Appendix B - Transportation
Winslow Subarea Transportation Study Technical Appendix

WINSLOW SUB AREA PLAN
TRANSPORTATION STUDY

TECHNICAL APPENDIX

#1823
January 10, 1997

INTRODUCTION

This appendix discusses the methodologies used to produce the future year traffic projections found in the Winslow Sub Area Plan. Information is organized in a series of chapters, many of which are modified from previously completed technical memoranda. The chapters are as follows:

1. Traffic Counts
2. Through Movement Analysis
3. Trip Generation
4. Trip Assignment Model
5. Alternatives Evaluation
6. Ferry Terminal Alternative Evaluation
7. Winslow Circulator Bus Evaluation

1. TRAFFIC COUNTS

Two types of counts were completed for this study: 24-hour directional volume, and peak hour turning movement counts. The analyses in this study were based primarily on the p.m. peak hour, with 24-hour counts used to verify assumptions and to provide information about traffic levels during other hours of the day. The peak hour in this study was from 4:30 p.m. to 5:30 p.m., when the highest traffic volumes were observed in the Winslow area. TDA used handheld data collection devices to input in the p.m. peak turning movement volumes.

Table 1 shows the location, date and source of the 24-hour roadway volume counts. Table 2 shows the location, date and source of the intersection turning movement counts.

Table 1. Roadway Volume Counts

Location	Date	Source
Winslow Way WB, SR-305 to Ericksen	2/13/96-2/20/96	City
Winslow Way EB, Ericksen to SR-305	2/13/96-2/20/96	City
Winslow Way WB, Ericksen to Madison	2/13/96-2/20/96	City
Winslow Way EB, Madison to Ericksen	2/13/96-2/20/96	City
Ericksen Avenue SB, unspecified	2/13/96-2/20/96	City
Ericksen Avenue NB, unspecified	2/13/96-2/20/96	City
Wyatt Way EB, Grow to Madison	2/23/96-3/1/96	City
Wyatt Way WB, Madison to Grow	2/23/96-3/1/96	City
Madison Ave NB, Winslow to Wyatt	2/23/96-3/1/96	City
Madison Ave SB, Wyatt to Winslow	2/23/96-3/1/96	City
Madison Ave NB, Wyatt to High School	2/23/96-3/1/96	City
Madison Ave SB, High School to Wyatt	2/23/96-3/1/96	City
Winslow Way WB, Ferncliff to SR-305	3/7/96-3/14/96	City
Winslow Way EB, SR-305 to Ferncliff	3/7/96-3/14/96	City
High School Rd WB, Ferncliff to SR-305	3/7/96-3/14/96	City
High School Rd EB, SR-305 to Ferncliff	3/7/96-3/14/96	City
Ferncliff Ave NB, High School to Winslow	3/7/96-3/14/96	City
Ferncliff Ave NB, High School to Winslow	3/7/96-3/14/96	City

Table 2. Intersection Turning Movement Counts

Intersection	Date	Source
SR-305/Winslow Way	12/07/95	WSDOT
SR-305/Madison Road	7/10/96	WSDOT
SR-305/High School Road	12/21/95	WSDOT
Wyatt/Madison	2/14/96	TDA
Madison/High School	2/14/96	TDA
Winslow/Madison	2/8/96	TDA
Winslow/Madison*	7/30/96*	TDA
Winslow/Ericksen	2/13/96	TDA
High School/ Sportsman Club Road	3/26/96	TDA
Winslow Way/Ferncliff	3/21/96	TDA
Sportsman Club/New Brooklyn	4/18/96	TDA

*Count completed to check seasonal variation in traffic volumes. Results showed this location had slightly higher volumes occurring in February than in July.

2. THROUGH MOVEMENT ANALYSIS

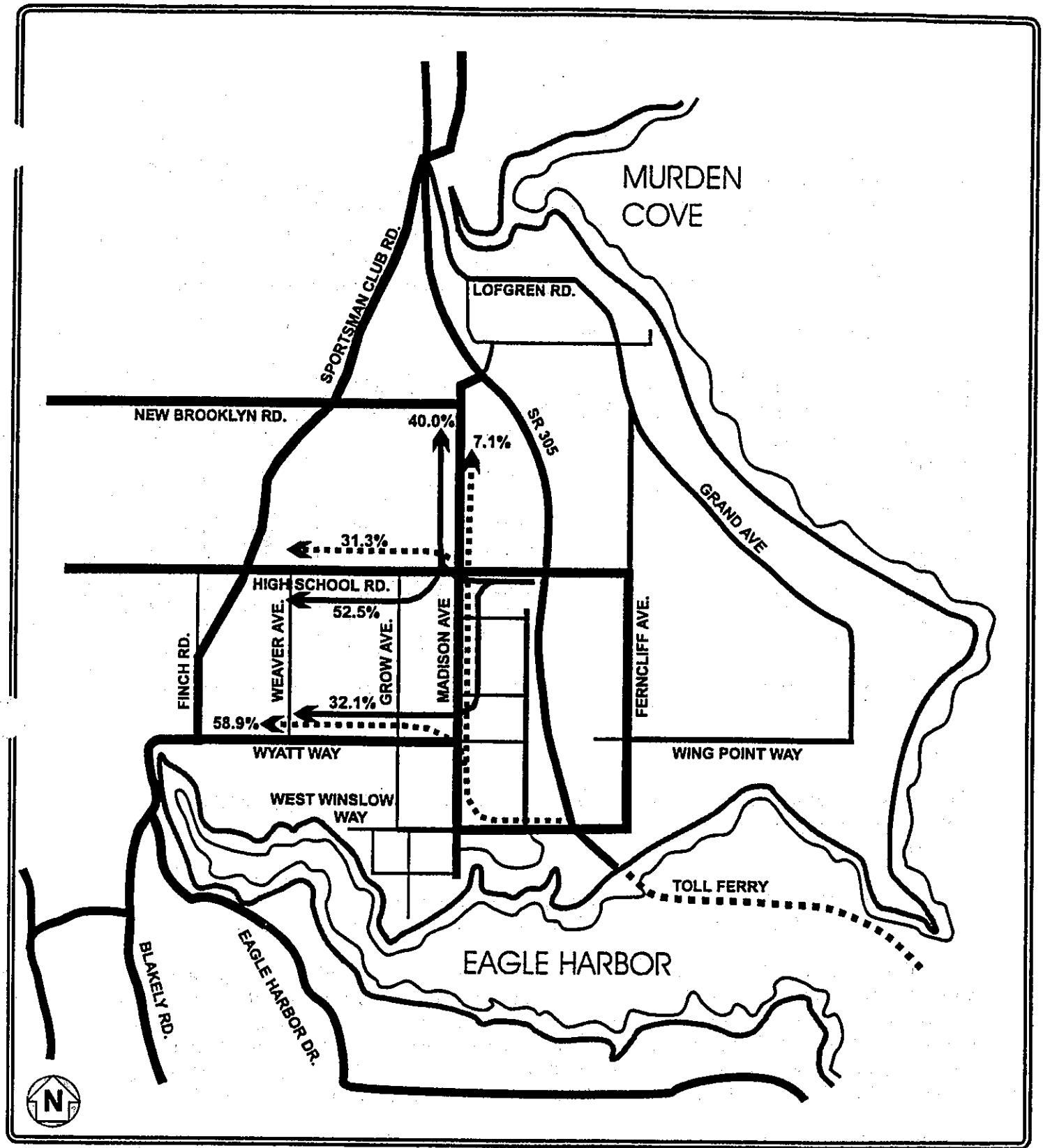
On Thursday, July 25, 1996, a license plate survey was conducted during the p.m. peak hour to evaluate the impact of through movements on Winslow area traffic. Through movements are those which travel from one collection point to another, not remaining in the downtown core.

A total of 1,474 vehicle plates were recorded between 4:30 p.m. to 5:30 p.m. The following table shows the collection points and describes the traffic volumes data collected.

Table 3. Location of Collection Points and Description of Data Collected

Collection Point	Traffic Direction	Comments
A. High School Road west of SR-305	WB	All entering volumes collected
B. Winslow Way west of SR-305	WB	All entering volumes collected
C. Wyatt Way west of Finch	WB	Only through movements on Wyatt included
D. High School Rd west of Sportsman Club Rd.	WB	Only through movement traffic on High School Road included
E. Madison Avenue South of New Brooklyn	NB	All exiting volumes collected

Figure 1 shows the location of each study station and the distribution of through trips by station.



WINSLOW

PERCENT OF DIRECT THROUGH TRIPS TO TOTAL THROUGH TRIPS
PM PEAK HOUR

TDA INC.

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FIGURE 1

Results

Results are summarized in Table 4. The table shows the number of records and the number of matches recorded at each station. Stations C, D and E were matched to stations A and B. The results show that approximately 35% of all trips entering Winslow in the westbound direction (at SR-305/High School Road or SR-305/Winslow Way W.) continue through to either the western or southern portions of Bainbridge Island. The remaining 65% either return to the SR-305 corridor, or remain within Winslow. Through movements that remained within Winslow for more than the observation period (extended shopping trips, for example) were not included in these statistics.

Table 4. Through Movement Analysis Statistics

	Entering Stations		Exiting Stations			
	Station A	Station B	Station C	Station D	Station E	Total
Entries	451	310	378	219	116	761
Valid*	378	272	359	207	112	650
Matches	142	86	109	75	44	228
% of Valid	37.6%	31.6%	30.4%	36.2%	39.3%	35.1%
Match A	--	--	53	59	30	142
Match B	--	--	56	16	14	86
% of total through	62.3%	37.7%	47.8%	32.9%	19.3%	100.0%

*Records within the first and last 3 minutes of the analysis were eliminated since no matches were possible (a vehicle could not travel from entering to exiting point during that period).

Travel Times

There were two types of through movements measured, differentiated by the length of time spent traveling from one data collection point to another. The two types of through trips measured are referred to as:

Direct Trips - trips that use Winslow area streets without stopping for goods of services.
Non-Direct Trips - trips that stop in Winslow prior to completing the through trip.

Travel times were used to determine whether persons were traveling through Winslow on a direct or non-direct trip. Table 5 shows the number of trips by travel time at each station. Based on previous analyses of route travel time, trips under 5 minutes were assumed to be direct trips. Results show that nearly 59% (33 of 56) of through movements between Station B (Winslow Way/SR-305) and Station C (Wyatt/Finch) are direct trips. From Station A (High School/SR-305), Station D at High School Road/Sportsman Club Road, 52.5% (31 of 59) of through movements are direct trips.

Overall, approximately 43% of through movements are direct trips and do not make a stop within Winslow. The remaining 57% have travel times above 5 minutes (non-direct trips) implying that some type of stop was made. Approximately 15% of all traffic entering at Stations A or B were direct trips.

Table 5. Results of Travel Time Analysis

Station A: High School Road, west of SR-305				
	Station C	Station D	Station E	Total
< 5 minutes	17	31	12	60
5 to 7 min	2	0	1	3
7 to 10 min	9	3	1	13
10 min or more	25	25	16	66
Total	53	59	30	142
% direct trips to through	32.1%	52.5%	40.0%	42.3%
% of total through trips	37.3%	41.5%	21.1%	100.0%
% direct trips to all trips				16.1%
		Number (%) of entries at A		371 (38.3%)

Station B: Winslow Way, west of SR-305				
	Station C	Station D	Station E	Total
< 5 minutes	33	5	1	39
5 to 7 min	5	3	2	10
7 to 10 min	5	1	2	8
10 min or more	13	7	9	29
Total	56	16	14	86
% direct trips to through	58.9%	31.3%	7.1%	45.3%
% of total through trips	65.1%	18.6%	16.3%	100.0%
% direct trips to all trips				14.3%
		Number (%) of entries at B		272 (31.6%)

Combined Volumes: Stations A and B				
	Station C	Station D	Station E	Total
< 5 minutes	50	36	13	99
5 to 7 min	7	3	3	13
7 to 10 min	14	4	3	21
10 min or more	38	32	25	95
Total	109	75	44	228
% direct trips to through	45.9%	48.0%	29.5%	43.4%
% of total through trips	47.8%	32.9%	19.3%	100.0%
% direct trips to all trips				15.2%
		Number (%) of total entries		650 (35.1%)

Conclusion

Based on the results of the through movement survey, the construction of a bypass route could reduce the number of trips through the core area by at least 15%, without negatively impacting the business community. Additionally, through trips traveling eastbound could also be diverted, further lowering

the number of through trips in the core area. Success of a bypass route depends on adequate traffic calming measures and providing equal or near equal travel times on the bypass route. Redirecting these through trips around Winslow's core may allow new development to occur without negatively impacting the existing roadway network.

3. TRIP GENERATION

Growth in Traffic

Changes in land use dictate the number of new cars which will be placed on Winslow area roadways. A total of approximately 1,500 new dwelling units and 439,000 s.f. of new commercial space was assumed. Table 6 shows the growth in p.m. peak hour auto trips by zone in Year 2012, due to increases in residential growth.

Table 6. Traffic Growth

		Auto Trips					Pedestrian/Transit Trips	
		Work Trips		Non-Work Trips		Work/Non-work Trips		
Zone	Residential Units	Inbound	Outbound	Inbound	Outbound	Total	Inbound	Outbound
A	200	47	24	7	7	86	18	6
B	200	32	17	10	10	68	31	11
C	120	12	6	4	4	27	27	12
D	380	20	10	14	14	58	104	47
E	40	1	1	0	0	3	13	6
F	230	2	1	3	3	9	78	39
G	125	7	3	8	8	25	31	12
H	160	26	13	8	8	55	25	9
I	40	5	3	3	3	14	6	2
Total	1495	153	79	57	57	345	333	144

The location of the zone affects the number of work or non-work trips made by automobile or made by foot, bicycle or transit. For example, a zone near the ferry terminal would likely have more pedestrian trips than a more remote zone. The percentage of trips made by foot was based on studies by Fruin (1971) and Bowman, Fruin and Zegeer (1989). To be conservative, no further reductions were assumed for the introduction of the Winslow circulating bus.

Retail Trips

Retail trips were also estimated by retail zone. The number of trips is based on the trip generation rates established by the Institute for Transportation Engineers (ITE) Trip Generation Rates for specialty retail (ITE land use 814). As per ITE instructions, a 45% passby adjustment was made, which reflects that existing trips to the area may also access the future retail constructed in the area.

Table 7. Retail Traffic Growth

RETAIL PROJECTIONS							
Zone	s.f. (thousands)	ITE PM Peak	w/passby adj	In	Out	Internal	External
V	100	493	271	130	141	41	230
W	82	404	222	107	116	12	210
X	147	725	399	191	207	40	359
Y	40	197	108	52	56	12	96
Z	70	345	190	91	99	9	181
Total	439	2164	1190	571	619	114	1077

*Specialty Retail (ITE Land Use 814)

A total of 1190 new p.m. peak hour trips were assumed to be added to the Winslow System. Of these 114 were assumed to be new internal (within Winslow) auto trips, while the remainder were assumed to be from persons not living within Winslow (area retail serves all of Bainbridge Island as well as outlying areas).

4. TRAFFIC ASSIGNMENT MODEL

A peak hour model was developed to assess the impacts of the changes in land use. The model was used to assign new traffic, as projected in the trip generation estimate, to area roads. The spreadsheet-based model assigned future traffic based on existing turning movements, traffic volumes and travel patterns. The No Action, Sanctuary and Dispersed alternatives were modeled, as described below:

No Action -- Growth in traffic followed existing patterns, with increases in both internal and through trips based on increases in land use.

Sanctuary Alternative -- Through trips (trips that travel through Winslow without stopping), were reassigned to SR-305 to show the effects of the bypass route.

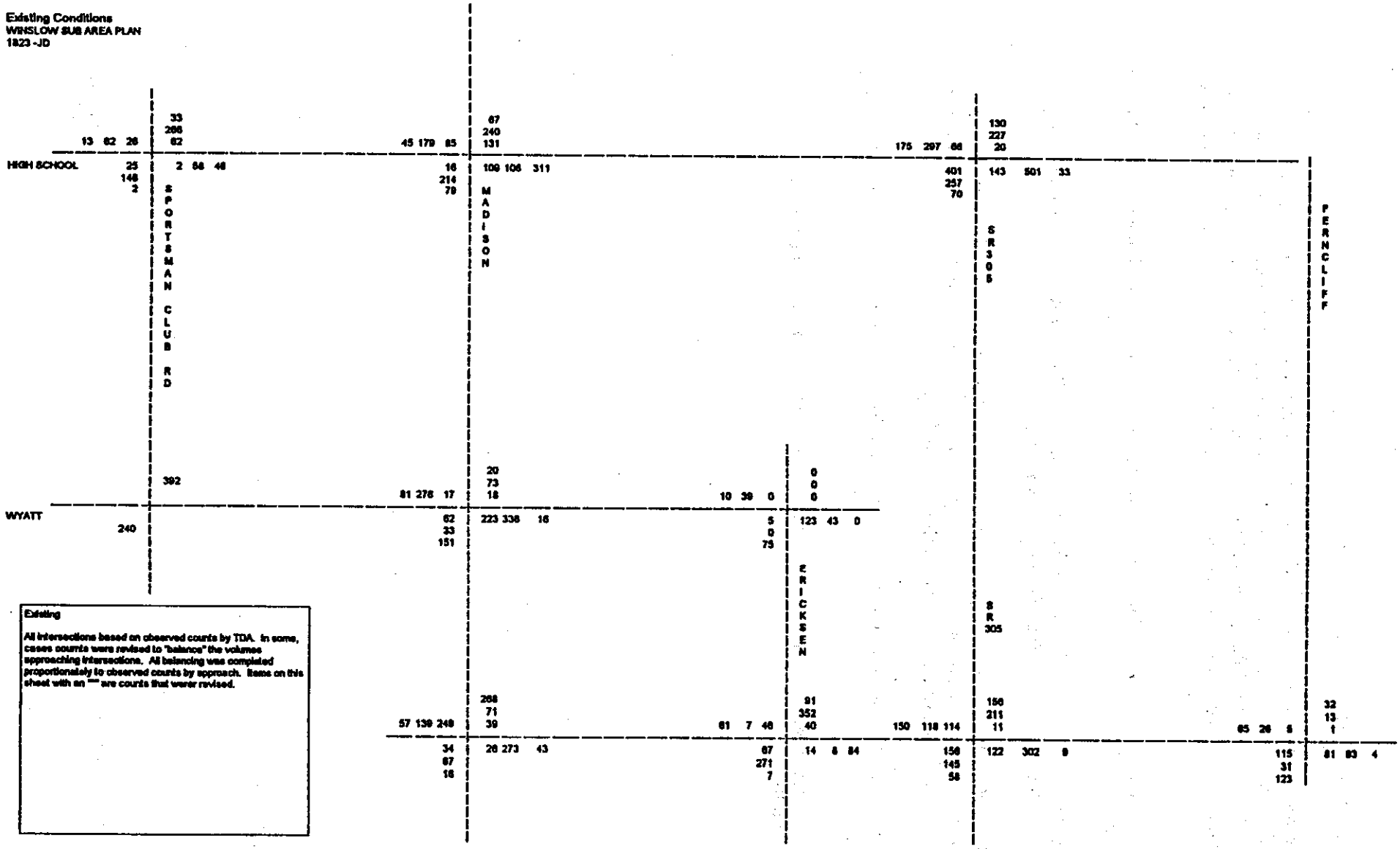
Dispersed Alternative -- Trips were redistributed to the new intersection on SR-305, assumed to be located at Knetchel Way. Through trips were reassigned on SR-305 bypass route. Ericksen Avenue was changed to a southbound one-way street south of Wyatt Way.

Figures 2 through 5 show the total turning movement counts for existing conditions and each future year alternative.

Level of Service analyses were run at all study intersection. The printouts from the LOS calculations are found in Appendix A.

Figure 3

Existing Conditions
WINSLOW SUB AREA PLAN
1823 -JD

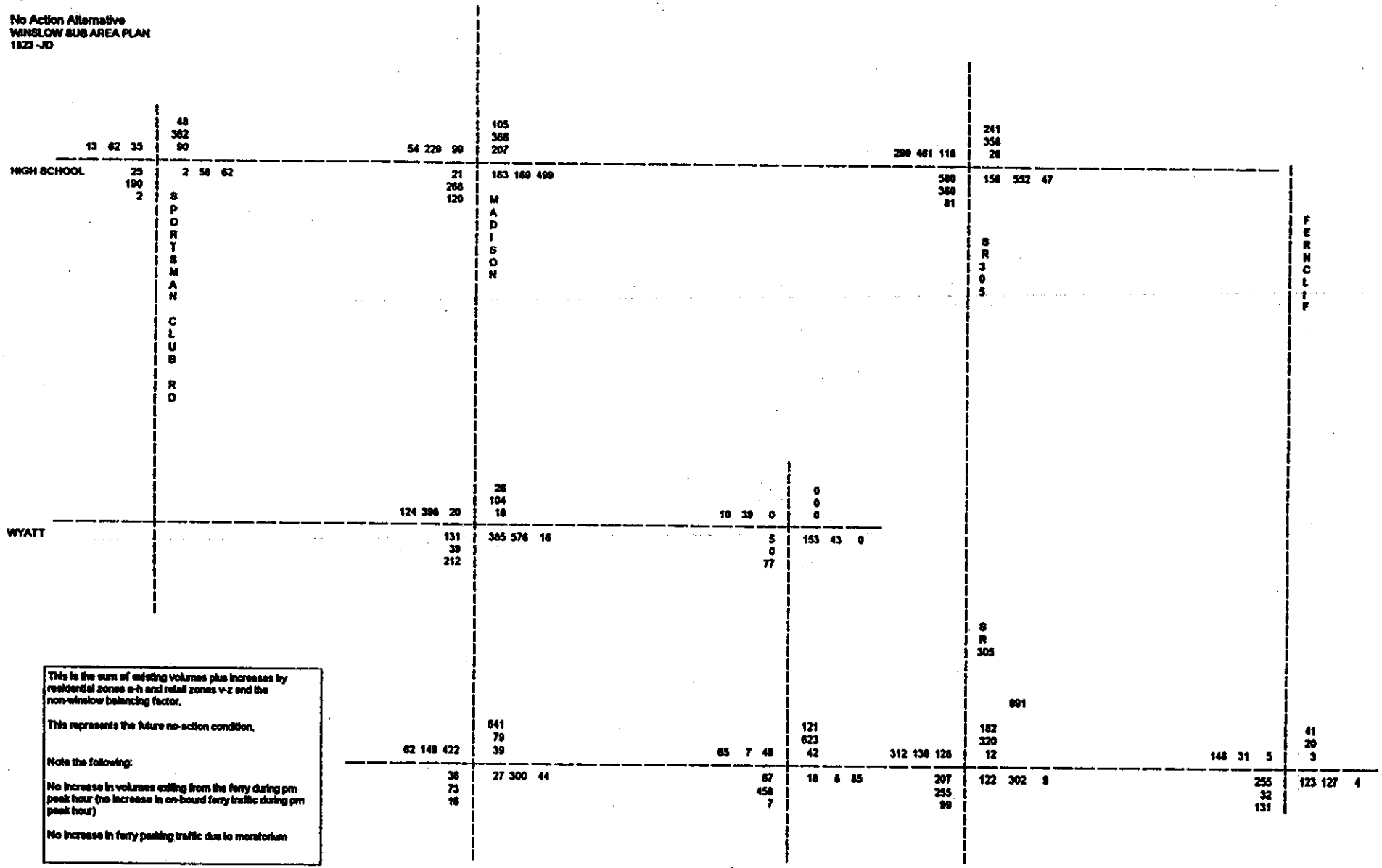


Existing

All intersections based on observed counts by TDA. In some, cases counts were revised to "balance" the volumes approaching intersections. All balancing was completed proportionately to observed counts by approach. Items on this sheet with an "*" are counts that were revised.

Figure 3

No Action Alternative
WINSLOW SUB AREA PLAN
1823 -JD



This is the sum of existing volumes plus increases by residential zones a-h and retail zones v-z and the non-winslow balancing factor.

This represents the future no-action condition.

Note the following:

No increase in volumes exiting from the ferry during pm peak hour (no increase in on-board ferry traffic during pm peak hour)

No increase in ferry parking traffic due to moratorium

Figure 4

Sanctuary Alternative
WINSLOW SUB AREA PLAN
1823 -JD

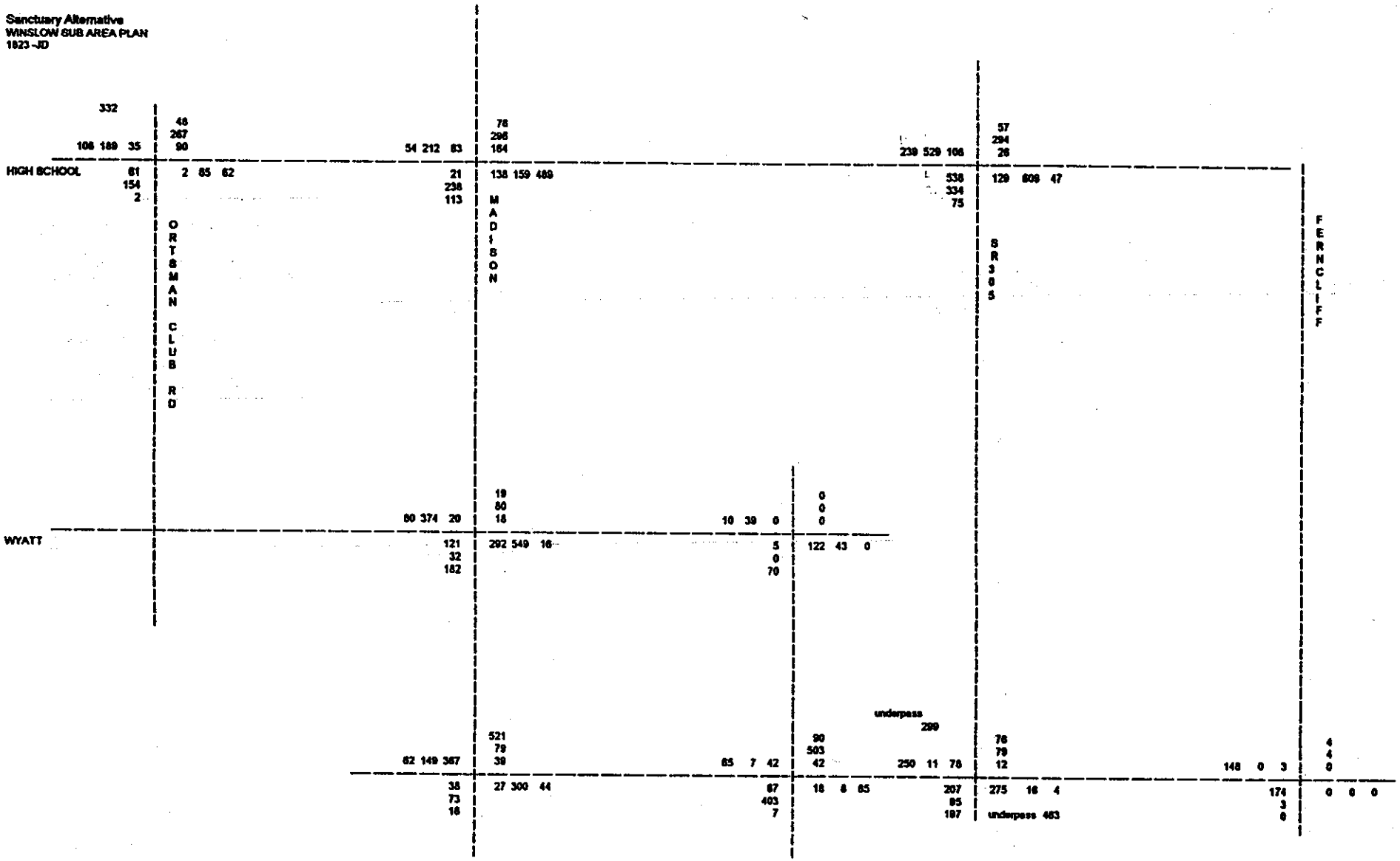


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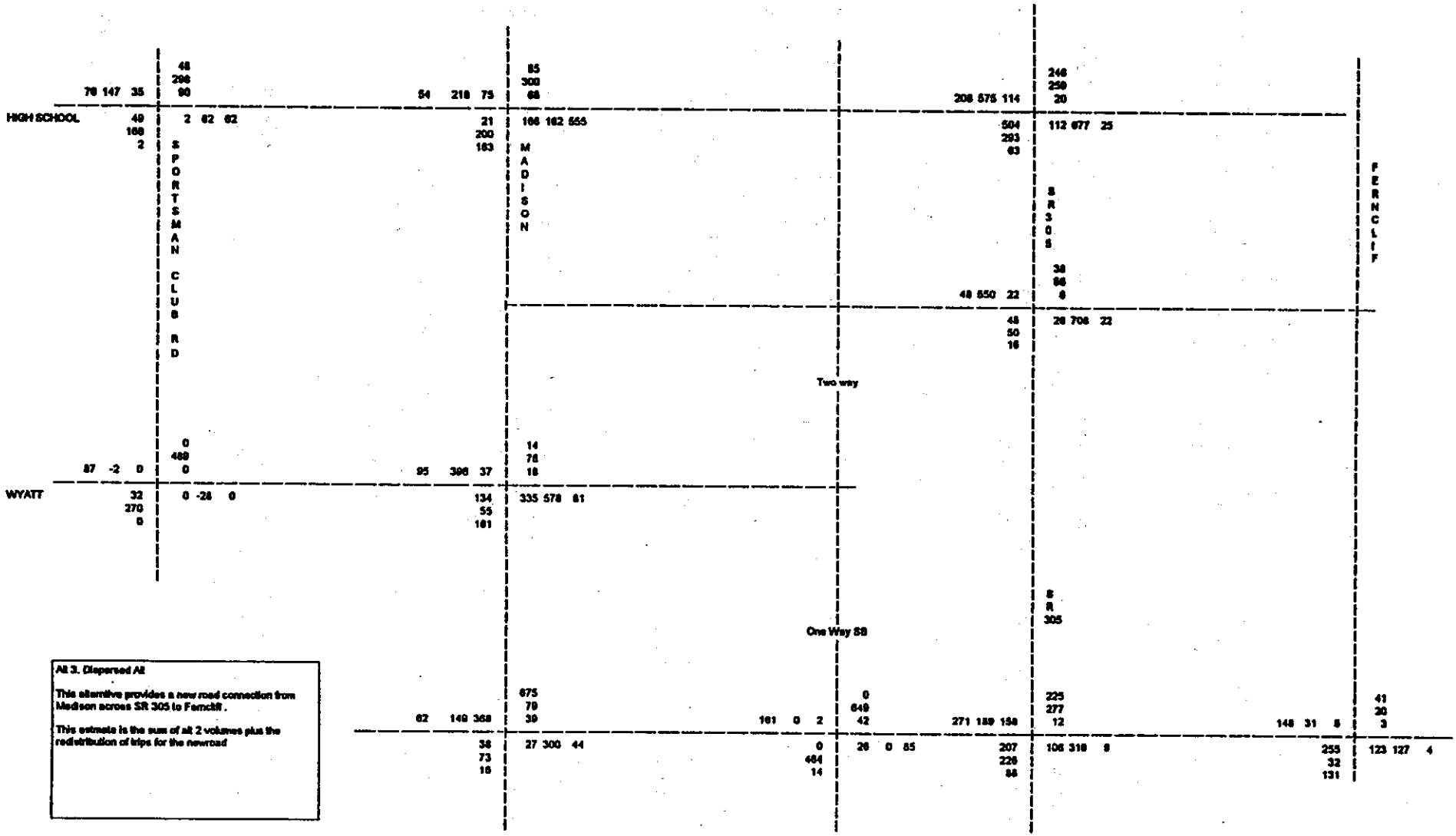
Figure 8

Dispersed Alternative

WINSLOW SUB AREA PLAN
1823 -JD



5. ALTERNATIVES EVALUATION

A numeric evaluation was conducted to develop a single performance indicator of how well each alternative meets the evaluation criteria.

- For each criteria, points were assigned based on the standard. For example, for intersection and roadway LOS, 10 points were given for LOS A and 6 points for LOS E. The total scores were then normalized, so that in all cases the existing condition score equaled 100 points. This allows comparison of each alternative to existing conditions.

Roadway LOS and Intersection LOS

The following scoring was applied to every intersection or roadway segment to result in an overall score. The overall score is the sum of the points assigned for each individual roadway segment or intersection. Intersection LOS results are found in the transportation section of the Winslow Sub Area Plan. The LOS F score of -2 points was assigned because LOS E is considered by the City as the minimum standard.

Scoring: LOS A=10, LOS B=9 , LOS C=8, LOS D=7, LOS E=6, LOS F= -2

Table 8. Intersection LOS

Criterion	Existing	No Action	Sanctuary	Dispersed
Intersection LOS Score:	52	20	55	60
Normalized Score:	100	38	106	115

As seen in the table above, the Dispersed alternative provides the best LOS at all study intersections. However, the Dispersed Alternative included signalization of Winslow Way/Madison Avenue and Wyatt Way/Madison Avenue. Both the Sanctuary and Dispersed alternatives provide improved operations over existing intersection LOS.

Table 9. Roadway LOS

Criterion	Existing	No Action	Sanctuary	Dispersed
Roadway LOS Score:	126	105	123	119
Normalized Score:	100	83	98	94

The table above shows that the Sanctuary alternative provides the best roadway LOS. The bypass road channels much of the "short-cut" traffic around Winslow's core. As seen in the scores, roadways are expected to be more congested than current conditions.

Travel Time

The total minutes of travel time for the shortest route from the intersection of Winslow Way/SR-305 to the intersection of Finch Road/Wyatt Way was used to score the alternatives. The inverse of the travel time result was normalized to produce the scores below.

Table 10. Travel Time

Criterion	Existing	No Action	Sanctuary	Dispersed
Travel Time Result (minutes):	3.4	7.6	5.5	5.9
Normalized Score:	100	45	61	57

The scores show that travel through Winslow is likely to take longer under all future scenarios.

Pedestrian/Bicycle Improvements

Each alternative was evaluated on the extent of pedestrian and bicycle facilities provided. The Sanctuary alternative provides an extensive network of both bicycle and pedestrian amenities. The Dispersed alternative provides an improvement over Existing and No Action, but devotes more City resources towards roadway and intersection improvements. The No Action option includes expected increase in sidewalk facilities over time. Scoring is based on an estimate of the number of miles of pedestrian facilities proposed under each alternative.

Table 11. Pedestrian and Bicycle Improvements

Pedestrian/Bicycle Improvements	Existing	No Action	Sanctuary	Dispersed
Degree of Improvements	5.7	8.0	21.5	12.8
Normalized Score:	100	139	377	224

Results of the Evaluation

Table 12 summarizes results of the alternatives evaluations. Scores above 400 (the existing conditions score) show overall improvement to the transportation system, where scores below 400 show conditions worse than those existing at present. As seen in the table, the Sanctuary Alternative received the highest point total, scoring highest in all but one category. Therefore, it best meets the criteria set by the community. The No Action alternative is not desirable in that its score implies conditions substantially worse than currently exist.

Table 12 . Results of Evaluated Circulation Alternatives

CRITERIA	Normalized Scores			
	Existing	No Action	Sanctuary	Dispersed
Intersection LOS	100	38	106	115
Roadway LOS	100	83	98	94
Travel Time	100	45	61	57
Pedestrian/bicycle improvements	100	139	377	224
Total	**400**	**305**	**642**	**490**

6. EVALUATION OF FERRY TERMINAL ACCESS

This evaluation focuses on the four proposed intersection alternatives for Winslow Way/SR-305/Olympic Drive. The analysis identifies which ferry terminal circulation pattern best serves the City's interests. The evaluation does not pretend to represent the interests of other parties in the decision process, such as Washington State Ferries, Washington Department of Transportation and Kitsap Transit. The method of evaluation of the ferry terminal scenarios follows that used in Winslow's circulation alternatives section. The results of each criterion were assigned a point total, which is then normalized based on existing conditions. The alternative with the highest number of points best meets the criteria set by the City of Bainbridge Island and the Winslow community.

Four alternatives were proposed by WSF to move traffic to and from the ferry terminal. The alternatives for the Winslow Way/SR-305/Olympic Drive intersection are described below:

Alternative A: The intersection would remain a four lane intersection (northbound/southbound) with one of the two southbound lanes becoming an exclusive HOV lane/right turn only lane. Bicycle lanes would be added along the east and west shoulders of SR-305 and Olympic Drive.

Alternative B: This alternative is proposed as the same as Alternative A, except an additional southbound lane would added to provide two southbound general purpose lanes and an exclusive HOV lane.

Alternative C: This alternative provides three travel lanes southbound and northbound. One lane in each direction would be designated as an exclusive HOV lane/right turn only lane. Bicycle lanes would be provided along the east and west shoulders.

Alternative D: This option develops a grade separated intersection for through traffic. Unlike previous grade separated proposals, this would leave the intersection of Winslow Way/SR-305/Olympic Drive unchanged from its current configuration. The intersection would serve those who live or shop in Winslow, while the underpass would provide "free-flow" movement for those traveling along SR-305.

(Note that WSF has proposed outbound holding lanes to improve LOS at Winslow Way/SR-305. Alternatives A, B and C would likely benefit from this plan.)

Evaluation of Ferry Terminal Scenarios

Each criterion is defined below and the acceptable standard is described. Scores are normalized based on existing conditions so that for each criteria, comparisons can be made between alternatives and existing conditions.

Level of Service

Intersection LOS is a function of the signal timing and traffic volumes at each approach. To meet the WSF criteria of unloading the ferry within 6 minutes, the signal timing for the exiting lanes (south leg of Winslow Way) would have to be extended for Alternatives A through C to prevent a queue that might impede the unloading process. Alternative D is assumed not to require an extended cycle to

clear traffic. To estimate the LOS with an extended cycle at Winslow Way/SR-305/Olympic Drive intersection the following steps were completed:

- The storage capacity (in number of passenger vehicles) was estimated.
- To meet the 6 minute ferry unloading criteria set by WSF, the number of vehicles that would have to be cleared through the first cycle and subsequent cycles was calculated.
- The remaining vehicles were assumed to exit using "normal" signal operations.
- To represent the impact over a 15 minute period, the initial "clear" cycle (to prevent backup onto the ferry) was considered as a "dummy" phase.
- The signal was optimized based upon existing volumes and the dummy phase.

The calculation spreadsheet for this analysis is found in Appendix B.

The resulting score for the Winslow Way/SR-305/Olympic Drive intersection alternatives is shown in Table 13.

Table 13. Intersection LOS Scores

Signalized Intersections	Existing	No Action	Alt. A 4 lanes	Alt. B 5 lanes	Alt. C 6 lanes	Alt. D Grade Separated
SR-305/Winslow Way LOS Score:	6	-2	-2	-2	-2	9
Normalized Score:	100	-33	-33	-33	-33	150

Scoring: LOS A=10, LOS B=9 , LOS C=8, LOS D=7, LOS E=6, LOS F or "*" = -2

Alternative D, the grade separated alternative, is the only alternative that provides an acceptable LOS. Use of outbound holding lanes could improve LOS for Alternatives A, B and C to an acceptable level[1].

Impact on City Streets

To minimize the impact to the Winslow community, ferry operations should be limited to the SR-305/Olympic Way corridor. Currently, many ferry terminal functions use City streets. For example, both passenger pick-up and drop-off and ferry terminal parking rely on the use of Winslow Way. This existing condition results in high vehicle volumes on Winslow Way, Ferncliff Road and the eastern portion of High School Road. Only Alternative D is assumed to isolate all ferry terminal functions on Olympic Way, since other alternatives lack sufficient intersection capacity to handle the additional trips. The approximate number of trips using the Olympic Way corridor associated with each alternative is used to evaluate this criteria.

[1]The assumption here is that the delay experienced by outbound traffic in the holding lanes would not be included as part of the overall intersection delay.

Table 14. City Streets Scores

	Existing	No Action	Alt. A 4 lanes	Alt. B 5 lanes	Alt. C 6 lanes	Alt. D Grade Separated
Vehicles per Hour	434	434	434	434	434	765
Normalized Score:	100	100	100	100	100	176

Scoring: Vehicles using Olympic Way per ferry.

Pedestrian Crossing

Pedestrian connections were assessed based on the crossing and waiting time required to cross the Olympic Drive/Winslow Way intersection in the eastbound movement. The inverse of the travel time result was used to normalize the scores.

Table 15. Pedestrian Crossing Scores

Eastbound Crossing	Existing	No Action	Alt. A 4 lanes	Alt. B 5 lanes	Alt. C 6 lanes	Alt. D Grade Separated
Crossing time	56	59	87	90	93	66
Normalized Score:	100	98	65	63	61	85

Results of the Evaluation

As seen in Table 16, the grade separated alternative (Alternative D) has the highest score. The alternative best meets each of the City of Bainbridge Island's criteria.

Table 16. Summary of Results - Normalized Scores

Criteria	Existing	No Action	Alt. A	Alt. B	Alt. C	Alt. D
Intersection LOS	100	-33	-33	-33	-33	150
Impact on City streets	100	100	100	100	100	176
Pedestrian crossing	100	98	65	63	61	85
Total	**300**	**165**	**132**	**130**	**128**	**411**

7. CIRCULATOR BUS

One aspect of both the Sanctuary and the Dispersed alternatives is the development of a transit circulator bus through the retail core of Winslow. This system would provide connections between the ferry terminal and the Winslow Way and High School Road retail areas.

Existing Transit

Figure 6 shows the existing transit service in the area provide by Kitsap Transit. Most Kitsap transit buses serves mainly peak hour commute runs. The 90 and 91 buses provide daytime service through the Winslow area, but only for passengers departing from the ferry terminal.

Service Needs

The Winslow area has insufficient existing transit service to meet future year demands. Participants of the community workshops conducted as part of this planning process identified the following service needs:

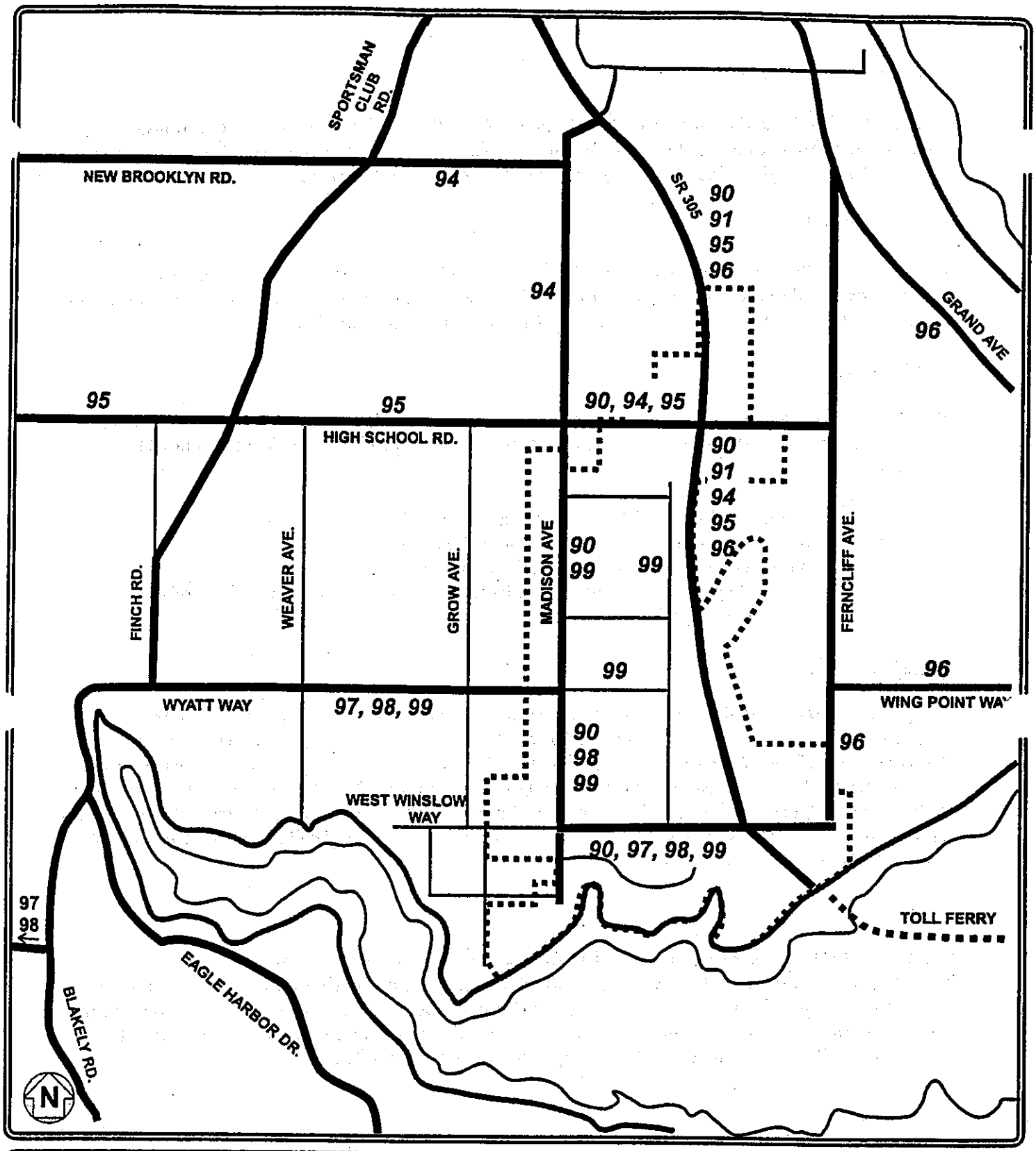
- to connect Winslow Way and High School Road shopping areas
- to allow access to the terminal during off-peak hours
- to provide visitors better access to retail areas
- to provide greater mobility for residents and transit dependent members of the Winslow community

Proposed Service

The proposed service would provide a circulating bus that would run in both directions along the following route: ferry terminal, Winslow Way, Madison Avenue, High School Road, Ferncliff, Winslow Way. Figure 7 shows the proposed route. Service would be frequent, approximately every 10-15 minutes. Two buses would be used running in opposite directions to maximize the convenience of the service. An analysis of transit operation and costs are attached. Ridership levels are based on fixed-route transit systems with similar residential densities. Ridership levels could vary due to fare levels and the service frequency provided.

Results

Results for the proposed system are found in Appendix C. The results show that 30 passengers per hour were assumed on weekdays, with up to 48 passengers per hour during peak hours. An estimate of 530 weekday and 212 weekend passengers were assumed over the 12 hour operation period. Two vehicles are projected to handle the load. However, either larger vehicles or an additional vehicle may be required during peak hours if ridership projections are exceeded.



WINSLOW

LEGEND

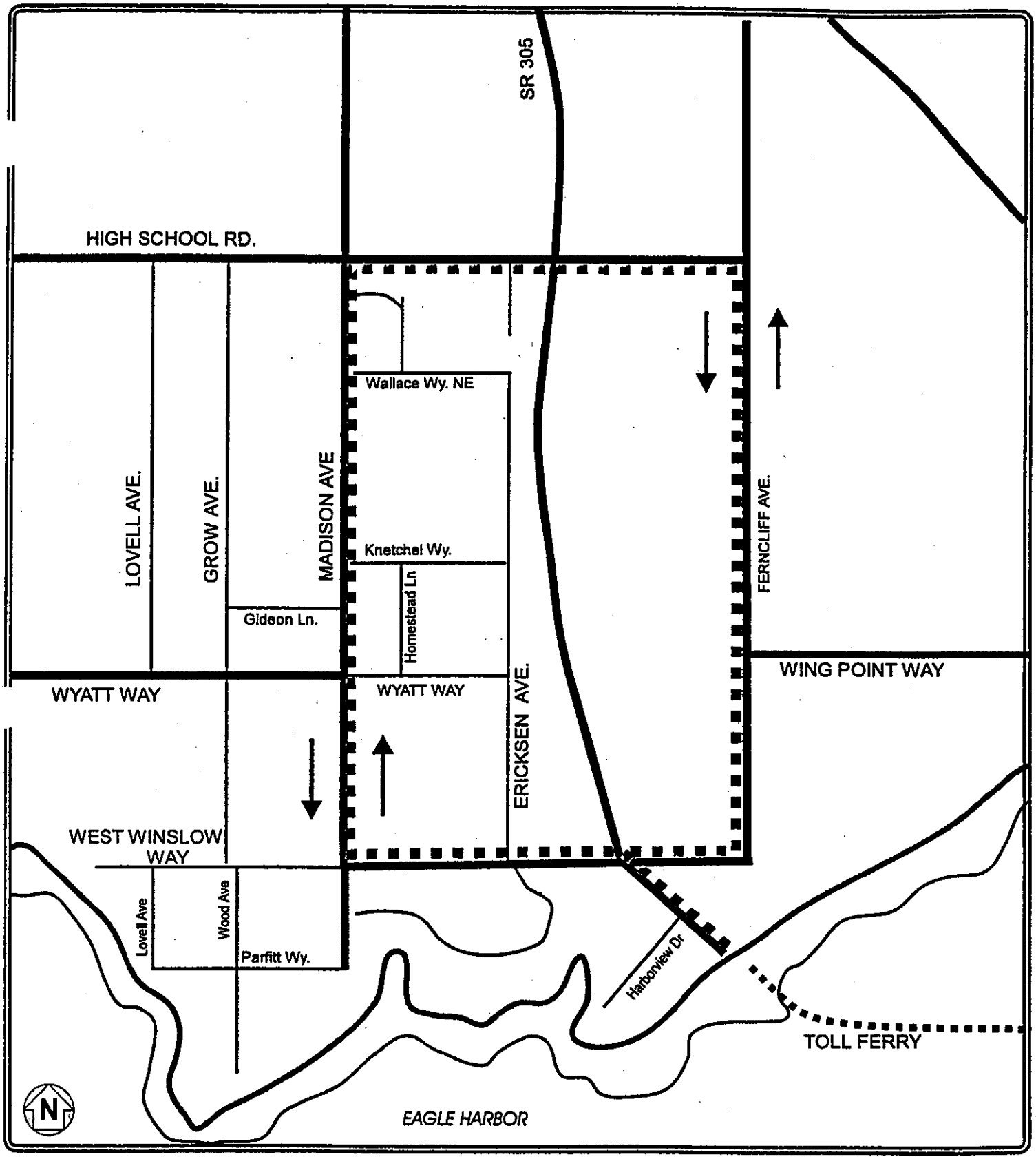
STUDY AREA

TRANSIT ROUTES-
KITSAP TRANSIT

TDA INC.

4/16/96
Winslow.cdr

FIGURE 6



WINSLOW

CIRCULATOR ROUTE

TDA INC.

Winslow.cdr

FIGURE 7

APPENDIX A

Level of Service Sheets

Notes Regarding Level of Service Sheets

The Level of Service analysis sheets that follow are in the following order:

Existing Conditions
No Action (Alternative 1)
Sanctuary (Alternative 2)
Dispersed (Alternative 3)

Some specific notes.

Winslow Way and Ferncliff -- Due to its unconventional control configuration was estimated using a spreadsheet. Future year LOS was assumed as a four way stop for the Dispersed and Sanctuary alternatives.

New Brooklyn and SR-305 -- The bypass route was analyzed both at SR-305 and New Brooklyn and at SR-305 and Madison Avenue for the Sanctuary and Dispersed Alternatives.

Calculations outside of range limits. The volumes recorded during future years exceeds the calculation parameters of the HCS model. To estimate the intersection demand intersections were manually calculated beyond the HCM limits. This approach recognizes the fact that greater traffic volumes can occur at stop intersections, eventhough the volumes fall outside the data set which the HCM methodology is based on.

Minor mitigative measures were instituted on all intersections that reported level of service *. These measures included changes to phasing, laneage and signal timing. The goal of these actions was to calculate a LOS score at the intersection.

HCM: SIGNALIZED INTERSECTION SUMMARY Version 2.4c 07-31-1996
Center For Microcomputers In Transportation

Streets: (E-W) SR 305 (N-S) Winslow way
Analyst: TDA INC DAN File Name: EWW305XT.HC9
Area Type: Other 7-31-96 PM PEAK
Comment: Existing 12/95 city counts

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	1	1	1	1	<	>	2	<	>	2	<
Volumes	156	145	48	11	211	156	122	302	9	114	118	150
Lane W (ft)	12.0	12.0	12.0	12.0	12.0			12.0			12.0	
RTOR Vols			0			0			0			0
Lost Time	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	*				NB	Left		*		
	Thru	*	*				Thru		*		
	Right	*	*				Right		*		
	Peds	*	*				Peds		*		
WB	Left		*			SB	Left	*			
	Thru		*				Thru	*			
	Right		*				Right	*			
	Peds		*				Peds	*			
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		9.0A	18.0A			Green		15.0A	21.0A		
Yellow/AR		5.0	5.0			Yellow/AR		5.0	5.0		

Cycle Length: 83 secs Phase combination order: #1 #2 #5 #6

Intersection Performance Summary

	Lane Group: Mvmts	Cap	Adj Sat Flow	v/c Ratio	g/C Ratio	Delay	LOS	Approach: Delay	LOS
EB	L	226	1703	0.922	0.133	50.7	E	28.4	D
	T	756	1845	0.255	0.410	10.5	B		
	R	600	1465	0.107	0.410	9.8	B		
WB	L	258	1071	0.058	0.241	15.7	C	121.4	F
	TR	418	1735	1.170	0.241	124.7	F		
NB	LTR	962	3470	0.631	0.277	17.9	C	17.9	C
SB	LTR	687	3356	0.777	0.205	24.1	C	24.1	C

Intersection Delay = 46.5 sec/veh Intersection LOS = E
Lost Time/Cycle, L = 12.0 sec Critical v/c(x) = 0.863

Winslow/h .cliff Delay Calculations
01/10/97
Winslow Job #1823

EXISTING CONDITIONS / SHARED LANE CALCULATIONS

Movement V1

Vx	127		
c(m,x)	1700		
T	0.25		
Vx/c(m,x)	0.07		
3600/c(m,x)	2.12	0.93	
		0.00075957	
Delay			2.29

Movement V4

Vx	1		
c(m,x)	1061		
T	0.25		
Vx/c(m,x)	0.00		
3600/c(m,x)	3.39	1.00	
		0.00001423	
Delay			3.40

Movement V5

Vx	14		
c(m,x)	1061		
T	0.25		
Vx/c(m,x)	0.01		
3600/c(m,x)	3.39	0.99	
		0.00020162	
Delay			3.44

Movement V6

Vx	35		
c(m,x)	1061		
T	0.25		
Vx/c(m,x)	0.03		
3600/c(m,x)	3.39	0.97	
		0.00051429	
Delay			3.51

Movement V7

Vx	89		
c(m,x)	819		
T	0.25		
Vx/c(m,x)	0.11		
3600/c(m,x)	4.40	0.89	
		0.00237861	
Delay			4.93

Movement V8

Vx	102		
c(m,x)	819		
T	0.25		
Vx/c(m,x)	0.12		
3600/c(m,x)	4.40	0.88	
		0.00277479	
Delay			5.02

Movement V9

Vx	4		
c(m,x)	819		
T	0.25		
Vx/c(m,x)	0.00		
3600/c(m,x)	4.40	1.00	
		0.00009588	
Delay			4.42

Movement V10

Vx	6		
c(m,x)	1078		
T	0.25		
Vx/c(m,x)	0.01		
3600/c(m,x)	3.34	0.99	
		0.00	
Delay			3.36

Movement V11

Vx	29		
c(m,x)	1078		
T	0.25		
Vx/c(m,x)	0.03		
3600/c(m,x)	3.34	0.97	
		0.00	
Delay			3.43

Movement V12

Vx	72		
c(m,x)	1078		
T	0.25		
Vx/c(m,x)	0.07		
3600/c(m,x)	3.34	0.93	
		0.00	
Delay			3.58

AVERAGE TOTAL DELAY 4.18

This spreadsheet calculates the HCS delay formula 10-11 and overall delay.

Center For Microcomputers In Transportation
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Ph: (904) 392-0378

Streets: (N-S) Madison Av (E-W) Winslow Way
Analyst..... TDA Inc (JD)
Date of Analysis..... 3/13/96
Other Information.....Winslow Sub area 1823 - Existing
All-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	1	0	> 1	< 0	0	> 1	1
Volumes	26	245	0	197	110	45	34	67	16	39	66	234
PHF	1	1	1	1	1	1	1	1	1	1	1	1

Volume Summary and Capacity Analysis WorkSheet

	NB	SB	EB	WB
LT Flow Rate	26	197	34	39
RT Flow Rate	0	45	16	234
Approach Flow Rate	271	352	117	339
Proportion LT	0.10	0.56	0.29	0.12
Proportion RT	0.00	0.13	0.14	0.69
Opposing Approach Flow Rate	352	271	339	117
Conflicting Approaches Flow Rate	456	456	623	623
Proportion, Subject Approach Flow Rate	0.25	0.33	0.11	0.31
Proportion, Opposing Approach Flow Rate	0.33	0.25	0.31	0.11
Lanes on Subject Approach	1	2	1	2
Lanes on Opposing Approach	2	1	2	1
LT, Opposing Approach	197	26	39	34
RT, Opposing Approach	45	0	234	16
LT, Conflicting Approaches	73	73	223	223
RT, Conflicting Approaches	250	250	45	45
Proportion LT, Opposing Approach	0.56	0.10	0.12	0.29
Proportion RT, Opposing Approach	0.13	0.00	0.69	0.14
Proportion LT, Conflicting Approaches	0.16	0.16	0.36	0.36
Proportion RT, Conflicting Approaches	0.55	0.55	0.07	0.07
Approach Capacity	454	890	346	545

Intersection Performance Summary

Movement	Approach Flow Rate	Approach Capacity	V/C Ratio	Average Total Delay	LOS
NB	271	454	0.60	9.7	B
SB	352	890	0.40	4.5	A
EB	117	346	0.34	3.6	A
WB	339	545	0.62	10.6	C

Intersection Delay = 7.6
Level of Service (Intersection) = B

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Streets: (N-S) Madison Av (E-W) Wyatt Way
Analyst..... TDA Inc (JD)
Date of Analysis..... 3/13/96
Other Information.....Winslow Sub area 1823 - Existing
All-way Stop-controlled Intersection

	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	1	< 0	0	> 1	< 0	0	> 1	< 0	0	> 1	< 0
Volumes	223	336	16	17	276	81	62	33	151	18	73	20
PHF	1	1	1	1	1	1	1	1	1	1	1	1

Volume Summary and Capacity Analysis WorkSheet

	NB	SB	EB	WB
LT Flow Rate	223	17	62	18
RT Flow Rate	16	81	151	20
Approach Flow Rate	575	374	246	111
Proportion LT	0.39	0.05	0.25	0.16
Proportion RT	0.03	0.22	0.61	0.18
Opposing Approach Flow Rate	374	575	111	246
Conflicting Approaches Flow Rate	357	357	949	949
Proportion, Subject Approach Flow Rate	0.44	0.29	0.19	0.08
Proportion, Opposing Approach Flow Rate	0.29	0.44	0.08	0.19
Lanes on Subject Approach	2	1	1	1
Lanes on Opposing Approach	1	2	1	1
LT, Opposing Approach	17	223	18	62
RT, Opposing Approach	81	16	20	151
LT, Conflicting Approaches	80	80	240	240
RT, Conflicting Approaches	171	171	97	97
Proportion LT, Opposing Approach	0.05	0.39	0.16	0.25
Proportion RT, Opposing Approach	0.22	0.03	0.18	0.61
Proportion LT, Conflicting Approaches	0.22	0.22	0.25	0.25
Proportion RT, Conflicting Approaches	0.48	0.48	0.10	0.10
Approach Capacity	1047	560	290	319

Intersection Performance Summary

Movement	Approach Flow Rate	Approach Capacity	V/C Ratio	Average Total Delay	LOS
NB	575	1047	0.55	8.1	B
SB	374	560	0.67	12.7	C
EB	246	290	0.85	25.1	D
WB	111	319	0.35	3.8	A

Intersection Delay = 12.2
Level of Service (Intersection) = C

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Streets: (N-S) Erickson Av (E-W) Winslow Way
Major Street Direction.... EW
Length of Time Analyzed... 60 (min)
Analyst..... TDA Inc (JD)
Date of Analysis..... 3/13/96
Other Information.....Winslow Sub area 1823 - Existing
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	67	271	7	34	299	78	14	8	84	46	7	61
PHF	1	1	1	1	1	1	1	1	1	1	1	1
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)	274	338
Potential Capacity: (pcph)	1006	933
Movement Capacity: (pcph)	1006	933
Prob. of Queue-Free State:	0.91	0.93

Step 2: LT from Major Street	WB	EB
Conflicting Flows: (vph)	278	377
Potential Capacity: (pcph)	1264	1134
Movement Capacity: (pcph)	1264	1134
Prob. of Queue-Free State:	0.97	0.93
TH Saturation Flow Rate: (pcphpl)	1700	1700
RT Saturation Flow Rate: (pcphpl)	1700	1700
Major LT Shared Lane Prob. of Queue-Free State:	0.96	0.92

Step 3: TH from Minor Street	NB	SB
Conflicting Flows: (vph)	752	717
Potential Capacity: (pcph)	440	459
Capacity Adjustment Factor due to Impeding Movements	0.89	0.89
Movement Capacity: (pcph)	390	407
Prob. of Queue-Free State:	0.98	0.98

Step 4: LT from Minor Street	NB	SB
Conflicting Flows: (vph)	748	760
Potential Capacity: (pcph)	391	384
Major LT, Minor TH Impedance Factor:	0.87	0.87
Adjusted Impedance Factor:	0.90	0.90
Capacity Adjustment Factor due to Impeding Movements	0.84	0.82
Movement Capacity: (pcph)	327	313

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	15	327 >					
NB T	9	390 >	723	5.9	0.6	B	5.9
NB R	92	1006 >					
SB L	51	313 >					
SB T	8	407 >	495	9.8	1.2	B	9.8
SB R	67	933 >					
EB L	74	1134		3.4	0.1	A	0.7
WB L	37	1264		2.9	0.0	A	0.2

Intersection Delay = 2.1 sec/veh

V

HCM: SIGNALIZED INTERSECTION SUMMARY Version 2.4d 10-31-1996
Center For Microcomputers In Transportation

Streets: (E-W) SR 305 (N-S) High School
Analyst: TDA Inc File Name: EHS305.HC9
Area Type: Other 7-23-96 PM Peak
Comment: Existing 12/95 city count

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	1	1	1	1	1	1	2	<	1	2	<
Volumes	401	257	70	20	227	130	143	501	33	66	297	175
Lane W (ft)	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0		12.0	12.0	
RTOR Vols			37			77			11			98
Lost Time	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	*	*			NB	Left	*			
	Thru		*	*			Thru		*		
	Right		*	*			Right		*		
	Peds		*	*			Peds		*		
WB	Left	*				SB	Left	*			
	Thru			*			Thru		*		
	Right			*			Right		*		
	Peds			*			Peds		*		
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		3.0A	12.0A	11.0A		Green		9.0A	15.0A		
Yellow/AR		5.0	5.0	5.0		Yellow/AR		5.0	5.0		

Cycle Length: 75 secs Phase combination order: #1 #2 #3 #5 #6

Intersection Performance Summary

	Lane Mvmts	Group: Cap	Adj Sat Flow	v/c Ratio	g/C Ratio	Delay	LOS	Approach: Delay	LOS
EB	L	514	1752	0.918	0.293	32.1	D	23.0	C
	T	760	1900	0.397	0.400	10.6	B		
	R	646	1615	0.059	0.400	8.9	B		
WB	L	115	1719	0.218	0.067	21.6	C	34.4	D
	T	317	1827	0.906	0.173	39.5	D		
	R	272	1568	0.250	0.173	17.4	C		
NB	L	255	1736	0.919	0.147	45.6	E	61.2	F
	TR	839	3701	1.073	0.227	65.2	F		
SB	L	260	1770	0.335	0.147	18.9	C	18.2	C
	TR	811	3576	0.638	0.227	18.1	C		

Intersection Delay = 38.3 sec/veh Intersection LOS = D
Lost Time/Cycle, L = 12.0 sec Critical v/c(x) = 0.958

HCM: SIGNALIZED INTERSECTION SUMMARY Version 2.4d 10-28-1996
Center For Microcomputers In Transportation

Streets: (E-W) SR ~~305~~ High School (N-S) High School 305
Analyst: TDA Inc File Name: EHS305.HC9
Area Type: Other 7-23-96 PM Peak
Comment: Existing 12/95 city count

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	1	1	1	1	1	1	2	<	1	2	<
Volumes	401	257	70	20	227	130	143	501	33	66	297	175
Lane W (ft)	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0		12.0	12.0	
RTOR Vols			37			77			11			98
Lost Time	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	*	*			NB	Left	*			
	Thru		*	*			Thru		*		
	Right		*	*			Right		*		
	Peds		*	*			Peds		*		
WB	Left	*				SB	Left	*			
	Thru			*			Thru		*		
	Right			*			Right		*		
	Peds			*			Peds		*		
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		3.0A	12.0A	11.0A		Green		7.0A	15.0A		
Yellow/AR		5.0	5.0	5.0		Yellow/AR		5.0	5.0		

Cycle Length: 73 secs Phase combination order: #1 #2 #3 #5 #6

Intersection Performance Summary

	Lane Group: Mvmts	Cap	Adj Sat Flow	v/c Ratio	g/C Ratio	Delay	LOS	Approach: Delay	LOS
EB	L	528	1752	0.894	0.301	28.2	D	20.4	C
	T	781	1900	0.387	0.411	9.9	B		
	R	664	1615	0.057	0.411	8.4	B		
WB	L	118	1719	0.212	0.068	20.9	C	31.0	D
	T	325	1827	0.882	0.178	35.2	D		
	R	279	1568	0.244	0.178	16.7	C		
NB	L	214	1736	1.093	0.123	102.2	F	63.9	F
	TR	862	3701	1.044	0.233	54.0	E		
SB	L	218	1770	0.399	0.123	19.7	C	17.6	C
	TR	833	3576	0.621	0.233	17.2	C		

Intersection Delay = 38.1 sec/veh Intersection LOS = D
Lost Time/Cycle, L = 12.0 sec Critical v/c(x) = 0.963

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Ph: (904) 392-0378

Streets: (N-S) Madison Av (E-W) High School Rd
Analyst..... TDA Inc (JD)
Date of Analysis..... 3/13/96
Other Information.....Winslow Sub area 1823 - Existing
All-way Stop-controlled Intersection

	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	1	< 0	1	1	< 0	0	> 1	< 0	1	1	< 0
Volumes	109	106	311	85	179	45	16	214	79	131	240	67
PHF	1	1	1	1	1	1	1	1	1	1	1	1

Volume Summary and Capacity Analysis WorkSheet

	NB	SB	EB	WB
LT Flow Rate	109	85	16	131
RT Flow Rate	311	45	79	67
Approach Flow Rate	526	309	309	438
Proportion LT	0.21	0.28	0.05	0.30
Proportion RT	0.59	0.15	0.26	0.15
Opposing Approach Flow Rate	309	526	438	309
Conflicting Approaches Flow Rate	747	747	835	835
Proportion, Subject Approach Flow Rate	0.33	0.20	0.20	0.28
Proportion, Opposing Approach Flow Rate	0.20	0.33	0.28	0.20
Lanes on Subject Approach	2	2	1	2
Lanes on Opposing Approach	2	2	2	1
LT, Opposing Approach	85	109	131	16
RT, Opposing Approach	45	311	67	79
LT, Conflicting Approaches	147	147	194	194
RT, Conflicting Approaches	146	146	356	356
Proportion LT, Opposing Approach	0.28	0.21	0.30	0.05
Proportion RT, Opposing Approach	0.15	0.59	0.15	0.26
Proportion LT, Conflicting Approaches	0.20	0.20	0.23	0.23
Proportion RT, Conflicting Approaches	0.20	0.20	0.43	0.43
Approach Capacity	615	684	388	807

Intersection Performance Summary

Movement	Approach Flow Rate	Approach Capacity	V/C Ratio	Average Total Delay	LOS
NB	526	615	0.86	25.8	D
SB	309	684	0.45	5.6	B
EB	309	388	0.80	20.6	D
WB	438	807	0.54	7.9	B

Intersection Delay = 15.9
Level of Service (Intersection) = C

****

File Name ESCRHSR.HC0
Streets: (N-S) Sportsman Club Rd (E-W) High School Rd
Major Street Direction.... EW
Length of Time Analyzed... 60 (min)
Analyst..... TDA Inc (DAN)
Date of Analysis..... 4/1/96
Other Information..... Winslow Sub area 1823 - Existing

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	25	146	2	62	266	36	2	58	46	26	62	13
PHF	.95	.95	.95	.95	.95	.95	.95	.95	.95	.95	.95	.95
Grade		4			1			0			0	
MC's (%)	0	0	0	0	0	0	0	0	0	0	0	0
SU/RV's (%)	0	0	0	0	0	0	0	0	0	0	0	0
CV's (%)	0	0	0	0	0	0	0	0	0	0	0	0
PCE's	1.7	1.7	1.7	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1

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)	147	284
Potential Capacity: (pcph)	1166	994
Movement Capacity: (pcph)	1166	994
Prob. of Queue-free State:	0.95	0.98

Step 2: LT from Major Street	WB	EB
Conflicting Flows: (vph)	148	302
Potential Capacity: (pcph)	1457	1231
Movement Capacity: (pcph)	1457	1231
Prob. of Queue-free State:	0.95	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:	0.94	0.96

Step 3: TH from Minor Street	NB	SB
Conflicting Flows: (vph)	536	519
Potential Capacity: (pcph)	571	583
Capacity Adjustment Factor due to Impeding Movements	0.90	0.90
Movement Capacity: (pcph)	513	524
Prob. of Queue-free State:	0.87	0.86

Step 4: LT from Minor Street	NB	SB
Conflicting Flows: (vph)	556	570
Potential Capacity: (pcph)	505	495
Major LT, Minor TH Impedance Factor:	0.77	0.78
Adjusted Impedance Factor:	0.83	0.83
Capacity Adjustment Factor due to Impeding Movements	0.81	0.79
Movement Capacity: (pcph)	411	393

****

Intersection Performance Summary

Movement		FlowRate v(pcph)	MoveCap Cm(pcph)		SharedCap Csh(pcph)	Avg.Total Delay		LOS	Delay By App
NB	L	2	411	>		>		>	
NB	T	67	513	>	674	>	6.5	> B	6.5
NB	R	53	1166	>		>		>	
SB	L	30	393	>		>		>	
SB	T	72	524	>	511	>	9.1	> B	9.1
SB	R	15	994	>		>		>	
EB	L	44	1231			3.0		A	0.4
WB	L	72	1457			2.6		A	0.4

Intersection Delay = 2.5

Center For Microcomputers In Transportation
University of Florida
512 Weil Hall
Gainesville, FL 32611-2083
Ph: (904) 392-0378

Streets: (N-S) Sportsman Club (E-W) New Brooklyn
Analyst..... TDA (jd)
Date of Analysis..... 5/1/96
Other Information.....Existing - Winslow Sub Area
All-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
Volumes	44	66	4	3	82	59	66	122	3	16	100	32
PHF	.81	.81	.81	.78	.78	.78	.89	.89	.89	.77	.77	.77

Volume Summary and Capacity Analysis WorkSheet

	EB	WB	NB	SB
LT Flow Rate	54	4	74	21
RT Flow Rate	5	76	3	42
Approach Flow Rate	140	185	214	193
Proportion LT	0.39	0.02	0.35	0.11
Proportion RT	0.04	0.41	0.01	0.22
Opposing Approach Flow Rate	185	140	193	214
Conflicting Approaches Flow Rate	407	407	325	325
Proportion, Subject Approach Flow Rate	0.19	0.25	0.29	0.26
Proportion, Opposing Approach Flow Rate	0.25	0.19	0.26	0.29
Lanes on Subject Approach	1	1	1	1
Lanes on Opposing Approach	1	1	1	1
LT, Opposing Approach	4	54	21	74
RT, Opposing Approach	76	5	42	3
LT, Conflicting Approaches	95	95	58	58
RT, Conflicting Approaches	45	45	81	81
Proportion LT, Opposing Approach	0.02	0.39	0.11	0.35
Proportion RT, Opposing Approach	0.41	0.04	0.22	0.01
Proportion LT, Conflicting Approaches	0.23	0.23	0.18	0.18
Proportion RT, Conflicting Approaches	0.11	0.11	0.25	0.25
Approach Capacity	507	341	609	489

Intersection Performance Summary

Movement	Approach Flow Rate	Approach Capacity	V/C Ratio	Average Total Delay	LOS
EB	140	507	0.28	2.9	A
WB	185	341	0.54	7.9	B
NB	214	609	0.35	3.8	A
SB	193	489	0.39	4.5	A

Intersection Delay = 4.8
Level of Service (Intersection) = A

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Streets: (N-S) SR-305 (E-W) MADISON AVE
Major Street Direction.... NS
Length of Time Analyzed... 60 (min)
Analyst..... TDA (jd)
Date of Analysis..... 10/29/96
Other Information.....EXISTING CONDITIONS- 1839
Two-way Stop-controlled Intersection

	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	2	< 0	1	2	< 0	0	> 1	< 0	0	> 1	< 0
Stop/Yield			N			N						
Volumes	11	879	9	2	550	123	51	10	6	3	7	10
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	5.50	2.10
Right Turn Minor Road	5.50	2.60
Through Traffic Minor Road	6.50	3.30
Left Turn Minor Road	*6.00	3.40

Worksheet for TWSC Intersection

Step 1: RT from Minor Street	WB	EB
Conflicting Flows: (vph)	467	354
Potential Capacity: (pcph)	803	916
Movement Capacity: (pcph)	803	916
Prob. of Queue-Free State:	0.99	0.99

Step 2: LT from Major Street	SB	NB
Conflicting Flows: (vph)	934	708
Potential Capacity: (pcph)	540	715
Movement Capacity: (pcph)	540	715
Prob. of Queue-Free State:	1.00	0.98

Step 3: TH from Minor Street	WB	EB
Conflicting Flows: (vph)	1652	1592
Potential Capacity: (pcph)	118	128
Capacity Adjustment Factor due to Impeding Movements	0.98	0.98
Movement Capacity: (pcph)	115	125
Prob. of Queue-Free State:	0.93	0.90

Step 4: LT from Minor Street	WB	EB
Conflicting Flows: (vph)	1529	1586
Potential Capacity: (pcph)	170	159
Major LT, Minor TH Impedance Factor:	0.88	0.91
Adjusted Impedance Factor:	0.91	0.93
Capacity Adjustment Factor due to Impeding Movements	0.90	0.92
Movement Capacity: (pcph)	154	146

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	59	146 >					
EB T	12	125 >	154	46.8	2.9	F	46.8
EB R	7	916 >					
WB L	3	154 >					
WB T	8	115 >	221	18.2	0.3	C	18.2
WB R	12	803 >					
NB L	13	715		5.1	0.0	B	0.1
SB L	2	540		6.7	0.0	B	0.0

Intersection Delay = 2.1 sec/veh

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Streets: (N-S) SR-305 (E-W) MADISON AVE
Major Street Direction.... NS
Length of Time Analyzed... 60 (min)
Analyst..... TDA (jd)
Date of Analysis..... 10/29/96
Other Information.....Alt 1: no action- 1839
Two-way Stop-controlled Intersection

	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	2	< 0	1	2	< 0	0	> 1	< 0	0	> 1	< 0
Stop/Yield			N			N						
Volumes	26	1334	14	3	855	202	104	25	30	5	12	16
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	5.50	2.10
Right Turn Minor Road	5.50	2.60
Through Traffic Minor Road	*6.00	3.30
Left Turn Minor Road	*6.00	3.40

Drivers aggressive
Shortened to reflect
queuing condition under existing
Conditions.

Worksheet for TWSC Intersection

Step 1: RT from Minor Street	WB	EB
Conflicting Flows: (vph)	467	354
Potential Capacity: (pcph)	803	916
Movement Capacity: (pcph)	803	916
Prob. of Queue-Free State:	0.99	0.99

Step 2: LT from Major Street	SB	NB
Conflicting Flows: (vph)	934	708
Potential Capacity: (pcph)	540	715
Movement Capacity: (pcph)	540	715
Prob. of Queue-Free State:	1.00	0.98

Step 3: TH from Minor Street	WB	EB
Conflicting Flows: (vph)	1652	1592
Potential Capacity: (pcph)	118	128
Capacity Adjustment Factor due to Impeding Movements	0.98	0.98
Movement Capacity: (pcph)	115	125
Prob. of Queue-Free State:	0.93	0.90

Step 4: LT from Minor Street	WB	EB
Conflicting Flows: (vph)	1529	1586
Potential Capacity: (pcph)	170	159
Major LT, Minor TH Impedance Factor:	0.88	0.91
Adjusted Impedance Factor:	0.91	0.93
Capacity Adjustment Factor due to Impeding Movements	0.90	0.92
Movement Capacity: (pcph)	154	146

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	59	146 >					
EB	T	12	125 >	154	46.8	2.9	F	46.8
EB	R	7	916 >					
WB	L	3	154 >					
WB	T	8	115 >	221	18.2	0.3	C	18.2
WB	R	12	803 >					
NB	L	13	715		5.1	0.0	B	0.1
SB	L	2	540		6.7	0.0	B	0.0

Intersection Delay = 2.1 sec/veh

Worksheet for TWSC Intersection

Step 1: RT from Minor Street	WB	EB
Conflicting Flows: (vph)	710	556
Potential Capacity: (pcph)	605	724
Movement Capacity: (pcph)	605	724
Prob. of Queue-Free State:	0.97	0.95

Step 2: LT from Major Street	SB	NB
Conflicting Flows: (vph)	1419	1113
Potential Capacity: (pcph)	297	433
Movement Capacity: (pcph)	297	433
Prob. of Queue-Free State:	0.99	0.93

Step 3: TH from Minor Street	WB	EB
Conflicting Flows: (vph)	2554	2456
Potential Capacity: (pcph)	50	56
Capacity Adjustment Factor due to Impeding Movements	0.92	0.92
Movement Capacity: (pcph)	46	52
Prob. of Queue-Free State:	0.70	0.44

Step 4: LT from Minor Street	WB	EB
Conflicting Flows: (vph)	2354	2448
Potential Capacity: (pcph)	64	57
Major LT, Minor TH Impedance Factor:	0.41	0.64
Adjusted Impedance Factor:	0.53	0.72
Capacity Adjustment Factor due to Impeding Movements	0.50	0.70
Movement Capacity: (pcph)	32	40

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	120	40 >					
EB T	29	52 >	51	*	67.6	F	*
EB R	35	724 >					
WB L	6	32 >					
WB T	14	46 >	75	97.2	2.7	F	97.2
WB R	19	605 >					
NB L	30	433		8.9	0.1	B	0.2
SB L	3	297		12.2	0.0	C	0.0

Intersection Delay = 295.6 sec/veh

* The calculated value was greater than 999.9.

HCM: SIGNALIZED INTERSECTION SUMMARY Version 2.4d 01-09-1997
Center For Microcomputers In Transportation

Streets: (E-W) High School Rd (N-S) SR 305
Analyst: TDA Inc (DAN) File Name: 1HS305.HC9
Area Type: Other 10-23-96 PM Peak
Comment: Winslow Sub Area 1823, Alternative 1

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	1	1	1	1	1	1	2	<	1	2	<
Volumes	577	360	81	26	359	241	157	552	47	118	461	291
PHF or PK15	0.85	0.85	0.85	0.79	0.79	0.79	0.61	0.61	0.61	0.76	0.76	0.76
Lane W (ft)	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0		12.0	12.0	
Grade		0			0			0			0	
% Heavy Veh	3	0	0	5	4	3	4	2	6	2	4	2
Parking	(Y/N)	N		(Y/N)	N		(Y/N)	N		(Y/N)	N	
Bus Stops			0			0			0			0
Con. Peds			0			0			10			0
Ped Button	(Y/N)	N		(Y/N)	N		(Y/N)	N		(Y/N)	N	
Arr Type	3	3	3	3	3	3	3	3		3	3	
RTOR Vols			37			77			11			98
Lost Time	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
Prop. Share												
Prop. Prot.												

Signal Operations

Phase Combination		1	2	3	4		5	6	7	8
EB	Left	*	*			NB	Left	*		
	Thru		*	*			Thru		*	
	Right		*	*			Right		*	
	Peds		*	*			Peds		*	
WB	Left	*				SB	Left	*		
	Thru			*			Thru		*	
	Right			*			Right		*	
	Peds			*			Peds		*	
NB	Right					EB	Right			
SB	Right					WB	Right			
Green		3.0A	12.0A	11.0A		Green		7.0A	15.0A	
Yellow/AR		5.0	5.0	5.0		Yellow/AR		5.0	5.0	

Cycle Length: 73 secs Phase combination order: #1 #2 #3 #5 #6

Intersection Performance Summary

	Lane Mvmts	Group: Cap	Adj Sat Flow	v/c Ratio	g/C Ratio	Delay	LOS	Approach: Delay	LOS
EB	L	528	1752	1.286	0.301	*	*	*	*
	T	781	1900	0.543	0.411	11.1	B		
	R	664	1615	0.077	0.411	8.4	B		
WB	L	118	1719	0.280	0.068	21.2	C	*	*
	T	325	1827	1.395	0.178	*	*		
	R	279	1568	0.745	0.178	25.4	D		
NB	L	214	1736	1.201	0.123	*	*	*	*
	TR	859	3690	1.178	0.233	116.2	F		
SB	L	218	1770	0.710	0.123	26.8	D	69.3	F
	TR	821	3526	1.101	0.233	76.5	F		

Intersection Delay = * (sec/veh) Intersection LOS = *
(g/C)*(V/c) is greater than one. Calculation of D1 is infeasable.

Winslow Sub Area #1823
Formulas used for calculating Approach LOS for All Way Stop Intersection (Beyond HCS Limits)

MADISON AVE/HIGH SCHOOL RD

ALTERNATIVE 1

Intersection:	**Madison Ave/High School Rd**		Date Printed	10/24/96
Scenario:	**Alternative 1**		Date inputed	10/24/96
	Northbound	Southbound	Eastbound	Westbound
*data from John's over 2100vph worksheet				
Approach Flow Rate	828	381	407	681
Proportion Subject Approach Flow Rate	0.36	0.17	0.18	0.3
Porportion Opposing Approach Flow Rate	0.17	0.36	0.3	0.18
Lanes on Subject Approach	2	2	1	2
Lanes on Opposing Approach	2	2	2	1
Proportion Left Turn Opposing Approach	0.26	0.2	0.31	0.05
Proportion Right Turn Opposing Approach	0.14	0.6	0.16	0.29
Proportion Left Turn Conflicting Approach	0.21	0.21	0.22	0.22
Proportion Right Turn Conflicting Approach	0.21	0.21	0.45	0.45
Approach Capacity	629	682	398	838
V/C Ratio	1.3164	0.5587	1.0226	0.8126
Approach Total Delay	148.7	8.4	48.7	21.9
Intersection Total Delay	**70.1**			
Level of Service (intersection)	**F**			

Job # 1823
NS: Madison Avenue
EW: High School Road
rnative 1 - no action
/23/96

Input Calculations for estimating the LOS for All way stop intersections above 2100 vph

	Northbound			Southbound			Eastbound			Westbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
Number of lanes	1	1	0	1	1	0	0	1	0	1	1	0
Volumes	163	169	496	99	228	54	21	266	120	208	367	106
PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Flow Rate	163	169	496	99	228	54	21	266	120	208	367	106
Approach Flow Rate		828			381			407			681	
Proportion left turn		0.20			0.26			0.05			0.31	
Proportion right turn		0.60			0.14			0.29			0.16	
Lanes on subject approach		2			2			1			2	
Lanes on opposing approach		2			2			2			1	
Subject Approach Flow Rate		828			381			407			681	
Opposing Approach flow Rate		381			828			681			407	
Conflicting Approach Flow Rate		1088			1088			1209			1209	
Total intersection flow rate		2297			2297			2297			2297	
Proportion, subject approach		0.36			0.17			0.18			0.30	
Proportion, opposing		0.17			0.36			0.30			0.18	
Proportion, conflicting		0.47			0.47			0.53			0.53	
Proportion LT, opposing approach		0.26			0.20			0.31			0.05	
Proportion RT, opposing approach		0.14			0.60			0.16			0.29	
Proportion LT conflicting approaches		0.21			0.21			0.22			0.22	
Proportion RT, conflicting approaches		0.21			0.21			0.45			0.45	

Use this in conjunction with LOS/delay worksheet: ALWAYLOS.WK4

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Ph: (904) 392-0378

Streets: (N-S) Madison Av (E-W) High School Rd
Analyst..... TDA Inc (DM)
Date of Analysis..... 10/23/96
Other Information.....Winslow Sub area 1823 - Alternative 1
All-way Stop-controlled Intersection

	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	1 <	0	1	1 <	0	0 >	1 <	0	1	1 <	0
Volumes	163	169	496	99	228	54	21	266	120	208	367	106
PHF	1	1	1	1	1	1	1	1	1	1	1	1

Range Limit(s) Exceeded

From HCM Range of Model Validity (p. 10-37):

The intersection volume exceeds 2100 vph.

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: (904) 392-0378

Streets: (N-S) Sportsman Club Rd (E-W) High School Rd
Major Street Direction.... EW
Length of Time Analyzed... 60 (min)
Analyst..... TDA Inc (DAN)
Date of Analysis..... 10/23/96
Other Information.....Winslow Sub area 1823 - Alternative 1
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	25	190	2	90	363	48	2	58	62	35	62	13
PHF	.95	.95	.95	.95	.95	.95	.95	.95	.95	.95	.95	.95
Grade		4			1			0			0	
MC's (%)												
SU/RV's (%)												
CV's (%)												
PCE's	1.70			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

tep 1: RT from Minor Street	NB	SB
Conflicting Flows: (vph)	201	408
Potential Capacity: (pcph)	1095	860
Movement Capacity: (pcph)	1095	860
Prob. of Queue-Free State:	0.93	0.98

Step 2: LT from Major Street	WB	EB
Conflicting Flows: (vph)	202	433
Potential Capacity: (pcph)	1373	1066
Movement Capacity: (pcph)	1373	1066
Prob. of Queue-Free State:	0.92	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:	0.90	0.95

Step 3: TH from Minor Street	NB	SB
Conflicting Flows: (vph)	755	730
Potential Capacity: (pcph)	438	452
Capacity Adjustment Factor due to Impeding Movements	0.86	0.86
Movement Capacity: (pcph)	375	387
rob. of Queue-Free State:	0.82	0.81

Step 4: LT from Minor Street	NB	SB
Conflicting Flows: (vph)	769	792
Potential Capacity: (pcph)	380	368
Major LT, Minor TH Impedance Factor:	0.70	0.70
Adjusted Impedance Factor:	0.76	0.77
Capacity Adjustment Factor due to Impeding Movements	0.75	0.72
Movement Capacity: (pcph)	286	265

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	2	286 >					
NB	T	67	375 >	561	8.6	1.1	B	8.6
NB	R	72	1095 >					
SB	L	41	265 >					
SB	T	72	387 >	357	15.7	1.8	C	15.7
SB	R	15	860 >					
EB	L	44	1066		3.5	0.0	A	0.4
WB	L	105	1373		2.8	0.2	A	0.5

Intersection Delay = 3.3 sec/veh

Winslow Sub Area #1823
Formulas used for calculating Approach LOS for All Way Stop Intersection (Beyond HCS Limits)

MADISON AVE/WYATT WAY

ALTERNATIVE 1

Intersection:	**Madison Ave/Wyatt Way**			Date Printed	10/23/96
Scenario:	**Alternative 1**			Date inputed	10/23/96
		Northbound	Southbound	Eastbound	Westbound
Approach Flow Rate		978	542	382	148
Proportion Subject Approach Flow Rate		0.48	0.26	0.19	0.07
Porportion Opposing Approach Flow Rate		0.26	0.48	0.07	0.19
Lanes on Subject Approach		2	1	1	1
Lanes on Opposing Approach		1	2	1	1
Proportion Left Turn Opposing Approach		0.04	0.4	0.12	0.34
Proportion Right Turn Opposing Approach		0.23	0.02	0.18	0.55
Proportion Left Turn Conflicting Approach		0.28	0.28	0.27	0.27
Proportion Right Turn Conflicting Approach		0.45	0.45	0.09	0.09
Approach Capacity		1047	531	285	257
V/C Ratio		0.9341	1.0207	1.3404	0.5759
Approach Total Delay		34.8	48.4	162.9	8.9
Intersection Total Delay	**60.4**				
Level of Service (intersection)	**F**				

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1: (904) 392-0378

Streets: (N-S) Madison Av (E-W) Wyatt Way
Analyst..... TDA Inc (DAN)
Date of Analysis..... 10/23/96
Other Information.....Winslow Sub area 1823 - Alternative 1
All-way Stop-controlled Intersection

	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	1 <	0	0 >	1 <	0	0 >	1 <	0	0 >	1 <	0
Volumes	389	573	16	20	398	124	131	39	212	18	104	26
PHF	1	1	1	1	1	1	1	1	1	1	1	1

Volume Summary and Capacity Analysis WorkSheet

	NB	SB	EB	WB
LT Flow Rate	389	20	131	18
RT Flow Rate	16	124	212	26
Approach Flow Rate	978	542	382	148
Proportion LT	0.40	0.04	0.34	0.12
Proportion RT	0.02	0.23	0.55	0.18
posing Approach Flow Rate	542	978	148	382
nflicting Approaches Flow Rate	530	530	1520	1520
Proportion, Subject Approach Flow Rate	0.48	0.26	0.19	0.07
Proportion, Opposing Approach Flow Rate	0.26	0.48	0.07	0.19
Lanes on Subject Approach	2	1	1	1
Lanes on Opposing Approach	1	2	1	1
LT, Opposing Approach	20	389	18	131
RT, Opposing Approach	124	16	26	212
LT, Conflicting Approaches	149	149	409	409
RT, Conflicting Approaches	238	238	140	140
Proportion LT, Opposing Approach	0.04	0.40	0.12	0.34
Proportion RT, Opposing Approach	0.23	0.02	0.18	0.55
Proportion LT, Conflicting Approaches	0.28	0.28	0.27	0.27
Proportion RT, Conflicting Approaches	0.45	0.45	0.09	0.09
*Range limit(s) exceeded (see below)	*	*	*	*

Range Limit(s) Exceeded

Range limits from HCM Table 10-7 (p. 10-47), implementing HCM Range of Model Validity (p. 10-37).

Southbound approach:

An intersection volume of 2050 has caused a range check to be made for this approach.
The following range limit(s) have been exceeded:

The proportion of left turns on the opposing approach is 0.40.
This is outside the permitted range of 0.00 - 0.36.

Eastbound approach:

An intersection volume of 2050 has caused a range check to be made for this approach.
The following range limit(s) have been exceeded:

The proportion of the volume on the subject approach is 0.19.
This is outside the permitted range of 0.20 - 0.50.

Westbound approach:

An intersection volume of 2050 has caused a range check to be made for this approach.
The following range limit(s) have been exceeded:

The proportion of the volume on the subject approach is 0.07.
This is outside the permitted range of 0.20 - 0.50.

Winslow Sub Area #1823
Formulas used for calculating Approach LOS for All Way Stop Intersection (Beyond HCS Limits)

MADISON AVE/WINSLOW WAY

ALTERNATIVE 1

Intersection: Madison Ave/Winslow Way			Date Printed	10/23/96
Scenario: Alternative 1			Date inputed	10/23/96
	Northbound	Southbound	Eastbound	Westbound
Approach Flow Rate	370	632	127	760
Proportion Subject Approach Flow Rate	0.2	0.33	0.07	0.4
Porportion Opposing Approach Flow Rate	0.33	0.2	0.4	0.07
Lanes on Subject Approach	1	2	1	2
Lanes on Opposing Approach	2	1	2	1
Proportion Left Turn Opposing Approach	0.67	0.07	0.05	0.3
Proportion Right Turn Opposing Approach	0.1	0.12	0.84	0.13
Proportion Left Turn Conflicting Approach	0.09	0.09	0.45	0.45
Proportion Right Turn Conflicting Approach	0.74	0.74	0.11	0.11
Approach Capacity	445	968	401	583
V/C Ratio	0.8315	0.6529	0.3167	1.3036
Approach Total Delay	23.6	12.0	3.3	141.7
Intersection Total Delay	**65.8**			
Level of Service (Intersectic	**F**			

Center For Microcomputers In Transportation
University of Florida
712 Weil Hall
Gainesville, FL 32611-2083
Ph: (904) 392-0378

Streets: (N-S) Madison Av (E-W) Winslow Way
Analyst..... TDA Inc (DM)
Date of Analysis..... 10/23/96
Other Information.....Winslow Sub area 1823 - Alternative 1
All-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	1	0	> 1	< 0	0	> 1	1
Volumes	27	299	44	421	149	62	38	73	16	39	79	642
PHF	1	1	1	1	1	1	1	1	1	1	1	1

Volume Summary and Capacity Analysis WorkSheet

	NB	SB	EB	WB
LT Flow Rate	27	421	38	39
RT Flow Rate	44	62	16	642
Approach Flow Rate	370	632	127	760
Proportion LT	0.07	0.67	0.30	0.05
Proportion RT	0.12	0.10	0.13	0.84
Opposing Approach Flow Rate	632	370	760	127
Conflicting Approaches Flow Rate	887	887	1002	1002
Proportion, Subject Approach Flow Rate	0.20	0.33	0.07	0.40
Proportion, Opposing Approach Flow Rate	0.33	0.20	0.40	0.07
Lanes on Subject Approach	1	2	1	2
Lanes on Opposing Approach	2	1	2	1
LT, Opposing Approach	421	27	39	38
RT, Opposing Approach	62	44	642	16
LT, Conflicting Approaches	77	77	448	448
RT, Conflicting Approaches	658	658	106	106
Proportion LT, Opposing Approach	0.67	0.07	0.05	0.30
Proportion RT, Opposing Approach	0.10	0.12	0.84	0.13
Proportion LT, Conflicting Approaches	0.09	0.09	0.45	0.45
Proportion RT, Conflicting Approaches	0.74	0.74	0.11	0.11
*Range limit(s) exceeded (see below)	*	*	*	*

Range Limit(s) Exceeded

Range limits from HCM Table 10-7 (p. 10-47), implementing HCM Range of Model Validity (p. 10-37).

Northbound approach:

An intersection volume of 1889 has caused a range check to be made for this approach.
The following range limit(s) have been exceeded:

The proportion of left turns on the opposing approach is 0.67.
This is outside the permitted range of 0.00 - 0.36.

The proportion of right turns on the conflicting approach is 0.74.
This is outside the permitted range of 0.00 - 0.52.

Southbound approach:

An intersection volume of 1889 has caused a range check to be made for this approach.
The following range limit(s) have been exceeded:

The proportion of right turns on the conflicting approach is 0.74.
This is outside the permitted range of 0.00 - 0.52.

Eastbound approach:

An intersection volume of 1889 has caused a range check to be made for this approach.
The following range limit(s) have been exceeded:

The proportion of the volume on the subject approach is 0.07.
This is outside the permitted range of 0.20 - 0.50.

The proportion of right turns on the opposing approach is 0.84.
This is outside the permitted range of 0.00 - 0.62.

HCM: SIGNALIZED INTERSECTION SUMMARY Version 2.4d 01-09-1997
Center For Microcomputers In Transportation

Streets: (E-W) High School Road (N-S) SR 305
Analyst: TDA Inc (DAN) File Name: 1HS305LT.HC9
Area Type: Other 10-25-96 PM Peak
Comment: Winslow Sub Area 1823, Alternative 1 NEW EB LFT/THRU AND TIMING

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	> 1	1	1	1	1	1	2	<	1	2	<
Volumes	577	360	81	26	359	241	157	552	47	118	461	291
PHF or PK15	0.85	0.85	0.85	0.79	0.79	0.79	0.61	0.61	0.61	0.76	0.76	0.76
Lane W (ft)	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0		12.0	12.0	
Grade		0			0			0			0	
% Heavy Veh	3	0	0	5	4	3	4	2	6	2	4	2
Parking	(Y/N)	N		(Y/N)	N		(Y/N)	N		(Y/N)	N	
Bus Stops			0			0			0			0
Con. Peds			0			0			10			0
Ped Button	(Y/N)	N		(Y/N)	N		(Y/N)	N		(Y/N)	N	
Arr Type	3	3	3	3	3	3	4	4		3	3	
RTOR Vols			37			77			11			98
Lost Time	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
Prop. Share	20											
Prop. Prot.												

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	*				NB	Left	*			
	Thru	*					Thru		*		
	Right	*					Right		*		
	Peds	*	*				Peds		*		
WB	Left		*			SB	Left	*			
	Thru		*				Thru		*		
	Right		*				Right		*		
	Peds		*				Peds		*		
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		25.0A	20.0A			Green		12.0A	22.0A		
Yellow/AR		5.0	5.0			Yellow/AR		5.0	5.0		

Cycle Length: 99 secs Phase combination order: #1 #2 #5 #6

Intersection Performance Summary

	Lane Group: Mvmts	Cap	Adj Sat Flow	v/c Ratio	g/C Ratio	Delay	LOS	Approach: Delay	LOS
EB	L	478	1752	1.136	0.273	106.9	F	92.6	F
	LT	512	1877	1.094	0.273	85.6	F		
	R	440	1615	0.116	0.273	17.5	C		
WB	L	382	1719	0.086	0.222	19.7	C	75.2	F
	T	406	1827	1.118	0.222	102.6	F		
	R	348	1568	0.597	0.222	24.3	C		
NB	L	245	1736	1.047	0.141	80.1	F	90.5	F
	TR	895	3690	1.131	0.242	93.2	F		
SB	L	250	1770	0.619	0.141	29.1	D	59.6	E
	TR	855	3526	1.058	0.242	64.8	F		

Intersection Delay = 80.7 sec/veh Intersection LOS = F
Lost Time/Cycle, L = 12.0 sec Critical v/c(x) = 1.116

HCM: SIGNALIZED INTERSECTION SUMMARY Version 2.4d 01-09-1997
Center For Microcomputers In Transportation

Streets: (E-W) Winslow Way (N-S) SR 305
Analyst: TDA INC DAN File Name: A1WW305N.HC9
Area Type: Other 11-19-96 PM PEAK
Comment: Winslow Sub Area 1823, clear phase optimization

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	1	1	1	1	1		> 2 <			> 2 <	
Volumes	207	255	99	12	321	181	64	158	5	128	130	312
PHF or PK15	57	71	28	7	182	103	34	84	3	39	39	94
Lane W (ft)	12.0	12.0	12.0	12.0	12.0	12.0		12.0			12.0	
Grade		0			0			3			0	
% Heavy Veh	6	3	10	0	2	1	3	7	22	0	14	2
Parking	(Y/N)	N		(Y/N)	N		(Y/N)	N		(Y/N)	N	
Bus Stops			0			0			0			0
Con. Peds			4			23			28			0
Ped Button	(Y/N)	N		(Y/N)	N		(Y/N)	N		(Y/N)	N	
Arr Type	3	3	3	3	3	3		5			3	
RTOR Vols			3			37			0			62
Lost Time	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
Prop. Share												
Prop. Prot.												

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	*	*			NB	Left		*		
	Thru	*	*				Thru		*		
	Right	*	*				Right		*		
	Peds	*	*				Peds		*		
WB	Left		*			SB	Left	*			
	Thru		*				Thru	*			
	Right		*				Right	*			
	Peds		*				Peds	*		*	
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		4.6A	25.3A			Green		12.0A	8.9A	13.6A	
Yellow/AR		4.0	4.0			Yellow/AR		4.0	4.0	0.0	

Cycle Length: 80 secs Phase combination order: #1 #2 #5 #6 #7

Intersection Performance Summary

	Lane Group: Mvmts	Cap	Adj Sat Flow	v/c Ratio	g/C Ratio	Delay	LOS	Approach: Delay	LOS
EB	L	209	1703	1.091	0.434	94.7	F	40.9	E
	T	801	1845	0.355	0.434	9.9	B		
	R	636	1465	0.171	0.434	9.0	B		
WB	L	256	782	0.109	0.327	12.2	B	93.0	F
	T	609	1863	1.195	0.327	130.5	F		
	R	516	1578	0.635	0.327	16.7	C		
NB	LTR	427	3468	1.190	0.123	128.3	F	128.3	F
SB	LTR	540	3342	1.192	0.162	134.9	F	134.9	F

Intersection Delay = 97.4 sec/veh Intersection LOS = F

Lost Time/Cycle, L = 9.0 sec Critical v/c(x) = 0.962

HCM: SIGNALIZED INTERSECTION SUMMARY Version 2.4d 01-09-1997
Center For Microcomputers In Transportation

Streets: (E-W) Winslow Way (N-S) SR 305
Analyst: TDA INC DAN File Name: A1WW305Z.HC9
Area Type: Other 11-19-96 PM PEAK
Comment: #1823, Ferry ALT A (4 lane): prior to recalc'd NB phase

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	1	1	1	1	1		> 2 <			> 1	1
Volumes	207	255	99	12	320	182	101	251	8	128	130	312
PHF or PK15	57	71	28	7	182	103	43	106	3	39	39	94
Lane W (ft)	12.0	12.0	12.0	12.0	12.0	12.0		12.0			12.0	12.0
Grade		0			0			3			0	
% Heavy Veh	6	3	10	0	2	1	3	7	22	0	14	2
Parking	(Y/N)	N		(Y/N)	N		(Y/N)	N		(Y/N)	N	
Bus Stops			0			0			0			0
Con. Peds			4			23			28			0
Ped Button	(Y/N)	Y	11.5 s	(Y/N)	Y	14.5 s	(Y/N)	Y	14.5 s	(Y/N)	Y	14.5
Arr Type	3	3	3	3	3	3		5			3	3
RTOR Vols			3			37			0			62
Lost Time	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
Prop. Share												
Prop. Prot.			28			37						32

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	*	*			NB	Left		*		
	Thru		*				Thru		*		
	Right		*				Right		*		
	Peds		*				Peds		*		
WB	Left	*	*			SB	Left	*			
	Thru		*				Thru	*			
	Right		*				Right	*			
	Peds		*				Peds	*		*	
NB	Right					EB	Right		*		
SB	Right					WB	Right	*			
Green		9.0A	36.0A			Green		19.0A	18.0A	12.0P	
Yellow/AR		4.0	4.0			Yellow/AR		4.0	4.0	0.0	

Cycle Length: 110 secs Phase combination order: #1 #2 #5 #6 #7

Intersection Performance Summary

	Lane Group: Mvmts	Cap	Adj Sat Flow	v/c Ratio	g/C Ratio	Delay	LOS	Approach: Delay	LOS
EB	L	220	1703	1.036	0.455	81.2	F	41.8	E
	T	621	1845	0.458	0.336	22.1	C		
	R	746	1465	0.146	0.509	10.9	B		
WB	L	351	1805	0.080	0.455	13.3	B	84.7	F
	T	627	1863	1.162	0.336	120.7	F		
	R	861	1578	0.381	0.545	11.0	B		
NB	LTR	600	3471	1.064	0.173	68.8	F	68.8	F
SB	LT	315	1732	0.991	0.182	70.7	F	79.8	F
	R	288	1583	1.046	0.182	89.3	F		

Intersection Delay = 71.3 sec/veh Intersection LOS = F
Lost Time/Cycle, L = 9.0 sec Critical v/c(x) = 0.951

HCM: SIGNALIZED INTERSECTION SUMMARY Version 2.4d 01-09-1997
Center For Microcomputers In Transportation

Streets: (E-W) Winslow Way (N-S) SR 305
Analyst: TDA INC (jd) File Name: A2WW305Z.HC9
Area Type: Other 11-19-96 PM PEAK
Comment: #1823, FERRY ALT B, (5 LANE), prior to recalc'd nb

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	1	1	1	1	1		> 2 <			> 2	1
Volumes	207	255	99	12	320	182	101	251	8	128	130	312
PHF or PK15	57	71	28	7	182	103	43	106	3	39	39	94
Lane W (ft)	12.0	12.0	12.0	12.0	12.0	12.0		12.0			12.0	12.0
Grade		0			0			3			0	
% Heavy Veh	6	3	10	0	2	1	3	7	22	0	14	2
Parking	(Y/N)	N		(Y/N)	N		(Y/N)	N		(Y/N)	N	
Bus Stops			0			0			0			0
Con. Peds			4			23			28			0
Ped Button	(Y/N)	Y	14.5 s	(Y/N)	Y	17.5 s	(Y/N)	Y	14.5 s	(Y/N)	Y	14.5
Arr Type	3	3	3	3	3	3		5			3	3
RTOR Vols			3			37			0			62
Lost Time	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
Prop. Share												
Prop. Prot.			25			26						0

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	*	*			NB	Left		*		
	Thru		*				Thru		*		
	Right		*				Right		*		
	Peds		*				Peds		*		
WB	Left	*	*			SB	Left	*			
	Thru		*				Thru	*			
	Right		*				Right	*			
	Peds		*				Peds	*		*	
NB	Right					EB	Right		*	*	
SB	Right					WB	Right	*			
Green		9.0A	37.0A			Green		18.0A	18.0A	12.0P	
Yellow/AR		4.0	4.0			Yellow/AR		4.0	4.0	0.0	

Cycle Length: 110 secs Phase combination order: #1 #2 #5 #6 #7

Intersection Performance Summary

	Lane Mvmts	Group: Cap	Adj Sat Flow	v/c Ratio	g/C Ratio	Delay	LOS	Approach: Delay	LOS
EB	L	220	1703	1.036	0.464	81.3	F	40.8	E
	T	637	1845	0.446	0.345	21.5	C		
	R	919	1465	0.119	0.627	6.3	B		
WB	L	360	1805	0.078	0.464	12.9	B	73.2	F
	T	644	1863	1.131	0.345	103.5	F		
	R	861	1578	0.381	0.545	11.0	B		
NB	LTR	600	3471	1.064	0.173	68.8	F	68.8	F
SB	LT	598	3465	0.548	0.173	32.4	D	71.0	F
	R	273	1583	1.101	0.173	113.0	F		

Intersection Delay = 65.0 sec/veh Intersection LOS = F
Lost Time/Cycle, L = 12.0 sec Critical v/c(x) = 0.399

HCM: SIGNALIZED INTERSECTION SUMMARY Version 2.4d 01-09-1997
Center For Microcomputers In Transportation

Streets: (E-W) Winslow Way (N-S) SR 305
Analyst: TDA INC File Name: A3WW305Z.HC9
Area Type: Other 11-19-96 PM PEAK
Comment: #1823, Ferry Alt. C (6 LANE) prior to recalc'd nb

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	1	1	1	1	1	> 2		1	> 2		1
Volumes	207	255	99	12	320	182	101	251	8	128	130	312
PHF or PK15	57	71	28	7	182	103	43	106	3	39	39	94
Lane W (ft)	12.0	12.0	12.0	12.0	12.0	12.0		12.0	12.0		12.0	12.0
Grade		0			0			3			0	
% Heavy Veh	6	3	10	0	2	1	3	7	22	0	14	2
Parking	(Y/N)	N		(Y/N)	N		(Y/N)	N		(Y/N)	N	
Bus Stops			0			0			0			0
Con. Peds			4			23			28			0
Ped Button	(Y/N)	Y	17.5 s	(Y/N)	Y	17.5 s	(Y/N)	Y	14.5 s	(Y/N)	Y	14.5
Arr Type	3	3	3	3	3	3		5	3		3	3
RTOR Vols			3			37			0			62
Lost Time	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
Prop. Share												
Prop. Prot.			47			38						10

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	*	*			NB	Left		*		
	Thru		*				Thru		*		
	Right		*				Right		*		
	Peds		*				Peds		*		
WB	Left	*	*			SB	Left	*			
	Thru		*				Thru	*			
	Right		*				Right	*			
	Peds		*				Peds	*			
NB	Right					EB	Right		*	*	
SB	Right					WB	Right	*			
Green		9.0A	37.0A			Green		18.0A	18.0A	12.0P	
Yellow/AR		4.0	4.0			Yellow/AR		4.0	4.0	0.0	

Cycle Length: 110 secs Phase combination order: #1 #2 #5 #6 #7

Intersection Performance Summary

	Lane Mvmts	Group: Cap	Adj Sat Flow	v/c Ratio	g/C Ratio	Delay	LOS	Approach: Delay	LOS
EB	L	220	1703	1.036	0.464	81.3	F	40.8	E
	T	637	1845	0.446	0.345	21.5	C		
	R	919	1465	0.119	0.627	6.3	B		
WB	L	360	1805	0.078	0.464	12.9	B	73.2	F
	T	644	1863	1.131	0.345	103.5	F		
	R	861	1578	0.381	0.545	11.0	B		
NB	LT	601	3481	1.041	0.173	60.9	F	60.3	F
	R	222	1283	0.054	0.173	28.9	D		
SB	LT	598	3465	0.548	0.173	32.4	D	71.0	F
	R	273	1583	1.101	0.173	113.0	F		

Intersection Delay = 63.2 sec/veh Intersection LOS = F
Lost Time/Cycle, L = 12.0 sec Critical v/c(x) = 0.399

HCM: SIGNALIZED INTERSECTION SUMMARY Version 2.4d 01-09-1997
Center For Microcomputers In Transportation

Streets: (E-W) Winslow Way (N-S) SR 305
Analyst: TDA Jd File Name: A4WW305.HC9
Area Type: Other 10-31-96 pm peak
Comment: Winslow Sub area - 1823 - Alt 2. with underpass - Alt 4

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	1	1	1	1	1	1	1 <		> 1		1
Volumes	207	81	210	12	71	69	282	16	4	67	11	250
PHF or PK15	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
Lane W (ft)	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0			12.0	12.0
Grade		0			0			0			0	
% Heavy Veh	2	2	2	2	2	2	2	2	2	2	2	2
Parking	(Y/N)	N		(Y/N)	N		(Y/N)	N		(Y/N)	N	
Bus Stops			0			0			0			0
Con. Peds			200			250			200			100
Ped Button	(Y/N)	Y	10.0 s	(Y/N)	Y	10.0 s	(Y/N)	Y	14.5 s	(Y/N)	Y	14.5
Arr Type	3	3	3	3	3	3	3	3			3	3
RTOR Vols			0			0			0			0
Lost Time	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
Prop. Share												
Prop. Prot.			52			59			37			54

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	*				NB	Left	*			
	Thru	*					Thru	*			
	Right	*					Right	*			
	Peds	*					Peds	*			
WB	Left		*			SB	Left		*		
	Thru		*				Thru		*		
	Right		*				Right		*		
	Peds		*				Peds		*		
NB	Right					EB	Right	*			
SB	Right	*				WB	Right		*		
Green		14.0A	10.0A			Green		18.0A	12.0A		
Yellow/AR		4.0	4.0			Yellow/AR		4.0	4.0		

Cycle Length: 70 secs Phase combination order: #1 #2 #5 #6

Intersection Performance Summary

	Lane Group: Mvmts	Cap	Adj Sat Flow	v/c Ratio	g/C Ratio	Delay	LOS	Approach: Delay	LOS
EB	L	379	1770	0.728	0.214	21.3	C	14.5	B
	T	399	1863	0.271	0.214	14.9	B		
	R	683	1406	0.410	0.486	7.7	B		
WB	L	278	1770	0.058	0.157	16.2	C	14.1	B
	T	293	1863	0.325	0.157	17.2	C		
	R	467	1362	0.197	0.343	10.5	B		
NB	L	480	1770	0.783	0.271	20.9	C	20.3	C
	TR	482	1775	0.054	0.271	12.2	B		
SB	LT	332	1786	0.314	0.186	16.1	C	11.1	B
	R	662	1495	0.503	0.443	9.6	B		

Intersection Delay = 15.0 sec/veh Intersection LOS = B
Lost Time/Cycle, L = 9.0 sec Critical v/c(x) = 0.558

APPENDIX C

Estimation of Winslow Loop Operation

Project: **Winslow Circulator**
System: Downtown Loop
Element:
Year: 2015 (Costs in 1996 $)

rdc1ab&. Print "Landscape" A1..BY46 **INPUT**

Notes:

INPUT VEHICLE AND LINK VOLUMES			Description:/Source	File:
Vehicle Capacity, persons =	17		Champion TransVan (Jane's 1990)	
Pk.Hr. Load Factor, persons =	80%			
Mean Pk.Hr. load, persons =	13.6		on the average, nobody stands; but peaks within the peak hour	
Design Day Passengers, 2-way	831	MLP=1	based on trip attraction rate (Ex. 5-1, Pushkarev and Zupan)	
Percent of Daily in Peak Hour =	16.3%		low peak factor since would use	
Pk. Link Vol, 2-way, pers/hr:	135	pers/hour		
1-way @ 70%	95	pers/hour		
Two-way SHUTTLE or open LOOP?		loop	ONE-way or TWO--way? two	
Station Spacing based on MEAN or by SEGMENT?		mean		
Policy Headway, minutes	see table to right			
Max. speed, mph	20	32.2 kph		
max. speed, fps	29.3	8.9 mps		
accel, decel, fps2	4	1.22 mps2		
Number of Stations (see notes):	6			
Round Trip Length, ft.	18,480	5,636 m		

POLICY HEADWAYS (time between departures)		Minutes:		
SEASON	DAY	PEAK	OFF-PEAK	EARLY, LATE
Peak Winter	Design Day -- wkday	10	10	10
	Weekend + Holiday	10	10	10
Summer	Weekday	10	10	10
	Weekend	10	10	10
Shoulder	Weekday	10	10	10
	Weekend	10	10	10

DISTRIBUTION BY DAY OF WEEK, SEASON			
SEASON		DAYS/YR.	% OF DESIGN DAY
Peak Winter	Design Day -- wkday	250	100%
	Weekend + Holiday	115	40%
Summer	Weekday	0	0%
	Weekend	0	0%
Shoulder	Weekday	0	0%
	Weekend	0	0%
Total		365	81%

CAPITAL COSTS:	1993 US$		
ITEM	UNIT $	UNITS	SOURCE
Route cost, per 1-way lin.ft.	$0	100% rte.	
per 1-way meter	$0		
Structures, total for system	$0	1 each	
Vehicles/consists, ea.	$40,000	(calculated)	
Terminal stations	$0	(calculated)	
Intermediate stations	$0	(calculated)	
Control & Communic.	$0	1 each	
Maintenance Facility	$0	1 each	
Rights-of-way	$0	1 each	

DISTRIBUTION OF HOURS		SERVICE HOURS PER DAY			
SEASON		PEAK	OFF-PEAK	EARLY LATE	TOTAL
Peak Winter	Design Day -- wkday	4	6	2	12
	Weekend + Holiday	4	6	2	12
Summer	Weekday	0	0	0	0
	Weekend	0	0	0	0
Shoulder	Weekday	0	0	0	0
	Weekend	0	0	0	0
Demand as % of Peak Period:		100%	31%	15%	

OPERATING COSTS/REVENUES	1993 US$	
ITEM	UNIT $	SOURCE
System O&M per veh.hour	$30.00	
System O&M per veh. mile	$0.00	
Avg. fare per passenger	$0.00	
Other operating rev./year	$0	

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INPUT

For: Two-way Loop based on: mean station spacing

MEAN STA. SPACING INPUT:

SPEED/ROUTE LENGTH/DWELLS:				USED HERE	
Segment	Max. Speed mph	fps	kph	Dwell sec.	Length, ft.
Total loop	20	29.3	32.2	below	18,480
Dwell times:					
	Terminal Stations:			20	
	Intermediate Stations:			0	

SEGMENT INPUT

SEGMENT SPEEDS/LENGTHS:					VOID, USE MEAN	RESULTS, BY SEGMENT:			
Number of Segments used:			loop		6				
Segment	Max. Speed mph	fps	kph	Dwell sec.	Length, ft.	Length Used, ft.	Time, sec.	Time min.	Average Speed, mph
1	20	29.3	32.2	20	18,480	18,480	657	10.96	19.2
2	15	22.0	24.1			0	0	0.00	n.a
3	50	73.3	80.5			0	0	0.00	n.a
4	55	80.7	88.5			0	0	0.00	n.a
5	55	80.7	88.5			0	0	0.00	n.a
6	55	80.7	88.5			0	0	0.00	n.a
7	55	80.7	88.5			0	0	0.00	n.a
8	50	73.3	80.5			0	0	0.00	n.a
9	12.5	18.3	20.1			0	0	0.00	n.a
10	12.5	18.3	20.1			0	0	0.00	n.a
11	15	22.0	24.1			0	0	0.00	n.a
12	15	22.0	24.1	15		0	0	0.00	n.a
totals:				35	18,480	18,480	657	10.96	19.168

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OUTPUT

SUMMARY OF RESULTS

Project: *Winslow Circulator* Date: 10-Dec-96
File: rdc1ab&.

System: Downtown Loop
Element: 0
Year: 2015

Route Type: Two-way Loop
Sta. Spacing: mean station spacing

Vehicle/train capacity, persons:	17
Round trip length, miles	3.50
Round trip length, kilometers	5.64
Peak Departures/hr, design day	13.90

RESULTS FOR TIME, SPEED, VEHICLES REQUIRED:					
	RT TIME,	MEAN SPEED		FLEET	
APPROACH:	min.	mph	kph	MAX. OPER.	SPARES
MEAN	11.57	18.16	29.21		
SEGMENT	n.a.	n.a.	n.a.		
FOR: mean				3	1

RIDERSHIP:	Input	Output	Difference
Peak (design) Day:	831	832	0%
Peak Hour, two-way	135		
Peak Hour, one-way	95		
Annual:		246,222	
Equiv. peak days per year		296	

Note: Comparison of Input and output for the Peak (design) Day is is check on Distribution of Hours (page 1)

CAPITAL COST (in US$)			
Item	Number	Unit $	Total $,
Route Cost, for 1-way lngth,ft.	100%	of 1-way rte.	
At a cost per foot of	36,960	$0	$0.0
At a cost per meter of	11,273	$0	$0.0
Structures, total for system	1	$0	$0.0
Vehicles/consists, ea.	4	$40,000	$0.2
Terminal Stations	2	$0	$0.0
Intermediate Stations	4	$0	$0.0
Control & Comm.	1	$0	$0.0
Maint. Facil. Expansion	1	$0	$0.0
Rights-of-Way	1	$0	$0.0
total			$0

COST PER PASSENGER	
Ann O & M $/Ann. Passenger	$1.19
Ann. Capital $/Ann. Passenge	$0.06
Total cost per passenger	$1.25

NET OPERATING REVENUES	
Average fare per passenger	$0.00
Ann. Farebox Rev, $ millions	$0.00
Other Oper. Rev., $ millions	$0.00
Total Ann.Oper. Rev., $ million	$0.00
Annual O & M Cost, $ millions	$0.29
Net Ann. Oper. Rev. (subsidy)	($0.29)

PRESENT VALUE OF COST , $ mil.	
Discount rate:	8%
Ann. Inflation Rate:	0%
System life:	25
Yrs to Midpoint of Constr.	2
Present Values ($ millions)	
Capital	$0
Oper. and Maint.	$3
TOTAL	$3

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OUTPUT

For: Two-way Loop based on: mean station spacing

il.

CALCULATIONS FOR MEAN STATION SPACING

Time Calculations based on *Mean* station spacing		for	USED HERE *loop*	
Dwell from previous		*English*		*Metric*
dwell @ terminals, sec.	1	20	sec.	20 sec
dwell @ interm.stops	5	0	sec.	0 sec
ROUND TRIP CALCULATIONS				
Round trip length		3.5	miles	5.6 km
number of segments		6		6
avg. dwell/stop		3	sec	3 sec
dist. betw. stations		3,080	ft.	939 m
		29.3	fps	8.9 mps
segment time		115.7	sec	115.7 sec.
segment time		1.93	min.	1.93 min
mean speed		26.63	fps	8.12 mps
mean speed		18.2	mph	29.2 kph
loop round trip time		11.6	min.	11.6 kps

FLEET CALCULATIONS:				
round trip time	mean	11.57	min.	11.57 min.
Mean speed		18.16	mph	29.2 kph
depart./hr./veh.(consist)		5.19		5.19
theor. # veh.(consists)		2.68	veh	2.68 veh
integer # Veh.(consists)		3	veh	3 veh
spare veh. @	10%	1	veh	1 veh
Total depart./hr.		13.9		13.9
Min. Veh. Oper, Policy, peak		2.31	veh	2.31 veh.
" " ", ", Integer, peak		3	veh	3 veh.
SPARE VEH @	10%	1	veh	1 veh
Peak hour demand, 1-way,pers.		95	pers.	95 pers
Avg. demand/departure		7	pers.	7 pers
Req'd peak cap'y:	125%	9	pers.	9 pers

CALCULATIONS BY INDIVIDUAL SEGMENTS

Time calculations based on individual route *Segments:*		VOID, USE MEAN
Capacity =		17
Pk.Hr. Load Factor =		80%
Mean Pk.Hr. load =		13.6
Pk. Link Vol, 2-way, pers/hr:		135
1-way @	70%	95
Number of Stations =		6
(includes 1 terminal sta.)		
Policy Hdway,max.,minutes		see table
round trip length, ft.		18,480
Round trip length, miles		3.5
Number of Segments		6
Max. speed, mph		20
max. speed, fps		29.3
accel, decel, fps2		4
Fleet Results:		
round trip time, min.		11.0
Peak hour:		
depart./hr./veh.(consist)		5.48
theor. # veh.(consists)		2.54
integer # Veh.(consists)		3
spare veh. @	10%	1
Total depart./hr.		13.9
Min. Veh. Oper, Policy Hdway		2.19
" " ", ", Integer		3
Spare Veh. @	10%	1
Peak hour demand, 1-way,pers.		95
Avg. demand/departure		7
Req'd peak cap'y:	125%	9
avg. speed, fps =		28.11
avg. speed, mph =		19.2

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Time Calculations by Segment below: VOID, USE MEAN

For: Two-way Loop based on: mean station spacing

10-Dec-96 rdc1ab&.

RESULTS... (ALL COSTS/REVENUES IN 1996 $)

OUTPUT

FLEET REQUIRED BY SEASON, TIME OF DAY, ANN. O&M $ cell P2

SEASON	DAYS/ YEAR	VEHICLES BY PERIOD OF DAY PEAK	MID-DAY	OFF-PEAK	VEH. HRS. PER DAY	VEH. HRS. PER YEAR
Peak Winter						
Design Day – w	250	3 D	2 P	2 P	28	7,000
Weekend + Holi	115	2 P	2 P	2 P	24	2,760
Summer						
Weekday	0	0 n	0 n	0 n	0	0
Weekend	0	0 n	0 n	0 n	0	0
Shoulder						
Weekday	0	0 n	0 n	0 n	0	0
Weekend	0	0 n	0 n	0 n	0	0
TOTALS	365				52	9,760

*Fleet sized by: D = Demand
P = Policy
n = no service

Annual Oper hours/total veh.	2,440
O&M Cost per hour:	$30.00
Annual O&M, $ thous.	$293

(calcns. at BH66)

PASSENGERS BY PERIOD & SEASON

SEASON	DAYS/ YEAR	PASS. BY PERIOD OF DAY PEAK	MID-DAY	OFF-PK.	PASS. PER DAY	PASS. PER YEAR
Peak Winter						
Design Day –	250	540	251	41	832	207,958
Weekend +	115	216	100	16	333	38,264
Summer						
Weekday	0	0	0	0	0	0
Weekend	0	0	0	0	0	0
Shoulder						
Weekday	0	0	0	0	0	0
Weekend	0	0	0	0	0	0
TOTALS	365	–	–	–	–	246,222

PRODUCTIVITY

SEASON	PASS. PER VEH. HOUR PEAK	MID-DAY	OFF-PEA	ALL-DAY	PASS. PER VEH. MILE PEAK	MID-DAY	OFF-PEAK	ALL-DAY
Peak Winter								
Design Day – w	45	21	10	30	2.5	1.2	0.6	1.5
Weekend + Holi	27	8	4	14	1.5	0.5	0.2	0.7
Summer								
Weekday	no srvc	no srvc	no srvc	no srvc	no srvc	no srvc	no srvc	no srvc
Weekend	no srvc	no srvc	no srvc	no srvc	no srvc	no srvc	no srvc	no srvc
Shoulder								
Weekday	no srvc	no srvc	no srvc	no srvc	no srvc	no srvc	no srvc	no srvc
Weekend	no srvc	no srvc	no srvc	no srvc	no srvc	no srvc	no srvc	no srvc

AVERAGE HEADWAYS BY SEASON, TIME OF DAY

SEASON	DAYS/ YEAR	AVERAGE HEADWAY, minutes PEAK	MID-DAY	OFF-PEAK
Peak Winter				
Design Day – w	250	4	6	6
Weekend + Holi	115	6	6	6
Summer				
Weekday	0	ERR	ERR	ERR
Weekend	0	ERR	ERR	ERR
Shoulder				
Weekday	0	ERR	ERR	ERR
Weekend	0	ERR	ERR	ERR
TOTALS	365			

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MADISON AVE/WINSLOW WAY

ALTERNATIVE 2

Intersection: Madison Ave/Winslow Way			Date Printed	10/25/96
Scenario: Alternative 2			Date inputed	10/25/96
	Northbound	Southbound	Eastbound	Westbound
Approach Flow Rate	371	578	127	639
Proportion Subject Approach Flow Rate	0.22	0.34	0.07	0.37
Porportion Opposing Approach Flow Rate	0.34	0.22	0.37	0.07
Lanes on Subject Approach	1	2	1	2
Lanes on Opposing Approach	2	1	2	1
Proportion Left Turn Opposing Approach	0.63	0.07	0.06	0.3
Proportion Right Turn Opposing Approach	0.11	0.12	0.82	0.13
Proportion Left Turn Conflicting Approach	0.1	0.1	0.42	0.42
Proportion Right Turn Conflicting Approach	0.7	0.7	0.11	0.11
Approach Capacity	471	977	382	562
V/C Ratio	0.7877	0.5916	0.3325	1.1370
Approach Total Delay	19.9	9.5	3.5	75.2
Intersection Total Delay	**35.8**			
Level of Service (Intersection)	**E**			

HCM: SIGNALIZED INTERSECTION SUMMARY Version 2.4d 01-09-1997
Center For Microcomputers In Transportation

Streets: (E-W) SR 305 (N-S) High School
Analyst: TDA Inc (DAN) File Name: 3HS305.HC9
Area Type: Other 10-25-96 PM Peak
Comment: Winslow Sub Area 1823, Alternative 3

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	1	1	1	1	1	1	2	<	1	2	<
Volumes	504	293	63	20	259	246	112	677	25	114	575	208
PHF or PK15	0.85	0.85	0.85	0.79	0.79	0.79	0.61	0.61	0.61	0.76	0.76	0.76
Lane W (ft)	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0		12.0	12.0	
Grade		0			0			0			0	
% Heavy Veh	3	0	0	5	4	3	4	2	6	2	4	2
Parking	(Y/N)	N		(Y/N)	N		(Y/N)	N		(Y/N)	N	
Bus Stops			0			0			0			0
Con. Peds			0			0			10			0
Ped Button	(Y/N)	N		(Y/N)	N		(Y/N)	N		(Y/N)	N	
Arr Type	3	3	3	3	3	3	4	4		3	3	
RTOR Vols			37			77			11			98
Lost Time	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
Prop. Share												
Prop. Prot.												

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	*	*			NB	Left	*			
	Thru		*	*			Thru		*		
	Right		*	*			Right		*		
	Peds		*	*			Peds		*		
WB	Left	*				SB	Left	*			
	Thru			*			Thru		*		
	Right			*			Right		*		
	Peds			*			Peds		*		
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		3.0A	12.0A	11.0A		Green		7.0A	15.0A		
Yellow/AR		5.0	5.0	5.0		Yellow/AR		5.0	5.0		

Cycle Length: 73 secs Phase combination order: #1 #2 #3 #5 #6

Intersection Performance Summary

	Lane Group: Mvmts	Cap	Adj Sat Flow	v/c Ratio	g/C Ratio	Delay	LOS	Approach: Delay	LOS
EB	L	528	1752	1.123	0.301	91.7	F	60.1	F
	T	781	1900	0.442	0.411	10.3	B		
	R	664	1615	0.045	0.411	8.3	B		
WB	L	118	1719	0.212	0.068	20.9	C	45.7	E
	T	325	1827	1.008	0.178	60.0	E		
	R	279	1568	0.766	0.178	26.6	D		
NB	L	214	1736	0.860	0.123	35.6	D	*	*
	TR	865	3714	1.376	0.233	*	*		
SB	L	218	1770	0.687	0.123	25.7	D	81.1	F
	TR	838	3600	1.130	0.233	89.9	F		

Intersection Delay = * (sec/veh) Intersection LOS = *

(g/C)*(V/c) is greater than one. Calculation of D1 is infeasable.

HCM: SIGNALIZED INTERSECTION SUMMARY - Version 2.4d 01-09-1997
Center For Microcomputers In Transportation

Streets: (E-W) High School Road (N-S) SR 305
Analyst: TDA Inc (JD) File Name: 3HS305M.HC9
Area Type: Other 10-26-96 PM Peak
Comment: Winslow Sub Area 1823, Alternative 3 WITH MITIGATION

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	> 1	1	1	1	1	1	2	<	1	2	<
Volumes	504	293	63	20	259	246	112	677	25	114	575	208
PHF or PK15	0.85	0.85	0.85	0.79	0.79	0.79	0.61	0.61	0.61	0.76	0.76	0.76
Lane W (ft)	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0		12.0	12.0	
Grade		0			0			0			0	
% Heavy Veh	3	0	0	5	4	3	4	2	6	2	4	2
Parking	(Y/N)	N		(Y/N)	N		(Y/N)	N		(Y/N)	N	
Bus Stops			0			0			0			0
Con. Peds			0			0			10			0
Ped Button	(Y/N)	N		(Y/N)	N		(Y/N)	N		(Y/N)	N	
Arr Type	3	3	3	3	3	3	4	4		3	3	
RTOR Vols			37			77			11			98
Lost Time	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
Prop. Share	22								0			
Prop. Prot.			27			44						

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	*				NB	Left	*			
	Thru	*					Thru		*		
	Right	*					Right		*		
	Peds	*					Peds		*		
WB	Left		*			SB	Left	*			
	Thru		*				Thru		*		
	Right		*				Right		*		
	Peds		*				Peds		*		
NB	Right					EB	Right	*			
SB	Right					WB	Right	*			
Green		22.0A	13.0A			Green		7.0A	28.0A		
Yellow/AR		5.0	5.0			Yellow/AR		5.0	5.0		

Cycle Length: 90 secs Phase combination order: #1 #2 #5 #6

Intersection Performance Summary

	Lane Group: Mvmts	Cap	Adj Sat Flow	v/c Ratio	g/C Ratio	Delay	LOS	Approach: Delay	LOS
EB	L	467	1752	0.991	0.267	51.1	E	45.2	E
	LT	500	1874	0.951	0.267	41.5	E		
	R	592	1615	0.051	0.367	11.9	B		
WB	L	286	1719	0.087	0.167	20.5	C	59.3	E
	T	304	1827	1.077	0.167	89.9	F		
	R	470	1568	0.455	0.300	17.0	C		
NB	L	174	1736	1.060	0.100	91.7	F	37.8	D
	TR	1238	3714	0.961	0.333	29.4	D		
SB	L	177	1770	0.847	0.100	46.0	E	23.6	C
	TR	1200	3600	0.789	0.333	20.1	C		

Intersection Delay = 38.7 sec/veh Intersection LOS = D
Lost Time/Cycle, L = 12.0 sec Critical v/c(x) = 1.004

Winslow Sub Area #1823

MADISON AVE/HIGH SCHOOL RD

ALTERNATIVE 3

Intersection: Madison Ave/High School Rd			**Date Printed**	**10/26/96**
Scenario: Alternative 3			**Date inputed**	**10/25/96**
	Northbound	**Southbound**	**Eastbound**	**Westbound**
Approach Flow Rate	883	347	384	453
Proportion Subject Approach Flow Rate	0.43	0.17	0.19	0.22
Porportion Opposing Approach Flow Rate	0.17	0.43	0.22	0.19
Lanes on Subject Approach	2	2	1	2
Lanes on Opposing Approach	2	2	2	1
Proportion Left Turn Opposing Approach	0.22	0.19	0.15	0.05
Proportion Right Turn Opposing Approach	0.16	0.63	0.19	0.42
Proportion Left Turn Conflicting Approach	0.11	0.11	0.20	0.20
Proportion Right Turn Conflicting Approac	0.30	0.30	0.50	0.50
Approach Capacity	772	797	427	812
V/C Ratio	1.1438	0.4354	0.8993	0.5579
Approach Total Delay	77.2	5.2	30.5	8.3
Intersection Total Delay	**41.3**			
Level of Service (intersection)	**E**			

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Streets: (N-S) Madison Av (E-W) High School Rd
Analyst..... TDA Inc (DM)
Date of Analysis..... 10/25/96
Other Information.....Winslow Sub area 1823 - Alternative 3
All-way Stop-controlled Intersection

	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	1	< 0	1	1	< 0	0	> 1	< 0	1	1	< 0
Volumes	166	162	555	75	218	54	21	200	163	68	300	85
PHF	1	1	1	1	1	1	1	1	1	.1	1	1

Volume Summary and Capacity Analysis WorkSheet

	NB	SB	EB	WB
LT Flow Rate	166	75	21	68
RT Flow Rate	555	54	163	85
Approach Flow Rate	883	347	384	453
Proportion LT	0.19	0.22	0.05	0.15
Proportion RT	0.63	0.16	0.42	0.19
Opposing Approach Flow Rate	347	883	453	384
Conflicting Approaches Flow Rate	837	837	1230	1230
Proportion, Subject Approach Flow Rate	0.43	0.17	0.19	0.22
Proportion, Opposing Approach Flow Rate	0.17	0.43	0.22	0.19
Lanes on Subject Approach	2	2	1	2
Lanes on Opposing Approach	2	2	2	1
LT, Opposing Approach	75	166	68	21
RT, Opposing Approach	54	555	85	163
LT, Conflicting Approaches	89	89	241	241
RT, Conflicting Approaches	248	248	609	609
Proportion LT, Opposing Approach	0.22	0.19	0.15	0.05
Proportion RT, Opposing Approach	0.16	0.63	0.19	0.42
Proportion LT, Conflicting Approaches	0.11	0.11	0.20	0.20
Proportion RT, Conflicting Approaches	0.30	0.30	0.50	0.50
*Range limit(s) exceeded (see below)	*	*	*	*

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Streets: (N-S) Sportsman Club Rd (E-W) High School Rd
Major Street Direction.... NS
Length of Time Analyzed... 60 (min)
Analyst..... TDA Inc (DAN)
Date of Analysis..... 10/25/96
Other Information..... Winslow Sub area 1823 - Alternative 3 - REVISED STOP CONTROLS

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	> 1	< 0	0	> 1	< 0
Stop/Yield			N			N						
Volumes	2	62	62	35	147	76	49	166	2	90	298	48
PHF	.95	.95	.95	.95	.95	.95	.95	.95	.95	.95	.95	.95
Grade		4			1			0			0	
MC's (%)												
SU/RV's (%)												
CV's (%)												
PCE's	1.70			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)	98	195
Potential Capacity: (pcph)	1235	1103
Movement Capacity: (pcph)	1235	1103
Prob. of Queue-Free State:	0.95	1.00

Step 2: LT from Major Street	SB	NB
Conflicting Flows: (vph)	130	235
Potential Capacity: (pcph)	1486	1325
Movement Capacity: (pcph)	1486	1325
Prob. of Queue-Free State:	0.97	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:	0.97	1.00

Step 3: TH from Minor Street	WB	EB
Conflicting Flows: (vph)	372	364
Potential Capacity: (pcph)	696	703
Capacity Adjustment Factor due to Impeding Movements	0.97	0.97
Movement Capacity: (pcph)	672	679
Prob. of Queue-Free State:	0.49	0.72

Step 4: LT from Minor Street	WB	EB
Conflicting Flows: (vph)	420	514
Potential Capacity: (pcph)	605	534
Major LT, Minor TH Impedance Factor:	0.69	0.47
Adjusted Impedance Factor:	0.76	0.58
Capacity Adjustment Factor due to Impeding Movements	0.76	0.55
Movement Capacity: (pcph)	459	296

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	57	296 >					
EB	T	193	679 >	527	13.0	2.9	C	13.0
EB	R	2	1103 >					
WB	L	105	459 >					
WB	T	345	672 >	643	25.3	9.7	D	25.3
WB	R	56	1235 >					
NB	L	3	1325		2.7	0.0	A	0.0
SB	L	41	1486		2.5	0.0	A	0.3

Intersection Delay = 13.4 sec/veh

HCM: SIGNALIZED INTERSECTION SUMMARY Version 2.4d 10-31-1996
Center For Microcomputers In Transportation

Streets: (E-W) Wyatt Way (N-S) Madison Avenue
Analyst: TDA Inc (jd) File Name: 3WYTMADP.HC9
Area Type: Other 10-31-96 PM Peak
Comment: 1839- Alternative 3: Signalized

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	1	<		> 1	1	1	1	<	1	1	1
Volumes	134	55	161	18	76	14	335	578	81	37	396	95
PHF or PK15	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Lane W (ft)	12.0	12.0			12.0	12.0	12.0	12.0		12.0	12.0	12.0
Grade		0			0			0			0	
% Heavy Veh	2	2	2	2	2	2	2	2	2	2	2	2
Parking	(Y/N)	Y	20	(Y/N)	Y	20	(Y/N)	Y	20	(Y/N)	Y	20
Bus Stops			0			0			0			0
Con. Peds			25			25			25			25
Ped Button	(Y/N)	Y	10.0 s	(Y/N)	Y	10.0 s	(Y/N)	Y	10.0 s	(Y/N)	Y	10.0
Arr Type	3	3			3	3	3	3		3	3	3
RTOR Vols			0			0			0			0
Lost Time	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
Prop. Share												
Prop. Prot.												

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	*				NB	Left	*	*		
	Thru	*					Thru		*	*	
	Right	*					Right		*	*	
	Peds	*					Peds		*	*	
WB	Left		*			SB	Left	*			
	Thru		*				Thru			*	
	Right		*				Right			*	
	Peds		*				Peds			*	
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		38.0A	7.0A			Green		6.0A	19.0A	38.0A	
Yellow/AR		0.0	4.0			Yellow/AR		0.0	4.0	4.0	

Cycle Length: 120 secs Phase combination order: #1 #2 #5 #6 #7

Intersection Performance Summary

	Lane Group: Mvmts	Cap	Adj Sat Flow	v/c Ratio	g/C Ratio	Delay	LOS	Approach: Delay	LOS
EB	L	516	1770	0.273	0.292	21.2	C	23.7	C
	TR	382	1311	0.594	0.292	25.3	D		
WB	LT	123	1845	0.805	0.067	56.2	E	53.3	E
	R	83	1249	0.180	0.067	34.3	D		
NB	L	384	1770	0.920	0.217	49.1	E	35.7	D
	TR	755	1461	0.918	0.517	28.9	D		
SB	L	44	1770	0.881	0.025	99.3	F	29.2	D
	T	605	1863	0.689	0.325	25.0	C		
	R	406	1249	0.246	0.325	19.3	C		

Intersection Delay = 32.8 sec/veh Intersection LOS = D
Lost Time/Cycle, L = 12.0 sec Critical v/c(x) = 0.804

Winslow Sub Area #1823

MADISON AVE/WYATT WAY

ALTERNATIVE 3

Intersection:	Madison Ave/Wyatt Way			Date Printed	10/26/96
Scenario:	Alternative 3			Date inputed	10/25/96
		Northbound	Southbound	Eastbound	Westbound
Approach Flow Rate		994	528	350	108
Proportion Subject Approach Flow Rate		0.5	0.27	0.18	0.05
Porportion Opposing Approach Flow Rate		0.27	0.5	0.05	0.18
Lanes on Subject Approach		2	1	1	1
Lanes on Opposing Approach		1	2	1	1
Proportion Left Turn Opposing Approach		0.07	0.34	0.17	0.38
Proportion Right Turn Opposing Approach		0.18	0.08	0.13	0.46
Proportion Left Turn Conflicting Approach		0.33	0.33	0.24	0.24
Proportion Right Turn Conflicting Approach		0.38	0.38	0.12	0.12
Approach Capacity		1019	549	254	218
V/C Ratio		0.9755	0.9617	1.3780	0.4954
Approach Total Delay		40.7	38.7	188.0	6.6
Intersection Total Delay	64.3				
Level of Service (intersection)	F				

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Streets: (N-S) Madison Av (E-W) Wyatt Way
Analyst..... TDA Inc (DAN)
Date of Analysis..... 10/25/96
Other Information.....Winslow Sub area 1823 - Alternative 3
All-way Stop-controlled Intersection

	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	1	< 0	0	> 1	< 0	0	> 1	< 0	0	> 1	< 0
Volumes	335	578	81	37	396	95	134	55	161	18	76	14
PHF	1	1	1	1	1	1	1	1	1	.1	1	1

Volume Summary and Capacity Analysis WorkSheet

	NB	SB	EB	WB
LT Flow Rate	335	37	134	18
RT Flow Rate	81	95	161	14
Approach Flow Rate	994	528	350	108
Proportion LT	0.34	0.07	0.38	0.17
Proportion RT	0.08	0.18	0.46	0.13
Opposing Approach Flow Rate	528	994	108	350
Conflicting Approaches Flow Rate	458	458	1522	1522
Proportion, Subject Approach Flow Rate	0.50	0.27	0.18	0.05
Proportion, Opposing Approach Flow Rate	0.27	0.50	0.05	0.18
Lanes on Subject Approach	2	1	1	1
Lanes on Opposing Approach	1	2	1	1
LT, Opposing Approach	37	335	18	134
RT, Opposing Approach	95	81	14	161
LT, Conflicting Approaches	152	152	372	372
RT, Conflicting Approaches	175	175	176	176
Proportion LT, Opposing Approach	0.07	0.34	0.17	0.38
Proportion RT, Opposing Approach	0.18	0.08	0.13	0.46
Proportion LT, Conflicting Approaches	0.33	0.33	0.24	0.24
Proportion RT, Conflicting Approaches	0.38	0.38	0.12	0.12
*Range limit(s) exceeded (see below)	*	*	*	*

HCM: SIGNALIZED INTERSECTION SUMMARY Version 2.4d 10-31-1996
Center For Microcomputers In Transportation

Streets: (E-W) Winslow Way (N-S) Madison AvenuNN
`nalyst: TDA Inc (jd) File Name: 3WWMADP.HC9
 rea Type: Other 10-31-96 PM Peak
Comment: 1839- Alternative 3: Signalized with 3 phase sb/sbnb/ebwb

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes		> 1	<		> 1	1		> 1	<		> 1	1
Volumes	38	73	16	39	79	675	27	300	44	368	149	62
PHF or PK15	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Lane W (ft)		12.0			12.0	12.0		12.0			12.0	12.0
Grade		0			0			0			0	
% Heavy Veh	2	2	2	2	2	2	2	2	2	2	2	2
Parking	(Y/N)	Y	20	(Y/N)	Y	20	(Y/N)	Y	20	(Y/N)	Y	20
Bus Stops			0			0			0			0
Con. Peds			0			0			0			0
Ped Button	(Y/N)	N		(Y/N)	N		(Y/N)	N		(Y/N)	N	
Arr Type		3			3	3		3			3	3
RTOR Vols			0			0			0			0
Lost Time	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
Prop. Share												
Prop. Prot.												

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	*				NB	Left		*		
	Thru	*					Thru		*		
	Right	*					Right		*		
	Peds						Peds				
WB	Left	*				SB	Left	*	*		
	Thru	*					Thru	*	*		
	Right	*					Right	*	*		
	Peds						Peds				
NB	Right					EB	Right				
SB	Right					WB	Right	*			
Green		40.0P				Green		10.0P	32.0P		
Yellow/AR		4.0				Yellow/AR		0.0	4.0		

Cycle Length: 90 secs Phase combination order: #1 #5 #6

Intersection Performance Summary

	Lane Group: Mvmts	Cap	Adj Sat Flow	v/c Ratio	g/C Ratio	Delay	LOS	Approach: Delay	LOS
EB	LTR	526	1154	0.255	0.456	11.5	B	11.5	B
WB	LT	726	1594	0.171	0.456	11.0	B	34.2	D
	R	718	1267	0.990	0.567	38.2	D		
NB	LTR	375	1023	1.040	0.367	69.2	F	69.2	F
SB	LT	701	1468	0.776	0.478	18.6	C	17.7	C
	R	605	1267	0.107	0.478	9.8	B		

Intersection Delay = 34.5 sec/veh Intersection LOS = D
Lost Time/Cycle, L = 6.0 sec Critical v/c(x) = 1.010

Winslow Sub Area #1823

MADISON AVE/WINSLOW WAY

ALTERNATIVE 3

Intersection:	**Madison Ave/Winslow Way**			Date Printed	10/26/96
Scenario:	**Alternative 3**			Date inputed	10/25/96
		Northbound	Southbound	Eastbound	Westbound
Approach Flow Rate		371	579	127	793
Proportion Subject Approach Flow Rate		0.2	0.31	0.07	0.42
Porportion Opposing Approach Flow Rate		0.31	0.2	0.42	0.07
Lanes on Subject Approach		1	2	1	2
Lanes on Opposing Approach		2	1	2	1
Proportion Left Turn Opposing Approach		0.64	0.07	0.05	0.30
Proportion Right Turn Opposing Approach		0.11	0.12	0.85	0.13
Proportion Left Turn Conflicting Approach		0.08	0.08	0.42	0.42
Proportion Right Turn Conflicting Approac		0.75	0.75	0.11	0.11
Approach Capacity		448	954	426	612
V/C Ratio		0.8281	0.6069	0.2981	- 1.2958
Approach Total Delay		23.3	10.0	3.1	137.5
Intersection Total Delay	**66.3**				
Level of Service (intersection)	**F**				

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Streets: (N-S) Madison Av (E-W) Winslow Way
Analyst..... TDA Inc (DM)
Date of Analysis..... 10/25/96
Other Information.....Winslow Sub area 1823 - Alternative 3
All-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	1	0	> 1	< 0	0	> 1	1
Volumes	27	300	44	368	149	62	38	73	16	39	79	675
PHF	1	1	1	1	1	1	1	1	1	1	1	1

Volume Summary and Capacity Analysis WorkSheet

	NB	SB	EB	WB
LT Flow Rate	27	368	38	39
RT Flow Rate	44	62	16	675
Approach Flow Rate	371	579	127	793
Proportion LT	0.07	0.64	0.30	0.05
Proportion RT	0.12	0.11	0.13	0.85
Opposing Approach Flow Rate	579	371	793	127
Conflicting Approaches Flow Rate	920	920	950	950
Proportion, Subject Approach Flow Rate	0.20	0.31	0.07	0.42
Proportion, Opposing Approach Flow Rate	0.31	0.20	0.42	0.07
Lanes on Subject Approach	1	2	1	2
Lanes on Opposing Approach	2	1	2	1
LT, Opposing Approach	368	27	39	38
RT, Opposing Approach	62	44	675	16
LT, Conflicting Approaches	77	77	395	395
RT, Conflicting Approaches	691	691	106	106
Proportion LT, Opposing Approach	0.64	0.07	0.05	0.30
Proportion RT, Opposing Approach	0.11	0.12	0.85	0.13
Proportion LT, Conflicting Approaches	0.08	0.08	0.42	0.42
Proportion RT, Conflicting Approaches	0.75	0.75	0.11	0.11
*Range limit(s) exceeded (see below)	*	*	*	*

Range Limit(s) Exceeded

Range limits from HCM Table 10-7 (p. 10-47), implementing HCM Range of Model Validity (p. 10-37).

Northbound approach:

An intersection volume of 1870 has caused a range check to be made for this approach.
The following range limit(s) have been exceeded:

The proportion of left turns on the opposing approach is 0.64.
This is outside the permitted range of 0.00 - 0.36.

The proportion of right turns on the conflicting approach is 0.75.
This is outside the permitted range of 0.00 - 0.52.

Southbound approach:

An intersection volume of 1870 has caused a range check to be made for this approach.
The following range limit(s) have been exceeded:

The proportion of right turns on the conflicting approach is 0.75.
This is outside the permitted range of 0.00 - 0.52.

Eastbound approach:

An intersection volume of 1870 has caused a range check to be made for this approach.
The following range limit(s) have been exceeded:

The proportion of the volume on the subject approach is 0.07.
This is outside the permitted range of 0.20 - 0.50.

The proportion of right turns on the opposing approach is 0.85.
This is outside the permitted range of 0.00 - 0.62.

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Streets: (N-S) Erickson Av (E-W) Winslow Way
Major Street Direction.... EW
Length of Time Analyzed... 60 (min)
Analyst..... TDA Inc (DM)
Date of Analysis..... 10/25/96
Other Information.....Winslow Sub area 1823 - Alternative 3
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	1
Stop/Yield			N			N						
Volumes		464	14	42	649		26		85			161
PHF		1	1	1	1		1		1			1
Grade		0			0			0			0	
MC's (%)												
SU/RV's (%)												
CV's (%)												
PCE's				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)	471	649
Potential Capacity: (pcph)	799	649
Movement Capacity: (pcph)	799	649
Prob. of Queue-Free State:	0.88	0.73

Step 2: LT from Major Street	WB	EB
Conflicting Flows: (vph)	478	
Potential Capacity: (pcph)	1015	
Movement Capacity: (pcph)	1015	
Prob. of Queue-Free State:	0.95	
TH Saturation Flow Rate: (pcphpl)	1700	
RT Saturation Flow Rate: (pcphpl)		
Major LT Shared Lane Prob. of Queue-Free State:	0.93	

Step 4: LT from Minor Street	NB	SB
Conflicting Flows: (vph)	1242	
Potential Capacity: (pcph)	202	
Major LT, Minor TH Impedance Factor:	0.93	
Adjusted Impedance Factor:	0.93	
Capacity Adjustment Factor due to Impeding Movements	0.67	
Movement Capacity: (pcph)	136	

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	29	136 >					
				372	14.4	1.6	C	14.4
NB	R	94	799 >					
								7.6
SB	R	177	649		7.6	1.3	B	
WB	L	46	1015		3.7	0.0	A	0.2

Intersection Delay = 2.1 sec/veh

HCM: SIGNALIZED INTERSECTION SUMMARY Version 2.4d 11-06-1996
Center For Microcomputers In Transportation

Streets: (E-W) New Brooklyn (N-S) SR 305
Analyst: TDA (jd) File Name: 3305NBRK.HC9
Area Type: Other 11-6-96 PM Peak
Comment: #1839 Alternative 3 signal at New Brooklyn

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1		1				1	1			1	1
Volumes	107		56				175	1252			899	196
PHF or PK15	0.75		0.75				0.75	0.75			0.90	0.90
Lane W (ft)	12.0		12.0				12.0	12.0			12.0	12.0
Grade		0						0			0	
% Heavy Veh	2		2				2	2			2	2
Parking	(Y/N)	N					(Y/N)	N		(Y/N)	N	
Bus Stops			0						0			0
Con. Peds			0			0			0			0
Ped Button	(Y/N)	N					(Y/N)	N		(Y/N)	N	
Arr Type	3		3				6	6			3	3
RTOR Vols			0						0			0
Lost Time	3.00		3.00				3.00	3.00			3.00	3.00
Prop. Share												
Prop. Prot.												

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	*				NB	Left	*			
	Thru						Thru	*	*		
	Right	*					Right				
	Peds						Peds				
WB	Left					SB	Left				
	Thru						Thru		*		
	Right						Right		*		
	Peds						Peds				
NB	Right					EB	Right	*			
SB	Right	*				WB	Right				
Green		9.0A				Green		31.0A	55.0A		
Yellow/AR		4.0				Yellow/AR		5.0	5.0		

Cycle Length: 109 secs Phase combination order: #1 #5 #6

Intersection Performance Summary

	Lane Mvmts	Group: Cap	Adj Sat Flow	v/c Ratio	g/C Ratio	Delay	LOS	Approach: Delay	LOS
EB	L	162	1770	0.881	0.092	58.2	E	42.4	E
	R	668	1583	0.112	0.422	12.3	B		
NB	L	536	1770	0.435	0.303	19.8	C	27.3	D
	T	1590	1863	1.050	0.853	28.4	D		
SB	T	974	1863	1.025	0.523	45.5	E	38.3	D
	R	1017	1583	0.214	0.642	5.2	B		

Intersection Delay = 32.3 sec/veh Intersection LOS = D
Lost Time/Cycle, L = 6.0 sec Critical v/c(x) = 1.034

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Streets: (N-S) Erickson Av (E-W) Winslow Way
Major Street Direction.... EW
Length of Time Analyzed... 60 (min)
Analyst..... TDA Inc (DM)
Date of Analysis..... 10/23/96
Other Information.....Winslow Sub area 1823 - Alternative 1
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	67	458	7	42	625	121	18	8	85	49	7	65
PHF	1	1	1	1	1	1	1	1	1	1	1	1
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)	462	686
Potential Capacity: (pcph)	808	622
Movement Capacity: (pcph)	808	622
Prob. of Queue-Free State:	0.88	0.88

Step 2: LT from Major Street	WB	EB
Conflicting Flows: (vph)	465	746
Potential Capacity: (pcph)	1029	756
Movement Capacity: (pcph)	1029	756
Prob. of Queue-Free State:	0.96	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:	0.92	0.87

Step 3: TH from Minor Street	NB	SB
Conflicting Flows: (vph)	1316	1260
Potential Capacity: (pcph)	222	238
Capacity Adjustment Factor due to Impeding Movements	0.80	0.80
Movement Capacity: (pcph)	177	190
Prob. of Queue-Free State:	0.95	0.96

Step 4: LT from Minor Street	NB	SB
Conflicting Flows: (vph)	1292	1302
Potential Capacity: (pcph)	189	187
Major LT, Minor TH Impedance Factor:	0.76	0.76
Adjusted Impedance Factor:	0.82	0.81
Capacity Adjustment Factor due to Impeding Movements	0.72	0.72
Movement Capacity: (pcph)	137	134

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	20	137 >					
NB	T	9	177 >	393	13.3	1.5	C	13.3
NB	R	94	808 >					
SB	L	54	134 >					
SB	T	8	190 >	239	33.8	3.7	E	33.8
SB	R	72	622 >					
EB	L	74	756		5.3	0.3	B	0.7
WB	L	46	1029		3.7	0.0	A	0.2

Intersection Delay = 3.9 sec/veh

Center For Microcomputers In Transportation
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Streets: (N-S) Fernclif Rd (E-W) Winslow Way
Analyst..... TDA INC (DAN)
Date of Analysis..... 10/29/96
Other Information.....Winslow Sub Area #1823 ALTERNATIVE 1
All-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
Volumes	255	32	131	3	20	41	123	127	4	5	31	148
PHF	1	1	1	1	1	1	1	1	1	1	1	1

Volume Summary and Capacity Analysis WorkSheet

	EB	WB	NB	SB
LT Flow Rate	255	3	123	5
RT Flow Rate	131	41	4	148
Approach Flow Rate	418	64	254	184
Proportion LT	0.61	0.05	0.48	0.03
Proportion RT	0.31	0.64	0.02	0.80
pposing Approach Flow Rate	64	418	184	254
Conflicting Approaches Flow Rate	438	438	482	482
Proportion, Subject Approach Flow Rate	0.45	0.07	0.28	0.20
Proportion, Opposing Approach Flow Rate	0.07	0.45	0.20	0.28
Lanes on Subject Approach	1	1	1	1
Lanes on Opposing Approach	1	1	1	1
LT, Opposing Approach	3	255	5	123
RT, Opposing Approach	41	131	148	4
LT, Conflicting Approaches	128	128	258	258
RT, Conflicting Approaches	152	152	172	172
Proportion LT, Opposing Approach	0.05	0.61	0.03	0.48
Proportion RT, Opposing Approach	0.64	0.31	0.80	0.02
Proportion LT, Conflicting Approaches	0.29	0.29	0.54	0.54
Proportion RT, Conflicting Approaches	0.35	0.35	0.36	0.36
Approach Capacity	734	384	615	298

Intersection Performance Summary

Movement	Approach Flow Rate	Approach Capacity	V/C Ratio	Average Total Delay	LOS
EB	418	734	0.57	8.7	B
WB	64	384	0.17	1.9	A
NB	254	615	0.41	4.8	A
SB	184	298	0.62	10.4	C

Intersection Delay = 7.5
Level of Service (Intersection) = B

HCM: SIGNALIZED INTERSECTION SUMMARY Version 2.4d 11-06-1996
Center For Microcomputers In Transportation

Streets: (E-W) New Brooklyn (N-S) SR 305
Analyst: TDA (jd) File Name: U305NBRK.HC9
Area Type: Other 11-5-96 PM Peak
Comment: #1839 Alternative 2U - New Brooklyn signal

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1		1				1	1			1	1
Volumes	95		58				250	1265			861	166
PHF or PK15	0.75		0.75				0.75	0.75			0.90	0.90
Lane W (ft)	12.0		12.0				12.0	12.0			12.0	12.0
Grade		0						0			0	
% Heavy Veh	2		2				2	2			2	2
Parking	(Y/N)	N					(Y/N)	N		(Y/N)	N	
Bus Stops			0						0			0
Con. Peds			0			0			0			0
Ped Button	(Y/N)	N					(Y/N)	N		(Y/N)	N	
Arr Type	3		3				6	6			3	3
RTOR Vols			0						0			0
Lost Time	3.00		3.00				3.00	3.00			3.00	3.00
Prop. Share												
Prop. Prot.												

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	*				NB	Left	*			
	Thru						Thru	*	*		
	Right	*					Right				
	Peds						Peds				
WB	Left					SB	Left				
	Thru						Thru		*		
	Right						Right		*		
	Peds						Peds				
NB	Right					EB	Right	*			
SB	Right	*				WB	Right				
Green		7.0A				Green		36.0A	53.0A		
Yellow/AR		4.0				Yellow/AR		5.0	5.0		

Cycle Length: 110 secs Phase combination order: #1 #5 #6

Intersection Performance Summary

	Lane Group: Mvmts	Cap	Adj Sat Flow	v/c Ratio	g/C Ratio	Delay	LOS	Approach: Delay	LOS
EB	L	129	1770	0.987	0.073	89.7	F	60.2	F
	R	705	1583	0.109	0.445	11.5	B		
NB	L	611	1770	0.545	0.345	18.9	C	22.5	C
	T	1626	1863	1.038	0.873	23.3	C		
SB	T	932	1863	1.027	0.500	47.5	E	40.9	E
	R	950	1583	0.194	0.600	6.4	B		

Intersection Delay = 31.0 sec/veh Intersection LOS = D
Lost Time/Cycle, L = 6.0 sec Critical v/c(x) = 1.034

HCM: SIGNALIZED INTERSECTION SUMMARY Version 2.4d 11-05-1996
Center For Microcomputers In Transportation

Streets: (E-W) Madison Ave (N-S) SR 305 NN
Analyst: TDA (jd) File Name: U305MADM.HC9
Area Type: Other 10-30-96 PM Peak
Comment: #1839 Alternative 2U signal /EB&WB left lane /EB&SB right lanes

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	1	1		> 1 <		1	1 <		1	1	1
Volumes	76	19	58	5	9	16	250	1250	15	3	861	157
PHF or PK15	0.75	0.75	0.75	0.83	0.83	0.83	0.75	0.75	0.75	0.90	0.90	0.90
Lane W (ft)	12.0	12.0	12.0		12.0		12.0	12.0		12.0	12.0	12.0
Grade		0			0			0			0	
% Heavy Veh	2	2	2	2	2	2	2	2	2	2	2	2
Parking	(Y/N)	N		(Y/N)	N		(Y/N)	N		(Y/N)	N	
Bus Stops			0			0			0			0
Con. Peds			0			0			0			0
Ped Button	(Y/N)	N		(Y/N)	N		(Y/N)	N		(Y/N)	N	
Arr Type	3	3	3		3		6	6		3	3	3
RTOR Vols			0			0			0			0
Lost Time	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
Prop. Share												
Prop. Prot.												

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	*				NB	Left	*			
	Thru	*					Thru	*	*		
	Right	*					Right	*	*		
	Peds						Peds				
WB	Left	*				SB	Left			*	
	Thru	*					Thru		*	*	
	Right	*					Right		*	*	
	Peds						Peds				
NB	Right					EB	Right	*			
SB	Right					WB	Right				
Green		6.0A				Green		43.0A	50.0A	4.0A	
Yellow/AR		4.0				Yellow/AR		5.0	5.0	3.0	

Cycle Length: 120 secs Phase combination order: #1 #5 #6 #7

Intersection Performance Summary

	Lane Mvmts	Group: Cap	Adj Sat Flow	v/c Ratio	g/C Ratio	Delay	LOS	Approach: Delay	LOS
EB	L	93	1589	1.090	0.058	145.9	F	81.4	F
	T	109	1863	0.230	0.058	35.0	D		
	R	726	1583	0.106	0.458	12.0	B		
WB	LTR	88	1505	0.410	0.058	37.0	D	37.0	D
NB	L	664	1770	0.502	0.375	18.8	C	41.5	E
	TR	1549	1859	1.089	0.833	46.0	E		
SB	L	59	1770	0.051	0.033	36.3	D	48.3	E
	T	916	1863	1.045	0.492	55.0	E		
	R	778	1583	0.224	0.492	11.3	B		

Intersection Delay = 46.1 sec/veh Intersection LOS = E
Lost Time/Cycle, L = 9.0 sec Critical v/c(x) = 1.052

HCM: SIGNALIZED INTERSECTION SUMMARY Version 2.4d 01-09-1997
Center For Microcomputers In Transportation

Streets: (E-W) High School Rd (N-S) SR 305
Analyst: TDA Inc (DAN) File Name: 2HS305.HC9
Area Type: Other 10-26-96 PM Peak
Comment: Winslow Sub Area 1823, Alternative 2

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	1	1	1	1	1	1	2	<	1	2	<
Volumes	538	334	75	26	294	305	129	668	47	144	529	239
PHF or PK15	0.85	0.85	0.85	0.79	0.79	0.79	0.61	0.61	0.61	0.76	0.76	0.76
Lane W (ft)	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0		12.0	12.0	
Grade		0			0			0			0	
% Heavy Veh	3	0	0	5	4	3	4	2	6	2	4	2
Parking	(Y/N)	N		(Y/N)	N		(Y/N)	N		(Y/N)	N	
Bus Stops			0			0			0			0
Con. Peds			0			0			10			0
Ped Button	(Y/N)	N		(Y/N)	N		(Y/N)	N		(Y/N)	N	
Arr Type	3	3	3	3	3	3	3	3		3	3	
RTOR Vols			37			77			11			98
Lost Time	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
Prop. Share												
Prop. Prot.												

Signal Operations

Phase Combination		1	2	3	4		5	6	7	8
EB	Left	*	*			NB	Left	*		
	Thru		*	*			Thru		*	
	Right		*	*			Right		*	
	Peds		*	*			Peds		*	
WB	Left	*				SB	Left	*		
	Thru			*			Thru		*	
	Right			*			Right		*	
	Peds			*			Peds		*	
NB	Right					EB	Right			
SB	Right					WB	Right			
Green		3.0A	12.0A	11.0A		Green		7.0A	15.0A	
Yellow/AR		5.0	5.0	5.0		Yellow/AR		5.0	5.0	

Cycle Length: 73 secs Phase combination order: #1 #2 #3 #5 #6

Intersection Performance Summary

	Lane Group: Mvmts	Cap	Adj Sat Flow	v/c Ratio	g/C Ratio	Delay	LOS	Approach: Delay	LOS
EB	L	528	1752	1.199	0.301	*	*	*	*
	T	781	1900	0.503	0.411	10.8	B		
	R	664	1615	0.066	0.411	8.4	B		
WB	L	118	1719	0.280	0.068	21.2	C	92.1	F
	T	325	1827	1.143	0.178	114.5	F		
	R	279	1568	1.035	0.178	71.5	F		
NB	L	214	1736	0.986	0.123	64.0	F	*	*
	TR	861	3696	1.408	0.233	*	*		
SB	L	218	1770	0.866	0.123	39.9	D	74.3	F
	TR	832	3573	1.112	0.233	81.3	F		

Intersection Delay = * (sec/veh) Intersection LOS = *
(g/C)*(V/c) is greater than one. Calculation of D1 is infeasable.

HCM: SIGNALIZED INTERSECTION SUMMARY Version 2.4d 01-09-1997
Center For Microcomputers In Transportation

Streets: (E-W) High School Road (N-S) SR 305
Analyst: TDA Inc (jd) File Name: 2HS305M.HC9
Area Type: Other 10-25-96 PM Peak
Comment: Winslow Sub Area 1823, Alternative 2 WITH MITIGATION

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	> 1	1	1	1	1	1	2	<	1	2	<
Volumes	538	334	75	26	294	305	129	668	47	144	529	239
PHF or PK15	0.85	0.85	0.85	0.79	0.79	0.79	0.67	0.67	0.67	0.76	0.76	0.76
Lane W (ft)	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0		12.0	12.0	
Grade		0			0			0			0	
% Heavy Veh	3	0	0	5	4	3	4	2	6	2	4	2
Parking	(Y/N)	N		(Y/N)	N		(Y/N)	N		(Y/N)	N	
Bus Stops			0			0			0			0
Con. Peds			0			0			10			0
Ped Button	(Y/N)	N		(Y/N)	N		(Y/N)	N		(Y/N)	N	
Arr Type	3	3	3	3	3	3	4	4		3	3	
RTOR Vols			37			77			11			98
Lost Time	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
Prop. Share	20											
Prop. Prot.			42			50						

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	*				NB	Left	*			
	Thru	*					Thru		*		
	Right	*					Right		*		
	Peds	*					Peds		*		
WB	Left		*			SB	Left	*			
	Thru		*				Thru		*		
	Right		*				Right		*		
	Peds						Peds		*		
NB	Right					EB	Right	*			
SB	Right					WB	Right	*			
Green		30.0A	20.0A			Green		10.0A	40.0A		
Yellow/AR		5.0	5.0			Yellow/AR		5.0	5.0		

Cycle Length: 120 secs Phase combination order: #1 #2 #5 #6

Intersection Performance Summary

	Lane Group: Mvmts	Cap	Adj Sat Flow	v/c Ratio	g/C Ratio	Delay	LOS	Approach: Delay	LOS
EB	L	467	1752	1.083	0.267	87.8	F	76.4	F
	LT	501	1877	1.039	0.267	70.5	F		
	R	592	1615	0.074	0.367	16.0	C		
WB	L	315	1719	0.105	0.183	26.4	D	70.2	F
	T	335	1827	1.111	0.183	109.8	F		
	R	483	1568	0.598	0.308	24.2	C		
NB	L	174	1736	1.112	0.100	122.7	F	40.8	E
	TR	1294	3696	0.853	0.350	26.5	D		
SB	L	177	1770	1.068	0.100	111.0	F	38.6	D
	TR	1251	3573	0.740	0.350	23.8	C		

Intersection Delay = 54.2 sec/veh Intersection LOS = E
Lost Time/Cycle, L = 12.0 sec Critical v/c(x) = 1.003

Winslow Sub Area #1823

MADISON AVE/WYATT WAY

ALTERNATIVE 2

Intersection:	**Madison Ave/Wyatt Way**			**Date Printed**	**10/26/96**
Scenario:	**Alternative 2**			**Date inputed**	**10/25/96**
		Northbound	Southbound	Eastbound	Westbound
Approach Flow Rate		857	474	335	117
Proportion Subject Approach Flow Rate		0.48	0.27	0.19	0.07
Porportion Opposing Approach Flow Rate		0.27	0.48	0.07	0.19
Lanes on Subject Approach		2	1	1	1
Lanes on Opposing Approach		1	2	1	1
Proportion Left Turn Opposing Approach		0.04	0.34	0.15	0.36
Proportion Right Turn Opposing Approach		0.17	0.02	0.16	0.54
Proportion Left Turn Conflicting Approach		0.31	0.31	0.23	0.23
Proportion Right Turn Conflicting Approach		0.44	0.44	0.07	0.07
Approach Capacity		1030	547	278	255
V/C Ratio		0.8320	0.8665	1.2050	- 0.4588
Approach Total Delay		23.6	26.9	97.4	5.7
Intersection Total Delay	**37.2**				
Level of Service (intersection)	**E**				

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Ph: (904) 392-0378

Streets: (N-S) Madison Av (E-W) Wyatt Way
Analyst..... TDA Inc (DAN)
Date of Analysis..... 10/26/96
Other Information.....Winslow Sub area 1823 - Alternative 2
All-way Stop-controlled Intersection

	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	1	< 0	0	> 1	< 0	0	> 1	< 0	0	> 1	< 0
Volumes	292	549	16	20	374	80	121	32	182	18	80	19
PHF	1	1	1	1	1	1	1	1	1	1	1	1

Volume Summary and Capacity Analysis WorkSheet

	NB	SB	EB	WB
LT Flow Rate	292	20	121	18
RT Flow Rate	16	80	182	19
Approach Flow Rate	857	474	335	117
Proportion LT	0.34	0.04	0.36	0.15
Proportion RT	0.02	0.17	0.54	0.16
Opposing Approach Flow Rate	474	857	117	335
Conflicting Approaches Flow Rate	452	452	1331	1331
Proportion, Subject Approach Flow Rate	0.48	0.27	0.19	0.07
Proportion, Opposing Approach Flow Rate	0.27	0.48	0.07	0.19
Lanes on Subject Approach	2	1	1	1
Lanes on Opposing Approach	1	2	1	1
LT, Opposing Approach	20	292	18	121
RT, Opposing Approach	80	16	19	182
LT, Conflicting Approaches	139	139	312	312
RT, Conflicting Approaches	201	201	96	96
Proportion LT, Opposing Approach	0.04	0.34	0.15	0.36
Proportion RT, Opposing Approach	0.17	0.02	0.16	0.54
Proportion LT, Conflicting Approaches	0.31	0.31	0.23	0.23
Proportion RT, Conflicting Approaches	0.44	0.44	0.07	0.07
*Range limit(s) exceeded (see below)	*	*	*	*

Range Limit(s) Exceeded

Range limits from HCM Table 10-7 (p. 10-47), implementing HCM Range of Model Validity (p. 10-37).

Eastbound approach:

An intersection volume of 1783 has caused a range check to be made for this approach.
The following range limit(s) have been exceeded:

The proportion of the volume on the subject approach is 0.19.
This is outside the permitted range of 0.20 - 0.50.

Westbound approach:

An intersection volume of 1783 has caused a range check to be made for this approach.
The following range limit(s) have been exceeded:

The proportion of the volume on the subject approach is 0.07.
This is outside the permitted range of 0.20 - 0.50.