ENCLOSURE 4
SEP07-00029

# CEDAR PARK PLAT
# TRAFFIC IMPACT ANALYSIS

## CITY OF KIRKLAND

Prepared for

Brian J. Darrow, PE, Principal
The Blueline Group
25 Central Way, Suite 400
Kirkland, WA 98033

Prepared by

TraffEx
NORTHWEST TRAFFIC EXPERTS

10104 – 111TH Ave. N.E.
Kirkland, Washington 98033
Telephone: 425.522.4118
Fax: 425.522.4311

July 11, 2007

TraffEx

NORTHWEST TRAFFIC EXPERTS
10104 - 111th Ave. N.E. Kirkland, WA 98033
Phone: 425.522.4118 Fax: 425.522.4311

July 11, 2007

Brian J. Darrow, PE, Principal
The Blueline Group
25 Central Way, Suite 400
Kirkland, WA 98033

Re: Cedar Park Plat – City of Kirkland
Traffic Impact Analysis

Dear Mr. Darrow:

We are pleased to submit this traffic impact analysis proposed 24 lot Cedar Park Plat located on the south side of SE 132nd St. in the City of Kirkland. Preliminary trip generation and project information was submitted to the City in a letter report dated April 6, 2007. The proposed project passed the traffic concurrency test per the June 4, 2007 memo attached in the technical appendix.

This TIA was prepared based on the City of Kirkland's current Traffic Impact Analysis Guidelines, the concurrency model trip distribution provided by the City and discussions with Thang Nguyen a Transportation Engineer on the City's staff.

## *PROJECT DESCRIPTION*

Figure 1 is a vicinity map showing the location of the site and the surrounding major street network. The project is located on two parcels at 11215 and 11219 NE 132nd St. on the south side of the street. The 4.58 acre site is zoned RSX 7.2, low density residential.

Figure 2 is a close in area map showing the site location in relation to existing local streets.

Figure 3 shows a preliminary site plan. The project consists of 24 single family units on a cul de sac. Vehicle access is provided by the cul de sac street connection to NE 132nd St, at the location of one of the two existing driveways and across the street from the fire station driveway.

The anticipated build out year of the Cedar Park Plat is 2009.

## *TRIP GENERATION*

The 24 single-family units in the proposed Cedar Park Plat are expected to generate the vehicular trips during an average weekday and during the street traffic peak hours as shown in the following table. Existing trips currently generated from the existing church/school were subtracted from the Cedar Park trips resulting in the net new trips generated as a result of the project.

TraffEx

## TRIP GENERATION 24 LOT CEDAR PARK PLAT (ITE CODE 220)

| *Time Period* | *Trip Rate* | *Trips Entering* | *Trips Exiting* | *Total* |
|---|---|---|---|---|
| Average Weekday | 9.57 | 115<br>50% | 115<br>50% | 230 |
| AM Peak Hour | 0.75 | 5<br>25% | 13<br>75% | 18 |
| PM Peak Hour | 1.01 | 15<br>63% | 9<br>37% | 24 |

## MINUS TRIP GENERATION FOR EXISTING 5,171 SF CHURCH (ITE CODE 560)

| *Time Period* | *Trip Rate* | *Trips Entering* | *Trips Exiting* | *Total* |
|---|---|---|---|---|
| Average Weekday | 9.11 | 23<br>50% | 24<br>50% | 47 |
| AM Peak Hour | 0.72 | 2<br>54% | 2<br>46% | 4 |
| PM Peak Hour | 0.66 | 2<br>52% | 1<br>48% | 3 |

## NET NEW TRIPS

| *Time Period* | *Trip Rate* | *Trips Entering* | *Trips Exiting* | *Total* |
|---|---|---|---|---|
| Average Weekday | | 92 | 91 | 183 |
| AM Peak Hour | | 3 | 11 | 14 |
| PM Peak Hour | | 13 | 8 | 21 |

A vehicle trip is defined as a single or one direction vehicle movement with either the origin or destination (exiting or entering) inside the study site.

The trip generation is calculated using the average trip rates in the Institute of Transportation Engineers (ITE) Trip Generation, Seventh Edition, for Single Family Detached Housing (ITE Land Use Code 210). These trip generation values account for

all site trips made by all vehicles for all purposes, including resident, visitor, and service and delivery vehicle trips.

The existing trips were not subtracted from the total new site generated trips to ensure a conservative traffic analysis. However, the existing trips were subtracted for the purposes of calculating road impact fees.

## *ANALYSIS OF SIGNIFICANT INTERSECTIONS*

Attached in the technical appendix is the concurrency test result table that shows PM peak hour site generated traffic volumes at City of Kirkland intersections. Those listed intersections that have a proportional share greater than 1% are considered significant intersections.

The City of Kirkland provided spreadsheet was used to determine that the proposed Cedar Park plat generated trips would not create a significant impact at any of the listed intersections. Attached in the technical appendix is the printout of the calculation for each of intersection.

## *TRIP DISTRIBUTION AND ASSIGNMENT*

Figure 4 shows the PM peak hour site generated traffic volumes and distribution at the site access/NE 132nd St. intersection. The trip distribution is based on the concurrency model output provided by the City of Kirkland.

## *EXISTING PHYSICAL CONDITIONS*

Existing structures consisting of a 5,171 sq. ft. church and related school will be removed with development.

### Street Facilities

The primary roads in the study area are classified per the City of Kirkland, are as follows:

| | |
|---|---|
| NE 132nd St. | Minor Arterial |
| Site Access St. | Local Access |

NE 132nd St. has a posted speed limit of 35 mph and has three vehicle lanes consisting of two through lanes and a center two way left turn lane. There is a bicycle lane, curb, gutter, landscape strip and sidewalk on both sides of NE 132nd Street.

The proposed site access street to Cedar Park plat is located at the church existing driveway curb cut and is directly across the street from the east fire station driveway. There is an emergency traffic signal that stops traffic in both directions on NE

132nd St. when activated by a fire truck or emergency vehicle exiting the fire station driveway. Under normal conditions the signal flashes yellow.

NE 132nd St. in this area is essentially straight and flat with excellent sight distance looking in both directions from the site access street location.

We requested historical accident data from the City of Kirkland. City staff indicated their records show no accidents have been reported at this location during the last seven years. We have field reviewed the site and surrounding street system. Based on the field review, the lack of accident activity and excellent sight distance there are no readily apparent safety issues.

## *EXISTING TRAFFIC CONDITIONS*

### Traffic Volumes

A PM peak hour turning movement count was performed at the site access/NE 132nd St. intersection. Figure 4 shows existing PM peak hour traffic volumes at the study intersection. The traffic volume turning movement count sheet is included in the Technical Appendix.

### Level of Service Analysis

LOS is a qualitative measure describing operational conditions within a traffic flow, and the perception of these conditions by drivers or passengers. These conditions include factors such as speed, delay, travel time, freedom to maneuver, traffic interruptions, comfort, convenience, and safety. Levels of service are given letter designations, from A to F, with LOS A representing the best operating conditions (free flow, little delay) and LOS F the worst (congestion, long delays). Generally, LOS A and B are high, LOS C and D are moderate and LOS E and F are low.

Table 1 shows calculated levels of service (LOS) for existing conditions at the study intersection. The LOS's were calculated using the procedures in the Transportation Research Board Highway Capacity Manual 2000. The LOS shown indicates overall intersection operation. At intersections, LOS is determined by the calculated average control delay per vehicle. The LOS and corresponding average control delay in seconds are as follows:

| TYPE OF INTERSECTION | A | B | C | D | E | F |
|---|---|---|---|---|---|---|
| Signalized | ≤ 10.0 | >10.0 and ≤20.0 | >20.0 and ≤35.0 | >35.0 and ≤55.0 | >55.0 and ≤80.0 | >80.0 |
| Stop Sign Control | ≤10.0 | >10 and ≤15 | >15 and ≤25 | >25 and ≤35 | >35 and ≤50 | >50 |

*FUTURE TRAFFIC CONDITIONS WITHOUT THE PROJECT*

Figure 4 shows projected future PM peak hour traffic volumes without the project. These volumes include the existing traffic volumes plus background traffic growth.

The City of Kirkland directed a 1.5% per year annual background growth factor be applied to existing traffic volumes to estimate future traffic volumes. The background growth rate factor includes traffic volumes generated from other approved but unbuilt developments (pipeline projects), other planned developments, and general growth in traffic traveling through the area. The existing traffic counts were increased by 3% to estimate 2009 horizon year traffic volumes.

The site access/NE 132nd St. intersection is calculated to operate at LOS C in the 2009 PM peak hour without project traffic

*FUTURE TRAFFIC CONDITIONS WITH PROJECT*

Figure 4 shows the projected PM peak hour traffic volumes with the proposed project. The site-generated peak hour traffic volumes were added to the projected future traffic volumes without project.

The site access/NE 132nd St. intersection is calculated to operate at LOS C in the PM peak hour with project traffic

*TRAFFIC MITIGATION*

The City of Kirkland requires a road impact fee of $966 per single family residential unit. The fee is scheduled to increase to $3,432 per unit on February 1, 2008. The existing 5,171 sq. ft. church/school generates 3 PM peak hour trips (using ITE trip generation rates). The three trips are the equivalent of 3 single family residences. Therefore, the net number of residential units based on trip generation is 24 – 3 = 21 units. The current road impact fee is therefore estimated to be 21 units X $966 = $20,286.

Full width street improvements are required on all internal plat streets to City of Kirkland Standards including curb, gutter and sidewalk.

TraffEx

*SUMMARY, CONCLUSIONS AND RECOMMENDATIONS*

We recommend that the Cedar Park plat be constructed as shown on the site plan with the following traffic impact mitigation measures:

- Construct the full width street improvements on all internal plat streets to City of Kirkland Standards including curb, gutter and sidewalk.

- Contribute the road impact fee to the City of Kirkland estimated to be $20,286 using the current fee for a single family unit.

No other traffic mitigation should be necessary. If you have any questions, please call 425-522-4118. You may also contact us via e-mail at vince@nwtraffex.com or larry@nwtraffex.com.

Very truly yours,

LARRY DONALD HOBBS
STATE OF WASHINGTON
30251
REGISTERED PROFESSIONAL ENGINEER
7-11-07
EXPIRES: 9/15/08

Vincent J. Geglia
Principal
TraffEx

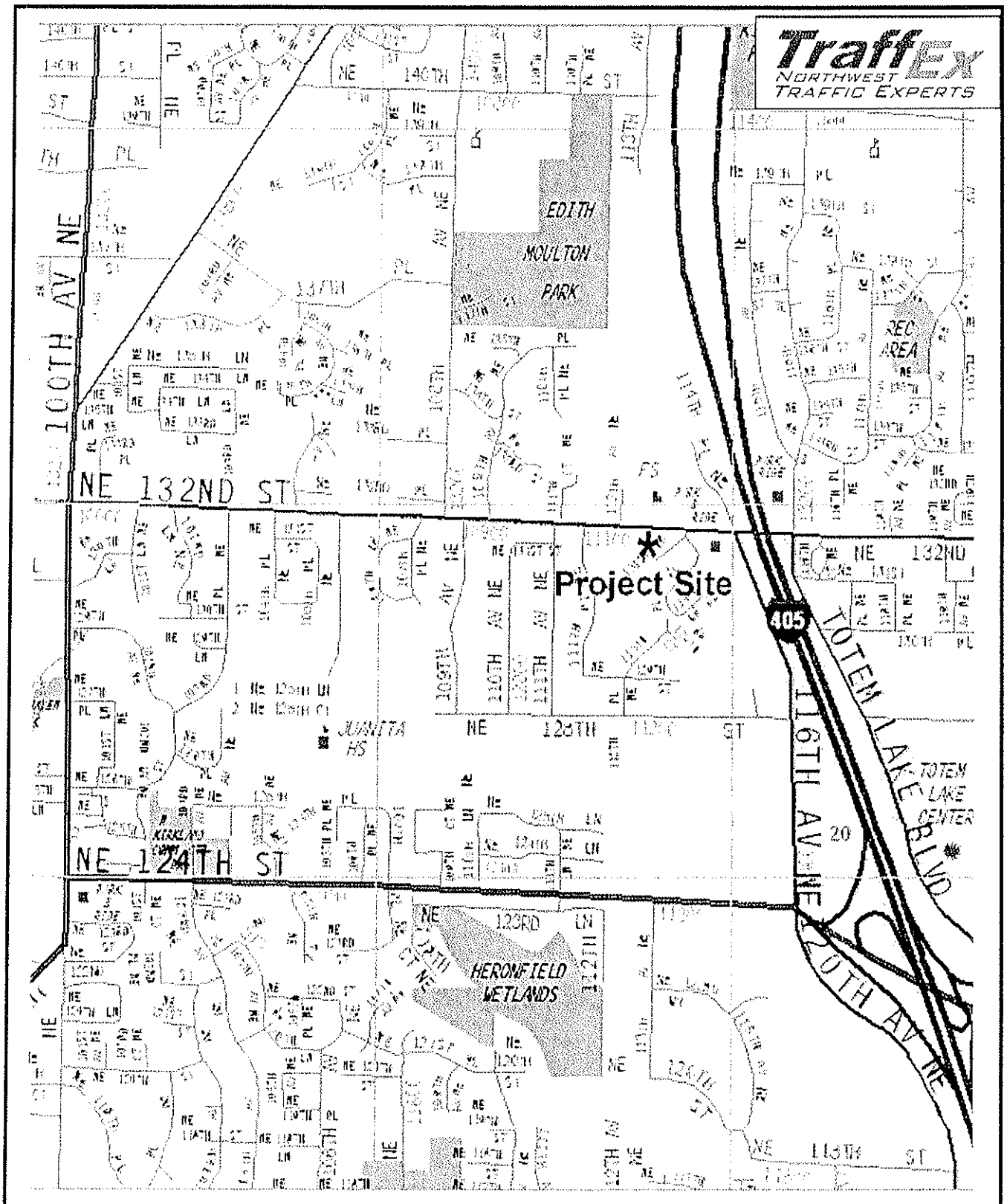
Larry D. Hobbs, P.E.
Principal
TraffEx

| TABLE 1<br>PM PEAK HOUR LEVEL OF SERVICE SUMMARY | | | |
|---|---|---|---|
| *INTERSECTION* | *EXISTING* | *FUTURE WITHOUT PROJECT* | *FUTURE WITH PROJECT* |
| Site Access St./<br>NE 132nd St. | C 20.3 SB | C 21.0 SB | C 21.4 SB |

XX Number shown is the average control delay in seconds per vehicle for the intersection **as a whole for signalized** intersections and for **the minor approach for unsignalized** intersections, which determines the LOS for intersections per the Transportation Research Board Highway Capacity Manual 2000

B Indicates calculated level of service

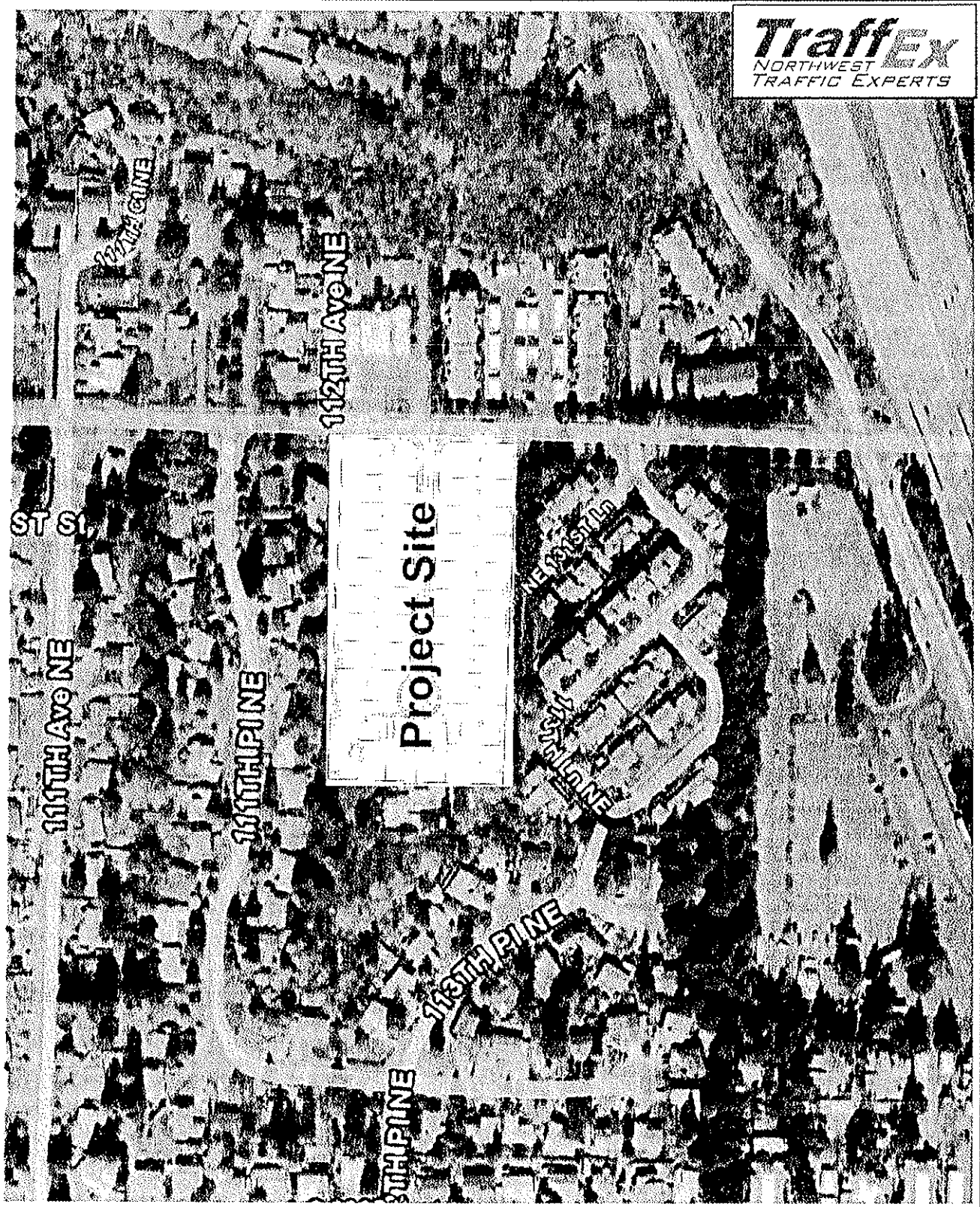
SB (eastbound) Indicates direction of the minor approach for unsignalized intersections




Cedar Park Plat

Vicinity Map

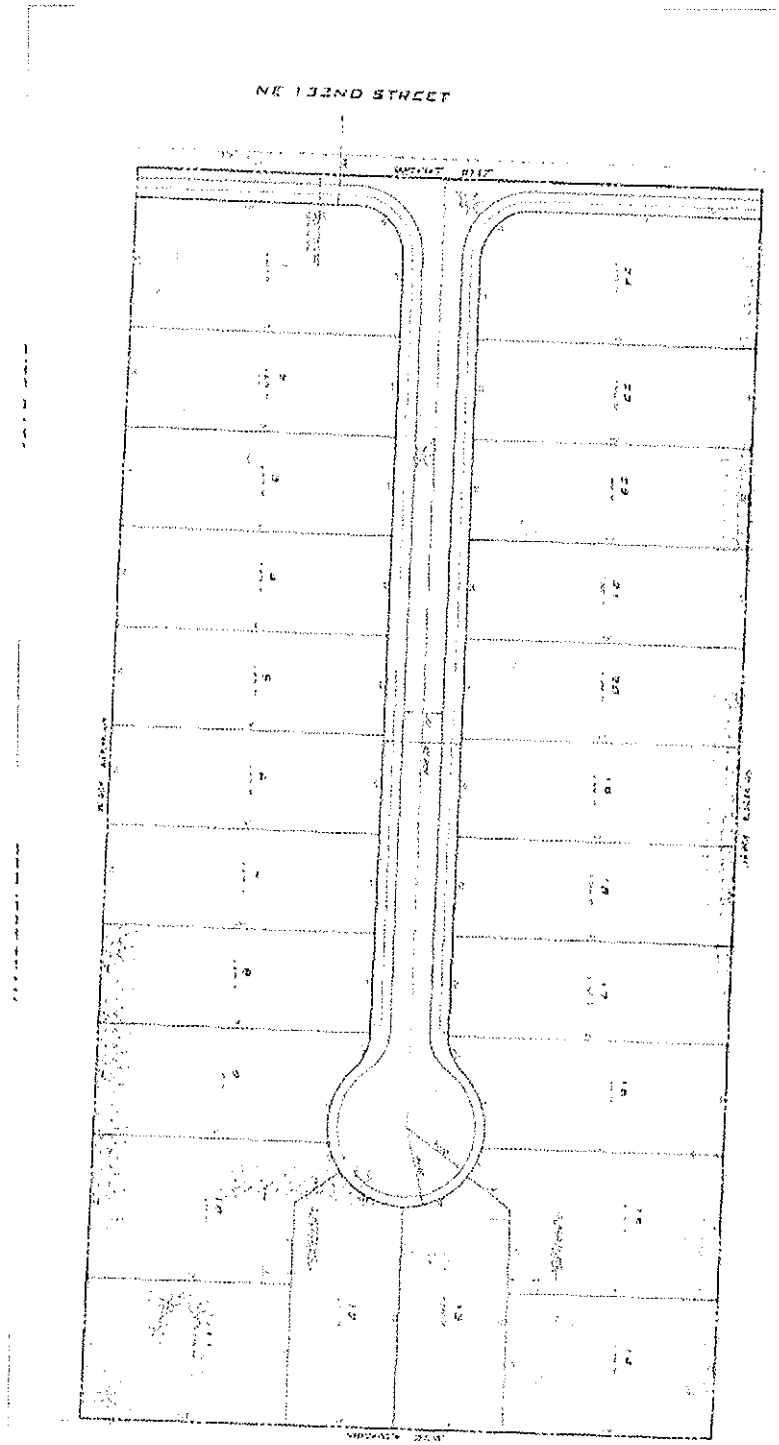
Figure 1




Cedar Park Plat

Area Map

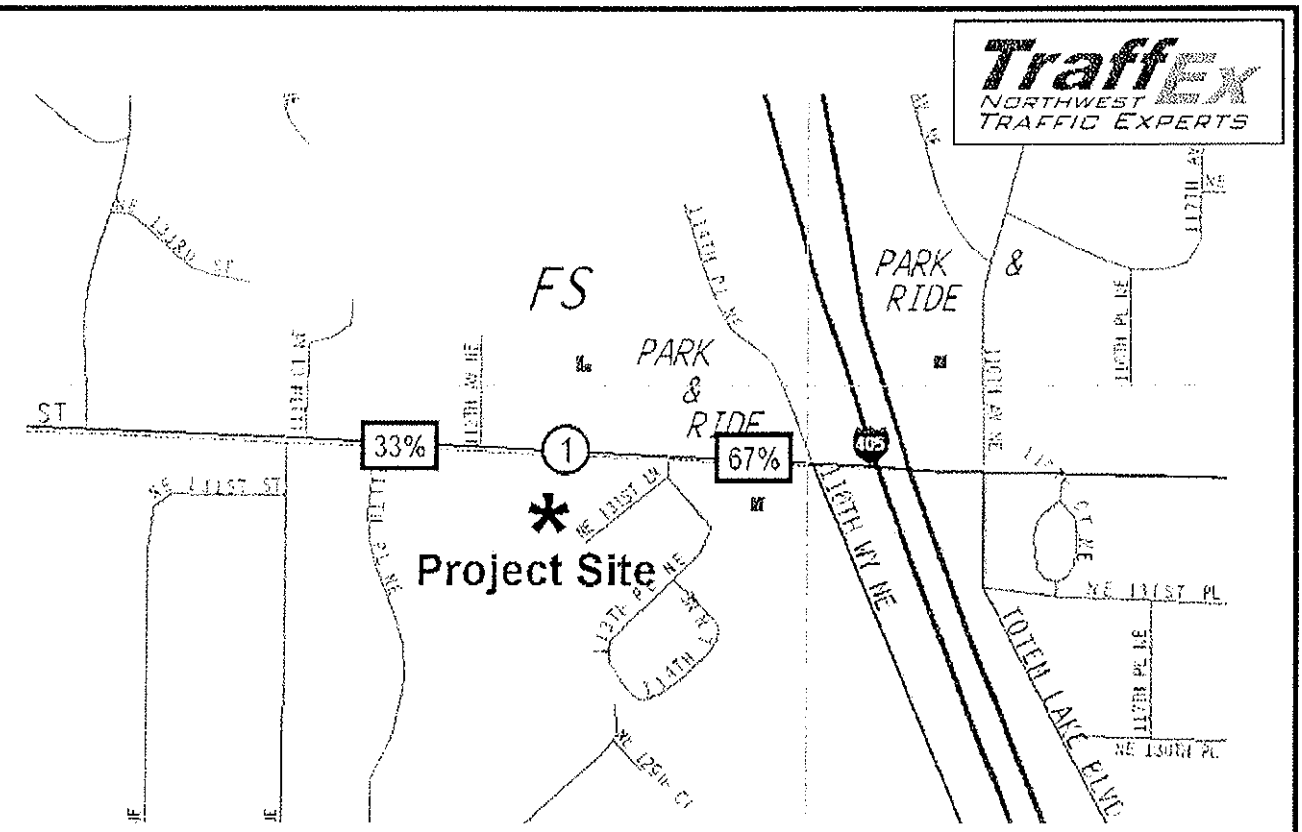
Figure 2

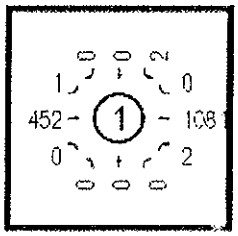



Cedar Park Plat

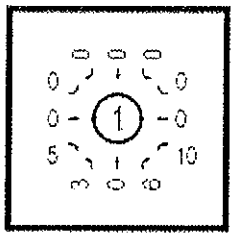
Site Plan

Figure 3

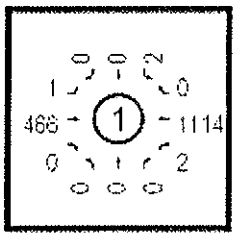


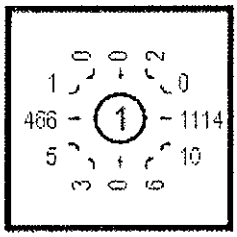

Existing Traffic Volumes




Project Generated Traffic Volumes




Future Without Project Traffic Volumes




Future With Project Traffic Volumes

PM Peak Hour Project Volumes

15 Enter
9 Exit
24 Total

Legend

15% Percentage of Project Traffic -PM Peak
←15 Peak Hour Volume and Direction

Cedar Park Plat

PM Peak Hour Traffic Volumes at Site Access/ NE 132nd St.

Figure 4