

MEMORANDUM

Date: June 21, 2010

To: Patty Criddle, PE, City of Redmond

From: Hicham Chatila, PE, PTOE, Transpo Group

cc: Josh Peterson, Magellan Architects
Mahmood Khadeer, MAPS

Subject: MAPS Assembly Facility Trip Generation and Parking Analysis

The purpose of this memorandum is to summarize the initial trip generation and parking analysis findings related to the proposed MAPS Assembly Facility (Mosque). The facility would be located in the City of Redmond at 17550 NE 67th CT, Figure 1. MAPS bought an existing building, previously owned by ITT Technologies and would utilize the most part of the building to hold its activities. It is noted that some counts and surveys for this analysis were conducted by MAPS staff and furnished to Transpo Group. This memorandum includes:

- Background
- Trip Generation
- Parking Analysis
- Summary and Conclusions

A summary of the project description and its anticipated traffic characteristics are provided in the following sections:

Background

MAPS is a Redmond, WA based religious, social, and charitable organization. MAPS has been sponsoring different type of activities since 2005 and conducting Friday services at a leased warehouse in Redmond, approximately half mile from the proposed facility.

Similar to the current facility, the new facility will hold the daily prayers (five prayers), the Friday assemblies and other weekend and/or evening activities. The daily prayers attract a limited number of members. Typically, only those who are not working or those who work and live near the facility attend these services. In addition to the daily prayers, Friday assembly is held during the off-peak hour, between 12:30 – 1:30 PM in winter and between 1:30 – 2:30 PM in summer. Friday assembly typically attracts more people. The prayer hall would accommodate total of 363 seats and would be divided into two halls. The first hall (Hall 1) would be used for the daily prayer and would accommodate 113 seats. The second hall (Hall 2) would be used for bigger events, such as the Friday prayer and would accommodate 250 seats.

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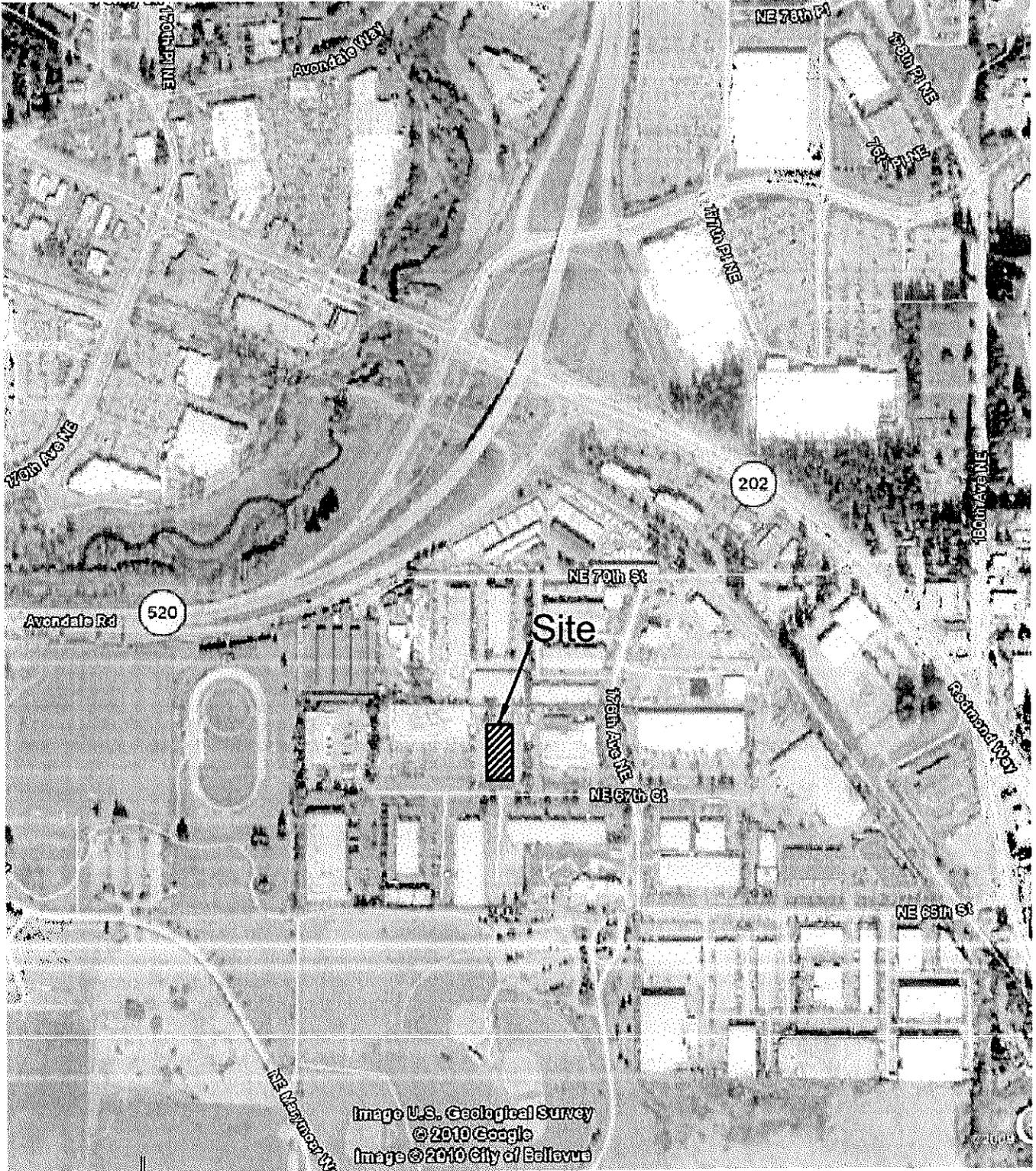


Image U.S. Geological Survey
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Site Vicinity

MAPS

FIGURE

1



The schedule of the anticipated activities at the MAPS facility is shown in Table 1.

Table 1. Activities for MAPS

Event	Schedule
Morning Prayer	5:30 – 6:00 (AM)
Sisters Learning Program	10:00 – 11:30 (AM)
Mid Day Prayer	1:00 – 1:30 (PM)
Late Afternoon Prayer and Islamic Class	5:00 – 6:30 (PM)
Evening Prayer	8:00 – 8:30 (PM)
Night Prayer	10:00 – 10:30 (PM)
Friday Assembly	12:30 – 1:30 (PM) In winter 1:30 – 2:30 (PM) In summer

In addition to the activities summarized in Table 1, MAPS offers occasional learning programs in the weekend evenings and afternoons. These types of activities typically attract 50-100 people.

Trip Generation

The proposed project consists of the MAPS facility (28,300 sf), office space (9,559 sf) and storage area (4,000 sf). In order to estimate the proposed office trip generation, daily and peak hour trips were estimated using rates from ITE *Trip Generation*, 8th Edition (2008). General Office Building (LU#710) was used. The *Trip Generation Manual* does not include trip generation information for the proposed MAPS facility. Therefore, the ITE *Trip Generation* manual was not used. In order to come up with an average trip rate, trip generation counts were collected at two other mosques, in addition to the existing MAPS mosque. These mosques are ICOE (Bellevue) and ICOK (Kent).

In coordination with the MAPS management team, the counts were conducted during three different weekdays at the current facility where the daily prayers are held. Counts at the other mosques were collected from 4:00 PM to 6:00 PM during a typical weekday. PM peak hour trips from these facilities (mosques) are shown in appendix B.

The existing site is currently occupied by approximately 41,900 square feet of manufacturing space with 104 parking stalls. Trip generation for the existing land use was developed based on the average trip rate from the Institute of Transportation Engineers (ITE) *Trip Generation Manual*, 8th Edition. Table 2 shows the net new trips associated with the proposed MAPS facility.

Table 2. Net New Vehicle Trip Generation

Land Use	Size	Daily	AM Peak Hour			PM Peak Hour			
			In	Out	Total	In	Out	Total	
Proposed Land Use	(MAPS) ¹	113 ²	140 ³	0	0	0	16	11	27
	Office ³	9,600 sf	106	13	2	15	2	12	14
Existing Land Use ⁴	41,900 sf	160	24	7	31	11	20	31	
Total Net New Trips		87	-11	-5	-16	7	3	10	

1. Based on average trip rates of three mosques in the region similar to the proposed facility. 0.24 trip/seat

2. Only Hall 1 will be used for the daily prayer purposes.

3. Based on daily counts collected by MAPS management team at the existing MAPS mosque. Counts were collected on a typical weekday.

4. ITE *Trip Generation* 8th Edition- Land Use # 710 General Office

5. ITE *Trip Generation* 8th Edition- Land Use #140 Manufacturing

As shown in Table 2, the proposed facility is anticipated to generate approximately 87 new off-site trips per weekday, with 10 occurring during the weekday PM peak hour. MAPS facility is not anticipated to generate any trips during the AM peak hour. Therefore, off-site trips are anticipated to be reduced by 16 trips during the weekday AM peak hour.

As a result, the MAPS is anticipated to generate less than 30 net new AM or PM peak hour trips and no traffic study is required.

Parking Analysis

This section describes parking impacts associated with the proposal, including an evaluation of the proposed supply compared to the anticipated demand.

Proposed Parking Supply

The existing site contains 104 parking stalls. This was revised and the new design would add additional two parking stalls to the existing, totaling 106 parking stalls which would be shared between the proposed office and the MAPS facility. In addition, on-street parking along NE 67th CT and NE 65th St is allowed on the south side and can accommodate up to 58 vehicles. NE 67th Ct is adjacent to the building and can accommodate up to 22 vehicles. NE 65th St is one block south of the building (approximately 450 ft) and can accommodate up to 36 vehicles. For attendees who would be parking along NE 65th St, if needed, this is still acceptable since it is within 1,000 ft walking distance. Based on our field observation, at least 40 percent (23 stalls) of the on-street parking stalls were available during the Friday parking peak hour.

Parking Code Requirements

The proposed project is required to provide a minimum number of parking stalls to meet the City of Redmond Land Use and Zoning Code. The requirements for parking are outlined for each component of the project in 20C.60.20-010 and 20D.170.40. For the proposed office, the office must provide 24 parking stalls.

Assuming that 2'-6" x 3'-6" is needed as the seat area for this specific type of worship place (MAPS), the hall can accommodate 363 seats. Per the Zoning Code, one stall is required per five seats. Therefore, 73 parking stalls would be required for the proposed MAPS facility.

Per the Zoning Code, the proposed project must provide a total of 97 parking stalls for the proposed land use. 24 parking stalls for the proposed office and 73 parking stalls for the proposed MAPS facility.

Parking Demand

A parking demand analysis for the proposed project was conducted to determine how closely the proposed number of parking spaces would match the anticipated parking demand. Total parking demand was calculated using the trip generation calculations, which considered the proposed land uses.

Parking demand rates for Mosques are available through the Institute of Transportation Engineers (ITE) in *Parking Generation (3rd Edition, 2004)*. This document provides rates to use for estimating peak parking demand for various uses based on data collected at many sites.

Office Parking Demand:

The ITE *Parking Generation*, 3rd Edition was used to estimate the required parking demand for the proposed office. Based on, Office Building (LU#701), the average peak period parking demand is 2.40 per 1,000 sf and the 85th percentile is 2.97. As a conservative approach, the 85th percentile parking demand of 2.97 was used to calculate the peak parking demand for the proposed office. It is anticipated that the proposed office would require a total of 29 parking stalls.

MAPS Parking Demand:

It is anticipated that the peak hour parking demand will occur during the Friday assembly as it is the biggest event that would be held in the new MAPS facility. As the Sunday is considered the biggest event for churches in a typical week, similarly Friday assembly is considered the biggest event for mosques. Per our understanding, Friday's activities in mosques are similar to the Sunday's activities that are held in churches.

It is important to note that the Institute of Transportation Engineers Handbook (Well recognized and widely used) has recognized mosques as similar use to churches and included them under LU# 560. The major difference is the peak hour of generator being on Friday rather than on Sunday. Therefore, ITE *Parking Generation*, 3rd Edition was used to estimate the required parking demand for Friday assembly. Based on, (LU#560), the average peak period parking demand is 0.16 per seat and the 85th percentile is 0.21 per seat. As a conservative approach, the 85th percentile parking demand of 0.21 per seat is used to calculate the peak parking demand for MAPS facility.

Table 3 provides a summary of parking supply and projected demand for the proposed project (MAPS facility and office space).

	Size	85th Percentile Rate	Parking Stalls
Office Parking Demand	9,600 sf	2.97	29
Maps Parking Demand (Hall 1)	113 seats	0.21	24
Maps Parking Demand (Hall 2)	250 seats	0.21	53
<i>Existing Parking Supply</i>			- 106
Parking Surplus (Deficit)			0

As shown in Table 3, it is anticipated that the on-site parking supply would be sufficient to meet the peak parking demand.

Summary and Conclusions

- The proposed facility (MAPS and the office) is anticipated to generate approximately 87 new off-site trips per weekday, with 10 occurring during the weekday PM peak hour. MAPS facility is not anticipated to generate any trips during the AM peak hour. Therefore, off-site trips are anticipated to be reduced by 16 trips during the weekday AM peak hour.
- The proposed facility is anticipated to generate the peak parking demand during Friday afternoon; during the MAPS assembly.
- The proposed facility (MAPS and the office) is required to provide a minimum of 97 parking stalls to meet the parking code requirements for the City of Redmond. Since the provided on-site parking stalls is 106, the proposed facility (MAPS and the office) meets the parking code requirements for the City of Redmond.
- Peak parking demand is calculated based on the 85th percentile rate for the office and MAPS facility.
- Peak parking demand for the proposed project would total 106 parking stalls, occurring during the Friday assembly (12:30 PM – 1:30 PM). With 106 parking stalls provided on-site, the project parking supply would be sufficient to meet peak parking demand, without the need to rely on off-site parking supply.

Appendix B: Tip Counts

Average Daily Trips for MAPS (1/20/2010)

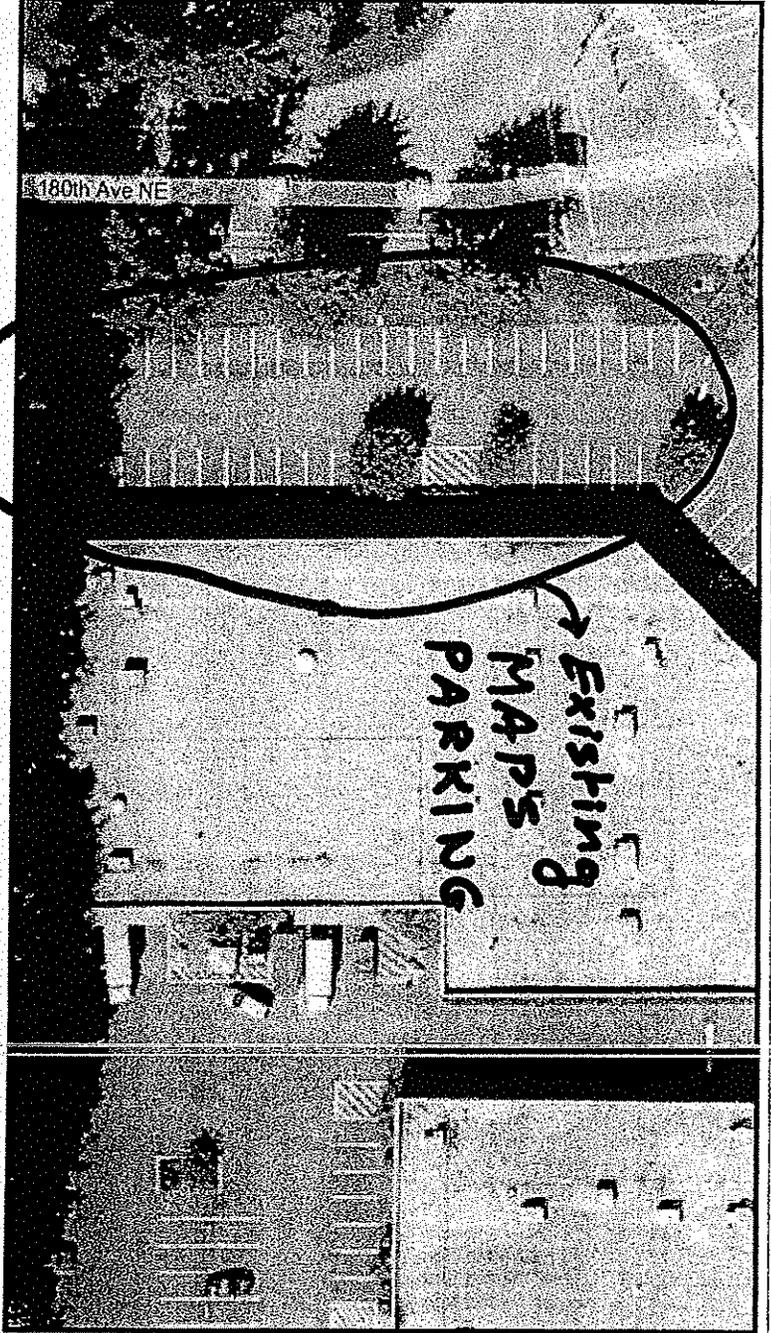
Event	Trips
Morning Prayer	10
Sisters Learning Program	30
Mid Day Prayer	14
Late Afternoon Prayer and Islamic Class	26
Evening Prayer	40
Night Prayer	20
Total Attendance	140

The table below provides a summary of the trip counts at three mosques in the region.

Site	Area (sf)	Estimated Number of seats	PM Peak Hour Trips	Average Rate
Existing MAPS	3,500	120	27	0.23
Eastside Mosque/ICOE	2,500	113	28	0.25
Kent Mosque/Islamic Center of Kent	3,320	105	24	0.23

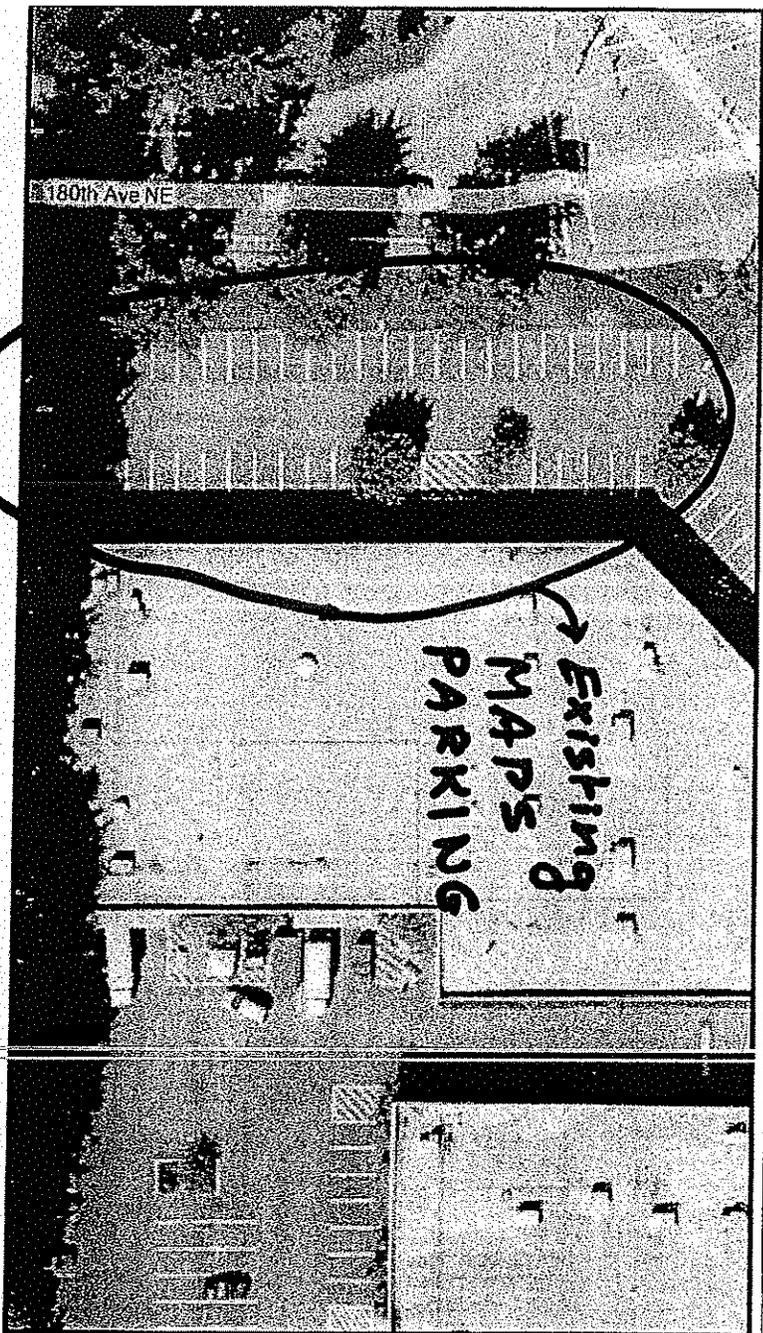
Evening 15 Minute Peak Hour Existing Count for MAPS Center

Time	Date	Prayer Time	Inbound	Outbound
4:30	1/18/2010	5:00 PM	0	0
4:45	1/18/2010	5:00 PM	5	2
5:00	1/18/2010	5:00 PM	9	7
5:15	1/18/2010	5:00 PM	0	0
5:30	1/18/2010	5:00 PM	0	0
Total	23		14	9
4:30	1/27/2010	5:10 PM	0	0
4:45	1/27/2010	5:10 PM	1	0
5:00	1/27/2010	5:10 PM	6	2
5:15	1/27/2010	5:10 PM	10	8
5:30	1/27/2010	5:10 PM	0	1
Total	28		17	11
4:30	1/28/2010	5:10 PM	0	0
4:45	1/28/2010	5:10 PM	0	0
5:00	1/28/2010	5:10 PM	6	2
5:15	1/28/2010	5:10 PM	9	8
5:30	1/28/2010	5:10 PM	0	0
Total	25		15	10



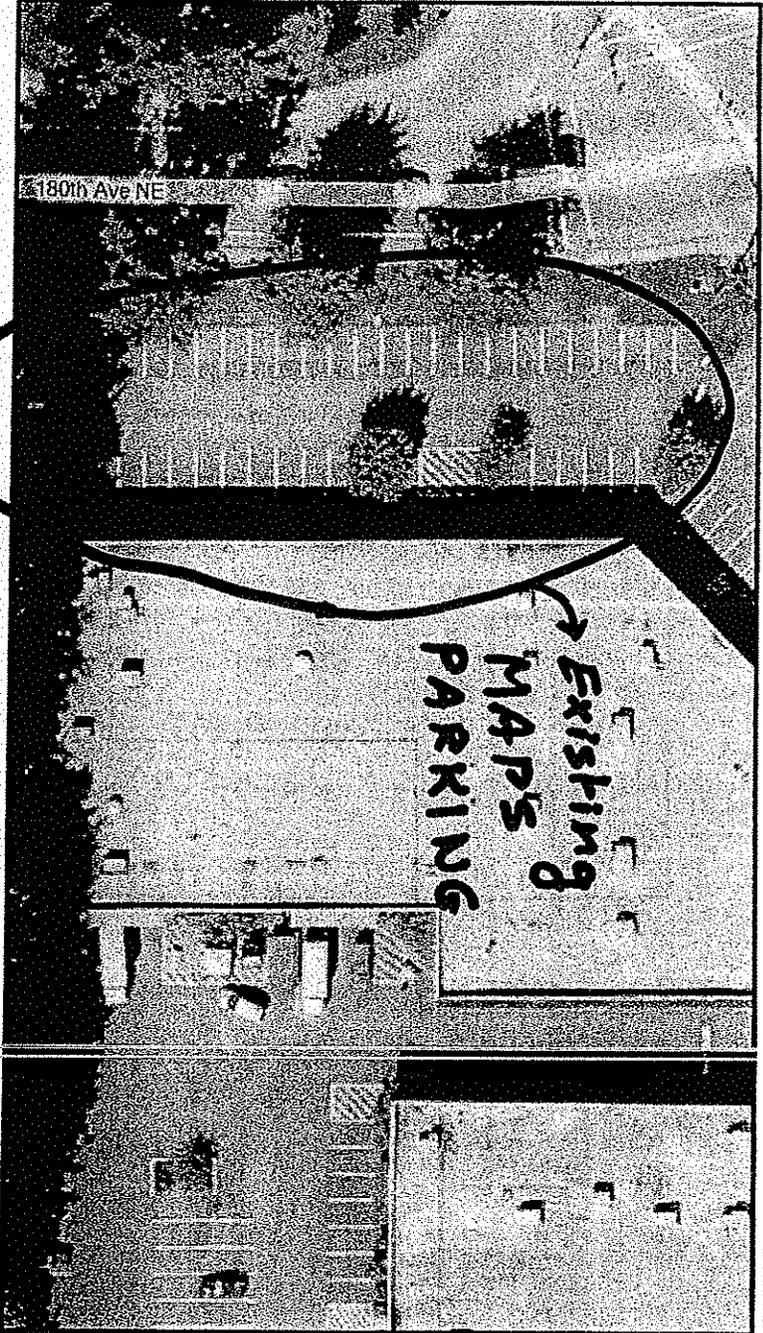
Count ALL Traffic
in Parking Lot
destined to/From
Mosque

<u>Count Date</u>	<u>Prayer time</u>	<u>Survey Time (start)</u>	<u>Inbound</u>	<u>Outbound</u>
1/18/2010	5:00 PM	4:30 PM	φ	φ
		4:45 PM	+++	//
		5:00 PM	+++	++++
		5:15 PM	φ	φ
		5:30 PM	φ	φ



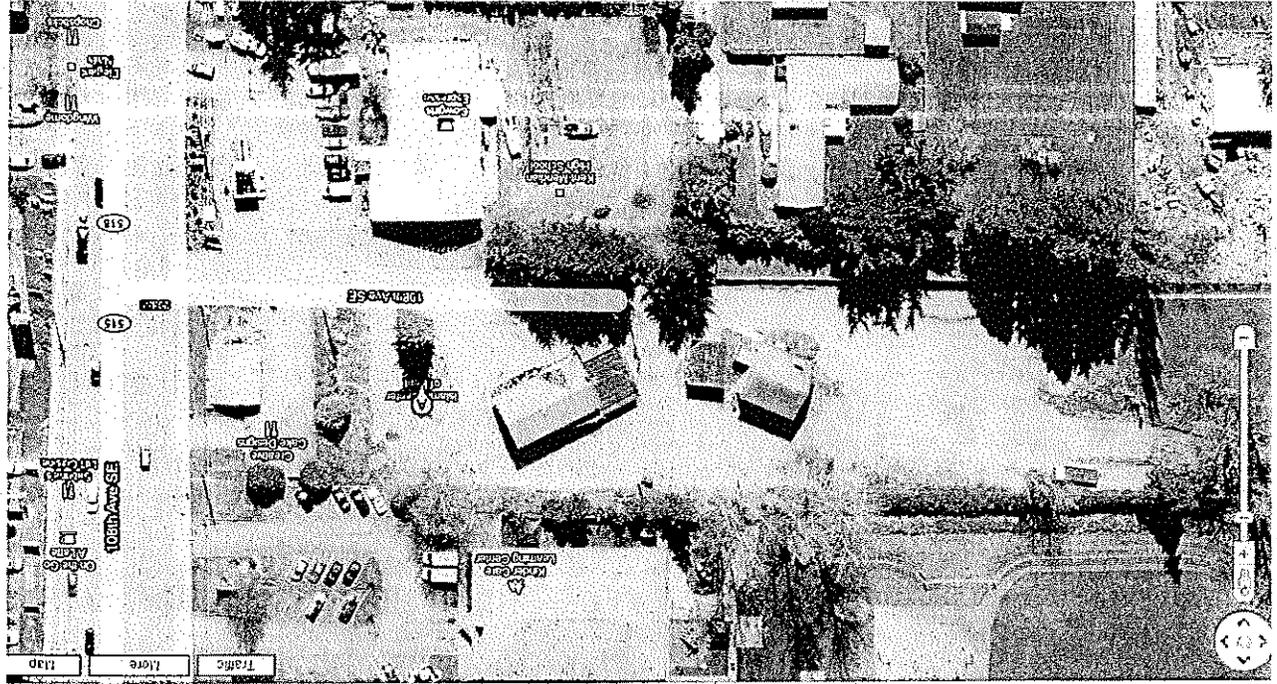
Count ALL Traffic
in Parking Lot
destined to/from
Mosque

<u>Count Date</u>	<u>Prayer time</u>	<u>Survey Time (start)</u>	<u>Inbound</u>	<u>Outbound</u>
1/27/2010	5:10 PM	4:30 PM	0	0
		4:45 PM	1	0
		5:00 PM	+++ /	//
		5:15 PM	+++ +++	+++ ///
		5:30 PM	+	/



Count ALL Traffic
in Parking Lot
destined to/from
Mosque

<u>Count Date</u>	<u>Prayer time</u>	<u>Survey Time (start)</u>	<u>Inbound</u>	<u>Outbound</u>
1/28/2010	5:10 PM	4:30 PM	0	0
		4:45 PM	0	0
		5:00 PM	### 1	//
		5:15 PM	### IIII	### IIII
		5:30 PM	0	0



Time Start	IN	Out
4:00 PM	0	0
4:15 PM	0	0
4:30 PM	0	0
4:45 PM	0	0
5:00 PM	0	0
5:15 PM	0	0
5:30 PM	0	0
5:45 PM	13	0
6:00 PM	1	10
Total	14	10

Kent Mosque / Islamic Center of Kent
 20857 108 Ave SE, Kent, WA 98001

Wednesday 1/14/2010

Survey Site:
Address:

Survey Site:

Eastside Mosque/ICOE

Tuesday 4/13/2010

Time Start	IN	Out
4:00 PM	0	0
4:15 PM	0	0
4:30 PM	0	0
4:45 PM	0	0
5:00 PM	0	0
5:15 PM	0	0
5:30 PM	0	0
5:45 PM	3	0
6:00 PM	25	0
Total	28	0

