. Based on a slower turning speed the available sight distance for the YMCA access would be adequate. A deviation will be prepared, if required.

Long-Term Land Use and Access

The areas west and south of the proposed school and YMCA are currently zoned RR-5. Based on this zoning it was assumed that about seven single family residential units on five-acre lots could potentially be constructed. Access to these lots would be determined at the time of development of these lots. This report also includes additional land use (and resulting traffic impact) scenarios as required per review comments by El Paso County and CDOT. Please refer to the included **appendix section**, which includes:

- Supplemental future land use/traffic scenarios which assume rezoning and subsequent mixed-use development with higher intensity trip generation.
- Scenarios assuming commercial development on the parcels north of Walker Road/east of SH 83.

The 2040 background scenario assumes full buildout of the street network within the site including the extension of Pinehurst Circle to the proposed right-in/right-out-only intersection with SH 83 and Road A from Pinehurst Circle to Walden Road as shown on the site plan for Phase 1. Please refer to the **appendix section** for analysis of future traffic scenarios with:

- No Pinehurst Circle connection to SH 83 (and no SH 83 access). ●
- A full-movement intersection at SH 83/Pinehurst Circle

This analysis can be deleted.

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 *MTCP 2040 Roadway Plan*

(2016 MTCP Update)

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 11 shows the recent traffic volumes at the intersections of SH 83/Walker. In addition to the typical morning and afternoon peak hours, Figure 11 also shows the existing traffic volumes during the typical school dismissal time (2:00 to 3:00 pm). These traffic volumes were based on traffic counts conducted by LSC in August 2018. Figure 11 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) ¹
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

¹ For unsignalized intersections, if v/c is > 1.00, then LOS is LOS F, regardless of the projected average control delay per vehicle

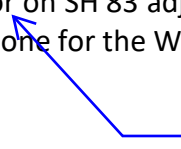
The intersections of SH 83/Highway 105/Walker and SH 83/Hodgen were analyzed to determine the existing levels of service using Synchro. Figure 11 shows the level of service analysis results. As shown on the figure, all movements at these intersections are level of service D or better during the peak hours. The level of service (LOS) reports are attached.

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 12 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 11 with a yearly growth rate of two percent per year.

Figure 13 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 on SH 83 adjacent to the site and previous work completed by LSC in the area including work done for the Walden development.

 which is...

**Black Forest
Master Plan**

commercial (as in
appendix)

The 2040 background traffic volumes assume the parcels just west and south of the site are developed based on the current zoning which allows for 5-acre residential lots. Please see the **appendix section** for additional future traffic scenarios which assume rezoning and subsequent mixed-use development with higher intensity trip generation. Also included are scenarios with commercial development on parcels north of Walker Road. These additional land use (and resulting traffic impact) scenarios have been provided per review comments by El Paso County and CDOT.

The 2040 background scenarios assume full buildout of the street network within the site including the extension of Pinehurst Circle to a right-in/right-out only intersection with SH 83 and Road A from Pinehurst Circle to Walden Road. Please see the **appendix section** for analysis of future traffic scenarios with:

Address how assumptions correlate between recent studies.

- No Pinehurst Circle connection to SH 83 (and no SH 83 access).
- A full-movement intersection at SH 83/Pinehurst Circle.

This analysis can be deleted.

TRIP GENERATION

Estimates of the traffic volumes expected to be generated by the site have been made using the nationally published trip generation rates found in *Trip Generation, 10th Edition, 2017* by the Institute of Transportation Engineers (ITE). 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, in the short term, with Phase 1 development of the school and YMCA only, the site is projected to generate about 1,830 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, which was assumed to occur between 7:45 and 8:45 a.m., about 316 vehicles would enter and 199 vehicles would exit the site. During the afternoon peak hour of the school, which was assumed to occur for one hour between 2:00 to 3:00 p.m., about 133 vehicles would enter and 182 vehicles would exit the site. During the afternoon peak hour of the adjacent street traffic, which generally occurs for one hour between 4:30 and 6:30 p.m., about 62 vehicles would enter and 78 vehicles would exit the site.

Following Phase 2, the site is projected to generate about 3,392 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 551 vehicles would enter and 344 vehicles would exit the site. During the afternoon peak hour, about 228 vehicles would enter and 309 vehicles would exit the site. During the afternoon peak hour of the adjacent street traffic, about 121 vehicles would enter and 151 vehicles would exit the site.

see comment
letter

TRIP DISTRIBUTION AND ASSIGNMENT

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 14 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 east boundary of the site. **Phase 3?**

When the distribution percentages (from Figure 14) were applied to the trip generation estimates (from Table 1), the site-generated traffic volumes on the area roadways were determined. Figure 15 shows the short-term Phase 1 only site-generated traffic volumes. Figures 16 and 17 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/right-out turning movements only. **Adjust all figures to show right-in only.**

Please refer to the **appendix section** for alternate site-generated traffic volume scenarios assuming:

- No access to SH 83
- A full-movement intersection at Pinehurst Circle/SH 83.

PROJECTED TOTAL TRAFFIC

Short Term

Figure 18 shows the short-term total traffic volumes at the intersection of SH 83/Walker/Highway 105 following development of Phase 1 only. Figure 19 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 12) plus the short-term site-generated traffic volumes (from Figures 15 and 16). 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

This analysis can be deleted.

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/right-out only.

Note: Please see the **appendix section** for the projected site-generated traffic volumes assuming separate scenarios assuming:

- No new access to SH 83 and
- A full-movement intersection at Pinehurst Circle/SH 83.

This analysis can be deleted.

Long Term (2040)

Figure 20 shows the 2040 total traffic volumes. These volumes are the sum of the 2040 background traffic volumes (from Figure 13) plus the long-term Phase 1 and 2 site-generated traffic volumes (from Figure 17). 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 are developed based on the current zoning which allows for 5-acre residential lots. The 2040 total traffic volumes also assume the proposed right-in/right out intersection of Pinehurst Circle/SH 83.

Note: Please see the **appendix section** for the projected traffic volumes assuming:

- Separate supplemental land use scenarios assuming:
 - rezoning and subsequent mixed-use development with higher intensity trip generation and
 - commercial development on the parcels north of Walker Road/east of SH 83.
- Access Scenarios assuming:
 - no new access to SH 83 and
 - a full-movement intersection at Pinehurst Circle/SH 83.

Provide narrative discussion.

Phase 4?

This analysis can be deleted.

PROJECTED LEVELS OF SERVICE

The intersections of SH 83/Walker and SH 83/Hodgen, the proposed intersections of the new north-south Collector 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, 2010 Edition* by the Transportation Research Board. The level of service reports are attached. The results of the analysis are shown in Tables 3 through 8. These traffic volumes assume a right-in/right-out access point to SH 83 and development of the adjacent parcels with 5-acre lots as allowed by the current zoning. Please see the **appendix section** for the additional scenarios.

SH 83/Walker/Highway 105

Table 3 shows the results of the level of service analysis for the intersection SH 83/Walker/Highway 105. 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. In the very short-term, this could be done by changing the timing plan to provide split phasing for the eastbound and westbound approaches. Based on a split phase timing plan, the intersection is projected to operate at an overall LOS D or better during the peak hours with the addition of Phase 1 traffic only (charter school with a 600-student enrollment and a 12,000 square foot YMCA). The eastbound and westbound approaches are projected to operate at LOS E during the morning peak hour.

The intersection is projected to operate at an overall LOS F during the morning peak hour based on the projected short-term total traffic volumes following buildout of Phases 1 and 2. It will be necessary to provide separate eastbound and westbound left-turn lanes at this intersection with any development beyond Phase 1. With the addition of these turn lanes, assuming separate left turn phases for these movements, the intersection is projected to operate at a LOS D or better during the peak hours based on the projected short-term **and 2040** total traffic volumes. Some of the minor movements are projected to operate at LOS E during the morning peak hour. The 2040 total traffic volumes assume the parcels just west and south of the site are developed based on the **current zoning which allows for 5-acre residential lots.**

Please see the **appendix section** for additional future traffic scenarios with more intense development of these parcels, development of parcels north of Walker Road, and the additional Pinehurst/SH 83 access scenarios. Some intersection movements have projected delays in the LOS E range simply because of the likelihood of arrival at the traffic signal at the beginning of the red phase at an intersection with many phases and a long cycle length. These movements would not be considered “failing” since the volume-to-capacity ratio is less than one. The justification is that to progress through traffic along an arterial corridor, the traffic signal offsets and left-turn and side street phase times have been adjusted to favor the through traffic band, which can often result in higher delay for the left-turn movements even though there is sufficient capacity for them.

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

Table 4 shows the results of the level of service analysis for the intersection SH 83/Hodgen. As shown in Table 4, all movements at this intersection 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/Road A


proposed 

Table 5 shows the results of the level of service analysis for the future intersection of Walker Road and Road A. This intersection is projected to operate at LOS C or better for all movements as a stop sign-controlled (northbound approach) intersection based on the short-term and 2040 total traffic volumes. However, as there is limited available sight distance along Walker Road, the proposed intersection of Walker Road and Road A was also analyzed assuming:

- All-Way Stop-sign control (AWSC)
- Temporary traffic signal control (prior to redevelopment north of Walker Road)
- Modern one-lane roundabout intersection control.

All of these traffic control options result in a projected LOS D or better for all movements based on the projected short-term and 2040 total traffic volumes. Both the short-term and long-term analysis assume the intersection of Pinehurst/SH 83 is restricted to right-in/right-out only. Note: long-term analysis assumes the adjacent parcels west and south of the site are developed with 5-acre lots as allowed by the current zoning. Please see the **appendix section** for analysis of the foregoing supplemental scenarios.

Pinehurst/Road A


proposed 

Table 6 shows the results of the level of service analysis for the future intersection of Pinehurst Circle and Road A. The intersection of Pinehurst Circle and Road A is projected to operate at LOS D or better for all movements during the peak hours based on the projected short-term and 2040 total traffic volumes as a two-way, stop sign-controlled intersection. Both the short-term and long-term analysis assume the intersection of Pinehurst/SH 83 is restricted to right-in/right-out only. The long-term analysis assumes the adjacent parcels west and south of the site are developed with 5-acre lots as allowed by the current zoning. Please see the **appendix section** for analysis of the foregoing supplemental scenarios.

Site Access Points

Table 7 shows the results of the level of service analysis for the site access points to Pinehurst Circle and Road A. The site access points to Pinehurst Circle and Road A are projected to operate at LOS B or better for all movements during the peak hours based on the projected short-term and 2040 total traffic volumes as stop sign-controlled intersections. Both the short-term and long-term analysis assume the intersection of Pinehurst/SH 83 is restricted to right-in/right-out only. The long-term analysis assumes the adjacent parcels west and south of the site are

developed with 5-acre lots as allowed by the current zoning. Please see the **appendix section** for analysis of the foregoing supplemental scenarios.

VEHICLE QUEUING ANALYSIS ← update for RI only

A queuing analysis was performed using Synchro/SimTraffic for Walker Road between SH 83 and Road A. The morning peak-hour total traffic volumes for the short-term following Phase 1, the short-term following Phase 2, and the long term (2040) were entered into the Synchro model. The simulation was run five times and the results were averaged. The queuing reports are attached. Note: the long-term analysis assumes the adjacent parcels west and south of the site are developed with **5-acre lots** as allowed by the current zoning. Please see the **appendix section** for analysis of the foregoing supplemental scenarios.

The projected 95th percentile queue length for the westbound approach on Walker Road approaching SH 83 is 349 feet based on the morning peak hour traffic volumes following buildout of Phase 1 only. This analysis assumes the existing single shared westbound left/through/right approach. This analysis also assumes the existing signal timing plan has been modified to provide split phasing for the eastbound and westbound approaches.

It was assumed that separate eastbound and westbound left-turn lanes would be constructed on Walker Road approaching SH 83 with Phase 2 development. The projected 95th percentile queue length for the westbound left-turn on Walker Road approaching SH 83 is 236 feet based on the projected short-term total morning peak hour traffic volumes following buildout of Phases 1 and 2 and 235 feet based on the 2040 morning peak hour traffic volumes.

The projected 95th percentile queue length for the northbound left-turn movement on SH 83 approaching Highway 105 is 293 feet following Phase 1, 257 feet following Phase 2, and 431 feet based on the 2040 total traffic volumes. The existing northbound left-turn lane is about 485 feet long. However, CDOT is requiring lane lengthening to accommodate queuing as a result of the additional turning vehicle demand (note: based on the existing turning volume, the lane is currently sub-standard)

STREET CLASSIFICATIONS

Figure 21 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 20 the projected average weekday traffic volume (ADT) on Walker Road just east of SH 83 is 5,795 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 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 Exhibit 1 and attached plan and profile plans by JPS Engineering. The plans show ROW preservation for potential future roadway widening for additional lanes.

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. In the very short term, this could be done by changing the timing plan to provide split phasing for the eastbound and westbound approaches. Any development beyond Phase 1 will require the addition of eastbound and westbound left-turn lanes and a protected phase for those movements.

Walker Road/A Road

See 9/17 e-mail

Stop-Sign Control

As shown Table 5, the intersection of Walker Road and Road A is projected to operate at an acceptable level of service as a two-way, stop sign-controlled intersection (TWSC but with stop sign on the northbound approach only). However, there is limited available sight distance along Walker Road that may preclude this type of traffic control with the current posted speed limit due to the safety implications. The TWSC could be a viable option if El Paso County, in conjunction with this project, reduces the posted speed limit on Walker Road on the approaches to this intersection to mitigate the limited intersection sight distance. The speed limit reduction may be accompanied by other signing and striping as well as enforcement. Note: The Highway 105 eastbound approach to Highway 83 is posted at 35 mph.

Four additional traffic control methods were analyzed. These options are discussed below. The acceptability of this TWSC option or alternate traffic control will be determined through the EPC access permit and development agreement process.

Interim All-Way, Stop Sign Control

The first alternative considered for the intersection of Walker/Road A was all-way, stop-sign control. Section 2B.07 of the *Manual on Uniform Traffic Control Devices* gives guidance on when multi-way stop control can be considered. As shown in Table 9, the projected traffic volumes at this intersection are only projected to meet the volume thresholds in section 2B.07.04.C during the morning peak hour and the afternoon peak hour of the school (two hours). Note: Should staggering of school start/dismissal times be implemented, the thresholds could potentially be met during up to four hours of the day (this would depend on a specific staggered start schedule). The criteria require 8 hours to meet the thresholds. However, section 2B.07.05.C gives the option to consider multi-way stop control at "locations where a road user, after stopping, cannot see conflicting traffic and is not able to negotiate the intersection unless conflicting cross traffic is also required to stop."

Interim Stop Sign Control with Channelized T Intersection Configuration

The option of an interim channelized T intersection was considered. The following are some points regarding a potential channelized T type intersection.

- Adequate sight distance would need to be available to/from the west (slight shift/downgrade on driveway)
- A right turn acceleration lane would still be needed for sight distance for the northbound right-turn movement.
- A westbound left-turn acceleration lane inherent with a channelized T design would not work well given the short distance to the SH 83/Walker intersection and the necessary westbound left-turn lane
- The stopping sight distance for westbound vehicles entering the westbound through lane from the end of the left-turn acceleration lane would need to be considered and may not meet standards.
- A good portion of the raised channelization required for a channelized T would be “throw away” once this intersection is converted to a four-leg intersection in the future.

Interim/Temporary Traffic Signal Control ← See 9/17 e-mail.

If all-way, stop sign control is not allowed, or excessive delays occur, temporary traffic signal control could be considered. A signal with a protected right turn island on the southeast corner and eastbound right turn acceleration lane on Walker Road would likely mitigate the intersection sight distance to the west and the signal would mitigate the intersection sight distance to the east. A right turn island is proposed for the southwest corner of this intersection in conjunction with the proposed continuous eastbound right-turn acceleration/deceleration lane.

Modern One-Lane Roundabout

The preferred long-term traffic control for this intersection is a one-lane modern roundabout. However, due to the lack of existing available right-of-way for the north half of a roundabout, it is not practical or the best solution to construct this intersection as a roundabout in the short-term. Shifting the alignment of Walker Road to the south to place the roundabout within the existing right-of-way would likely result in a series of **substandard horizontal reverse curves**, difficulty with the combination of reverse curvature, the left-turn lane approaching SH 83 and the exit from the roundabout. Also, significant additional land from the site would be required.

The foregoing is a preliminary analyses/discussion of a roundabout and other/potential interim intersection control options (signal, protected turn lanes/islands, etc.). The decision to allow interim AWSC traffic control rests with El Paso County. This will be determined through the EPC access permit and development agreement process.

PHASING AND TRIGGERS FOR WALKER ROAD IMPROVEMENTS

Table 8 shows a summary of the off-site improvements needed in the vicinity of the site. As shown in Table 8, a continuous right-turn acceleration/deceleration lane will be needed on Walker Road between SH 83 and Road A with the initial development of the site. Any development beyond Phase 1 will require the addition of eastbound and westbound left-turn lanes on Walker/Highway 105 at SH 83.

TWSC Option at Road A/Walker Road

LSC recommends an ECM-standard length westbound left turn deceleration lane on Walker Road with Phase 1.

Exhibit 1 and the attached plan & profile exhibit (by JPS Engineering) show the recommended improvements needed with Phases 1 and 2.

SHANNON ROAD CONNECTION PHASING

- Short Term: Exhibit 1 and 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. Under the recommended TWSC option at Walker/Road A, a westbound left turn lane would extend through the Shannon intersection. Should issues arise, the intersection may need to be posted for right-in/right-out movements only.
- Intermediate Term: If a temporary signal is installed at A Road/Walker, Shannon may need to be posted for right-in/right-out turning movements only (should issues arise; until the roundabout is constructed and Shannon can be realigned to the roundabout).
- Long Term: The vision for the planned roundabout at Road A/Walker would include realignment of Shannon Road to the north leg of a future roundabout. 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.

FUTURE ROUNDABOUT PLANNING

The attached Walker Road Plan and Profile sheet (by JPS Engineering) shows the proposed ROW dedication and preservation based on the potential estimated ROW required for a 180-foot roundabout (inscribed circle diameter plus approaches and pedestrian/bike paths around the roundabout). This has been estimated based on the Baptist/Old Denver Highway roundabout, as suggested by El Paso County staff.

DESIGN OF THE RI/RO ON SH 83

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 “ramps.” This configuration along with added design features such as potential extension of the right turn island with curb extensions to the north and south to further channelize right turning traffic. No Left Turn/No U-Turn (MUTCD R3-18) signage, and striping will further discourage motorists from attempting left turn movements. The design of the right-in/right-out 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 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.

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. Also, at the intersection of A Road/Walker Road, additional ROW will likely be needed to accommodate the future roundabout. This additional preservation for the future roundabout is also depicted on the JPS plan and profile exhibit.

Based on the analysis/laneage requirements included in the **appendix section**, 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.


CONCLUSIONS AND RECOMMENDATIONS

Update

Trip Generation

- Following Phase 1 only development of the school and YMCA, the site is projected to generate about 1,830 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, which was assumed to occur between 7:45 and 8:45 a.m., about 316 vehicles would enter and 199 vehicles would exit the site. During the afternoon peak hour of the school, which was assumed to occur for one hour between 2:00 to 3:00 p.m., about 133 vehicles would enter and 182 vehicles would exit the site. During the afternoon peak hour of the adjacent street traffic, which generally occurs for one hour between 4:30 and 6:30 p.m., about 62 vehicles would enter and 78 vehicles would exit the site.
- Following Phase 2 development of the proposed school and YMCA, the site is projected to generate about 3,392 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 551 vehicles would enter and 344 vehicles would exit the site. During the afternoon peak hour of the school about 228 vehicles would enter and 309 vehicles would exit the site. During the afternoon peak hour of the adjacent street traffic, about 121 vehicles would enter and 151 vehicles would exit the site.

Deviations

- The following deviations to the El Paso County Engineering Criteria will be required with the Phase 1 development:
 - Spacing of the proposed public road intersection of Walker Road and Road A
 - Spacing of the south access point to Road A (driveway) and sight distance for a driveway at the south access point to Road A.
 - 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  See 9/17 e-mail
 - 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 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

- The intersection of SH 83/Highway 105/Walker is projected to operate at an overall LOS D or better during the peak hours with the addition of **Phase 1** traffic only (charter school with a 600-student enrollment and a 12,000 square foot YMCA) assuming the signal timing plan is modified to provide split phasing for the eastbound and westbound approaches. The eastbound and westbound approaches are projected to operate at LOS E during the morning peak hour. **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.**
- Separate eastbound and westbound left-turn lanes will be needed on Highway 105 and Walker Road approaching SH 83 with **Phase 2 development**. With the addition of these turn lanes and assuming separate protected left-turn phase for these movements, the intersection is projected to operate at a LOS D or better during the peak hours based on the projected short-term and 2040 total traffic volumes. Some of the minor movements are projected to operate at LOS E during the morning peak hour. The 2040 total traffic volumes assume the parcels just west and south of the site are developed based on the current zoning which allows for 5-acre residential lots. **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 intersection of Walker Road and Road A is projected to operate at an acceptable level of service a two-way, stop sign-controlled intersection (TWSC but with stop sign on the northbound approach only), however, there is limited available sight distance along Walker Road that may preclude this type of traffic control due to the safety implications. Three additional traffic control methods were analyzed including all-way, stop sign control, temporary traffic signal control and a modern one-lane roundabout. All movements at this intersection are projected to operate at an acceptable LOS (LOS D or better) during the peak hours for all the traffic control scenarios analyzed.
- The site access points to Pinehurst Circle and Road A and the intersection of Pinehurst Circle and Road A are projected to operate at a satisfactory level of service as stop-sign-controlled intersections based on the projected short-term and 2040 total traffic volumes.

Traffic Circulation

- Figure 3 shows the circulation plan for the proposed school and YMCA. The plan provides for about 880 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.

Recommendations

- Table 8 shows a summary of the on-site and off-site improvements needed in the vicinity of the site. Table 8 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 deficiency based on the turning volume thresholds requiring turn lanes.

- 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.
- 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 contain 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 short term total volumes, a lane length of 915 feet would be required (600 feet for deceleration (including the taper) plus 315 feet for queue/storage).
- 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 acceleration lane would be required on SH 83 at Pinehurst Circle. Based on a posted speed limit of 60 miles per hour, the prescribed lane length for the acceleration lane is 870 feet long plus a 300-foot taper. This lane would be constructed to connect to the existing northbound right-turn deceleration lane approaching Walker Road and, as such, the lane would be a continuous acceleration/ deceleration lane between Pinehurst Circle and Walker Road.
- LSC recommends a continuous westbound right turn acceleration/deceleration lane between SH 83 and Road A.
- Based on the projected short-term total traffic volumes and the criteria contained in the *ECM*, a westbound left-turn lane would be required on Walker Road approaching Road A. Based on a reduced posted speed limit of 35 mph (design speed of 40 miles per hour, the prescribed lane length for this lane is _230 feet long plus a 160-foot taper.
- See Exhibit 1 and the attached JPS Engineering Plan & Profile exhibit for the recommended lane geometry on Highway 105/Walker Road from just west of SH 83 to just east of Shannon Drive.
- Based on the projected short-term total traffic volumes and the criteria contained in the *ECM*, an eastbound left-turn lane would be required on Pinehurst Circle approaching Road A. Based on a design speed of 30 miles per hour, the prescribed lane length for the deceleration lane is 415 feet long (including 300 feet of stacking distance) plus a 120-foot taper.
- Based on the projected short-term total traffic volumes and the criteria contained in the *El Paso County Engineering Criteria Manual (ECM)*, a westbound right-turn deceleration lane would be required on Pinehurst Circle approaching Road A. Based on a design speed of 30

miles per hour, the prescribed lane length for the deceleration lane is 115 feet long plus a 120-foot taper.

- 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 Road A 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 Road A approaching the south (YMCA) 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 Road A approaching the north (school) but not the south (YMCA) 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.

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 or need further assistance.

Sincerely,

LSC TRANSPORTATION CONSULTANTS, INC.

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

JCH:KDF:bjwb:jas

Enclosures: Tables 2-9
Figure 1-21
Exhibit 1
Walker Road Plan and Profile (JPS Engineering)
Counts
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Appendix Level of Service Reports
Appendix Queuing Reports

Tables and Figures



**Table 2
Trip Generation Estimate
Monument Academy**

Land Use Code	Land Use Description	Trip Generation Units	Trip Generation Rates ⁽¹⁾							Total Trips Generated						
			Average Weekday Traffic	Morning Peak Hour		Mid-Afternoon Peak Hour		Afternoon Peak Hour		Average Weekday Traffic	Morning Peak Hour		Mid-Afternoon Peak Hour		Afternoon Peak Hour	
				In	Out	In	Out	In	Out		In	Out	In	Out	In	Out
Phase 1 - Initial Land Uses																
536	Private School (K-12)	600 Students	2.48	0.49	0.31	0.21	0.30	0.07	0.10	1,488	291	186	128	177	44	58
495	Recreational Community Center	12 KSF ⁽²⁾	28.52	2.05	1.06	0.46	0.43	1.51	1.70	342	25	13	5	5	18	20
Phase 1 Total									1,830	316	199	133	182	62	78	
Phase 2 (Future) - Additional Land Uses																
536	Private School (K-12)	400 Students	2.48	0.49	0.31	0.21	0.30	0.07	0.10	992	194	124	86	118	29	39
495	Recreational Community Center	20 KSF	28.52	2.05	1.06	0.46	0.43	1.51	1.70	570	41	21	9	9	30	34
Phase 2 Total									1,562	235	145	95	127	59	73	
Buildout Total (Phase 1 + Phase 2)									3,392	551	344	228	309	121	151	

Notes:

(1) Source: "Trip Generation, 10th Edition, 2017" by the Institute of Transportation Engineers (ITE)

(2) KSF = thousand square feet of floor space

Source: LSC Transportation Consultants, Inc.

Appendices will be reviewed in detail with updated submittal.

Table 3
Level of Service Analysis
SH 83/Hwy 105/Walker
Monument Academy

Movement	Phase 1 Only			Short-Term Total			2040 Background			2040 Total		
	AM	Midday	PM	AM	Midday	PM	AM	Midday	PM	AM	Midday	PM
Scenario: Existing Lane Geometry and Signal Timing Plan Modified To Add Split Phases for the Eastbound and Westbound Approaches												
Eastbound Left and Through	E	D	D	F	E	D	---	---	---	---	---	---
Eastbound Right	A	A	A	A	A	A	---	---	---	---	---	---
Westbound	E	D	D	F	E	D	---	---	---	---	---	---
Northbound Left	D	B	B	D	C	C	---	---	---	---	---	---
Northbound Through	D	C	C	D	D	C	---	---	---	---	---	---
Northbound Right	A	A	A	A	A	A	---	---	---	---	---	---
Southbound Left	C	B	B	C	C	B	---	---	---	---	---	---
Southbound Through	D	C	C	D	D	D	---	---	---	---	---	---
Southbound Right	A	A	A	A	A	A	---	---	---	---	---	---
Overall	D	C	C	F	D	C	---	---	---	---	---	---

Scenario: Add eastbound and westbound left-turn lanes

Eastbound Left	---	---	---	C	D	D	D	C	C	D	D	D
Eastbound Through	---	---	---	E	D	D	D	D	D	E	D	D
Eastbound Right	---	---	---	A	A	A	A	A	A	A	A	A
Westbound Left	---	---	---	E	C	C	C	C	C	E	D	C
Westbound Through and Right	---	---	---	B	C	C	C	C	D	C	C	C
Northbound Left	---	---	---	D	A	C	C	B	A	C	E	B
Northbound Through	---	---	---	D	B	B	B	B	B	B	D	C
Northbound Right	---	---	---	A	A	A	A	A	A	A	A	A
Southbound Left	---	---	---	C	A	A	A	A	A	A	D	B
Southbound Through	---	---	---	C	B	C	C	B	C	D	D	C
Southbound Right	---	---	---	A	A	A	A	A	A	A	A	A
Overall	---	---	---	D	B	C	C	B	B	C	D	C

Source: LSC Transportation Consultants, Inc.

**Table 4
Level of Service Analysis
Hodgen/SH 83
Monument Academy**

Right-in/Right-out at Pinehurst/SH 83

Without Redevelopment North of Walker Road

Movement	Short-Term Total		2040 Background		2040 Total	
	AM	PM	AM	PM	AM	PM
Scenario: Existing Lane Geometry						
Eastbound Left	D	D	---	---	---	---
Eastbound Through	D	D	---	---	---	---
Eastbound Right	A	A	---	---	---	---
Westbound Left	D	C	---	---	---	---
Westbound Through	D	D	---	---	---	---
Westbound Right	B	A	---	---	---	---
Northbound Left	A	B	---	---	---	---
Northbound Through	C	C	---	---	---	---
Northbound Right	A	A	---	---	---	---
Southbound Left	A	B	---	---	---	---
Southbound Through/Right	C	C	---	---	---	---
Overall	C	C	---	---	---	---

Scenario: Add 2nd northbound and southbound through lanes, 2nd southbound left-turn lane, separate southbound right-turn lane, and 2nd westbound left-turn lane

Eastbound Left	---	---	B	B	C	B
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	A	A	A
Southbound Left (2)	---	---	D	D	D	D
Southbound Through (2)	---	---	C	C	C	C
Southbound Right	---	---	A	A	A	A
Overall	---	---	C	C	C	C

Notes:

Source: LSC Transportation Consultants, Inc.

**Table 5
Level of Service Analysis
Road A/Walker
Monument Academy**

Movement	Short-Term Total			2040 Total		
	AM	Midday	PM	AM	Midday	PM
Scenario: <u>Two-Way, Stop-Sign Control</u>						
Northbound Left	B	B	B	C	B	B
Northbound Right	A	A	A	A	A	A
Eastbound Left	---	---	---	---	---	---
Westbound Left-Turn	A	A	A	A	A	A
Southbound Left	---	---	---	---	---	---
Southbound Through and Right	---	---	---	---	---	---
Scenario: <u>All-Way, Stop-Sign Control</u>						
Northbound Left	C	B	A	C	B	B
Northbound Right	A	A	A	A	A	A
Eastbound Left	---	---	---	---	---	---
Eastbound Through	A	A	A	A	A	B
Eastbound Right	D	A	A	D	A	A
Westbound Left	B	A	A	C	B	A
Westbound Through and Right	---	---	---	---	---	---
Southbound Left	---	---	---	---	---	---
Southbound Through and Right	---	---	---	---	---	---
Scenario: <u>Temporary Traffic Signal</u>						
Eastbound Through	A	A	A	A	A	A
Eastbound Right	A	A	A	A	A	A
Westbound Left	A	A	A	A	A	A
Westbound Through and Right	A	A	A	A	A	A
Northbound Left	D	D	D	D	D	D
Northbound Right	A	B	B	A	A	B
Overall	B	C	B	B	B	B
Scenario: <u>One-Lane, Modern Roundabout</u>						
Eastbound	A	A	A	A	A	A
Westbound	A	A	A	A	A	A
Northbound	A	A	A	A	A	A
Southbound	---	---	---	---	---	---
Overall	A	A	A	A	A	A

Source: LSC Transportation Consultants, Inc.

**Table 6
Level of Service Analysis
Road A/Pinehurst
Monument Academy**

Movement	Short-Term Total			2040 Total		
	AM	Midday	PM	AM	Midday	PM
Scenario: <u>Two-Way, Stop-Sign Control</u>						
Eastbound Left	A	A	A	A	A	A
Southbound Left	D	B	A	D	B	A
Southbound Right	A	A	A	B	A	A
Notes:						
<i>Source: LSC Transportation Consultants, Inc.</i>						

**Table 7
Level of Service Analysis
Site Access Points
Monument Academy**

Movement	Short-Term Total			2040 Total		
	AM	Midday	PM	AM	Midday	PM
Intersection: North School Access/Road "A"						
Northbound Left	---	---	---	---	---	---
Eastbound	---	---	---	---	---	---
Westbound	A	A	A	A	A	A
Southbound Left	A	A	A	A	A	A
Intersection: YMCA Access/Road "A"						
Northbound Left	---	---	---	---	---	---
Eastbound	---	---	---	---	---	---
Westbound	B	A	A	B	A	A
Southbound Left	A	A	A	A	A	A
Intersection: South School Access/Pinehurst						
Eastbound Left	A	A	A	A	A	A
Southbound	B	A	A	C	A	A

Notes:

Source: LSC Transportation Consultants, Inc.

Table 8 Monument Academy Roadway Improvements			
Item #	Improvement	Timing	Responsibility
Roadway Segment Improvements			
1	Construct Road A from Pinehurst Circle to Walker Road as an Urban Non-Residential Collector ⁽¹⁾ .	Phase 1	Monument Academy
2	Construct Pinehurst Circle from SH 83 to Road A as a Rural Minor Collector roadway.	Phase 1	Monument Academy
3	Construct Pinehurst Circle from Road A to the east boundary of the Monument Academy site as an Urban Local roadway ⁽²⁾ .	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.	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	Upgrade Walker Road to add 4' paved shoulders from A Road east to the start of the redirect taper on the north side and to the district access on the south side.	Phase 1	Monument Academy
7	Upgrade Walker Road from SH 83 to Road A by adding curb and gutter along the south side of the roadway and widening to accommodate auxiliary turn lanes.	Phase 1	Monument Academy
SH 83/Walker/Highway 105			
8	Modify the traffic signal timing plan to provide split phasing for the eastbound and westbound approaches. This will require new traffic signal heads for the eastbound and westbound approaches. In conjunction with this phasing scheme, stagger school start/finish times to distribute peak period impact on this intersection.	Phase 1	Monument Academy
9	Extend the existing northbound left-turn lane on SH 83 approaching Highway 105. The existing lane is about 670 feet long (lane plus taper length). Based on the short-term total volumes, a lane length of 850 feet would be required (600 feet for deceleration and taper plus 315 feet for queue/storage).	Phase 1	Monument Academy
10	Add eastbound and westbound left-turn lanes as shown in Figure 22.	Phase 2	Monument Academy
11	Modify the traffic signal. Modification may include adding signal heads for protected-permissive phasing for the eastbound and westbound left-turn movements and modifying the traffic signal timing plan. Additional mast-arm mounted signs may also be required. Adjustment or modification to existing 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 can likely be addressed at the design stage.	Phase 2	Monument Academy
SH 83/Pinehurst Circle			
12	Construct new intersection as a restricted right-in/right-out 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 "ramps." This configuration along with added design features such as potential extension of the right turn island with curb extensions to the north and south to further channelize right turning traffic, No Left Turn/No U-Turn (MUTCD R3-18) signage, and striping will further discourage motorists from attempting left turn movements. The design of the right-in/right-out will be part of the CDOT access permitting process.	Phase 1	Monument Academy
13	TWSC Option [Alternative to All-Way Stop Sign control (AWSC)] - A viable option if El Paso County, in conjunction with this project, reduces the posted speed limit on Walker Road on the approaches to this intersection to mitigate the limited intersection	Phase 1	Monument Academy
14	Construct northbound right-turn acceleration lane on SH 83 at Pinehurst Circle. Note: This would result in a "continuous" northbound acceleration/deceleration lane between Pinehurst Circle and Walker Road.	Phase 1	Monument Academy
Walker Rd./Road A			
15	Construct a continuous eastbound right-turn acceleration/deceleration lane on Walker Road between SH 83 and Road A	Phase 1	Monument Academy
16	TWSC Option [Alternative to previously proposed All-Way Stop Sign control (AWSC) option] - A viable option if El Paso County, in conjunction with this project, reduces the posted speed limit on Walker Road on the approaches to this intersection to mitigate the limited intersection sight distance. The speed limit reduction may be accompanied by other signing and striping as well as enforcement.	Phases 1	Monument Academy
17	Future Temporary Traffic Signal Option [option for replacing the AWSC or TWSC if and when the intersection reaches a point where operations would be improved with the installation of a temporary signal (prior to the ultimate roundabout solution).	If Necessary - Not Likely with Phases 1 and 2 only but potentially in the Intermediate to Long Term with additional development.	Monument Academy/Future Development
18	With the TWSC Option and Future Temporary Signal Control Options - Construct a westbound left turn deceleration lane on Walker Road east of Road A on the approach to the Walker/Road A intersection. This lane would extend across the Shannon/Walker intersection	Phase 1 w/ The TWSC Option or with the Temp. Signal Option	Monument Academy
Pinehurst/Road A			
19	Construct an eastbound left-turn lane on Pinehurst approaching Road A.	Phase 1	Monument Academy
20	Construct a westbound right-turn deceleration lane on Pinehurst approaching Road A.	Phase 1	Monument Academy
21	Potential future AWSC or Channelized T intersection (if needed for acceptable southbound left turn level of service in the future).	Long Term (to be determined with development plans for the areas west and south of the school or the extension of Pinehurst Circle to the east)	Future Developer
Pinehurst/School Access			
22	Construct an eastbound left-turn lane on Pinehurst approaching the school site access.	Phase 1	Monument Academy
23	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
Road A/North (School) Access			
24	Construct a southbound left-turn lane ⁽³⁾ on Road A approaching the north (school) access.	Phase 1	Monument Academy
25	Construct a northbound right-turn deceleration lane on Road A approaching the north (school) access.	Phase 1	Monument Academy
Road A/South (YMCA) Access			
26	Construct a southbound left-turn lane ⁽³⁾ on Road A approaching the south (YMCA) access.	Phase 1	Monument Academy
Notes:			
(1) In the short-term curb and gutter would only be constructed on the east side of Road A and phased sidewalks locations shown in Figure 4. County maintenance would not occur until complete. The deviation for A Road 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: 8/15/19)			

**Table 9
Monument Academy
All-Way Stop-Sign Control Warrant
Peak Hour Analysis
Walker Road & Road "A"**

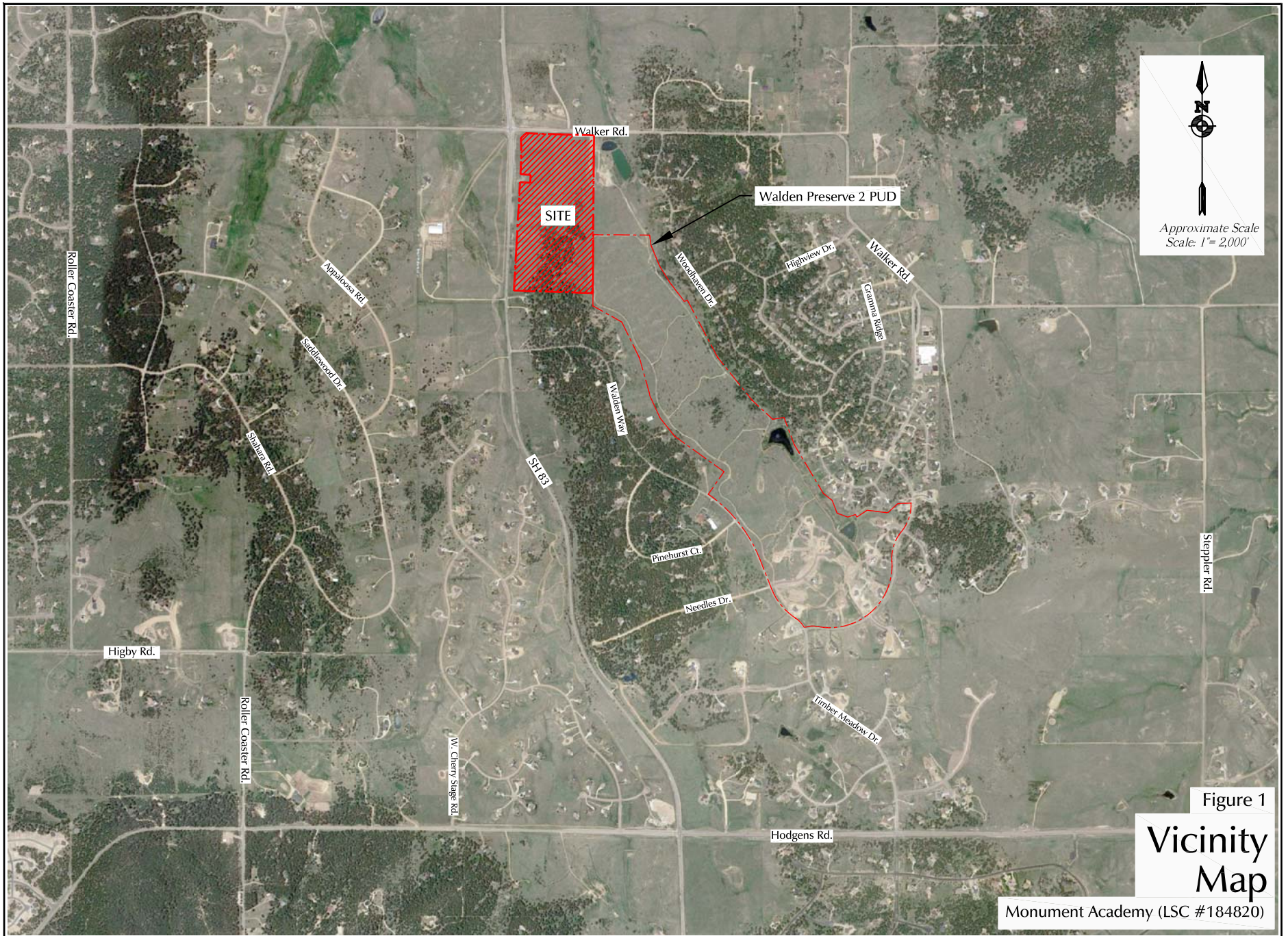
Time	Traffic Volumes ⁽¹⁾⁽²⁾ (vehicles/hour)		All-Way Stop Warrant Criteria				
	Walker	Road "A"	Major Street		Minor Street		Both
			Minimum	Met?	Minimum	Met?	Met?
12:00 AM	3	6	300	No	200	No	No
1:00 AM	3	4	300	No	200	No	No
2:00 AM	1	0	300	No	200	No	No
3:00 AM	1	0	300	No	200	No	No
4:00 AM	21	0	300	No	200	No	No
5:00 AM	66	9	300	No	200	No	No
6:00 AM	182	41	300	No	200	No	No
7:00 AM	732	326	300	Yes	200	Yes	Yes
8:00 AM	218	70	300	No	200	No	No
9:00 AM	156	51	300	No	200	No	No
10:00 AM	154	59	300	No	200	No	No
11:00 AM	159	77	300	No	200	No	No
12:00 PM	177	69	300	No	200	No	No
1:00 PM	178	55	300	No	200	No	No
2:00 PM	435	310	300	Yes	200	Yes	Yes
3:00 PM	253	87	300	No	200	No	No
4:00 PM	333	193	300	Yes	200	No	No
5:00 PM	340	152	300	Yes	200	No	No
6:00 PM	183	61	300	No	200	No	No
7:00 PM	136	66	300	No	200	No	No
8:00 PM	83	35	300	No	200	No	No
9:00 PM	53	20	300	No	200	No	No
10:00 PM	20	3	300	No	200	No	No
11:00 PM	10	4	300	No	200	No	No
Total Hours Met				4		2	2

Notes:

(1) Off-peak through volumes on Walker Road are estimates by LSC based on the peak hour traffic counts and 24-hour traffic counts conducted on Woodhaven Drive and Highview Drive just south of Walker Road in 2012

(2) Off-peak traffic due to Phase 1 and Phase 2 are based on "Hourly Distribution of Entering and Exiting Vehicle Trips by Land Use" published by the Institute of Transportation Engineers in Augusts 2018

Source: LSC Transportation Consultants, Inc.

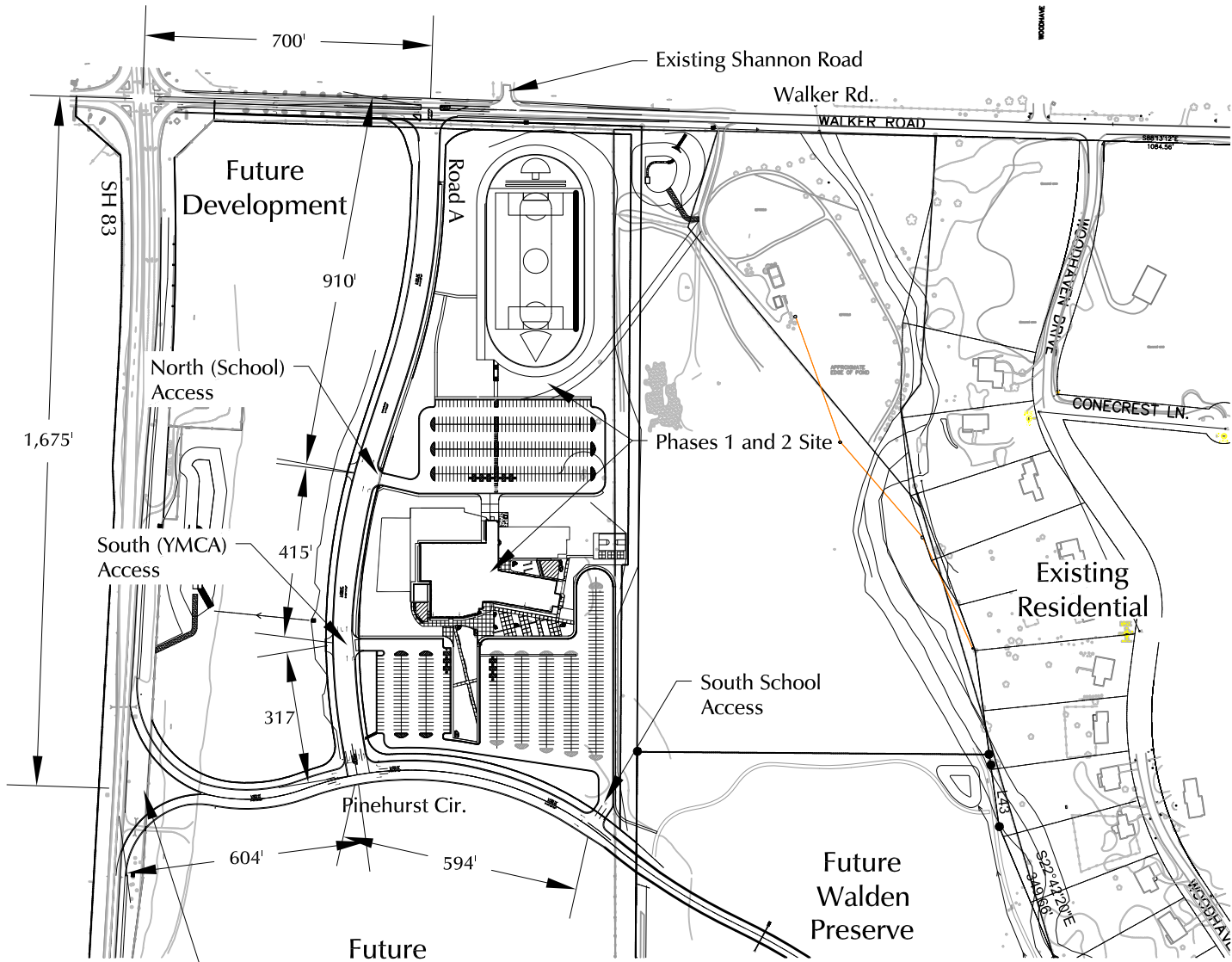


Approximate Scale
Scale: 1" = 2,000'

Figure 1

Vicinity Map

Monument Academy (LSC #184820)



Proposed Right-In/Right-Out
Only Access (Future Phase)

Figure 2
**Phases 1 and 2
 Site Plan**

Monument Academy (LSC #184820)

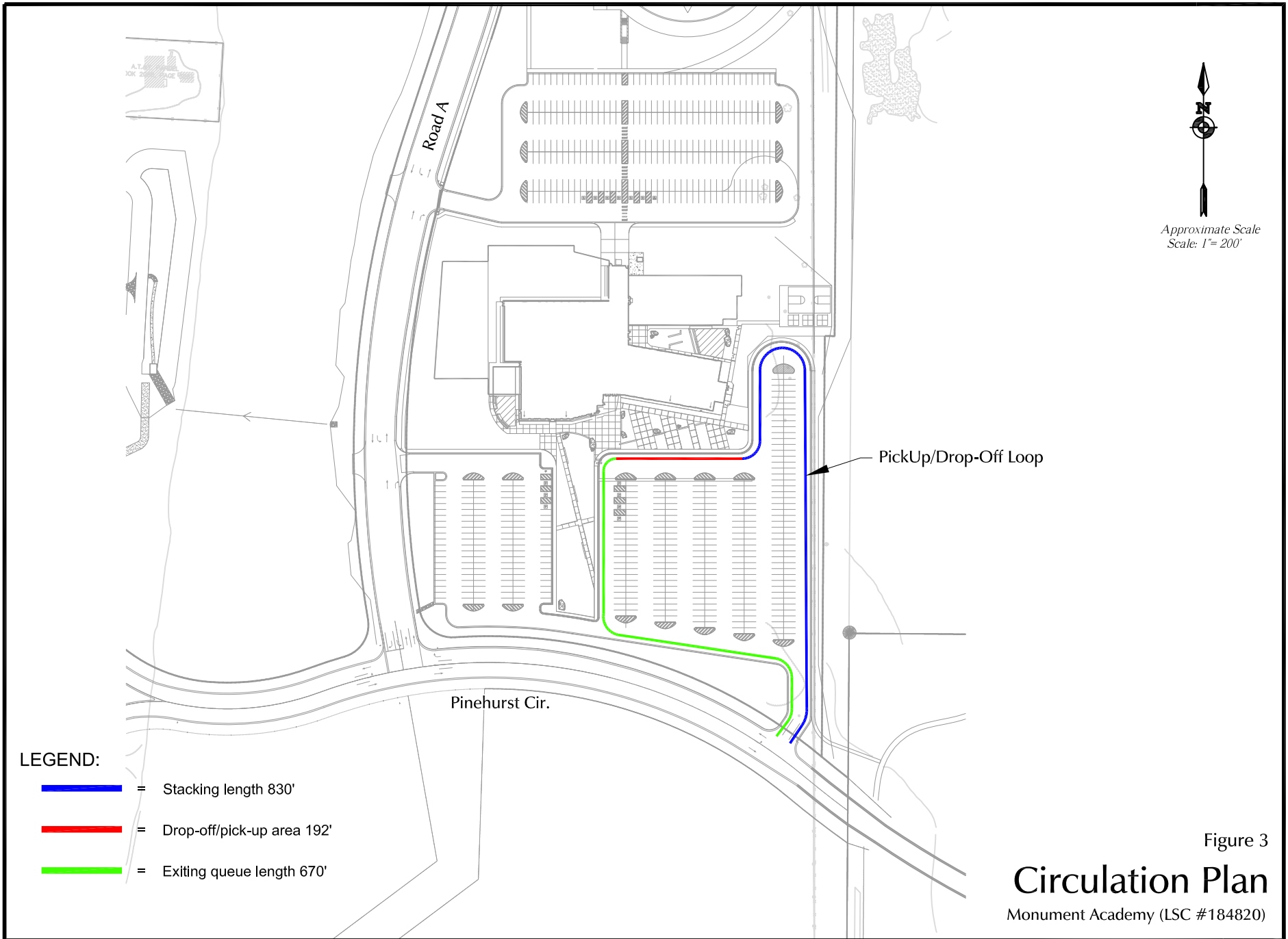
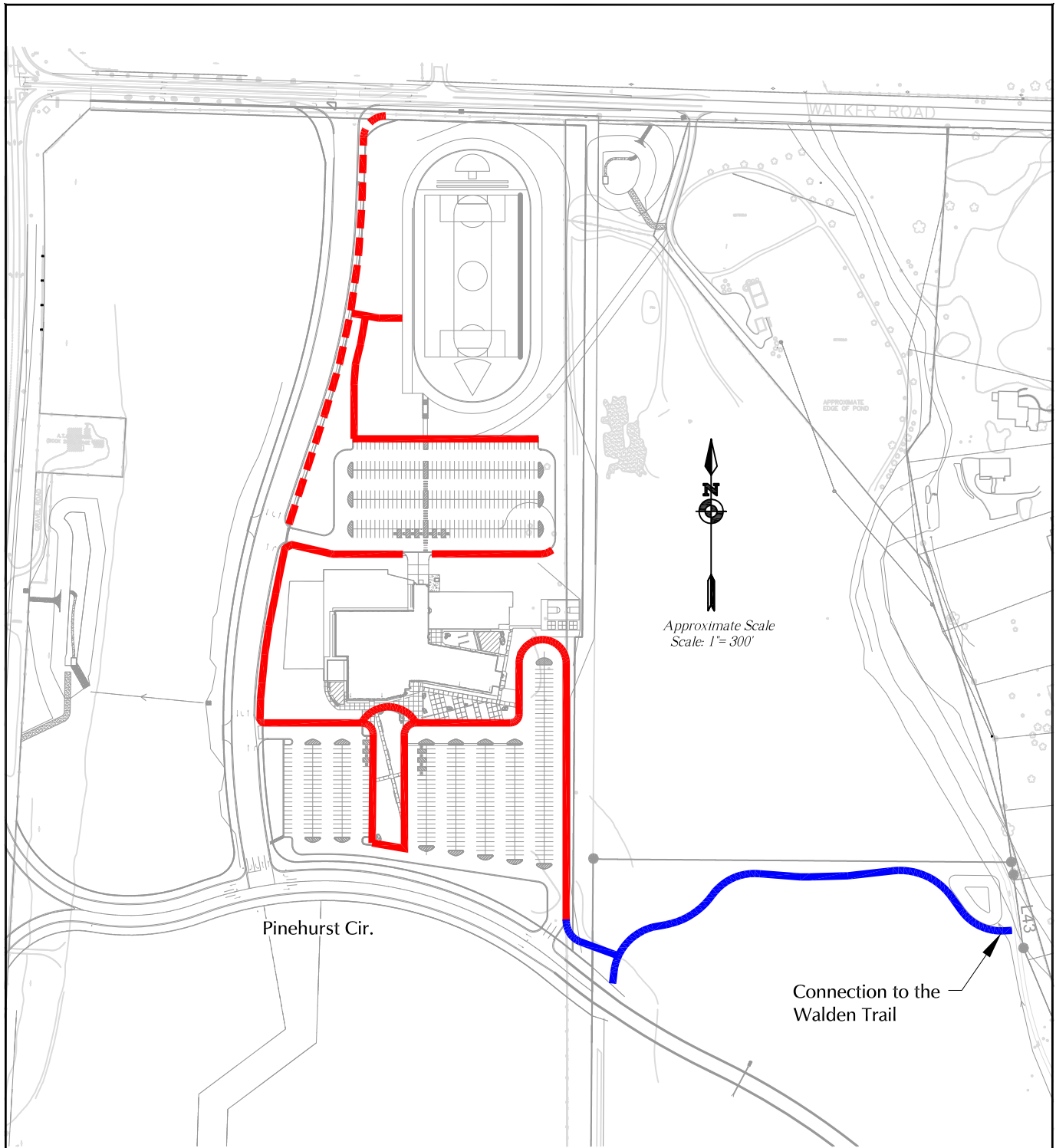


Figure 3

Circulation Plan

Monument Academy (LSC #184820)



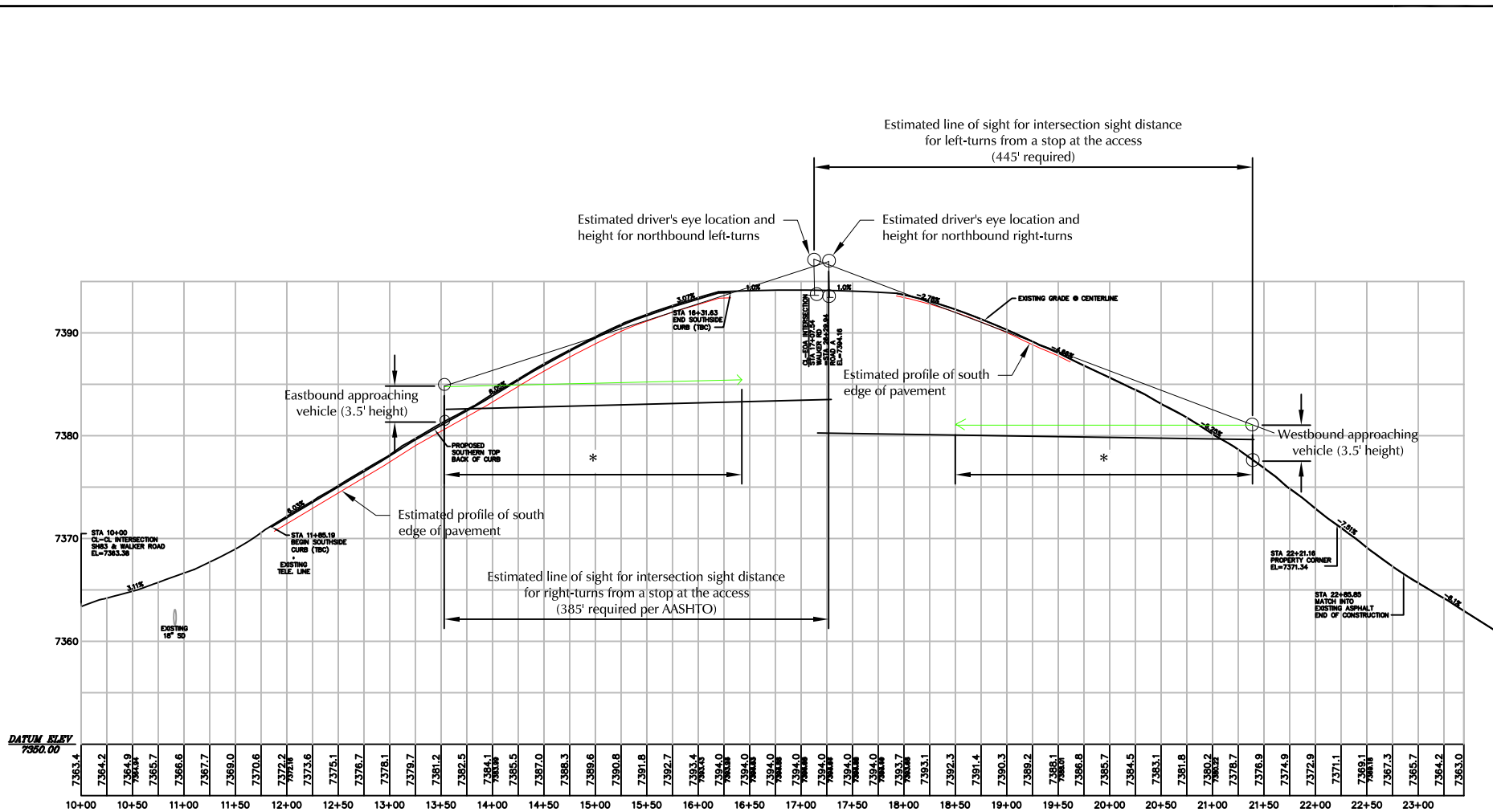
LEGEND:

- = Sidewalk
- - - - = Future Sidewalk
- = Trail Connection

Figure 4

Pedestrian and Bicycle Plan

Monument Academy (LSC #184820)



* ECM required stopping sight distance (289' based on design speed of 40mph adjusted for grade over 3%)

Figure 5
Sight Distance at Walker and Road A
 Monument Academy (LSC #184820)



Approximate Scale
Scale: 1" = 120'

* Note: Based on a posted speed limit of 35mph (40mph design speed).

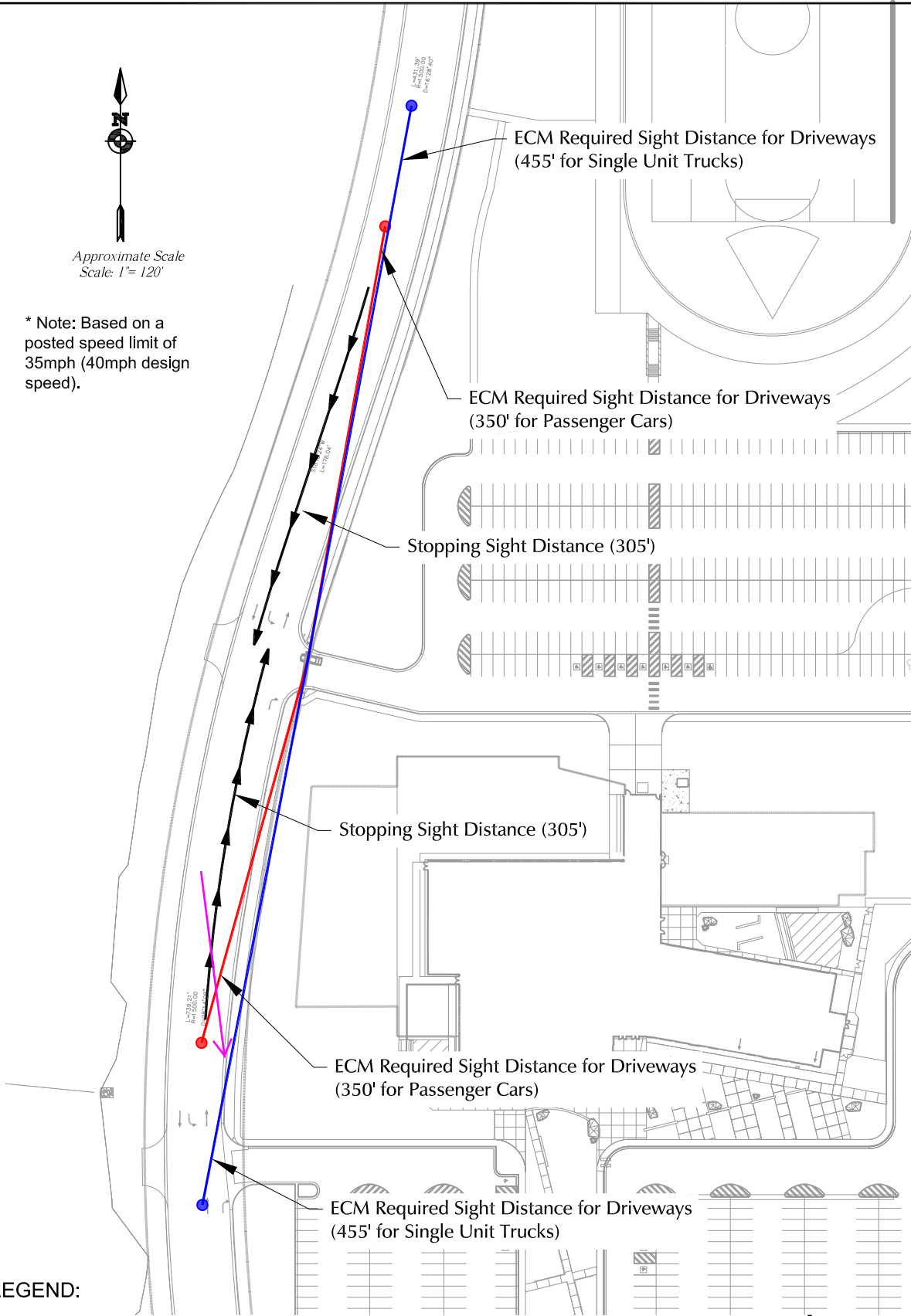


Figure 6

Sight Distance North School Access

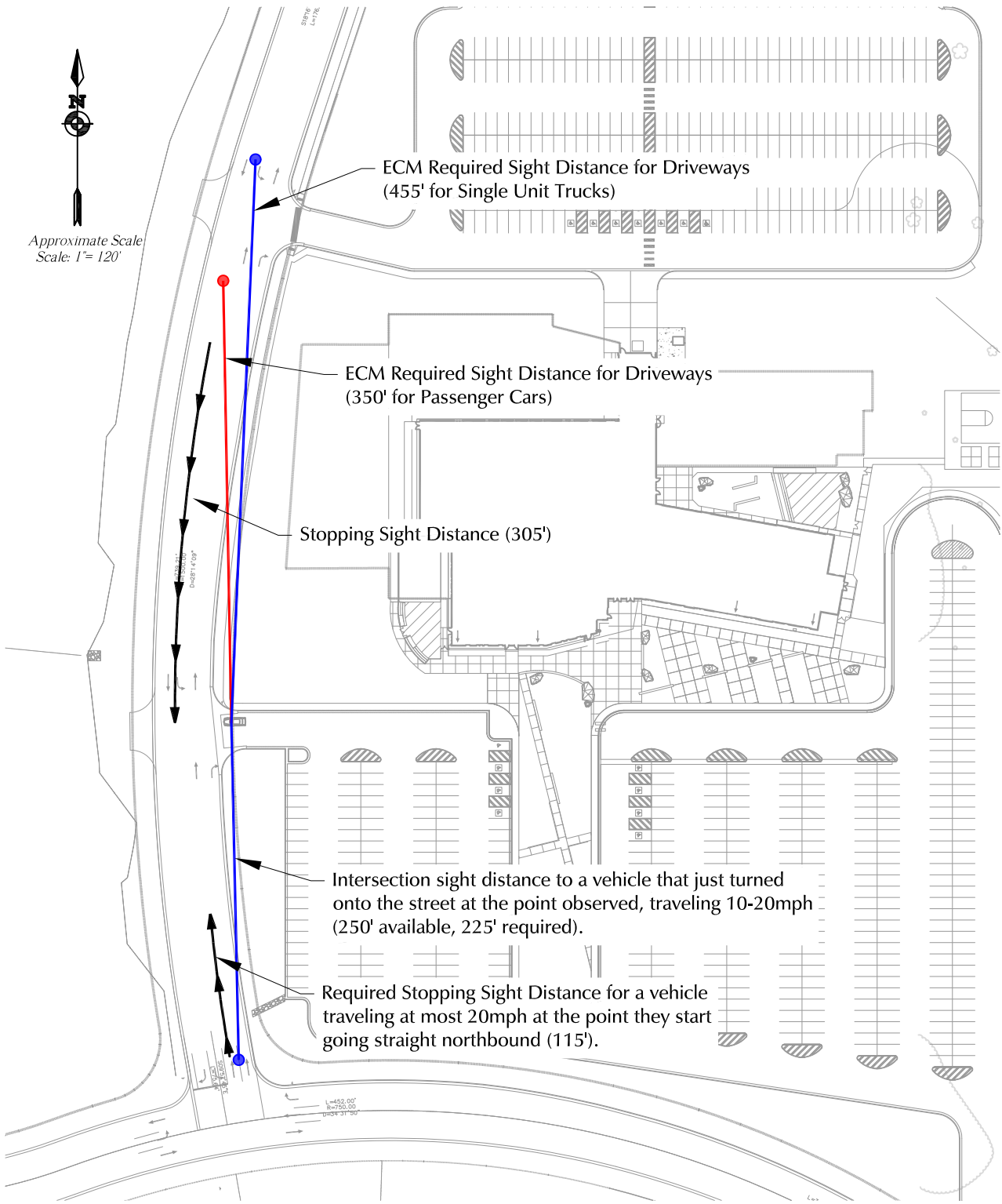
Monument Academy (LSC #184820)

LEGEND:

- = Required intersection sight distance for passenger cars
- = Required intersection sight distance for single-unit trucks
- ↔ = Required stopping sight distance



Approximate Scale
Scale: 1" = 120'



LEGEND:




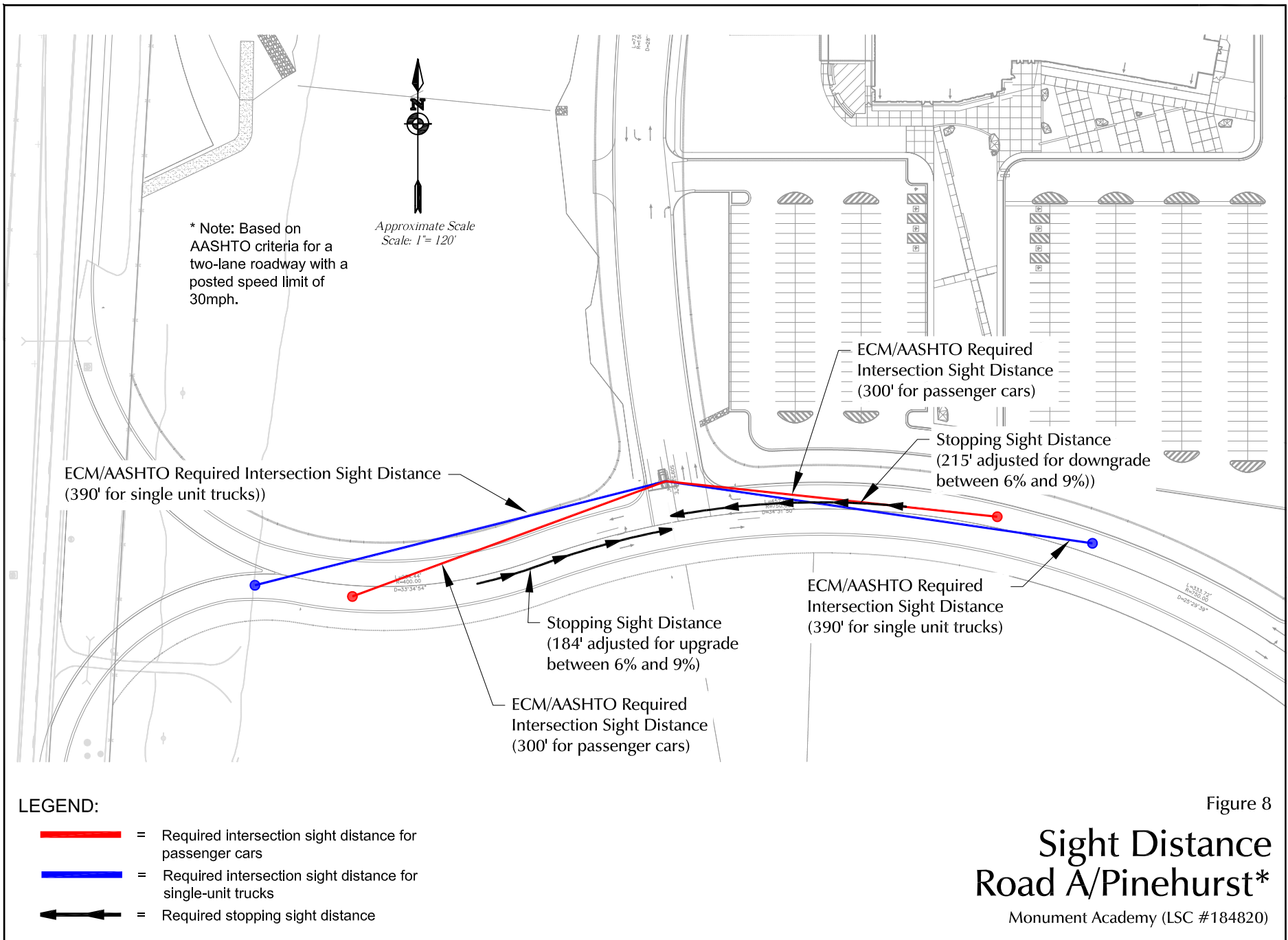
-  = Required intersection sight distance for passenger cars
-  = Required intersection sight distance for single-unit trucks
-  = Required stopping sight distance

Figure 7

Sight Distance YMCA Access

Monument Academy (LSC #184820)



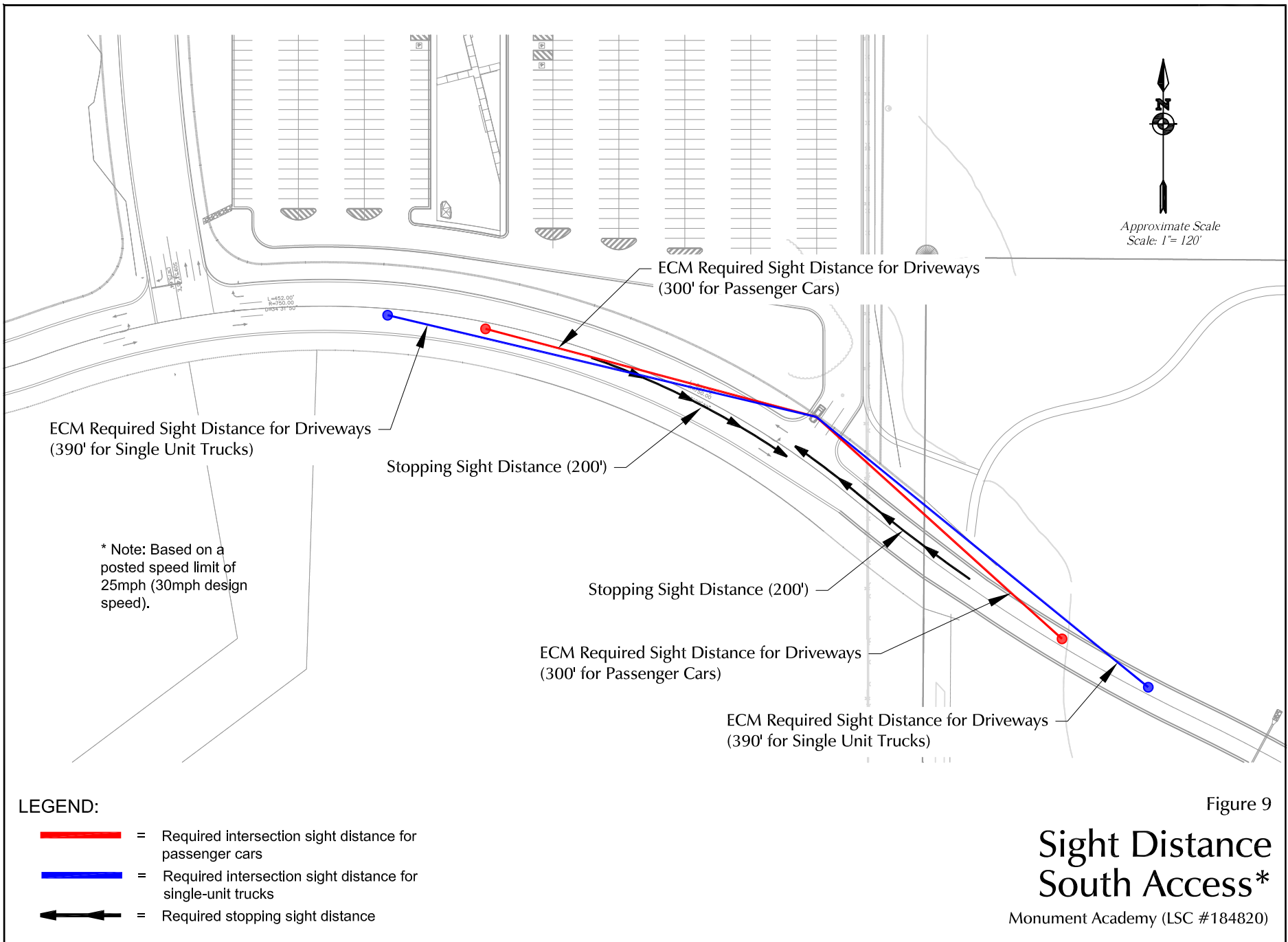


Figure 9

Sight Distance South Access*

Monument Academy (LSC #184820)

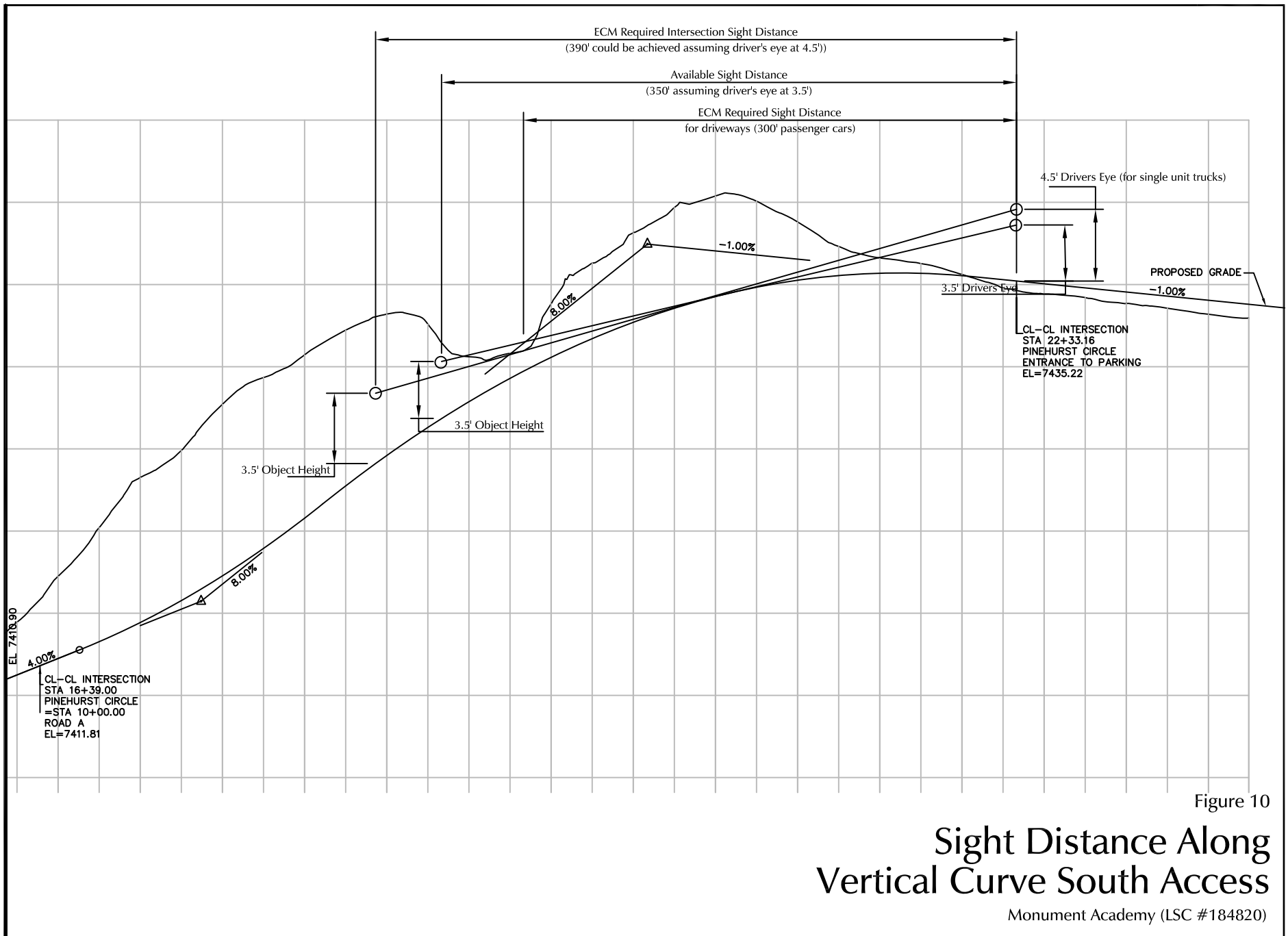
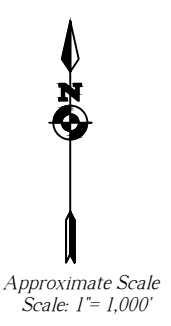
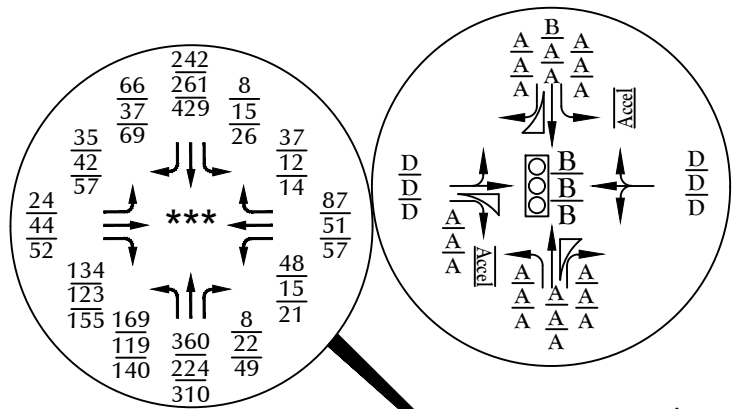


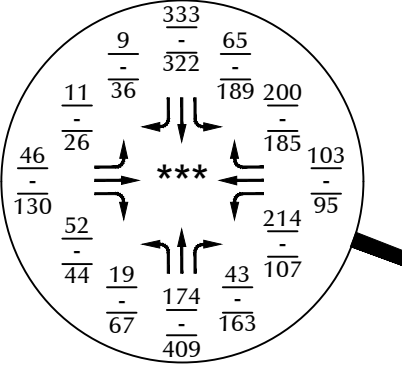
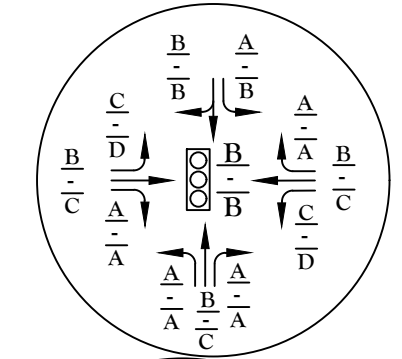
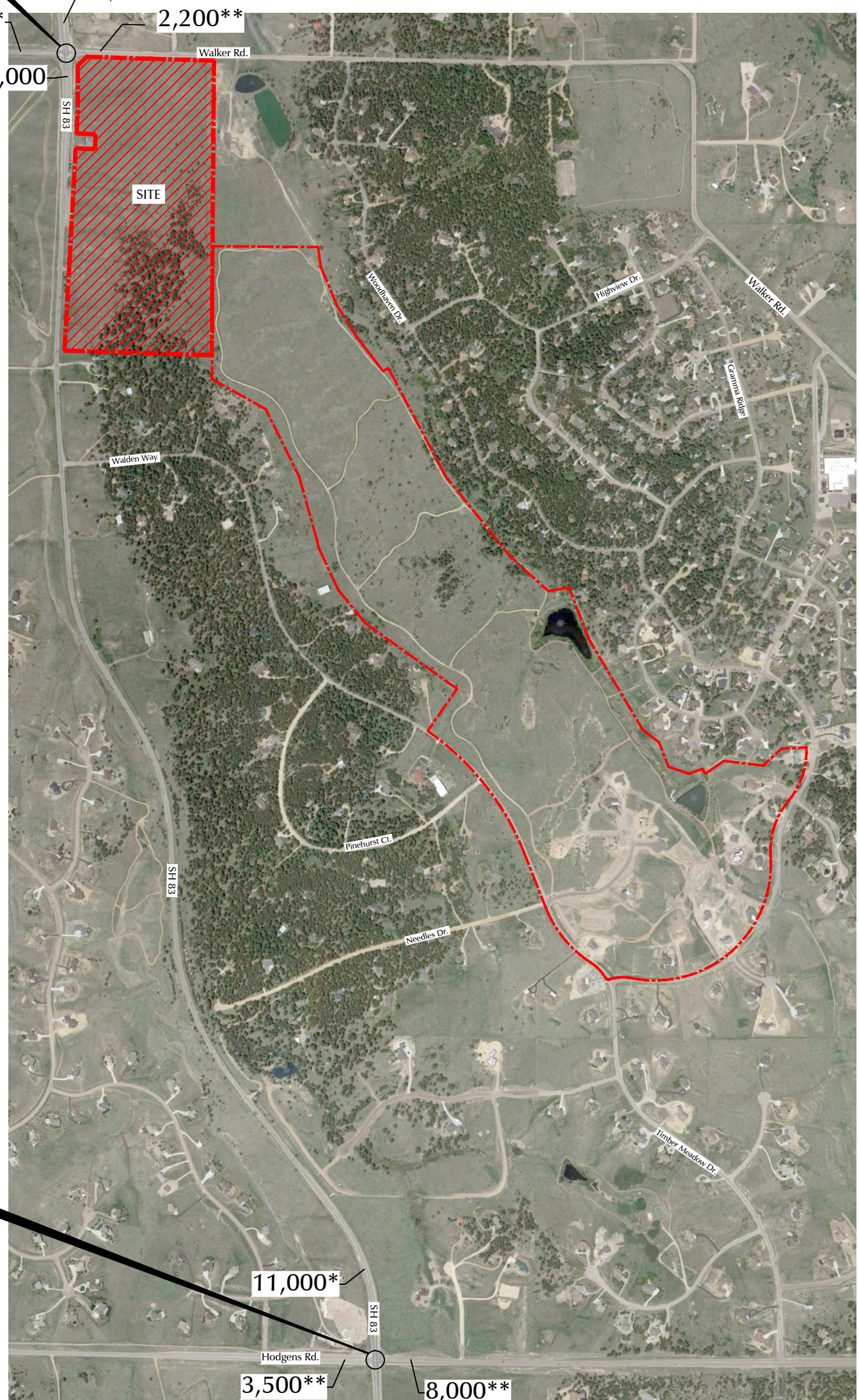
Figure 10

Sight Distance Along Vertical Curve South Access

Monument Academy (LSC #184820)



* CDOT 2018 AADT
 ** Estimates by LSC
 *** Southbound through volume adjusted based on more recent count at Walden/SH 83



LEGEND:

- = Traffic Signal
- XX = AM Weekday Peak-Hour Traffic (6:45-7:45am)(vehicles per hour)
- XX = School Peak-Hour Traffic (2:00-3:00pm)
- XX = PM Weekday Peak-Hour Traffic (vehicles per hour)
- A = AM Individual Movement Peak-Hour Level of Service
- B = School Individual Movement Peak-Hour Level of Service
- C = PM Individual Movement Peak-Hour Level of Service
- C = AM Entire Intersection Peak-Hour Level of Service
- C = School Entire Intersection Peak-Hour Level of Service
- C = PM Entire Intersection Peak-Hour Level of Service
- X,XXX= Average Daily Traffic (vehicles per day)



Figure 11
**Existing Traffic, Lane Geometry,
 Traffic Control and Level of Service**
 Monument Academy (LSC #184820)

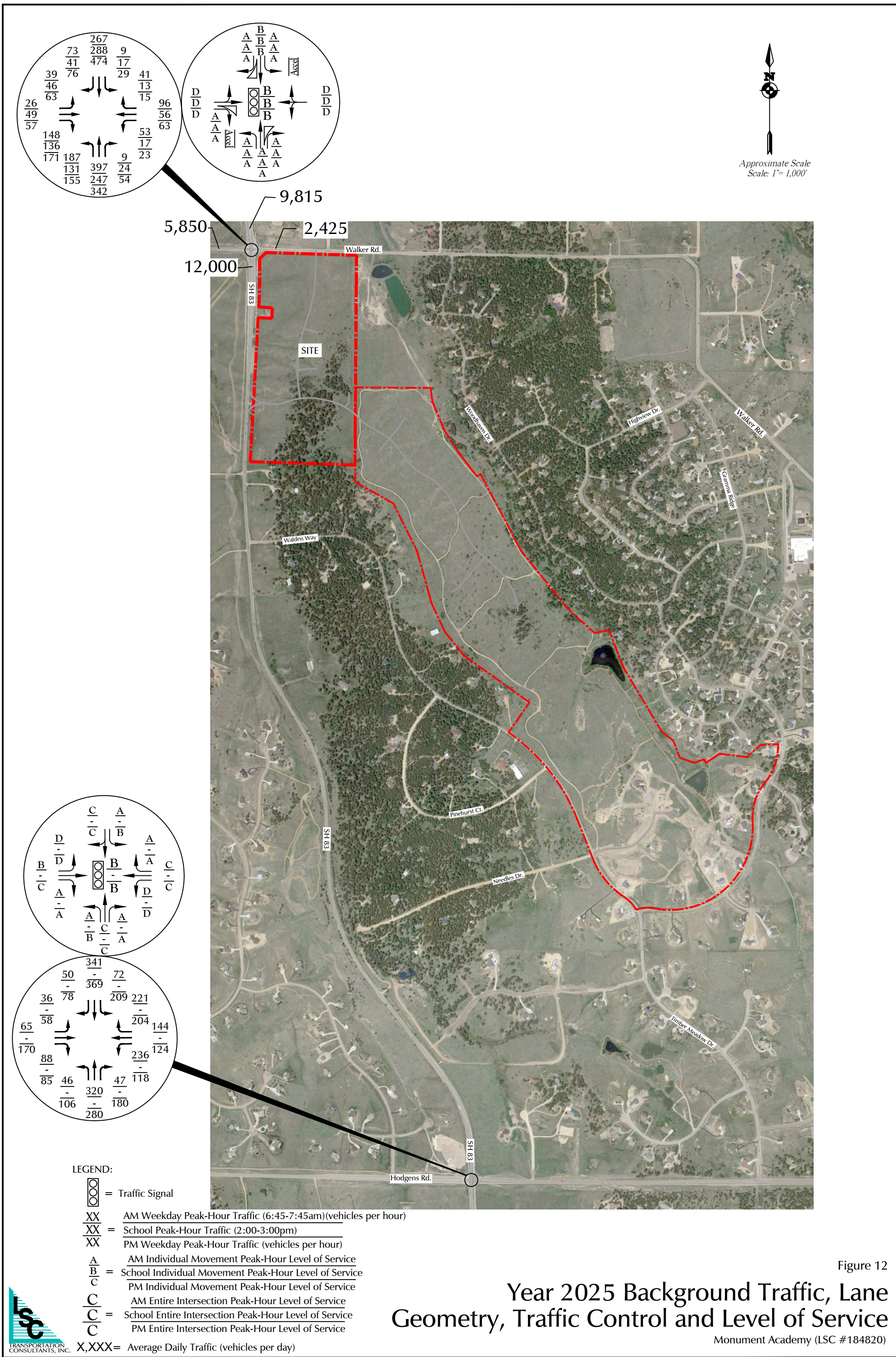


Figure 12

Year 2025 Background Traffic, Lane Geometry, Traffic Control and Level of Service

Monument Academy (LSC #184820)

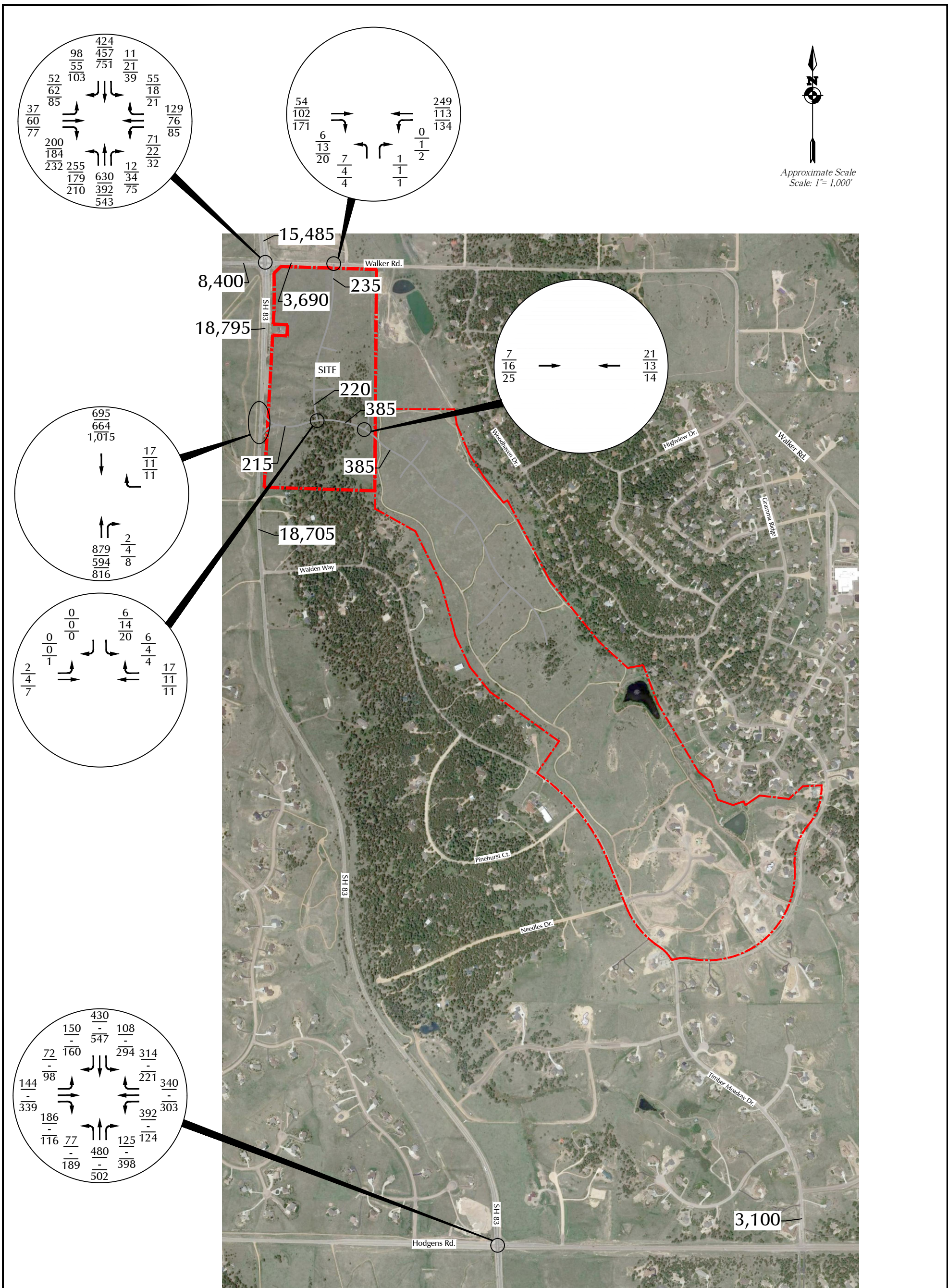
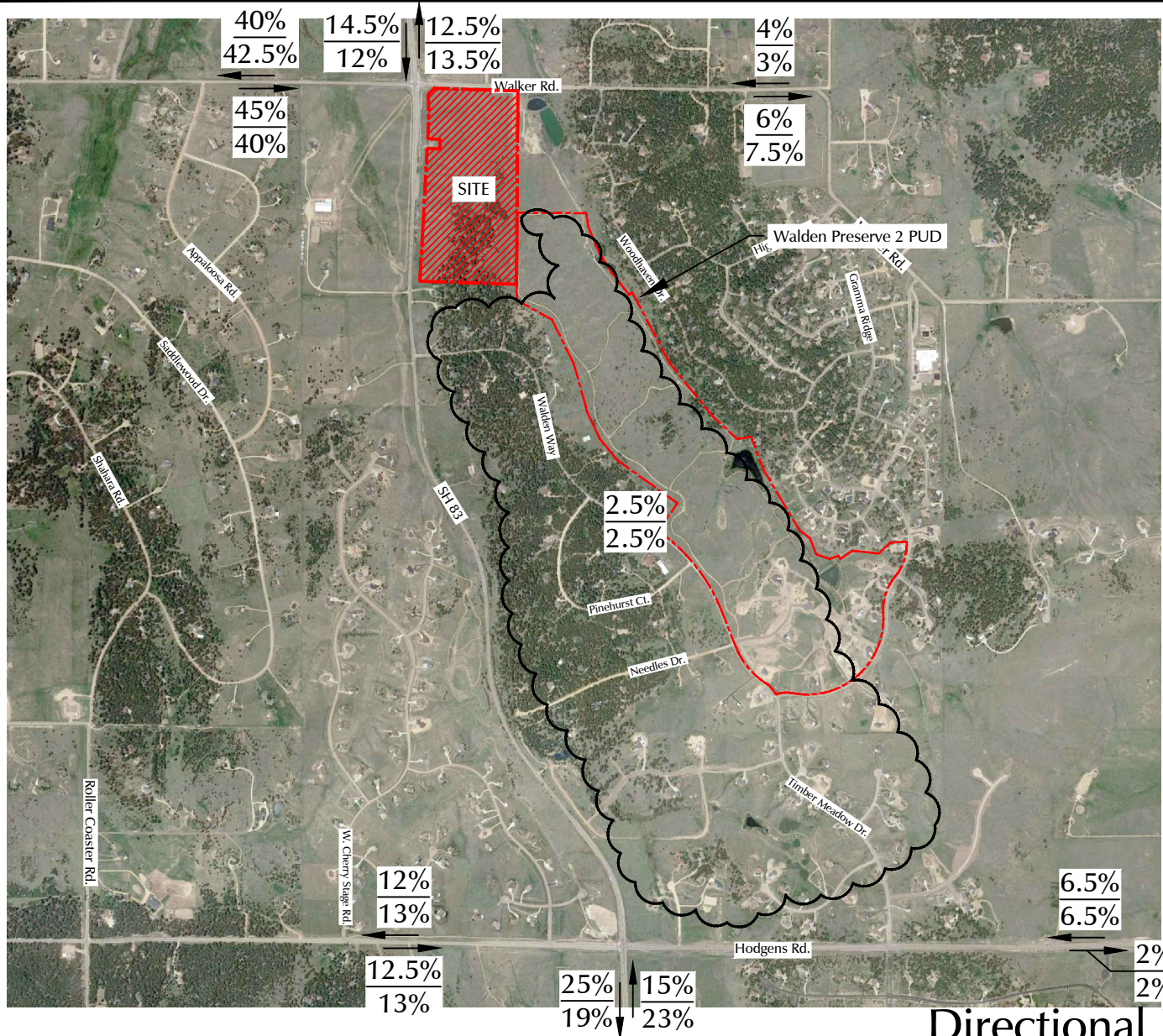



Figure 13

Year 2040 Background Traffic with No Redevelopment North of Walker Road

Monument Academy (LSC #184820)

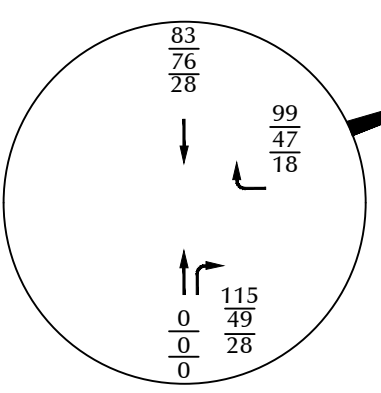
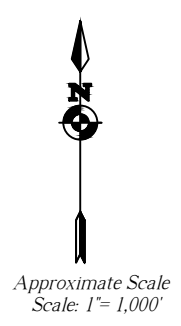
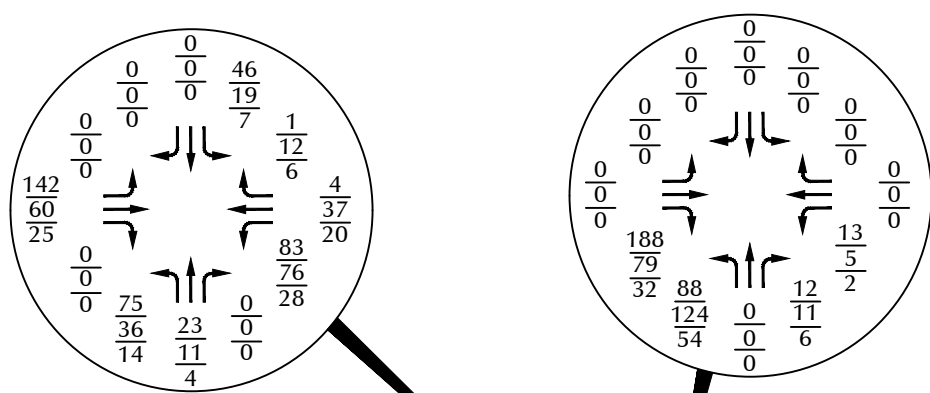





 Approximate Scale
 Scale: 1" = 2,000'

LEGEND:
 = AM Percent Directional Distribution
 = PM Percent Directional Distribution

Figure 14
Directional Distribution of Site-Generated Traffic
 Monument Academy (LSC #184820)



LEGEND:

- $\frac{XX}{XX}$ = AM Weekday Peak-Hour Traffic (vehicles per hour)
- $\frac{XX}{XX}$ = School Peak-Hour Traffic (2:00-3:00pm)
- $\frac{XX}{XX}$ = PM Weekday Peak-Hour Traffic (vehicles per hour)
- X,XXX= Average Daily Traffic (vehicles per day)



Figure 15
**Short-Term Assignment
of Phase 1 Only Site-Generated Traffic**
Monument Academy (LSC #184820)

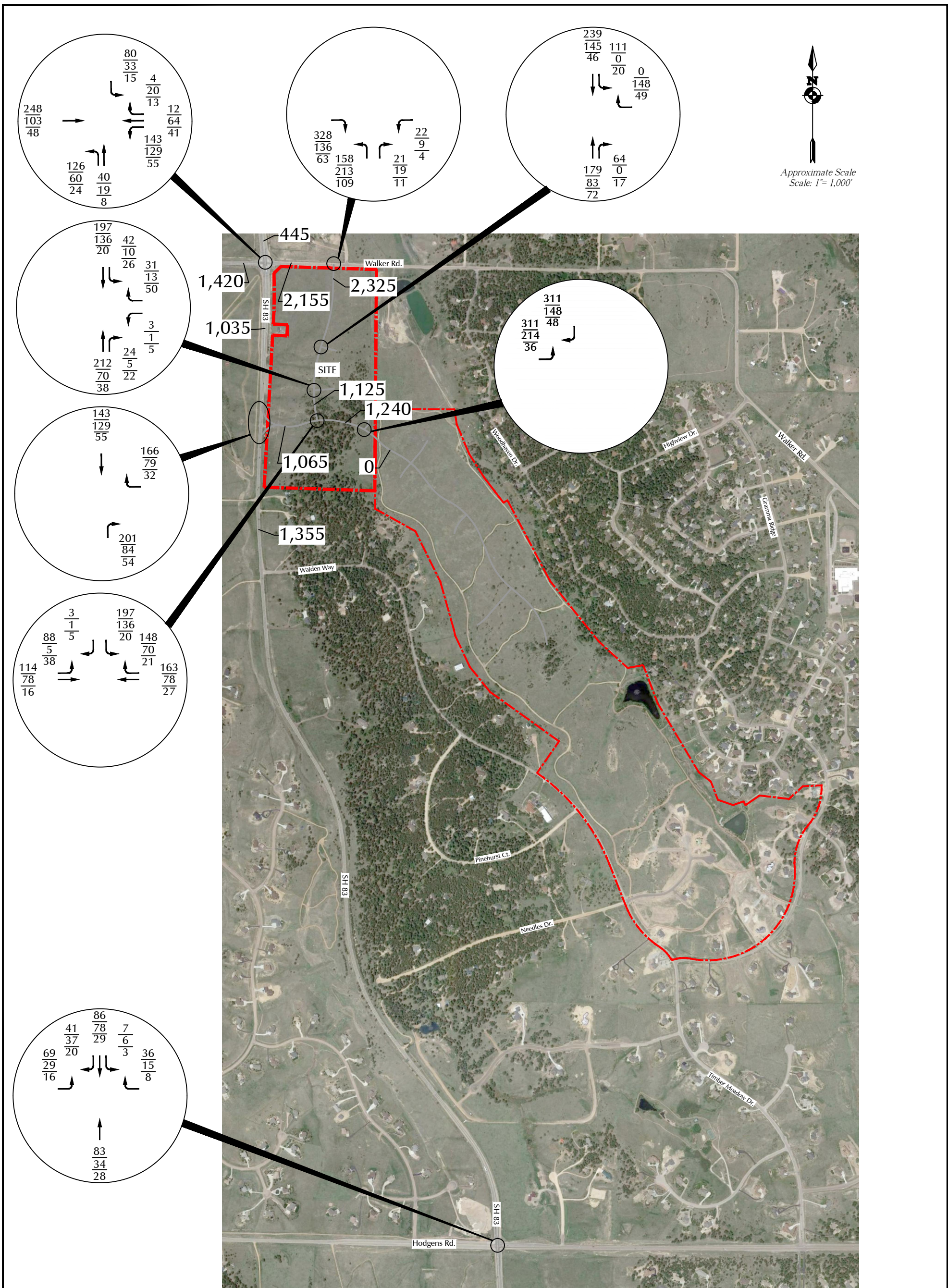


Figure 16

LEGEND:

- XX = AM Weekday Peak-Hour Traffic (vehicles per hour)
- XX = School Peak-Hour Traffic (2:00-3:00pm)
- XX = PM Weekday Peak-Hour Traffic (vehicles per hour)
- X,XXX = Average Daily Traffic (vehicles per day)

Short-Term Assignment of Phases 1 and 2 Site-Generated Traffic with Right-In/Right-Out Access at Pinehurst/SH 83

Monument Academy (LSC #184820)



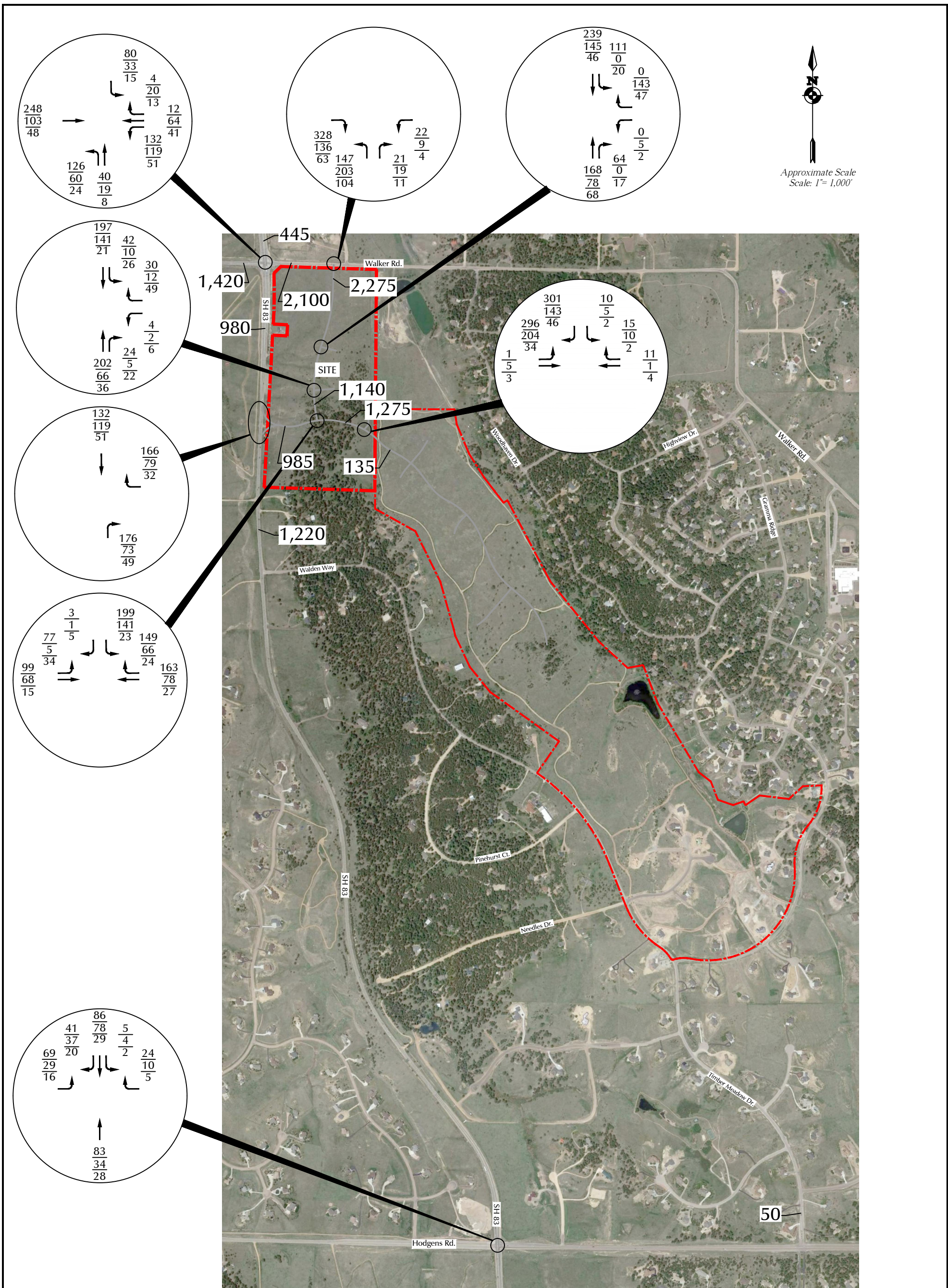


Figure 17

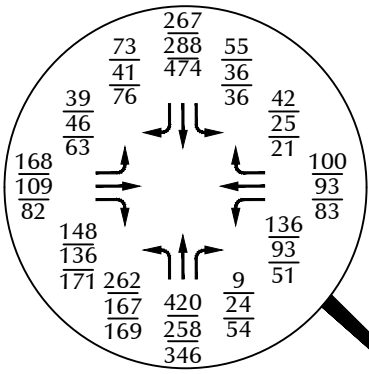
LEGEND:

- XX AM Weekday Peak-Hour Traffic (vehicles per hour)
- XX = School Peak-Hour Traffic (2:00-3:00pm)
- XX PM Weekday Peak-Hour Traffic (vehicles per hour)
- X,XXX= Average Daily Traffic (vehicles per day)

Long-Term Assignment of Phase 1 and 2 Site-Generated Traffic with Right-In/Right-Out Access at Pinehurst/SH 83

Monument Academy (LSC #184820)





Approximate Scale
Scale: 1" = 1,000'



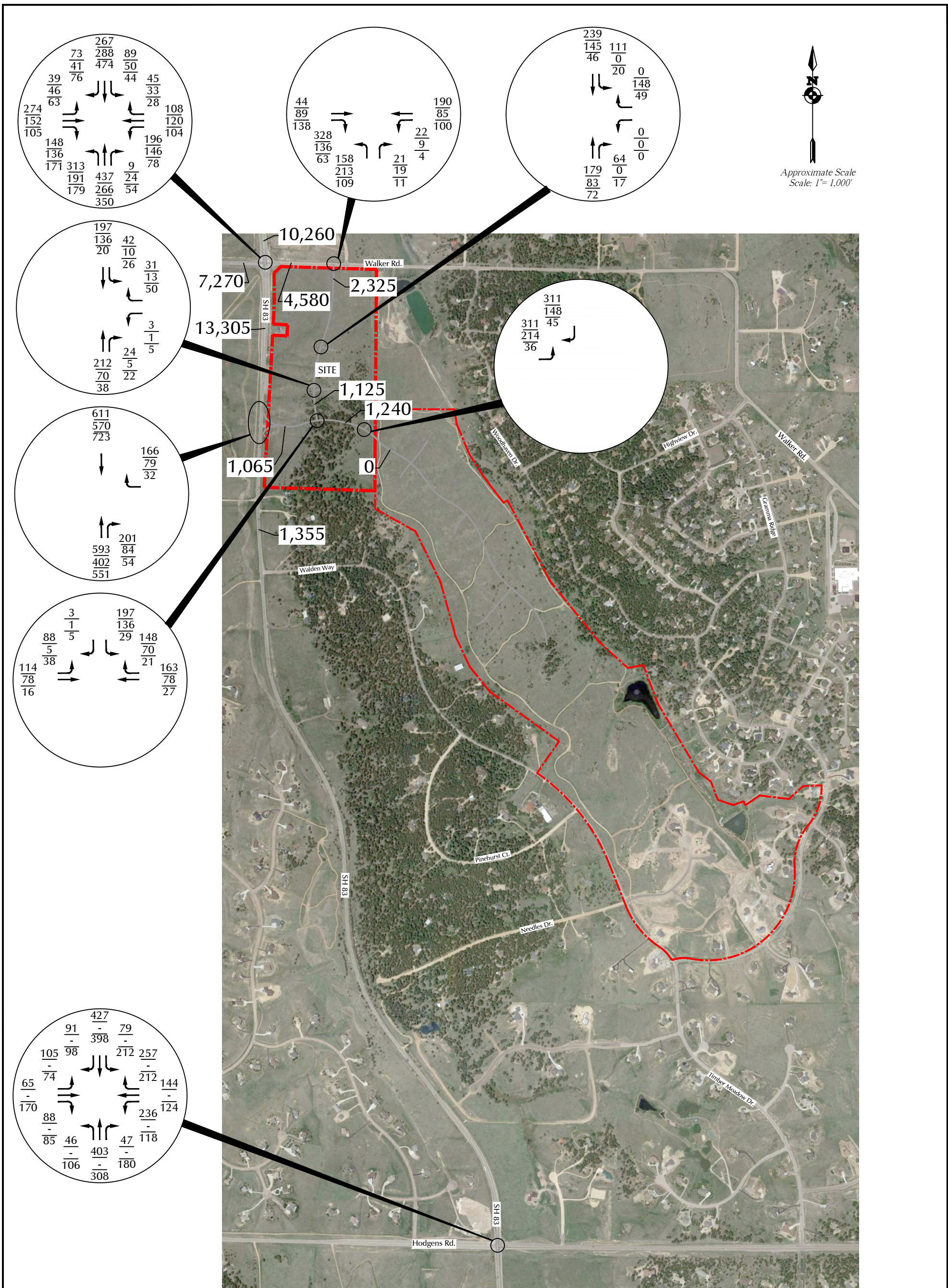
LEGEND:

- XX = AM Weekday Peak-Hour Traffic (vehicles per hour)
- XX = School Peak-Hour Traffic (2:00-3:00pm)
- XX = PM Weekday Peak-Hour Traffic (vehicles per hour)
- X,XXX = Average Daily Traffic (vehicles per day)



Figure 18
Year 2025
Total Traffic With Phase 1 Only

Monument Academy (LSC #184820)



LEGEND:

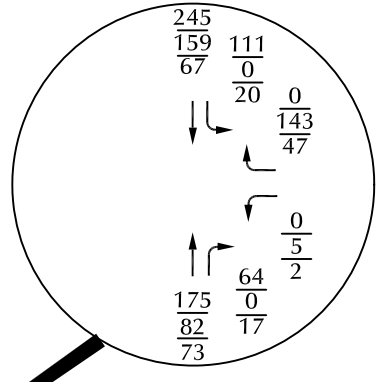
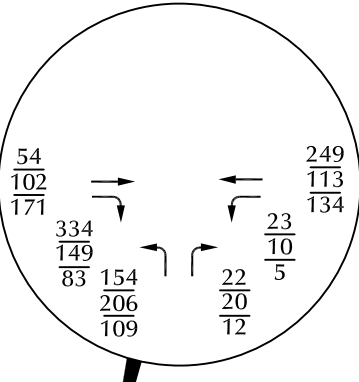
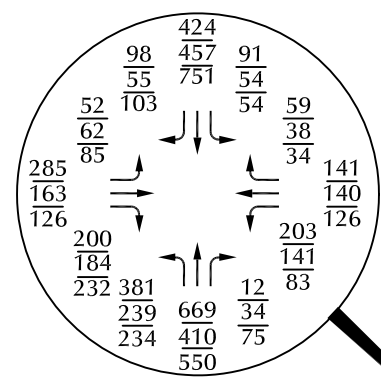
- XX AM Weekday Peak-Hour Traffic (vehicles per hour)
- XX = School Peak-Hour Traffic (2:00-3:00pm)
- XX PM Weekday Peak-Hour Traffic (vehicles per hour)
- X,XXX= Average Daily Traffic (vehicles per day)

Year 2025 Total Traffic with Right-In/Right-Out Access at Pinehurst/SH 83

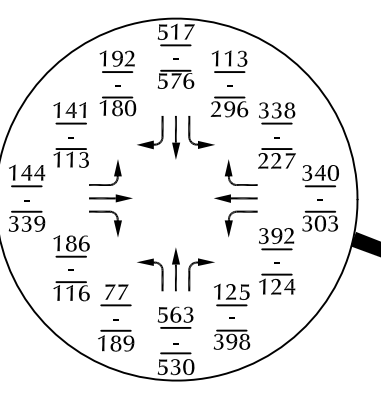
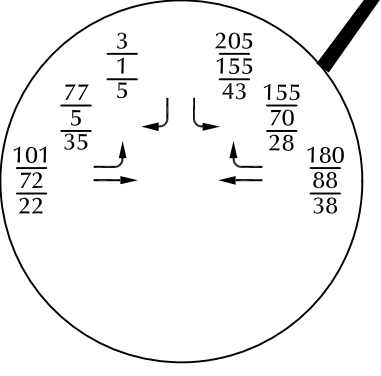
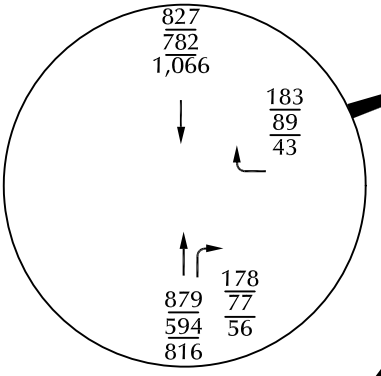
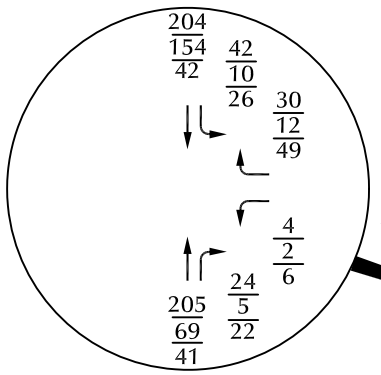
Figure 19

Monument Academy (LSC #184820)





Approximate Scale
Scale: 1" = 1,000'

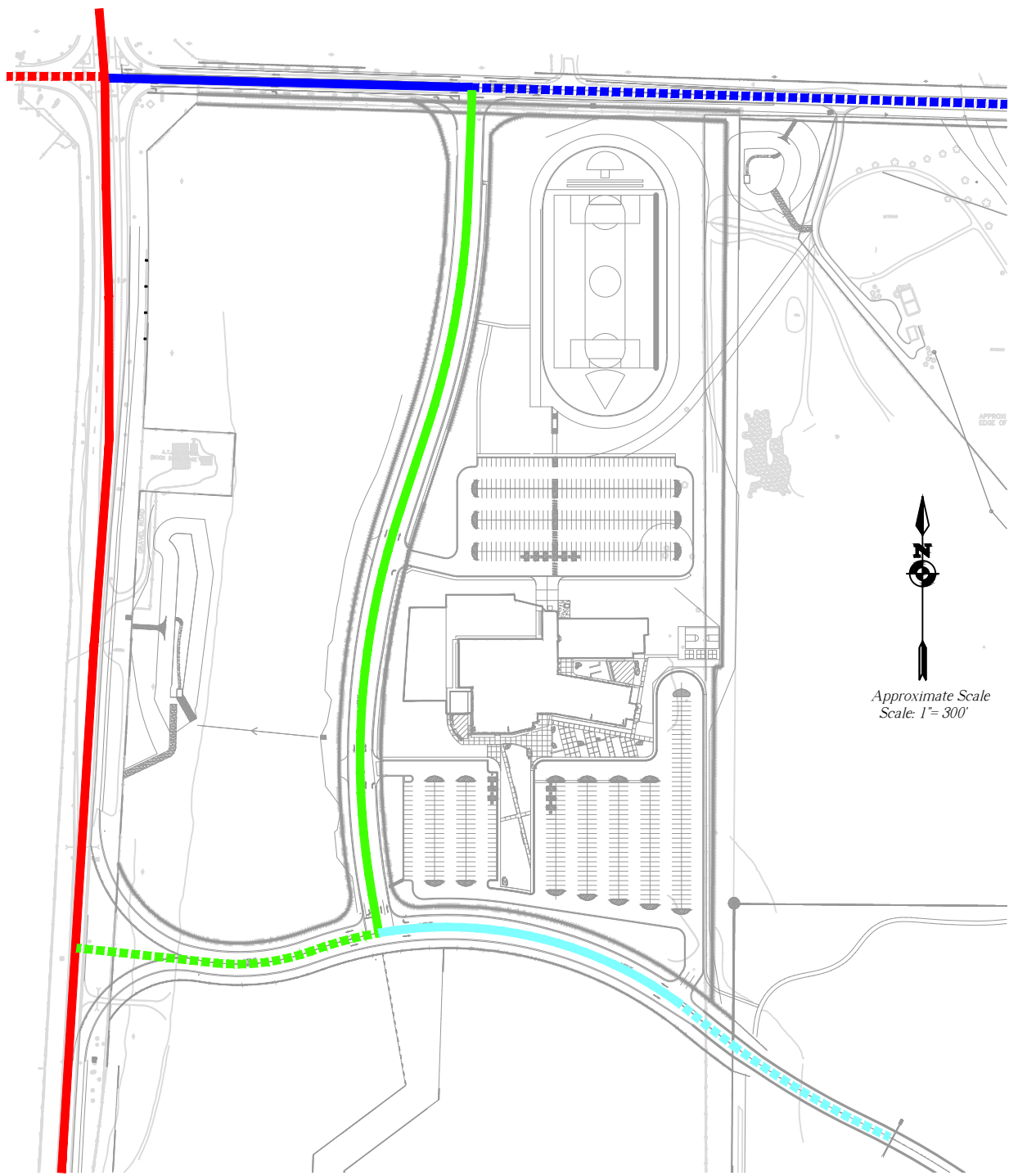


LEGEND:
 XX = AM Weekday Peak-Hour Traffic (vehicles per hour)
 XX = School Peak-Hour Traffic (2:00-3:00pm)
 XX = PM Weekday Peak-Hour Traffic (vehicles per hour)
 X,XXX = Average Daily Traffic (vehicles per day)



Figure 20
2040 Total Traffic

Monument Academy (LSC #184820)

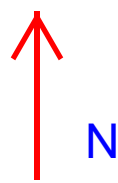
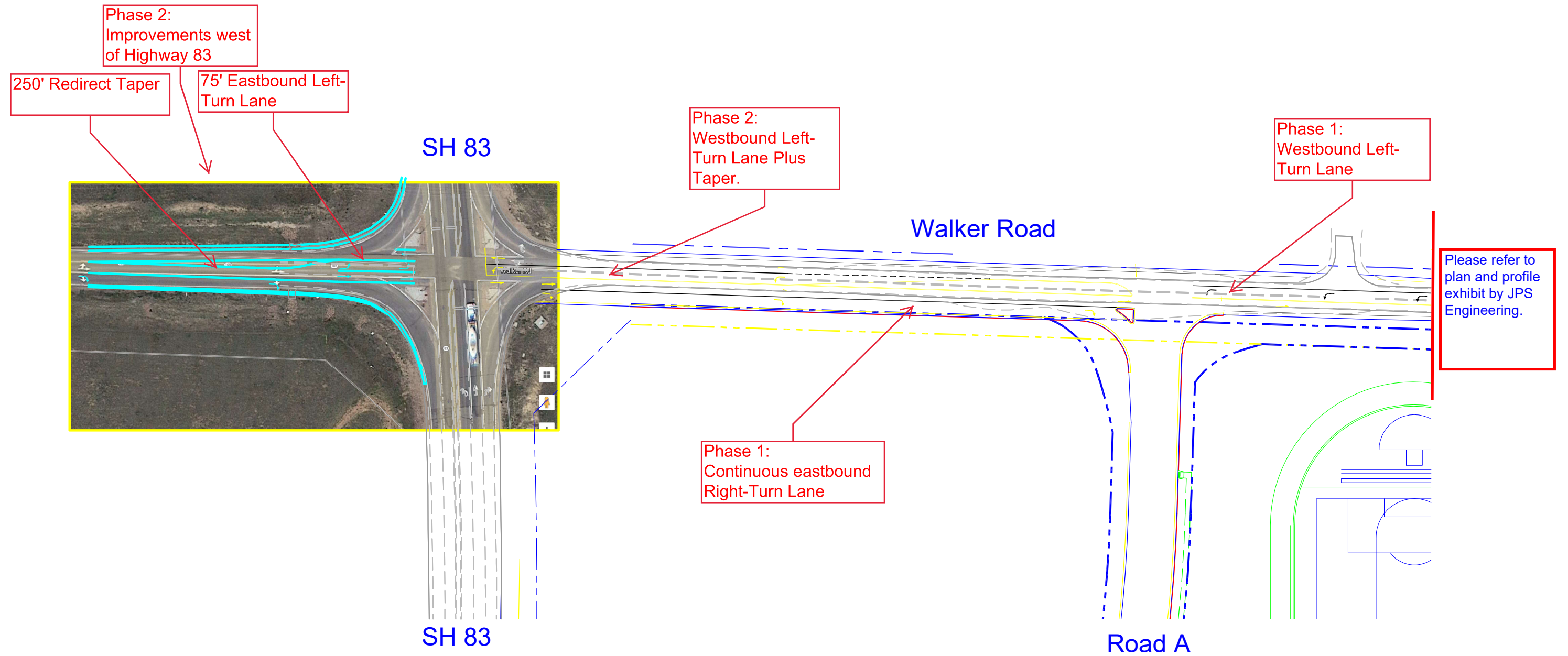


Approximate Scale
Scale: 1" = 300'

LEGEND:

- = Regional Highway (CDOT R-A)
- - - - = Three Lane, Rural Principal Arterial
- = Urban Minor Arterial
- - - - = Rural Minor Arterial
- = Urban Non-Residential Collector
- - - - = Rural Minor Collector
- = Urban Local
- - - - = Rural Local

Figure 21
Roadway Classifications
Monument Academy (LSC #184820)

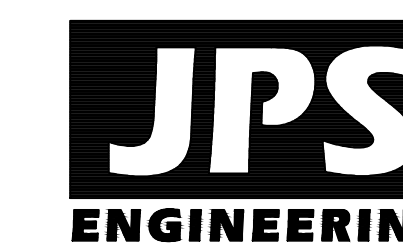
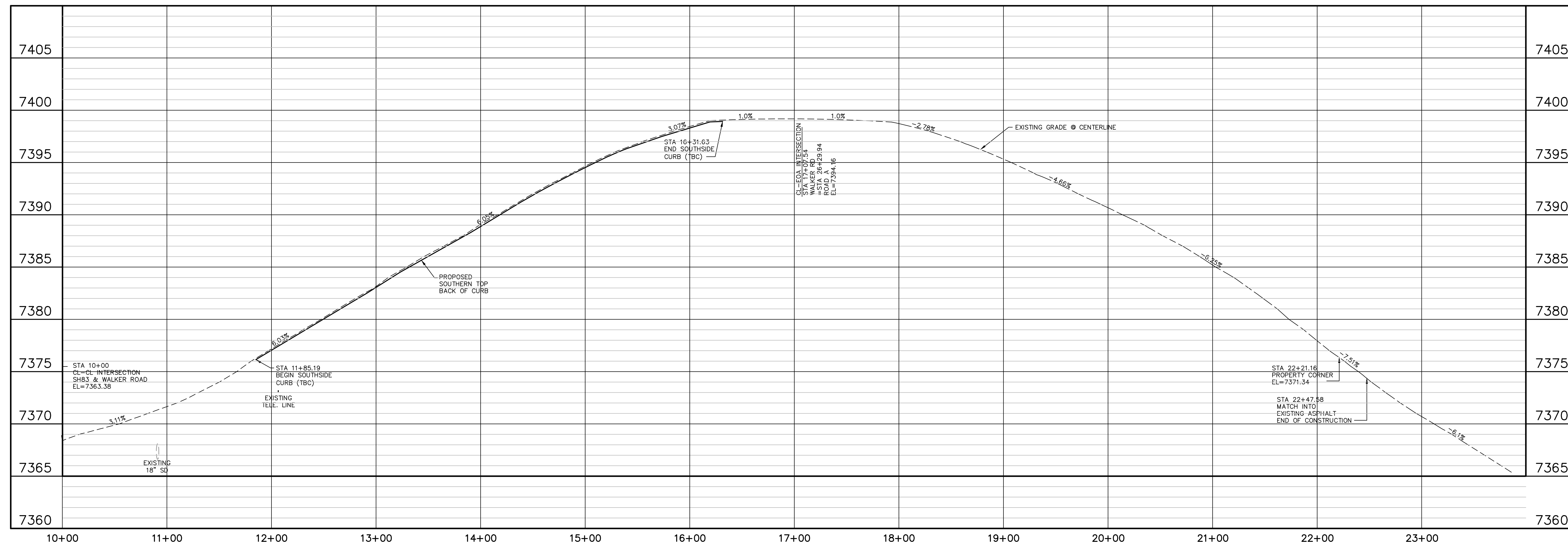
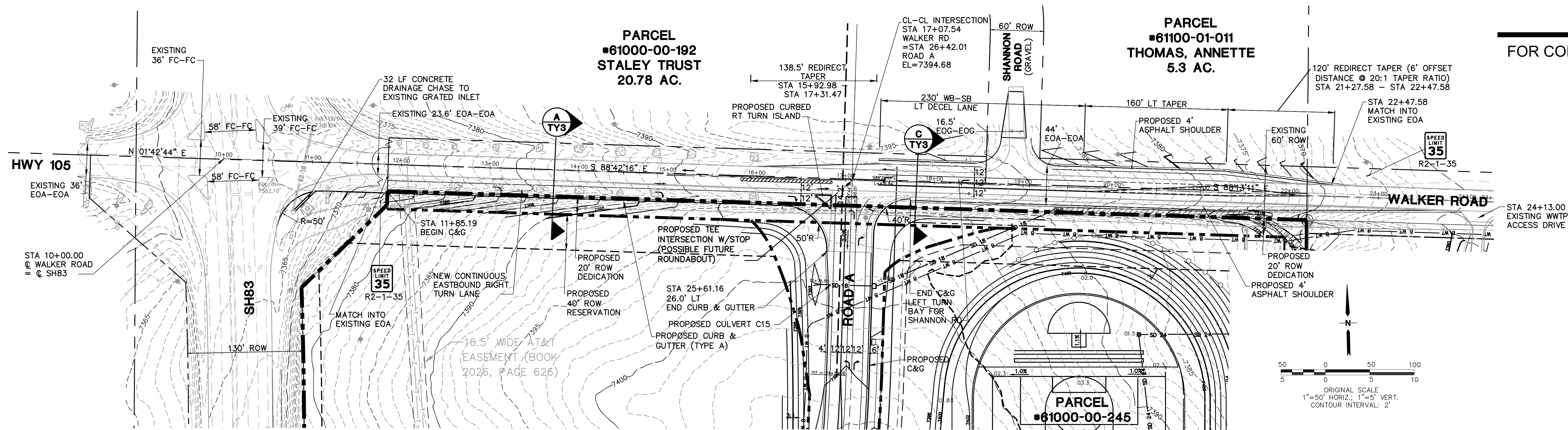


1"=100'
(on 11x17)

Exhibit 1: Phases 1 and 2 Walker Road Auxiliary Turn Lanes

MONUMENT ACADEMY HIGH SCHOOL

FOR CONSTRUCTION



19 E. Willamette Ave.
Colorado Springs, CO
80903

PH: 719-477-9429
FAX: 719-471-0766
www.jpsengr.com

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CRP ARCHITECTS AIA
100 E. St. Vrain, Suite 300
Colorado Springs, Colorado 80903

WALKER ROAD PLAN & PROFILE

NO.	REVISION	BY	DATE
1	FOR PERMIT	JPS	4/22/19
2	COUNTY COMMENTS	JPS	4/29/19
3	COUNTY COMMENTS	JPS	8/14/19

NORTH	
DATE:	2/08/19
DRAWN BY:	BJJ
CHECKED BY:	JPS
REVISED:	8/14/19

PCD PROJECT NO. PPR-19-009

PP4

Internal Trip Capture Estimate



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

Table 1-A: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)						
Land Use	Development Data (For Information Only)			Estimated Vehicle-Trips ³		
	ITE LUCs ¹	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 ²				0		
				1,120	666	454

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

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 ⁵	870	541	329
External Transit-Trips ⁶	0	0	0
External Non-Motorized Trips ⁶	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

¹Land Use Codes (LUCs) from *Trip Generation Manual*, published by the Institute of Transportation Engineers.

²Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator.

³Enter trips assuming no transit or non-motorized trips (as assumed in *ITE Trip Generation Manual*).

⁴Enter 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.

⁵Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A.

⁶Person-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			
Project Name:	Walden North	Organization:	LSC Transportation Consultants, Inc.
Project Location:	SH 83/Walker	Performed By:	KDF
Scenario Description:	Buildout	Date:	1/16/2019
Analysis Year:	2040	Checked By:	
Analysis Period:	PM Street Peak Hour	Date:	

Table 1-P: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)						
Land Use	Development Data (For Information Only)			Estimated Vehicle-Trips ³		
	ITE LUCs ¹	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 ²				0	0	0
				1,481	677	804

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

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 ⁵	1,231	552	679
External Transit-Trips ⁶	0	0	0
External Non-Motorized Trips ⁶	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

¹Land Use Codes (LUCs) from *Trip Generation Manual*, published by the Institute of Transportation Engineers.

²Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator.

³Enter trips assuming no transit or non-motorized trips (as assumed in *ITE Trip Generation Manual*).

⁴Enter vehicle occupancy assumed in Table 1-P vehicle trips. If vehicle occupancy changes for proposed mixed-use project, manual adjustments must be made.

⁵Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P.

⁶Person-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

Traffic Counts



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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

Start Time	Hwy 83 Southbound				Walden Way Westbound				Hwy 83 Northbound				Eastbound				Int. Total	
	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	0	180
06:45	1	92	0	0	1	0	5	0	0	108	0	0	0	0	0	0	0	207
Total	1	177	0	0	1	0	9	0	0	199	0	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	0	202
07:15	1	114	0	0	1	0	4	0	0	108	0	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	0	216
07:45	6	117	0	0	1	0	3	0	0	102	0	0	0	0	0	0	0	229
Total	9	428	0	0	5	0	15	0	0	417	1	0	0	0	0	0	0	875
08:00	3	83	0	0	0	0	4	0	0	108	1	0	0	0	0	0	0	199
08:15	0	101	0	0	1	0	1	0	0	121	0	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	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	0	
Total %	0.8	46.8	0	0	0.4	0	1.7	0	0	50.1	0.1	0	0	0	0	0	0	

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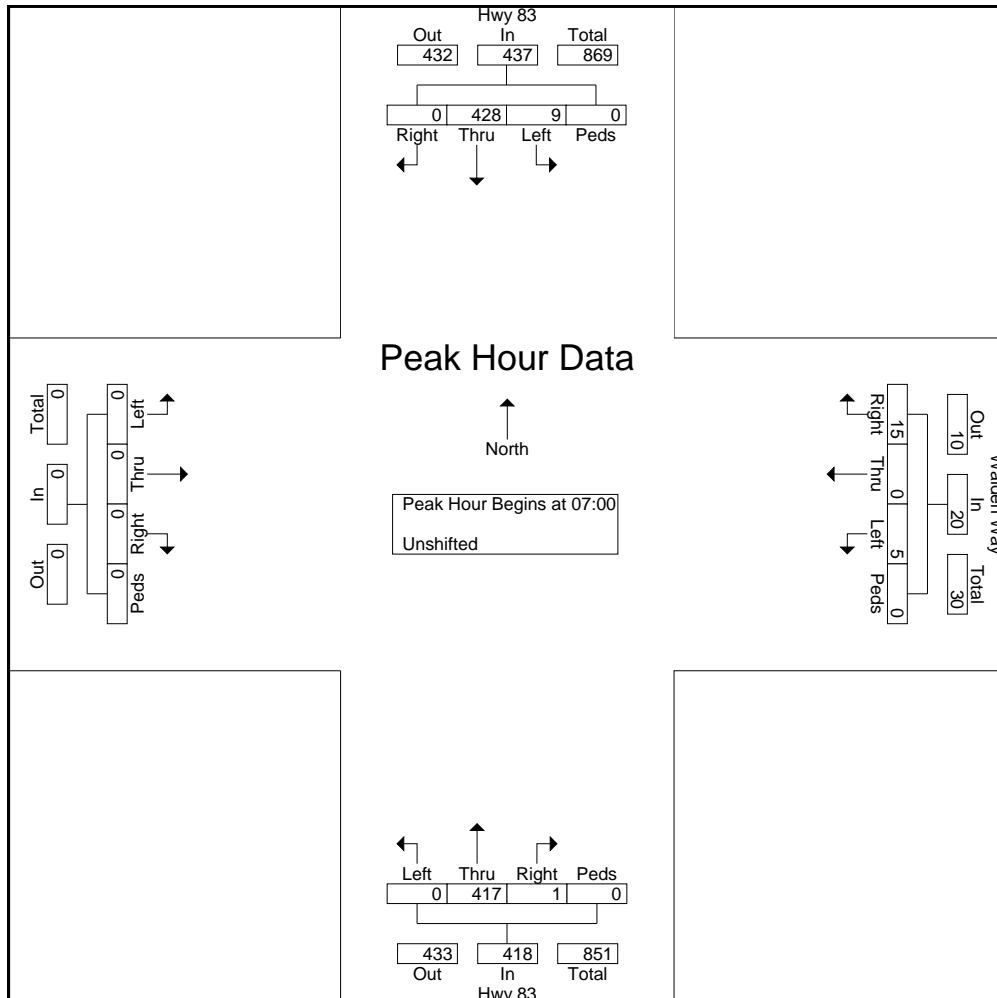
File Name : Hwy 83 - Walden Way AM 11-18

Site Code : 184820

Start Date : 11/29/2018

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Start Time	Hwy 83 Southbound					Walden Way Westbound					Hwy 83 Northbound					Eastbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. 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



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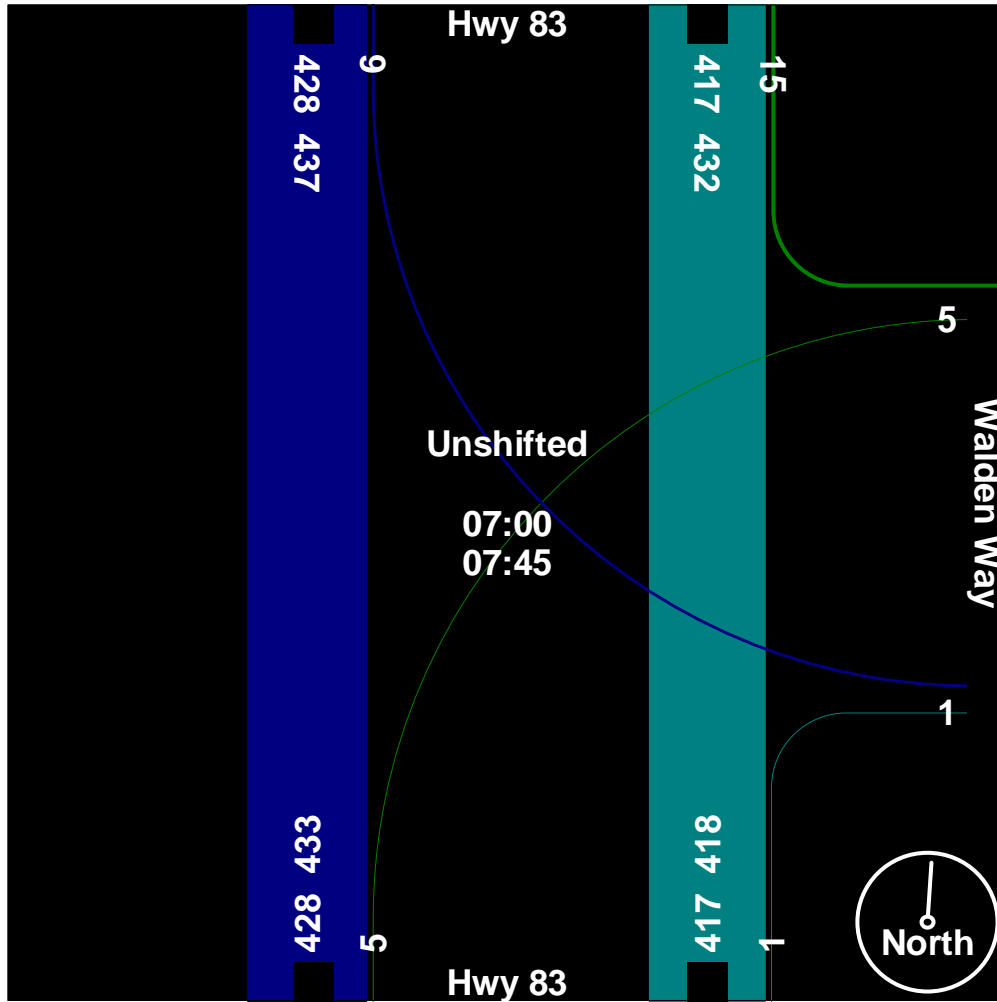
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File Name : Hwy 83 - Walden Way AM 11-18

Site Code : 184820

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

Site Code : 184820

Start Date : 11/29/2018

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Start Time	Hwy 83 Southbound				Walden Way Westbound				Hwy 83 Northbound				Eastbound				Int. Total	
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds		
16:00	3	157	0	0	3	0	2	0	0	109	0	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	0	250
16:30	1	149	0	0	0	0	5	0	0	126	1	0	0	0	0	0	0	282
16:45	2	129	0	0	1	0	4	0	0	108	1	0	0	0	0	0	0	245
Total	6	584	0	0	5	0	13	0	0	439	4	0	0	0	0	0	0	1051
17:00	8	169	0	0	0	0	2	0	0	126	0	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	0	266
17:30	1	146	0	0	0	0	5	0	0	105	0	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	0	226
Total	11	596	0	0	0	0	8	0	0	437	2	0	0	0	0	0	0	1054
Grand Total	17	1180	0	0	5	0	21	0	0	876	6	0	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	0	
Total %	0.8	56.1	0	0	0.2	0	1	0	0	41.6	0.3	0	0	0	0	0	0	

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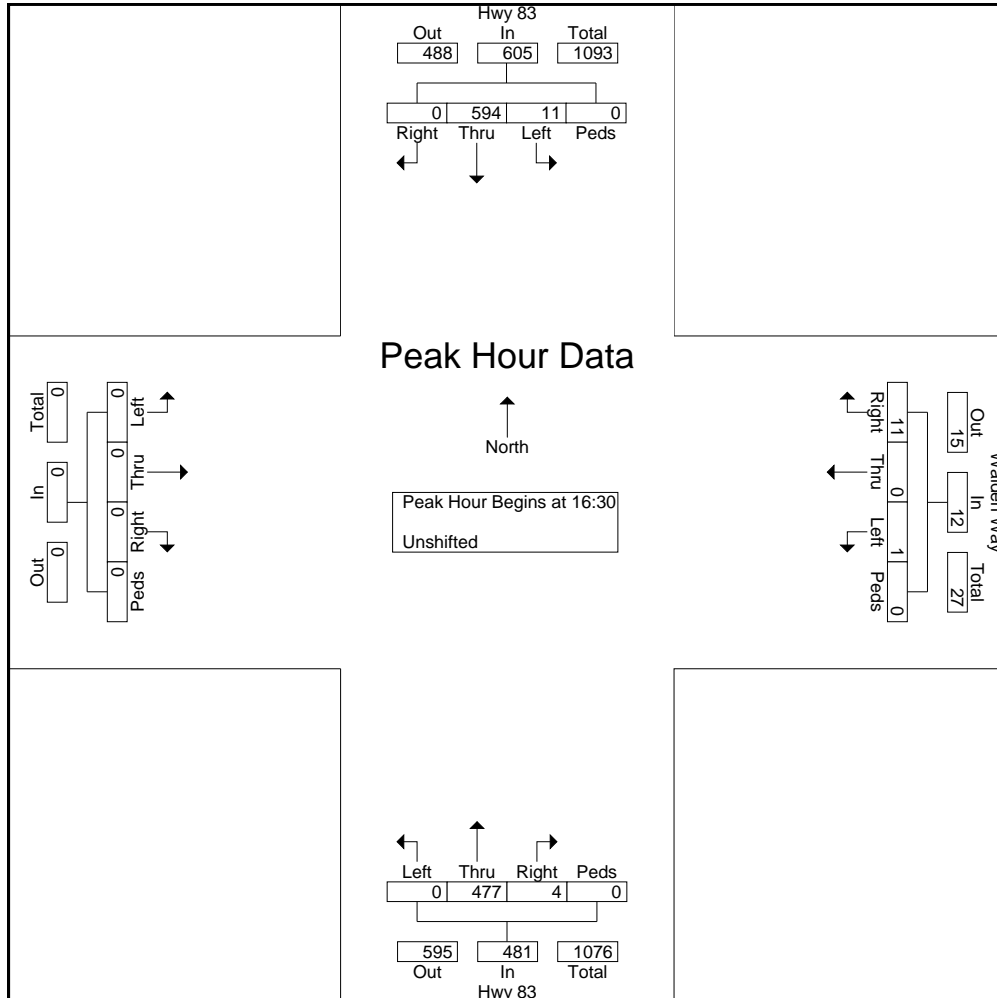
File Name : Hwy 83 - Walden Way PM 11-18

Site Code : 184820

Start Date : 11/29/2018

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Start Time	Hwy 83 Southbound					Walden Way Westbound					Hwy 83 Northbound					Eastbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. 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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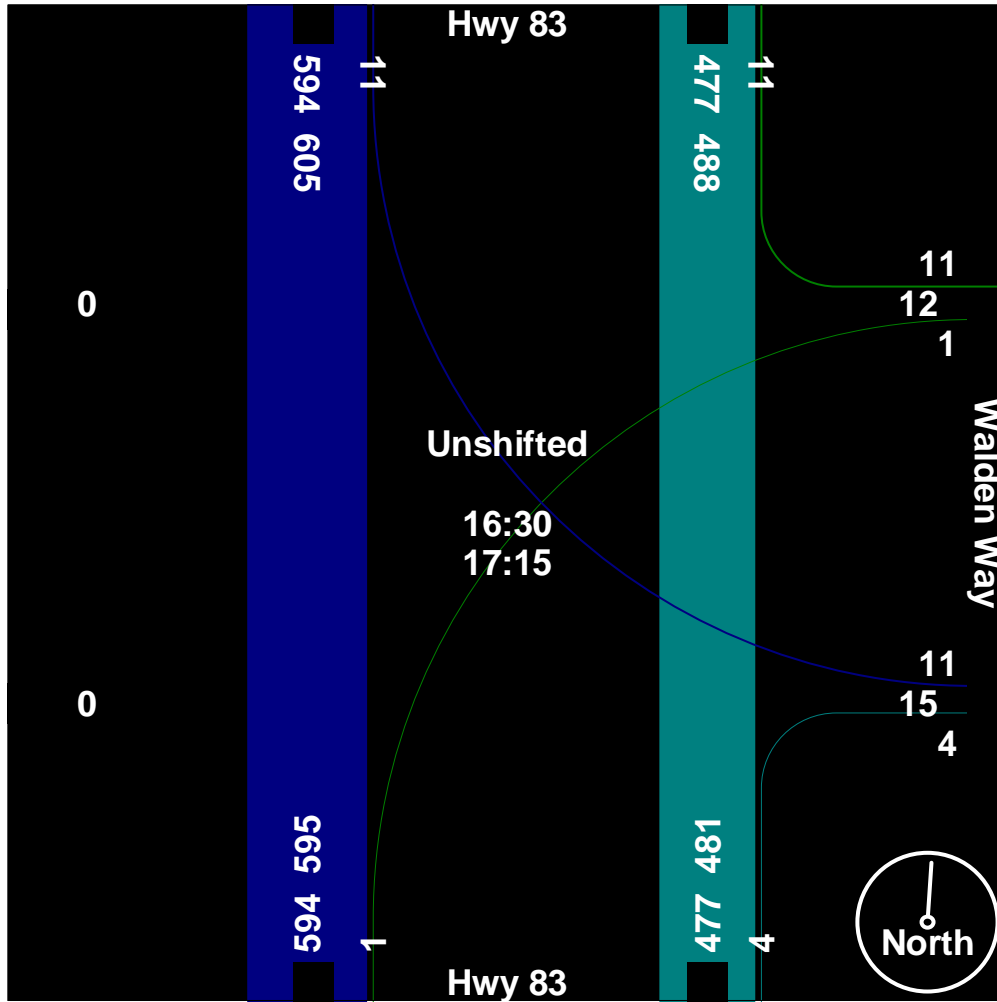
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File Name : Hwy 83 - Walden Way PM 11-18

Site Code : 184820

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File Name : Hwy 83 - Walker Rd AM

Site Code : 184820

Start Date : 8/29/2018

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Groups Printed- Unshifted

Start Time	Hwy 83 Southbound				Walker rd Westbound				Hwy 83 Northbound				CR 105 Eastbound				Int. Total
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
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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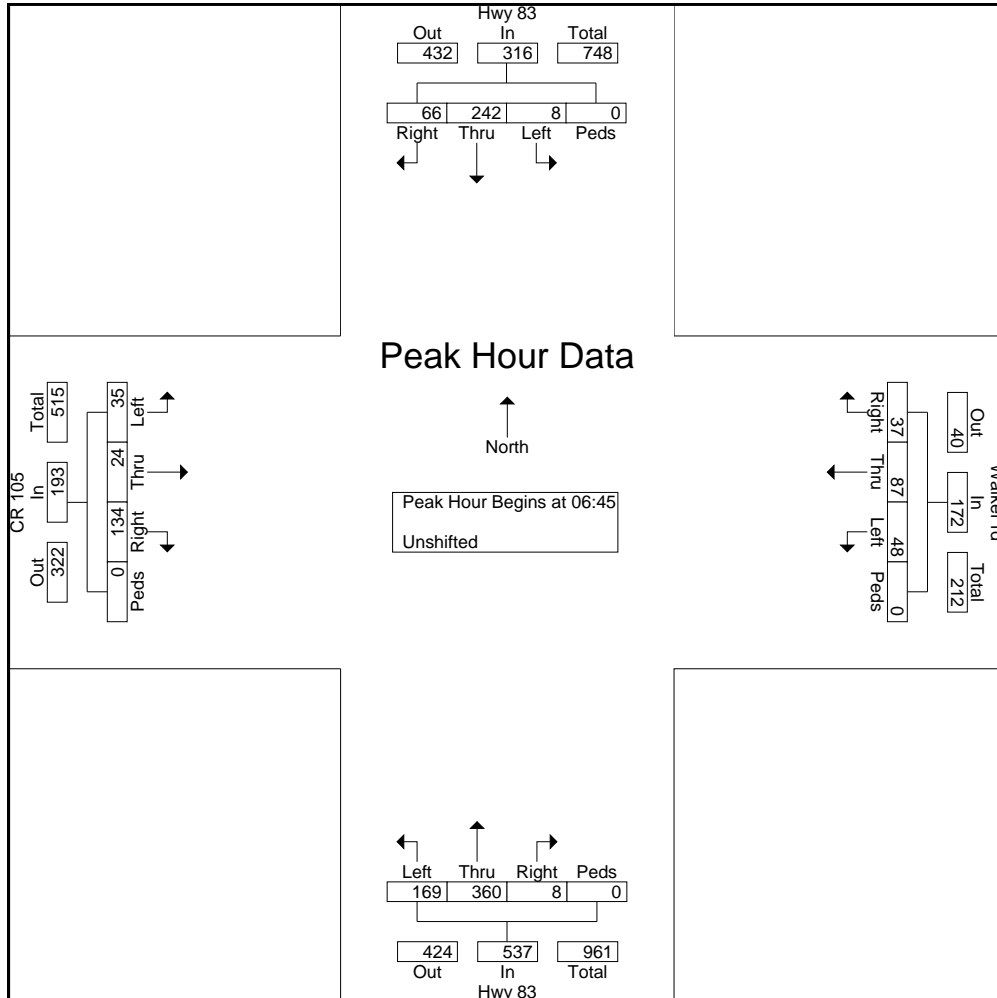
File Name : Hwy 83 - Walker Rd AM

Site Code : 184820

Start Date : 8/29/2018

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Start Time	Hwy 83 Southbound					Walker rd Westbound					Hwy 83 Northbound					CR 105 Eastbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. 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



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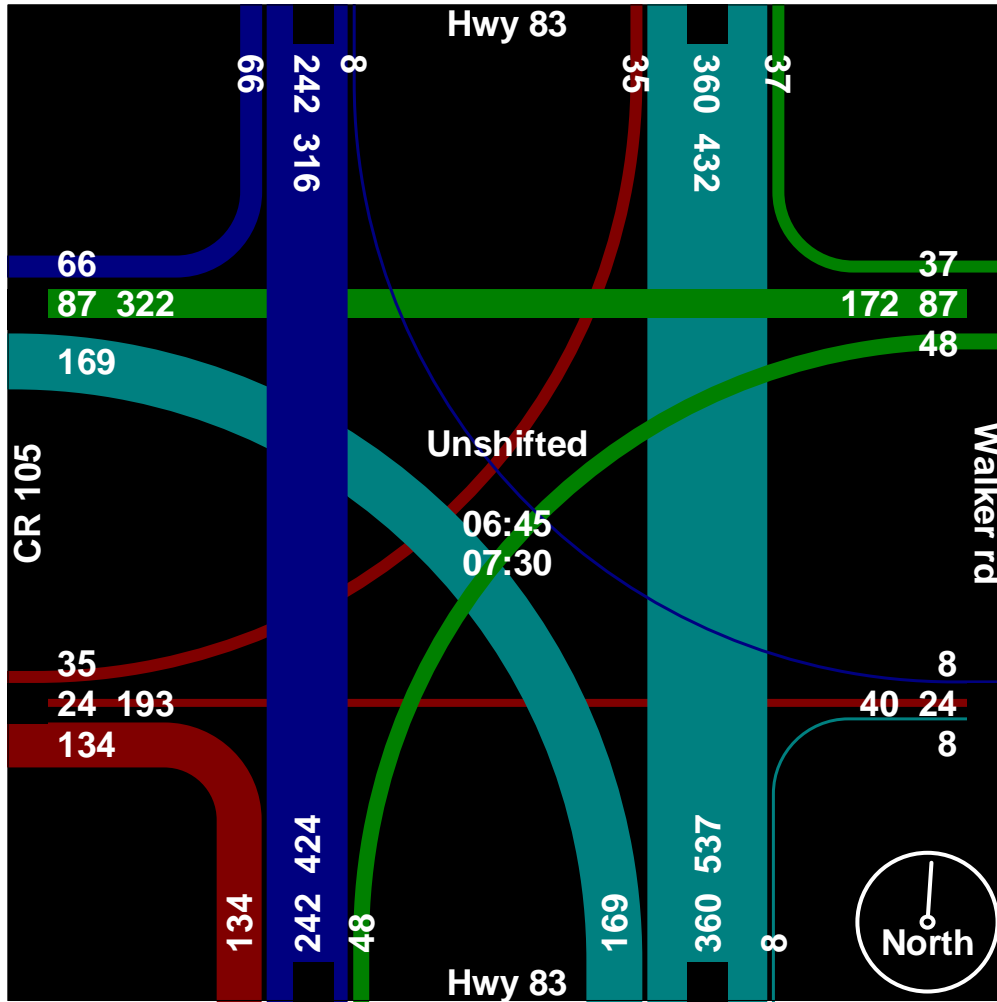
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File Name : Hwy 83 - Walker Rd Mid

Site Code : 00184820

Start Date : 9/5/2018

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Groups Printed- Unshifted

Start Time	Hwy 83 Southbound				Walker Rd Westbound				Hwy 83 Northbound				CR 105 Eastbound				Int. Total
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
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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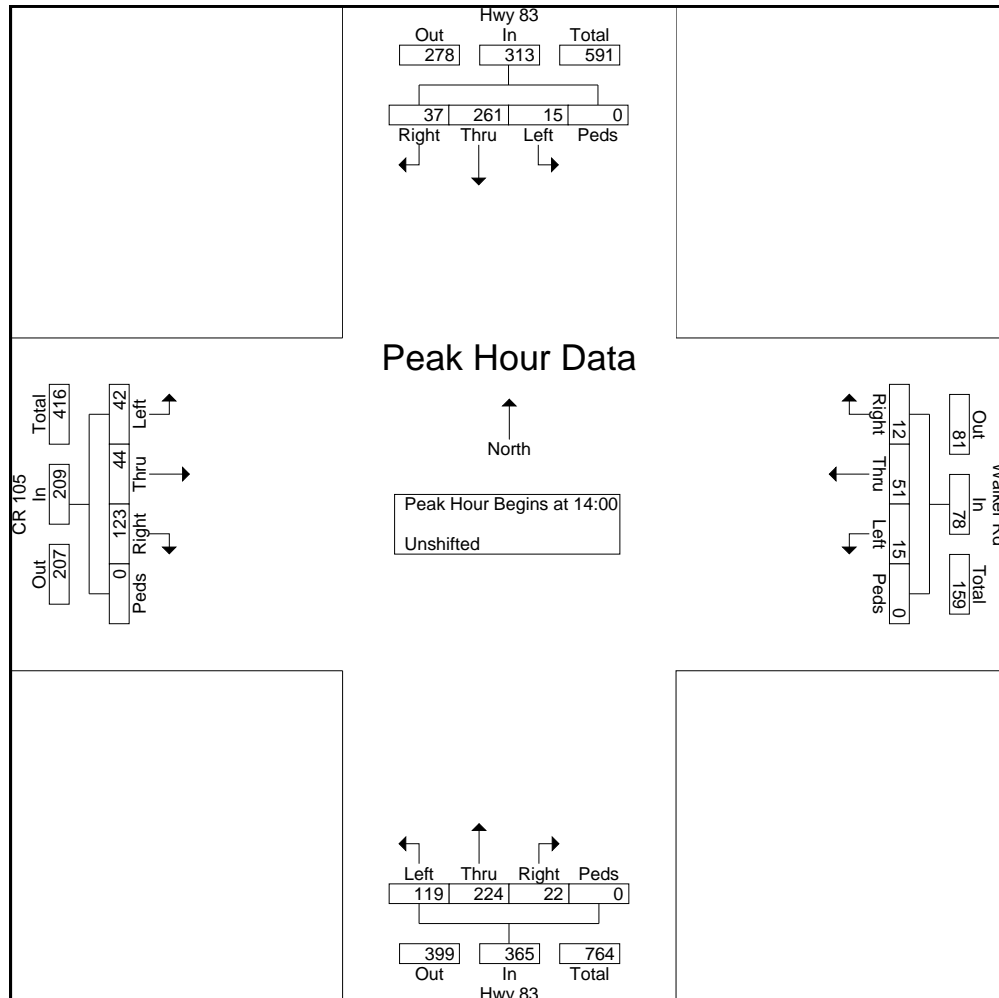
File Name : Hwy 83 - Walker Rd Mid

Site Code : 00184820

Start Date : 9/5/2018

Page No : 2

Start Time	Hwy 83 Southbound					Walker Rd Westbound					Hwy 83 Northbound					CR 105 Eastbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. 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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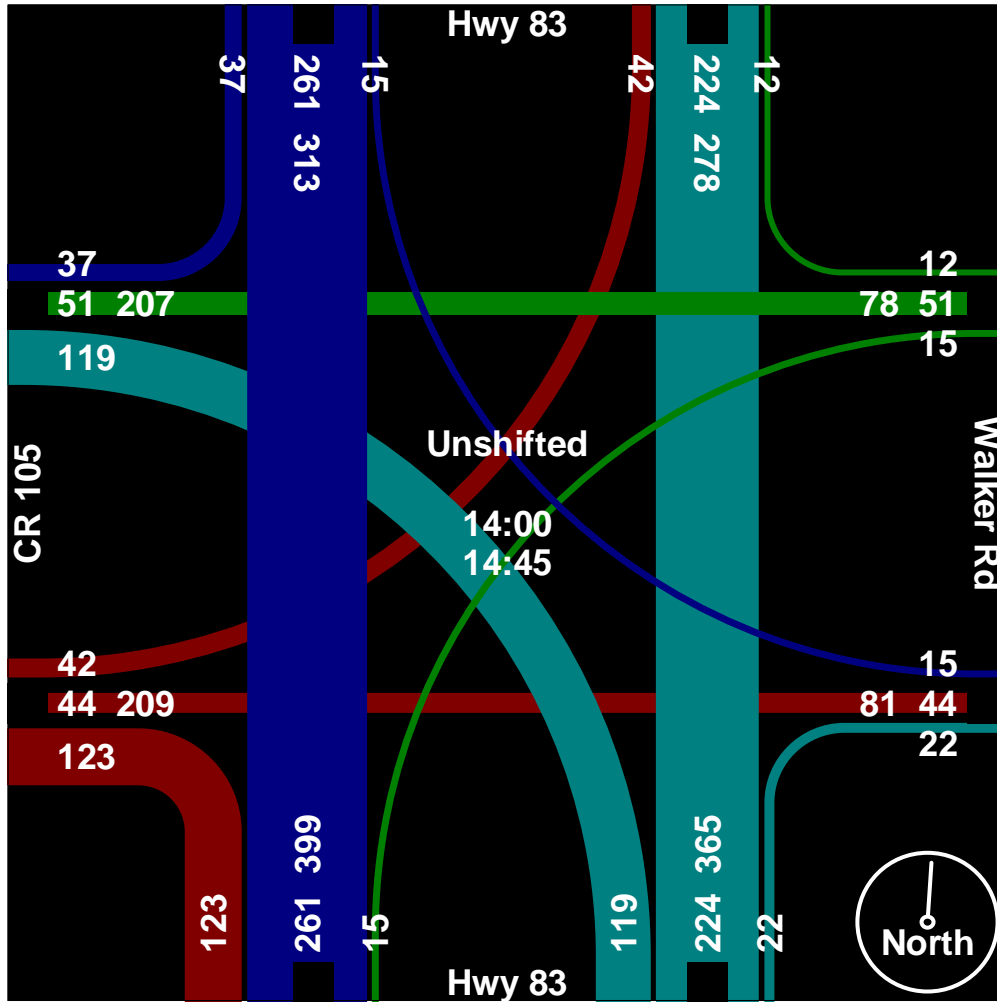
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File Name : Hwy 83 - Walker Rd Mid

Site Code : 00184820

Start Date : 9/5/2018

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File Name : Hwy 83 - Walker Rd PM

Site Code : 184820

Start Date : 8/29/2018

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Start Time	Hwy 83 Southbound				Walker Rd Westbound				Hwy 83 Northbound				CR 195 Eastbound				Int. Total
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
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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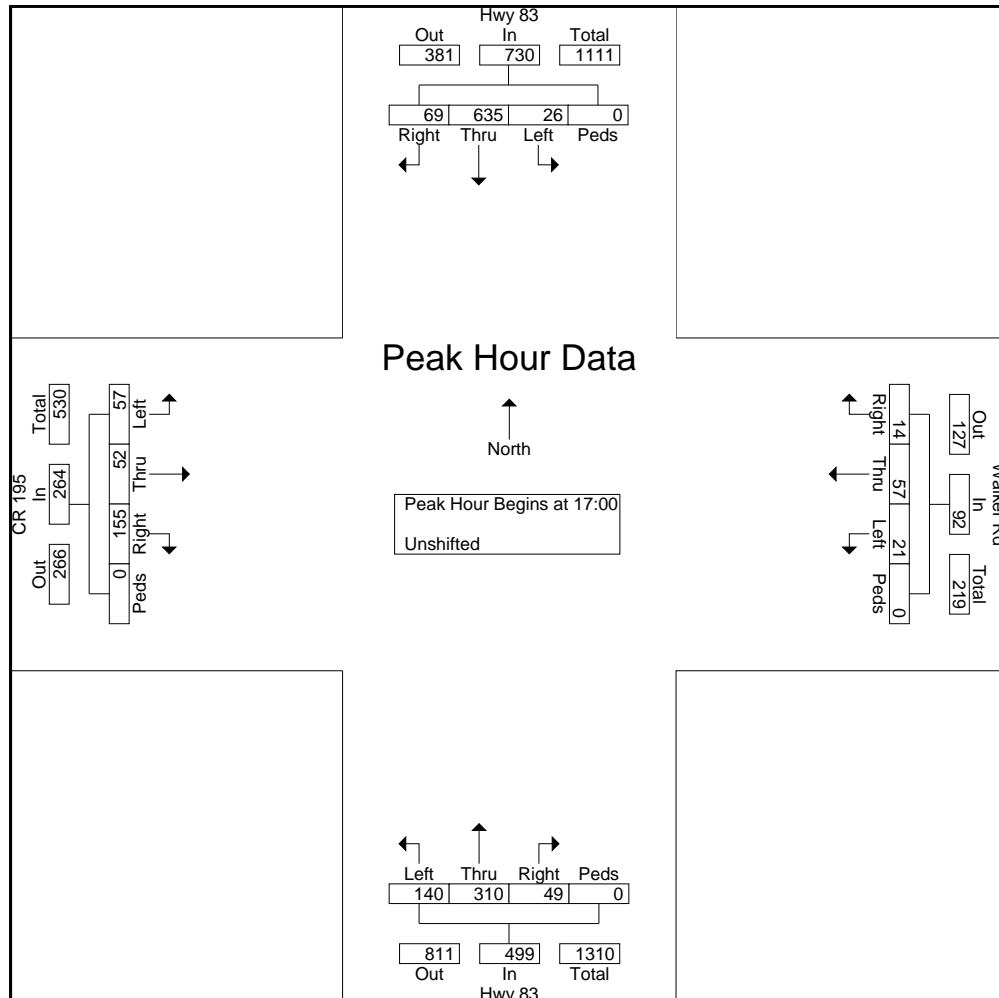
File Name : Hwy 83 - Walker Rd PM

Site Code : 184820

Start Date : 8/29/2018

Page No : 2

Start Time	Hwy 83 Southbound					Walker Rd Westbound					Hwy 83 Northbound					CR 195 Eastbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. 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



LSC Transportation Consultants, Inc.

545 E Pikes Peak Ave, Suite 210

Colorado Springs, CO 80905

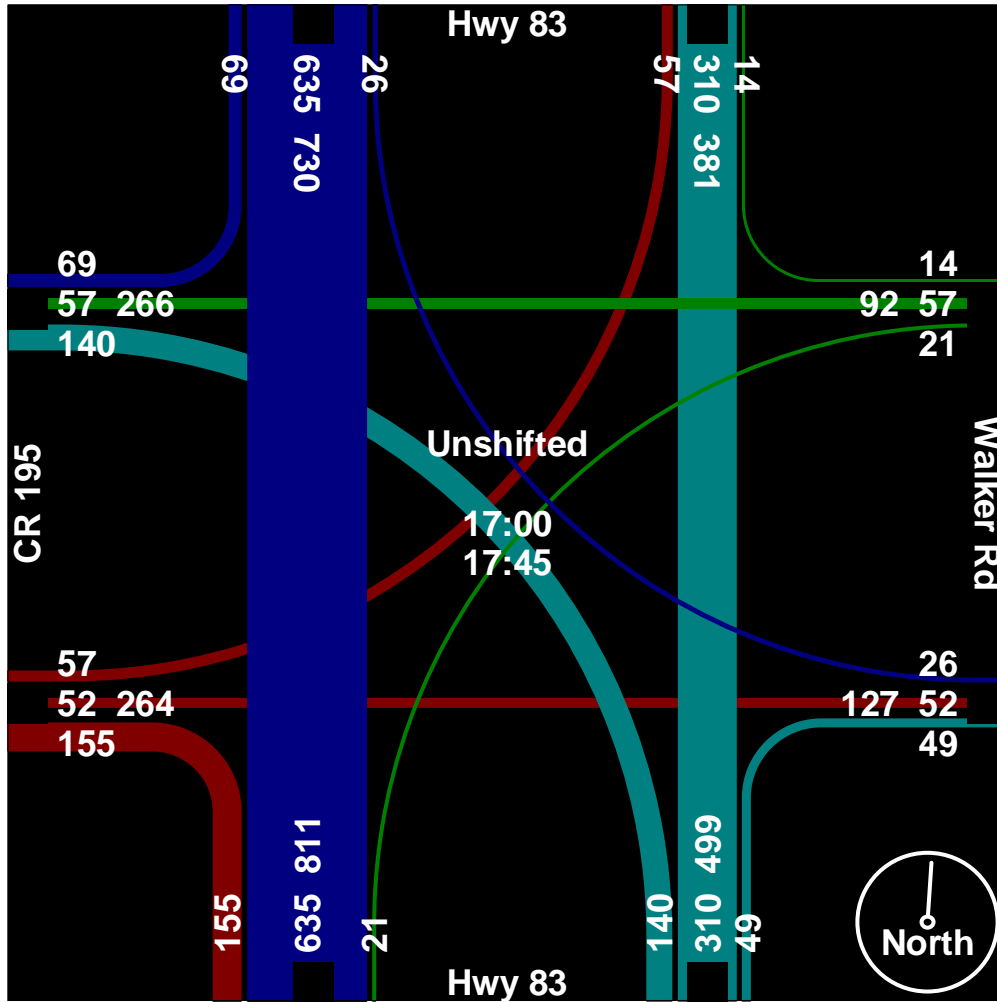
719-633-2868

File Name : Hwy 83 - Walker Rd PM

Site Code : 184820

Start Date : 8/29/2018

Page No : 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

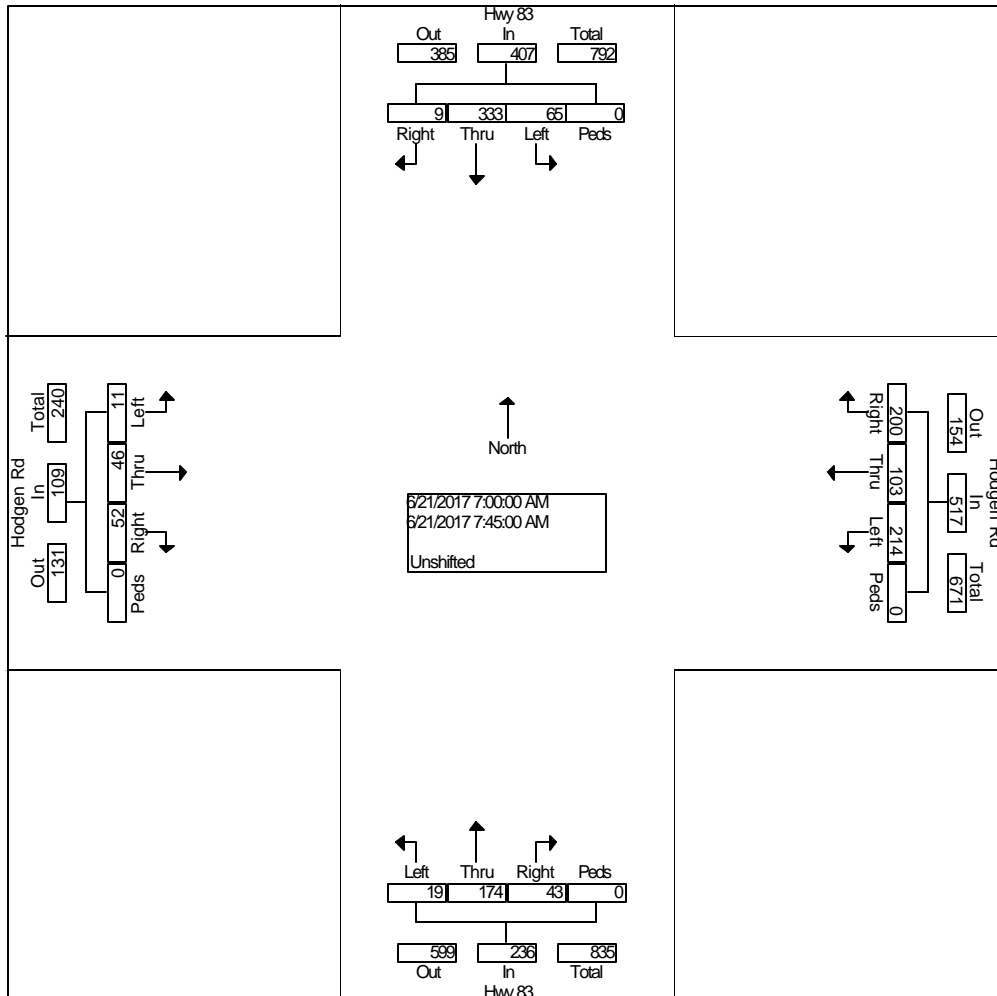
Groups Printed- Unshifted

Start Time	Hwy 83 From North				Hodgen Rd From East				Hwy 83 From South				Hodgen Rd From West				Int. Total
	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
06:30 AM	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

Start Time	Hwy 83 From North					Hodgen Rd From East					Hwy 83 From South					Hodgen Rd From West					Int. Total
	Rig ht	Thr u	Lef t	Pe ds	App. Total	Rig ht	Thr u	Lef t	Pe ds	App. Total	Rig ht	Thr u	Lef t	Pe ds	App. Total	Rig ht	Thr u	Lef t	Pe ds	App. Total	
Peak Hour From 06:30 AM to 08:15 AM - Peak 1 of 1																					
Intersection	07:00 AM																				
Volume	9	33	65	0	407	20	10	21	0	517	43	17	19	0	236	52	46	11	0	109	1269
Percent	2.2	81.8	16.0	0.0		38.7	19.9	41.4	0.0		18.2	7.3	8.1	0.0		47.7	42.2	10.1	0.0		
07:30 Volume	1	10	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																				
Volume	1	10	16	0	122	57	30	60	0	147	8	48	4	0	60	13	18	5	0	36	
Peak Factor	0.834					0.879					0.983					0.757					



Counts by LSC

LSC Transportation Consultants, Inc.

File Name : Hwy 83 - Hodgen PM
 Site Code : 00174470
 Start Date : 06/21/2017
 Page No : 1

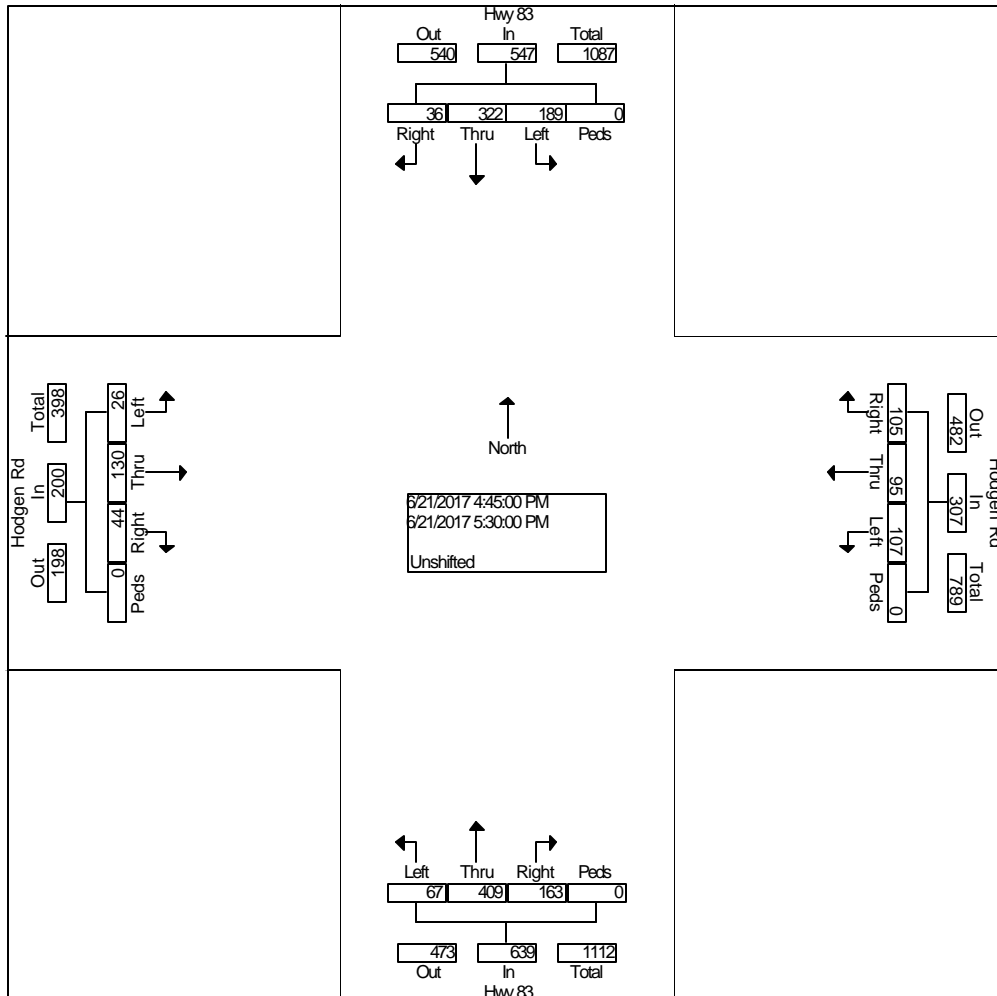
Groups Printed- Unshifted

Start Time	Hwy 83 From North				Hodgen Rd From East				Hwy 83 From South				Hodgen Rd From West				Int. Total
	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
04:00 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

Start Time	Hwy 83 From North					Hodgen Rd From East					Hwy 83 From South					Hodgen Rd From West					Int. Total	
	Rig ht	Thr u	Lef t	Pe ds	App. Total	Rig ht	Thr u	Lef t	Pe ds	App. Total	Rig ht	Thr u	Lef t	Pe ds	App. Total	Rig ht	Thr u	Lef t	Pe ds	App. Total		
Peak Hour From 04:00 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	
Percent	6.6	58.9	34.6	0.0		34.2	30.9	34.9	0.0		25.5	64.0	10.5	0.0		22.0	65.0	13.0	0.0			
05:30 Volume	12	85	51	0	148	23	23	29	0	75	41	11	3	17	0	171	9	33	9	0	51	445
Peak Factor	0.951																					
High Int.	04:45 PM																					
Volume	8	90	52	0	150	32	23	28	0	83	41	11	3	17	0	171	8	39	9	0	56	
Peak Factor	0.912					0.925					0.934					0.893						



Levels of Service



Levels of Service - Existing



Timings
1: SH 83 & SH 105/Walker Rd

Existing Traffic
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations												
Traffic Volume (vph)	35	24	134	48	87	169	360	8	8	242	66	
Future Volume (vph)	35	24	134	48	87	169	360	8	8	242	66	
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 Effct Green (s)		14.3	88.6		14.3	63.2	59.2	59.2	53.9	46.2	46.2	
Actuated g/C Ratio		0.16	1.00		0.16	0.71	0.67	0.67	0.61	0.52	0.52	
v/c Ratio		0.31	0.08		0.67	0.25	0.33	0.01	0.01	0.29	0.09	
Control Delay		37.0	0.1		44.9	5.5	8.7	0.0	5.5	14.2	3.0	
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay		37.0	0.1		44.9	5.5	8.7	0.0	5.5	14.2	3.0	
LOS		D	A		D	A	A	A	A	B	A	
Approach Delay		11.4			44.9		7.6			11.7		
Approach LOS		B			D		A			B		

Intersection Summary

Cycle Length: 100
 Actuated Cycle Length: 88.6
 Natural Cycle: 50
 Control Type: Semi Act-Uncoord
 Maximum v/c Ratio: 0.67
 Intersection Signal Delay: 14.2
 Intersection Capacity Utilization 54.3%
 Analysis Period (min) 15
 Intersection LOS: B
 ICU Level of Service A

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



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 Effct 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



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)	42	44	123	15	51	119	224	22	15	261	37
Future Volume (vph)	42	44	123	15	51	119	224	22	15	261	37
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 Effct Green (s)		10.4	78.0		10.3	59.5	57.8	57.8	54.0	49.7	49.7
Actuated g/C Ratio		0.13	1.00		0.13	0.76	0.74	0.74	0.69	0.64	0.64
v/c Ratio		0.45	0.09		0.41	0.15	0.17	0.02	0.02	0.22	0.04
Control Delay		40.9	0.1		36.2	3.9	6.1	0.0	3.9	10.5	0.1
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		40.9	0.1		36.2	3.9	6.1	0.0	3.9	10.5	0.1
LOS		D	A		D	A	A	A	A	B	A
Approach Delay		16.8			36.2		5.0			8.9	
Approach LOS		B			D		A			A	

Intersection Summary

Cycle Length: 100
 Actuated Cycle Length: 78
 Natural Cycle: 40
 Control Type: Semi Act-Uncoord
 Maximum v/c Ratio: 0.45
 Intersection Signal Delay: 11.7
 Intersection Capacity Utilization 46.2%
 Analysis Period (min) 15
 Intersection LOS: B
 ICU Level of Service A

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



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 Effct Green (s)		11.7	82.2		11.4	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		0.53	0.10		0.40	0.23	0.27	0.05	0.04	0.41	0.07	
Control Delay		43.0	0.1		35.8	4.6	8.4	1.1	4.5	13.4	2.1	
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay		43.0	0.1		35.8	4.6	8.4	1.1	4.5	13.4	2.1	
LOS		D	A		D	A	A	A	A	B	A	
Approach Delay		17.8			35.8		6.6			11.5		
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: 0.53
 Intersection Signal Delay: 12.3
 Intersection Capacity Utilization 57.4%
 Analysis Period (min) 15
 Intersection LOS: B
 ICU Level of Service B

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



Timings
121: SH 83 & Hodgen Rd

2017 Existing
PM

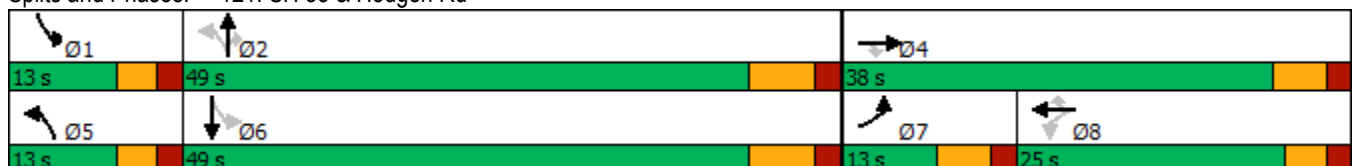


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations											
Traffic Volume (vph)	26	130	44	107	95	185	67	409	163	189	322
Future Volume (vph)	26	130	44	107	95	185	67	409	163	189	322
Turn Type	Prot	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA
Protected Phases	7	4			8		5	2		1	6
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 Effct 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 Capacity Utilization 63.9%
 Analysis Period (min) 15
 Intersection LOS: B
 ICU Level of Service B

Splits and Phases: 121: SH 83 & Hodgen Rd



Levels of Service - Short-Term Background



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)	39	26	148	53	96	187	397	9	9	267	73	
Future Volume (vph)	39	26	148	53	96	187	397	9	9	267	73	
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 Effct Green (s)		15.5	90.2		15.5	63.6	59.5	59.5	54.0	46.2	46.2	
Actuated g/C Ratio		0.17	1.00		0.17	0.71	0.66	0.66	0.60	0.51	0.51	
v/c Ratio		0.33	0.09		0.69	0.29	0.37	0.01	0.02	0.33	0.10	
Control Delay		37.3	0.1		45.8	6.2	9.6	0.0	5.9	15.4	3.6	
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay		37.3	0.1		45.8	6.2	9.6	0.0	5.9	15.4	3.6	
LOS		D	A		D	A	A	A	A	B	A	
Approach Delay		11.5			45.8		8.4			12.7		
Approach LOS		B			D		A			B		

Intersection Summary

Cycle Length: 100
 Actuated Cycle Length: 90.2
 Natural Cycle: 55
 Control Type: Semi Act-Uncoord
 Maximum v/c Ratio: 0.69
 Intersection Signal Delay: 14.9
 Intersection Capacity Utilization 57.2%
 Analysis Period (min) 15

Intersection LOS: B
 ICU Level of Service B

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



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	320	47	72	341
Future Volume (vph)	36	65	88	236	144	221	46	320	47	72	341
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 Effct Green (s)	5.4	20.1	20.1	16.2	16.2	16.2	27.7	21.8	21.8	28.9	24.2
Actuated g/C Ratio	0.09	0.32	0.32	0.26	0.26	0.26	0.44	0.34	0.34	0.46	0.38
v/c Ratio	0.33	0.15	0.20	0.82	0.35	0.43	0.15	0.58	0.09	0.21	0.70
Control Delay	40.1	19.4	5.6	51.7	27.9	6.9	9.3	21.9	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	40.1	19.4	5.6	51.7	27.9	6.9	9.3	21.9	0.3	9.7	23.8
LOS	D	B	A	D	C	A	A	C	A	A	C
Approach Delay		17.0			29.5			18.0			21.6
Approach LOS		B			C			B			C

Intersection Summary

Cycle Length: 100	
Actuated Cycle Length: 63.4	
Natural Cycle: 70	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.82	
Intersection Signal Delay: 22.9	Intersection LOS: C
Intersection Capacity Utilization 61.6%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 121: SH 83 & Hodgen Rd



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)	46	49	136	17	56	131	247	24	17	288	41	
Future Volume (vph)	46	49	136	17	56	131	247	24	17	288	41	
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 Effct Green (s)		11.1	81.2		11.0	62.0	59.9	59.9	54.5	46.7	46.7	
Actuated g/C Ratio		0.14	1.00		0.14	0.76	0.74	0.74	0.67	0.58	0.58	
v/c Ratio		0.51	0.10		0.44	0.17	0.19	0.02	0.02	0.27	0.04	
Control Delay		43.0	0.1		37.3	4.1	6.4	0.0	4.2	11.5	0.4	
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay		43.0	0.1		37.3	4.1	6.4	0.0	4.2	11.5	0.4	
LOS		D	A		D	A	A	A	A	B	A	
Approach Delay		17.8			37.3		5.3			9.8		
Approach LOS		B			D		A			A		

Intersection Summary

Cycle Length: 100	
Actuated Cycle Length: 81.2	
Natural Cycle: 40	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.51	
Intersection Signal Delay: 12.3	Intersection LOS: B
Intersection Capacity Utilization 48.8%	ICU Level of Service A
Analysis Period (min) 15	

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



Timings

Short-Term Background Traffic

1: SH 83 & SH 105/Walker Rd

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 Effct Green (s)		12.5	86.1		12.5	62.3	56.2	56.2	54.1	46.2	46.2
Actuated g/C Ratio		0.15	1.00		0.15	0.72	0.65	0.65	0.63	0.54	0.54
v/c Ratio		0.59	0.11		0.42	0.29	0.33	0.06	0.04	0.47	0.09
Control Delay		45.7	0.1		36.0	5.3	9.3	1.4	4.7	15.5	2.7
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		45.7	0.1		36.0	5.3	9.3	1.4	4.7	15.5	2.7
LOS		D	A		D	A	A	A	A	B	A
Approach Delay		19.0			36.0		7.4			13.3	
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: 0.59
 Intersection Signal Delay: 13.5
 Intersection Capacity Utilization 61.7%
 Analysis Period (min) 15
 Intersection LOS: B
 ICU Level of Service B

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



Timings
121: SH 83 & Hodgen Rd

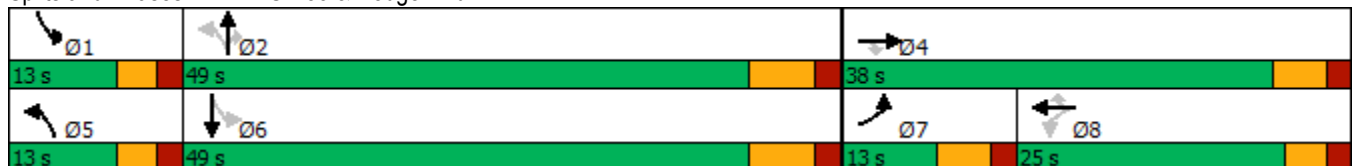
Short-Term Background Traffic
PM Peak Hour

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 Effct 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



Levels of Service - Phase 1 Short-Term Total

- With Right-in/Right-out Access to SH 83



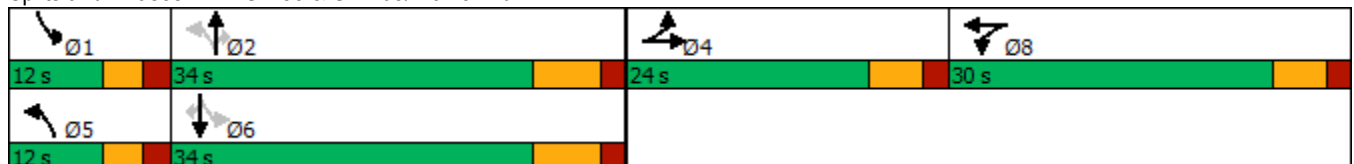
Timings Phase 1 Only Short-Term Total Traffic With Right-in/Right-out at Pinehurst/SH83
 1: SH 83 & SH 105/Walker Rd AM Peak Hour

	→	↘	←	↙	↑	↗	↘	↓	↙
Lane Group	EBT	EBR	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕	↕	↕	↕	↑	↕	↕	↑	↕
Traffic Volume (vph)	168	148	100	262	420	9	55	267	73
Future Volume (vph)	168	148	100	262	420	9	55	267	73
Turn Type	NA	Free	NA	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	4		8	5	2		1	6	
Permitted Phases		Free		2		2	6		6
Detector Phase	4		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
Minimum Split (s)	11.0		11.0	10.0	12.0	12.0	10.0	12.0	12.0
Total Split (s)	24.0		30.0	12.0	34.0	34.0	12.0	34.0	34.0
Total Split (%)	24.0%		30.0%	12.0%	34.0%	34.0%	12.0%	34.0%	34.0%
Yellow Time (s)	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
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	Max	Max	None	Max	Max
Act Effct Green (s)	17.6	99.6	24.0	37.1	29.5	29.5	35.7	27.0	27.0
Actuated g/C Ratio	0.18	1.00	0.24	0.37	0.30	0.30	0.36	0.27	0.27
v/c Ratio	0.91	0.09	0.98	0.88	0.87	0.02	0.29	0.62	0.16
Control Delay	72.7	0.1	78.1	54.0	52.3	0.1	21.9	38.3	0.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	72.7	0.1	78.1	54.0	52.3	0.1	21.9	38.3	0.9
LOS	E	A	E	D	D	A	C	D	A
Approach Delay	48.6		78.1		52.0			29.1	
Approach LOS	D		E		D			C	

Intersection Summary

Cycle Length: 100
 Actuated Cycle Length: 99.6
 Natural Cycle: 90
 Control Type: Semi Act-Uncoord
 Maximum v/c Ratio: 0.98
 Intersection Signal Delay: 51.5
 Intersection LOS: D
 Intersection Capacity Utilization 74.9%
 ICU Level of Service D
 Analysis Period (min) 15

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



Timings Phase 1 Only Short-Term Total Traffic With Right-in/Right-out at Pinehurst/SH 83
 1: SH 83 & SH 105/Walker Rd Midday (2-3 PM)

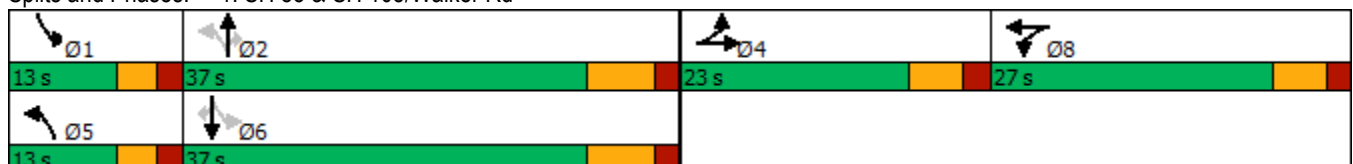


Lane Group	EBT	EBR	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↔	↖	↑	↗	↖	↑	↗
Traffic Volume (vph)	109	136	93	167	258	24	36	288	41
Future Volume (vph)	109	136	93	167	258	24	36	288	41
Turn Type	NA	Free	NA	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	4		8	5	2		1	6	
Permitted Phases		Free		2		2	6		6
Detector Phase	4		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
Minimum Split (s)	11.0		11.0	10.0	12.0	12.0	10.0	12.0	12.0
Total Split (s)	23.0		27.0	13.0	37.0	37.0	13.0	37.0	37.0
Total Split (%)	23.0%		27.0%	13.0%	37.0%	37.0%	13.0%	37.0%	37.0%
Yellow Time (s)	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
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	Max	Max	None	Max	Max
Act Effct Green (s)	14.3	94.8	18.2	42.6	36.0	36.0	39.0	30.2	30.2
Actuated g/C Ratio	0.15	1.00	0.19	0.45	0.38	0.38	0.41	0.32	0.32
v/c Ratio	0.71	0.10	0.81	0.40	0.39	0.05	0.10	0.49	0.07
Control Delay	53.7	0.1	54.4	19.2	26.9	0.1	15.8	30.7	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.7	0.1	54.4	19.2	26.9	0.1	15.8	30.7	0.2
LOS	D	A	D	B	C	A	B	C	A
Approach Delay	30.3		54.4		22.3			25.5	
Approach LOS	C		D		C			C	

Intersection Summary

Cycle Length: 100
 Actuated Cycle Length: 94.8
 Natural Cycle: 60
 Control Type: Semi Act-Uncoord
 Maximum v/c Ratio: 0.81
 Intersection Signal Delay: 31.0 Intersection LOS: C
 Intersection Capacity Utilization 57.6% ICU Level of Service B
 Analysis Period (min) 15

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



Timings

Short-Term Total Traffic With Right-in/Right-out at Pinehurst/SH 83

1: SH 83 & SH 105/Walker Rd

PM Peak Hour

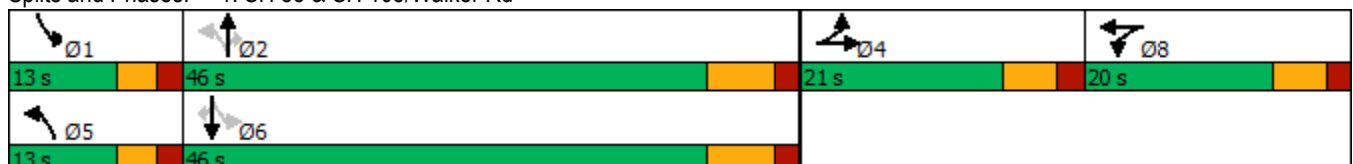


Lane Group	EBT	EBR	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕	↗	↕	↖	↑	↗	↖	↑	↗
Traffic Volume (vph)	82	171	83	169	346	54	36	474	76
Future Volume (vph)	82	171	83	169	346	54	36	474	76
Turn Type	NA	Free	NA	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	4		8	5	2		1	6	
Permitted Phases		Free		2		2	6		6
Detector Phase	4		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
Minimum Split (s)	11.0		11.0	10.0	12.0	12.0	10.0	12.0	12.0
Total Split (s)	21.0		20.0	13.0	46.0	46.0	13.0	46.0	46.0
Total Split (%)	21.0%		20.0%	13.0%	46.0%	46.0%	13.0%	46.0%	46.0%
Yellow Time (s)	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
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	Max	Max	None	Max	Max
Act Effct Green (s)	12.5	95.6	11.9	51.8	45.2	45.2	47.6	39.1	39.1
Actuated g/C Ratio	0.13	1.00	0.12	0.54	0.47	0.47	0.50	0.41	0.41
v/c Ratio	0.65	0.11	0.67	0.48	0.46	0.08	0.07	0.62	0.10
Control Delay	53.2	0.1	53.6	15.7	21.7	0.2	11.1	27.7	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.2	0.1	53.6	15.7	21.7	0.2	11.1	27.7	0.3
LOS	D	A	D	B	C	A	B	C	A
Approach Delay	24.5		53.6		17.9			23.1	
Approach LOS	C		D		B			C	

Intersection Summary

Cycle Length: 100
 Actuated Cycle Length: 95.6
 Natural Cycle: 60
 Control Type: Semi Act-Uncoord
 Maximum v/c Ratio: 0.67
 Intersection Signal Delay: 24.1
 Intersection Capacity Utilization 64.4%
 Analysis Period (min) 15
 Intersection LOS: C
 ICU Level of Service C

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



Levels of Service - Phase 1 & 2 Short-Term Total

- With Right-in/Right-out Access to SH 83



Timings

Short-Term Total Traffic With Right-in/Right-out at Pinehurst/SH83

1: SH 83 & SH 105/Walker Rd

AM Peak Hour

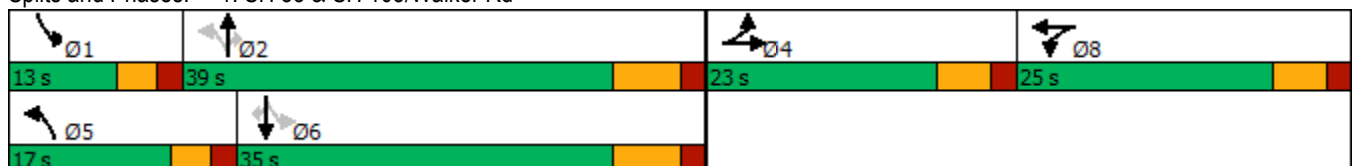


Lane Group	EBT	EBR	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕	↗	↕	↖	↑	↗	↖	↑	↗
Traffic Volume (vph)	274	148	108	313	437	9	89	267	73
Future Volume (vph)	274	148	108	313	437	9	89	267	73
Turn Type	NA	Free	NA	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	4		8	5	2		1	6	
Permitted Phases		Free		2		2	6		6
Detector Phase	4		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
Minimum Split (s)	11.0		11.0	10.0	12.0	12.0	10.0	12.0	12.0
Total Split (s)	23.0		25.0	17.0	39.0	39.0	13.0	35.0	35.0
Total Split (%)	23.0%		25.0%	17.0%	39.0%	39.0%	13.0%	35.0%	35.0%
Yellow Time (s)	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
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	Max	Max	None	Max	Max
Act Effct Green (s)	17.0	100.0	19.0	46.2	32.2	32.2	37.8	28.0	28.0
Actuated g/C Ratio	0.17	1.00	0.19	0.46	0.32	0.32	0.38	0.28	0.28
v/c Ratio	1.46	0.09	1.56	0.82	0.83	0.02	0.52	0.60	0.16
Control Delay	257.7	0.1	296.4	36.0	44.9	0.1	23.2	36.9	0.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	257.7	0.1	296.4	36.0	44.9	0.1	23.2	36.9	0.8
LOS	F	A	F	D	D	A	C	D	A
Approach Delay	195.1		296.4		40.6			27.6	
Approach LOS	F		F		D			C	

Intersection Summary

Cycle Length: 100
 Actuated Cycle Length: 100
 Natural Cycle: 140
 Control Type: Semi Act-Uncoord
 Maximum v/c Ratio: 1.56
 Intersection Signal Delay: 128.6
 Intersection Capacity Utilization 87.2%
 Analysis Period (min) 15
 Intersection LOS: F
 ICU Level of Service E

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



Intersection

Int Delay, s/veh 4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↘	↑	↘	↗
Traffic Vol, veh/h	44	328	22	190	158	21
Future Vol, veh/h	44	328	22	190	158	21
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Yield	-	None	-	None
Storage Length	-	0	50	-	300	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	84	55	55	100	55	55
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	52	596	40	190	287	38

Major/Minor

	Major1	Major2	Minor1			
Conflicting Flow All	0	0	52	0	322	52
Stage 1	-	-	-	-	52	-
Stage 2	-	-	-	-	270	-
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	-	-	1554	-	672	1016
Stage 1	-	-	-	-	970	-
Stage 2	-	-	-	-	775	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1554	-	655	1016
Mov Cap-2 Maneuver	-	-	-	-	655	-
Stage 1	-	-	-	-	945	-
Stage 2	-	-	-	-	775	-

Approach

	EB	WB	NB
HCM Control Delay, s	0	1.3	14
HCM LOS			B

Minor Lane/Major Mvmt

	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	655	1016	-	-	1554	-
HCM Lane V/C Ratio	0.439	0.038	-	-	0.026	-
HCM Control Delay (s)	14.7	8.7	-	-	7.4	-
HCM Lane LOS	B	A	-	-	A	-
HCM 95th %tile Q(veh)	2.2	0.1	-	-	0.1	-

Timings

Short-Term Total Traffic With Right-in/Right-out at Pinehurst/SH 83

1: SH 83 & SH 105/Walker Rd

Midday (2-3 PM)

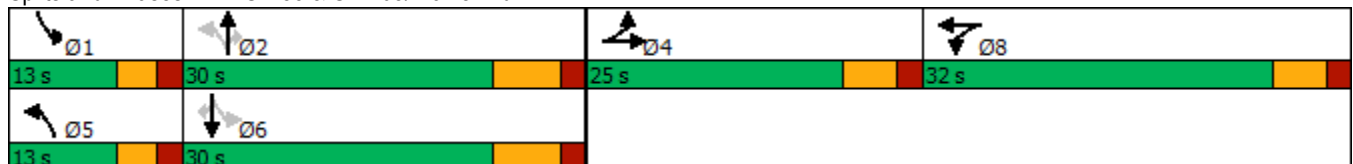


Lane Group	EBT	EBR	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕	↗	↕	↖	↑	↗	↖	↑	↗
Traffic Volume (vph)	152	136	120	191	266	24	50	288	41
Future Volume (vph)	152	136	120	191	266	24	50	288	41
Turn Type	NA	Free	NA	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	4		8	5	2		1	6	
Permitted Phases		Free		2		2	6		6
Detector Phase	4		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
Minimum Split (s)	11.0		11.0	10.0	12.0	12.0	10.0	12.0	12.0
Total Split (s)	25.0		32.0	13.0	30.0	30.0	13.0	30.0	30.0
Total Split (%)	25.0%		32.0%	13.0%	30.0%	30.0%	13.0%	30.0%	30.0%
Yellow Time (s)	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
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	Max	Max	None	Max	Max
Act Effct Green (s)	16.8	95.9	23.8	34.5	26.3	26.3	32.3	23.1	23.1
Actuated g/C Ratio	0.18	1.00	0.25	0.36	0.27	0.27	0.34	0.24	0.24
v/c Ratio	0.79	0.10	0.89	0.59	0.56	0.06	0.18	0.64	0.08
Control Delay	56.4	0.1	57.4	30.2	37.8	0.2	21.3	41.5	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.4	0.1	57.4	30.2	37.8	0.2	21.3	41.5	0.3
LOS	E	A	E	C	D	A	C	D	A
Approach Delay	35.3		57.4		32.5			33.8	
Approach LOS	D		E		C			C	

Intersection Summary

Cycle Length: 100
 Actuated Cycle Length: 95.9
 Natural Cycle: 75
 Control Type: Semi Act-Uncoord
 Maximum v/c Ratio: 0.89
 Intersection Signal Delay: 39.2
 Intersection Capacity Utilization 72.7%
 Analysis Period (min) 15
 Intersection LOS: D
 ICU Level of Service C

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



Intersection

Int Delay, s/veh 5.5

Movement EBT EBR WBL WBT NBL NBR

Lane Configurations	↑	↗	↘	↑	↘	↗
Traffic Vol, veh/h	89	136	9	85	213	19
Future Vol, veh/h	89	136	9	85	213	19
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Yield	-	None	-	None
Storage Length	-	0	50	-	300	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	75	75	81	75	75
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	97	181	12	105	284	25

Major/Minor Major1 Major2 Minor1

Conflicting Flow All	0	0	97	0	226	97
Stage 1	-	-	-	-	97	-
Stage 2	-	-	-	-	129	-
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	-	-	1496	-	762	959
Stage 1	-	-	-	-	927	-
Stage 2	-	-	-	-	897	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1496	-	756	959
Mov Cap-2 Maneuver	-	-	-	-	756	-
Stage 1	-	-	-	-	920	-
Stage 2	-	-	-	-	897	-

Approach EB WB NB

HCM Control Delay, s	0	0.8	12.3
HCM LOS			B

Minor Lane/Major Mvmt NBLn1 NBLn2 EBT EBR WBL WBT

Capacity (veh/h)	756	959	-	-	1496	-
HCM Lane V/C Ratio	0.376	0.026	-	-	0.008	-
HCM Control Delay (s)	12.6	8.9	-	-	7.4	-
HCM Lane LOS	B	A	-	-	A	-
HCM 95th %tile Q(veh)	1.8	0.1	-	-	0	-

Timings

Short-Term Total Traffic With Right-in/Right-out at Pinehurst/SH 83

1: SH 83 & SH 105/Walker Rd

PM Peak Hour

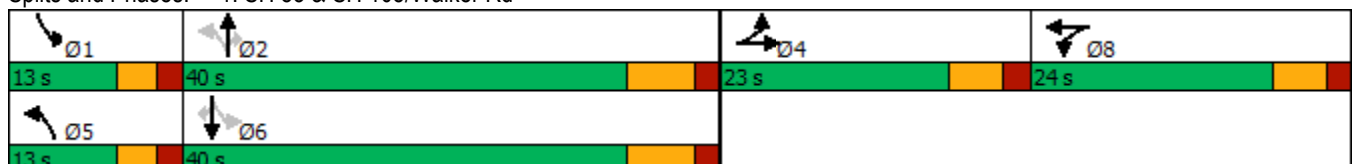


Lane Group	EBT	EBR	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕	↗	↕	↖	↑	↗	↖	↑	↗
Traffic Volume (vph)	105	171	104	179	350	54	44	474	76
Future Volume (vph)	105	171	104	179	350	54	44	474	76
Turn Type	NA	Free	NA	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	4		8	5	2		1	6	
Permitted Phases		Free		2		2	6		6
Detector Phase	4		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
Minimum Split (s)	11.0		11.0	10.0	12.0	12.0	10.0	12.0	12.0
Total Split (s)	23.0		24.0	13.0	40.0	40.0	13.0	40.0	40.0
Total Split (%)	23.0%		24.0%	13.0%	40.0%	40.0%	13.0%	40.0%	40.0%
Yellow Time (s)	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
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	Max	Max	None	Max	Max
Act Effct Green (s)	13.7	93.8	14.8	45.7	39.2	39.2	41.9	33.2	33.2
Actuated g/C Ratio	0.15	1.00	0.16	0.49	0.42	0.42	0.45	0.35	0.35
v/c Ratio	0.67	0.11	0.73	0.60	0.52	0.08	0.10	0.72	0.12
Control Delay	51.4	0.1	51.9	23.3	26.8	0.2	14.0	35.1	0.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.4	0.1	51.9	23.3	26.8	0.2	14.0	35.1	0.4
LOS	D	A	D	C	C	A	B	D	A
Approach Delay	25.6		51.9		23.2			29.1	
Approach LOS	C		D		C			C	

Intersection Summary

Cycle Length: 100
 Actuated Cycle Length: 93.8
 Natural Cycle: 65
 Control Type: Semi Act-Uncoord
 Maximum v/c Ratio: 0.73
 Intersection Signal Delay: 28.9
 Intersection Capacity Utilization 68.0%
 Analysis Period (min) 15
 Intersection LOS: C
 ICU Level of Service C

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



Intersection

Int Delay, s/veh 3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↘	↑	↘	↗
Traffic Vol, veh/h	138	63	4	100	109	11
Future Vol, veh/h	138	63	4	100	109	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Yield	-	None	-	None
Storage Length	-	0	50	-	300	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	77	92	92	99	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	179	68	4	101	118	12

Major/Minor

	Major1	Major2	Minor1		
Conflicting Flow All	0	0	179	0	288
Stage 1	-	-	-	-	179
Stage 2	-	-	-	-	109
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1397	-	702
Stage 1	-	-	-	-	852
Stage 2	-	-	-	-	916
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1397	-	700
Mov Cap-2 Maneuver	-	-	-	-	700
Stage 1	-	-	-	-	849
Stage 2	-	-	-	-	916

Approach

	EB	WB	NB
HCM Control Delay, s	0	0.3	11
HCM LOS			B

Minor Lane/Major Mvmt

	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	700	864	-	-	1397	-
HCM Lane V/C Ratio	0.169	0.014	-	-	0.003	-
HCM Control Delay (s)	11.2	9.2	-	-	7.6	-
HCM Lane LOS	B	A	-	-	A	-
HCM 95th %tile Q(veh)	0.6	0	-	-	0	-

Timings

Short-Term Total Traffic With Right-in/Right-out at Pinehurst/SH83

1: SH 83 & SH 105/Walker Rd

AM Peak Hour

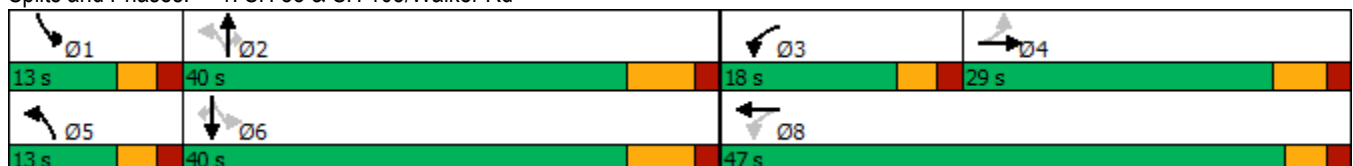


Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↶	↷	↷	↶	↷	↶	↷	↷	↶	↷	↷
Traffic Volume (vph)	39	274	148	196	108	313	437	9	89	267	73
Future Volume (vph)	39	274	148	196	108	313	437	9	89	267	73
Turn Type	Perm	NA	Free	pm+pt	NA	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4		3	8	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)	29.0	29.0		18.0	47.0	13.0	40.0	40.0	13.0	40.0	40.0
Total Split (%)	29.0%	29.0%		18.0%	47.0%	13.0%	40.0%	40.0%	13.0%	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 Effct Green (s)	23.0	23.0	100.0	42.0	42.0	43.2	33.2	33.2	42.8	33.0	33.0
Actuated g/C Ratio	0.23	0.23	1.00	0.42	0.42	0.43	0.33	0.33	0.43	0.33	0.33
v/c Ratio	0.15	0.99	0.09	0.99	0.31	0.82	0.80	0.02	0.49	0.51	0.14
Control Delay	32.6	79.9	0.1	77.1	18.4	38.5	42.2	0.1	21.3	30.6	1.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.6	79.9	0.1	77.1	18.4	38.5	42.2	0.1	21.3	30.6	1.3
LOS	C	E	A	E	B	D	D	A	C	C	A
Approach Delay		57.5			51.4		40.0			23.5	
Approach LOS		E			D		D			C	

Intersection Summary

Cycle Length: 100
 Actuated Cycle Length: 100
 Natural Cycle: 90
 Control Type: Semi Act-Uncoord
 Maximum v/c Ratio: 0.99
 Intersection Signal Delay: 43.1
 Intersection LOS: D
 Intersection Capacity Utilization 75.8%
 ICU Level of Service D
 Analysis Period (min) 15

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



Intersection

Intersection Delay, s/veh 25.2

Intersection LOS D

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗		↖	↖	↗
Traffic Vol, veh/h	44	328	22	190	158	21
Future Vol, veh/h	44	328	22	190	158	21
Peak Hour Factor	0.85	0.56	0.55	1.00	0.55	0.55
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	52	586	40	190	287	38
Number of Lanes	1	1	0	1	1	1

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	2	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	2	2
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	2	0	1
HCM Control Delay	32.5	14.1	18.7
HCM LOS	D	B	C

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1
Vol Left, %	100%	0%	0%	0%	10%
Vol Thru, %	0%	0%	100%	0%	90%
Vol Right, %	0%	100%	0%	100%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	158	21	44	328	212
LT Vol	158	0	0	0	22
Through Vol	0	0	44	0	190
RT Vol	0	21	0	328	0
Lane Flow Rate	287	38	52	586	230
Geometry Grp	7	7	7	7	4
Degree of Util (X)	0.583	0.065	0.088	0.877	0.413
Departure Headway (Hd)	7.308	6.087	6.098	5.388	6.463
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	491	586	585	668	554
Service Time	5.073	3.851	3.862	3.151	4.54
HCM Lane V/C Ratio	0.585	0.065	0.089	0.877	0.415
HCM Control Delay	19.9	9.3	9.5	34.5	14.1
HCM Lane LOS	C	A	A	D	B
HCM 95th-tile Q	3.7	0.2	0.3	10.5	2

HCM 6th TWSC
3: N-S Collector St & North School Access

Short-Term Total Traffic With Right-in/Right-out at Pinehurst/SH83

AM Peak Hour

Intersection

Int Delay, s/veh 1.7

Movement WBL WBR NBT NBR SBL SBT

Lane Configurations	↘↗		↑	↗↘	↘↗	↑
Traffic Vol, veh/h	0	0	179	64	111	239
Future Vol, veh/h	0	0	179	64	111	239
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	55	55	55	55	55	55
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	325	116	202	435

Major/Minor Minor1 Major1 Major2

Conflicting Flow All	1164	325	0	0	441	0
Stage 1	325	-	-	-	-	-
Stage 2	839	-	-	-	-	-
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	215	716	-	-	1119	-
Stage 1	732	-	-	-	-	-
Stage 2	424	-	-	-	-	-
Platoon blocked, %			-	-	-	-
Mov Cap-1 Maneuver	176	716	-	-	1119	-
Mov Cap-2 Maneuver	199	-	-	-	-	-
Stage 1	600	-	-	-	-	-
Stage 2	424	-	-	-	-	-

Approach WB NB SB

HCM Control Delay, s	0	0	2.8
HCM LOS	A		

Minor Lane/Major Mvmt NBT NBRWBLn1 SBL SBT

Capacity (veh/h)	-	-	-	1119	-
HCM Lane V/C Ratio	-	-	-	0.18	-
HCM Control Delay (s)	-	-	0	8.9	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	-	0.7	-

HCM 6th TWSC Short-Term Total Traffic With Right-in/Right-out at Pinehurst/SH83
 4: N-S Collector St & YMCA Access AM Peak Hour

Intersection						
Int Delay, s/veh	0.9					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	3	31	212	24	42	197
Future Vol, veh/h	3	31	212	24	42	197
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	92	92	55	92	92	55
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	34	385	26	46	358

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	848	398	0	0	411
Stage 1	398	-	-	-	-
Stage 2	450	-	-	-	-
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	332	652	-	-	1148
Stage 1	678	-	-	-	-
Stage 2	642	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	319	652	-	-	1148
Mov Cap-2 Maneuver	429	-	-	-	-
Stage 1	651	-	-	-	-
Stage 2	642	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.1	0	0.9
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	623	1148
HCM Lane V/C Ratio	-	-	0.059	0.04
HCM Control Delay (s)	-	-	11.1	8.3
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	0.2	0.1

Intersection

Int Delay, s/veh 9.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↘	↑	↑	↗	↘	↗
Traffic Vol, veh/h	88	114	163	148	197	3
Future Vol, veh/h	88	114	163	148	197	3
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	-	-	205	205	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	55	55	55	55	55	55
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	85	110	296	269	358	5

Major/Minor

	Major1	Major2	Minor2
Conflicting Flow All	565	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	1007	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1007	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach

	EB	WB	SB
HCM Control Delay, s	3.9	0	26.3
HCM LOS			D

Minor Lane/Major Mvmt

	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1007	-	-	-	514	743
HCM Lane V/C Ratio	0.084	-	-	-	0.697	0.007
HCM Control Delay (s)	8.9	-	-	-	26.6	9.9
HCM Lane LOS	A	-	-	-	D	A
HCM 95th %tile Q(veh)	0.3	-	-	-	5.4	0

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

Short-Term Total Traffic With Right-in/Right-out at Pinehurst/SH83

AM Peak Hour

Intersection

Int Delay, s/veh 10.1

Movement EBL EBT WBT WBR SBL SBR

Lane Configurations	↘	↑	↗		↘	
Traffic Vol, veh/h	311	0	0	0	0	311
Future Vol, veh/h	311	0	0	0	0	311
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	55	92	92	75	55	55
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	565	0	0	0	0	565

Major/Minor Major1 Major2 Minor2

Conflicting Flow All	1	0	-	0	1131	1
Stage 1	-	-	-	-	1	-
Stage 2	-	-	-	-	1130	-
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	-	-	-	225	1084
Stage 1	-	-	-	-	1022	-
Stage 2	-	-	-	-	308	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1622	-	-	-	147	1084
Mov Cap-2 Maneuver	-	-	-	-	147	-
Stage 1	-	-	-	-	666	-
Stage 2	-	-	-	-	308	-

Approach EB WB SB

HCM Control Delay, s	8.4	0	11.9
HCM LOS			B

Minor Lane/Major Mvmt EBL EBT WBT WBR SBLn1

Capacity (veh/h)	1622	-	-	-	1084
HCM Lane V/C Ratio	0.349	-	-	-	0.522
HCM Control Delay (s)	8.4	-	-	-	11.9
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	1.6	-	-	-	3.1

Timings
121: SH 83 & Hodgen Rd

Short-Term Total Traffic With Right-in/Right-out at Pinehurst/SH83

AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations											
Traffic Volume (vph)	105	65	88	236	144	257	46	403	47	79	427
Future Volume (vph)	105	65	88	236	144	257	46	403	47	79	427
Turn Type	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA
Protected Phases	7	4		3	8		5	2		1	6
Permitted Phases			4	8		8	2		2	6	
Detector Phase	7	4	4	3	8	8	5	2	2	1	6
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	11.0	10.0	12.0	12.0	10.0	12.0
Total Split (s)	15.0	17.0	17.0	15.0	17.0	17.0	13.0	55.0	55.0	13.0	55.0
Total Split (%)	15.0%	17.0%	17.0%	15.0%	17.0%	17.0%	13.0%	55.0%	55.0%	13.0%	55.0%
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	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	6.0	6.0	5.0	7.0	7.0	5.0	7.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	Min	Min	None	Min
Act Effct Green (s)	10.0	10.5	10.5	22.2	10.9	10.9	39.3	31.8	31.8	41.0	34.7
Actuated g/C Ratio	0.12	0.13	0.13	0.27	0.13	0.13	0.48	0.39	0.39	0.51	0.43
v/c Ratio	0.65	0.37	0.35	0.66	0.67	0.63	0.18	0.64	0.08	0.25	0.84
Control Delay	54.8	42.4	6.6	36.4	52.8	12.0	9.4	24.4	0.2	9.7	31.2
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	54.8	42.4	6.6	36.4	52.8	12.0	9.4	24.4	0.2	9.7	31.2
LOS	D	D	A	D	D	B	A	C	A	A	C
Approach Delay		35.2			30.3			20.7			28.4
Approach LOS		D			C			C			C

Intersection Summary

Cycle Length: 100
 Actuated Cycle Length: 81.1
 Natural Cycle: 75
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.84
 Intersection Signal Delay: 28.1
 Intersection LOS: C
 Intersection Capacity Utilization 68.6%
 ICU Level of Service C
 Analysis Period (min) 15

Splits and Phases: 121: SH 83 & Hodgen Rd



Timings Short-Term Total Traffic With Right-in/Right-out Access at Pinehurst/SH 83
 1: SH 83 & SH 105/Walker Rd Middy (2-3 PM)

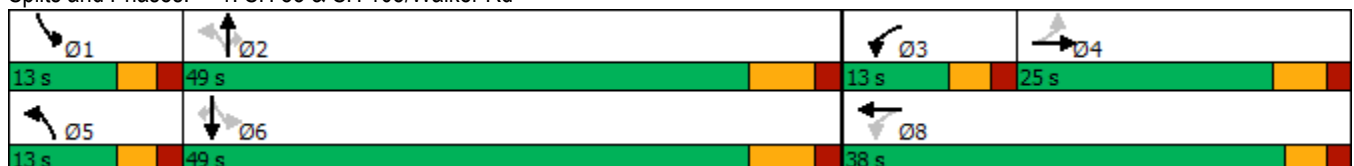


Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	46	152	136	146	120	191	266	24	50	288	41
Future Volume (vph)	46	152	136	146	120	191	266	24	50	288	41
Turn Type	Perm	NA	Free	pm+pt	NA	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4		3	8	5	2		1	6	
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		13.0	38.0	13.0	49.0	49.0	13.0	49.0	49.0
Total Split (%)	25.0%	25.0%		13.0%	38.0%	13.0%	49.0%	49.0%	13.0%	49.0%	49.0%
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 Effct Green (s)	15.1	15.1	96.2	29.1	29.1	53.7	45.4	45.4	51.0	42.1	42.1
Actuated g/C Ratio	0.16	0.16	1.00	0.30	0.30	0.56	0.47	0.47	0.53	0.44	0.44
v/c Ratio	0.28	0.70	0.10	0.67	0.37	0.34	0.33	0.04	0.11	0.35	0.05
Control Delay	39.5	51.3	0.1	39.2	26.2	11.6	19.0	0.1	9.7	20.2	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.5	51.3	0.1	39.2	26.2	11.6	19.0	0.1	9.7	20.2	0.1
LOS	D	D	A	D	C	B	B	A	A	C	A
Approach Delay		30.6			32.5		14.9			16.4	
Approach LOS		C			C		B			B	

Intersection Summary

Cycle Length: 100
 Actuated Cycle Length: 96.2
 Natural Cycle: 60
 Control Type: Semi Act-Uncoord
 Maximum v/c Ratio: 0.70
 Intersection Signal Delay: 23.0 Intersection LOS: C
 Intersection Capacity Utilization 61.0% ICU Level of Service B
 Analysis Period (min) 15

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



HCM 6th AWSC Short-Term Total Traffic With Right-in/Right-out Access at Pinehurst/SH 83
 2: N-S Collector St & Walker Rd

Midday (2-3 PM)

Intersection

Intersection Delay, s/veh	11.3
Intersection LOS	B

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗		↖	↖	↗
Traffic Vol, veh/h	89	136	9	85	213	19
Future Vol, veh/h	89	136	9	85	213	19
Peak Hour Factor	0.92	0.75	0.75	0.81	0.75	0.75
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	97	181	12	105	284	25
Number of Lanes	1	1	0	1	1	1

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	2	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	2	2
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	2	0	1
HCM Control Delay	9.3	10	13.6
HCM LOS	A	A	B

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1
Vol Left, %	100%	0%	0%	0%	10%
Vol Thru, %	0%	0%	100%	0%	90%
Vol Right, %	0%	100%	0%	100%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	213	19	89	136	94
LT Vol	213	0	0	0	9
Through Vol	0	0	89	0	85
RT Vol	0	19	0	136	0
Lane Flow Rate	284	25	97	181	117
Geometry Grp	7	7	7	7	4
Degree of Util (X)	0.472	0.034	0.151	0.247	0.182
Departure Headway (Hd)	5.986	4.778	5.603	4.896	5.615
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	596	740	637	729	634
Service Time	3.772	2.564	3.369	2.662	3.697
HCM Lane V/C Ratio	0.477	0.034	0.152	0.248	0.185
HCM Control Delay	14.1	7.7	9.4	9.3	10
HCM Lane LOS	B	A	A	A	A
HCM 95th-tile Q	2.5	0.1	0.5	1	0.7

HCM 6th TWSC Short-Term Total Traffic With Right-in/Right-out Access at Pinehurst/SH 83
 3: N-S Collector St & North School Access

Midday (2-3 PM)

Intersection						
Int Delay, s/veh	3.9					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↘		↑	↗	↘	↑
Traffic Vol, veh/h	0	148	83	0	0	145
Future Vol, veh/h	0	148	83	0	0	145
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	75	75	75	75	75	75
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	197	111	0	0	193

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	304	111	0
Stage 1	111	-	-
Stage 2	193	-	-
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	688	942	-
Stage 1	914	-	-
Stage 2	840	-	-
Platoon blocked, %			
Mov Cap-1 Maneuver	688	942	-
Mov Cap-2 Maneuver	711	-	-
Stage 1	914	-	-
Stage 2	840	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.8	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	942	1479
HCM Lane V/C Ratio	-	-	0.209	-
HCM Control Delay (s)	-	-	9.8	0
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0.8	0

HCM 6th TWSC Short-Term Total Traffic With Right-in/Right-out Access at Pinehurst/SH 83
 4: N-S Collector St & YMCA Access Midday (2-3 PM)

Intersection						
Int Delay, s/veh	0.7					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	1	13	70	5	10	136
Future Vol, veh/h	1	13	70	5	10	136
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	92	92	75	92	92	75
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	14	93	5	11	181

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	299	96	0	0	98
Stage 1	96	-	-	-	-
Stage 2	203	-	-	-	-
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	692	960	-	-	1495
Stage 1	928	-	-	-	-
Stage 2	831	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	687	960	-	-	1495
Mov Cap-2 Maneuver	705	-	-	-	-
Stage 1	922	-	-	-	-
Stage 2	831	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.9	0	0.4
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	936	1495
HCM Lane V/C Ratio	-	-	0.016	0.007
HCM Control Delay (s)	-	-	8.9	7.4
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0

HCM 6th TWSC Short-Term Total Traffic With Right-in/Right-out Access at Pinehurst/SH 83
 5: Pinehurst Cir & N-S Collector St Midday (2-3 PM)

Intersection

Int Delay, s/veh 4.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↘	↗	↗	↘	↘	↘
Traffic Vol, veh/h	5	78	78	70	136	1
Future Vol, veh/h	5	78	78	70	136	1
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	-	-	205	205	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	75	75	75	75	75	75
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	7	104	104	93	181	1

Major/Minor

	Major1	Major2	Minor2		
Conflicting Flow All	197	0	0	222	104
Stage 1	-	-	-	104	-
Stage 2	-	-	-	118	-
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	1376	-	-	766	951
Stage 1	-	-	-	920	-
Stage 2	-	-	-	907	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	1376	-	-	762	951
Mov Cap-2 Maneuver	-	-	-	762	-
Stage 1	-	-	-	915	-
Stage 2	-	-	-	907	-

Approach

	EB	WB	SB
HCM Control Delay, s	0.5	0	11.2
HCM LOS			B

Minor Lane/Major Mvmt

	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1376	-	-	-	762	951
HCM Lane V/C Ratio	0.005	-	-	-	0.238	0.001
HCM Control Delay (s)	7.6	-	-	-	11.2	8.8
HCM Lane LOS	A	-	-	-	B	A
HCM 95th %tile Q(veh)	0	-	-	-	0.9	0

HCM 6th TWSC Short-Term Total Traffic With Right-in/Right-out Access at Pinehurst/SH 83
 6: Pinehurst Cir & South School Access Midday (2-3 PM)

Intersection						
Int Delay, s/veh	8.3					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	214	0	0	0	0	148
Future Vol, veh/h	214	0	0	0	0	148
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	75	75
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	285	0	0	0	0	197

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	1	0	-	0	571
Stage 1	-	-	-	-	1
Stage 2	-	-	-	-	570
Critical Hdwy	4.12	-	-	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	2.218	-	-	-	3.518
Pot Cap-1 Maneuver	1622	-	-	-	482
Stage 1	-	-	-	-	1022
Stage 2	-	-	-	-	566
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1622	-	-	-	397
Mov Cap-2 Maneuver	-	-	-	-	397
Stage 1	-	-	-	-	842
Stage 2	-	-	-	-	566

Approach	EB	WB	SB
HCM Control Delay, s	7.7	0	9.1
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1622	-	-	-	1084
HCM Lane V/C Ratio	0.176	-	-	-	0.182
HCM Control Delay (s)	7.7	-	-	-	9.1
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0.6	-	-	-	0.7

Timings

Short-Term Total Traffic With Right-in/Right-out at Pinehurst/SH 83

1: SH 83 & SH 105/Walker Rd

PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	63	105	171	78	104	179	350	54	44	474	76
Future Volume (vph)	63	105	171	78	104	179	350	54	44	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)	20.0	20.0		13.0	33.0	13.0	54.0	54.0	13.0	54.0	54.0
Total Split (%)	20.0%	20.0%		13.0%	33.0%	13.0%	54.0%	54.0%	13.0%	54.0%	54.0%
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 Effct Green (s)	10.7	10.7	93.9	21.6	21.6	60.0	53.4	53.4	55.8	47.3	47.3
Actuated g/C Ratio	0.11	0.11	1.00	0.23	0.23	0.64	0.57	0.57	0.59	0.50	0.50
v/c Ratio	0.47	0.53	0.11	0.28	0.31	0.40	0.38	0.07	0.07	0.50	0.09
Control Delay	51.4	49.7	0.1	30.6	28.0	9.7	15.4	0.1	7.5	19.3	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	51.4	49.7	0.1	30.6	28.0	9.7	15.4	0.1	7.5	19.3	0.2
LOS	D	D	A	C	C	A	B	A	A	B	A
Approach Delay		25.0			29.0		12.3			16.0	
Approach LOS		C			C		B			B	

Intersection Summary

Cycle Length: 100	
Actuated Cycle Length: 93.9	
Natural Cycle: 60	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.53	
Intersection Signal Delay: 17.9	Intersection LOS: B
Intersection Capacity Utilization 65.4%	ICU Level of Service C
Analysis Period (min) 15	

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



Intersection

Intersection Delay, s/veh	9.1
Intersection LOS	A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗		↖	↖	↗
Traffic Vol, veh/h	138	63	4	100	109	11
Future Vol, veh/h	138	63	4	100	109	11
Peak Hour Factor	0.77	0.92	0.92	0.99	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	179	68	4	101	118	12
Number of Lanes	1	1	0	1	1	1

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	2	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	2	2
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	2	0	1
HCM Control Delay	8.8	8.9	9.8
HCM LOS	A	A	A

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1
Vol Left, %	100%	0%	0%	0%	4%
Vol Thru, %	0%	0%	100%	0%	96%
Vol Right, %	0%	100%	0%	100%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	109	11	138	63	104
LT Vol	109	0	0	0	4
Through Vol	0	0	138	0	100
RT Vol	0	11	0	63	0
Lane Flow Rate	118	12	179	68	105
Geometry Grp	7	7	7	7	4
Degree of Util (X)	0.193	0.015	0.25	0.082	0.146
Departure Headway (Hd)	5.872	4.665	5.017	4.314	5.004
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	611	766	717	831	717
Service Time	3.608	2.401	2.738	2.035	3.031
HCM Lane V/C Ratio	0.193	0.016	0.25	0.082	0.146
HCM Control Delay	10	7.5	9.4	7.4	8.9
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0.7	0	1	0.3	0.5

HCM 6th TWSC
3: N-S Collector St & North School Access

Short-Term Total Traffic With Right-in/Right-out at Pinehurst/SH 83

PM Peak Hour

Intersection

Int Delay, s/veh 2.9

Movement WBL WBR NBT NBR SBL SBT

Lane Configurations	↘↘		↑	↗	↘	↑
Traffic Vol, veh/h	0	49	72	17	20	46
Future Vol, veh/h	0	49	72	17	20	46
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	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	53	78	18	22	50

Major/Minor Minor1 Major1 Major2

Conflicting Flow All	172	78	0	0	96	0
Stage 1	78	-	-	-	-	-
Stage 2	94	-	-	-	-	-
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	818	983	-	-	1498	-
Stage 1	945	-	-	-	-	-
Stage 2	930	-	-	-	-	-
Platoon blocked, %			-	-	-	-
Mov Cap-1 Maneuver	806	983	-	-	1498	-
Mov Cap-2 Maneuver	787	-	-	-	-	-
Stage 1	931	-	-	-	-	-
Stage 2	930	-	-	-	-	-

Approach WB NB SB

HCM Control Delay, s	8.9	0	2.3
HCM LOS	A		

Minor Lane/Major Mvmt NBT NBRWBLn1 SBL SBT

Capacity (veh/h)	-	-	983	1498	-
HCM Lane V/C Ratio	-	-	0.054	0.015	-
HCM Control Delay (s)	-	-	8.9	7.4	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	0.2	0	-

Intersection

Int Delay, s/veh 4.2

Movement WBL WBR NBT NBR SBL SBT

Lane Configurations						
Traffic Vol, veh/h	5	50	38	22	26	20
Future Vol, veh/h	5	50	38	22	26	20
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	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	54	41	24	28	22

Major/Minor Minor1 Major1 Major2

Conflicting Flow All	131	53	0	0	65	0
Stage 1	53	-	-	-	-	-
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	863	1014	-	-	1537	-
Stage 1	970	-	-	-	-	-
Stage 2	945	-	-	-	-	-
Platoon blocked, %			-	-	-	-
Mov Cap-1 Maneuver	847	1014	-	-	1537	-
Mov Cap-2 Maneuver	812	-	-	-	-	-
Stage 1	953	-	-	-	-	-
Stage 2	945	-	-	-	-	-

Approach WB NB SB

HCM Control Delay, s	8.9	0	4.2
HCM LOS	A		

Minor Lane/Major Mvmt NBT NBRWBLn1 SBL SBT

Capacity (veh/h)	-	-	992	1537	-
HCM Lane V/C Ratio	-	-	0.06	0.018	-
HCM Control Delay (s)	-	-	8.9	7.4	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	0.2	0.1	-

Intersection

Int Delay, s/veh 4.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↘	↗	↗	↘	↘	↘
Traffic Vol, veh/h	38	16	27	21	20	5
Future Vol, veh/h	38	16	27	21	20	5
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	-	-	205	205	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	41	17	29	23	22	5

Major/Minor

	Major1	Major2	Minor2		
Conflicting Flow All	52	0	-	0	128 29
Stage 1	-	-	-	-	29 -
Stage 2	-	-	-	-	99 -
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	1554	-	-	-	866 1046
Stage 1	-	-	-	-	994 -
Stage 2	-	-	-	-	925 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1554	-	-	-	843 1046
Mov Cap-2 Maneuver	-	-	-	-	798 -
Stage 1	-	-	-	-	968 -
Stage 2	-	-	-	-	925 -

Approach

	EB	WB	SB
HCM Control Delay, s	5.2	0	9.4
HCM LOS			A

Minor Lane/Major Mvmt

	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1554	-	-	-	798	1046
HCM Lane V/C Ratio	0.027	-	-	-	0.027	0.005
HCM Control Delay (s)	7.4	-	-	-	9.6	8.5
HCM Lane LOS	A	-	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	-	0.1	0

Intersection						
Int Delay, s/veh	7.9					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↘	↑	↗		↘	
Traffic Vol, veh/h	36	0	0	0	0	48
Future Vol, veh/h	36	0	0	0	0	48
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	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	39	0	0	0	0	52

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	1	0	0
Stage 1	-	-	1
Stage 2	-	-	78
Critical Hdwy	4.12	-	6.42
Critical Hdwy Stg 1	-	-	5.42
Critical Hdwy Stg 2	-	-	5.42
Follow-up Hdwy	2.218	-	3.518
Pot Cap-1 Maneuver	1622	-	924
Stage 1	-	-	1022
Stage 2	-	-	945
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1622	-	902
Mov Cap-2 Maneuver	-	-	902
Stage 1	-	-	997
Stage 2	-	-	945

Approach	EB	WB	SB
HCM Control Delay, s	7.3	0	8.5
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1622	-	-	-	1084
HCM Lane V/C Ratio	0.024	-	-	-	0.048
HCM Control Delay (s)	7.3	-	-	-	8.5
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0.1	-	-	-	0.2

Timings
121: SH 83 & Hodgen Rd

Short-Term Total Traffic With Right-in/Right-out at Pinehurst/SH 83

PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations											
Traffic Volume (vph)	74	170	85	118	124	212	106	308	180	212	398
Future Volume (vph)	74	170	85	118	124	212	106	308	180	212	398
Turn Type	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA
Protected Phases	7	4		3	8		5	2		1	6
Permitted Phases			4	8		8	2		2	6	
Detector Phase	7	4	4	3	8	8	5	2	2	1	6
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	11.0	10.0	12.0	12.0	10.0	12.0
Total Split (s)	15.0	20.0	20.0	15.0	20.0	20.0	13.0	52.0	52.0	13.0	52.0
Total Split (%)	15.0%	20.0%	20.0%	15.0%	20.0%	20.0%	13.0%	52.0%	52.0%	13.0%	52.0%
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	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	6.0	6.0	5.0	7.0	7.0	5.0	7.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	Min	Min	None	Min
Act Effct Green (s)	8.9	13.5	13.5	25.0	16.8	16.8	38.3	28.5	28.5	40.2	32.1
Actuated g/C Ratio	0.11	0.16	0.16	0.30	0.20	0.20	0.46	0.34	0.34	0.48	0.39
v/c Ratio	0.51	0.74	0.29	0.41	0.39	0.48	0.36	0.54	0.30	0.50	0.79
Control Delay	49.2	52.3	4.8	26.7	38.4	8.7	12.8	24.3	3.8	14.6	31.5
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	49.2	52.3	4.8	26.7	38.4	8.7	12.8	24.3	3.8	14.6	31.5
LOS	D	D	A	C	D	A	B	C	A	B	C
Approach Delay		39.3			21.5			16.0			26.5
Approach LOS		D			C			B			C

Intersection Summary

Cycle Length: 100
 Actuated Cycle Length: 83
 Natural Cycle: 65
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.79
 Intersection Signal Delay: 24.8
 Intersection LOS: C
 Intersection Capacity Utilization 67.4%
 ICU Level of Service C
 Analysis Period (min) 15

Splits and Phases: 121: SH 83 & Hodgen Rd

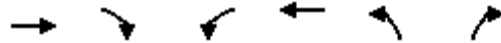


Timings

Short-Term Total Traffic With Right-in/Right-out at Pinehurst/SH83

2: N-S Collector St & Walker Rd

AM Peak Hour



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑	↑	↑	↑	↑
Traffic Volume (vph)	44	328	22	190	158	21
Future Volume (vph)	44	328	22	190	158	21
Turn Type	NA	Perm	Perm	NA	Prot	Perm
Protected Phases	2			6	8	
Permitted Phases		2	6			8
Detector Phase	2	2	6	6	8	8
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	23.0	23.0	23.0	23.0	23.0	23.0
Total Split (s)	55.0	55.0	55.0	55.0	45.0	45.0
Total Split (%)	55.0%	55.0%	55.0%	55.0%	45.0%	45.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	Max	Max	Max	Max	None	None
Act Effct Green (s)	50.8	50.8	50.8	50.8	17.7	17.7
Actuated g/C Ratio	0.65	0.65	0.65	0.65	0.23	0.23
v/c Ratio	0.04	0.48	0.05	0.16	0.72	0.10
Control Delay	6.3	2.2	6.5	6.7	38.6	8.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	6.3	2.2	6.5	6.7	38.6	8.6
LOS	A	A	A	A	D	A
Approach Delay	2.5			6.7	35.1	
Approach LOS	A			A	D	

Intersection Summary

Cycle Length: 100	
Actuated Cycle Length: 78.6	
Natural Cycle: 50	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.72	
Intersection Signal Delay: 12.1	Intersection LOS: B
Intersection Capacity Utilization 32.8%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 2: N-S Collector St & Walker Rd



Timings
2: N-S Collector St & Walker Rd

Short-Term Total Traffic With Right-in/Right-out at Pinehurst/SH 83

Midday (2-3 PM)



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑	↑	↑	↑	↑
Traffic Volume (vph)	89	136	9	85	213	19
Future Volume (vph)	89	136	9	85	213	19
Turn Type	NA	Perm	Perm	NA	Prot	Perm
Protected Phases	2			6	8	
Permitted Phases		2	6			8
Detector Phase	2	2	6	6	8	8
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	23.0	23.0	23.0	23.0	23.0	23.0
Total Split (s)	65.0	65.0	65.0	65.0	35.0	35.0
Total Split (%)	65.0%	65.0%	65.0%	65.0%	35.0%	35.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	Max	Max	Max	Max	None	None
Act Effct Green (s)	60.9	60.9	60.9	60.9	19.5	19.5
Actuated g/C Ratio	0.67	0.67	0.67	0.67	0.22	0.22
v/c Ratio	0.08	0.16	0.01	0.08	0.75	0.07
Control Delay	6.3	1.5	6.6	6.4	45.3	10.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	6.3	1.5	6.6	6.4	45.3	10.7
LOS	A	A	A	A	D	B
Approach Delay	3.2			6.4	42.5	
Approach LOS	A			A	D	

Intersection Summary

Cycle Length: 100
 Actuated Cycle Length: 90.4
 Natural Cycle: 50
 Control Type: Semi Act-Uncoord
 Maximum v/c Ratio: 0.75
 Intersection Signal Delay: 21.0
 Intersection Capacity Utilization 27.3%
 Analysis Period (min) 15
 Intersection LOS: C
 ICU Level of Service A

Splits and Phases: 2: N-S Collector St & Walker Rd



Timings

Short-Term Total Traffic With Right-in/Right-out at Pinehurst/SH 83

2: N-S Collector St & Walker Rd

PM Peak Hour



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑	↑	↑	↑	↑
Traffic Volume (vph)	138	63	4	100	109	11
Future Volume (vph)	138	63	4	100	109	11
Turn Type	NA	Perm	Perm	NA	Prot	Perm
Protected Phases	2			6	8	
Permitted Phases		2	6			8
Detector Phase	2	2	6	6	8	8
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	23.0	23.0	23.0	23.0	23.0	23.0
Total Split (s)	65.0	65.0	65.0	65.0	35.0	35.0
Total Split (%)	65.0%	65.0%	65.0%	65.0%	35.0%	35.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	Max	Max	Max	Max	None	None
Act Effct Green (s)	67.6	67.6	67.6	67.6	11.1	11.1
Actuated g/C Ratio	0.76	0.76	0.76	0.76	0.13	0.13
v/c Ratio	0.13	0.06	0.00	0.07	0.53	0.06
Control Delay	3.4	1.1	3.2	3.3	43.9	16.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	3.4	1.1	3.2	3.3	43.9	16.2
LOS	A	A	A	A	D	B
Approach Delay	2.8			3.3	41.3	
Approach LOS	A			A	D	

Intersection Summary

Cycle Length: 100	
Actuated Cycle Length: 88.7	
Natural Cycle: 50	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.53	
Intersection Signal Delay: 13.3	Intersection LOS: B
Intersection Capacity Utilization 21.6%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 2: N-S Collector St & Walker Rd



HCM 6th Roundabout Short-Term Total Traffic With Right-in/Right-out at Pinehurst/SH83
 2: N-S Collector St & Walker Rd AM Peak Hour

Intersection			
Intersection Delay, s/veh	6.8		
Intersection LOS	A		
Approach	EB	WB	NB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	648	230	325
Demand Flow Rate, veh/h	661	235	332
Vehicles Circulating, veh/h	41	293	53
Vehicles Exiting, veh/h	487	92	649
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	8.0	5.8	5.0
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	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	661	235	332
Cap Entry Lane, veh/h	1323	1023	1307
Entry HV Adj Factor	0.980	0.980	0.979
Flow Entry, veh/h	648	230	325
Cap Entry, veh/h	1297	1002	1280
V/C Ratio	0.499	0.230	0.254
Control Delay, s/veh	8.0	5.8	5.0
LOS	A	A	A
95th %tile Queue, veh	3	1	1

Intersection			
Intersection Delay, s/veh	4.8		
Intersection LOS	A		
Approach	EB	WB	NB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	278	117	309
Demand Flow Rate, veh/h	284	119	316
Vehicles Circulating, veh/h	12	290	99
Vehicles Exiting, veh/h	397	124	197
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	4.4	4.6	5.2
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	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	284	119	316
Cap Entry Lane, veh/h	1363	1027	1247
Entry HV Adj Factor	0.979	0.982	0.978
Flow Entry, veh/h	278	117	309
Cap Entry, veh/h	1335	1008	1220
V/C Ratio	0.208	0.116	0.253
Control Delay, s/veh	4.4	4.6	5.2
LOS	A	A	A
95th %tile Queue, veh	1	0	1

HCM 6th Roundabout Short-Term Total Traffic With Right-in/Right-out at Pinehurst/SH 83
 2: N-S Collector St & Walker Rd PM Peak Hour

Intersection			
Intersection Delay, s/veh	4.1		
Intersection LOS	A		
Approach	EB	WB	NB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	247	105	130
Demand Flow Rate, veh/h	252	107	132
Vehicles Circulating, veh/h	4	120	183
Vehicles Exiting, veh/h	223	195	73
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	4.2	3.7	4.2
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	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	252	107	132
Cap Entry Lane, veh/h	1374	1221	1145
Entry HV Adj Factor	0.982	0.981	0.985
Flow Entry, veh/h	247	105	130
Cap Entry, veh/h	1349	1198	1128
V/C Ratio	0.183	0.088	0.115
Control Delay, s/veh	4.2	3.7	4.2
LOS	A	A	A
95th %tile Queue, veh	1	0	0

Levels of Service - 2040 Background Traffic

- With Low Intensity Development of Adjacent Parcels
- No Redevelopment North of Walker Rd
- With Right-in/Right-out Access to SH 83



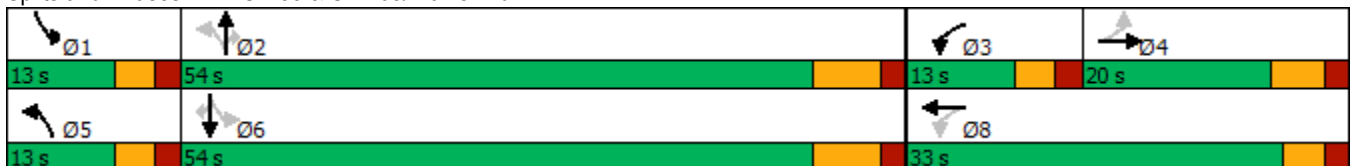
2040 Background Traffic With Low Intensity Development and RIRO at Pinehurst/SH83
 1: SH 83 & SH 105/Walker Rd Timings AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations												
Traffic Volume (vph)	52	37	200	71	129	255	630	12	11	424	98	
Future Volume (vph)	52	37	200	71	129	255	630	12	11	424	98	
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)	20.0	20.0		13.0	33.0	13.0	54.0	54.0	13.0	54.0	54.0	
Total Split (%)	20.0%	20.0%		13.0%	33.0%	13.0%	54.0%	54.0%	13.0%	54.0%	54.0%	
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 Effct Green (s)	10.6	10.6	94.0	21.7	21.7	61.1	56.0	56.0	55.1	47.2	47.2	
Actuated g/C Ratio	0.11	0.11	1.00	0.23	0.23	0.65	0.60	0.60	0.59	0.50	0.50	
v/c Ratio	0.43	0.23	0.13	0.33	0.58	0.49	0.58	0.02	0.04	0.48	0.12	
Control Delay	51.2	41.9	0.2	31.8	34.4	10.9	17.3	0.0	7.3	18.6	1.4	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	51.2	41.9	0.2	31.8	34.4	10.9	17.3	0.0	7.3	18.6	1.4	
LOS	D	D	A	C	C	B	B	A	A	B	A	
Approach Delay		15.6			33.7		15.2			15.2		
Approach LOS		B			C		B			B		

Intersection Summary

Cycle Length: 100
 Actuated Cycle Length: 94
 Natural Cycle: 60
 Control Type: Semi Act-Uncoord
 Maximum v/c Ratio: 0.58
 Intersection Signal Delay: 18.1 Intersection LOS: B
 Intersection Capacity Utilization 70.8% ICU Level of Service C
 Analysis Period (min) 15

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



2040 Background Traffic With Low Intensity Development and RIRO at Pinehurst/SH83
 2: N-S Collector St & Walker Rd HCM 6th TWSC AM Peak Hour

Intersection						
Int Delay, s/veh	0.4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗		↖	↘	
Traffic Vol, veh/h	54	6	0	249	7	1
Future Vol, veh/h	54	6	0	249	7	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Yield	-	None	-	None
Storage Length	-	235	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	60	60	92	60	60
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	59	10	0	271	12	2

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	59	0	330
Stage 1	-	-	-	-	59
Stage 2	-	-	-	-	271
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1545	-	665
Stage 1	-	-	-	-	964
Stage 2	-	-	-	-	775
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1545	-	665
Mov Cap-2 Maneuver	-	-	-	-	665
Stage 1	-	-	-	-	964
Stage 2	-	-	-	-	775

Approach	EB	WB	NB
HCM Control Delay, s	0	0	10.3
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	694	-	-	1545	-
HCM Lane V/C Ratio	0.019	-	-	-	-
HCM Control Delay (s)	10.3	-	-	0	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

2040 Background Traffic With Low Intensity Development and RIRO at Pinehurst/SH83
 5: Pinehurst Cir & N-S Collector St HCM 6th TWSC

AM Peak Hour

Intersection

Int Delay, s/veh 1.8

Movement EBL EBT WBT WBR SBL SBR

Lane Configurations	↘	↑	↑	↗	↘	↗
Traffic Vol, veh/h	0	2	17	6	6	0
Future Vol, veh/h	0	2	17	6	6	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	255	-	-	205	205	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	55	55	55	55	55	55
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	2	31	11	11	0

Major/Minor Major1 Major2 Minor2

Conflicting Flow All	42	0	-	0	33	31
Stage 1	-	-	-	-	31	-
Stage 2	-	-	-	-	2	-
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	1567	-	-	-	980	1043
Stage 1	-	-	-	-	992	-
Stage 2	-	-	-	-	1021	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	1567	-	-	-	980	1043
Mov Cap-2 Maneuver	-	-	-	-	903	-
Stage 1	-	-	-	-	992	-
Stage 2	-	-	-	-	1021	-

Approach EB WB SB

HCM Control Delay, s	0	0	9
HCM LOS			A

Minor Lane/Major Mvmt EBL EBT WBT WBR SBLn1 SBLn2

Capacity (veh/h)	1567	-	-	-	903	-
HCM Lane V/C Ratio	-	-	-	-	0.012	-
HCM Control Delay (s)	0	-	-	-	9	0
HCM Lane LOS	A	-	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	-	0	-

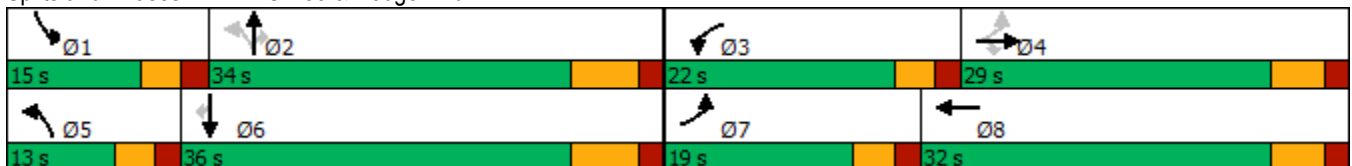
2040 Background Traffic With Low Intensity Development and RIRO at Pinehurst/SH83
 121: SH 83 & Hodgen Rd Timings AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	72	144	186	392	340	314	77	480	125	108	430	150
Future Volume (vph)	72	144	186	392	340	314	77	480	125	108	430	150
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 Effct Green (s)	23.0	14.0	14.0	14.9	23.8	86.4	36.5	28.7	28.7	8.2	29.6	29.6
Actuated g/C Ratio	0.27	0.16	0.16	0.17	0.28	1.00	0.42	0.33	0.33	0.09	0.34	0.34
v/c Ratio	0.24	0.50	0.47	0.70	0.70	0.21	0.18	0.43	0.21	0.35	0.37	0.24
Control Delay	19.2	40.2	9.1	41.8	38.6	0.3	15.2	26.2	5.1	42.2	24.7	5.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.2	40.2	9.1	41.8	38.6	0.3	15.2	26.2	5.1	42.2	24.7	5.4
LOS	B	D	A	D	D	A	B	C	A	D	C	A
Approach Delay		22.1			28.3			21.1			23.2	
Approach LOS		C			C			C			C	

Intersection Summary

Cycle Length: 100
 Actuated Cycle Length: 86.4
 Natural Cycle: 60
 Control Type: Semi Act-Uncoord
 Maximum v/c Ratio: 0.70
 Intersection Signal Delay: 24.4 Intersection LOS: C
 Intersection Capacity Utilization 58.7% ICU Level of Service B
 Analysis Period (min) 15

Splits and Phases: 121: SH 83 & Hodgen Rd



2040 Background Traffic With Low Intensity Development and RIRO at Pinehurst/SH83
 1: SH 83 & SH 105/Walker Rd Timings AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	62	60	184	22	76	179	392	34	21	457	55
Future Volume (vph)	62	60	184	22	76	179	392	34	21	457	55
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)	20.0	20.0		13.0	33.0	13.0	54.0	54.0	13.0	54.0	54.0
Total Split (%)	20.0%	20.0%		13.0%	33.0%	13.0%	54.0%	54.0%	13.0%	54.0%	54.0%
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 Effct Green (s)	9.9	9.9	90.2	17.7	17.7	60.5	54.0	54.0	55.6	47.5	47.5
Actuated g/C Ratio	0.11	0.11	1.00	0.20	0.20	0.67	0.60	0.60	0.62	0.53	0.53
v/c Ratio	0.47	0.39	0.12	0.12	0.34	0.34	0.37	0.04	0.04	0.49	0.06
Control Delay	51.0	44.7	0.2	28.5	29.4	8.2	14.0	0.1	7.0	17.7	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.0	44.7	0.2	28.5	29.4	8.2	14.0	0.1	7.0	17.7	0.1
LOS	D	D	A	C	C	A	B	A	A	B	A
Approach Delay		20.4			29.2		11.3			15.4	
Approach LOS		C			C		B			B	

Intersection Summary
 Cycle Length: 100
 Actuated Cycle Length: 90.2
 Natural Cycle: 60
 Control Type: Semi Act-Uncoord
 Maximum v/c Ratio: 0.49
 Intersection Signal Delay: 16.1 Intersection LOS: B
 Intersection Capacity Utilization 59.1% ICU Level of Service B
 Analysis Period (min) 15

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



2040 Background Traffic With Low Intensity Development and RIRO at Pinehurst/SH83
 2: N-S Collector St & Walker Rd HCM 6th TWSC AM Peak Hour

Intersection						
Int Delay, s/veh	0.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗		↖	↘	
Traffic Vol, veh/h	102	13	1	113	4	1
Future Vol, veh/h	102	13	1	113	4	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Yield	-	None	-	None
Storage Length	-	235	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	75	75	81	75	75
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	111	17	1	140	5	1

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	111	0	253
Stage 1	-	-	-	-	111
Stage 2	-	-	-	-	142
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1479	-	736
Stage 1	-	-	-	-	914
Stage 2	-	-	-	-	885
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1479	-	735
Mov Cap-2 Maneuver	-	-	-	-	735
Stage 1	-	-	-	-	913
Stage 2	-	-	-	-	885

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	9.7
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	769	-	-	1479	-
HCM Lane V/C Ratio	0.009	-	-	0.001	-
HCM Control Delay (s)	9.7	-	-	7.4	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-

2040 Background Traffic With Low Intensity Development and RIRO at Pinehurst/SH83
 5: Pinehurst Cir & N-S Collector St HCM 6th TWSC

AM Peak Hour

Intersection

Int Delay, s/veh 3.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↘	↑	↑	↗	↘	↗
Traffic Vol, veh/h	0	4	11	4	14	0
Future Vol, veh/h	0	4	11	4	14	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	255	-	-	205	205	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	75	75	75	75	75	75
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	5	15	5	19	0

Major/Minor

	Major1	Major2	Minor2
Conflicting Flow All	20	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	1596	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1596	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach

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

Minor Lane/Major Mvmt

	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1596	-	-	-	917	-
HCM Lane V/C Ratio	-	-	-	-	0.02	-
HCM Control Delay (s)	0	-	-	-	9	0
HCM Lane LOS	A	-	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1	-

2040 Background Traffic With Low Intensity Development and RIRO at Pinehurst/SH83
 1: SH 83 & SH 105/Walker Rd Timings PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations												
Traffic Volume (vph)	85	77	232	32	85	210	543	75	39	751	103	
Future Volume (vph)	85	77	232	32	85	210	543	75	39	751	103	
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)	20.0	20.0		13.0	33.0	13.0	54.0	54.0	13.0	54.0	54.0	
Total Split (%)	20.0%	20.0%		13.0%	33.0%	13.0%	54.0%	54.0%	13.0%	54.0%	54.0%	
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 Effct Green (s)	10.8	10.8	89.1	18.2	18.3	61.4	56.9	56.9	56.6	48.1	48.1	
Actuated g/C Ratio	0.12	0.12	1.00	0.20	0.21	0.69	0.64	0.64	0.64	0.54	0.54	
v/c Ratio	0.57	0.36	0.15	0.14	0.29	0.67	0.48	0.07	0.08	0.79	0.12	
Control Delay	54.9	43.1	0.2	28.6	27.7	21.3	16.5	0.3	7.3	27.3	1.5	
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	54.9	43.1	0.2	28.6	27.7	21.3	16.5	0.3	7.3	27.3	1.5	
LOS	D	D	A	C	C	C	B	A	A	C	A	
Approach Delay		20.4			27.9		16.3			23.5		
Approach LOS		C			C		B			C		

Intersection Summary
 Cycle Length: 100
 Actuated Cycle Length: 89.1
 Natural Cycle: 80
 Control Type: Semi Act-Uncoord
 Maximum v/c Ratio: 0.79
 Intersection Signal Delay: 20.6 Intersection LOS: C
 Intersection Capacity Utilization 77.5% ICU Level of Service D
 Analysis Period (min) 15

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



2040 Background Traffic With Low Intensity Development and RIRO at Pinehurst/SH83
 2: N-S Collector St & Walker Rd HCM 6th TWSC PM Peak Hour

Intersection						
Int Delay, s/veh	0.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑		↑	↑	
Traffic Vol, veh/h	171	20	2	134	4	1
Future Vol, veh/h	171	20	2	134	4	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Yield	-	None	-	None
Storage Length	-	235	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	77	92	92	99	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	222	22	2	135	4	1

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	222	0	361 222
Stage 1	-	-	-	-	222 -
Stage 2	-	-	-	-	139 -
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	-	-	1347	-	638 818
Stage 1	-	-	-	-	815 -
Stage 2	-	-	-	-	888 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1347	-	637 818
Mov Cap-2 Maneuver	-	-	-	-	637 -
Stage 1	-	-	-	-	813 -
Stage 2	-	-	-	-	888 -

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	10.5
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	666	-	-	1347	-
HCM Lane V/C Ratio	0.008	-	-	0.002	-
HCM Control Delay (s)	10.5	-	-	7.7	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-

2040 Background Traffic With Low Intensity Development and RIRO at Pinehurst/SH83
 5: Pinehurst Cir & N-S Collector St HCM 6th TWSC

PM Peak Hour

Intersection

Int Delay, s/veh 4.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↘	↗	↗	↘	↘	↘
Traffic Vol, veh/h	1	7	11	4	20	0
Future Vol, veh/h	1	7	11	4	20	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	255	-	-	205	205	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	8	12	4	22	0

Major/Minor

	Major1	Major2	Minor2
Conflicting Flow All	16	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	1602	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1602	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach

	EB	WB	SB
HCM Control Delay, s	0.9	0	9
HCM LOS			A

Minor Lane/Major Mvmt

	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1602	-	-	-	915	-
HCM Lane V/C Ratio	0.001	-	-	-	0.024	-
HCM Control Delay (s)	7.2	-	-	-	9	0
HCM Lane LOS	A	-	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1	-

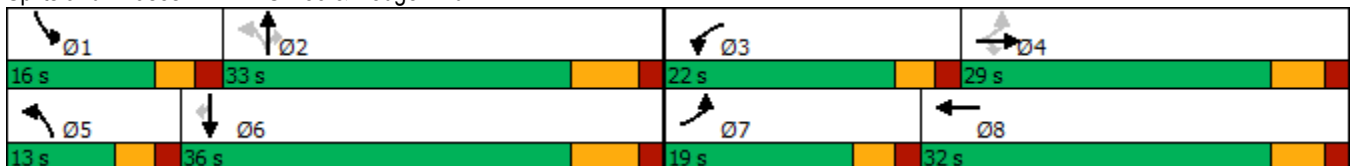
2040 Background Traffic With Low Intensity Development and RIRO at Pinehurst/SH83
 121: SH 83 & Hodgen Rd Timings PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	98	339	116	124	303	221	189	502	398	294	547	160
Future Volume (vph)	98	339	116	124	303	221	189	502	398	294	547	160
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	33.0	33.0	16.0	36.0	36.0
Total Split (%)	19.0%	29.0%	29.0%	22.0%	32.0%		13.0%	33.0%	33.0%	16.0%	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 Effct Green (s)	31.5	21.6	21.6	8.8	24.1	90.6	36.2	26.2	26.2	10.8	29.1	29.1
Actuated g/C Ratio	0.35	0.24	0.24	0.10	0.27	1.00	0.40	0.29	0.29	0.12	0.32	0.32
v/c Ratio	0.29	0.80	0.25	0.39	0.64	0.15	0.52	0.52	0.56	0.75	0.51	0.27
Control Delay	19.0	47.3	3.9	42.7	37.7	0.2	21.4	30.0	6.3	52.5	27.7	5.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.0	47.3	3.9	42.7	37.7	0.2	21.4	30.0	6.3	52.5	27.7	5.4
LOS	B	D	A	D	D	A	C	C	A	D	C	A
Approach Delay		33.2			25.9			19.8			31.4	
Approach LOS		C			C			B			C	

Intersection Summary

Cycle Length: 100
 Actuated Cycle Length: 90.6
 Natural Cycle: 60
 Control Type: Semi Act-Uncoord
 Maximum v/c Ratio: 0.80
 Intersection Signal Delay: 26.8 Intersection LOS: C
 Intersection Capacity Utilization 66.8% ICU Level of Service C
 Analysis Period (min) 15

Splits and Phases: 121: SH 83 & Hodgen Rd



Levels of Service - 2040 Total Traffic

- With Low Intensity Development of Adjacent Parcels
- No Redevelopment North of Walker Rd
- With Right-in/Right-out Access to SH 83



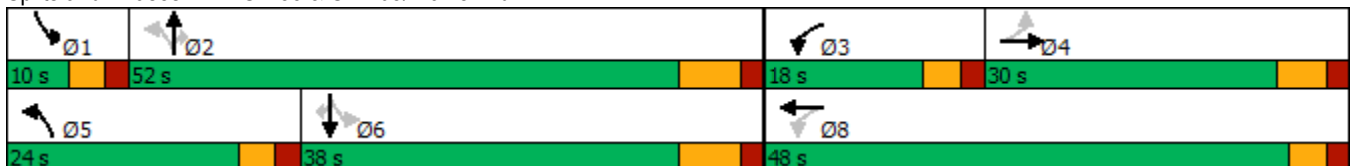
2040 Total Traffic With Low Intensity Development and RIRO at Pinehurst/SH83
 1: SH 83 & SH 105/Walker Rd Timings AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations												
Traffic Volume (vph)	52	285	200	203	141	381	669	12	91	424	98	
Future Volume (vph)	52	285	200	203	141	381	669	12	91	424	98	
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)	30.0	30.0		18.0	48.0	24.0	52.0	52.0	10.0	38.0	38.0	
Total Split (%)	27.3%	27.3%		16.4%	43.6%	21.8%	47.3%	47.3%	9.1%	34.5%	34.5%	
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 Effct Green (s)	23.7	23.7	109.7	42.7	42.7	57.0	45.0	45.0	38.0	31.0	31.0	
Actuated g/C Ratio	0.22	0.22	1.00	0.39	0.39	0.52	0.41	0.41	0.35	0.28	0.28	
v/c Ratio	0.23	0.95	0.13	0.97	0.38	0.97	0.90	0.02	0.73	0.85	0.18	
Control Delay	38.5	76.3	0.2	75.8	23.7	61.2	47.4	0.1	44.7	53.6	0.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	38.5	76.3	0.2	75.8	23.7	61.2	47.4	0.1	44.7	53.6	0.7	
LOS	D	E	A	E	C	E	D	A	D	D	A	
Approach Delay		48.2			49.9		51.7			43.8		
Approach LOS		D			D		D			D		

Intersection Summary

Cycle Length: 110
 Actuated Cycle Length: 109.7
 Natural Cycle: 90
 Control Type: Semi Act-Uncoord
 Maximum v/c Ratio: 0.97
 Intersection Signal Delay: 48.9 Intersection LOS: D
 Intersection Capacity Utilization 88.8% ICU Level of Service E
 Analysis Period (min) 15

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



2040 Total Traffic With Low Intensity Development and RIRO at Pinehurst/SH83
 2: N-S Collector St & Walker Rd HCM 6th TWSC AM Peak Hour

Intersection						
Int Delay, s/veh	3.8					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↘	↑	↘	↗
Traffic Vol, veh/h	54	334	23	249	154	22
Future Vol, veh/h	54	334	23	249	154	22
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Yield	-	None	-	None
Storage Length	-	0	50	-	300	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	60	60	92	60	60
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	59	557	38	271	257	37

Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	0	59	0	406	59
Stage 1	-	-	-	-	59	-
Stage 2	-	-	-	-	347	-
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	-	-	1545	-	601	1007
Stage 1	-	-	-	-	964	-
Stage 2	-	-	-	-	716	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1545	-	586	1007
Mov Cap-2 Maneuver	-	-	-	-	586	-
Stage 1	-	-	-	-	940	-
Stage 2	-	-	-	-	716	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.9	14.9
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	586	1007	-	-	1545	-
HCM Lane V/C Ratio	0.438	0.036	-	-	0.025	-
HCM Control Delay (s)	15.8	8.7	-	-	7.4	-
HCM Lane LOS	C	A	-	-	A	-
HCM 95th %tile Q(veh)	2.2	0.1	-	-	0.1	-

2040 Total Traffic With Low Intensity Development and RIRO at Pinehurst/SH83
 3: N-S Collector St & North School Access HCM 6th TWSC AM Peak Hour

Intersection

Int Delay, s/veh 1.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↘↗		↑	↗↘	↘↗	↑
Traffic Vol, veh/h	0	0	175	64	111	245
Future Vol, veh/h	0	0	175	64	111	245
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	55	55	55	55	55	55
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	318	116	202	445

Major/Minor

	Minor1	Major1	Major2		
Conflicting Flow All	1167	318	0	0	434
Stage 1	318	-	-	-	-
Stage 2	849	-	-	-	-
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	214	723	-	-	1126
Stage 1	738	-	-	-	-
Stage 2	419	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	176	723	-	-	1126
Mov Cap-2 Maneuver	195	-	-	-	-
Stage 1	606	-	-	-	-
Stage 2	419	-	-	-	-

Approach

	WB	NB	SB
HCM Control Delay, s	0	0	2.8
HCM LOS	A		

Minor Lane/Major Mvmt

	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	-	1126
HCM Lane V/C Ratio	-	-	-	0.179
HCM Control Delay (s)	-	-	0	8.9
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	-	0.7

2040 Total Traffic With Low Intensity Development and RIRO at Pinehurst/SH83
 4: N-S Collector St & YMCA Access HCM 6th TWSC AM Peak Hour

Intersection						
Int Delay, s/veh	0.9					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	4	30	208	24	42	204
Future Vol, veh/h	4	30	208	24	42	204
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	92	92	55	92	92	55
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	33	378	26	46	371

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	854	391	0	0	404
Stage 1	391	-	-	-	-
Stage 2	463	-	-	-	-
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	329	658	-	-	1155
Stage 1	683	-	-	-	-
Stage 2	634	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	316	658	-	-	1155
Mov Cap-2 Maneuver	426	-	-	-	-
Stage 1	656	-	-	-	-
Stage 2	634	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.2	0	0.9
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	618	1155
HCM Lane V/C Ratio	-	-	0.06	0.04
HCM Control Delay (s)	-	-	11.2	8.2
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	0.2	0.1

2040 Total Traffic With Low Intensity Development and RIRO at Pinehurst/SH83
 5: Pinehurst Cir & N-S Collector St HCM 6th TWSC

AM Peak Hour

Intersection						
Int Delay, s/veh	9.5					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↘	↗	↗	↘	↘	↘
Traffic Vol, veh/h	77	101	180	155	205	3
Future Vol, veh/h	77	101	180	155	205	3
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	-	-	205	205	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	55	55	55	55	55	55
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	74	97	327	282	373	5

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	609	0	-	0	572 327
Stage 1	-	-	-	-	327 -
Stage 2	-	-	-	-	245 -
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	970	-	-	-	482 714
Stage 1	-	-	-	-	731 -
Stage 2	-	-	-	-	796 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	970	-	-	-	445 714
Mov Cap-2 Maneuver	-	-	-	-	521 -
Stage 1	-	-	-	-	675 -
Stage 2	-	-	-	-	796 -

Approach	EB	WB	SB
HCM Control Delay, s	3.9	0	27.2
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	970	-	-	-	521	714
HCM Lane V/C Ratio	0.076	-	-	-	0.715	0.008
HCM Control Delay (s)	9	-	-	-	27.4	10.1
HCM Lane LOS	A	-	-	-	D	B
HCM 95th %tile Q(veh)	0.2	-	-	-	5.8	0

2040 Total Traffic With Low Intensity Development and RIRO at Pinehurst/SH83
 6: Pinehurst Cir & South School Access HCM 6th TWSC AM Peak Hour

Intersection						
Int Delay, s/veh	12.1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	296	8	32	15	10	301
Future Vol, veh/h	296	8	32	15	10	301
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	55	92	92	75	55	55
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	538	9	35	20	18	547

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	55	0	-	0	1130 45
Stage 1	-	-	-	-	45 -
Stage 2	-	-	-	-	1085 -
Critical Hdwy	4.12	-	-	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	2.218	-	-	-	3.518 3.318
Pot Cap-1 Maneuver	1550	-	-	-	225 1025
Stage 1	-	-	-	-	977 -
Stage 2	-	-	-	-	324 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1550	-	-	-	147 1025
Mov Cap-2 Maneuver	-	-	-	-	147 -
Stage 1	-	-	-	-	638 -
Stage 2	-	-	-	-	324 -

Approach	EB	WB	SB
HCM Control Delay, s	8.4	0	16.8
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1550	-	-	-	860
HCM Lane V/C Ratio	0.347	-	-	-	0.658
HCM Control Delay (s)	8.6	-	-	-	16.8
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	1.6	-	-	-	5.1

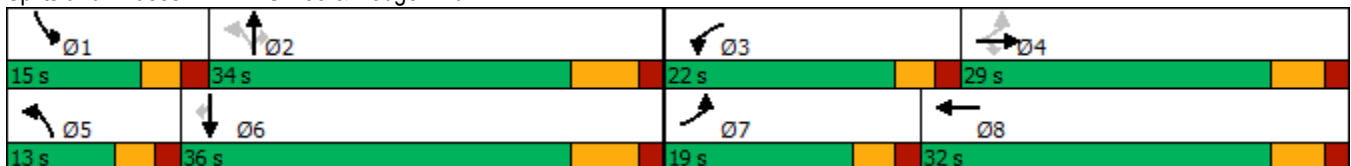
2040 Total Traffic With Low Intensity Development and RIRO at Pinehurst/SH83
121: SH 83 & Hodgen Rd Timings AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	141	144	186	392	340	338	77	563	125	113	517	192
Future Volume (vph)	141	144	186	392	340	338	77	563	125	113	517	192
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 Effct Green (s)	28.8	17.1	17.1	15.0	21.5	91.5	37.1	27.8	27.8	8.4	31.4	31.4
Actuated g/C Ratio	0.31	0.19	0.19	0.16	0.23	1.00	0.41	0.30	0.30	0.09	0.34	0.34
v/c Ratio	0.46	0.44	0.43	0.73	0.82	0.22	0.21	0.55	0.23	0.38	0.45	0.30
Control Delay	22.1	37.3	8.0	45.7	49.8	0.3	16.9	30.4	5.4	44.4	27.2	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	22.1	37.3	8.0	45.7	49.8	0.3	16.9	30.4	5.4	44.4	27.2	5.3
LOS	C	D	A	D	D	A	B	C	A	D	C	A
Approach Delay		21.2			32.7			24.9			24.4	
Approach LOS		C			C			C			C	

Intersection Summary

Cycle Length: 100
 Actuated Cycle Length: 91.5
 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 64.6% ICU Level of Service C
 Analysis Period (min) 15

Splits and Phases: 121: SH 83 & Hodgen Rd



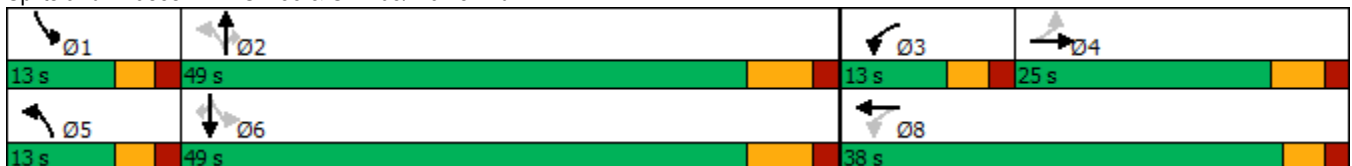
2040 Total Traffic With Low Intensity Development and RIRO at Pinehurst/SH83
 1: SH 83 & SH 105/Walker Rd Timings AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	62	163	184	141	140	239	410	34	54	457	55
Future Volume (vph)	62	163	184	141	140	239	410	34	54	457	55
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		13.0	38.0	13.0	49.0	49.0	13.0	49.0	49.0
Total Split (%)	25.0%	25.0%		13.0%	38.0%	13.0%	49.0%	49.0%	13.0%	49.0%	49.0%
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 Effct Green (s)	15.7	15.7	96.8	29.7	29.7	53.6	45.3	45.3	51.1	42.1	42.1
Actuated g/C Ratio	0.16	0.16	1.00	0.31	0.31	0.55	0.47	0.47	0.53	0.43	0.43
v/c Ratio	0.35	0.72	0.12	0.66	0.42	0.58	0.50	0.06	0.15	0.59	0.08
Control Delay	41.4	52.6	0.2	38.7	27.4	17.1	22.1	0.1	10.2	25.2	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.4	52.6	0.2	38.7	27.4	17.1	22.1	0.1	10.2	25.2	0.2
LOS	D	D	A	D	C	B	C	A	B	C	A
Approach Delay		29.7			32.4		19.0			21.1	
Approach LOS		C			C		B			C	

Intersection Summary

Cycle Length: 100
 Actuated Cycle Length: 96.8
 Natural Cycle: 60
 Control Type: Semi Act-Uncoord
 Maximum v/c Ratio: 0.72
 Intersection Signal Delay: 24.4 Intersection LOS: C
 Intersection Capacity Utilization 72.9% ICU Level of Service C
 Analysis Period (min) 15

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



2040 Total Traffic With Low Intensity Development and RIRO at Pinehurst/SH83
 2: N-S Collector St & Walker Rd HCM 6th TWSC

AM Peak Hour

Intersection						
Int Delay, s/veh	5.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↘	↑	↘	↗
Traffic Vol, veh/h	102	149	10	113	206	20
Future Vol, veh/h	102	149	10	113	206	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Yield	-	None	-	None
Storage Length	-	0	50	-	300	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	75	75	81	75	75
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	111	199	13	140	275	27

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	111	0	277
Stage 1	-	-	-	-	111
Stage 2	-	-	-	-	166
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1479	-	713
Stage 1	-	-	-	-	914
Stage 2	-	-	-	-	863
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1479	-	707
Mov Cap-2 Maneuver	-	-	-	-	707
Stage 1	-	-	-	-	906
Stage 2	-	-	-	-	863

Approach	EB	WB	NB
HCM Control Delay, s	0	0.7	12.9
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	707	942	-	-	1479	-
HCM Lane V/C Ratio	0.388	0.028	-	-	0.009	-
HCM Control Delay (s)	13.3	8.9	-	-	7.5	-
HCM Lane LOS	B	A	-	-	A	-
HCM 95th %tile Q(veh)	1.8	0.1	-	-	0	-

2040 Total Traffic With Low Intensity Development and RIRO at Pinehurst/SH83
 3: N-S Collector St & North School Access HCM 6th TWSC AM Peak Hour

Intersection

Int Delay, s/veh 3.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↘↗		↑	↗↘	↘↗	↑
Traffic Vol, veh/h	5	143	82	0	0	159
Future Vol, veh/h	5	143	82	0	0	159
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	75	75	75	75	75	75
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	7	191	109	0	0	212

Major/Minor

	Minor1	Major1	Major2		
Conflicting Flow All	321	109	0	0	109
Stage 1	109	-	-	-	-
Stage 2	212	-	-	-	-
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	673	945	-	-	1481
Stage 1	916	-	-	-	-
Stage 2	823	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	673	945	-	-	1481
Mov Cap-2 Maneuver	699	-	-	-	-
Stage 1	916	-	-	-	-
Stage 2	823	-	-	-	-

Approach

	WB	NB	SB
HCM Control Delay, s	9.9	0	0
HCM LOS	A		

Minor Lane/Major Mvmt

	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	934	1481
HCM Lane V/C Ratio	-	-	0.211	-
HCM Control Delay (s)	-	-	9.9	0
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0.8	0

2040 Total Traffic With Low Intensity Development and RIRO at Pinehurst/SH83
 4: N-S Collector St & YMCA Access HCM 6th TWSC AM Peak Hour

Intersection

Int Delay, s/veh 0.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	2	12	69	5	10	154
Future Vol, veh/h	2	12	69	5	10	154
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	92	92	75	92	92	75
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	13	92	5	11	205

Major/Minor

	Minor1	Major1	Major2		
Conflicting Flow All	322	95	0	0	97
Stage 1	95	-	-	-	-
Stage 2	227	-	-	-	-
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	672	962	-	-	1496
Stage 1	929	-	-	-	-
Stage 2	811	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	667	962	-	-	1496
Mov Cap-2 Maneuver	689	-	-	-	-
Stage 1	922	-	-	-	-
Stage 2	811	-	-	-	-

Approach

	WB	NB	SB
HCM Control Delay, s	9	0	0.4
HCM LOS	A		

Minor Lane/Major Mvmt

	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	910	1496
HCM Lane V/C Ratio	-	-	0.017	0.007
HCM Control Delay (s)	-	-	9	7.4
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0

2040 Total Traffic With Low Intensity Development and RIRO at Pinehurst/SH83
 5: Pinehurst Cir & N-S Collector St HCM 6th TWSC

AM Peak Hour

Intersection

Int Delay, s/veh 4.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↘	↗	↗	↘	↘	↘
Traffic Vol, veh/h	5	72	88	70	155	1
Future Vol, veh/h	5	72	88	70	155	1
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	-	-	205	205	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	75	75	75	75	75	75
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	7	96	117	93	207	1

Major/Minor

	Major1	Major2	Minor2
Conflicting Flow All	210	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	1361	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1361	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach

	EB	WB	SB
HCM Control Delay, s	0.5	0	11.5
HCM LOS			B

Minor Lane/Major Mvmt

	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1361	-	-	-	759	935
HCM Lane V/C Ratio	0.005	-	-	-	0.272	0.001
HCM Control Delay (s)	7.7	-	-	-	11.5	8.9
HCM Lane LOS	A	-	-	-	B	A
HCM 95th %tile Q(veh)	0	-	-	-	1.1	0

2040 Total Traffic With Low Intensity Development and RIRO at Pinehurst/SH83
 6: Pinehurst Cir & South School Access HCM 6th TWSC AM Peak Hour

Intersection						
Int Delay, s/veh	7.6					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	204	22	14	10	5	143
Future Vol, veh/h	204	22	14	10	5	143
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	75	75
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	272	24	15	13	7	191

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	28	0	-	0	590 22
Stage 1	-	-	-	-	22 -
Stage 2	-	-	-	-	568 -
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	1585	-	-	-	470 1055
Stage 1	-	-	-	-	1001 -
Stage 2	-	-	-	-	567 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1585	-	-	-	389 1055
Mov Cap-2 Maneuver	-	-	-	-	389 -
Stage 1	-	-	-	-	829 -
Stage 2	-	-	-	-	567 -

Approach	EB	WB	SB
HCM Control Delay, s	7.1	0	9.5
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1585	-	-	-	997
HCM Lane V/C Ratio	0.172	-	-	-	0.198
HCM Control Delay (s)	7.7	-	-	-	9.5
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0.6	-	-	-	0.7

2040 Total Traffic With Low Intensity Development and RIRO at Pinehurst/SH83
 1: SH 83 & SH 105/Walker Rd Timings PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	85	126	232	83	126	234	550	75	54	751	103
Future Volume (vph)	85	126	232	83	126	234	550	75	54	751	103
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)	22.0	22.0		13.0	35.0	16.0	52.0	52.0	13.0	49.0	49.0
Total Split (%)	22.0%	22.0%		13.0%	35.0%	16.0%	52.0%	52.0%	13.0%	49.0%	49.0%
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 Effct Green (s)	11.9	11.9	93.4	22.9	22.9	59.6	49.2	49.2	51.1	42.4	42.4
Actuated g/C Ratio	0.13	0.13	1.00	0.25	0.25	0.64	0.53	0.53	0.55	0.45	0.45
v/c Ratio	0.58	0.56	0.15	0.31	0.37	0.86	0.59	0.09	0.13	0.94	0.14
Control Delay	54.5	48.4	0.2	29.6	28.3	50.8	21.5	0.4	8.9	46.3	1.9
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	54.5	48.4	0.2	29.6	28.3	50.8	21.5	0.4	8.9	46.3	1.9
LOS	D	D	A	C	C	D	C	A	A	D	A
Approach Delay		24.3			28.7		27.6			39.1	
Approach LOS		C			C		C			D	

Intersection Summary

Cycle Length: 100
 Actuated Cycle Length: 93.4
 Natural Cycle: 80
 Control Type: Semi Act-Uncoord
 Maximum v/c Ratio: 0.94
 Intersection Signal Delay: 31.4 Intersection LOS: C
 Intersection Capacity Utilization 85.1% ICU Level of Service E
 Analysis Period (min) 15

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



2040 Total Traffic With Low Intensity Development and RIRO at Pinehurst/SH83
 2: N-S Collector St & Walker Rd HCM 6th TWSC PM Peak Hour

Intersection						
Int Delay, s/veh	2.7					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↖	↑	↖	↗
Traffic Vol, veh/h	171	83	5	134	109	12
Future Vol, veh/h	171	83	5	134	109	12
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Yield	-	None	-	None
Storage Length	-	0	50	-	300	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	77	92	92	99	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	222	90	5	135	118	13

Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	0	222	0	367	222
Stage 1	-	-	-	-	222	-
Stage 2	-	-	-	-	145	-
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	-	-	1347	-	633	818
Stage 1	-	-	-	-	815	-
Stage 2	-	-	-	-	882	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1347	-	630	818
Mov Cap-2 Maneuver	-	-	-	-	630	-
Stage 1	-	-	-	-	812	-
Stage 2	-	-	-	-	882	-

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

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	630	818	-	-	1347	-
HCM Lane V/C Ratio	0.188	0.016	-	-	0.004	-
HCM Control Delay (s)	12	9.5	-	-	7.7	-
HCM Lane LOS	B	A	-	-	A	-
HCM 95th %tile Q(veh)	0.7	0	-	-	0	-

2040 Total Traffic With Low Intensity Development and RIRO at Pinehurst/SH83
 3: N-S Collector St & North School Access HCM 6th TWSC PM Peak Hour

Intersection						
Int Delay, s/veh	2.6					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↘↗		↑	↗↘	↘↗	↑
Traffic Vol, veh/h	2	47	73	17	20	67
Future Vol, veh/h	2	47	73	17	20	67
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	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	51	79	18	22	73

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	196	79	0	0	97
Stage 1	79	-	-	-	-
Stage 2	117	-	-	-	-
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	793	981	-	-	1496
Stage 1	944	-	-	-	-
Stage 2	908	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	781	981	-	-	1496
Mov Cap-2 Maneuver	769	-	-	-	-
Stage 1	930	-	-	-	-
Stage 2	908	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.9	0	1.7
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	970	1496
HCM Lane V/C Ratio	-	-	0.055	0.015
HCM Control Delay (s)	-	-	8.9	7.4
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0

2040 Total Traffic With Low Intensity Development and RIRO at Pinehurst/SH83
 4: N-S Collector St & YMCA Access HCM 6th TWSC PM Peak Hour

Intersection						
Int Delay, s/veh	3.7					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	6	49	41	22	26	42
Future Vol, veh/h	6	49	41	22	26	42
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	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	7	53	45	24	28	46

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	159	57	0	0	69
Stage 1	57	-	-	-	-
Stage 2	102	-	-	-	-
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	832	1009	-	-	1532
Stage 1	966	-	-	-	-
Stage 2	922	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	817	1009	-	-	1532
Mov Cap-2 Maneuver	790	-	-	-	-
Stage 1	949	-	-	-	-
Stage 2	922	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.9	0	2.8
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	979	1532
HCM Lane V/C Ratio	-	-	0.061	0.018
HCM Control Delay (s)	-	-	8.9	7.4
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0.1

2040 Total Traffic With Low Intensity Development and RIRO at Pinehurst/SH83
 5: Pinehurst Cir & N-S Collector St HCM 6th TWSC PM Peak Hour

Intersection

Int Delay, s/veh 4.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↘	↗	↗	↘	↘	↘
Traffic Vol, veh/h	35	22	38	28	43	5
Future Vol, veh/h	35	22	38	28	43	5
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	-	-	205	205	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	38	24	41	30	47	5

Major/Minor

	Major1	Major2	Minor2		
Conflicting Flow All	71	0	0	141	41
Stage 1	-	-	-	41	-
Stage 2	-	-	-	100	-
Critical Hdwy	4.12	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	3.518	3.318
Pot Cap-1 Maneuver	1529	-	-	852	1030
Stage 1	-	-	-	981	-
Stage 2	-	-	-	924	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	1529	-	-	831	1030
Mov Cap-2 Maneuver	-	-	-	794	-
Stage 1	-	-	-	956	-
Stage 2	-	-	-	924	-

Approach

	EB	WB	SB
HCM Control Delay, s	4.6	0	9.7
HCM LOS			A

Minor Lane/Major Mvmt

	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1529	-	-	-	794	1030
HCM Lane V/C Ratio	0.025	-	-	-	0.059	0.005
HCM Control Delay (s)	7.4	-	-	-	9.8	8.5
HCM Lane LOS	A	-	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	-	0.2	0

2040 Total Traffic With Low Intensity Development and RIRO at Pinehurst/SH83
 6: Pinehurst Cir & South School Access HCM 6th TWSC PM Peak Hour

Intersection						
Int Delay, s/veh	5					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	34	29	18	2	2	46
Future Vol, veh/h	34	29	18	2	2	46
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	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	37	32	20	2	2	50

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	22	0	-	0	127 21
Stage 1	-	-	-	-	21 -
Stage 2	-	-	-	-	106 -
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	1593	-	-	-	868 1056
Stage 1	-	-	-	-	1002 -
Stage 2	-	-	-	-	918 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1593	-	-	-	848 1056
Mov Cap-2 Maneuver	-	-	-	-	848 -
Stage 1	-	-	-	-	979 -
Stage 2	-	-	-	-	918 -

Approach	EB	WB	SB
HCM Control Delay, s	3.9	0	8.6
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1593	-	-	-	1045
HCM Lane V/C Ratio	0.023	-	-	-	0.05
HCM Control Delay (s)	7.3	-	-	-	8.6
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0.1	-	-	-	0.2

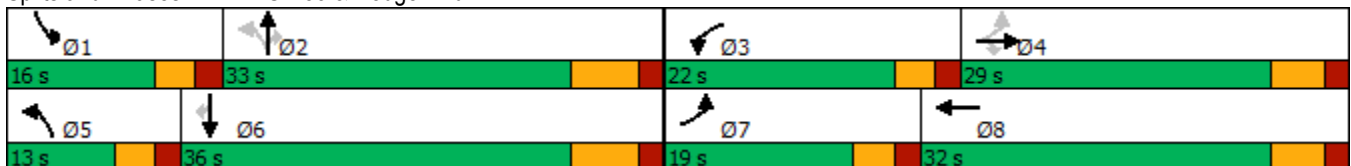
2040 Total Traffic With Low Intensity Development and RIRO at Pinehurst/SH83
 121: SH 83 & Hodgen Rd Timings PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	113	339	116	124	303	227	189	530	398	296	576	180
Future Volume (vph)	113	339	116	124	303	227	189	530	398	296	576	180
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	33.0	33.0	16.0	36.0	36.0
Total Split (%)	19.0%	29.0%	29.0%	22.0%	32.0%		13.0%	33.0%	33.0%	16.0%	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 Effct Green (s)	32.5	22.0	22.0	8.9	21.4	91.0	36.2	26.2	26.2	10.8	29.1	29.1
Actuated g/C Ratio	0.36	0.24	0.24	0.10	0.24	1.00	0.40	0.29	0.29	0.12	0.32	0.32
v/c Ratio	0.36	0.80	0.24	0.39	0.73	0.15	0.54	0.55	0.56	0.76	0.54	0.30
Control Delay	20.0	46.4	3.8	43.0	43.0	0.2	22.4	30.8	6.4	53.4	28.5	5.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.0	46.4	3.8	43.0	43.0	0.2	22.4	30.8	6.4	53.4	28.5	5.4
LOS	B	D	A	D	D	A	C	C	A	D	C	A
Approach Delay		32.4			28.2			20.7			31.5	
Approach LOS		C			C			C			C	

Intersection Summary

Cycle Length: 100
 Actuated Cycle Length: 91
 Natural Cycle: 60
 Control Type: Semi Act-Uncoord
 Maximum v/c Ratio: 0.80
 Intersection Signal Delay: 27.5 Intersection LOS: C
 Intersection Capacity Utilization 67.8% ICU Level of Service C
 Analysis Period (min) 15

Splits and Phases: 121: SH 83 & Hodgen Rd



HCM 6th AWC 2040 Total Traffic With Low Intensity Development and RIRO at Pinehurst/SH83
 2: N-S Collector St & Walker Rd

AM Peak Hour

Intersection	
Intersection Delay, s/veh	22.3
Intersection LOS	C

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑		↑	↑	↑
Traffic Vol, veh/h	54	334	23	249	154	22
Future Vol, veh/h	54	334	23	249	154	22
Peak Hour Factor	0.92	0.60	0.60	0.92	0.60	0.60
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	59	557	38	271	257	37
Number of Lanes	1	1	0	1	1	1

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	2	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	2	2
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	2	0	1
HCM Control Delay	27.5	16.6	17.2
HCM LOS	D	C	C

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1
Vol Left, %	100%	0%	0%	0%	8%
Vol Thru, %	0%	0%	100%	0%	92%
Vol Right, %	0%	100%	0%	100%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	154	22	54	334	272
LT Vol	154	0	0	0	23
Through Vol	0	0	54	0	249
RT Vol	0	22	0	334	0
Lane Flow Rate	257	37	59	557	309
Geometry Grp	7	7	7	7	4
Degree of Util (X)	0.529	0.063	0.099	0.833	0.541
Departure Headway (Hd)	7.42	6.197	6.099	5.388	6.301
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	485	575	585	668	569
Service Time	5.186	3.962	3.863	3.152	4.372
HCM Lane V/C Ratio	0.53	0.064	0.101	0.834	0.543
HCM Control Delay	18.3	9.4	9.5	29.4	16.6
HCM Lane LOS	C	A	A	D	C
HCM 95th-tile Q	3	0.2	0.3	9	3.2

HCM 6th A WS 2040 Total Traffic With Low Intensity Development and RIRO at Pinehurst/SH83
 2: N-S Collector St & Walker Rd

AM Peak Hour

Intersection	
Intersection Delay, s/veh	11.5
Intersection LOS	B

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑		↑	↑	↑
Traffic Vol, veh/h	102	149	10	113	206	20
Future Vol, veh/h	102	149	10	113	206	20
Peak Hour Factor	0.92	0.75	0.75	0.81	0.75	0.75
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	111	199	13	140	275	27
Number of Lanes	1	1	0	1	1	1

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	2	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	2	2
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	2	0	1
HCM Control Delay	9.6	10.6	13.9
HCM LOS	A	B	B

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1
Vol Left, %	100%	0%	0%	0%	8%
Vol Thru, %	0%	0%	100%	0%	92%
Vol Right, %	0%	100%	0%	100%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	206	20	102	149	123
LT Vol	206	0	0	0	10
Through Vol	0	0	102	0	113
RT Vol	0	20	0	149	0
Lane Flow Rate	275	27	111	199	153
Geometry Grp	7	7	7	7	4
Degree of Util (X)	0.476	0.037	0.174	0.272	0.244
Departure Headway (Hd)	6.243	5.033	5.638	4.931	5.746
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	580	715	629	719	628
Service Time	3.951	2.741	3.437	2.73	3.746
HCM Lane V/C Ratio	0.474	0.038	0.176	0.277	0.244
HCM Control Delay	14.5	7.9	9.6	9.6	10.6
HCM Lane LOS	B	A	A	A	B
HCM 95th-tile Q	2.6	0.1	0.6	1.1	1

HCM 6th AWC 2040 Total Traffic With Low Intensity Development and RIRO at Pinehurst/SH83
 2: N-S Collector St & Walker Rd PM Peak Hour

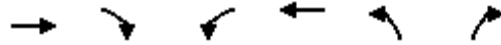
Intersection	
Intersection Delay, s/veh	9.6
Intersection LOS	A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑		↑	↑	↑
Traffic Vol, veh/h	171	83	5	134	109	12
Future Vol, veh/h	171	83	5	134	109	12
Peak Hour Factor	0.77	0.92	0.92	0.99	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	222	90	5	135	118	13
Number of Lanes	1	1	0	1	1	1

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	2	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	2	2
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	2	0	1
HCM Control Delay	9.4	9.4	10.1
HCM LOS	A	A	B

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1
Vol Left, %	100%	0%	0%	0%	4%
Vol Thru, %	0%	0%	100%	0%	96%
Vol Right, %	0%	100%	0%	100%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	109	12	171	83	139
LT Vol	109	0	0	0	5
Through Vol	0	0	171	0	134
RT Vol	0	12	0	83	0
Lane Flow Rate	118	13	222	90	141
Geometry Grp	7	7	7	7	4
Degree of Util (X)	0.201	0.018	0.312	0.109	0.199
Departure Headway (Hd)	6.098	4.89	5.065	4.361	5.083
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	588	729	711	821	705
Service Time	3.846	2.637	2.797	2.093	3.122
HCM Lane V/C Ratio	0.201	0.018	0.312	0.11	0.2
HCM Control Delay	10.4	7.7	10.1	7.6	9.4
HCM Lane LOS	B	A	B	A	A
HCM 95th-tile Q	0.7	0.1	1.3	0.4	0.7

Timings 2040 Total Traffic With Low Intensity Development and RIRO at Pinehurst/SH83
 2: N-S Collector St & Walker Rd AM Peak Hour



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑	↑	↑	↑	↑
Traffic Volume (vph)	54	334	23	249	154	22
Future Volume (vph)	54	334	23	249	154	22
Turn Type	NA	Perm	Perm	NA	Prot	Perm
Protected Phases	2			6	8	
Permitted Phases		2	6			8
Detector Phase	2	2	6	6	8	8
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	23.0	23.0	23.0	23.0	23.0	23.0
Total Split (s)	55.0	55.0	55.0	55.0	45.0	45.0
Total Split (%)	55.0%	55.0%	55.0%	55.0%	45.0%	45.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	Max	Max	Max	Max	None	None
Act Effct Green (s)	51.3	51.3	51.3	51.3	16.3	16.3
Actuated g/C Ratio	0.66	0.66	0.66	0.66	0.21	0.21
v/c Ratio	0.05	0.45	0.04	0.22	0.69	0.10
Control Delay	5.8	1.9	5.9	6.5	38.2	9.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	5.8	1.9	5.9	6.5	38.2	9.0
LOS	A	A	A	A	D	A
Approach Delay	2.3			6.4	34.5	
Approach LOS	A			A	C	

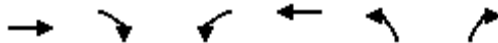
Intersection Summary

Cycle Length: 100	
Actuated Cycle Length: 77.6	
Natural Cycle: 50	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.69	
Intersection Signal Delay: 11.1	Intersection LOS: B
Intersection Capacity Utilization 33.2%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 2: N-S Collector St & Walker Rd



Timings 2040 Total Traffic With Low Intensity Development and RIRO at Pinehurst/SH83
 2: N-S Collector St & Walker Rd AM Peak Hour

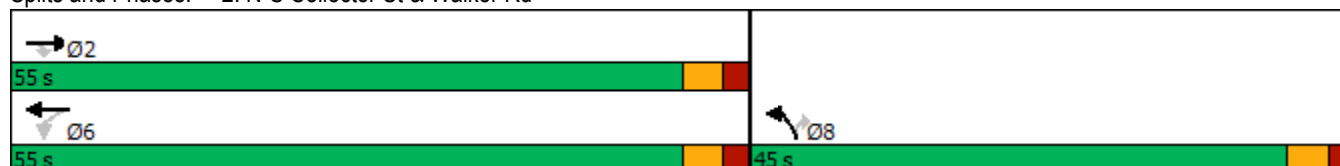


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑	↑	↑	↑	↑
Traffic Volume (vph)	102	149	10	113	206	20
Future Volume (vph)	102	149	10	113	206	20
Turn Type	NA	Perm	Perm	NA	Prot	Perm
Protected Phases	2			6	8	
Permitted Phases		2	6			8
Detector Phase	2	2	6	6	8	8
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	23.0	23.0	23.0	23.0	23.0	23.0
Total Split (s)	55.0	55.0	55.0	55.0	45.0	45.0
Total Split (%)	55.0%	55.0%	55.0%	55.0%	45.0%	45.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	Max	Max	Max	Max	None	None
Act Effct Green (s)	51.0	51.0	51.0	51.0	17.2	17.2
Actuated g/C Ratio	0.65	0.65	0.65	0.65	0.22	0.22
v/c Ratio	0.09	0.18	0.02	0.12	0.71	0.07
Control Delay	6.2	1.5	6.3	6.3	38.4	9.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	6.2	1.5	6.3	6.3	38.4	9.6
LOS	A	A	A	A	D	A
Approach Delay	3.2			6.3	35.8	
Approach LOS	A			A	D	

Intersection Summary

Cycle Length: 100
 Actuated Cycle Length: 78.2
 Natural Cycle: 50
 Control Type: Semi Act-Uncoord
 Maximum v/c Ratio: 0.71
 Intersection Signal Delay: 16.7
 Intersection Capacity Utilization 27.0%
 Analysis Period (min) 15
 Intersection LOS: B
 ICU Level of Service A

Splits and Phases: 2: N-S Collector St & Walker Rd



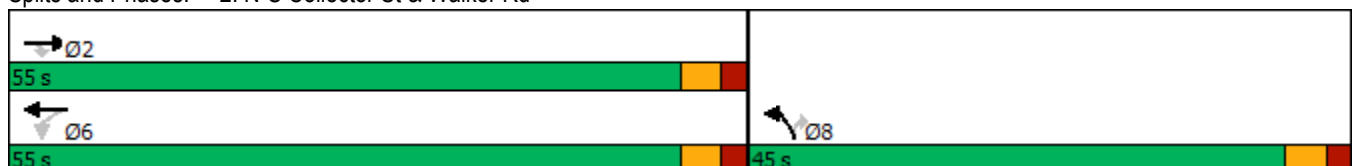
Timings 2040 Total Traffic With Low Intensity Development and RIRO at Pinehurst/SH83
 2: N-S Collector St & Walker Rd PM Peak Hour

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↘	↑	↘	↗
Traffic Volume (vph)	171	83	5	134	109	12
Future Volume (vph)	171	83	5	134	109	12
Turn Type	NA	Perm	Perm	NA	Prot	Perm
Protected Phases	2			6	8	
Permitted Phases		2	6			8
Detector Phase	2	2	6	6	8	8
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	23.0	23.0	23.0	23.0	23.0	23.0
Total Split (s)	55.0	55.0	55.0	55.0	45.0	45.0
Total Split (%)	55.0%	55.0%	55.0%	55.0%	45.0%	45.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	Max	Max	Max	Max	None	None
Act Effct Green (s)	58.9	58.9	58.9	58.9	10.3	10.3
Actuated g/C Ratio	0.78	0.78	0.78	0.78	0.14	0.14
v/c Ratio	0.15	0.07	0.01	0.09	0.49	0.06
Control Delay	3.6	1.1	3.6	3.5	36.6	13.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	3.6	1.1	3.6	3.5	36.6	13.9
LOS	A	A	A	A	D	B
Approach Delay	2.9			3.5	34.3	
Approach LOS	A			A	C	

Intersection Summary

Cycle Length: 100	
Actuated Cycle Length: 75.6	
Natural Cycle: 50	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.49	
Intersection Signal Delay: 10.1	Intersection LOS: B
Intersection Capacity Utilization 23.4%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 2: N-S Collector St & Walker Rd



2040 Total Traffic With Low Intensity Development and RIRO at Pinehurst/SH83
 2: N-S Collector St & Walker Rd HCM 6th Roundabout AM Peak Hour

Intersection			
Intersection Delay, s/veh	6.6		
Intersection LOS	A		
Approach	EB	WB	NB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	616	309	294
Demand Flow Rate, veh/h	628	315	300
Vehicles Circulating, veh/h	39	262	60
Vehicles Exiting, veh/h	538	98	607
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	7.6	6.4	4.8
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	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	628	315	300
Cap Entry Lane, veh/h	1326	1056	1298
Entry HV Adj Factor	0.981	0.980	0.980
Flow Entry, veh/h	616	309	294
Cap Entry, veh/h	1300	1035	1272
V/C Ratio	0.474	0.298	0.231
Control Delay, s/veh	7.6	6.4	4.8
LOS	A	A	A
95th %tile Queue, veh	3	1	1

2040 Total Traffic With Low Intensity Development and RIRO at Pinehurst/SH83
 5: Pinehurst Cir & N-S Collector St HCM 6th Roundabout

AM Peak Hour

Intersection			
Intersection Delay, s/veh	7.7		
Intersection LOS	A		
Approach	EB	WB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	171	609	378
Demand Flow Rate, veh/h	174	622	385
Vehicles Circulating, veh/h	380	75	334
Vehicles Exiting, veh/h	339	479	363
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	5.7	8.0	8.1
Approach LOS	A	A	A
Lane	Left	Left	Left
Designated Moves	LT	TR	LR
Assumed Moves	LT	TR	LR
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	174	622	385
Cap Entry Lane, veh/h	937	1278	982
Entry HV Adj Factor	0.983	0.980	0.982
Flow Entry, veh/h	171	609	378
Cap Entry, veh/h	921	1252	964
V/C Ratio	0.186	0.487	0.392
Control Delay, s/veh	5.7	8.0	8.1
LOS	A	A	A
95th %tile Queue, veh	1	3	2

HCM 6th Round Total Traffic With Low Intensity Development and RIRO at Pinehurst/SH83
 2: N-S Collector St & Walker Rd

AM Peak Hour

Intersection			
Intersection Delay, s/veh	4.9		
Intersection LOS	A		
Approach	EB	WB	NB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	310	153	302
Demand Flow Rate, veh/h	316	156	308
Vehicles Circulating, veh/h	13	280	113
Vehicles Exiting, veh/h	423	141	216
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	4.7	4.9	5.2
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	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	316	156	308
Cap Entry Lane, veh/h	1362	1037	1230
Entry HV Adj Factor	0.980	0.982	0.981
Flow Entry, veh/h	310	153	302
Cap Entry, veh/h	1335	1018	1206
V/C Ratio	0.232	0.150	0.250
Control Delay, s/veh	4.7	4.9	5.2
LOS	A	A	A
95th %tile Queue, veh	1	1	1

HCM 6th Round Total Traffic With Low Intensity Development and RIRO at Pinehurst/SH83
 2: N-S Collector St & Walker Rd

PM Peak Hour

Intersection			
Intersection Delay, s/veh	4.4		
Intersection LOS	A		
Approach	EB	WB	NB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	312	140	131
Demand Flow Rate, veh/h	318	143	133
Vehicles Circulating, veh/h	5	120	226
Vehicles Exiting, veh/h	258	239	97
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	4.6	4.0	4.4
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	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	318	143	133
Cap Entry Lane, veh/h	1373	1221	1096
Entry HV Adj Factor	0.980	0.981	0.985
Flow Entry, veh/h	312	140	131
Cap Entry, veh/h	1345	1198	1079
V/C Ratio	0.232	0.117	0.121
Control Delay, s/veh	4.6	4.0	4.4
LOS	A	A	A
95th %tile Queue, veh	1	0	0

Queuing Analysis



Phase 1 Only Short-Term Total Traffic With Right-in/Right-out at Pinehurst/SH83
 Queuing and Blocking Report

AM Peak Hour

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

Movement	EB	WB	NB	NB	SB	SB	SB
Directions Served	LT	LTR	L	T	L	T	R
Maximum Queue (ft)	246	349	308	373	95	312	54
Average Queue (ft)	117	158	164	168	37	141	2
95th Queue (ft)	208	282	293	284	71	255	18
Link Distance (ft)	619	610	678	678		636	
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)					475		475
Storage Blk Time (%)							
Queuing Penalty (veh)							

Queuing and Blocking Report

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

Movement	EB	EB	EB	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	T	R	L	TR	L	T	L	T	R
Maximum Queue (ft)	325	552	240	236	148	341	356	132	231	32
Average Queue (ft)	63	213	54	97	53	134	157	46	108	2
95th Queue (ft)	222	498	279	185	118	257	292	95	182	18
Link Distance (ft)		619			612	659	659		630	
Upstream Blk Time (%)		4								
Queuing Penalty (veh)		0								
Storage Bay Dist (ft)	300		375	300				475		475
Storage Blk Time (%)	0	13	0							
Queuing Penalty (veh)	0	24	0							

2040 Total Traffic With Low Intensity Development and RIRO at Pinehurst/SH83
 Queuing and Blocking Report

AM Peak Hour

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

Movement	EB	EB	EB	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	T	R	L	TR	L	T	L	T	R
Maximum Queue (ft)	324	486	160	235	199	503	710	137	427	147
Average Queue (ft)	55	204	20	108	76	212	316	57	239	12
95th Queue (ft)	171	405	164	188	155	431	616	108	386	88
Link Distance (ft)		619			618	1602	1602		630	
Upstream Blk Time (%)		0								
Queuing Penalty (veh)		0								
Storage Bay Dist (ft)	300		375	300				475		475
Storage Blk Time (%)		6	0						0	0
Queuing Penalty (veh)		15	0						0	0

Appendix Section





LSC TRANSPORTATION CONSULTANTS, INC.
545 East Pikes Peak Avenue, Suite 210
Colorado Springs, CO 80903
(719) 633-2868
FAX (719) 633-5430
E-mail: lsc@lsctrans.com
Website: <http://www.lsctrans.com>

This appendix section contains analysis and findings for the additional scenarios required by the County and CDOT. These additional scenarios cover variations to the applicant-proposed right-in/right-out access to SH 83 south of Walker Road and well as to analysis of potentially more intense development than was assumed in the TIA, associated with possible rezoning of the parcels directly west and south of the proposed school and YMCA, as well as parcels located north of Walker Road.

SITE-GENERATED TRIP ASSIGNMENT

Appendix Figures 1-4 show the projected site-generated traffic volumes following Phase 2 development of the school and YMCA based on the trip generation estimate and directional distribution estimate shown in the main part of the report. Appendix Figures 1 and 2 show the short-term assignment of the site-generated traffic, assuming no access to SH 83 and a full-movement intersection at SH 83/Pinehurst respectively. The short-term assignment 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. Appendix Figures 3 and 4 show the long-term assignment of the site-generated traffic assuming no access to SH 83 and a full-movement intersection at SH 83/Pinehurst respectively. The long-term assignment assumes Pinehurst Circle has been completed from Walden Way to the east boundary of the site.

BACKGROUND TRAFFIC ESTIMATES

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 including the Walden Preserve, the parcels just west and south of the site and parcels north of Walker Road.

The 2040 background traffic volumes shown in the main report assume the parcels west and south of the site will be developed with 5-acre residential lots (as allowed by the current zoning) and no redevelopment of parcels north of Walker Road. This appendix section includes two additional land use scenarios. Both scenarios assume the parcels west and south of the site are rezoned and developed with a more intense mix of retail and office uses. The second land use scenario assumes that, in addition to this more intense land use on the adjacent parcels, the area north of Walker Road is redeveloped with a mix of residential and retail land uses.

Appendix Table 1 shows a trip generation estimate for the two future potential **land use scenarios**. 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 5 shows the long-term directional distribution estimates for the potential future land uses. When the distribution percentages from Appendix Figure 5 are applied to the trip generation estimates from Appendix Table 1, the potential future additional traffic volumes at the key area intersections can be determined.

Two alternate **access** scenarios have also been included in this memorandum. The first access scenario assumes Pinehurst Road does not extend to SH 83 and the second access scenario assumes a full-movement intersection at Pinehurst/SH 83.

Appendix Figures 6 through 9 shows the various 2040 background traffic estimates. These volumes were based on the 2040 background traffic volumes shown in the updated Monument Academy TIA. To calculate the 2040 background traffic volumes for the new scenarios, traffic estimated to be generated by the 5-acre lots was first removed. Additional traffic due to potential redevelopment of the adjacent parcels and areas north of Walker Road was then added to these baseline volumes. The 2040 background volumes for the alternate access options also included some rerouting of traffic estimated to use Pinehurst Circle through the site from the Walden development. Below is a list of the 2040 background traffic volumes shown:

Figure	Adjacent Parcels	North of Walker	Pinehurst/SH 83
Appendix Figure 6	Higher Intensity Land Use*	None	Right-in/Right-out
Appendix Figure 7	Higher Intensity Land Use*	Residential/Retail	None
Appendix Figure 8	Higher Intensity Land Use*	Residential/Retail	Right-in/Right-out
Appendix Figure 9	Higher Intensity Land Use*	Residential/Retail	Full-Movement

*Rezoning would be required.

SHORT-TERM TOTAL TRAFFIC WITH ALTERNATE ACCESS SCENARIOS

Appendix Figures 10 and 11 show the projected short-term total traffic volumes assuming Pinehurst does not connect to SH 83 and assuming a full-movement intersection at Pinehurst/SH 83, respectively. These volumes are the sum of the short-term background traffic volumes from the Monument Academy TIA plus the short-term site-generated traffic volumes for the two additional access scenarios shown in Appendix Figures 1 and 2 of this appendix section.

2040 TOTAL TRAFFIC WITH ALTERNATE ACCESS SCENARIOS

Appendix Figures 12 through 15 show the 2040 total traffic volumes based on the various alternate scenarios. These volumes are the sum of the long-term site generated traffic (from the main report or Appendix Figures 3 and 4 plus the 2040 background traffic volumes shown in Appendix Figures 6 through 9. Below is a list of the 2040 total traffic volumes shown:

Figure	Adjacent Parcels	North of Walker	Pinehurst/SH 83
Appendix Figure 12	Higher Intensity Land Use*	None	Right-in/Right-out
Appendix Figure 13	Higher Intensity Land Use*	Residential/Retail	None
Appendix Figure 14	Higher Intensity Land Use*	Residential/Retail	Right-in/Right-out
Appendix Figure 15	Higher Intensity Land Use*	Residential/Retail	Full-Movement

PROJECTED LEVELS OF SERVICE

The intersections of SH 83/Walker, SH 83/Hodgen, the proposed intersections of the new north-south Collector 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, 2010 Edition* by the Transportation Research Board. The level of service reports are attached.

Please see the LOS section of the main report for a discussion of the baseline level of service analysis, based on development of the adjacent parcels with 5-acre residential lots and Pinehurst Circle extended to a right-in/right-out only intersection with SH 83.

SH 83/Walker/Highway 105

Appendix Table 2 shows the results of the level of service analysis for the intersection SH 83/Walker/Highway 105. The intersection of SH 83/Walker/Highway 105 is projected to operate at an overall LOS D or better based on the 2040 total traffic volumes for all scenarios. As discussed in the Monument Academy TIS, some of the minor approach movements are projected to operate at LOS E, assuming SH 83/Pinehurst is a right-in/right-out access. If no additional access is allowed to SH 83, more of the minor movements are projected to operate at LOS E during the morning peak hour. If a full-movement intersection is allowed at SH 83/Pinehurst, all movements at SH 83/Walker/Highway 105 are projected to operate at LOS D or better during the morning peak hour.

Hodgen/SH 83

Appendix Table 3 shows the results of the level of service analysis for the intersection of SH 83/Hodgen. As show in Appendix Table 4, all movements at this intersection 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, 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 for all alternate scenarios and the future alternate scenario lane geometry.

Walker/Road A

Appendix Table 4 shows the results of the level of service analysis for the future intersection of Walker Road and Road A. As discussed in the Monument Academy TIS, the future intersection of Walker/Road A is projected to operate at a satisfactory level of service as either a two-way or three-way stop sign-controlled intersection, based on the projected 2040 total traffic volumes, assuming the adjacent parcels are developed with 5-acre residential lots. If those parcels instead develop with a more intense mix of retail and office uses temporary traffic signal control will likely need to be considered to maintain an acceptable level of service if this intersection is not reconstructed as a roundabout prior to the future development. The proposed roundabout is projected to operate at a satisfactory level of service assuming Pinehurst Circle extends to SH 83 as either a right-in/right-out only intersection or full-movement intersection. If Pinehurst Circle is not extended to SH 83 a single lane roundabout is projected to operate at LOS F during the morning peak hour.

Pinehurst/Road A

Appendix Table 5 shows the results of the level of service analysis for the future intersection of Pinehurst Circle and Road A. The intersection of Pinehurst Circle and Road A is projected to operate at LOS D or better for all movements during the peak hours as a stop-sign-controlled intersection based on the projected short-term and 2040 total traffic assuming the adjacent parcels are developed with 5-acre residential lots.

If the adjacent parcels are developed with more intense land uses, it may be necessary to convert to all-way stop-sign control, or potentially signal control, to maintain an acceptable level of service.

Site Access Points

Appendix Table 6 shows the results of the level of service analysis for the site access points to Pinehurst Circle and Road A. The site access points to Pinehurst Circle and Road A are projected to operate at LOS C or better for all movements during the peak hours as stop sign-controlled

intersections, based on the projected short-term and 2040 total traffic, assuming the adjacent parcels are developed with 5-acre residential lots. Should the adjacent parcels develop with more intense land use, alternate traffic control may be necessary depending on the actual land use and access locations.

SH 83/Pinehurst

The intersection of SH 83/Pinehurst is proposed to be constructed as a right-in/right-out only access. A raised channelized island and a northbound acceleration lane would allow this intersection to operate freely. CDOT requested additional analysis of this intersection as a full-movement intersection. Even if this intersection were constructed as a “T” intersection with a channelized southbound left-turn acceleration lane, the westbound left-turn movement is projected to operate at LOS F during the morning peak hour. If this intersection were to be constructed as a modern one-lane roundabout, all movements are projected to operate at LOS C or better during the peak hours, based on the projected short-term total traffic volumes. By 2040 this intersection would operate at LOS F during both the morning and afternoon peak hours as a one-lane roundabout.

Planning for Future ROW needs/Recommended ROW Reservation

Based on the results of the analysis contained in this appendix section, including the level of service results and corresponding roadway/intersection laneage assumed in the analysis, potential future right-of-way needs have been identified for Walker Road and State Highway 83. Reservation of right of way is discussed in the main report. The potential future right-of-way widths are addressed within the main part of the TIS report (not an “Appendix Figure”), as the reservation of this additional right of way is recommended at this time even with the current zoning of the adjacent parcels.

QUEUING ANALYSIS

Appendix Table 8 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 2040 total peak hour volumes for the three access scenarios for the intersection of SH 83/Pinehurst shown in Appendix Figures 13, 14 and 15. These volumes assume higher intensity land uses on the adjacent parcels and redevelopment of the parcels north of Walker Road with a mix of residential and retail uses. As shown in Appendix Table 8, the projected 95th percentile queue for the westbound left turn and through lanes could be accommodated by the proposed spacing of Road A, assuming Pinehurst/SH 83 is either a full-movement intersection or restricted to right-in/right-out only. If no additional access is allowed to SH 83, the 95th percentile queues are projected to extend past the intersection of Walker/Road A.

Appendix Tables 1-8



**Appendix Table 1
Future Background Trip Generation Estimate
Monument Academy**

Land Use Code	Land Use Description	Trip Generation Units	Trip Generation Rates ⁽¹⁾								Total Trips Generated								Internal Trips ⁽²⁾ (%)	Total "External" Trips Generated								Passby Trips ⁽³⁾ (%)	Average Weekday Traffic
			Average Weekday Traffic	Morning Peak Hour		Mid-Afternoon Peak Hour		Afternoon Peak Hour		Average Weekday Traffic	Morning Peak Hour		Mid-Afternoon Peak Hour		Afternoon Peak Hour		Average Weekday Traffic	Morning Peak Hour		Mid-Afternoon Peak Hour		Afternoon Peak Hour							
				In	Out	In	Out	In	Out		In	Out	In	Out	In	Out		In		Out	In	Out	In	Out					
Long-Term Additional Land Uses of Adjacent Parcels																													
Low Intensity Long-Term/Future - Additional Land Uses On Adjacent Parcels																													
210	Single-Family Detached Housing	3 DU ⁽⁴⁾	9.44	0.19	0.56	0.33	0.29	0.62	0.37	28	1	2	1	1	2	1	0%	28	1	2	1	1	2	1	0%	28		28	
210	Single-Family Detached Housing	4 DU	9.44	0.19	0.56	0.33	0.29	0.62	0.37	38	1	2	1	1	2	1	0%	38	1	2	1	1	2	1	0%	38		38	
			Low Intensity Land Use Total								66	2	4	2	2	4	2		66	2	4	2	2	4	2		66		
High Intensity Long-Term/Future - Additional Land Uses On Adjacent Parcels																													
945	Gasoline/Service Station with Convenience Market	5 KSF ⁽⁵⁾	1440.02	38.75	37.24	46.80	46.08	45.06	43.29	7,200	194	186	234	230	225	216	15%	6,120	165	158	199	196	191	184	56%	2,693			
820	Shopping Center	57 KSF	71.94	1.96	1.20	3.20	3.31	3.02	3.27	4,105	112	69	183	189	172	187	15%	3,489	95	59	156	161	146	159	34%	2,303			
934	Fast-Food Restaurant with Drive-Through Window	5 KSF	470.95	20.50	19.69	13.66	15.07	16.99	15.68	2,355	102	98	68	75	85	78	15%	2,002	87	83	58	64	72	66	50%	1,001			
932	High-Turnover (Sit-Down) Restaurant	4 KSF	112.18	5.47	4.47	2.19	2.69	6.06	3.71	449	22	18	9	11	24	15	15%	382	19	15	8	9	20	13	43%	218			
912	Drive-in Bank	10 KSF	100.03	5.51	3.99	4.65	4.70	10.23	10.23	1,000	55	40	47	47	102	102	15%	850	47	34	40	40	87	87	35%	553			
710	General Office Building	57 KSF	10.79	1.21	0.20	0.44	0.35	0.19	0.98	616	69	11	25	20	11	56	15%	524	59	9	21	17	9	48	0%	524			
720	Medical-Dental Office Building	61 KSF	36.98	1.84	0.52	1.68	1.70	0.96	2.46	2,255	112	32	103	104	58	150	15%	1,917	95	27	88	88	49	128	0%	1,917			
210	Single-Family Detached Housing	164 DU	9.44	0.19	0.56	0.33	0.29	0.62	0.37	1,548	30	91	54	48	102	60	0%	1,548	30	91	54	48	102	60	0%	1,548			
			High Intensity Land Use Total								19,528	696	545	723	724	779	864		16,832	597	476	624	623	676	745		10,757		
Potential Future Background Land Uses North of Walker Road (Not a part of this development)																													
210	Single-Family Detached Housing	150 DU	9.44	0.19	0.56	0.33	0.29	0.62	0.37	1,416	28	83	50	44	94	55	0%	1,416	28	83	50	44	94	55	0%	1,416			
820	Shopping Center	30 KSF	88.38	3.45	2.11	3.93	4.07	3.57	3.86	2,651	103	63	118	122	107	116	0%	2,651	103	63	118	122	107	116	34%	1,750			
											4,067	131	146	168	166	201	171		4,067	131	146	168	166	201	171		3,166		

Notes:
(1) Source: "Trip Generation, 10th Edition, 2017" by the Institute of Transportation Engineers (ITE)
(2) See attached NCHRP 684 Internal Trip Capture Estimation Tool
(3) Source: "Trip Generation Handbook - An ITE Proposed Recommended Practice, 3rd Edition, 2017" by ITE
(4) DU = dwelling unit
(5) KSF = thousand square feet of floor space

Source: LSC Transportation Consultants, Inc.

Appendix Table 2
Level of Service Analysis
SH 83/Hwy 105/Walker
Monument Academy

Movement	No Access at Pinehurst/SH 83									Right-in/Right-out at Pinehurst/SH 83												Full Access at Pinehurst/SH 83									
	Short-Term Total			2040 Total (High Intensity)			Phase 1 Only			Short-Term Total			2040 Background (Low Intensity)			2040 Background (High Intensity)			2040 Total (Low Intensity)			2040 Total (High Intensity)			Short-Term Total			2040 Total			
	AM	Midday	PM	AM	Midday	PM	AM	Midday	PM	AM	Midday	PM	AM	Midday	PM	AM	Midday	PM	AM	Midday	PM	AM	Midday	PM	AM	Midday	PM	AM	Midday	PM	
	With Redevelopment North of Walker Rd									Without Redevelopment North of Walker Road												With Redevelopment North of Walker Rd									
Scenario: Existing Lane Geometry and Signal Timing Plan Modified To Add Split Phases for the Eastbound and Westbound Approaches																															
Eastbound Left and Through	F	E	D	---	---	---	E	D	D	F	E	D	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	E	D	D
Eastbound Right	A	A	A	---	---	---	A	A	A	A	A	A	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	A	A	A
Westbound	F	E	D	---	---	---	E	D	D	F	E	D	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	E	D	D	
Northbound Left	C	C	C	---	---	---	D	B	B	D	C	C	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	E	C	C	
Northbound Through	D	D	C	---	---	---	D	C	C	D	D	C	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	D	C	C	
Northbound Right	A	A	A	---	---	---	A	A	A	A	A	A	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	A	A	A	
Southbound Left	C	C	B	---	---	---	C	B	B	C	C	B	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	C	B	B	
Southbound Through	D	D	D	---	---	---	D	C	C	D	D	D	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	D	D	D	
Southbound Right	A	A	A	---	---	---	A	A	A	A	A	A	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	A	A	A	
Overall	F	D	C	---	---	---	D	C	C	F	D	C	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	D	C	C	
Scenario: Add eastbound and westbound left-turn lanes																															
Eastbound Left	C	D	D	---	---	---	---	---	---	C	D	D	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	C	D	D	
Eastbound Through	E	D	D	---	---	---	E	D	D	D	D	D	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	D	D	D	
Eastbound Right	A	A	A	---	---	---	A	A	A	A	A	A	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	A	A	A	
Westbound Left	E	D	C	---	---	---	E	C	C	C	C	C	---	---	---	---	---	---	---	---	---	---	---	---	---	---	C	C	C		
Westbound Through and Right	C	C	C	---	---	---	B	C	C	C	D	D	---	---	---	---	---	---	---	---	---	---	---	---	---	---	C	D	C		
Northbound Left	C	B	A	---	---	---	D	A	C	B	A	C	---	---	---	---	---	---	---	---	---	---	---	---	---	---	C	A	A		
Northbound Through	D	B	B	---	---	---	D	B	B	B	B	B	---	---	---	---	---	---	---	---	---	---	---	---	---	---	C	B	B		
Northbound Right	A	A	A	---	---	---	A	A	A	A	A	A	---	---	---	---	---	---	---	---	---	---	---	---	---	---	A	A	A		
Southbound Left	B	A	A	---	---	---	C	A	A	A	A	A	---	---	---	---	---	---	---	---	---	---	---	---	---	---	B	A	A		
Southbound Through	C	C	B	---	---	---	C	B	C	B	C	D	---	---	---	---	---	---	---	---	---	---	---	---	---	---	C	B	B		
Southbound Right	A	A	A	---	---	---	A	A	A	A	A	A	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	A	A	A	
Overall	D	C	B	---	---	---	D	B	C	B	B	C	---	---	---	---	---	---	---	---	---	---	---	---	---	---	C	B	B		
Scenario: Add 2nd eastbound through lane, 2nd southbound through lane, 2nd westbound left-turn lane, separate westbound right-turn lane, 2nd northbound left-turn lane																															
Eastbound Left	---	---	---	C	C	C	---	---	---	C	C	C	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	C	B	C	
Eastbound Through (2)	---	---	---	E	D	D	---	---	---	D	D	D	---	---	---	---	---	---	---	---	---	---	---	---	---	---	E	D	D		
Eastbound Right	---	---	---	A	A	A	---	---	---	B	A	B	---	---	---	---	---	---	---	---	---	---	---	---	---	---	A	A	B		
Westbound Left (2)	---	---	---	E	D	D	---	---	---	D	D	D	---	---	---	---	---	---	---	---	---	---	---	---	---	---	E	D	D		
Westbound Through	---	---	---	E	D	D	---	---	---	D	C	D	---	---	---	---	---	---	---	---	---	---	---	---	---	---	D	C	D		
Westbound Right	---	---	---	A	A	A	---	---	---	A	A	A	---	---	---	---	---	---	---	---	---	---	---	---	---	---	A	A	A		
Northbound Left (2)	---	---	---	E	D	D	---	---	---	D	D	D	---	---	---	---	---	---	---	---	---	---	---	---	---	---	E	D	D		
Northbound Through	---	---	---	D	D	D	---	---	---	D	D	D	---	---	---	---	---	---	---	---	---	---	---	---	---	---	D	C	D		
Northbound Right	---	---	---	C	B	B	---	---	---	A	A	A	---	---	---	---	---	---	---	---	---	---	---	---	---	---	A	A	A		
Southbound Left	---	---	---	E	C	D	---	---	---	B	B	C	---	---	---	---	---	---	---	---	---	---	---	---	---	---	E	C	D		
Southbound Through (2)	---	---	---	C	C	C	---	---	---	C	C	C	---	---	---	---	---	---	---	---	---	---	---	---	---	---	C	C	D		
Southbound Right	---	---	---	A	A	A	---	---	---	A	A	A	---	---	---	---	---	---	---	---	---	---	---	---	---	---	A	A	A		
Overall	---	---	---	D	C	D	---	---	---	C	C	C	---	---	---	---	---	---	---	---	---	---	---	---	---	---	D	C	D		

Source: LSC Transportation Consultants, Inc.

Include
Include

Appendix Table 3
Level of Service Analysis
Hodgen/SH 83
Monument Academy

Movement	No Access at Pinehurst/SH 83				Right-in/Right-out at Pinehurst/SH 83								Full Access at Pinehurst/SH 83									
	With Redevelopment North of Walker Rd				Without Redevelopment North of Walker Road				With Redevelopment North of Walker Road				With Redevelopment North of Walker Rd									
	Short-Term AM	Total PM	2040 Total AM (High Intensity)	2040 Total PM (High Intensity)	Short-Term AM	Total PM	2040 Background AM (Low Intensity)	2040 Background PM (Low Intensity)	2040 Background AM (High Intensity)	2040 Background PM (High Intensity)	2040 Total AM (Low Intensity)	2040 Total PM (Low Intensity)	2040 Total AM (High Intensity)	2040 Total PM (High Intensity)	2040 Background AM (High Intensity)	2040 Background PM (High Intensity)	2040 Total AM (High Intensity)	2040 Total PM (High Intensity)	Short-Term AM	Total PM	2040 Total AM	2040 Total PM
Scenario: Existing Lane Geometry																						
Eastbound Left	D	D	---	---	D	D	---	---	---	---	---	---	---	---	---	---	---	---	D	D	---	---
Eastbound Through	D	D	---	---	D	D	---	---	---	---	---	---	---	---	---	---	---	---	D	D	---	---
Eastbound Right	A	A	---	---	A	A	---	---	---	---	---	---	---	---	---	---	---	---	A	A	---	---
Westbound Left	D	C	---	---	D	C	---	---	---	---	---	---	---	---	---	---	---	---	D	C	---	---
Westbound Through	D	D	---	---	D	D	---	---	---	---	---	---	---	---	---	---	---	---	D	D	---	---
Westbound Right	B	A	---	---	B	A	---	---	---	---	---	---	---	---	---	---	---	---	B	A	---	---
Northbound Left	A	B	---	---	A	B	---	---	---	---	---	---	---	---	---	---	---	---	A	B	---	---
Northbound Through	C	C	---	---	C	C	---	---	---	---	---	---	---	---	---	---	---	---	C	C	---	---
Northbound Right	A	A	---	---	A	A	---	---	---	---	---	---	---	---	---	---	---	---	A	A	---	---
Southbound Left	A	B	---	---	A	B	---	---	---	---	---	---	---	---	---	---	---	---	A	B	---	---
Southbound Through/Right	C	C	---	---	C	C	---	---	---	---	---	---	---	---	---	---	---	---	C	C	---	---
Overall	C	C	---	---	C	C	---	---	---	---	---	---	---	---	---	---	---	---	C	C	---	---
Scenario: Add 2nd northbound and southbound through lanes, 2nd southbound left-turn lane, separate southbound right-turn lane, and 2nd westbound left-turn lane																						
Eastbound Left	---	---	C	D	---	---	B	B	C	C	C	C	C	C	D	D	C	D	---	---	C	D
Eastbound Through	---	---	D	D	---	---	D	D	D	D	D	D	D	D	D	D	D	D	---	---	D	D
Eastbound Right	---	---	A	A	---	---	A	A	A	A	A	A	A	A	A	A	A	A	---	---	A	A
Westbound Left (2)	---	---	D	D	---	---	D	D	D	D	D	D	D	D	D	D	D	D	---	---	D	D
Westbound Through	---	---	D	D	---	---	D	D	D	D	D	D	D	D	D	D	D	D	---	---	D	D
Westbound Right	---	---	A	A	---	---	A	A	A	A	A	A	A	A	A	A	A	A	---	---	A	A
Northbound Left	---	---	B	C	---	---	B	C	B	C	B	C	B	C	B	C	B	C	---	---	B	C
Northbound Through (2)	---	---	D	C	---	---	C	C	C	C	C	C	C	C	C	C	C	C	---	---	D	C
Northbound Right	---	---	A	B	---	---	A	A	A	B	A	A	A	B	A	B	A	B	---	---	A	B
Southbound Left (2)	---	---	D	D	---	---	D	D	D	D	D	D	D	D	D	D	D	D	---	---	D	D
Southbound Through (2)	---	---	C	C	---	---	C	C	C	C	C	C	C	C	C	C	C	C	---	---	C	C
Southbound Right	---	---	A	A	---	---	A	A	A	A	A	A	A	A	A	A	A	A	---	---	A	A
Overall	---	---	C	C	---	---	C	C	C	C	C	C	C	C	C	C	C	C	---	---	C	C

Source: LSC Transportation Consultants, Inc.

Appendix Table 4
Level of Service Analysis
Road A/Walker
Monument Academy

Movement	No Access at Pinehurst/SH 83									Right-in/Right-out at Pinehurst/SH 83									Full Access at Pinehurst/SH 83										
	Short-Term Total			With Redevelopment North of Walker Rd 2040 Total (High Intensity)			Short-Term Total			2040 Background (High Intensity)			2040 Total (Low Intensity)			2040 Total (High Intensity)			With Redevelopment North of Walker Rd 2040 Total (High Intensity)			Short-Term Total			With Redevelopment North of Walker Rd 2040 Total (High Intensity)				
	AM	Midday	PM	AM	Midday	PM	AM	Midday	PM	AM	Midday	PM	AM	Midday	PM	AM	Midday	PM	AM	Midday	PM	AM	Midday	PM	AM	Midday	PM	AM	Midday
Scenario: Two-Way, Stop-Sign Control																													
Northbound Left	E	B	B	---	---	---	B	B	B	D	D	E	C	B	B	F	F	F	---	---	---	B	B	B	---	---	---		
Northbound Right	A	A	A	---	---	---	A	A	A	A	A	A	A	A	A	A	A	A	---	---	---	A	A	A	---	---	---		
Eastbound Left	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
Westbound Left-Turn	A	A	A	---	---	---	A	A	A	A	A	A	A	A	A	A	A	A	---	---	---	A	A	A	---	---	---		
Southbound Left	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
Southbound Through and Right	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
Scenario: All-Way, Stop-Sign Control																													
Northbound Left	F	C	B	---	---	---	C	B	A	F	F	F	C	B	B	F	F	F	---	---	---	A	A	A	---	---	---		
Northbound Right	B	A	A	---	---	---	A	A	A	A	A	A	A	A	A	B	B	A	---	---	---	A	A	A	---	---	---		
Eastbound Left	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
Eastbound Through	B	A	A	---	---	---	A	A	A	B	B	B	A	A	B	B	B	B	---	---	---	A	A	A	---	---	---		
Eastbound Right	F	B	A	---	---	---	D	A	A	E	E	D	D	A	A	F	F	E	---	---	---	B	A	A	---	---	---		
Westbound Left	C	B	A	---	---	---	B	A	A	C	B	B	C	B	A	D	C	C	---	---	---	B	A	A	---	---	---		
Westbound Through and Right	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
Southbound Left	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
Southbound Through and Right	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
Scenario: Temporary Traffic Signal																													
Eastbound Left	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
Eastbound Through	B	A	A	---	---	---	A	A	A	B	B	B	A	A	A	B	B	B	---	---	---	A	A	A	---	---	---		
Eastbound Right	A	A	A	---	---	---	A	A	A	A	A	A	A	A	A	A	A	A	---	---	---	A	A	A	---	---	---		
Westbound Left	B	A	A	---	---	---	A	A	A	B	B	B	A	A	A	B	B	B	---	---	---	A	A	A	---	---	---		
Westbound Through and Right	B	A	A	---	---	---	A	A	A	B	B	B	A	A	A	B	B	B	---	---	---	A	A	A	---	---	---		
Northbound Left	D	D	D	---	---	---	D	D	D	D	D	D	D	D	D	D	D	D	---	---	---	C	D	D	---	---	---		
Northbound Right	A	B	B	---	---	---	A	B	B	A	A	A	A	A	B	A	A	A	---	---	---	B	B	B	---	---	---		
Southbound Left	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
Southbound Through and Right	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
Overall	B	C	B	---	---	---	B	C	B	B	C	C	B	B	B	C	C	C	---	---	---	A	B	A	---	---	---		
Scenario: One-Lane, Modern Roundabout																													
Eastbound	C	A	A	F	C	D	A	A	A	A	A	A	A	A	A	C	B	A	D	B	B	A	A	A	B	A	A	B	
Westbound	A	A	A	E	B	C	A	A	A	A	A	A	A	A	A	B	B	A	C	A	B	B	A	A	A	A	A	A	
Northbound	A	A	A	E	D	F	A	A	A	A	A	A	A	A	A	A	B	B	B	B	B	C	A	A	A	A	A	A	
Southbound	---	---	---	C	B	B	---	---	---	---	---	---	---	---	---	---	---	---	B	B	B	---	---	---	A	A	A	A	
Overall	B	A	A	F	D	E	A	A	A	A	A	A	A	A	A	B	B	A	C	B	B	A	A	A	B	A	A	A	

Source: LSC Transportation Consultants, Inc.

**Appendix Table 5
Level of Service Analysis
Road A/Pinehurst
Monument Academy**

Movement	Right-in/Right-out at Pinehurst/SH 83									Full Access at Pinehurst/SH 83								
	Short-Term Total			2040 Background (high intensity)			2040 Total (Low Intensity)			2040 Total (High Intensity)			Short-Term Total			2040 Total (High Intensity)		
	AM	Midday	PM	AM	Midday	PM	AM	Midday	PM	AM	Midday	PM	AM	Midday	PM	AM	Midday	PM
Scenario: Two-Way, Stop-Sign Control																		
Eastbound Left	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	---	---	---
Southbound Left	D	B	A	B	C	D	D	B	A	F	E	F	C	B	A	---	---	---
Southbound Right	A	A	A	A	A	A	B	A	A	B	B	A	B	A	A	---	---	---
Scenario: All-Way, Stop-Sign Control																		
Eastbound Left	---	---	---	B	B	B	---	---	---	C	B	B	---	---	---	C	B	C
Eastbound Through	---	---	---	A	A	A	---	---	---	B	B	A	---	---	---	C	B	B
Westbound Left	---	---	---	A	A	A	---	---	---	C	B	A	---	---	---	D	B	B
Westbound Through	---	---	---	A	A	A	---	---	---	C	B	A	---	---	---	A	A	A
Southbound Left	---	---	---	A	A	A	---	---	---	C	B	B	---	---	---	B	B	B
Southbound Right	---	---	---	A	A	A	---	---	---	B	B	A	---	---	---	B	B	C

Source: LSC Transportation Consultants, Inc.

Appendix Table 6
Level of Service Analysis
Site Access Points
Monument Academy

Movement	No Access at Pinehurst/SH 83						Right-in/Right-out at Pinehurst/SH 83									Full Access at Pinehurst/SH 83								
	Short-Term Total			2040 Total (High Intensity)			Short-Term Total			2040 Background (High Intensity)			2040 Total (Low Intensity)			2040 Total (High Intensity)			Short-Term Total			2040 Total		
	AM	Midday	PM	AM	Midday	PM	AM	Midday	PM	AM	Midday	PM	AM	Midday	PM	AM	Midday	PM	AM	Midday	PM	AM	Midday	PM
Intersection: North School Access/Road "A"																								
Northbound Left	---	---	---	A	A	A	---	---	---	A	A	A	---	---	---	A	A	A	---	---	---	A	A	A
Eastbound	---	---	---	F	F	F	---	---	---	B	B	B	---	---	---	D	D	C	---	---	---	C	B	B
Westbound	B	B	A	A	B	B	A	A	A	---	---	---	A	A	A	A	B	B	A	A	A	A	B	B
Southbound Left	A	A	A	A	A	A	A	A	A	---	---	---	A	A	A	A	A	A	A	A	A	A	A	A
Intersection: YMCA Access/Road "A"																								
Northbound Left	---	---	---	A	A	A	---	---	---	A	A	A	---	---	---	A	A	A	---	---	---	A	A	A
Eastbound	---	---	---	F	C	C	---	---	---	B	B	B	---	---	---	C	C	C	---	---	---	B	B	B
Westbound	B	A	A	B	B	B	B	A	A	---	---	---	B	A	A	B	B	B	B	A	A	B	B	C
Southbound Left	A	A	A	A	A	A	A	A	A	---	---	---	A	A	A	A	A	A	A	A	A	A	A	A
Intersection: South School Access/Pinehurst																								
Eastbound Left	A	A	A	A	A	A	A	A	A	---	---	---	A	A	A	A	A	A	A	A	A	A	A	A
Southbound	B	A	A	B	A	A	B	A	A	---	---	---	C	A	A	B	A	A	B	A	A	B	A	A

Source: LSC Transportation Consultants, Inc.

**Appendix Table 7
Level of Service Analysis
Road A/Pinehurst
Monument Academy**

Full Access at Pinehurst/SH 83

Movement	Short-Term Total			2040 Total		
	AM	Midday	PM	AM	Midday	PM
Scenario: <u>One-Lane Modern Roundabout</u>						
Westbound	C	A	A	F	E	F
Northbound	C	A	A	F	C	F
Southbound	B	A	A	E	E	F
Overall	C	A	A	F	E	F
Scenario: <u>Channelized T Intersection</u>						
Westbound Left	F	C	C	---	---	---
Westbound Right	A	A	A	---	---	---
Southbound Left	A	A	A	---	---	---
<i>Source: LSC Transportation Consultants, Inc.</i>						

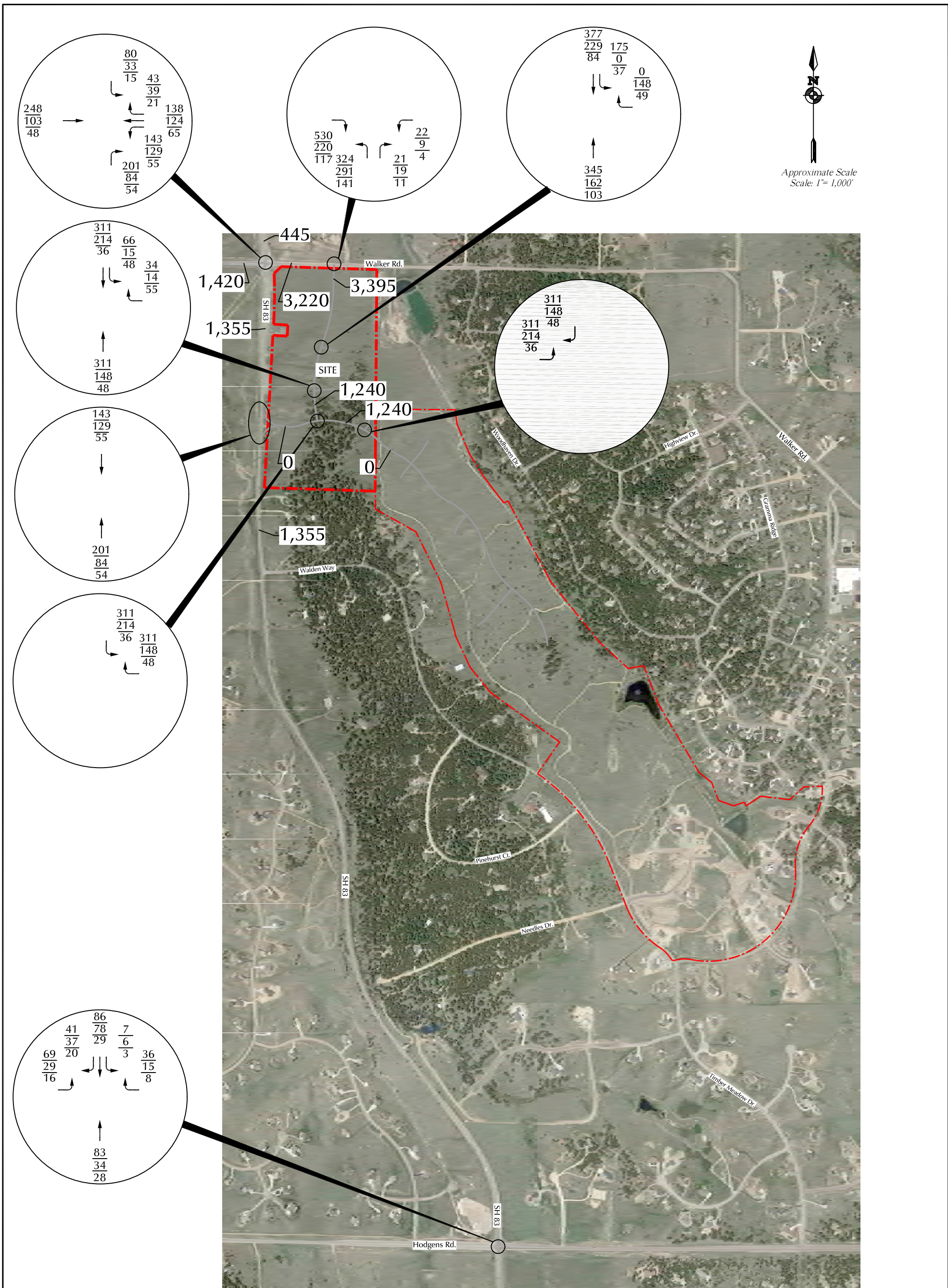
**Appendix Table 8
Queuing Analysis
SH 83/Highway 105/Walker
Monument Academy**

SH 83/Pinehurst Scenario	Projected 2040 95th Percentile Queue Length (ft)					
	Westbound Left-Turn			Westbound Through		
	AM	Midday	PM	AM	Midday	PM
No Access	307	253	247	621	510	584
Right-in/Right-out Only	307	261	247	295	277	321
Full Access	61	78	102	190	252	280

Source: LSC Transportation Consultants, Inc.

Appendix Figures 1-15





Appendix Figure 1

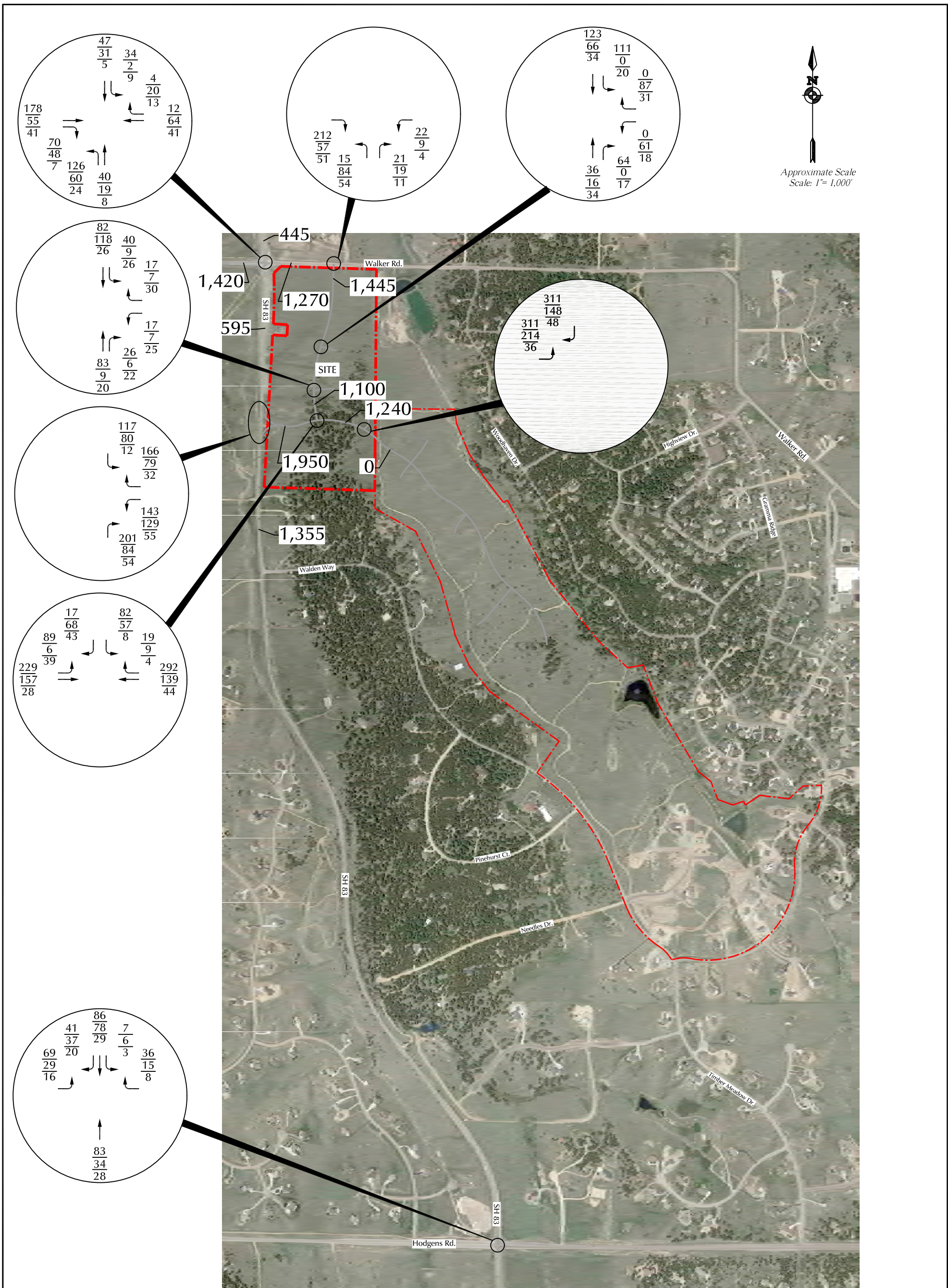
Short-Term Assignment of Site-Generated Traffic with No Access at Pinehurst/SH 83

Monument Academy (LSC #184820)

LEGEND:

- XX AM Weekday Peak-Hour Traffic (vehicles per hour)
- XX = School Peak-Hour Traffic (2:00-3:00pm)
- XX PM Weekday Peak-Hour Traffic (vehicles per hour)
- X,XXX= Average Daily Traffic (vehicles per day)





Appendix Figure 2

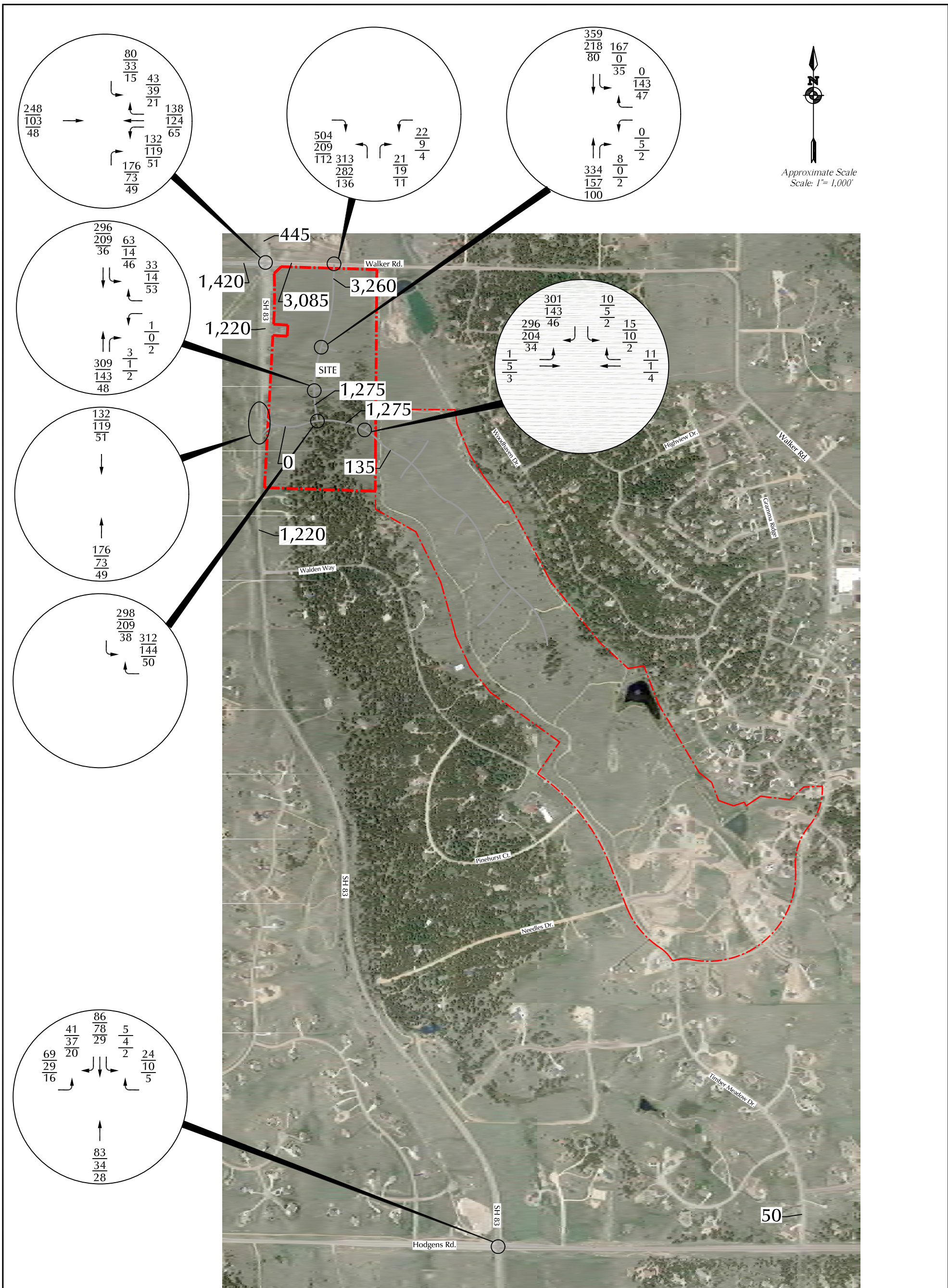
Short-Term Assignment of Site-Generated Traffic with Full-Movement Access at Pinehurst/SH 83

Monument Academy (LSC #184820)

LEGEND:

- XX AM Weekday Peak-Hour Traffic (vehicles per hour)
- XX = School Peak-Hour Traffic (2:00-3:00pm)
- XX PM Weekday Peak-Hour Traffic (vehicles per hour)
- X,XXX= Average Daily Traffic (vehicles per day)





Appendix Figure 3

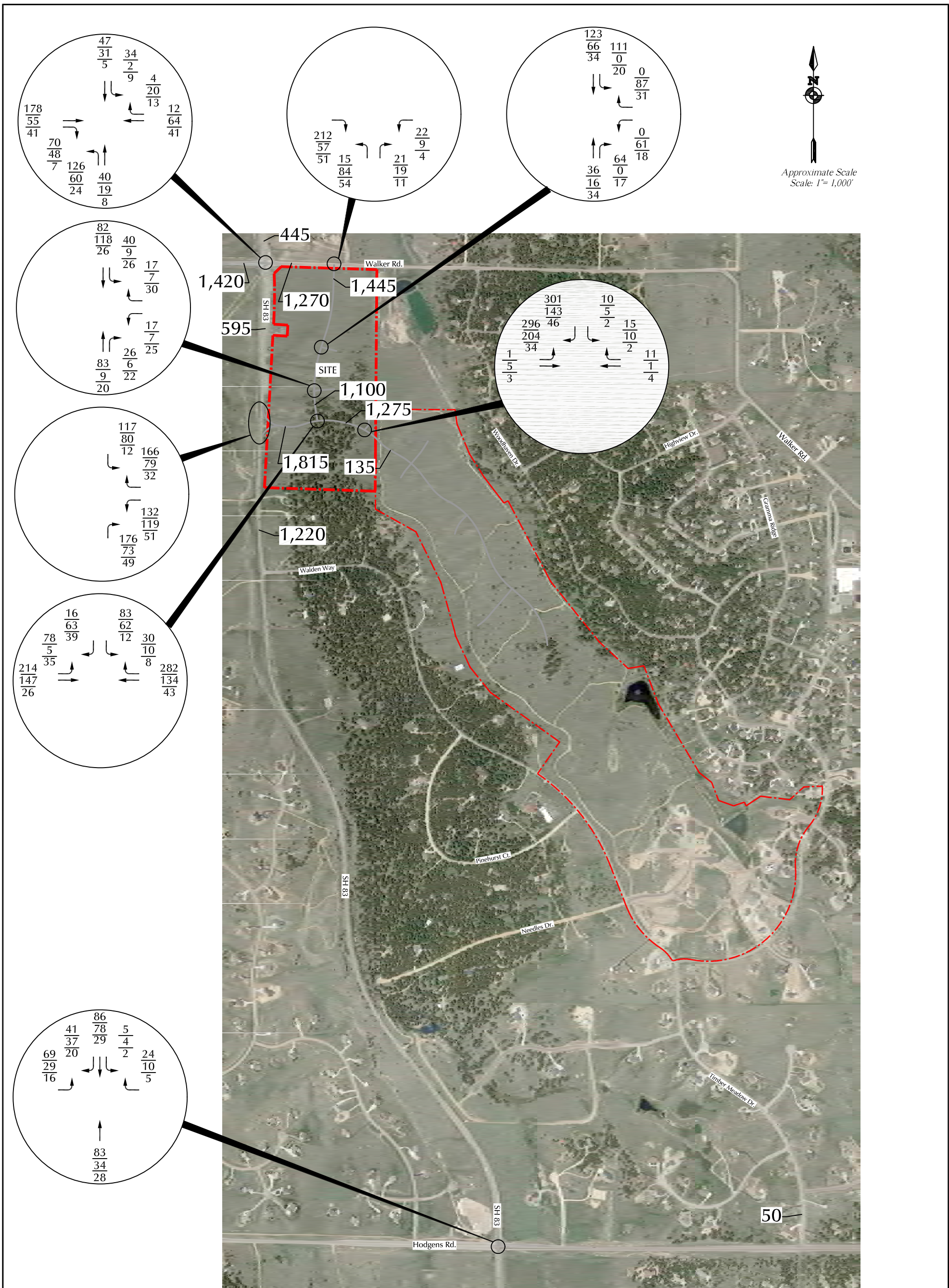
Long-Term Assignment of Site-Generated Traffic with No Access at Pinehurst/SH 83

Monument Academy (LSC #184820)

LEGEND:

- XX AM Weekday Peak-Hour Traffic (vehicles per hour)
- XX = School Peak-Hour Traffic (2:00-3:00pm)
- XX PM Weekday Peak-Hour Traffic (vehicles per hour)
- X,XXX= Average Daily Traffic (vehicles per day)





Appendix Figure 4

Long-Term Assignment of Site-Generated Traffic with Full Movement Access at Pinehurst/SH 83

Monument Academy (LSC #184820)

LEGEND:

- $\frac{XX}{XX}$ AM Weekday Peak-Hour Traffic (vehicles per hour)
- $\frac{XX}{XX}$ = School Peak-Hour Traffic (2:00-3:00pm)
- $\frac{XX}{XX}$ PM Weekday Peak-Hour Traffic (vehicles per hour)
- X,XXX= Average Daily Traffic (vehicles per day)



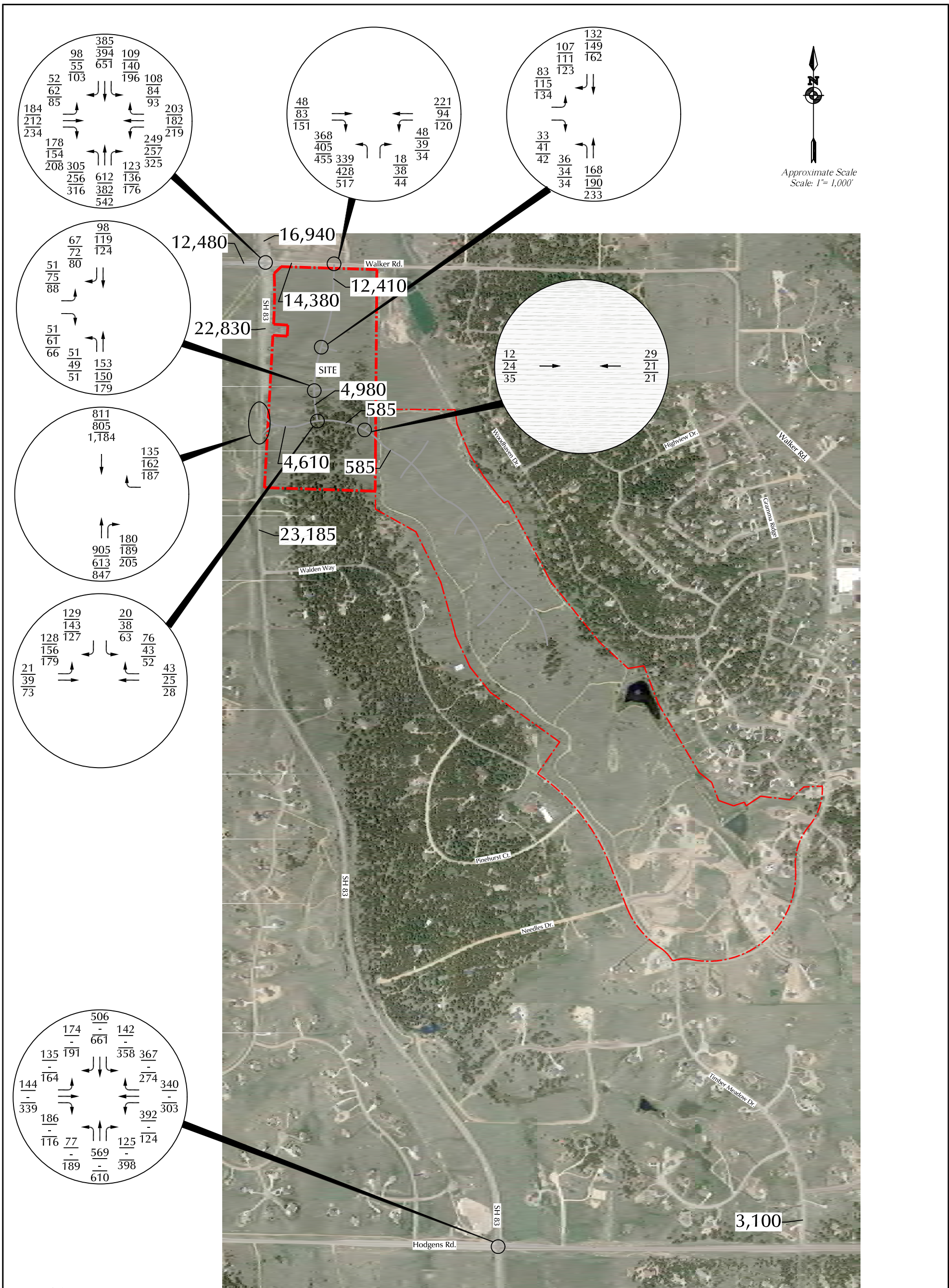


Approximate Scale
Scale: 1" = 2,000'



Directional Distribution of Site-Generated Traffic

Appendix Figure 5
Monument Academy (LSC #184820)



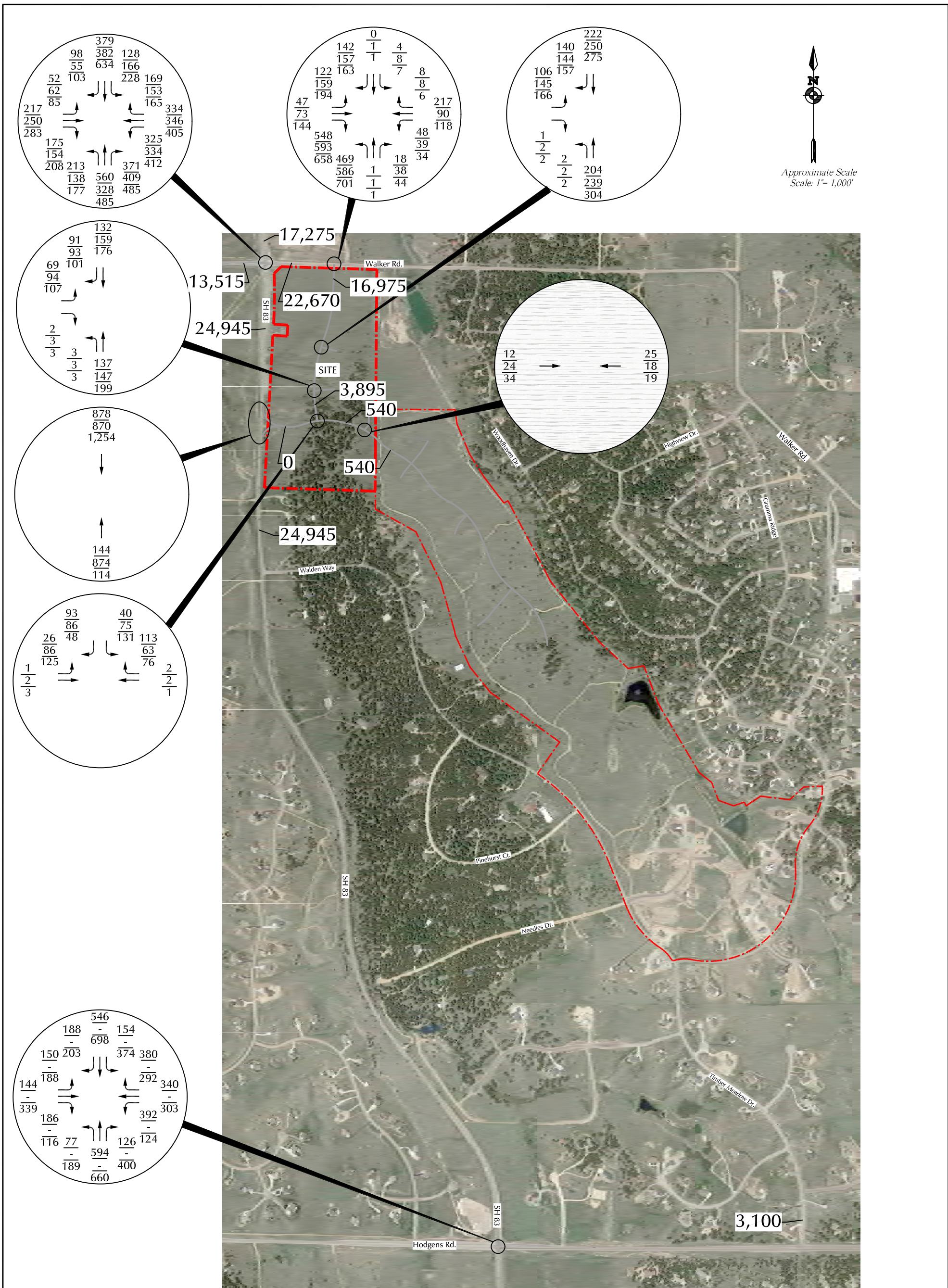
LEGEND:

- XX AM Weekday Peak-Hour Traffic (vehicles per hour)
- XX = School Peak-Hour Traffic (2:00-3:00pm)
- XX PM Weekday Peak-Hour Traffic (vehicles per hour)
- X,XXX= Average Daily Traffic (vehicles per day)

Appendix Figure 6

Year 2040 Background Traffic with High Intensity Development of Adjacent Parcels. No Redevelopment N. of Walker Rd. and Right-in/Right-out Access at Pinehurst/SH 83





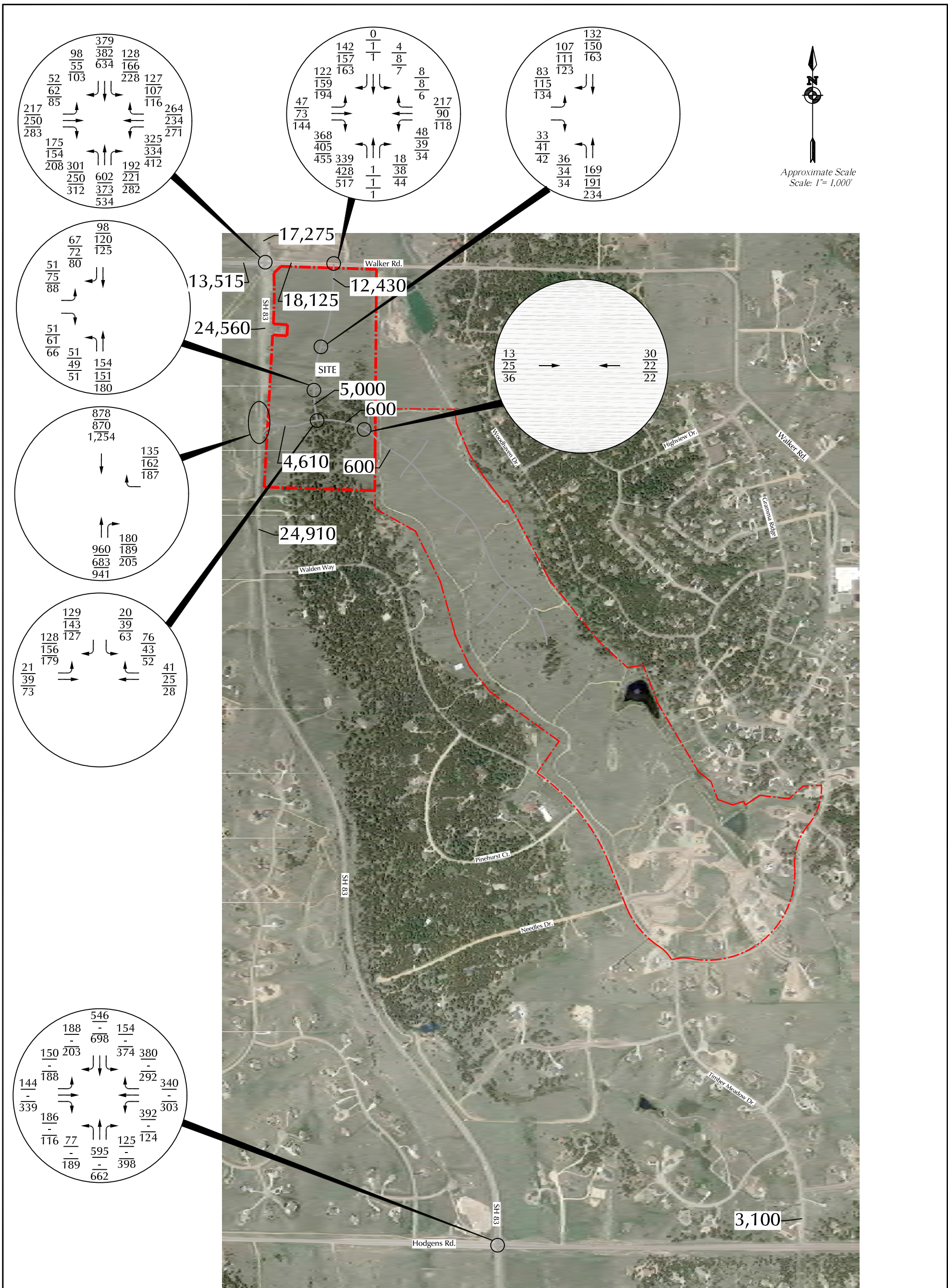
Appendix Figure 7

Year 2040 Background Traffic with Redevelopment North of Walker Road and No Access at Pinehurst/SH 83

LEGEND:

- $\frac{XX}{XX}$ = AM Weekday Peak-Hour Traffic (vehicles per hour)
- $\frac{XX}{XX}$ = School Peak-Hour Traffic (2:00-3:00pm)
- $\frac{XX}{XX}$ = PM Weekday Peak-Hour Traffic (vehicles per hour)
- X,XXX= Average Daily Traffic (vehicles per day)





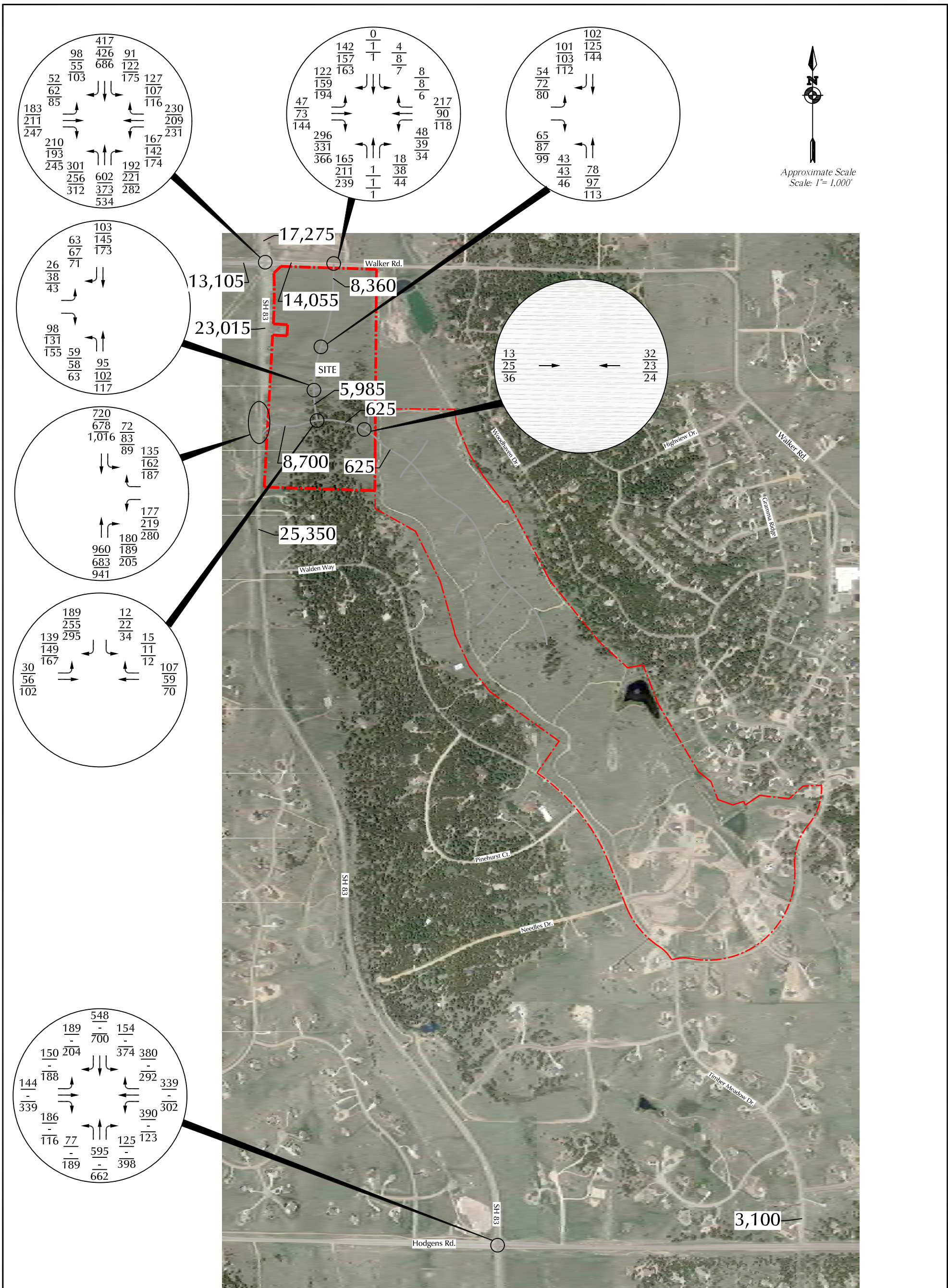
Appendix Figure 8

Year 2040 Background Traffic with Redevelopment North of Walker Road and Right-In/Right-Out Access at Pinehurst/SH 83

LEGEND:

- XX AM Weekday Peak-Hour Traffic (vehicles per hour)
- XX School Peak-Hour Traffic (2:00-3:00pm)
- XX PM Weekday Peak-Hour Traffic (vehicles per hour)
- X,XXX= Average Daily Traffic (vehicles per day)



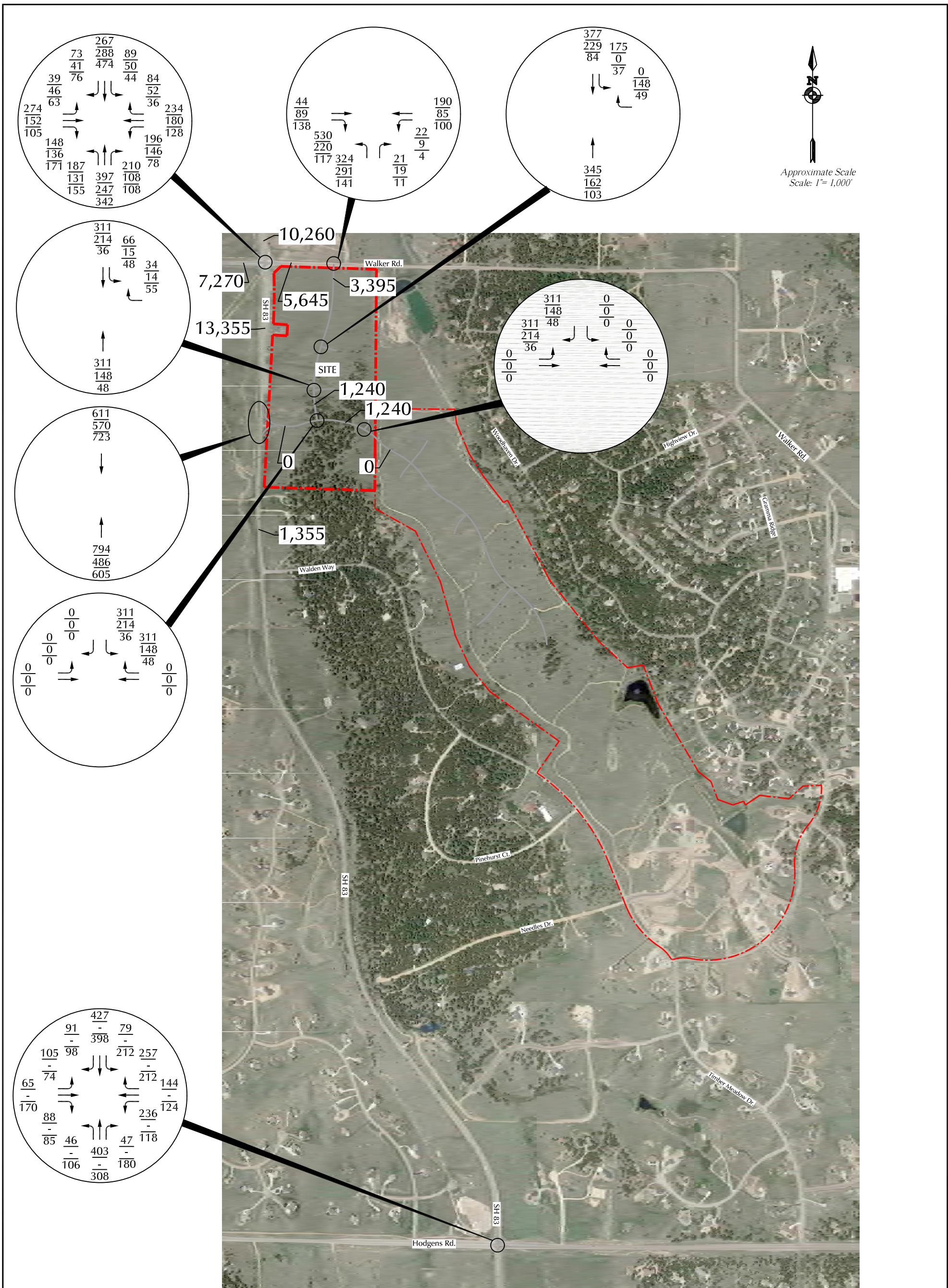


Appendix Figure 9

Year 2040 Background Traffic with Redevelopment North of Walker Road and Full-Movement Access at Pinehurst/SH 83

Monument Academy (LSC #184820)



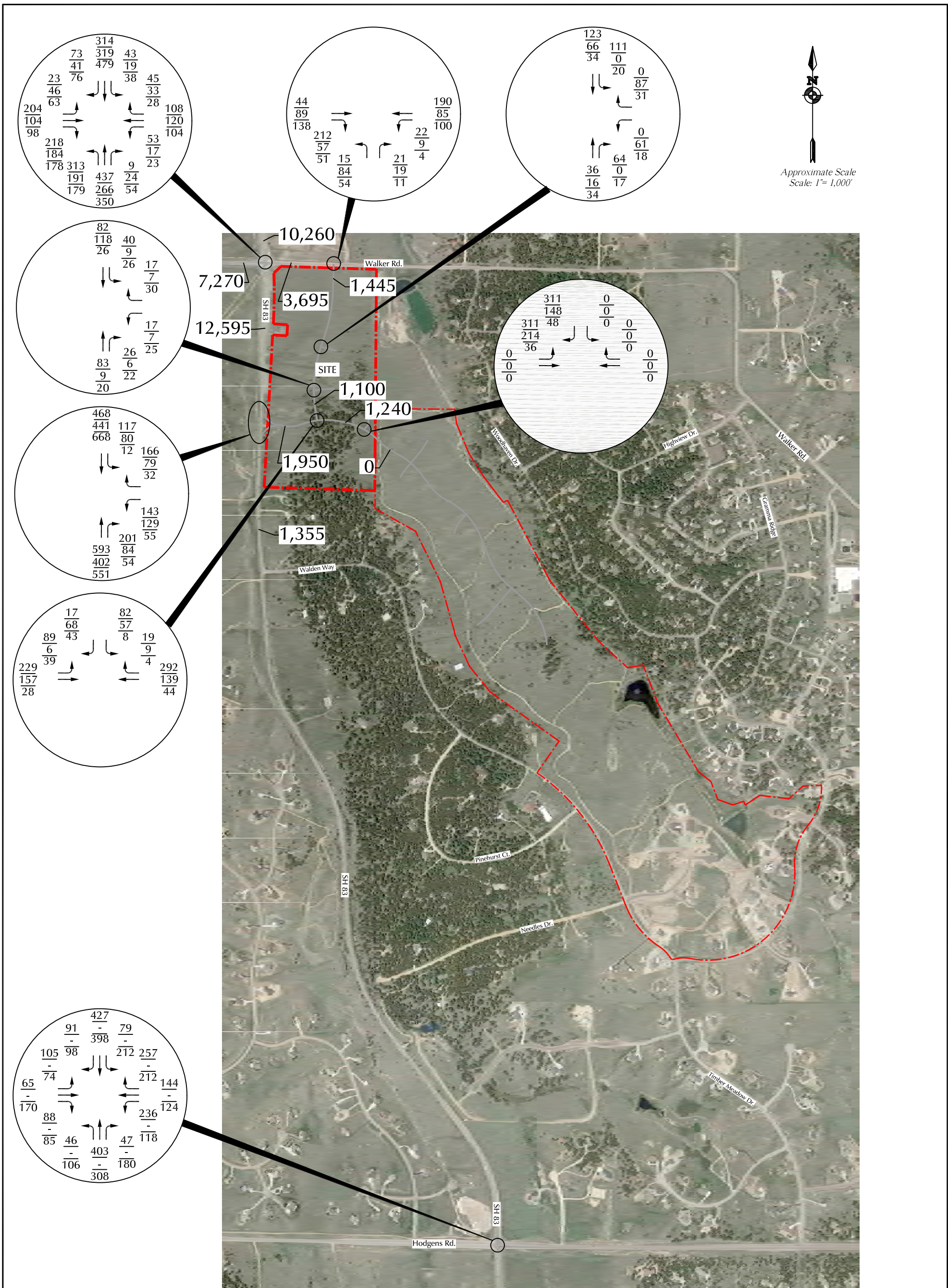


LEGEND:

- XX = AM Weekday Peak-Hour Traffic (vehicles per hour)
- XX = School Peak-Hour Traffic (2:00-3:00pm)
- XX = PM Weekday Peak-Hour Traffic (vehicles per hour)
- X,XXX= Average Daily Traffic (vehicles per day)



Appendix Figure 10
**Year 2025 Total Traffic
 with No Access at Pinehurst/SH 83**
 Monument Academy (LSC #184820)

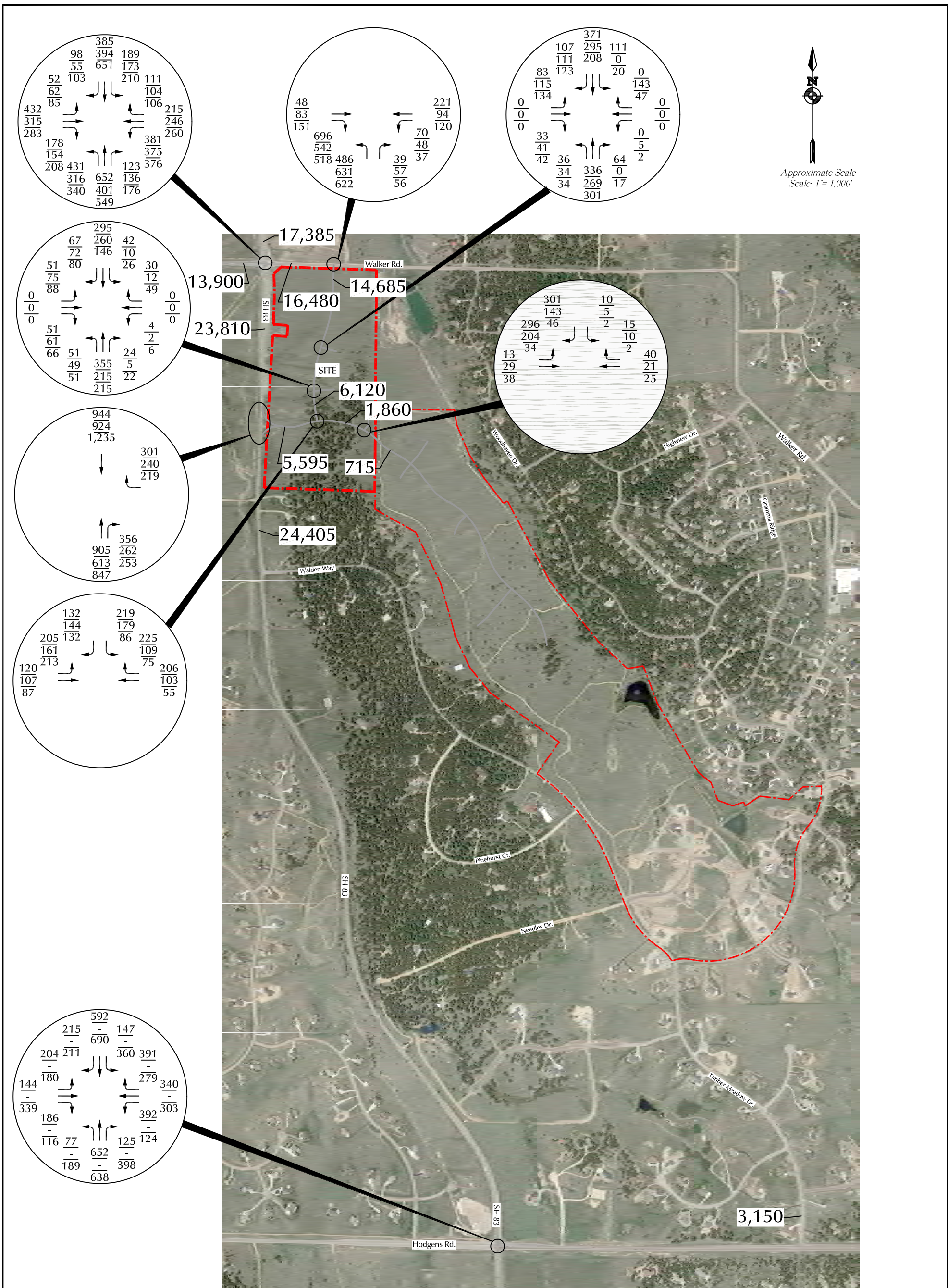


LEGEND:

- XX AM Weekday Peak-Hour Traffic (vehicles per hour)
- XX = School Peak-Hour Traffic (2:00-3:00pm)
- XX PM Weekday Peak-Hour Traffic (vehicles per hour)
- X,XXX= Average Daily Traffic (vehicles per day)



Appendix Figure 11
Year 2025 Total Traffic
with Full Movement Access at Pinehurst/SH 83
Monument Academy (LSC #184820)



Appendix Figure 12

Year 2040 Total Traffic with High Density Adjacent Development and Right-in/Right-out Access at Pinehurst/SH 83. No Redevelopment North of Walker Road

LEGEND:

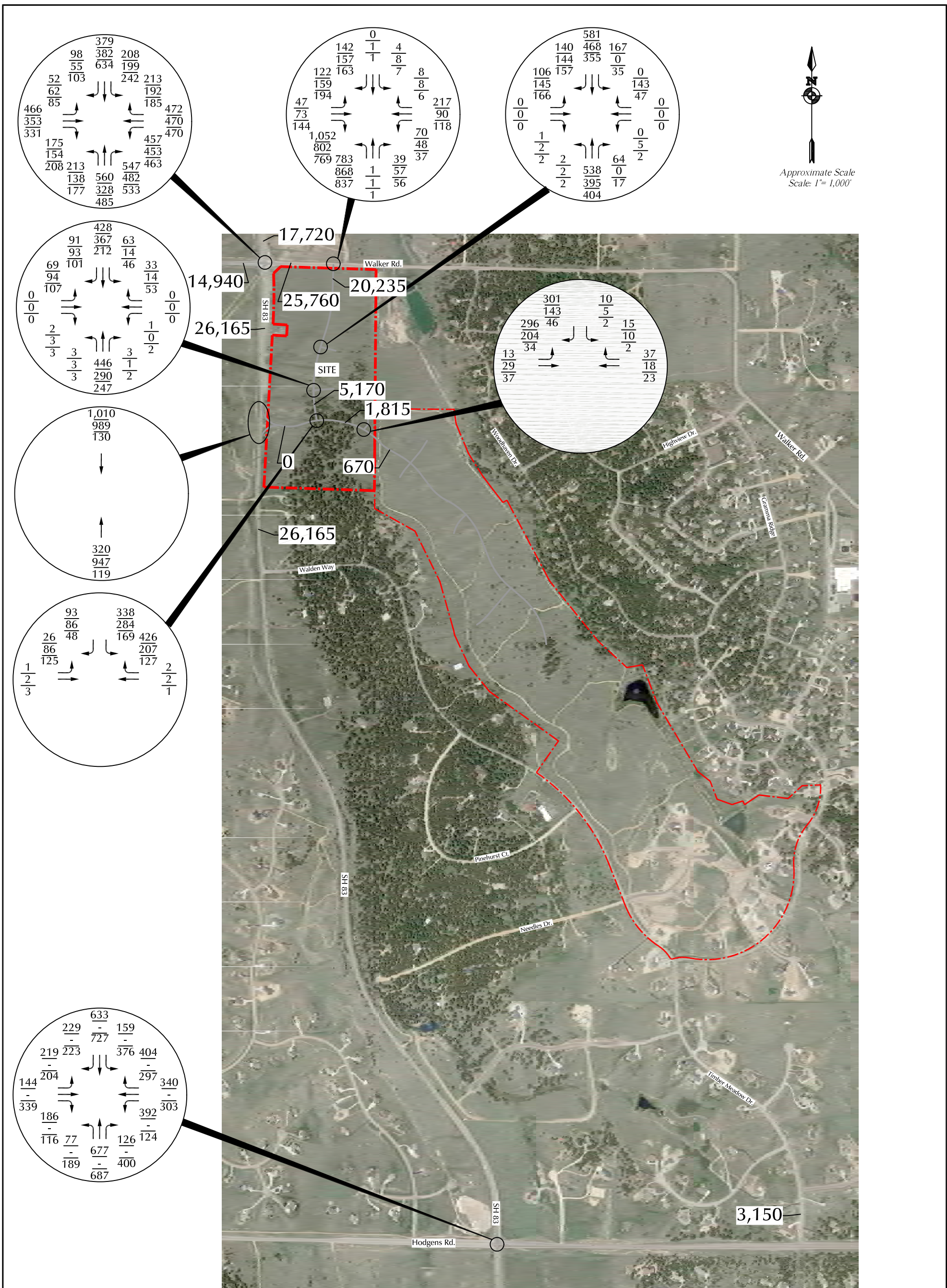
XX AM Weekday Peak-Hour Traffic (vehicles per hour)

XX = School Peak-Hour Traffic (2:00-3:00pm)

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

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





Appendix Figure 13

Year 2040 Total Traffic with High Intensity Adjacent Development, and Redevelopment North of Walker Road and No Access at Pinehurst/SH 83

LEGEND:

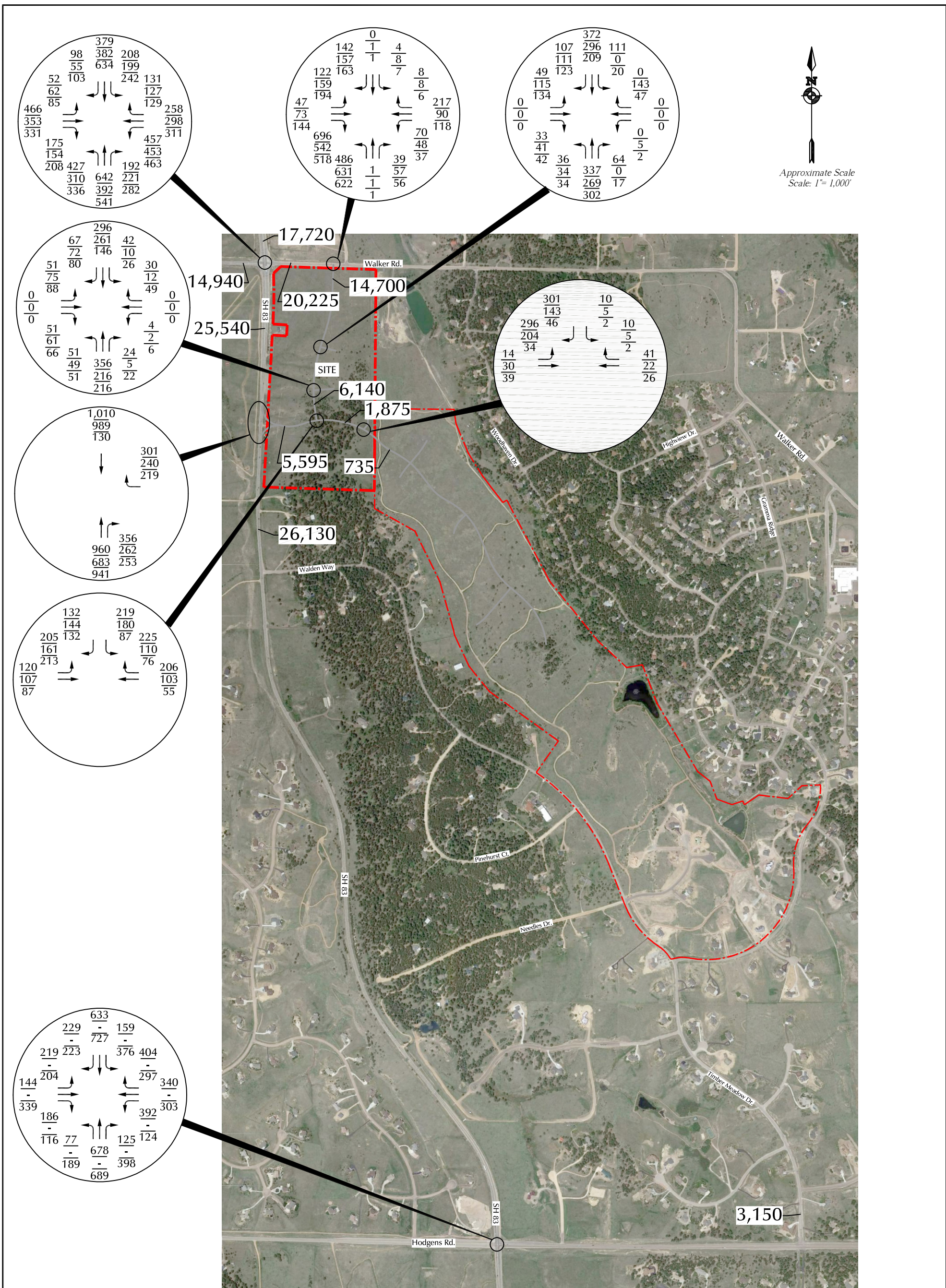
XX AM Weekday Peak-Hour Traffic (vehicles per hour)

XX = School Peak-Hour Traffic (2:00-3:00pm)

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

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





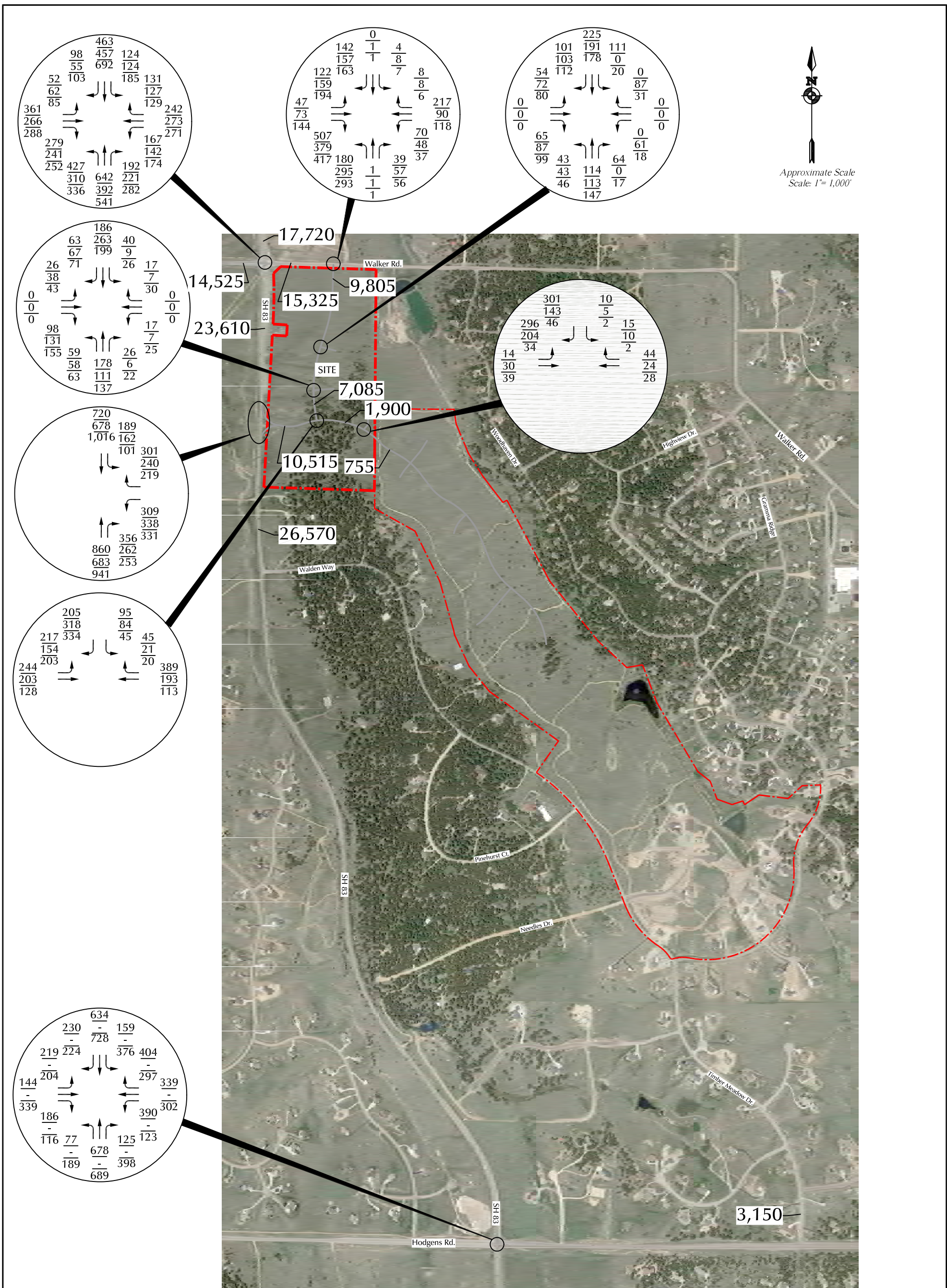
Appendix Figure 14

Year 2040 Total Traffic with Redevelopment North of Walker Road and Right-In/Right-Out Access at Pinehurst/SH 83

LEGEND:

- XX AM Weekday Peak-Hour Traffic (vehicles per hour)
- XX School Peak-Hour Traffic (2:00-3:00pm)
- XX PM Weekday Peak-Hour Traffic (vehicles per hour)
- X,XXX= Average Daily Traffic (vehicles per day)





Appendix Figure 15

Year 2040 Total Traffic with Redevelopment North of Walker Road and Full Movement Access at Pinehurst/SH 83

Monument Academy (LSC #184820)



Appendix Level of Service Reports



Levels of Service - Phase 1 & 2 Short-Term Total

- With No Access to SH 83



Timings

Short-Term Total Traffic With No Access at Pinehurst/SH83

1: SH 83 & SH 105/Walker Rd

AM Peak Hour

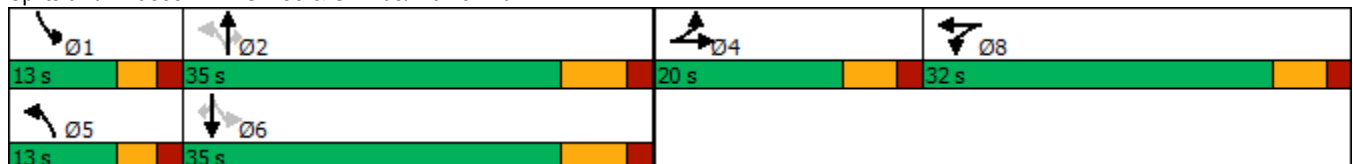


Lane Group	EBT	EBR	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↔	↖	↑	↗	↖	↑	↗
Traffic Volume (vph)	274	148	234	187	397	210	89	267	73
Future Volume (vph)	274	148	234	187	397	210	89	267	73
Turn Type	NA	Free	NA	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	4		8	5	2		1	6	
Permitted Phases		Free		2		2	6		6
Detector Phase	4		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
Minimum Split (s)	11.0		11.0	10.0	12.0	12.0	10.0	12.0	12.0
Total Split (s)	20.0		32.0	13.0	35.0	35.0	13.0	35.0	35.0
Total Split (%)	20.0%		32.0%	13.0%	35.0%	35.0%	13.0%	35.0%	35.0%
Yellow Time (s)	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
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	Max	Max	None	Max	Max
Act Effct Green (s)	14.0	100.0	26.0	38.2	28.2	28.2	37.8	28.0	28.0
Actuated g/C Ratio	0.14	1.00	0.26	0.38	0.28	0.28	0.38	0.28	0.28
v/c Ratio	1.78	0.09	1.68	0.58	0.86	0.48	0.55	0.60	0.16
Control Delay	394.5	0.1	342.2	26.8	51.8	5.8	26.7	36.9	0.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	394.5	0.1	342.2	26.8	51.8	5.8	26.7	36.9	0.8
LOS	F	A	F	C	D	A	C	D	A
Approach Delay	298.7		342.2		31.4			28.5	
Approach LOS	F		F		C			C	

Intersection Summary

Cycle Length: 100
 Actuated Cycle Length: 100
 Natural Cycle: 130
 Control Type: Semi Act-Uncoord
 Maximum v/c Ratio: 1.78
 Intersection Signal Delay: 170.6
 Intersection Capacity Utilization 90.7%
 Analysis Period (min) 15
 Intersection LOS: F
 ICU Level of Service E

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



Intersection						
Int Delay, s/veh	13					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↘	↑	↘	↗
Traffic Vol, veh/h	44	530	22	190	324	21
Future Vol, veh/h	44	530	22	190	324	21
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Yield	-	None	-	None
Storage Length	-	235	50	-	300	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	84	55	55	100	55	55
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	52	964	40	190	589	38

Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	0	52	0	322	52
Stage 1	-	-	-	-	52	-
Stage 2	-	-	-	-	270	-
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	-	-	1554	-	672	1016
Stage 1	-	-	-	-	970	-
Stage 2	-	-	-	-	775	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1554	-	655	1016
Mov Cap-2 Maneuver	-	-	-	-	655	-
Stage 1	-	-	-	-	945	-
Stage 2	-	-	-	-	775	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.3	38.3
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	655	1016	-	-	1554	-
HCM Lane V/C Ratio	0.899	0.038	-	-	0.026	-
HCM Control Delay (s)	40.2	8.7	-	-	7.4	-
HCM Lane LOS	E	A	-	-	A	-
HCM 95th %tile Q(veh)	11.3	0.1	-	-	0.1	-

Timings

Short-Term Total Traffic With No Access at Pinehurst/SH 83

1: SH 83 & SH 105/Walker Rd

Midday (2-3 PM)

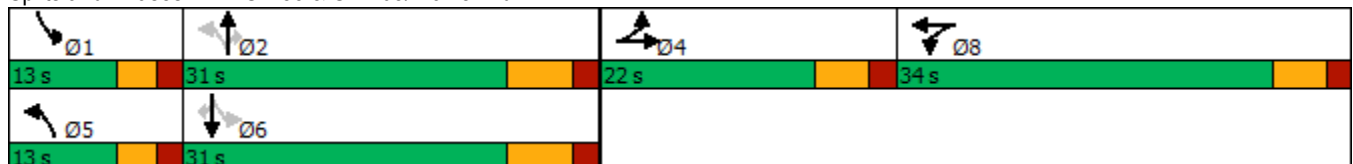


Lane Group	EBT	EBR	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↔	↖	↑	↗	↖	↑	↗
Traffic Volume (vph)	152	136	180	131	247	108	50	288	41
Future Volume (vph)	152	136	180	131	247	108	50	288	41
Turn Type	NA	Free	NA	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	4		8	5	2		1	6	
Permitted Phases		Free		2		2	6		6
Detector Phase	4		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
Minimum Split (s)	11.0		11.0	10.0	12.0	12.0	10.0	12.0	12.0
Total Split (s)	22.0		34.0	13.0	31.0	31.0	13.0	31.0	31.0
Total Split (%)	22.0%		34.0%	13.0%	31.0%	31.0%	13.0%	31.0%	31.0%
Yellow Time (s)	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
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	Max	Max	None	Max	Max
Act Effct Green (s)	15.6	99.5	28.0	35.2	26.8	26.8	33.3	24.0	24.0
Actuated g/C Ratio	0.16	1.00	0.28	0.35	0.27	0.27	0.33	0.24	0.24
v/c Ratio	0.88	0.10	0.99	0.42	0.53	0.27	0.18	0.64	0.08
Control Delay	72.4	0.1	73.3	24.7	37.0	5.9	20.9	41.6	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	72.4	0.1	73.3	24.7	37.0	5.9	20.9	41.6	0.3
LOS	E	A	E	C	D	A	C	D	A
Approach Delay	45.3		73.3		25.7			33.8	
Approach LOS	D		E		C			C	

Intersection Summary

Cycle Length: 100
 Actuated Cycle Length: 99.5
 Natural Cycle: 80
 Control Type: Semi Act-Uncoord
 Maximum v/c Ratio: 0.99
 Intersection Signal Delay: 44.7
 Intersection LOS: D
 Intersection Capacity Utilization 73.7%
 ICU Level of Service D
 Analysis Period (min) 15

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



Intersection						
Int Delay, s/veh	6.5					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↘	↑	↘	↗
Traffic Vol, veh/h	89	220	9	85	291	19
Future Vol, veh/h	89	220	9	85	291	19
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Yield	-	None	-	None
Storage Length	-	235	50	-	300	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	75	75	81	75	75
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	97	293	12	105	388	25

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	97	0	226 97
Stage 1	-	-	-	-	97 -
Stage 2	-	-	-	-	129 -
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	-	-	1496	-	762 959
Stage 1	-	-	-	-	927 -
Stage 2	-	-	-	-	897 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1496	-	756 959
Mov Cap-2 Maneuver	-	-	-	-	756 -
Stage 1	-	-	-	-	920 -
Stage 2	-	-	-	-	897 -

Approach	EB	WB	NB
HCM Control Delay, s	0	0.8	14.3
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	756	959	-	-	1496	-
HCM Lane V/C Ratio	0.513	0.026	-	-	0.008	-
HCM Control Delay (s)	14.7	8.9	-	-	7.4	-
HCM Lane LOS	B	A	-	-	A	-
HCM 95th %tile Q(veh)	3	0.1	-	-	0	-

Timings

Short-Term Total Traffic With No Access at Pinehurst/SH 83

1: SH 83 & SH 105/Walker Rd

PM Peak Hour

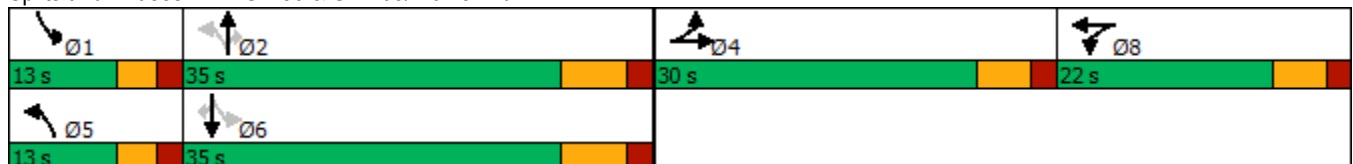


Lane Group	EBT	EBR	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕	↕	↕	↕	↑	↕	↕	↑	↕
Traffic Volume (vph)	105	171	128	155	342	108	44	474	76
Future Volume (vph)	105	171	128	155	342	108	44	474	76
Turn Type	NA	Free	NA	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	4		8	5	2		1	6	
Permitted Phases		Free		2		2	6		6
Detector Phase	4		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
Minimum Split (s)	11.0		11.0	10.0	12.0	12.0	10.0	12.0	12.0
Total Split (s)	30.0		22.0	13.0	35.0	35.0	13.0	35.0	35.0
Total Split (%)	30.0%		22.0%	13.0%	35.0%	35.0%	13.0%	35.0%	35.0%
Yellow Time (s)	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
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	Max	Max	None	Max	Max
Act Effct Green (s)	13.9	89.1	15.0	40.7	34.0	34.0	36.7	28.1	28.1
Actuated g/C Ratio	0.16	1.00	0.17	0.46	0.38	0.38	0.41	0.32	0.32
v/c Ratio	0.63	0.11	0.79	0.58	0.56	0.18	0.11	0.81	0.13
Control Delay	45.4	0.1	54.5	23.6	28.7	3.4	14.7	41.7	0.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	45.4	0.1	54.5	23.6	28.7	3.4	14.7	41.7	0.4
LOS	D	A	D	C	C	A	B	D	A
Approach Delay	22.6		54.5		22.8			34.4	
Approach LOS	C		D		C			C	

Intersection Summary

Cycle Length: 100
 Actuated Cycle Length: 89.1
 Natural Cycle: 65
 Control Type: Semi Act-Uncoord
 Maximum v/c Ratio: 0.81
 Intersection Signal Delay: 30.4
 Intersection Capacity Utilization 68.4%
 Analysis Period (min) 15
 Intersection LOS: C
 ICU Level of Service C

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



Intersection						
Int Delay, s/veh	3.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑	↑	↑	↑	↑
Traffic Vol, veh/h	138	117	4	100	141	11
Future Vol, veh/h	138	117	4	100	141	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Yield	-	None	-	None
Storage Length	-	235	50	-	300	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	77	92	92	99	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	179	127	4	101	153	12

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	179	0	288
Stage 1	-	-	-	-	179
Stage 2	-	-	-	-	109
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1397	-	702
Stage 1	-	-	-	-	852
Stage 2	-	-	-	-	916
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1397	-	700
Mov Cap-2 Maneuver	-	-	-	-	700
Stage 1	-	-	-	-	849
Stage 2	-	-	-	-	916

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	11.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	700	864	-	-	1397	-
HCM Lane V/C Ratio	0.219	0.014	-	-	0.003	-
HCM Control Delay (s)	11.6	9.2	-	-	7.6	-
HCM Lane LOS	B	A	-	-	A	-
HCM 95th %tile Q(veh)	0.8	0	-	-	0	-

Timings

Short-Term Total Traffic With No Access at Pinehurst/SH83

1: SH 83 & SH 105/Walker Rd

AM Peak Hour

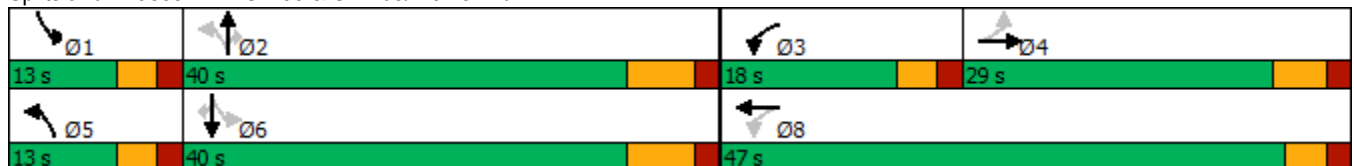


Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑	↗	↘	↗	↘	↑	↗	↘	↑	↗
Traffic Volume (vph)	39	274	148	196	234	187	397	210	89	267	73
Future Volume (vph)	39	274	148	196	234	187	397	210	89	267	73
Turn Type	Perm	NA	Free	pm+pt	NA	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4		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)	29.0	29.0		18.0	47.0	13.0	40.0	40.0	13.0	40.0	40.0
Total Split (%)	29.0%	29.0%		18.0%	47.0%	13.0%	40.0%	40.0%	13.0%	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 Effct Green (s)	23.0	23.0	100.0	42.0	42.0	43.2	33.2	33.2	42.8	33.0	33.0
Actuated g/C Ratio	0.23	0.23	1.00	0.42	0.42	0.43	0.33	0.33	0.43	0.33	0.33
v/c Ratio	0.19	0.99	0.09	0.99	0.64	0.49	0.73	0.44	0.43	0.51	0.14
Control Delay	33.9	79.9	0.1	77.1	26.6	20.5	37.7	4.8	19.4	30.6	1.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.9	79.9	0.1	77.1	26.6	20.5	37.7	4.8	19.4	30.6	1.3
LOS	C	E	A	E	C	C	D	A	B	C	A
Approach Delay		57.6			45.9		23.2			23.0	
Approach LOS		E			D		C			C	

Intersection Summary

Cycle Length: 100
 Actuated Cycle Length: 100
 Natural Cycle: 90
 Control Type: Semi Act-Uncoord
 Maximum v/c Ratio: 0.99
 Intersection Signal Delay: 36.5
 Intersection LOS: D
 Intersection Capacity Utilization 70.3%
 ICU Level of Service C
 Analysis Period (min) 15

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



Intersection	
Intersection Delay, s/veh	17.4
Intersection LOS	F

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗		↖	↖	↗
Traffic Vol, veh/h	44	530	22	190	324	21
Future Vol, veh/h	44	530	22	190	324	21
Peak Hour Factor	0.84	0.55	0.55	1.00	0.55	0.55
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	52	964	40	190	589	38
Number of Lanes	1	1	0	1	1	1

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	2	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	2	2
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	2	0	1
HCM Control Delay	311.6	19.8	137.3
HCM LOS	F	C	F

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1
Vol Left, %	100%	0%	0%	0%	10%
Vol Thru, %	0%	0%	100%	0%	90%
Vol Right, %	0%	100%	0%	100%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	324	21	44	530	212
LT Vol	324	0	0	0	22
Through Vol	0	0	44	0	190
RT Vol	0	21	0	530	0
Lane Flow Rate	589	38	52	964	230
Geometry Grp	7	7	7	7	4
Degree of Util (X)	1.219	0.066	0.101	1.671	0.476
Departure Headway (Hd)	8.682	7.446	7.623	6.904	8.952
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	424	484	473	540	405
Service Time	6.382	5.146	5.323	4.604	6.952
HCM Lane V/C Ratio	1.389	0.079	0.11	1.785	0.568
HCM Control Delay	145.5	10.7	11.2	327.9	19.8
HCM Lane LOS	F	B	B	F	C
HCM 95th-tile Q	20.6	0.2	0.3	50.2	2.5

HCM 6th TWSC
3: N-S Collector St & North School Access

Short-Term Total Traffic With No Access at Pinehurst/SH83

AM Peak Hour

Intersection						
Int Delay, s/veh	2.1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↘↗		↑	↗↘	↘↗	↑
Traffic Vol, veh/h	0	0	345	0	175	377
Future Vol, veh/h	0	0	345	0	175	377
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	55	55	55	55	55	55
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	627	0	318	685

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	1948	627	0	0	627	0
Stage 1	627	-	-	-	-	-
Stage 2	1321	-	-	-	-	-
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	71	484	-	-	955	-
Stage 1	532	-	-	-	-	-
Stage 2	249	-	-	-	-	-
Platoon blocked, %			-	-	-	-
Mov Cap-1 Maneuver	47	484	-	-	955	-
Mov Cap-2 Maneuver ~	-127	-	-	-	-	-
Stage 1	355	-	-	-	-	-
Stage 2	249	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	0	0	3.4
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	955	-
HCM Lane V/C Ratio	-	-	0.333	-
HCM Control Delay (s)	-	-	0	10.6
HCM Lane LOS	-	-	A	B
HCM 95th %tile Q(veh)	-	-	1.5	-

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

HCM 6th TWSC
4: N-S Collector St & YMCA Access

Short-Term Total Traffic With No Access at Pinehurst/SH83
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	311	0	66	311
Future Vol, veh/h	0	34	311	0	66	311
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	92	92	55	92	92	55
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	37	565	0	72	565

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	1274	565	0	0	565
Stage 1	565	-	-	-	-
Stage 2	709	-	-	-	-
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	184	524	-	-	1007
Stage 1	569	-	-	-	-
Stage 2	488	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	171	524	-	-	1007
Mov Cap-2 Maneuver	289	-	-	-	-
Stage 1	529	-	-	-	-
Stage 2	488	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.4	0	1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	524	1007
HCM Lane V/C Ratio	-	-	0.071	0.071
HCM Control Delay (s)	-	-	12.4	8.8
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	0.2	0.2

Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↘	↑	↑	↗	↘	↗
Traffic Vol, veh/h	0	0	0	311	311	0
Future Vol, veh/h	0	0	0	311	311	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	255	-	-	205	205	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	55	55	55	55	55	55
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	0	565	565	0

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	565	0	-	0	0
Stage 1	-	-	-	-	0
Stage 2	-	-	-	-	0
Critical Hdwy	4.12	-	-	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	2.218	-	-	-	3.518
Pot Cap-1 Maneuver	1007	-	-	-	-
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	1007	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-

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

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1007	-	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-	-
HCM Control Delay (s)	0	-	-	-	-	0
HCM Lane LOS	A	-	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	-	-

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

Short-Term Total Traffic With No Access at Pinehurst/SH83
AM Peak Hour

Intersection						
Int Delay, s/veh	10.1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖	↑	↗		↖	
Traffic Vol, veh/h	311	0	0	0	0	311
Future Vol, veh/h	311	0	0	0	0	311
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	55	92	92	75	55	55
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	565	0	0	0	0	565

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	1	0	0 1131 1
Stage 1	-	-	- - 1 -
Stage 2	-	-	- - 1130 -
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	-	- - 225 1084
Stage 1	-	-	- - 1022 -
Stage 2	-	-	- - 308 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1622	-	- - 147 1084
Mov Cap-2 Maneuver	-	-	- - 147 -
Stage 1	-	-	- - 666 -
Stage 2	-	-	- - 308 -

Approach	EB	WB	SB
HCM Control Delay, s	8.4	0	11.9
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1622	-	-	-	1084
HCM Lane V/C Ratio	0.349	-	-	-	0.522
HCM Control Delay (s)	8.4	-	-	-	11.9
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	1.6	-	-	-	3.1

Timings
121: SH 83 & Hodgen Rd

Short-Term Total Traffic With No Access at Pinehurst/SH83

AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations											
Traffic Volume (vph)	105	65	88	236	144	257	46	403	47	79	427
Future Volume (vph)	105	65	88	236	144	257	46	403	47	79	427
Turn Type	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA
Protected Phases	7	4		3	8		5	2		1	6
Permitted Phases			4	8		8	2		2	6	
Detector Phase	7	4	4	3	8	8	5	2	2	1	6
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	11.0	10.0	12.0	12.0	10.0	12.0
Total Split (s)	15.0	17.0	17.0	15.0	17.0	17.0	13.0	55.0	55.0	13.0	55.0
Total Split (%)	15.0%	17.0%	17.0%	15.0%	17.0%	17.0%	13.0%	55.0%	55.0%	13.0%	55.0%
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	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	6.0	6.0	5.0	7.0	7.0	5.0	7.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	Min	Min	None	Min
Act Effct Green (s)	10.0	10.5	10.5	22.2	10.9	10.9	39.3	31.8	31.8	41.0	34.7
Actuated g/C Ratio	0.12	0.13	0.13	0.27	0.13	0.13	0.48	0.39	0.39	0.51	0.43
v/c Ratio	0.65	0.37	0.35	0.66	0.67	0.63	0.18	0.64	0.08	0.25	0.84
Control Delay	54.8	42.4	6.6	36.4	52.8	12.0	9.4	24.4	0.2	9.7	31.2
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	54.8	42.4	6.6	36.4	52.8	12.0	9.4	24.4	0.2	9.7	31.2
LOS	D	D	A	D	D	B	A	C	A	A	C
Approach Delay		35.2			30.3			20.7			28.4
Approach LOS		D			C			C			C

Intersection Summary

Cycle Length: 100
 Actuated Cycle Length: 81.1
 Natural Cycle: 75
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.84
 Intersection Signal Delay: 28.1
 Intersection Capacity Utilization 68.6%
 Analysis Period (min) 15
 Intersection LOS: C
 ICU Level of Service C

Splits and Phases: 121: SH 83 & Hodgen Rd



Timings

Short-Term Total Traffic With No Access at Pinehurst/SH 83

1: SH 83 & SH 105/Walker Rd

Midday (2-3 PM)

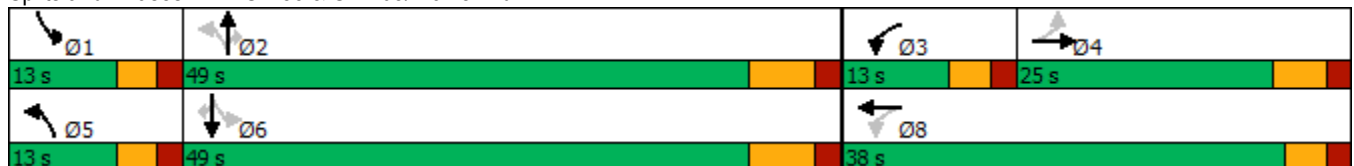


Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↑	↗	↖	↗	↖	↑	↗	↖	↑	↗
Traffic Volume (vph)	46	152	136	146	180	131	247	108	50	288	41
Future Volume (vph)	46	152	136	146	180	131	247	108	50	288	41
Turn Type	Perm	NA	Free	pm+pt	NA	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4		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		13.0	38.0	13.0	49.0	49.0	13.0	49.0	49.0
Total Split (%)	25.0%	25.0%		13.0%	38.0%	13.0%	49.0%	49.0%	13.0%	49.0%	49.0%
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 Effct Green (s)	15.1	15.1	95.9	29.1	29.1	53.4	45.1	45.1	50.9	42.0	42.0
Actuated g/C Ratio	0.16	0.16	1.00	0.30	0.30	0.56	0.47	0.47	0.53	0.44	0.44
v/c Ratio	0.31	0.70	0.10	0.67	0.56	0.23	0.30	0.18	0.11	0.35	0.05
Control Delay	40.7	51.2	0.1	39.0	30.7	10.5	18.7	3.7	9.7	20.2	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.7	51.2	0.1	39.0	30.7	10.5	18.7	3.7	9.7	20.2	0.1
LOS	D	D	A	D	C	B	B	A	A	C	A
Approach Delay		30.7			33.9		12.7			16.3	
Approach LOS		C			C		B			B	

Intersection Summary

Cycle Length: 100	
Actuated Cycle Length: 95.9	
Natural Cycle: 60	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.70	
Intersection Signal Delay: 23.2	Intersection LOS: C
Intersection Capacity Utilization 58.4%	ICU Level of Service B
Analysis Period (min) 15	

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



Intersection	
Intersection Delay, s/veh	16
Intersection LOS	C

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗		↖	↖	↗
Traffic Vol, veh/h	89	220	9	85	291	19
Future Vol, veh/h	89	220	9	85	291	19
Peak Hour Factor	0.92	0.75	0.75	0.81	0.75	0.75
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	97	293	12	105	388	25
Number of Lanes	1	1	0	1	1	1

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	2	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	2	2
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	2	0	1
HCM Control Delay	11.7	11	21.5
HCM LOS	B	B	C

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1
Vol Left, %	100%	0%	0%	0%	10%
Vol Thru, %	0%	0%	100%	0%	90%
Vol Right, %	0%	100%	0%	100%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	291	19	89	220	94
LT Vol	291	0	0	0	9
Through Vol	0	0	89	0	85
RT Vol	0	19	0	220	0
Lane Flow Rate	388	25	97	293	117
Geometry Grp	7	7	7	7	4
Degree of Util (X)	0.692	0.037	0.164	0.44	0.205
Departure Headway (Hd)	6.417	5.206	6.105	5.396	6.302
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	563	688	587	666	568
Service Time	4.145	2.933	3.847	3.137	4.351
HCM Lane V/C Ratio	0.689	0.036	0.165	0.44	0.206
HCM Control Delay	22.4	8.1	10	12.3	11
HCM Lane LOS	C	A	A	B	B
HCM 95th-tile Q	5.4	0.1	0.6	2.2	0.8

HCM 6th TWSC
3: N-S Collector St & North School Access

Short-Term Total Traffic With No Access at Pinehurst/SH 83

Midday (2-3 PM)

Intersection						
Int Delay, s/veh	2.9					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↘↗		↑	↗↘	↘↗	↑
Traffic Vol, veh/h	0	148	162	0	0	229
Future Vol, veh/h	0	148	162	0	0	229
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	75	75	75	75	75	75
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	197	216	0	0	305

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	521	216	0
Stage 1	216	-	-
Stage 2	305	-	-
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	516	824	-
Stage 1	820	-	-
Stage 2	748	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	516	824	-
Mov Cap-2 Maneuver	591	-	-
Stage 1	820	-	-
Stage 2	748	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.7	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	824	1354
HCM Lane V/C Ratio	-	-	0.239	-
HCM Control Delay (s)	-	-	10.7	0
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	0.9	0

HCM 6th TWSC
4: N-S Collector St & YMCA Access

Short-Term Total Traffic With No Access at Pinehurst/SH 83
Midday (2-3 PM)

Intersection						
Int Delay, s/veh	0.5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	14	148	0	15	214
Future Vol, veh/h	0	14	148	0	15	214
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	92	92	75	92	92	75
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	15	197	0	16	285

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	514	197	0	0	197
Stage 1	197	-	-	-	-
Stage 2	317	-	-	-	-
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	521	844	-	-	1376
Stage 1	836	-	-	-	-
Stage 2	738	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	515	844	-	-	1376
Mov Cap-2 Maneuver	584	-	-	-	-
Stage 1	826	-	-	-	-
Stage 2	738	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.3	0	0.4
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	844	1376
HCM Lane V/C Ratio	-	-	0.018	0.012
HCM Control Delay (s)	-	-	9.3	7.6
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0

Intersection						
Int Delay, s/veh	8.3					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	214	0	0	0	0	148
Future Vol, veh/h	214	0	0	0	0	148
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	75	75
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	285	0	0	0	0	197

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	1	0	0
Stage 1	-	-	1
Stage 2	-	-	570
Critical Hdwy	4.12	-	6.42
Critical Hdwy Stg 1	-	-	5.42
Critical Hdwy Stg 2	-	-	5.42
Follow-up Hdwy	2.218	-	3.518
Pot Cap-1 Maneuver	1622	-	482
Stage 1	-	-	1022
Stage 2	-	-	566
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1622	-	397
Mov Cap-2 Maneuver	-	-	397
Stage 1	-	-	842
Stage 2	-	-	566

Approach	EB	WB	SB
HCM Control Delay, s	7.7	0	9.1
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1622	-	-	-	1084
HCM Lane V/C Ratio	0.176	-	-	-	0.182
HCM Control Delay (s)	7.7	-	-	-	9.1
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0.6	-	-	-	0.7

Timings

Short-Term Total Traffic With No Access at Pinehurst/SH 83

1: SH 83 & SH 105/Walker Rd

PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	63	105	171	78	128	155	342	108	44	474	76
Future Volume (vph)	63	105	171	78	128	155	342	108	44	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)	20.0	20.0		13.0	33.0	13.0	54.0	54.0	13.0	54.0	54.0
Total Split (%)	20.0%	20.0%		13.0%	33.0%	13.0%	54.0%	54.0%	13.0%	54.0%	54.0%
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 Effct Green (s)	10.7	10.7	93.9	21.6	21.6	60.0	53.4	53.4	55.9	47.4	47.4
Actuated g/C Ratio	0.11	0.11	1.00	0.23	0.23	0.64	0.57	0.57	0.60	0.50	0.50
v/c Ratio	0.49	0.53	0.11	0.28	0.39	0.34	0.38	0.13	0.07	0.50	0.09
Control Delay	52.5	49.7	0.1	30.6	29.8	9.1	15.3	2.4	7.5	19.3	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	52.5	49.7	0.1	30.6	29.8	9.1	15.3	2.4	7.5	19.3	0.2
LOS	D	D	A	C	C	A	B	A	A	B	A
Approach Delay		25.2			30.0		11.4			16.0	
Approach LOS		C			C		B			B	

Intersection Summary

Cycle Length: 100	
Actuated Cycle Length: 93.9	
Natural Cycle: 60	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.53	
Intersection Signal Delay: 17.8	Intersection LOS: B
Intersection Capacity Utilization 65.8%	ICU Level of Service C
Analysis Period (min) 15	

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



Intersection

Intersection Delay, s/veh 9.4
Intersection LOS A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗		↖	↖	↗
Traffic Vol, veh/h	138	117	4	100	141	11
Future Vol, veh/h	138	117	4	100	141	11
Peak Hour Factor	0.77	0.92	0.92	0.99	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	179	127	4	101	153	12
Number of Lanes	1	1	0	1	1	1

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	2	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	2	2
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	2	0	1
HCM Control Delay	8.9	9.2	10.6
HCM LOS	A	A	B

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1
Vol Left, %	100%	0%	0%	0%	4%
Vol Thru, %	0%	0%	100%	0%	96%
Vol Right, %	0%	100%	0%	100%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	141	11	138	117	104
LT Vol	141	0	0	0	4
Through Vol	0	0	138	0	100
RT Vol	0	11	0	117	0
Lane Flow Rate	153	12	179	127	105
Geometry Grp	7	7	7	7	4
Degree of Util (X)	0.255	0.016	0.256	0.157	0.152
Departure Headway (Hd)	5.993	4.785	5.138	4.434	5.177
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	598	744	699	808	691
Service Time	3.745	2.538	2.871	2.167	3.22
HCM Lane V/C Ratio	0.256	0.016	0.256	0.157	0.152
HCM Control Delay	10.8	7.6	9.6	8	9.2
HCM Lane LOS	B	A	A	A	A
HCM 95th-tile Q	1	0	1	0.6	0.5

HCM 6th TWSC
3: N-S Collector St & North School Access

Short-Term Total Traffic With No Access at Pinehurst/SH 83
PM Peak Hour

Intersection						
Int Delay, s/veh	2.7					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↘↗		↑	↗↘	↘↗	↑
Traffic Vol, veh/h	0	49	103	0	37	84
Future Vol, veh/h	0	49	103	0	37	84
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	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	53	112	0	40	91

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	283	112	0	0	112	0
Stage 1	112	-	-	-	-	-
Stage 2	171	-	-	-	-	-
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	707	941	-	-	1478	-
Stage 1	913	-	-	-	-	-
Stage 2	859	-	-	-	-	-
Platoon blocked, %			-	-	-	-
Mov Cap-1 Maneuver	688	941	-	-	1478	-
Mov Cap-2 Maneuver	700	-	-	-	-	-
Stage 1	888	-	-	-	-	-
Stage 2	859	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.1	0	2.3
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	941	1478
HCM Lane V/C Ratio	-	-	0.057	0.027
HCM Control Delay (s)	-	-	9.1	7.5
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0.1

HCM 6th TWSC
4: N-S Collector St & YMCA Access

Short-Term Total Traffic With No Access at Pinehurst/SH 83
PM Peak Hour

Intersection						
Int Delay, s/veh	4.5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	55	48	0	48	36
Future Vol, veh/h	0	55	48	0	48	36
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	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	60	52	0	52	39

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	195	52	0
Stage 1	52	-	-
Stage 2	143	-	-
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	794	1016	-
Stage 1	970	-	-
Stage 2	884	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	768	1016	-
Mov Cap-2 Maneuver	744	-	-
Stage 1	938	-	-
Stage 2	884	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.8	0	4.2
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	1016	1554
HCM Lane V/C Ratio	-	-	0.059	0.034
HCM Control Delay (s)	-	-	8.8	7.4
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0.1

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

Short-Term Total Traffic With No Access at Pinehurst/SH 83
PM Peak Hour

Intersection						
Int Delay, s/veh	7.9					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↙	↑	↘		↙	
Traffic Vol, veh/h	36	0	0	0	0	48
Future Vol, veh/h	36	0	0	0	0	48
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	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	39	0	0	0	0	52

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	1	0	0
Stage 1	-	-	1
Stage 2	-	-	78
Critical Hdwy	4.12	-	6.42
Critical Hdwy Stg 1	-	-	5.42
Critical Hdwy Stg 2	-	-	5.42
Follow-up Hdwy	2.218	-	3.518
Pot Cap-1 Maneuver	1622	-	924
Stage 1	-	-	1022
Stage 2	-	-	945
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1622	-	902
Mov Cap-2 Maneuver	-	-	902
Stage 1	-	-	997
Stage 2	-	-	945

Approach	EB	WB	SB
HCM Control Delay, s	7.3	0	8.5
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1622	-	-	-	1084
HCM Lane V/C Ratio	0.024	-	-	-	0.048
HCM Control Delay (s)	7.3	-	-	-	8.5
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0.1	-	-	-	0.2

Timings
121: SH 83 & Hodgen Rd

Short-Term Total Traffic With No Access at Pinehurst/SH 83

PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations											
Traffic Volume (vph)	74	170	85	118	124	212	106	308	180	212	398
Future Volume (vph)	74	170	85	118	124	212	106	308	180	212	398
Turn Type	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA
Protected Phases	7	4		3	8		5	2		1	6
Permitted Phases			4	8		8	2		2	6	
Detector Phase	7	4	4	3	8	8	5	2	2	1	6
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	11.0	10.0	12.0	12.0	10.0	12.0
Total Split (s)	15.0	20.0	20.0	15.0	20.0	20.0	13.0	52.0	52.0	13.0	52.0
Total Split (%)	15.0%	20.0%	20.0%	15.0%	20.0%	20.0%	13.0%	52.0%	52.0%	13.0%	52.0%
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	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	6.0	6.0	5.0	7.0	7.0	5.0	7.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	Min	Min	None	Min
Act Effct Green (s)	8.9	13.5	13.5	25.0	16.8	16.8	38.3	28.5	28.5	40.2	32.1
Actuated g/C Ratio	0.11	0.16	0.16	0.30	0.20	0.20	0.46	0.34	0.34	0.48	0.39
v/c Ratio	0.51	0.74	0.29	0.41	0.39	0.48	0.36	0.54	0.30	0.50	0.79
Control Delay	49.2	52.3	4.8	26.7	38.4	8.7	12.8	24.3	3.8	14.6	31.5
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	49.2	52.3	4.8	26.7	38.4	8.7	12.8	24.3	3.8	14.6	31.5
LOS	D	D	A	C	D	A	B	C	A	B	C
Approach Delay		39.3			21.5			16.0			26.5
Approach LOS		D			C			B			C

Intersection Summary

Cycle Length: 100	
Actuated Cycle Length: 83	
Natural Cycle: 65	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.79	
Intersection Signal Delay: 24.8	Intersection LOS: C
Intersection Capacity Utilization 67.4%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 121: SH 83 & Hodgen Rd



Timings
2: N-S Collector St & Walker Rd

Short-Term Total Traffic With No Access at Pinehurst/SH83

AM Peak Hour

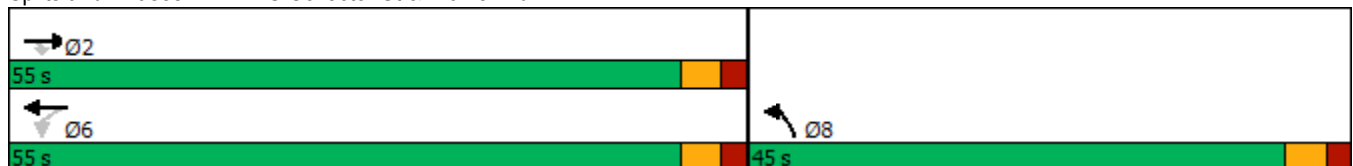


Lane Group	EBT	EBR	WBL	WBT	NBL
Lane Configurations	↑	↑		↑	↑
Traffic Volume (vph)	44	530	22	190	324
Future Volume (vph)	44	530	22	190	324
Turn Type	NA	Perm	Perm	NA	Prot
Protected Phases	2			6	8
Permitted Phases		2	6		
Detector Phase	2	2	6	6	8
Switch Phase					
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	23.0	23.0	23.0	23.0	23.0
Total Split (s)	55.0	55.0	55.0	55.0	45.0
Total Split (%)	55.0%	55.0%	55.0%	55.0%	45.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0
Total Lost Time (s)	5.0	5.0		5.0	5.0
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	Max	Max	Max	Max	None
Act Effct Green (s)	50.1	50.1		50.1	36.8
Actuated g/C Ratio	0.52	0.52		0.52	0.38
v/c Ratio	0.05	0.75		0.25	0.93
Control Delay	13.0	5.4		14.7	51.1
Queue Delay	0.0	0.0		0.0	0.0
Total Delay	13.0	5.4		14.7	51.1
LOS	B	A		B	D
Approach Delay	5.8			14.7	51.1
Approach LOS	A			B	D

Intersection Summary

Cycle Length: 100
 Actuated Cycle Length: 97
 Natural Cycle: 55
 Control Type: Semi Act-Uncoord
 Maximum v/c Ratio: 0.93
 Intersection Signal Delay: 22.0
 Intersection LOS: C
 Intersection Capacity Utilization 52.4%
 ICU Level of Service A
 Analysis Period (min) 15

Splits and Phases: 2: N-S Collector St & Walker Rd



Timings
2: N-S Collector St & Walker Rd

Short-Term Total Traffic With No Access at Pinehurst/SH 83

Midday (2-3 PM)



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑	↑	↑	↑	↑
Traffic Volume (vph)	89	220	9	85	291	19
Future Volume (vph)	89	220	9	85	291	19
Turn Type	NA	Perm	Perm	NA	Prot	Perm
Protected Phases	2			6	8	
Permitted Phases		2	6			8
Detector Phase	2	2	6	6	8	8
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	23.0	23.0	23.0	23.0	23.0	23.0
Total Split (s)	65.0	65.0	65.0	65.0	35.0	35.0
Total Split (%)	65.0%	65.0%	65.0%	65.0%	35.0%	35.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	Max	Max	Max	Max	None	None
Act Effct Green (s)	60.2	60.2	60.2	60.2	24.8	24.8
Actuated g/C Ratio	0.63	0.63	0.63	0.63	0.26	0.26
v/c Ratio	0.08	0.26	0.01	0.09	0.84	0.06
Control Delay	8.0	1.7	8.0	8.0	50.2	10.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.0	1.7	8.0	8.0	50.2	10.1
LOS	A	A	A	A	D	B
Approach Delay	3.3			8.0	47.7	
Approach LOS	A			A	D	

Intersection Summary

Cycle Length: 100	
Actuated Cycle Length: 95	
Natural Cycle: 50	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.84	
Intersection Signal Delay: 23.8	Intersection LOS: C
Intersection Capacity Utilization 31.6%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 2: N-S Collector St & Walker Rd



Timings
2: N-S Collector St & Walker Rd

Short-Term Total Traffic With No Access at Pinehurst/SH 83
PM Peak Hour

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↙	↑	↙	↗
Traffic Volume (vph)	138	117	4	100	141	11
Future Volume (vph)	138	117	4	100	141	11
Turn Type	NA	Perm	Perm	NA	Prot	Perm
Protected Phases	2			6	8	
Permitted Phases		2	6			8
Detector Phase	2	2	6	6	8	8
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	23.0	23.0	23.0	23.0	23.0	23.0
Total Split (s)	75.0	75.0	75.0	75.0	25.0	25.0
Total Split (%)	75.0%	75.0%	75.0%	75.0%	25.0%	25.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	Max	Max	Max	Max	None	None
Act Effct Green (s)	75.3	75.3	75.3	75.3	13.8	13.8
Actuated g/C Ratio	0.76	0.76	0.76	0.76	0.14	0.14
v/c Ratio	0.13	0.10	0.00	0.07	0.62	0.05
Control Delay	3.9	1.0	3.8	3.7	50.4	17.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	3.9	1.0	3.8	3.7	50.4	17.2
LOS	A	A	A	A	D	B
Approach Delay	2.7			3.7	48.0	
Approach LOS	A			A	D	

Intersection Summary

Cycle Length: 100	
Actuated Cycle Length: 99.1	
Natural Cycle: 50	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.62	
Intersection Signal Delay: 15.8	Intersection LOS: B
Intersection Capacity Utilization 23.4%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 2: N-S Collector St & Walker Rd



Intersection			
Intersection Delay, s/veh	13.4		
Intersection LOS	B		
Approach	EB	WB	NB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	1052	232	651
Demand Flow Rate, veh/h	1073	237	664
Vehicles Circulating, veh/h	43	623	53
Vehicles Exiting, veh/h	817	94	1063
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	17.5	9.0	8.2
Approach LOS	C	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	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	1073	237	664
Cap Entry Lane, veh/h	1321	731	1307
Entry HV Adj Factor	0.980	0.980	0.980
Flow Entry, veh/h	1052	232	651
Cap Entry, veh/h	1295	716	1282
V/C Ratio	0.812	0.324	0.508
Control Delay, s/veh	17.5	9.0	8.2
LOS	C	A	A
95th %tile Queue, veh	10	1	3

Intersection			
Intersection Delay, s/veh	5.7		
Intersection LOS	A		
Approach	EB	WB	NB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	390	117	413
Demand Flow Rate, veh/h	398	119	422
Vehicles Circulating, veh/h	12	396	99
Vehicles Exiting, veh/h	503	124	311
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	5.3	5.2	6.1
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	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	398	119	422
Cap Entry Lane, veh/h	1363	921	1247
Entry HV Adj Factor	0.980	0.982	0.979
Flow Entry, veh/h	390	117	413
Cap Entry, veh/h	1336	905	1221
V/C Ratio	0.292	0.129	0.338
Control Delay, s/veh	5.3	5.2	6.1
LOS	A	A	A
95th %tile Queue, veh	1	0	2

Intersection			
Intersection Delay, s/veh	4.4		
Intersection LOS	A		
Approach	EB	WB	NB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	306	105	165
Demand Flow Rate, veh/h	313	107	168
Vehicles Circulating, veh/h	4	156	183
Vehicles Exiting, veh/h	259	195	134
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	4.6	3.9	4.5
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	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	313	107	168
Cap Entry Lane, veh/h	1374	1177	1145
Entry HV Adj Factor	0.979	0.981	0.982
Flow Entry, veh/h	306	105	165
Cap Entry, veh/h	1345	1155	1124
V/C Ratio	0.228	0.091	0.147
Control Delay, s/veh	4.6	3.9	4.5
LOS	A	A	A
95th %tile Queue, veh	1	0	1

Levels of Service - Phase 1 & 2 Short-Term Total

- With Full Access to SH 83



Timings

Short-Term Total Traffic With Full-Movement at Pinehurst/SH83

1: SH 83 & SH 105/Walker Rd

AM Peak Hour

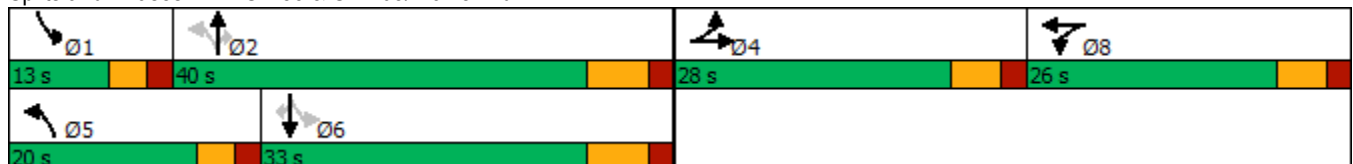


Lane Group	EBT	EBR	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕	↕	↕	↕	↑	↗	↖	↑	↗
Traffic Volume (vph)	204	218	108	313	437	9	43	314	73
Future Volume (vph)	204	218	108	313	437	9	43	314	73
Turn Type	NA	Free	NA	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	4		8	5	2		1	6	
Permitted Phases		Free		2		2	6		6
Detector Phase	4		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
Minimum Split (s)	11.0		11.0	10.0	12.0	12.0	10.0	12.0	12.0
Total Split (s)	28.0		26.0	20.0	40.0	40.0	13.0	33.0	33.0
Total Split (%)	26.2%		24.3%	18.7%	37.4%	37.4%	12.1%	30.8%	30.8%
Yellow Time (s)	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
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	Max	Max	None	Max	Max
Act Effct Green (s)	21.7	106.4	19.7	48.0	36.0	36.0	35.2	26.0	26.0
Actuated g/C Ratio	0.20	1.00	0.19	0.45	0.34	0.34	0.33	0.24	0.24
v/c Ratio	0.94	0.14	0.93	0.94	0.79	0.02	0.26	0.81	0.16
Control Delay	75.8	0.2	76.4	56.7	43.9	0.1	20.4	53.6	0.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	75.8	0.2	76.4	56.7	43.9	0.1	20.4	53.6	0.6
LOS	E	A	E	E	D	A	C	D	A
Approach Delay	46.9		76.4		48.4			40.6	
Approach LOS	D		E		D			D	

Intersection Summary

Cycle Length: 107
 Actuated Cycle Length: 106.4
 Natural Cycle: 90
 Control Type: Semi Act-Uncoord
 Maximum v/c Ratio: 0.94
 Intersection Signal Delay: 50.2
 Intersection Capacity Utilization 78.1%
 Analysis Period (min) 15
 Intersection LOS: D
 ICU Level of Service D

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



Intersection						
Int Delay, s/veh	1.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↘	↑	↘	↗
Traffic Vol, veh/h	44	212	22	190	15	21
Future Vol, veh/h	44	212	22	190	15	21
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Yield	-	None	-	None
Storage Length	-	0	50	-	300	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	84	55	55	100	55	55
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	52	385	40	190	27	38

Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	0	52	0	322	52
Stage 1	-	-	-	-	52	-
Stage 2	-	-	-	-	270	-
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	-	-	1554	-	672	1016
Stage 1	-	-	-	-	970	-
Stage 2	-	-	-	-	775	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1554	-	655	1016
Mov Cap-2 Maneuver	-	-	-	-	655	-
Stage 1	-	-	-	-	945	-
Stage 2	-	-	-	-	775	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.3	9.5
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	655	1016	-	-	1554	-
HCM Lane V/C Ratio	0.042	0.038	-	-	0.026	-
HCM Control Delay (s)	10.7	8.7	-	-	7.4	-
HCM Lane LOS	B	A	-	-	A	-
HCM 95th %tile Q(veh)	0.1	0.1	-	-	0.1	-

Intersection						
Int Delay, s/veh	28					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↘	↗	↑	↗		↘
Traffic Vol, veh/h	143	166	593	201	117	0
Future Vol, veh/h	143	166	593	201	117	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Free	-	Free	-	None
Storage Length	0	0	-	400	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	65	65	88	65	65	83
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	220	255	674	309	180	0

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	1034	-	0	-	674
Stage 1	674	-	-	-	-
Stage 2	360	-	-	-	-
Critical Hdwy	6.42	-	-	-	4.12
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	-	-	-	2.218
Pot Cap-1 Maneuver	257	0	-	0	917
Stage 1	506	0	-	0	-
Stage 2	706	0	-	0	-
Platoon blocked, %					
Mov Cap-1 Maneuver	~ 207	-	-	-	917
Mov Cap-2 Maneuver	~ 207	-	-	-	-
Stage 1	407	-	-	-	-
Stage 2	706	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	128.8	0	9.9
HCM LOS	F		

Minor Lane/Major Mvmt	NBTWBLn1WBLn2	SBL	SBT
Capacity (veh/h)	- 207	- 917	-
HCM Lane V/C Ratio	- 1.063	- 0.196	-
HCM Control Delay (s)	- 128.8	0	9.9
HCM Lane LOS	- F	A	A
HCM 95th %tile Q(veh)	- 9.9	- 0.7	-

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

Timings

Short-Term Total Traffic With Full-Movement at Pinehurst/SH 83

1: SH 83 & SH 105/Walker Rd

Midday (2-3 PM)

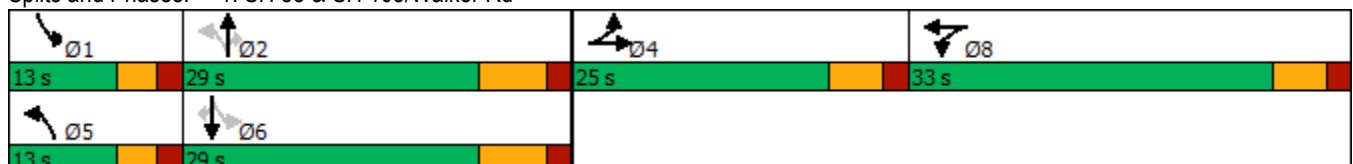


Lane Group	EBT	EBR	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕	↗	↕	↖	↑	↗	↖	↑	↗
Traffic Volume (vph)	104	184	120	191	266	24	19	319	41
Future Volume (vph)	104	184	120	191	266	24	19	319	41
Turn Type	NA	Free	NA	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	4		8	5	2		1	6	
Permitted Phases		Free		2		2	6		6
Detector Phase	4		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
Minimum Split (s)	11.0		11.0	10.0	12.0	12.0	10.0	12.0	12.0
Total Split (s)	25.0		33.0	13.0	29.0	29.0	13.0	29.0	29.0
Total Split (%)	25.0%		33.0%	13.0%	29.0%	29.0%	13.0%	29.0%	29.0%
Yellow Time (s)	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
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	Max	Max	None	Max	Max
Act Effct Green (s)	13.7	83.4	15.2	35.8	30.9	30.9	30.5	22.2	22.2
Actuated g/C Ratio	0.16	1.00	0.18	0.43	0.37	0.37	0.37	0.27	0.27
v/c Ratio	0.64	0.13	0.67	0.52	0.41	0.05	0.06	0.64	0.08
Control Delay	43.4	0.2	40.6	22.9	26.2	0.1	16.6	36.3	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.4	0.2	40.6	22.9	26.2	0.1	16.6	36.3	0.3
LOS	D	A	D	C	C	A	B	D	A
Approach Delay	20.9		40.6		23.3			31.2	
Approach LOS	C		D		C			C	

Intersection Summary

Cycle Length: 100
 Actuated Cycle Length: 83.4
 Natural Cycle: 60
 Control Type: Semi Act-Uncoord
 Maximum v/c Ratio: 0.67
 Intersection Signal Delay: 27.2
 Intersection Capacity Utilization 60.2%
 Analysis Period (min) 15
 Intersection LOS: C
 ICU Level of Service B

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



Intersection

Int Delay, s/veh 3.5

Movement EBT EBR WBL WBT NBL NBR

Lane Configurations	↑	↗	↘	↑	↘	↗
Traffic Vol, veh/h	89	57	9	85	84	19
Future Vol, veh/h	89	57	9	85	84	19
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Yield	-	None	-	None
Storage Length	-	0	50	-	300	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	75	75	81	75	75
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	97	76	12	105	112	25

Major/Minor Major1 Major2 Minor1

Conflicting Flow All	0	0	97	0	226	97
Stage 1	-	-	-	-	97	-
Stage 2	-	-	-	-	129	-
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	-	-	1496	-	762	959
Stage 1	-	-	-	-	927	-
Stage 2	-	-	-	-	897	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1496	-	756	959
Mov Cap-2 Maneuver	-	-	-	-	756	-
Stage 1	-	-	-	-	920	-
Stage 2	-	-	-	-	897	-

Approach EB WB NB

HCM Control Delay, s 0 0.8 10.3
HCM LOS B

Minor Lane/Major Mvmt NBLn1 NBLn2 EBT EBR WBL WBT

Capacity (veh/h)	756	959	-	-	1496	-
HCM Lane V/C Ratio	0.148	0.026	-	-	0.008	-
HCM Control Delay (s)	10.6	8.9	-	-	7.4	-
HCM Lane LOS	B	A	-	-	A	-
HCM 95th %tile Q(veh)	0.5	0.1	-	-	0	-

Intersection

Int Delay, s/veh 4.9

Movement WBL WBR NBT NBR SBL SBT

Lane Configurations	↘	↗	↑	↑		↙
Traffic Vol, veh/h	129	79	402	84	80	0
Future Vol, veh/h	129	79	402	84	80	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Free	-	Free	-	None
Storage Length	0	0	-	400	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	75	93	75	92	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	140	105	432	112	87	0

Major/Minor Minor1 Major1 Major2

Conflicting Flow All	606	-	0	-	432	0
Stage 1	432	-	-	-	-	-
Stage 2	174	-	-	-	-	-
Critical Hdwy	6.42	-	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	-	-	-	2.218	-
Pot Cap-1 Maneuver	460	0	-	0	1128	-
Stage 1	655	0	-	0	-	-
Stage 2	856	0	-	0	-	-
Platoon blocked, %			-			-
Mov Cap-1 Maneuver	425	-	-	-	1128	-
Mov Cap-2 Maneuver	425	-	-	-	-	-
Stage 1	605	-	-	-	-	-
Stage 2	856	-	-	-	-	-

Approach WB NB SB

HCM Control Delay, s	17.6	0	8.5
HCM LOS	C		

Minor Lane/Major Mvmt NBTWBLn1WBLn2 SBL SBT

Capacity (veh/h)	-	425	-	1128	-
HCM Lane V/C Ratio	-	0.33	-	0.077	-
HCM Control Delay (s)	-	17.6	0	8.5	0
HCM Lane LOS	-	C	A	A	A
HCM 95th %tile Q(veh)	-	1.4	-	0.2	-

Timings

Short-Term Total Traffic With Right-in/Right-out at Pinehurst/SH 83

1: SH 83 & SH 105/Walker Rd

PM Peak Hour

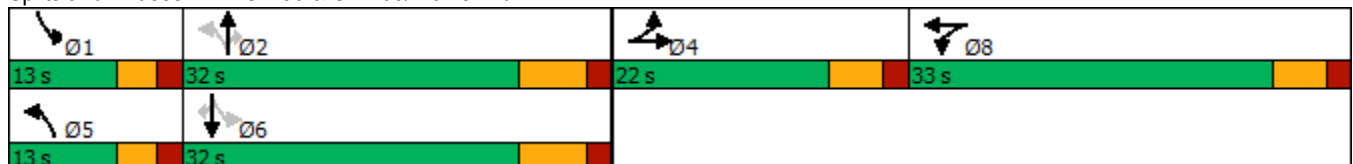


Lane Group	EBT	EBR	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↔	↖	↑	↗	↖	↑	↗
Traffic Volume (vph)	98	178	104	179	350	54	38	479	76
Future Volume (vph)	98	178	104	179	350	54	38	479	76
Turn Type	NA	Free	NA	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	4		8	5	2		1	6	
Permitted Phases		Free		2		2	6		6
Detector Phase	4		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
Minimum Split (s)	11.0		11.0	10.0	12.0	12.0	10.0	12.0	12.0
Total Split (s)	22.0		33.0	13.0	32.0	32.0	13.0	32.0	32.0
Total Split (%)	22.0%		33.0%	13.0%	32.0%	32.0%	13.0%	32.0%	32.0%
Yellow Time (s)	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
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	Max	Max	None	Max	Max
Act Effct Green (s)	12.4	81.6	11.9	37.9	31.3	31.3	33.7	25.1	25.1
Actuated g/C Ratio	0.15	1.00	0.15	0.46	0.38	0.38	0.41	0.31	0.31
v/c Ratio	0.62	0.12	0.57	0.64	0.57	0.09	0.09	0.83	0.13
Control Delay	43.1	0.2	39.2	25.6	27.8	0.3	13.6	42.7	0.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.1	0.2	39.2	25.6	27.8	0.3	13.6	42.7	0.4
LOS	D	A	D	C	C	A	B	D	A
Approach Delay	20.6		39.2		24.5			35.4	
Approach LOS	C		D		C			D	

Intersection Summary

Cycle Length: 100
 Actuated Cycle Length: 81.6
 Natural Cycle: 60
 Control Type: Semi Act-Uncoord
 Maximum v/c Ratio: 0.83
 Intersection Signal Delay: 28.6
 Intersection LOS: C
 Intersection Capacity Utilization 68.7%
 ICU Level of Service C
 Analysis Period (min) 15

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



Intersection

Int Delay, s/veh 1.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↘	↑	↘	↗
Traffic Vol, veh/h	138	51	4	100	54	11
Future Vol, veh/h	138	51	4	100	54	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Yield	-	None	-	None
Storage Length	-	0	50	-	300	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	77	92	92	99	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	179	55	4	101	59	12

Major/Minor

	Major1	Major2	Minor1		
Conflicting Flow All	0	0	179	0	288
Stage 1	-	-	-	-	179
Stage 2	-	-	-	-	109
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1397	-	702
Stage 1	-	-	-	-	852
Stage 2	-	-	-	-	916
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1397	-	700
Mov Cap-2 Maneuver	-	-	-	-	700
Stage 1	-	-	-	-	849
Stage 2	-	-	-	-	916

Approach

	EB	WB	NB
HCM Control Delay, s	0	0.3	10.4
HCM LOS			B

Minor Lane/Major Mvmt

	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	700	864	-	-	1397	-
HCM Lane V/C Ratio	0.084	0.014	-	-	0.003	-
HCM Control Delay (s)	10.6	9.2	-	-	7.6	-
HCM Lane LOS	B	A	-	-	A	-
HCM 95th %tile Q(veh)	0.3	0	-	-	0	-

Intersection

Int Delay, s/veh 1.4

Movement WBL WBR NBT NBR SBL SBT

Lane Configurations	↘	↗	↑	↗		↘
Traffic Vol, veh/h	55	32	551	54	12	0
Future Vol, veh/h	55	32	551	54	12	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Free	-	Free	-	None
Storage Length	0	0	-	400	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	86	92	92	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	60	35	641	59	13	0

Major/Minor Minor1 Major1 Major2

Conflicting Flow All	667	-	0	-	641	0
Stage 1	641	-	-	-	-	-
Stage 2	26	-	-	-	-	-
Critical Hdwy	6.42	-	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	-	-	-	2.218	-
Pot Cap-1 Maneuver	424	0	-	0	943	-
Stage 1	525	0	-	0	-	-
Stage 2	997	0	-	0	-	-
Platoon blocked, %			-			-
Mov Cap-1 Maneuver	418	-	-	-	943	-
Mov Cap-2 Maneuver	418	-	-	-	-	-
Stage 1	518	-	-	-	-	-
Stage 2	997	-	-	-	-	-

Approach WB NB SB

HCM Control Delay, s	15	0	8.9
HCM LOS	C		

Minor Lane/Major Mvmt NBTWBLn1WBLn2 SBL SBT

Capacity (veh/h)	-	418	-	943	-
HCM Lane V/C Ratio	-	0.143	-	0.014	-
HCM Control Delay (s)	-	15	0	8.9	0
HCM Lane LOS	-	C	A	A	A
HCM 95th %tile Q(veh)	-	0.5	-	0	-

Timings

Short-Term Total Traffic With Full-Movement at Pinehurst/SH83

1: SH 83 & SH 105/Walker Rd

AM Peak Hour

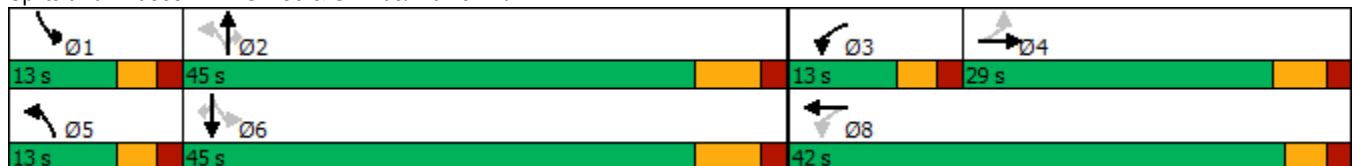


Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↙	↑	↘	↙	↘	↙	↑	↘	↙	↑	↘
Traffic Volume (vph)	39	204	218	53	108	313	437	9	43	314	73
Future Volume (vph)	39	204	218	53	108	313	437	9	43	314	73
Turn Type	Perm	NA	Free	pm+pt	NA	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4		3	8	5	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)	29.0	29.0		13.0	42.0	13.0	45.0	45.0	13.0	45.0	45.0
Total Split (%)	29.0%	29.0%		13.0%	42.0%	13.0%	45.0%	45.0%	13.0%	45.0%	45.0%
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 Effct Green (s)	19.6	19.6	94.1	30.5	30.5	50.2	42.0	42.0	47.4	38.4	38.4
Actuated g/C Ratio	0.21	0.21	1.00	0.32	0.32	0.53	0.45	0.45	0.50	0.41	0.41
v/c Ratio	0.16	0.81	0.14	0.33	0.40	0.72	0.60	0.02	0.16	0.49	0.12
Control Delay	33.0	53.0	0.2	25.1	23.3	25.7	26.9	0.0	12.4	25.0	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	33.0	53.0	0.2	25.1	23.3	25.7	26.9	0.0	12.4	25.0	1.0
LOS	C	D	A	C	C	C	C	A	B	C	A
Approach Delay		31.5			23.7		26.0			19.5	
Approach LOS		C			C		C			B	

Intersection Summary

Cycle Length: 100	
Actuated Cycle Length: 94.1	
Natural Cycle: 65	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.81	
Intersection Signal Delay: 25.6	Intersection LOS: C
Intersection Capacity Utilization 67.9%	ICU Level of Service C
Analysis Period (min) 15	

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



Intersection	
Intersection Delay, s/veh	10
Intersection LOS	A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗		↖	↖	↗
Traffic Vol, veh/h	44	212	22	190	15	21
Future Vol, veh/h	44	212	22	190	15	21
Peak Hour Factor	0.84	0.55	0.55	1.00	0.55	0.55
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	52	385	40	190	27	38
Number of Lanes	1	1	0	1	1	1

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	2	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	2	2
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	2	0	1
HCM Control Delay	10	10.3	8.8
HCM LOS	A	B	A

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1
Vol Left, %	100%	0%	0%	0%	10%
Vol Thru, %	0%	0%	100%	0%	90%
Vol Right, %	0%	100%	0%	100%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	15	21	44	212	212
LT Vol	15	0	0	0	22
Through Vol	0	0	44	0	190
RT Vol	0	21	0	212	0
Lane Flow Rate	27	38	52	385	230
Geometry Grp	7	7	7	7	4
Degree of Util (X)	0.049	0.056	0.071	0.45	0.317
Departure Headway (Hd)	6.476	5.263	4.909	4.206	4.954
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	553	679	731	856	727
Service Time	4.221	3.008	2.631	1.928	2.981
HCM Lane V/C Ratio	0.049	0.056	0.071	0.45	0.316
HCM Control Delay	9.6	8.3	8	10.3	10.3
HCM Lane LOS	A	A	A	B	B
HCM 95th-tile Q	0.2	0.2	0.2	2.4	1.4

HCM 6th TWSC
3: N-S Collector St & North School Access

Short-Term Total Traffic With Full-Movement at Pinehurst/SH83

AM Peak Hour

Intersection						
Int Delay, s/veh	2.7					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↘↗		↑	↗↘	↘↗	↑
Traffic Vol, veh/h	0	0	36	64	111	123
Future Vol, veh/h	0	0	36	64	111	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	-	-	155	255	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	55	55	55	55	55	55
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	65	116	202	224

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	693	65	0	0	181
Stage 1	65	-	-	-	-
Stage 2	628	-	-	-	-
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	409	999	-	-	1394
Stage 1	958	-	-	-	-
Stage 2	532	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	350	999	-	-	1394
Mov Cap-2 Maneuver	300	-	-	-	-
Stage 1	819	-	-	-	-
Stage 2	532	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	0	0	3.8
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	-	1394
HCM Lane V/C Ratio	-	-	-	0.145
HCM Control Delay (s)	-	-	0	8
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	-	0.5

HCM 6th TWSC
4: N-S Collector St & YMCA Access

Short-Term Total Traffic With Full-Movement at Pinehurst/SH83
AM Peak Hour

AM Peak Hour

Intersection						
Int Delay, s/veh	1.7					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↔		↔	↔
Traffic Vol, veh/h	17	17	83	26	40	82
Future Vol, veh/h	17	17	83	26	40	82
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	92	92	55	92	92	55
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	18	18	151	28	43	149

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	400	165	0	0	179
Stage 1	165	-	-	-	-
Stage 2	235	-	-	-	-
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	606	879	-	-	1397
Stage 1	864	-	-	-	-
Stage 2	804	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	587	879	-	-	1397
Mov Cap-2 Maneuver	630	-	-	-	-
Stage 1	837	-	-	-	-
Stage 2	804	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.2	0	1.7
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	734	1397
HCM Lane V/C Ratio	-	-	0.05	0.031
HCM Control Delay (s)	-	-	10.2	7.7
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	0.2	0.1

Intersection

Int Delay, s/veh 4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↘	↗	↗	↘	↘	↘
Traffic Vol, veh/h	89	229	292	19	82	17
Future Vol, veh/h	89	229	292	19	82	17
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	-	-	205	205	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	55	55	55	55	55	55
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	86	221	531	35	149	31

Major/Minor

	Major1	Major2	Minor2		
Conflicting Flow All	566	0	-	0	924
Stage 1	-	-	-	-	531
Stage 2	-	-	-	-	393
Critical Hdwy	4.12	-	-	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	2.218	-	-	-	3.518
Pot Cap-1 Maneuver	1006	-	-	-	299
Stage 1	-	-	-	-	590
Stage 2	-	-	-	-	682
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1006	-	-	-	274
Mov Cap-2 Maneuver	-	-	-	-	383
Stage 1	-	-	-	-	540
Stage 2	-	-	-	-	682

Approach

	EB	WB	SB
HCM Control Delay, s	2.5	0	18.9
HCM LOS			C

Minor Lane/Major Mvmt

	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1006	-	-	-	383	548
HCM Lane V/C Ratio	0.085	-	-	-	0.389	0.056
HCM Control Delay (s)	8.9	-	-	-	20.3	12
HCM Lane LOS	A	-	-	-	C	B
HCM 95th %tile Q(veh)	0.3	-	-	-	1.8	0.2

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

Short-Term Total Traffic With Full-Movement at Pinehurst/SH83
AM Peak Hour

Intersection						
Int Delay, s/veh	10.1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖	↑	↗		↖	
Traffic Vol, veh/h	311	0	0	0	0	311
Future Vol, veh/h	311	0	0	0	0	311
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	55	92	92	75	55	55
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	565	0	0	0	0	565

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	1	0	-	0	1131
Stage 1	-	-	-	-	1
Stage 2	-	-	-	-	1130
Critical Hdwy	4.12	-	-	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	2.218	-	-	-	3.518
Pot Cap-1 Maneuver	1622	-	-	-	225
Stage 1	-	-	-	-	1022
Stage 2	-	-	-	-	308
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1622	-	-	-	147
Mov Cap-2 Maneuver	-	-	-	-	147
Stage 1	-	-	-	-	666
Stage 2	-	-	-	-	308

Approach	EB	WB	SB
HCM Control Delay, s	8.4	0	11.9
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1622	-	-	-	1084
HCM Lane V/C Ratio	0.349	-	-	-	0.522
HCM Control Delay (s)	8.4	-	-	-	11.9
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	1.6	-	-	-	3.1

Intersection			
Intersection Delay, s/veh	20.2		
Intersection LOS	C		
Approach	WB	NB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	475	983	731
Demand Flow Rate, veh/h	484	1002	746
Vehicles Circulating, veh/h	687	184	224
Vehicles Exiting, veh/h	499	786	947
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	20.7	24.9	13.5
Approach LOS	C	C	B
Lane	Left	Left	Left
Designated Moves	LR	TR	LT
Assumed Moves	LR	TR	LT
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	484	1002	746
Cap Entry Lane, veh/h	685	1144	1098
Entry HV Adj Factor	0.981	0.981	0.980
Flow Entry, veh/h	475	983	731
Cap Entry, veh/h	672	1122	1076
V/C Ratio	0.707	0.876	0.679
Control Delay, s/veh	20.7	24.9	13.5
LOS	C	C	B
95th %tile Queue, veh	6	12	6

Timings
121: SH 83 & Hodgen Rd

Short-Term Total Traffic With Full-Movement at Pinehurst/SH83

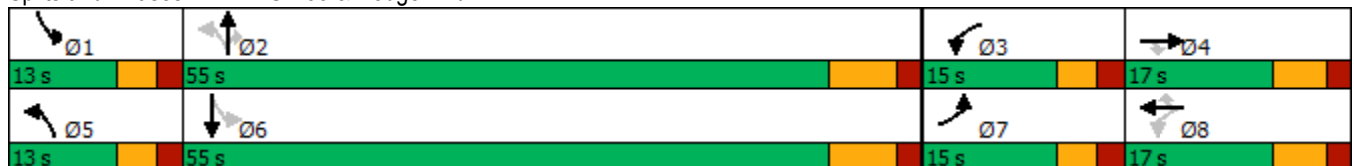
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations											
Traffic Volume (vph)	105	65	88	236	144	257	46	403	47	79	427
Future Volume (vph)	105	65	88	236	144	257	46	403	47	79	427
Turn Type	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA
Protected Phases	7	4		3	8		5	2		1	6
Permitted Phases			4	8		8	2		2	6	
Detector Phase	7	4	4	3	8	8	5	2	2	1	6
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	11.0	10.0	12.0	12.0	10.0	12.0
Total Split (s)	15.0	17.0	17.0	15.0	17.0	17.0	13.0	55.0	55.0	13.0	55.0
Total Split (%)	15.0%	17.0%	17.0%	15.0%	17.0%	17.0%	13.0%	55.0%	55.0%	13.0%	55.0%
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	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	6.0	6.0	5.0	7.0	7.0	5.0	7.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	Min	Min	None	Min
Act Effct Green (s)	10.0	10.5	10.5	22.2	10.9	10.9	39.3	31.8	31.8	41.0	34.7
Actuated g/C Ratio	0.12	0.13	0.13	0.27	0.13	0.13	0.48	0.39	0.39	0.51	0.43
v/c Ratio	0.65	0.37	0.35	0.66	0.67	0.63	0.18	0.64	0.08	0.25	0.84
Control Delay	54.8	42.4	6.6	36.4	52.8	12.0	9.4	24.4	0.2	9.7	31.2
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	54.8	42.4	6.6	36.4	52.8	12.0	9.4	24.4	0.2	9.7	31.2
LOS	D	D	A	D	D	B	A	C	A	A	C
Approach Delay		35.2			30.3			20.7			28.4
Approach LOS		D			C			C			C

Intersection Summary

Cycle Length: 100
 Actuated Cycle Length: 81.1
 Natural Cycle: 75
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.84
 Intersection Signal Delay: 28.1
 Intersection Capacity Utilization 68.6%
 Analysis Period (min) 15
 Intersection LOS: C
 ICU Level of Service C

Splits and Phases: 121: SH 83 & Hodgen Rd



Timings

Short-Term Total Traffic With Full-Movement Access at Pinehurst/SH 83

1: SH 83 & SH 105/Walker Rd

Midday (2-3 PM)



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	46	104	184	17	120	191	266	24	19	319	41
Future Volume (vph)	46	104	184	17	120	191	266	24	19	319	41
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)	17.0	17.0		13.0	30.0	13.0	57.0	57.0	13.0	57.0	57.0
Total Split (%)	17.0%	17.0%		13.0%	30.0%	13.0%	57.0%	57.0%	13.0%	57.0%	57.0%
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 Effct Green (s)	11.0	11.0	91.9	16.7	16.7	63.9	58.9	58.9	58.3	50.3	50.3
Actuated g/C Ratio	0.12	0.12	1.00	0.18	0.18	0.70	0.64	0.64	0.63	0.55	0.55
v/c Ratio	0.37	0.62	0.13	0.11	0.61	0.29	0.24	0.03	0.03	0.31	0.04
Control Delay	47.4	53.2	0.2	30.8	39.6	6.5	10.2	0.0	5.8	13.7	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.4	53.2	0.2	30.8	39.6	6.5	10.2	0.0	5.8	13.7	0.1
LOS	D	D	A	C	D	A	B	A	A	B	A
Approach Delay		24.9			38.7		8.1			11.7	
Approach LOS		C			D		A			B	

Intersection Summary

Cycle Length: 100	
Actuated Cycle Length: 91.9	
Natural Cycle: 55	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.62	
Intersection Signal Delay: 17.9	Intersection LOS: B
Intersection Capacity Utilization 59.0%	ICU Level of Service B
Analysis Period (min) 15	

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



Intersection	
Intersection Delay, s/veh	8.7
Intersection LOS	A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗		↖	↖	↗
Traffic Vol, veh/h	89	57	9	85	84	19
Future Vol, veh/h	89	57	9	85	84	19
Peak Hour Factor	0.92	0.75	0.75	0.81	0.75	0.75
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	97	76	12	105	112	25
Number of Lanes	1	1	0	1	1	1

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	2	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	2	2
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	2	0	1
HCM Control Delay	8.1	8.9	9.3
HCM LOS	A	A	A

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1
Vol Left, %	100%	0%	0%	0%	10%
Vol Thru, %	0%	0%	100%	0%	90%
Vol Right, %	0%	100%	0%	100%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	84	19	89	57	94
LT Vol	84	0	0	0	9
Through Vol	0	0	89	0	85
RT Vol	0	19	0	57	0
Lane Flow Rate	112	25	97	76	117
Geometry Grp	7	7	7	7	4
Degree of Util (X)	0.178	0.032	0.135	0.091	0.16
Departure Headway (Hd)	5.718	4.513	5.028	4.325	4.929
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	628	793	715	830	729
Service Time	3.446	2.241	2.748	2.045	2.952
HCM Lane V/C Ratio	0.178	0.032	0.136	0.092	0.16
HCM Control Delay	9.7	7.4	8.5	7.5	8.9
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0.6	0.1	0.5	0.3	0.6

HCM 6th TWSC Short-Term Total Traffic With Full-Movement Access at Pinehurst/SH 83
 3: N-S Collector St & North School Access MIDDAY (2-3 PM)

Intersection						
Int Delay, s/veh	6.2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		↑	↑	↑	↑
Traffic Vol, veh/h	61	87	16	0	0	66
Future Vol, veh/h	61	87	16	0	0	66
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	75	75	75	75	75	75
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	81	116	21	0	0	88

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	109	21	0	0	21	0
Stage 1	21	-	-	-	-	-
Stage 2	88	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	888	1056	-	-	1595	-
Stage 1	1002	-	-	-	-	-
Stage 2	935	-	-	-	-	-
Platoon blocked, %			-	-	-	-
Mov Cap-1 Maneuver	888	1056	-	-	1595	-
Mov Cap-2 Maneuver	841	-	-	-	-	-
Stage 1	1002	-	-	-	-	-
Stage 2	935	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	955	1595
HCM Lane V/C Ratio	-	-	0.207	-
HCM Control Delay (s)	-	-	9.7	0
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0.8	0

HCM 6th TWSC Short-Term Total Traffic With Full-Movement Access at Pinehurst/SH 83
 4: N-S Collector St & YMCA Access MIDDAY (2-3 PM)

Intersection						
Int Delay, s/veh	1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↔		↔	↔
Traffic Vol, veh/h	7	7	9	6	9	118
Future Vol, veh/h	7	7	9	6	9	118
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	92	92	75	92	92	75
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	8	8	12	7	10	157

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	193	16	0	0	19
Stage 1	16	-	-	-	-
Stage 2	177	-	-	-	-
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	796	1063	-	-	1597
Stage 1	1007	-	-	-	-
Stage 2	854	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	791	1063	-	-	1597
Mov Cap-2 Maneuver	761	-	-	-	-
Stage 1	1001	-	-	-	-
Stage 2	854	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.1	0	0.4
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	887	1597
HCM Lane V/C Ratio	-	-	0.017	0.006
HCM Control Delay (s)	-	-	9.1	7.3
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0

HCM 6th TWSC Short-Term Total Traffic With Full-Movement Access at Pinehurst/SH 83
 5: Pinehurst Cir & N-S Collector St MIDDAY (2-3 PM)

Intersection

Int Delay, s/veh 3.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↘	↗	↗	↘	↘	↘
Traffic Vol, veh/h	6	157	139	9	57	68
Future Vol, veh/h	6	157	139	9	57	68
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	-	-	205	205	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	75	75	75	75	75	75
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	8	209	185	12	76	91

Major/Minor

	Major1	Major2	Minor2		
Conflicting Flow All	197	0	0	410	185
Stage 1	-	-	-	185	-
Stage 2	-	-	-	225	-
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	1376	-	-	598	857
Stage 1	-	-	-	847	-
Stage 2	-	-	-	812	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	1376	-	-	594	857
Mov Cap-2 Maneuver	-	-	-	646	-
Stage 1	-	-	-	842	-
Stage 2	-	-	-	812	-

Approach

	EB	WB	SB
HCM Control Delay, s	0.3	0	10.4
HCM LOS			B

Minor Lane/Major Mvmt

	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1376	-	-	-	646	857
HCM Lane V/C Ratio	0.006	-	-	-	0.118	0.106
HCM Control Delay (s)	7.6	-	-	-	11.3	9.7
HCM Lane LOS	A	-	-	-	B	A
HCM 95th %tile Q(veh)	0	-	-	-	0.4	0.4

HCM 6th TWSC Short-Term Total Traffic With Full-Movement Access at Pinehurst/SH 83
 6: Pinehurst Cir & South School Access Middy (2-3 PM)

Intersection						
Int Delay, s/veh	8.3					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖	↑	↗		↖	
Traffic Vol, veh/h	214	0	0	0	0	148
Future Vol, veh/h	214	0	0	0	0	148
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	75	75
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	285	0	0	0	0	197

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	1	0	-	0	571
Stage 1	-	-	-	-	1
Stage 2	-	-	-	-	570
Critical Hdwy	4.12	-	-	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	2.218	-	-	-	3.518
Pot Cap-1 Maneuver	1622	-	-	-	482
Stage 1	-	-	-	-	1022
Stage 2	-	-	-	-	566
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1622	-	-	-	397
Mov Cap-2 Maneuver	-	-	-	-	397
Stage 1	-	-	-	-	842
Stage 2	-	-	-	-	566

Approach	EB	WB	SB
HCM Control Delay, s	7.7	0	9.1
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1622	-	-	-	1084
HCM Lane V/C Ratio	0.176	-	-	-	0.182
HCM Control Delay (s)	7.7	-	-	-	9.1
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0.6	-	-	-	0.7

HCM 6th Roundabout Short-Term Total Traffic With Full-Movement Access at Pinehurst/SH 83
 7: SH 83 & Pinehurst Cir

Midday (2-3 PM)

Intersection			
Intersection Delay, s/veh	7.5		
Intersection LOS	A		
Approach	WB	NB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	245	544	528
Demand Flow Rate, veh/h	250	555	539
Vehicles Circulating, veh/h	441	89	143
Vehicles Exiting, veh/h	203	593	548
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	7.2	7.4	7.9
Approach LOS	A	A	A
Lane	Left	Left	Left
Designated Moves	LR	TR	LT
Assumed Moves	LR	TR	LT
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	250	555	539
Cap Entry Lane, veh/h	880	1260	1193
Entry HV Adj Factor	0.980	0.981	0.980
Flow Entry, veh/h	245	544	528
Cap Entry, veh/h	862	1236	1169
V/C Ratio	0.284	0.440	0.452
Control Delay, s/veh	7.2	7.4	7.9
LOS	A	A	A
95th %tile Queue, veh	1	2	2

Timings

Short-Term Total Traffic With Full-Movement at Pinehurst/SH 83

1: SH 83 & SH 105/Walker Rd

PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	63	98	178	23	104	179	350	54	38	479	76
Future Volume (vph)	63	98	178	23	104	179	350	54	38	479	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)	18.0	18.0		13.0	31.0	13.0	56.0	56.0	13.0	56.0	56.0
Total Split (%)	18.0%	18.0%		13.0%	31.0%	13.0%	56.0%	56.0%	13.0%	56.0%	56.0%
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 Effct Green (s)	9.7	9.7	89.7	15.3	15.3	62.3	55.7	55.7	57.6	49.4	49.4
Actuated g/C Ratio	0.11	0.11	1.00	0.17	0.17	0.69	0.62	0.62	0.64	0.55	0.55
v/c Ratio	0.49	0.51	0.12	0.11	0.42	0.36	0.35	0.06	0.06	0.47	0.08
Control Delay	52.3	48.6	0.2	30.3	32.8	7.2	12.3	0.1	5.9	15.6	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.3	48.6	0.2	30.3	32.8	7.2	12.3	0.1	5.9	15.6	0.2
LOS	D	D	A	C	C	A	B	A	A	B	A
Approach Delay		23.9			32.4		9.6			13.0	
Approach LOS		C			C		A			B	

Intersection Summary

Cycle Length: 100	
Actuated Cycle Length: 89.7	
Natural Cycle: 60	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.51	
Intersection Signal Delay: 15.6	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



Intersection

Intersection Delay, s/veh 8.7

Intersection LOS A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗		↖	↖	↗
Traffic Vol, veh/h	138	51	4	100	54	11
Future Vol, veh/h	138	51	4	100	54	11
Peak Hour Factor	0.77	0.92	0.92	0.99	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	179	55	4	101	59	12
Number of Lanes	1	1	0	1	1	1

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	2	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	2	2
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	2	0	1
HCM Control Delay	8.6	8.6	8.9
HCM LOS	A	A	A

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1
Vol Left, %	100%	0%	0%	0%	4%
Vol Thru, %	0%	0%	100%	0%	96%
Vol Right, %	0%	100%	0%	100%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	54	11	138	51	104
LT Vol	54	0	0	0	4
Through Vol	0	0	138	0	100
RT Vol	0	11	0	51	0
Lane Flow Rate	59	12	179	55	105
Geometry Grp	7	7	7	7	4
Degree of Util (X)	0.095	0.015	0.24	0.063	0.14
Departure Headway (Hd)	5.832	4.626	4.824	4.122	4.794
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	616	775	747	872	750
Service Time	3.55	2.344	2.534	1.832	2.807
HCM Lane V/C Ratio	0.096	0.015	0.24	0.063	0.14
HCM Control Delay	9.2	7.4	9.1	7.1	8.6
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0.3	0	0.9	0.2	0.5

HCM 6th TWSC
3: N-S Collector St & North School Access

Short-Term Total Traffic With Full-Movement at Pinehurst/SH 83

PM Peak Hour

Intersection						
Int Delay, s/veh	3.8					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↘↗		↑	↑	↘↗	↑
Traffic Vol, veh/h	18	31	34	17	20	34
Future Vol, veh/h	18	31	34	17	20	34
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	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	20	34	37	18	22	37

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	118	37	0	0	55
Stage 1	37	-	-	-	-
Stage 2	81	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218
Pot Cap-1 Maneuver	878	1035	-	-	1550
Stage 1	985	-	-	-	-
Stage 2	942	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	866	1035	-	-	1550
Mov Cap-2 Maneuver	823	-	-	-	-
Stage 1	971	-	-	-	-
Stage 2	942	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9	0	2.7
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	946	1550
HCM Lane V/C Ratio	-	-	0.056	0.014
HCM Control Delay (s)	-	-	9	7.4
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0

HCM 6th TWSC
4: N-S Collector St & YMCA Access

Short-Term Total Traffic With Full-Movement at Pinehurst/SH 83
PM Peak Hour

PM Peak Hour

Intersection

Int Delay, s/veh 4.7

Movement WBL WBR NBT NBR SBL SBT

Lane Configurations	Y		B		Y	↑
Traffic Vol, veh/h	25	30	20	22	26	26
Future Vol, veh/h	25	30	20	22	26	26
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	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	27	33	22	24	28	28

Major/Minor Minor1 Major1 Major2

Conflicting Flow All	118	34	0	0	46	0
Stage 1	34	-	-	-	-	-
Stage 2	84	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	878	1039	-	-	1562	-
Stage 1	988	-	-	-	-	-
Stage 2	939	-	-	-	-	-
Platoon blocked, %			-	-	-	-
Mov Cap-1 Maneuver	862	1039	-	-	1562	-
Mov Cap-2 Maneuver	818	-	-	-	-	-
Stage 1	970	-	-	-	-	-
Stage 2	939	-	-	-	-	-

Approach WB NB SB

HCM Control Delay, s	9.2	0	3.7
HCM LOS	A		

Minor Lane/Major Mvmt NBT NBRWBLn1 SBL SBT

Capacity (veh/h)	-	-	925	1562	-
HCM Lane V/C Ratio	-	-	0.065	0.018	-
HCM Control Delay (s)	-	-	9.2	7.3	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	0.2	0.1	-

Intersection

Int Delay, s/veh 4.5

Movement EBL EBT WBT WBR SBL SBR

Lane Configurations	↘	↑	↑	↗	↘	↗
Traffic Vol, veh/h	39	28	44	4	8	43
Future Vol, veh/h	39	28	44	4	8	43
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	-	-	205	205	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	42	30	48	4	9	47

Major/Minor Major1 Major2 Minor2

Conflicting Flow All	52	0	-	0	162	48
Stage 1	-	-	-	-	48	-
Stage 2	-	-	-	-	114	-
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	1554	-	-	-	829	1021
Stage 1	-	-	-	-	974	-
Stage 2	-	-	-	-	911	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	1554	-	-	-	807	1021
Mov Cap-2 Maneuver	-	-	-	-	776	-
Stage 1	-	-	-	-	948	-
Stage 2	-	-	-	-	911	-

Approach EB WB SB

HCM Control Delay, s	4.3	0	8.9
HCM LOS			A

Minor Lane/Major Mvmt EBL EBT WBT WBR SBLn1 SBLn2

Capacity (veh/h)	1554	-	-	-	776	1021
HCM Lane V/C Ratio	0.027	-	-	-	0.011	0.046
HCM Control Delay (s)	7.4	-	-	-	9.7	8.7
HCM Lane LOS	A	-	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	-	0	0.1

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

Short-Term Total Traffic With Full-Movement at Pinehurst/SH 83
PM Peak Hour

Intersection						
Int Delay, s/veh	7.9					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	36	0	0	0	0	48
Future Vol, veh/h	36	0	0	0	0	48
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	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	39	0	0	0	0	52

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	1	0	0
Stage 1	-	-	1
Stage 2	-	-	78
Critical Hdwy	4.12	-	6.42
Critical Hdwy Stg 1	-	-	5.42
Critical Hdwy Stg 2	-	-	5.42
Follow-up Hdwy	2.218	-	3.518
Pot Cap-1 Maneuver	1622	-	924
Stage 1	-	-	1022
Stage 2	-	-	945
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1622	-	902
Mov Cap-2 Maneuver	-	-	902
Stage 1	-	-	997
Stage 2	-	-	945

Approach	EB	WB	SB
HCM Control Delay, s	7.3	0	8.5
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1622	-	-	-	1084
HCM Lane V/C Ratio	0.024	-	-	-	0.048
HCM Control Delay (s)	7.3	-	-	-	8.5
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0.1	-	-	-	0.2

Intersection			
Intersection Delay, s/veh	8.4		
Intersection LOS	A		
Approach	WB	NB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	95	700	681
Demand Flow Rate, veh/h	97	714	694
Vehicles Circulating, veh/h	654	13	61
Vehicles Exiting, veh/h	73	742	690
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	6.7	8.2	8.7
Approach LOS	A	A	A
Lane	Left	Left	Left
Designated Moves	LR	TR	LT
Assumed Moves	LR	TR	LT
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	97	714	694
Cap Entry Lane, veh/h	708	1362	1297
Entry HV Adj Factor	0.979	0.981	0.981
Flow Entry, veh/h	95	700	681
Cap Entry, veh/h	694	1335	1272
V/C Ratio	0.137	0.524	0.535
Control Delay, s/veh	6.7	8.2	8.7
LOS	A	A	A
95th %tile Queue, veh	0	3	3

Timings
121: SH 83 & Hodgen Rd

Short-Term Total Traffic With Full-Movement at Pinehurst/SH 83

PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations											
Traffic Volume (vph)	74	170	85	118	124	212	106	308	180	212	398
Future Volume (vph)	74	170	85	118	124	212	106	308	180	212	398
Turn Type	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA
Protected Phases	7	4		3	8		5	2		1	6
Permitted Phases			4	8		8	2		2	6	
Detector Phase	7	4	4	3	8	8	5	2	2	1	6
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	11.0	10.0	12.0	12.0	10.0	12.0
Total Split (s)	15.0	20.0	20.0	15.0	20.0	20.0	13.0	52.0	52.0	13.0	52.0
Total Split (%)	15.0%	20.0%	20.0%	15.0%	20.0%	20.0%	13.0%	52.0%	52.0%	13.0%	52.0%
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	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	6.0	6.0	5.0	7.0	7.0	5.0	7.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	Min	Min	None	Min
Act Effct Green (s)	8.9	13.5	13.5	25.0	16.8	16.8	38.3	28.5	28.5	40.2	32.1
Actuated g/C Ratio	0.11	0.16	0.16	0.30	0.20	0.20	0.46	0.34	0.34	0.48	0.39
v/c Ratio	0.51	0.74	0.29	0.41	0.39	0.48	0.36	0.54	0.30	0.50	0.79
Control Delay	49.2	52.3	4.8	26.7	38.4	8.7	12.8	24.3	3.8	14.6	31.5
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	49.2	52.3	4.8	26.7	38.4	8.7	12.8	24.3	3.8	14.6	31.5
LOS	D	D	A	C	D	A	B	C	A	B	C
Approach Delay		39.3			21.5			16.0			26.5
Approach LOS		D			C			B			C

Intersection Summary

Cycle Length: 100
 Actuated Cycle Length: 83
 Natural Cycle: 65
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.79
 Intersection Signal Delay: 24.8
 Intersection LOS: C
 Intersection Capacity Utilization 67.4%
 ICU Level of Service C
 Analysis Period (min) 15

Splits and Phases: 121: SH 83 & Hodgen Rd



Timings
2: N-S Collector St & Walker Rd

Short-Term Total Traffic With Full-Movement at Pinehurst/SH 83

Midday (2-3 PM)



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑	↑	↑	↑	↑
Traffic Volume (vph)	89	57	9	85	84	19
Future Volume (vph)	89	57	9	85	84	19
Turn Type	NA	Perm	Perm	NA	Prot	Perm
Protected Phases	2			6	8	
Permitted Phases		2	6			8
Detector Phase	2	2	6	6	8	8
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	23.0	23.0	23.0	23.0	23.0	23.0
Total Split (s)	65.0	65.0	65.0	65.0	35.0	35.0
Total Split (%)	65.0%	65.0%	65.0%	65.0%	35.0%	35.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	Max	Max	Max	Max	None	None
Act Effct Green (s)	68.5	68.5	68.5	68.5	10.7	10.7
Actuated g/C Ratio	0.80	0.80	0.80	0.80	0.12	0.12
v/c Ratio	0.07	0.06	0.01	0.07	0.51	0.11
Control Delay	3.2	1.0	3.2	3.2	42.6	13.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	3.2	1.0	3.2	3.2	42.6	13.5
LOS	A	A	A	A	D	B
Approach Delay	2.2			3.2	37.3	
Approach LOS	A			A	D	

Intersection Summary

Cycle Length: 100
 Actuated Cycle Length: 85.6
 Natural Cycle: 50
 Control Type: Semi Act-Uncoord
 Maximum v/c Ratio: 0.51
 Intersection Signal Delay: 13.7
 Intersection Capacity Utilization 20.2%
 Analysis Period (min) 15
 Intersection LOS: B
 ICU Level of Service A

Splits and Phases: 2: N-S Collector St & Walker Rd

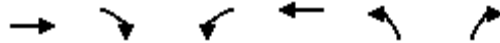


Timings

Short-Term Total Traffic With Right-in/Right-out at Pinehurst/SH 83

2: N-S Collector St & Walker Rd

PM Peak Hour



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑	↑	↑	↑	↑
Traffic Volume (vph)	138	51	4	100	54	11
Future Volume (vph)	138	51	4	100	54	11
Turn Type	NA	Perm	Perm	NA	Prot	Perm
Protected Phases	2			6	8	
Permitted Phases		2	6			8
Detector Phase	2	2	6	6	8	8
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	23.0	23.0	23.0	23.0	23.0	23.0
Total Split (s)	65.0	65.0	65.0	65.0	35.0	35.0
Total Split (%)	65.0%	65.0%	65.0%	65.0%	35.0%	35.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	Max	Max	Max	Max	None	None
Act Effct Green (s)	73.1	73.1	73.1	73.1	8.3	8.3
Actuated g/C Ratio	0.83	0.83	0.83	0.83	0.09	0.09
v/c Ratio	0.12	0.04	0.00	0.07	0.35	0.07
Control Delay	2.4	0.8	2.2	2.4	42.9	18.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	2.4	0.8	2.2	2.4	42.9	18.4
LOS	A	A	A	A	D	B
Approach Delay	2.0			2.4	38.7	
Approach LOS	A			A	D	

Intersection Summary

Cycle Length: 100	
Actuated Cycle Length: 88.1	
Natural Cycle: 50	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.35	
Intersection Signal Delay: 8.5	Intersection LOS: A
Intersection Capacity Utilization 19.8%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 2: N-S Collector St & Walker Rd



Intersection			
Intersection Delay, s/veh	5.1		
Intersection LOS	A		
Approach	EB	WB	NB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	437	230	65
Demand Flow Rate, veh/h	446	235	67
Vehicles Circulating, veh/h	41	28	53
Vehicles Exiting, veh/h	222	92	434
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	5.9	4.2	3.2
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	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	446	235	67
Cap Entry Lane, veh/h	1323	1341	1307
Entry HV Adj Factor	0.980	0.980	0.970
Flow Entry, veh/h	437	230	65
Cap Entry, veh/h	1297	1314	1268
V/C Ratio	0.337	0.175	0.051
Control Delay, s/veh	5.9	4.2	3.2
LOS	A	A	A
95th %tile Queue, veh	2	1	0

Intersection			
Intersection Delay, s/veh	3.8		
Intersection LOS	A		
Approach	EB	WB	NB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	173	117	137
Demand Flow Rate, veh/h	177	119	140
Vehicles Circulating, veh/h	12	114	99
Vehicles Exiting, veh/h	221	124	90
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	3.9
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	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	177	119	140
Cap Entry Lane, veh/h	1363	1228	1247
Entry HV Adj Factor	0.978	0.982	0.979
Flow Entry, veh/h	173	117	137
Cap Entry, veh/h	1333	1207	1221
V/C Ratio	0.130	0.097	0.112
Control Delay, s/veh	3.8	3.8	3.9
LOS	A	A	A
95th %tile Queue, veh	0	0	0

HCM 6th Roundabout Short-Term Total Traffic With Right-in/Right-out at Pinehurst/SH 83
 2: N-S Collector St & Walker Rd 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	1	1	1
Adj Approach Flow, veh/h	234	105	71
Demand Flow Rate, veh/h	239	107	72
Vehicles Circulating, veh/h	4	60	183
Vehicles Exiting, veh/h	163	195	60
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	4.1	3.5	3.7
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	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	239	107	72
Cap Entry Lane, veh/h	1374	1298	1145
Entry HV Adj Factor	0.981	0.981	0.986
Flow Entry, veh/h	234	105	71
Cap Entry, veh/h	1348	1273	1129
V/C Ratio	0.174	0.082	0.063
Control Delay, s/veh	4.1	3.5	3.7
LOS	A	A	A
95th %tile Queue, veh	1	0	0

Levels of Service - 2040 Background Traffic

- With High Intensity Development of Adjacent Parcels
- No Redevelopment North of Walker Rd
- With Right-in/Right-out Access to SH 83



2040 Background Traffic (HI, Ex N/O Walker, RIRO Pinehurst/SH 83)

1: SH 83 & SH 105/Walker Rd Timings

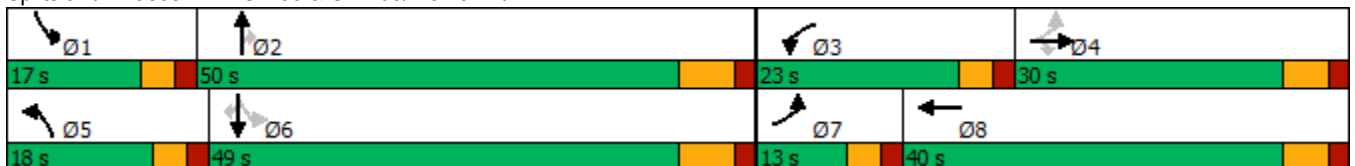
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	52	184	178	249	203	108	305	612	123	109	385	98
Future Volume (vph)	52	184	178	249	203	108	305	612	123	109	385	98
Turn Type	pm+pt	NA	Perm	Prot	NA	Free	Prot	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4			Free			2	6		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)	13.0	30.0	30.0	23.0	40.0		18.0	50.0	50.0	17.0	49.0	49.0
Total Split (%)	10.8%	25.0%	25.0%	19.2%	33.3%		15.0%	41.7%	41.7%	14.2%	40.8%	40.8%
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	None	None	None	None	None
Act Effct Green (s)	20.3	12.1	12.1	14.1	21.6	97.3	12.8	38.5	38.5	46.1	34.9	34.9
Actuated g/C Ratio	0.21	0.12	0.12	0.14	0.22	1.00	0.13	0.40	0.40	0.47	0.36	0.36
v/c Ratio	0.19	0.51	0.52	0.61	0.60	0.08	0.71	0.85	0.21	0.46	0.32	0.15
Control Delay	26.5	45.9	12.0	46.4	43.5	0.1	52.6	40.1	3.6	16.8	23.7	1.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.5	45.9	12.0	46.4	43.5	0.1	52.6	40.1	3.6	16.8	23.7	1.1
LOS	C	D	B	D	D	A	D	D	A	B	C	A
Approach Delay		30.0			36.4			38.8			18.6	
Approach LOS		C			D			D			B	

Intersection Summary

Cycle Length: 120	
Actuated Cycle Length: 97.3	
Natural Cycle: 70	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.85	
Intersection Signal Delay: 32.3	Intersection LOS: C
Intersection Capacity Utilization 72.3%	ICU Level of Service C
Analysis Period (min) 15	

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



Intersection

Int Delay, s/veh 11.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↘	↑	↘	↗
Traffic Vol, veh/h	48	368	48	221	339	18
Future Vol, veh/h	48	368	48	221	339	18
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Yield	-	None	-	None
Storage Length	-	0	50	-	300	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	75	75	92	75	75
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	52	491	64	240	452	24

Major/Minor

	Major1	Major2	Minor1		
Conflicting Flow All	0	0	52	0	420
Stage 1	-	-	-	-	52
Stage 2	-	-	-	-	368
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1554	-	590
Stage 1	-	-	-	-	970
Stage 2	-	-	-	-	700
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1554	-	566
Mov Cap-2 Maneuver	-	-	-	-	566
Stage 1	-	-	-	-	930
Stage 2	-	-	-	-	700

Approach

	EB	WB	NB
HCM Control Delay, s	0	1.6	30.7
HCM LOS			D

Minor Lane/Major Mvmt

	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	566	1016	-	-	1554	-
HCM Lane V/C Ratio	0.799	0.024	-	-	0.041	-
HCM Control Delay (s)	31.9	8.6	-	-	7.4	-
HCM Lane LOS	D	A	-	-	A	-
HCM 95th %tile Q(veh)	7.7	0.1	-	-	0.1	-

Intersection

Int Delay, s/veh 2.8

Movement EBL EBR NBL NBT SBT SBR

Lane Configurations	↘		↘	↑	↑	↘
Traffic Vol, veh/h	83	33	36	168	132	107
Future Vol, veh/h	83	33	36	168	132	107
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	95	95	95	90	90	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	87	35	38	187	147	113

Major/Minor Minor2 Major1 Major2

Conflicting Flow All	410	147	260	0	-	0
Stage 1	147	-	-	-	-	-
Stage 2	263	-	-	-	-	-
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	598	900	1304	-	-	-
Stage 1	880	-	-	-	-	-
Stage 2	781	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	581	900	1304	-	-	-
Mov Cap-2 Maneuver	623	-	-	-	-	-
Stage 1	854	-	-	-	-	-
Stage 2	781	-	-	-	-	-

Approach EB NB SB

HCM Control Delay, s	11.4	1.3	0
HCM LOS	B		

Minor Lane/Major Mvmt NBL NBT EBLn1 SBT SBR

Capacity (veh/h)	1304	-	683	-	-
HCM Lane V/C Ratio	0.029	-	0.179	-	-
HCM Control Delay (s)	7.8	-	11.4	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.6	-	-

Intersection

Int Delay, s/veh 3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Y		Y	↑	↑	Y
Traffic Vol, veh/h	51	51	51	153	98	67
Future Vol, veh/h	51	51	51	153	98	67
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	85	85	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	55	55	55	180	115	73

Major/Minor

	Minor2	Major1	Major2			
Conflicting Flow All	405	115	188	0	-	0
Stage 1	115	-	-	-	-	-
Stage 2	290	-	-	-	-	-
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	602	937	1386	-	-	-
Stage 1	910	-	-	-	-	-
Stage 2	759	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	578	937	1386	-	-	-
Mov Cap-2 Maneuver	608	-	-	-	-	-
Stage 1	874	-	-	-	-	-
Stage 2	759	-	-	-	-	-

Approach

	EB	NB	SB
HCM Control Delay, s	10.7	1.8	0
HCM LOS	B		

Minor Lane/Major Mvmt

	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1386	-	737	-	-
HCM Lane V/C Ratio	0.04	-	0.15	-	-
HCM Control Delay (s)	7.7	-	10.7	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.5	-	-

Intersection

Int Delay, s/veh 5.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↘	↗	↗	↘	↘	↘
Traffic Vol, veh/h	128	21	43	76	20	129
Future Vol, veh/h	128	21	43	76	20	129
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	150	-	-	205	205	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	75	75	75	75	75	75
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	171	28	57	101	27	172

Major/Minor

	Major1	Major2	Minor2		
Conflicting Flow All	158	0	-	0	427 57
Stage 1	-	-	-	-	57 -
Stage 2	-	-	-	-	370 -
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	1422	-	-	-	584 1009
Stage 1	-	-	-	-	966 -
Stage 2	-	-	-	-	699 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1422	-	-	-	514 1009
Mov Cap-2 Maneuver	-	-	-	-	482 -
Stage 1	-	-	-	-	850 -
Stage 2	-	-	-	-	699 -

Approach

	EB	WB	SB
HCM Control Delay, s	6.8	0	9.8
HCM LOS			A

Minor Lane/Major Mvmt

	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1422	-	-	-	482	1009
HCM Lane V/C Ratio	0.12	-	-	-	0.055	0.17
HCM Control Delay (s)	7.9	-	-	-	12.9	9.3
HCM Lane LOS	A	-	-	-	B	A
HCM 95th %tile Q(veh)	0.4	-	-	-	0.2	0.6

2040 Background Traffic (HI, Ex N/O Walker, RIRO Pinehurst/SH 83)

121: SH 83 & Hodgen Rd Timings

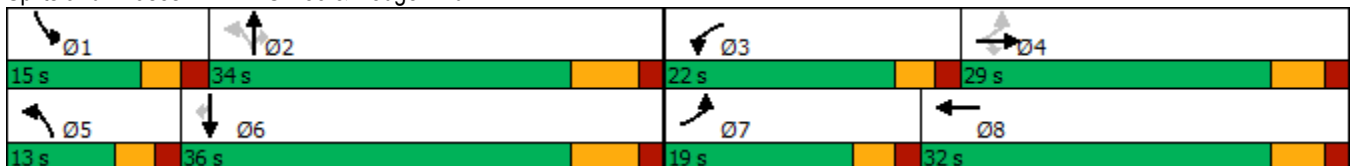
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	135	144	186	392	340	367	77	569	125	142	506	174
Future Volume (vph)	135	144	186	392	340	367	77	569	125	142	506	174
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 Effct Green (s)	28.4	17.0	17.0	15.0	21.5	91.4	36.8	27.5	27.5	8.8	31.5	31.5
Actuated g/C Ratio	0.31	0.19	0.19	0.16	0.24	1.00	0.40	0.30	0.30	0.10	0.34	0.34
v/c Ratio	0.45	0.44	0.43	0.73	0.82	0.24	0.20	0.56	0.23	0.45	0.44	0.28
Control Delay	21.9	37.5	8.0	45.6	49.6	0.4	16.8	30.8	5.4	45.1	26.9	5.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.9	37.5	8.0	45.6	49.6	0.4	16.8	30.8	5.4	45.1	26.9	5.4
LOS	C	D	A	D	D	A	B	C	A	D	C	A
Approach Delay		21.2			31.7			25.3			25.5	
Approach LOS		C			C			C			C	

Intersection Summary

Cycle Length: 100	
Actuated Cycle Length: 91.4	
Natural Cycle: 60	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.82	
Intersection Signal Delay: 27.0	Intersection LOS: C
Intersection Capacity Utilization 64.4%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 121: SH 83 & Hodgen Rd



2040 Background Traffic (HI, Ex N/O Walker, RIRO Pinehurst/SH 83)

1: SH 83 & SH 105/Walker Rd Timings

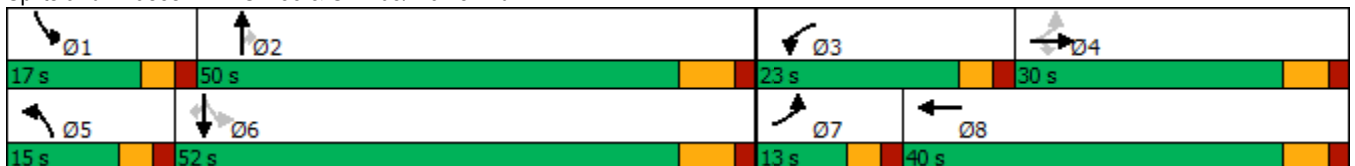
Midday

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	62	212	154	257	182	84	256	382	136	140	394	55
Future Volume (vph)	62	212	154	257	182	84	256	382	136	140	394	55
Turn Type	pm+pt	NA	Perm	Prot	NA	Free	Prot	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4			Free			2	6		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)	13.0	30.0	30.0	23.0	40.0		15.0	50.0	50.0	17.0	52.0	52.0
Total Split (%)	10.8%	25.0%	25.0%	19.2%	33.3%		12.5%	41.7%	41.7%	14.2%	43.3%	43.3%
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	None	None	None	None	None
Act Effct Green (s)	20.4	12.0	12.0	13.3	20.8	82.6	10.4	23.4	23.4	35.3	23.1	23.1
Actuated g/C Ratio	0.25	0.15	0.15	0.16	0.25	1.00	0.13	0.28	0.28	0.43	0.28	0.28
v/c Ratio	0.19	0.50	0.43	0.57	0.47	0.06	0.63	0.74	0.29	0.43	0.42	0.10
Control Delay	20.9	38.3	9.2	38.5	33.4	0.1	45.3	36.8	5.5	16.0	25.4	0.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.9	38.3	9.2	38.5	33.4	0.1	45.3	36.8	5.5	16.0	25.4	0.4
LOS	C	D	A	D	C	A	D	D	A	B	C	A
Approach Delay		26.3			30.6			33.3			20.6	
Approach LOS		C			C			C			C	

Intersection Summary

Cycle Length: 120	
Actuated Cycle Length: 82.6	
Natural Cycle: 60	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.74	
Intersection Signal Delay: 28.2	Intersection LOS: C
Intersection Capacity Utilization 60.8%	ICU Level of Service B
Analysis Period (min) 15	

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



Intersection						
Int Delay, s/veh	14.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↘	↑	↘	↗
Traffic Vol, veh/h	83	405	39	94	428	38
Future Vol, veh/h	83	405	39	94	428	38
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Yield	-	None	-	None
Storage Length	-	0	50	-	300	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	75	75	92	75	75
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	90	540	52	102	571	51
Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	0	90	0	296	90
Stage 1	-	-	-	-	90	-
Stage 2	-	-	-	-	206	-
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	-	-	1505	-	695	968
Stage 1	-	-	-	-	934	-
Stage 2	-	-	-	-	829	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1505	-	671	968
Mov Cap-2 Maneuver	-	-	-	-	671	-
Stage 1	-	-	-	-	901	-
Stage 2	-	-	-	-	829	-
Approach	EB	WB	NB			
HCM Control Delay, s	0	2.5	31.2			
HCM LOS			D			
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	671	968	-	-	1505	-
HCM Lane V/C Ratio	0.85	0.052	-	-	0.035	-
HCM Control Delay (s)	33.2	8.9	-	-	7.5	-
HCM Lane LOS	D	A	-	-	A	-
HCM 95th %tile Q(veh)	9.6	0.2	-	-	0.1	-

Intersection						
Int Delay, s/veh	3.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↘↗		↘	↑	↑	↗
Traffic Vol, veh/h	115	41	34	190	149	111
Future Vol, veh/h	115	41	34	190	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	95	95	95	90	90	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	121	43	36	211	166	117

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	449	166	283	0	-	0
Stage 1	166	-	-	-	-	-
Stage 2	283	-	-	-	-	-
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	568	878	1279	-	-	-
Stage 1	863	-	-	-	-	-
Stage 2	765	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	552	878	1279	-	-	-
Mov Cap-2 Maneuver	604	-	-	-	-	-
Stage 1	839	-	-	-	-	-
Stage 2	765	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.3	1.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1279	-	658	-	-
HCM Lane V/C Ratio	0.028	-	0.25	-	-
HCM Control Delay (s)	7.9	-	12.3	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0.1	-	1	-	-

Intersection						
Int Delay, s/veh	3.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	75	61	49	150	119	72
Future Vol, veh/h	75	61	49	150	119	72
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	85	85	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	82	66	53	176	140	78

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	422	140	218	0	-	0
Stage 1	140	-	-	-	-	-
Stage 2	282	-	-	-	-	-
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	588	908	1352	-	-	-
Stage 1	887	-	-	-	-	-
Stage 2	766	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	565	908	1352	-	-	-
Mov Cap-2 Maneuver	605	-	-	-	-	-
Stage 1	852	-	-	-	-	-
Stage 2	766	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.4	1.8	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1352	-	711	-	-
HCM Lane V/C Ratio	0.039	-	0.208	-	-
HCM Control Delay (s)	7.8	-	11.4	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.8	-	-

Intersection

Int Delay, s/veh 7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↘	↗	↗	↘	↘	↘
Traffic Vol, veh/h	156	39	25	43	38	143
Future Vol, veh/h	156	39	25	43	38	143
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	150	-	-	205	205	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	75	75	75	75	75	75
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	208	52	33	57	51	191

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	90	0	0
Stage 1	-	-	33
Stage 2	-	-	468
Critical Hdwy	4.12	-	6.42
Critical Hdwy Stg 1	-	-	5.42
Critical Hdwy Stg 2	-	-	5.42
Follow-up Hdwy	2.218	-	3.518
Pot Cap-1 Maneuver	1505	-	530
Stage 1	-	-	989
Stage 2	-	-	630
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1505	-	457
Mov Cap-2 Maneuver	-	-	382
Stage 1	-	-	853
Stage 2	-	-	630

Approach	EB	WB	SB
HCM Control Delay, s	6.2	0	10.6
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1505	-	-	-	382	1041
HCM Lane V/C Ratio	0.138	-	-	-	0.133	0.183
HCM Control Delay (s)	7.8	-	-	-	15.9	9.2
HCM Lane LOS	A	-	-	-	C	A
HCM 95th %tile Q(veh)	0.5	-	-	-	0.5	0.7

2040 Background Traffic (HI, Ex N/O Walker, RIRO Pinehurst/SH 83)

1: SH 83 & SH 105/Walker Rd Timings

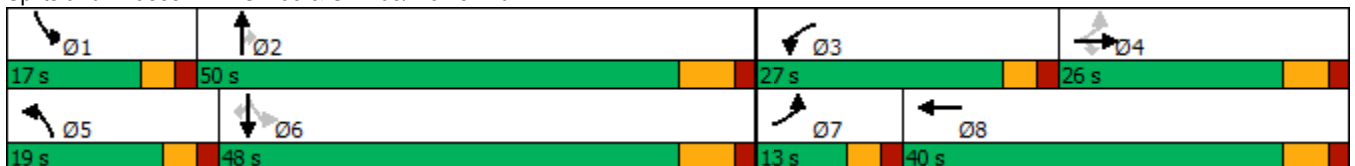
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	85	234	208	325	219	93	316	542	176	196	651	103
Future Volume (vph)	85	234	208	325	219	93	316	542	176	196	651	103
Turn Type	pm+pt	NA	Perm	Prot	NA	Free	Prot	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4			Free			2	6		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)	13.0	26.0	26.0	27.0	40.0		19.0	50.0	50.0	17.0	48.0	48.0
Total Split (%)	10.8%	21.7%	21.7%	22.5%	33.3%		15.8%	41.7%	41.7%	14.2%	40.0%	40.0%
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	None	None	None	None	None
Act Effct Green (s)	21.4	12.7	12.7	15.5	23.5	98.0	13.4	35.2	35.2	45.8	32.7	32.7
Actuated g/C Ratio	0.22	0.13	0.13	0.16	0.24	1.00	0.14	0.36	0.36	0.47	0.33	0.33
v/c Ratio	0.30	0.54	0.55	0.63	0.52	0.06	0.71	0.85	0.27	0.66	0.58	0.17
Control Delay	27.3	46.6	11.8	45.9	40.0	0.1	52.1	43.5	6.1	25.1	29.5	1.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.3	46.6	11.8	45.9	40.0	0.1	52.1	43.5	6.1	25.1	29.5	1.4
LOS	C	D	B	D	D	A	D	D	A	C	C	A
Approach Delay		29.8			37.2			39.8			25.6	
Approach LOS		C			D			D			C	

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 98
 Natural Cycle: 65
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.85
 Intersection Signal Delay: 33.3
 Intersection LOS: C
 Intersection Capacity Utilization 74.8%
 ICU Level of Service D
 Analysis Period (min) 15

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



Intersection						
Int Delay, s/veh	15.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↘	↑	↘	↗
Traffic Vol, veh/h	151	455	34	120	517	44
Future Vol, veh/h	151	455	34	120	517	44
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Yield	-	None	-	None
Storage Length	-	0	50	-	300	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	159	479	36	126	544	46
Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	0	159	0	357	159
Stage 1	-	-	-	-	159	-
Stage 2	-	-	-	-	198	-
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	-	-	1420	-	641	886
Stage 1	-	-	-	-	870	-
Stage 2	-	-	-	-	835	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1420	-	625	886
Mov Cap-2 Maneuver	-	-	-	-	625	-
Stage 1	-	-	-	-	848	-
Stage 2	-	-	-	-	835	-
Approach	EB	WB	NB			
HCM Control Delay, s	0	1.7	35.2			
HCM LOS			E			
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	625	886	-	-	1420	-
HCM Lane V/C Ratio	0.871	0.052	-	-	0.025	-
HCM Control Delay (s)	37.4	9.3	-	-	7.6	-
HCM Lane LOS	E	A	-	-	A	-
HCM 95th %tile Q(veh)	10.1	0.2	-	-	0.1	-

Intersection						
Int Delay, s/veh	3.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	RT		LT	TH	TH	RT
Traffic Vol, veh/h	134	42	34	233	162	123
Future Vol, veh/h	134	42	34	233	162	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	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	141	44	36	245	171	129

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	488	171	300	0	-	0
Stage 1	171	-	-	-	-	-
Stage 2	317	-	-	-	-	-
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	539	873	1261	-	-	-
Stage 1	859	-	-	-	-	-
Stage 2	738	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	523	873	1261	-	-	-
Mov Cap-2 Maneuver	581	-	-	-	-	-
Stage 1	834	-	-	-	-	-
Stage 2	738	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13.1	1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1261	-	631	-	-
HCM Lane V/C Ratio	0.028	-	0.294	-	-
HCM Control Delay (s)	7.9	-	13.1	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0.1	-	1.2	-	-

Intersection

Int Delay, s/veh 3.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↘↗		↘	↑	↑	↘
Traffic Vol, veh/h	88	66	51	179	124	80
Future Vol, veh/h	88	66	51	179	124	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	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	93	69	54	188	131	84

Major/Minor

	Minor2	Major1	Major2			
Conflicting Flow All	427	131	215	0	-	0
Stage 1	131	-	-	-	-	-
Stage 2	296	-	-	-	-	-
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	584	919	1355	-	-	-
Stage 1	895	-	-	-	-	-
Stage 2	755	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	561	919	1355	-	-	-
Mov Cap-2 Maneuver	599	-	-	-	-	-
Stage 1	859	-	-	-	-	-
Stage 2	755	-	-	-	-	-

Approach

	EB	NB	SB
HCM Control Delay, s	11.6	1.7	0
HCM LOS	B		

Minor Lane/Major Mvmt

	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1355	-	704	-	-
HCM Lane V/C Ratio	0.04	-	0.23	-	-
HCM Control Delay (s)	7.8	-	11.6	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.9	-	-

Intersection

Int Delay, s/veh 6.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↘	↑	↑	↗	↘	↗
Traffic Vol, veh/h	179	73	28	52	63	127
Future Vol, veh/h	179	73	28	52	63	127
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	150	-	-	205	205	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	188	77	29	55	66	134

Major/Minor

	Major1	Major2	Minor2		
Conflicting Flow All	84	0	-	0	482 29
Stage 1	-	-	-	-	29 -
Stage 2	-	-	-	-	453 -
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	1513	-	-	-	543 1046
Stage 1	-	-	-	-	994 -
Stage 2	-	-	-	-	640 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1513	-	-	-	476 1046
Mov Cap-2 Maneuver	-	-	-	-	411 -
Stage 1	-	-	-	-	871 -
Stage 2	-	-	-	-	640 -

Approach

	EB	WB	SB
HCM Control Delay, s	5.5	0	11.1
HCM LOS			B

Minor Lane/Major Mvmt

	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1513	-	-	-	411	1046
HCM Lane V/C Ratio	0.125	-	-	-	0.161	0.128
HCM Control Delay (s)	7.7	-	-	-	15.4	8.9
HCM Lane LOS	A	-	-	-	C	A
HCM 95th %tile Q(veh)	0.4	-	-	-	0.6	0.4

2040 Background Traffic (HI, Ex N/O Walker, RIRO Pinehurst/SH 83)

121: SH 83 & Hodgen Rd Timings

PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	164	339	116	124	303	274	189	610	398	358	661	191
Future Volume (vph)	164	339	116	124	303	274	189	610	398	358	661	191
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 Effct Green (s)	31.9	22.1	22.1	7.7	20.9	96.8	39.9	30.0	30.0	14.0	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	0.14	0.37	0.37
v/c Ratio	0.61	0.84	0.23	0.48	0.79	0.18	0.55	0.59	0.59	0.76	0.53	0.28
Control Delay	31.7	54.4	1.1	49.7	50.9	0.3	21.0	31.7	11.9	50.9	26.1	4.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.7	54.4	1.1	49.7	50.9	0.3	21.0	31.7	11.9	50.9	26.1	4.4
LOS	C	D	A	D	D	A	C	C	B	D	C	A
Approach Delay		38.4			30.9			23.4			30.0	
Approach LOS		D			C			C			C	

Intersection Summary

Cycle Length: 100
 Actuated Cycle Length: 96.8
 Natural Cycle: 60
 Control Type: Semi Act-Uncoord
 Maximum v/c Ratio: 0.84
 Intersection Signal Delay: 29.5
 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



Intersection	
Intersection Delay, s/veh	40.2
Intersection LOS	E

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑		↑	↑	↑
Traffic Vol, veh/h	48	368	48	221	339	18
Future Vol, veh/h	48	368	48	221	339	18
Peak Hour Factor	0.92	0.75	0.75	0.92	0.75	0.75
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	52	491	64	240	452	24
Number of Lanes	1	1	0	1	1	1

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	2	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	2	2
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	2	0	1
HCM Control Delay	36.6	21.7	56.2
HCM LOS	E	C	F

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1
Vol Left, %	100%	0%	0%	0%	18%
Vol Thru, %	0%	0%	100%	0%	82%
Vol Right, %	0%	100%	0%	100%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	339	18	48	368	269
LT Vol	339	0	0	0	48
Through Vol	0	0	48	0	221
RT Vol	0	18	0	368	0
Lane Flow Rate	452	24	52	491	304
Geometry Grp	7	7	7	7	4
Degree of Util (X)	0.956	0.043	0.104	0.878	0.62
Departure Headway (Hd)	7.613	6.387	7.16	6.442	7.334
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	475	560	500	564	493
Service Time	5.362	4.135	4.911	4.192	5.389
HCM Lane V/C Ratio	0.952	0.043	0.104	0.871	0.617
HCM Control Delay	58.7	9.4	10.7	39.3	21.7
HCM Lane LOS	F	A	B	E	C
HCM 95th-tile Q	11.8	0.1	0.3	9.9	4.2

Intersection	
Intersection Delay, s/veh	69.9
Intersection LOS	F

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑		↑	↑	↑
Traffic Vol, veh/h	83	405	39	94	428	38
Future Vol, veh/h	83	405	39	94	428	38
Peak Hour Factor	0.92	0.75	0.75	0.92	0.75	0.75
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	90	540	52	102	571	51
Number of Lanes	1	1	0	1	1	1

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	2	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	2	2
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	2	0	1
HCM Control Delay	41.9	14.6	112
HCM LOS	E	B	F

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1
Vol Left, %	100%	0%	0%	0%	29%
Vol Thru, %	0%	0%	100%	0%	71%
Vol Right, %	0%	100%	0%	100%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	428	38	83	405	133
LT Vol	428	0	0	0	39
Through Vol	0	0	83	0	94
RT Vol	0	38	0	405	0
Lane Flow Rate	571	51	90	540	154
Geometry Grp	7	7	7	7	4
Degree of Util (X)	1.169	0.087	0.172	0.923	0.316
Departure Headway (Hd)	7.377	6.157	7.301	6.584	7.944
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	496	586	494	556	455
Service Time	5.077	3.857	5.001	4.284	5.944
HCM Lane V/C Ratio	1.151	0.087	0.182	0.971	0.338
HCM Control Delay	121.1	9.4	11.5	47	14.6
HCM Lane LOS	F	A	B	E	B
HCM 95th-tile Q	20.7	0.3	0.6	11.4	1.3

Intersection	
Intersection Delay, s/veh	52.5
Intersection LOS	F

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑		↑	↑	↑
Traffic Vol, veh/h	151	455	34	120	517	44
Future Vol, veh/h	151	455	34	120	517	44
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	159	479	36	126	544	46
Number of Lanes	1	1	0	1	1	1

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	2	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	2	2
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	2	0	1
HCM Control Delay	26.3	14.3	91.4
HCM LOS	D	B	F

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1
Vol Left, %	100%	0%	0%	0%	22%
Vol Thru, %	0%	0%	100%	0%	78%
Vol Right, %	0%	100%	0%	100%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	517	44	151	455	154
LT Vol	517	0	0	0	34
Through Vol	0	0	151	0	120
RT Vol	0	44	0	455	0
Lane Flow Rate	544	46	159	479	162
Geometry Grp	7	7	7	7	4
Degree of Util (X)	1.105	0.078	0.299	0.806	0.324
Departure Headway (Hd)	7.311	6.092	7.176	6.46	7.694
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	501	591	504	565	470
Service Time	5.011	3.792	4.876	4.16	5.694
HCM Lane V/C Ratio	1.086	0.078	0.315	0.848	0.345
HCM Control Delay	98.4	9.3	12.9	30.7	14.3
HCM Lane LOS	F	A	B	D	B
HCM 95th-tile Q	17.9	0.3	1.2	7.9	1.4

2: N-S Collector St & Walker Rd Timings

AM Peak Hour



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑	↑	↑	↑	↑
Traffic Volume (vph)	48	368	48	221	339	18
Future Volume (vph)	48	368	48	221	339	18
Turn Type	NA	Perm	Perm	NA	Prot	Perm
Protected Phases	2			6	8	
Permitted Phases		2	6			8
Detector Phase	2	2	6	6	8	8
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	23.0	23.0	23.0	23.0	23.0	23.0
Total Split (s)	55.0	55.0	55.0	55.0	45.0	45.0
Total Split (%)	55.0%	55.0%	55.0%	55.0%	45.0%	45.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	Max	Max	Max	Max	None	None
Act Effct Green (s)	50.3	50.3	50.3	50.3	27.1	27.1
Actuated g/C Ratio	0.57	0.57	0.57	0.57	0.31	0.31
v/c Ratio	0.05	0.44	0.08	0.22	0.82	0.05
Control Delay	10.4	2.6	10.8	11.2	41.1	7.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.4	2.6	10.8	11.2	41.1	7.9
LOS	B	A	B	B	D	A
Approach Delay	3.3			11.1	39.4	
Approach LOS	A			B	D	

Intersection Summary

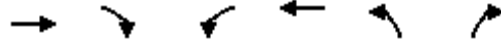
Cycle Length: 100	
Actuated Cycle Length: 87.5	
Natural Cycle: 50	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.82	
Intersection Signal Delay: 18.1	Intersection LOS: B
Intersection Capacity Utilization 38.7%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 2: N-S Collector St & Walker Rd



2: N-S Collector St & Walker Rd Timings

Midday



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑	↑	↑	↑	↑
Traffic Volume (vph)	83	405	39	94	428	38
Future Volume (vph)	83	405	39	94	428	38
Turn Type	NA	Perm	Perm	NA	Prot	Perm
Protected Phases	2			6	8	
Permitted Phases		2	6			8
Detector Phase	2	2	6	6	8	8
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	23.0	23.0	23.0	23.0	23.0	23.0
Total Split (s)	55.0	55.0	55.0	55.0	45.0	45.0
Total Split (%)	55.0%	55.0%	55.0%	55.0%	45.0%	45.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	Max	Max	Max	Max	None	None
Act Effct Green (s)	50.2	50.2	50.2	50.2	33.9	33.9
Actuated g/C Ratio	0.53	0.53	0.53	0.53	0.36	0.36
v/c Ratio	0.09	0.49	0.07	0.10	0.90	0.08
Control Delay	12.6	3.0	12.8	12.7	46.6	5.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.6	3.0	12.8	12.7	46.6	5.8
LOS	B	A	B	B	D	A
Approach Delay	4.3			12.7	43.3	
Approach LOS	A			B	D	

Intersection Summary

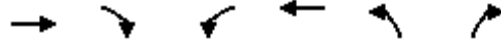
Cycle Length: 100	
Actuated Cycle Length: 94.1	
Natural Cycle: 55	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.90	
Intersection Signal Delay: 22.5	Intersection LOS: C
Intersection Capacity Utilization 40.9%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 2: N-S Collector St & Walker Rd



2: N-S Collector St & Walker Rd Timings

PM Peak Hour

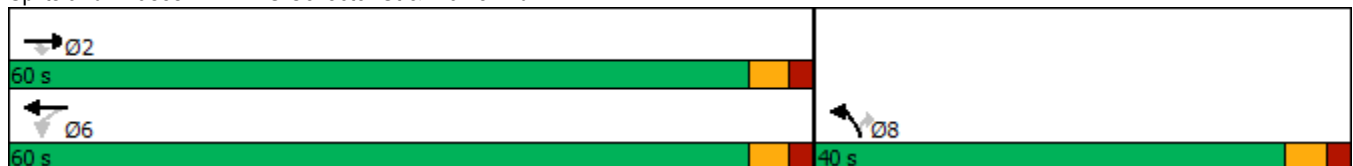


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑	↑	↑	↑	↑
Traffic Volume (vph)	151	455	34	120	517	44
Future Volume (vph)	151	455	34	120	517	44
Turn Type	NA	Perm	Perm	NA	Prot	Perm
Protected Phases	2			6	8	
Permitted Phases		2	6			8
Detector Phase	2	2	6	6	8	8
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	23.0	23.0	23.0	23.0	23.0	23.0
Total Split (s)	60.0	60.0	60.0	60.0	40.0	40.0
Total Split (%)	60.0%	60.0%	60.0%	60.0%	40.0%	40.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	Max	Max	Max	Max	None	None
Act Effct Green (s)	55.1	55.1	55.1	55.1	32.5	32.5
Actuated g/C Ratio	0.56	0.56	0.56	0.56	0.33	0.33
v/c Ratio	0.15	0.43	0.05	0.12	0.92	0.08
Control Delay	11.2	2.4	10.7	10.9	54.6	7.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.2	2.4	10.7	10.9	54.6	7.0
LOS	B	A	B	B	D	A
Approach Delay	4.6			10.9	50.9	
Approach LOS	A			B	D	

Intersection Summary

Cycle Length: 100	
Actuated Cycle Length: 97.6	
Natural Cycle: 50	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.92	
Intersection Signal Delay: 25.0	Intersection LOS: C
Intersection Capacity Utilization 53.3%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 2: N-S Collector St & Walker Rd



Intersection			
Intersection Delay, s/veh	7.1		
Intersection LOS	A		
Approach	EB	WB	NB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	543	304	476
Demand Flow Rate, veh/h	554	310	485
Vehicles Circulating, veh/h	65	461	53
Vehicles Exiting, veh/h	706	77	566
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	7.1	8.4	6.3
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	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	554	310	485
Cap Entry Lane, veh/h	1291	862	1307
Entry HV Adj Factor	0.980	0.981	0.981
Flow Entry, veh/h	543	304	476
Cap Entry, veh/h	1266	846	1283
V/C Ratio	0.429	0.360	0.371
Control Delay, s/veh	7.1	8.4	6.3
LOS	A	A	A
95th %tile Queue, veh	2	2	2

Intersection			
Intersection Delay, s/veh	4.1		
Intersection LOS	A		
Approach	EB	WB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	199	158	199
Demand Flow Rate, veh/h	203	161	203
Vehicles Circulating, veh/h	28	174	58
Vehicles Exiting, veh/h	233	57	277
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	4.0	4.4	4.1
Approach LOS	A	A	A
Lane	Left	Left	Left
Designated Moves	LT	TR	LR
Assumed Moves	LT	TR	LR
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	203	161	203
Cap Entry Lane, veh/h	1341	1155	1301
Entry HV Adj Factor	0.982	0.981	0.980
Flow Entry, veh/h	199	158	199
Cap Entry, veh/h	1317	1133	1275
V/C Ratio	0.151	0.139	0.156
Control Delay, s/veh	4.0	4.4	4.1
LOS	A	A	A
95th %tile Queue, veh	1	0	1

Intersection			
Intersection Delay, s/veh	8.1		
Intersection LOS	A		
Approach	EB	WB	NB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	630	154	622
Demand Flow Rate, veh/h	643	157	634
Vehicles Circulating, veh/h	53	582	92
Vehicles Exiting, veh/h	686	144	604
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	8.0	7.1	8.4
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	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	643	157	634
Cap Entry Lane, veh/h	1307	762	1256
Entry HV Adj Factor	0.980	0.981	0.981
Flow Entry, veh/h	630	154	622
Cap Entry, veh/h	1281	747	1232
V/C Ratio	0.492	0.206	0.505
Control Delay, s/veh	8.0	7.1	8.4
LOS	A	A	A
95th %tile Queue, veh	3	1	3

Intersection			
Intersection Delay, s/veh	4.4		
Intersection LOS	A		
Approach	EB	WB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	260	90	242
Demand Flow Rate, veh/h	265	92	247
Vehicles Circulating, veh/h	52	212	34
Vehicles Exiting, veh/h	229	105	270
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	4.5	4.0	4.3
Approach LOS	A	A	A
Lane	Left	Left	Left
Designated Moves	LT	TR	LR
Assumed Moves	LT	TR	LR
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	265	92	247
Cap Entry Lane, veh/h	1309	1112	1333
Entry HV Adj Factor	0.981	0.982	0.980
Flow Entry, veh/h	260	90	242
Cap Entry, veh/h	1284	1091	1306
V/C Ratio	0.203	0.083	0.185
Control Delay, s/veh	4.5	4.0	4.3
LOS	A	A	A
95th %tile Queue, veh	1	0	1

Intersection			
Intersection Delay, s/veh	8.2		
Intersection LOS	A		
Approach	EB	WB	NB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	638	162	590
Demand Flow Rate, veh/h	651	166	602
Vehicles Circulating, veh/h	37	555	162
Vehicles Exiting, veh/h	684	209	526
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	7.8	7.0	9.0
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	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	651	166	602
Cap Entry Lane, veh/h	1329	783	1170
Entry HV Adj Factor	0.980	0.979	0.980
Flow Entry, veh/h	638	162	590
Cap Entry, veh/h	1302	767	1146
V/C Ratio	0.490	0.212	0.515
Control Delay, s/veh	7.8	7.0	9.0
LOS	A	A	A
95th %tile Queue, veh	3	1	3

Intersection			
Intersection Delay, s/veh	4.3		
Intersection LOS	A		
Approach	EB	WB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	265	84	200
Demand Flow Rate, veh/h	271	86	204
Vehicles Circulating, veh/h	67	192	30
Vehicles Exiting, veh/h	167	146	248
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	4.7	3.9	4.0
Approach LOS	A	A	A
Lane	Left	Left	Left
Designated Moves	LT	TR	LR
Assumed Moves	LT	TR	LR
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	271	86	204
Cap Entry Lane, veh/h	1289	1134	1338
Entry HV Adj Factor	0.980	0.982	0.980
Flow Entry, veh/h	265	84	200
Cap Entry, veh/h	1262	1114	1312
V/C Ratio	0.210	0.076	0.152
Control Delay, s/veh	4.7	3.9	4.0
LOS	A	A	A
95th %tile Queue, veh	1	0	1

Levels of Service - 2040 Background Traffic

- With High Intensity Development of Adjacent Parcels
- With Redevelopment North of Walker Rd
- With Right-in/Right-out Access to SH 83



2040 Background Traffic (RIRO Pinehurst/SH 83)

1: SH 83 & SH 105/Walker Rd Timings

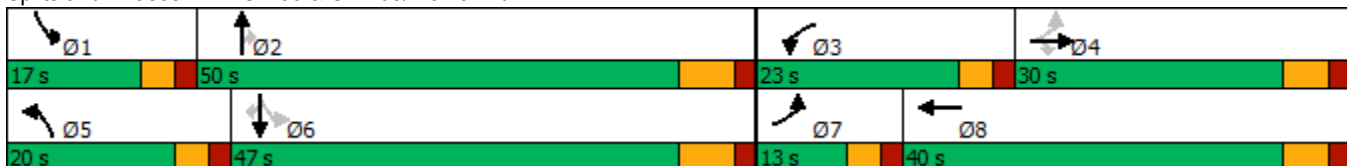
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	52	247	175	338	258	131	303	603	192	138	379	98
Future Volume (vph)	52	247	175	338	258	131	303	603	192	138	379	98
Turn Type	pm+pt	NA	Perm	Prot	NA	Free	Prot	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4			Free			2	6		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)	13.0	30.0	30.0	23.0	40.0		20.0	50.0	50.0	17.0	47.0	47.0
Total Split (%)	10.8%	25.0%	25.0%	19.2%	33.3%		16.7%	41.7%	41.7%	14.2%	39.2%	39.2%
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	None	None	None	None	None
Act Effct Green (s)	23.5	15.2	15.2	15.6	26.3	103.2	13.8	38.6	38.6	47.5	35.1	35.1
Actuated g/C Ratio	0.23	0.15	0.15	0.15	0.25	1.00	0.13	0.37	0.37	0.46	0.34	0.34
v/c Ratio	0.19	0.58	0.47	0.71	0.66	0.10	0.69	0.88	0.33	0.62	0.33	0.16
Control Delay	25.9	46.9	10.4	51.4	44.5	0.1	53.5	47.1	7.0	25.9	27.0	1.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.9	46.9	10.4	51.4	44.5	0.1	53.5	47.1	7.0	25.9	27.0	1.1
LOS	C	D	B	D	D	A	D	D	A	C	C	A
Approach Delay		32.4			39.1			40.8			22.7	
Approach LOS		C			D			D			C	

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 103.2
 Natural Cycle: 75
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.88
 Intersection Signal Delay: 35.2
 Intersection LOS: D
 Intersection Capacity Utilization 76.3%
 ICU Level of Service D
 Analysis Period (min) 15

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



Intersection				
Intersection Delay, s/veh	9.5			
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	722	312	517	153
Demand Flow Rate, veh/h	737	318	528	156
Vehicles Circulating, veh/h	73	631	187	809
Vehicles Exiting, veh/h	892	84	623	140
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	9.6	11.1	8.3	9.5
Approach LOS	A	B	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	737	318	528	156
Cap Entry Lane, veh/h	1281	725	1140	605
Entry HV Adj Factor	0.980	0.982	0.979	0.981
Flow Entry, veh/h	722	312	517	153
Cap Entry, veh/h	1255	712	1116	593
V/C Ratio	0.575	0.439	0.463	0.258
Control Delay, s/veh	9.6	11.1	8.3	9.5
LOS	A	B	A	A
95th %tile Queue, veh	4	2	3	1

121: SH 83 & Hodgen Rd Timings

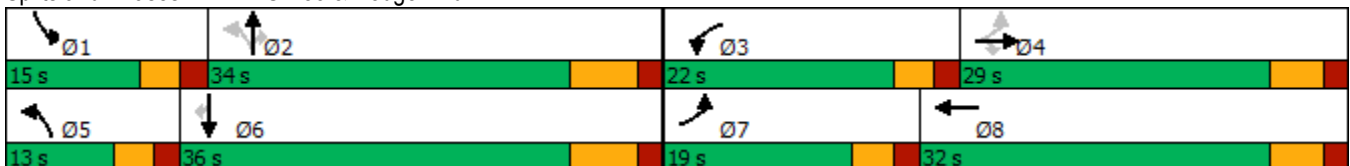
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	159	144	186	392	340	383	77	605	125	155	555	192
Future Volume (vph)	159	144	186	392	340	383	77	605	125	155	555	192
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 Effct Green (s)	33.2	19.8	19.8	15.8	23.2	95.2	36.5	27.1	27.1	9.4	31.6	31.6
Actuated g/C Ratio	0.35	0.21	0.21	0.17	0.24	1.00	0.38	0.28	0.28	0.10	0.33	0.33
v/c Ratio	0.66	0.50	0.51	0.79	0.86	0.28	0.29	0.70	0.26	0.58	0.60	0.35
Control Delay	27.8	38.4	11.4	50.1	54.7	0.4	19.1	35.7	6.3	49.5	31.2	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	27.8	38.4	11.4	50.1	54.7	0.4	19.1	35.7	6.3	49.5	31.2	5.3
LOS	C	D	B	D	D	A	B	D	A	D	C	A
Approach Delay		24.7			34.5			29.6			28.8	
Approach LOS		C			C			C			C	

Intersection Summary

Cycle Length: 100
 Actuated Cycle Length: 95.2
 Natural Cycle: 60
 Control Type: Semi Act-Uncoord
 Maximum v/c Ratio: 0.86
 Intersection Signal Delay: 30.1
 Intersection LOS: C
 Intersection Capacity Utilization 67.0%
 ICU Level of Service C
 Analysis Period (min) 15

Splits and Phases: 121: SH 83 & Hodgen Rd



2040 Background Traffic (RIRO Pinehurst/SH 83)

1: SH 83 & SH 105/Walker Rd Timings

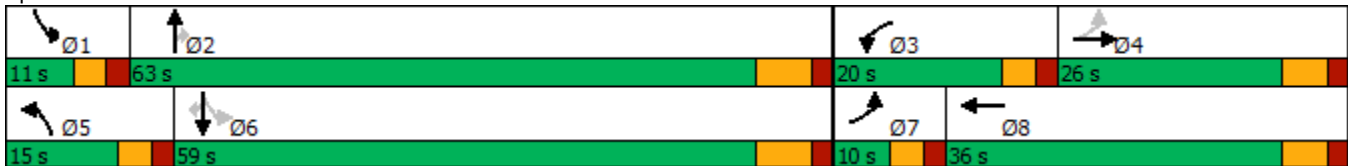
Midday

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	62	257	154	340	238	109	251	373	221	168	382	55
Future Volume (vph)	62	257	154	340	238	109	251	373	221	168	382	55
Turn Type	pm+pt	NA	Free	Prot	NA	Free	Prot	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		Free			Free			2	6		6
Detector Phase	7	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)	10.0	11.0		10.0	11.0		10.0	12.0	12.0	10.0	12.0	12.0
Total Split (s)	10.0	26.0		20.0	36.0		15.0	63.0	63.0	11.0	59.0	59.0
Total Split (%)	8.3%	21.7%		16.7%	30.0%		12.5%	52.5%	52.5%	9.2%	49.2%	49.2%
Yellow Time (s)	3.0	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
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)	5.0	6.0		5.0	6.0		5.0	7.0	7.0	5.0	7.0	7.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None		None	None		None	None	None	None	None	None
Act Effct Green (s)	17.5	11.4	76.8	13.3	22.1	76.8	10.2	22.5	22.5	26.5	18.4	18.4
Actuated g/C Ratio	0.23	0.15	1.00	0.17	0.29	1.00	0.13	0.29	0.29	0.35	0.24	0.24
v/c Ratio	0.22	0.52	0.10	0.60	0.47	0.07	0.58	0.72	0.37	0.52	0.47	0.12
Control Delay	19.0	35.3	0.1	35.5	28.3	0.1	39.6	32.8	4.9	20.0	26.9	0.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.0	35.3	0.1	35.5	28.3	0.1	39.6	32.8	4.9	20.0	26.9	0.5
LOS	B	D	A	D	C	A	D	C	A	B	C	A
Approach Delay		21.7			27.4			27.5			22.6	
Approach LOS		C			C			C			C	

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 76.8
 Natural Cycle: 60
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.72
 Intersection Signal Delay: 25.3
 Intersection LOS: C
 Intersection Capacity Utilization 64.9%
 ICU Level of Service C
 Analysis Period (min) 15

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



Intersection				
Intersection Delay, s/veh	8.5			
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	680	144	505	174
Demand Flow Rate, veh/h	694	147	515	177
Vehicles Circulating, veh/h	51	643	257	611
Vehicles Exiting, veh/h	737	129	488	179
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	8.6	7.5	9.1	7.7
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	694	147	515	177
Cap Entry Lane, veh/h	1310	716	1062	740
Entry HV Adj Factor	0.980	0.980	0.981	0.983
Flow Entry, veh/h	680	144	505	174
Cap Entry, veh/h	1284	702	1041	727
V/C Ratio	0.530	0.205	0.485	0.239
Control Delay, s/veh	8.6	7.5	9.1	7.7
LOS	A	A	A	A
95th %tile Queue, veh	3	1	3	1

2040 Background Traffic (RIRO Pinehurst/SH 83)

1: SH 83 & SH 105/Walker Rd Timings

PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	85	302	208	430	290	122	316	535	282	234	634	103
Future Volume (vph)	85	302	208	430	290	122	316	535	282	234	634	103
Turn Type	pm+pt	NA	Perm	Prot	NA	Free	Prot	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4			Free			2	6		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)	13.0	26.0	26.0	27.0	40.0		21.0	50.0	50.0	17.0	46.0	46.0
Total Split (%)	10.8%	21.7%	21.7%	22.5%	33.3%		17.5%	41.7%	41.7%	14.2%	38.3%	38.3%
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	None	None	None	None	None
Act Effct Green (s)	23.9	15.2	15.2	18.6	29.0	105.7	14.4	36.4	36.4	48.0	34.0	34.0
Actuated g/C Ratio	0.23	0.14	0.14	0.18	0.27	1.00	0.14	0.34	0.34	0.45	0.32	0.32
v/c Ratio	0.30	0.63	0.53	0.75	0.60	0.08	0.71	0.88	0.41	0.83	0.59	0.17
Control Delay	27.1	49.9	10.9	51.2	41.1	0.1	54.7	49.4	6.3	45.1	33.2	1.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.1	49.9	10.9	51.2	41.1	0.1	54.7	49.4	6.3	45.1	33.2	1.5
LOS	C	D	B	D	D	A	D	D	A	D	C	A
Approach Delay		33.0			40.3			40.1			32.7	
Approach LOS		C			D			D			C	

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 105.7
 Natural Cycle: 75
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.88
 Intersection Signal Delay: 36.9
 Intersection LOS: D
 Intersection Capacity Utilization 80.9%
 ICU Level of Service D
 Analysis Period (min) 15

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



Intersection				
Intersection Delay, s/veh	12.6			
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	861	167	644	180
Demand Flow Rate, veh/h	878	170	657	183
Vehicles Circulating, veh/h	46	813	370	768
Vehicles Exiting, veh/h	905	214	554	215
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	11.5	9.9	15.7	9.6
Approach LOS	B	A	C	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	878	170	657	183
Cap Entry Lane, veh/h	1317	602	946	630
Entry HV Adj Factor	0.981	0.980	0.980	0.983
Flow Entry, veh/h	861	167	644	180
Cap Entry, veh/h	1291	590	927	620
V/C Ratio	0.667	0.282	0.694	0.290
Control Delay, s/veh	11.5	9.9	15.7	9.6
LOS	B	A	C	A
95th %tile Queue, veh	5	1	6	1

121: SH 83 & Hodgen Rd Timings

PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	195	339	116	124	303	294	189	673	398	375	709	211
Future Volume (vph)	195	339	116	124	303	294	189	673	398	375	709	211
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 Effct Green (s)	32.3	22.2	22.2	7.7	20.9	97.0	39.7	29.8	29.8	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	0.72	0.84	0.23	0.48	0.80	0.20	0.58	0.65	0.60	0.78	0.57	0.31
Control Delay	38.5	53.7	1.1	49.8	51.2	0.3	22.4	33.3	12.1	52.3	26.8	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	38.5	53.7	1.1	49.8	51.2	0.3	22.4	33.3	12.1	52.3	26.8	4.3
LOS	D	D	A	D	D	A	C	C	B	D	C	A
Approach Delay		39.8			30.2			25.0			30.5	
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: 30.2
 Intersection LOS: C
 Intersection Capacity Utilization 76.0%
 ICU Level of Service D
 Analysis Period (min) 15

Splits and Phases: 121: SH 83 & Hodgen Rd



Levels of Service - 2040 Total Traffic

- With High Intensity Development of Adjacent Parcels
- With Redevelopment North of Walker Rd
- With No Access to SH 83



2040 Total Traffic (No Access Pinehurst/SH 83)

1: SH 83 & SH 105/Walker Rd Timings

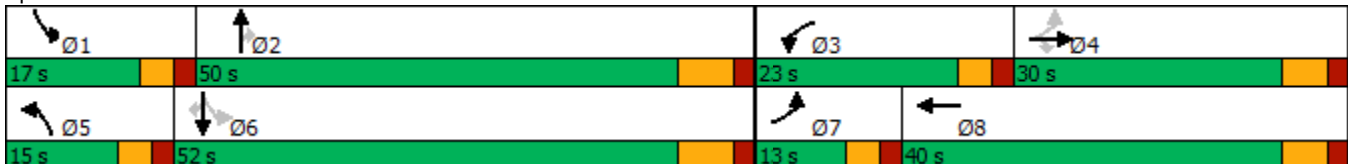
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	52	466	175	457	472	213	213	560	547	208	379	98
Future Volume (vph)	52	466	175	457	472	213	213	560	547	208	379	98
Turn Type	pm+pt	NA	Perm	Prot	NA	Free	Prot	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4			Free			2	6		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)	13.0	30.0	30.0	23.0	40.0		15.0	50.0	50.0	17.0	52.0	52.0
Total Split (%)	10.8%	25.0%	25.0%	19.2%	33.3%		12.5%	41.7%	41.7%	14.2%	43.3%	43.3%
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	None	None	None	None	None
Act Effct Green (s)	30.4	22.2	22.2	18.1	35.6	114.8	9.9	39.3	39.3	55.5	41.5	41.5
Actuated g/C Ratio	0.26	0.19	0.19	0.16	0.31	1.00	0.09	0.34	0.34	0.48	0.36	0.36
v/c Ratio	0.31	0.83	0.41	0.92	1.00	0.16	0.76	0.90	0.87	0.95	0.31	0.15
Control Delay	28.3	56.4	8.7	72.1	78.9	0.2	69.6	54.3	30.9	70.5	27.2	0.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	28.3	56.4	8.7	72.1	78.9	0.2	69.6	54.3	30.9	70.5	27.2	0.9
LOS	C	E	A	E	E	A	E	D	C	E	C	A
Approach Delay		43.6			61.0			46.0			38.2	
Approach LOS		D			E			D			D	

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 114.8
 Natural Cycle: 90
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 1.00
 Intersection Signal Delay: 48.8
 Intersection LOS: D
 Intersection Capacity Utilization 89.2%
 ICU Level of Service E
 Analysis Period (min) 15

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



Intersection				
Intersection Delay, s/veh	96.5			
Intersection LOS	F			
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	1582	337	1097	153
Demand Flow Rate, veh/h	1614	344	1119	156
Vehicles Circulating, veh/h	99	1197	187	1401
Vehicles Exiting, veh/h	1458	109	1526	140
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	152.1	46.5	41.9	23.0
Approach LOS	F	E	E	C
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	1614	344	1119	156
Cap Entry Lane, veh/h	1247	407	1140	331
Entry HV Adj Factor	0.980	0.980	0.980	0.981
Flow Entry, veh/h	1582	337	1097	153
Cap Entry, veh/h	1223	399	1118	324
V/C Ratio	1.294	0.845	0.981	0.472
Control Delay, s/veh	152.1	46.5	41.9	23.0
LOS	F	E	E	C
95th %tile Queue, veh	56	8	19	2

3: N-S Collector St & Future Tract B Access/North School Access HCM 6th TWSC AM Peak Hour

Intersection												
Int Delay, s/veh	37.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↑	↑	↕	↕	↑
Traffic Vol, veh/h	106	0	1	0	0	0	2	538	8	167	581	140
Future Vol, veh/h	106	0	1	0	0	0	2	538	8	167	581	140
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	95	95	95	75	75	75	95	90	75	75	90	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	112	0	1	0	0	0	2	598	11	223	646	147

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1700	1705	646	1768	1841	598	793	0	0	609	0	0
Stage 1	1092	1092	-	602	602	-	-	-	-	-	-	-
Stage 2	608	613	-	1166	1239	-	-	-	-	-	-	-
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	~ 73	91	472	65	75	502	828	-	-	970	-	-
Stage 1	260	291	-	486	489	-	-	-	-	-	-	-
Stage 2	483	483	-	236	247	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	~ 60	70	472	53	58	502	828	-	-	970	-	-
Mov Cap-2 Maneuver	~ 60	70	-	53	58	-	-	-	-	-	-	-
Stage 1	259	224	-	485	488	-	-	-	-	-	-	-
Stage 2	482	482	-	181	190	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	561.8	0	0	2.2
HCM LOS	F	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	828	-	-	60	-	970	-	-
HCM Lane V/C Ratio	0.003	-	-	1.877	-	0.23	-	-
HCM Control Delay (s)	9.4	-	-	561.8	0	9.8	-	-
HCM Lane LOS	A	-	-	F	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	10.6	-	0.9	-	-

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

4: N-S Collector St & YMCA Access HCM 6th TWSC

Intersection												
Int Delay, s/veh	4											
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	3	446	3	63	428	91
Future Vol, veh/h	69	0	2	1	0	33	3	446	3	63	428	91
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	92	92	92	92	85	92	92	85	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	75	0	2	1	0	36	3	525	3	68	504	99

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1191	1174	504	1224	1272	527	603	0	0	528	0	0
Stage 1	640	640	-	533	533	-	-	-	-	-	-	-
Stage 2	551	534	-	691	739	-	-	-	-	-	-	-
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	164	192	568	156	168	551	975	-	-	1039	-	-
Stage 1	464	470	-	531	525	-	-	-	-	-	-	-
Stage 2	519	524	-	435	424	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	145	179	568	147	157	551	975	-	-	1039	-	-
Mov Cap-2 Maneuver	145	179	-	147	157	-	-	-	-	-	-	-
Stage 1	463	439	-	529	523	-	-	-	-	-	-	-
Stage 2	484	522	-	405	396	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	53.2		12.6		0.1		0.9	
HCM LOS	F		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	975	-	-	148	510	1039	-	-
HCM Lane V/C Ratio	0.003	-	-	0.521	0.072	0.066	-	-
HCM Control Delay (s)	8.7	-	-	53.2	12.6	8.7	-	-
HCM Lane LOS	A	-	-	F	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	2.5	0.2	0.2	-	-

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

Intersection						
Int Delay, s/veh	9.2					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	296	13	37	15	10	301
Future Vol, veh/h	296	13	37	15	10	301
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	75	75
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	395	14	40	20	13	401

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	60	0	-	0	854 50
Stage 1	-	-	-	-	50 -
Stage 2	-	-	-	-	804 -
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	1544	-	-	-	329 1018
Stage 1	-	-	-	-	972 -
Stage 2	-	-	-	-	440 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1544	-	-	-	245 1018
Mov Cap-2 Maneuver	-	-	-	-	245 -
Stage 1	-	-	-	-	723 -
Stage 2	-	-	-	-	440 -

Approach	EB	WB	SB
HCM Control Delay, s	7.8	0	12
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1544	-	-	-	924
HCM Lane V/C Ratio	0.256	-	-	-	0.449
HCM Control Delay (s)	8.1	-	-	-	12
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	1	-	-	-	2.4

121: SH 83 & Hodgen Rd Timings

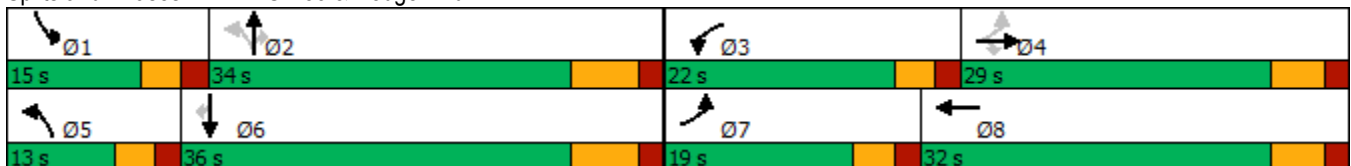
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	219	144	186	392	340	404	77	677	126	159	633	229
Future Volume (vph)	219	144	186	392	340	404	77	677	126	159	633	229
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 Effct Green (s)	33.0	19.3	19.3	15.2	21.8	94.0	36.5	27.2	27.2	9.1	31.5	31.5
Actuated g/C Ratio	0.35	0.21	0.21	0.16	0.23	1.00	0.39	0.29	0.29	0.10	0.34	0.34
v/c Ratio	0.66	0.40	0.41	0.75	0.83	0.27	0.25	0.70	0.24	0.50	0.56	0.35
Control Delay	27.7	35.9	7.5	47.2	51.6	0.4	18.2	35.1	5.6	47.1	30.0	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	27.7	35.9	7.5	47.2	51.6	0.4	18.2	35.1	5.6	47.1	30.0	5.2
LOS	C	D	A	D	D	A	B	D	A	D	C	A
Approach Delay		23.0			31.9			29.4			27.1	
Approach LOS		C			C			C			C	

Intersection Summary

Cycle Length: 100
 Actuated Cycle Length: 94
 Natural Cycle: 60
 Control Type: Semi Act-Uncoord
 Maximum v/c Ratio: 0.83
 Intersection Signal Delay: 28.6
 Intersection Capacity Utilization 72.4%
 Analysis Period (min) 15
 Intersection LOS: C
 ICU Level of Service C

Splits and Phases: 121: SH 83 & Hodgen Rd



1: SH 83 & SH 105/Walker Rd Timings

Midday

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	62	353	154	453	470	192	138	328	482	199	382	55
Future Volume (vph)	62	353	154	453	470	192	138	328	482	199	382	55
Turn Type	pm+pt	NA	Perm	Prot	NA	Free	Prot	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4			Free			2	6		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)	13.0	30.0	30.0	23.0	40.0		15.0	52.0	52.0	15.0	52.0	52.0
Total Split (%)	10.8%	25.0%	25.0%	19.2%	33.3%		12.5%	43.3%	43.3%	12.5%	43.3%	43.3%
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	None	None	None	None	None
Act Effct Green (s)	28.1	19.7	19.7	17.4	32.7	94.6	9.0	24.1	24.1	36.8	24.9	24.9
Actuated g/C Ratio	0.30	0.21	0.21	0.18	0.35	1.00	0.10	0.25	0.25	0.39	0.26	0.26
v/c Ratio	0.24	0.50	0.35	0.76	0.77	0.13	0.45	0.73	0.71	0.60	0.43	0.11
Control Delay	19.5	36.5	6.9	47.5	39.6	0.2	48.2	42.5	12.8	26.0	30.9	0.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.5	36.5	6.9	47.5	39.6	0.2	48.2	42.5	12.8	26.0	30.9	0.4
LOS	B	D	A	D	D	A	D	D	B	C	C	A
Approach Delay		26.7			36.0			28.2			26.7	
Approach LOS		C			D			C			C	

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 94.6
 Natural Cycle: 70
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.77
 Intersection Signal Delay: 30.3
 Intersection LOS: C
 Intersection Capacity Utilization 76.4%
 ICU Level of Service D
 Analysis Period (min) 15

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



2: N-S Collector St & Walker Rd HCM 6th Roundabout

Midday

Intersection				
Intersection Delay, s/veh	25.6			
Intersection LOS	D			
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	1088	154	975	174
Demand Flow Rate, veh/h	1110	157	994	177
Vehicles Circulating, veh/h	61	1103	257	1081
Vehicles Exiting, veh/h	1197	148	914	179
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	21.0	14.3	34.6	14.9
Approach LOS	C	B	D	B
Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	1110	157	994	177
Cap Entry Lane, veh/h	1297	448	1062	458
Entry HV Adj Factor	0.981	0.982	0.981	0.983
Flow Entry, veh/h	1088	154	975	174
Cap Entry, veh/h	1271	440	1041	450
V/C Ratio	0.856	0.350	0.936	0.386
Control Delay, s/veh	21.0	14.3	34.6	14.9
LOS	C	B	D	B
95th %tile Queue, veh	12	2	15	2

Intersection												
Int Delay, s/veh	12.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↗	↖	↗	↖	↖	↗
Traffic Vol, veh/h	145	0	2	5	0	143	2	395	0	0	468	144
Future Vol, veh/h	145	0	2	5	0	143	2	395	0	0	468	144
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	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	153	0	2	5	0	151	2	416	0	0	493	152

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	989	913	493	990	1065	416	645	0	0	416	0	0
Stage 1	493	493	-	420	420	-	-	-	-	-	-	-
Stage 2	496	420	-	570	645	-	-	-	-	-	-	-
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	226	273	576	225	223	637	940	-	-	1143	-	-
Stage 1	558	547	-	611	589	-	-	-	-	-	-	-
Stage 2	556	589	-	506	467	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	172	272	576	224	223	637	940	-	-	1143	-	-
Mov Cap-2 Maneuver	172	272	-	224	223	-	-	-	-	-	-	-
Stage 1	557	547	-	610	588	-	-	-	-	-	-	-
Stage 2	424	588	-	504	467	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	95.1		13.1		0		0	
HCM LOS	F		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	940	-	-	174	600	1143	-	-
HCM Lane V/C Ratio	0.002	-	-	0.889	0.26	-	-	-
HCM Control Delay (s)	8.8	-	-	95.1	13.1	0	-	-
HCM Lane LOS	A	-	-	F	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	6.5	1	0	-	-

4: N-S Collector St & YMCA Access HCM 6th TWSC

Midday

Intersection												
Int Delay, s/veh	2.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	↕
Traffic Vol, veh/h	94	0	3	0	0	14	3	290	1	14	367	93
Future Vol, veh/h	94	0	3	0	0	14	3	290	1	14	367	93
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	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	99	0	3	0	0	15	3	305	1	15	386	98

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	735	728	386	779	826	306	484	0	0	306	0	0
Stage 1	416	416	-	312	312	-	-	-	-	-	-	-
Stage 2	319	312	-	467	514	-	-	-	-	-	-	-
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	335	350	662	313	307	734	1079	-	-	1255	-	-
Stage 1	614	592	-	699	658	-	-	-	-	-	-	-
Stage 2	693	658	-	576	535	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	325	345	662	308	302	734	1079	-	-	1255	-	-
Mov Cap-2 Maneuver	325	345	-	308	302	-	-	-	-	-	-	-
Stage 1	612	585	-	697	656	-	-	-	-	-	-	-
Stage 2	677	656	-	566	529	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	20.7		10		0.1		0.2	
HCM LOS	C		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1079	-	-	330	734	1255	-	-
HCM Lane V/C Ratio	0.003	-	-	0.309	0.02	0.012	-	-
HCM Control Delay (s)	8.3	-	-	20.7	10	7.9	-	-
HCM Lane LOS	A	-	-	C	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	1.3	0.1	0	-	-

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

Midday

Intersection						
Int Delay, s/veh	7.1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	204	29	18	10	5	143
Future Vol, veh/h	204	29	18	10	5	143
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	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	215	31	19	11	5	151

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	30	0	-	0	486 25
Stage 1	-	-	-	-	25 -
Stage 2	-	-	-	-	461 -
Critical Hdwy	4.12	-	-	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	2.218	-	-	-	3.518 3.318
Pot Cap-1 Maneuver	1583	-	-	-	540 1051
Stage 1	-	-	-	-	998 -
Stage 2	-	-	-	-	635 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1583	-	-	-	467 1051
Mov Cap-2 Maneuver	-	-	-	-	467 -
Stage 1	-	-	-	-	862 -
Stage 2	-	-	-	-	635 -

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

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1583	-	-	-	1008
HCM Lane V/C Ratio	0.136	-	-	-	0.155
HCM Control Delay (s)	7.6	-	-	-	9.2
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0.5	-	-	-	0.5

1: SH 83 & SH 105/Walker Rd Timings

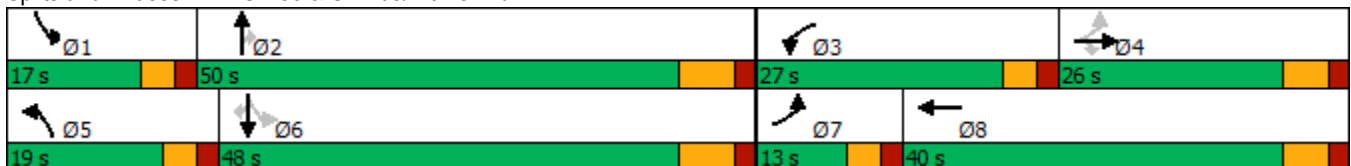
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	85	331	208	463	470	185	177	485	533	242	634	103
Future Volume (vph)	85	331	208	463	470	185	177	485	533	242	634	103
Turn Type	pm+pt	NA	Perm	Prot	NA	Free	Prot	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4			Free			2	6		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)	13.0	26.0	26.0	27.0	40.0		19.0	50.0	50.0	17.0	48.0	48.0
Total Split (%)	10.8%	21.7%	21.7%	22.5%	33.3%		15.8%	41.7%	41.7%	14.2%	40.0%	40.0%
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	None	None	None	None	None
Act Effct Green (s)	27.4	18.7	18.7	19.6	33.6	109.4	11.2	35.7	35.7	50.4	36.4	36.4
Actuated g/C Ratio	0.25	0.17	0.17	0.18	0.31	1.00	0.10	0.33	0.33	0.46	0.33	0.33
v/c Ratio	0.43	0.58	0.49	0.79	0.87	0.12	0.53	0.84	0.69	0.84	0.57	0.17
Control Delay	30.0	47.2	9.8	54.6	54.9	0.2	54.4	48.3	12.0	43.8	32.8	1.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.0	47.2	9.8	54.6	54.9	0.2	54.4	48.3	12.0	43.8	32.8	1.4
LOS	C	D	A	D	D	A	D	D	B	D	C	A
Approach Delay		32.4			45.7			33.0			32.2	
Approach LOS		C			D			C			C	

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 109.4
 Natural Cycle: 90
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.87
 Intersection Signal Delay: 36.3
 Intersection LOS: D
 Intersection Capacity Utilization 87.5%
 ICU Level of Service E
 Analysis Period (min) 15

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



Intersection				
Intersection Delay, s/veh	35.2			
Intersection LOS	E			
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	1165	169	941	180
Demand Flow Rate, veh/h	1188	172	960	183
Vehicles Circulating, veh/h	48	1108	370	1065
Vehicles Exiting, veh/h	1200	222	866	215
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	25.8	15.3	54.4	14.8
Approach LOS	D	C	F	B
Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	1188	172	960	183
Cap Entry Lane, veh/h	1314	446	946	466
Entry HV Adj Factor	0.981	0.980	0.980	0.983
Flow Entry, veh/h	1165	169	941	180
Cap Entry, veh/h	1288	437	927	458
V/C Ratio	0.904	0.386	1.015	0.393
Control Delay, s/veh	25.8	15.3	54.4	14.8
LOS	D	C	F	B
95th %tile Queue, veh	15	2	20	2

3: N-S Collector St & Future Tract B Access/North School Access HCM 6th TWSC PM Peak Hour

Intersection												
Int Delay, s/veh	12.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↗	↖	↗	↖	↖	↗
Traffic Vol, veh/h	166	0	2	2	0	47	2	404	2	35	355	157
Future Vol, veh/h	166	0	2	2	0	47	2	404	2	35	355	157
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	95	95	95	90	75	75	95	90	75	75	90	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	175	0	2	2	0	63	2	449	3	47	394	165

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	974	944	394	1025	1106	449	559	0	0	452	0	0
Stage 1	488	488	-	453	453	-	-	-	-	-	-	-
Stage 2	486	456	-	572	653	-	-	-	-	-	-	-
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	231	262	655	213	210	610	1012	-	-	1109	-	-
Stage 1	561	550	-	586	570	-	-	-	-	-	-	-
Stage 2	563	568	-	505	464	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	200	250	655	205	201	610	1012	-	-	1109	-	-
Mov Cap-2 Maneuver	200	250	-	205	201	-	-	-	-	-	-	-
Stage 1	560	527	-	585	569	-	-	-	-	-	-	-
Stage 2	504	567	-	482	445	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	83.2		12.1		0		0.6	
HCM LOS	F		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1012	-	-	202	571	1109	-	-
HCM Lane V/C Ratio	0.002	-	-	0.875	0.114	0.042	-	-
HCM Control Delay (s)	8.6	-	-	83.2	12.1	8.4	-	-
HCM Lane LOS	A	-	-	F	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	6.7	0.4	0.1	-	-

4: N-S Collector St & YMCA Access HCM 6th TWSC

Intersection												
Int Delay, s/veh	4.1											
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	3	247	2	46	212	101
Future Vol, veh/h	107	0	3	2	0	53	3	247	2	46	212	101
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	92	92	92	92	85	92	92	85	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	116	0	3	2	0	58	3	291	2	50	249	110

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	676	648	249	704	757	292	359	0	0	293	0	0
Stage 1	349	349	-	298	298	-	-	-	-	-	-	-
Stage 2	327	299	-	406	459	-	-	-	-	-	-	-
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	367	389	790	352	337	747	1200	-	-	1269	-	-
Stage 1	667	633	-	711	667	-	-	-	-	-	-	-
Stage 2	686	666	-	622	566	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	328	373	790	339	323	747	1200	-	-	1269	-	-
Mov Cap-2 Maneuver	328	373	-	339	323	-	-	-	-	-	-	-
Stage 1	666	608	-	710	666	-	-	-	-	-	-	-
Stage 2	632	665	-	595	544	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	21.7		10.5		0.1		1	
HCM LOS	C		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1200	-	-	333	716	1269	-	-
HCM Lane V/C Ratio	0.003	-	-	0.359	0.083	0.039	-	-
HCM Control Delay (s)	8	-	-	21.7	10.5	8	-	-
HCM Lane LOS	A	-	-	C	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	1.6	0.3	0.1	-	-

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

Intersection

Int Delay, s/veh 5

Movement EBL EBT WBT WBR SBL SBR

Lane Configurations						
Traffic Vol, veh/h	34	37	23	2	2	46
Future Vol, veh/h	34	37	23	2	2	46
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	75	75
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	45	40	25	3	3	61

Major/Minor Major1 Major2 Minor2

Conflicting Flow All	28	0	-	0	157	27
Stage 1	-	-	-	-	27	-
Stage 2	-	-	-	-	130	-
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	1585	-	-	-	834	1048
Stage 1	-	-	-	-	996	-
Stage 2	-	-	-	-	896	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1585	-	-	-	811	1048
Mov Cap-2 Maneuver	-	-	-	-	811	-
Stage 1	-	-	-	-	968	-
Stage 2	-	-	-	-	896	-

Approach EB WB SB

HCM Control Delay, s	3.9	0	8.7
HCM LOS			A

Minor Lane/Major Mvmt EBL EBT WBT WBR SBLn1

Capacity (veh/h)	1585	-	-	-	1035
HCM Lane V/C Ratio	0.029	-	-	-	0.062
HCM Control Delay (s)	7.3	-	-	-	8.7
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0.1	-	-	-	0.2

121: SH 83 & Hodgen Rd Timings

PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	204	339	116	124	303	297	189	687	400	376	727	223
Future Volume (vph)	204	339	116	124	303	297	189	687	400	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 Effct 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	0.76	0.84	0.23	0.48	0.80	0.20	0.60	0.67	0.60	0.78	0.58	0.32
Control Delay	41.3	53.7	1.1	49.8	51.2	0.3	23.0	33.7	12.3	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	41.3	53.7	1.1	49.8	51.2	0.3	23.0	33.7	12.3	52.3	27.1	4.3
LOS	D	D	A	D	D	A	C	C	B	D	C	A
Approach Delay		40.6			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 Capacity Utilization 77.0%
 Analysis Period (min) 15

Intersection LOS: C
 ICU Level of Service D

Splits and Phases: 121: SH 83 & Hodgen Rd



Levels of Service - 2040 Total Traffic

- With High Intensity Development of Adjacent Parcels
- No Redevelopment North of Walker Rd
- With Right-in/Right-out Access to SH 83



2040 Total Traffic (HI, Ex N/O Walker, RIRO Pinehurst/SH 83)

1: SH 83 & SH 105/Walker Rd Timings

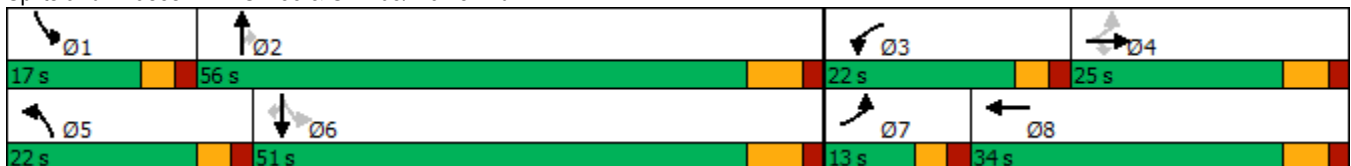
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	52	432	178	381	215	111	431	652	123	189	385	98
Future Volume (vph)	52	432	178	381	215	111	431	652	123	189	385	98
Turn Type	pm+pt	NA	Perm	Prot	NA	Free	Prot	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4			Free			2	6		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)	13.0	25.0	25.0	22.0	34.0		22.0	56.0	56.0	17.0	51.0	51.0
Total Split (%)	10.8%	20.8%	20.8%	18.3%	28.3%		18.3%	46.7%	46.7%	14.2%	42.5%	42.5%
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	None	None	None	None	None
Act Effct Green (s)	27.1	18.8	18.8	17.1	31.0	115.0	16.9	44.2	44.2	52.9	39.1	39.1
Actuated g/C Ratio	0.24	0.16	0.16	0.15	0.27	1.00	0.15	0.38	0.38	0.46	0.34	0.34
v/c Ratio	0.18	0.91	0.45	0.91	0.52	0.09	0.90	0.93	0.21	0.92	0.34	0.16
Control Delay	28.4	69.3	10.1	72.8	42.9	0.1	71.1	54.4	3.4	70.0	28.8	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	0.0
Total Delay	28.4	69.3	10.1	72.8	42.9	0.1	71.1	54.4	3.4	70.0	28.8	1.0
LOS	C	E	B	E	D	A	E	D	A	E	C	A
Approach Delay		52.0			52.3			54.4			37.8	
Approach LOS		D			D			D			D	

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 115
 Natural Cycle: 90
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.93
 Intersection Signal Delay: 50.0
 Intersection LOS: D
 Intersection Capacity Utilization 86.8%
 ICU Level of Service E
 Analysis Period (min) 15

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



Intersection

Int Delay, s/veh 51.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↘	↑	↘	↗
Traffic Vol, veh/h	48	696	70	221	486	39
Future Vol, veh/h	48	696	70	221	486	39
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Yield	-	None	-	None
Storage Length	-	0	50	-	300	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	75	75	92	75	75
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	52	928	93	240	648	52

Major/Minor

	Major1	Major2	Minor1		
Conflicting Flow All	0	0	52	0	478 52
Stage 1	-	-	-	-	52 -
Stage 2	-	-	-	-	426 -
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	-	-	1554	-	~ 546 1016
Stage 1	-	-	-	-	970 -
Stage 2	-	-	-	-	659 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1554	-	~ 513 1016
Mov Cap-2 Maneuver	-	-	-	-	~ 513 -
Stage 1	-	-	-	-	912 -
Stage 2	-	-	-	-	659 -

Approach

	EB	WB	NB
HCM Control Delay, s	0	2.1	146.7
HCM LOS			F

Minor Lane/Major Mvmt

	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	513	1016	-	-	1554	-
HCM Lane V/C Ratio	1.263	0.051	-	-	0.06	-
HCM Control Delay (s)	157.8	8.7	-	-	7.5	-
HCM Lane LOS	F	A	-	-	A	-
HCM 95th %tile Q(veh)	26.2	0.2	-	-	0.2	-

Notes

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

2040 Total Traffic (HI, Ex N/O Walker, RIRO Pinehurst/SH 83)

3: N-S Collector St & Future Tract B Access/North School Access HCM 6th TWSC AM Peak Hour

Intersection												
Int Delay, s/veh	3.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↔			↕↔		↕	↑	↕	↕	↑	↕
Traffic Vol, veh/h	49	0	33	0	0	0	36	336	64	111	371	107
Future Vol, veh/h	49	0	33	0	0	0	36	336	64	111	371	107
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	95	95	95	75	75	75	95	90	75	75	90	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	52	0	35	0	0	0	38	373	85	148	412	113

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1200	1242	412	1231	1270	373	525	0	0	458	0	0
Stage 1	708	708	-	449	449	-	-	-	-	-	-	-
Stage 2	492	534	-	782	821	-	-	-	-	-	-	-
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	162	175	640	154	168	673	1042	-	-	1103	-	-
Stage 1	426	438	-	589	572	-	-	-	-	-	-	-
Stage 2	558	524	-	387	389	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	141	146	640	127	140	673	1042	-	-	1103	-	-
Mov Cap-2 Maneuver	141	146	-	127	140	-	-	-	-	-	-	-
Stage 1	411	379	-	568	551	-	-	-	-	-	-	-
Stage 2	538	505	-	317	337	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	34.8	0	0.7	1.9
HCM LOS	D	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1042	-	-	205	-	1103	-
HCM Lane V/C Ratio	0.036	-	-	0.421	-	0.134	-
HCM Control Delay (s)	8.6	-	-	34.8	0	8.8	-
HCM Lane LOS	A	-	-	D	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	1.9	-	0.5	-

Intersection												
Int Delay, s/veh	3.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↔			↕↔		↕	↕		↕	↕	↕
Traffic Vol, veh/h	51	0	51	4	0	30	51	355	24	42	295	67
Future Vol, veh/h	51	0	51	4	0	30	51	355	24	42	295	67
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	92	92	92	92	85	92	92	85	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	55	0	55	4	0	33	55	418	26	46	347	73

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	997	993	347	1044	1053	431	420	0	0	444	0	0
Stage 1	439	439	-	541	541	-	-	-	-	-	-	-
Stage 2	558	554	-	503	512	-	-	-	-	-	-	-
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	223	245	696	207	226	624	1139	-	-	1116	-	-
Stage 1	597	578	-	525	521	-	-	-	-	-	-	-
Stage 2	514	514	-	551	536	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	197	224	696	178	206	624	1139	-	-	1116	-	-
Mov Cap-2 Maneuver	197	224	-	178	206	-	-	-	-	-	-	-
Stage 1	568	554	-	500	496	-	-	-	-	-	-	-
Stage 2	464	489	-	486	514	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	23.2		13.1		0.9		0.8	
HCM LOS	C		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1139	-	-	307	482	1116	-	-
HCM Lane V/C Ratio	0.049	-	-	0.361	0.077	0.041	-	-
HCM Control Delay (s)	8.3	-	-	23.2	13.1	8.4	-	-
HCM Lane LOS	A	-	-	C	B	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-	1.6	0.2	0.1	-	-

Intersection

Int Delay, s/veh	59.9					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↘	↗	↗	↘	↘	↘
Traffic Vol, veh/h	205	120	206	225	219	132
Future Vol, veh/h	205	120	206	225	219	132
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	150	-	-	205	205	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	75	75	75	75	75	75
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	273	160	275	300	292	176

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	575	0	-	0	981
Stage 1	-	-	-	-	275
Stage 2	-	-	-	-	706
Critical Hdwy	4.12	-	-	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	2.218	-	-	-	3.518
Pot Cap-1 Maneuver	998	-	-	-	~ 277
Stage 1	-	-	-	-	771
Stage 2	-	-	-	-	489
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	998	-	-	-	~ 201
Mov Cap-2 Maneuver	-	-	-	-	~ 197
Stage 1	-	-	-	-	560
Stage 2	-	-	-	-	489

Approach	EB	WB	SB
HCM Control Delay, s	6.3	0	183
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	998	-	-	-	197	764
HCM Lane V/C Ratio	0.274	-	-	-	1.482	0.23
HCM Control Delay (s)	10	-	-	-	286.6	11.1
HCM Lane LOS	A	-	-	-	F	B
HCM 95th %tile Q(veh)	1.1	-	-	-	18	0.9

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

Intersection

Int Delay, s/veh 9.3

Movement EBL EBT WBT WBR SBL SBR

Lane Configurations						
Traffic Vol, veh/h	296	13	40	15	10	301
Future Vol, veh/h	296	13	40	15	10	301
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	75	75
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	395	14	43	20	13	401

Major/Minor Major1 Major2 Minor2

Conflicting Flow All	63	0	-	0	857	53
Stage 1	-	-	-	-	53	-
Stage 2	-	-	-	-	804	-
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	1540	-	-	-	328	1014
Stage 1	-	-	-	-	970	-
Stage 2	-	-	-	-	440	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1540	-	-	-	244	1014
Mov Cap-2 Maneuver	-	-	-	-	244	-
Stage 1	-	-	-	-	722	-
Stage 2	-	-	-	-	440	-

Approach EB WB SB

HCM Control Delay, s	7.9	0	12.1
HCM LOS			B

Minor Lane/Major Mvmt EBL EBT WBT WBR SBLn1

Capacity (veh/h)	1540	-	-	-	921
HCM Lane V/C Ratio	0.256	-	-	-	0.45
HCM Control Delay (s)	8.1	-	-	-	12.1
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	1	-	-	-	2.4

2040 Total Traffic (HI, Ex N/O Walker, RIRO Pinehurst/SH 83)

121: SH 83 & Hodgen Rd Timings

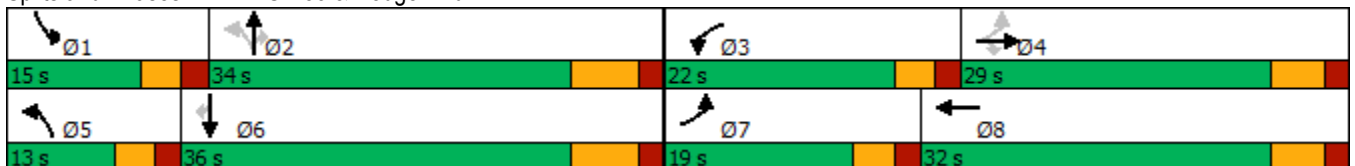
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	204	144	186	392	340	391	77	652	125	147	592	215
Future Volume (vph)	204	144	186	392	340	391	77	652	125	147	592	215
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 Effct Green (s)	32.5	19.0	19.0	15.1	21.7	93.6	36.6	27.3	27.3	8.9	31.5	31.5
Actuated g/C Ratio	0.35	0.20	0.20	0.16	0.23	1.00	0.39	0.29	0.29	0.10	0.34	0.34
v/c Ratio	0.62	0.40	0.41	0.74	0.83	0.26	0.23	0.66	0.23	0.47	0.52	0.33
Control Delay	26.2	36.1	7.6	47.0	51.6	0.4	17.9	34.0	5.5	46.5	29.2	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	26.2	36.1	7.6	47.0	51.6	0.4	17.9	34.0	5.5	46.5	29.2	5.3
LOS	C	D	A	D	D	A	B	C	A	D	C	A
Approach Delay		22.4			32.2			28.4			26.5	
Approach LOS		C			C			C			C	

Intersection Summary

Cycle Length: 100
 Actuated Cycle Length: 93.6
 Natural Cycle: 60
 Control Type: Semi Act-Uncoord
 Maximum v/c Ratio: 0.83
 Intersection Signal Delay: 28.2
 Intersection LOS: C
 Intersection Capacity Utilization 70.6%
 ICU Level of Service C
 Analysis Period (min) 15

Splits and Phases: 121: SH 83 & Hodgen Rd



2040 Total Traffic (HI, Ex N/O Walker, RIRO Pinehurst/SH 83)

1: SH 83 & SH 105/Walker Rd Timings

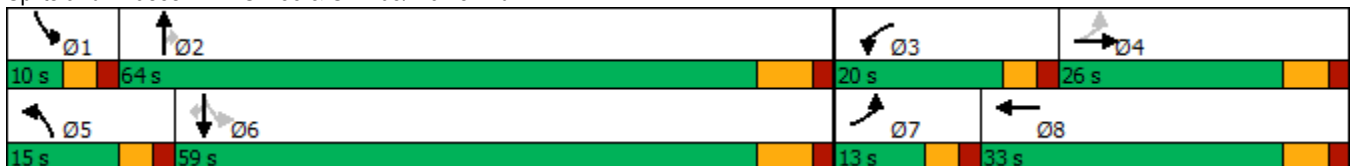
Midday

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	62	315	154	375	246	104	316	401	136	173	394	55
Future Volume (vph)	62	315	154	375	246	104	316	401	136	173	394	55
Turn Type	pm+pt	NA	Free	Prot	NA	Free	Prot	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		Free			Free			2	6		6
Detector Phase	7	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)	10.0	11.0		10.0	11.0		10.0	12.0	12.0	10.0	12.0	12.0
Total Split (s)	13.0	26.0		20.0	33.0		15.0	64.0	64.0	10.0	59.0	59.0
Total Split (%)	10.8%	21.7%		16.7%	27.5%		12.5%	53.3%	53.3%	8.3%	49.2%	49.2%
Yellow Time (s)	3.0	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
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)	5.0	6.0		5.0	6.0		5.0	7.0	7.0	5.0	7.0	7.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None		None	None		None	None	None	None	None	None
Act Effct Green (s)	22.3	14.2	81.6	15.2	24.8	81.6	10.1	23.8	23.8	25.8	18.7	18.7
Actuated g/C Ratio	0.27	0.17	1.00	0.19	0.30	1.00	0.12	0.29	0.29	0.32	0.23	0.23
v/c Ratio	0.18	0.63	0.10	0.71	0.53	0.08	0.78	0.75	0.29	0.73	0.51	0.12
Control Delay	17.5	36.9	0.1	40.5	30.5	0.1	51.0	35.8	5.1	35.0	29.6	0.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.5	36.9	0.1	40.5	30.5	0.1	51.0	35.8	5.1	35.0	29.6	0.5
LOS	B	D	A	D	C	A	D	D	A	D	C	A
Approach Delay		25.1			31.3			35.8			28.8	
Approach LOS		C			C			D			C	

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 81.6
 Natural Cycle: 60
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.78
 Intersection Signal Delay: 30.8
 Intersection Capacity Utilization 69.3%
 Analysis Period (min) 15
 Intersection LOS: C
 ICU Level of Service C

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



Intersection

Int Delay, s/veh 75.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↘	↑	↘	↗
Traffic Vol, veh/h	83	542	48	94	631	57
Future Vol, veh/h	83	542	48	94	631	57
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Yield	-	None	-	None
Storage Length	-	0	50	-	300	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	75	75	92	75	75
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	90	723	64	102	841	76

Major/Minor

	Major1	Major2	Minor1		
Conflicting Flow All	0	0	90	0	320
Stage 1	-	-	-	-	90
Stage 2	-	-	-	-	230
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1505	-	~ 673
Stage 1	-	-	-	-	934
Stage 2	-	-	-	-	~ 808
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1505	-	~ 644
Mov Cap-2 Maneuver	-	-	-	-	~ 644
Stage 1	-	-	-	-	894
Stage 2	-	-	-	-	~ 808

Approach

	EB	WB	NB
HCM Control Delay, s	0	2.9	155.9
HCM LOS			F

Minor Lane/Major Mvmt

	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	644	968	-	-	1505	-
HCM Lane V/C Ratio	1.306	0.079	-	-	0.043	-
HCM Control Delay (s)	169.2	9	-	-	7.5	-
HCM Lane LOS	F	A	-	-	A	-
HCM 95th %tile Q(veh)	34	0.3	-	-	0.1	-

Notes

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

Intersection												
Int Delay, s/veh	3.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	↕
Traffic Vol, veh/h	75	0	61	2	0	12	49	215	5	10	260	72
Future Vol, veh/h	75	0	61	2	0	12	49	215	5	10	260	72
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	92	92	92	92	85	92	92	85	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	82	0	66	2	0	13	53	253	5	11	306	78

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	696	692	306	762	768	256	384	0	0	258	0	0
Stage 1	328	328	-	362	362	-	-	-	-	-	-	-
Stage 2	368	364	-	400	406	-	-	-	-	-	-	-
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	356	367	734	322	332	783	1174	-	-	1307	-	-
Stage 1	685	647	-	657	625	-	-	-	-	-	-	-
Stage 2	652	624	-	626	598	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	336	348	734	281	314	783	1174	-	-	1307	-	-
Mov Cap-2 Maneuver	336	348	-	281	314	-	-	-	-	-	-	-
Stage 1	654	642	-	627	597	-	-	-	-	-	-	-
Stage 2	612	596	-	565	593	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	17.1		10.9		1.4		0.2	
HCM LOS	C		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1174	-	-	444	624	1307	-	-
HCM Lane V/C Ratio	0.045	-	-	0.333	0.024	0.008	-	-
HCM Control Delay (s)	8.2	-	-	17.1	10.9	7.8	-	-
HCM Lane LOS	A	-	-	C	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	1.4	0.1	0	-	-

5: Pinehurst Cir & N-S Collector St HCM 6th TWSC

Midday

Intersection

Int Delay, s/veh 13.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↘	↗	↗	↘	↘	↘
Traffic Vol, veh/h	161	107	103	109	179	144
Future Vol, veh/h	161	107	103	109	179	144
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	150	-	-	205	205	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	75	75	75	75	75	75
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	215	143	137	145	239	192

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	282	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	1280	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1280	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	5	0	28.7
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1280	-	-	-	318	911
HCM Lane V/C Ratio	0.168	-	-	-	0.751	0.211
HCM Control Delay (s)	8.4	-	-	-	43.7	10
HCM Lane LOS	A	-	-	-	E	B
HCM 95th %tile Q(veh)	0.6	-	-	-	5.7	0.8

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

Midday

Intersection						
Int Delay, s/veh	7.5					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	204	29	21	10	5	143
Future Vol, veh/h	204	29	21	10	5	143
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	75	75
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	272	32	23	13	7	191

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	36	0	-	0	606 30
Stage 1	-	-	-	-	30 -
Stage 2	-	-	-	-	576 -
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	1575	-	-	-	460 1044
Stage 1	-	-	-	-	993 -
Stage 2	-	-	-	-	562 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1575	-	-	-	380 1044
Mov Cap-2 Maneuver	-	-	-	-	380 -
Stage 1	-	-	-	-	821 -
Stage 2	-	-	-	-	562 -

Approach	EB	WB	SB
HCM Control Delay, s	7	0	9.6
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1575	-	-	-	986
HCM Lane V/C Ratio	0.173	-	-	-	0.2
HCM Control Delay (s)	7.8	-	-	-	9.6
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0.6	-	-	-	0.7

2040 Total Traffic (HI, Ex N/O Walker, RIRO Pinehurst/SH 83)

1: SH 83 & SH 105/Walker Rd Timings

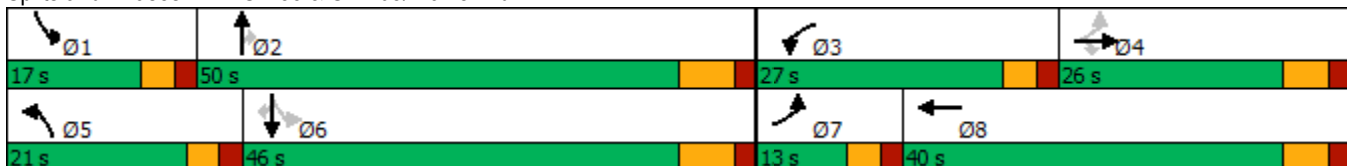
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	85	283	208	376	260	106	340	549	176	210	651	103
Future Volume (vph)	85	283	208	376	260	106	340	549	176	210	651	103
Turn Type	pm+pt	NA	Perm	Prot	NA	Free	Prot	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4			Free			2	6		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)	13.0	26.0	26.0	27.0	40.0		21.0	50.0	50.0	17.0	46.0	46.0
Total Split (%)	10.8%	21.7%	21.7%	22.5%	33.3%		17.5%	41.7%	41.7%	14.2%	38.3%	38.3%
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	None	None	None	None	None
Act Effct Green (s)	23.4	14.6	14.6	17.2	27.1	103.4	14.8	36.5	36.5	46.7	33.2	33.2
Actuated g/C Ratio	0.23	0.14	0.14	0.17	0.26	1.00	0.14	0.35	0.35	0.45	0.32	0.32
v/c Ratio	0.30	0.60	0.53	0.69	0.56	0.07	0.73	0.88	0.28	0.75	0.60	0.17
Control Delay	27.1	48.5	11.0	48.9	40.4	0.1	54.1	48.3	6.6	35.4	32.8	1.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.1	48.5	11.0	48.9	40.4	0.1	54.1	48.3	6.6	35.4	32.8	1.5
LOS	C	D	B	D	D	A	D	D	A	D	C	A
Approach Delay		31.8			39.0			43.3			30.1	
Approach LOS		C			D			D			C	

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 103.4
 Natural Cycle: 70
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.88
 Intersection Signal Delay: 36.5
 Intersection LOS: D
 Intersection Capacity Utilization 78.2%
 ICU Level of Service D
 Analysis Period (min) 15

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



Intersection						
Int Delay, s/veh	32.8					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↘	↑	↘	↗
Traffic Vol, veh/h	151	518	37	120	622	56
Future Vol, veh/h	151	518	37	120	622	56
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Yield	-	None	-	None
Storage Length	-	0	50	-	300	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	159	545	39	126	655	59

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	159
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	-	-	1420
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	1420
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.8	72.3
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	619	886	-	-	1420	-
HCM Lane V/C Ratio	1.058	0.067	-	-	0.027	-
HCM Control Delay (s)	78	9.4	-	-	7.6	-
HCM Lane LOS	F	A	-	-	A	-
HCM 95th %tile Q(veh)	18.1	0.2	-	-	0.1	-

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

2040 Total Traffic (HI, Ex N/O Walker, RIRO Pinehurst/SH 83)

3: N-S Collector St & Future Tract B Access/North School Access HCM 6th TWSC PM Peak Hour

Intersection												
Int Delay, s/veh	5.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕	↕	↕	↕	↕
Traffic Vol, veh/h	134	0	42	2	0	47	34	301	17	20	208	123
Future Vol, veh/h	134	0	42	2	0	47	34	301	17	20	208	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	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	141	0	44	2	0	49	36	317	18	21	219	129

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	684	668	219	737	779	317	348	0	0	335	0	0
Stage 1	261	261	-	389	389	-	-	-	-	-	-	-
Stage 2	423	407	-	348	390	-	-	-	-	-	-	-
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	363	379	821	334	327	724	1211	-	-	1224	-	-
Stage 1	744	692	-	635	608	-	-	-	-	-	-	-
Stage 2	609	597	-	668	608	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	326	362	821	305	312	724	1211	-	-	1224	-	-
Mov Cap-2 Maneuver	326	362	-	305	312	-	-	-	-	-	-	-
Stage 1	722	680	-	616	590	-	-	-	-	-	-	-
Stage 2	551	579	-	621	598	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	23.1		10.7		0.8		0.5	
HCM LOS	C		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1211	-	-	381	686	1224	-	-
HCM Lane V/C Ratio	0.03	-	-	0.486	0.075	0.017	-	-
HCM Control Delay (s)	8.1	-	-	23.1	10.7	8	-	-
HCM Lane LOS	A	-	-	C	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	2.6	0.2	0.1	-	-

Intersection												
Int Delay, s/veh	4.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↗	↘		↗	↘	↗
Traffic Vol, veh/h	88	0	66	6	0	49	51	215	22	26	146	80
Future Vol, veh/h	88	0	66	6	0	49	51	215	22	26	146	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	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	93	0	69	6	0	52	54	226	23	27	154	84

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	580	565	154	631	638	238	238	0	0	249	0	0
Stage 1	208	208	-	346	346	-	-	-	-	-	-	-
Stage 2	372	357	-	285	292	-	-	-	-	-	-	-
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	426	434	892	394	394	801	1329	-	-	1317	-	-
Stage 1	794	730	-	670	635	-	-	-	-	-	-	-
Stage 2	648	628	-	722	671	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	380	408	892	347	370	801	1329	-	-	1317	-	-
Mov Cap-2 Maneuver	380	408	-	347	370	-	-	-	-	-	-	-
Stage 1	761	715	-	643	609	-	-	-	-	-	-	-
Stage 2	582	602	-	652	657	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	15.5	10.6	1.4	0.8
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1329	-	-	504	701	1317	-	-
HCM Lane V/C Ratio	0.04	-	-	0.322	0.083	0.021	-	-
HCM Control Delay (s)	7.8	-	-	15.5	10.6	7.8	-	-
HCM Lane LOS	A	-	-	C	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	1.4	0.3	0.1	-	-

Intersection

Int Delay, s/veh 7.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↘	↗	↗	↘	↘	↘
Traffic Vol, veh/h	213	87	55	75	86	132
Future Vol, veh/h	213	87	55	75	86	132
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	150	-	-	205	205	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	224	92	58	79	91	139

Major/Minor

	Major1	Major2	Minor2		
Conflicting Flow All	137	0	-	0	598 58
Stage 1	-	-	-	-	58 -
Stage 2	-	-	-	-	540 -
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	1447	-	-	-	465 1008
Stage 1	-	-	-	-	965 -
Stage 2	-	-	-	-	584 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1447	-	-	-	393 1008
Mov Cap-2 Maneuver	-	-	-	-	326 -
Stage 1	-	-	-	-	815 -
Stage 2	-	-	-	-	584 -

Approach

	EB	WB	SB
HCM Control Delay, s	5.6	0	13.5
HCM LOS			B

Minor Lane/Major Mvmt

	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1447	-	-	-	326	1008
HCM Lane V/C Ratio	0.155	-	-	-	0.278	0.138
HCM Control Delay (s)	7.9	-	-	-	20.2	9.1
HCM Lane LOS	A	-	-	-	C	A
HCM 95th %tile Q(veh)	0.5	-	-	-	1.1	0.5

Intersection

Int Delay, s/veh 4.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	34	38	25	2	2	46
Future Vol, veh/h	34	38	25	2	2	46
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	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	36	40	26	2	2	48

Major/Minor

	Major1	Major2	Minor2		
Conflicting Flow All	28	0	-	0	139 27
Stage 1	-	-	-	-	27 -
Stage 2	-	-	-	-	112 -
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	1585	-	-	-	854 1048
Stage 1	-	-	-	-	996 -
Stage 2	-	-	-	-	913 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1585	-	-	-	834 1048
Mov Cap-2 Maneuver	-	-	-	-	834 -
Stage 1	-	-	-	-	973 -
Stage 2	-	-	-	-	913 -

Approach

	EB	WB	SB
HCM Control Delay, s	3.5	0	8.6
HCM LOS			A

Minor Lane/Major Mvmt

	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1585	-	-	-	1037
HCM Lane V/C Ratio	0.023	-	-	-	0.049
HCM Control Delay (s)	7.3	-	-	-	8.6
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0.1	-	-	-	0.2

2040 Total Traffic (HI, Ex N/O Walker, RIRO Pinehurst/SH 83)

121: SH 83 & Hodgen Rd Timings

PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	180	339	116	124	303	279	189	638	398	360	690	211
Future Volume (vph)	180	339	116	124	303	279	189	638	398	360	690	211
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 Effct Green (s)	32.0	22.1	22.1	7.7	20.9	96.9	39.9	30.0	30.0	14.0	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	0.14	0.37	0.37
v/c Ratio	0.67	0.84	0.23	0.48	0.80	0.19	0.57	0.61	0.59	0.76	0.55	0.30
Control Delay	34.7	54.2	1.1	49.8	51.2	0.3	21.8	32.3	11.9	51.1	26.5	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	34.7	54.2	1.1	49.8	51.2	0.3	21.8	32.3	11.9	51.1	26.5	4.3
LOS	C	D	A	D	D	A	C	C	B	D	C	A
Approach Delay		39.0			30.8			24.1			29.8	
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: 29.7
 Intersection LOS: C
 Intersection Capacity Utilization 74.6%
 ICU Level of Service D
 Analysis Period (min) 15

Splits and Phases: 121: SH 83 & Hodgen Rd



Intersection	
Intersection Delay, s/veh	234.6
Intersection LOS	F

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑		↑	↑	↑
Traffic Vol, veh/h	48	696	70	221	486	39
Future Vol, veh/h	48	696	70	221	486	39
Peak Hour Factor	0.92	0.75	0.75	0.92	0.75	0.75
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	52	928	93	240	648	52
Number of Lanes	1	1	0	1	1	1

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	2	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	2	2
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	2	0	1
HCM Control Delay	325.3	31.2	204.4
HCM LOS	F	D	F

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1
Vol Left, %	100%	0%	0%	0%	24%
Vol Thru, %	0%	0%	100%	0%	76%
Vol Right, %	0%	100%	0%	100%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	486	39	48	696	291
LT Vol	486	0	0	0	70
Through Vol	0	0	48	0	221
RT Vol	0	39	0	696	0
Lane Flow Rate	648	52	52	928	334
Geometry Grp	7	7	7	7	4
Degree of Util (X)	1.403	0.095	0.106	1.7	0.692
Departure Headway (Hd)	8.904	7.66	8.345	7.62	9.45
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	415	471	432	483	387
Service Time	6.604	5.36	6.045	5.32	7.45
HCM Lane V/C Ratio	1.561	0.11	0.12	1.921	0.863
HCM Control Delay	219.9	11.2	12	342.9	31.2
HCM Lane LOS	F	B	B	F	D
HCM 95th-tile Q	28	0.3	0.4	47.7	5

Intersection	
Intersection Delay, s/veh	17.3
Intersection LOS	C

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖	↑	↑	↗	↖	↗
Traffic Vol, veh/h	205	120	206	225	219	132
Future Vol, veh/h	205	120	206	225	219	132
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	273	160	275	300	292	176
Number of Lanes	1	1	1	1	1	1

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	2	2	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	2	0	2
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	2	2
HCM Control Delay	17.3	16.2	18.5
HCM LOS	C	C	C

Lane	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	0%	0%	100%	0%
Vol Thru, %	0%	100%	100%	0%	0%	0%
Vol Right, %	0%	0%	0%	100%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	205	120	206	225	219	132
LT Vol	205	0	0	0	219	0
Through Vol	0	120	206	0	0	0
RT Vol	0	0	0	225	0	132
Lane Flow Rate	273	160	275	300	292	176
Geometry Grp	7	7	7	7	7	7
Degree of Util (X)	0.569	0.31	0.524	0.512	0.621	0.315
Departure Headway (Hd)	7.494	6.981	6.863	6.146	7.661	6.439
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	478	510	522	582	470	554
Service Time	5.289	4.777	4.653	3.936	5.443	4.22
HCM Lane V/C Ratio	0.571	0.314	0.527	0.515	0.621	0.318
HCM Control Delay	19.8	12.9	17.1	15.3	22.3	12.2
HCM Lane LOS	C	B	C	C	C	B
HCM 95th-tile Q	3.5	1.3	3	2.9	4.1	1.3

Intersection	
Intersection Delay, s/veh	216.3
Intersection LOS	F

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑		↑	↑	↑
Traffic Vol, veh/h	83	542	48	94	631	57
Future Vol, veh/h	83	542	48	94	631	57
Peak Hour Factor	0.92	0.75	0.75	0.92	0.75	0.75
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	90	723	64	102	841	76
Number of Lanes	1	1	0	1	1	1

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	2	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	2	2
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	2	0	1
HCM Control Delay	133	17.5	326.2
HCM LOS	F	C	F

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1
Vol Left, %	100%	0%	0%	0%	34%
Vol Thru, %	0%	0%	100%	0%	66%
Vol Right, %	0%	100%	0%	100%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	631	57	83	542	142
LT Vol	631	0	0	0	48
Through Vol	0	0	83	0	94
RT Vol	0	57	0	542	0
Lane Flow Rate	841	76	90	723	166
Geometry Grp	7	7	7	7	4
Degree of Util (X)	1.725	0.131	0.172	1.236	0.346
Departure Headway (Hd)	7.894	6.669	8.47	7.747	9.513
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	471	541	427	477	381
Service Time	5.594	4.369	6.17	5.447	7.513
HCM Lane V/C Ratio	1.786	0.14	0.211	1.516	0.436
HCM Control Delay	354.7	10.4	12.9	148	17.5
HCM Lane LOS	F	B	B	F	C
HCM 95th-tile Q	47.5	0.4	0.6	23.1	1.5

Intersection	
Intersection Delay, s/veh	12.3
Intersection LOS	B

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖	↑	↑	↗	↖	↗
Traffic Vol, veh/h	161	107	103	109	179	144
Future Vol, veh/h	161	107	103	109	179	144
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	215	143	137	145	239	192
Number of Lanes	1	1	1	1	1	1

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	2	2	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	2	0	2
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	2	2
HCM Control Delay	12.8	10.6	13.1
HCM LOS	B	B	B

Lane	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	0%	0%	100%	0%
Vol Thru, %	0%	100%	100%	0%	0%	0%
Vol Right, %	0%	0%	0%	100%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	161	107	103	109	179	144
LT Vol	161	0	0	0	179	0
Through Vol	0	107	103	0	0	0
RT Vol	0	0	0	109	0	144
Lane Flow Rate	215	143	137	145	239	192
Geometry Grp	7	7	7	7	7	7
Degree of Util (X)	0.402	0.247	0.243	0.229	0.45	0.298
Departure Headway (Hd)	6.739	6.231	6.381	5.668	6.795	5.582
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	535	576	562	632	530	643
Service Time	4.482	3.973	4.127	3.414	4.534	3.322
HCM Lane V/C Ratio	0.402	0.248	0.244	0.229	0.451	0.299
HCM Control Delay	14	11	11.2	10.1	15	10.7
HCM Lane LOS	B	B	B	B	B	B
HCM 95th-tile Q	1.9	1	0.9	0.9	2.3	1.2

Intersection

Intersection Delay, s/veh	102.1
Intersection LOS	F

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑		↑	↑	↑
Traffic Vol, veh/h	151	518	37	120	622	56
Future Vol, veh/h	151	518	37	120	622	56
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	159	545	39	126	655	59
Number of Lanes	1	1	0	1	1	1

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	2	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	2	2
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	2	0	1
HCM Control Delay	41.3	15.6	182.1
HCM LOS	E	C	F

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1
Vol Left, %	100%	0%	0%	0%	24%
Vol Thru, %	0%	0%	100%	0%	76%
Vol Right, %	0%	100%	0%	100%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	622	56	151	518	157
LT Vol	622	0	0	0	37
Through Vol	0	0	151	0	120
RT Vol	0	56	0	518	0
Lane Flow Rate	655	59	159	545	165
Geometry Grp	7	7	7	7	4
Degree of Util (X)	1.362	0.103	0.301	0.925	0.34
Departure Headway (Hd)	7.491	6.27	7.734	7.014	8.36
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	491	574	467	523	433
Service Time	5.198	3.977	5.434	4.714	6.36
HCM Lane V/C Ratio	1.334	0.103	0.34	1.042	0.381
HCM Control Delay	197.6	9.7	13.7	49.4	15.6
HCM Lane LOS	F	A	B	E	C
HCM 95th-tile Q	29.9	0.3	1.3	11.2	1.5

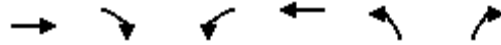
Intersection	
Intersection Delay, s/veh	9.9
Intersection LOS	A

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖	↑	↑	↗	↖	↗
Traffic Vol, veh/h	213	87	55	75	86	132
Future Vol, veh/h	213	87	55	75	86	132
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	224	92	58	79	91	139
Number of Lanes	1	1	1	1	1	1

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	2	2	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	2	0	2
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	2	2
HCM Control Delay	10.9	8.4	9.4
HCM LOS	B	A	A

Lane	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	0%	0%	100%	0%
Vol Thru, %	0%	100%	100%	0%	0%	0%
Vol Right, %	0%	0%	0%	100%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	213	87	55	75	86	132
LT Vol	213	0	0	0	86	0
Through Vol	0	87	55	0	0	0
RT Vol	0	0	0	75	0	132
Lane Flow Rate	224	92	58	79	91	139
Geometry Grp	7	7	7	7	7	7
Degree of Util (X)	0.36	0.134	0.088	0.105	0.155	0.191
Departure Headway (Hd)	5.773	5.27	5.491	4.784	6.168	4.961
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	621	677	648	743	579	720
Service Time	3.531	3.027	3.259	2.552	3.928	2.721
HCM Lane V/C Ratio	0.361	0.136	0.09	0.106	0.157	0.193
HCM Control Delay	11.8	8.8	8.8	8.1	10.1	8.9
HCM Lane LOS	B	A	A	A	B	A
HCM 95th-tile Q	1.6	0.5	0.3	0.4	0.5	0.7

2040 Total Traffic With No Redevelopment N/O Walker & RIRO Pinehurst/SH 83
 2: N-S Collector St & Walker Rd Timings AM Peak Hour



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑	↑	↑	↑	↑
Traffic Volume (vph)	48	696	70	221	486	39
Future Volume (vph)	48	696	70	221	486	39
Turn Type	NA	Perm	Perm	NA	Prot	Perm
Protected Phases	2			6	8	
Permitted Phases		2	6			8
Detector Phase	2	2	6	6	8	8
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	23.0	23.0	23.0	23.0	23.0	23.0
Total Split (s)	55.0	55.0	55.0	55.0	45.0	45.0
Total Split (%)	55.0%	55.0%	55.0%	55.0%	45.0%	45.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	Max	Max	Max	Max	None	None
Act Effct Green (s)	50.1	50.1	50.1	50.1	37.9	37.9
Actuated g/C Ratio	0.51	0.51	0.51	0.51	0.39	0.39
v/c Ratio	0.05	0.74	0.14	0.25	0.95	0.08
Control Delay	13.1	5.1	14.0	14.9	53.5	5.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.1	5.1	14.0	14.9	53.5	5.7
LOS	B	A	B	B	D	A
Approach Delay	5.5			14.6	50.0	
Approach LOS	A			B	D	

Intersection Summary

Cycle Length: 100
 Actuated Cycle Length: 98
 Natural Cycle: 55
 Control Type: Semi Act-Uncoord
 Maximum v/c Ratio: 0.95
 Intersection Signal Delay: 22.5 Intersection LOS: C
 Intersection Capacity Utilization 55.6% ICU Level of Service B
 Analysis Period (min) 15

Splits and Phases: 2: N-S Collector St & Walker Rd



2: N-S Collector St & Walker Rd Timings

Midday

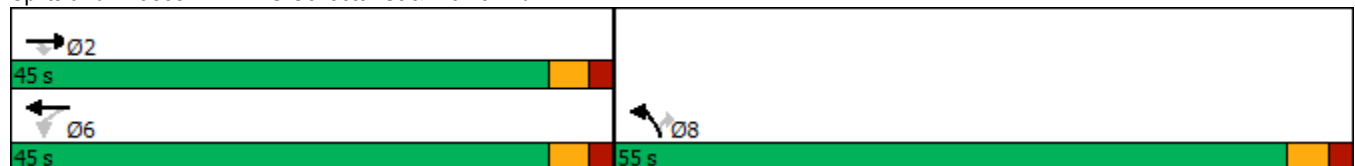


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑	↑	↑	↑	↑
Traffic Volume (vph)	83	542	48	94	631	57
Future Volume (vph)	83	542	48	94	631	57
Turn Type	NA	Perm	Perm	NA	Prot	Perm
Protected Phases	2			6	8	
Permitted Phases		2	6			8
Detector Phase	2	2	6	6	8	8
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	23.0	23.0	23.0	23.0	23.0	23.0
Total Split (s)	45.0	45.0	45.0	45.0	55.0	55.0
Total Split (%)	45.0%	45.0%	45.0%	45.0%	55.0%	55.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	Max	Max	Max	Max	None	None
Act Effct Green (s)	40.1	40.1	40.1	40.1	48.2	48.2
Actuated g/C Ratio	0.41	0.41	0.41	0.41	0.49	0.49
v/c Ratio	0.12	0.67	0.12	0.13	0.97	0.09
Control Delay	19.4	5.2	19.9	19.6	49.2	3.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.4	5.2	19.9	19.6	49.2	3.9
LOS	B	A	B	B	D	A
Approach Delay	6.8			19.7	45.5	
Approach LOS	A			B	D	

Intersection Summary

Cycle Length: 100
 Actuated Cycle Length: 98.3
 Natural Cycle: 60
 Control Type: Semi Act-Uncoord
 Maximum v/c Ratio: 0.97
 Intersection Signal Delay: 26.6
 Intersection LOS: C
 Intersection Capacity Utilization 52.6%
 ICU Level of Service A
 Analysis Period (min) 15

Splits and Phases: 2: N-S Collector St & Walker Rd



2: N-S Collector St & Walker Rd Timings

PM Peak Hour



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑	↑	↑	↑	↑
Traffic Volume (vph)	151	518	37	120	622	56
Future Volume (vph)	151	518	37	120	622	56
Turn Type	NA	Perm	Perm	NA	Prot	Perm
Protected Phases	2			6	8	
Permitted Phases		2	6			8
Detector Phase	2	2	6	6	8	8
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	23.0	23.0	23.0	23.0	23.0	23.0
Total Split (s)	55.0	55.0	55.0	55.0	45.0	45.0
Total Split (%)	55.0%	55.0%	55.0%	55.0%	45.0%	45.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	Max	Max	Max	Max	None	None
Act Effct Green (s)	50.1	50.1	50.1	50.1	38.3	38.3
Actuated g/C Ratio	0.51	0.51	0.51	0.51	0.39	0.39
v/c Ratio	0.17	0.51	0.06	0.13	0.95	0.09
Control Delay	14.1	3.1	13.4	13.7	54.3	5.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.1	3.1	13.4	13.7	54.3	5.5
LOS	B	A	B	B	D	A
Approach Delay	5.6			13.7	50.3	
Approach LOS	A			B	D	

Intersection Summary

Cycle Length: 100	
Actuated Cycle Length: 98.4	
Natural Cycle: 60	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.95	
Intersection Signal Delay: 26.6	Intersection LOS: C
Intersection Capacity Utilization 59.1%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 2: N-S Collector St & Walker Rd



Intersection			
Intersection Delay, s/veh	7.6		
Intersection LOS	A		
Approach	EB	WB	NB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	595	308	516
Demand Flow Rate, veh/h	607	314	527
Vehicles Circulating, veh/h	69	499	53
Vehicles Exiting, veh/h	744	81	623
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	7.7	9.0	6.7
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	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	607	314	527
Cap Entry Lane, veh/h	1286	829	1307
Entry HV Adj Factor	0.980	0.982	0.979
Flow Entry, veh/h	595	308	516
Cap Entry, veh/h	1261	814	1280
V/C Ratio	0.472	0.379	0.403
Control Delay, s/veh	7.7	9.0	6.7
LOS	A	A	A
95th %tile Queue, veh	3	2	2

Intersection			
Intersection Delay, s/veh	4.3		
Intersection LOS	A		
Approach	EB	WB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	227	162	204
Demand Flow Rate, veh/h	232	165	209
Vehicles Circulating, veh/h	29	203	58
Vehicles Exiting, veh/h	238	58	310
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	4.2	4.6	4.2
Approach LOS	A	A	A
Lane	Left	Left	Left
Designated Moves	LT	TR	LR
Assumed Moves	LT	TR	LR
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	232	165	209
Cap Entry Lane, veh/h	1340	1122	1301
Entry HV Adj Factor	0.980	0.981	0.976
Flow Entry, veh/h	227	162	204
Cap Entry, veh/h	1313	1100	1269
V/C Ratio	0.173	0.147	0.161
Control Delay, s/veh	4.2	4.6	4.2
LOS	A	A	A
95th %tile Queue, veh	1	1	1

2: N-S Collector St & Walker Rd HCM 6th Roundabout

Midday

Intersection			
Intersection Delay, s/veh	12.7		
Intersection LOS	B		
Approach	EB	WB	NB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	813	166	917
Demand Flow Rate, veh/h	829	169	936
Vehicles Circulating, veh/h	65	858	92
Vehicles Exiting, veh/h	962	170	802
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	11.0	10.5	14.6
Approach LOS	B	B	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	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	829	169	936
Cap Entry Lane, veh/h	1291	575	1256
Entry HV Adj Factor	0.981	0.982	0.980
Flow Entry, veh/h	813	166	917
Cap Entry, veh/h	1267	565	1231
V/C Ratio	0.642	0.294	0.745
Control Delay, s/veh	11.0	10.5	14.6
LOS	B	B	B
95th %tile Queue, veh	5	1	7

5: Pinehurst Cir & N-S Collector St HCM 6th Roundabout

Midday

Intersection			
Intersection Delay, s/veh	6.5		
Intersection LOS	A		
Approach	EB	WB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	358	282	431
Demand Flow Rate, veh/h	365	288	440
Vehicles Circulating, veh/h	244	219	140
Vehicles Exiting, veh/h	336	390	367
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	6.8	5.8	6.7
Approach LOS	A	A	A
Lane	Left	Left	Left
Designated Moves	LT	TR	LR
Assumed Moves	LT	TR	LR
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	365	288	440
Cap Entry Lane, veh/h	1076	1104	1196
Entry HV Adj Factor	0.981	0.980	0.980
Flow Entry, veh/h	358	282	431
Cap Entry, veh/h	1056	1082	1172
V/C Ratio	0.339	0.261	0.368
Control Delay, s/veh	6.8	5.8	6.7
LOS	A	A	A
95th %tile Queue, veh	2	1	2

Intersection			
Intersection Delay, s/veh	9.8		
Intersection LOS	A		
Approach	EB	WB	NB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	704	165	714
Demand Flow Rate, veh/h	718	169	728
Vehicles Circulating, veh/h	40	668	162
Vehicles Exiting, veh/h	797	222	596
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	8.7	8.2	11.3
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	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	718	169	728
Cap Entry Lane, veh/h	1325	698	1170
Entry HV Adj Factor	0.980	0.979	0.981
Flow Entry, veh/h	704	165	714
Cap Entry, veh/h	1299	684	1147
V/C Ratio	0.542	0.242	0.622
Control Delay, s/veh	8.7	8.2	11.3
LOS	A	A	B
95th %tile Queue, veh	3	1	5

Intersection			
Intersection Delay, s/veh	4.8		
Intersection LOS	A		
Approach	EB	WB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	316	137	230
Demand Flow Rate, veh/h	322	140	235
Vehicles Circulating, veh/h	93	228	59
Vehicles Exiting, veh/h	201	187	309
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	5.2	4.5	4.4
Approach LOS	A	A	A
Lane	Left	Left	Left
Designated Moves	LT	TR	LR
Assumed Moves	LT	TR	LR
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	322	140	235
Cap Entry Lane, veh/h	1255	1094	1299
Entry HV Adj Factor	0.982	0.977	0.979
Flow Entry, veh/h	316	137	230
Cap Entry, veh/h	1232	1069	1272
V/C Ratio	0.257	0.128	0.181
Control Delay, s/veh	5.2	4.5	4.4
LOS	A	A	A
95th %tile Queue, veh	1	0	1

Levels of Service - 2040 Total Traffic

- With High Intensity Development of Adjacent Parcels
- With Redevelopment North of Walker Rd
- With Right-in/Right-out Access to SH 83



2: N-S Collector St & Walker Rd HCM 6th Roundabout

Intersection				
Intersection Delay, s/veh	19.7			
Intersection LOS	C			
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	1107	337	701	153
Demand Flow Rate, veh/h	1130	344	715	156
Vehicles Circulating, veh/h	99	793	187	997
Vehicles Exiting, veh/h	1054	109	1042	140
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	26.9	16.1	11.6	12.2
Approach LOS	D	C	B	B
Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	1130	344	715	156
Cap Entry Lane, veh/h	1247	615	1140	499
Entry HV Adj Factor	0.980	0.980	0.980	0.981
Flow Entry, veh/h	1107	337	701	153
Cap Entry, veh/h	1222	603	1118	490
V/C Ratio	0.906	0.560	0.627	0.313
Control Delay, s/veh	26.9	16.1	11.6	12.2
LOS	D	C	B	B
95th %tile Queue, veh	14	3	5	1

2: N-S Collector St & Walker Rd HCM 6th Roundabout

Midday

Intersection				
Intersection Delay, s/veh	12.2			
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	815	154	725	174
Demand Flow Rate, veh/h	831	157	739	177
Vehicles Circulating, veh/h	61	848	257	826
Vehicles Exiting, veh/h	942	148	635	179
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	10.9	10.0	14.4	10.2
Approach LOS	B	A	B	B
Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	831	157	739	177
Cap Entry Lane, veh/h	1297	581	1062	594
Entry HV Adj Factor	0.981	0.982	0.981	0.983
Flow Entry, veh/h	815	154	725	174
Cap Entry, veh/h	1272	570	1042	584
V/C Ratio	0.641	0.270	0.696	0.298
Control Delay, s/veh	10.9	10.0	14.4	10.2
LOS	B	A	B	B
95th %tile Queue, veh	5	1	6	1

Intersection				
Intersection Delay, s/veh	14.7			
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	901	169	715	180
Demand Flow Rate, veh/h	919	172	729	183
Vehicles Circulating, veh/h	48	877	370	834
Vehicles Exiting, veh/h	969	222	597	215
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	12.5	10.9	19.4	10.5
Approach LOS	B	B	C	B
Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	919	172	729	183
Cap Entry Lane, veh/h	1314	564	946	589
Entry HV Adj Factor	0.980	0.980	0.981	0.983
Flow Entry, veh/h	901	169	715	180
Cap Entry, veh/h	1288	553	928	580
V/C Ratio	0.699	0.305	0.771	0.310
Control Delay, s/veh	12.5	10.9	19.4	10.5
LOS	B	B	C	B
95th %tile Queue, veh	6	1	8	1

Levels of Service - 2040 Total Traffic

- With High Intensity Development of Adjacent Parcels
- With Redevelopment North of Walker Rd
- With Full Access to SH 83



2040 Total Traffic (Full Access Pinehurst/SH 83)

1: SH 83 & SH 105/Walker Rd Timings

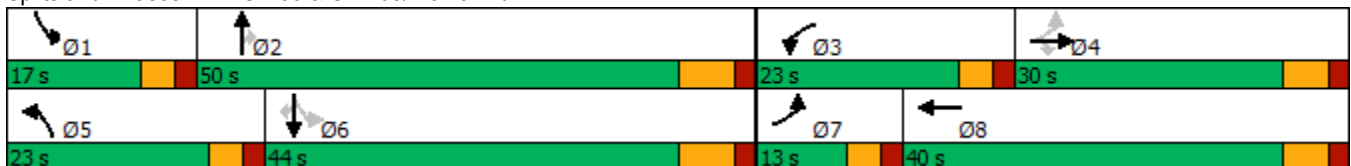
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	52	361	279	167	242	131	427	642	192	124	463	98
Future Volume (vph)	52	361	279	167	242	131	427	642	192	124	463	98
Turn Type	pm+pt	NA	Perm	Prot	NA	Free	Prot	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4			Free			2	6		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)	13.0	30.0	30.0	23.0	40.0		23.0	50.0	50.0	17.0	44.0	44.0
Total Split (%)	10.8%	25.0%	25.0%	19.2%	33.3%		19.2%	41.7%	41.7%	14.2%	36.7%	36.7%
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	None	None	None	None	None
Act Effct Green (s)	27.3	19.1	19.1	11.0	25.4	104.9	17.3	41.8	41.8	46.2	34.3	34.3
Actuated g/C Ratio	0.26	0.18	0.18	0.10	0.24	1.00	0.16	0.40	0.40	0.44	0.33	0.33
v/c Ratio	0.20	0.68	0.56	0.51	0.65	0.10	0.80	0.88	0.32	0.58	0.42	0.16
Control Delay	25.8	46.6	8.9	51.0	45.1	0.1	55.0	46.1	7.6	24.5	29.8	0.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.8	46.6	8.9	51.0	45.1	0.1	55.0	46.1	7.6	24.5	29.8	0.5
LOS	C	D	A	D	D	A	D	D	A	C	C	A
Approach Delay		31.1			35.5			42.3			24.6	
Approach LOS		C			D			D			C	

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 104.9
 Natural Cycle: 80
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.88
 Intersection Signal Delay: 34.8
 Intersection LOS: C
 Intersection Capacity Utilization 76.7%
 ICU Level of Service D
 Analysis Period (min) 15

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



Intersection				
Intersection Delay, s/veh	10.1			
Intersection LOS	B			
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	855	337	293	153
Demand Flow Rate, veh/h	873	344	299	156
Vehicles Circulating, veh/h	99	377	187	581
Vehicles Exiting, veh/h	638	109	785	140
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	13.0	8.0	5.7	7.1
Approach LOS	B	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	873	344	299	156
Cap Entry Lane, veh/h	1247	939	1140	763
Entry HV Adj Factor	0.979	0.980	0.980	0.981
Flow Entry, veh/h	855	337	293	153
Cap Entry, veh/h	1222	921	1117	748
V/C Ratio	0.700	0.366	0.262	0.204
Control Delay, s/veh	13.0	8.0	5.7	7.1
LOS	B	A	A	A
95th %tile Queue, veh	6	2	1	1

3: N-S Collector St & Future Tract B Access/North School Access HCM 6th TWSC AM Peak Hour

Intersection													
Int Delay, s/veh	4.2												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↕			↕		↕	↑	↑	↕	↕	↑	↕
Traffic Vol, veh/h	54	0	65	0	0	0	43	114	64	111	225	101	
Future Vol, veh/h	54	0	65	0	0	0	43	114	64	111	225	101	
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	95	95	95	75	75	75	95	90	75	75	90	95	
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	
Mvmt Flow	57	0	68	0	0	0	45	127	85	148	250	106	

Major/Minor	Minor2		Minor1			Major1		Major2				
Conflicting Flow All	806	848	250	850	869	127	356	0	0	212	0	0
Stage 1	546	546	-	217	217	-	-	-	-	-	-	-
Stage 2	260	302	-	633	652	-	-	-	-	-	-	-
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	300	298	789	280	290	923	1203	-	-	1358	-	-
Stage 1	522	518	-	785	723	-	-	-	-	-	-	-
Stage 2	745	664	-	468	464	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	267	256	789	228	249	923	1203	-	-	1358	-	-
Mov Cap-2 Maneuver	267	256	-	228	249	-	-	-	-	-	-	-
Stage 1	503	462	-	756	696	-	-	-	-	-	-	-
Stage 2	717	639	-	381	413	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	17.3	0	1.4	2.3
HCM LOS	C	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1203	-	-	418	-	1358	-	-
HCM Lane V/C Ratio	0.038	-	-	0.3	-	0.109	-	-
HCM Control Delay (s)	8.1	-	-	17.3	0	8	-	-
HCM Lane LOS	A	-	-	C	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	1.2	-	0.4	-	-

Intersection												
Int Delay, s/veh	3.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	↕
Traffic Vol, veh/h	26	0	98	17	0	17	59	178	26	40	186	63
Future Vol, veh/h	26	0	98	17	0	17	59	178	26	40	186	63
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	92	92	92	92	85	92	92	85	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	28	0	107	18	0	18	64	209	28	43	219	68

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	665	670	219	744	724	223	287	0	0	237	0	0
Stage 1	305	305	-	351	351	-	-	-	-	-	-	-
Stage 2	360	365	-	393	373	-	-	-	-	-	-	-
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	374	378	821	331	352	817	1275	-	-	1330	-	-
Stage 1	705	662	-	666	632	-	-	-	-	-	-	-
Stage 2	658	623	-	632	618	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	343	348	821	270	324	817	1275	-	-	1330	-	-
Mov Cap-2 Maneuver	343	348	-	270	324	-	-	-	-	-	-	-
Stage 1	670	641	-	633	600	-	-	-	-	-	-	-
Stage 2	611	592	-	532	598	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	12.2		14.8		1.7		1	
HCM LOS	B		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1275	-	-	635	406	1330	-	-
HCM Lane V/C Ratio	0.05	-	-	0.212	0.091	0.033	-	-
HCM Control Delay (s)	8	-	-	12.2	14.8	7.8	-	-
HCM Lane LOS	A	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-	0.8	0.3	0.1	-	-

Intersection	
Intersection Delay, s/veh	21.7
Intersection LOS	C

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↗	↖	↖	↗	↗	↖
Traffic Vol, veh/h	217	244	389	45	95	205
Future Vol, veh/h	217	244	389	45	95	205
Peak Hour Factor	0.85	0.75	0.85	0.95	0.75	0.95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	255	325	458	47	127	216
Number of Lanes	1	1	1	1	1	1

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	2	2	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	2	0	2
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	2	2
HCM Control Delay	17.3	32.1	13.7
HCM LOS	C	D	B

Lane	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	0%	0%	100%	0%
Vol Thru, %	0%	100%	100%	0%	0%	0%
Vol Right, %	0%	0%	0%	100%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	217	244	389	45	95	205
LT Vol	217	0	0	0	95	0
Through Vol	0	244	389	0	0	0
RT Vol	0	0	0	45	0	205
Lane Flow Rate	255	325	458	47	127	216
Geometry Grp	7	7	7	7	7	7
Degree of Util (X)	0.494	0.583	0.835	0.077	0.275	0.395
Departure Headway (Hd)	6.967	6.456	6.57	5.856	7.824	6.598
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	516	556	549	608	457	542
Service Time	4.742	4.231	4.346	3.632	5.602	4.375
HCM Lane V/C Ratio	0.494	0.585	0.834	0.077	0.278	0.399
HCM Control Delay	16.4	18	34.5	9.1	13.6	13.7
HCM Lane LOS	C	C	D	A	B	B
HCM 95th-tile Q	2.7	3.7	8.6	0.2	1.1	1.9

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

Intersection						
Int Delay, s/veh	9.3					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	296	14	44	15	10	301
Future Vol, veh/h	296	14	44	15	10	301
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	75	75
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	395	15	48	20	13	401

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	68	0	-	0	863 58
Stage 1	-	-	-	-	58 -
Stage 2	-	-	-	-	805 -
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	1533	-	-	-	325 1008
Stage 1	-	-	-	-	965 -
Stage 2	-	-	-	-	440 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1533	-	-	-	241 1008
Mov Cap-2 Maneuver	-	-	-	-	241 -
Stage 1	-	-	-	-	716 -
Stage 2	-	-	-	-	440 -

Approach	EB	WB	SB
HCM Control Delay, s	7.9	0	12.2
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1533	-	-	-	914
HCM Lane V/C Ratio	0.257	-	-	-	0.454
HCM Control Delay (s)	8.2	-	-	-	12.2
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	1	-	-	-	2.4

7: SH 83 & Pinehurst Cir HCM 6th Roundabout

Intersection			
Intersection Delay, s/veh	160.6		
Intersection LOS	F		
Approach	WB	NB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	726	1486	957
Demand Flow Rate, veh/h	741	1515	976
Vehicles Circulating, veh/h	1031	203	331
Vehicles Exiting, veh/h	687	1104	1440
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	274.4	177.7	47.6
Approach LOS	F	F	E
Lane	Left	Left	Left
Designated Moves	LR	TR	LT
Assumed Moves	LR	TR	LT
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	741	1515	976
Cap Entry Lane, veh/h	482	1122	985
Entry HV Adj Factor	0.980	0.981	0.980
Flow Entry, veh/h	726	1486	957
Cap Entry, veh/h	472	1100	965
V/C Ratio	1.537	1.351	0.991
Control Delay, s/veh	274.4	177.7	47.6
LOS	F	F	E
95th %tile Queue, veh	39	58	18

2040 Total Traffic (Full Access Pinehurst/SH 83)

121: SH 83 & Hodgen Rd Timings

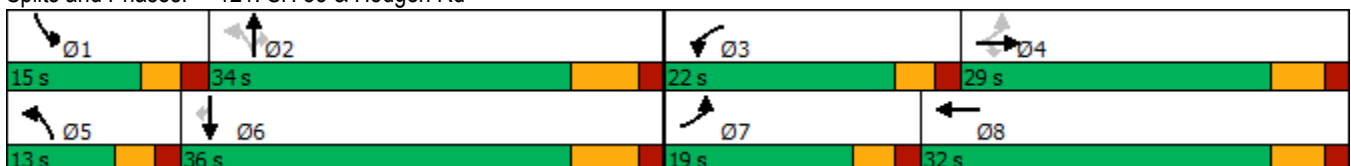
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	219	144	186	390	339	404	77	678	125	159	634	230
Future Volume (vph)	219	144	186	390	339	404	77	678	125	159	634	230
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 Effct Green (s)	33.0	19.3	19.3	15.1	21.8	93.9	36.5	27.2	27.2	9.1	31.5	31.5
Actuated g/C Ratio	0.35	0.21	0.21	0.16	0.23	1.00	0.39	0.29	0.29	0.10	0.34	0.34
v/c Ratio	0.66	0.40	0.41	0.74	0.83	0.27	0.25	0.70	0.24	0.50	0.56	0.35
Control Delay	27.6	35.9	7.5	47.1	51.5	0.4	18.2	35.1	5.5	47.1	30.0	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	27.6	35.9	7.5	47.1	51.5	0.4	18.2	35.1	5.5	47.1	30.0	5.2
LOS	C	D	A	D	D	A	B	D	A	D	C	A
Approach Delay		23.0			31.8			29.4			27.1	
Approach LOS		C			C			C			C	

Intersection Summary

Cycle Length: 100
 Actuated Cycle Length: 93.9
 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 72.4%
 ICU Level of Service C
 Analysis Period (min) 15

Splits and Phases: 121: SH 83 & Hodgen Rd



2040 Total Traffic (Full Access Pinehurst/SH 83)

1: SH 83 & SH 105/Walker Rd Timings

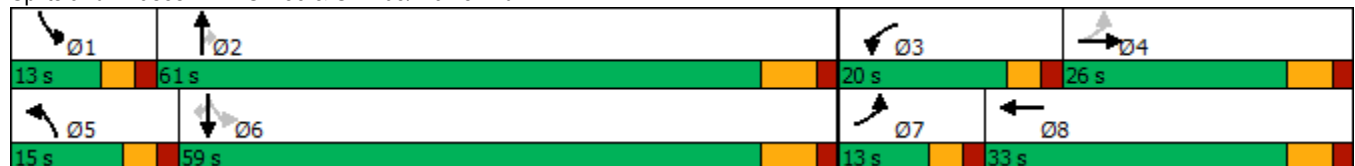
Midday

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	62	266	241	142	273	127	310	392	221	124	457	55
Future Volume (vph)	62	266	241	142	273	127	310	392	221	124	457	55
Turn Type	pm+pt	NA	Free	Prot	NA	Free	Prot	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		Free			Free			2	6		6
Detector Phase	7	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)	10.0	11.0		10.0	11.0		10.0	12.0	12.0	10.0	12.0	12.0
Total Split (s)	13.0	26.0		20.0	33.0		15.0	61.0	61.0	13.0	59.0	59.0
Total Split (%)	10.8%	21.7%		16.7%	27.5%		12.5%	50.8%	50.8%	10.8%	49.2%	49.2%
Yellow Time (s)	3.0	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
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)	5.0	6.0		5.0	6.0		5.0	7.0	7.0	5.0	7.0	7.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None		None	None		None	None	None	None	None	None
Act Effct Green (s)	23.9	15.5	80.7	9.2	20.3	80.7	10.4	24.3	24.3	31.7	21.8	21.8
Actuated g/C Ratio	0.30	0.19	1.00	0.11	0.25	1.00	0.13	0.30	0.30	0.39	0.27	0.27
v/c Ratio	0.18	0.41	0.16	0.38	0.61	0.08	0.74	0.74	0.36	0.36	0.50	0.11
Control Delay	19.2	31.8	0.2	39.4	36.0	0.1	48.9	34.5	5.0	15.7	26.8	0.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.2	31.8	0.2	39.4	36.0	0.1	48.9	34.5	5.0	15.7	26.8	0.4
LOS	B	C	A	D	D	A	D	C	A	B	C	A
Approach Delay		17.0			28.5			32.2			22.4	
Approach LOS		B			C			C			C	

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 80.7
 Natural Cycle: 60
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.74
 Intersection Signal Delay: 25.9
 Intersection LOS: C
 Intersection Capacity Utilization 65.2%
 ICU Level of Service C
 Analysis Period (min) 15

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



Intersection				
Intersection Delay, s/veh	7.5			
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	643	154	372	174
Demand Flow Rate, veh/h	656	157	379	177
Vehicles Circulating, veh/h	61	488	257	466
Vehicles Exiting, veh/h	582	148	460	179
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	8.2	6.3	7.1	6.4
Approach LOS	A	A	A	A
Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	656	157	379	177
Cap Entry Lane, veh/h	1297	839	1062	858
Entry HV Adj Factor	0.981	0.982	0.981	0.983
Flow Entry, veh/h	643	154	372	174
Cap Entry, veh/h	1272	823	1042	843
V/C Ratio	0.506	0.187	0.357	0.206
Control Delay, s/veh	8.2	6.3	7.1	6.4
LOS	A	A	A	A
95th %tile Queue, veh	3	1	2	1

Intersection												
Int Delay, s/veh	5.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↗	↖	↗	↖	↖	↗
Traffic Vol, veh/h	72	0	87	61	0	87	43	113	0	0	191	103
Future Vol, veh/h	72	0	87	61	0	87	43	113	0	0	191	103
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	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	76	0	92	64	0	92	45	119	0	0	201	108

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	456	410	201	510	518	119	309	0	0	119	0	0
Stage 1	201	201	-	209	209	-	-	-	-	-	-	-
Stage 2	255	209	-	301	309	-	-	-	-	-	-	-
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	515	531	840	474	462	933	1252	-	-	1469	-	-
Stage 1	801	735	-	793	729	-	-	-	-	-	-	-
Stage 2	749	729	-	708	660	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	452	512	840	411	445	933	1252	-	-	1469	-	-
Mov Cap-2 Maneuver	452	512	-	411	445	-	-	-	-	-	-	-
Stage 1	772	735	-	764	703	-	-	-	-	-	-	-
Stage 2	651	703	-	631	660	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	13.2		12.9		2.2		0	
HCM LOS	B		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1252	-	-	605	612	1469	-	-
HCM Lane V/C Ratio	0.036	-	-	0.277	0.255	-	-	-
HCM Control Delay (s)	8	-	-	13.2	12.9	0	-	-
HCM Lane LOS	A	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	1.1	1	0	-	-

4: N-S Collector St & YMCA Access HCM 6th TWSC

Midday

Intersection												
Int Delay, s/veh	4.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	↕
Traffic Vol, veh/h	38	0	131	7	0	7	58	111	6	9	263	67
Future Vol, veh/h	38	0	131	7	0	7	58	111	6	9	263	67
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	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	40	0	138	7	0	7	61	117	6	9	277	71

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	541	540	277	642	608	120	348	0	0	123	0	0
Stage 1	295	295	-	242	242	-	-	-	-	-	-	-
Stage 2	246	245	-	400	366	-	-	-	-	-	-	-
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	452	449	762	387	410	931	1211	-	-	1464	-	-
Stage 1	713	669	-	762	705	-	-	-	-	-	-	-
Stage 2	758	703	-	626	623	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	429	424	762	303	387	931	1211	-	-	1464	-	-
Mov Cap-2 Maneuver	429	424	-	303	387	-	-	-	-	-	-	-
Stage 1	677	665	-	724	670	-	-	-	-	-	-	-
Stage 2	714	668	-	510	619	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	12.6		13.1		2.7		0.2	
HCM LOS	B		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1211	-	-	649	457	1464	-	-
HCM Lane V/C Ratio	0.05	-	-	0.274	0.032	0.006	-	-
HCM Control Delay (s)	8.1	-	-	12.6	13.1	7.5	-	-
HCM Lane LOS	A	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-	1.1	0.1	0	-	-

Intersection	
Intersection Delay, s/veh	12.6
Intersection LOS	B

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↗	↑	↑	↖	↗	↖
Traffic Vol, veh/h	154	203	193	21	84	318
Future Vol, veh/h	154	203	193	21	84	318
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	162	214	203	22	88	335
Number of Lanes	1	1	1	1	1	1

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	2	2	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	2	0	2
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	2	2
HCM Control Delay	12.2	12.1	13.3
HCM LOS	B	B	B

Lane	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	0%	0%	100%	0%
Vol Thru, %	0%	100%	100%	0%	0%	0%
Vol Right, %	0%	0%	0%	100%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	154	203	193	21	84	318
LT Vol	154	0	0	0	84	0
Through Vol	0	203	193	0	0	0
RT Vol	0	0	0	21	0	318
Lane Flow Rate	162	214	203	22	88	335
Geometry Grp	7	7	7	7	7	7
Degree of Util (X)	0.297	0.362	0.356	0.034	0.165	0.512
Departure Headway (Hd)	6.599	6.091	6.314	5.602	6.719	5.508
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	545	590	569	638	534	653
Service Time	4.337	3.829	4.057	3.344	4.458	3.246
HCM Lane V/C Ratio	0.297	0.363	0.357	0.034	0.165	0.513
HCM Control Delay	12.1	12.3	12.5	8.5	10.8	13.9
HCM Lane LOS	B	B	B	A	B	B
HCM 95th-tile Q	1.2	1.6	1.6	0.1	0.6	2.9

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

Midday

Intersection						
Int Delay, s/veh	7.1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	204	30	24	10	5	143
Future Vol, veh/h	204	30	24	10	5	143
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	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	215	32	25	11	5	151

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	36	0	-	0	493 31
Stage 1	-	-	-	-	31 -
Stage 2	-	-	-	-	462 -
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	1575	-	-	-	535 1043
Stage 1	-	-	-	-	992 -
Stage 2	-	-	-	-	634 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1575	-	-	-	462 1043
Mov Cap-2 Maneuver	-	-	-	-	462 -
Stage 1	-	-	-	-	856 -
Stage 2	-	-	-	-	634 -

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

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1575	-	-	-	1000
HCM Lane V/C Ratio	0.136	-	-	-	0.156
HCM Control Delay (s)	7.6	-	-	-	9.3
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0.5	-	-	-	0.6

7: SH 83 & Pinehurst Cir HCM 6th Roundabout

Midday

Intersection			
Intersection Delay, s/veh	35.9		
Intersection LOS	E		
Approach	WB	NB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	609	995	885
Demand Flow Rate, veh/h	621	1015	902
Vehicles Circulating, veh/h	733	174	363
Vehicles Exiting, veh/h	456	1091	991
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	49.5	25.0	38.8
Approach LOS	E	C	E
Lane	Left	Left	Left
Designated Moves	LR	TR	LT
Assumed Moves	LR	TR	LT
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	621	1015	902
Cap Entry Lane, veh/h	653	1155	953
Entry HV Adj Factor	0.981	0.980	0.981
Flow Entry, veh/h	609	995	885
Cap Entry, veh/h	641	1132	935
V/C Ratio	0.950	0.878	0.947
Control Delay, s/veh	49.5	25.0	38.8
LOS	E	C	E
95th %tile Queue, veh	13	13	15

1: SH 83 & SH 105/Walker Rd Timings

PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	85	288	252	174	271	129	336	541	282	185	692	103
Future Volume (vph)	85	288	252	174	271	129	336	541	282	185	692	103
Turn Type	pm+pt	NA	Perm	Prot	NA	Free	Prot	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4			Free			2	6		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)	13.0	26.0	26.0	27.0	40.0		19.0	50.0	50.0	17.0	48.0	48.0
Total Split (%)	10.8%	21.7%	21.7%	22.5%	33.3%		15.8%	41.7%	41.7%	14.2%	40.0%	40.0%
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	None	None	None	None	None
Act Effct Green (s)	25.9	17.1	17.1	10.9	23.4	97.5	13.8	35.1	35.1	44.6	31.9	31.9
Actuated g/C Ratio	0.27	0.18	0.18	0.11	0.24	1.00	0.14	0.36	0.36	0.46	0.33	0.33
v/c Ratio	0.29	0.49	0.53	0.48	0.64	0.09	0.73	0.85	0.40	0.63	0.63	0.17
Control Delay	26.4	40.5	9.2	47.9	43.5	0.1	52.9	42.9	6.0	22.7	30.6	1.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.4	40.5	9.2	47.9	43.5	0.1	52.9	42.9	6.0	22.7	30.6	1.5
LOS	C	D	A	D	D	A	D	D	A	C	C	A
Approach Delay		26.0			35.1			36.8			26.1	
Approach LOS		C			D			D			C	

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 97.5
 Natural Cycle: 70
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.85
 Intersection Signal Delay: 31.3
 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



Intersection				
Intersection Delay, s/veh	9.0			
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	795	169	368	180
Demand Flow Rate, veh/h	811	172	375	183
Vehicles Circulating, veh/h	48	523	370	480
Vehicles Exiting, veh/h	615	222	489	215
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	10.3	6.8	8.4	6.6
Approach LOS	B	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	811	172	375	183
Cap Entry Lane, veh/h	1314	809	946	846
Entry HV Adj Factor	0.980	0.980	0.981	0.983
Flow Entry, veh/h	795	169	368	180
Cap Entry, veh/h	1288	793	928	832
V/C Ratio	0.617	0.212	0.396	0.216
Control Delay, s/veh	10.3	6.8	8.4	6.6
LOS	B	A	A	A
95th %tile Queue, veh	5	1	2	1

3: N-S Collector St & Future Tract B Access/North School Access HCM 6th TWSC 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	80	0	99	18	0	31	46	147	17	20	178	112
Future Vol, veh/h	80	0	99	18	0	31	46	147	17	20	178	112
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	95	95	95	90	75	75	95	90	75	75	90	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	84	0	104	20	0	41	48	163	23	27	198	118

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	543	534	198	622	629	163	316	0	0	186	0	0
Stage 1	252	252	-	259	259	-	-	-	-	-	-	-
Stage 2	291	282	-	363	370	-	-	-	-	-	-	-
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	451	452	843	399	399	882	1244	-	-	1388	-	-
Stage 1	752	698	-	746	694	-	-	-	-	-	-	-
Stage 2	717	678	-	656	620	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	411	426	843	334	376	882	1244	-	-	1388	-	-
Mov Cap-2 Maneuver	411	426	-	334	376	-	-	-	-	-	-	-
Stage 1	723	685	-	717	667	-	-	-	-	-	-	-
Stage 2	657	652	-	564	608	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	14.3	12	1.7	0.6
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1244	-	-	574	575	1388	-	-
HCM Lane V/C Ratio	0.039	-	-	0.328	0.107	0.019	-	-
HCM Control Delay (s)	8	-	-	14.3	12	7.6	-	-
HCM Lane LOS	A	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	1.4	0.4	0.1	-	-

4: N-S Collector St & YMCA Access HCM 6th TWSC

PM Peak Hour

Intersection												
Int Delay, s/veh	5.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	↕
Traffic Vol, veh/h	43	0	155	25	0	30	63	137	22	26	199	71
Future Vol, veh/h	43	0	155	25	0	30	63	137	22	26	199	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	92	92	92	92	85	92	92	85	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	47	0	168	27	0	33	68	161	24	28	234	77

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	616	611	234	722	676	173	311	0	0	185	0	0
Stage 1	290	290	-	309	309	-	-	-	-	-	-	-
Stage 2	326	321	-	413	367	-	-	-	-	-	-	-
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	403	409	805	342	375	871	1249	-	-	1390	-	-
Stage 1	718	672	-	701	660	-	-	-	-	-	-	-
Stage 2	687	652	-	616	622	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	366	379	805	255	348	871	1249	-	-	1390	-	-
Mov Cap-2 Maneuver	366	379	-	255	348	-	-	-	-	-	-	-
Stage 1	679	659	-	663	624	-	-	-	-	-	-	-
Stage 2	625	617	-	477	610	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	13.5		15.1		2.2		0.6	
HCM LOS	B		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1249	-	-	639	415	1390	-	-
HCM Lane V/C Ratio	0.055	-	-	0.337	0.144	0.02	-	-
HCM Control Delay (s)	8	-	-	13.5	15.1	7.6	-	-
HCM Lane LOS	A	-	-	B	C	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-	1.5	0.5	0.1	-	-

Intersection	
Intersection Delay, s/veh	16.2
Intersection LOS	C

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↗	↑	↑	↖	↗	↖
Traffic Vol, veh/h	203	128	113	20	45	334
Future Vol, veh/h	203	128	113	20	45	334
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	271	171	151	27	60	445
Number of Lanes	1	1	1	1	1	1

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	2	2	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	2	0	2
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	2	2
HCM Control Delay	14.7	11.7	19
HCM LOS	B	B	C

Lane	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	0%	0%	100%	0%
Vol Thru, %	0%	100%	100%	0%	0%	0%
Vol Right, %	0%	0%	0%	100%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	203	128	113	20	45	334
LT Vol	203	0	0	0	45	0
Through Vol	0	128	113	0	0	0
RT Vol	0	0	0	20	0	334
Lane Flow Rate	271	171	151	27	60	445
Geometry Grp	7	7	7	7	7	7
Degree of Util (X)	0.513	0.299	0.282	0.045	0.114	0.694
Departure Headway (Hd)	6.825	6.316	6.739	6.023	6.824	5.612
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	528	568	532	592	524	641
Service Time	4.577	4.068	4.503	3.787	4.574	3.362
HCM Lane V/C Ratio	0.513	0.301	0.284	0.046	0.115	0.694
HCM Control Delay	16.6	11.8	12.2	9.1	10.5	20.2
HCM Lane LOS	C	B	B	A	B	C
HCM 95th-tile Q	2.9	1.2	1.2	0.1	0.4	5.5

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

Intersection						
Int Delay, s/veh	4.8					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	34	39	28	2	2	46
Future Vol, veh/h	34	39	28	2	2	46
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	75	75
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	45	42	30	3	3	61

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	33	0	-	0	164 32
Stage 1	-	-	-	-	32 -
Stage 2	-	-	-	-	132 -
Critical Hdwy	4.12	-	-	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	2.218	-	-	-	3.518 3.318
Pot Cap-1 Maneuver	1579	-	-	-	827 1042
Stage 1	-	-	-	-	991 -
Stage 2	-	-	-	-	894 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1579	-	-	-	804 1042
Mov Cap-2 Maneuver	-	-	-	-	804 -
Stage 1	-	-	-	-	963 -
Stage 2	-	-	-	-	894 -

Approach	EB	WB	SB
HCM Control Delay, s	3.8	0	8.7
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1579	-	-	-	1029
HCM Lane V/C Ratio	0.029	-	-	-	0.062
HCM Control Delay (s)	7.3	-	-	-	8.7
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0.1	-	-	-	0.2

7: SH 83 & Pinehurst Cir HCM 6th Roundabout

PM Peak Hour

Intersection			
Intersection Delay, s/veh	93.8		
Intersection LOS	F		
Approach	WB	NB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	556	1257	1175
Demand Flow Rate, veh/h	568	1282	1198
Vehicles Circulating, veh/h	1011	108	331
Vehicles Exiting, veh/h	379	1421	1247
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	118.5	54.5	124.0
Approach LOS	F	F	F
Lane	Left	Left	Left
Designated Moves	LR	TR	LT
Assumed Moves	LR	TR	LT
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	568	1282	1198
Cap Entry Lane, veh/h	492	1236	985
Entry HV Adj Factor	0.979	0.981	0.980
Flow Entry, veh/h	556	1257	1175
Cap Entry, veh/h	482	1212	965
V/C Ratio	1.154	1.037	1.217
Control Delay, s/veh	118.5	54.5	124.0
LOS	F	F	F
95th %tile Queue, veh	20	25	38

121: SH 83 & Hodgen Rd Timings

PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	204	339	116	123	302	297	189	689	398	376	728	224
Future Volume (vph)	204	339	116	123	302	297	189	689	398	376	728	224
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 Effct Green (s)	32.2	22.2	22.2	7.7	20.9	97.0	39.7	29.8	29.8	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	0.47	0.79	0.20	0.60	0.67	0.60	0.78	0.58	0.32
Control Delay	41.1	53.8	1.1	49.6	51.1	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	41.1	53.8	1.1	49.6	51.1	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		40.6			29.9			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 77.0%
 ICU Level of Service D
 Analysis Period (min) 15

Splits and Phases: 121: SH 83 & Hodgen Rd















Appendix Queuing Analysis



2040 Total Traffic (No Access Pinehurst/SH 83)

1: SH 83 & SH 105/Walker Rd Queues

AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	55	568	184	497	576	260	224	571	667	254	399	103
v/c Ratio	0.31	0.83	0.41	0.92	1.00	0.16	0.76	0.90	0.87	0.95	0.31	0.15
Control Delay	28.3	56.4	8.7	72.1	78.9	0.2	69.6	54.3	30.9	70.5	27.2	0.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	28.3	56.4	8.7	72.1	78.9	0.2	69.6	54.3	30.9	70.5	27.2	0.9
Queue Length 50th (ft)	26	222	0	199	~501	0	89	406	257	128	113	0
Queue Length 95th (ft)	54	257	60	#307	#621	0	#149	#602	344	#246	154	5
Internal Link Dist (ft)		573			387			655			612	
Turn Bay Length (ft)	205		375	305		325	500			475		475
Base Capacity (vph)	188	743	477	541	577	1583	301	701	806	267	1395	723
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	0.76	0.39	0.92	1.00	0.16	0.74	0.81	0.83	0.95	0.29	0.14

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

1: SH 83 & SH 105/Walker Rd Queues

Midday















Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	65	372	162	477	495	202	145	345	507	209	402	58
v/c Ratio	0.24	0.50	0.35	0.76	0.77	0.13	0.45	0.73	0.71	0.60	0.43	0.11
Control Delay	19.5	36.5	6.9	47.5	39.6	0.2	48.2	42.5	12.8	26.0	30.9	0.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.5	36.5	6.9	47.5	39.6	0.2	48.2	42.5	12.8	26.0	30.9	0.4
Queue Length 50th (ft)	22	106	0	150	280	0	45	203	47	85	113	0
Queue Length 95th (ft)	53	170	47	#253	#510	0	83	299	160	136	157	0
Internal Link Dist (ft)		573			387			655			612	
Turn Bay Length (ft)	205		375	305		325	500			475		475
Base Capacity (vph)	292	920	539	669	686	1583	372	909	984	360	1726	856
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	0.22	0.40	0.30	0.71	0.72	0.13	0.39	0.38	0.52	0.58	0.23	0.07

Intersection Summary

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

1: SH 83 & SH 105/Walker Rd Queues

PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	89	348	219	487	495	195	186	511	561	255	667	108
v/c Ratio	0.43	0.58	0.49	0.79	0.87	0.12	0.53	0.84	0.69	0.84	0.57	0.17
Control Delay	30.0	47.2	9.8	54.6	54.9	0.2	54.4	48.3	12.0	43.8	32.8	1.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.0	47.2	9.8	54.6	54.9	0.2	54.4	48.3	12.0	43.8	32.8	1.4
Queue Length 50th (ft)	40	125	0	178	354	0	69	347	65	108	211	0
Queue Length 95th (ft)	79	183	69	247	#584	0	108	486	194	#250	280	9
Internal Link Dist (ft)		573			387			655			612	
Turn Bay Length (ft)	205		375	305		325	500			475		475
Base Capacity (vph)	217	685	483	704	590	1583	448	746	898	310	1358	708
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	0.51	0.45	0.69	0.84	0.12	0.42	0.68	0.62	0.82	0.49	0.15

Intersection Summary

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

1: SH 83 & SH 105/Walker Rd Queues

AM Peak Hour















Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	55	568	184	497	315	160	449	655	234	254	399	103
v/c Ratio	0.19	0.95	0.44	0.95	0.62	0.10	0.91	0.96	0.33	0.93	0.33	0.16
Control Delay	27.5	75.9	9.7	79.9	45.8	0.1	74.8	63.1	7.6	69.6	29.7	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	0.0
Total Delay	27.5	75.9	9.7	79.9	45.8	0.1	74.8	63.1	7.6	69.6	29.7	1.0
Queue Length 50th (ft)	28	232	0	199	221	0	179	484	22	140	118	0
Queue Length 95th (ft)	57	#294	63	#307	295	0	#276	#722	60	#250	161	6
Internal Link Dist (ft)		573			387			655			612	
Turn Bay Length (ft)	205		375	305		325	500			475		475
Base Capacity (vph)	326	597	420	521	509	1583	493	707	718	274	1255	667
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	0.17	0.95	0.44	0.95	0.62	0.10	0.91	0.93	0.33	0.93	0.32	0.15

Intersection Summary

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

1: SH 83 & SH 105/Walker Rd Queues













												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	65	372	162	477	314	134	326	413	233	209	402	58
v/c Ratio	0.19	0.63	0.10	0.79	0.58	0.08	0.73	0.76	0.37	0.63	0.44	0.11
Control Delay	19.6	39.4	0.1	46.6	34.2	0.1	49.2	37.8	5.0	24.3	28.3	0.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.6	39.4	0.1	46.6	34.2	0.1	49.2	37.8	5.0	24.3	28.3	0.4
Queue Length 50th (ft)	21	98	0	127	152	0	88	200	0	65	94	0
Queue Length 95th (ft)	54	164	0	#261	277	0	#189	325	50	120	145	0
Internal Link Dist (ft)		573			387			655			612	
Turn Bay Length (ft)	205		375	305		325	500			475		475
Base Capacity (vph)	356	834	1583	606	609	1583	445	1185	1092	334	2126	1016
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	0.18	0.45	0.10	0.79	0.52	0.08	0.73	0.35	0.21	0.63	0.19	0.06

Intersection Summary

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

1: SH 83 & SH 105/Walker Rd Queues

PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	89	348	219	487	327	136	354	569	297	255	667	108
v/c Ratio	0.31	0.66	0.52	0.79	0.62	0.09	0.72	0.90	0.42	0.87	0.60	0.18
Control Delay	27.3	51.5	10.6	54.4	41.9	0.1	55.0	53.7	6.9	54.7	35.2	1.6
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	27.3	51.5	10.6	54.4	41.9	0.1	55.0	53.7	6.9	54.7	35.2	1.6
Queue Length 50th (ft)	43	132	0	181	220	0	132	395	16	122	221	0
Queue Length 95th (ft)	79	183	69	247	321	0	188	#612	81	#292	295	10
Internal Link Dist (ft)		573			387			655			612	
Turn Bay Length (ft)	205		375	305		325	500			475		475
Base Capacity (vph)	298	658	473	703	589	1583	575	728	780	298	1223	654
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	0.30	0.53	0.46	0.69	0.56	0.09	0.62	0.78	0.38	0.86	0.55	0.17













Intersection Summary

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

2040 Total Traffic (Full Access Pinehurst/SH 83)

1: SH 83 & SH 105/Walker Rd Queues

AM Peak Hour

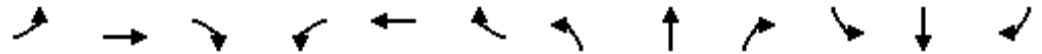
												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	55	440	294	182	295	160	449	655	234	151	487	103
v/c Ratio	0.20	0.68	0.56	0.51	0.65	0.10	0.80	0.88	0.32	0.58	0.42	0.16
Control Delay	25.8	46.6	8.9	51.0	45.1	0.1	55.0	46.1	7.6	24.5	29.8	0.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.8	46.6	8.9	51.0	45.1	0.1	55.0	46.1	7.6	24.5	29.8	0.5
Queue Length 50th (ft)	25	148	0	61	190	0	152	403	21	46	134	0
Queue Length 95th (ft)	54	191	74	103	257	0	#253	#718	63	84	202	0
Internal Link Dist (ft)		573			387			655			612	
Turn Bay Length (ft)	205		375	305		325	500			475		475
Base Capacity (vph)	295	820	592	595	610	1583	595	771	763	299	1261	698
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	0.19	0.54	0.50	0.31	0.48	0.10	0.75	0.85	0.31	0.51	0.39	0.15

Intersection Summary

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

1: SH 83 & SH 105/Walker Rd Queues

Midday















Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	65	280	254	149	287	134	326	413	233	131	481	58
v/c Ratio	0.18	0.41	0.16	0.38	0.61	0.08	0.74	0.74	0.36	0.36	0.50	0.11
Control Delay	19.2	31.8	0.2	39.4	36.0	0.1	48.9	34.5	5.0	15.7	26.8	0.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.2	31.8	0.2	39.4	36.0	0.1	48.9	34.5	5.0	15.7	26.8	0.4
Queue Length 50th (ft)	20	65	0	36	135	0	84	186	0	35	106	0
Queue Length 95th (ft)	54	121	0	78	252	0	#201	325	50	78	172	0
Internal Link Dist (ft)		573			387			655			612	
Turn Bay Length (ft)	205		375	305		325	500			475		475
Base Capacity (vph)	375	928	1583	661	646	1583	440	1292	1169	370	2364	1112
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	0.17	0.30	0.16	0.23	0.44	0.08	0.74	0.32	0.20	0.35	0.20	0.05

Intersection Summary

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

1: SH 83 & SH 105/Walker Rd Queues

PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	89	303	265	183	285	136	354	569	297	195	728	108
v/c Ratio	0.29	0.49	0.53	0.48	0.64	0.09	0.73	0.85	0.40	0.63	0.63	0.17
Control Delay	26.4	40.5	9.2	47.9	43.5	0.1	52.9	42.9	6.0	22.7	30.6	1.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.4	40.5	9.2	47.9	43.5	0.1	52.9	42.9	6.0	22.7	30.6	1.5
Queue Length 50th (ft)	40	94	0	58	175	0	115	329	12	60	202	0
Queue Length 95th (ft)	80	149	71	102	280	0	#213	#566	74	116	294	9
Internal Link Dist (ft)		573			387			655			612	
Turn Bay Length (ft)	205		375	305		325	500			475		475
Base Capacity (vph)	318	774	553	801	672	1583	510	850	868	344	1540	781
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	0.28	0.39	0.48	0.23	0.42	0.09	0.69	0.67	0.34	0.57	0.47	0.14

Intersection Summary

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