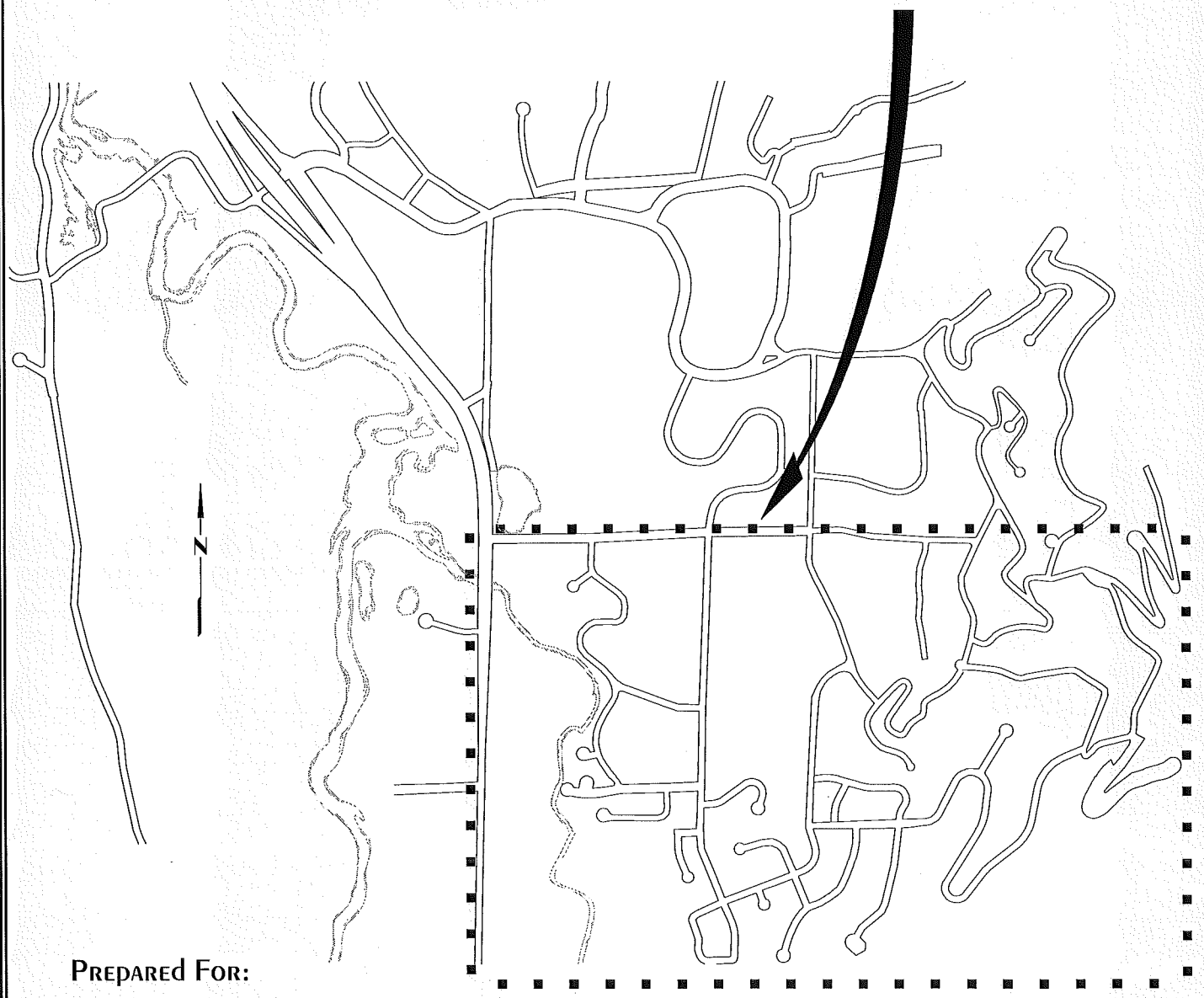
WHISTLER AREA TRANSPORTATION STUDY



PREPARED FOR:

City of STEAMBOAT SPRINGS
P.O. BOX 775088
137 10TH STREET
STEAMBOAT SPRINGS, COLORADO 80477

DECEMBER 19, 1996

TP-96118

TRANSPLAN ASSOCIATES, Inc.

1375 WALNUT STREET, SUITE 211, BOULDER, CO 80302
PHONE (303) 442-3130 FAX (303) 442-3139

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1.0 INTRODUCTION

The Whistler Area of Steamboat Springs is located southeast of the US 40/Walton Creek Road intersection and extends to the eastern and southern City limits. The purpose of the Whistler Area Transportation Study is to determine the ability of the existing and proposed transportation circulation system to accommodate future growth in the area. This study contains an analysis of the potential transportation and circulation impacts associated with the buildout of the Whistler Area during winter Saturday peak conditions. Potential long-term buildout traffic constraints are identified and any improvements to the circulation system necessary in the future are recommended.

Traffic projections associated with build out of the parcels within the Whistler Area were based on information from a variety of sources. Several recently completed traffic impact studies for specific development proposals were reviewed, as was the Mt. Werner Corridor Traffic Study, and the Yampa Valley Multi-Modal Corridor Transportation Plan. Area land use projections were provided by the City Planning Department for the majority of the vacant and currently under construction parcels where land use and density were known. For parcels where specific land use information was not known, land use data contained in the Community Plan was applied.

The build out traffic projections contained in this study should streamline the development review process when evaluating specific development proposals in the Whistler Area. However, it is anticipated that future site specific traffic studies for the vacant parcels in the study area will be conducted to address detailed traffic access patterns and the need for any improvements such as additional turn lanes and upgrades to traffic control at site access points.

2.0 STUDY AREA

The study area for the project is generally bounded by US 40 on the west, Walton Creek Road on the north, and the City limits on the east and the south. The primary roadways include US 40, Walton Creek Road, Whistler Road, and Village Drive. The study area is illustrated on the vicinity map as Figure 1. Eight major intersections within this area were identified for specific analysis during existing and future buildout conditions as illustrated on Figure 2.

3.0 PREVIOUS STUDIES AND ADDITIONAL INFORMATION REVIEWED

Data contained in recently completed transportation corridor and land use studies, as well as specific project traffic studies, were utilized in this study as background information for the undeveloped parcels. Specific studies used are listed below.

- Mt. Werner Corridor Traffic Study
- Steamboat Springs Area Community Plan
- Yampa Valley Multi-Modal Corridor Transportation Plan
- Numerous studies for individual parcel development proposals

Additional information was provided through meetings and discussions with City staff members involved with planning, engineering, accident records, trail systems, and transit services.

4.0 EXISTING CONDITIONS

4.1 Study Area Roadways

The study area is served by a circulation network including US 40 (designated as an arterial roadway in the Community Plan), collector streets, and local access roadways. A description of the primary roadways in the Whistler Area are listed below.

US 40 is a state highway which provides primary regional access to the Steamboat Springs area, as well as local access within City. US 40 is a four-lane roadway with left-turn lanes, deceleration lanes, and acceleration lanes at major intersections from Walton Creek Road north into the downtown area. The four-lane section transitions to two-lanes south of Walton Creek Road. The intersection of US 40/Walton Creek Road is signalized with acceleration and deceleration lanes along US 40. The intersection of US 40/Dougherty Road is controlled by a stop sign on the side street approach. US 40 is identified as an arterial street in the Area Community Plan. The paved roadway width along US 40 varies from approximately 80 feet north of Walton Creek Road to approximately 24 feet south of Dougherty Road. The posted speed limit along US 40 is 45 miles per hour (mph) north of Dougherty Road, and 55 mph south of Dougherty Road.

Walton Creek Road is designated as a collector street, and currently provides the only direct access from the Whistler Area to US 40. This two-lane roadway has paved shoulders from US 40 to Village Drive which are utilized by bicyclists. Turn lanes are not present at any of the intersections along this roadway, with the exception of US 40 where separate turn lanes exist. The roadway width ranges from approximately 45 feet at US 40 to 24 feet east of Village Drive. At Village Drive, an off-street hard surface trail exists along the northern section of Walton Creek Road. A bus shelter exists along the south edge of this roadway east of Whistler Road. The posted speed limit along this roadway is 35 mph. Stop signs control all side street approaches to Walton Creek Road.

Whistler Road - Eagle Ridge Drive is a two-lane roadway that serves as a collector street for adjacent residential traffic. Eagle Ridge Drive extends to the north from Walton Creek Road, and has a paved surface of approximately 36 feet wide. Extending to the south from Walton Creek Road is Whistler Road with a paved surface of approximately 24 feet wide. The east edges of these two approach roadways are aligned across the intersection. As a result, there is an existing 12 foot offset between the north and south legs along the west edge of the intersection with Walton Creek Road. The speed limit along these roadways is 25 mph. A hard surface bike trail begins along Eagle Ridge Drive and meanders north to connect with the existing Mt. Werner Circle trail.

Village Drive serves as an access route from the Whistler Area residential uses to the ski area along Mt. Werner Circle via Apres Ski Way. It is a two-lane roadway designated as a local street south of Walton Creek Road and a collector street to the north of Walton Creek Road. The roadway width is approximately 24 feet throughout. A southbound right-turn lane is currently under construction at the intersection with Walton Creek Road, all other intersections have single lane approaches. The posted speed limit along Village Drive is 30 mph north of Walton Creek Road and 25 mph in the residential area south of Walton Creek Road.

Stone Court currently is designated as a local street providing access to existing and future single family residential units south of Whistler Road. This two-lane roadway is approximately 30 feet wide at the intersection with Whistler Road, and is signed as Stone Lane at this location. Further west at the Chinook Lane intersection, this roadway is signed as Stone Court. It is assumed that the speed limit on this roadway is 25 mph. A stop sign along Stone Court controls the intersections with Whistler Road and Chinook Lane. Stone Court currently terminates at a cul-de-sac west of Chinook Lane and east of Walton Creek. If Stone Court were to be extended west across the creek, it would intersect with US 40 and align with the existing intersection of US 40 and Dougherty Road. The connection of Stone Court to US 40 has historically been discussed as a possible second access route into the Whistler Area.

4.2 Study Area Intersections

Eight study area intersections were identified for the Whistler Area transportation analysis based on discussions with City staff. The intersections and their existing control type are listed below. The existing lane configuration and control type at each of the intersections are also included on Figure 2.

1. US 40 / Walton Creek Road *(signal)*
2. Chinook Lane / Walton Creek Road *(stop sign)*
3. Whistler Road-Eagle Ridge Drive / Walton Creek Road *(stop sign)*
4. Village Drive / Walton Creek Road *(stop sign)*
5. Village Drive / Meadow Lane *(stop sign)*
6. Whistler Road / Skyview Court *(stop sign)*
7. Whistler Road / Stone Lane *(stop sign)*
8. US 40 / Dougherty Road-Future Stone Court *(stop sign)*

4.3 Existing Traffic Volumes

Traffic counts were collected at each of the study area intersections in September 1996, during the weekday PM peak hour period. As identified in previous studies and count programs, the areas within close proximity to the ski resort experience peak seasonal traffic volumes on Saturdays in the winter when the ski area is in operation and weekly lodging is turning over. The only exception to this trend is that US 40 has peak seasonal traffic in the summer. An extensive traffic volume collection study was conducted in 1995 on President's Day weekend for the Mt. Werner Corridor Traffic Study. These volumes were used to forecast peak winter Saturday volumes at the Whistler study area intersections. In order to account for growth that has occurred in the area since 1995, an annual growth factor of 5% per year (or a factor of 1.1) was applied to the 1995 volumes to attain current winter Saturday scenario volumes. It was determined that the intersections closer to the ski resort would experience the highest traffic increases between fall and winter conditions. In addition, the intersections with US 40 would experience reduced through volumes in the winter due to non-peak traffic along this corridor. Based on this data, the September 1996 volumes in the Whistler Area were factored to reflect current winter Saturday volumes. These volumes are considered baseline traffic volumes for this analysis, and are illustrated on Figure 2.

4.4 Intersection Levels of Service

In determining the operational characteristics of an intersection, "Levels of Service" (LOS) A through F are applied, with LOS A indicating very good operations and LOS F indicating poor operations. The intersection LOS is represented as an average delay in seconds per vehicle for all vehicles using the intersection in a given peak hour. LOS can be calculated for intersections with either stop sign control or traffic signal control. In either case, the LOS for each approach movement and an average LOS for the entire intersection are calculated. It is the average LOS that is commonly used to rate the relative congestion in an intersection. More complete level of service definitions are contained in the following table which may be useful when reviewing the LOS results.

Level of Service Definitions

LOS	Delay (avg. sec./vehicle)		Definition
	Signalized	Unsignalized	
A	0.0 to 5.0	0.0 to 5.0	Low volumes; primarily free flow operations. Density is low and vehicles can freely maneuver within the traffic stream. Drivers can maintain their desired speeds with little or no delay.
B	5.1 to 15.0	5.1 to 10.0	Stable flow with potential for some restriction of operating speeds due to traffic conditions. Maneuvering is only slightly restricted. The stopped delays are not bothersome and drivers are not subject to appreciable tension.
C	15.1 to 25.0	10.1 to 20.0	Stable operations, however the ability to maneuver is more restricted by the increase in traffic volumes. Relatively satisfactory operating speeds prevail, but adverse coordination or longer queues cause delays.
D	25.1 to 40.0	20.1 to 30.0	Approaching unstable traffic flow where small increases in volume could cause substantial delays. Most drivers are restricted in ability to maneuver and selection of travel speeds. Comfort and convenience are low, but tolerable.
E	40.1 to 60.0	30.1 to 45.0	Operations characterized by significant approach delays and average travel speeds of one-half to one-third the free flow speed. Flow is unstable and there is potential for stoppages of brief duration. High signal density, extensive queuing, or signal progression/timing are the typical causes of delays at signalized corridors.
F	> 60.0	> 45.0	Forced flow operations with high approach delays at critical intersections. Speeds are reduced substantially and stoppages may occur for short or long periods of time because of downstream congestion.

Level of service criteria contained in the Highway Capacity Manual[1] was applied to the study area intersection volumes illustrated on Figure 2 to determine existing levels of service during the winter Saturday P.M. peak hour period. The intersection level of service worksheets are contained in the Appendix. The results of the LOS calculations at the study area intersections are summarized in Table 1.

[1] Highway Capacity Manual, 3rd Edition, Highway Research Board Special Report 209, Transportation Research Board, National Research Council, updated 1994.

As documented in the level of service summary table, the overall intersection and the individual intersection approaches are operating acceptably in the LOS A-C range during existing winter Saturday PM peak hour conditions.

4.5 Intersection Sight Distance Evaluation

A sight distance evaluation was conducted at all of the existing study area intersections. It was determined that there is adequate sight distance at all of the intersections with stop sign control on the side streets for the vehicles approaching on the side street to safely enter the intersection (after stopping and pulling forward to the edge of the main street). However, some of the intersections had utility boxes and other obstructions located on corners which interfered with the minimum clear distances established in the City's roadway standards. The City's standards state that a minimum clear distance of 10 feet for local streets and 15 feet for all other roadway types from the roadway pavement should exist. Staff indicated that this requirement is intended to provide adequate sight distances at intersections. The following table contains a list of the intersections and descriptions of the sight distance limitations that were identified.

Existing Intersection Sight Distance Limitations

Intersection	Sight Distance Limitation
US 40/Dougherty Rd.	Trees along Dougherty (County roadway) obscure stop sign at intersection
Village Dr./Walton Creek Rd.	Utility boxes on northwest corner are within the minimum clear area and are tall enough to obscure visibility for southbound motorists who have stopped at the stop sign and have not pulled forward
Whistler Rd./Skyview Ln.	Construction related dumpster on northwest corner

There is adequate distance between the obstructions at the Village Dr./Walton Creek Rd. and Whistler Rd./Skyview Ln. intersections for vehicles on the side streets to pull ahead and see beyond. Therefore, these obstructions are not directly affecting the sight distances for stopped vehicles at the intersection, but the objects are within the minimum clear distance established by the City. All construction equipment and supplies (such as dumpsters) should be kept out of the clear zones.

The trees which are obstructing the view of the stop sign as vehicles approach US 40 along Dougherty Road should be cut back to provide adequate warning of the impending stop condition. It is our understanding that Dougherty Road is in the County. We recommend that the County be notified of the need for tree trimming on the approach to US 40. At all of the study intersections, snow accumulation from plowing will also contribute to sight distance limitations during winter conditions if snow banks exceed 3 ½ feet in height. Given that this may easily happen, snow banks should be pushed as far back as possible in the vicinity of intersections.

4.6 Traffic Signal Warrants

The peak hour signal warrant criteria contained in the Manual on Uniform Traffic Control Devices (MUTCD)[2] was applied to the existing winter Saturday peak hour volumes at the intersections of Chinook Lane/Walton Creek Road, Whistler Road-Eagle Ridge Drive/Walton Creek Road, and Village Drive/Walton Creek Road. Traffic volumes at the other four unsignalized intersections in the study area were too low to even consider a traffic signal. The peak hour volume warrant considers traffic volume on approaching roadways, as well as the number of lanes available at the intersection to serve the approaching traffic. The signal warrant worksheets for the three primary stop sign controlled intersections within the Whistler Area are illustrated on Figures 3, 4 and 5, respectively. It was determined that the existing winter Saturday P.M. peak hour volumes do not satisfy minimum peak hour warrant criteria at any of the intersections analyzed.

4.7 Traffic Accident History

The Steamboat Springs Police Department provided a three year history of traffic accidents at the eight key intersections included in the study area. A summary of the accident history is included in Table 2. As indicated, approximately 80% of the traffic accidents occurred in the five winter months (November thru March) when the ski area traffic is highest and the road conditions are at their worst. Five of the eight intersections typically experience very low traffic accident frequency of less than one accident per year. The remaining three intersections along Walton Creek Road (at US 40, at Whistler Rd., and at Village Dr.) experienced between 10 and 20 traffic accidents in the three years reviewed. The detailed traffic accident reports were reviewed for these three intersections and collision diagrams were prepared to help identify correctable traffic accident patterns, if any. Collision diagrams are included in the Appendix. As expected, 70% to 80% of the traffic accidents at each intersection involved snowy or icy road surface conditions. The most common accident type observed at each intersection was the rear end accident, and most occurred when the road surface was slippery. Rear end collisions tend to be the least severe from an injury causation perspective.

Another common accident type at these three intersections involved vehicles turning off of the main street onto the side street which lost control on slippery surfaces and slid into vehicles waiting at the intersection on the side street approaches. In the case of Village Dr./Walton Creek Rd., the installation of an all way stop may correct this condition although there would likely be an increase in rear end accidents on the Walton Creek Road approaches, particularly considering that there is a grade of approximately 6 percent on Walton Creek Road in the vicinity of the intersection.

In general, the accident patterns observed in the collision diagrams did not suggest the need for immediate corrective measures. Rather, the accident patterns noted should be considered in conjunction with the projected buildout traffic patterns (discussed later in this report) to determine if a change in intersection traffic control or configuration is needed in the future.

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[2] Manual on Uniform Traffic Control Devices, U.S. Department of Transportation, Federal Highway Administration, Sec. 4C - Warrants, 1988 Edition.

4.8 Transit and Shuttle Service

Steamboat Springs Transit (SST) serves approximately 630,000 passenger trips per year with most of the ridership occurring during the winter months when the ski area is in operation (140,000 trips per month). Although the SST service is now a free to user system as opposed to a year ago when a fee was charged, the ridership has remained relatively constant. The Whistler Area is served by the SST red line which provides access to the ski area, as well as downtown. The SST green line runs throughout the Whistler Area providing access from the residential uses to the ski area during the winter ski season. The SST buses run every 20 minutes during the ski season, and are usually full to capacity with standing room only on Saturday afternoons as the ski area closes for the day.

In addition to the SST lines, various shuttle services circulate to specific condominium developments on routes through the Whistler Area, providing access to the ski area. The shuttle vans are also well utilized during peak times of the day although there are off-peak periods when utilization is less. The SST routes and stops, along with the shuttle routes serving the Whistler Area are illustrated on Figure 6.

4.9 Bicycle and Pedestrian Facilities

The Whistler Area is served by a network of pedestrian and bicycle facilities throughout according to existing data collected for this study, as well as information contained on the Trail Systems Map and in the Community Plan. Many of the facilities in the area are currently discontinuous given the piecemeal development patterns that have occurred. Current plans are proposing connections and completions of existing missing links as illustrated on Figure 7. Bicycle and pedestrian traffic is an important component of year round transportation in the area. Within the study area, existing hard surface trails are present along US 40 to the north which connect with the Yampa River bike trail west of US 40 and the Mt. Werner trail east of US 40. Currently, this trail has a southern terminus near the US 40 trail underpass south of Walton Creek Road. On-street paved shoulders along Walton Creek Road provide bicycle and pedestrian access from US 40 to the residential areas to the east. At Village Drive, the roadway narrows to 24 feet, thus discontinuing the on-street shoulder lanes utilized by bicyclists and pedestrians. An existing off-street trail continues from Village Drive on the north to Apres Ski Way, and to the north from Village Drive on the east side of the roadway. North of Walton Creek Road along Eagle Ridge Drive, an off-street trail exists which connects north to the Mt. Werner trail system. A discontinuous trail exists along Walton Creek and Whistler Park.

Many of the developments have constructed sidewalks along their frontages, though a discontinuous system exists due to several undeveloped parcels. Soft surface trails currently exist in and around the Bear Drive area.

5.0 SUMMARY OF EXISTING TRANSPORTATION ISSUES

All of the study area intersections operate very well within LOS A-C ranges during the existing winter Saturday peak period as shown in Table 1. The roadways and intersections currently provide adequate capacity to accommodate the existing peak ski season traffic. A sight distance evaluation at the intersections evidences that some of the intersections currently have objects that are in the City's minimum clear zone, although adequate distance at the intersections is available for vehicles

to pull beyond the obstructions for a clear sight of the oncoming traffic. The trees blocking the view of the stop sign as vehicles approach US 40 along Dougherty Road is the only limitation that requires action (cutting the trees back) due to safety concerns, and County staff should be notified of this condition. It was determined that minimum peak hour signal warrant criteria was not satisfied at any of the stop sign controlled intersections that were analyzed in the Whistler Area.

The 3-year accident data indicated that 70% to 80% of the accidents in the area are related to icy or snowy roadway conditions, with no other obvious or unusual accident patterns present. The intersection of Village Dr./Walton Creek Rd. may benefit from an all-way stop, however, rear end type accidents may increase with an all-way stop condition.

The Whistler Area is serviced by the SST red and green lines, as well as several individual shuttle services. The SST system is well utilized during the winter ski season. The pedestrian and bicycle facilities in the area include off-street hard and soft surface trails, on-street shoulder lanes, and sidewalks. The majority of the facilities are currently discontinuous in the Whistler Area.

6.0 FUTURE WHISTLER AREA LAND USE AT AREA BUILDOUT

Land use estimates for buildout of the currently vacant parcels in the Whistler Area were developed in order to make future year traffic projections and determine any roadway system needs. Several sources were referenced to attain land use and traffic projections. These included individual proposed developments on line with the City, data contained in the Mt. Werner Corridor study, the City's land use zoning map, seasonal and historical data on file with Colorado Department of Transportation (CDoT) for US 40, data contained in the Community Plan, as well as information provided through consultation with City staff. With this data, current aerial photographs were utilized to provide a graphic view of land use projections developed for vacant or under construction parcels in the Whistler Area. The parcels range in size from a specific development site to the in-fill of an existing subdivision area. The approximate location of the Whistler Area parcels are illustrated on Figure 8. As shown on the figure there are 40 parcels within the study area that will add to the traffic volumes in the future build out scenario.

Two primary types of land uses are zoned in the Whistler Area. The first major land use is residential development with varying densities. The second land use is mainly highway commercial located along US 40 which includes office, specialty retail, lodging, restaurant, and other related uses. The land use estimates provide a thorough and representative description of potential development in the Whistler Area. Conservative estimates were assumed when specific land uses and densities were not known. As specific development proposals come on line for any currently vacant parcel, the specific land use and size for the given parcel may change. However, it is anticipated that the range and extent of the build out land use estimates contained in this study can accommodate this unavoidable uncertainty. Some parcels may generate more traffic than anticipated, while others will generate less traffic. In any event, the end result will remain relatively the same for the future year projections and recommended improvements contained in the following sections of this study.

7.0 FUTURE YEAR TRIP GENERATION AND DISTRIBUTION

7.1 Trip Generation

Trip generation for build out of the parcels was based on land use rates contained in the Mt. Werner Corridor study, ITE Trip Generation Manual[3], and individual studies for proposed development. The Saturday trip generation was estimated for each land use. Where Saturday trip generation rates were not known, estimates were made according to land use traffic characteristics during the Saturday periods.

It was determined that a certain percentage of the residential and lodging trips generated by the undeveloped parcels would be reduced to account for use of transit and shuttle ridership, as well as car pooling. Estimated automobile trip reduction factors for new trips generated by each of the land uses were developed based on the land use type, the proximity to transit lines, the level of shuttle service observed, proximity to the ski area, etc. The transit reduction percentages used in this study are consistent with those presented in the Mt. Werner Corridor study.

The commercial related uses will experience a pass-by trip reduction. Pass-by trips are associated with traffic that is already on the roadway (in this case US 40) traveling past the commercial uses. Pass-by trips do not create any increase in the traffic volumes within the primary impact area. In fact, the only impact of the pass-by trips will occur at the site driveways and adjacent intersections where through movements become turning movements into and out of the commercial site. A pass-by reduction factor was applied to restaurant and specialty retail land uses only. The pass-by percentages were derived from land use pass-by data contained in the ITE Trip Generation Manual.

Based on the trip generation and trip-type reduction assumptions presented above, winter Saturday average daily traffic (ADT) and P.M. peak hour trip generation estimates for the Whistler Area parcels were calculated and are contained in Table 3. As the data in the table indicates, it is anticipated that build out of the area will result in an increase of approximately 13,335 ADT and 1,220 P.M. peak hour winter Saturday traffic volumes. It is recognized that the trip generation estimates noted in the table involve the potential for some "double counting" of trips. For example, a portion of the new employees may reside in new or existing residences in the area and their commute trips would already be counted as part of the existing or build out residential development trip generation. There may also be certain trips between commercial centers and residential developments which would be counted twice. However, we estimate this potential double counting of trips to be minimal and conservative in nature.

7.2 Trip Distribution and Assignment

The peak hour trips shown in Table 3 were distributed onto the study area street network based on existing land use and traffic patterns in the City, and consideration for future growth patterns outside the study area. In general, it was estimated that 35% of the residential traffic would be oriented towards the mountain area, while the remaining residential traffic would be oriented towards US 40

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[3] Trip Generation, Institute of Transportation Engineers, Fifth Edition, January 1991, updated February 1995.

to access downtown, other commercial areas, or communities to the south. In addition, background winter through traffic on US 40 was increased by approximately 45 percent due to traffic growth information from CDoT. Based on these assumptions, the build out peak hour volumes were assigned to the study area intersections and are illustrated on Figure 9.

8.0 BUILD OUT SCENARIO TRAFFIC CONDITIONS

8.1 Roadway Improvements

Adjustments to the lane configurations at the US 40/Dougherty Rd.-Stone Ct. and US 40/Walton Creek Road intersections will occur due to the proposed development of specific projects which will gain access from these intersections. Future turn lane additions or roadway improvements at these locations are assumed to be in place for the build out analysis. The assumed intersection improvements are illustrated on Figure 9 and include:

US 40 / Dougherty Road-Stone Court
- northbound and southbound left turn lanes on US 40
- northbound and southbound right turn deceleration lanes on US 40
- separate right turn and thru-left turn lanes on the new westbound Stone Ct. approach to US 40

US 40 / Walton Creek Road
- separate left turn and thru-right lanes on the new eastbound Walton Creek Rd. approach to US 40
- northbound left turn lane on US 40
- southbound right turn deceleration lane on US 40.

The approved Country Inn & Suites development (parcel number 8) has been conditioned to construct a portion of the future Stone Court extension for approximately 300 feet to the east of the US 40/Dougherty Road intersection. As identified in the traffic study for the project, a southbound left-turn lane into the Stone Court extension is required which will involve the widening of US 40. Drainage issues along both the east and west shoulders of US 40 will need to be addressed when this widening occurs. It is also recommended that a northbound left-turn lane be constructed at the same time the southbound lane is constructed given that the required pavement width will need to be constructed to shadow the southbound turn lane. Build out of the Country Inn and the remaining vacant parcel area (parcel number 40) will result in the need for the addition of acceleration and deceleration lanes along US 40 (per the CDoT access code requirements), as well as two outbound lanes from Stone Court.

The proposed Snow River development (parcel number 2) along US 40 between Dougherty Road and the southern Super 8 driveway will also be responsible for improving the Dougherty Road approach and providing a southbound right turn deceleration lane along US 40 per CDoT access code requirements.

Build out of the site (parcel number 6) located on the western edge of the US 40/Walton Creek Road intersection will require construction of the fourth leg of the intersection, the addition of a southbound deceleration lane, and the addition (restriping) of a northbound left turn lane into the

site. The existing traffic signal will also need to be modified to serve the fourth intersection leg. The build out scenario intersection lane configuration is also illustrated on Figure 9.

8.2 Intersection Levels of Service

The intersection levels of service were calculated with the addition of the build out peak hour volumes, and any additional turn lanes associated with a parcel's development as discussed previously in Section 8.1. Because a southbound right-turn lane is currently under construction along Village Drive at Walton Creek Road, it was assumed to be in place for build out scenario analyses. The level of service worksheets are contained in the Appendix. Table 1 lists the results of the buildout scenario peak hour LOS calculations. The majority of the study area intersections will have adequate capacity to accommodate the future build out volumes during the winter Saturday peak hour period. However, the following intersections will experience congestion and operate at poor levels of service on one or more approaches.

- US 40 / Walton Creek Road: This intersection's overall operation will remain in the LOS C range, however, the additional eastbound leg, northbound left-turn lane, and southbound left-turn lane will degrade to the LOS D range. In addition, the westbound left-through lane will operate in the LOS E range.

- Whistler Rd.-Eagle Ridge Dr. / Walton Creek Road: Although the overall intersection LOS is projected to operate in the LOS C range during build out conditions, the northbound left-turning volumes will operate in the LOS F range. Additional widening to provide for separate north- and southbound left-turn lanes would greatly improve the delays experienced on these two approaches. The recommended lane configuration is illustrated on Figure 10.

  There is adequate width (approximately 36 feet) on the north leg of the intersection along Eagle Ridge Drive to formally stripe the approach for a separate left-turn lane and a shared through-right lane. On the south leg of the intersection along Whistler Road, the roadway section is currently 24 feet wide. Current right-of-way exists to allow for additional widening of Whistler Road to the west in order to provide enough width for a separate northbound left-turn lane and a through-right lane. Given the existing west side offset between the north and south legs, it would make sense to align these roadways. The intersection LOS was recalculated with the lane additions and is shown in Table 1. The overall intersection LOS will improve to the LOS B range with the recommended lane improvements. The northbound left-turn vehicle delay improves considerably with the separate lane, but will still remain in the LOS F range.

  It should be noted that an intersection may have one or more approach movements with LOS in the D, E, or F range and still have an overall intersection LOS that is fairly good, say LOS B or C. This simply means that most vehicles incur relatively little delay while passing through the intersection (such as the main street through vehicles) while some vehicles experience considerable delay (such as on a side street at a stop sign trying to turn left onto the main roadway). This condition is relatively common on busy through streets with stop sign control on the side streets. Such is the case as discussed above at the Walton Creek Road/Whistler Road-Eagle Ridge Drive intersection. A side street approach with a poor LOS is not necessarily an indication that an intersection needs to be signalized. In fact, there

are established traffic signal warrant procedures (outlined in the Section 8.3 of this report) that can be used to help determine if a traffic signal is needed or warranted at a given intersection. Even if a traffic signal is not warranted at an intersection with one or more approaches operating with congested levels of service, the congestion itself should prompt traffic engineering staff to monitor the traffic accident history over time to insure that the congestion is not creating unsafe traffic conditions.

The completion of the Stone Court extension to US 40 would lower the northbound left turn traffic at this intersection and relieve some of the congestion projected. This condition is discussed in more detail in later sections of this report.

- Village Drive / Walton Creek Road: During winter Saturday peak hour build out conditions, this intersection is forecast to operate in the LOS E range, with the northbound approach operating in the LOS F range. Due to the balanced approach volumes during peak conditions, it is recommended that an all-way stop be considered at this intersection in the future. With an all-way stop control, the intersection is projected to operate in the LOS B range (volume-to-capacity ratio of 0.64) according to all-way stop LOS calculation methodology contained in the 1985 Highway Capacity Manual[4]. However, due to the 6 percent grade along Walton Creek Road at this intersection, rear end collisions may increase and stopped vehicles may have difficulty moving forward from a stopped position during severe icy and snowy conditions before sanding operations have been implemented. This tradeoff may be appropriate given that there is an average of four broadside collisions in this intersection per year that may be corrected (or have their severity reduced) by the installation of an all way stop (see the collision diagram in the Appendix). The operation of this intersection should be monitored as area development continues, and an all way stop should be implemented as congestion and/or accidents reach unacceptable levels.

  The completion of the Stone Court extension to US 40 would also lower the northbound left turn traffic at this intersection and relieve some of the congestion projected. The Stone Court extension should also postpone the need for an all way stop at this intersection.

8.3 Signal Warrant Analysis

The MUTCD peak hour signal warrant criteria, introduced previously, considers the following factors in helping to determine the need for a traffic signal:

- traffic volume on the main roadway (both approaches)
- traffic volume on the side street (the highest approach volume is used)
- the number of lanes serving the traffic on both the main roadway and the side street
- the speed of traffic on the main roadway (greater than or less than 40 mph)

These four factors are entered into a traffic signal warrant graphic to determine if the peak hour signal warrant is met at a given intersection. It should be noted that LOS for the overall intersection

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[4] Highway Capacity Manual, Special Report 209, Transportation Research Board, Chapter 10-13 (Multiway Stop Control), 1985.

or an individual intersection approach is not a direct factor in determining the traffic signal warrant. It stands to reason that if most vehicles in an intersection experience poor LOS then a traffic signal warrant will likely be met. However, if a low volume side street approach has a very poor LOS while the majority of the traffic has little or no delay (good LOS) then the traffic signal warrant will not be met. As discussed above, poor LOS on an individual intersection approach is not necessarily an indication of the need for a traffic signal.

This traffic signal warrant approach was applied to several of the study area intersections with the addition of Whistler Area build out scenario winter Saturday peak hour volumes. In addition to the prior intersections analyzed for signal warrants, the US 40/ Dougherty Rd.-Stone Ct. intersection was included in the signal warrant analysis due to its revised configuration and increased traffic volumes generated by the future development of adjacent parcels. The signal warrant worksheets are shown on Figure 3 (Chinook Ln./Walton Creek Rd.), Figure 4 (Whistler Rd.-Eagle Ridge Dr./Walton Creek Rd.), Figure 5 (Village Dr./Walton Creek Rd.), and Figure 12 (US 40/Dougherty Rd.-Stone Ct.).

A review of the signal warrant worksheets indicate that:

- Peak hour signal warrant criteria is not satisfied at any of the analyzed intersections, assuming all recommended or planned intersection approach laneage improvements discussed above are in place and travel speeds on Walton Creek Road are maintained under 40 mph. This includes the addition of a separate northbound and southbound left-turn lane at the Whistler Rd.-Eagle Ridge Dr./Walton Creek Road intersection which is needed to serve build out volumes.

- If the improvements recommended at the Whistler Rd.-Eagle Ridge Dr. Walton Creek Road intersection are not added, minimum peak hour signal warrants would be satisfied.

- If speeds do exceed 40 mph on Walton Creek Road, peak hour signal warrants will be met at Chinook Lane, Whistler Road, and Village Drive.

The impact of the Stone Court extension on these signal warrants is discussed below.

9.0 BUILD OUT SCENARIO WITH STONE COURT EXTENSION

Currently, virtually all traffic from the Whistler area that accesses US 40 does so on Walton Creek Road. A secondary connection from the Whistler Area to US 40 is proposed in the City's circulation plan. Stone Court has been identified as the potential roadway connection. The extension of Stone Court from its current cul-de-sac terminus at Walton Creek to US 40 where it would align with Dougherty Road is proposed. A portion of the roadway will be constructed once the vacant parcels along US 40 adjacent to the proposed extension develop. According to conversations with City staff members, the City will be responsible for the construction of the bridge section over Walton Creek, and the adjacent parcel developers will be responsible for the construction of the roadway from US 40 to Walton Creek. The Stone Court extension will provide access to the southern portion of the Whistler Area, thus diverting a portion of existing and build out traffic volumes from the Walton Creek Road corridor to Stone Court. An analysis of the impacts associated with the construction of the Stone Court extension and the resultant traffic diversions are discussed in the following sections.

9.1 Traffic Volumes

The distribution of build out scenario traffic volumes would change with the Stone Court extension in place. The intersections along Walton Creek Road would be affected by the extension due to traffic diversions from this roadway to Stone Court in order to access the residences located in the southern Whistler Area. It was estimated that approximately 40% of the projected turning movement volumes traveling to/from the west via Walton Creek Road at Chinook Lane and Whistler Road, and approximately 20% at Village Drive, would divert to Stone Court. These traffic diversions affect the projected volumes at all of the study area intersections. Figure 11 illustrates the build out scenario volumes with the Stone Court extension. The most significant impact is that the northbound to westbound left turning traffic on Chinook Lane, Whistler Road, and Village Drive onto Walton Creek Road will be reduced. Recall from Section 8.2 that these northbound left turns were projected to be the most congested movements in the study area with the worst LOS (often in the F range) if the area builds out and the Stone Court extension is not implemented.

9.2 Intersection Levels of Service

The intersection LOS were calculated with the addition of the build out scenario traffic volumes assuming the diversion of traffic associated with the Stone Court extension. The level of service worksheets are contained in the Appendix. The level of service calculation results are provided in Table 3.

It is projected that all of the intersection operations will improve, except at US 40/Stone Court, with the Stone Court extension in place. The intersections are all projected to operate in the LOS A-C range with the extension of Stone Court. It was assumed that the turn lane additions at the Whistler Rd.-Eagle Ridge Dr./Walton Creek Road intersection were in place for this analysis. At the Village Dr./Walton Creek Rd. intersection, the provision of all-way stop control would improve the overall level of service from the LOS C range to LOS A-B range (volume-to-capacity ratio 0.61).

The US 40/Dougherty Rd.-Stone Ct. intersection is projected to operate in the LOS A range, with the westbound left-through lane operating in the LOS C-D range. Overall, the Stone Court extension will benefit the Whistler Area by improving intersection LOS (particularly along Walton Creek Road) and providing secondary access to US 40 from the area. The Stone Court extension will allow for shorter access routes for many residents and reduce the vehicle miles of travel on the roadway system. This extension will also improve emergency vehicle access to and from the southern and western portions of the Whistler area.

9.3 Signal Warrant Analysis

The MUTCD signal warrant criteria discussed previously was applied to the intersections with the addition of diverted build out winter Saturday P.M. peak hour volumes and the Stone Court extension in place to determine if signalization will be warranted. The peak hour signal warrant worksheets are shown on Figure 3 for the Chinook Ln./Walton Creek Rd. intersection, Figure 4 for the Whistler Rd.-Eagle Ridge Dr./Walton Creek Rd. intersection, and Figure 5 for the Village Dr./Walton Creek Rd. intersection. The US 40/Dougherty Rd.-Stone Ct. peak hour signal warrant worksheet is shown on Figure 12.

Based on the peak hour signal warrant criteria, it was determined that:

- If the Stone Court extension is in place and the travel speeds on Walton Creek Road are below 40 mph, no traffic peak hour signal warrants will be met at any of the Walton Creek Road intersections. This is assuming that the recommendation to provide an additional north- and southbound approach lane to the Whistler Rd.-Eagle Ridge Dr./Walton Creek Rd. intersection is in place also. If this additional lane is not constructed, minimum peak hour signal warrant criteria will be satisfied at this intersection.

- If speeds along Walton Creek Road exceed 40 mph, minimum peak hour signal warrants will be satisfied at the intersections with Whistler Road and Village Drive. The Chinook Lane intersection will not warrant a traffic signal even with 40 mph speeds if the Stone Court extension is constructed.

- The Stone Court extension reduces the need for a traffic signal at all of the intersections along Walton Creek Road. In addition, the extension will help postpone the need for all way stop control at the Village Drive/Walton Creek Road intersection by reducing the northbound and eastbound approach traffic volumes.

- It is not anticipated that the US 40/ Dougherty Rd.-Stone Ct. intersection will warrant a traffic signal even if the extension is constructed.

10.0 RECOMMENDED LONG-TERM IMPROVEMENTS

10.1 Corridor Improvements

It is anticipated that the existing study area roadway corridors will be able to adequately accommodate the projected traffic increases associated with the Whistler Area parcel build out. Therefore, additional through travel lanes are not required in the Whistler Area. However, the Stone Court extension will provide a secondary access route to the area, will improve roadway and intersection operations, and will postpone or eliminate the need for future traffic signals or all way stop control at the intersections along Walton Creek Road. On this basis, the Stone Court extension is recommended.

Individual developments will be responsible for bringing roadways up to current standards should their traffic additions warrant this, such as the improvement of Dougherty Road (currently narrow and gravel) and the western extension of Walton Creek Road at US 40.

10.2 Intersection Improvements

It is recommended that improvements be implemented at the following intersections in order to provide for safe and efficient traffic flows through the intersections in the future. These improvements are necessary whether or not the Stone Court extension is constructed.

- US 40/Dougherty Road - recommend that the County cut back tree branches blocking visibility of stop sign

- Village Drive/Walton Creek Road - monitor and provide all-way stop if and when congestion and/or safety considerations dictate (factors that will influence this determination include the Stone Court extension, and whether or not a traffic signal is installed at Whistler Dr./Walton Creek Rd. - a signal at the adjacent intersection may postpone the need for an all way stop at this location by providing gaps in the traffic flow along Walton Creek Road)

- Whistler Rd.-Eagle Ridge Dr./Walton Creek Road - provide north and south left-turn lanes

Lane additions and roadway improvements associated with the extension of Stone Court, the future access to Dougherty Road by the Snow River project, and the addition of the fourth leg at the US 40/Walton Creek Road intersection will be necessary. These improvements were assumed in place for the build out level of service analyses, and are listed below.

- US 40/Dougherty Road-Stone Court - bring Dougherty Road up to current paved roadway standards; construct northbound and southbound left-turn lanes along US 40; construct northbound deceleration and acceleration lane at Stone Court; construct southbound deceleration lane at Dougherty Road; provide two outbound lanes at Stone Court for a shared left-through lane and a separate right-turn lane

- US 40/Walton Creek Road - provide southbound deceleration lane; restripe the northbound median for a left-turn lane; restripe the westbound approach for a shared left-through lane and a separate right-turn lane; construct two eastbound lanes on the new leg for a separate left-turn and shared through-right lane; upgrade signal hardware and phasing to incorporate fourth intersection leg and northbound left-turn arrow

10.3 Transit and Shuttle System Improvements

The City is currently reviewing options to consolidate all shuttle services in the area and possibly take over management of these services. The transit service to the Whistler Area may expand given the existing peak demand and potential growth in demand generated by the build out of the area parcels. Transit ridership will continue to play a critical role in the future, as it does currently today, and steps should be taken to insure quality transit service in the future. As transit ridership increases with area development, the system of transit stops needs to be updated and consideration should be given to installing additional shelters where they do not already exist.

10.4 Bicycle and Pedestrian System Improvements

Several improvements to the City's trail system are proposed in the future. The City has identified future hard and soft surface trails, as well as proposed corridor connection areas. The corridor connections will provide for a continuous trail system throughout the Whistler Area and beyond. Several pedestrian and bicycle underpasses and bridges are planned for construction in the future also. The existing and future trail system is illustrated on Figure 7 (based on the best available information). It is recommended that the development of the vacant parcels also include the construction of sidewalks along the project frontages. This will improve the currently discontinuous sidewalk sections within the study area and encourage walking when possible. A connected sidewalk system is critical to supporting transit use in the area. The fact that sidewalks currently

may not exist in a specific area should not be reason to allow a new development to avoid constructing sidewalks. An interconnected system of bicycle and pedestrian facilities gets constructed one segment at a time. It is never too late to start.

10.5 Transportation System Improvement Thresholds

The transportation system improvements identified in Section 10.2 will be needed to accommodate the increased demand for transportation as the land area in the Whistler Area is built-out, as well as to improve safety at the intersections. It was determined that new signals may not be warranted in the Whistler Area, contingent upon the lane additions recommended at the Whistler Road-Eagle Ridge Dr./Walton Creek Road intersection and that speeds along Walton Creek Road remain at less than 40 mph. The need for roadway improvements at individual intersections will be triggered by the rate and sequence of the land development in the Whistler Area. It is difficult to predict which improvements will be needed first (such as the installation of an all-way stop at Village Dr./Walton Creek Rd.), and it is recommended that the traffic operational and safety conditions be monitored over time. However, specific development combinations that will likely trigger the need for specific improvements are summarized as follows:

- Development of the Snow River project (parcel 2), the Country Inn & Suites project (parcel 8), the Yampa River Meadows project (parcel 1), and the currently vacant highway commercial parcel 40 adjacent to the US 40/Stone Ct. intersection will drive the improvements recommended at the US 40/Dougherty Road-Stone Court intersection. These improvements include widening the intersection to accommodate additional turn lanes throughout.

- The development of the Walton Pond area (parcel 6) will trigger the need for turn lane additions and modifications to the traffic signal phasing at the US 40/Walton Creek Road intersection.

Construction of the Stone Court extension across Walton Creek should be pursued by the City. The timing will depend on adjacent development along the proposed extension (such as the proposed Country Inn & Suites) and should consider increased congestion in the Walton Creek Road corridor.

Improvements to the pedestrian and bicycle system are an important component of the transportation system in the area and should be pursued, both as parcels develop and as funding is available for the city-wide and regional connections. The transit and shuttle van consolidation system enhancements should be pursued aggressively.

Existing and Projected Levels of Service Summary Table

Table 1

Intersection and Critical Movements	Existing		Buildout		Buildout with Improvements		Buildout with Stone Ct. Extension	
	Winter Weekend (P.M. Peak Hour)							
	Average Delay (sec/veh)	Level of Service (LOS)	Average Delay (sec/veh)	Level of Service (LOS)	Average Delay (sec/veh)	Level of Service (LOS)	Average Delay (sec/veh)	Level of Service (LOS)
SIGNALIZED								
U.S. 40 / Walton Creek Rd.	**4.0**	**A**	**18.2**	**C**	**n/a**	**n/a**	**15.3**	**C**
Eastbound Left	*n/a*	*n/a*	*35.9*	*D*	*n/a*	*n/a*	*37.8*	*D*
Eastbound Through-Right	*n/a*	*n/a*	*31.7*	*D*	*n/a*	*n/a*	*33.5*	*D*
Westbound Left	*24.9*	*C*	*n/a*	*n/a*	*n/a*	*n/a*	*n/a*	*n/a*
Westbound Left-Through	*n/a*	*n/a*	*42.2*	*E*	*n/a*	*n/a*	*43.6*	*E*
Westbound Right	*17.9*	*C*	*10.7*	*B*	*n/a*	*n/a*	*15.2*	*C*
Northbound Left	*n/a*	*n/a*	*37.8*	*D*	*n/a*	*n/a*	*37.8*	*D*
Northbound Through	*4.9*	*A*	*22.2*	*C*	*n/a*	*n/a*	*15.2*	*C*
Northbound Right	*4.3*	*A*	*13.5*	*B*	*n/a*	*n/a*	*9.8*	*B*
Southbound Left	*2.8*	*A*	*26.9*	*D*	*n/a*	*n/a*	*31.4*	*D*
Southbound Through	*2.0*	*A*	*3.8*	*A*	*n/a*	*n/a*	*3.3*	*A*
Southbound Right	*n/a*	*n/a*	*3.1*	*A*	*n/a*	*n/a*	*2.5*	*A*
UNSIGNALIZED								
Chinook Ln. / Walton Creek Rd.	**1.0**	**A**	**1.9**	**A**	**n/a**	**n/a**	**1.0**	**A**
Northbound Left-Right	*7.3*	*B*	*18.6*	*C*	*n/a*	*n/a*	*9.5*	*B*
Westbound Left	*3.0*	*A*	*4.1*	*A*	*n/a*	*n/a*	*3.4*	*A*
Whistler Rd. / Walton Creek Rd.	**2.8**	**A**	**19.2**	**C**	**8.3**	**B**	**3.4**	**A**
Northbound Left-Through-Right	*9.0*	*B*	*92.5*	*F*	*n/a*	*n/a*	*n/a*	*n/a*
Northbound Left	*n/a*	*n/a*	*n/a*	*n/a*	*55.7*	*F*	*20.1*	*D*
Northbound Through-Right	*n/a*	*n/a*	*n/a*	*n/a*	*7.0*	*B*	*6.1*	*B*
Southbound Left-Through-Right	*8.4*	*B*	*15.1*	*C*	*n/a*	*n/a*	*n/a*	*n/a*
Southbound Left	*n/a*	*n/a*	*n/a*	*n/a*	*16.7*	*C*	*13.9*	*C*
Southbound Through-Right	*n/a*	*n/a*	*n/a*	*n/a*	*13.1*	*C*	*10.4*	*C*
Eastbound Left	*2.6*	*A*	*3.0*	*A*	*3.0*	*A*	*2.9*	*A*
Westbound Left	*3.2*	*A*	*4.3*	*A*	*4.3*	*A*	*3.7*	*A*
Village Dr. / Walton Creek Rd.	**5.6**	**B**	**31.5**	**E**	**n/a**	**n/a**	**14.8**	**C**
Northbound Left-Through-Right	*11.1*	*C*	*111.0*	*F*	*n/a*	*n/a*	*46.6*	*F*
Southbound Left-Through	*9.0*	*B*	*19.7*	*C*	*n/a*	*n/a*	*18.3*	*C*
Southbound Right	*n/a*	*n/a*	*3.6*	*A*	*n/a*	*n/a*	*3.6*	*A*
Eastbound Left	*2.6*	*A*	*2.9*	*A*	*n/a*	*n/a*	*2.9*	*A*
Westbound Left	*2.6*	*A*	*2.9*	*A*	*n/a*	*n/a*	*2.8*	*A*
Village Dr. / Meadow Ln.	**1.2**	**A**	**1.6**	**A**	**n/a**	**n/a**	**1.5**	**A**
Eastbound Left-Right	*4.2*	*A*	*4.7*	*A*	*n/a*	*n/a*	*4.4*	*A*
Northbound Left	*2.4*	*A*	*2.6*	*A*	*n/a*	*n/a*	*2.5*	*A*
Whistler Rd. / Skyview Ct.	**0.5**	**A**	**0.5**	**A**	**n/a**	**n/a**	**0.5**	**A**
Eastbound Left-Right	*5.3*	*B*	*5.5*	*B*	*n/a*	*n/a*	*4.7*	*A*
Northbound Left	*2.7*	*A*	*2.8*	*A*	*n/a*	*n/a*	*2.6*	*A*
Whistler Rd. / Stone Ln.	**0.5**	**A**	**0.5**	**A**	**n/a**	**n/a**	**2.1**	**A**
Eastbound Left-Right	*4.4*	*A*	*4.6*	*A*	*n/a*	*n/a*	*4.7*	*A*
Northbound Left	*2.5*	*A*	*2.5*	*A*	*n/a*	*n/a*	*2.6*	*A*
U.S. 40 / Dougherty Rd.	**0.0**	**A**	**1.5**	**A**	**n/a**	**n/a**	**2.8**	**A**
Eastbound Left-Through-Right	*n/a*	*n/a*	*13.3*	*C*	*n/a*	*n/a*	*18.7*	*C*
Eastbound Left-Right	*5.3*	*B*	*n/a*	*n/a*	*n/a*	*n/a*	*n/a*	*n/a*
Westbound Left-Through	*n/a*	*n/a*	*14.3*	*C*	*n/a*	*n/a*	*20.4*	*D*
Westbound Right	*n/a*	*n/a*	*4.4*	*A*	*n/a*	*n/a*	*4.7*	*A*
Northbound Left	*2.9*	*A*	*3.6*	*A*	*n/a*	*n/a*	*3.4*	*A*
Southbound Left	*n/a*	*n/a*	*3.5*	*A*	*n/a*	*n/a*	*4.0*	*A*

Traffic Accident History at Study Area Intersections

Table 2

Intersection	Number of Accidents			
	Sept. 1993 to Sept. 1994	Sept. 1994 to Sept. 1995	Sept. 1995 to Sept. 1996	Three Year Total
U.S. 40 / Walton Creek Road	2	6	3	11
Chinook Lane / Walton Creek Road	0	0	2	2
Whistler Road / Walton Creek Road	4	3	3	10
Village Drive / Walton Creek Road	6	8	5	19
Village Drive / Meadow Lane	0	0	0	0
Whistler Road / Skyview Court	0	0	2	2
Whistler Road / Stone Lane	0	0	1	1
U.S. 40 / Dougherty Road	0	0	0	0
Total Number of Accidents	12	17	16	45 *

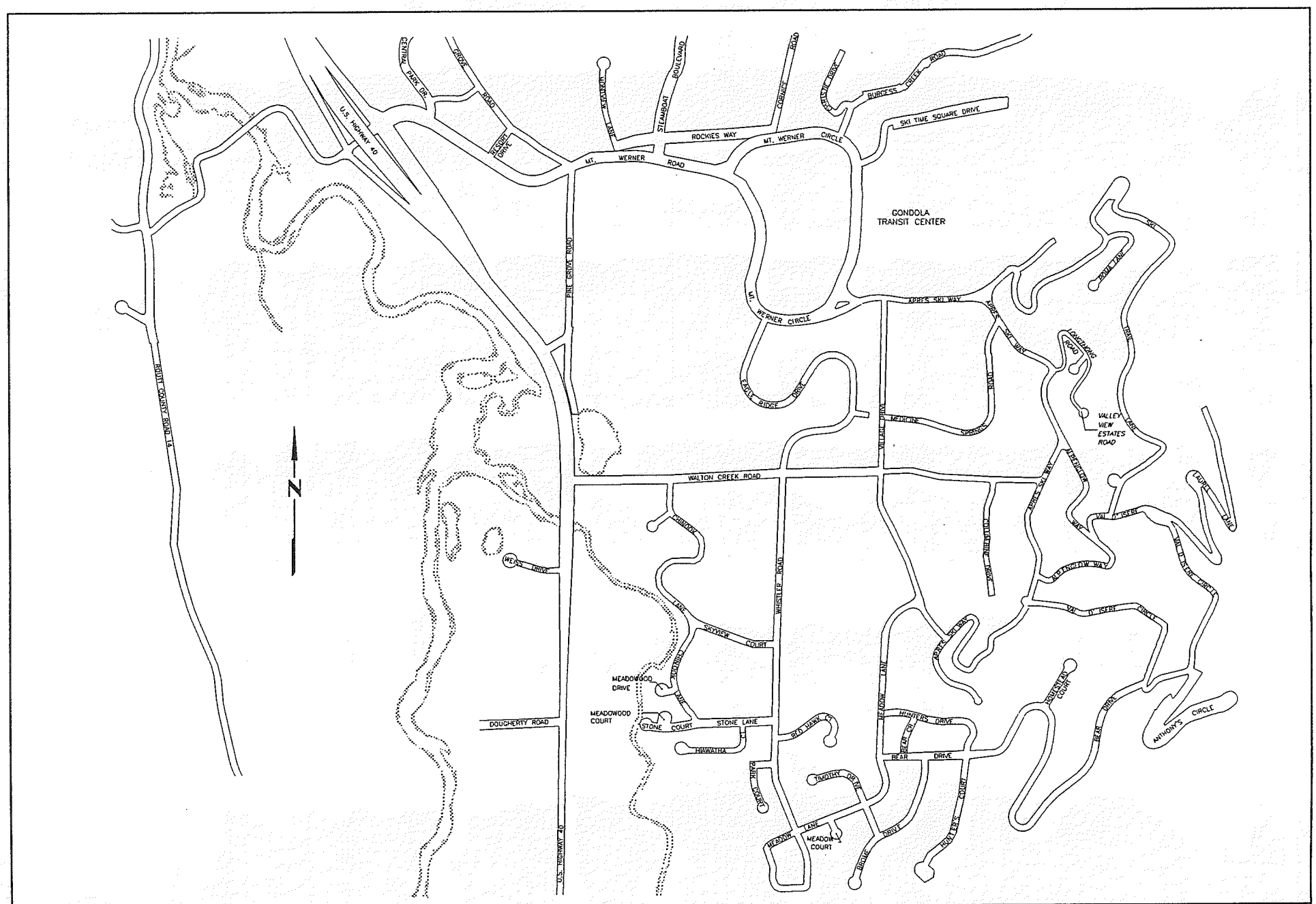
* An average of approximately 1.9 accidents per year per intersection within the study area.

Note: Approximately 80% of all reported accidents at these locations occured between the months of November and March when the ski area was in operation. Approximately 20% occured between the months of April and October.

Whistler Area Parcel Trip Generation Estimates

Table 3

Parcel #	Description or (status)	Land Use(s)	Zoning Class	Size		Winter Weekend Daily Trips					Winter Weekend PM Peak Hour Trips						
				Number	Independent Variable	Trip Rate	Trips	Percent Non Transit	Percent Non Pass-By	Total Trips after Transit and Pass-By Reduction	Trip Rate	Trips	Percent Non Transit	Percent Non Pass-By	Trips after Transit and Pass-By Reduction		
															Total	In	Out
1	Yampa Meadows Estates	Residential	RE	19	D.U.s	10.00	190	90%	n/a	170	0.90	17	90%	n/a	15	8	7
2	Snow River Development	Hotel	CH	100	Rooms	10.50	1,050	90%	n/a	945	0.87	87	90%	n/a	78	30	48
		Sit-Down Rest.	CH	6	1000 s.f.	229.34	1,376	100%	60%	826	15.09	91	100%	60%	55	26	29
		G. Office Bldg.	CH	15	1000 s.f.	2.20	33	100%	n/a	33	0.20	5	100%	n/a	5	3	2
		Apartments	CH	108	D.U.s	5.44	587	70%	n/a	411	0.56	60	70%	n/a	42	23	19
3	Super 8 Motel	Motel	CH	40	Rooms	8.38	335	90%	n/a	302	1.20	48	90%	n/a	43	16	27
4	Forest Service Office Bldg.	Office Bldg.	CH	n/a	n/a	n/a	80	100%	n/a	80	n/a	5	100%	n/a	5	2	3
5	Walton Pond, Parcel C	Sit-Down Rest.	CH	4	1000 s.f.	229.34	917	100%	60%	550	15.09	60	100%	60%	36	17	19
		Hotel	CH	70	Rooms	10.50	735	90%	n/a	662	0.87	61	90%	n/a	55	21	34
6	Walton Pond Area	G. Office Bldg.	CH	20.7	1000 s.f.	2.20	46	100%	n/a	46	0.20	5	100%	n/a	5	3	2
		SST Maint. Facility	CH	n/a	n/a	n/a	10	100%	n/a	10	n/a	2	100%	n/a	2	1	1
		Specialty Retail	CH	32.5	1000 s.f.	42.00	1,365	100%	65%	887	3.78	123	100%	65%	80	46	34
7	Luxury Inn	Motel	CH	25	Rooms	8.28	207	90%	n/a	186	1.44	36	90%	n/a	32	12	20
8	Country Inn & Suites	Motel	CH	65	Rooms	8.48	551	90%	n/a	496	1.00	65	90%	n/a	59	23	36
9	(currently vacant)	Residential	RML	17	D.U.s	6.50	111	70%	n/a	77	0.59	10	70%	n/a	7	4	3
10	(currently vacant)	Residential	RML	39	D.U.s	6.50	254	70%	n/a	177	0.59	23	70%	n/a	16	9	7
11	(construction underway)	Residential	RMH	17	D.U.s	6.50	111	70%	n/a	77	0.59	10	70%	n/a	7	4	3
12	Settlers Crossing (infill)	Residential	RH	6	D.U.s	10.00	60	90%	n/a	54	0.90	5	90%	n/a	5	3	2
13	Woodbridge	Residential	RMM	12	D.U.s	6.50	78	70%	n/a	55	0.59	7	70%	n/a	5	3	2
14	(currently vacant)	Residential	RML	70	D.U.s	6.50	455	70%	n/a	319	0.59	41	70%	n/a	29	16	13
15	Mountain Village Apts.	Apartments	RML	103	D.U.s	6.50	670	70%	n/a	469	0.59	61	70%	n/a	43	24	19
16	Villas at Walton Creek	Condos	RMH	108	D.U.s	6.50	702	70%	n/a	491	0.59	64	70%	n/a	45	25	20
17	(currently vacant)	Residential	RML	7	D.U.s	6.50	46	70%	n/a	32	0.59	4	70%	n/a	3	2	1
18	Eagleridge Subdivision	Residential	RMM	130	D.U.s	6.50	845	70%	n/a	592	0.59	77	70%	n/a	54	30	24
19	Block 9 Eagleridge	Town Homes	RMH	20	D.U.s	6.50	130	70%	n/a	91	0.59	12	70%	n/a	8	4	4
20	(currently vacant)	Condos	RR	45	D.U.s	6.50	293	70%	n/a	205	0.59	27	70%	n/a	19	10	9
21	(construction underway)	Residential	RMH	63	D.U.s	6.50	410	70%	n/a	287	0.59	37	70%	n/a	26	14	12
22	(currently vacant)	Residential	RR	17	D.U.s	6.50	111	70%	n/a	77	0.59	10	70%	n/a	7	4	3
23	(construction underway)	Day Care Center	RR	10	employ.	2.61	26	100%	n/a	26	0.71	7	100%	n/a	7	4	3
24	(currently vacant)	Residential	RML	5	D.U.s	6.50	33	70%	n/a	23	0.59	3	70%	n/a	2	1	1
25	(currently vacant)	Residential	RMH	12	D.U.s	6.50	78	70%	n/a	55	0.59	7	70%	n/a	5	3	2
26	Victorian Meadows	Residential	RMH	30	D.U.s	6.50	195	70%	n/a	137	0.59	18	70%	n/a	13	7	6
27	Sunburst Town Homes	Town Homes	RMM	21	D.U.s	6.50	137	70%	n/a	96	0.59	12	70%	n/a	8	4	4
28	Meadow Lane Town Homes	Town Homes	RML	30	D.U.s	6.50	195	70%	n/a	137	0.59	18	70%	n/a	13	7	6
29	Saddle Creek Town Homes	Town Homes	RMM	32	D.U.s	6.50	208	70%	n/a	146	0.59	19	70%	n/a	13	7	6
30	Bear Creek Subdivision	Residential	RH	50	D.U.s	10.00	500	90%	n/a	450	0.90	45	90%	n/a	41	23	18
31	Bear Run (infill)	Residential	RL	10	D.U.s	10.00	100	90%	n/a	90	0.90	9	90%	n/a	8	4	4
32	Running Bear (infill)	Residential	RE/C	47	D.U.s	10.00	470	90%	n/a	423	0.90	42	90%	n/a	38	21	17
33	(currently vacant)	Residential	RML	72	D.U.s	6.50	468	70%	n/a	328	0.59	42	70%	n/a	29	16	13
34	(currently vacant)	G. Office Bldg.	CT	9	1000 s.f.	2.20	20	100%	n/a	20	0.20	5	100%	n/a	5	3	2
35	Trappers Crossing	Residential	RR	145	D.U.s	6.50	943	70%	n/a	660	0.59	86	70%	n/a	60	33	27
36	(currently vacant)	Residential	RR	22	D.U.s	6.50	143	70%	n/a	100	0.59	13	70%	n/a	9	5	4
37	(currently vacant)	Residential	RR	22	D.U.s	6.50	143	70%	n/a	100	0.59	13	70%	n/a	9	5	4
38	Meadow South	Residential	RR	54	D.U.s	6.50	351	70%	n/a	246	0.59	32	70%	n/a	22	12	10
39	Ski Ranches (infill)	Residential	RM	30	D.U.s	10.00	300	90%	n/a	270	0.90	27	90%	n/a	24	13	11
40	(currently vacant)	Specialty Retail	CH	52	1000 s.f.	42.00	2,184	100%	65%	1,420	3.78	197	100%	65%	128	73	55
TOTALS										**13,334**					**1,220**	**624**	**596**



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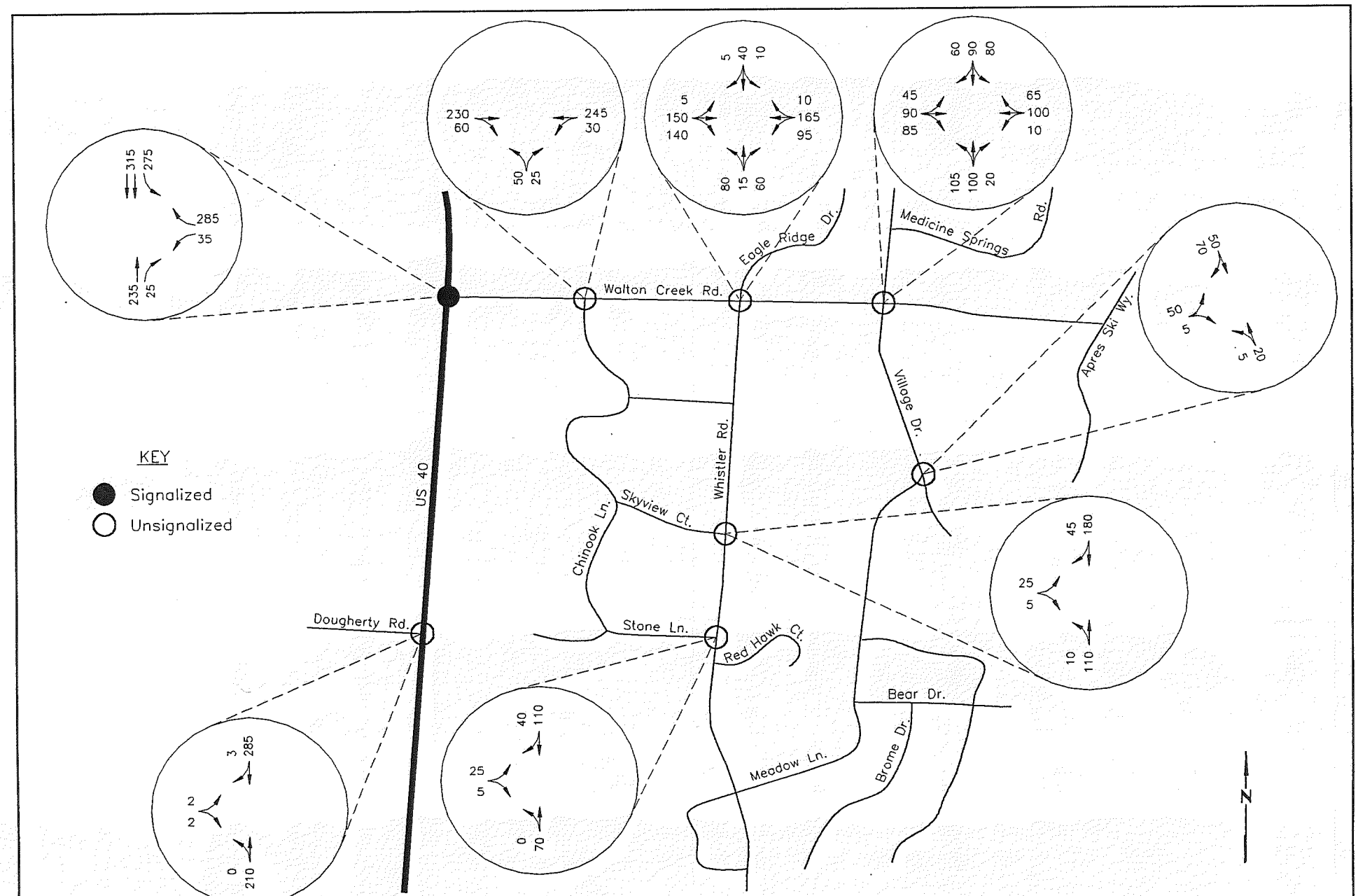
Consulting Engineers

WHISTLER AREA TRANSPORTATION STUDY

VICINITY MAP

Scale	1"=1200'	Date	11/4/96	Drawn by	RAC	Job #	96118	Figure	1



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WHISTLER AREA TRANSPORTATION STUDY

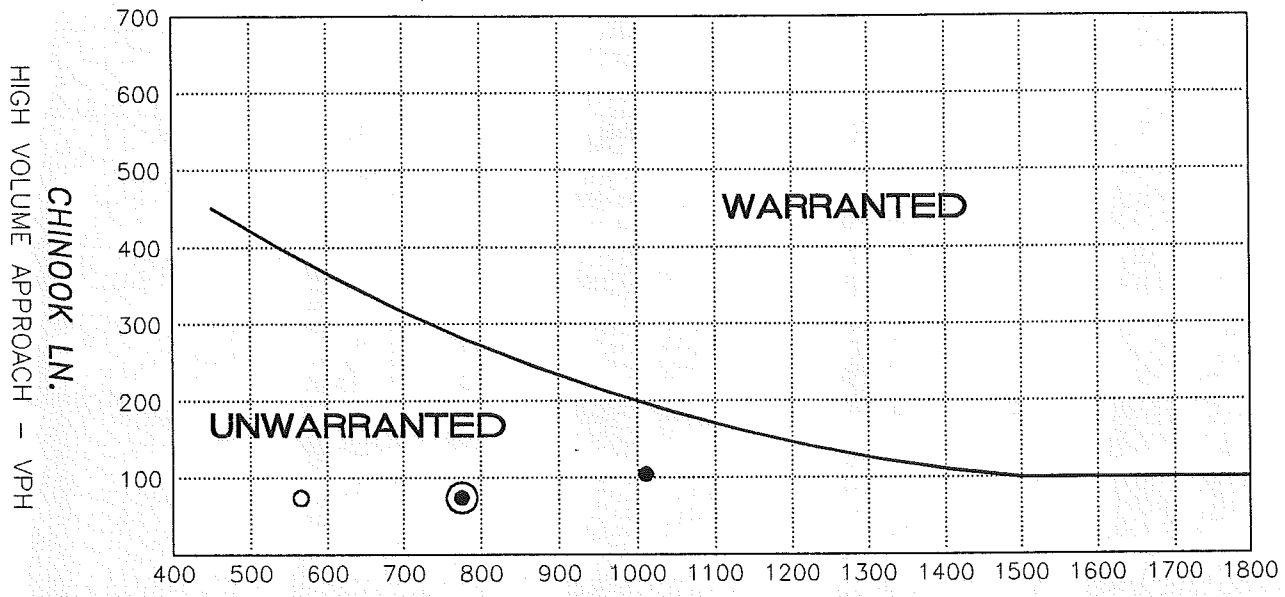
EXISTING PM PEAK HOUR VOLUMES

Scale	NTS	Date	11/4/96	Drawn by	RAC	Job #	96118	Figure	2

PEAK HOUR VOLUME WARRANT

(BELOW 40 MPH ON MAJOR STREET)

1 LANE & 1 LANE

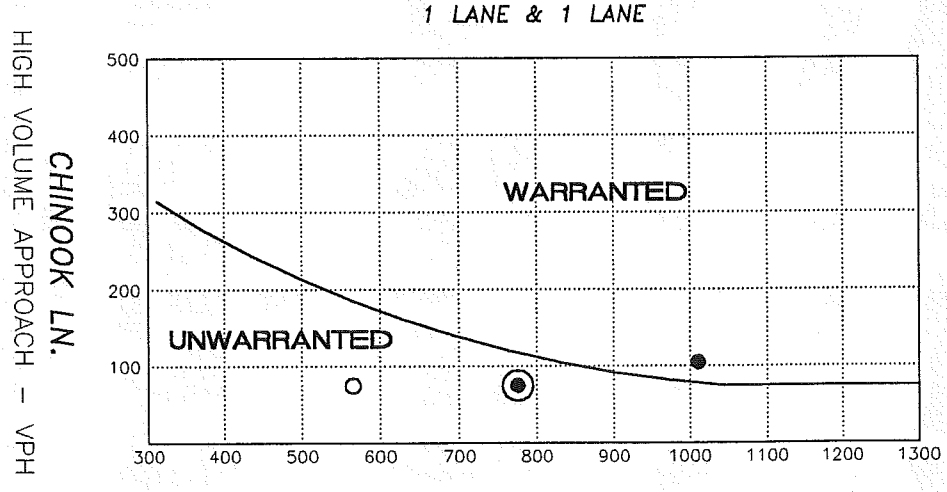


- Existing (565,75)
- Buildout (1010,105)
- Buildout with Stone Ct. Extension (775,75)

PEAK HOUR VOLUME WARRANT

(COMMUNITY LESS THAN 10,000 POPULATION
OR ABOVE 40 MPH ON MAJOR STREET)

1 LANE & 1 LANE



- Existing (565,75)
- Buildout (1010,105)
- Buildout with Stone Ct. Extension (775,75)

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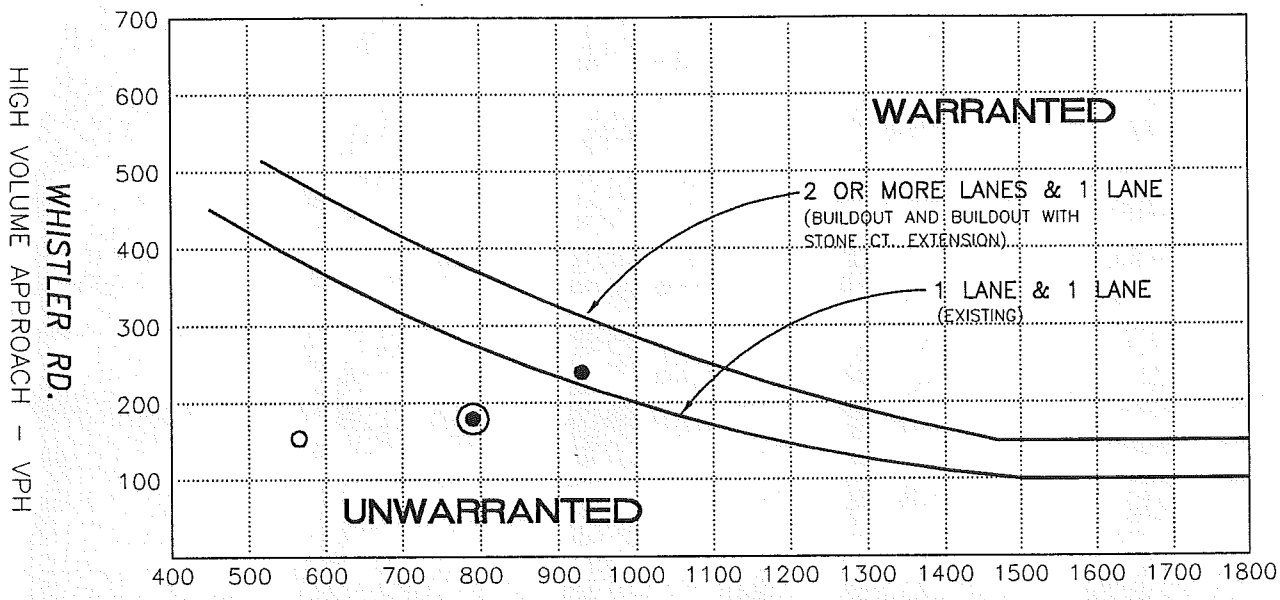
WHISTLER AREA TRANSPORTATION STUDY

CHINOOK LN. / WALTON CREEK RD. SIGNAL WARRANT WORKSHEET

Scale	NTS	Date	11/4/96	Drawn by	RAC	Job #	96118	Figure	3

PEAK HOUR VOLUME WARRANT

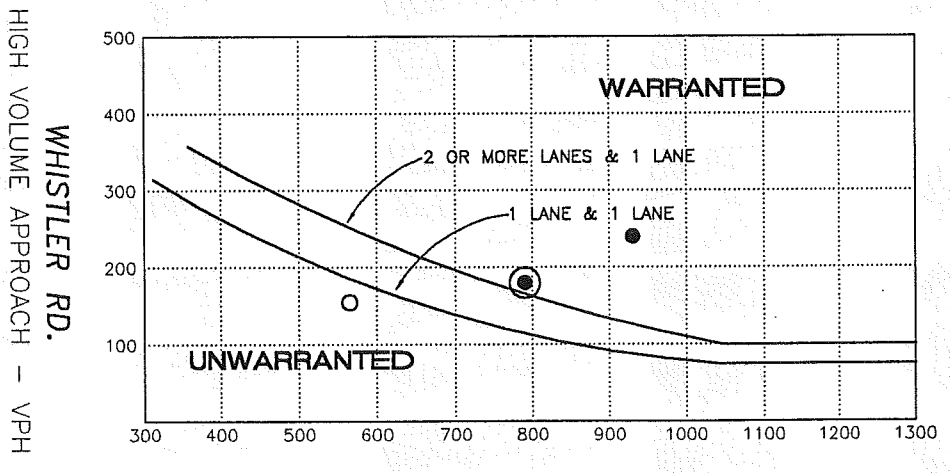
(BELOW 40 MPH ON MAJOR STREET)



- O Existing (565,155)
- ● Buildout (930,240)
- ◉ Buildout with Stone Ct. Extension (790,180)

PEAK HOUR VOLUME WARRANT

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



- O Existing (565,155)
- ● Buildout (930,240)
- ◉ Buildout with Stone Ct. Extension (790,180)

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WHISTLER AREA TRANSPORTATION STUDY

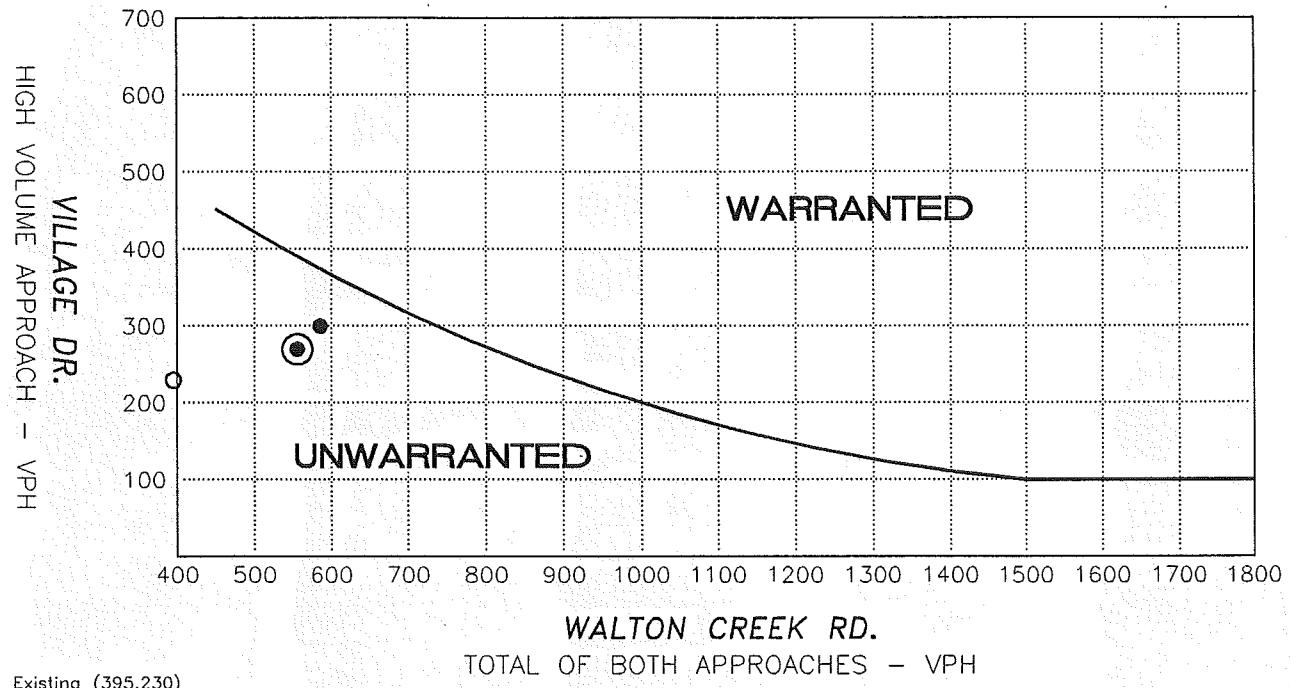
WHISTLER RD. / WALTON CREEK RD. SIGNAL WARRANT WORKSHEET

Scale NTS	Date 11/4/96	Drawn by RAC	Job # 96118	Figure 4

PEAK HOUR VOLUME WARRANT

(BELOW 40 MPH ON MAJOR STREET)

1 LANE & 1 LANE



○ Existing (395,230)

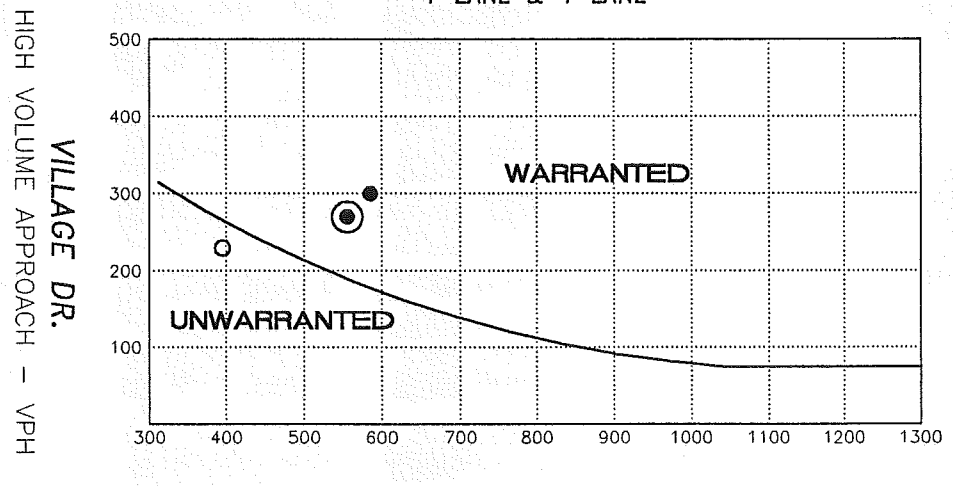
● Buildout (585,300)

◉ Buildout with Stone Ct. Extension (555,270)

PEAK HOUR VOLUME WARRANT

(COMMUNITY LESS THAN 10,000 POPULATION
OR ABOVE 40 MPH ON MAJOR STREET)

1 LANE & 1 LANE



○ Existing (395,230)

● Buildout (585,300)

◉ Buildout with Stone Ct. Extension (555,270)

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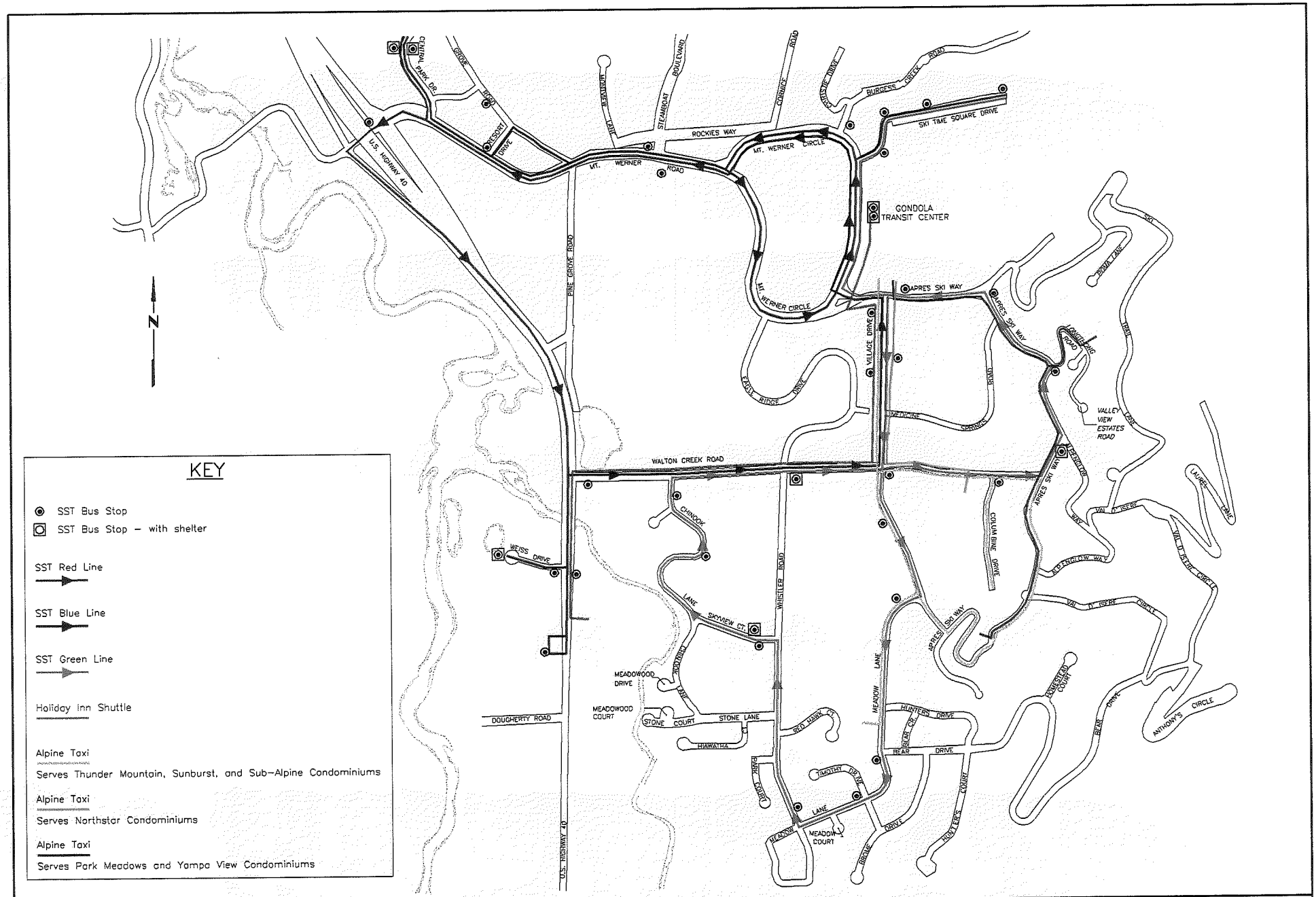
WHISTLER AREA TRANSPORTATION STUDY

VILLAGE DR. / WALTON CREEK RD. SIGNAL WARRANT WORKSHEET

Scale NTS	Date 11/4/96	Drawn by RAC	Job # 96118	Figure 5



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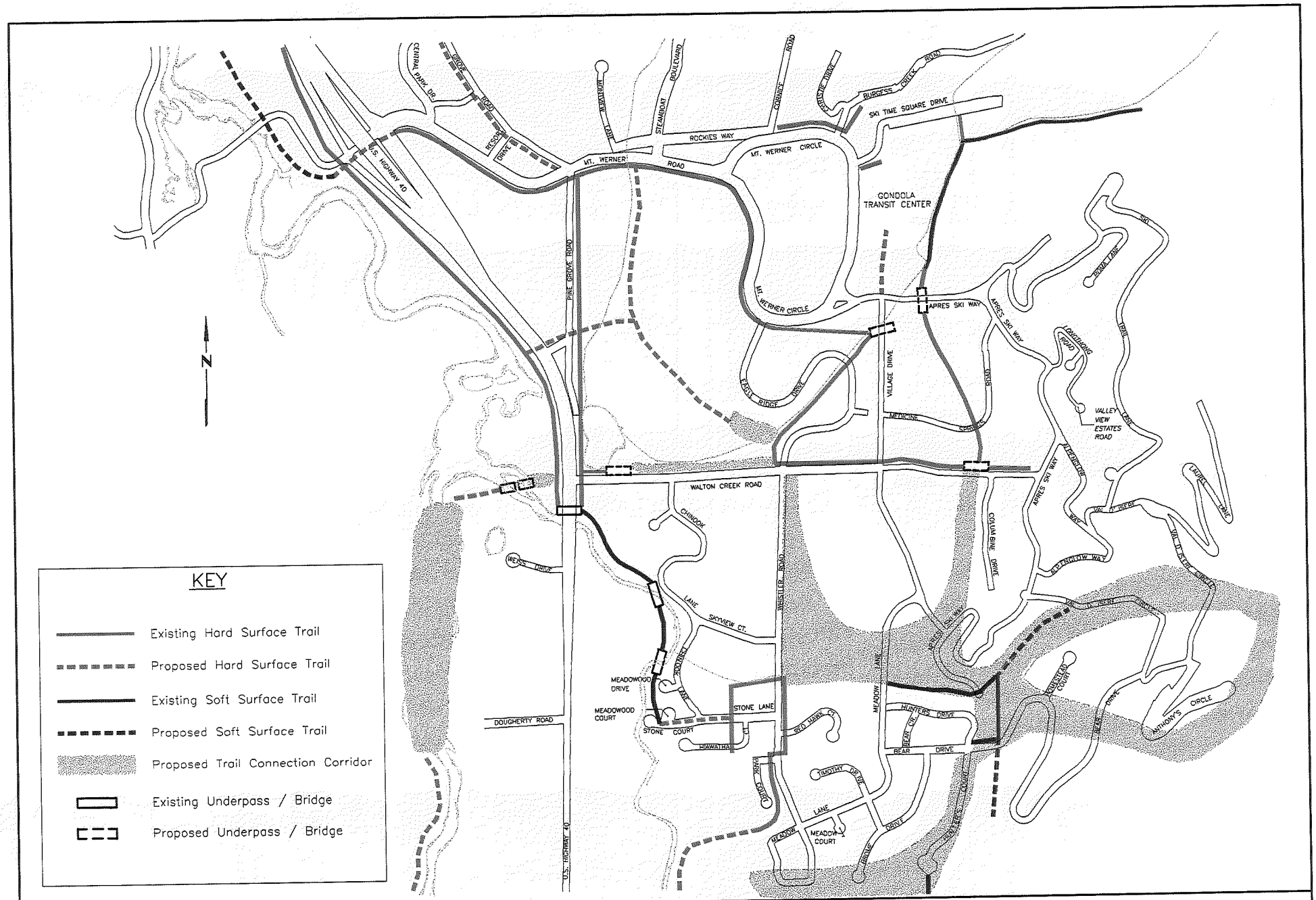
WHISTLER AREA TRANSPORTATION STUDY

TRANSIT / SHUTTLE SERVICE ROUTE MAP

Scale	1"=1200'	Date	11/4/96	Drawn by	RAC	Job #	96118	Figure	6



TRANSPLAN ASSOCIATES, Inc.
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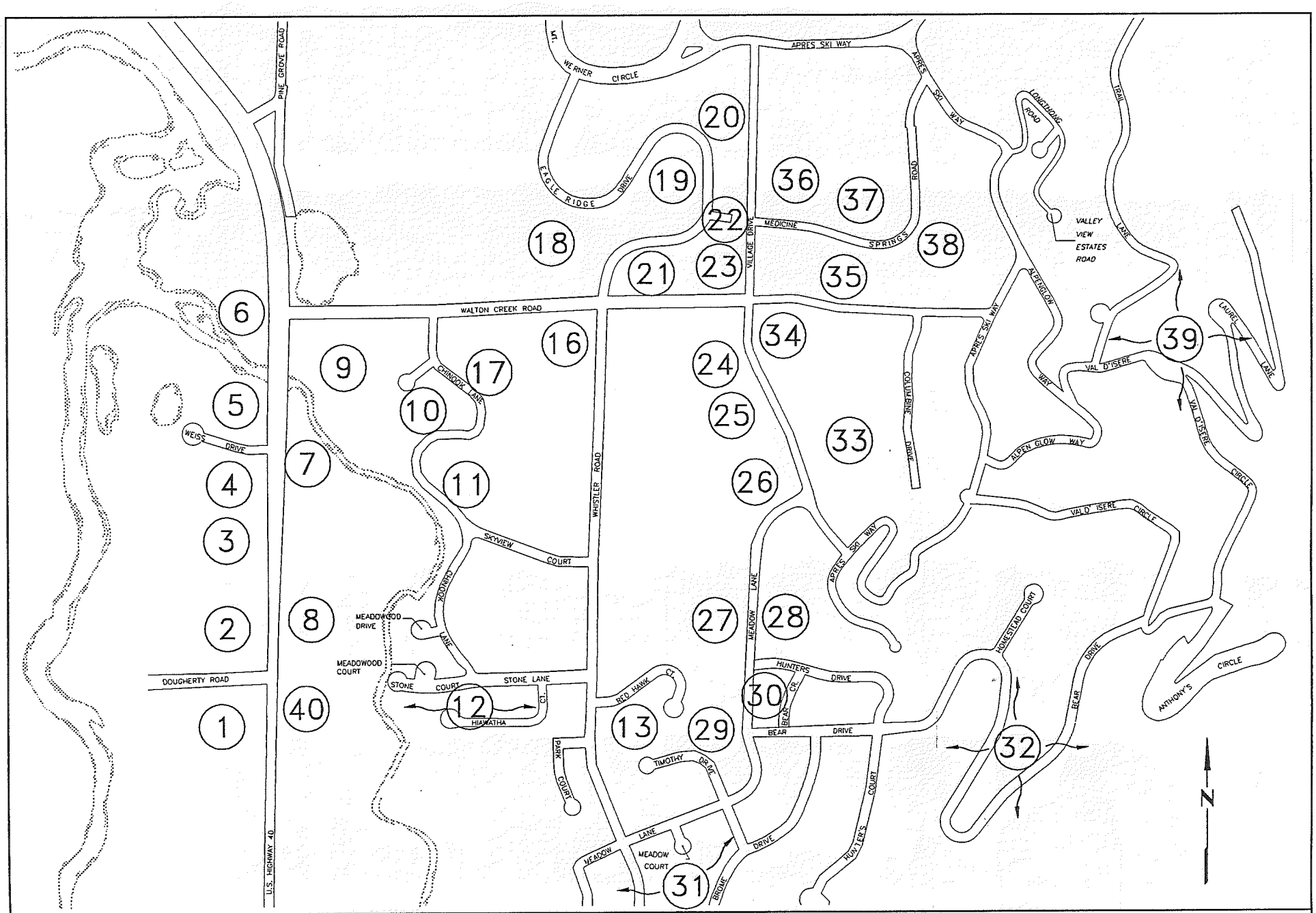
WHISTLER AREA TRANSPORTATION STUDY

PEDESTRIAN AND BICYCLE FACILITY MAP

Scale	1"=1200'	Date	12/19/96	Drawn by	RAC	Job #	96118	Figure	7



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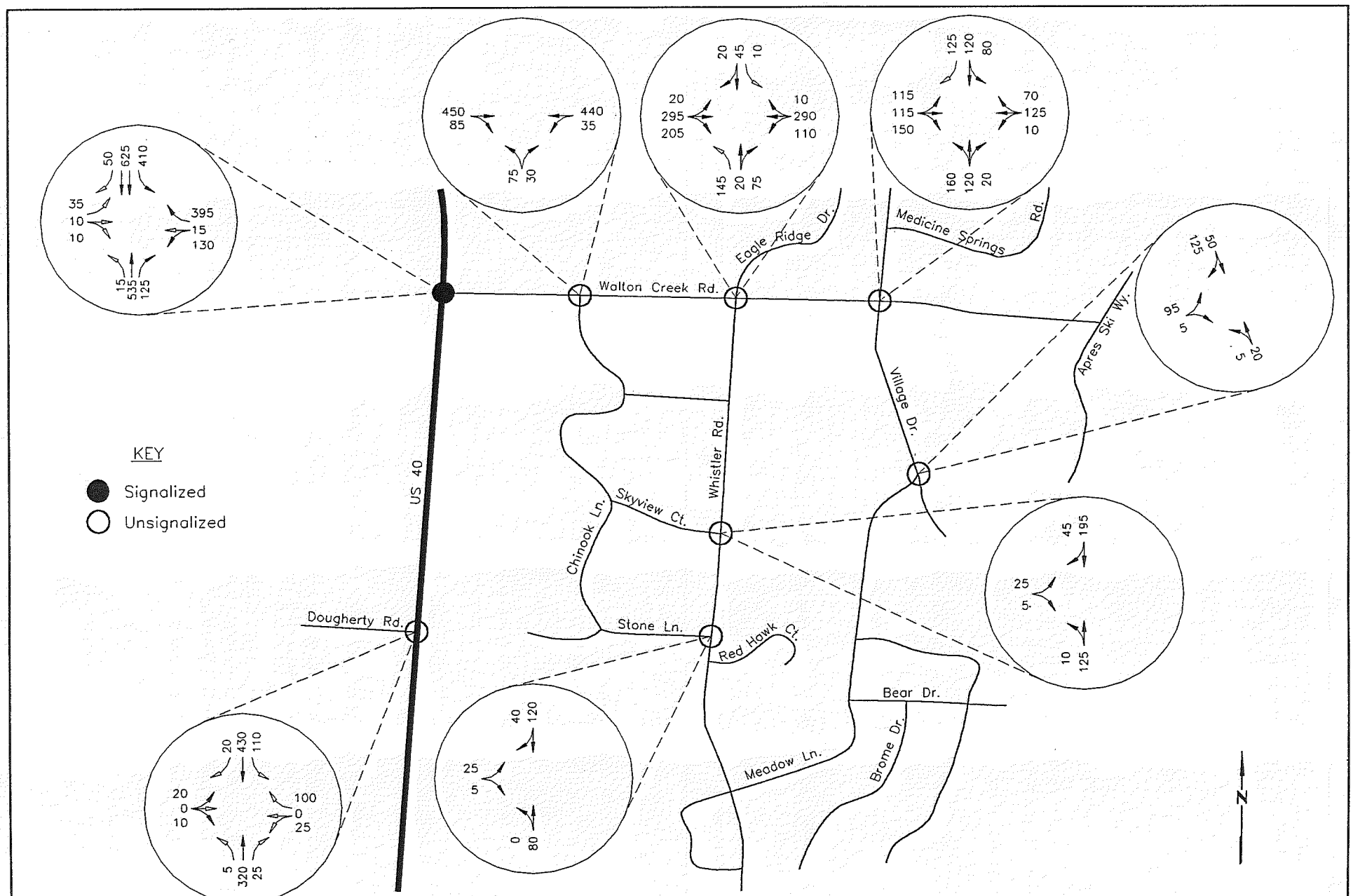
WHISTLER AREA TRANSPORTATION STUDY

WHISTLER AREA PARCEL MAP

Scale	NTS	Date	11/4/96	Drawn by	RAC	Job #	96118	Figure	8



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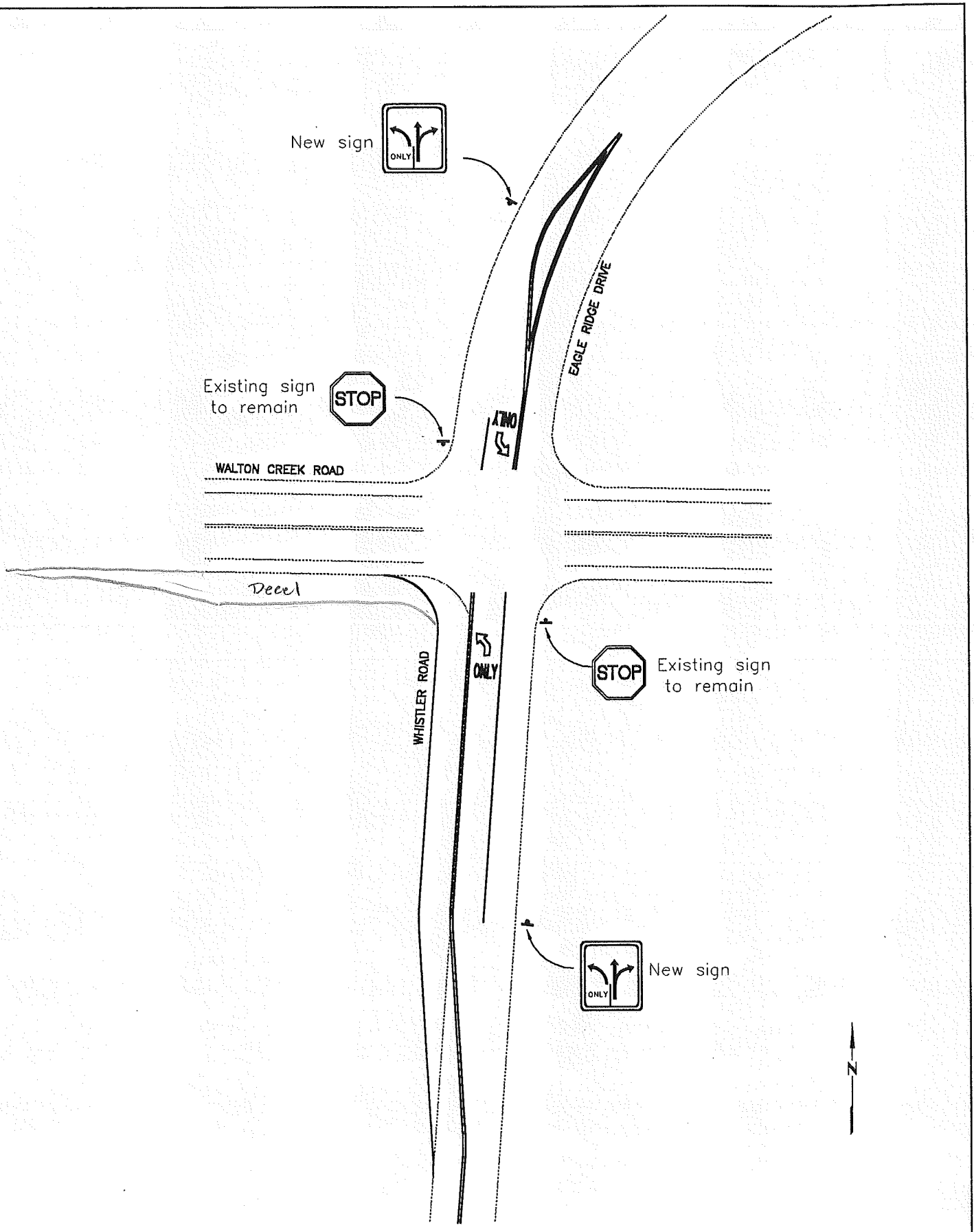
WHISTLER AREA TRANSPORTATION STUDY

BUILD OUT SCENARIO WINTER SATURDAY PM PEAK HOUR VOLUMES

Scale	NTS	Date	11/4/96	Drawn by	RAC	Job #	96118	Figure	9



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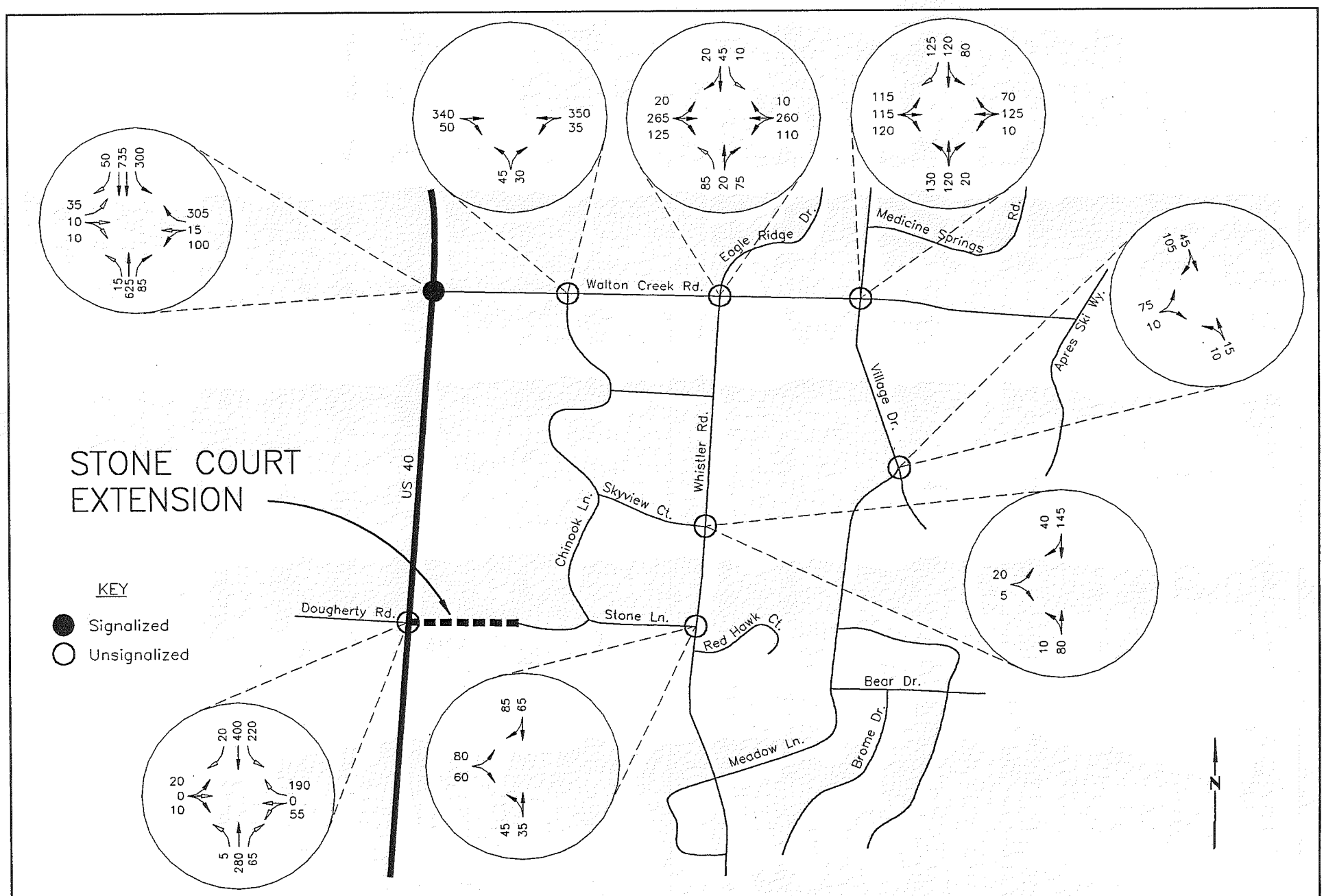
WHISTLER AREA TRANSPORTATION STUDY

WHISTLER RD./WALTON CREEK RD. RECOMMENDED IMPROVEMENTS

Scale	Date	Drawn by	Job #	Figure
1"=50'	11/4/96	RAC	96118	10



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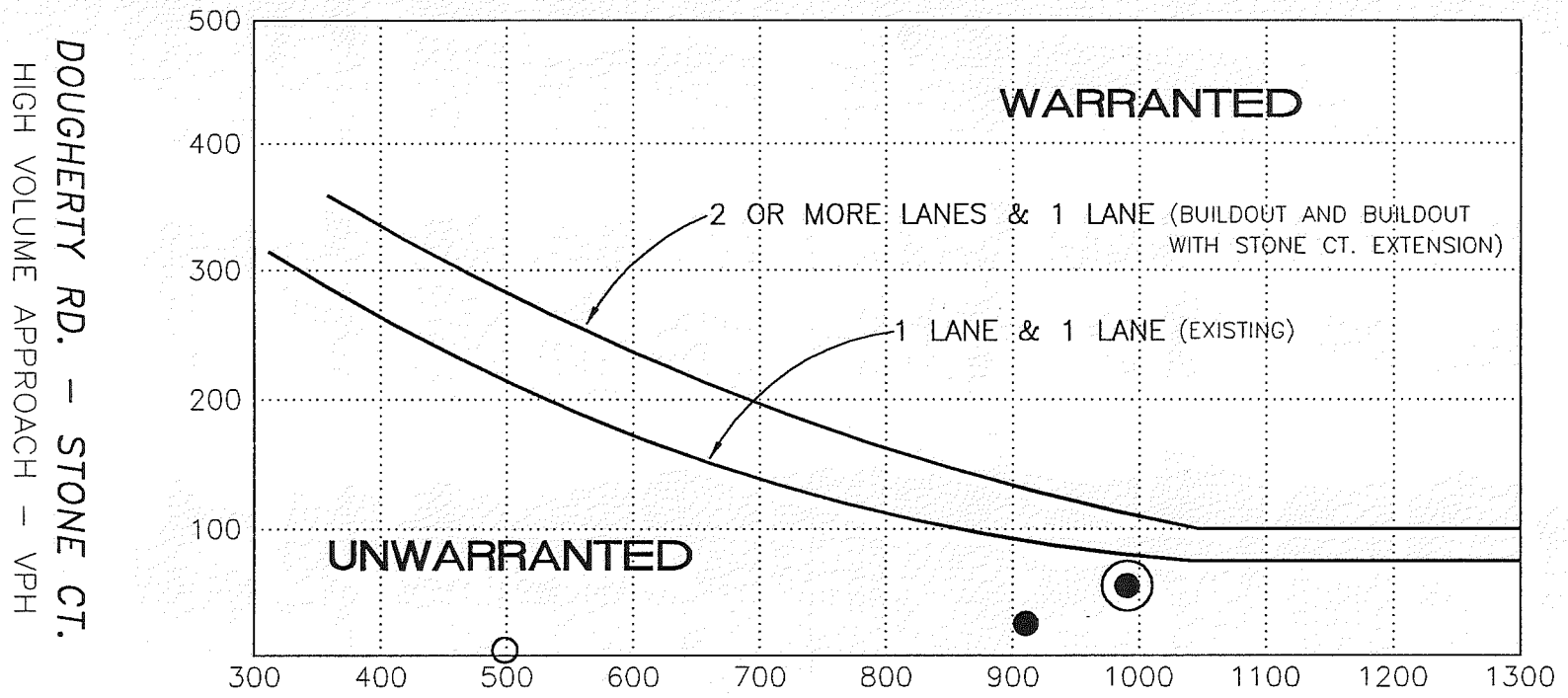
WHISTLER AREA TRANSPORTATION STUDY

BUILD OUT SCENARIO WINTER SATURDAY PM PEAK HOUR VOLUMES W/STONE CT. EXTENSION

Scale	NTS	Date	11/4/96	Drawn by	RAC	Job #	96118	Figure	11

PEAK HOUR VOLUME WARRANT

(COMMUNITY LESS THAN 10,000 POPULATION
OR ABOVE 40 MPH ON MAJOR STREET)



○ Existing (498,4)

● Buildout (910,25)*

◉ Buildout with Stone Ct. Extension (990,55)*

* DISCOUNTING 100% WESTBOUND RIGHT TURNS PER MUTCD RULING IV-65.

TRANSPLAN ASSOCIATES, Inc.
Consulting Engineers

WHISTLER AREA TRANSPORTATION STUDY

US 40 / DOUGHERTY RD. – STONE CT. SIGNAL WARRANT WORKSHEET

Scale	NTS	Date	11/4/96	Drawn by	RAC	Job #	96118	Figure	12

TECHNICAL APPENDIX

Level of Service Worksheets

SIG/Cinema V1.01 ORGANIZATION: TransPlan Associates, Inc.
Winter Weekend PM Peak Hour Walton Creek/U.S. 40 SUMMARY

ANALYST: TransPlan-KJ ANALYSIS DATE: 9-25-96
ANALYSIS PERIOD: PM Peak Hour CASE: US40WTWW

	LANES App	Outbnd	GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT) Lane 1	Lane 2	Lane 3	Lane 4	Lane 5	Lane 6
EB	0	2						
WB	2	0	L 12.0	R 12.0				
NB	2	2	T 12.0	R 12.0				
SB	3	2	L 12.0	T 12.0	T 12.0			

Data	EAST L	EAST T	EAST R	WEST L	WEST T	WEST R	NORTH L	NORTH T	NORTH R	SOUTH L	SOUTH T	SOUTH R
Mvt Vol (vph)	0	0	0	35	0	285	0	235	25	275	315	0
PHF				0.90		0.90		0.90	0.90	0.90	0.90	
%Hvy Vehicles				2		2		2	2	2	2	
Arrival Type				3		3		3	3	3	3	
RTOR Vol (vph)				284				20			0	
Peds/Hour				0				0			0	
% Grade				0				0			0	
Parkers/Hour				0				0			0	
Buses/Hour				0				0			0	

SIGNAL SETTINGS: SEMI-ACTUATED OPERATIONAL ANALYSIS CYCLE LENGTH: 110.0

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB									
WB	R		L R						
NB		TR							
SB	LT	LT							
GREEN	10.0	70.0	17.0	0.0	0.0	0.0	0.0	0.0	0
YELLOW	3.0	3.0	3.0	0.0	0.0	0.0	0.0	0.0	
RED	0.0	2.0	2.0	0.0	0.0	0.0	0.0	0.0	

LOST TIME PER PHASE: 3.0 SEC LOST TIME PER CYCLE: 6.0 SEC

CAPACITY ANALYSIS RESULTS

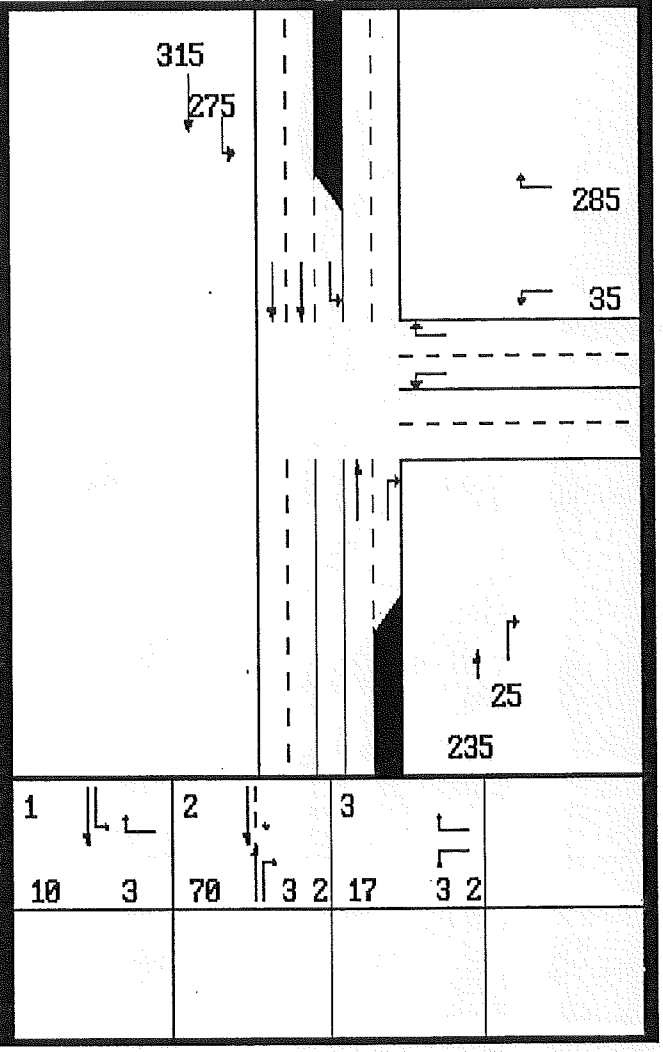
App		Lane Group	Cap (vph)	v/s Ratio	g/C Ratio	Lane Group	v/c Ratio	Delay (sec/veh)	LOS	APPROACH: Delay (sec/veh)	LOS
WB	*	L	306	0.02	0.17	L	0.13	24.9	C	24.7	C
		R	461	0.00	0.29	R	0.00	17.9	C		
NB		T	1219	0.14	0.65	T	0.21	4.9	A	4.9	A
		R	1036	0.00	0.65	R	0.01	4.3	A		
SB	*	Lper	514	0.19	0.68					2.4	A
	*	Lpro	161	0.09	0.09	L	0.45	2.8	A		
		T	2878	0.10	0.77	T	0.13	2.0	A		

INTERSECT: DELAY = 4.0 SEC/VEH Xc = 0.32 LOS = A Sum(v/s)CR = 0.31

HCM Summary Results for Case: US40WTWW Walton Creek/U.S. 40

Winter Weekend PM Peak Hour PM Peak Hour Version 1.01

Lane Grp	v/s	X v/c	Lane Grp Delay (sec/veh)	L O S	App Delay (sec/veh)	App L O S
WB L	*0.02	0.13	24.9	C	24.7	C
R	0.00	0.00	17.9	C		
NB T	0.14	0.21	4.9	A	4.9	A
R	0.00	0.01	4.3	A		
SB Lper	*0.19				2.4	A
Lpro	*0.09	0.45#	2.8	A		
T	0.10	0.13	2.0	A		
Int.	0.31	0.32	4.0	A	#L TOTAL	



TransPlan Associates, Inc.
1375 Walnut St.
Suite 211
Boulder, CO 80302-
Ph: (303) 442-3130

Streets: (N-S) Chinook Lane (E-W) Walton Creek Rd.
Major Street Direction.... EW
Length of Time Analyzed... 60 (min)
Analyst..... TransPlan-KJ
Date of Analysis..... 9/25/96
Other Information.....Winter Weekend PM Peak Hour.
Two-way Stop-controlled Intersection

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	< 0	0	> 1	0	0	> 0	< 0	0	0	0
Stop/Yield			N			N						
Volumes		230	60	30	245		50		25			
PHF		.95	.95	.95	.95		.95		.95			
Grade		0			0			0				
MC's (%)												
SU/RV's (%)												
CV's (%)												
PCE's				1.10			1.10		1.10			

Adjustment Factors

Vehicle Maneuver	Critical Gap (tg)	Follow-up Time (tf)
Left Turn Major Road	5.00	2.10
Right Turn Minor Road	5.50	2.60
Through Traffic Minor Road	6.00	3.30
Left Turn Minor Road	6.50	3.40

Worksheet for TWSC Intersection

Step 1: RT from Minor Street	NB	SB
Conflicting Flows: (vph)	274	
Potential Capacity: (pcph)	1006	
Movement Capacity: (pcph)	1006	
Prob. of Queue-Free State:	0.97	

Step 2: LT from Major Street	WB	EB
Conflicting Flows: (vph)	305	
Potential Capacity: (pcph)	1227	
Movement Capacity: (pcph)	1227	
Prob. of Queue-Free State:	0.97	
TH Saturation Flow Rate: (pcphpl)	1700	
RT Saturation Flow Rate: (pcphpl)		
Major LT Shared Lane Prob. of Queue-Free State:	0.97	

Step 4: LT from Minor Street	NB	SB
Conflicting Flows: (vph)	564	
Potential Capacity: (pcph)	499	
Major LT, Minor TH Impedance Factor:	0.97	
Adjusted Impedance Factor:	0.97	
Capacity Adjustment Factor due to Impeding Movements	0.97	
Movement Capacity: (pcph)	482	

Intersection Performance Summary

Movement	Flow Rate (pcph)	Move Cap (pcph)	Shared Cap (pcph)	Avg. Total Delay (sec/veh)	95% Queue Length (veh)	LOS	Approach Delay (sec/veh)
NB L	58	482 >	583	7.3	0.6	B	7.3
NB R	29	1006 >					
WB L	35	1227		3.0	0.0	A	0.3

Intersection Delay = 1.0 sec/veh

TransPlan Associates, Inc.
1375 Walnut St.
Suite 211
Boulder, CO 80302-
Ph: (303) 442-3130

Streets: (N-S) Whistler Road (E-W) Walton Creek Road
Major Street Direction.... EW
Length of Time Analyzed... 60 (min)
Analyst..... TransPlan-KJ
Date of Analysis..... 9/25/96
Other Information.....Winter Weekend PM Peak Hour.
Two-way Stop-controlled Intersection

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	>1	<0	0	>1	<0	0	>1	<0	0	>1	<0
Stop/Yield			N			N						
Volumes	5	150	140	95	165	10	80	15	60	10	40	5
PHF	.95	.95	.95	.95	.95	.95	.95	.95	.95	.95	.95	.95
Grade		0			0			0			0	
MC's (%)												
SU/RV's (%)												
CV's (%)												
PCE's	1.10			1.10			1.10	1.10	1.10	1.10	1.10	1.10

Adjustment Factors

Vehicle Maneuver	Critical Gap (tg)	Follow-up Time (tf)
Left Turn Major Road	5.00	2.10
Right Turn Minor Road	5.50	2.60
Through Traffic Minor Road	6.00	3.30
Left Turn Minor Road	6.50	3.40

Worksheet for TWSC Intersection

Step 1: RT from Minor Street	NB	SB
Conflicting Flows: (vph)	232	180
Potential Capacity: (pcph)	1056	1122
Movement Capacity: (pcph)	1056	1122
Prob. of Queue-Free State:	0.93	0.99
Step 2: LT from Major Street	**WB**	**EB**
Conflicting Flows: (vph)	305	185
Potential Capacity: (pcph)	1227	1399
Movement Capacity: (pcph)	1227	1399
Prob. of Queue-Free State:	0.91	1.00
TH Saturation Flow Rate: (pcphpl)	1700	1700
RT Saturation Flow Rate: (pcphpl)	1700	1700
Major LT Shared Lane Prob. of Queue-Free State:	0.90	0.99
Step 3: TH from Minor Street	**NB**	**SB**
Conflicting Flows: (vph)	522	590
Potential Capacity: (pcph)	581	535
Capacity Adjustment Factor due to Impeding Movements	0.89	0.89
Movement Capacity: (pcph)	520	479
Prob. of Queue-Free State:	0.97	0.90
Step 4: LT from Minor Street	**NB**	**SB**
Conflicting Flows: (vph)	540	556
Potential Capacity: (pcph)	515	505
Major LT, Minor TH Impedance Factor:	0.81	0.86
Adjusted Impedance Factor:	0.85	0.90
Capacity Adjustment Factor due to Impeding Movements	0.85	0.84
Movement Capacity: (pcph)	437	423

Intersection Performance Summary

Movement	Flow Rate (pcph)	Move Cap (pcph)	Shared Cap (pcph)	Avg. Total Delay (sec/veh)	95% Queue Length (veh)	LOS	Approach Delay (sec/veh)
NB L	92	437 >					
NB T	18	520 >	577	9.0	1.5	B	9.0
NB R	69	1056 >					
SB L	12	423 >					
SB T	46	479 >	493	8.4	0.5	B	8.4
SB R	6	1122 >					
EB L	6	1399		2.6	0.0	A	0.0
WB L	110	1227		3.2	0.2	A	1.1

Intersection Delay = 2.8 sec/veh

TransPlan Associates, Inc.
1375 Walnut St.
Suite 211
Boulder, CO 80302-
Ph: (303) 442-3130

Streets: (N-S) Village Drive (E-W) Walton Creek Road
Major Street Direction.... EW
Length of Time Analyzed... 60 (min)
Analyst..... TransPlan-KJ
Date of Analysis..... 9/25/96
Other Information.....Winter Weekend PM Peak Hour.
Two-way Stop-controlled Intersection

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	>1	<0	0	>1	<0	0	>1	<0	0	>1	<0
Stop/Yield			N			N						
Volumes	45	90	85	10	100	65	105	100	20	80	90	60
PHF	.95	.95	.95	.95	.95	.95	.95	.95	.95	.95	.95	.95
Grade		0			0			0			0	
MC's (%)												
SU/RV's (%)												
CV's (%)												
PCE's	1.10			1.10			1.10	1.10	1.10	1.10	1.10	1.10

Adjustment Factors

Vehicle Maneuver	Critical Gap (tg)	Follow-up Time (tf)
Left Turn Major Road	5.00	2.10
Right Turn Minor Road	5.50	2.60
Through Traffic Minor Road	6.00	3.30
Left Turn Minor Road	6.50	3.40

Worksheet for TWSC Intersection

Step 1: RT from Minor Street	NB	SB
Conflicting Flows: (vph)	140	139
Potential Capacity: (pcph)	1176	1177
Movement Capacity: (pcph)	1176	1177
Prob. of Queue-Free State:	0.98	0.94
Step 2: LT from Major Street	**WB**	**EB**
Conflicting Flows: (vph)	184	173
Potential Capacity: (pcph)	1401	1418
Movement Capacity: (pcph)	1401	1418
Prob. of Queue-Free State:	0.99	0.96
TH Saturation Flow Rate: (pcphpl)	1700	1700
RT Saturation Flow Rate: (pcphpl)	1700	1700
Major LT Shared Lane Prob. of Queue-Free State:	0.99	0.96
Step 3: TH from Minor Street	**NB**	**SB**
Conflicting Flows: (vph)	370	381
Potential Capacity: (pcph)	698	688
Capacity Adjustment Factor due to Impeding Movements	0.95	0.95
Movement Capacity: (pcph)	663	653
Prob. of Queue-Free State:	0.83	0.84
Step 4: LT from Minor Street	**NB**	**SB**
Conflicting Flows: (vph)	416	400
Potential Capacity: (pcph)	608	621
Major LT, Minor TH Impedance Factor:	0.80	0.78
Adjusted Impedance Factor:	0.84	0.83
Capacity Adjustment Factor due to Impeding Movements	0.79	0.82
Movement Capacity: (pcph)	483	507

Intersection Performance Summary

Movement	Flow Rate (pcph)	Move Cap (pcph)	Shared Cap (pcph)	Avg. Total Delay (sec/veh)	95% Queue Length (veh)	LOS	Approach Delay (sec/veh)
NB L	122	483 >					
NB T	116	653 >	584	11.1	2.6	C	11.1
NB R	23	1176 >					
SB L	92	507 >					
SB T	105	653 >	664	9.0	2.2	B	9.0
SB R	69	1177 >					
EB L	52	1418		2.6	0.0	A	0.5
WB L	12	1401		2.6	0.0	A	0.1

Intersection Delay = 5.6 sec/veh

TransPlan Associates, Inc.
1375 Walnut St.
Suite 211
Boulder, CO 80302-
Ph: (303) 442-3130

Streets: (N-S) Village Drive (E-W) Meadow Lane
Major Street Direction.... NS
Length of Time Analyzed... 60 (min)
Analyst..... TransPlan-KJ
Date of Analysis..... 9/25/96
Other Information.....Winter Weekend PM Peak Hour.
Two-way Stop-controlled Intersection

	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	> 1	0	0	1	< 0	0	> 0	< 0	0	0	0
Stop/Yield			N			N						
Volumes	5	20			50	70	50		5			
PHF	.95	.95			.95	.95	.95		.95			
Grade		0			0			0				
MC's (%)												
SU/RV's (%)												
CV's (%)												
PCE's	1.10						1.10		1.10			

Adjustment Factors

Vehicle Maneuver	Critical Gap (tg)	Follow-up Time (tf)
Left Turn Major Road	5.00	2.10
Right Turn Minor Road	5.50	2.60
Through Traffic Minor Road	6.00	3.30
Left Turn Minor Road	6.50	3.40

Worksheet for TWSC Intersection

Step 1: RT from Minor Street	WB	EB
Conflicting Flows: (vph)		90
Potential Capacity: (pcph)		1247
Movement Capacity: (pcph)		1247
Prob. of Queue-Free State:		1.00
Step 2: LT from Major Street	**SB**	**NB**
Conflicting Flows: (vph)		127
Potential Capacity: (pcph)		1491
Movement Capacity: (pcph)		1491
Prob. of Queue-Free State:		1.00
TH Saturation Flow Rate: (pcphpl)		1700
RT Saturation Flow Rate: (pcphpl)		
Major LT Shared Lane Prob. of Queue-Free State:		1.00
Step 4: LT from Minor Street	**WB**	**EB**
Conflicting Flows: (vph)		116
Potential Capacity: (pcph)		907
Major LT, Minor TH Impedance Factor:		1.00
Adjusted Impedance Factor:		1.00
Capacity Adjustment Factor due to Impeding Movements		1.00
Movement Capacity: (pcph)		903

Intersection Performance Summary

Movement	Flow Rate (pcph)	Move Cap (pcph)	Shared Cap (pcph)	Avg. Total Delay (sec/veh)	95% Queue Length (veh)	LOS	Approach Delay (sec/veh)
EB L	58	903 >	927	4.2	0.1	A	4.2
EB R	6	1247 >					
NB L	6	1491		2.4	0.0	A	0.5

Intersection Delay = 1.2 sec/veh

TransPlan Associates, Inc.
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Streets: (N-S) Whistler ~~Drive~~ Rd. (E-W) Skyview ~~Lane~~ Ct.
Major Street Direction.... NS
Length of Time Analyzed... 60 (min)
Analyst..... TransPlan-KJ
Date of Analysis..... 9/25/96
Other Information.....Winter Weekend PM Peak Hour.
Two-way Stop-controlled Intersection

	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	> 1	0	0	1	< 0	0	> 0	< 0	0	0	0
Stop/Yield			N			N						
Volumes	10	110			180	45	25		5			
PHF	.95	.95			.95	.95	.95		.95			
Grade		0			0			0				
MC's (%)												
SU/RV's (%)												
CV's (%)												
PCE's	1.10						1.10		1.10			

Adjustment Factors

Vehicle Maneuver	Critical Gap (tg)	Follow-up Time (tf)
Left Turn Major Road	5.00	2.10
Right Turn Minor Road	5.50	2.60
Through Traffic Minor Road	6.00	3.30
Left Turn Minor Road	6.50	3.40

Worksheet for TWSC Intersection

Step 1: RT from Minor Street	WB	EB
Conflicting Flows: (vph)		212
Potential Capacity: (pcph)		1081
Movement Capacity: (pcph)		1081
Prob. of Queue-Free State:		0.99
Step 2: LT from Major Street	**SB**	**NB**
Conflicting Flows: (vph)		236
Potential Capacity: (pcph)		1323
Movement Capacity: (pcph)		1323
Prob. of Queue-Free State:		0.99
TH Saturation Flow Rate: (pcphpl)		1700
RT Saturation Flow Rate: (pcphpl)		
Major LT Shared Lane Prob. of Queue-Free State:		0.99
Step 4: LT from Minor Street	**WB**	**EB**
Conflicting Flows: (vph)		340
Potential Capacity: (pcph)		673
Major LT, Minor TH Impedance Factor:		0.99
Adjusted Impedance Factor:		0.99
Capacity Adjustment Factor due to Impeding Movements		0.99
Movement Capacity: (pcph)		666

Intersection Performance Summary

Movement	Flow Rate (pcph)	Move Cap (pcph)	Shared Cap (pcph)	Avg. Total Delay (sec/veh)	95% Queue Length (veh)	LOS	Approach Delay (sec/veh)
EB L	29	666 >	713	5.3	0.0	B	5.3
EB R	6	1081 >					
NB L	12	1323		2.7	0.0	A	0.2

Intersection Delay = 0.5 sec/veh

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1375 Walnut St.
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Boulder, CO 80302-
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Streets: (N-S) Whistler ~~Drive~~ Rd. (E-W) Stone ~~Court~~ Ct.
Major Street Direction.... NS
Length of Time Analyzed... 60 (min)
Analyst..... TransPlan-KJ
Date of Analysis..... 9/25/96
Other Information.....Winter Weekend PM Peak Hour.
Two-way Stop-controlled Intersection

	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	> 1	0	0	1	< 0	0	> 0	< 0	0	0	0
Stop/Yield			N			N						
Volumes	0	70			110	40	25		5			
PHF	.95	.95			.95	.95	.95		.95			
Grade		0			0			0				
MC's (%)												
SU/RV's (%)												
CV's (%)												
PCE's	1.10						1.10		1.10			

Adjustment Factors

Vehicle Maneuver	Critical Gap (tg)	Follow-up Time (tf)
Left Turn Major Road	5.00	2.10
Right Turn Minor Road	5.50	2.60
Through Traffic Minor Road	6.00	3.30
Left Turn Minor Road	6.50	3.40

Worksheet for TWSC Intersection

Step 1: RT from Minor Street	WB	EB
Conflicting Flows: (vph)		137
Potential Capacity: (pcph)		1180
Movement Capacity: (pcph)		1180
Prob. of Queue-Free State:		0.99
Step 2: LT from Major Street	**SB**	**NB**
Conflicting Flows: (vph)		158
Potential Capacity: (pcph)		1441
Movement Capacity: (pcph)		1441
Prob. of Queue-Free State:		1.00
TH Saturation Flow Rate: (pcphpl)		1700
RT Saturation Flow Rate: (pcphpl)		
Major LT Shared Lane Prob. of Queue-Free State:		1.00
Step 4: LT from Minor Street	**WB**	**EB**
Conflicting Flows: (vph)		211
Potential Capacity: (pcph)		799
Major LT, Minor TH Impedance Factor:		1.00
Adjusted Impedance Factor:		1.00
Capacity Adjustment Factor due to Impeding Movements		1.00
Movement Capacity: (pcph)		799

Intersection Performance Summary

Movement	Flow Rate (pcph)	Move Cap (pcph)	Shared Cap (pcph)	Avg. Total Delay (sec/veh)	95% Queue Length (veh)	LOS	Approach Delay (sec/veh)
EB L	29	799 >	846	4.4	0.0	A	4.4
EB R	6	1180 >					
NB L	0	1441		2.5	0.0	A	0.0

Intersection Delay = 0.5 sec/veh

TransPlan Associates, Inc.
1375 Walnut St.
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Boulder, CO 80302-
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Streets: (N-S) U.S. 40 (E-W) Dougherty Rd.
Major Street Direction.... NS
Length of Time Analyzed... 60 (min)
Analyst..... TransPlan-KJ
Date of Analysis..... 9/25/96
Other Information.....Winter Weekend PM Peak Hour.
Two-way Stop-controlled Intersection

	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	> 1	0	0	1	< 0	0	> 0	< 0	0	0	0
Stop/Yield			N			N						
Volumes	0	210			285	3	2		2			
PHF	.95	.95			.95	.95	.95		.95			
Grade		0			0			0				
MC's (%)												
SU/RV's (%)												
CV's (%)												
PCE's	1.10						1.10		1.10			

Adjustment Factors

Vehicle Maneuver	Critical Gap (tg)	Follow-up Time (tf)
Left Turn Major Road	5.00	2.10
Right Turn Minor Road	5.50	2.60
Through Traffic Minor Road	6.00	3.30
Left Turn Minor Road	6.50	3.40

Worksheet for TWSC Intersection

Step 1: RT from Minor Street	WB	EB
Conflicting Flows: (vph)		302
Potential Capacity: (pcph)		973
Movement Capacity: (pcph)		973
Prob. of Queue-Free State:		1.00

Step 2: LT from Major Street	SB	NB
Conflicting Flows: (vph)		303
Potential Capacity: (pcph)		1229
Movement Capacity: (pcph)		1229
Prob. of Queue-Free State:		1.00
TH Saturation Flow Rate: (pcphpl)		1700
RT Saturation Flow Rate: (pcphpl)		
Major LT Shared Lane Prob. of Queue-Free State:		1.00

Step 4: LT from Minor Street	WB	EB
Conflicting Flows: (vph)		522
Potential Capacity: (pcph)		528
Major LT, Minor TH Impedance Factor:		1.00
Adjusted Impedance Factor:		1.00
Capacity Adjustment Factor due to Impeding Movements		1.00
Movement Capacity: (pcph)		528

Intersection Performance Summary

Movement	Flow Rate (pcph)	Move Cap (pcph)	Shared Cap (pcph)	Avg. Total Delay (sec/veh)	95% Queue Length (veh)	LOS	Approach Delay (sec/veh)
EB L	2	528 >	685	5.3	0.0	B	5.3
EB R	2	973 >					
NB L	0	1229		2.9	0.0	A	0.0

Intersection Delay = 0.0 sec/veh

SIG/Cinema V1.01 ORGANIZATION: TransPlan Associates, Inc.
Projected Winter Weekend PM Pk. Hr. Walton Creek/U.S. 40 SUMMARY

ANALYST: TransPlan-KJ ANALYSIS DATE: 10-30-96
ANALYSIS PERIOD: PM Peak Hour CASE: US40WTWP

	LANES App	Outbnd	GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT) Lane 1	Lane 2	Lane 3	Lane 4	Lane 5	Lane 6
EB	2	2	L 12.0	TR 12.0				
WB	2	1	LT 12.0	R 12.0				
NB	3	2	L 12.0	T 12.0	R 12.0			
SB	4	2	L 12.0	T 12.0	T 12.0	R 12.0		

Data	EAST L	EAST T	EAST R	WEST L	WEST T	WEST R	NORTH L	NORTH T	NORTH R	SOUTH L	SOUTH T	SOUTH R
Mvt Vol (vph)	35	10	10	130	15	395	15	535	125	410	625	50
PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
%Hvy Vehicles	2	2	2	2	2	2	2	2	2	2	2	2
Arrival Type	3	3	3	3	3	3	3	3	3	3	3	3
RTOR Vol (vph)		5			300			120			45	
Peds/Hour		0			0			0			0	
% Grade		0			0			0			0	
Parkers/Hour		5			0			0			0	
Buses/Hour		0			0			0			0	

SIGNAL SETTINGS: PRETIMED DESIGN ANALYSIS CYCLE LENGTH: 110.0

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB	LTR								
WB	LTR	R							
NB			TR	LTR					
SB		LTR	TR						
GREEN	13.8	37.6	37.6	5.0	0.0	0.0	0.0	0.0	0
YELLOW	4.0	4.0	4.0	2.3	0.0	0.0	0.0	0.0	
RED	0.0	0.0	0.0	1.7	0.0	0.0	0.0	0.0	

LOST TIME PER PHASE: 3.0 SEC LOST TIME PER CYCLE: 9.0 SEC

CAPACITY ANALYSIS RESULTS

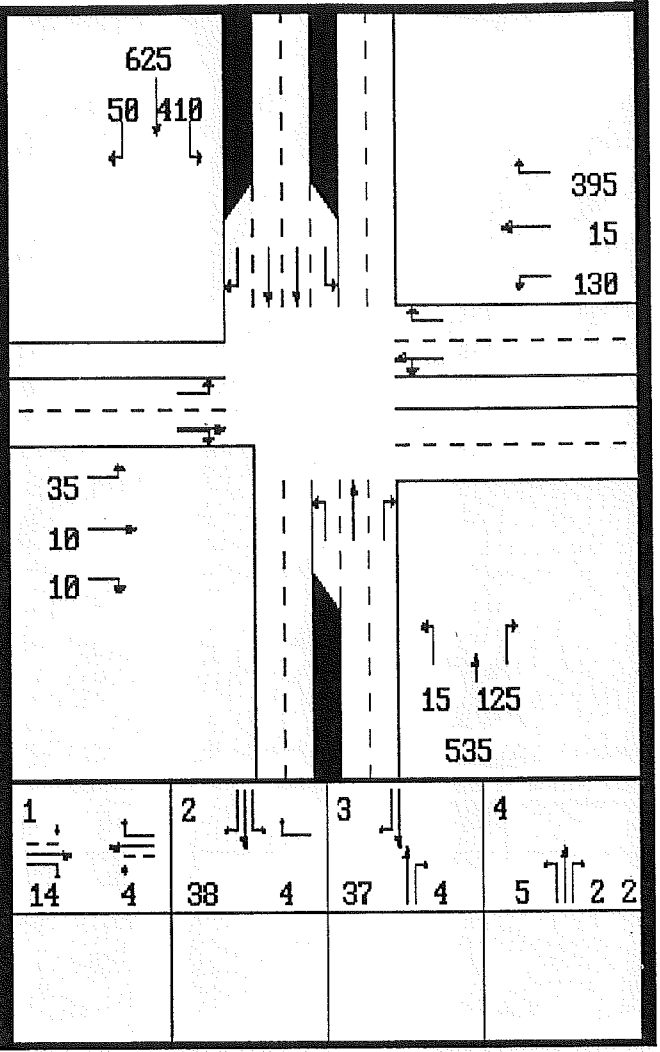
App		Lane Group	Cap (vph)	v/s Ratio	g/C Ratio	Lane Group	v/c Ratio	Delay (sec/veh)	LOS	APPROACH: Delay (sec/veh)	LOS
EB		L	86	0.06	0.13	L	0.45	35.9	D	34.7	D
		TR	208	0.01	0.13	TR	0.08	31.7	D		
WB	*	LT	222	0.10	0.13	LT	0.73	42.2	E	29.7	D
		R	811	0.07	0.51	R	0.13	10.7	B		
NB		L	96	0.01	0.05	L	0.18	37.8	D	22.5	C
	*	T	807	0.32	0.43	T	0.74	22.2	C		
		R	686	0.00	0.43	R	0.01	13.5	B		
SB	*	L	621	0.26	0.35	L	0.73	26.9	D	12.6	B
		T	2716	0.20	0.73	T	0.27	3.8	A		
		R	1155	0.00	0.73	R	0.01	3.1	A		

INTERSECT: DELAY = 18.2 SEC/VEH Xc = 0.73 LOS = C Sum(v/s)CR = 0.67

HCM Summary Results for Case: US40WTWP Walton Creek/U.S. 40

Projected Winter Weekend PM Pk. Hr. PM Peak Hour Version 1.01

			- Lane Grp - Delay (sec/ veh)	L O S	- App - Delay (sec/ veh)	L O S
Lane Grp	v/s	X v/c				
EB L	0.06	0.45	35.9	D	34.7	D
TR	0.01	0.08	31.7	D		
WB LT	*0.10	0.73	42.2	E	29.7	D
R	0.07	0.13	10.7	B		
NB L	0.01	0.18	37.8	D	22.5	C
T	*0.32	0.74	22.2	C		
R	0.00	0.01	13.5	B		
SB L	*0.26	0.73	26.9	D	12.6	B
T	0.20	0.27	3.8	A		
R	0.00	0.01	3.1	A		
Int.	0.67	0.73	18.2	C		



TransPlan Associates, Inc.
1375 Walnut St.
Suite 211
Boulder, CO 80302-
Ph: (303) 442-3130

Streets: (N-S) Chinook Lane (E-W) Walton Creek Rd.
Major Street Direction.... EW
Length of Time Analyzed... 60 (min)
Analyst..... TransPlan-KJ
Date of Analysis..... 9/25/96
Other Information.....Projected Winter Weekend PM Peak Hour.
Two-way Stop-controlled Intersection

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	< 0	0	> 1	0	0	> 0	< 0	0	0	0
Stop/Yield			N			N						
Volumes		450	85	35	440		75		30			
PHF		.95	.95	.95	.95		.95		.95			
Grade		0			0			0				
MC's (%)												
SU/RV's (%)												
CV's (%)												
PCE's				1.10			1.10		1.10			

Adjustment Factors

Vehicle Maneuver	Critical Gap (tg)	Follow-up Time (tf)
Left Turn Major Road	5.00	2.10
Right Turn Minor Road	5.50	2.60
Through Traffic Minor Road	6.00	3.30
Left Turn Minor Road	6.50	3.40

Worksheet for TWSC Intersection

Step 1: RT from Minor Street	NB	SB
Conflicting Flows: (vph)	518	
Potential Capacity: (pcph)	757	
Movement Capacity: (pcph)	757	
Prob. of Queue-Free State:	0.95	

Step 2: LT from Major Street	WB	EB
Conflicting Flows: (vph)	563	
Potential Capacity: (pcph)	924	
Movement Capacity: (pcph)	924	
Prob. of Queue-Free State:	0.96	
TH Saturation Flow Rate: (pcphpl)	1700	
RT Saturation Flow Rate: (pcphpl)		
Major LT Shared Lane Prob. of Queue-Free State:	0.94	

Step 4: LT from Minor Street	NB	SB
Conflicting Flows: (vph)	1018	
Potential Capacity: (pcph)	272	
Major LT, Minor TH Impedance Factor:	0.94	
Adjusted Impedance Factor:	0.94	
Capacity Adjustment Factor due to Impeding Movements	0.94	
Movement Capacity: (pcph)	255	

Intersection Performance Summary

Movement	Flow Rate (pcph)	Move Cap (pcph)	Shared Cap (pcph)	Avg. Total Delay (sec/veh)	95% Queue Length (veh)	LOS	Approach Delay (sec/veh)
NB L	87	255 >	315	18.6	2.0	C	18.6
NB R	35	757 >					
WB L	41	924		4.1	0.0	A	0.3

Intersection Delay = 1.9 sec/veh

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Streets: (N-S) Whistler Road (E-W) Walton Creek Road
Major Street Direction.... EW
Length of Time Analyzed... 60 (min)
Analyst..... TransPlan-KJ
Date of Analysis..... 9/25/96
Other Information.....Projected Winter Weekend PM Peak Hour.
Two-way Stop-controlled Intersection

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	>1	<0	0	>1	<0	0	>1	<0	0	>1	<0
Stop/Yield			N			N						
Volumes	20	295	205	110	290	10	145	20	75	10	45	20
PHF	.95	.95	.95	.95	.95	.95	.95	.95	.95	.95	.95	.95
Grade		0			0			0			0	
MC's (%)												
SU/RV's (%)												
CV's (%)												
PCE's	1.10			1.10			1.10	1.10	1.10	1.10	1.10	1.10

Adjustment Factors

Vehicle Maneuver	Critical Gap (tg)	Follow-up Time (tf)
Left Turn Major Road	5.00	2.10
Right Turn Minor Road	5.50	2.60
Through Traffic Minor Road	6.00	3.30
Left Turn Minor Road	6.50	3.40

Worksheet for TWSC Intersection

Step 1: RT from Minor Street	NB	SB
Conflicting Flows: (vph)	419	310
Potential Capacity: (pcph)	849	964
Movement Capacity: (pcph)	849	964
Prob. of Queue-Free State:	0.90	0.98
Step 2: LT from Major Street	**WB**	**EB**
Conflicting Flows: (vph)	527	316
Potential Capacity: (pcph)	962	1212
Movement Capacity: (pcph)	962	1212
Prob. of Queue-Free State:	0.87	0.98
TH Saturation Flow Rate: (pcphpl)	1700	1700
RT Saturation Flow Rate: (pcphpl)	1700	1700
Major LT Shared Lane Prob. of Queue-Free State:	0.84	0.97
Step 3: TH from Minor Street	**NB**	**SB**
Conflicting Flows: (vph)	872	974
Potential Capacity: (pcph)	380	336
Capacity Adjustment Factor due to Impeding Movements	0.81	0.81
Movement Capacity: (pcph)	309	273
Prob. of Queue-Free State:	0.93	0.81
Step 4: LT from Minor Street	**NB**	**SB**
Conflicting Flows: (vph)	900	916
Potential Capacity: (pcph)	319	312
Major LT, Minor TH Impedance Factor:	0.66	0.75
Adjusted Impedance Factor:	0.73	0.81
Capacity Adjustment Factor due to Impeding Movements	0.72	0.73
Movement Capacity: (pcph)	229	227

Intersection Performance Summary

Movement	Flow Rate (pcph)	Move Cap (pcph)	Shared Cap (pcph)	Avg. Total Delay (sec/veh)	95% Queue Length (veh)	LOS	Approach Delay (sec/veh)
NB L	168	229 >					
NB T	23	309 >	305	92.5	14.0	F	92.5
NB R	87	849 >					
SB L	12	227 >					
SB T	52	273 >	326	15.1	1.2	C	15.1
SB R	23	964 >					
EB L	23	1212		3.0	0.0	A	0.1
WB L	128	962		4.3	0.5	A	1.2

Intersection Delay = 19.2 sec/veh

TransPlan Associates, Inc.
1375 Walnut St.
Suite 211
Boulder, CO 80302-
Ph: (303) 442-3130

Streets: (N-S) Whistler Road (E-W) Walton Creek Road
Major Street Direction.... EW
Length of Time Analyzed... 60 (min)
Analyst..... TransPlan-KJ
Date of Analysis..... 9/25/96
Other Information.....Projected Winter Weekend PM Peak Hour.
Two-way Stop-controlled Intersection

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	> 1	< 0	0	> 1	< 0	1	1	< 0	1	1	< 0
Stop/Yield			N			N						
Volumes	20	295	205	110	290	10	145	20	75	10	45	20
PHF	.95	.95	.95	.95	.95	.95	.95	.95	.95	.95	.95	.95
Grade		0			0			0			0	
MC's (%)												
SU/RV's (%)												
CV's (%)												
PCE's	1.10			1.10			1.10	1.10	1.10	1.10	1.10	1.10

Adjustment Factors

Vehicle Maneuver	Critical Gap (tg)	Follow-up Time (tf)
Left Turn Major Road	5.00	2.10
Right Turn Minor Road	5.50	2.60
Through Traffic Minor Road	6.00	3.30
Left Turn Minor Road	6.50	3.40

Worksheet for TWSC Intersection

Step 1: RT from Minor Street	NB	SB
Conflicting Flows: (vph)	419	310
Potential Capacity: (pcph)	849	964
Movement Capacity: (pcph)	849	964
Prob. of Queue-Free State:	0.90	0.98
Step 2: LT from Major Street	**WB**	**EB**
Conflicting Flows: (vph)	527	316
Potential Capacity: (pcph)	962	1212
Movement Capacity: (pcph)	962	1212
Prob. of Queue-Free State:	0.87	0.98
TH Saturation Flow Rate: (pcphpl)	1700	1700
RT Saturation Flow Rate: (pcphpl)	1700	1700
Major LT Shared Lane Prob. of Queue-Free State:	0.84	0.97
Step 3: TH from Minor Street	**NB**	**SB**
Conflicting Flows: (vph)	872	974
Potential Capacity: (pcph)	380	336
Capacity Adjustment Factor due to Impeding Movements	0.81	0.81
Movement Capacity: (pcph)	309	273
Prob. of Queue-Free State:	0.93	0.81
Step 4: LT from Minor Street	**NB**	**SB**
Conflicting Flows: (vph)	900	916
Potential Capacity: (pcph)	319	312
Major LT, Minor TH Impedance Factor:	0.66	0.75
Adjusted Impedance Factor:	0.73	0.81
Capacity Adjustment Factor due to Impeding Movements	0.72	0.73
Movement Capacity: (pcph)	229	227

Intersection Performance Summary

Movement	Flow Rate (pcph)	Move Cap (pcph)	Shared Cap (pcph)	Avg. Total Delay (sec/veh)	95% Queue Length (veh)	LOS	Approach Delay (sec/veh)
NB L	168	229		55.7	6.6	F	
NB T	23	309 >					36.4
NB R	87	849 >	622	7.0	0.7	B	
SB L	12	227		16.7	0.0	C	
SB T	52	273 >					13.6
SB R	23	964 >	350	13.1	0.9	C	
EB L	23	1212		3.0	0.0	A	0.1
WB L	128	962		4.3	0.5	A	1.2

Intersection Delay = 8.3 sec/veh

TransPlan Associates, Inc.
1375 Walnut St.
Suite 211
Boulder, CO 80302-
Ph: (303) 442-3130

Streets: (N-S) Village Drive (E-W) Walton Creek Road
Major Street Direction.... EW
Length of Time Analyzed... 60 (min)
Analyst..... TransPlan-KJ
Date of Analysis..... 9/25/96
Other Information.....Projected Winter Weekend PM Peak Hour.
Two-way Stop-controlled Intersection

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	>1	<0	0	>1	<0	0	>1	<0	0	>1	1
Stop/Yield			N			N						
Volumes	115	115	150	10	125	70	160	120	20	80	120	125
PHF	.95	.95	.95	.95	.95	.95	.95	.95	.95	.95	.95	.95
Grade		0			0			0			0	
MC's (%)												
SU/RV's (%)												
CV's (%)												
PCE's	1.10			1.10			1.10	1.10	1.10	1.10	1.10	1.10

Adjustment Factors

Vehicle Maneuver	Critical Gap (tg)	Follow-up Time (tf)
Left Turn Major Road	5.00	2.10
Right Turn Minor Road	5.50	2.60
Through Traffic Minor Road	6.00	3.30
Left Turn Minor Road	6.50	3.40

Worksheet for TWSC Intersection

Step 1: RT from Minor Street	NB	SB
Conflicting Flows: (vph)	200	169
Potential Capacity: (pcph)	1096	1137
Movement Capacity: (pcph)	1096	1137
Prob. of Queue-Free State:	0.98	0.87
Step 2: LT from Major Street	**WB**	**EB**
Conflicting Flows: (vph)	279	206
Potential Capacity: (pcph)	1262	1367
Movement Capacity: (pcph)	1262	1367
Prob. of Queue-Free State:	0.99	0.90
TH Saturation Flow Rate: (pcphpl)	1700	1700
RT Saturation Flow Rate: (pcphpl)	1700	1700
Major LT Shared Lane Prob. of Queue-Free State:	0.99	0.88
Step 3: TH from Minor Street	**NB**	**SB**
Conflicting Flows: (vph)	538	580
Potential Capacity: (pcph)	569	541
Capacity Adjustment Factor due to Impeding Movements	0.87	0.87
Movement Capacity: (pcph)	497	473
Prob. of Queue-Free State:	0.72	0.71
Step 4: LT from Minor Street	**NB**	**SB**
Conflicting Flows: (vph)	630	574
Potential Capacity: (pcph)	457	493
Major LT, Minor TH Impedance Factor:	0.62	0.63
Adjusted Impedance Factor:	0.70	0.71
Capacity Adjustment Factor due to Impeding Movements	0.61	0.70
Movement Capacity: (pcph)	280	344

Intersection Performance Summary

Movement	Flow Rate (pcph)	Move Cap (pcph)	Shared Cap (pcph)	Avg. Total Delay (sec/veh)	95% Queue Length (veh)	LOS	Approach Delay (sec/veh)
NB L	185	280 >					
NB T	139	497 >	361	111.0	18.6	F	111.0
NB R	23	1096 >					
SB L	92	344 >	412	19.7	3.9	C	
SB T	139	473 >					13.5
SB R	145	1137		3.6	0.5	A	
EB L	133	1367		2.9	0.3	A	0.9
WB L	12	1262		2.9	0.0	A	0.1

Intersection Delay = 31.5 sec/veh

TransPlan Associates, Inc.
1375 Walnut St.
Suite 211
Boulder, CO 80302-
Ph: (303) 442-3130

Streets: (N-S) Village Drive (E-W) Meadow Lane
Major Street Direction.... NS
Length of Time Analyzed... 60 (min)
Analyst..... TransPlan-KJ
Date of Analysis..... 9/25/96
Other Information.....Projected Winter Weekend PM Peak Hour.
Two-way Stop-controlled Intersection

	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	> 1	0	0	1	< 0	0	> 0	< 0	0	0	0
Stop/Yield			N			N						
Volumes	5	20			50	125	95		5			
PHF	.95	.95			.95	.95	.95		.95			
Grade		0			0			0				
MC's (%)												
SU/RV's (%)												
CV's (%)												
PCE's	1.10						1.10		1.10			

Adjustment Factors

Vehicle Maneuver	Critical Gap (tg)	Follow-up Time (tf)
Left Turn Major Road	5.00	2.10
Right Turn Minor Road	5.50	2.60
Through Traffic Minor Road	6.00	3.30
Left Turn Minor Road	6.50	3.40

Worksheet for TWSC Intersection

Step 1: RT from Minor Street	WB	EB
Conflicting Flows: (vph)		119
Potential Capacity: (pcph)		1205
Movement Capacity: (pcph)		1205
Prob. of Queue-Free State:		1.00
Step 2: LT from Major Street	**SB**	**NB**
Conflicting Flows: (vph)		185
Potential Capacity: (pcph)		1399
Movement Capacity: (pcph)		1399
Prob. of Queue-Free State:		1.00
TH Saturation Flow Rate: (pcphpl)		1700
RT Saturation Flow Rate: (pcphpl)		
Major LT Shared Lane Prob. of Queue-Free State:		1.00
Step 4: LT from Minor Street	**WB**	**EB**
Conflicting Flows: (vph)		145
Potential Capacity: (pcph)		873
Major LT, Minor TH Impedance Factor:		1.00
Adjusted Impedance Factor:		1.00
Capacity Adjustment Factor due to Impeding Movements		1.00
Movement Capacity: (pcph)		869

Intersection Performance Summary

Movement	Flow Rate (pcph)	Move Cap (pcph)	Shared Cap (pcph)	Avg. Total Delay (sec/veh)	95% Queue Length (veh)	LOS	Approach Delay (sec/veh)
EB L	110	869 >	882	4.7	0.5	A	4.7
EB R	6	1205 >					
NB L	6	1399		2.6	0.0	A	0.5

Intersection Delay = 1.6 sec/veh

TransPlan Associates, Inc.
1375 Walnut St.
Suite 211
Boulder, CO 80302-
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Streets: (N-S) Whistler Road (E-W) Skyview Court
Major Street Direction.... NS
Length of Time Analyzed... 60 (min)
Analyst..... TransPlan-KJ
Date of Analysis..... 9/25/96
Other Information.....Projected Winter Weekend PM Peak Hour.
Two-way Stop-controlled Intersection

	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	> 1	0	0	1	< 0	0	> 0	< 0	0	0	0
Stop/Yield			N			N						
Volumes	10	125			195	45	25		5			
PHF	.95	.95			.95	.95	.95		.95			
Grade		0			0			0				
MC's (%)												
SU/RV's (%)												
CV's (%)												
PCE's	1.10						1.10		1.10			

Adjustment Factors

Vehicle Maneuver	Critical Gap (tg)	Follow-up Time (tf)
Left Turn Major Road	5.00	2.10
Right Turn Minor Road	5.50	2.60
Through Traffic Minor Road	6.00	3.30
Left Turn Minor Road	6.50	3.40

Worksheet for TWSC Intersection

Step 1: RT from Minor Street	WB	EB
Conflicting Flows: (vph)		228
Potential Capacity: (pcph)		1061
Movement Capacity: (pcph)		1061
Prob. of Queue-Free State:		0.99
Step 2: LT from Major Street	**SB**	**NB**
Conflicting Flows: (vph)		252
Potential Capacity: (pcph)		1300
Movement Capacity: (pcph)		1300
Prob. of Queue-Free State:		0.99
TH Saturation Flow Rate: (pcphpl)		1700
RT Saturation Flow Rate: (pcphpl)		
Major LT Shared Lane Prob. of Queue-Free State:		0.99
Step 4: LT from Minor Street	**WB**	**EB**
Conflicting Flows: (vph)		372
Potential Capacity: (pcph)		645
Major LT, Minor TH Impedance Factor:		0.99
Adjusted Impedance Factor:		0.99
Capacity Adjustment Factor due to Impeding Movements		0.99
Movement Capacity: (pcph)		639

Intersection Performance Summary

Movement	Flow Rate (pcph)	Move Cap (pcph)	Shared Cap (pcph)	Avg. Total Delay (sec/veh)	95% Queue Length (veh)	LOS	Approach Delay (sec/veh)
EB L	29	639 >	686	5.5	0.0	B	5.5
EB R	6	1061 >					
NB L	12	1300		2.8	0.0	A	0.2

Intersection Delay = 0.5 sec/veh

TransPlan Associates, Inc.
1375 Walnut St.
Suite 211
Boulder, CO 80302-
Ph: (303) 442-3130

Streets: (N-S) Whistler Road (E-W) Stone Lane
Major Street Direction.... NS
Length of Time Analyzed... 60 (min)
Analyst..... TransPlan-KJ
Date of Analysis..... 9/25/96
Other Information.....Projected Winter Weekend PM Peak Hour.
Two-way Stop-controlled Intersection

	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	> 1	0	0	1	< 0	0	> 0	< 0	0	0	0
Stop/Yield			N			N						
Volumes	0	80			120	40	25		5			
PHF	.95	.95			.95	.95	.95		.95			
Grade		0			0			0				
MC's (%)												
SU/RV's (%)												
CV's (%)												
PCE's	1.10						1.10		1.10			

Adjustment Factors

Vehicle Maneuver	Critical Gap (tg)	Follow-up Time (tf)
Left Turn Major Road	5.00	2.10
Right Turn Minor Road	5.50	2.60
Through Traffic Minor Road	6.00	3.30
Left Turn Minor Road	6.50	3.40

Worksheet for TWSC Intersection

Step 1: RT from Minor Street	WB	EB
Conflicting Flows: (vph)		147
Potential Capacity: (pcph)		1166
Movement Capacity: (pcph)		1166
Prob. of Queue-Free State:		0.99
Step 2: LT from Major Street	**SB**	**NB**
Conflicting Flows: (vph)		168
Potential Capacity: (pcph)		1426
Movement Capacity: (pcph)		1426
Prob. of Queue-Free State:		1.00
TH Saturation Flow Rate: (pcphpl)		1700
RT Saturation Flow Rate: (pcphpl)		
Major LT Shared Lane Prob. of Queue-Free State:		1.00
Step 4: LT from Minor Street	**WB**	**EB**
Conflicting Flows: (vph)		231
Potential Capacity: (pcph)		778
Major LT, Minor TH Impedance Factor:		1.00
Adjusted Impedance Factor:		1.00
Capacity Adjustment Factor due to Impeding Movements		1.00
Movement Capacity: (pcph)		778

Intersection Performance Summary

Movement	Flow Rate (pcph)	Move Cap (pcph)	Shared Cap (pcph)	Avg. Total Delay (sec/veh)	95% Queue Length (veh)	LOS	Approach Delay (sec/veh)
EB L	29	778 >	825	4.6	0.0	A	4.6
EB R	6	1166 >					
NB L	0	1426		2.5	0.0	A	0.0

Intersection Delay = 0.5 sec/veh

TransPlan Associates, Inc.
1375 Walnut St.
Suite 211
Boulder, CO 80302-
Ph: (303) 442-3130

Streets: (N-S) U.S. 40 (E-W) Dougherty Rd.
Major Street Direction.... NS
Length of Time Analyzed... 60 (min)
Analyst..... TransPlan-KJ
Date of Analysis..... 9/25/96
Other Information.....Projected Winter Weekend PM Peak Hour.
Two-way Stop-controlled Intersection

	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	1	1	1	1	1	0	>1	<0	0	>1	1
Stop/Yield			N			N						
Volumes	5	320	25	110	430	20	20	0	10	25	0	100
PHF	.95	.95	.95	.95	.95	.95	.95	.95	.95	.95	.95	.95
Grade		0			0			0			0	
MC's (%)												
SU/RV's (%)												
CV's (%)												
PCE's	1.10			1.10			1.10	1.10	1.10	1.10	1.10	1.10

Adjustment Factors

Vehicle Maneuver	Critical Gap (tg)	Follow-up Time (tf)
Left Turn Major Road	5.00	2.10
Right Turn Minor Road	5.50	2.60
Through Traffic Minor Road	6.00	3.30
Left Turn Minor Road	6.50	3.40

Worksheet for TWSC Intersection

Step 1: RT from Minor Street	WB	EB
Conflicting Flows: (vph)	337	453
Potential Capacity: (pcph)	934	816
Movement Capacity: (pcph)	934	816
Prob. of Queue-Free State:	0.88	0.99
Step 2: LT from Major Street	**SB**	**NB**
Conflicting Flows: (vph)	363	474
Potential Capacity: (pcph)	1151	1019
Movement Capacity: (pcph)	1151	1019
Prob. of Queue-Free State:	0.89	0.99
Step 3: TH from Minor Street	**WB**	**EB**
Conflicting Flows: (vph)	952	957
Potential Capacity: (pcph)	354	352
Capacity Adjustment Factor due to Impeding Movements	0.88	0.88
Movement Capacity: (pcph)	313	311
Prob. of Queue-Free State:	1.00	1.00
Step 4: LT from Minor Street	**WB**	**EB**
Conflicting Flows: (vph)	916	974
Potential Capacity: (pcph)	312	289
Major LT, Minor TH Impedance Factor:	0.88	0.88
Adjusted Impedance Factor:	0.91	0.91
Capacity Adjustment Factor due to Impeding Movements	0.90	0.80
Movement Capacity: (pcph)	280	231

Intersection Performance Summary

Movement	Flow Rate (pcph)	Move Cap (pcph)	Shared Cap (pcph)	Avg. Total Delay (sec/veh)	95% Queue Length (veh)	LOS	Approach Delay (sec/veh)
EB L	23	231 >					
EB T	0	311 >	306	13.3	0.4	C	13.3
EB R	12	816 >					
WB L	29	280 >	280	14.3	0.3	C	
WB T	0	313 >					6.4
WB R	116	934		4.4	0.4	A	
NB L	6	1019		3.6	0.0	A	0.1
SB L	128	1151		3.5	0.4	A	0.7

Intersection Delay = 1.5 sec/veh

SIG/Cinema V1.01 ORGANIZATION: TransPlan Associates, Inc.
Buidout with Stone Ct. Extension Walton Creek/U.S. 40 SUMMARY

ANALYST: TransPlan-KJ ANALYSIS DATE: 10-30-96
ANALYSIS PERIOD: PM Peak Hour CASE: US40WTWS

LANES		GEOMETRY: MOVEMENTS SERVICED BY LANE AND LANE WIDTHS (FT)											
App	Outbnd	Lane 1		Lane 2		Lane 3		Lane 4		Lane 5		Lane 6	
EB 2	2	L	12.0	TR	12.0								
WB 2	1	LT	12.0	R	12.0								
NB 3	2	L	12.0	T	12.0	R	12.0						
SB 4	2	L	12.0	T	12.0	T	12.0	R	12.0				

Data	EAST			WEST			NORTH			SOUTH		
	L	T	R	L	T	R	L	T	R	L	T	R
Mvt Vol (vph)	35	10	10	100	15	305	15	625	85	300	735	50
PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
%Hvy Vehicles	2	2	2	2	2	2	2	2	2	2	2	2
Arrival Type	3	3	3	3	3	3	3	3	3	3	3	3
RTOR Vol (vph)		5			285			80			45	
Peds/Hour		0			0			0			0	
% Grade		0			0			0			0	
Parkers/Hour		5			0			0			0	
Buses/Hour		0			0			0			0	

SIGNAL SETTINGS: PRETIMED DESIGN ANALYSIS CYCLE LENGTH: 110.0

PHASE:	1	2	3	4	5	6	7	8	PED ONLY
EB	LTR								
WB	LTR			R					
NB		LTP	TR						
SB			TR	LTR					
GREEN	11.1	5.0	49.9	28.0	0.0	0.0	0.0	0.0	0
YELLOW	2.3	4.0	4.0	2.3	0.0	0.0	0.0	0.0	
RED	1.7	0.0	0.0	1.7	0.0	0.0	0.0	0.0	

LOST TIME PER PHASE: 3.0 SEC LOST TIME PER CYCLE: 9.0 SEC

CAPACITY ANALYSIS RESULTS

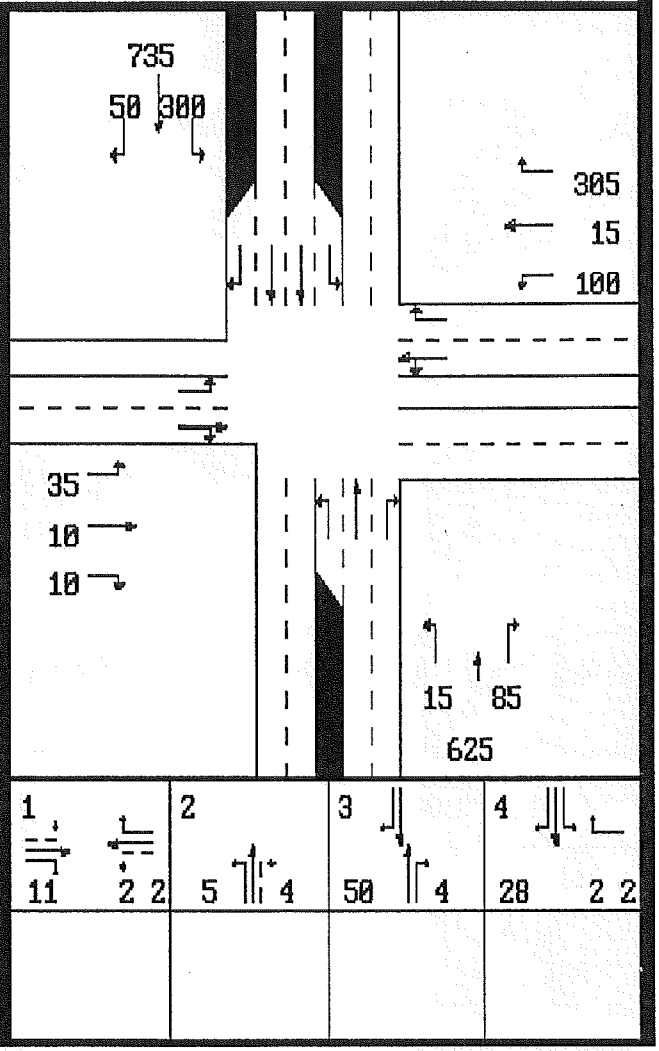
App		Lane Group	Cap (vph)	v/s Ratio	g/C Ratio	Lane Group	v/c Ratio	Delay (sec/veh)	LOS	APPROACH: Delay (sec/veh)	LOS
EB		L	84	0.05	0.11	L	0.46	37.8	D	36.5	D
		TR	170	0.01	0.11	TR	0.09	33.5	D		
WB	*	LT	182	0.08	0.11	LT	0.70	43.6	E	39.5	D
		R	634	0.01	0.40	R	0.03	15.2	C		
NB		L	96	0.01	0.05	L	0.18	37.8	D	15.7	C
	*	T	1014	0.37	0.54	T	0.68	15.2	C		
		R	819	0.00	0.52	R	0.01	9.8	B		
SB	*	L	467	0.19	0.26	L	0.71	31.4	D	11.1	B
		T	2808	0.23	0.75	T	0.31	3.3	A		
		R	1194	0.00	0.75	R	0.01	2.5	A		

INTERSECT: DELAY = 15.3 SEC/VEH Xc = 0.70 LOS = C Sum(v/s)CR = 0.64

HCM Summary Results for Case: US40WTWS Walton Creek/U.S. 40

Buidout with Stone Ct. Extension PM Peak Hour Version 1.01

			- Lane Grp -		- App -	
			Delay	L	Delay	L
	Lane	X	(sec/	O	(sec/	O
	Grp	v/s v/c	veh)	S	veh)	S
EB	L	0.05 0.46	37.8	D	36.5	D
	TR	0.01 0.09	33.5	D		
WB	LT	*0.08 0.70	43.6	E	39.5	D
	R	0.01 0.03	15.2	C		
NB	L	0.01 0.18	37.8	D	15.7	C
	T	*0.37 0.68	15.2	C		
	R	0.00 0.01	9.8	B		
SB	L	*0.19 0.71	31.4	D	11.1	B
	T	0.23 0.31	3.3	A		
	R	0.00 0.01	2.5	A		
	Int.	0.64 0.70	15.3	C		



TransPlan Associates, Inc.
1375 Walnut St.
Suite 211
Boulder, CO 80302-
Ph: (303) 442-3130

Streets: (N-S) Chinook Lane (E-W) Walton Creek Rd.
Major Street Direction.... EW
Length of Time Analyzed... 60 (min)
Analyst..... TransPlan-KJ
Date of Analysis..... 9/25/96
Other Information..... Buildout Winter Weekend PM Peak Hour-St one Ct. Extension
Two-way Stop-controlled Intersection

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	< 0	0	> 1	0	0	> 0	< 0	0	0	0
Stop/Yield			N			N						
Volumes		340	50	35	350		45		30			
PHF		.95	.95	.95	.95		.95		.95			
Grade		0			0			0				
MC's (%)												
SU/RV's (%)												
CV's (%)												
PCE's				1.10			1.10		1.10			

Adjustment Factors

Vehicle Maneuver	Critical Gap (tg)	Follow-up Time (tf)
Left Turn Major Road	5.00	2.10
Right Turn Minor Road	5.50	2.60
Through Traffic Minor Road	6.00	3.30
Left Turn Minor Road	6.50	3.40

Worksheet for TWSC Intersection

Step 1: RT from Minor Street	NB	SB
Conflicting Flows: (vph)	384	
Potential Capacity: (pcph)	885	
Movement Capacity: (pcph)	885	
Prob. of Queue-Free State:	0.96	
Step 2: LT from Major Street	**WB**	**EB**
Conflicting Flows: (vph)	411	
Potential Capacity: (pcph)	1092	
Movement Capacity: (pcph)	1092	
Prob. of Queue-Free State:	0.96	
TH Saturation Flow Rate: (pcphpl)	1700	
RT Saturation Flow Rate: (pcphpl)		
Major LT Shared Lane Prob. of Queue-Free State:	0.95	
Step 4: LT from Minor Street	**NB**	**SB**
Conflicting Flows: (vph)	790	
Potential Capacity: (pcph)	369	
Major LT, Minor TH Impedance Factor:	0.95	
Adjusted Impedance Factor:	0.95	
Capacity Adjustment Factor due to Impeding Movements	0.95	
Movement Capacity: (pcph)	351	

Intersection Performance Summary

Movement	Flow Rate (pcph)	Move Cap (pcph)	Shared Cap (pcph)	Avg. Total Delay (sec/veh)	95% Queue Length (veh)	LOS	Approach Delay (sec/veh)
NB L	52	351 >	464	9.5	0.8	B	9.5
NB R	35	885 >					
WB L	41	1092		3.4	0.0	A	0.3

Intersection Delay = 1.0 sec/veh

TransPlan Associates, Inc.
1375 Walnut St.
Suite 211
Boulder, CO 80302-
Ph: (303) 442-3130

Streets: (N-S) Whistler Road (E-W) Walton Creek Road
Major Street Direction.... EW
Length of Time Analyzed... 60 (min)
Analyst..... TransPlan-KJ
Date of Analysis..... 9/25/96
Other Information..... Buildout Winter Weekend PM Peak Hour- S tone Ct. Extension
Two-way Stop-controlled Intersection

	Eastbound			Westbound			Northbound				Southbound			
	L	T	R	L	T	R	L	T	R		L	T	R	
No. Lanes	0	> 1	< 0	0	> 1	< 0	1	1	< 0		1	1	< 0	
Stop/Yield			N			N								
Volumes	20	265	125	110	260	10	85	20	75		10	45	20	
PHF	.95	.95	.95	.95	.95	.95	.95	.95	.95		.95	.95	.95	
Grade		0			0			0				0		
MC's (%)														
SU/RV's (%)														
CV's (%)														
PCE's	1.10			1.10			1.10	1.10	1.10		1.10	1.10	1.10	

Adjustment Factors

Vehicle Maneuver	Critical Gap (tg)	Follow-up Time (tf)
Left Turn Major Road	5.00	2.10
Right Turn Minor Road	5.50	2.60
Through Traffic Minor Road	6.00	3.30
Left Turn Minor Road	6.50	3.40

Worksheet for TWSC Intersection

Step 1: RT from Minor Street	NB	SB
Conflicting Flows: (vph)	345	280
Potential Capacity: (pcph)	926	999
Movement Capacity: (pcph)	926	999
Prob. of Queue-Free State:	0.91	0.98
Step 2: LT from Major Street	**WB**	**EB**
Conflicting Flows: (vph)	411	285
Potential Capacity: (pcph)	1092	1254
Movement Capacity: (pcph)	1092	1254
Prob. of Queue-Free State:	0.88	0.98
TH Saturation Flow Rate: (pcphpl)	1700	1700
RT Saturation Flow Rate: (pcphpl)	1700	1700
Major LT Shared Lane Prob. of Queue-Free State:	0.86	0.98
Step 3: TH from Minor Street	**NB**	**SB**
Conflicting Flows: (vph)	767	828
Potential Capacity: (pcph)	432	401
Capacity Adjustment Factor due to Impeding Movements	0.84	0.84
Movement Capacity: (pcph)	362	336
Prob. of Queue-Free State:	0.94	0.85
Step 4: LT from Minor Street	**NB**	**SB**
Conflicting Flows: (vph)	796	812
Potential Capacity: (pcph)	366	359
Major LT, Minor TH Impedance Factor:	0.71	0.79
Adjusted Impedance Factor:	0.77	0.83
Capacity Adjustment Factor due to Impeding Movements	0.76	0.76
Movement Capacity: (pcph)	277	271

Intersection Performance Summary

Movement	Flow Rate (pcph)	Move Cap (pcph)	Shared Cap (pcph)	Avg. Total Delay (sec/veh)	95% Queue Length (veh)	LOS	Approach Delay (sec/veh)
NB L	98	277		20.1	1.8	D	
NB T	23	362 >					12.7
NB R	87	926 >	698	6.1	0.6	B	
SB L	12	271		13.9	0.0	C	
SB T	52	336 >					10.8
SB R	23	999 >	422	10.4	0.7	C	
EB L	23	1254		2.9	0.0	A	0.1
WB L	128	1092		3.7	0.4	A	1.1

Intersection Delay = 3.4 sec/veh

TransPlan Associates, Inc.
1375 Walnut St.
Suite 211
Boulder, CO 80302-
Ph: (303) 442-3130

Streets: (N-S) Village Drive (E-W) Walton Creek Road
Major Street Direction.... EW
Length of Time Analyzed... 60 (min)
Analyst..... TransPlan-KJ
Date of Analysis..... 9/25/96
Other Information..... Buildout Winter Weekend PM Peak Hour- S tone Ct. Extension
Two-way Stop-controlled Intersection

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	>1	<0	0	>1	<0	0	>1	<0	0	>1	1
Stop/Yield			N			N						
Volumes	115	115	120	10	125	70	130	120	20	80	120	125
PHF	.95	.95	.95	.95	.95	.95	.95	.95	.95	.95	.95	.95
Grade		0			0			0			0	
MC's (%)												
SU/RV's (%)												
CV's (%)												
PCE's	1.10			1.10			1.10	1.10	1.10	1.10	1.10	1.10

Adjustment Factors

Vehicle Maneuver	Critical Gap (tg)	Follow-up Time (tf)
Left Turn Major Road	5.00	2.10
Right Turn Minor Road	5.50	2.60
Through Traffic Minor Road	6.00	3.30
Left Turn Minor Road	6.50	3.40

Worksheet for TWSC Intersection

Step 1: RT from Minor Street	NB	SB
Conflicting Flows: (vph)	184	169
Potential Capacity: (pcph)	1117	1137
Movement Capacity: (pcph)	1117	1137
Prob. of Queue-Free State:	0.98	0.87
Step 2: LT from Major Street	**WB**	**EB**
Conflicting Flows: (vph)	247	206
Potential Capacity: (pcph)	1307	1367
Movement Capacity: (pcph)	1307	1367
Prob. of Queue-Free State:	0.99	0.90
TH Saturation Flow Rate: (pcphpl)	1700	1700
RT Saturation Flow Rate: (pcphpl)	1700	1700
Major LT Shared Lane Prob. of Queue-Free State:	0.99	0.89
Step 3: TH from Minor Street	**NB**	**SB**
Conflicting Flows: (vph)	522	548
Potential Capacity: (pcph)	581	563
Capacity Adjustment Factor due to Impeding Movements	0.88	0.88
Movement Capacity: (pcph)	509	494
Prob. of Queue-Free State:	0.73	0.72
Step 4: LT from Minor Street	**NB**	**SB**
Conflicting Flows: (vph)	614	558
Potential Capacity: (pcph)	467	503
Major LT, Minor TH Impedance Factor:	0.63	0.64
Adjusted Impedance Factor:	0.71	0.72
Capacity Adjustment Factor due to Impeding Movements	0.62	0.70
Movement Capacity: (pcph)	290	354

Intersection Performance Summary

Movement	Flow Rate (pcph)	Move Cap (pcph)	Shared Cap (pcph)	Avg. Total Delay (sec/veh)	95% Queue Length (veh)	LOS	Approach Delay (sec/veh)
NB L	151	290 >					
NB T	139	509 >	384	46.6	10.1	F	46.6
NB R	23	1117 >					
SB L	92	354 >	427	18.3	3.6	C	
SB T	139	494 >					12.6
SB R	145	1137		3.6	0.5	A	
EB L	133	1367		2.9	0.3	A	1.0
WB L	12	1307		2.8	0.0	A	0.1

Intersection Delay = 14.8 sec/veh

TransPlan Associates, Inc.
1375 Walnut St.
Suite 211
Boulder, CO 80302-
Ph: (303) 442-3130

Streets: (N-S) Village Drive (E-W) Meadow Lane
Major Street Direction.... NS
Length of Time Analyzed... 60 (min)
Analyst..... TransPlan-KJ
Date of Analysis..... 9/25/96
Other Information..... Buildout Winter Weekend PM Peak Hour- S tone Ct. Extension
Two-way Stop-controlled Intersection

	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	> 1	0	0	1	< 0	0	> 0	< 0	0	0	0
Stop/Yield			N			N						
Volumes	10	15			45	105	75		10			
PHF	.95	.95			.95	.95	.95		.95			
Grade		0			0			0				
MC's (%)												
SU/RV's (%)												
CV's (%)												
PCE's	1.10						1.10		1.10			

Adjustment Factors

Vehicle Maneuver	Critical Gap (tg)	Follow-up Time (tf)
Left Turn Major Road	5.00	2.10
Right Turn Minor Road	5.50	2.60
Through Traffic Minor Road	6.00	3.30
Left Turn Minor Road	6.50	3.40

Worksheet for TWSC Intersection

Step 1: RT from Minor Street	WB	EB
Conflicting Flows: (vph)		102
Potential Capacity: (pcph)		1229
Movement Capacity: (pcph)		1229
Prob. of Queue-Free State:		0.99
Step 2: LT from Major Street	**SB**	**NB**
Conflicting Flows: (vph)		158
Potential Capacity: (pcph)		1441
Movement Capacity: (pcph)		1441
Prob. of Queue-Free State:		0.99
TH Saturation Flow Rate: (pcphpl)		1700
RT Saturation Flow Rate: (pcphpl)		
Major LT Shared Lane Prob. of Queue-Free State:		0.99
Step 4: LT from Minor Street	**WB**	**EB**
Conflicting Flows: (vph)		130
Potential Capacity: (pcph)		890
Major LT, Minor TH Impedance Factor:		0.99
Adjusted Impedance Factor:		0.99
Capacity Adjustment Factor due to Impeding Movements		0.99
Movement Capacity: (pcph)		883

Intersection Performance Summary

Movement	Flow Rate (pcph)	Move Cap (pcph)	Shared Cap (pcph)	Avg. Total Delay (sec/veh)	95% Queue Length (veh)	LOS	Approach Delay (sec/veh)
EB L	87	883 >					
			914	4.4	0.3	A	4.4
EB R	12	1229 >					
NB L	12	1441		2.5	0.0	A	1.0

Intersection Delay = 1.5 sec/veh

TransPlan Associates, Inc.
1375 Walnut St.
Suite 211
Boulder, CO 80302-
Ph: (303) 442-3130

Streets: (N-S) Whistler Road (E-W) Skyview Court
Major Street Direction.... NS
Length of Time Analyzed... 60 (min)
Analyst..... TransPlan-KJ
Date of Analysis..... 9/25/96
Other Information..... Buildout Winter Weekend PM Peak Hour- S tone Ct. Extension
Two-way Stop-controlled Intersection

	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	> 1	0	0	1	< 0	0	> 0	< 0	0	0	0
Stop/Yield			N			N						
Volumes	10	80			145	40	20		5			
PHF	.95	.95			.95	.95	.95		.95			
Grade		0			0			0				
MC's (%)												
SU/RV's (%)												
CV's (%)												
PCE's	1.10						1.10		1.10			

Adjustment Factors

Vehicle Maneuver	Critical Gap (tg)	Follow-up Time (tf)
Left Turn Major Road	5.00	2.10
Right Turn Minor Road	5.50	2.60
Through Traffic Minor Road	6.00	3.30
Left Turn Minor Road	6.50	3.40

Worksheet for TWSC Intersection

Step 1: RT from Minor Street	WB	EB
Conflicting Flows: (vph)		174
Potential Capacity: (pcph)		1130
Movement Capacity: (pcph)		1130
Prob. of Queue-Free State:		0.99
Step 2: LT from Major Street	**SB**	**NB**
Conflicting Flows: (vph)		195
Potential Capacity: (pcph)		1384
Movement Capacity: (pcph)		1384
Prob. of Queue-Free State:		0.99
TH Saturation Flow Rate: (pcphpl)		1700
RT Saturation Flow Rate: (pcphpl)		
Major LT Shared Lane Prob. of Queue-Free State:		0.99
Step 4: LT from Minor Street	**WB**	**EB**
Conflicting Flows: (vph)		269
Potential Capacity: (pcph)		740
Major LT, Minor TH Impedance Factor:		0.99
Adjusted Impedance Factor:		0.99
Capacity Adjustment Factor due to Impeding Movements		0.99
Movement Capacity: (pcph)		733

Intersection Performance Summary

Movement	Flow Rate (pcph)	Move Cap (pcph)	Shared Cap (pcph)	Avg. Total Delay (sec/veh)	95% Queue Length (veh)	LOS	Approach Delay (sec/veh)
EB L	23	733 >	790	4.7	0.0	A	4.7
EB R	6	1130 >					
NB L	12	1384		2.6	0.0	A	0.3

Intersection Delay = 0.5 sec/veh

TransPlan Associates, Inc.
1375 Walnut St.
Suite 211
Boulder, CO 80302-
Ph: (303) 442-3130

Streets: (N-S) Whistler Road (E-W) Stone Lane
Major Street Direction.... NS
Length of Time Analyzed... 60 (min)
Analyst..... TransPlan-KJ
Date of Analysis..... 9/25/96
Other Information..... Buildout Winter Weekend PM Peak Hour- S tone Ct. Extension
Two-way Stop-controlled Intersection

	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	> 1	0	0	1	< 0	0	> 0	< 0	0	0	0
Stop/Yield			N			N						
Volumes	45	35			65	85	80		60			
PHF	.95	.95			.95	.95	.95		.95			
Grade		0			0			0				
MC's (%)												
SU/RV's (%)												
CV's (%)												
PCE's	1.10						1.10		1.10			

Adjustment Factors

Vehicle Maneuver	Critical Gap (tg)	Follow-up Time (tf)
Left Turn Major Road	5.00	2.10
Right Turn Minor Road	5.50	2.60
Through Traffic Minor Road	6.00	3.30
Left Turn Minor Road	6.50	3.40

Worksheet for TWSC Intersection

Step 1: RT from Minor Street	WB	EB
Conflicting Flows: (vph)		112
Potential Capacity: (pcph)		1215
Movement Capacity: (pcph)		1215
Prob. of Queue-Free State:		0.94

Step 2: LT from Major Street	SB	NB
Conflicting Flows: (vph)		157
Potential Capacity: (pcph)		1443
Movement Capacity: (pcph)		1443
Prob. of Queue-Free State:		0.96
TH Saturation Flow Rate: (pcphpl)		1700
RT Saturation Flow Rate: (pcphpl)		
Major LT Shared Lane Prob. of Queue-Free State:		0.96

Step 4: LT from Minor Street	WB	EB
Conflicting Flows: (vph)		196
Potential Capacity: (pcph)		815
Major LT, Minor TH Impedance Factor:		0.96
Adjusted Impedance Factor:		0.96
Capacity Adjustment Factor due to Impeding Movements		0.96
Movement Capacity: (pcph)		785

Intersection Performance Summary

Movement	Flow Rate (pcph)	Move Cap (pcph)	Shared Cap (pcph)	Avg. Total Delay (sec/veh)	95% Queue Length (veh)	LOS	Approach Delay (sec/veh)
EB L	92	785 >					
			925	4.7	0.7	A	4.7
EB R	69	1215 >					
NB L	52	1443		2.6	0.0	A	1.5

Intersection Delay = 2.1 sec/veh

TransPlan Associates, Inc.
1375 Walnut St.
Suite 211
Boulder, CO 80302-
Ph: (303) 442-3130

Streets: (N-S) U.S. 40 (E-W) Dougherty Rd.
Major Street Direction.... NS
Length of Time Analyzed... 60 (min)
Analyst..... TransPlan-KJ
Date of Analysis..... 9/25/96
Other Information..... Buildout Winter Weekend PM Peak Hour- S tone Ct. Extension
Two-way Stop-controlled Intersection

	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	1	1	1	1	1	0	> 1	< 0	0	> 1	1
Stop/Yield			N			N						
Volumes	5	280	65	220	400	20	20	0	10	55	0	190
PHF	.95	.95	.95	.95	.95	.95	.95	.95	.95	.95	.95	.95
Grade		0			0			0			0	
MC's (%)												
SU/RV's (%)												
CV's (%)												
PCE's	1.10			1.10			1.10	1.10	1.10	1.10	1.10	1.10

Adjustment Factors

Vehicle Maneuver	Critical Gap (tg)	Follow-up Time (tf)
Left Turn Major Road	5.00	2.10
Right Turn Minor Road	5.50	2.60
Through Traffic Minor Road	6.00	3.30
Left Turn Minor Road	6.50	3.40

Worksheet for TWSC Intersection

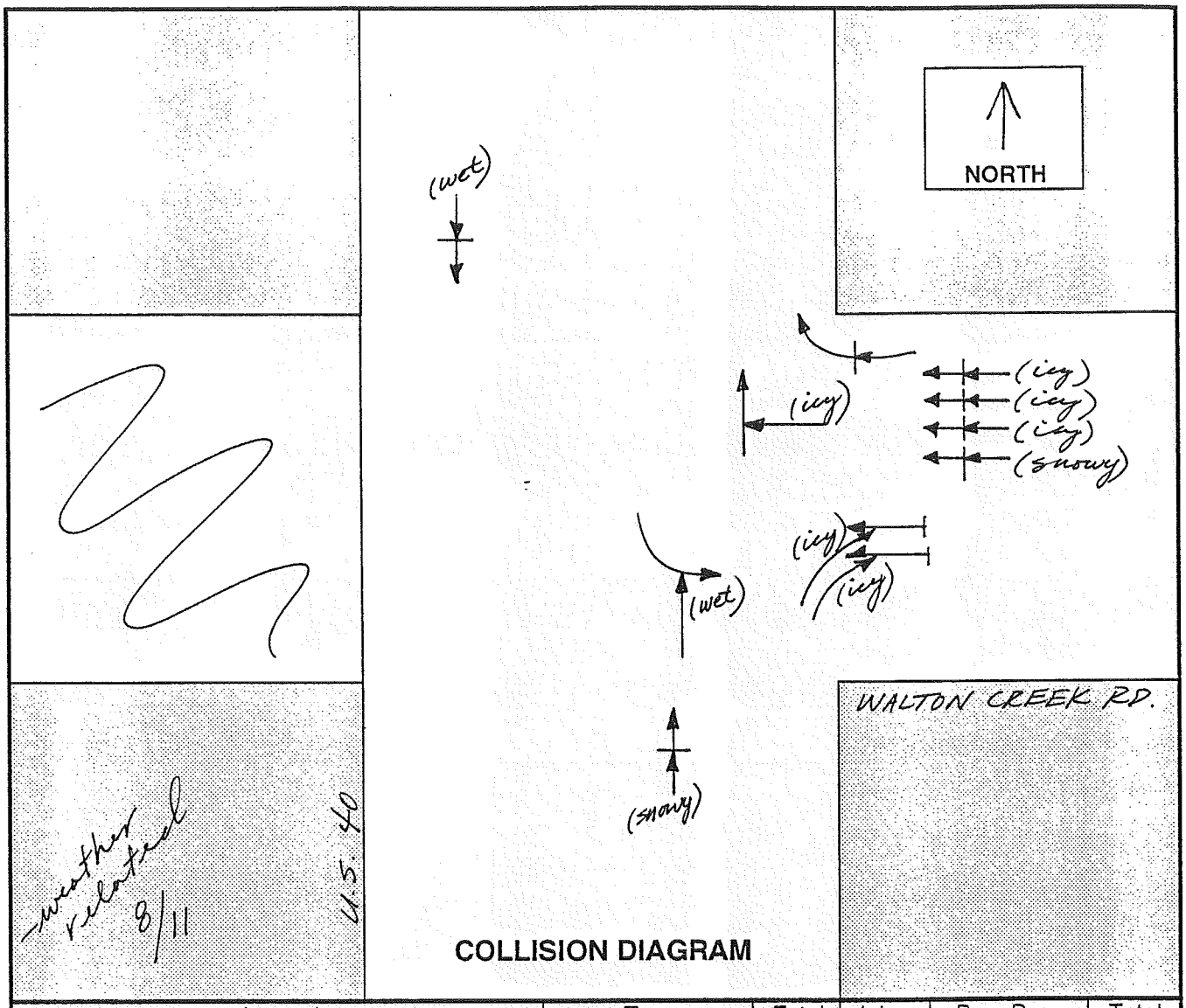
Step 1: RT from Minor Street	WB	EB
Conflicting Flows: (vph)	295	421
Potential Capacity: (pcph)	981	847
Movement Capacity: (pcph)	981	847
Prob. of Queue-Free State:	0.78	0.99
Step 2: LT from Major Street	**SB**	**NB**
Conflicting Flows: (vph)	363	442
Potential Capacity: (pcph)	1151	1056
Movement Capacity: (pcph)	1151	1056
Prob. of Queue-Free State:	0.78	0.99
Step 3: TH from Minor Street	**WB**	**EB**
Conflicting Flows: (vph)	974	1021
Potential Capacity: (pcph)	336	318
Capacity Adjustment Factor due to Impeding Movements	0.77	0.77
Movement Capacity: (pcph)	260	246
Prob. of Queue-Free State:	1.00	1.00
Step 4: LT from Minor Street	**WB**	**EB**
Conflicting Flows: (vph)	958	1064
Potential Capacity: (pcph)	295	256
Major LT, Minor TH Impedance Factor:	0.77	0.77
Adjusted Impedance Factor:	0.83	0.83
Capacity Adjustment Factor due to Impeding Movements	0.81	0.64
Movement Capacity: (pcph)	240	164

Intersection Performance Summary

Movement	Flow Rate (pcph)	Move Cap (pcph)	Shared Cap (pcph)	Avg. Total Delay (sec/veh)	95% Queue Length (veh)	LOS	Approach Delay (sec/veh)
EB L	23	164 >					
EB T	0	246 >	227	18.7	0.6	C	18.7
EB R	12	847 >					
WB L	64	240 >	240	20.4	1.2	D	
WB T	0	260 >					8.3
WB R	220	981		4.7	1.0	A	
NB L	6	1056		3.4	0.0	A	0.0
SB L	255	1151		4.0	1.0	A	1.4

Intersection Delay = 2.8 sec/veh

Intersection Collision Diagrams



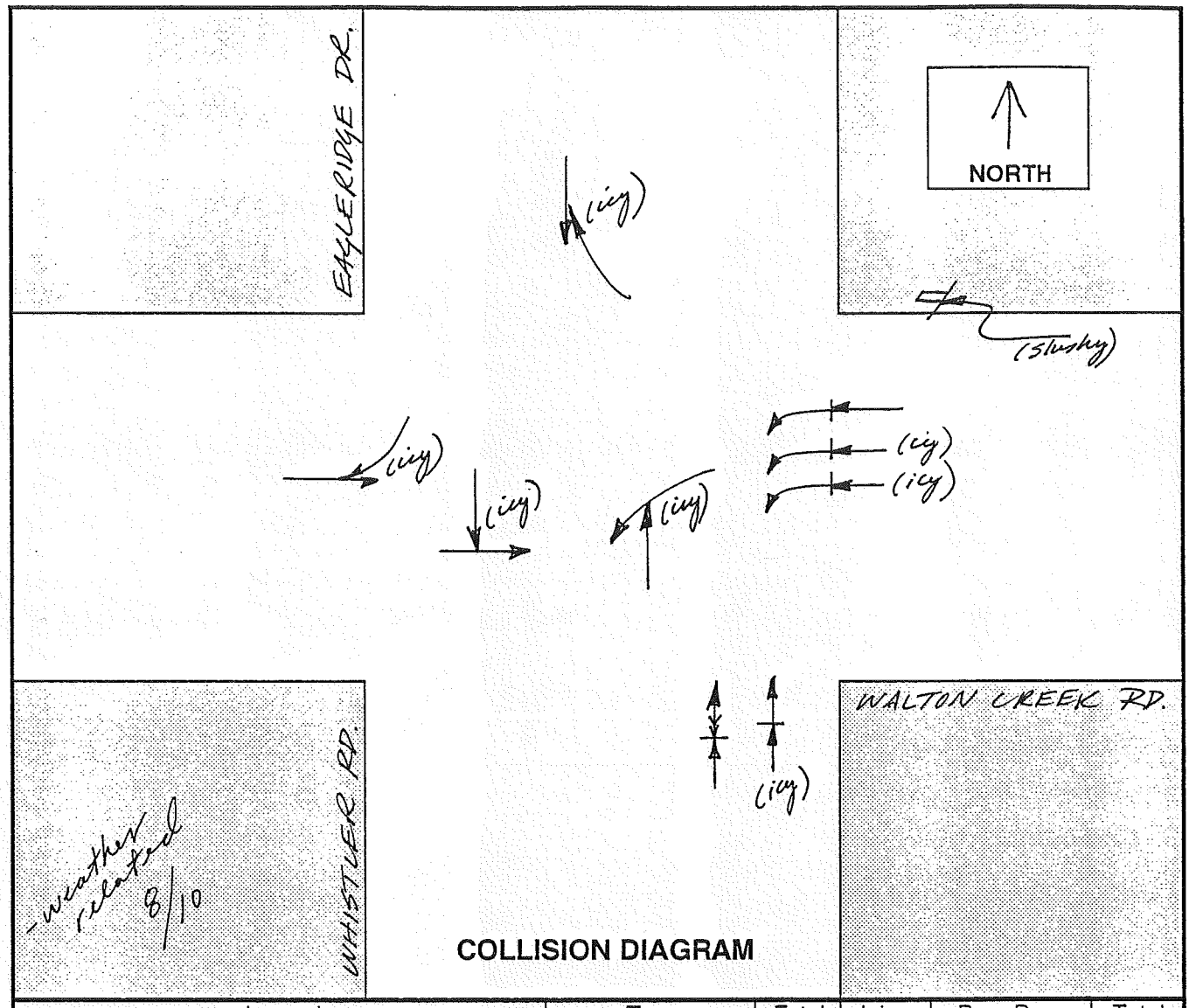
COLLISION DIAGRAM

Legend	Type	Fatal	Injury	Prop.Dam.	Total
Non-Involved Vehicle	Rear End				7
Stopped Vehicle	Right Angle				1
Moving Vehicle	Left Turn				1
Backing Vehicle	Right Turn				2
Pedestrian or Bike	Side Swipe				
Parked Vehicle	Head On				
Fixed Object	Pedestrian				
	Fixed Object				
	Bike				
	Others				

Intersection: U.S. 40 / WALTON CREEK ROAD

Study Dates: FROM SEPT. 1993 TO SEPT. 1996

Date of Study: OCTOBER 31, 1996 By: KLJ



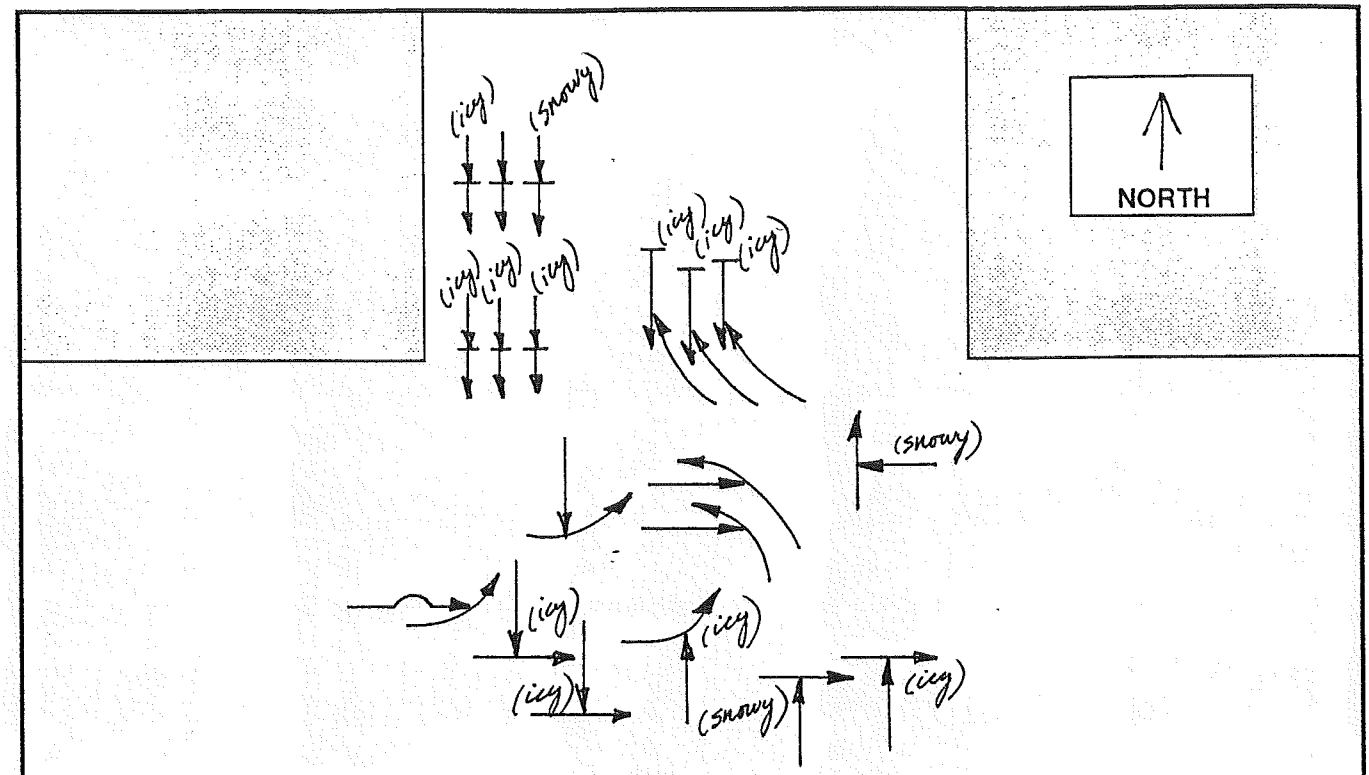
COLLISION DIAGRAM

Legend		Type	Fatal	Injury	Prop.Dam.	Total
← — —	Non-Involved Vehicle	Rear End				5
←|	Stopped Vehicle	Right Angle				1
←	Moving Vehicle	Left Turn				1
←»	Backing Vehicle	Right Turn				2
×— —	Pedestrian or Bike	Side Swipe				
▱	Parked Vehicle	Head On				
□	Fixed Object	Pedestrian				
		Fixed Object				1
		Bike				
		Others				

Intersection: WHISTLER ROAD / WALTON CREEK ROAD

Study Dates: FROM SEPT. 1993 TO SEPT. 1996

Date of Study: OCTOBER 31, 1996 By: KLJ



weather related 14/19

COLLISION DIAGRAM

Legend	Type	Fatal	Injury	Prop.Dam.	Total
Non-Involved Vehicle	Rear End				6
Stopped Vehicle	Right Angle				5
Moving Vehicle	Left Turn				5
Backing Vehicle	Right Turn				3
Pedestrian or Bike	Side Swipe				
Parked Vehicle	Head On				
Fixed Object	Pedestrian				
	Fixed Object				
	Bike				
	Others				

Intersection: VILLAGE DRIVE / WALTON CREEK ROAD

Study Dates: FROM SEPT. 1993 TO SEPT. 1996

Date of Study: OCTOBER 31, 1996 By: KLJ