

Final Traffic Impact Analysis Study Report

Blue Ridge Middle/Junior High School Lakeside, Arizona



In Accordance with the Requirements of

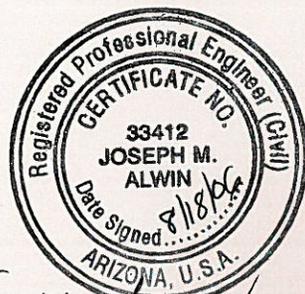


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COMMUNITY DEVELOPMENT



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August 17, 2006

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SECTION 1: INTRODUCTION AND SUMMARY

1.1 Purpose of Report and Study Objectives

The purpose of this study is to document a traffic impact analysis for the proposed Blue Ridge Middle/Jr. High School located within Lakeside, Arizona. Lakeside is a small incorporated rural community located within Navajo County. The primary access into the proposed school will be through two driveways intersecting Porter Mountain Road and therefore fall under the jurisdiction of the Town of Pinetop-Lakeside (Town).

As the overall development will generate more than 500 trips but less than 1,000 trips during the peak period, study objectives will follow the requirements of a Category IIa classification under Section 240 – Traffic Impact Analyses, ADOT Traffic Engineering Policies, Guidelines and Procedures. The requirements of this policy are that the study horizons be the opening year and five years after opening. Also, the study will evaluate site access points and all major intersections, either signalized or unsignalized, within ½ mile of the site boundary.

1.2 Executive Summary

C.L. Williams Inc. has been retained by NTD Stichler of Phoenix, Arizona to perform a traffic impact analysis of the proposed school; Blue Ridge Middle/Jr. High School. The site is located within Lakeside, Arizona as shown within Figure 1, Site Location Map.

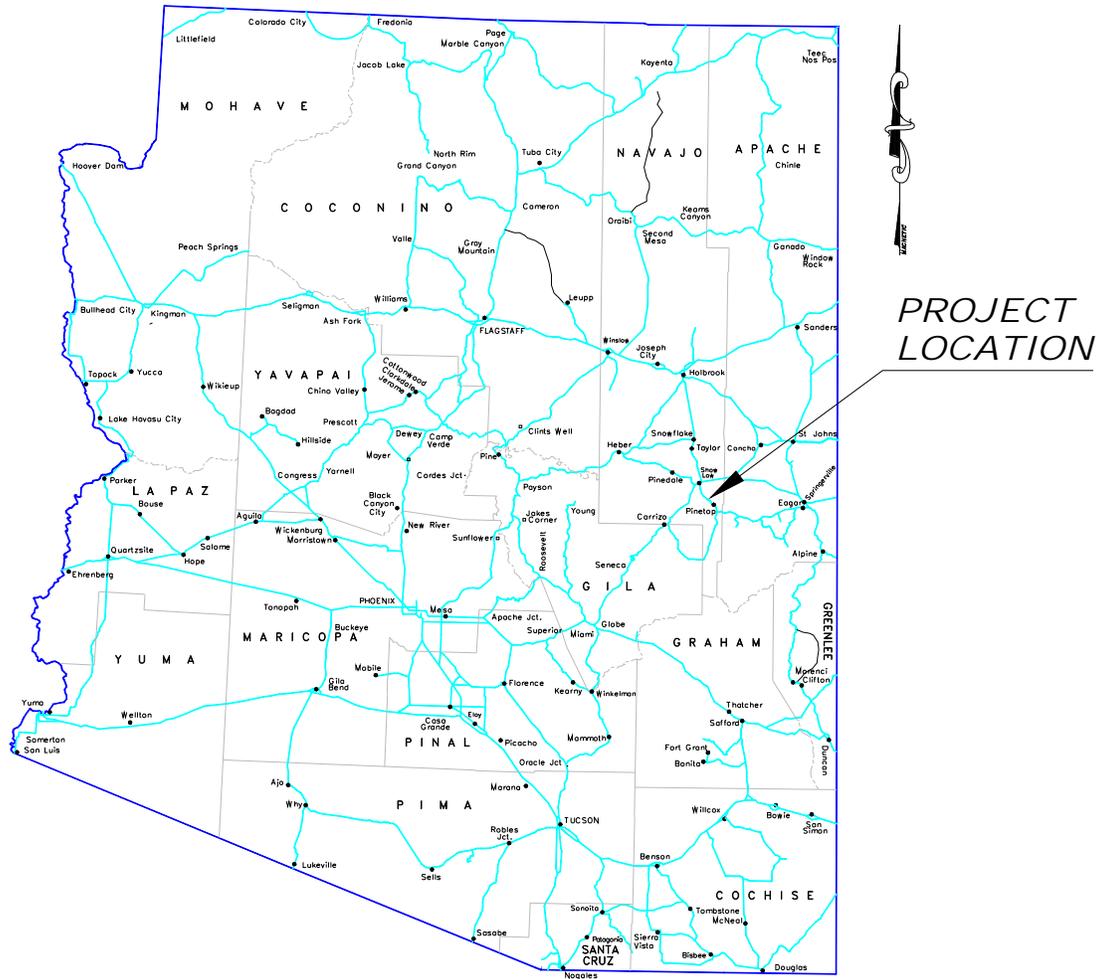
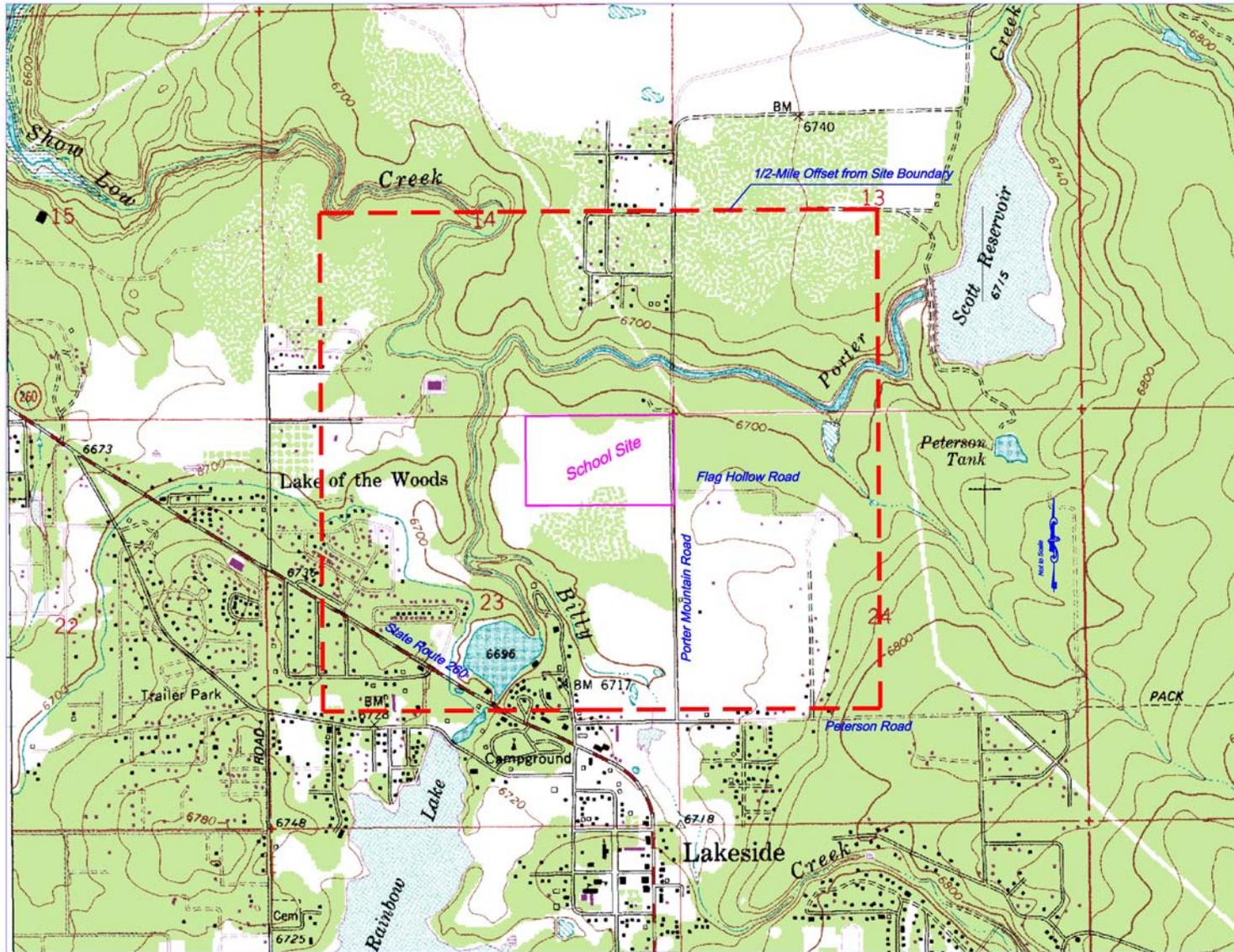


Figure 1: Location Map

The study area, based on ADOT Category IIa Traffic Impact Analyses requirements is limited to site access points and major intersections within ½-mile of the site boundary. There is only one existing roadway intersection in this region that could meet this requirement; the intersection of Porter Mountain Road and Flag Hollow Trail as shown within the site layout map shown within Figure 3. The general area of focus is shown by the vicinity map as shown in Figure 2.

Figure 2: Vicinity Map



1.2.1 Development Description

Blue Ridge Middle/Jr. High School is planned to consist of facilities to support a total of 1,300 students with no other trip generation facilities. Middle school student attendance is anticipated to be 650 while attendance of the Junior High School is anticipated to be 650 students. No commercial or other uses exist or are planned within the project limits. For the purposes of this study trip generation rates within Trip Generation 7th Edition¹ will be employed and will be in accordance with ITE Land Use Code 522; Middle School/Junior High School.

1.2.2 Principal Findings

1.2.2.1 Opening Year - 2007

Prior to the opening year (i.e., 2007), due to the impact of traffic generated by the new school, the intersection of Porter Mountain Road and Flag Hollow Road will need to be improved to a signalized intersection with exclusive left turn lanes on Porter Mountain Road and an exclusive right turn lane for the northbound approach to the intersection. Under these improvements the intersection of Porter Mountain Road and Flag Hollow Road will operate at a Level of Service (LOS) during the AM peak period of A, while during the PM peak period the intersection will operate at a LOS of A.

Also, during 2007 the intersection of Porter Mountain Road and the North Drive (northern school access point), the resulting Level of Service during the AM peak period is C, while during the PM peak period the intersection will operate at a LOS of B. This intersection will require an exclusive left turn lane for the northbound approach and an exclusive right turn lane for the southbound approach.

1.2.2.2 Horizon Year - 2012

During the horizon year of 2012 the intersection of Porter Mountain Road and Flag Hollow Road should require no additional improvements over that recommended for the opening year conditions. Under this condition the intersection of Porter Mountain Road and Flag Hollow Road will operate at a Level of Service during the AM peak period of A, while during the PM peak period the intersection will operate at a LOS of A.

Also, during 2012 the intersection of Porter Mountain Road and the North Drive (northern school access point), the resulting Level of Service during the AM peak period is C, while during the PM peak period the intersection will operate at LOS of B. Intersection and roadway geometry do not require additional improvements over that shown for the 2007 recommendations.

1.2.3 Conclusions

The additional traffic volumes along Porter Mountain Road due to the new school will require roadway and intersection control improvements in accordance with the findings of this study.

Although a 4-way stop control at the intersection of Porter Mountain Road and Flag Hollow Road would provide adequate levels of service, examination of signal warrants and that such a stop controlled intersection would operate during the period when the school is closed, (i.e., having to stop traffic along Porter Mountain Road during the seasonal peak volume of traffic during the summer) such a condition is not an appropriate traffic control measure for this intersection.

1.2.4 Recommendations

The following are recommendations over the existing conditions present within the study area. In addition to the following, the location of North Drive should receive special consideration given resulting poor sight distance available at the currently planned location. Section 6.3 contains additional detail on this issue.

1.2.4.1 Opening Year – 2007

Prior to opening year, the intersection of Porter Mountain Road and Flag Hollow Road should be improved as follow.

1. Construct a northbound left turn lane, storage no less than 250 feet,
and
2. Construct a southbound left turn lane, storage no less than 100 feet,
and
3. Construct a northbound right turn lane, storage no less than 100 feet,
and
4. Install a traffic signal.

Prior to the opening year, the intersection of Porter Mountain Road and North Drive should be improved as follow.

1. Construct a northbound left turn lane, storage no less than 200 feet,
and
2. Construct a southbound right turn lane, storage no less than 100 feet,
and
3. Install 1-way STOP sign on the minor leg of intersection.

1.2.4.2 Horizon Year – 2012

During or prior to the year 2012, the intersection of Porter Mountain Road and Flag Hollow Road should be improved as follow.

1. No additional improvements are required over that shown for the opening year: 2007.

SECTION 2: PROPOSED DEVELOPMENT

2.1 Site Location

The Blue Ridge Middle/Jr. High School is located along the western edge of Porter Mountain Road approximately 0.7 miles north of its intersection with State Route 260. The location of this development is shown within Figure 2 and the layout of the school is shown within Figure 3.

2.2 Land Use and Density

The land use prior to development was unoccupied public land owned by the United States Forest Service. The land use under the developed condition is solely for the Blue Ridge Middle/Jr. High School. No other land uses occur or are known to be planned within the development boundary.

2.3 Site Plan

The site layout map within Figure 3 shows the overall site layout. Two points of access into the proposed school are currently planned and for the purpose of this report will be named North Drive and South Drive. Since the South Drive aligns with Flag Hollow Road, such will be referred to as Flag Hollow Road for this study.

The sole access into the school is from Porter Mountain Road. The proposed North Drive intersection will form a standard “T” intersection with an angle of the intersecting minor street being approximately 90 degrees relative to the major street; Porter Mountain Road. The access at Flag Hollow Road will form a standard 4-way intersection with Porter Mountain Road.

2.4 Development Phasing and Timing

No phasing is planned for the proposed school. The anticipated opening year is set for 2007 as desired by the School District.

SECTION 3: STUDY AREA CONDITIONS

3.1 Study Area

The study area for this size of development, in accordance with ADOT TIA criteria for a Category IIa development, will be the site access driveways: North Drive and Flag Hollow Road along with all major intersections within ½-mile of the site boundary. Only one intersection appears to possibly meet this condition: Flag Hollow Trail and therefore will be considered in the analyses.

3.2 Land Use

Land use within the study area (i.e., proposed subdivision and adjacent area) is generally a mix of commercial uses along the western edge of Porter Mountain Road and residential uses east of Porter Mountain Road. No other land uses; either planned or under consideration by the local jurisdiction, are known to exist. A request for such information was sent to the Town but to date no response has been received.

3.3 Site Accessibility

The main thoroughfare of the area is Porter Mountain Road which connects Lakeside to the City of Show Low (via Penrod Road) and is a paved facility consisting of 2-lanes with no auxiliary lanes within or in close proximity to the study area. The existing posted speed limit is 40 miles per hour.

Traffic will, by in large, originate from the south given the student requirement for attending the Blue Ridge School (i.e., must live within the school district which is entirely south of this location).

No other access points are planned for this development.

SECTION 4: ANALYSIS OF EXISTING CONDITIONS

4.1 Physical Characteristics

Porter Mountain Road is a paved rural highway with two travel lanes, one in each direction, with no two-way continuous left turn lane or auxiliary lanes within the study limits. Porter Mountain Road is oriented in a south to north alignment.

Flag Hollow Road is an unpaved two lane roadway serving residential homes to the east of Porter Mountain Road.

Traffic control devices consist of speed limit signs along Porter Mountain Road and stop signs at intersecting roadways to Porter Mountain Road.

4.2 Traffic Volumes

A daily traffic count was collected at near the intersection of Porter Mountain Road and Flag Hollow Road on Wednesday July 5, 2006. Manual turning movement counts were performed between 7:00 a.m. and 9:00 a.m. and between 4:00 p.m. to 6:00 p.m. on the same day to determine traffic distribution patterns. A copy of the turning count and daily traffic count information are included within Appendices B and C, respectively.

Porter Mountain Road has an ADT of approximately 5,800 vehicles. Flag Hollow Road has an estimated ADT of 315 vehicles (based on the assumption that 8% of the ADT occurs during the AM peak period: 25/.08).

Review of ATR correction factors, as reported by Mr. Mark Catchpole (602-712-8596) of the Arizona Department of Transportation, for two stations: one in Show Low and the other in Lakeside suggests that seasonal adjustment factors to the actual collected data are not needed. Such factors for the month and day that the traffic data was obtained shows that the correction factors, if used, would actually reduce the field data counts. Therefore, to provide a more conservative estimate of

existing traffic volumes no correction will be made. ATR seasonal correction factors are shown within Appendix E. It should be noted that based on the ATR factors, the month of July has the highest traffic volumes of any month of the year. Existing traffic volume information is shown in Figure 4.

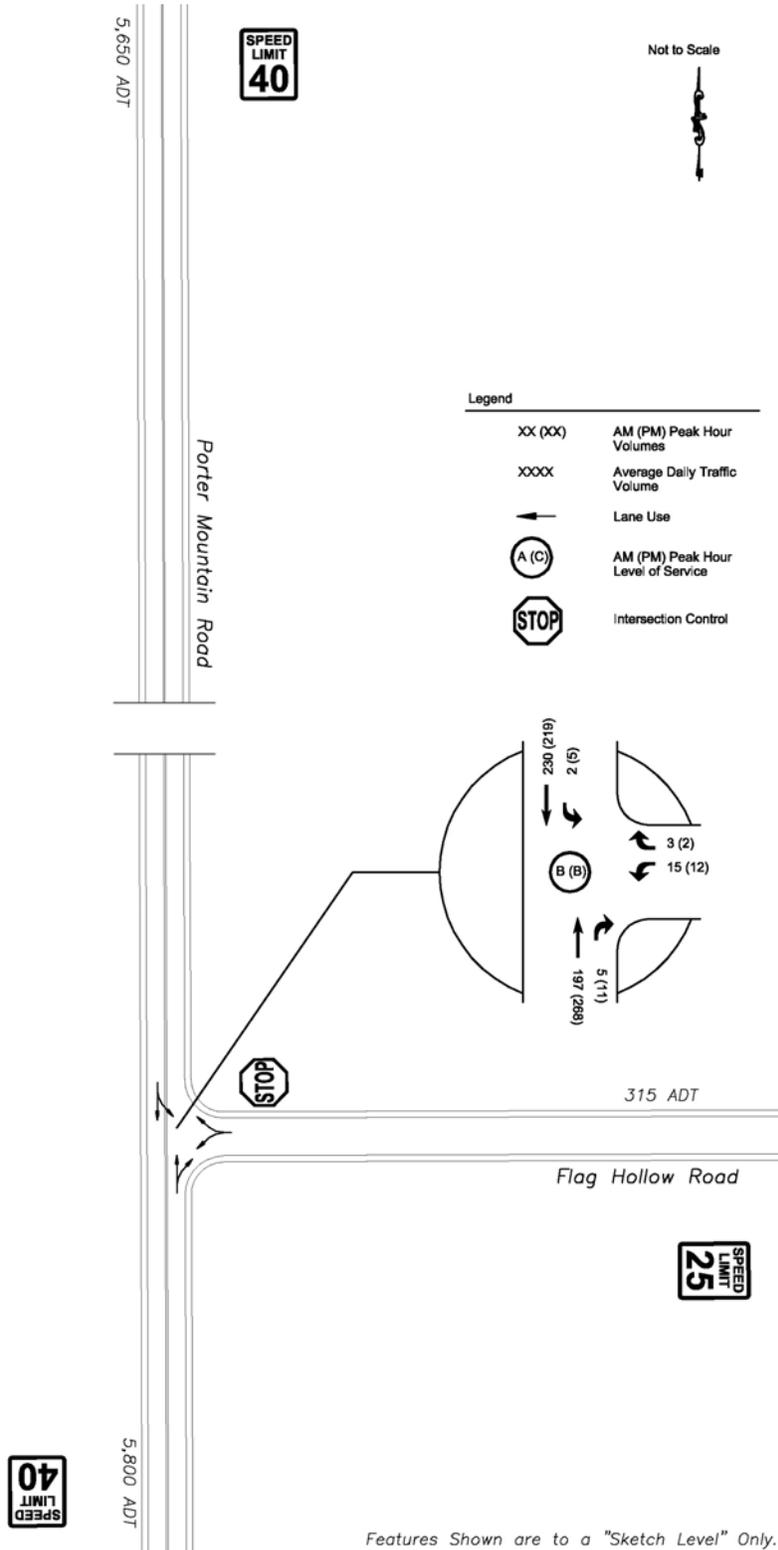
4.3 Level of Service (LOS)

The existing LOS at the intersection of Porter Mountain Road and Flag Hollow Road is “B” during the AM peak period and “B” during the PM peak period. Detailed analyses are contained within Appendix D.1.

4.4 Safety

Traffic accident data was requested of the Navajo County Sheriff’s office. Only a summary of the available, via a phone conversation, data over the past three years was made available to CLW and consists of: 41 recorded accidents of which 16 involved some form of injury and 25 involved property damage. The Sheriff’s office was not able to forward complete records to CLW for review and therefore no determination of what, if any, potential existing traffic safety concerns might be revealed through a close inspection of the accident records, can be made.

Figure 4: Existing Traffic Data and Cultural Information



SECTION 5: PROJECTED TRAFFIC

5.1 Trip Generation

The Institute of Transportation Engineer’s (ITE) Trip Generation, 7th Edition, was used to obtain daily and peak hour trip generation rates and inbound-outbound percentages, which were then used to estimate the number of daily and peak hour trips that can be attributed to the entire development. The trip generation characteristics of the site are summarized in Table 1.

**Table 1
Trip Generation of Site**

Land Use	ITE Code	Quantity	Units	Daily	AM Peak			PM Peak		
				Total	In	Out	Total	In	Out	Total
Middle School/Junior High School	522	1,300	Students	2106	439	360	799	175	215	390

<u>Middle School/Junior High School (ITE 7th Edition)</u>		Trip Distribution	
Daily (ITE 522)	T = 1.62 (X)	50% In	50% Out
AM Peak Hour (ITE 522)	T = 0.79 (X) – 228.00	55% In	45% Out
PM Peak Hour (ITE 522)	T = 0.30 (X)	45% In	55% Out

The Blue Ridge Middle/Jr. High School is expected to generate 2,106 daily trips, with 799 trips occurring during the AM peak hour, and 390 trips during the PM peak hour. Site generated trips are shown in Figure 5.

5.2 Adjacent Trip Generation

Trip generation due to adjacent parcel development under planning consideration is considered not to exist. CLW has made a request to Mr. Keith Dennis of the Town but has not received a response as of the date of this study.

5.3 Trip Reductions

As there are no mix-uses planning for this phase, no reduction of the trip

generated by the site can be made.

5.4 Trip Distribution

The distribution of trips generated by the site is based on the consideration that by in large virtually all traffic will originate from the south given that the Blue Ridge School District is located to the south of this site. The teacher to student ratio is estimated at 1:10 and therefore teachers would make up as much as 10% of the traffic generation and only a portion of those are assumed to originate from the north.

Percent to and from:

South of Porter Mountain Road 96%

North of Porter Mountain Road 4% (teachers and support personnel)

Trips will be divided evenly onto the two access points as the school is equally divide along an east-west line: north for the Junior High School and drop off area and south for the Middle School and its respective drop off area. Another scenario was also modeled based on a request of the Town's technical review firm (Ironsides Engineering) whereby there is a 70-30 split (70% goes to the south access). However, it was revealed that the 50-50 split provided the worse case scenario and therefore is considered throughout the remainder of the analyses herein excluding the discussion of left turn lane capacity as described in Section 6.3.3. of this report.

5.5 Trip Assignment

Trips were assigned to the roadway network on the basis of the trip distribution and the likely travel patterns to and from the site. Figure 5 shows the results of the traffic assignment.

5.6 Future Traffic Forecast

Existing trips were adjusted to reflect traffic volumes during the opening year; 2007. A growth rate of 5 percent per year was used based on review of 1990, 2000 and 2004 census data for the Town of Pinetop/Lakeside and the City of Show Low. Therefore a total increase of 5 percent was applied to the traffic data collected for 2006. Figure 6 shows the background traffic volumes during 2007 (i.e., without site traffic). For the horizon year of 2012, existing traffic volumes were increased by 34 percent (i.e., $(1+r)^6$). This growth factor was deemed appropriate based on a discussion with Mr. Paul Esparza; Town of Pinetop-Lakeside Community Development Director. Figure 7 shows the forecasted background traffic volumes during 2012.

5.7 Total Traffic - 2007

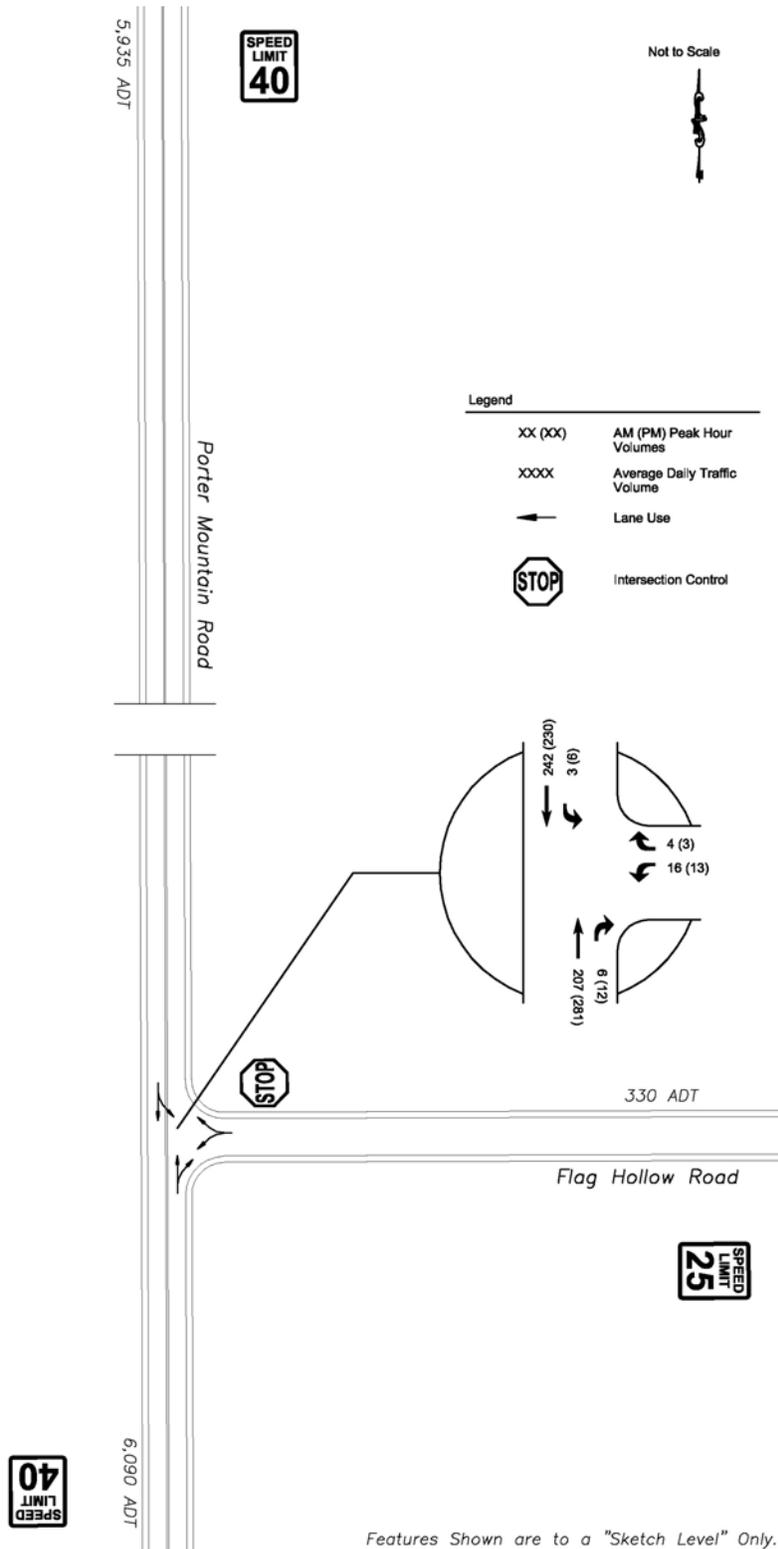
Site traffic volumes were added to the background traffic volumes for 2007 and are shown on Figure 8.

The resulting LOS of the unsignalized intersections was performed by HCS+, a software program that evaluates such a condition in accordance with guidelines as provided within the 2000 Highway Capacity Manual.

The resulting LOS for the intersection of Porter Mountain Road and Flag Hollow Road is a LOS F during the AM peak period and a LOS D during the PM peak hour. Furthermore, the resulting LOS for the intersection of Porter Mountain Road and North Drive is a LOS F during the AM peak period and a LOS C during the PM peak hour. Support information and computations for the 2007 unmitigated condition are contained within Appendix D.2. Given that the resulting LOS for both intersections during the opening year is considered substandard (i.e., recommended minimum LOS is "C") evaluation of horizon year, under existing conditions, was not performed.

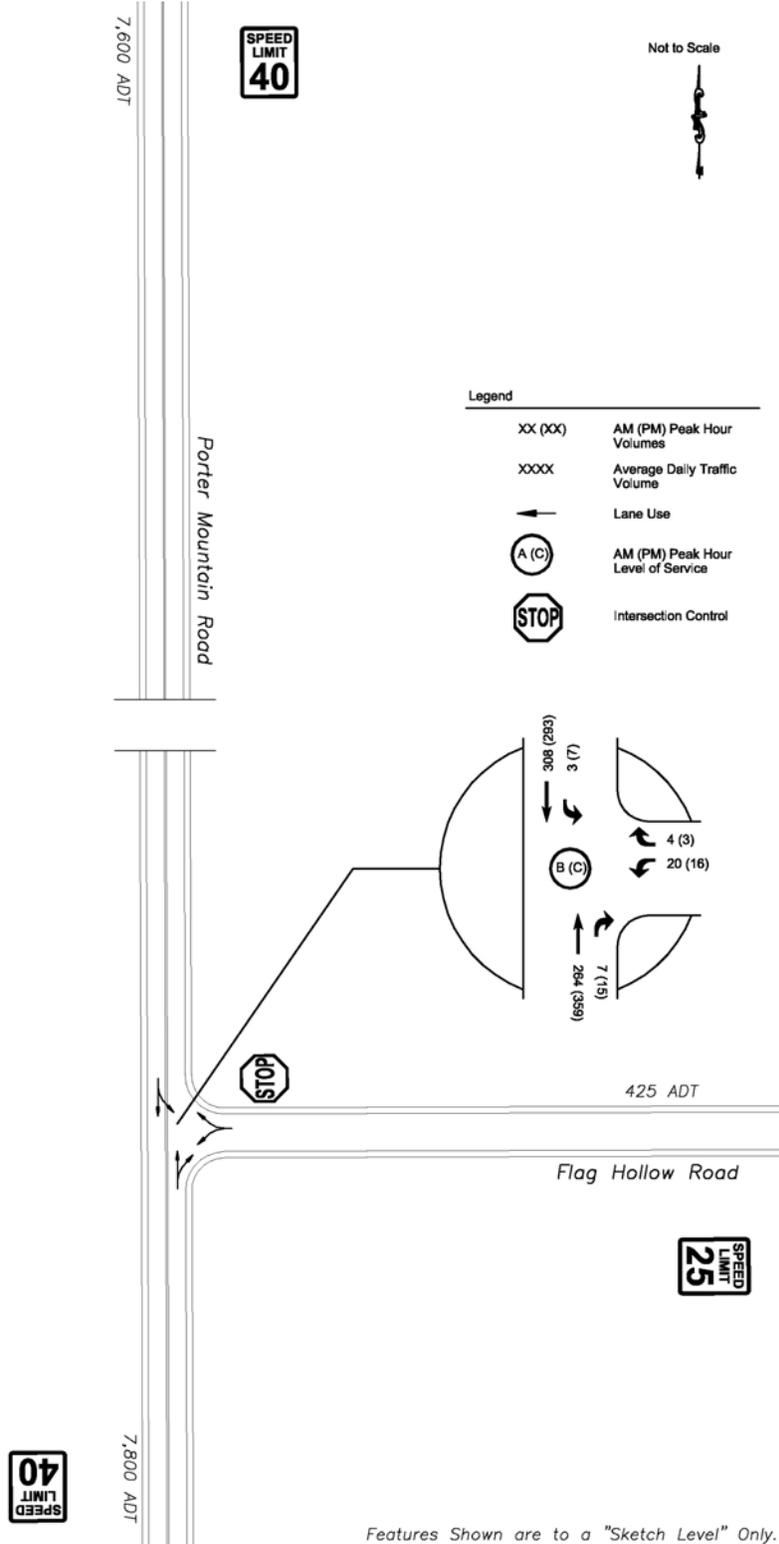
The mitigated conditions are discussed in detail within Section 6 of this study.

Figure 6: Background Traffic – 2007



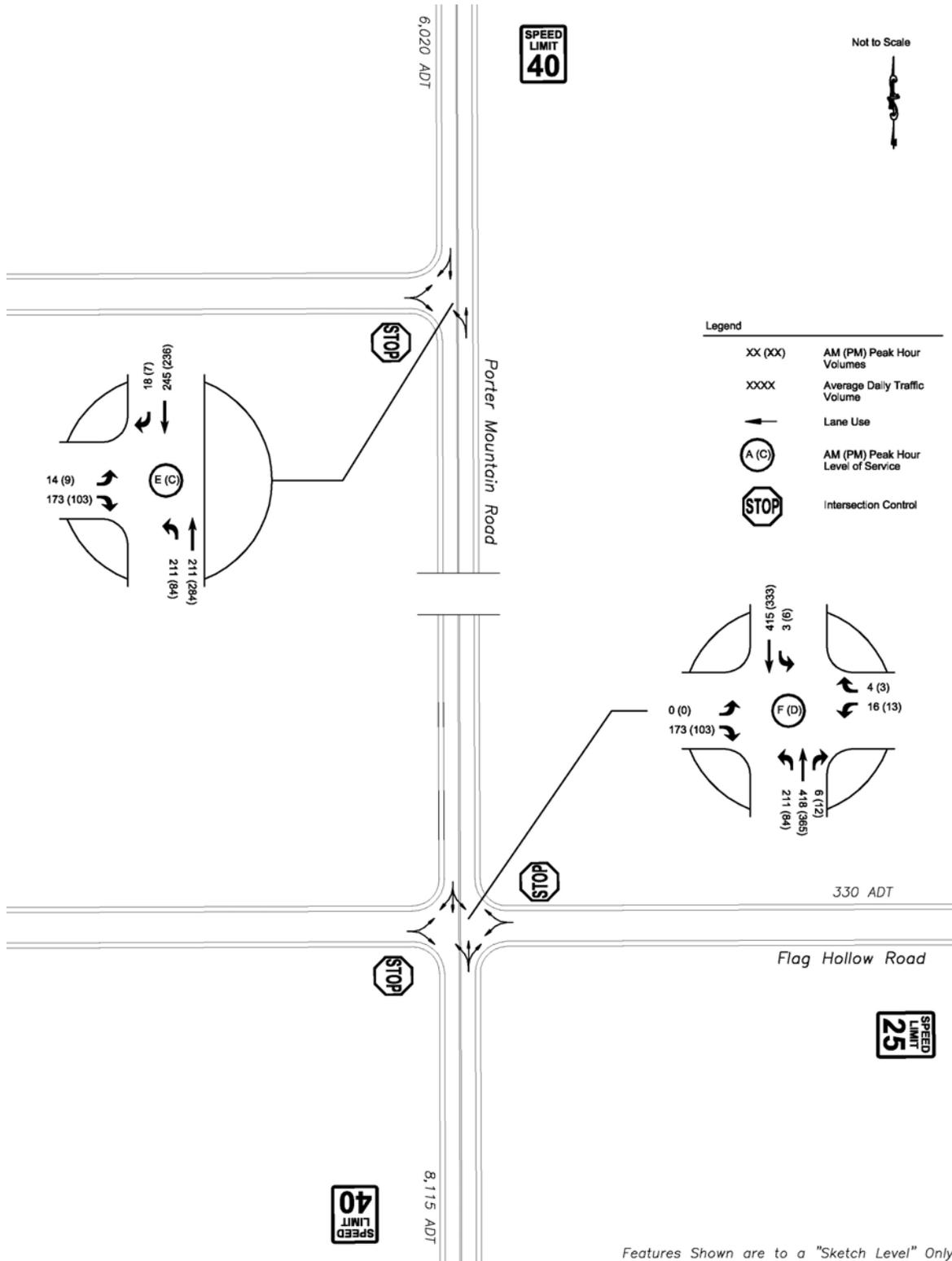
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Figure 7: Background Traffic – 2012



Features Shown are to a "Sketch Level" Only.

Figure 8: Total Traffic – 2007 – Unmitigated



Features Shown are to a "Sketch Level" Only.

SECTION 6: TRAFFIC AND IMPROVEMENT ANALYSIS

6.1 Site Access

Site access currently exists as shown in Figure 4. Left and right turning movements are done within a shared single approach lane. Based on the resulting Level of Service (LOS) during both the AM and PM peak periods of the opening year conditions, mitigation measures are required to the existing conditions along Porter Mountain Road in order to resolve resulting substandard Level of Service to both proposed access points into the school.

6.2 Level of Service Analysis – Initial Mitigated Conditions

A Level of Service (LOS) analysis was performed for the total mitigated traffic condition at both subject intersections: Porter Mountain Road at Flag Hollow Road and Porter Mountain Road and the North Drive.

The resulting LOS of the unsignalized and signalized intersections were determined by HCS+, a software program that evaluates such a condition in accordance with guidelines as provided within the 2000 Highway Capacity Manual.

6.2.1 Opening Year – 2007

The resulting LOS for the intersection of Porter Mountain Road and Flag Hollow Road under the initial mitigated conditions is a LOS C during the AM peak period and a LOS B during the PM peak hour using a 4-way stop intersection. Furthermore, the resulting LOS for the intersection of Porter Mountain Road and North Drive is a LOS C during the AM peak period and a LOS B during the PM peak hour. Support information and computations for the 2007 initial mitigated condition are contained within Appendix D.3. The initially examined mitigation measures consist of the following and are explained in detail within the following herein.

Prior to opening year, the intersection of Porter Mountain Road and Flag Hollow Road should be improved as follows.

1. Construct a northbound left turn lane, storage no less than 200 feet,
and
2. Construct a southbound left turn lane, storage no less than 100 feet,
and
3. Construct a northbound right turn lane, storage no less than 100 feet,
and
4. Install 4-way STOP signing.

Prior to opening year, the intersection of Porter Mountain Road and North Drive should be improved as follows.

1. Construct a northbound left turn lane, storage no less than 200 feet,
and
2. Construct a southbound right turn lane, storage no less than 100 feet,
and
3. Install 1-way STOP sign on minor leg of intersection.

6.2.2 Horizon Year - 2012

The resulting LOS for the intersection of Porter Mountain Road and Flag Hollow Road under the mitigated conditions is a LOS A during the AM peak period and a LOS A during the PM peak hour. Furthermore, the resulting LOS for the intersection of Porter Mountain Road and North Drive is a LOS C during the AM peak period and a LOS B during the PM peak hour. Support information and computations for the unmitigated condition are contained within Appendix D.4 while those relevant to the mitigated condition are contained within Appendix D.5. Mitigation measures for the horizon year 2012 consist of the following and are

explained in detail within the following sections.

During or prior to the year 2012, the intersection of Porter Mountain Road and Flag Hollow Road should be improved as follows:

1. Install a traffic signal.

No other improvements are recommended given the resulting LOS for the study area intersections.

6.3 Traffic Safety

Traffic safety elements evaluated for this study consist of sight distance, auxiliary lanes and adequacy of the location and design of driveway access locations.

6.3.1 Sight Distance – Porter Mountain Road at Flag Hollow Road

The existing available sight distance based on field inspection and review of the available topographic mapping, sight distance is considered excellent in both directions along Porter Mountain Road from Flag Hollow Road. The available sight distance north of the intersection, along the road, is approximately 1,100 feet and 2,000 feet to the south of the intersection. The minimum sight distance for the estimated design speed (i.e., 50 mph) along Porter Mountain Road should be no less than 850 feet for a combination truck (under Case B – Intersections with Stop Control on the Minor Road of reference 7) and therefore both directions appear to have adequate sight distance.

Under the consideration whereby the intersection operates under a 4-way controlled condition the minimum sight distance required is far less than under Case B conditions. Therefore, all approach legs of the improved intersection will have adequate sight distance.

6.3.2 Sight Distance – Porter Mountain Road at North Drive

Under the conditions where North Drive is constructed as planned (520 feet north of Flag Hollow Road) the available sight distance appears to vary from marginal to excellent along Porter Mountain Road from North Drive. The available sight distance north of the intersection, along the road, is approximately 530 feet and over 2,000 feet to the south of the intersection. The minimum sight distance for the estimated design speed along Porter Mountain Road should be no less than 850 feet for a combination truck (under Case B – Intersections with Stop Control on the Minor Road of reference 7) and therefore the North Drive intersection appears to have adequate sight distance to the south.

This intersection will require mitigation/planning measures given the resulting poor sight distance available to the north. Given that combination trucks would likely not frequent the school, the suggested minimum sight distance of 850 feet could be reduced that required for the anticipated design vehicle: passenger car. Therefore, the minimum sight distance under such a condition would be no less than 560 feet. Two solutions appear available to resolve this condition.

1. Locate North Drive to no greater than 200 feet south of the northern site boundary, or
2. Lower the roadway profile of Porter Mountain Road as necessary during the design phase of this project.

CLW recommends option 1 as review of the preliminary site layout shows that this would increase the available storage for left turn issue as discussed in Section 8.1 of this study. Lowering the roadway profile of Porter Mountain Road would likely result in driveway improvement concerns and/or conflicts for existing access points along Porter Mountain.

6.3.3 Auxiliary Lanes – Left Turns

In order to mitigate substandard resulting Level of Service at both subject intersections exclusive left turn lanes are required for both subject intersections given that left turn volumes into the school are significant. Therefore, a queuing analysis was required for these auxiliary lanes during the opening year: 2007.

The following equation is use to determine the required storage length for unsignalized intersections.

$$\text{Storage Length} = [(\text{veh/hr})/30 \text{ periods/hr}] \times 25 \text{ feet}$$

Table 2
Left Turn Storage Length Required - 2007

Intersection	Control Type	Movement	Calculated Storage	Recommended Storage **
Porter Mountain Road & Flag Hollow Road	4-Way Stop*	NB Left SB Left	179' 3'	250' 100'
Porter Mountain Road & North Drive	Stop on Minor Leg	NB Left	179'	200'

* Evaluation of the recommended improvements (i.e., Traffic Signal) produced identical results

** considers the impact under a 70-30 site traffic distribution scenario

As the intersection of Porter Mountain Road and Flag Hollow Road is recommended to be a signalized intersection for the horizon year of 2012 the queuing analysis differs. The following equation is use to determine the required storage length for signalized intersections.

$$\text{Storage Length} = [2 \times (\text{veh/hr})/(\text{cycles/hr})] \times 25 \text{ feet}$$

**Table 3
Left Turn Storage Length Required - 2012**

Intersection	Control Type	Movement	Calculated Storage	Recommended Storage *
Porter Mountain Road & Flag Hollow Road	Traffic Signal	NB Left SB Left	179' 6'	250' 100'
Porter Mountain Road & North Drive	Stop on Minor Leg	NB Left	179'	200'

*considers the impact under a 70-30 site traffic distribution scenario

6.3.4 Auxiliary Lanes – Right Turns

Given that ADOT does not currently have a right turn lane warrant policy, CLW evaluated right turn lanes using methodology developed by the Idaho Department of Transportation's⁶ criteria (which ADOT is considering at this time). CLW found that right turn lanes at the subject intersections appear warranted.

The results of the analysis, shown within Appendix G including the Idaho criteria, shows that a right turn lane is warranted for both the northbound leg of Porter Mountain Road at Flag Hollow Road and that a right turn lane is warranted during the AM peak period for the southbound leg of Porter Mountain Road at North Drive. Based on the resulting low right turn volumes at both subject intersections it is recommended that the minimum storage for right turn lanes be 100 feet. Coordination with Town staff should be undertaken prior to the issuing of the permit for this effort to insure that all Town requirements (e.g., striping thickness and width, pavement legends, words and legends, removal methods...etc.) are met prior to intersection improvements.

6.4 Pedestrian Considerations

Pedestrian traffic, based on field inspection and review of the surrounding land uses, does not by in large exist. Therefore, no recommendations for pedestrian

facilities are offered in this study.

6.5 Speed Considerations

The posted speed limit for all existing roads in the study area appears adequate for their respective functional classifications at traffic volumes. No changes to the existing speed limits are known to be planned nor are they recommended due to this development.

6.6 Traffic Control Needs

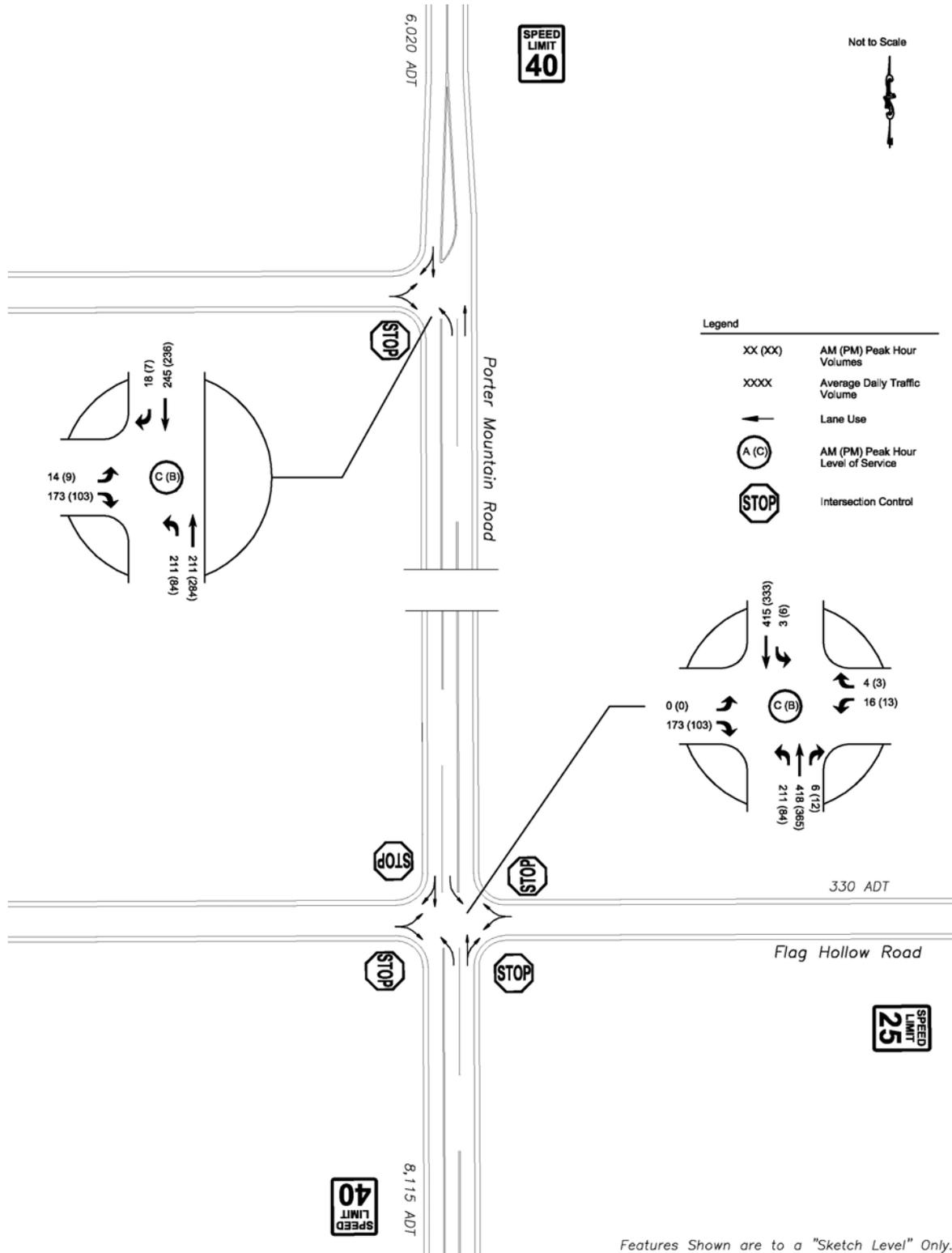
Based on the LOS analyses and field observations, the intersection of Porter Mountain Road and Flag Hollow Road should be controlled via a 4-way stop condition during the opening year of 2007 under the initial examination. Section 6.7 provides a discussion regarding further examination of this intersection. North Drive is recommended to be controlled via a stop control while allowing Porter Mountain Road to be under no stop control at this intersection.

During or prior to 2012, the intersection of Porter Mountain Road and Flag Hollow Road should be controlled via a traffic signal. No changes to the roadway and intersection geometrics, when compared to those recommended for 2007, should be made to the intersection of Porter Mountain Road and North Drive. The intersection of Porter Mountain Road and North Drive also do not require changes.

Roadway geometric improvements, based on the findings of the study, should include the necessary left and right turn lanes as discussion above.

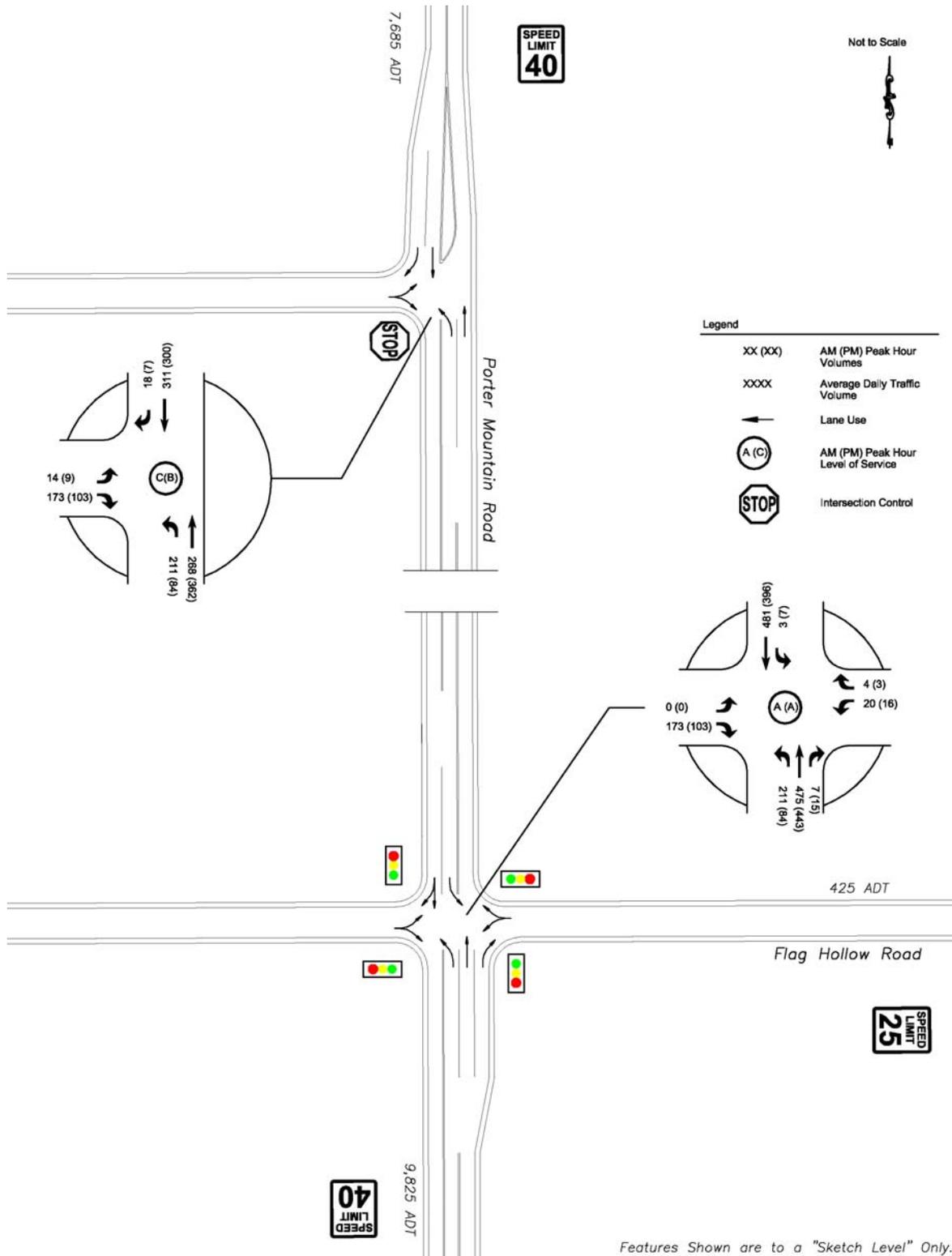
The initially examined mitigated condition along with resulting Levels of Service is shown in Figure 9 for the opening year 2007. The mitigated condition along with resulting Levels of Service is shown in Figure 10 for the horizon year 2012.

Figure 9: Total Traffic – 2007 – Mitigated – Initial Examination



Features Shown are to a "Sketch Level" Only.

Figure 10: Total Traffic – 2012 – Mitigated



Features Shown are to a "Sketch Level" Only.

6.7 Traffic Signal Needs - 2007

Under the issue whereby should a traffic signal be considered for the intersection of Porter Mountain Road and Flag Hollow Road during the opening year, CLW evaluated the need based on guidelines within Chapter 4 of the MUTCD regarding traffic signal warrants. This method is a nationally accepted procedure for analyzing traffic volumes, driver delay, and accidents. There are eight specific warrants that are contained in the analysis process. However, not all of the warrants are applicable to this study.

Traffic signals should not be installed unless one, or more, of the signal warrants are met. The satisfaction of a warrant or warrants is not in itself justification for a traffic signal. Engineering judgment along with additional traffic studies should indicate that the installation of a signal will improve the overall safety and/or operation of the intersection.

A detailed explanation of each warrant analyzed is provided in the following paragraphs for the intersection of Porter Mountain Road and Flag Hollow Road.

Warrant 1 – Eight Hour Vehicular Volume

This warrant is intended for application where the volume of the intersecting traffic from a side street or driveway, is the principle reason for considering installation of a traffic signal. In this study, the warrant would be satisfied when, for each of any eight hours of an average day, traffic volumes equal or exceed a given threshold combined on the main roadway approach and also a minimum threshold on the higher volume minor leg is met. Since this results of this study are made for the peak hour and daily traffic volumes for a future year, such a warrant cannot be directly determined and therefore is considered not applicable.

Result - *Not Applicable*

Warrant 2 – Four Hour Vehicular Volume

This warrant is intended for application where the volume of the intersecting traffic from a side street or driveway, is the principle reason for considering installation of a traffic signal. In this study, the warrant would be satisfied when, for each of any four hours of an average day, traffic volumes equal or exceed a given threshold combined on the main roadway approach and also a minimum threshold on the higher volume minor leg is met. Since this results of this study are made for the peak hour and daily traffic volumes for a future year, such a warrant cannot be directly determined and therefore is considered not applicable.

Result - *Not Applicable*

Warrant 3 – Peak Hour

The Peak Hour signal warranty is intended for use at a location where traffic conditions are such that for a minimum of 1 hour of an average day, the minor street traffic suffers undue delay when entering or crossing the major roadway.

The warrant analysis for this condition is separated into two categories.

A.

- a. The total stopped time delay experienced by the traffic on one minor-street approach (one direction only) controlled by a STOP-sign equals or exceeds: 4 vehicle-hours for a one-lane approach; or 5-vehicle-hours for a two-lane approach, and
- b. The volume on the same minor-street approach (one direction only) equals or exceeds 100 vehicles per hour for one moving lane of traffic or 150 vehicles per hour for two moving lanes, and
- c. The total entering volume services during the hour equals or exceeds 650 vehicles per hour for intersections with three approaches or 800

vehicles per hour for intersections with four or more approaches.

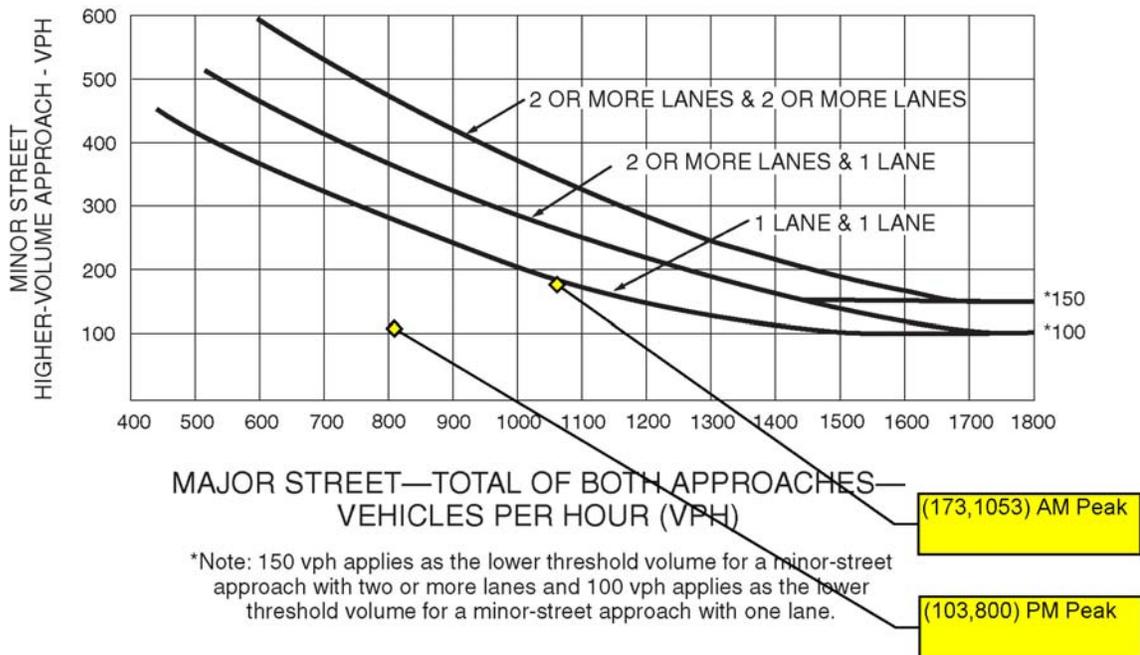
B.

- a. The plotted point representing the vehicles per hour on the major street (total of both approaches) and the corresponding vehicles per hour on the higher-volume minor-street approach (one direction only) for 1 hour of an average day falls above the applicable curve in Figure 4C-3 for the existing combination of approach lanes.

Evaluation of Category A finds that the total stop delay that would be experienced by the traffic from the eastbound leg of the subject intersection equals 0.4 vehicle-hours [176 veh x 7.2 second control delay / 3,600 seconds per hour] and therefore under this category does not meet warrants.

Evaluation of Category B is shown in the following figure.

Figure 11: MUTCD Traffic Signal Warrant – Peak Hour



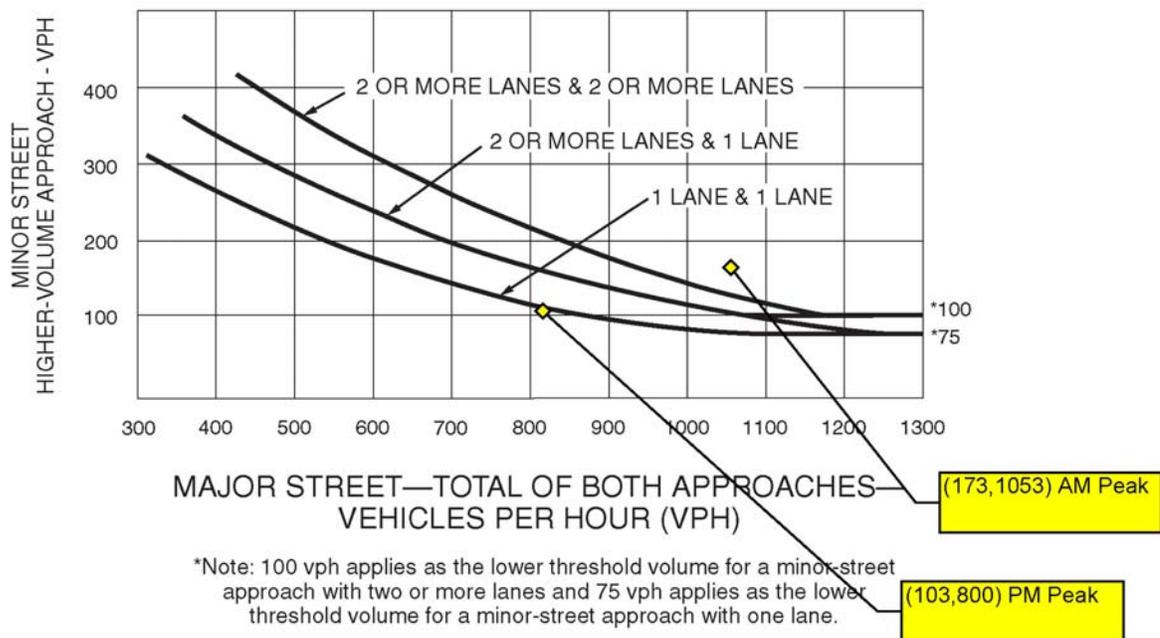
Also within the Peak Hour Warrant is an optional warrant whereby if certain conditions are met such should be considered within the warrant analysis. The conditions are:

1. Community population less than 10,000 or
2. The posted or 85th percentile speed on the major road exceeds 40 MPH.

As the 2005 Census population estimate for the Town of Pinetop-Lakeside is approximately 4,200 and that even under a high growth rate up to and past the study's horizon year (i.e., 2012), the population will not exceed 10,000 such a warrant is evaluated herein. Therefore the following figure is used.

Figure 12: MUTCD Traffic Signal Warrant – Peak Hour (70% Condition)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h OR ABOVE 40 mph ON MAJOR STREET)



Result – *Meets Warrant*

Warrant 4 – Pedestrian Volume

The pedestrian volume signal warrant is intended for application where the traffic volume on a major street is so heavy that pedestrian experience excessive delay in crossing the major street.

Given that existing pedestrian volumes noted in the area are sparse and that future pedestrian volumes cannot be adequately estimated such a warrant is not deemed appropriate for this study.

Result - *Not Applicable*

Warrant 5 – School Crossing

The School Crossing signal warrant is intended for application where the fact that school children cross the major street is the principal reason to consider installing a traffic control signal. A comprehensive evaluation of this warrant cannot be made under this study as the school has yet to be constructed. However, such a condition may become present (as can be noted for the existing location of the Blue Ridge High School area) once the school opens and therefore should be evaluated when the school opens.

Result – *May be Applicable*

Warrant 6 – Coordinated Signal System

This warrant is intended where a progressive movement in a coordinated signal system sometimes necessitates installing traffic control signals at intersections where they would not otherwise be needed in order to maintain proper platooning of vehicles.

Given that closest existing traffic signal is approximately 0.7-miles to the south this warrant is not deemed appropriate for this study.

Result - *Not Applicable*

Warrant 7 – Crash Experience

This Crash Experience signal warrant conditions are intended for application where the severity and frequency of crashes are the principal reasons to consider installing a traffic control signal.

Given that accidents records could not be obtained from the Navajo County Sheriff's office, evaluation of this warrant could not be undertaken.

Result - *Not Applicable*

Warrant 8 – Roadway Network

Installing a traffic signal at some intersections might be justified to encourage concentration and organization of traffic flow on a roadway network.

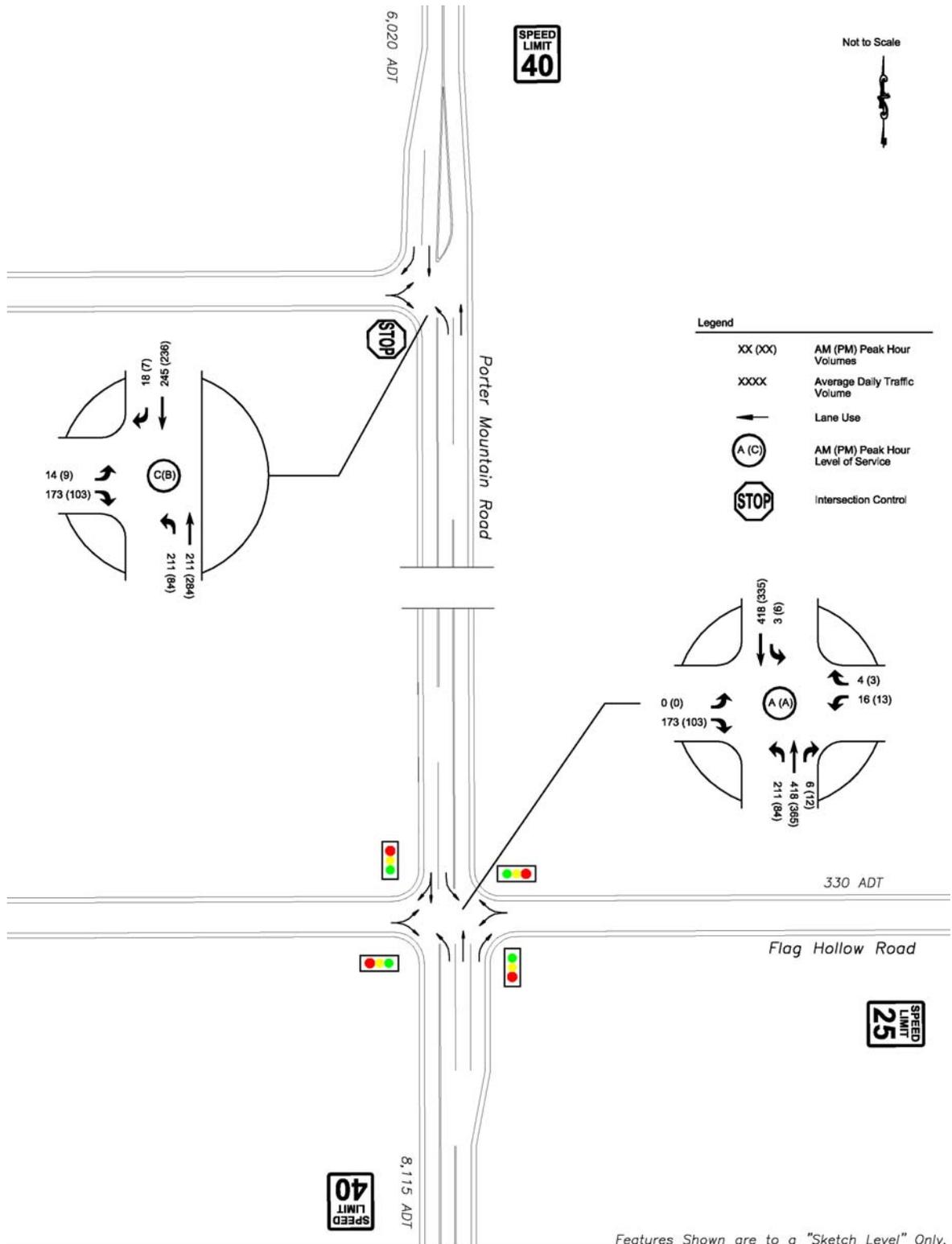
Review the elements of this warrant such is not deemed appropriate for this study.

Result - *Not Applicable*

6.7.1 Conclusion of Warrant Analysis

The conclusion of the warrant analysis demonstrates that a traffic signal during the opening year of 2007 should be considered. Additional consideration should also be given to a traffic signal given that during the period when the school will be closed (i.e., summer season) that traffic along Porter Mountain Road is the peak seasonal period of the year. Under such a condition traffic could likely traverse the intersection if they know the school will be closed and therefore could result in a higher accident potential. Therefore, a traffic signal for the subject intersection is strongly recommended. Figure 13 shows the recommended conditions.

Figure 13: Total Traffic – 2007 – Mitigated – Final Recommendation



SECTION 7: CONCLUSIONS

7.1 General Analysis Conclusion

The proposed Blue Ridge Middle/Junior High School will contribute significant traffic volumes along Porter Mountain Road in the vicinity of Flag Hollow Road. Given this anticipated condition during both 2007 and 2012, several intersection and roadway improvements will be required to insure that the operational characteristics of these roadways is maintained at a desired level.

Section 8 includes detailed information regarding the recommendations.

SECTION 8: RECOMMENDATIONS

8.1 Site Access

The location of the North Drive access should be no greater than 200 feet south of the northern project boundary based on the sight distance analysis.

The eastbound leg of both school access points should include no less than 150 feet of conflict free storage. It is estimated that currently there will be 100 feet of available storage for the North Drive and over 200 feet for the access across from Flag Hollow. Therefore, the internal circulation (not within this study) should incorporate the findings of this study.

8.2 Intersection Improvements - 2007

Prior to opening year of 2007, the intersection of Porter Mountain Road and Flag Hollow Road should be improved to include the following. Such is based on signal warrant evaluation and consideration whereby a 70-30 site traffic distribution pattern might occur.

1. Construct a northbound left turn lane, storage no less than 250 feet, and
2. Construct a southbound left turn lane, storage no less than 100 feet, and
3. Construct a northbound right turn lane, storage no less than 100 feet, and
4. Install a traffic signal.

Furthermore, the intersection of Porter Mountain Road and North Drive should be improved as follows.

1. Construct a northbound left turn lane, storage no less than 200 feet, and
2. Construct a southbound right turn lane, storage no less than 100 feet, and
3. Install 1-way STOP sign on minor leg of intersection.

8.3 Intersection Improvements - 2012

During the year 2012, the intersection of Porter Mountain Road and Flag Hollow Road do not require any additional improvements over that recommended for the 2007 condition. This also applies to the intersection of Porter Mountain Road and North Drive.

Under these conditions all intersections will operate at desired levels of service.

8.4 Roadway & Intersection Improvements

The following roadway and intersection improvements should be used during design of all features of this development.

1. Construct auxiliary lanes per the recommendations of this study, and
2. Turn Lane “gaps” should be no less than 90 feet long, and
3. Roadway tapers should be designed per MUTCD and AASHTO guidelines based on the posted speed limit or 85th-percentile speed (whichever is greater) within the project limits, and
4. Pavement markings and signing should be in accordance with ADOT practices or as directed by the Town of Pinetop-Lakeside.

The location of North Drive, as it is currently shown within the site plan, should be addressed during the design phase given potential poor sight distance available to the north. Section 6 offers recommendations that the designer should consider when evaluating this concern.

APPENDIX A

REFERENCES

United Civil Group
 2803 N. 7th Ave, Suite 16
 602-265-6155

Street : Porter Mountain Road
 Location : S. of Flag Hollow
 Counter : 2240

Site: TC6114
 Date: 7/5/2006
 Wednesday

24 Hour Volume (2 channels/pg., 15 min.)

Begin	Nb	Sb	Combined	Begin	Nb	Sb	Combined
14:00	45	177	45 196	14:00	3	12	2 12
14:15	43		62 105	14:15	2		5 7
14:30	55		45 100	14:30	6		2 8
14:45	34		44 78	14:45	1		3 4
15:00	58	254	64 205	15:00	2	8	1 5
15:15	59		54 113	15:15	1		1 2
15:30	62		34 96	15:30	1		1 2
15:45	75		53 128	15:45	4		2 6
16:00	68	249	58 205	16:00	4	20	3 17
16:15	64		40 104	16:15	6		3 9
16:30	72		54 126	16:30	7		5 12
16:45	45		53 98	16:45	3		6 9
17:00	77	233	38 195	17:00	10	67	8 70
17:15	66		51 117	17:15	17		12 29
17:30	46		61 107	17:30	19		16 35
17:45	44		45 89	17:45	21		34 55
18:00	40	127	42 166	18:00	27	125	21 149
18:15	33		37 70	18:15	20		30 50
18:30	27		41 68	18:30	38		47 85
18:45	27		46 73	18:45	40		51 91
19:00	33	107	30 120	19:00	33	137	46 187
19:15	26		25 51	19:15	20		36 56
19:30	26		30 56	19:30	38		48 86
19:45	22		35 57	19:45	46		57 103
20:00	16	92	28 96	20:00	27	134	38 186
20:15	17		30 47	20:15	39		49 88
20:30	20		22 42	20:30	37		45 82
20:45	39		16 55	20:45	31		54 85
21:00	28	63	9 56	21:00	37	131	25 194
21:15	11		14 25	21:15	32		47 79
21:30	13		18 31	21:30	29		52 81
21:45	11		15 26	21:45	45		40 85
22:00	17	51	10 30	22:00	51	177	44 170
22:15	14		10 24	22:15	38		34 72
22:30	10		3 13	22:30	43		50 93
22:45	10		7 17	22:45	45		42 87
23:00	4	27	7 24	23:00	46	182	45 193
23:15	5		6 11	23:15	45		59 104
23:30	11		5 16	23:30	42		47 89
23:45	7		6 13	23:45	49		42 91
7/6/2006 00:00	4	22	9 22	00:00	39	180	54 213
00:15	5		5 10	00:15	50		53 103
00:30	6		4 10	00:30	41		59 100
00:45	7		4 11	00:45	50		47 97
01:00	3	8	3 7	01:00	50	213	58 237
01:15	2		1 3	01:15	42		58 100
01:30	1		2 3	01:30	61		66 127
01:45	2		1 3	01:45	60		55 115

Totals							
12 Hours	1410	1322	2732		1386	1633	3019
	51.6 %	48.4 %			45.9 %	54.1 %	
24 Hours	2796	2955	5751				
	48.6 %	51.4 %					

Peak Hours							
AM	11:00	08:45	10:30	PM	15:45	13:00	15:45
Volume	182	208	375		279	237	484
Factor	0.93	0.95	0.90		0.93	0.90	0.95

United Civil Group
 2803 N. 7th Ave, Suite 16
 602-265-6155

Street : Porter Mountain Road
 Location : N. of Flag Hollow
 Counter : 4252

Site: TC6114
 Date: 7/5/2006
 Wednesday

24 Hour Vehicle Classification (60 Min.)

Channel: Sb

Time	Total	Bike	Cars Trailer	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Ax Doubl	5 Axle Doubl	>6 Ax Doubl	<6 Ax Multi	6 Axle Multi	>6 Ax Multi
14:00	197	49	135	6	1	0	0	0	6	0	0	0	0	0
15:00	203	47	142	11	1	0	0	0	2	0	0	0	0	0
16:00	200	53	137	3	1	0	0	0	4	1	0	1	0	0
17:00	186	65	110	1	1	1	0	0	8	0	0	0	0	0
18:00	161	48	113	0	0	0	0	0	0	0	0	0	0	0
19:00	117	34	81	0	0	0	0	0	2	0	0	0	0	0
20:00	94	34	59	0	0	0	0	0	1	0	0	0	0	0
21:00	56	29	26	1	0	0	0	0	0	0	0	0	0	0
22:00	28	13	15	0	0	0	0	0	0	0	0	0	0	0
23:00	25	9	16	0	0	0	0	0	0	0	0	0	0	0
7/6/2006														
00:00	23	11	10	1	0	0	0	0	1	0	0	0	0	0
01:00	7	2	5	0	0	0	0	0	0	0	0	0	0	0
02:00	12	3	7	0	0	0	0	0	2	0	0	0	0	0
03:00	5	2	1	0	0	0	0	0	2	0	0	0	0	0
04:00	17	10	6	0	0	0	0	0	1	0	0	0	0	0
05:00	69	23	41	3	0	0	0	0	2	0	0	0	0	0
06:00	146	52	85	4	2	2	0	0	1	0	0	0	0	0
07:00	188	56	115	6	2	2	0	0	7	0	0	0	0	0
08:00	172	45	110	6	3	1	0	0	6	1	0	0	0	0
09:00	187	45	123	8	1	3	0	1	6	0	0	0	0	0
10:00	164	43	96	13	2	3	0	0	5	0	0	2	0	0
11:00	187	39	123	10	5	4	0	1	5	0	0	0	0	0
12:00	192	54	116	7	6	5	0	0	4	0	0	0	0	0
13:00	224	54	150	10	2	1	1	0	5	1	0	0	0	0
14:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Total	2860	820	1822	90	27	22	1	2	70	3	0	3	0	0
%		28.7	63.7	3.1	0.9	0.8	0.0	0.1	2.4	0.1	0.0	0.1	0.0	0.0

United Civil Group
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Street : Porter Mountain Road
 Location : N. of Flag Hollow
 Counter : 4252

Site: TC6114
 Date: 7/5/2006
 Wednesday

24 Hour Vehicle Classification (60 Min.)

Channel: Nb

Time	Total	Bike	Cars Trailer	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Ax Doubl	5 Axle Doubl	>6 Ax Doubl	<6 Ax Multi	6 Axle Multi	>6 Ax Multi
14:00	180	34	132	8	0	2	0	0	4	0	0	0	0	0
15:00	241	53	158	18	1	1	0	0	9	0	0	1	0	0
16:00	240	46	185	2	1	1	0	0	5	0	0	0	0	0
17:00	218	56	155	4	0	2	1	0	0	0	0	0	0	0
18:00	127	32	91	1	3	0	0	0	0	0	0	0	0	0
19:00	109	27	78	2	0	0	0	0	2	0	0	0	0	0
20:00	88	22	64	1	0	0	0	0	1	0	0	0	0	0
21:00	62	21	41	0	0	0	0	0	0	0	0	0	0	0
22:00	51	14	36	1	0	0	0	0	0	0	0	0	0	0
23:00	27	13	14	0	0	0	0	0	0	0	0	0	0	0
7/6/2006														
00:00	22	11	11	0	0	0	0	0	0	0	0	0	0	0
01:00	8	2	6	0	0	0	0	0	0	0	0	0	0	0
02:00	12	4	8	0	0	0	0	0	0	0	0	0	0	0
03:00	8	3	4	0	0	0	0	0	1	0	0	0	0	0
04:00	20	6	14	0	0	0	0	0	0	0	0	0	0	0
05:00	66	20	43	2	0	1	0	0	0	0	0	0	0	0
06:00	124	24	95	3	0	0	0	0	2	0	0	0	0	0
07:00	139	21	105	5	0	4	0	0	3	1	0	0	0	0
08:00	132	19	99	5	2	5	0	0	2	0	0	0	0	0
09:00	132	16	101	9	1	3	0	0	2	0	0	0	0	0
10:00	176	32	113	9	2	10	0	0	7	0	0	3	0	0
11:00	184	36	130	10	2	3	0	0	3	0	0	0	0	0
12:00	172	31	116	7	1	10	1	1	4	0	0	1	0	0
13:00	213	37	152	9	1	8	0	0	5	0	0	1	0	0
14:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Total	2751	580	1951	96	14	50	2	1	50	1	0	6	0	0
%		21.1	70.9	3.5	0.5	1.8	0.1	0.0	1.8	0.0	0.0	0.2	0.0	0.0

United Civil Group
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Street : Porter Mountain Road
 Location : N. of Flag Hollow
 Counter : 4252

Site: TC6114
 Date: 7/5/2006
 Wednesday

24 Hour Speed (60 Min.)

Channel: Sb

mph	Total	0 - < 15	15 - < 20	20 - < 25	25 - < 30	30 - < 35	35 - < 40	40 - < 45	45 - < 50	50 - < 55	55 - < 60	60 - < 65	65 - < 70	70 - < 200
14:00	197	0	9	15	58	87	25	1	0	0	0	2	0	0
15:00	203	9	11	15	59	89	19	0	0	0	1	0	0	0
16:00	200	0	15	14	60	91	18	0	2	0	0	0	0	0
17:00	186	3	3	9	54	88	24	2	1	1	0	0	0	1
18:00	161	1	1	3	50	81	22	3	0	0	0	0	0	0
19:00	117	0	0	1	40	57	19	0	0	0	0	0	0	0
20:00	94	1	0	6	46	33	8	0	0	0	0	0	0	0
21:00	56	1	0	3	24	19	7	1	1	0	0	0	0	0
22:00	28	0	0	0	11	13	4	0	0	0	0	0	0	0
23:00	25	0	0	2	6	11	6	0	0	0	0	0	0	0
7/6/2006														
00:00	23	0	0	2	7	10	3	1	0	0	0	0	0	0
01:00	7	0	0	1	4	2	0	0	0	0	0	0	0	0
02:00	12	0	0	1	4	4	3	0	0	0	0	0	0	0
03:00	5	0	0	0	2	3	0	0	0	0	0	0	0	0
04:00	17	0	0	1	7	7	2	0	0	0	0	0	0	0
05:00	69	1	2	5	17	28	14	2	0	0	0	0	0	0
06:00	146	0	2	4	46	78	11	5	0	0	0	0	0	0
07:00	188	2	7	6	70	83	18	2	0	0	0	0	0	0
08:00	172	3	2	5	80	73	9	0	0	0	0	0	0	0
09:00	187	0	4	16	76	85	5	1	0	0	0	0	0	0
10:00	164	3	7	11	60	73	10	0	0	0	0	0	0	0
11:00	187	2	10	11	66	77	15	1	1	2	1	1	0	0
12:00	192	3	7	6	70	83	16	3	2	0	1	0	0	1
13:00	224	4	9	16	96	79	19	0	0	1	0	0	0	0
Total	2860	33	89	153	1013	1254	277	22	7	4	3	3	0	2
%		1.2	3.1	5.3	35.4	43.8	9.7	0.8	0.2	0.1	0.1	0.1	0.0	0.1

Percentile Speeds
 (mph)

10 %	15 %	50 %	85 %	90 %
25.2	26.6	30.0	33.9	35.1

10 mph Pace Speed
 Number in pace

25.9 - 35.9	Average	30.0 mph
2354 (82.3 %)	Minimum	5.1 mph
	Maximum	88.7 mph

Speeds Exceeded

45 mph	55 mph	65 mph
0.7 %	0.3 %	0.1 %
Count	19	8
		2

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Site: TC6114
 Date: 7/5/2006
 Wednesday

24 Hour Speed (60 Min.)

Channel: Nb

mph	Total	0 - < 15	15 - < 20	20 - < 25	25 - < 30	30 - < 35	35 - < 40	40 - < 45	45 - < 50	50 - < 55	55 - < 60	60 - < 65	65 - < 70	70 - < 200
14:00	180	1	3	16	52	83	22	3	0	0	0	0	0	0
15:00	241	1	9	12	48	137	30	4	0	0	0	0	0	0
16:00	240	0	2	14	52	122	44	6	0	0	0	0	0	0
17:00	218	3	0	6	60	99	45	5	0	0	0	0	0	0
18:00	127	0	0	2	21	60	40	4	0	0	0	0	0	0
19:00	109	0	0	1	27	65	15	1	0	0	0	0	0	0
20:00	88	0	1	4	20	49	14	0	0	0	0	0	0	0
21:00	62	0	0	0	17	36	7	2	0	0	0	0	0	0
22:00	51	0	0	5	15	23	8	0	0	0	0	0	0	0
23:00	27	0	0	1	7	15	4	0	0	0	0	0	0	0
7/6/2006														
00:00	22	0	0	1	5	9	6	0	0	1	0	0	0	0
01:00	8	0	0	0	2	5	1	0	0	0	0	0	0	0
02:00	12	0	0	1	1	7	1	2	0	0	0	0	0	0
03:00	8	0	0	0	2	3	3	0	0	0	0	0	0	0
04:00	20	0	0	0	7	9	4	0	0	0	0	0	0	0
05:00	66	0	0	0	16	37	11	1	1	0	0	0	0	0
06:00	124	0	1	3	22	73	21	4	0	0	0	0	0	0
07:00	139	5	3	4	35	67	24	1	0	0	0	0	0	0
08:00	132	0	2	7	32	60	27	2	1	0	0	0	0	1
09:00	132	0	1	6	31	65	28	0	1	0	0	0	0	0
10:00	176	3	6	16	34	88	27	1	0	0	0	0	0	1
11:00	184	4	3	14	40	86	33	2	0	2	0	0	0	0
12:00	172	3	3	4	24	99	35	3	0	0	0	0	0	1
13:00	213	2	4	12	55	101	36	2	0	0	0	0	1	0
Total	2751	22	38	129	625	1398	486	43	3	3	0	0	1	3
%		0.8	1.4	4.7	22.7	50.8	17.7	1.6	0.1	0.1	0.0	0.0	0.0	0.1

Percentile Speeds
 (mph)

10 %	15 %	50 %	85 %	90 %
26.6	27.8	31.6	35.8	36.5

10 mph Pace Speed
 Number in pace

26.6 - 36.6	Average	31.5 mph
2254 (81.9 %)	Minimum	5.8 mph
	Maximum	98.0 mph

Speeds Exceeded

45 mph	55 mph	65 mph
0.4 %	0.1 %	0.1 %
Count	10	4

United Civil Group
 2803 N. 7th Ave, Suite 16
 602-265-6155

Street : Porter Mountain Road
 Location : N. of Flag Hollow
 Counter : 4252

Site: TC6114
 Date: 7/5/2006
 Wednesday

24 Hour Volume (2 channels/pg., 15 min.)

Begin	Sb	Nb	Combined	Begin	Sb	Nb	Combined						
14:00	50	197	46	180	96	377	02:00	3	12	3	12	6	24
14:15	59		43		102		02:15	4		2		6	
14:30	44		60		104		02:30	2		6		8	
14:45	44		31		75		02:45	3		1		4	
15:00	61	203	52	241	113	444	03:00	1	5	2	8	3	13
15:15	57		51		108		03:15	1		1		2	
15:30	33		61		94		03:30	1		1		2	
15:45	52		77		129		03:45	2		4		6	
16:00	52	200	66	240	118	440	04:00	3	17	4	20	7	37
16:15	38		58		96		04:15	3		6		9	
16:30	58		72		130		04:30	5		7		12	
16:45	52		44		96		04:45	6		3		9	
17:00	38	186	66	218	104	404	05:00	8	69	11	66	19	135
17:15	49		65		114		05:15	13		16		29	
17:30	55		46		101		05:30	14		19		33	
17:45	44		41		85		05:45	34		20		54	
18:00	38	161	43	127	81	288	06:00	19	146	28	124	47	270
18:15	37		30		67		06:15	29		20		49	
18:30	42		28		70		06:30	44		38		82	
18:45	44		26		70		06:45	54		38		92	
19:00	30	117	33	109	63	226	07:00	44	188	33	139	77	327
19:15	24		26		50		07:15	37		22		59	
19:30	27		27		54		07:30	52		40		92	
19:45	36		23		59		07:45	55		44		99	
20:00	28	94	13	88	41	182	08:00	36	172	29	132	65	304
20:15	32		17		49		08:15	45		38		83	
20:30	22		20		42		08:30	43		35		78	
20:45	12		38		50		08:45	48		30		78	
21:00	9	56	30	62	39	118	09:00	48	187	24	132	72	319
21:15	14		11		25		09:15	43		34		77	
21:30	18		10		28		09:30	54		28		82	
21:45	15		11		26		09:45	42		46		88	
22:00	10	28	17	51	27	79	10:00	44	164	54	176	98	340
22:15	9		14		23		10:15	37		33		70	
22:30	3		10		13		10:30	42		43		85	
22:45	6		10		16		10:45	41		46		87	
23:00	8	25	4	27	12	52	11:00	43	187	45	184	88	371
23:15	6		5		11		11:15	56		47		103	
23:30	5		11		16		11:30	41		46		87	
23:45	6		7		13		11:45	47		46		93	
7/6/2006 00:00	10	23	4	22	14	45	12:00	47	192	36	172	83	364
00:15	5		5		10		12:15	43		50		93	
00:30	4		6		10		12:30	57		39		96	
00:45	4		7		11		12:45	45		47		92	
01:00	3	7	3	8	6	15	13:00	59	224	55	213	114	437
01:15	1		2		3		13:15	51		44		95	
01:30	2		1		3		13:30	60		56		116	
01:45	1		2		3		13:45	54		58		112	

Totals													
12 Hours	1297		1373		2670			1563		1378		2941	
	48.6 %		51.4 %					53.1 %		46.9 %			
24 Hours	2860		2751		5611								
	51.0 %		49.0 %										

Peak Hours													
AM	08:45		10:45		11:00		PM	13:00		15:45		15:45	
Volume	193		184		371			224		273		473	
Factor	0.89		0.98		0.90			0.93		0.89		0.91	

APPENDIX D
LEVEL OF SERVICE ANALYSIS

D.1
EXISTING CONDITIONS
2006

REFERENCES

1. Trip Generation, Institute of Transportation Engineers, 7th Edition, 2003
2. Manual on Uniform Traffic Control Devices for Streets and Highways, Federal Highway Administration, 2003 edition.
3. Highway Capacity Manual, Transportation Research Board, National Research Council, HCM 2000.
4. HCS+, version 5.1, McTrans Center, University of Florida
5. Roadway Design Manual, Maricopa Department of Transportation April 2004.
6. Traffic Manual, Idaho Department of Transportation, January 2006
7. A Policy on Geometric Design of Highways and Streets, American Associations of State Highway and Transportation Officials, 4th Edition, 2001.

APPENDIX B
TURNING MOVEMENT COUNTS

B.1
PORTER MOUNTAIN ROAD
AND FLAG HOLLOW ROAD

Turning Movement Count

Project No: Blue Ridge Middle School

Project:

Location: Porter Mountain Road at Flag Hollow Road: Lakeside, AZ

Intersection Configuration: "T" & STOP on minor leg

DATE 5-Jul-06

Wednesday

Northbound - 1 shared through-right turn lane

Southbound - 1 shared through-right turn lane

Eastbound - none

Westbound - 1 shared left-right turn lane

Speed Limit

North-South	East-West
40	25

Start Time	Southbound				Westbound				Northbound				Eastbound				Total	Peak Hour
	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds		
7:00 AM		41	2			2	2			2	45						94	
7:15 AM		44	0			0	1			0	41						86	
7:30 AM		64	1			1	2			1	52						121	
7:45 AM		61	0			2	3			1	38						105	406
8:00 AM		51	0			0	7			1	54						113	425
8:15 AM		54	1			0	3			2	53						113	452
8:30 AM		54	0			1	6			2	38						101	432
8:45 AM		44	0			1	1			3	39						88	415
Peak Hour Total	0	230	2	0	3	0	15	0	5	197	0	0	0	0	0	0		

Start Time	Southbound				Westbound				Northbound				Eastbound				Total	Peak Hour
	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds		
4:00 PM		39	0			0	0			4	61						104	
4:15 PM			2			2	3			1							8	
4:30 PM		54	0			0	1			3	46						104	
4:45 PM			3			0	6			2							11	227
5:00 PM		55	0			0	2			5	61						123	246
5:15 PM			0			1	0			7							8	246
5:30 PM		41	2			0	5			2	38						88	230
5:45 PM			0			1	3			2							6	225
Peak Hour Total	0	109	5	0	2	0	12	0	11	107	0	0	0	0	0	0		

APPENDIX C
TRAFFIC COUNTS

C.1
PORTER MOUNTAIN ROAD,
24-HOUR PERIOD

United Civil Group
 2803 N. 7th Ave, Suite 16
 602-265-6155

Street : Porter Mountain Road
 Location : S. of Flag Hollow
 Counter : 2240

Site: TC6114
 Date: 7/5/2006
 Wednesday

24 Hour Vehicle Classification (60 Min.)

Channel: Nb

Time	Total	Bike	Cars Trailer	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Ax Doubl	5 Axle Doubl	>6 Ax Doubl	<6 Ax Multi	6 Axle Multi	>6 Ax Multi
14:00	177	7	148	11	0	5	2	0	3	0	0	1	0	0
15:00	254	12	209	16	0	9	1	0	5	0	0	2	0	0
16:00	249	10	217	15	2	2	0	0	2	0	0	1	0	0
17:00	233	10	206	11	0	1	1	0	4	0	0	0	0	0
18:00	127	8	113	6	0	0	0	0	0	0	0	0	0	0
19:00	107	3	99	3	0	0	0	0	2	0	0	0	0	0
20:00	92	1	84	6	0	0	0	0	1	0	0	0	0	0
21:00	63	4	57	2	0	0	0	0	0	0	0	0	0	0
22:00	51	1	46	3	0	0	0	0	1	0	0	0	0	0
23:00	27	2	25	0	0	0	0	0	0	0	0	0	0	0
7/6/2006														
00:00	22	2	20	0	0	0	0	0	0	0	0	0	0	0
01:00	8	0	8	0	0	0	0	0	0	0	0	0	0	0
02:00	12	0	12	0	0	0	0	0	0	0	0	0	0	0
03:00	8	0	7	0	0	0	0	0	1	0	0	0	0	0
04:00	20	1	18	1	0	0	0	0	0	0	0	0	0	0
05:00	67	4	57	4	0	1	0	0	1	0	0	0	0	0
06:00	125	3	110	6	1	2	0	0	2	0	0	1	0	0
07:00	137	1	113	11	0	7	2	1	1	1	0	0	0	0
08:00	134	4	117	8	0	4	1	0	0	0	0	0	0	0
09:00	131	3	111	9	0	5	0	0	1	0	0	2	0	0
10:00	177	3	142	8	0	16	0	0	7	0	0	1	0	0
11:00	182	4	150	14	1	7	2	0	1	0	0	3	0	0
12:00	180	4	149	5	0	11	1	0	7	0	0	3	0	0
13:00	213	9	175	10	0	9	2	0	6	0	0	2	0	0
14:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Total	2796	96	2393	149	4	79	12	1	45	1	0	16	0	0
%		3.4	85.6	5.3	0.1	2.8	0.4	0.0	1.6	0.0	0.0	0.6	0.0	0.0

United Civil Group
 2803 N. 7th Ave, Suite 16
 602-265-6155

Street : Porter Mountain Road
 Location : S. of Flag Hollow
 Counter : 2240

Site: TC6114
 Date: 7/5/2006
 Wednesday

24 Hour Vehicle Classification (60 Min.)

Channel: Sb

Time	Total	Bike	Cars Trailer	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Ax Doubl	5 Axle Doubl	>6 Ax Doubl	<6 Ax Multi	6 Axle Multi	>6 Ax Multi
14:00	196	13	160	15	2	3	0	0	3	0	0	0	0	0
15:00	205	11	180	6	1	3	1	0	3	0	0	0	0	0
16:00	205	8	177	10	2	1	0	0	7	0	0	0	0	0
17:00	195	12	168	9	1	0	1	0	4	0	0	0	0	0
18:00	166	8	148	3	0	1	0	0	6	0	0	0	0	0
19:00	120	4	111	1	0	1	0	0	3	0	0	0	0	0
20:00	96	6	87	2	0	0	0	0	1	0	0	0	0	0
21:00	56	4	51	1	0	0	0	0	0	0	0	0	0	0
22:00	30	0	29	1	0	0	0	0	0	0	0	0	0	0
23:00	24	0	24	0	0	0	0	0	0	0	0	0	0	0
7/6/2006														
00:00	22	2	17	1	0	1	0	0	1	0	0	0	0	0
01:00	7	0	7	0	0	0	0	0	0	0	0	0	0	0
02:00	12	1	8	1	0	0	0	0	2	0	0	0	0	0
03:00	5	0	3	0	0	0	0	0	2	0	0	0	0	0
04:00	17	2	14	0	0	0	0	0	1	0	0	0	0	0
05:00	70	3	65	1	0	0	0	0	0	0	0	1	0	0
06:00	149	10	118	14	1	3	0	0	3	0	0	0	0	0
07:00	187	11	148	16	2	4	0	0	5	0	0	1	0	0
08:00	186	4	164	6	2	5	1	0	2	1	0	1	0	0
09:00	194	7	160	14	2	4	1	0	6	0	0	0	0	0
10:00	170	3	137	9	3	6	1	0	8	0	0	3	0	0
11:00	193	8	158	4	4	9	2	1	5	0	1	1	0	0
12:00	213	11	174	14	1	5	1	0	7	0	0	0	0	0
13:00	237	14	196	12	1	7	1	0	6	0	0	0	0	0
14:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Total	2955	142	2504	140	22	53	9	1	75	1	1	7	0	0
%		4.8	84.7	4.7	0.7	1.8	0.3	0.0	2.5	0.0	0.0	0.2	0.0	0.0

United Civil Group
 2803 N. 7th Ave, Suite 16
 602-265-6155

Street : Porter Mountain Road
 Location : S. of Flag Hollow
 Counter : 2240

Site: TC6114
 Date: 7/5/2006
 Wednesday

24 Hour Speed (60 Min.)
 Channel: Nb

mph	Total	0 - < 15	15 - < 20	20 - < 25	25 - < 30	30 - < 35	35 - < 40	40 - < 45	45 - < 50	50 - < 55	55 - < 60	60 - < 65	65 - < 70	70 - < 200
14:00	177	5	2	6	18	80	57	7	1	0	1	0	0	0
15:00	254	2	1	13	21	119	85	12	1	0	0	0	0	0
16:00	249	2	4	11	24	110	82	12	3	0	0	0	0	1
17:00	233	2	1	10	32	95	78	13	2	0	0	0	0	0
18:00	127	2	1	2	9	43	57	11	2	0	0	0	0	0
19:00	107	1	2	6	7	44	44	3	0	0	0	0	0	0
20:00	92	1	0	4	13	45	25	4	0	0	0	0	0	0
21:00	63	0	0	1	7	31	18	4	2	0	0	0	0	0
22:00	51	0	0	1	12	20	16	2	0	0	0	0	0	0
23:00	27	0	0	0	4	14	7	2	0	0	0	0	0	0
7/6/2006														
00:00	22	0	0	0	2	6	12	1	0	1	0	0	0	0
01:00	8	0	0	0	1	4	3	0	0	0	0	0	0	0
02:00	12	0	0	1	1	4	3	3	0	0	0	0	0	0
03:00	8	0	0	0	1	3	4	0	0	0	0	0	0	0
04:00	20	0	0	0	1	10	7	2	0	0	0	0	0	0
05:00	67	0	0	0	3	31	25	7	1	0	0	0	0	0
06:00	125	1	0	1	7	51	48	16	1	0	0	0	0	0
07:00	137	3	5	5	9	56	47	10	1	1	0	0	0	0
08:00	134	0	0	4	9	65	45	11	0	0	0	0	0	0
09:00	131	1	0	1	21	53	43	11	1	0	0	0	0	0
10:00	177	0	4	2	18	68	73	10	1	0	0	0	0	1
11:00	182	1	3	7	23	61	64	21	1	0	0	1	0	0
12:00	180	3	0	2	19	81	63	11	1	0	0	0	0	0
13:00	213	1	2	5	27	101	70	7	0	0	0	0	0	0
Total	2796	25	25	82	289	1195	976	180	18	2	1	1	0	2
%		0.9	0.9	2.9	10.3	42.7	34.9	6.4	0.6	0.1	0.0	0.0	0.0	0.1

Percentile Speeds
 (mph)

10 %	15 %	50 %	85 %	90 %
28.2	29.6	33.9	38.0	39.6

10 mph Pace Speed
 Number in pace

29.1 - 39.1	Average	33.8 mph
2183 (78.1 %)	Minimum	5.9 mph
	Maximum	98.0 mph

Speeds Exceeded

45 mph	55 mph	65 mph
0.9 %	0.1 %	0.1 %
Count	24	4
		2

United Civil Group
 2803 N. 7th Ave, Suite 16
 602-265-6155

Street : Porter Mountain Road
 Location : S. of Flag Hollow
 Counter : 2240

Site: TC6114
 Date: 7/5/2006
 Wednesday

24 Hour Speed (60 Min.)
 Channel: Sb

mph	Total	0 - < 15	15 - < 20	20 - < 25	25 - < 30	30 - < 35	35 - < 40	40 - < 45	45 - < 50	50 - < 55	55 - < 60	60 - < 65	65 - < 70	70 - < 200
14:00	196	3	1	15	49	89	33	5	0	0	0	0	0	1
15:00	205	5	5	18	48	91	35	2	1	0	0	0	0	0
16:00	205	5	3	12	49	95	35	2	0	2	2	0	0	0
17:00	195	3	0	15	41	93	33	8	1	0	0	0	0	1
18:00	166	0	3	6	22	91	35	7	2	0	0	0	0	0
19:00	120	2	2	4	27	58	22	4	0	0	0	0	0	1
20:00	96	0	0	7	38	39	12	0	0	0	0	0	0	0
21:00	56	0	0	0	20	23	8	4	1	0	0	0	0	0
22:00	30	0	0	1	9	14	6	0	0	0	0	0	0	0
23:00	24	0	0	0	4	12	8	0	0	0	0	0	0	0
7/6/2006														
00:00	22	0	0	2	5	7	7	1	0	0	0	0	0	0
01:00	7	0	0	0	3	3	1	0	0	0	0	0	0	0
02:00	12	0	0	0	4	3	4	1	0	0	0	0	0	0
03:00	5	0	0	0	1	4	0	0	0	0	0	0	0	0
04:00	17	0	0	0	6	8	3	0	0	0	0	0	0	0
05:00	70	0	2	6	15	30	15	2	0	0	0	0	0	0
06:00	149	1	2	4	29	79	29	4	1	0	0	0	0	0
07:00	187	4	2	8	47	91	31	3	1	0	0	0	0	0
08:00	186	0	2	22	51	98	9	3	0	0	1	0	0	0
09:00	194	1	3	15	72	85	16	2	0	0	0	0	0	0
10:00	170	2	1	14	48	77	24	2	1	0	0	0	1	0
11:00	193	2	1	12	51	89	36	1	0	1	0	0	0	0
12:00	213	1	1	13	59	108	26	4	0	0	0	0	0	1
13:00	237	5	1	22	65	103	36	3	2	0	0	0	0	0
Total	2955	34	29	196	763	1390	464	58	10	3	3	0	1	4
%		1.2	1.0	6.6	25.8	47.0	15.7	2.0	0.3	0.1	0.1	0.0	0.0	0.1

Percentile Speeds
 (mph)

10 %	15 %	50 %	85 %	90 %
25.5	27.0	31.6	35.1	36.5

10 mph Pace Speed
 Number in pace

25.9 - 35.9	Average	31.1 mph
2301 (77.9 %)	Minimum	5.0 mph
	Maximum	98.0 mph

Speeds Exceeded

45 mph	55 mph	65 mph
0.7 %	0.3 %	0.2 %
Count	21	8
		5

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	JMA	Intersection	Porter Mtn. Road @ Flag Hollow
Agency/Co.	CLW	Jurisdiction	Town of Pinetop-Lakeside
Date Performed	7/12/2006	Analysis Year	2006
Analysis Time Period	AM Peak Hour		

Project Description	
East/West Street: <i>Flag Hollow Road</i>	North/South Street: <i>Porter Mountain Road</i>
Intersection Orientation: <i>North-South</i>	Study Period (hrs): <i>0.25</i>

Vehicle Volumes and Adjustments						
Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		197	5	2	230	
Peak-Hour Factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85
Hourly Flow Rate, HFR	0	231	5	2	270	0
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	<i>Undivided</i>					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration			<i>TR</i>	<i>LT</i>		
Upstream Signal		0			0	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume				15	0	3
Peak-Hour Factor, PHF	0.85	0.85	0.85	0.80	0.80	0.80
Hourly Flow Rate, HFR	0	0	0	18	0	3
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach		<i>N</i>			<i>N</i>	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	0	1	0
Configuration					<i>LTR</i>	

Delay, Queue Length, and Level of Service								
Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		<i>LT</i>		<i>LTR</i>				
v (vph)		2		21				
C (m) (vph)		1343		555				
v/c		0.00		0.04				
95% queue length		0.00		0.12				
Control Delay		7.7		11.7				
LOS		<i>A</i>		<i>B</i>				
Approach Delay	--	--	11.7					
Approach LOS	--	--	<i>B</i>					

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst		Intersection	Porter Mtn. Road @ Flag Hollow
Agency/Co.	CLW	Jurisdiction	Town of Pinetop-Lakeside
Date Performed	7/12/2006	Analysis Year	2006
Analysis Time Period	PM Peak Hour		

Project Description	
East/West Street: <i>Flag Hollow Road</i>	North/South Street: <i>Porter Mountain Road</i>
Intersection Orientation: <i>North-South</i>	Study Period (hrs): <i>0.25</i>

Vehicle Volumes and Adjustments						
Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		268	11	5	219	
Peak-Hour Factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85
Hourly Flow Rate, HFR	0	315	12	5	257	0
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	<i>Undivided</i>					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration			<i>TR</i>	<i>LT</i>		
Upstream Signal		0			0	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume				12	0	2
Peak-Hour Factor, PHF	0.85	0.85	0.85	0.80	0.80	0.80
Hourly Flow Rate, HFR	0	0	0	14	0	2
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach		<i>N</i>			<i>N</i>	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	0	1	0
Configuration					<i>LTR</i>	

Delay, Queue Length, and Level of Service								
Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		<i>LT</i>		<i>LTR</i>				
v (vph)		5		16				
C (m) (vph)		1244		494				
v/c		0.00		0.03				
95% queue length		0.01		0.10				
Control Delay		7.9		12.5				
LOS		<i>A</i>		<i>B</i>				
Approach Delay	--	--	12.5					
Approach LOS	--	--	<i>B</i>					

D.2
TOTAL TRAFFIC 2007
UNMITIGATED (50-50 SPLIT)

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	JMA	Intersection	Porter Mtn. Road @ Flag Hollow
Agency/Co.	CLW	Jurisdiction	Town of Pinetop-Lakeside
Date Performed	7/12/2006	Analysis Year	2007
Analysis Time Period	AM Peak Hour - Unmitigated		
Project Description <i>Blue Ridge Middle/Jr. High School</i>			
East/West Street: <i>Flag Hollow Road</i>		North/South Street: <i>Porter Mountain Road</i>	
Intersection Orientation: <i>North-South</i>		Study Period (hrs): <i>0.25</i>	

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	211	418	6	3	415	0
Peak-Hour Factor, PHF	0.85	0.90	0.85	0.85	0.90	0.85
Hourly Flow Rate, HFR	248	464	7	3	461	0
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	<i>Undivided</i>					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration	<i>LTR</i>			<i>LTR</i>		
Upstream Signal		0			0	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	0	0	173	16	0	4
Peak-Hour Factor, PHF	0.85	0.85	0.85	0.80	0.80	0.80
Hourly Flow Rate, HFR	0	0	203	19	0	4
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)	0			0		
Flared Approach		<i>N</i>			<i>N</i>	
Storage		0			0	
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration		<i>LTR</i>			<i>LTR</i>	

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	<i>LTR</i>	<i>LTR</i>		<i>LTR</i>			<i>LTR</i>	
v (vph)	248	3		23			203	
C (m) (vph)	1111	1101		57			605	
v/c	0.22	0.00		0.40			0.34	
95% queue length	0.86	0.01		1.50			1.47	
Control Delay	9.2	8.3		105.6			13.9	
LOS	<i>A</i>	<i>A</i>		<i>F</i>			<i>B</i>	
Approach Delay	--	--	105.6			13.9		
Approach LOS	--	--	<i>F</i>			<i>B</i>		

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	JMA	Intersection	Porter Mtn. Road @ Flag Hollow
Agency/Co.	CLW	Jurisdiction	Town of Pinetop-Lakeside
Date Performed	8/13/2006	Analysis Year	2007
Analysis Time Period	PM Peak Hour - Unmitigated		
Project Description <i>Blue Ridge Middle/Jr. High School</i>			
East/West Street: <i>Flag Hollow Road</i>		North/South Street: <i>Porter Mountain Road</i>	
Intersection Orientation: <i>North-South</i>		Study Period (hrs): <i>0.25</i>	

Vehicle Volumes and Adjustments						
Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	84	365	12	6	333	0
Peak-Hour Factor, PHF	0.85	0.90	0.85	0.80	0.90	0.85
Hourly Flow Rate, HFR	98	405	14	7	370	0
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	<i>Undivided</i>					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration	<i>LTR</i>			<i>LTR</i>		
Upstream Signal		0			0	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	0	0	103	13	0	3
Peak-Hour Factor, PHF	0.85	0.85	0.85	0.80	0.80	0.80
Hourly Flow Rate, HFR	0	0	121	16	0	3
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)	0			0		
Flared Approach		<i>N</i>			<i>N</i>	
Storage		0			0	
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration		<i>LTR</i>			<i>LTR</i>	

Delay, Queue Length, and Level of Service								
Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	<i>LTR</i>	<i>LTR</i>		<i>LTR</i>			<i>LTR</i>	
v (vph)	98	7		19			121	
C (m) (vph)	1200	1151		175			680	
v/c	0.08	0.01		0.11			0.18	
95% queue length	0.27	0.02		0.36			0.64	
Control Delay	8.3	8.1		28.1			11.4	
LOS	<i>A</i>	<i>A</i>		<i>D</i>			<i>B</i>	
Approach Delay	--	--	28.1			11.4		
Approach LOS	--	--	<i>D</i>			<i>B</i>		

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	JMA	Intersection	Porter Mtn. Rd. @ North Drive
Agency/Co.	CLW	Jurisdiction	Town of Pinetop-Lakeside
Date Performed	7/12/2006	Analysis Year	2007
Analysis Time Period	AM Peak Hour - Unmitigated		

Project Description *Blue Ridge Middle/Junior High School*

East/West Street: *North Drive*

North/South Street: *Porter Mountain Road*

Intersection Orientation: *East-West*

Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	14	0	173			
Peak-Hour Factor, PHF	0.80	1.00	0.85	1.00	1.00	1.00
Hourly Flow Rate, HFR	17	0	203	0	0	0
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	<i>Undivided</i>					
RT Channelized			0			0
Lanes	0	1	0	0	0	0
Configuration	<i>LTR</i>					
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	211	211		245	18	
Peak-Hour Factor, PHF	0.85	0.85	1.00	1.00	0.85	0.80
Hourly Flow Rate, HFR	248	248	0	0	288	22
Percent Heavy Vehicles	0	5	0	0	5	0
Percent Grade (%)		0			0	
Flared Approach		<i>N</i>			<i>N</i>	
Storage		0			0	
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration	<i>LT</i>					<i>TR</i>

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	<i>LTR</i>		<i>LT</i>					<i>TR</i>
v (vph)	17		496					310
C (m) (vph)	1636		537					670
v/c	0.01		0.92					0.46
95% queue length	0.03		11.31					2.45
Control Delay	7.2		50.0					14.9
LOS	<i>A</i>		<i>F</i>					<i>B</i>
Approach Delay	--	--	50.0			14.9		
Approach LOS	--	--	<i>F</i>			<i>B</i>		

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	JMA	Intersection	Porter Mtn. Rd. @ North Drive
Agency/Co.	CLW	Jurisdiction	Town of Pinetop-Lakeside
Date Performed	7/12/2006	Analysis Year	2007
Analysis Time Period	PM Peak Hour - Unmitigated		

Project Description *Blue Ridge Middle/Junior High School*

East/West Street: *North Drive*

North/South Street: *Porter Mountain Road*

Intersection Orientation: *East-West*

Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	9	0	103			
Peak-Hour Factor, PHF	0.80	1.00	0.85	1.00	1.00	1.00
Hourly Flow Rate, HFR	11	0	121	0	0	0
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	<i>Undivided</i>					
RT Channelized			0			0
Lanes	0	1	0	0	0	0
Configuration	<i>LTR</i>					
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	84	284			236	7
Peak-Hour Factor, PHF	0.85	0.85	1.00	1.00	0.85	0.80
Hourly Flow Rate, HFR	98	334	0	0	277	8
Percent Heavy Vehicles	0	5	0	0	5	0
Percent Grade (%)	0			0		
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration	<i>LT</i>			<i>TR</i>		

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	<i>LTR</i>		<i>LT</i>			<i>TR</i>		
v (vph)	11		432			285		
C (m) (vph)	1636		708			745		
v/c	0.01		0.61			0.38		
95% queue length	0.02		4.19			1.80		
Control Delay	7.2		17.7			12.8		
LOS	A		C			B		
Approach Delay	--		17.7			12.8		
Approach LOS	--		C			B		

D.3
TOTAL TRAFFIC 2007
MITIGATED (50-50 SPLIT)

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	JMA	Intersection	Porter Mtn. Rd. @ North Drive
Agency/Co.	CLW	Jurisdiction	Town of Pinetop-Lakeside
Date Performed	8/13/2006	Analysis Year	2007
Analysis Time Period	AM Peak Hour - Mitigated		

Project Description <i>Blue Ridge Middle/Junior High School</i>	
East/West Street: <i>North Drive</i>	North/South Street: <i>Porter Mountain Road</i>
Intersection Orientation: <i>East-West</i>	Study Period (hrs): <i>0.25</i>

Vehicle Volumes and Adjustments						
Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	14	0	173			
Peak-Hour Factor, PHF	0.80	1.00	0.85	1.00	1.00	1.00
Hourly Flow Rate, HFR	17	0	203	0	0	0
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	<i>Undivided</i>					
RT Channelized			0			0
Lanes	0	1	0	0	0	0
Configuration	LTR					
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	211	211			245	18
Peak-Hour Factor, PHF	0.85	0.85	1.00	1.00	0.85	0.80
Hourly Flow Rate, HFR	248	248	0	0	288	22
Percent Heavy Vehicles	0	5	0	0	5	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	1	1	0	0	1	1
Configuration	L	T			T	R

Delay, Queue Length, and Level of Service								
Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LTR		L	T			T	R
v (vph)	17		248	248			288	22
C (m) (vph)	1636		422	740			651	1091
v/c	0.01		0.59	0.34			0.44	0.02
95% queue length	0.03		3.66	1.48			2.27	0.06
Control Delay	7.2		25.0	12.3			14.8	8.4
LOS	A		C	B			B	A
Approach Delay	--	--	18.6			14.4		
Approach LOS	--	--	C			B		

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	JMA	Intersection	Porter Mtn. Rd. @ North Drive
Agency/Co.	CLW	Jurisdiction	Town of Pinetop-Lakeside
Date Performed	8/13/2006	Analysis Year	2007
Analysis Time Period	PM Peak Hour - Mitigated		

Project Description *Blue Ridge Middle/Junior High School*

East/West Street: *North Drive*

North/South Street: *Porter Mountain Road*

Intersection Orientation: *East-West*

Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	9	0	103			
Peak-Hour Factor, PHF	0.80	1.00	0.85	1.00	1.00	1.00
Hourly Flow Rate, HFR	11	0	121	0	0	0
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	<i>Undivided</i>					
RT Channelized			0			0
Lanes	0	1	0	0	0	0
Configuration	<i>LTR</i>					
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	84	284		236		7
Peak-Hour Factor, PHF	0.85	0.85	1.00	1.00	0.85	0.80
Hourly Flow Rate, HFR	98	334	0	0	277	8
Percent Heavy Vehicles	0	5	0	0	5	0
Percent Grade (%)		0			0	
Flared Approach		<i>N</i>			<i>N</i>	
Storage		0			0	
RT Channelized			0			0
Lanes	1	1	0	0	1	1
Configuration	<i>L</i>	<i>T</i>			<i>T</i>	<i>R</i>

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	<i>LTR</i>		<i>L</i>	<i>T</i>			<i>T</i>	<i>R</i>
v (vph)	11		98	334			277	8
C (m) (vph)	1636		515	796			738	1091
v/c	0.01		0.19	0.42			0.38	0.01
95% queue length	0.02		0.70	2.09			1.75	0.02
Control Delay	7.2		13.6	12.8			12.8	8.3
LOS	<i>A</i>		<i>B</i>	<i>B</i>			<i>B</i>	<i>A</i>
Approach Delay	--	--	13.0			12.7		
Approach LOS	--	--	<i>B</i>			<i>B</i>		

HCS+™ DETAILED REPORT

General Information				Site Information			
Analyst	JMA			Intersection	Porter Mtn at Flag Hollow Rd.		
Agency or Co.	CLW			Area Type	All other areas		
Date Performed	8/13/2006			Jurisdiction	Town of Pinetop-Lakeside		
Time Period	AM Peak - Recommended			Analysis Year	2007		
				Project ID	Blue Ridge Middle/Junior High School		

Volume and Timing Input													
	EB			WB			NB			SB			
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
Number of lanes, N ₁	0	1	0	0	1	0	1	1	0	1	1	0	
Lane group	LTR			LTR			L	TR		L	TR		
Volume, V (vph)	0	0	173	16	0	4	211	418	6	3	415	0	
% Heavy vehicles, %HV	0	0	0	0	0	0	0	5	0	0	5	0	
Peak-hour factor, PHF	0.90	0.90	0.85	0.80	0.90	0.80	0.85	0.90	0.90	0.80	0.90	0.90	
Pretimed (P) or actuated (A)	P	P	P	P	P	P	P	P	P	P	P	P	
Start-up lost time, I ₁		2.0			2.0		2.0	2.0		2.0	2.0		
Extension of effective green, e		2.0			2.0		2.0	2.0		2.0	2.0		
Arrival type, AT		3			3		3	3		3	3		
Unit extension, UE		3.0			3.0		3.0	3.0		3.0	3.0		
Filtering/metering, I		1.000			1.000		1.000	1.000		1.000	1.000		
Initial unmet demand, Q _b		0.0			0.0		0.0	0.0		0.0	0.0		
Ped / Bike / RTOR volumes	0	0	0	0	0	0	0	0	0	0	0	0	
Lane width		12.0			12.0		12.0	12.0		12.0	12.0		
Parking / Grade / Parking	N	0	N	N	0	N	N	0	N	N	0	N	
Parking maneuvers, N _m													
Buses stopping, N _b		0			0		0	0		0	0		
Min. time for pedestrians, G _p		3.2			3.2			3.2			3.2		
Phasing	EW Perm	02	03	04	NS Perm	06	07	08					
Timing	G = 12.0	G = 0.0	G = 0.0	G = 0.0	G = 40.0	G = 0.0	G = 0.0	G = 0.0					
	Y = 4	Y = 0	Y = 0	Y = 0	Y = 4	Y = 0	Y = 0	Y = 0					
Duration of Analysis, T = 0.25							Cycle Length, C = 60.0						

Lane Group Capacity, Control Delay, and LOS Determination												
	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted flow rate, v		204			25		248	471		4	461	
Lane group capacity, c		329			237		585	1205		577	1207	
v/c ratio, X		0.62			0.11		0.42	0.39		0.01	0.38	
Total green ratio, g/C		0.20			0.20		0.67	0.67		0.67	0.67	
Uniform delay, d ₁		21.9			19.6		4.6	4.5		3.3	4.5	
Progression factor, PF		1.000			1.000		1.000	1.000		1.000	1.000	
Delay calibration, k		0.50			0.50		0.50	0.50		0.50	0.50	
Incremental delay, d ₂		8.5			0.9		2.2	1.0		0.0	0.9	
Initial queue delay, d ₃		0.0			0.0		0.0	0.0		0.0	0.0	
Control delay		30.4			20.5		6.9	5.5		3.4	5.4	
Lane group LOS		C			C		A	A		A	A	
Approach delay	30.4			20.5			6.0			5.4		
Approach LOS	C			C			A			A		
Intersection delay	9.6			X _C = 0.47			Intersection LOS			A		

HCS+™ DETAILED REPORT

General Information				Site Information			
Analyst	JMA			Intersection	Porter Mtn at Flag Hollow Rd.		
Agency or Co.	CLW			Area Type	All other areas		
Date Performed	8/13/2006			Jurisdiction	Town of Pinetop-Lakeside		
Time Period	PM Peak - Recommended			Analysis Year	2007		
				Project ID	Blue Ridge Middle/Junior High School		

Volume and Timing Input												
	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of lanes, N ₁	0	1	0	0	1	0	1	1	0	1	1	0
Lane group	LTR			LTR			L	TR		L	TR	
Volume, V (vph)	0	0	103	13	0	3	84	365	12	6	333	0
% Heavy vehicles, %HV	0	0	0	0	0	0	0	5	0	0	5	0
Peak-hour factor, PHF	0.90	0.90	0.85	0.80	0.90	0.80	0.85	0.90	0.90	0.80	0.90	0.90
Pretimed (P) or actuated (A)	P	P	P	P	P	P	P	P	P	P	P	P
Start-up lost time, I ₁		2.0			2.0		2.0	2.0		2.0	2.0	
Extension of effective green, e		2.0			2.0		2.0	2.0		2.0	2.0	
Arrival type, AT		3			3		3	3		3	3	
Unit extension, UE		3.0			3.0		3.0	3.0		3.0	3.0	
Filtering/metering, I		1.000			1.000		1.000	1.000		1.000	1.000	
Initial unmet demand, Q _b		0.0			0.0		0.0	0.0		0.0	0.0	
Ped / Bike / RTOR volumes	0	0	0	0	0	0	0	0	0	0	0	0
Lane width		12.0			12.0		12.0	12.0		12.0	12.0	
Parking / Grade / Parking	N	0	N	N	0	N	N	0	N	N	0	N
Parking maneuvers, N _m												
Buses stopping, N _b		0			0		0	0		0	0	
Min. time for pedestrians, G _p	3.2			3.2			3.2			3.2		
Phasing	EW Perm	02	03	04	NS Perm	06	07	08				
Timing	G = 12.0	G = 0.0	G = 0.0	G = 0.0	G = 40.0	G = 0.0	G = 0.0	G = 0.0				
	Y = 4	Y = 0	Y = 0	Y = 0	Y = 4	Y = 0	Y = 0	Y = 0				
Duration of Analysis, T = 0.25							Cycle Length, C = 60.0					

Lane Group Capacity, Control Delay, and LOS Determination												
	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted flow rate, v		121			20		99	419		7	370	
Lane group capacity, c		329			296		665	1203		621	1207	
v/c ratio, X		0.37			0.07		0.15	0.35		0.01	0.31	
Total green ratio, g/C		0.20			0.20		0.67	0.67		0.67	0.67	
Uniform delay, d ₁		20.7			19.5		3.7	4.3		3.4	4.2	
Progression factor, PF		1.000			1.000		1.000	1.000		1.000	1.000	
Delay calibration, k		0.50			0.50		0.50	0.50		0.50	0.50	
Incremental delay, d ₂		3.1			0.4		0.5	0.8		0.0	0.7	
Initial queue delay, d ₃		0.0			0.0		0.0	0.0		0.0	0.0	
Control delay		23.9			19.9		4.2	5.1		3.4	4.8	
Lane group LOS		C			B		A	A		A	A	
Approach delay	23.9			19.9			5.0			4.8		
Approach LOS	C			B			A			A		
Intersection delay	7.4			X _C = 0.35			Intersection LOS			A		

ALL-WAY STOP CONTROL ANALYSIS

General Information

Analyst	JMA
Agency/Co.	CLW
Date Performed	8/13/2006
Analysis Time Period	AM Peak - Mitigated

Site Information

Intersection	Porter Mtn Rd @ Flag Hollow Rd
Jurisdiction	Town of Pinetop-Lakeside
Analysis Year	2007

Project ID *Blue Ridge Middle/Jr. High School - Initial Examination*

East/West Street: *Flag Hollow Road*

North/South Street: *Porter Mountain Road*

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
	L	T	R	L	T	R
Movement						
Volume	0	0	173	16	0	4
%Thrus Left Lane	50			50		

Approach	Northbound			Southbound		
	L	T	R	L	T	R
Movement						
Volume	211	418	6	3	415	0
%Thrus Left Lane	50			50		

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LTR		LTR		L	TR	L	TR
PHF	0.85		0.85		0.85	0.90	0.85	0.90
Flow Rate	203		22		248	470	3	461
% Heavy Vehicles	0		0		0	5	0	5
No. Lanes	1		1		2		2	
Geometry Group	2		2		5		5	
Duration, T	0.25							

Saturation Headway Adjustment Worksheet

Prop. Left-Turns	0.0		0.8		1.0	0.0	1.0	0.0
Prop. Right-Turns	1.0		0.2		0.0	0.0	0.0	0.0
Prop. Heavy Vehicle								
hLT-adj	0.2	0.2	0.2	0.2	0.5	0.5	0.5	0.5
hRT-adj	-0.6	-0.6	-0.6	-0.6	-0.7	-0.7	-0.7	-0.7
hHV-adj	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
hadj, computed	6.06		6.06		6.06	6.06	6.06	6.06

Departure Headway and Service Time

hd, initial value	3.20		3.20		3.20	3.20	3.20	3.20
x, initial	0.18		0.02		0.22	0.42	0.00	0.41
hd, final value	6.06		6.06		6.06	6.06	6.06	6.06
x, final value	0.34		0.05		0.44	0.78	0.01	0.81
Move-up time, m	2.0		2.0		2.3		2.3	
Service Time	4.1		4.1		4.1		4.1	

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity	453		272		498	597	253	563
Delay	12.18		10.74		14.07	26.66	9.48	30.49
LOS	B		B		B	D	A	D
Approach: Delay	12.18		10.74		22.31		30.35	
LOS	B		B		C		D	
Intersection Delay	23.32							
Intersection LOS	C							

ALL-WAY STOP CONTROL ANALYSIS

General Information

Analyst	JMA
Agency/Co.	CLW
Date Performed	8/13/2006
Analysis Time Period	PM Peak Hour - Mitigated

Site Information

Intersection	Porter Mtn Rd @ Flag Hollow Rd
Jurisdiction	Town of Pinetop-Lakeside
Analysis Year	2007

Project ID *Blue Ridge Middle/Jr. High School - Initial Examination*

East/West Street: *Flag Hollow Road*

North/South Street: *Porter Mountain Road*

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
	L	T	R	L	T	R
Movement						
Volume	0	0	103	13	0	3
%Thrus Left Lane	50			50		

Approach	Northbound			Southbound		
	L	T	R	L	T	R
Movement						
Volume	84	365	12	6	333	0
%Thrus Left Lane	50			50		

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LTR		LTR		L	TR	L	TR
PHF	0.85		0.85		0.85	0.90	0.85	0.90
Flow Rate	121		18		98	418	7	370
% Heavy Vehicles	0		0		0	5	0	5
No. Lanes	1		1		2		2	
Geometry Group	2		2		5		5	
Duration, T	0.25							

Saturation Headway Adjustment Worksheet

Prop. Left-Turns	0.0		0.8		1.0	0.0	1.0	0.0
Prop. Right-Turns	1.0		0.2		0.0	0.0	0.0	0.0
Prop. Heavy Vehicle								
hLT-adj	0.2	0.2	0.2	0.2	0.5	0.5	0.5	0.5
hRT-adj	-0.6	-0.6	-0.6	-0.6	-0.7	-0.7	-0.7	-0.7
hHV-adj	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
hadj, computed	5.42		5.42		5.42	5.42	5.42	5.42

Departure Headway and Service Time

hd, initial value	3.20		3.20		3.20	3.20	3.20	3.20
x, initial	0.11		0.02		0.09	0.37	0.01	0.33
hd, final value	5.42		5.42		5.42	5.42	5.42	5.42
x, final value	0.18		0.03		0.16	0.62	0.01	0.57
Move-up time, m	2.0		2.0		2.3		2.3	
Service Time	3.4		3.4		3.4		3.4	

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity	371		268		348	662	257	620
Delay	9.62		9.56		9.59	16.52	8.74	15.36
LOS	A		A		A	C	A	C
Approach: Delay	9.62		9.56		15.21		15.24	
LOS	A		A		C		C	
Intersection Delay	14.47							
Intersection LOS	B							

D.4
TOTAL TRAFFIC 2012
UNMITIGATED (50-50 SPLIT)

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	JMA	Intersection	Porter Mtn. Road @ Flag Hollow
Agency/Co.	CLW	Jurisdiction	Town of Pinetop-Lakeside
Date Performed	7/19/2006	Analysis Year	2012
Analysis Time Period	AM Peak Hour		
Project Description <i>Blue Ridge Middle/Jr. High School</i>			
East/West Street: <i>Flag Hollow Road</i>		North/South Street: <i>Porter Mountain Road</i>	
Intersection Orientation: <i>North-South</i>		Study Period (hrs): <i>0.25</i>	

Vehicle Volumes and Adjustments						
Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		264	7	3	308	
Peak-Hour Factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85
Hourly Flow Rate, HFR	0	310	8	3	362	0
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	<i>Undivided</i>					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration			<i>TR</i>	<i>LT</i>		
Upstream Signal		0			0	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume				20	0	4
Peak-Hour Factor, PHF	0.85	0.85	0.85	0.80	0.80	0.80
Hourly Flow Rate, HFR	0	0	0	24	0	4
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach		<i>N</i>			<i>N</i>	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	0	1	0
Configuration					<i>LTR</i>	

Delay, Queue Length, and Level of Service								
Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		<i>LT</i>		<i>LTR</i>				
v (vph)		3		28				
C (m) (vph)		1253		445				
v/c		0.00		0.06				
95% queue length		0.01		0.20				
Control Delay		7.9		13.6				
LOS		<i>A</i>		<i>B</i>				
Approach Delay	--	--	13.6					
Approach LOS	--	--	<i>B</i>					

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	JMA	Intersection	Porter Mtn. Road @ Flag Hollow
Agency/Co.	CLW	Jurisdiction	Town of Pinetop-Lakeside
Date Performed	7/19/2006	Analysis Year	2012
Analysis Time Period	PM Peak Hour - Background		
Project Description <i>Blue Ridge Middle/Junior High School</i>			
East/West Street: <i>Flag Hollow Road</i>		North/South Street: <i>Porter Mountain Road</i>	
Intersection Orientation: <i>North-South</i>		Study Period (hrs): <i>0.25</i>	

Vehicle Volumes and Adjustments						
Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		359	15	7	293	
Peak-Hour Factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85
Hourly Flow Rate, HFR	0	422	17	8	344	0
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	<i>Undivided</i>					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration			TR	LT		
Upstream Signal		0			0	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume				16	0	3
Peak-Hour Factor, PHF	0.85	0.85	0.85	0.80	0.80	0.80
Hourly Flow Rate, HFR	0	0	0	19	0	3
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	0	1	0
Configuration					LTR	

Delay, Queue Length, and Level of Service								
Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		LT		LTR				
v (vph)		8		22				
C (m) (vph)		1132		381				
v/c		0.01		0.06				
95% queue length		0.02		0.18				
Control Delay		8.2		15.0				
LOS		A		C				
Approach Delay	--	--	15.0					
Approach LOS	--	--	C					

ALL-WAY STOP CONTROL ANALYSIS

General Information

Analyst	JMA
Agency/Co.	CLW
Date Performed	8/13/2006
Analysis Time Period	AM Peak - Unmitigated

Site Information

Intersection	Porter Mtn Rd @ Flag Hollow Rd
Jurisdiction	Town of Pinetop-Lakeside
Analysis Year	2012

Project ID *Blue Ridge Middle/Junior High School*East/West Street: *Flag Hollow Road*North/South Street: *Porter Mountain Road*

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
	L	T	R	L	T	R
Movement						
Volume	0	0	173	20	0	4
%Thrus Left Lane	50			50		

Approach	Northbound			Southbound		
	L	T	R	L	T	R
Movement						
Volume	211	475	7	3	481	0
%Thrus Left Lane	50			50		

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LTR		LTR		L	TR	L	TR
PHF	0.85		0.85		0.85	0.90	0.85	0.90
Flow Rate	203		27		248	534	3	534
% Heavy Vehicles	0		0		0	5	0	5
No. Lanes	1		1		2		2	
Geometry Group	2		2		5		5	
Duration, T	0.25							

Saturation Headway Adjustment Worksheet

Prop. Left-Turns	0.0		0.9		1.0	0.0	1.0	0.0
Prop. Right-Turns	1.0		0.1		0.0	0.0	0.0	0.0
Prop. Heavy Vehicle								
hLT-adj	0.2	0.2	0.2	0.2	0.5	0.5	0.5	0.5
hRT-adj	-0.6	-0.6	-0.6	-0.6	-0.7	-0.7	-0.7	-0.7
hHV-adj	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
hadj, computed	6.42		6.42		6.42	6.42	6.42	6.42

Departure Headway and Service Time

hd, initial value	3.20		3.20		3.20	3.20	3.20	3.20
x, initial	0.18		0.02		0.22	0.47	0.00	0.47
hd, final value	6.42		6.42		6.42	6.42	6.42	6.42
x, final value	0.36		0.06		0.46	0.92	0.01	0.97
Move-up time, m	2.0		2.0		2.3		2.3	
Service Time	4.4		4.4		4.4		4.4	

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity	453		277		498	579	253	551
Delay	13.01		11.38		14.77	44.42	9.68	55.71
LOS	B		B		B	E	A	F
Approach: Delay	13.01		11.38		35.02		55.46	
LOS	B		B		E		F	
Intersection Delay	38.81							
Intersection LOS	E							

ALL-WAY STOP CONTROL ANALYSIS

General Information		Site Information	
Analyst	JMA	Intersection	Porter Mtn Rd @ Flag Hollow Rd
Agency/Co.	CLW	Jurisdiction	Town of Pinetop-Lakeside
Date Performed	8/13/2006	Analysis Year	2012
Analysis Time Period	PM Peak - Unmitigated		

Project ID *Blue Ridge Middle/Junior High School*East/West Street: *Flag Hollow Road*North/South Street: *Porter Mountain Road*

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
	L	T	R	L	T	R
Movement						
Volume	0	0	103	16	0	3
%Thrus Left Lane	50			50		

Approach	Northbound			Southbound		
	L	T	R	L	T	R
Movement						
Volume	84	443	15	7	396	0
%Thrus Left Lane	50			50		

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	<i>LTR</i>		<i>LTR</i>		<i>L</i>	<i>TR</i>	<i>L</i>	<i>TR</i>
PHF	0.85		0.85		0.85	0.90	0.85	0.90
Flow Rate	121		21		98	508	8	440
% Heavy Vehicles	0		0		0	5	0	5
No. Lanes	1		1		2		2	
Geometry Group	2		2		5		5	
Duration, T	0.25							

Saturation Headway Adjustment Worksheet

Prop. Left-Turns	0.0		0.9		1.0	0.0	1.0	0.0
Prop. Right-Turns	1.0		0.1		0.0	0.0	0.0	0.0
Prop. Heavy Vehicle								
hLT-adj	0.2	0.2	0.2	0.2	0.5	0.5	0.5	0.5
hRT-adj	-0.6	-0.6	-0.6	-0.6	-0.7	-0.7	-0.7	-0.7
hHV-adj	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
hadj, computed	5.81		5.81		5.81	5.81	5.81	5.81

Departure Headway and Service Time

hd, initial value	3.20		3.20		3.20	3.20	3.20	3.20
x, initial	0.11		0.02		0.09	0.45	0.01	0.39
hd, final value	5.81		5.81		5.81	5.81	5.81	5.81
x, final value	0.20		0.04		0.16	0.78	0.01	0.70
Move-up time, m	2.0		2.0		2.3		2.3	
Service Time	3.8		3.8		3.8		3.8	

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity	371		271		348	649	258	622
Delay	10.22		10.10		9.79	24.69	8.92	20.57
LOS	B		B		A	C	A	C
Approach: Delay	10.22		10.10		22.28		20.37	
LOS	B		B		C		C	
Intersection Delay	20.13							
Intersection LOS	C							

D.5
TOTAL TRAFFIC 2012
MITIGATED (50-50 SPLIT)

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	JMA	Intersection	Porter Mtn. Rd. @ North Drive
Agency/Co.	CLW	Jurisdiction	Town of Pinetop-Lakeside
Date Performed	8/13/2006	Analysis Year	2012
Analysis Time Period	AM Peak Hour - Mitigated		

Project Description <i>Blue Ridge Middle/Junior High School</i>	
East/West Street: <i>North Drive</i>	North/South Street: <i>Porter Mountain Road</i>
Intersection Orientation: <i>East-West</i>	Study Period (hrs): <i>0.25</i>

Vehicle Volumes and Adjustments						
Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	14	0	173			
Peak-Hour Factor, PHF	0.80	1.00	0.85	1.00	1.00	1.00
Hourly Flow Rate, HFR	17	0	203	0	0	0
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	<i>Undivided</i>					
RT Channelized			0			0
Lanes	0	1	0	0	0	0
Configuration	<i>LTR</i>					
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	211	268			311	18
Peak-Hour Factor, PHF	0.85	0.85	1.00	1.00	0.90	0.80
Hourly Flow Rate, HFR	248	315	0	0	345	22
Percent Heavy Vehicles	0	5	0	0	5	0
Percent Grade (%)	0			0		
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	1	1	0	0	1	1
Configuration	<i>L</i>		<i>T</i>		<i>T</i>	
						<i>R</i>

Delay, Queue Length, and Level of Service								
Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	<i>LTR</i>		<i>L</i>	<i>T</i>			<i>T</i>	<i>R</i>
v (vph)	17		248	315			345	22
C (m) (vph)	1636		360	740			651	1091
v/c	0.01		0.69	0.43			0.53	0.02
95% queue length	0.03		4.92	2.14			3.13	0.06
Control Delay	7.2		34.4	13.4			16.6	8.4
LOS	A		D	B			C	A
Approach Delay	--		22.7			16.1		
Approach LOS	--		C			C		

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	JMA	Intersection	Porter Mtn. Rd. @ North Drive
Agency/Co.	CLW	Jurisdiction	Town of Pinetop-Lakeside
Date Performed	8/13/2006	Analysis Year	2012
Analysis Time Period	PM Peak Hour - Mitigated		

Project Description <i>Blue Ridge Middle/Junior High School</i>	
East/West Street: <i>North Drive</i>	North/South Street: <i>Porter Mountain Road</i>
Intersection Orientation: <i>East-West</i>	Study Period (hrs): <i>0.25</i>

Vehicle Volumes and Adjustments						
Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	9	0	103			
Peak-Hour Factor, PHF	0.80	1.00	0.85	1.00	1.00	1.00
Hourly Flow Rate, HFR	11	0	121	0	0	0
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	<i>Undivided</i>					
RT Channelized			0			0
Lanes	0	1	0	0	0	0
Configuration	LTR					
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	84	362			300	7
Peak-Hour Factor, PHF	0.85	0.85	1.00	1.00	0.85	0.80
Hourly Flow Rate, HFR	98	425	0	0	352	8
Percent Heavy Vehicles	0	5	0	0	5	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	1	1	0	0	1	1
Configuration	L	T			T	R

Delay, Queue Length, and Level of Service								
Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LTR		L	T			T	R
v (vph)	11		98	425			352	8
C (m) (vph)	1636		429	796			738	1091
v/c	0.01		0.23	0.53			0.48	0.01
95% queue length	0.02		0.87	3.21			2.60	0.02
Control Delay	7.2		15.9	14.6			14.2	8.3
LOS	A		C	B			B	A
Approach Delay	--	--	14.8			14.1		
Approach LOS	--	--	B			B		

HCS+™ DETAILED REPORT

General Information				Site Information			
Analyst	JMA			Intersection	Porter Mtn at Flag Hollow Rd.		
Agency or Co.	CLW			Area Type	All other areas		
Date Performed	8/13/2006			Jurisdiction	Town of Pinetop-Lakeside		
Time Period	AM Peak - Mitigated			Analysis Year	2012		
				Project ID	Blue Ridge Middle/Junior High School (50-50 split)		

Volume and Timing Input													
	EB			WB			NB			SB			
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
Number of lanes, N ₁	0	1	0	0	1	0	1	1	0	1	1	0	
Lane group	LTR			LTR			L	TR		L	TR		
Volume, V (vph)	0	0	173	20	0	4	211	475	7	3	481	0	
% Heavy vehicles, %HV	0	0	0	0	0	0	0	5	0	0	5	0	
Peak-hour factor, PHF	0.90	0.90	0.85	0.80	0.90	0.80	0.85	0.90	0.90	0.80	0.90	0.90	
Pretimed (P) or actuated (A)	P	P	P	P	P	P	P	P	P	P	P	P	
Start-up lost time, I ₁		2.0			2.0		2.0	2.0		2.0	2.0		
Extension of effective green, e		2.0			2.0		2.0	2.0		2.0	2.0		
Arrival type, AT		3			3		3	3		3	3		
Unit extension, UE		3.0			3.0		3.0	3.0		3.0	3.0		
Filtering/metering, I		1.000			1.000		1.000	1.000		1.000	1.000		
Initial unmet demand, Q _b		0.0			0.0		0.0	0.0		0.0	0.0		
Ped / Bike / RTOR volumes	0	0	0	0	0	0	0	0	0	0	0	0	
Lane width		12.0			12.0		12.0	12.0		12.0	12.0		
Parking / Grade / Parking	N	0	N	N	0	N	N	0	N	N	0	N	
Parking maneuvers, N _m													
Buses stopping, N _b		0			0		0	0		0	0		
Min. time for pedestrians, G _p		3.2			3.2			3.2			3.2		
Phasing	EW Perm	02	03	04	NS Perm	06	07	08					
Timing	G = 12.0	G = 0.0	G = 0.0	G = 0.0	G = 40.0	G = 0.0	G = 0.0	G = 0.0					
	Y = 4	Y = 0	Y = 0	Y = 0	Y = 4	Y = 0	Y = 0	Y = 0					
Duration of Analysis, T = 0.25							Cycle Length, C = 60.0						

Lane Group Capacity, Control Delay, and LOS Determination												
	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted flow rate, v		204			30		248	536		4	534	
Lane group capacity, c		329			221		524	1205		523	1207	
v/c ratio, X		0.62			0.14		0.47	0.44		0.01	0.44	
Total green ratio, g/C		0.20			0.20		0.67	0.67		0.67	0.67	
Uniform delay, d ₁		21.9			19.7		4.9	4.7		3.4	4.7	
Progression factor, PF		1.000			1.000		1.000	1.000		1.000	1.000	
Delay calibration, k		0.50			0.50		0.50	0.50		0.50	0.50	
Incremental delay, d ₂		8.5			1.3		3.0	1.2		0.0	1.2	
Initial queue delay, d ₃		0.0			0.0		0.0	0.0		0.0	0.0	
Control delay		30.4			21.0		7.9	5.9		3.4	5.9	
Lane group LOS		C			C		A	A		A	A	
Approach delay	30.4			21.0			6.6			5.9		
Approach LOS	C			C			A			A		
Intersection delay	9.7			X _C = 0.51			Intersection LOS			A		

HCS+™ DETAILED REPORT

General Information				Site Information			
Analyst	JMA			Intersection	Porter Mtn at Flag Hollow Rd.		
Agency or Co.	CLW			Area Type	All other areas		
Date Performed	8/13/2006			Jurisdiction	Town of Pinetop-Lakeside		
Time Period	PM Peak - Mitigated			Analysis Year	2012		
				Project ID	Blue Ridge Middle/Junior High School (50-50 split)		

Volume and Timing Input												
	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of lanes, N ₁	0	1	0	0	1	0	1	1	0	1	1	0
Lane group	LTR			LTR			L	TR		L	TR	
Volume, V (vph)	0	0	103	16	0	3	84	443	15	7	396	0
% Heavy vehicles, %HV	0	0	0	0	0	0	0	5	0	0	5	0
Peak-hour factor, PHF	0.90	0.90	0.85	0.80	0.90	0.80	0.85	0.90	0.90	0.80	0.90	0.90
Pretimed (P) or actuated (A)	P	P	P	P	P	P	P	P	P	P	P	P
Start-up lost time, I ₁		2.0			2.0		2.0	2.0		2.0	2.0	
Extension of effective green, e		2.0			2.0		2.0	2.0		2.0	2.0	
Arrival type, AT		3			3		3	3		3	3	
Unit extension, UE		3.0			3.0		3.0	3.0		3.0	3.0	
Filtering/metering, I		1.000			1.000		1.000	1.000		1.000	1.000	
Initial unmet demand, Q _b		0.0			0.0		0.0	0.0		0.0	0.0	
Ped / Bike / RTOR volumes	0	0	0	0	0	0	0	0	0	0	0	0
Lane width		12.0			12.0		12.0	12.0		12.0	12.0	
Parking / Grade / Parking	N	0	N	N	0	N	N	0	N	N	0	N
Parking maneuvers, N _m												
Buses stopping, N _b		0			0		0	0		0	0	
Min. time for pedestrians, G _p	3.2			3.2			3.2			3.2		
Phasing	EW Perm	02	03	04	NS Perm	06	07	08				
Timing	G = 12.0	G = 0.0	G = 0.0	G = 0.0	G = 40.0	G = 0.0	G = 0.0	G = 0.0				
	Y = 4	Y = 0	Y = 0	Y = 0	Y = 4	Y = 0	Y = 0	Y = 0				
Duration of Analysis, T = 0.25						Cycle Length, C = 60.0						

Lane Group Capacity, Control Delay, and LOS Determination												
	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted flow rate, v		121			24		99	509		9	440	
Lane group capacity, c		329			290		603	1202		545	1207	
v/c ratio, X		0.37			0.08		0.16	0.42		0.02	0.36	
Total green ratio, g/C		0.20			0.20		0.67	0.67		0.67	0.67	
Uniform delay, d ₁		20.7			19.5		3.7	4.6		3.4	4.4	
Progression factor, PF		1.000			1.000		1.000	1.000		1.000	1.000	
Delay calibration, k		0.50			0.50		0.50	0.50		0.50	0.50	
Incremental delay, d ₂		3.1			0.6		0.6	1.1		0.1	0.9	
Initial queue delay, d ₃		0.0			0.0		0.0	0.0		0.0	0.0	
Control delay		23.9			20.1		4.3	5.7		3.4	5.3	
Lane group LOS		C			C		A	A		A	A	
Approach delay	23.9			20.1			5.5			5.2		
Approach LOS	C			C			A			A		
Intersection delay	7.5			X _C = 0.41			Intersection LOS			A		

D.6
TOTAL TRAFFIC 2007
MITIGATED (70-30 SPLIT)

Not to Scale

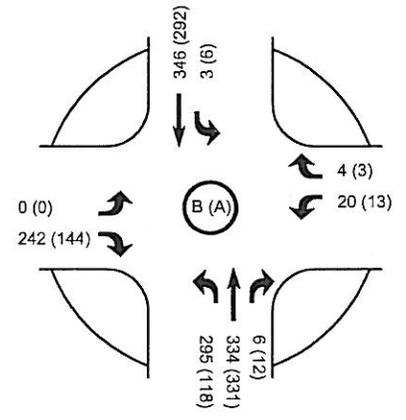
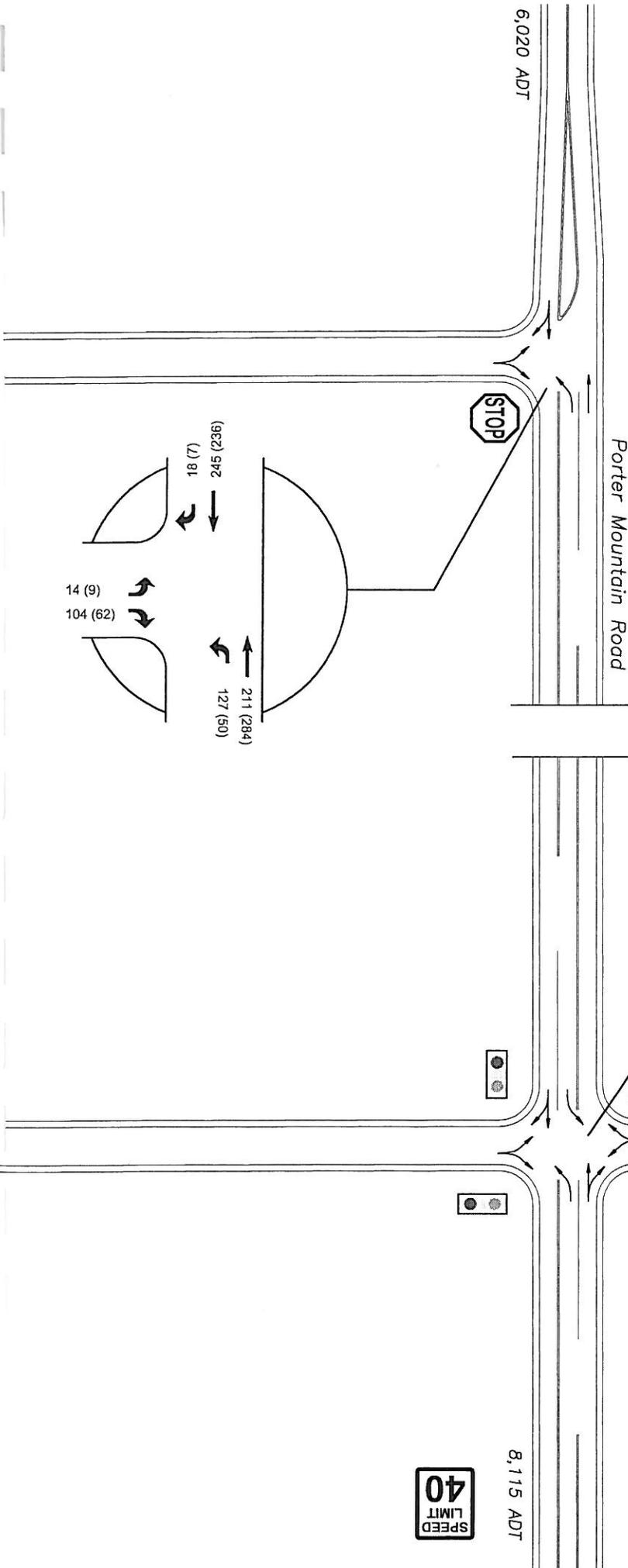


SPEED LIMIT 40

6,020 ADT

Legend

- XX (XX) AM (PM) Peak Hour Volumes
- XXXX Average Daily Traffic Volume
- ← Lane Use
- A (C) AM (PM) Peak Hour Level of Service
- STOP Intersection Control



330 ADT

SPEED LIMIT 25

This figure represents a 70-30 access split
Features Shown are to a "Sketch Level" Only.

HCS+™ DETAILED REPORT

General Information	Site Information
Analyst <i>JMA</i>	Intersection <i>Porter Mtn at Flag Hollow Rd.</i>
Agency or Co. <i>CLW</i>	Area Type <i>All other areas</i>
Date Performed <i>8/9/2006</i>	Jurisdiction <i>Town of Pinetop-Lakeside</i>
Time Period <i>AM Peak - Mitigated</i>	Analysis Year <i>2012</i>
	Project ID <i>Blue Ridge Middle/Junior High School - 70.30 split</i>

	EB			WB			NB			SB			
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
Number of lanes, N ₁	0	1	0	0	1	0	1	1	0	1	1	0	
Lane group	LTR			LTR			L	TR		L	TR		
Volume, V (vph)	0	0	242	20	0	4	295	334	6	3	346	0	
% Heavy vehicles, %HV	0	0	0	0	0	0	0	5	0	0	5	0	
Peak-hour factor, PHF	0.90	0.90	0.85	0.80	0.90	0.80	0.85	0.90	0.90	0.80	0.90	0.90	
Pretimed (P) or actuated (A)	P	P	P	P	P	P	P	P	P	P	P	P	
Start-up lost time, I ₁		2.0			2.0		2.0	2.0		2.0	2.0		
Extension of effective green, e		2.0			2.0		2.0	2.0		2.0	2.0		
Arrival type, AT		3			3		3	3		3	3		
Unit extension, UE		3.0			3.0		3.0	3.0		3.0	3.0		
Filtering/metering, I		1.000			1.000		1.000	1.000		1.000	1.000		
Initial unmet demand, Q _b		0.0			0.0		0.0	0.0		0.0	0.0		
Ped / Bike / RTOR volumes	0	0	0	0	0	0	0	0	0	0	0	0	
Lane width		12.0			12.0		12.0	12.0		12.0	12.0		
Parking / Grade / Parking	N	0	N	N	0	N	N	0	N	N	0	N	
Parking maneuvers, N _m													
Buses stopping, N _b		0			0		0	0		0	0		
Min. time for pedestrians, G _p		3.2			3.2			3.2			3.2		
Phasing	EW Perm	02	03	04	NS Perm	06	07	08					
Timing	G = 14.6	G = 0.0	G = 0.0	G = 0.0	G = 35.4	G = 0.0	G = 0.0	G = 0.0					
	Y = 4	Y = 0	Y = 0	Y = 0	Y = 4	Y = 0	Y = 0	Y = 0					
Duration of Analysis, T = 0.25							Cycle Length, C = 58.0						

	EB			WB			NB			SB			
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
Adjusted flow rate, v		285			30		347	378		4	384		
Lane group capacity, c		414			290		582	1102		588	1105		
v/c ratio, X		0.69			0.10		0.60	0.34		0.01	0.35		
Total green ratio, g/C		0.25			0.25		0.61	0.61		0.61	0.61		
Uniform delay, d ₁		19.6			16.7		6.9	5.6		4.4	5.6		
Progression factor, PF		1.000			1.000		1.000	1.000		1.000	1.000		
Delay calibration, k		0.50			0.50		0.50	0.50		0.50	0.50		
Incremental delay, d ₂		9.0			0.7		4.5	0.9		0.0	0.9		
Initial queue delay, d ₃		0.0			0.0		0.0	0.0		0.0	0.0		
Control delay		28.7			17.4		11.4	6.4		4.4	6.5		
Lane group LOS		C			B		B	A		A	A		
Approach delay		28.7			17.4			8.8			6.4		
Approach LOS		C			B			A			A		
Intersection delay		12.3			X _C = 0.62			Intersection LOS			B		

HCS+™ DETAILED REPORT

General Information				Site Information			
Analyst	JMA			Intersection	Porter Mtn at Flag Hollow Rd.		
Agency or Co.	CLW			Area Type	All other areas		
Date Performed	8/9/2006			Jurisdiction	Town of Pinetop-Lakeside		
Time Period	PM Peak - Mitigated			Analysis Year	2012		
				Project ID	Blue Ridge Middle/Junior High School - 70.30 split		

Volume and Timing Input													
	EB			WB			NB			SB			
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
Number of lanes, N ₁	0	1	0	0	1	0	1	1	0	1	1	0	
Lane group	LTR			LTR			L	TR		L	TR		
Volume, V (vph)	0	0	144	13	0	3	118	331	12	6	292	0	
% Heavy vehicles, %HV	0	0	0	0	0	0	0	5	0	0	5	0	
Peak-hour factor, PHF	0.90	0.90	0.85	0.80	0.90	0.80	0.85	0.90	0.90	0.80	0.90	0.90	
Pretimed (P) or actuated (A)	P	P	P	P	P	P	P	P	P	P	P	P	
Start-up lost time, I ₁		2.0			2.0		2.0	2.0		2.0	2.0		
Extension of effective green, e		2.0			2.0		2.0	2.0		2.0	2.0		
Arrival type, AT		3			3		3	3		3	3		
Unit extension, UE		3.0			3.0		3.0	3.0		3.0	3.0		
Filtering/metering, I		1.000			1.000		1.000	1.000		1.000	1.000		
Initial unmet demand, Q _b		0.0			0.0		0.0	0.0		0.0	0.0		
Ped / Bike / RTOR volumes	0	0	0	0	0	0	0	0	0	0	0	0	
Lane width		12.0			12.0		12.0	12.0		12.0	12.0		
Parking / Grade / Parking	N	0	N	N	0	N	N	0	N	N	0	N	
Parking maneuvers, N _m													
Buses stopping, N _b		0			0		0	0		0	0		
Min. time for pedestrians, G _p		3.2			3.2			3.2			3.2		
Phasing	EW Perm	02	03	04	NS Perm	06	07	08					
Timing	G = 14.6	G = 0.0	G = 0.0	G = 0.0	G = 35.4	G = 0.0	G = 0.0	G = 0.0					
	Y = 4	Y = 0	Y = 0	Y = 0	Y = 4	Y = 0	Y = 0	Y = 0					
Duration of Analysis, T = 0.25							Cycle Length, C = 58.0						

Lane Group Capacity, Control Delay, and LOS Determination												
	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted flow rate, v		169			20		139	381		7	324	
Lane group capacity, c		414			373		637	1100		585	1105	
v/c ratio, X		0.41			0.05		0.22	0.35		0.01	0.29	
Total green ratio, g/C		0.25			0.25		0.61	0.61		0.61	0.61	
Uniform delay, d ₁		18.1			16.5		5.1	5.6		4.4	5.4	
Progression factor, PF		1.000			1.000		1.000	1.000		1.000	1.000	
Delay calibration, k		0.50			0.50		0.50	0.50		0.50	0.50	
Incremental delay, d ₂		3.0			0.3		0.8	0.9		0.0	0.7	
Initial queue delay, d ₃		0.0			0.0		0.0	0.0		0.0	0.0	
Control delay		21.1			16.7		5.9	6.4		4.5	6.0	
Lane group LOS		C			B		A	A		A	A	
Approach delay	21.1			16.7			6.3			6.0		
Approach LOS	C			B			A			A		
Intersection delay	8.8			X _C = 0.36			Intersection LOS			A		

APPENDIX E
SEASONAL ADJUSTMENT VALUES
ADOT

E.1
ADOT SEASONAL AND
DAILY ADJUSTMENT FACTORS
FOR 2005

**Arizona Department of Transportation
Daily and Seasonal Factors for 2005**

US 60 MP 337.20 Show Low	Jan factor	Feb factor	Mar factor	Apr factor	Mav factor	Jun factor	Jul factor	Aug factor	Sep factor	Oct factor	Nov factor	Dec factor
SEASONAL (MONTH OF YEAR)	1.172	1.109	1.017	1.120	0.917	0.866	0.737	0.939	1.002	1.043	1.101	1.196
Sundav	0.744	0.779	0.800	0.822	0.868	0.769	0.846	0.733	0.815	0.751	0.796	1.052
Monday	1.087	1.092	1.106	1.119	0.974	1.136	1.006	1.150	0.808	1.159	1.255	0.980
Tuesday	1.420	1.361	1.311	1.271	1.317	1.334	1.247	1.346	1.292	1.337	1.313	1.198
Wednesday	1.329	1.225	1.219	1.222	1.324	1.239	1.411	1.283	1.563	1.246	1.034	1.095
Thursday	1.169	1.106	1.119	1.069	1.115	1.042	1.217	1.094	1.264	1.070	1.056	1.002
Friday	0.763	0.751	0.787	0.754	0.749	0.789	0.699	0.762	0.786	0.784	0.805	0.781
Saturday	0.899	0.987	0.911	0.978	0.931	0.967	0.943	0.983	0.945	0.958	0.971	0.997

SR 260 MP 355.50 Hon Dah	Jan factor	Feb factor	Mar factor	Apr factor	Mav factor	Jun factor	Jul factor	Aug factor	Sep factor	Oct factor	Nov factor	Dec factor
SEASONAL (MONTH OF YEAR)	1.114	1.051	1.114	1.187	0.972	0.874	0.766	0.857	0.936	1.027	1.171	1.149
Sundav	1.028	1.051	1.135	1.207	1.038	1.012	1.004	1.071	1.025	1.062	1.233	1.275
Monday	1.118	1.168	1.102	1.107	1.113	1.152	1.055	1.115	1.086	1.129	1.095	1.114
Tuesday	1.252	1.149	1.076	1.101	1.147	1.158	1.135	1.134	1.161	1.121	1.054	1.060
Wednesday	1.190	1.065	0.980	1.000	1.064	1.064	1.078	1.037	1.084	1.026	0.965	1.005
Thursday	1.062	1.037	0.995	0.999	1.016	1.035	1.058	1.026	1.029	1.022	0.975	0.950
Friday	0.835	0.856	0.881	0.810	0.842	0.850	0.861	0.853	0.830	0.868	0.831	0.814
Saturday	0.738	0.799	0.892	0.889	0.866	0.835	0.876	0.851	0.875	0.850	0.942	0.911

APPENDIX F
SITE PHOTOGRAPHS



View of Flag Hollow Road from Porter Mountain Road looking east. Unpaved 2-lane roadway



View of the Intersection of Porter Mountain Road and Flag Hollow Road, looking south from Flag Hollow Road



View of the Intersection of Porter Mountain Road and Flag Hollow Road, looking west from Flag Hollow Road.



View of proposed school site.



View of the Intersection of Porter Mountain Road and Flag Hollow Road, looking north from Flag Hollow Road.

APPENDIX G
TURN LANE WARRANT ANALYSIS
IDAHO METHOD

SECTION 450.00 - HIGHWAY APPROACHES

SECTION 451.00 - GENERAL

451.01 General.

SECTION 452.00 - TURN LANES FOR NEW APPROACHES

452.01 General.

452.01 Left-Turn Lanes.

452.02 Right-Turn Lanes.

SECTION 450.00 - HIGHWAY APPROACHES

SECTION 451.00 - GENERAL

451.01 General. Each District will monitor right-of-way use on state highways within their respective Districts in conformance with the provisions of Department policy and applicable state and federal regulations. Access control on other transportation systems is the responsibility of the public highway agency having jurisdiction of that roadway.

Uncontrolled encroachments can nullify carefully planned safety and maintenance features; therefore, modifications of existing encroachments or any new encroachments must be covered by a permit. It is essential that those in the field (maintenance foreman, maintenance technician, etc.) control these encroachments. A permit to use the right-of-way must be completed and approved before installation of any encroachment begins.

Field personnel that have contact with those owning property adjoining the highway should be knowledgeable of the policies and procedures regarding encroachment permits and be willing to explain and assist those that plan changes or improvements.

The state policy controlling right-of-way encroachments is covered in Rule [39.03.42](#), “Rules Governing Use of Right-of-Way Encroachments on State Highway Rights-of-Way”, Administrative Policy [A-12-01](#) and the ITD documents “Access Management: Standards and Procedures for Highway Right of Way Encroachments” and “A Policy for the Accommodation of Utilities within the Right of Way of the State Highway System in the State of Idaho.”

SECTION 452.00 - TURN LANES FOR NEW APPROACHES

452.01 General. The need for turn lanes on State Highways shall be addressed during the Concept Review of any proposed new construction. All public-use approaches to the State Highway System, including private approaches to subdivisions and/or adjacent businesses, shall be reviewed for the need to provide turn lanes on the State highway.

Justification for each turn lane shall be supported by an engineering study approved by the Traffic and Highway Safety Engineer that considers at least the following factors:

- Operating speed of the highway,
- Traffic volumes,
- Number of anticipated turning moves,
- Availability of passing opportunities,
- Sight distance, and
- Past collision history and/or potential for collisions.

Turn lanes shall not be constructed to enhance an existing roadside business, unless the applicant is willing to participate in the cost. However, when the safety of the traveling public is a significant factor, the participation requirement may be waived. If the engineering study does not support justification for a turn lane, the turn lane may not be approved even when requested by the applicant.

When the need for a turn lane is the result of a planned commercial development(s), and the requirements for a turn lane are met, the turn lane shall be paid for by the developer(s).

452.01 Left-Turn Lanes. The chart below provides warrants for a left-turn lane based on the portion of the current year design hourly volume (DHV) on the highway carried in a single lane, the peak-hour volume of vehicles turning left, and the posted speed. A left-turn lane is warranted when the single-lane portion of the DHV of the highway and the DHV of left turns intersect at a point on or above the curve for the posted speed. In most cases, left-turn lanes should be provided where there are more than 12 left turns per peak hour.

Where the DHV of the left turn into the access is more than 12 vph and the highway's inside lane volume exceeds 250 vph on 45 to 65 mph highways or 400 vph on 25 to 40 mph highways, a left-turn lane may be required due to the high traffic volumes or other unique site-specific safety considerations.

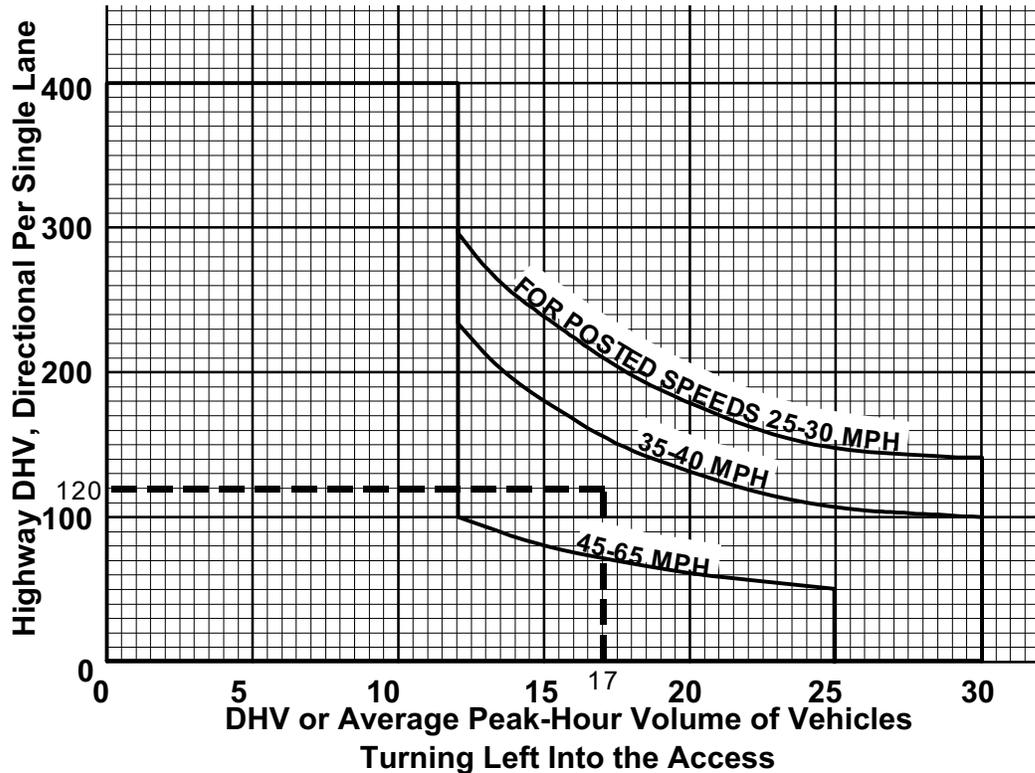
Left-turn lanes should also be considered if there have been four accidents per year at an existing approach, or if that number of accidents could be expected to occur as a result of a new approach without turn lanes.

The effect that a left-turn lane will have on restricting passing opportunities must be weighed against the safety benefit the left-turn lane may provide. On a highway section where passing opportunities are critical, the adverse effect that construction of a left-turn lane would have on the capacity of that roadway section may be more significant than the safety benefit from the left-turn lane. At T-intersections, a possible alternative to constructing a left-turn lane is to widen the right shoulder for an adequate distance on both sides of the intersection to permit through traffic to pass a left-turning vehicle on the right, thus making a no-passing zone unnecessary.

Example:

A rural highway with a posted speed of 55 mph has a current year DHV of 200 vehicles per hour and a directional distribution of 60/40. At an intersection the left-turning DHV is 17 vehicles per hour.

RURAL LEFT-TURN LANE WARRANT



The highest single-lane DHV is $0.6 \times 200 = 120$ vph. Entering the left-turn warrant chart with 17 vph on the horizontal axis and 120 vph on the vertical axis gives a point of intersection above the 45-65 mph curve. A left-turn lane should be considered at this intersection after evaluation of all the above factors.

452.02 Right-Turn Lanes. The chart below provides warrants for a right- turn lane based on the current year design hourly volume on the highway, the peak-hour volume of vehicles turning right, and the posted speed. A right-turn lane is warranted when the single-lane portion of the DHV of the highway and the DHV of right turns intersect at a point on or above the curve for the posted speed.

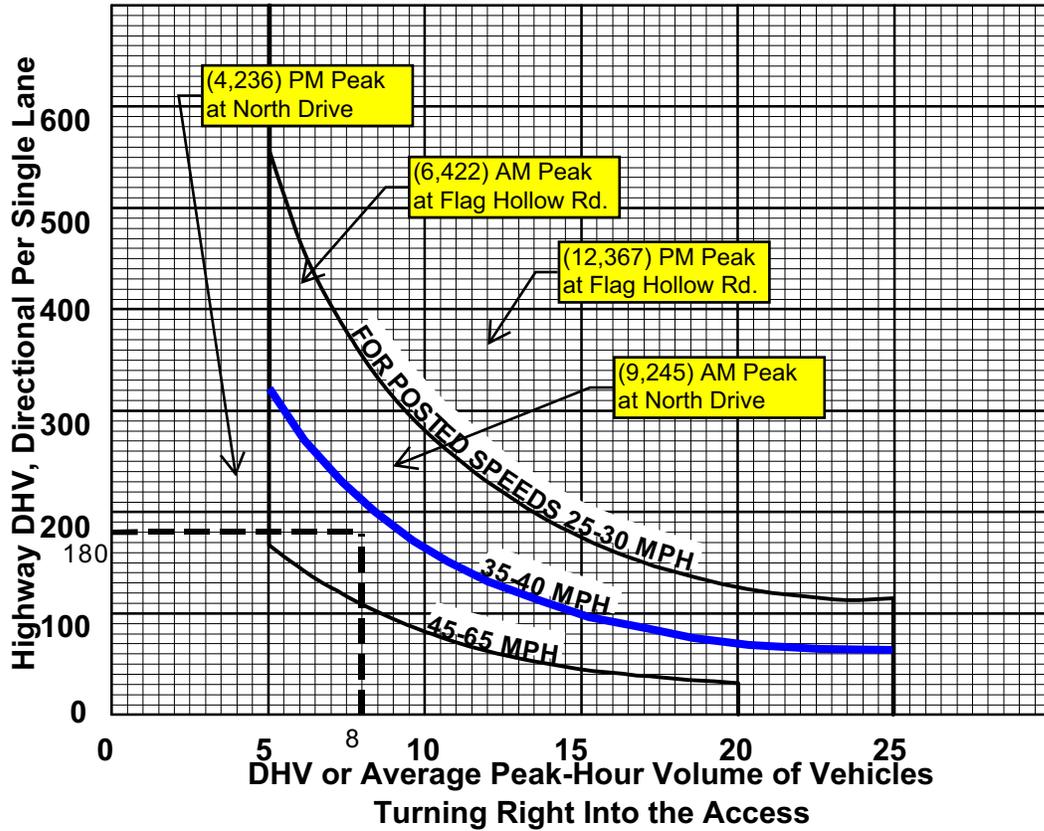
Where the DHV of the right turn into the access is less than 5 vph and the highway's outside lane volume exceeds 250 vph on 45 to 65 mph highways or 450 vph on a 35 to 40 mph highway, or 600 vph on a 25 to 30 mph highway, a right-turn lane may be required due to the high traffic volumes or other unique site-specific safety considerations.

Where the existing shoulder is of adequate width, it may be possible to adjust the pavement markings to provide a sufficient right-turn lane without widening the road.

Example:

A rural highway with a posted speed of 40 mph has a current year DHV of 360 vehicles per hour and a directional distribution of 50/50. At an intersection the right-turning DHV is 8 vehicles per hour.

RURAL RIGHT-TURN LANE WARRANT



The single-lane DHV is $0.5 \times 360 = 180$ vph. Entering the right-turn warrant chart with 8 vph on the horizontal axis and 180 vph on the vertical axis gives a point of intersection below the 35-40 mph curve. A right-turn lane should not be considered at the intersection.