City of Kirkland
Planning and Community Development Department
123 Fifth Avenue
Kirkland, WA 98033

RE: Kirkland Children's School Master Plan, Case No. Zon12-00659

Attn: Tony Leavitt

My name is Gary L. Porter and I live at 5444 106th Avenue NE. (See Enclosure Note #1) I do have a comment concerning the Children's School Master Plan Proposal. The proposed new building property backs up to an alley that is supposed to extend through the entire block.

Approximately five years ago the subject school moved their fence over nine feet into the center of the alley restricting full access from 53rd Avenue NE to 55th Avenue NE. Also, the landscaping for the home located on 53rd Avenue NE closed off the alley prior to the school's action. (See Enclosure Note #2.)

I am requesting that the city open the alley as shown. This would require that the school return its fence to its property line and the owners on NE 53rd remove their impediments so homeowners have full access. The alley provides access for owners and emergency vehicles.

If my request is not implemented, I would not be in favor of Proposal Case No. ZON12-00659.

Thank you for your consideration.

Gary L. Porter
5444 106th Ave. NE
Kirkland, WA 98033
425-828-4457

Enclosure (1)

Tony Leavitt

From: Carol Walton <cwalton@kndservices.net>
Sent: Friday, August 24, 2012 4:24 PM
To: Tony Leavitt
Subject: ZON12-00659

Good morning Tony,

My husband and I have raised our family and lived next door to the Kirkland children's school for the past 20 years. We have enjoyed building a positive relationship with the school over the many years we have been close neighbors to the north, sharing a fence with them.

We are concerned about the following:

1.The proposed new lighting for the new parking lot, and how it may impact the privacy of our home.

2. The proposed new parking stalls and the impact those might have on the environment (additional black top) along with the additional traffic it will add to the already seriously congested 108th ave Ne.

3. The proposed new building sites will mean that the children will then use the area along the fence line we share for their outside time, and we are concerned about increased noise level due to both the close proximity to our home and yard as well as the increased number of children that the school will then be able to hold.

Our address is:

Brooks and Carol Walton
5403 108th Ave NE
Kirkland Wa.
98033

We would like to receive a layout of the proposed plan for development on the site. We also want to be notified in a ten day advance of any and all hearings that will take place regarding the proposal.

Thank you,

Carol

KIRKLAND
CHILDREN'S SCHOOL
NURTURING CHILDREN & ENRICHING FAMILIES

October 2, 2012

Tony Leavitt, Associate Planner
City of Kirkland Planning and Community Development
123 5th Avenue; Kirkland, WA 98033

RE: ZON12-00659 Kirkland Children's School - email of concern from Carol Walton

Mr. Leavitt,

We wanted to take this opportunity to address some of Carol Walton's concerns that she stated in her email to you dated 8/24/2012. We have always enjoyed a positive and working relationship with our neighbors, and plan to continue to do so as we move through this process.

We believe we understand her and her husband's concerns regarding the new classroom building at Kirkland Children School. In response to those concerns, we are providing the below additional information to help address and respond to her email:

1. CONCERN: "The proposed new lighting for the new parking lot, and how it may impact the privacy of our home."

   RESPONSE: The proposed light fixture located in the new parking lot has been proposed for parent and children's safety and meets the City of Kirkland zoning code requirements outlined in chapter 105. The fixture as proposed is approximately 16' tall and will be oriented toward east, facing away from Ms. Walton's property, and the nearest light pole will be nearly 90' away from corner of the their garage. Currently there is also an existing 6' tall fence separating the property.

2. CONCERN: "The proposed new parking stalls and the impact those might have on the environment (additional black top) along with the additional traffic it will add to the already seriously congested 108th Ave NE. "

   RESPONSE: We are proposing pervious paving at the new parking stalls near the new building as well as an infiltration system for all stormwater drainage for the improvements. This will allow all new stormwater to drain directly into the ground on our property and it will not impact any offsite properties. Also, traffic impacts along 108th are addressed in the traffic study which has been submitted to the City and is part of our application. The results of the study show how little, if any impact we have on peak hour traffic. In

addition, The Kirkland Children's School will also pay traffic Impact mitigation fees to the City who will be able to best direct these funds to where they will be most effective when proposing traffic improvements..

3. CONCERN: "The proposed new building sites will mean that the children will then use the area along the fence line we share for their outside time, and we are concerned about increased noise level due to both the close proximity to our home and yard as well as the increased number of children that the school will then be able to hold."

   RESPONSE: The area adjacent to the common fence line is currently an outdoor play area for the school and will remain unchanged as part of this proposal. We are not increasing the size of the play area; actually we are reducing the size due to the proposed new classroom building and the rain garden. The rain garden was placed between the fence line and the proposed new building to act as additional buffer. In addition, even though the school will hold more children, we will be staging outdoor time so that no more children will be on the playground at any one time than there are today to help address Mrs. Walton's concerns.

As a closing note, the Kirkland Children School plans to enjoy and continuing the great relationship they have with the neighbors and overall community. Because of the concern for the community, during our initial planning phases for this project we evaluated many options of new classroom configurations to best meet the community needs for additional classroom space at Kirkland Children School and how to maintain the "fit" into the community. These options varied from replacing the existing school with a new large 2 story school to adding on to the existing building and revising the outdoor play areas. The proposed design was selected after many community meetings and discussions with many in the community because based on the feedback, it had the smallest impact to the neighbors and the overall community. We have tried very hard to provide the best result while still meeting the growing community need for quality child care.

We hope this address Mrs. Walton's concern but if there are additional concerns, or if you have any questions please contact me anytime.

Sincerely,

Donna Caditz

Donna Caditz, Executive Director
Newport Children's School, Inc
d/b/a Kirkland Children's School

CITY OF KIRKLAND
123 FIFTH AVENUE
KIRKLAND, WA 98033-6189
425.587.3225

Determination Of Nonsignificance

CASE #: SEP12-00660

DATE ISSUED: September 10, 2012

DESCRIPTION OF PROPOSAL: Construction of a new 3,400 square foot building on the existing Kirkland Children's School site to house new classrooms. The project also includes other site improvements including the addition of 9 parking stalls, a rain garden, parking lot lighting and landscaping. The existing buildings and parking lots on the property will remain.

APPLICANT: Steve Lee, Studio Meng Strazarra

PROJECT LOCATION: 5311 108th Avenue NE

LEAD AGENCY IS THE CITY OF KIRKLAND

The lead agency for this proposal has determined that it does not have a probable significant adverse impact on the environment. An environmental impact statement (EIS) is not required under RCW 43.21.030 (2) (c). This decision was made after review of a completed environmental checklist and other information on file with the lead agency. This information is available to the public upon request. There is no comment period for this DNS.

There is no comment period for this DNS. September 24, 2012

Responsible Official: _____ 9/6/12

Eric Shields, Director
Department of Planning and Community Development
425-587-3225

Address: City of Kirkland
123 Fifth Avenue
Kirkland, WA 98033-6189

You may appeal this determination to the Planning Department at Kirkland City Hall, 123 Fifth Avenue, Kirkland, WA 98033 no later than 5:00 p.m., September 24, 2012 by WRITTEN NOTICE OF APPEAL.

You should be prepared to make specific factual objections. Contact the Planning Department at 425-587-3225 to read or ask about the procedures for SEPA appeals.

Please reference case # SEP12-00660

Distribute this form with a copy of the checklist to the following:

Owner: Newport Children's School

cc: Case # ZON12-00659

Distributed to agencies along with a copy of the checklist (see attached).

_____ 9/10/12

Distributed By: Date:

CITY OF KIRKLAND
Planning and Community Development Department
123 Fifth Avenue, Kirkland, WA 98033 425.587-3225
www.kirklandwa.gov

MEMORANDUM

To: Eric R. Shields, AICP, Planning Director

From: Tony Leavitt, Associate Planner

Date: September 6, 2012

File: SEP12-00660

Subject: **ENVIRONMENTAL DETERMINATION FOR KIRKLAND CHILDREN'S SCHOOL MASTER PLAN, PCD FIL NO. ZON12-00659**

PROPOSAL

Steve Lee of Studio Meng Strazarra, the applicant, is requesting approval of a Master Plan zoning permit to allow the construction of a new 3,400 square foot building on the existing Kirkland Children's School site located at 5311 108th Avenue NE (see Enclosures 1 and 2). The building will house 3 new classrooms (totaling 2,750 square feet) for the preschool/daycare environmental education program, restroom facilities, and storage areas. The project also includes other site improvements including the addition of 9 parking stalls, a rain garden, parking lot lighting and landscaping. The existing buildings and parking lots on the property will remain.

ENVIRONMENTAL ISSUES

I have had an opportunity to visit the site and review the environmental checklist (Enclosure 3), the Traffic Impact Analysis (Enclosure 4) and the Traffic Impact Analysis Review Memo (Enclosure 5). Based a review of these materials, the main environmental issue related to the project is potential traffic impacts.

PUBLIC COMMENTS

During the initial comment period for the SEPA Determination and zoning permit application, the City received a total of 28 emails and postcards from interested parties (see Enclosure 6). Most of the comments were in support of the facility. Two emails bought up concerns about lighting, parking, playground noise and impact to an adjacent alley. These concerns will be addressed as part of the master plan zoning permit review by Staff.

TRAFFIC IMPACTS

Public Works Staff concludes that the proposed project will not create significant traffic impacts. Staff recommends approval with the following conditions:

1. Pay Road Impact Fee.
2. Provide 32 parking stalls

The applicant's proposed plans comply with the parking requirement condition. The applicant will be required to pay road impact fees as part of the building permit.

SUMMARY

It will be necessary to further analyze certain aspects of the proposal, to determine if the project complies with all the applicable City codes and policies. That analysis is most appropriately addressed through the master plan zoning permit review process. In contrast, State law specifies that this environmental review under the State Environmental Policy Act (SEPA) is to focus only on potential significant impacts to the environment that could not be adequately mitigated through the Kirkland regulations and Comprehensive Plan.[1]

Based on my review of the submitted information, I have not identified any significant adverse environmental impacts. Therefore, I recommend that a Determination of Non-Significance be issued for this proposed action.

SEPA ENCLOSURES

1. Vicinity Map
2. Site Plan
3. Environmental Checklist
4. Traffic Impact Analysis
5. Traffic Impact Analysis Review Memo
6. Public Comments

Review by Responsible Official:

I concur ☐

I do not concur ☐

Comments:

_____
_____
_____
_____
_____

_____
Eric R. Shields, AICP
Planning Director

_____
Date

[1]ESHB 1724, adopted April 23, 1995

CITY OF KIRKLAND
123 FIFTH AVENUE ● KIRKLAND, WASHINGTON 98033-6189 ● (425) 587-3000

DEPARTMENT OF PUBLIC WORKS
MEMORANDUM

To: Tony Leavitt, Planner

From: Thang Nguyen, Transportation Engineer

Date: July 13, 2012

Subject: Kirkland Children's School Expansion, TRANS12-00620

This memo summarizes Public Works review of the traffic impact analysis report for the proposed Kirkland Children School expansion.

Project Description
The current school is 7,000 square feet and the applicant is proposing to add 2,750 gross square feet for two additional classrooms and other ancillary use.

Trip Generation
The expansion is calculated to generate 35 AM peak hour, 19 PM peak hour and 218 daily peak trips.

Traffic Concurrency
All developments subject to SEPA review are required to pass traffic concurrency. The proposed project passed traffic concurrency. A traffic concurrency test notice was issued December 23, 2011 and will expire December 23, 2012 unless a building permit is issued or a traffic concurrency test extension is requested prior to December 23, 2012 and it is approved by the City.

Traffic Impacts
Project traffic distribution and assignment was estimated using the City's BKR Traffic Model.

The City 's Traffic Impact Analysis Guidelines (TIAG) requires a Level of Service (LOS) Analysis using the Highway Capacity Manual Operational Method for intersections that have proportionate share greater than 1%. Based on the proportionate share calculation the intersection of 108th Avenue NE/NE 53rd Street met the 1% proportionate share threshold for PM peak hour; thus, requiring safety and level of service analyses. In addition, the immediate intersection to the north of the site 108th Avenue NE/NE 55th Street was also analyzed for LOS and safety.

The City requires developers to mitigate traffic impacts when one of the following two conditions is met:

1. An intersection level of service is at E and the project traffic is more than 15% of the intersection traffic volumes.
2. An intersection level of service is at F and the project traffic is more than 5% of the intersection traffic volumes.

The intersection of 108th Avenue NE/NE 53rd Street and 108th Avenue NE/NE 55th Street were calculated to operate at LOS-C or better during the PM peak hour. The resulting level of service is acceptable therefore; off-site traffic mitigation is not warranted.

Driveway Operation
All the project driveways are calculated to operate at an acceptable LOS-B or better and the project driveway meets the City of Kirkland minimum requirements for safe sight distance. Thus, no mitigation is warranted.

Parking
A parking demand analysis was completed by the traffic consultant and the peak parking demand at any one 5-minute is 20 spaces with an 85th percentile of 19 spaces. Based on the additional expanded space, the parking demand was computed to be 26 spaces. The applicant is proposing a total of 32 spaces. It appears that the proposed supply will accommodate the growth and demand.

On-site Circulation
On-site circulation was reviewed and it is anticipated that the school expansion and increase enrollment will not cause traffic to queue onto 108th Avenue NE.

Road Impact Fees
Per City's Ordinance 3685, Road Impact Fees per Impact Fee Schedule in effect September 1, 2010 are required for all developments. Road impact fees are used to construct transportation improvements throughout the City. The road impact rate Day Care Center is $21.39 per gross square foot. With 2,750 additional square feet, the calculated transportation impact fee is $58,822.50 ($21.39 x 2,750). Thus, the impact fee assessed for the proposed project will be $58,822.50. Final impact fee shall be determined at building permit acceptance.

Staff Recommendations
Public Works Staff concludes that the proposed project will not create significant traffic impacts that would require specific off-site traffic mitigation. Staff recommends approval of the proposed project with the following conditions:

- Pay Road Impact Fee.
- Provide 32 parking spaces

If you have any questions, call me at (425) 587-3869.

cc: EnerGov Filing

Tree Solutions Inc
Consulting Arborists

TO:	Donna Caditz, Executive Director, Kirkland Children's School
JOB SITE:	5311 108th Avenue Northeast, Kirkland Washington
SUBJECT:	Tree Inventory and Arborist Report for Kirkland Children's School
DATE:	June 19, 2012
PREPARED BY:	Sean Dugan ASCA Registered Consulting Arborist #457 ISA Board Certified Master Arborist #PN-5459B PNW-ISA Certified Tree Risk Assessor #149

Contents

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Assignment & Scope of Report
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Appendix C - Tree Protection Specification
Attachments:
- ***Table of Trees***
- ***Site Survey with Tree Locations***

Summary

Forty-three (43) significant trees on the subject property were included in this inventory. Eight significant trees will need to be removed due to being within the building envelope or having a significant portion of the tree's root system that will be negatively impacted by the proposed construction. Two significant trees will be removed for health/structural reasons. Thirty-three (33) significant trees, or 77 percent, can be retained based on the proposed development plans and tree viability. All of the remaining trees are viable and unlikely to be negatively impacted by construction or adjacent tree removal. No significant trees on adjacent properties will be negatively impacted.

Assignment & Scope of Report

This report outlines the site inspection by Sean Dugan and Scott Selby of Tree Solutions Inc. made on June 5, 2012. We were asked to visit the site and collect the data needed to provide a tree inventory and retention plan as required by the city of Kirkland as stated in the Zoning Code 95.30. Included in this arborist report are observations, discussion, and recommendations needed to address the City's requirements. Donna Caditz, Executive Director of the Kirkland Children's School, requested these services to acquire information for project planning and to be in accord with City code.

Limits of Assignment

Unless stated otherwise: 1) information contained in this report covers only those trees that were examined and reflects the condition of those trees at the time of inspection; and 2) the inspection is limited to visual examination of the subject trees without dissection, excavation, probing, climbing, or coring unless explicitly specified. There is no warranty or guarantee, expressed or implied, that problems or deficiencies of the subject trees may not arise in the future.

The International Society of Arboriculture's Standard of Care defines "Hazard Tree" as "a tree that has been assessed as having characteristics that make it an unacceptable risk for continued retention. A hazard tree, or a hazardous component, exists when the sum of the risk factors equals or exceeds a predetermined threshold of risk." The predetermined threshold for risk and the actions required to reduce the risk below that threshold is established by the risk manager.

As a Certified Tree Risk Assessor, my job is to provide the risk manager, in this case the property owners, with technical information required to make informed decisions. The risk manager must make the decision about how to implement the actions required to reduce risk levels to acceptable levels.

Additional Assumptions and Limiting Conditions can be found in Appendix A.

Methods

I evaluated tree health and structure utilizing visual tree assessment (VTA) methods. The basis behind VTA is the identification of symptoms, which the tree produces in reaction to a weak spot or area of mechanical stress. A tree reacts to mechanical and physiological stresses by growing more vigorously to re-enforce weak areas, while depriving less stressed parts. (Mattheck & Breloer 1994) An understanding of the uniform stress allows one to make informed judgments about the condition of a tree.

Using the Pacific Northwest International Society of Arboriculture (PNWISA) Tree Risk Assessment method, I assigned a risk potential rating to each tree. This method is adapted from the United States Forest Service risk assessment approach and is considered the present Standard of Care. This method provides assessors a structured process, based on good science and arboriculture, to assign recommended thresholds for action for the purpose of informing risk managers. The PNWISA Tree Risk Assessment method requires assessor certification. Additional information regarding this method can be found in Appendix B.

The diameter of each tree was measured at the diameter at standard height (DSH), 54 inches above grade. All trees with a DSH of six inches or greater were included in the report. The species, DSH, health and structural condition, risk potential rating, limits of disturbance, management options, notes, and tree status for each tree can be found in the attached Table of Trees. A marked up Site Survey with Tree Locations has also been attached to this report.

Each significant tree was previously tagged and the numbers are shown on the site survey. These numbers are referred to in the attached Table of Trees. Significant trees that were not tagged have been included into the attached Site Survey. Several trees on adjacent properties with canopies that overhang the subject property were labeled with a Letter identifier on the site survey.

Limits of disturbance (LOD) is indicated throughout the report as radial feet extending out from the face of the trunk. The LOD was determined on a case-by-case basis for individual trees. Trees with good tolerance to root zone disturbance or that are not in an area near proposed construction can be protected to drip line, if necessary. Trees with high preservation value should be protected to the greater of the drip line or the critical root zone (CRZ).

I contacted Tony Leavipt, Associate Planner with the city of Kirkland working on the Kirkland Children's School project, to determine what information the City would require. Mr. Leavipt advised me that the Tree Retention Plan for Multifamily, Commercial, and Non-Residential properties would be needed.

Observations

The Site

The property is in a residential/commercial district and is currently being used as the Kirkland Children's School. The property had previously been farm land. Soils on the site are compacted at the surface but are looser further below grade. I was able to easily insert a steel probe 42 inches deep. The soil texture has a high sand component. The topography of the site is generally flat.

The site has several existing buildings and surrounding infrastructure, including parking area, walkways, covered patios, and playground areas. The site receives consistent use throughout the daytime hours. There is less use of the playground areas in the evening.
A new building and parking area is being proposed for the site north of the existing structures. (see attached Site Survey with Tree Locations)

The Trees

Information specific to each tree can be found in the attached Table of Trees. Tree species that were observed on site include Douglas-fir (*Pseudotsuga menziesii*), Western Red cedar (*Thuja plicata*), Red alder (*Alnus rubra*), Flowering cherry (*Prunus sp*.), Pear (*Pyrus sp*.), Leyland cypress (*Cupressus x leylandii*), Blue ash (*Fraxinus excelsior*), Little leaf linden (*Tilia cordata*), and Japanese styrax (*Styrax japonica*). Additional species observed on adjacent properties include Beaked hazelnut (*Corylus cornuta*) and Quaking aspen (*Populus tremuloides*).

Discussion

Forty-three (43) significant-size trees were observed on the subject property. Thirty-three (33) significant trees, or 77 percent, can be retained, based on the proposed development plans and tree viability.

Eight significant trees, numbers 124 thru 130 and tree 132, will need to be removed due to being within the building envelope or having a significant portion of the tree's root system that will be negatively impacted by the proposed construction.

Two significant trees, numbers 123 and 134, will be removed for health/structural reasons. Tree 123 is a Douglas-fir located in a play area utilized by young children for extended periods throughout the day. The tree's trunk leans to the northeast and has a defect at the base, which has resulted in 20 percent of the circumference exuding significant amounts of resin. The moderate diameter-size parts in the upper canopy have previously failed into the play area below. The risk managers would like to significantly reduce the risk of falling parts and remove the risk potential presented from the trunk. Tree removal is the only option to accomplish these goals. If the City does not believe the issues with the tree are serious enough to warrant removal, the tree will be one of the two trees allowed for removal from the site with a tree removal permit.

Tree 134 is a small ash tree that was planted voluntarily. The tree was injured, creating a wound over 30 percent of the trunk's circumference. The tree is not in imminent risk of failure, but will likely have long term decay issues that will ultimately lead to the tree's removal. The risk managers of the property would like to eliminate the risk from this tree while it is still small.

Based on the location of the eight trees proposed for removal in relation to the adjacent trees, it does not appear that there will be any negative impact to retained trees on the subject property or adjacent properties.

Two additional significant trees, numbers 192 and 193, should be considered for removal in the future, as these Red alders are not suitable trees to be located along a roadway and sidewalk. These trees currently have a *Retain* status.

Six (6) trees below significant size were also observed. One of these, tree D, will need to be removed for the construction of a walkway. Seven (7) significant trees on adjacent properties with canopies overhanging the subject property were observed. All of these will be retained.

A row of healthy Leyland cypress trees are located along the north property line adjacent to the existing parking lot. The trees have spread beyond the limits of the planting bed and are now encroaching into the parking lot and residential property to the north. The trees have also grown to a height where they are blocking the solar access to the residential property. In my opinion they may be an inappropriate plant for the limited space.

Leyland cypress has the potential to get over 80 feet tall and have a canopy spread greater than 30 feet across. The row of trees approaching this size will reduce the ability to use critically needed parking space in the lot and will completely block the sun to the neighboring site. The Children's School would like to manage these trees before they overwhelm the space.

The options the School has that would allow for the management of these trees includes beginning to create a hedge by pruning the spread of the trees back to the edge of the parking lot and reducing the height by approximately 15 feet. Hedging of the trees will require ongoing maintenance and operational costs but will achieve the goals of the School and the site to the north. Otherwise, the trees should be removed and replaced with a tree species that is more appropriate to the limited planting area. Trees to consider are:

- Hinoki cypress
- English yew
- Japanese yew
- Callery pear
- Maidenhair tree
- Paperbark maple

Tree Protection

The Tree Protection Specification found in Appendix C should be applied to all trees that will be preserved and that are near proposed construction. This shall occur prior to the commencement of site work.

The trees with the greatest potential to be negatively impacted by site development is 131. Tree protection fencing should be established around the tree. When excavating within the CRZ care should be made not to remove or damage roots that can be retained and still complete the adjacent trenching. All roots that need to be removed should be cut with a pruning tool and not by ripping out with a back hoe.

All of the significant Leyland cypress can be preserved by placing a tree protection barrier at the edge of the tree's drip line. This will prevent the canopy from being damaged by any passing vehicles. This tree species is tolerant to contractor pressures and is unlikely to be negatively impacted during site development.

None of the trees located to the west and south of the existing structures will have any construction-related activity within the tree's CRZ or below the canopy. These trees are unlikely to be negatively impacted by site development activities. It is my opinion that tree protection measures are not necessary to be placed around these trees.

None of the trees on the adjacent properties with canopies overhang the subject property will be close to any of the site development activities and they are all unlikely to be negatively impacted from construction.

Recommendations

Tree specific recommendations can be found in the attached Table of Trees.

- All tree protection measures should be installed prior to the commencement of site work.
- No trees should be removed before attaining City permission.
- Trees located on adjacent properties and new significant trees found on site are shown in the attached Site Survey and should be included into the primary survey in the plan set to be submitted to the City.
- The CRZ and tree protection measures should be shown on the survey for all trees that will be preserved.
- The Site Survey should show the LOD for all trees.
- A preservation and maintenance agreement will need to be obtained with the City for all remaining trees on the property.

Glossary

absorbing roots: common term describing the fine, non-woody, short-lived roots that absorb water and mineral nutrients and that are often infected with beneficial organisms (Matheny *et al.* 1998)
cabling: installation of hardware in a tree to help support weak branches or crotches (Lilly 2001)
cracks: defects in trees that, if severe, may pose a risk of tree or branch failure (Lilly 2001)
crown: the aboveground portions of a tree (Lilly 2001)
crown cleaning: selective pruning to remove one or more of the following parts: dead, diseased, and/or broken branches (ANSI A300)
DBH or DSH: diameter at breast or standard height; the diameter of the trunk measured 54 inches (4.5 feet) above grade (Matheny *et al.* 1998)
ISA: International Society of Arboriculture
included bark: bark that becomes embedded in a crotch between branch and trunk or between codominant stems and causes a weak structure (Lilly 2001)
lateral: secondary or subordinate branch (Lilly 2001)
Limits of Disturbance: The boundary between the protected area around a tree and the allowable site disturbance as determined by a qualified professional measured in feet from trunk. (KZC)
mitigation: process of reducing damages or risk (Lilly 2001)
monitoring: keeping a close watch; performing regular checks or inspections (Lilly 2001)
phototropic growth: growth toward light source or stimulant (Harris *et al.*1999)
PNWISA: Pacific Northwest Chapter of ISA
significant size: a tree measuring 6" DSH or greater (KZC)
soil structure: the arrangement of soil particles (Lilly 2001)
structural defects: flaws, decay, or other faults in the trunk, branches, or root collar of a tree, which may lead to failure (Lilly 2001)
target: person, object, or structure that could be injured or damaged in the event of tree or branch failure (Lilly 2001)

References

ANSI A300 (Part 1) – 2008 American National Standards Institute. American National Standard for Tree Care Operations: Tree, Shrub, and Other Woody Plant Maintenance: Standard Practices (Pruning). New York: Tree Care Industry Association, 2008.

ANSI A300 (Part 2) – 2004 American National Standards Institute. American National Standard for Tree Care Operations: Tree, Shrub, and Other Woody Plant Maintenance: Standard Practices (Fertilization). New York: Tree Care Industry Association, 2004.

City of Kirkland Zoning Code (KZC) Chapter 95, http://kirklandcode.ecitygov.net/CK_KZC_Search.html

Dunster & Associates Environmental Consultants Ltd. Assessing Trees in Urban Areas and the Urban-Rural Interface, US Release 1.0. Silverton: Pacific Northwest Chapter ISA, 2006

Lilly, Sharon. Arborists' Certification Study Guide. Champaign, IL: The International Society of Arboriculture, 2001.

Matheny, Nelda and James R. Clark. Trees and Development: A Technical Guide to Preservation of Trees During Land Development. Champaign, IL: International Society of Arboriculture, 1998.

Mattheck, Claus and Helge Breloer, The Body Language of Trees.: A Handbook for Failure Analysis. London: HMSO, 1994.

Appendix A - Assumptions & Limiting Conditions

1. Consultant assumes that any legal description provided to Consultant is correct and that title to property is good and marketable. Consultant assumes no responsibility for legal matters. Consultant assumes all property appraised or evaluated is free and clear, and is under responsible ownership and competent management.
2. Consultant assumes that the property and its use do not violate applicable codes, ordinances, statutes or regulations.
3. Although Consultant has taken care to obtain all information from reliable sources and to verify the data insofar as possible, Consultant does not guarantee and is not responsible for the accuracy of information provided by others.
4. Client may not require Consultant to testify or attend court by reason of any report unless mutually satisfactory contractual arrangements are made, including payment of an additional fee for such Services as described in the Consulting Arborist Agreement.
5. Unless otherwise required by law, possession of this report does not imply right of publication or use for any purpose by any person other than the person to whom it is addressed, without the prior express written consent of the Consultant.
6. Unless otherwise required by law, no part of this report shall be conveyed by any person, including the Client, the public through advertising, public relations, news, sales or other media without the Consultant's prior express written consent.
7. This report and any values expressed herein represent the opinion of the Consultant, and the Consultant's fee is in no way contingent upon the reporting of a specific value, a stipulated result, the occurrence of a subsequent event or upon any finding to be reported.
8. Sketches, drawings and photographs in this report, being intended as visual aids, are not necessarily to scale and should not be construed as engineering or architectural reports or surveys. The reproduction of any information generated by architects, engineers or other consultants and any sketches, drawings or photographs is for the express purpose of coordination and ease of reference only. Inclusion of such information on any drawings or other documents does not constitute a representation by Consultant as to the sufficiency or accuracy of the information.
9. Unless otherwise agreed, (1) information contained in this report covers only the items examined and reflects the condition of the those items at the time of inspection; and (2) the inspection is limited to visual examination of accessible items without dissection, excavation, probing, climbing, or coring. Consultant makes no warranty or guarantee, express or implied, that the problems or deficiencies of the plans or property in question may not arise in the future.
10. Loss or alteration of any part of this Agreement invalidates the entire report.

Appendix B - Tree Risk Assessor Method

The Pacific Northwest International Society of Arboriculture (PNWISA) Tree Risk Assessment method is adapted from the United States Forest Service risk assessment approach and is considered the present Standard of Care. This method provides assessors a structured process, based on good science and arboriculture, to assign recommended thresholds for action for the purpose of informing risk managers. The PNWISA Tree Risk Assessment method requires assessor certification.

The method uses a 12 point system, divided into three categories, to rate the potential risk from a tree and its parts.

P **Probability of Failure** is rated at 1-5 points based on the judgment of the assessor.

1 point = Low risk – The defect is not likely to lead to imminent failure and no further action is required. In many cases these defects might not even be recorded.

2 points = Moderate risk – One or more defects that are well established but would typically not lead to failure for several years. Corrective action might be useful to prevent future problems but only if time and money are available. Not the highest priority for action, these are the "retain and monitor" situations that can be used to inform budget and work schedules for subsequent years.

3 points = Moderately High risk – One or more defects areas well established but not yet deemed to be a high priority issue. Additional testing may be required or, the assessor may feel the problems are not serious enough to warrant immediate action, but do warrant placing the tree on a list of trees to be inspected more regularly. These are Retain and Monitor trees.

4 points = High risk – The defect is serious and imminent failure is likely and corrective action is required immediately. These cases require treatment within the next few days or weeks.

5 points = Extreme - The tree or component part is already failing. An emergency situation where treatment is required today.

S **Size of the Defective Part(s)** is rated 1-3 with 1 point for branches or stems up to 10cm (4 inches) in diameter, 2 points for branches or stems between 10-50cm (4-20 inches) in diameter and, 3 points for branches or stems over 50cm (20 inches) in diameter.

T **Target Area** is rated 1-4 based on the following target descriptions.

1= Low – Sites rated at one point are very rarely used for any long period of time, and people passing through the area (regardless of how they travel) do not spend a lot of time within the striking range of the tree within any one day. There are no valuable buildings or other facilities within striking range.

2= Moderate – Valuable buildings are at the edge of striking distance, so they would not be seriously damaged even if the tree did fall down. The site has people within striking range occasionally, meaning less than 50% of the time span in any one day, week , or month, and do not stay within striking range for very long.

3= Moderately High – The site has valuable buildings within striking range. People are within striking range more than 50% of the time span in any one day, week, or month, and their exposure time can be more than just passing by.

4= High – The highest rated targets have a building within striking range frequently used by people, often for longer periods of time, or high volumes of people coming and going within striking range

The Overall Risk Rating and Action Thresholds

Risk Rating	Risk Category	Interpretation & Implications
3	Low 1	*Insignificant- no concern at all.*
4	Low 2	*Insignificant – very minor issues*
5	Low 3	*Insignificant – minor issues not of concern for many years yet*
6	Moderate 1	*Some issues but nothing that is likely to cause any problems for another 10 years or more*
7	Moderate 2	*Well defined issues – retain and monitor. Not expected to be a problem for at least another 5 – 10 years*
8	Moderate 3	*Well-defined issues – retain and monitor. Not expected to be a problem for at least another 1 – 5 years.*
9	High 1	*The assessed issues have now become very clear. The tree can still reasonable be retained as it is not likely to fall apart right away, but it must now be monitored annually.*
10	High 2	*The assessed issues have now become very clear. The probability of failure is now getting serious, or the target rating and/or site context have changed such that mitigation measures should now be on a schedule with a clearly defined timeline for action.*
11	High 3	*The tree, or a part of it has reached a stage where it could fail at any time. Action to mitigate the risk is required within weeks rather than months.*
12	Extreme	*This tree, or part of it, is in the process of failing. Immediate action is required. All other less significant tree work should be suspended, and roads or work areas should be closed off until the risk issues have been mitigated.*

Options for Mitigation of Risk Trees include:

Remove the risk altogether if possible by cutting off one or more branches, removing dead wood, or possibly removing the entire tree. Extreme risk situations should be closed off until the risk is abated.

Modify the risk of failure probability. In some cases it may be possible to reduce the probability of failure by adding mechanical support in the form of cables braces or props.

Modify the risk rating by moving the target. Risk ratings can sometimes be lowered by moving the target so that there is a much lower probability of the defective part striking anything. Moving the target should generally be seen as an interim measure.

Retain and monitor. This approach is used where some defects have been noted but they are not yet serious and the present risk level is only moderate.

Reference:

Dunster & Associates Environmental Consultants Ltd. Assessing Trees in Urban Areas and the Urban-Rural Interface, US Release 1.0. Silverton: Pacific Northwest Chapter ISA, 2006

Appendix C - Tree Protection Specifications

1. This specification must be followed for all trees that are in close proximity to any clearing and grading limits.

2. Educate all workers on site about tree protection techniques and requirements during preconstruction meetings and by sharing and posting this Tree Protection Specification.

3. After the site has been surveyed and clearing and grading stakes are in place, the project arborist should visit the site to determine the actual placement of tree protection measures based on the potential impact to tree root systems. Final adjustment of clearing limits by the arborist will be made on site prior to construction.

4. Tree Protection Zone (TPZ) fencing or other barriers shall be installed along all clearing limits to protect the Critical Root Zones (CRZ) of trees that are to be preserved. Optimal CRZ areas should be the greater of the drip line or calculated at 1-foot radius for every 1-inch of tree diameter. Actual limits of disturbance can be found in the attached Table of Trees. TPZ fencing shall be a minimum of a 4-foot tall orange plastic fencing anchored with steel stakes or a 6-foot tall chain link fence, depending on the project needs. Alternative barriers may be approved with consent of the project arborist. One entry point into the TPZ to gain access to the tree shall be provided for all trees, especially those surrounded by a chain link fence. Damaged barriers shall be re-established or replaced.

5. The project arborist may require chain link fencing or plywood boxing around trees in certain high traffic areas. The arborist will meet on site with the contractor to determine the specific types of fencing and placement, and the specific clearing instructions for areas near preserved trees. Adjustment of the initial TPZ lay out may be required as construction progresses and should be approved by the project arborist.

6. Post appropriate signage to the fencing to help convey the importance of the CRZ to workers.

7. TPZ fencing shall not be moved without authorization from the project arborist or the site supervisor. All fencing is to be left in place until the completion of the project. Tree protection signage shall be attached to fencing only.

8. A 4 to 6-inch deep layer of coarse arborist woodchips or hog fuel mulch shall be layered over the top of the soil surface. The mulch shall be kept 12-inches away from the base of any tree. Alternative mulch may be used with the prior approval of the project arborist.

9. Work required for removal of unwanted vegetation within the CRZ areas will be hand work only. NO HEAVY EQUIPMENT SHALL BE USED IN THE TPZ.

10. Within the TPZ areas, no parking, materials storage, dumping, or burning is allowed.

11. Do not attach anything to trees using nails, screws, and/or spikes.

12. Any trees adjacent to high traffic areas or building envelopes shall be pruned to attain proper safety and clearance prior to the construction. The project arborist will provide a recommendation using American national Standards Institute ANSI A300 Standard Practices for Pruning. Use of an International Society of Arboriculture Certified Arborist to perform the recommended work is strongly recommended.

13. When removing trees outside of the TPZ determined to be unacceptable for retention, use methods such as directional felling to avoid damage to trees and other valuable vegetation that is being retained. Small trees and other native vegetation in these areas should be carefully preserved.

14. Tree stumps that are within a TPZ or immediately adjacent to the CRZ of a preserved tree or other vegetation shall be removed by grinding.

15. Where the project arborist has determined that roots of a preserved tree may be encountered during excavation or grading, a Certified Arborist shall be on site to supervise any root pruning and to assess the potential impact of such pruning.

16. Excavation equipment shall have flat front buckets to be used when lower the grade that may contact roots of a preserved tree.

17. Excavation should occur at perpendicular angles that will reduce the potential to tear and break roots further back towards the tree.

18. Any root greater than 1-inches in diameter that is encountered shall be carefully cut with a sharp tool and not torn with a backhoe. Avoid, when feasible, cutting any root greater than 4 inches in diameter. Roots cut shall be immediately covered with soil or mulch and kept moist. When roots must be exposed around concrete forms before back-filling can occur, cover the roots with wet burlap and a white plastic sheeting.

19. Where access for machinery or any vehicle is required within the CRZ or TPZ of any preserved tree, the soil should be protected from compaction. Acceptable methods include an 18 inch deep layer of wood chips or hog fuel, 1 inch thick plywood, Alturna Mats, or steel sheets be placed over the soil surface.

20. Do not trench for utilities installation or repair, or for irrigation system installation within the TPZ without consent of the project arborist. Alter routes of underground infrastructure or use alternate methods such as pipe boring, air excavation, or HVAC to work around roots.

21. Landscaping specified within the TPZ areas shall be designed to limit disturbance of surface soils and preserved vegetation. No root pruning is permitted. New plants added in these areas should be of the smallest size possible to minimize disturbance.

22. Do not change grade by cutting or filling within the TPZ without consent of the project arborist.

23. Where backfill is required within a CRZ or TPZ area, the project arborist shall determine the amount and type of fill material to be used.

24. Supplemental irrigation for all protected trees is required during the summer months or prolonged periods of dry weather. In the absence of adequate rainfall, apply at least 1 inch of water per week by deep soaking methods. THIS IS MOST IMPORTANT FOR SUCESSFUL TREE RETENTION.

25. Fertilize trees as necessary with phosphorus, potassium, calcium, magnesium, and other macro- and micro-nutrients as indicated by a soil nutrient analysis test, but wait at least 1 year to apply any nitrogen. Nitrogen shall only be applied according to the American National Standards Institute A300 (part 2) Standard Practices for Fertilization (ANSI A300 Part 2, 2004) or the International Society of Arboriculture's Best Management Practice for Fertilization.

26. Monitoring of all trees, especially those exposed to new environmental conditions such as exposure to wind, sun, or deep shade, should be monitored during construction and annually for several seasons following construction to check for adverse changes to the tree health or stability.

Attachments: Table of Trees, Site Survey with Tree Locations

Tree Solutions Inc
Consulting Arborists

Kirkland Children's School
5311 108th Ave NE Kirkland

Date of Inventory: June 5, 2012
Table Prepared: June 5, 2012

Tree #	*Scientific Name*	Common Name	DSH (inches)	Drip Line	Condition	Prob	Size	Target	Risk Potential	LOD	Management Options	Notes	Tree Status
101	*Pseudotsuga menziesii*	Douglas fir	24.8	16.0	Good	2	2	4	8	Drip line	Crown clean as time and money allows	Bark crack with sap flow; tag missing; self-corrected lean; branch failure most probable	Retain
102	*Cupressocyparis leylandii*	Leyland cypress	7.8	5	Fair	1	1	3	5	Drip line		Phototropic lean	Retain
103	*Cupressocyparis leylandii*	Leyland cypress	7	5	Fair	1	1	4	6	Drip line		Topped	Retain
104	*Cupressocyparis leylandii*	Leyland cypress	6.7	5	Fair	1	1	4	6	Drip line		Topped; trunk sweep	Retain
105	*Cupressocyparis leylandii*	Leyland cypress	12.5	5	Good	1	1	4	6	Drip line		Phototropic lean	Retain
109	*Pseudotsuga menziesii*	Douglas fir	22.9	15	Good	2	2	4	8	Drip line	Crown clean as time and money allows		Retain
111	*Pseudotsuga menziesii*	Douglas fir	25.2	15	Good	2	2	4	8	Drip line	Crown clean as time and money allows; consider subordinating smaller lead to reduce the potential for part failure	8" subordinate lead at 8' with sap flow from union with main stem; not a significant risk	Retain
112	*Pseudotsuga menziesii*	Douglas fir	17	10	Good	2	1	4	7	Drip line	Crown clean as time and money allows	Tag removed	Retain
113	*Thuja plicata*	Western redcedar	25	12	Good	2	2	4	8	Drip line			Retain
114	*Pseudotsuga menziesii*	Douglas fir	16.8	8	Good	2	2	4	8	Drip line	Crown clean as time and money allows	Tag removed	Retain
115	*Pseudotsuga menziesii*	Douglas fir	32.8	25	Good	2	2	4	8	Drip line	Crown clean as time and money allows	Tag removed	Retain
116	*Pseudotsuga menziesii*	Douglas fir	24.8	16	Good	2	2	4	8	Drip line	Crown clean as time and money allows	Tag removed; self-corrected lean	Retain
117	*Pseudotsuga menziesii*	Douglas fir	30.3	20	Good	2	2	4	8	Drip line	Crown clean as time and money allows	Protect CRZ; deadwood, remove hangers, reduce longer scaffold limbs	Retain
118	*Pseudotsuga menziesii*	Douglas fir	40	30	Good	2	3	4	9	Drip line	Retain, test, and monitor; crown clean as time and money allows	Basal swelling; recommend advanced testing to assess if defect present; tag missing	Retain

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Tree #	*Scientific Name*	Common Name	DSH (inches)	Drip Line	Condition	Prob	Size	Target	Risk Potential	LOD	Management Options	Notes	Tree Status
119	*Pseudotsuga menziesii*	Douglas fir	19.7	10	Good	2	2	4	8	Drip line	Excavate root flare to assess for possible girdling roots. Crown clean as time and money allows	Buried root crown	Retain
120	*Pseudotsuga menziesii*	Douglas fir	16.3	10	Good	2	2	4	8	Drip line	Excavate root flare to assess for possible girdling roots. Crown clean as time and money allows	Buried root crown	Retain
121	*Pseudotsuga menziesii*	Douglas fir	24.4	18	Good	2	2	4	8	Drip line	Excavate root flare to assess for possible girdling roots. Crown clean as time and money allows	Buried root crown	Retain
122	*Pseudotsuga menziesii*	Douglas fir	24.6	15 (S)	Good	2	2	4	8	Drip line	Excavate root flare to assess for possible girdling roots. Crown clean as time and money allows	Buried root crown; bark crack with sap flow	Retain
123	*Pseudotsuga menziesii*	Douglas fir	41.9	35	Fair	3	3	4	10	Drip line	Retain, test, crown clean, reduce scaffold branch length, and monitor; or remove	Basal swelling, sap flow 20% around trunk; corrected lean; advanced decay test for extent of internal issues	Remove health
124	*Pseudotsuga menziesii*	Douglas fir	33	14	Fair	2	1	4	7	NA		Restricted trunk due to gazebo	Remove for construction
125	*Pseudotsuga menziesii*	Douglas fir	13.7	12	Fair	2	2	4	8	NA		Remaining trunk long-term decay issues	Remove for construction
126	*Thuja plicata*	Western redcedar	29	13	Fair	3	3	4	10	NA		Internal decay seam - both sides; bird holes; poor choice for retention	Remove for construction
127	*Pseudotsuga menziesii*	Douglas fir	33.2	15	Good	2	1	4	7	NA			Remove for construction
128	*Pseudotsuga menziesii*	Douglas fir	33.2	15	Fair	2	1	4	7	NA		small twig dieback; flat trunk on parking area side	Remove for construction
129	*Pseudotsuga menziesii*	Douglas fir	28.5	24	Good	2	2	4	8	15' to east	Reduce length of longer laterals	previously "wind-sailing" limits ability to prune; shallow roots; trunk with kink	Remove for construction

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Tree #	*Scientific Name*	Common Name	DSH (inches)	Drip Line	Condition	Prob	Size	Target	Risk Potential	LOD	Management Options	Notes	Tree Status
130	*Thuja plicata*	Western redcedar	29.7	12	Fair	2	2	4	8	15' to south	Monitor junction for resin flow after severe weather events; or cable	Forked trunk at 40' w/narrow union; old nurse log tree, shows no sign of movement, upper canopy sparse; top soil layer compacted	Remove for construction
131	*Pyrus calleryana*	Flowering pear	14, 13.5, 13.3	20	Good	2	2	4	8	Drip line	Reduce limb endweight & raise canopy, selective thinning, can install a dynamic catch cable to further reduce risk potential, high preservation value	SW leaning trunk; monitor union between 2 south trunks for seperation or sap flow especially after heavy snow or ice load.	Retain
132	*Pseudotsuga menziesii*	Douglas fir	31	14	Good	2	1	4	7	NA		Branch failure	Remove for construction
133	*Tilia cordata*	Linden	10.4	15	Good	1	1	4	6	Drip line		Protect CRZ; sap sucker holes	Retain
134	*Fraxinus excelsior*	Ash (blue)	9.2	14	Fair	2	2	4	8	NA	Retain & monitor trunk for continued defect or remove	Significant trunk wound - long-term decay issuel; trunk leaning west	Rmove
135	*Pseudotsuga menziesii*	Douglas fir	36.5	20	Good	2	2	4	8	Drip line	Crown clean as time and money allows, reduce length of longest scaffold branches	Protect CRZ; deadwood, remove hangers, reduce longer scaffold limbs	Retain
173	*Cupressocyparis leylandii*	Leyland cypress	6.2	4	Good	1	1	1	3	Drip line		Protect to dripline	Retain
174	*Cupressocyparis leylandii*	Leyland cypress	6.4	3	Fair	1	1	3	5	Drip line		Topped; phototropic lean; our tag	Retain
175	*Cupressocyparis leylandii*	Leyland cypress	6.2	4	Fair	1	1	3	5	Drip line		Phototropic lean; our tag	Retain
176	*Cupressocyparis leylandii*	Leyland cypress	12.8	8	Good	1	1	3	5	Drip line		Root obstruction - curb	Retain
187	*Cupressocyparis leylandii*	Leyland cypress	12	8	Good	1	1	3	5	Drip line		Root obstruction - curb	Retain

Kirkland Children's School
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Tree #	*Scientific Name*	Common Name	DSH (inches)	Drip Line	Condition	Prob	Size	Target	Risk Potential	LOD	Management Options	Notes	Tree Status
188	*Cupressocyparis leylandii*	Leyland cypress	11	8	Fair	2	2	3	7	Drip line		Long-term risk issue possible; forked trunk & narrow angle of attachment, crack, included bark, enveloped wire; root obstruction - curb	Retain
189	*Cupressocyparis leylandii*	Leyland cypress	14	8	Good	1	1	3	5	Drip line		Self-corrected lean; sprinkler at base; root obstruction - curb	Retain
190	*Cupressocyparis leylandii*	Leyland cypress	14	8	Good	1	1	3	5	Drip line		Root obstruction - curb	Retain
191	*Cupressocyparis leylandii*	Leyland cypress	8.5	7	Good	1	1	3	5	Drip line		Root obstruction - curb	Retain
192	*Alnus rubra*	Red Alder	10	12	Fair	2	2	4	8	Drip line	Consider for removal due to unsuitable species for location	This tree is a poor choice for the location. The species has weak wood and often fail quickly, short life span. Ice/snow load possible issue; monitor lean correcting; trunk leans east; small twig dieback; touching utility line	Retain
193	*Alnus rubra*	Red Alder	16.2	13	Fair	2	1	4	7	Drip line	Consider for removal due to unsuitable species for location	Girdling root; top dieback; branch failure; maintain clearance on walk/road/parking	Retain
196	*Cupressocyparis leylandii*	Leyland cypress	8	6	Good	1	1	3	5	Drip line		In CRZ of 117, 135	Retain
A	*Malus*	Crabapple	4			1	1	3	5	Drip line			Retain
B	*Malus*	Crabapple	5			1	1	3	5	Drip line			Retain
C	*Malus*	Crabapple	5	8	Good	1	1	1	3	Drip line			Retain
D	*Malus*	Crabapple	5	8	Good	1	1	1	3	NA			Remove construction
E	*Malus*	Crabapple	5.6	8	Good	1	1	1	3	Drip line			Retain
F	*Tilia cordata*	Linden	8.3	10	Good	1	1	1	3	Drip line			Retain

Kirkland Children's School
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Date of Inventory: June 5, 2012
Table Prepared: June 5, 2012

Tree #	*Scientific Name*	Common Name	DSH (inches)	Drip Line	Condition	Prob	Size	Target	Risk Potential	LOD	Management Options	Notes	Tree Status
H	*Styrax*	Japanese snowbell	5.6	10	Good	1	1	1	3	Drip line			Retain
I	*Acer circinatum*	Vine maple	6+	8	Good	1	1	1	3	Drip line		N of tree 129	Retain
J	*Acer circinatum*	Vine maple	6+	8	Fair	1	1	1	3	Drip line		N of #131 on adjacent site; fair condition; some canopy dieback	Retain
K	*Pseudotsuga menziesii*	Douglas fir	~24	18	Good	2	1	3	3	Drip line		NW corner on adjacent site; 18' dripline, app. 24" DSH; good condition;	Retain
L	*Corylus cornuta*	Beaked hazelnut	6+	12	Good	1	1	1	3	Drip line			Retain
M	*Thuja plicata*	Western redcedar	22	16	Good	1	1	4	6	Drip line		Located on adjacent property next to fence with 8' overhang; behind #123	Retain
N	*Populus sp*	Aspen	22	12	Good	1	1	3	5	Drip line		On adjacent lot south of "L", 12' dripline radius, 8' from property line,	Retain

CITY OF KIRKLAND
Planning and Community Development Department
123 Fifth Avenue, Kirkland, WA 98033
425.587-3225 - www.kirklandwa.gov

MEMORANDUM

To: Tony Leavitt, Associate Planner

From: Tina Cohen, Consulting Urban Forester

Date: September 26, 2012

Subject: Urban Forester Review, ZON12-00659

The City's objective is to retain as many viable trees as possible on a development site while still allowing the development proposal to move forward in a timely manner. In order to make better decisions about tree retention, an approved tree retention plan that establishes the priorities of tree retention is required for zoning permit applications. Tree retention values are assessed based on the site, the location of trees and the information provided by the applicant's arborist.

The following tree retention values, based on Kirkland Zoning Code definitions, for the project are listed below:

- The High Retention Value trees on this site are Trees 101, 115, 116, 117, 135, 175, 176, 187, and 190 and G (10 total). Per the requirements in KZC 95.30, the applicant is required to retain and protect High Retention Value trees to the maximum extent possible. High Retention value trees are significant viable trees that are located within required yards or landscape buffers and fit the criteria defined in KZC 95.10.

- The Moderate Retention Value trees are Trees 102 thru 105, 109, 111 thru 114, 118 thru 122, 131, 133, 173, 189, 191, 192, 193, H (22 total). Moderate Retention Value trees are viable trees that are to be retained if feasible.

- The Low Retention Value trees are Trees 123 thru 130, 132, 134, 188, and A thru F (17 total). These are typed as Low Retention Value trees based on their current condition or are located in an area where removal is unavoidable due to the anticipated development activity.

No trees are approved for removal with the approval of a zoning permit. A new retention plan shall be required at each phase of the project as more information about the location of the proposed improvements is known, subject to the requirements in KZC 95.30.

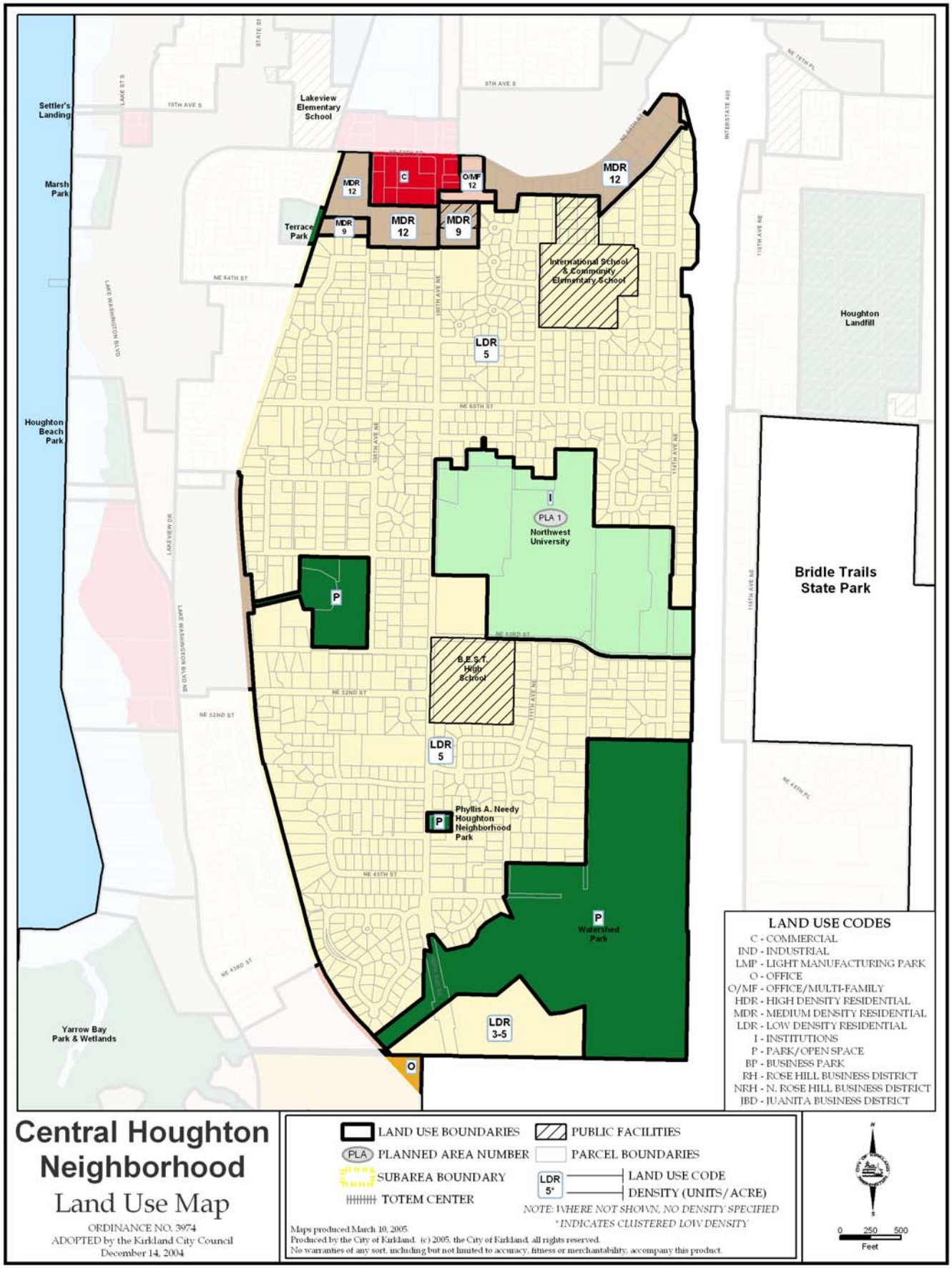

Figure CH-1: Central Houghton Land Use

CHAPTER 15 - SINGLE-FAMILY RESIDENTIAL (RS) ZONES

15.05 User Guide.

The charts in KZC 15.10 contain the basic zoning regulations that apply in each RS 35, RS 12.5, RS 8.5, RS 7.2, RS 6.3 and RS 5.0 zones of the City. Use these charts by reading down the left hand column entitled Use. Once you locate the use in which you are interested, read across to find the regulations that apply to that use.

Section 15.08

Section 15.08 – GENERAL REGULATIONS
The following regulations apply to all uses in this zone unless otherwise noted:

1. Refer to Chapter 1 KZC to determine what other provisions of this code may apply to the subject property.

2. If any portion of a structure is adjoining a detached dwelling unit in a low density zone, then either:
   a. The height of that portion of the structure shall not exceed 15 feet above average building elevation, or
   b. The maximum horizontal facade shall not exceed 50 feet.
   See KZC 115.30, Distance Between Structures/Adjacency to Institutional Use, for further details.
   (Does not apply to Detached Dwelling Unit and Mini-School or Mini-Day-Care Center uses).

3. May not use lands waterward of the ordinary high water mark to determine lot size or to calculate allowable density.

4. May also be regulated under the Shoreline Master Program; refer to Chapter 83 KZC.

	USE / REGULATIONS	DIRECTIONS: FIRST, read down to find use...THEN, across for REGULATIONS										
			MINIMUMS				MAXIMUMS					
		Required Review Process	Lot Size	REQUIRED YARDS (See Ch. 115)			Lot Coverage	Height of Structure	Landscape Category (See Ch. 95)	Sign Category (See Ch. 100)	Required Parking Spaces (See Ch. 105)	Special Regulations (See also General Regulations)
				Front	Side	Rear						
.030	School or Day-Care Center	See Spec. Reg. 10.	As established on the Zoning Map. See Spec. Reg. 1.	If this use can accommodate 50 or more students or children, then: 50′ / 50′ on each side / 50′ If this use can accommodate 13 to 49 students or children, then: 20′ / 20′ on each side / 20′			70%	25′ above average building elevation. See Spec. Reg. 12.	D	B See Spec. Reg. 8.	See KZC 105.25.	1. Minimum lot size is as follows: a. In RS 35 zones, the minimum lot size is 35,000 square feet. b. In RS 12.5 zones, the minimum lot size is 12,500 square feet. c. In RS 8.5 zones, the minimum lot size is 8,500 square feet. d. In RS 7.2 zones, the minimum lot size is 7,200 square feet. e. In RS 6.3 zones, the minimum lot size is 6,300 square feet. f. In RS 5.0 zones, the minimum lot size is 5,000 square feet. 2. May locate on the subject property only if: a. It will not be materially detrimental to the character of the neighborhood in which it is located. b. Site and building design minimizes adverse impacts on surrounding residential neighborhoods. c. The property is served by a collector or arterial street (does not apply to existing school sites). 3. A six-foot-high fence along the side and rear property lines is required only along the property lines adjacent to the outside play areas. 4. Hours of operation and maximum number of attendees at one (1) time may be limited to reduce impacts on nearby residential uses. 5. Structured play areas must be setback from all property lines as follows: a. 20 feet if this use can accommodate 50 or more students or children. b. 10 feet if this use can accommodate 13 to 49 students or children. 6. An on-site passenger loading area must be provided. The City shall determine the appropriate size of the loading area on a case-by-case basis, depending on the number of attendees and the extent of the abutting right-of-way improvements. Carpooling, staggered loading/unloading time, right-of-way improvements or other means may be required to reduce traffic impacts on nearby residential uses. 7. The location of parking and passenger loading areas shall be designed to reduce impacts on nearby residential uses. 8. Electrical signs shall not be permitted. 9. May include accessory living facilities for staff persons. 10. The required review process is as follows: a. If the subject property, including all contiguous property owned by the applicant and held by others for future use by the applicant, is less than five acres, the required review process is Process IIA, Chapter 150 KZC; provided, however, that within the jurisdiction of the Houghton Municipal Corporation, the required review process is Process IIB, Chapter 152 KZC. REGULATIONS CONTINUED ON NEXT PAGE

	USE / REGULATIONS	DIRECTIONS: FIRST, read down to find use...THEN, across for REGULATIONS										
		Required Review Process	MINIMUMS				MAXIMUMS		Landscape Category (See Ch. 95)	Sign Category (See Ch. 100)	Required Parking Spaces (See Ch. 105)	Special Regulations (See also General Regulations)
			Lot Size	REQUIRED YARDS (See Ch. 115)			Lot Coverage	Height of Structure				
				Front	Side	Rear						
.030	School or Day-Care Center (continued)											REGULATIONS CONTINUED FROM PREVIOUS PAGE b. If the subject property, including all contiguous property owned by the applicant and held by others for future use by the applicant, is five or more acres, a Master Plan, approved through Process IIB, Chapter 152 KZC, is required. The Master Plan must show building placement, building dimensions, roadways, utility locations, land uses within the Master Plan area, parking location, buffering, and landscaping. 11. These uses are subject to the requirements established by the Department of Social and Health Services (WAC Title 388). 12. For school use, structure height may be increased, up to 35 feet, if: a. The school can accommodate 200 or more students; and b. The required side and rear yards for the portions of the structure exceeding the basic maximum structure height are increased by one foot for each additional one foot of structure height; and c. The increased height is not specifically inconsistent with the applicable neighborhood plan provisions of the Comprehensive Plan. d. The increased height will not result in a structure that is incompatible with surrounding uses or improvements. *This special regulation is not effective within the disapproval jurisdiction of the Houghton Community Council.*
.040	Mini-School or Mini-Day-Care Center	Process I, Chapter 145 KZC.	As established on the Zoning Map. See Special Regulation 1.	20′	5′ but 2 side yards must equal at least 15′.	10′	50%	25′ above average building elevation.	E	B See Spec. Reg. 8.	See KZC 105.25.	1. Minimum lot size is as follows: a. In RS 35 zones, the minimum lot size is 35,000 square feet. b. In RS 12.5 zones, the minimum lot size is 12,500 square feet. c. In RS 8.5 zones, the minimum lot size is 8,500 square feet. d. In RS 7.2 zones, the minimum lot size is 7,200 square feet. e. In RS 6.3 zones, the minimum lot size is 6,300 square feet. f. In RS 5.0 zones, the minimum lot size is 5,000 square feet. 2. May locate on the subject property if: a. It will not be materially detrimental to the character of the neighborhood in which it is located. b. Site design must minimize adverse impacts on surrounding residential neighborhoods. 3. A six-foot-high fence is required along the property lines adjacent to the outside play areas. REGULATIONS CONTINUED ON NEXT PAGE

TRAFFIC IMPACT ANALYSIS

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The Kirkland Children's School

TRAFFIC IMPACT ANALYSIS

for a

2,750 gsf Addition to the existing School Building

located at

5311 108th Avenue NE

in the

City of Kirkland

February 21, 2012

The Kirkland Children's School

TRAFFIC IMPACT ANALYSIS

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The Kirkland Children's School

TRAFFIC IMPACT ANALYSIS

The following Traffic Impact Analysis (TIA) has been prepared for a proposed 2,750 gsf expansion of an existing school located on 108th Avenue NE in the southwest quadrant of the City of Kirkland.

The school enlargement will be undertaken in a single phase and will be completed by the end of 2012.

Coincidentally, the project will take place at the same time as the relocation of the Northstar Junior High/Middle School to the B.E.S.T. high school campus on 108th Avenue NE at NE 53rd Street. Accordingly, the forecast traffic demands from this new public school are included in this TIA.

Findings & Conclusions

The following principal conclusions may be considered with respect to the proposed expansion of the existing Kirkland Children's School.

- The proposed expansion of the existing school will increase the size of the facility by 2,750 gsf.
- The expansion program will under a worst case assessment produce an additional 218 trips per day and increase the morning peak hour traffic demand at the site by 35 trips per hour and the p.m. peak hour demand of the arterial street by 19 trips per hour.
- The existing facility has in situ parking for 23 full sized vehicles in a 90° degree angle style configuration on a paved lot accessed with a pair of one-way drives.
- The 85th percentile parking demand of the existing school is for 19 stalls.
- The highest number of parked vehicles, over only one 5-minute interval, was 20.
- On completion of the expansion program an additional 9 stalls will be provided to bring the on site total parking supply to 32 stalls which is sufficient to meet the expected worst case parking demand.
- The road network under review in this TIA includes the adjacent arterial – 108th Avenue NE – and the proximate intersections extending from NE 53rd Street to the Northwest University main campus driveway.
- Peak hour traffic observations were conducted over both a.m. and p.m. arterial street peak hours at the end of January 2012.
- This late January date was chosen to allow regional traffic to consolidate after the December 2011 tolling of SR 520 that induced substantial traffic diversion.

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- Level of Service (LOS) analyses were conducted for three conditions: (I) Current a.m. and p.m. peak hours, (II) 2012 conditions with the Northstar Junior High/Middle School completed and in full operation but without the Kirkland Children's School expansion, and (III) for 2012 with the Kirkland Children's School expansion completed.
- For all three LOS cases, the current year, 2012 *without* the project and 2012 *with* the project the lowest computed value was 'C'.
- Since the project does not cause a shift in the LOS at any of the intersections impacted by site-generated traffic no mitigation measures of any kind are required.
- A proportional share evaluation was conducted pursuant to the *Traffic Impact Analysis Guidelines* to determine if any intersection is impacted by more than one (1) percent.
- No intersection was determined to meet or exceed this one percent criterion.
- Four-year accident data (2008-2011) were provided by DPW for 108th Avenue NE from NE 52nd to NE 58th Street, covering the site's access.
- The computed mean accident rate along this section of 108th Avenue NE was 0.415 per million vehicle miles of travel.
- The WSDOT previously published mean accident rate for "urban minor arterial streets" was 3.44/mvm (million vehicle miles) suggesting accident causation or culpability does not reside with the street system. Fundamentally, 108th Avenue NE is considered to be a very safe street by this comparative measure.
- The existing children's school has in situ parking for 23 automobiles in a 90^{o} degree angle configuration.
- Access to the paved parking lot is from a pair of one-way driveways.
- The 85th percentile parking demand was for 19 vehicles.
- The highest observed demand over a 5-minute interval was by 22 vehicles.
- On completion of the building expansion program an additional 9 stalls will be added to the existing parking lot.
- This additional parking will be entirely adequate to accommodate the increased parking demand occasioned by the proposed facility expansion.
- Considering no impacts to the arterial street network level of service, no likely shift in accident frequency or rate to the network, and no impacts to in situ parking, no traffic mitigation measures are necessary nor are any recommended on the basis of the findings of this traffic impact analysis.

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The Kirkland Children's School

TRAFFIC IMPACT ANALYSIS

for a

2,750 gsf Addition to the existing School Building

City of Kirkland

Purpose

Briefly, the purpose of this traffic impact analysis (TIA) is to obtain and review the current a.m. and p.m. peak hour traffic volumes at the proximate key local arterial street intersections that may be impacted by vehicular traffic generated by the school's addition of two new class rooms, determine the expected new travel demands (trip generation) associated with the expansion program, assess the adequacy of parking on the site given the expanded school enrollment, review the local street accident records to determine if there are any current street elements that may increase traffic hazards, and determine if there are any "intersection proportionate share" costs that may be attributable to the school expansion.

Location

The Kirkland Children's School is located at 5311 108th Avenue NE. The existing school site, within the southern region of the City of Kirkland, is shown on Figure 1, the *Vicinity Map*. Further, Figure 2 is an aerial photograph of the site showing both the current school building occupying the southern part of the property and its attendant parking lot and dual one-way access driveways on the northern part of the site, situated on the west side of 108th Avenue NE, directly opposite the Kirkland Adventist School.

Site Traffic Design Parameters

At the present time the school includes the following traffic related design elements.

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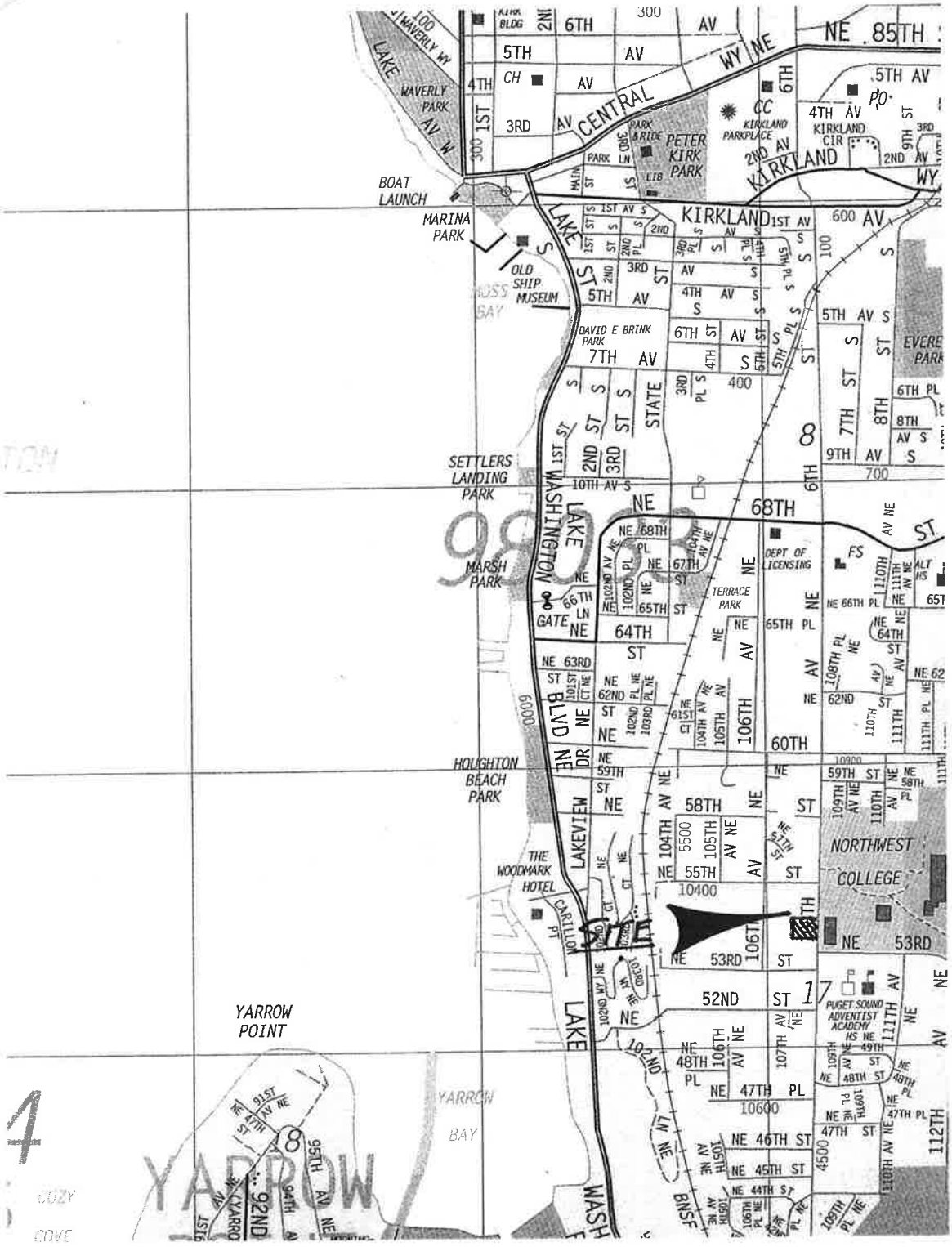

FIGURE 1

Vicinity Map

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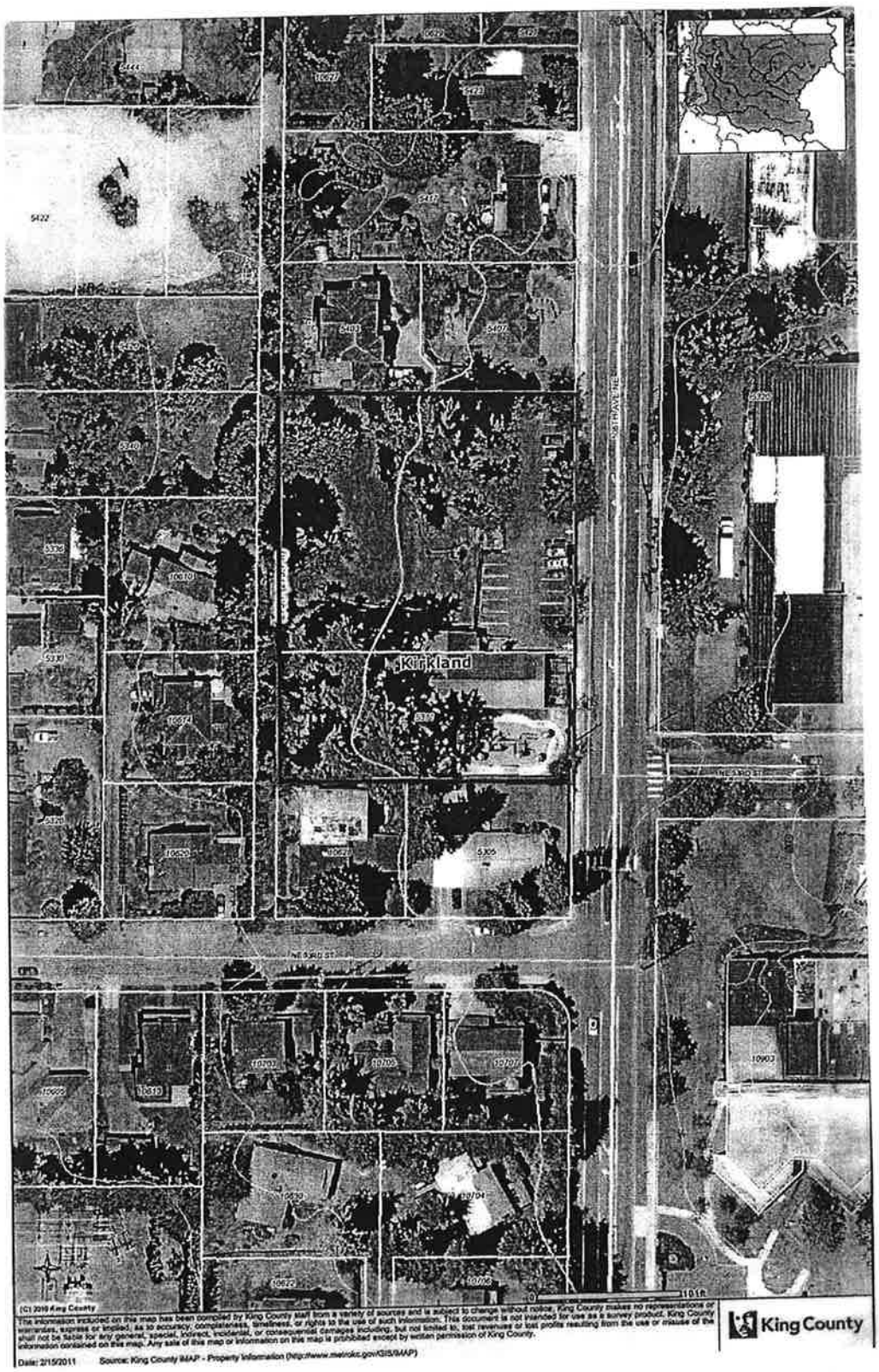

FIGURE 2

Kirkland Children's School
King County Aerial View of Site

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Current building size	7,000 gsf
Proposed addition	2,750 gsf
Current enrollment	92 pupils
ITE Land Use Designation	LUC 565 – Child Care
Site access	2 one-way driveways
Current parking supply	23 stalls
To be added, on-site parking	9 stalls
Parking style	90° angle with central aisle

Reference Documents & Scope

Reference is made to the City of Kirkland's *Traffic Impact Analysis Guidelines* (revised February, 2004) and to the 2009 *Concurrency Management Review Application*.

The trip generation data for the development is based on the **Institute of Transportation Engineers** (ITE) 7th edition of the *Trip Generation Manual* published by the Institute of Transportation Engineers (ITE).

For the analysis scope, it may be noted that while the p.m. peak hour is the highest peak hour of the average weekday, since it contains work, school, shopping and social-recreation travel demands, the city Department of Public Works (DPW) has requested the TIA include the a.m. peak hour. The a.m. peak hour is the highest in terms of the school's site trip generation and, as a consequence, this TIA bases its conclusions and recommendations on the worst-case peak hour of the average weekday. Capacity analysis is in accordance with the *2000 Highway Capacity Manual* (HCM) publication by the Transportation Research Board, Washington, D.C.

Adjacent Land Uses

To the north, south and west of the children's school site the land uses are single-family residential while to the east (across from the site on 108th Avenue NE) the land uses are all institutional. There are three of these and include (1) the Lake Washington School District's B.E.S.T. alternative school abutting and to the south of NE 53rd Street, (2) the Kirkland Adventist School adjacent to and immediately north of NE 53rd Street, and to its immediate north, (3) the Northwest University.

Proposed Adjacent Development

The Lake Washington School District is adding a new school to the campus of B.E.S.T.

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This new school is the Northstar Junior/Middle School. It is being relocated to the B.E.S.T. campus from its present location at the Lake Washington High School, 12033 NE 80th Street, Kirkland. At its new location it will be revised to include grades 6-8 from its present 7-9 format. Its proposed capacity will be for 90 students with 5 staff.

The new Northstar Junior/Middle School is expected to be occupied by late 2012. In terms of its new traffic demands on the local network it will add 397 daily vehicular trips, 144 a.m. peak hour trips, and 103 trips in the mid-afternoon. During the evening peak hour of the arterial street, it will add only one (1) trip.

The projected a.m. and p.m. peak hour traffic assignments for the Northstar Junior/Middle School are shown on Figures 3 and 4, respectively.

Phasing

The Kirkland Children's School expansion program will be developed in a single phase and is expected to be completed and fully occupied by the end of the 2012-year.

Street System

The adjacent arterial street serving the site is 108th Avenue NE. This facility is a 3-lane minor arterial with bicycle lanes on the east and west sides, curbs, gutters and sidewalks, also on both sides, and overhead nighttime illumination. At intervals the center, two-way left turn lane has raised median landscaping. The posted speed limit is 30 mph. No on-street curbside parking is permitted.

The traffic volume on 108th Avenue NE at the project site is 11,590 vehicles per day per 2007 data. In he year 2000 the average daily traffic volume (ADT) was reported as being 11,401. The annual arterial traffic growth rate is less than 0.2 percent per year. This growth rate is inconsequential and suggests the neighborhood is at a plateau in terms of traffic intensification.

To the south of the Kirkland Children's School site is NE 53rd Street. At its intersection with 108th Avenue NE it is offset by about 120 feet (centerline to centerline) so it forms two "tee" type intersections that essentially preclude direct through traffic movements. On its western approach (east leg) to 108th Avenue NE it is striped for separate left and right turning lanes. It has a posted speed limit of 25 mph and an ADT of 3,020. This street provides the primary access to both the B.E.S.T. school and the Kirkland Adventist School.

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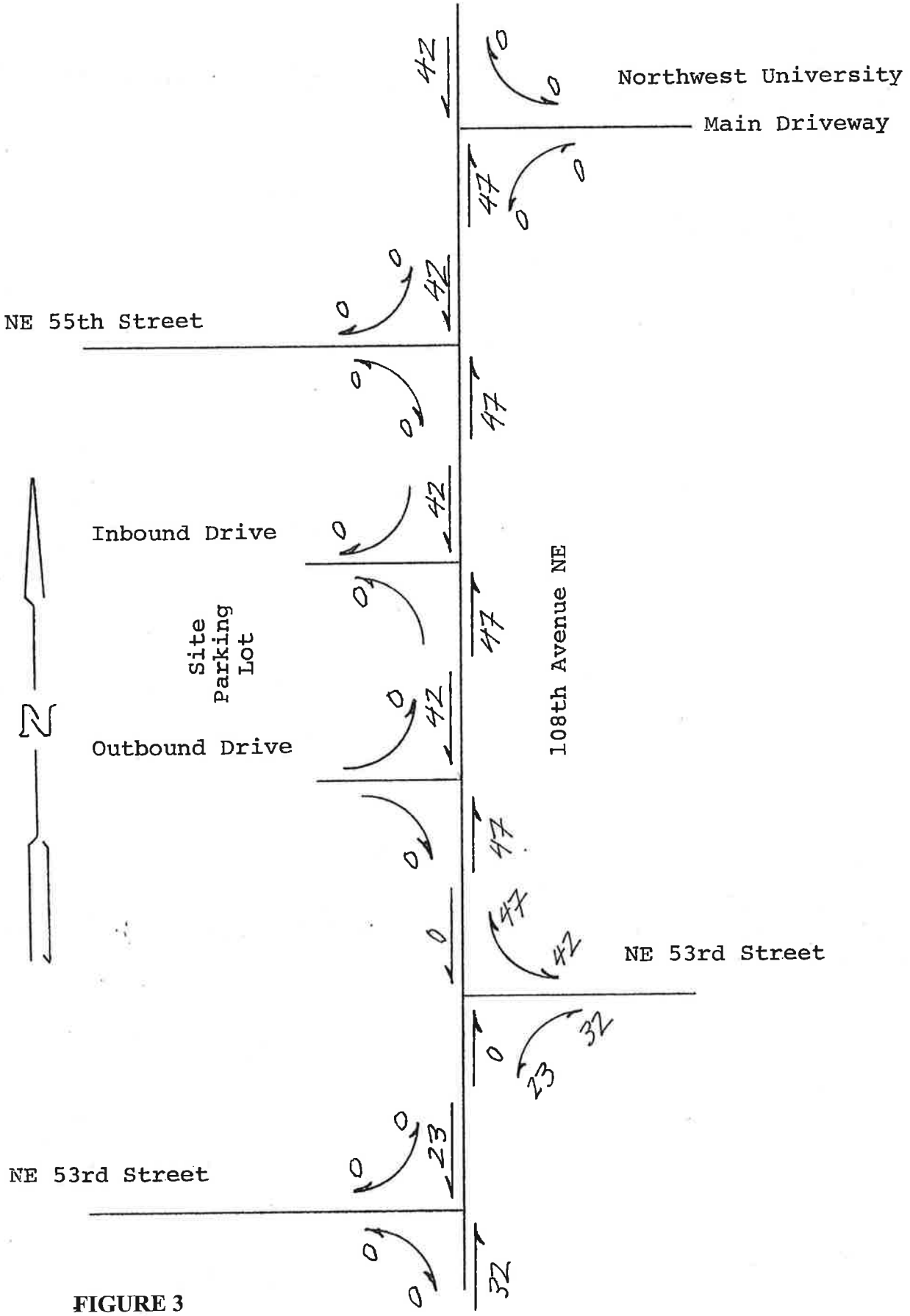

FIGURE 3

Northstar Jr. High/Middle School
A.M. Peak Hour Traffic Assignment

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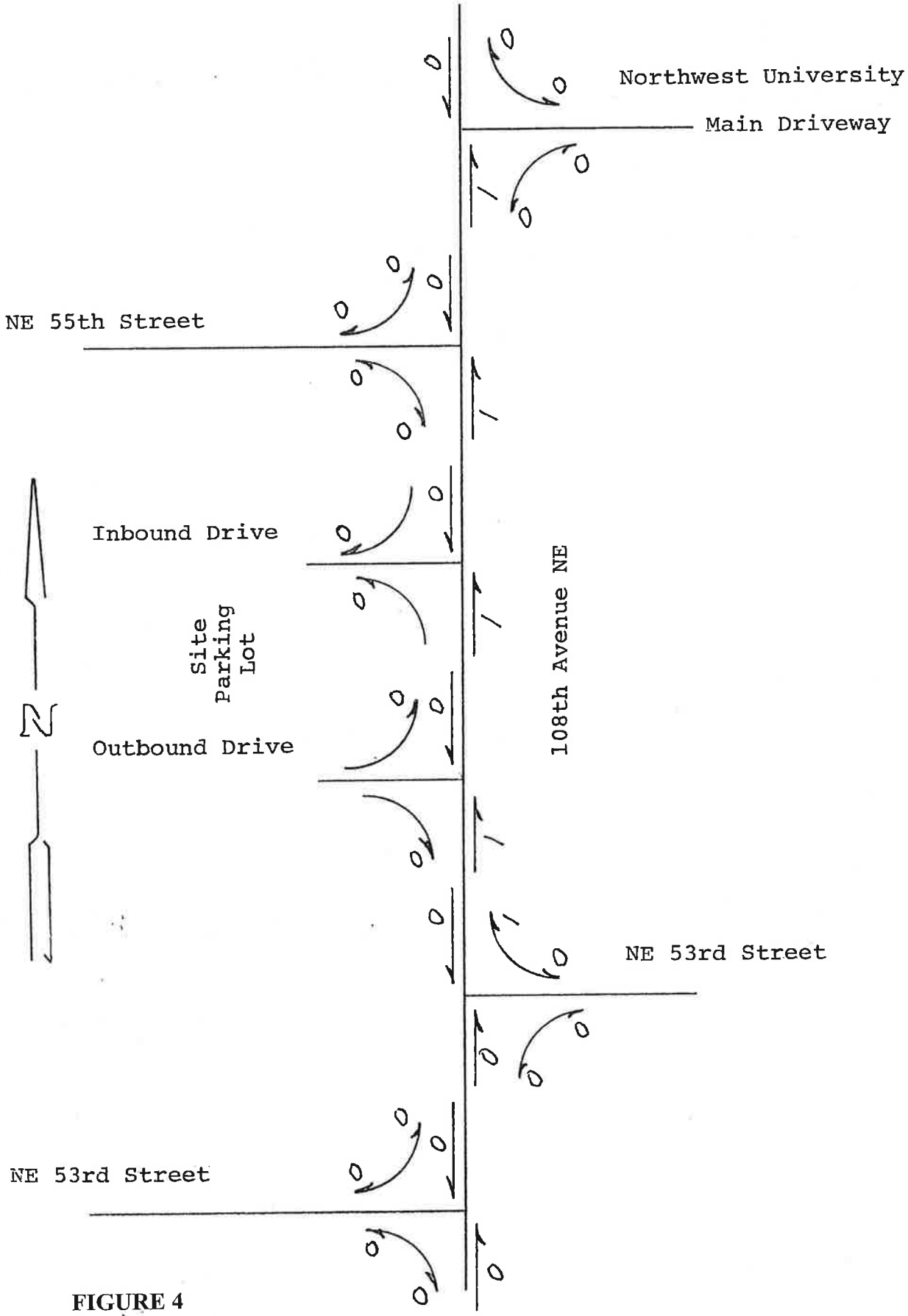

FIGURE 4

Northstar Jr. High/Middle School
P.M. Peak Hour Traffic Assignment

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On the west side of 108th Avenue NE, NE 53rd Street serves a residential neighborhood and has similar design standards as its counterpart described above except it has only a single lane approach to 108th Avenue NE. It has a 25 mph speed limit. It has an ADT of 350 vehicles per day.

To the immediate north of the project side is NE 55th Street. It is similar to its counterpart – NE 53rd Street – in that its ADT is also 350 vehicles per day, serves the same kind of residential development, has the identical roadway design and a single lane approach to 108th Avenue NE.

About 170 feet north of NE 55th Street is the main access to Northwest University. This is a parkway style access street with a center landscaped median separating the single lane inbound and outbound traffic movements. This access road has an ADT of 970.

The current a.m. and p.m. peak hour traffic volumes on these intersecting facilities on 108th Avenue NE are shown on the schematic diagrams of Figures 5and 6. The data are also contained in the appendix in raw form along with bus, truck and pedestrian volumes. These figures also show the peak hour traffic volumes at the site's two one-way driveways, inbound and outbound.

Traffic Accidents

Kirkland DPW provided four-year traffic accident data along 108th Avenue NE from NE 52nd Street to NE 58th Place for the interval January 1, 2008 through 2011. The frequencies, by location, are noted below.

Table I

Accident Frequency by Location and Year

Segment	2011	2010	2009	2008
@ NE 52nd Street	0	0	0	0
NE 52nd to NE 53rd Street	0	0	1	0
@ NE 53rd Street *	0	0	1	0
NE 53rd to NE 55th Street *	0	2	0	0
@ NE 55th Street	0	0	0	0
NE 55th to NE 57th Street *	0	0	1	0
@ NE 57th Street	0	0	0	0
NE 57th to NE 58th Place	0	0	0	0
@ NE 58th Place	0	0	0	0

* Note: Of this 2010 data, 1 accident, 25 feet N of 53rd NB, rear end type, w/ no injuries or property damage and 1 accident, 320 feet N of I/S. Hit parked car, injury type. In 2009, 2 accidents involved ped./bicyclist collisions, 1 w/injuries.

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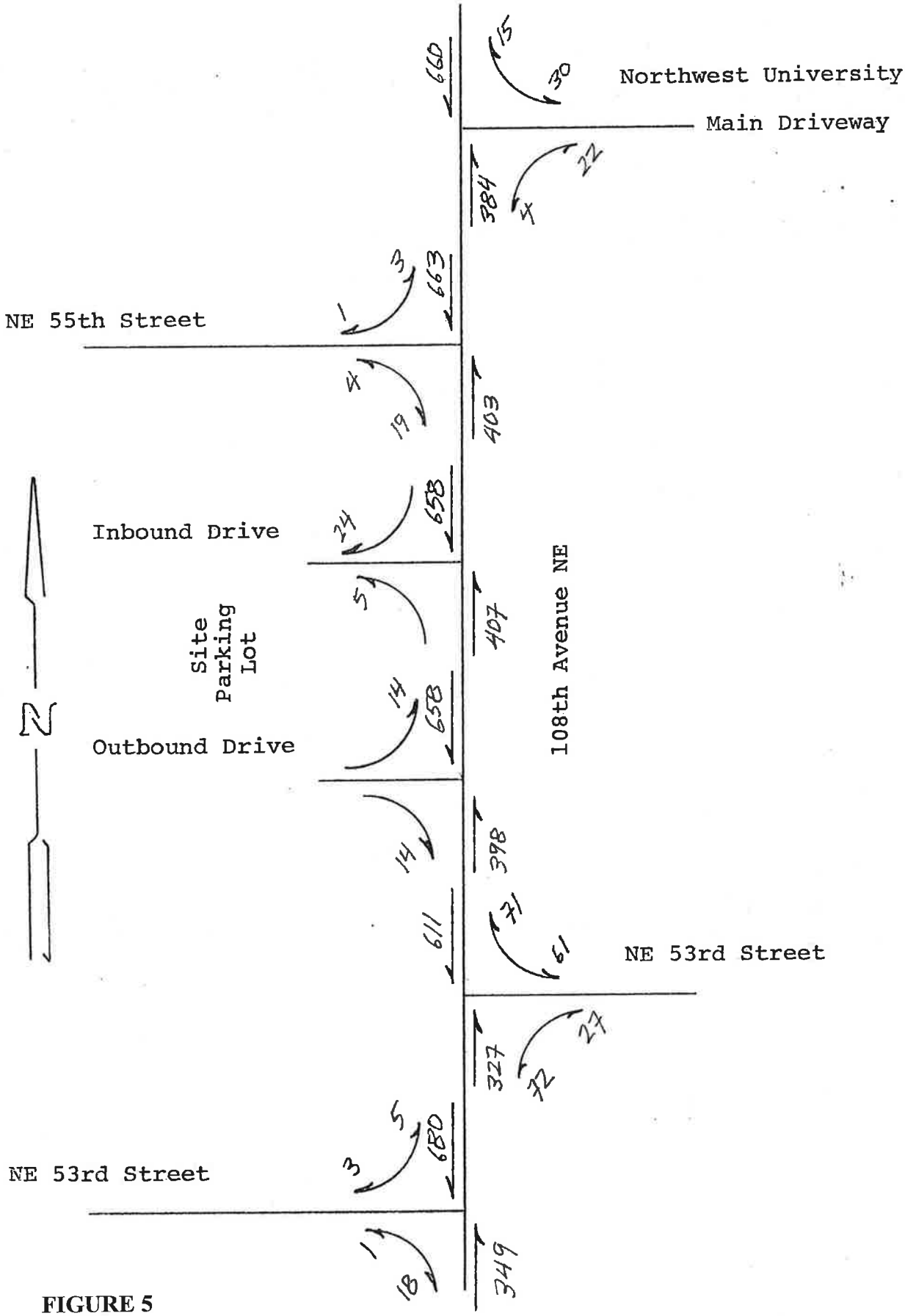

FIGURE 5

Current A.M. Peak Hour
Traffic Volumes

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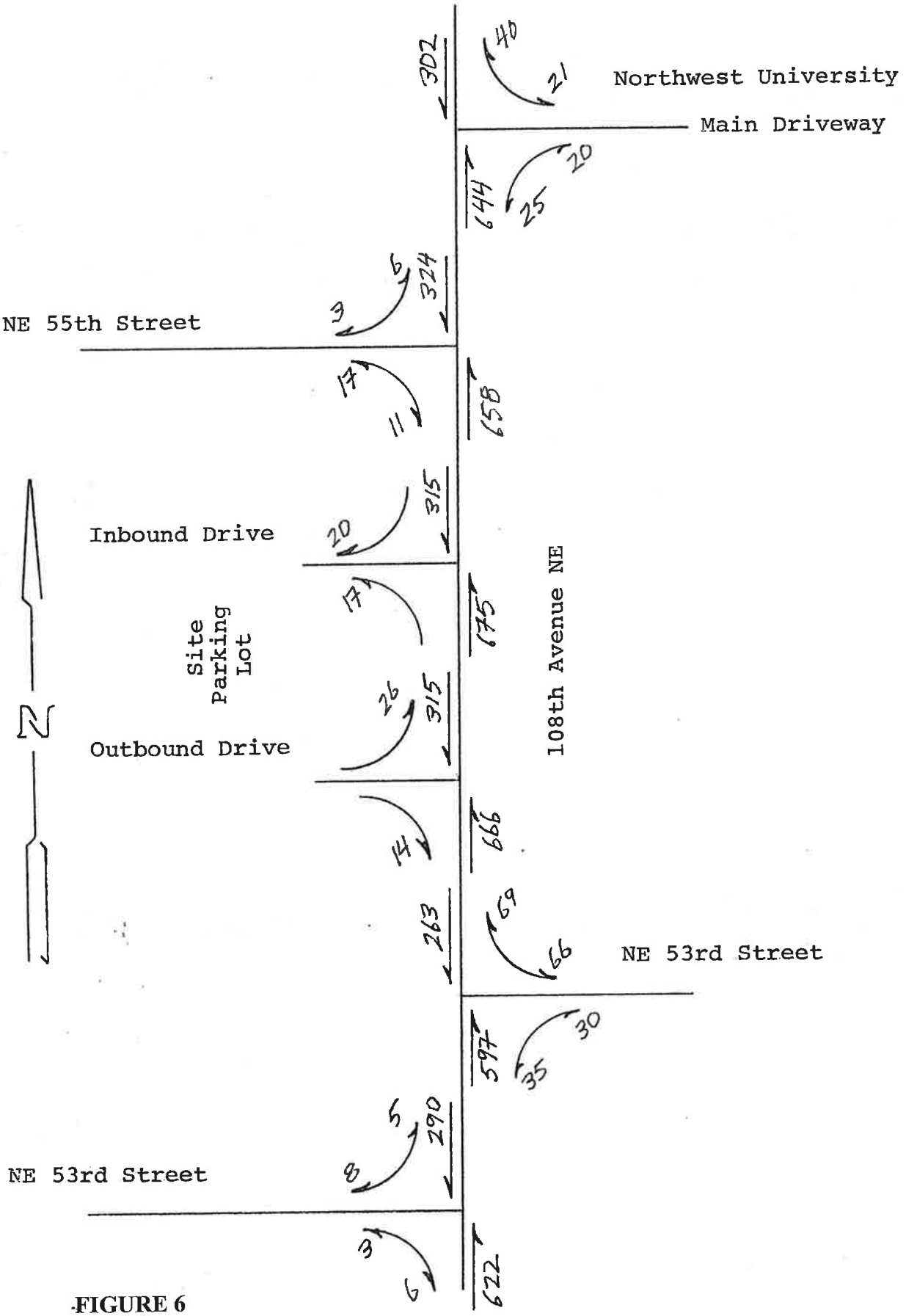

FIGURE 6

Current P.M. Peak Hour
Traffic Volumes

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In the above 4-year data, three (3) injury accidents were reported. There were no fatal accidents. One injury accident involved a bicycle-pedestrian collision in the early morning peak hour (between 55th and 57th at 7:20 a.m. on 1/5/09). Since it did not involve a motor vehicle it may be discounted when computing the average accident rate on 108th Avenue NE.

The average accident rate over this section of 108th Avenue NE (with 4 accidents in four years and an ADT of 11,590) is computed to be 0.415 accidents per million vehicle miles of travel (mvm). WSDOT published a statewide minor arterial accident rate in urban areas of 3.44/mvm. Consequently, with the accident rate on 108th Avenue NE being (0.415/3.44 X 100) only twelve percent (12%) of the published statewide average there is no statistical evidence to suggest accident causation or culpability resides with the road network. Stated another way, the traffic accidents on this minor arterial are likely due to driver error or ambient conditions-vehicle elements and, as a result, cannot be remediated by roadway construction alternatives.

The proposed expansion program of the Kirkland Children's School will not adversely impact traffic hazards.

Transit

Metro Transit Routes 253 and 540 serve the project site. The articulated bus headways, over the two peak hours, are not more than 15- minutes. Transit stops are conveniently located at the corner of NE 53rd Street and 108th Avenue NE.

There is no bus "turn out" on 108th Avenue NE, for north or southbound routes, and so through arterial street traffic is of necessity stopped during transit loading and disembarking operations. This is not considered a traffic issue since, by peak hour observation, transit usage is relatively light at this intersection. As described above, too, traffic hazard does not show up in the data.

Year 2012 Volumes without Project

To validate expected traffic growth on the arterial system, to obtain the year 2012 traffic volumes *without* the project, and noting that the city's published traffic volumes on 108th Avenue NE do not extend forward from 2007, WSDOT traffic statistics from the *Annual Traffic Report* were reviewed. At *Permanent Traffic Recorder #822* located on I-405 at MP 18.71 the 2007 volume was 182,000. By the year 20120 it had increased to only to 184,000. With a rate of growth of marginally more than a quarter of a percent (0.275%),

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for the purposes of this study, the traffic growth on 108th Avenue NE to the end of 2012 is assumed to be negligible.

The year 2012 a.m. and p.m. traffic volumes *without* the project, but including the forecast traffic for the Northstar Junior High/Middle School described earlier on page 4, are shown on Figures 7 and 8. As before, these are schematic diagrams to display the various traffic movements, by direction.

Trip Generation

Trip generation for the proposed Kirkland Children's School 2,750 gsf addition is based on the 7th edition of the **Institute of Transportation Engineers** (ITE) *Trip Generation Manual*, for *Land Use Code565*, (Day Care Center). Excerpts from this publication are included in the appendix, for reference purposes. The trip generation data are shown below in Table II.

TABLE II

The Kirkland Children's School Expansion Trip Generation

A.W.D.T.	218 Trips/Day
A.M. Inbound	19 vehicles/hour
A.M. Outbound	16 vehicles/hour
P.M. Inbound	9 vehicles/hour
P.M. Outbound	10 vehicles/hour

Trip Distribution & Assignment

The new traffic generated by this expansion program will be distributed onto the adjacent roadway system and then onto the regional transportation network. The traffic distribution and assignment of site-generated traffic is based on the *Analogy Method* described in *Transportation and Land Development*, Vergil G. Stover, 1988, published by the Institute of Transportation Engineers (ITE). A schematic diagram showing the trip assignment for both the a.m. and p.m. peak hours is shown on Figures 9 and 10. In developing these figures there are no assumed arterial facility capacity restraints and, as noted above, the distribution of school traffic follows the same pattern as now extant.

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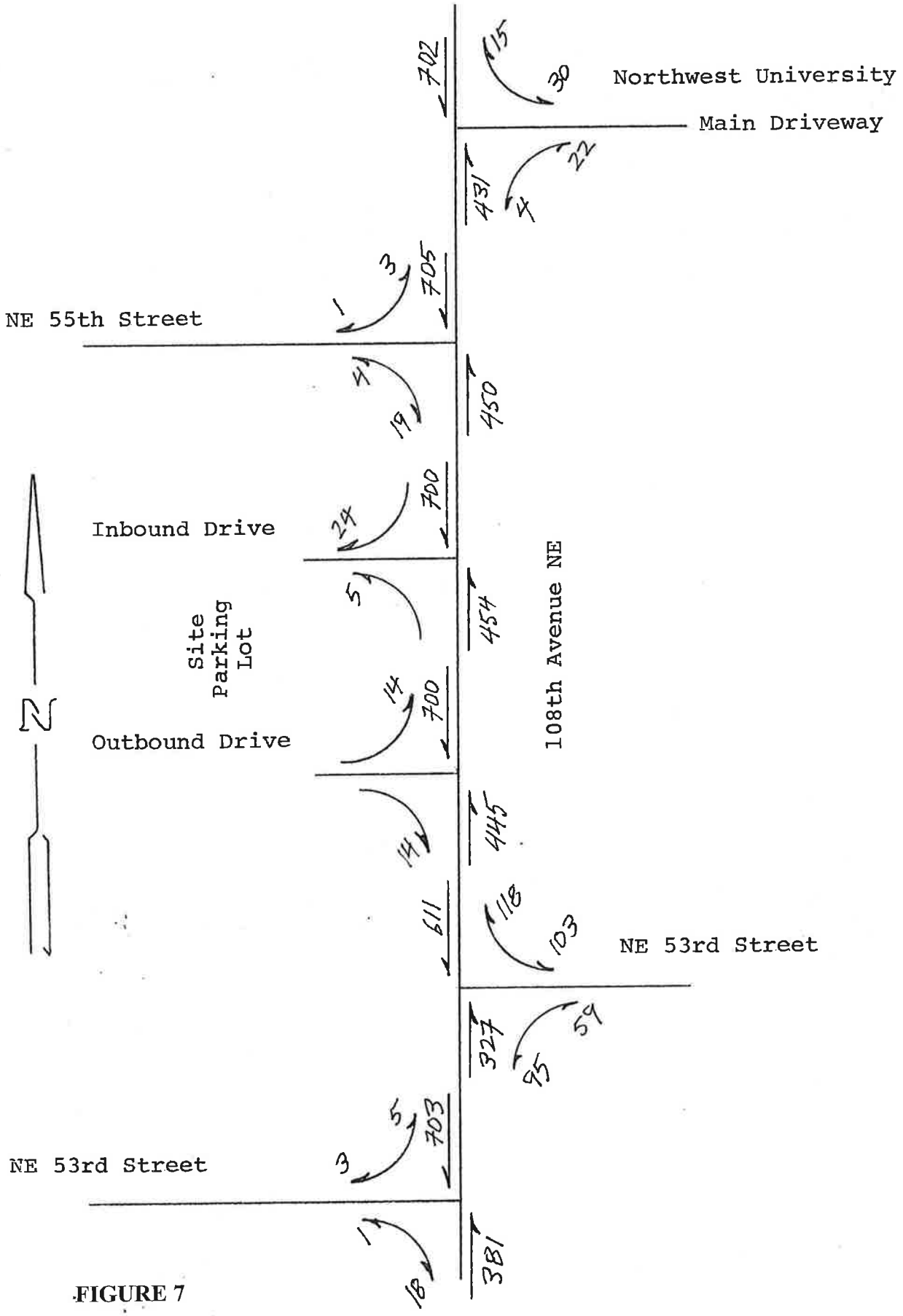

FIGURE 7

2012 A.M. Peak Hour Traffic Volumes
Without the Project

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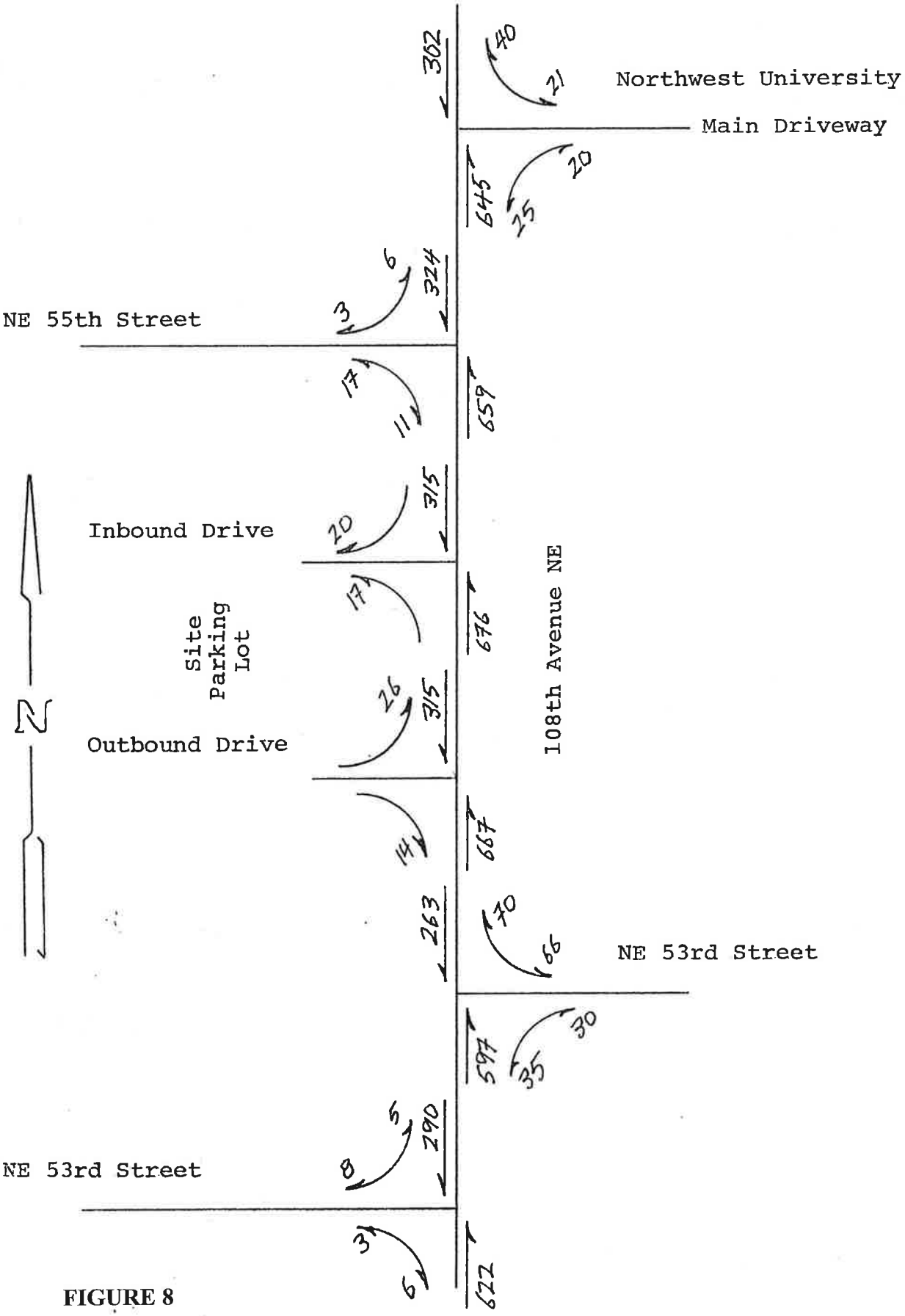

FIGURE 8

2012 P.M. Peak Hour Traffic Volumes
Without the Project

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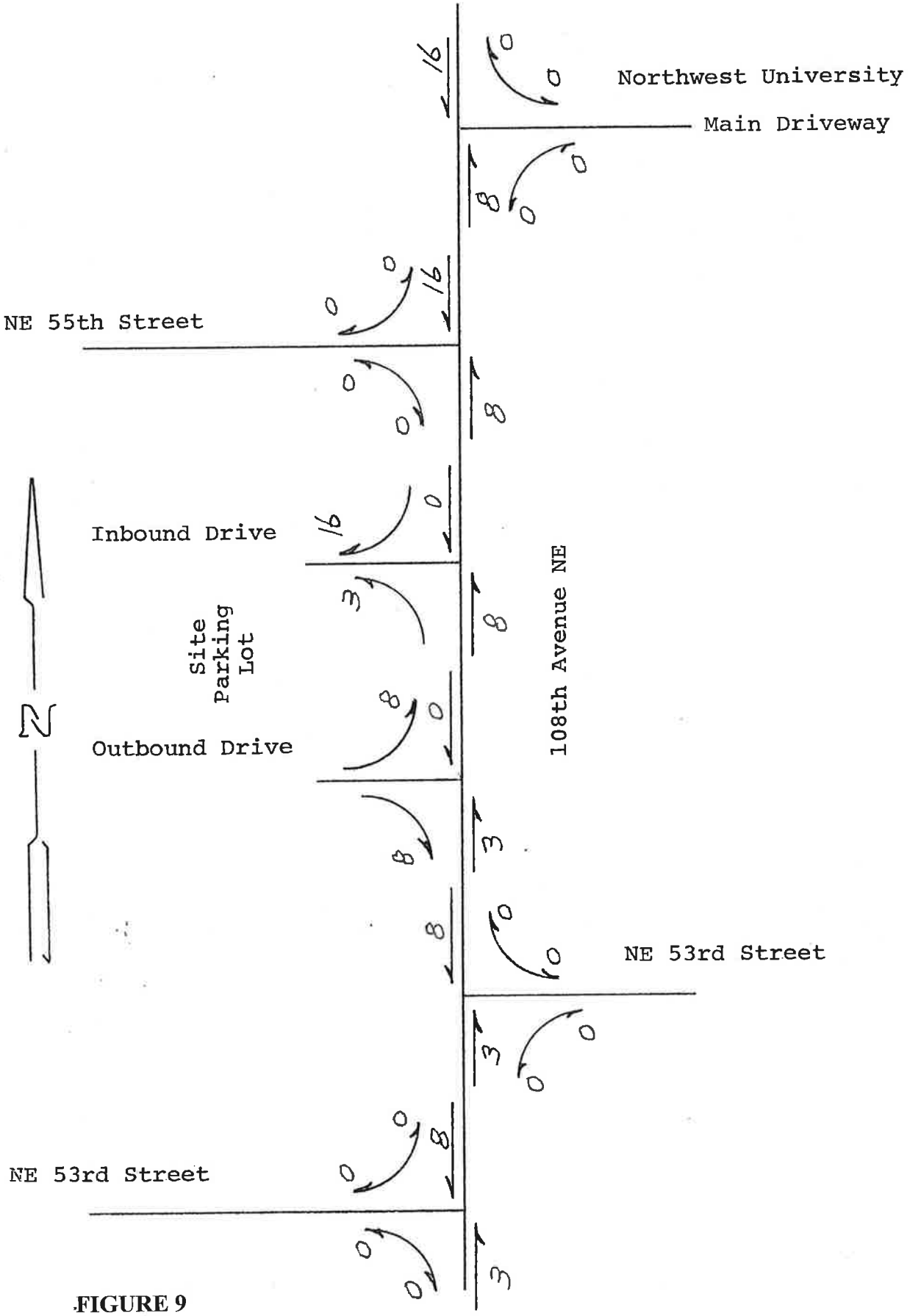

FIGURE 9

2012 A.M. Peak Hour Project
Traffic Assignment

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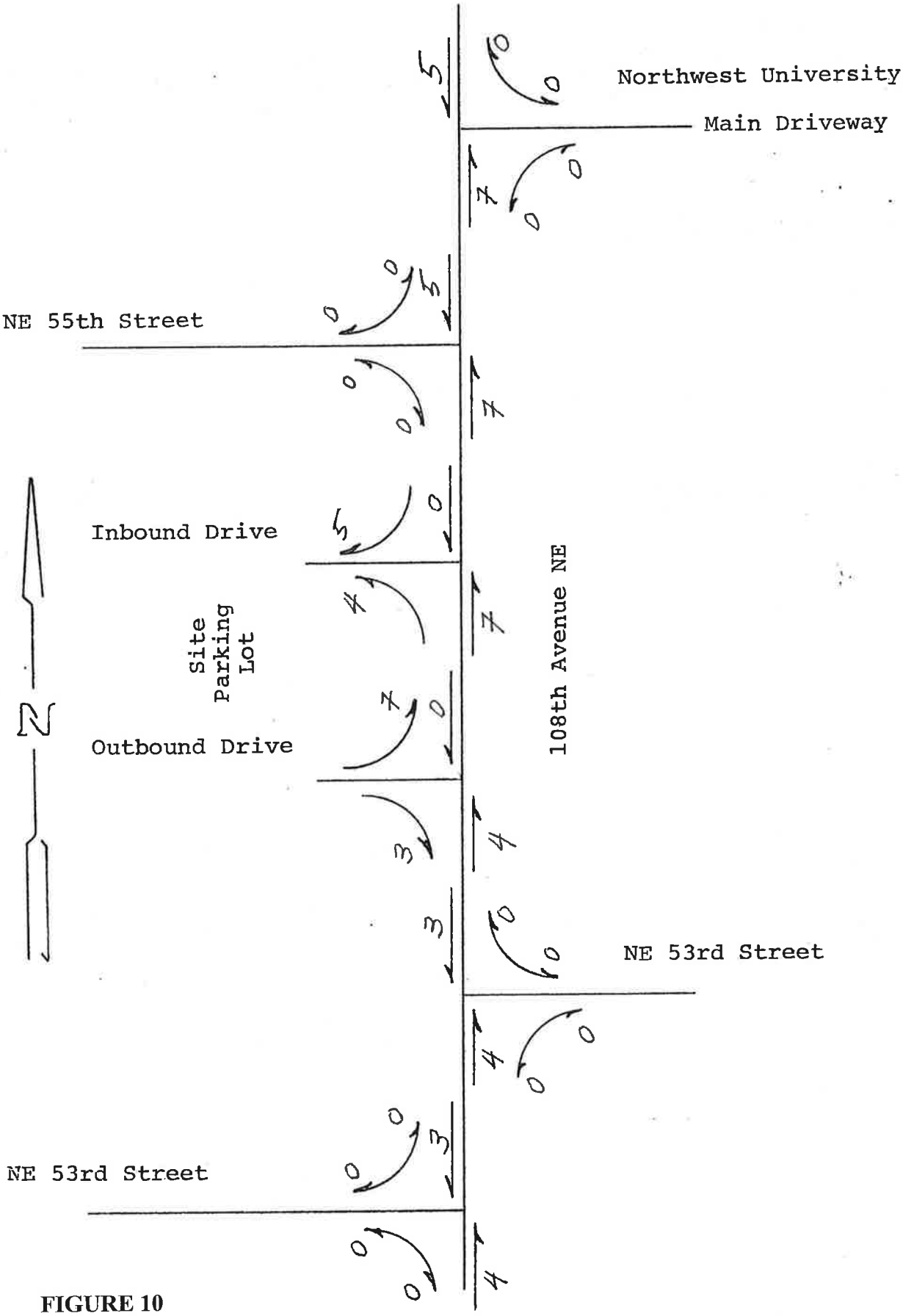

FIGURE 10

2012 P.M. Peak Hour Project
Traffic Assignment

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2012 Volumes with Project

Figures 11 and 12 show the a.m. and p.m. peak hour traffic volumes with the project completed and fully occupied. The data also includes the forecast volumes for the Northstar Junior High/Middle School relocated to the B.E.S.T. school campus.

Capacity Analysis

Capacity analysis is in accordance with the **2000 Highway Capacity Manual** (HCM) publication by the Transportation Research Board. The analysis was accomplished using the software entitled **HCS 3**, produced by the McTrans Center at the University of Florida. The results of the analysis are noted in Table III.

When reviewing the following LOS tabulated summaries, note that the computer input and results are included in the *Appendix*. The appendix computations show the entering traffic volumes and approach lane configurations. From observations, heavy (truck) volumes, noted in the appended raw field notes, were insignificant in number and do not, as a consequence, impact vehicular operations. Similarly, the absence of any significant approach road grades suggests negligible impacts from that consideration. The average intersection approach delays and levels of service (LOS) for these STOP sign controlled intersections are described below.

TABLE III

Levels of Service & Delay (in seconds)

Intersection	Current	2012 (*W/O* Project)	2012 *With* Project
	A.M. Peak Hour		
108th Ave. NE/NE 53rd (west leg)	C, 15.8	C, 16.4	C, 16.5
108th Ave. NE/NE 53rd (east leg)	C, 15.2	C, 17.5	C, 17.6
108th Ave. NE/S. Driveway	B, 14.1	B, 14.7	C, 15.2
108th Ave. NE/N. Driveway	A, 9.1	A, 9.3	A, 9.4
108th Ave. NE/NE 55th Street	B, 14.1	B, 14.7	B, 15.0
108th Ave. NE/Northwest Univ. Dr.	B, 11.6	B, 12.0	B, 12.1

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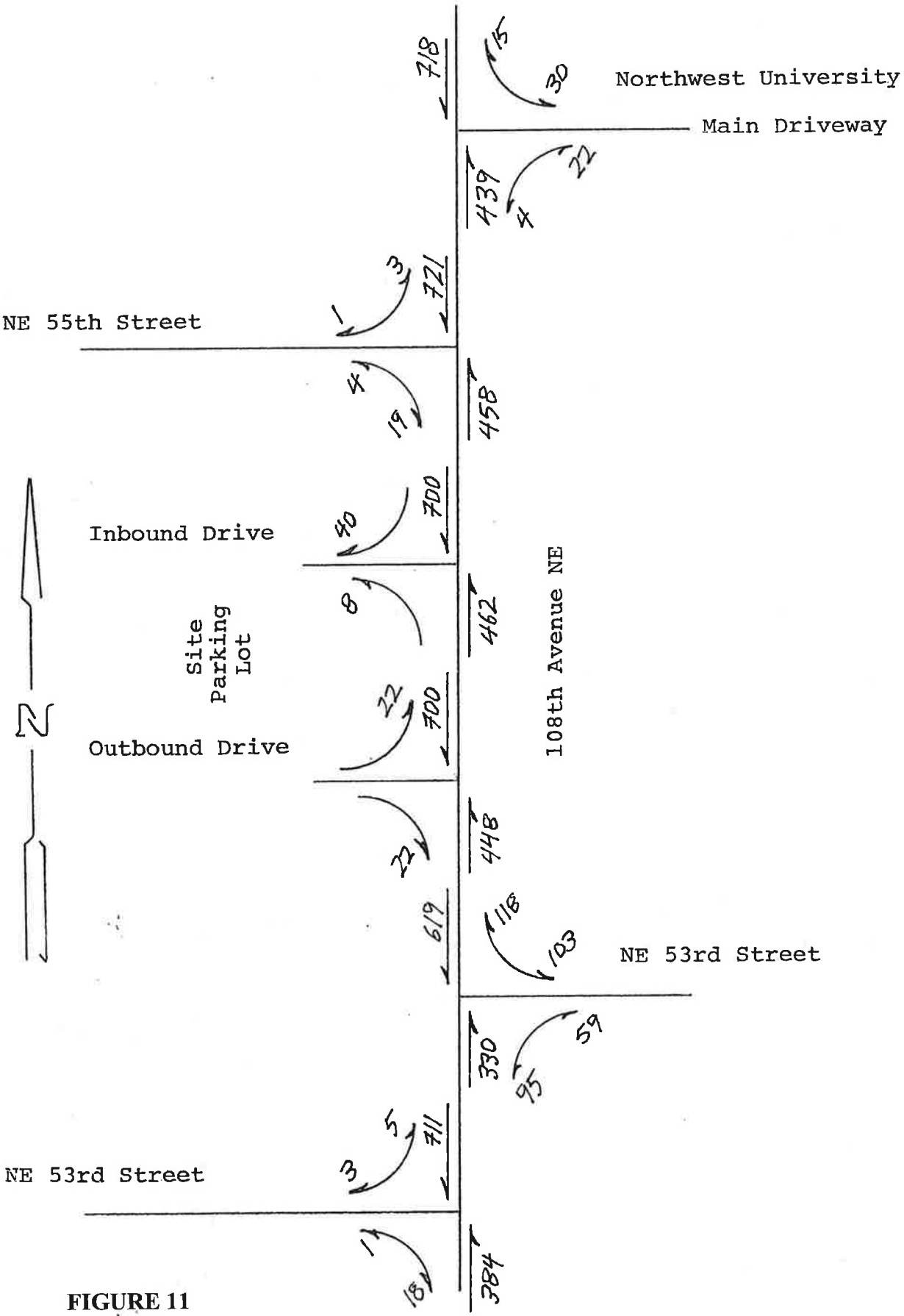

FIGURE 11

2012 A.M. Peak Hour Traffic Volumes
KCS Project Completed

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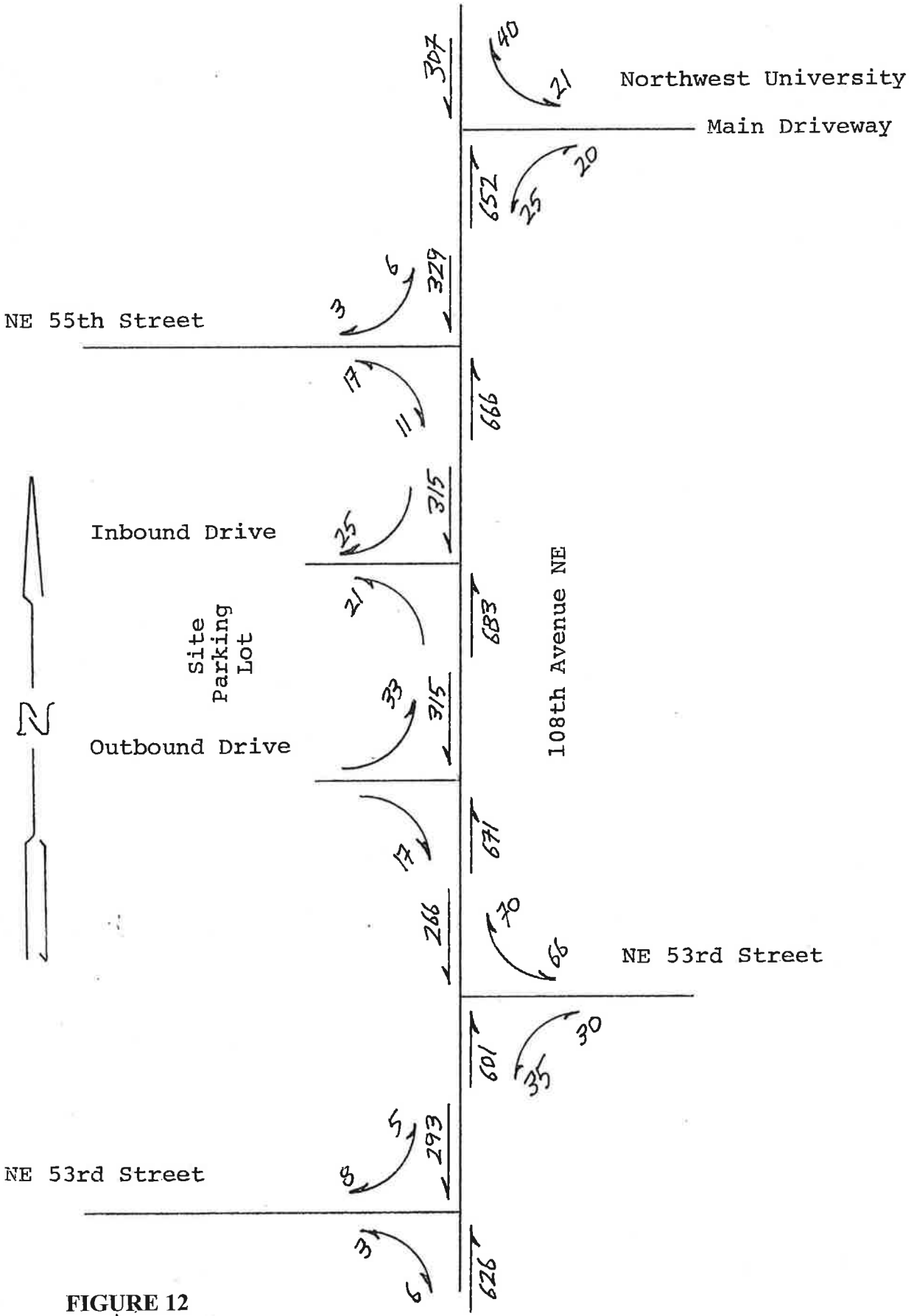

FIGURE 12

2012 P.M. Peak Hour Traffic Volumes
KCS Project Completed

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TABLE III - CONTINUATION

Levels of Service & Delay (in seconds)

Intersection	Current	2012 (*W/O* Project)	2012 *With* Project
	P.M. Peak Hour		
108th Ave. NE/NE 53rd (west leg)	B, 12.0	B, 14.0	B, 14.1
108th Ave. NE/NE 53rd (east leg)*	C, 16.4	C, 16.4	C, 16.4
108th Ave. NE/S. Driveway	B, 12.2	B, 12.9	B, 13.2
108th Ave. NE/N. Driveway	A, 8.0	A, 8.0	A, 8.1
108th Ave. NE/NE 55th Street	B, 12.2	B, 12.2	B, 12.2
108th Ave. NE/Northwest Univ. Dr.	B, 14.1	B, 14.1	B, 14.2

* Note: East leg has two approach lanes. Worst case LOS is shown is for the LT movement.

LOS Criteria & Conclusions

When reviewing the levels of service at the various intersections and the site driveways the following criteria apply.

TABLE IV

Levels of Service Criteria, Unsignalized Intersections

Level of Service	Delay Range
A	Less than 10 seconds
B	10 to 15 seconds
C	15 to 25 seconds
D	25 to 35 seconds
E	35 to 50 seconds
F	more than 50 seconds

On completion of the school's expansion program, there is no change in the LOS at any intersection in the vicinity, on 108th Avenue NE. Indeed, every studied intersection continues to function at a very good level. At worst, the project increases delay at the site's exiting driveway by 0.5 seconds in the morning and 0.3 seconds in the afternoon.

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Fundamentally, the Kirkland Children's School expansion program will not have any significant or material impact on the street network. This conclusion is made even with the proposed Northstar Junior High/Middle School relocation to the B.E.S.T. school campus.

Proportional Share Evaluation

The City of Kirkland DPW has requested that a proportional share evaluation be conducted pursuant to the *Traffic Impact Analysis Guidelines*. This section concerns those intersections where more than one (1) percent of the total traffic is added from the subject development.

From the Northstar Junior High/Middle School Relocation, *Traffic Impact Study*, dated January 26, 2012, by Transportation Engineers Northwest (TENW), page 19, Table 6, the following data is replicated.

Intersection Proportional Shares

Kirkland Int. Code #	Intersection	Proportional Share	Detailed Analysis Required
NA	108th Ave. NE/NE 53rd St.	2.39 %	Yes
103	State Street/NE 68th Street	0.12 %	No
104	108th Ave. NE/NE 68th St.	0.99 %	No
112	6th Street/Kirkland Way	0.27 %	No
407	NE 70th St./116th Ave. NE	0.46 %	No

Since the Northstar Junior High/Middle School relocation project imposes 397 daily trips to the city's street network, and since the Kirkland Children's School expansion program increases daily traffic by 218 daily trips, in other words by about half (55%) of the Northstar project, and noting that only the intersection of 108th Avenue NE at NE 53rd Street is above the one percent code threshold, then only this intersection merits a proportional share analysis.

The proportional share analysis worksheet (page 12 of the City of Kirkland's Traffic Impact Analysis Guidelines) is appended for reference purposes.

The proportional share, it will be seen, is 0.001, which clearly falls well below the one (1) percent threshold. Nonetheless, a detailed LOS analysis was conducted with results shown in Table III, above.

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Site Specific Improvements

For site traffic impacted street intersections falling within LOS A through D, no improvements are required.

From Table III no intersection falls below LOS D. Consequently, no improvements are mandated.

Study Comparisons

A comparison with the *Traffic Impact Study*, dated January 26, 2012, by Transportation Engineers Northwest, at that study's page 22, Table 7, shows the westbound left turn movement at the intersection of 108th Avenue NE and NE 53rd Street operating at LOS F. However, the input data for that study was dated November 10, 2011, before WSDOT implemented toll collections on SR 520.

For the Kirkland Children's School study, conversely, it was decided to wait until January 30th, 2012 to conduct intersection counts at this location. This delay was to ensure an adequate amount of time for SR 520 traffic to settle down to the new tolling program and, naturally, wait for its attendant traffic diversion to also stabilize.

The data of January 30th, 2012 was taken under dry albeit winter conditions. Nonetheless, it is considered adequate for the purposes of this impact analysis.

Parking Analysis

Based on observations at the school over the p.m. peak hour, taken under dry, cloudy weather conditions and with no evident unusual traffic conditions on the adjacent arterial street, the following parking characteristics may be of interest.

First, the in-situ parking lot is linear in form, paralleling the adjacent three-lane arterial-street, 108th Avenue SE. It has two driveways. The southern driveway, along the edge of and closest to the school building, is designated as one-way 'out' while the northern driveway operates as an "inbound" access.

Between these two driveways, on the east side of the paved parking lot, there are seven (7) parking stalls in a 90° degree configuration. Opposite these stalls on the west side of the lot there are also seven (7) parking in a similar 90° degree configuration. On then east side of the parking lot, on the north side of the northern driveway, there are eight (8) stalls also in a 90° degree style. Parallel to a fence that sets off the play are there is a

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parallel style-parking stall used on occasion for the school bus. Thus, at this time, the automobile capacity of the current parking lot is for 23 vehicles and the school mini-bus.

Recalling the current parking lot capacity of 23 vehicles, including a space for one (1) jitney bus, the following parking lot occupancy (next page, Table V) was observed.

Table V

Parked Lot Occupancy

Time Ends @	Demand (Stalls)
4:20	20)
4:25	22)
4:30	19)
4:35	19)
4:40	20)
4:45	18)
4:50	18)
4:55	17)
5:00	19)
5:05	17)
5:10	16)
5:15	13)
5:20	15
5:25	15
5:30	12
5:35	14
5:40	10
5:45	10
5:50	6
5:55	8
6:00	8
Mean parking demand	18 stalls
Median parking demand	18 stalls
Mode, parking demand	19 stalls
85th Percentile, demand	19 stalls

For the existing facility, a design load for 19 vehicles is appropriate for this kind of facility with a scale of 7,000 gsf in that it satisfies both the 85th percentile and the mode.

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As described earlier on page 4, the parking lot will be increased to accommodate an additional nine (9) parking stalls. This will increase the parking capacity to (23+9) 32 stalls. These new stalls will be in a 90° degree configuration and are to be located along the internal school fence at the north end of the playground.

The adequacy of this additional parking was verified against the scale of the existing school, at 7,000 gsf, versus the scale of the school after its modification, 9,750 gsf.

The 9,750 gsf-expanded school building will require, at the 85th percentile, a total of 26 stalls.

If an absolute worst-case analysis is to be considered over the single 5-minute interval, when the maximum number of parked cars were observed at only one time (4:25 p.m.), then for the expanded school building a total of 31 parking stalls would be required.

Considering the new parking lot capacity of 32 stalls, clearly even the worst-case parking demand of 31 stalls for the larger school facility will be adequately met.

Additionally, the lack of any historical accident data over the last four years at these two access driveways serving the existing parking lot and school does not suggest any likely increased hazard as a result of the larger parking lot associated with the bigger school building. Accordingly, no change in the street access to the parking lot, from the current one-way driveway couplet, is required and none is proposed.

In summary, the addition of 9 new parking stalls to the existing supply of 23 stalls will be adequate to meet event the worst case parking demands.

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