CITY OF KIRKLAND
123 FIFTH AVENUE, KIRKLAND, WASHINGTON 98033-6189
(425) 587-3225

DETERMINATION OF NONSIGNIFICANCE (DNS) .

CASE #: SEP06-00001 DATE ISSUED: 1/20/2006

DESCRIPTION OF PROPOSAL

Redevelopment of the Totem Lake Mall. The completed Mall will have approximately 562,299 sf of retail space, 144,000 sf of office space, 216 residential units, and a 3,000 seat multiplex theater.

PROPONENT:

LOCATION OF PROPOSAL

TOTEM LAKE MALL (UPPER AND LOWER) ALONG TOTEM LAKE BOULEVARD AND 120th 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.

This DNS is issued under 197-11-340 (2); the lead agency will not act on this proposal for 14 days from the date above. Comments must be submitted by 5:00 p.m. 2/3/2006

Responsible official: 1/19/06

Eric Shields, Director Date
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 NANCY COX at Kirkland City Hall, 123 Fifth Avenue, Kirkland, WA 98033 no later than 5:00 p.m., February 03, 2006 by WRITTEN NOTICE OF APPEAL.

You should be prepared to make specific factual objections. Contact Nancy Cox to read or ask about the procedures for SEPA appeals.

Please reference case # SEP06-00001.

Publish in the Eastside Journal (date): 1/26/06

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

_____ Environmental Review Section, Department of Ecology,
P.O. Box 47703, Olympia, WA 98504-7703

_____ Department of Fish and Wildlife (for streams and wetlands - with drawings)
North Lake Washington Tributaries Area Habitat Biologist
16018 Mill Creek Boulevard, Mill Creek, WA 98012

_____ Department of Fish and Wildlife (for shorelines and Lake Wa. - with drawings)
Lake Washington Tributaries Area Habitat Biologist
C/O DOE
3190 160th Avenue SE, Bellevue, WA 98008

_____ Seattle District, U.S. Army Corps of Engineers,
P.O. Box C-3755
Seattle, WA 98124

_____ Attn: Lynn Best, Acting Director, Environmental Division, Seattle City Light
700 5th Avenue, Suite 3316
P.O. Box 34023
Seattle, WA 98125-4023

_____ Muckleshoot Tribal Council, Environmental Division, Fisheries Department
39015 172nd SE
Auburn, WA 98092

_____ Northshore Utility District,
P.O. Box 82489
Kenmore, WA 98028-0489

_____ Shirley Marroquin
Environmental Planning Supervisor
King County Wastewater Treatment Division
201 South Jackson Street, MS KSC-NR-0505
Seattle, WA 98104-3855 - and -

_____ Gary Kriedt
King County Metro Transit Environmental Planning
201 South Jackson Street, MS KSC-TR-0431
Seattle, WA 98104-3856

_____ Director of Support Services Center
Lake Washington School District No. 414
P.O. Box 97039
Redmond, WA 98073-9739

_____ John Sutherland, Developer Services
Washington State Department of Transportation
15700 Dayton Ave. N., MS 240
P.O. Box 330310
Seattle, WA 98133-9710

_____ Tim McGruder, Conservation Chair
East Lake Washington Audubon Society
13450 NE 100th St.
Kirkland, WA 98033

---MITIGATING MEASURES INCORPORATED INTO THE PROPOSAL: ----------

1. Construct c-curbing in 120th Ave NE to restrict traffic entering and exiting the driveway located on the west side of 120th approximately 120 ft. north of Totem Lake Blvd. to right turn only.
2. Enter into an agreement not to contest the installation of c-curbing to restrict left-turns in and out of the south driveway off Totem Lake Boulevard.
3. Install traffic signals at the intersection of 120th Avenue NE/Totem Lake Way and 120th Avenue NE/central Boulevard (new east-west street through the development).
4. The applicant shall configure on-street parking stalls along the new central Boulevard that ensures safety to pedestrians, cyclists, and other vehicles. The configuration and design of the on-street parking stalls shall be subject to review and approval by the City.
5. Provide a Transportation Management Program (TMP) applicable only to the proposed office building in Phase 2a. The TMP shall be reviewed and approved by the City prior to approval of a building permit for the proposed office building in Phase 2a. The TMP shall identify measures to reduce single-occupant vehicle trips and promote other forms of transportation.

cc: Case # SEP06-00001

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

Suzanne Kersikofski

Distributed By:

Date: 1/20/06

SEPA_C_A, rev: 1/19/2006

-CITY OF KIRKLAND
123 FIFTH AVENUE KIRKLAND, WASHINGTON 98033-6189 (425) 587-3255

DEPARTMENT OF PLANNING AND COMMUNITY DEVELOPMENT MEMORANDUM

To: Eric R. Shields, AICP, SEPA Responsible Official

From: Jon Regala, Associate Planner

Date: January 19, 2006

File: SEP06-00001

Subject: **TOTEM LAKE MALL - ENVIRONMENTAL DETERMINATION**

BACKGROUND

The owners of the Totem Lake Mall, Coventry II DDR Totem Lake LLC (Coventry DDR), are proposing a major redevelopment of the Totem Lake Mall. In general, their proposal is to tear down the center portion of the lower Mall (portion of Mall next to Totem Lake Boulevard) in Phase 1 and 1a, retaining the major tenants at the both ends while building new ground floor retail space (approximately 193,349 square feet) with 216 residential units above. Also, the applicant is proposing to demolish the entire upper Mall (portion of Mall east of 120th Avenue NE) as part of Phase 2 of the project.

At the upper Mall, the following is proposed: retail space (approximately 366,700 square feet), office (approximately 144,000 square feet), and cinema (60,000 square feet). The office building would be constructed during Phase 2a. The existing parking along Totem Lake Boulevard would be retained. Additional parking is proposed in three parking garages totaling 2,995 stalls. The vicinity map is shown in Attachment 1. The site plan is shown in Attachment 2.

The subject property is located on a seismic hazard area and also contains a high landslide hazard area along the steep hillside along the north property line at the upper Mall as identified on the City of Kirkland's sensitive areas map (see Attachment 3).

I have had an opportunity to visit the site and review the following documents:

Attachment 4. Environmental Checklist, December 5, 2005
Attachment 5. Professional Service Industries, Inc. Geotechnical Engineering Study dated June 2, 2004
Attachment 6. Transportation Solutions, Inc. (TSI), Traffic Impact Analysis report dated December 28, 2005
Attachment 7. Thang Nguyen's analysis memo of TSI's report dated December 29, 2005

It will be necessary to further analyze the applicant's proposal to determine if the project complies with all the applicable City codes and policies. That analysis is most appropriate with the building permit review of the Mall project. 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 City of Kirkland regulations.

TRAFFIC ANALYSIS

Thang Nguyen, City of Kirkland Public Works Department Transportation Engineer, has had a chance to review the traffic impact study done by TSI. (see Attachment 6). Based on an analysis of Mr. Nguyen's memo, the

following mitigation measures should be required at the building permit stage of the appropriate phase of project since these items cannot be adequately mitigated with current City of Kirkland regulations.

1. Construct c-curbing in 120th Ave NE to restrict traffic entering and exiting the driveway located on the west side of 120th approximately 120 ft. north of Totem Lake Blvd. to right turn only.
2. Enter into an agreement not to contest the installation of c-curbing to restrict left-turns in and out of the south driveway off Totem Lake Boulevard.
3. Install traffic signals at the intersection of 120th Avenue NE/Totem Lake Way and 120th Avenue NE/central Boulevard (new east-west street through the development).
4. The applicant shall configure on-street parking stalls along the new central Boulevard that ensures safety to pedestrians, cyclists, and other vehicles. The configuration and design of the on-street parking stalls shall be subject to review and approval by the City.
5. Provide a Transportation Management Program (TMP) applicable only to the proposed office building in Phase 2a. The TMP shall be reviewed and approved by the City prior to approval of a building permit for the proposed office building in Phase 2a. The TMP shall identify measures to reduce single-occupant vehicle trips and promote other forms of transportation.

POLICY DIRECTION

These recommendations are based on adopted goals and policies of the City as found in the City's Comprehensive Plan. Specifically, the following elements of the 1995 Comprehensive Plan support the recommendations in the previous sections:

Policy T-3.1: Design transit facilities (stations, centers, park and rides, shelters, etc.) that are easily accessible from other modes of transportation, accommodating those with disabilities, and appealing to pedestrians, and that may contain residential, office, institutional and/or commercial uses where appropriate.

Goal T-4: Establish and maintain a roadway network which will efficiently and safely provide for vehicular circulation.

Policy T-4.1: Promote efficient use of existing rights-of-way through measures such as:
- ***Intersection improvements;***
- ***Time-of-day parking restrictions along congested arterials;***
- ***Signal timing optimization;***
- ***Added center left-turn lanes; and***
- ***Limiting left turns along congested arterials.***

Policy T-4.8: Provide for local vehicular access to arterials, while minimizing conflicts with through traffic.

Policy T-5.4. Require new development to mitigate site-specific transportation impacts.

Policy T-5.6: Promote transportation demand management (TDM) strategies to help achieve mode split goals. TDM may include incentives, programs, or regulations to reduce the number of single-occupant vehicle trips.

Policy T-5.7: Assure that transportation improvements are concurrent with development to maintain the vehicular level of service standard for the development's subarea.

These policies directly support the above mentioned mitigating measures and require these measures in order to fully mitigate the impacts created by the proposal.

CONCLUSION

Based on my review of all available information and adopted policies of the City, I am recommending that the proposal be changed or clarified to include the mitigating measures described in the sections above so that a Determination of Nonsignificance (DNS) can be issued.

SEPA ATTACHMENTS

1. Vicinity Map
2. Site Plan
3. COK Sensitive Areas Map
4. Environmental Checklist, December 5, 2005
5. Professional Service Industries, Inc. Geotechnical Engineering Study dated June 2, 2004
6. Transportation Solutions, Inc. (TSI), Traffic Impact Analysis report dated December 28, 2005
7. Thang Nguyen's analysis memo of TSI's report dated December 29, 2005

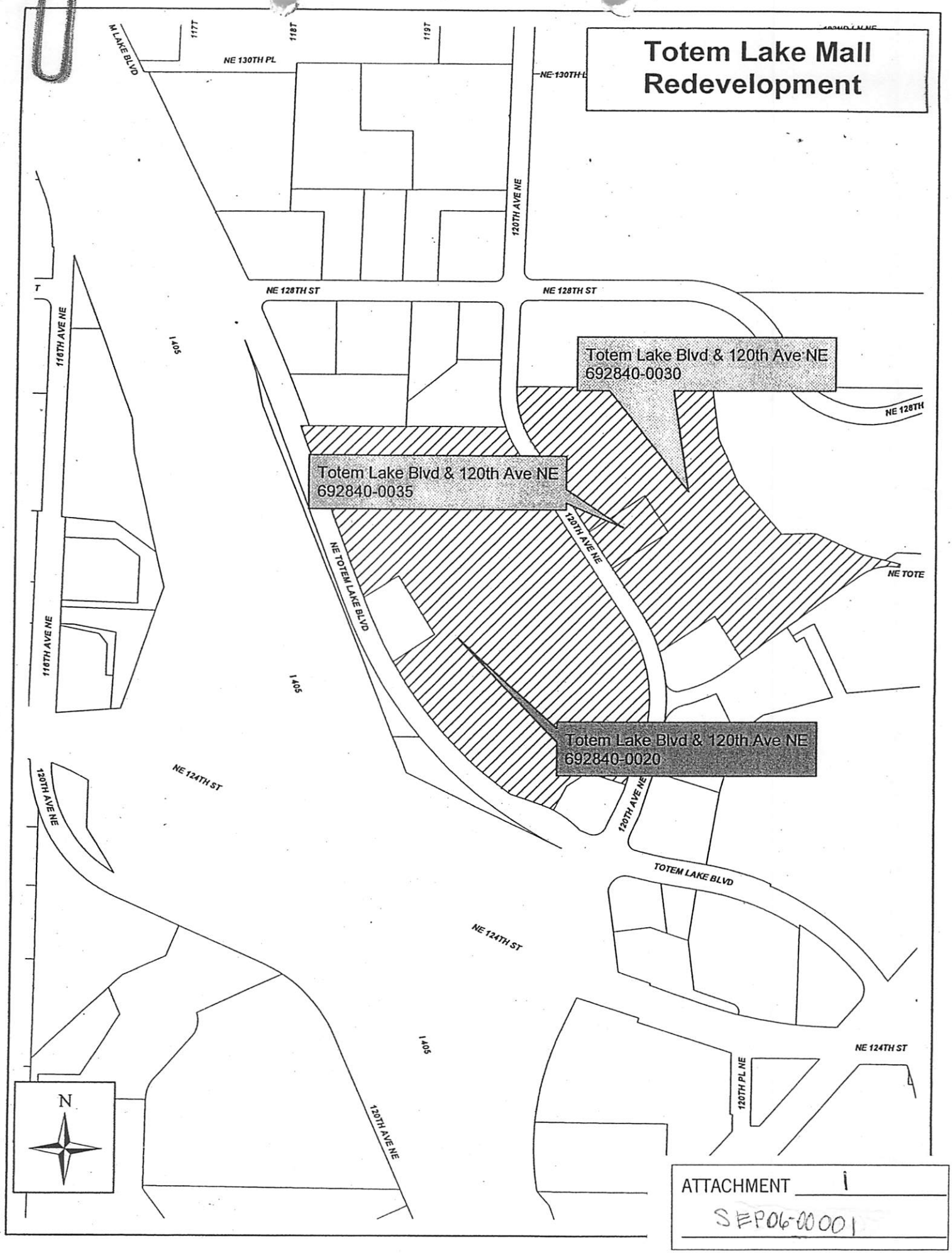
REVIEW BY RESPONSIBLE OFFICIAL:

✓ I concur _____ I do not concur

Comments:

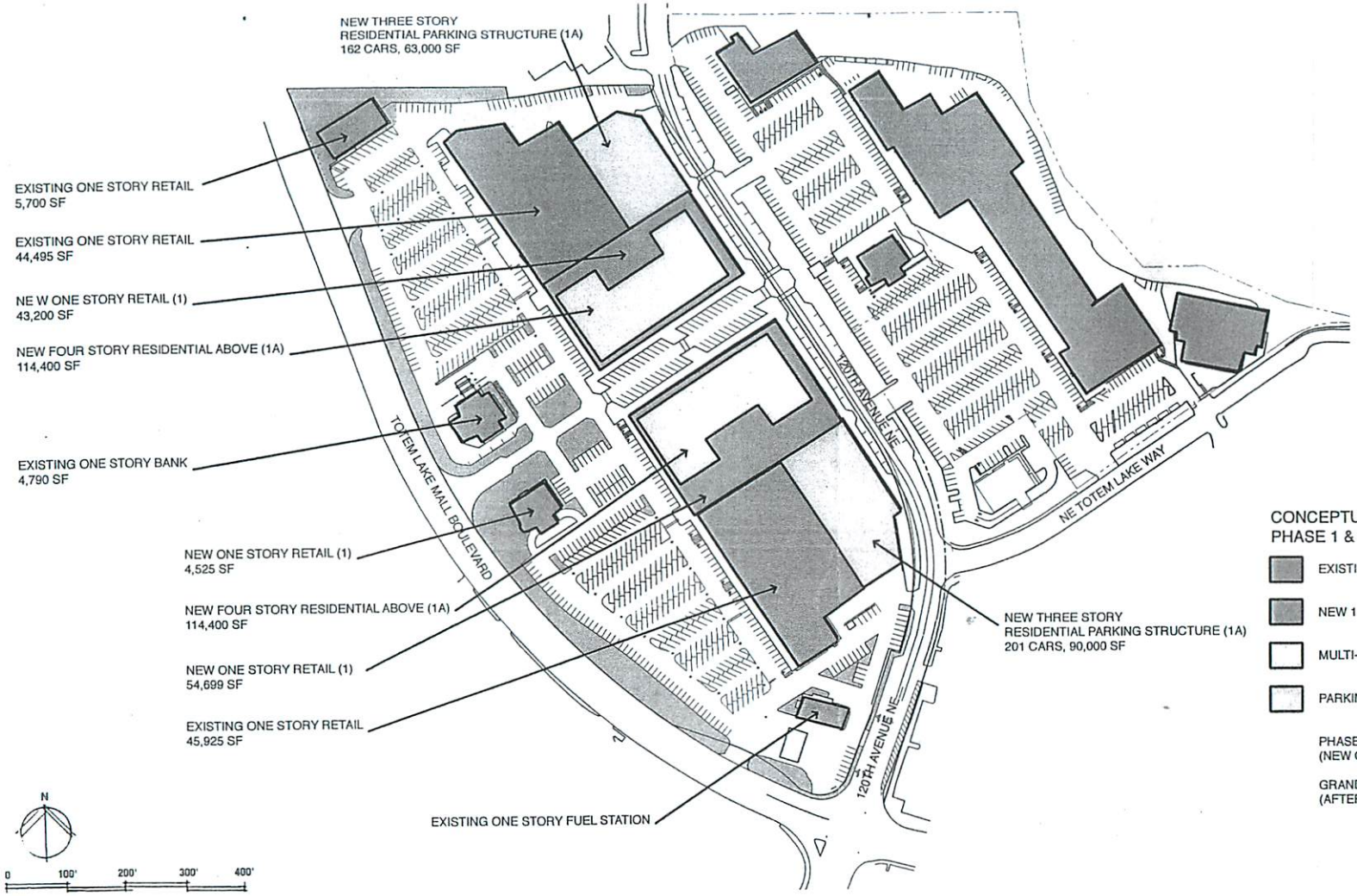
Eric R. Shields, Planning Director 1/19/06 Date

Totem Lake Mall Redevelopment



ATTACHMENT 1

SEP06-00001



CONCEPTUAL SITE PLAN LEGEND
PHASE 1 & 1A

	EXISTING BUILDINGS	192,734 SF
	NEW 1- STORY RETAIL	102,424 SF
	MULTI-FAMILY RESIDENTIAL	228,800 SF
	PARKING GARAGES	153,000 SF 363 STALLS
	PHASE 1 & 1A (NEW CONSTRUCTION)	484,224 SF 363 STALLS
	GRAND TOTAL (AFTER PHASE 1 & 1A)	676,958 SF 1,771 STALLS

SEARS
TECTS

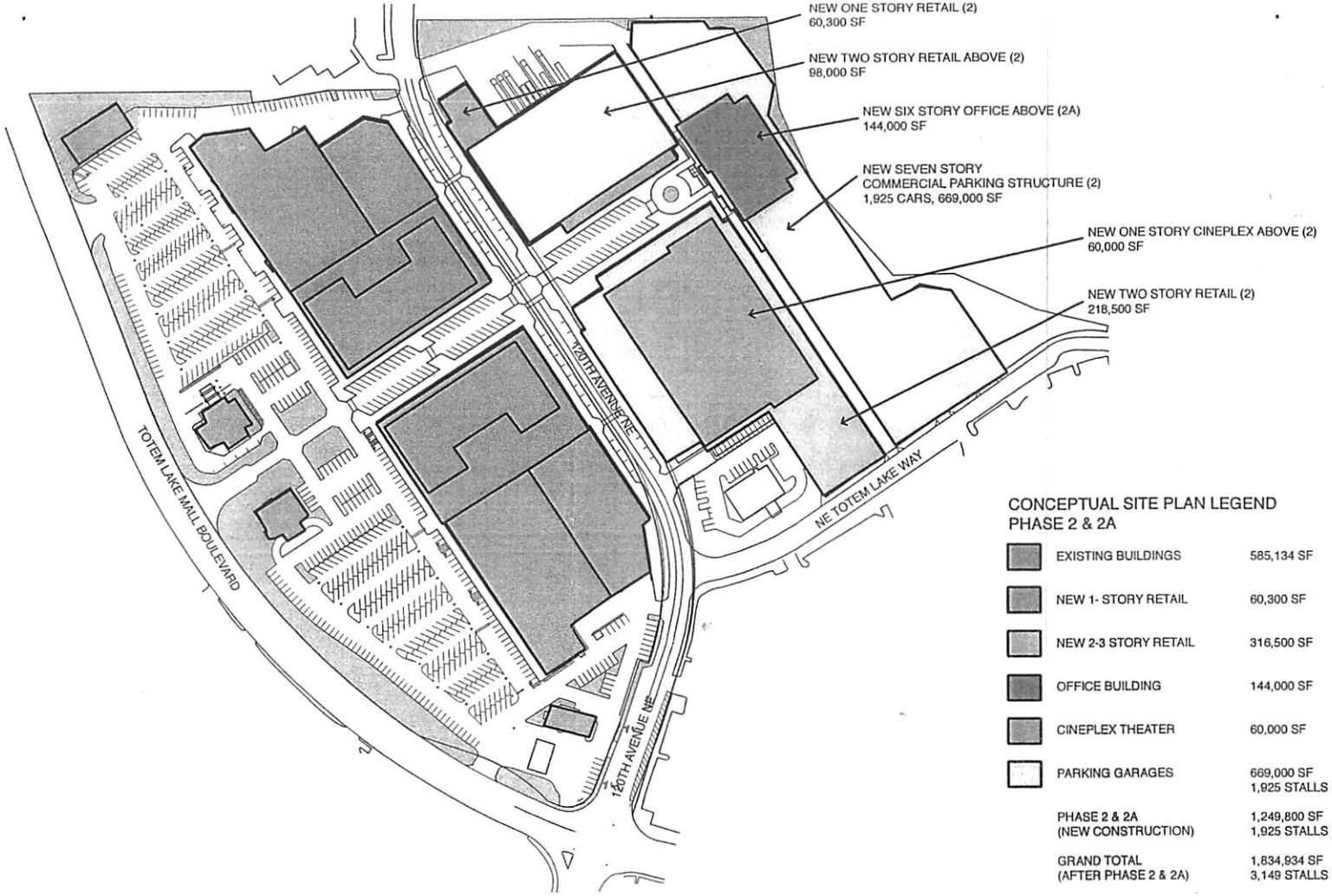
CONCEPTUAL SITE PLAN - PHASE 1 &1A

TOTEM LAKE MALL - CONCEPTUAL MASTER PLAN

EXHIBIT 7

DEVELOPERS
DIVERSIFIED
REALTY

ATTACHMENT 2
SEP06-00001



CONCEPTUAL SITE PLAN LEGEND
PHASE 2 & 2A

EXISTING BUILDINGS	585,134 SF
NEW 1- STORY RETAIL	60,300 SF
NEW 2-3 STORY RETAIL	316,500 SF
OFFICE BUILDING	144,000 SF
CINEPLEX THEATER	60,000 SF
PARKING GARAGES	669,000 SF 1,925 STALLS
PHASE 2 & 2A (NEW CONSTRUCTION)	1,249,800 SF 1,925 STALLS
GRAND TOTAL (AFTER PHASE 2 & 2A)	1,834,934 SF 3,149 STALLS

N

0 100' 200' 300' 400'

November 7, 2005

FULLER SEARS
ARCHITECTS

CONCEPTUAL SITE PLAN - PHASE 2 &2A

TOTEM LAKE MALL - CONCEPTUAL MASTER PLAN

EXHIBIT 8

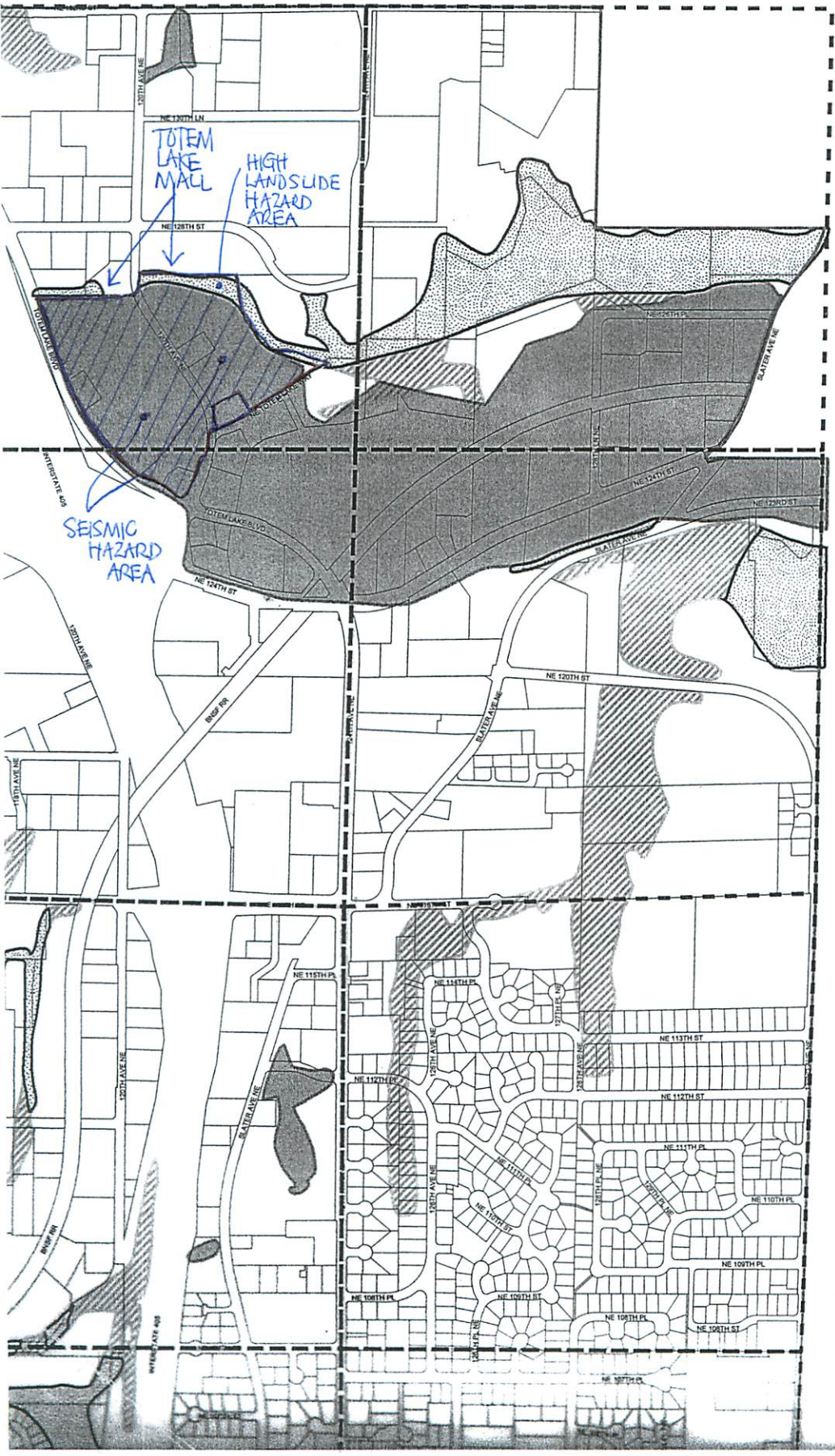
DEVELOPERS
DIVERSIFIED
REALTY

2 1

K

J

I



ATTACHMENT 3

SEP06-00001

Purpose of Checklist: The State Environmental Policy Act (SEPA), Chapter 43.21C RCW, requires all governmental agencies to consider the environmental impacts of a proposal before making decisions. An environmental impact statement (EIS) must be prepared for all proposals with probable significant adverse impacts on the environment. The purpose of this checklist is to provide information to help the City of Kirkland's Responsible Official and any other agencies with jurisdiction to identify impacts from a proposal (and to reduce or avoid impacts from the proposal, if it can be done), and to help the City of Kirkland decide whether an EIS is required.

A. BACKGROUND

1. Name of proposed project, if applicable:

Totem Lake Mall Redevelopment

2. Name of proponent:

Coventry II/DDR Totem Lake LLC

3. Address and phone number of proponent and contact person:

Proponent:

Coventry II/DDR Totem Lake LLC
Charles Worsham
C/O Developer's Diversified Realty
3300 Enterprise Parkway
Beachwood, Ohio, 44122
(216) 755-5887

Contact Person:

Triad Associates
Don Hill, Principal
12112 115th Avenue NE
Kirkland, WA 98034
(425) 821-8448

4. Date checklist prepared:

December 5, 2005

5. Agency requesting checklist:

City of Kirkland Planning & Community Development Department

6. Proposed timing or schedule (including phasing, if applicable):

The proposed redevelopment of the existing Totem Lake Mall will occur in two principal phases over the ten year term of the Development Agreement. It is anticipated that the retail portion will be completed over five years and the office/residential portion will be completed within seven years following the date of adoption of the Development Agreement. Phase 1 and Phase 1A contemplate the redevelopment of the existing Lower Mall lying west of 120th Avenue NE, and realignment and reconstruction of existing 120th Avenue NE. Phase 2 and Phase 2A contemplate the redevelopment of the existing Upper Mall lying east of 120th Avenue NE.

ATTACHMENT 4
SEP06-00001

Phase 1

- Demolition of the one story retail building in the center of the Lower Mall.
- Construction of new retail buildings within the Lower Mall.
- Construction of that portion of the public plaza, common amenities and open spaces within the Lower Mall.
- Relocation and installation of associated utility infrastructure.
- Realignment and reconstruction of 120th Avenue NE.

Phase 1A

- Construction of two four-story residential buildings above retail.
- Two three story residential parking structures adjacent to the residential buildings.

Phase 2

- Relocation of tenants in the Upper Mall.
- The complete demolition of all buildings in the Upper Mall, except the existing free-standing bank building near the intersection of 120th Avenue NE and NE Totem Lake Way which is not part of the project.
- Construction of new retail buildings comprising the Upper Mall.
- Construction of the primary parking structure.
- Completion of the public plaza, common amenities and open space within the Upper Mall.
- Relocation and installation of associated utility infrastructure.
- Any remaining improvements, such as landscaping and signage necessary to complete the project.

Phase 2A

- Construction of the six-story office complex above the primary parking structure.

7. **Do you have any plans for future additions, expansions, or further activity related to or connected with this proposal? If yes, please explain.**

No future additions or expansions are contemplated.

8. **Environmental information that has been prepared, or will be prepared, directly related to this proposal.**

An environmental assessment will be made based on the review of this SEPA Checklist. Supplemental to this SEPA Checklist are the following technical studies:

- *Conceptual Master Plan* prepared by Fuller/Sears Architects dated and approved by City of Kirkland Design Review Board on 11/7/05
- *Memorandum of Understanding between the Proponent and the City of Kirkland*, dated October, 2005
- *Development Agreement between the Proponent and the City of Kirkland*, pending
- *Design Guidelines and Development Regulations*

- *Traffic Concurrency Certification Notice*
- *Comprehensive Plan EIS* (City of Kirkland, 1994)
- *City of Kirkland Neighborhood Plan, EIS Addendum* (issued 9/27/01)
- *City of Kirkland, Totem Center Regulations to Implement Totem Lake Neighborhood Plan, EIS Addendum* (issued 2/11/04)

Each of the above documents is hereby incorporated by reference into this Checklist.

9. Do you know whether applications are pending for governmental approvals of other proposals directly affecting the property covered by this proposal?

None known.

10. List any governmental approvals or permits that will be needed for your proposal, if known.

The following approvals/permits will likely be needed for this proposal:

• Conceptual Master Plan	City of Kirkland
• SEPA Threshold Determination	City of Kirkland
• Memorandum of Understanding	City of Kirkland/Proponent
• Development Agreement	City of Kirkland/Proponent
• Design Review Board Approval	City of Kirkland
• Clearing and Grading Permits	City of Kirkland
• Road and Storm Drainage Approval	City of Kirkland
• Water Extension Approval	Northshore Utility District
• Sewer System Extension Approval	Northshore Utility District
• Building Permits	City of Kirkland
• Demolition Permits	City of Kirkland
• NPDES Permit	State Dept. of Ecology

11. Description of the proposal including the proposed uses and the size of the project and site.

Proposal

The existing Totem Lake Mall is located on a 26.5-acre site northeast of the intersection of NE 124th Street and Interstate-405. Totem Lake Mall Boulevard extends along the westerly boundary of the property, parallel to Interstate-405, while 120th Avenue NE runs approximately north and south, effectively dividing the Mall into a 16.6-acre "Lower Mall" on the west and a 9.9-acre "Upper Mall" on the east. In addition to the main Upper and Lower Mall buildings, there are several additional free-standing retail buildings within the Mall. Refer to the Conceptual Master Plan for further details regarding building locations and approximate building footprints.

The proposal is to redevelop the existing Mall including substantial demolition of existing buildings, new construction of buildings, parking structures, a public plaza, and realignment of 120th Avenue NE.

The majority of the leased space will be utilized for typical retail uses such as medium and large retail tenants and shops, restaurants, financial institutions and other service providers. The existing cinema (currently

closed) within the Mall will be replaced with a modern multi-screen cinema in the Upper Mall. A six-story office complex will be located above the primary parking structure in the Upper Mall. A residential complex, comprised of two buildings each containing approximately 108 units, will be located over retail uses in the Lower Mall. In addition to surface parking lots and on-street parking there will be three parking structures strategically located throughout the Mall.

Retail

The total retail building square footage within the Mall will be approximately 583,600 square feet (excluding the Cinema). The largest of the retail units will be located in the Upper Mall in closer proximity to the primary parking structure. The Conceptual Master Plan shows the location and approximate size of all buildings that will comprise the Mall upon redevelopment.

Office

There will be a six-story office building located within the Upper Mall above the primary parking structure, consisting of approximately 144,000 square feet. Each floor will be approximately 24,000 square feet.

Cinema

The cinema will be located within the Upper Mall above one of the major retail units and will contain approximately 60,000 square feet. It is anticipated that the cinema will have at least 13 screens and approximately 3,000 seats.

Residential

The residential complexes will be located within the Lower Mall and will contain approximately 226,000 square feet. It is anticipated that there will be approximately 216 residential units located within the two buildings.

Parking

Parking will be accommodated within three parking structures, surface parking lots and on-street parking. The primary seven-level parking structure will be located within the Upper Mall and is anticipated to provide approximately 1,900 parking spaces. There will be two additional parking structures for the exclusive use of residential units located within the Lower Mall adjacent to the residential complexes. The primary surface parking lot will be located in its current location within the Lower Mall, providing approximately 700 parking spaces. Supplemental parking will be provided along the new Public Plaza and the realigned 120th Ave NE. The completed project is anticipated to provide over 3,000 parking stalls.

Public Plaza and Right-of-Way

For details regarding the public plaza and right-of-way, please see

the Conceptual Master Plan. The plaza will be within a public right-of-way with adjacent parking, public amenities, sidewalks and landscaping.

12. **Location of the proposal. Provide a street address, if any, and section, township, and range, if known. If a proposal would occur over a range of area, provide the range or boundaries of the site(s). Provide a legal description, site plan, vicinity map, and topographic map, if available.**

The subject property, situated within a portion of Section 28, Township 25 North, Range 5 East, W.M., and is comprised of the following King County parcels: 6928400024, 6928400020, 6928400035, and 6928400070

The existing Totem Lake Mall is located northeast of the intersection of NE 124th Street and Interstate-405. Totem Lake Mall Boulevard extends along the westerly boundary of the property, parallel to Interstate-405, while 120th Avenue NE runs approximately north and south, effectively dividing the Mall into a "Lower Mall" on the west and an "Upper Mall" on the east.

B. ENVIRONMENTAL ELEMENTS

1. Earth

a **General description of the site (circle one):** rolling, hilly, steep slopes, mountainous, **mostly flat abutting a wooded hillside**.

b. **What is the steepest slope on the site (approximate percent slope)?**

According to the Geotechnical Engineering Study, the ground surface of the developed portions of the Upper Mall slopes down to the south at an overall grade of less than 5 percent. The north and east sides of the Mall are bordered by a slope rising above the developed area at an average gradient of approximately 2:1.

c. **What general types of soils are found on the site (for example, clay, sand, gravel, peat, muck)? If you know the classification of agricultural soils, specify them and note any prime farmland.**

A Geotechnical Engineering Report has been prepared by Professional Service Industries, Inc, dated June 2, 2004. The geotechnical report identifies surface and subsurface conditions and concludes that the site can accommodate the proposed development with inclusion of some construction recommendations.

The report indicates that the near-surface soil conditions encountered in the explorations were variable. Generally, a 2-foot to 5-foot layer of fill underlies the pavement in the Upper Mall, which in turn was underlain by apparent advance outwash sand and gravel along the north and east sides of the site and recessional silt, sand, and gravel in the central portion. The surface of the outwash soil appears to dip down to the south and west within the southern half of the Upper Mall. Soils in the Lower Mall generally consist of 5 to 8 feet of silty and sandy gravel fill overlying interbedded layers of sediments ranging from very fine sandy and clayey silt to well graded sand and gravel with trace to some silt. Layers of peat and organic silt were also encountered at some locations.

d. Are there surface indications or history of unstable soils in the immediate vicinity? If so, describe.

None known.

e. Describe the purpose, type, and approximate quantities of any filling or grading proposed. Indicate source of fill.

Grading for the proposed development will be limited to those areas identified for roads, buildings, parking areas, storm drainage, and utility infrastructure. It is estimated that there will be approximately 90,000 cubic yards of cut and 12,000 cubic yards of fill. The ultimate fill quantities will be determined during final engineering. No clearing or grading activity will start until the necessary permits are obtained.

f. Could erosion occur as a result of clearing, construction, or use? If so, generally describe.

Limited erosion could occur as a result of the initial construction on-site; however, temporary erosion and sedimentation control (TESC) measures will be utilized during the construction phase to minimize potential erosion impacts. Temporary erosion and sedimentation control plans will be incorporated into the final engineering and grading plans submitted to and approved by the City of Kirkland prior to any clearing or grading activity.

Typical construction related erosion impacts include, silt entering wetlands, creeks, or other water bodies. Use related erosion impacts are unlikely since the site will be stabilized, from an erosion control standpoint, and all storm water will be directed to existing storm drainage conveyance/detention facilities and/or proposed water quality/detention facilities.

g. About what percent of the site will be covered with impervious surfaces after project construction (for example, asphalt or buildings)?

Total impervious area of the completed project (excluding re-aligned 120th Ave NE) will be approximately the same as the existing property (excluding existing 120th Ave NE) which is estimated at 80% of the total site.

h. Proposed measures to reduce or control erosion, or other impacts to the earth, if any:

A temporary erosion and sedimentation control plan, designed in accordance with the City of Kirkland standards, will be employed during the construction phase of this project. Said plan will be prepared in conjunction with the recommendations of the geotechnical report.

During construction, the contractor will follow an approved temporary erosion and sedimentation control (TESC) plan meeting City of Kirkland requirements. This TESC plan will be submitted and reviewed/approved as part of the final engineering and grading plans.

It is anticipated that the TESC will include the use of best management

practices (BMP's) which could include all or a combination of the following:

Stabilization BMPs may include:

- Seeding disturbed ground
- Mulching the ground with straw or wood chips
- Jute matting slopes
- Plastic covering stockpiled soil
- Silt fencing around buffer zones to sensitive areas
- Preserving natural vegetation

Structural BMPs may include:

- Build ditches to divert runoff from exposed soils and slopes
- Installing silt fencing around disturbed areas
- Channeling runoff through temporary pipes and drainage swales to minimize runoff concentration from exposed areas
- Rock check dams and rock lined channels to reduce runoff velocity
- Straw bale barriers
- Grade terracing for cut slopes over 15 feet
- Sediment traps for exposed areas less than three acres
- Sediment ponds for exposed areas greater than three acres
- Level spreader or dispersal trench systems
- Rock outlet protection
- Installation of rock pad construction entrances
- Installation of truck wheel wash pads
- Inspection of facilities at regular intervals

In addition to the approved TESC plan, the contractor will be monitored by the Washington State Department of Ecology under the National Pollutant Discharge Elimination System Permit (NPDES).

The NPDES is an Environmental Protection Administration mandate that is administered locally by the Washington Department of Ecology (DOE). The purpose of this permitting program is to prohibit non-stormwater discharges into storm sewers, reduce discharge of stormwater-borne pollutants to the maximum extent practical, and to establish a permitting system for stormwater discharges. As part of the NPDES permit requirements, the contractor is required to keep a copy of the Storm Water Pollution Prevention Program (SWPPP) on-site for reference. The SWPPP includes objectives to implement BMPs to minimize erosion and sediments from rainfall runoff at construction sites and to identify, reduce, eliminate, or prevent the pollution of stormwater, prevent violations of surface water quality, ground water quality, or sediment management standards, and prevent adverse water quality impacts during construction by controlling peak rates and volumes of stormwater runoff at the permittee's outfall and locations

2. Air

a. What types of emissions to the air would result from the proposal (i.e., dust, automobile, odors, industrial wood smoke) during construction and when the project is completed? If any, generally describe and give approximate quantities if known.

During project construction, heavy equipment operation and workers'

vehicles would generate exhaust emissions into the immediate vicinity. Construction activity on the site could also stir up exposed soils and generate dust and particulate matter into the local air. The completed project would result in a minor increase in the amount of emission-related pollutants in the local air from project related traffic.

b. **Are there any off-site sources of emissions or odors that may affect your proposal? If so, generally describe.**

There are no known off-site sources of emissions or odors that are likely to impact this project.

c. **Proposed measures to reduce or control emissions or other impacts to air, if any:**

To minimize the potential adverse impacts from emissions resulting from construction activities, Best Management Practices (BMP's) would be implemented to ensure that minimal amounts of dust and exhaust fumes leave the site. BMP measures include watering of the site as necessary during the construction phase of the project to help control dust and other particulates. Additionally, street cleaning/sweeping, and minimizing vehicle and equipment idling to reduce exhaust emissions at the site.

3. **Water**

a. **Surface:**

1) **Is there any surface water body on or in the immediate vicinity of the site (including year-round and seasonal streams, saltwater, lakes, ponds, wetlands)? If yes, describe type and provide names. If appropriate, state what stream or river it flows into.**

Totem Lake is not located immediately adjacent to the site however Totem Lake lies south of the south edge of the project.

2) **Will the project require any work over, in, or adjacent to (within 200 feet) the described waters? If yes, please describe and attach available plans.**

No.

3) **Estimate the amount of fill and dredge material that would be placed in or removed from surface water or wetlands, and indicate the area of the site that would be affected. Indicate the source of fill material.**

None.

4) **Will the proposal require surface water withdrawals or diversions? Give general description, purpose, and approximate quantities, if known.**

No.

5) **Does the proposal lie within a 100-year floodplain? If so, note**

location on the site plan. If so, note location on the site plan.

No.

6) **Does the proposal involve any discharges of waste materials to surface waters? If so, describe the type of waste and anticipated volume of discharge.**

Additional stormwater runoff will occur in proportion to the minor amount of added new impervious area associated with the project. Discharge of this additional stormwater runoff will be collected and routed through an added stormwater detention facility to meet the City of Kirkland stormwater detention standards. Additionally, parking and roadways will be directed to added water quality facilities designed to meet the City of Kirkland water quality standards. Primary control of potential pollutants would be provided through the inclusion of water quality measures in the drainage design.

b. **Ground:**

1) **Will groundwater be withdrawn, or will water be discharged to ground water? Give general description, purpose, and approximate quantities if known.**

No.

2) **Describe waste material that will be discharged into the ground from septic tanks or other sources, if any (for example: domestic sewage; industrial, containing the following chemicals ..; agricultural; etc.) Describe the general size of the system, the number of such systems, the number of houses to be served (if applicable), or the number of animals or humans the system(s) are expected to serve.**

None.

c. **Water Run-off (including stormwater):**

1) **Describe the source of run-off (including stormwater) and method of collection and disposal, if any (include quantities, if known). Where will this water flow? Will this water flow into other waters? If so, describe.**

The primary source of runoff will be from the additional impervious areas associated with the construction of the parking lots, roadways, and buildings. Preliminary detention design volume is based upon the total increase in impervious area. The preliminary storm drainage system has been designed to include a conveyance system (12" minimum) and on-site water quality treatment.

Storm water runoff sheet flows in an east to west direction in the parking lots of both the Upper and Lower Malls into the existing storm water collection system. The Upper Mall storm water flows over the parking lots into catch basins where it merges with the 120th Avenue and Totem Lake Way storm water and discharges into Totem Lake. Water from Totem Lake is transported via two 42-inch pipes to a vault

located near the northwest corner of the intersection of 120th Avenue Northeast and Totem Lake Boulevard. The water then flows via a 60-inch pipe to a small pond located approximately 300 feet northwest of the above mentioned intersection. The storm water from the Lower Mall flows over the parking lot into catch basins where it meets with the stormwater from the east side of Totem Lake Boulevard in the small detention pond. The combined water is then conveyed off-site via pipe flow under Totem Lake Boulevard.

2) **Could waste materials enter ground or surface waters? If so, generally describe.**

Minimal pollutants normally associated with this type of development could enter the surface water. However, the amount would be minimal since the on-site drainage will include the use of treatment facilities in conformance with current City of Kirkland standards. The proposed plans for stormwater and run-off control are expected to minimize entry of waste materials or pollutants to groundwater resources and/or surface waters.

d. **Proposed measures to reduce or control surface, ground, and run-off water impacts, if any:**

The proposed drainage system will be designed and implemented in accordance with City standards. These standards have been developed to minimize potential surface and ground, water impacts.

4. **Plants**

a. **Check or circle types of vegetation found on the site:**

_X_ **Evergreen trees**: Cedar, Pine
_X_ **Deciduous trees:** Plum,
__ **Shrubs:** salmonberry, vine maple, sword fern,
__ **Wetland Plants:** slough sedge, skunk cabbage

b. **What kind and amount of vegetation will be removed or altered?**

The entire site is developed with paved surfaces or buildings. Therefore, no vegetation will be removed or altered within the existing paved surfaces or buildings area. However, landscaping of parking lots and plaza areas will be provided.

The north and east perimeter of the site are bordered by a slope rising above the developed area. These perimeter areas have some existing vegetation and trees. Affected areas will be landscaped.

c. **List threatened or endangered species known to be on or near the site.**

There are no known threatened or endangered plant species on or near the site.

d. **Proposed landscaping, use of native plants, or other measures to preserve or enhance vegetation on the site, if any:**

The City of Kirkland Zoning Ordinance does not designate a landscape category for the proposed use. Instead, the Development Regulations and Conceptual Master Plan incorporate requirements for establishment of a circulation system for vehicles and pedestrians, and design principles that include use of landscaping to emphasize entries into buildings and pedestrian areas, to enhance public spaces, and to screen blank walls and service areas. In addition, landscaping will also be provided in plazas, along pedestrian routes, in parking areas and affected areas along the perimeter of the site.

5. Animals

a. Check or circle any birds and animals which have been observed on or near the site, or are known to be on or near the site:

__ **Birds**: hawk, heron, eagle, songbirds, other: raptors
__ **Mammals**: deer, bear, elk, beaver, other: small rodents
__ **Fish:** bass, perch, salmon, trout, herring, shellfish, other:

b. List any threatened or endangered species known to be on or near the site.

Based on a field inspection by Triad Associates staff, there were no threatened or endangered species observed on or near the site.

c. Is the site part of a migration route? If so, explain.

None known.

d. Proposed measures to preserve or enhance wildlife, if any:

None.

6 Energy and Natural Resources

a. What kinds of energy (electric, natural gas, oil, wood stove, solar) will be used to meet the completed project's energy needs? Describe whether it will be used for heating, manufacturing, etc.

Electric and/or natural gas will be used to meet the primary energy needs of the proposal.

b. Would your project affect the potential use of solar energy by adjacent properties? If so, generally describe.

No. The properties to the north and east are located at higher elevations. Interstate-405 is located to the west.

c. What kinds of energy conservation features are included in the plans of this proposal? List other proposed measures to reduce or control energy impacts, if any:

The buildings will be constructed to meet or exceed applicable local, state, and federal building codes to ensure compliance with energy conservation standards.

7. Environmental Health

a. Are there any environmental health hazards, including exposure to toxic chemicals, risk of fire and explosion, spill or hazardous waste, that could occur as a result of this proposal? If so, describe.

Although it is unlikely, under normal working conditions, that environmental health hazards would be encountered, construction equipment could, potentially, pose a threat to environmental health via leaky equipment, spills during refueling, and leaky containers stored on-site for construction equipment maintenance. All project related construction will meet all current local, county, state and federal regulations.

1) Describe special emergency services that might be required.

None.

2) Proposed measures to reduce or control environmental health hazards, if any:

State regulations regarding safety and the handling of hazardous materials would be enforced during the construction process. Equipment refueling areas would be located in areas where a spill could be quickly contained, and where the risk of the hazardous material entering surface water is minimized.

b. Noise

1) What types of noise exist in the area, which may affect your project (for example: traffic, equipment operation, other)?

The immediate vicinity contains a variety of land uses with minimal off-site noise which would affect the subject property on a routine basis.

2) What types and levels of noise would be created by or associated with the project on a short-term or a long-term basis (for example: traffic, construction, operation, other)? Indicate what hours noise would come from the site.

Construction activities on the site would temporarily increase the peak on-site noise levels. All construction would be during the City of Kirkland's approved hours of operation. The completed project would result in a slight increase in ambient noise levels in the vicinity.

Short-term impacts would result from the use of construction equipment during site and road development and during the vertical construction phases of the project.

3) Proposed measures to reduce or control noise impacts, if any:

Construction activity will be limited to hours as specified by the City of Kirkland, which will help to mitigate the impacts of potential construction noise.

8. Land and Shoreline Use

a. What is the current use of the site and adjacent properties?

The existing Totem Lake Mall is located on a 26.5-acre site northwest of the intersection of NE 124th Street and Interstate-405. Totem Lake Mall Boulevard extends along the westerly boundary of the property, parallel to Interstate-405, while 120th Avenue NE runs approximately north and south, effectively dividing the Mall into a "Lower Mall" and an "Upper Mall". In addition to the main Upper and Lower Mall buildings, there are several additional free-standing retail buildings within the Mall.

Adjoining Uses

Interstate-405 and retail uses are located to the west. A residential use (the Madison House) is located to the east. Existing retail buildings, a bank, and a motel are located to the south. Office uses are located north of the site.

b. Has the site been used for agriculture? If so, describe.

No.

c. Describe any structures on the site.

The two primary mall buildings were constructed during the mid-1970s (the Lower Mall building in 1972 and the Upper Mall building in 1974) with the remaining free-standing structures added sporadically over the next decade. The approximate gross square footage within the buildings is 290,000 square feet. There are approximately 24 tenants currently within the Mall.

d. Will any structures be demolished? If so, what?

An existing one story structure located in the center of the Lower Mall will be demolished during Phase 1. Demolition of all buildings in the Upper Mall will occur during Phase 2 of the project. The free-standing existing bank building near the intersection of 120th Avenue NE and NE Totem Lake Way is not part of the project and will remain.

e. What is the current zoning classification of the site?

The property is zoned Totem Lake 2 (TL-2) by the City of Kirkland Zoning Code, Chapter 55.17. The TL-2 Zone allows a full spectrum of uses, including: (1) retail sales of goods and services, movie theatres, restaurants, fast food establishments, taverns, banks and other financial institutions and service providers; (2) offices; (3) residential; (4) vehicle service stations; (5) hotels or motels; (6) churches; (7) schools and day-care centers; (8) assisted living facilities; (9) convalescent centers and nursing homes; (10) public utilities, government facilities or community facilities; and (11) public parks.

f. What is the current comprehensive plan designation of the site?

Totem Lake Neighborhood.

g. **If applicable, what is the current shoreline master program designation of the site?**

No shoreline; not applicable.

h. **Has any part of the site been classified as an "environmentally sensitive" area? If so, specify.**

No.

i. **Approximately how many people would reside or work in the completed project?**

Approximately 324 people will reside in the completed project assuming 1.5 people per each of the 216 residential units. Approximately 1,200 to 2,000 people will work at the completed project upon completion.

j. **Approximately how many people would the completed project displace?**

None.

k. **Proposed measures to avoid or reduce displacement impacts, if any:**

None.

l. **Proposed measures to ensure the proposal is compatible with existing and projected land uses and plans, if any:**

The project will be developed in accordance with the Conceptual Master Plan, Development Agreement and applicable City of Kirkland development regulations which have been adopted as Growth Management Act development regulations to implement the goals and policies of the adopted GMA Comprehensive Plan.

9. **Housing**

a. **Approximately how many units would be provided, if any? Indicate whether high, middle, or low-income housing.**

Two-hundred and sixteen (216) residential units will be constructed on the property.

b. **Approximately how many units, if any, would be eliminated? Indicate whether high, middle, or low-income housing.**

None.

c. **Proposed measures to reduce or control housing impacts, if any:**

Adherence to the comprehensive plan and growth management planning goals will ensure that housing development is consistent with those policies stated in the applicable land use plan. Additionally, the proposed project will add much needed housing units to the City Kirkland, thereby absorbing some of the growth projected by the area and assisting the City

in absorbing the growth projections stipulated under the auspices of the Growth Management Act.

10. Aesthetics

a. What is the tallest height of any proposed structure(s), not including antennas; what is the principal exterior building material(s) proposed?

Height

Maximum structure height ranges from 75' to 135' above average building elevation. Generally, structure height is limited to 75'. However, structure height may exceed 75' above average building elevation if approved through the Conceptual Master Plan; provided, that no more than 5% of the gross site area included within the Conceptual Master Plan may have increased building height, and the increased building height cannot exceed 135 ' above average building elevation. The Conceptual Master Plan includes a proposed office building located above the primary parking structure, with a structure height of not greater than 135' above average building elevation. The property comprising the office building is less than 5% of the gross site area included in the Conceptual Master Plan.

Building Materials

Building Materials have yet to be determined. The Architect is currently working with the City of Kirkland and the Design Review Board to determine appropriate building materials for the project.

b. What views in the immediate vicinity would be altered or obstructed?

Development of the site would change the existing visual character of the site for the nearest existing properties from that of an under-utilized shopping mall to that of a vibrant, pedestrian oriented Regional Shopping Center.

c. Proposed measures to reduce or control aesthetic impacts, if any:

Measures to reduce aesthetic impacts have yet to be determined. The Architect is currently working with the City of Kirkland and the Design Review Board to determine appropriate building materials for the project.

11. Light and Glare

a. What type of light or glare will the proposal produce? What time of day would it mainly occur?

The completed project will generate light and glare typically associated with a commercial development mainly occurring during the evening hours, and will be associated with vehicle headlights, streetlights and residential unit and security lighting.

b. Could light or glare from the finished project be a safety hazard or interfere with views?

No.

c. **What existing off-site sources of light or glare may affect your proposal?**

None.

d. **Proposed measures to reduce or control light and glare impacts, if any:**

A lighting plan has not been determined. The Architect is currently working with the City of Kirkland and the Design Review Board to determine appropriate lighting for the project.

12. Recreation

a. **What designated and informal recreational opportunities are in the immediate vicinity?**

There is a walking trail along portions of Totem Lake south of the project.

b. **Would the proposed project displace any existing recreational uses? If so, describe.**

The project would not displace any existing recreational uses.

c. **Proposed measures to reduce or control impacts on recreation, including recreation opportunities to be provided by the project or applicant, if any:**

A public plaza will be provided as part of the project.

13. Historic and Cultural Preservation

a. **Are there any places or objects listed on, or proposed for, national, state, or local preservation registers known to be on or next to the site? If so, generally describe.**

None known.

b. **Generally describe any landmarks or evidence of historic, archaeological, scientific, or cultural importance known to be on or next to the site.**

There are no landmarks or evidence of any significant historic, archaeological, scientific, or cultural resources known to be on or next to the site.

c. **Proposed measures to reduce or control impacts, if any:**

If any historic or cultural evidence was encountered during construction or installation of improvements, an archaeologist/historian would be engaged to investigate, evaluate and/or move or curate such resources as appropriate.

14. Transportation

a. Identify public streets and highways serving the site, and describe proposed access to the existing street system. Show on site plans, if any.

Regional access to the existing Mall is provided by Interstate-405 located directly west of the site.

Local access to the development is via Totem Lake Boulevard and 120th Avenue NE. There are a number of existing accesses along these two streets that serve the existing Mall. A Plaza Boulevard is proposed that will link the Upper and Lower Mall areas and provide access to the proposed parking structure located in the Upper Mall.

b. Is site currently served by public transit? If not, what is the approximate distance to the nearest transit stop?

Public transportation is generally provided along 120th Avenue NE and Totem Lake Boulevard. Currently, there are two bus stops, one located at the intersection of 120th Avenue NE and Totem Lake Mall Boulevard, and the other along 120th Avenue NE near NE Totem Lake Way. A transit center is planned as part of the Gateway project north of the project on NE 128th Street adjacent to the Evergreen Hospital campus. This transit center will provide a direct link to regional routes and improved local connections.

c. How many parking spaces would the completed project have? How many would the project eliminate?

There are no required parking spaces designated by the Development Regulations. Instead, the Development Regulations provide that required parking spaces will be determined and established in the Conceptual Master Plan. The on-site parking supply will consist of approximately 3,000 parking spaces.

d. Will the proposal require any new roads or streets, or improvements to existing roads or streets, not including driveways? If so, generally describe (indicate whether public or private).

It is anticipated that through a joint effort between the City of Kirkland and the proponent, 120th Avenue NE will be redesigned and reconstructed during the early stages of Mall redevelopment. As currently constructed, 120th Avenue NE is a very busy thoroughfare and utilized for both access to the Mall and general connection to adjoining streets and boulevards. This creates potential unsafe and serious impediment to achieving the connectivity and sense of place between the Upper and Lower Mall. By redesigning 120th Avenue NE, it will be possible to incorporate both traffic management and pedestrian-friendly improvements. Design plans and specifications will be approved by the City of Kirkland.

A new access road will be constructed within the public plaza to provide access to and from Totem Lake Boulevard, 120th Avenue NE and the primary parking structure located in the Upper Mall. Design plans and specifications will be approved by the City of Kirkland.

e. **Will the project use (or occur in the immediate vicinity of) water, rail, or air transportation? If so, generally describe.**

No.

f. **How many vehicular trips per day would be generated by the completed project? If known, indicate when peak volumes would occur.**

Please refer to the Traffic Concurrency Certification Notice previously issued by the City of Kirkland for this redevelopment project.

g. **Proposed measures to reduce or control transportation impacts, if any:**

Please refer to the Traffic Concurrency Certification Notice previously issued by the City of Kirkland for this redevelopment project.

15. Public Services

a. **Would the project result in an increased need for public services (for example: fire protection, police protection, health care, schools, other)? If so, generally describe.**

The completed project would result in a slight increase in need for police and fire protection, as well as emergency medical services. In addition, there is a possibility that there might be a slight increase in school enrollment associated with the 216 residential units.

b. **Proposed measures to reduce or control direct impacts on public services, if any.**

The project will be designed and constructed with adequate water pressure, properly located fire hydrants, and streets constructed to allow adequate access for aid, fire, and police protection vehicles. Increased property valuation will result in increased taxes generated to support public services.

16. Utilities

a. **Indicate utilities currently available at the site:**

Electricity, **Natural Gas**, **Water**, **Refuse Service**, **Telephone**, **Sanitary Sewer**, Septic System, Other. All utilities will be extended to and through the site.

b. **Describe the utilities that are proposed for the project, the utility providing the service, and the general construction activities on the site or in the immediate vicinity which might be needed.**

Sanitary Sewer:	Northshore Utility District
Water:	Northshore Utility District
Electricity:	Puget Sound Energy
Natural Gas:	Puget Sound Energy
Telephone:	Verizon

Cable Service: Comcast
Fiber Optic: Metromedia

C. SIGNATURE

The above answers are true and complete to the best of my knowledge. I understand that the lead agency is relying on them to make its decision.

Signature: Jeff Morgan

Jeff Morgan, Project Planner
Triad Associates

TRIAD ASSOCIATES
11814 115th Avenue NE
Kirkland WA 98034 6923

Date Prepared: December 5, 2005

RECEIVED
JUN 03 2004
DEVELOPMENT
SERVICES GROUP

GEOTECHNICAL ENGINEERING STUDY

PROPOSED RENOVATIONS TO
TOTEM LAKE MALLS
TOTEM LAKE BOULEVARD AND
120TH AVENUE NORTHEAST
KIRKLAND, WASHINGTON

Submitted to:

Developers Diversified Realty

3300 Enterprise Parkway

Beachwood, OH 44122

Submitted by:

PROFESSIONAL SERVICE INDUSTRIES, INC.

3257 16th Avenue West

Seattle, Washington 98119-1706

June 2, 2004

PSI Project No. 875-45083

ATTACHMENT 5
SEP06-00001

Information To Build On
Engineering • Consulting • Testing

FULLER SEARS ARCHITECTS
JUN 0 7

June 2, 2004

Developers Diversified Realty
3300 Enterprise Parkway
Beachwood, OH 44122

Attention: Mr. David Scarnati

Re: Geotechnical Engineering Study
Proposed Totem Lake Malls Renovation
Totem Lake Boulevard and 120th Avenue Northeast
Kirkland, Washington
PSI Project No. 875-45083

Dear Mr. Scarnati:

Professional Service Industries, Inc. (PSI) has completed our geotechnical engineering study for the proposed renovations to the Totem Lake Malls located in Kirkland, Washington. This report presents the findings of our field exploration as well as the results of laboratory tests and engineering analyses.

PSI appreciates the opportunity to provide services to you during this phase of project and we look forward to working with you in the future. If you have any questions regarding this report or need additional information, please call.

Respectfully Submitted,
PROFESSIONAL SERVICE INDUSTRIES, INC.

TIMOTHY D. HUNTTING
STATE OF WASHINGTON
27412
REGISTERED
PROFESSIONAL ENGINEER
6/2/04

Timothy D. Huntting, P.E.
Senior Geotechnical Engineer
EXPIRES 3-26-05

for Troy Hull, P.E.
Regional Geotechnical Engineer

TDH/TH:ab

\\SEATTLE-FS1\PROJECTS\NCG\2004 Projects\875-45083 Totem Lake Mall\875-45083 GES Rpt.doc

TABLE OF CONTENTS

Page No.

1.0 INTRODUCTION 1
1.1 Project Description 1
2.0 SCOPE OF SERVICES 1
2.1 Subsurface Exploration 2
2.2 Laboratory Testing 2
2.3 Analysis and Reporting 2
3.0 SURFACE CONDITIONS 3
4.0 SUBSURFACE CONDITIONS 3
4.1 Local Geology 3
4.2 Soils 4
4.3 Groundwater 4
5.0 CONCLUSIONS AND RECOMMENDATIONS 5
5.1 General 5
5.2 Geologic Hazards 5
5.2.1 Seismic Considerations 5
5.2.2 Erosion Hazard 6
5.3 Earthwork 6
5.3.1 Site Preparation 6
5.3.2 Subgrade Preparation 6
5.3.3 Excavations 6
5.3.4 Structural Fill 7
5.3.5 Underground Utilities 8
5.3.6 Wet Weather Construction 8
5.4 Foundations 8
5.4.1 Shallow Footings 8
5.4.2 Pile Foundations 9
5.4.3 Mat Foundations 11
5.5 Lower Level Building and Retaining Walls 11
5.6 Slab-on-Grade Floors 12
5.7 Drainage Considerations 12
5.7.1 Surface Drainage 12
5.7.2 Subsurface Drainage 12
5.8 Asphalt Pavement 13
6.0 ADDITIONAL SERVICES 14
7.0 USE OF THIS REPORT 14

APPENDIX A Field Exploration and Laboratory Testing

LIST OF FIGURES

Figure 1 Vicinity Map
Figure 2 Exploration Location Map
Figure 3 Typical Wall Drainage Detail

1.0 INTRODUCTION

This report presents the results of a geotechnical engineering study completed by Professional Service Industries, Inc. (PSI) for proposed renovations to Developers Diversified Realty's Totem Lake Malls in Kirkland, Washington. The Vicinity Map, Figure 1, shows the general location of the site. This report has been prepared based on our understanding of the proposed development, our conversations with Mr. David Scarnati of Developers Diversified Realty, and data collected during field explorations.

1.1 Project Description

The site is currently active as a retail shopping center and is divided into an upper mall and a lower mall by 120th Avenue Northeast. A plan of the site as it currently exists, along with the approximate locations of the explorations completed for this investigation, is shown on the Exploration Location Map, Figure 2. Development plans for the lower mall include demolishing the middle portion of the main building, thereby creating two separate structures. A new road will be constructed through this area, connecting the west entrance of the lower mall to a new parking garage in the upper mall. The structures that remain will be renovated or replaced, two new parking garages will be constructed and a separate one-story restaurant (or possibly bank) will be built. Renovations may include adding residential units above the retail spaces. The parking garages will be located immediately to the east of the two renovated buildings and the restaurant is planned for the west entrance to the mall.

Plans for the upper mall consist of demolishing virtually the entire upper mall and building two large, multi-story retail buildings, a parking garage, and possibly a hotel. The parking garage will occupy the general location of the existing main building with the two retail buildings located to the north and south of the new roadway. The hotel would be located along the southeast perimeter of the site. An existing, detached bank building at the south corner will remain.

It is our understanding that the first floors of the new buildings and the parking garage on the upper mall may be a few to several feet below existing grades. Grading in the lower mall is expected to be relatively minor. It is also possible that the alignment of Northeast 120th Avenue may be relocated about 14 feet to the west. We also assume that development plans include upgrading utility services, and repaving all parking lots and access drives.

Planned structural loads were not provided to us. We anticipate that most of the building loads will be light to moderately heavy, with assumed maximum loads of 75 kips for columns and 6 kips per lineal foot for walls. The number of levels in the parking garages has not been established at the time this report was written.

If any of these design criteria are inconsistent or have been changed, we should be informed so that we may review and re-evaluate the recommendations in this report. Once site grades and building loads are known, PSI should have the opportunity to re-evaluate our recommendations for efficiency. In any case, PSI should be retained to perform a general review of the plans and specifications to verify that our recommendations have been properly interpreted and incorporated into the final design.

2.0 SCOPE OF SERVICES

PSI's scope was developed with the intent of providing geotechnical engineering criteria and recommendations for the proposed renovations. Our specific scope of services was outlined in

our revised proposal No. 875-350364 to Developers Diversified Realty dated February 19, 2004 and consisted of conducting subsurface exploration, limited laboratory testing, engineering analyses, and preparing this report. Written notice to proceed with these services was provided by Developers Diversified Realty on April 8, 2004, by issuing a purchase order.

2.1 Subsurface Exploration

Our field exploration consisted of drilling 16 soils test borings using our CME 75 truck-mounted drill rig on April 26 through 30, 2004. The estimated maximum boring depth in our scope of services was 60 feet. However, practical auger refusal was reached when the drilling equipment encountered heaving sand or very dense sand and gravel at depths varying from about 25 to 35 feet below the ground surface. The boring locations are shown on the Exploration Location Map, Figure 2. Details of our field exploration and logs of the explorations are presented in Appendix A.

2.2 Laboratory Testing

Laboratory tests were conducted on selected representative soil samples to evaluate the general physical properties and engineering characteristics of the materials encountered. Moisture content analyses were performed on 84 samples returned to our laboratory. Seven samples were analyzed for particle size distribution. Moisture content test results are shown at the respective sample depths on the exploration logs in Appendix A. The particle size distribution curves are presented in Figures A-17 through A-23 of Appendix A.

2.3 Analysis and Reporting

Data collected during the field exploration and the results of laboratory tests were evaluated and engineering analyses were performed to provide the following geotechnical information relating to the proposed site development:

- Results of the subsurface exploration, with a description of the soil and groundwater conditions encountered
- A discussion of geologic hazards related to the proposed development and seismic design considerations, including the site coefficient per Table 16-J of the Uniform Building Code (UBC)
- Recommendations for earthwork, including site preparation, excavation, and placement of required compacted fill
- Conclusions regarding the use of the on-site soils as structural fill
- Recommendations for foundation types and their design for supporting the proposed residences
- Estimated settlement for the anticipated loadings
- Recommendations regarding frictional and passive values for the resistance of lateral forces
- Recommendations for floor slab support
- Recommendations for permanent subsurface drainage systems and temporary groundwater control measures, if necessary
- Recommendations for asphalt pavement.

The scope of services did not include an environmental assessment for determining the presence or absence of wetlands, or hazardous or toxic materials in the air, surface water, groundwater, or soil on, below, or around this site.

3.0 SURFACE CONDITIONS

The project site is located at in Kirkland, Washington. The general location of the site is shown on the Vicinity Map, Figure 1. The site consists of several irregularly shaped parcels occupied by several separate and contiguous buildings and asphalt-paved parking lots. The site is currently active as a retail shopping center and is divided into an upper mall and a lower mall by 120th Avenue Northeast, which traverses the site in a north-south direction.

The site is bounded by Totem Lake Mall Boulevard to the west and southwest, 120th Avenue Northeast and Totem Lake Way to the southeast, a senior citizen's retirement center to the northeast, and undeveloped land and commercial/professional office properties to the north. The existing site configuration is shown on the Exploration Location Map, Figure 2.

The ground surface of the developed portions of the upper mall slopes down to the south at an overall grade of less than 5 percent. The north and east sides of the mall are bordered by a slope rising above the developed area at an average gradient of about 2H:1V (Horizontal:Vertical). Based on recollections of long-time residents, the northern and eastern portions of the upper mall were sources of gravel borrow for construction of Interstate 405 circa 1970. The north and east slopes do appear to be cut to their current configuration. The average elevation of the upper mall is about 6 to 8 feet higher than the lower mall.

The ground surface of the lower mall is essentially level. Based on recollections of residents, this area used to be either a lake or bogs surrounding the lake and was filled in to build the existing mall. A much smaller lake still exists south and east of Totem Lake Way, and 120th Avenue Northeast.

The majority of the pavement in the upper mall is in good condition, having received a seal coat within the last several years. The service drive along the east edge of the developed area has received less maintenance and is in poor condition with alligator cracking, raveling pavement, and scattered potholes. Most of the pavement in the lower mall appears to date from the time of original construction and is in relatively good condition for its age. Some pavement was replaced when the north end of the main building was remodeled several years ago but it is a relatively insignificant amount. There are isolated areas with alligator cracking and some potholes have developed. Except for isolated patches and the replaced areas at the north end of the site, pavement in the lower mall has not received any recent surface treatment.

4.0 SUBSURFACE CONDITIONS

4.1 Local Geology

The present geology and topography of the site and immediate vicinity reflect deposition and erosion processes that occurred during and following the last period of continental glaciation in the Puget Sound area. The predominant geologic units mapped in the vicinity of the site are Vashon advance outwash (Qva), Vashon till (Qvt), and Vashon recessional outwash (Qvr). The till unit appears to be present to the north and east of the site. The slope behind (north and east) the upper mall appears to be advance outwash soil. The advance outwash transitions nonconformally to recessional outwash beneath the site.

Totem Lake sits in a topographic low, with a well-defined channel to the east and poorly defined channel to the west. This area is believed to have been a watercourse between the Sammamish River Valley and Lake Washington, cut by meltwater from the retreating glaciers. Consequently, soils in the area consist of a varying mixture of silt, sand, gravel, cobbles, and boulders carried by the meltwater. Periodic deposition in a slackwater environment has resulted in layers of finer-grained silt and clay, organic soils, and peat being deposited at certain locations. A former peat bog is believed to have existed throughout the central portion of the lower mall.

4.2 Soils

The near-surface soil conditions encountered in our explorations were variable. Generally, a 2-foot to 5-foot layer of fill underlies the pavement in the upper mall, which in turn was underlain by apparent advance outwash sand and gravel along the north and east sides of the site and recessional silt, sand, and gravel in the central portion. The surface of the outwash soil appears to dip down to the south and west within the southern half of the upper mall. At Boring B-8 we encountered about 6 feet of loose to very loose silty gravel with sand that was underlain by firm sandy silt interbedded with layers of loose silty sand with some gravel. At Boring B-11, the fill appears to be about 8 feet thick and was overlain by about 12 feet of loose to very loose silty gravel which in turn was overlain by about 13 feet of soft peat.

Soils in the lower mall generally consist of 5 to 8 feet of silty and sandy gravel fill overlying interbedded layers of sediments ranging from very fine sandy and clayey silt to well graded sand and gravel with trace to some silt. Layers of peat and organic silt were also encountered at some locations. Generally the average relative density of the fill was medium dense but was found to be loose near the contact with the underlying native soil. The native soils ranged from very soft/loose to very dense. Most of the borings in the lower mall were terminated in a very dense layer of sand and gravel located at a depth of about 20 feet below the ground surface. Very dense soil was not encountered in the two borings in the northeast corner of the site (Borings B-1 and B-2).

The preceding discussion is intended as a general review of the soil conditions encountered. For more information, please refer to the Boring Logs, Figures A-1 through A-16 in Appendix A.

4.3 Groundwater

Groundwater was encountered in most of the borings completed for this project at depths ranging from about 3 to 19 feet below the ground surface. Mottled conditions, indicative of excessive moisture and poor aeration, were also observed in the fill soils above the local groundwater level. Site grading involving excavations below depths of 3 to 5 feet will likely encounter groundwater seepage.

The borings were not allowed to remain open for an extended period of time, which would permit for a more detailed evaluation. In addition, fluctuations in groundwater levels should be expected on a seasonal and annual basis. Recent rainfall, amounts of rainfall, surface water runoff, activities at nearby sites, and other factors may influence levels. Typically, groundwater levels rise during and shortly following the wet winter months, and drop during the drier summer months.

5.0 CONCLUSIONS AND RECOMMENDATIONS

5.1 General

Based on our study, the site appears to be suitable for the proposed development from a geotechnical standpoint. The primary geotechnical considerations for this project are 1) foundation design, 2) total and differential settlements resulting from anticipated loads, and 3) proper subgrade preparation.

The following sections provide PSI's opinions and recommendations regarding these issues and other geotechnical considerations. Our recommendations should be incorporated into the project design drawings and construction specifications.

5.2 Geologic Hazards

5.2.1 Seismic Considerations

The Puget Sound area falls within Seismic Zone 3, as classified by the 1997 Uniform Building Code (UBC). Based on the soil conditions encountered and the local geology, we interpret the upper 100 feet of bearing material underlying most of the upper mall as corresponding to a soil profile of S_D, as defined in Table 16-J of the 1997 UBC. The SD profile type is defined as stiff soil with an average N-value of between 15 and 50. The upper 100 feet of bearing material underlying the lower mall and the southern portion of the upper mall to corresponds to a soil profile of S_E. The S_E profile type is defined as soft soil with an average N-value less than 15 or any profile with more than 10 feet of soft clay.

Liquefaction is a phenomenon where there is a reduction or complete loss of soil strength due to an increase in pore water pressure induced by vibrations. The vibration source typically considered in liquefaction analysis is a seismic event or earthquake. Structural damage due to liquefaction can occur in one of three forms:

- Excessive settlements
- Complete foundation bearing capacity failure
- Surface rupturing due to lateral spreading

Liquefaction mainly occurs in geologically recent deposits of fine-grained sands that are below the groundwater table. Soils of this nature derive their strength from intergranular friction. The generated water pressure or pore pressure essentially separates the soil grains and eliminates this intergranular friction; thus, eliminating the soil's strength. Coarser grain deposits of sands and gravels are normally not affected because their hydraulic conductivity allows for drainage or dissipation of these excess pore pressures. Silts and clays are normally not affected because of the cohesive component of their shear strength.

We reviewed the field exploration data and results of our laboratory testing in order to assess the potential for liquefaction of the site soils during a seismic event. Based on our interpretation of the geology of the area, it is possible there are some pockets of soil underlying the site that have the potential to liquefy when subjected to ground motions from a significant seismic event. However, it is likely they are present in isolated, discontinuous, and relatively thin lenses interbedded with nonliquefiable soils. In our opinion, building foundations would not be subject to a bearing capacity failure as a result of soil liquefaction. However, some minor differential building settlements could occur as a result of liquefaction and/or consolidation of soft/loose deposits caused by the shaking generated during a seismic event.

The site will be subjected to some amount of ground shaking during a seismic event, the magnitude of which will vary depending on the location and magnitude of the earthquake. Based on the soil and groundwater conditions we encountered, it is our opinion that there is little to negligible risk for ground rupture, subsidence, soil liquefaction, landsliding, or lateral spreading to occur at this site during an earthquake.

5.2.2 Erosion Hazard

The primary cause of erosion at a site subjected to construction activities is uncontrolled surface water with runoff over unprotected site surfaces. Due to the relatively level condition of most of the site, the overall potential for erosion is low.

The soils present in the existing cut bank on the north and east sides of the upper mall consist of relatively clean outwash sand. With the existing slope gradients, these soils will have a moderate to severe potential for erosion when exposed. A temporary erosion and sedimentary control (TESC) plan, as a part of the Best Management Practices (BMP) will need to be in place prior to starting grading activity on the site. This includes the use of geotextile barriers (silt barriers), straw barriers, controlled surface grading, equipment washing, storm drain inlet protection, and sediment traps.

5.3 Earthwork

5.3.1 Site Preparation

To prepare the site for construction, building demolition debris should be removed from the site. All deleterious material such as grass, roots, topsoil, and debris-laden fill should be stripped from areas to be occupied by structures, pavements, or walkways. Asphalt pavement and concrete slabs may be crushed and reused onsite as fill or as a stabilizing base if desired. Underground pipes to be abandoned should be plugged or removed. Cleared materials should be disposed of offsite. Voids remaining after removing unsuitable materials should be backfilled with adequately compacted structural fill as described below.

5.3.2 Subgrade Preparation

After clearing, excavations to achieve desired grades may be initiated. Any existing loose, soft, or unstable soils found below footing subgrade elevations should be overexcavated and removed. If overexcavations are required, the excavations should extend laterally beyond the edges of the footings a minimum distance of 2 feet in each direction. Overexcavated areas may be backfilled with structural fill, controlled density fill (CDF), or lean concrete to subgrade elevation or the footings may be extended to bear on undisturbed native soil.

5.3.3 Excavations

Footings and utility trenches can be readily excavated with conventional earthmoving equipment. Cave-in protection is required before workers may enter any excavation except those excavations made entirely in stable rock or where the depth of excavation is less than 4 feet and there is no indication of a potential cave-in. Suitable protection systems include shoring, sloping or benching, or shielding. The Washington Safety Standards for Construction Work (Chapter 296-155 WAC), Part N, provides standardized systems and slope configurations that may be used for excavations less than 20 feet deep. The type of soil at the site dictates the appropriate design of the protection system.

Based on these standards, some of the undisturbed native and the better-compacted fill soils are classified as Group B but most of the existing soils are in the Group C category. We

recommend that all soils be classified as Group C. Accordingly, for excavations more than 4 feet but less than 20 feet in depth, the side slopes should be laid back at an inclination no steeper than 1½H:1V.

The above information is solely for the benefit of the owner and other design consultants and provides only basic guidelines for excavation work. There may be other site-specific conditions, such as excavations deeper than 20 feet, variations in the subsurface, confined space issues, and the presence of nearby structures, equipment, or stockpiles of materials, that could alter the level of protection required. It is understood that job site safety is the sole responsibility of the project contractor and that by providing this information, it should not be construed to imply that PSI assumes responsibility for job site safety. All excavations at the site must be completed in accordance with local, state, or federal requirements.

5.3.4 Structural Fill

Structural fill is defined as the compacted fill placed under buildings, slabs, or any other load-bearing areas. The suitability of soils used for structural fill depends mainly on the gradation and moisture content of the material when it is placed. As the percent fines in a soil increases above 5 percent, the soil becomes more sensitive to moisture changes, and achieving adequate compaction may become difficult or impossible.

Our subsurface exploration indicates that most of the existing soils have a large percentage of fine material and moisture contents were generally above the optimum point. These materials are considered to be highly moisture sensitive and would only be usable during the dry summer months. Therefore we recommend using imported granular materials for use as structural fill.

Any suitable, inorganic, predominately granular soil may be used for fill material, provided the material is properly moisture conditioned prior to placement and compaction. Any imported structural fill for construction during wet weather should consist of clean, well-graded sand and gravel meeting the recommended grading requirements shown in following table.

GRADING FOR IMPORTED GRANULAR MATERIAL	
U.S. Standard Sieve Size	Percent Passing by Dry Weight
3 inch	100
¾ inch	50 – 100
No. 4	25 – 65
No. 10	10 – 50
No. 40	0 – 20
No. 200	5 Maximum

All structural fill underlying footings, floor slabs, pavements, walkways should be placed in horizontal lifts not exceeding 8 inches in loose thickness and compacted to a minimum of 95 percent of its laboratory maximum dry density. The maximum dry density should be determined in accordance with the American Society of Testing and Materials (ASTM) D 1557 test method. Fill materials should be placed at or near their optimum moisture content, as determined by this test method. Fill within landscaped areas should be compacted to reduce the potential for excessive settlement.

5.3.5 Underground Utilities

Utility pipes should be bedded and backfilled in accordance with American Public Works Association (APWA) or City of Kirkland specifications. As a minimum, trench backfill should be placed and compacted as structural fill, as described above and to a minimum of 95 percent of its maximum dry density. Around pipes, compaction should be done by carefully tamping the material with hand tools or light compaction equipment to prevent damaging or displacing the pipe. Backfill should be placed to at least 12 inches above the crown of the pipe before any heavy compaction equipment is used.

Soils excavated on-site may be usable as backfill material provided their moisture contents can be controlled to near the optimum point. If utility installation takes place during the wet winter months, it will likely be necessary to import suitable wet weather fill for trench backfilling.

5.3.6 Wet Weather Construction

Care must be taken to protect on-site soils exposed during construction. Soils exposed by subgrade preparation operations may become unstable should their moisture content be allowed to increase to above optimum. Ideally, site preparation and initial construction activities should be scheduled to minimize ground disturbance during the wet season. Earthwork should be done in small sections to minimize the soils exposure to wet weather. Any excavations or removal of unsuitable soils should be immediately followed by the placement of backfill or concrete for footings. No soils should be left uncompacted or exposed to wet weather conditions. Surfaces should be rolled to seal out the water.

Work areas may be covered with plastic sheeting to protect against wet weather. Prior to starting fill activities each day, any wet soil surfaces should be removed. Construction traffic should be limited to specific areas to prevent widespread disturbance of the subgrade.

5.4 Foundations

Shallow foundations may be used to support building loads where the underlying soil consists of medium dense or denser sandy and gravely soil or firm to stiff silty soil. Based on conditions encountered in the borings, it appears that most of the buildings in the upper mall will be underlain by medium dense or denser undisturbed native soil or existing structural fill. The primary exceptions are along southwest wall and south corner of the proposed south retail building (in the vicinity of Boring B-8 and Boring B-11) where we encountered soft and loose soils and some peat. A deep foundation system will be needed in areas underlain by very loose to loose sandy soils, soft silts, or organic soils to support building loads. Recommendations for both shallow and deep foundations are provided in the following sections.

5.4.1 Shallow Footings

Any loose soil encountered at the footing subgrade elevation should be overexcavated and replaced with structural fill or equivalent material. We recommend dimensioning shallow footings for a net bearing capacity of 2,500 psf. For short term loads, such as wind and seismic, a one-third increase in the allowable capacities can be used. Based on the subsurface conditions encountered, site geology, and past experience, we anticipate that properly designed and constructed foundations supported on the recommended materials should experience total and differential settlements of less than 1 inch and ½ inch, respectively. The majority of these settlements are expected to occur during construction.

Lateral foundation loads can be resisted by friction between the foundation base and the supporting soil, and by passive earth pressure acting on the face of the embedded portion of the

foundation. For the latter, the foundation must be poured "neat" against undisturbed soils or overexcavated areas need to be backfilled with structural fill. For frictional resistance, a coefficient of 0.3 can be used. For passive earth pressure, the available resistance can be computed using an equivalent fluid pressure of 250 psf per foot of embedment. These lateral resistance values include a factor of safety of 1.5. All footing excavations should be examined by a representative from PSI, prior to placing forms or reinforcing steel, to verify that subgrade conditions are as anticipated in this report.

We recommend that continuous footings have a minimum width of 18 inches. Foundations exposed to the weather should bear at a minimum depth of 18 inches below final exterior grades to protect from frost heave. Interior foundations can be constructed at any convenient depth below the floor slab.

5.4.2 Pile Foundations

Due to the presence of loose and soft soils and compressible peat layers in the west and south portions of the site (generally all of the lower mall and the south end of the upper mall), a deep foundation system is appropriate for support of buildings in these areas. Piles bearing on the underlying dense to very dense sand and gravel are recommended to reduce the potential for large settlements that could lead to unacceptable levels of building distress. Because of the variable depths to the bearing stratum, the ability to easily adjust the pile length in the field is highly advised. Augercast concrete piles appear to be the most suitable option at this site.

Driven piles are acceptable from a foundation support viewpoint, but present some possible installation difficulties at this site. Because the depth to the bearing soil varies, some piles may reach practical refusal at shallower depths than expected, resulting in damaged piles or the need to cut off pile tops. Also, the noise and vibration caused by pile driving may be disruptive, and may require monitoring of nearby structures, particularly with respect to potential vibration-related damage.

Augercast piles can be installed relatively quickly in a number of standard diameters. A nominal diameter of 12 inches is recommended as a minimum diameter to be considered in design. The recommended maximum allowable axial compressive capacities are provided in the following table. Any additional fills placed over soft or loose soils will compress the soft or loose soil, creating downdrag loads on the piles. The allowable capacities are net of additional loading due to the effects of downdrag.

Approximate Embedment Depth Into Dense Glacial Soil	Maximum Allowable Axial Capacity (kips)		
	12-inch Pile Diameter	18-inch Pile Diameter	24-inch Pile Diameter
5	25	55	95
10	35	70	125
15	45	90	155
20	55	110	185

Augercast piles should extend a minimum of 5 ft into the dense glacial soil, and should be installed with a pile spacing no closer than three-pile diameters center to center.

We recommend that experienced and qualified personnel who can evaluate the contractor's operation, and collect and interpret the installation data observe the installation of all augercast piles. The observer would also note the depth of the dense soil and verify that the required penetration into the bearing stratum is achieved.

Provided the buildings are properly designed and constructed and piles are founded in the dense to very dense sand and gravel, total settlement of pile-supported foundations is expected to be less than about ½ inch, and differential settlement between adjacent pile-supported foundations is expected to be less than ¼ inch.

We suggest the following guidelines be used in developing specifications for augercast pile installation:

1. A pressure gauge should be installed in the grout supply system in order to monitor pressure during the grouting operations. The gauge should be positioned so that the geotechnical engineer or senior engineering technician can easily observe it.
2. A mechanical counter should be provided on the grout pump to record the number of pump strokes during the installation of each pile.
3. The grout pump should be calibrated prior to initiation of production pile installation by pumping grout into a container of known volume. The pump should then be calibrated as often as deemed necessary by the geotechnical engineer or his representative.
4. One set of four, 2 x 2 x 2-inch grout cube samples should be made from each truckload of grout. The samples should be tested to confirm compressive strength of the grout. Compression tests should be performed on samples to determine the strength of each batch of grout on the third and seventh day after batching. Final compressive strength should be determined by testing two samples on the twenty-eighth day after batching and averaging the results.
5. After achieving the desired pile depth/tip criteria, a positive grout pressure should be observed prior to initiating withdrawal of the auger. A continuous fluid return (first slurry, then grout) from the top of the auger hole is the best indication that the maximum possible pressure head is being achieved.
6. The auger should be withdrawn slowly and smoothly so that a positive grout pressure is maintained in the hole at all times during auger withdrawal. If the withdrawal of the auger becomes erratic, grout pressure suddenly drops, or if the grout supply is interrupted, the auger tip should be reinserted at least 5 feet below the level where the grouting operation was disrupted prior to resuming withdrawal of the auger. The geotechnical engineer or senior engineering technician should monitor the time rate of withdrawal of the auger.
7. A grout factor greater than 1.1 should be achieved for all piles. The grout factor is defined as the actual volume of grout pumped into the pile divided by the theoretical volume of the pile. The contractor should coordinate the rate of withdrawal of the auger so that the minimum grout factor is achieved. However, grout factor of 1.3 or more would not be unusual.
8. Clockwise rotation of the auger should be performed during the grouting process at least until grout is observed flowing out of the top of the drilled hole. Auger rotation helps stabilize the sides of the hole, facilitates the removal of spoil material from the hole, and prevents bearing formation cuttings from settling out to the bottom of the hole during grouting.
9. The installation of adjacent piles on the same working day may not be possible. Piles located closer together than 2.5 pile diameters on center and not less then 4-feet apart on center, should not be installed until the initial grouted pile has set overnight.

10. Some subsidence of fresh grout may occur in the top of the piles. This subsidence is in part a result of the weight of the grout column "pushing" laterally into void space of adjacent soils. It is anticipated that this subsidence will occur within a period of about two hours following the grouting operation. If subsidence occurs while the pile grout is in a fluid state (generally within two hours of forming the pile), we recommend that the pile be "topped" with fresh grout to the proper cutoff elevation immediately. We recommend that a pile grout subsidence of up to 1 foot be considered acceptable for this project. As stated previously, the pile should be refilled as the subsidence occurs. Conscientious monitoring of the pile grout levels will be required by the contractor and installation monitoring personnel. Piles that subside more than 1 foot overnight or after a two-hour period should be evaluated on an individual basis.

11. Grout should not be pumped into the piles when it is older than 90 minutes from the time it was batched. This time limit may be extended through the use of an approved retarding admixture. If such an admixture is to be used it should be included in the submittal for approval of the grout mix design.

5.4.3 Mat Foundations

Reinforced concrete mat foundations may also be a viable option for supporting some structures where the net load increase on the existing soil is minimal. Mat foundations could be placed on soils with variable density or consistency but should be designed to be stiff enough to resist differential settlement. We recommend designing mat foundations using a modulus of subgrade reaction value of 20 pounds per cubic inch (pci), and an allowable bearing capacity of 1200 psf. The friction and passive earth pressure values discussed in the shallow foundation section may be used for designing resistance to lateral loads

5.5 Lower Level Building and Retaining Walls

The magnitude of earth pressure developed on lower level walls or retaining walls will partly depend on the quality of the wall backfill. For this purpose, we recommend using relatively granular soil and placing and compacting the material as structural fill. To guard against hydrostatic pressure development, wall drainage should also be installed as recommended in the site drainage section.

With wall backfill placed and compacted as recommended and drainage properly installed, we recommend designing unrestrained walls for an active earth pressure equivalent to a fluid with a weight of 35 pcf. For restrained walls fixed only at the top, the wall should be designed for an equivalent fluid weight of 55 pcf. For seismic considerations, an additional uniform pressure of 6*H psf should be included, where H is the wall height in feet. Traffic loads behind the wall may be modeled as equal to an additional 2 feet of backfill height. These values assume a horizontal backfill condition and that no other surcharge loading, such as sloping embankments or adjacent buildings, will act on the wall.

Friction at the base of foundations and passive earth pressure will provide resistance to these lateral loads. Values for these parameters are provided in Section 5.4.1.

5.6 Slab-on-Grade Floors

Slab-on-grade floors may be supported on undisturbed native soil or properly compacted structural fill, provided the subgrade is prepared in accordance with the recommendations in this report. Any loose soil encountered beneath slab areas should be removed and replaced with structural fill. Because ground surfaces may be unintentionally disturbed during construction activities, we recommend that all slab subgrades be recompacted immediately before slab construction. After the subgrade has been prepared, we recommend placing a capillary break layer to guard against wetting of the slab by capillary movement of water in the supporting soils. The layer should consist of at least 4 inches of clean, free-draining coarse sand or gravel containing less than 3 percent fines (minus No. 200 mesh sieve).

Where moisture by vapor transmission is undesirable, an eight to ten mil thick plastic membrane should be placed on top of the capillary break material. In accordance with American Concrete Institute recommendations, the membrane should be covered with 1 to 2 inches of clean, moist sand to guard against damage during construction and to aid in curing of the concrete.

Construction activities and exposure to the environment may cause deterioration of the prepared subgrade. Therefore, we recommend that a representative of the geotechnical engineer observe the condition of the finish subgrade immediately before slab-on-grade construction and, if necessary, perform further density and moisture content tests to determine the suitability of the final prepared subgrade.

5.7 Drainage Considerations

5.7.1 Surface Drainage

Final exterior grades should promote free and positive drainage away from building areas at all times. Water should not be allowed to pond or collect adjacent to foundations or within the immediate building area. Except for paved locations, we recommend providing a minimum gradient of 3 percent for a minimum distance of 10 feet from individual building perimeters. In paved locations, a minimum gradient of 2 percent should be provided unless provisions are included for collection and disposal of surface water adjacent the structure.

During construction, loose and exposed surfaces should be adequately compacted to reduce the potential for moisture infiltration into the soils. In addition, surface water must not be allowed to flow in an uncontrolled manner over the crest of any slopes. Surface water should be directed away from the slope crests to a point of collection and controlled discharge.

5.7.2 Subsurface Drainage

Groundwater was encountered within our exploratory borings at depths varying from about 3 to 19 feet below existing grade. If groundwater seepage is encountered during construction, we recommend the contractor slope the bottom of excavation, direct the water to ditches, and collect it in prepared sump pits from which the water can be pumped and discharged into approved storm drain systems.

To reduce the potential for buildup of seepage and hydrostatic pressures behind subterranean walls, a drainage layer should be placed adjacent to the wall. The drainage material should consist of free-draining, granular material such as ¾ inch washed rock or pea gravel. The drainage layer should extend at least 18 inches behind the wall. Alternatively, a composite drainage fabric, such as Miradrain, Enkadrain, or equivalent, may be used. If any such product

is used, it should be designed and installed in accordance with the manufacturer's specifications.

Groundwater seepage should be collected in rigid, 4-inch minimum diameter, perforated drainpipes placed at the base of the wall. Perforations should be less than ¼ inch in diameter. The pipe should be surrounded by at least 12 inches of free-draining granular material regardless of the type of wall drainage used. Pipes should be routed to convey collected water to a suitable outlet. A typical wall drainage detail is shown on Figure 3.

5.8 Asphalt Pavement

Pavement sections must be installed over firm subgrade. The top 12 inches of subgrade in cut areas and all fill soil should be compacted to at least 95 percent of the maximum dry density per ASTM D 1557. Following excavation or filling to establish subgrade elevation, but immediately prior to paving, the subgrade surface should be proof-rolled with a loaded dump truck, heavy roller, or equivalent. Soft spots or areas exhibiting excessive movement, pumping, or weaving exposed by this proof-rolling, which cannot be easily stabilized, should be over-excavated and backfilled with granular fill, placed and compacted as previously described. We recommend that proof rolling be observed by a representative of the geotechnical engineer.

Our minimum pavement design recommendations are made assuming the pavement subgrade will consist of well-compacted native soil or structural fill. Based on our review of site soil conditions and experience at sites with similar soils, we have assumed a California Bearing Ratio of 30 percent for pavement subgrade soil.

For access drives and areas of heavy truck traffic, we recommend a flexible pavement section of at least 4 inches of asphalt concrete over 9 inches of crushed rock base or 6 inches of asphalt treated base. In parking lots and areas limited to automobile and light truck traffic only, this section may be reduced to a minimum of 3 inches of asphalt concrete over 6 inches of crushed rock base or 4 inches of asphalt treated base.

Paving materials used should conform to the Washington State Department of Transportation (WSDOT) specifications for Class B asphalt concrete, Asphalt treated base and crushed rock base. Crushed rock base should be compacted to at least 95 percent of its maximum dry density per ASTM D 1557.

If possible, heavy construction equipment imposing loads greater than the normal loads assumed in pavement design should not be allowed on paved areas. If frequent and heavy construction traffic across paved areas cannot be avoided, a thickened pavement section design should be incorporated into the project plans. The thickened pavement areas should be identified as designated equipment routes and heavy construction traffic should be restricted to these designated routes.

Paving operations should be scheduled for the drier and warmer summer months. If work is accomplished during wet weather, a layer of permeable crushed rock may be required to properly prepare the subgrade.

Long-term pavement performance depends partially on surface drainage. A poorly drained pavement section is more prone to premature failure because surface water infiltrating into moisture sensitive subgrade soils tends to reduce their supporting capability. For optimum pavement performance, we recommend surface drainage gradients of no less than 2 percent. Regular maintenance should be planned to seal cracks when they occur.

6.0 ADDITIONAL SERVICES

PSI recommends that we be retained to provide consultation during design and to review the geotechnical-related portions of the design drawings and specifications. The purpose of the review is to verify that the recommendations presented in this report have been properly interpreted and implemented in the design and specifications.

We also recommend that PSI be retained to perform geotechnical-monitoring services during construction. The purpose of these services would be to observe compliance with the design concepts, specifications, and recommendations of this report, and to expedite design or construction changes in the event that subsurface conditions differ from those anticipated before the start of construction.

A representative of the geotechnical engineer should observe all building areas and footing excavations. Observations should be conducted during and immediately after the demolition and removal of existing landscaping, structures, and utilities. A final observation of footing excavations should also be conducted to determine if the soil bearing capacity has been altered by construction activities following site preparations. The footings should be observed after the reinforcing steel has been placed and within 24 hours before placing concrete.

We recommend that a representative of the geotechnical engineer be present to observe other excavations and temporary shoring, to monitor fill placement and compaction activities, to observe proof-rolling operations, to document that design subgrade conditions are obtained beneath building and paved areas, and to confirm appropriate use and placement of drainage material. We recommend that in-place density testing be performed on fills, backfills, and finished subgrade surfaces. Conformance testing of imported materials may also be needed to verify compliance with project specifications and our recommendations.

In addition to our geotechnical monitoring services, PSI also offers construction materials testing and special inspection services. Our technical knowledge and expertise includes the following areas:

- Reinforced Concrete
- Structural Shotcrete
- Fireproofing
- Reinforced Masonry
- Roofing and Waterproofing
- Floor Flatness
- Post-Tension Concrete
- Pre-Tension Concrete
- Structural Steel Fabrication
- Structural Steel Erection
- Nondestructive Examination
- Batch Plant Inspection

PSI would be pleased to provide these services to you on this project

7.0 USE OF THIS REPORT

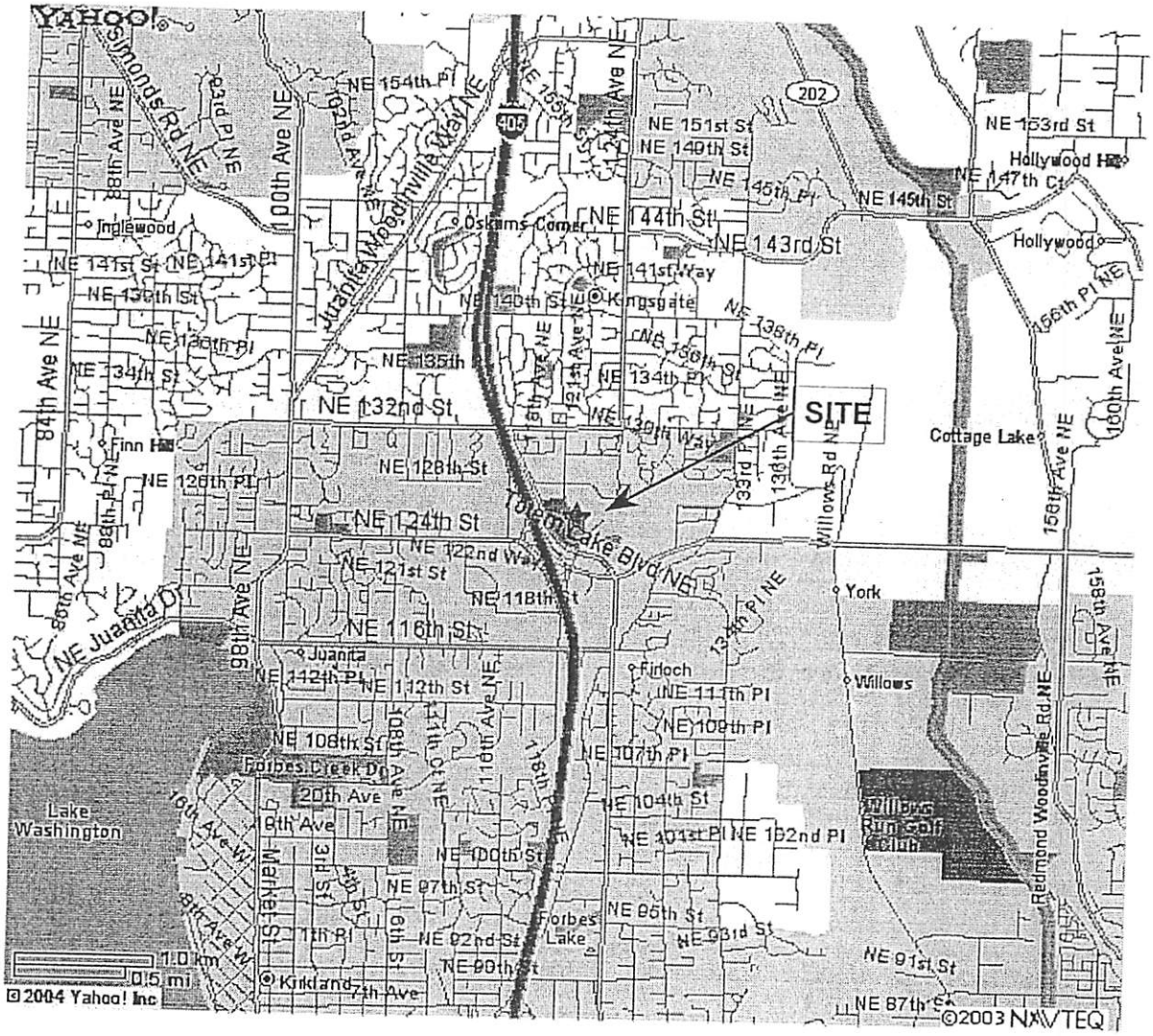
PSI prepared this report for the exclusive use of Developers Diversified Realty and their design consultants for specific application to the proposed renovations at Totem Lake Malls in Kirkland, Washington. The use by others is at their sole risk.

The findings, conclusions, and recommendations contained in this report are based in part upon the data obtained from on-site explorations. The boring logs do not provide a warranty as to the conditions that may exist at the entire site. There may be some variation in subsurface soil and groundwater conditions at the site, and the nature and extent of the variations may not become

evident until construction. Accordingly, a contingency for unanticipated conditions should be included in the construction budget and schedule. If conditions appear to be different from those described in this report, PSI should be notified before construction continues so that we may re-evaluate our recommendations.

This report, in its entirety, should be included in the project contract documents. The reproduction of this report, except in full, by any method and its transmittal by any means to a third party without the written permission of PSI, is prohibited.

Within the limitations of scope, schedule, and budget, we conducted our services in accordance with generally accepted geotechnical engineering principles and practices in this area at the time this report was prepared. No other warranty, express or implied, is made as to the professional advice included in this report.

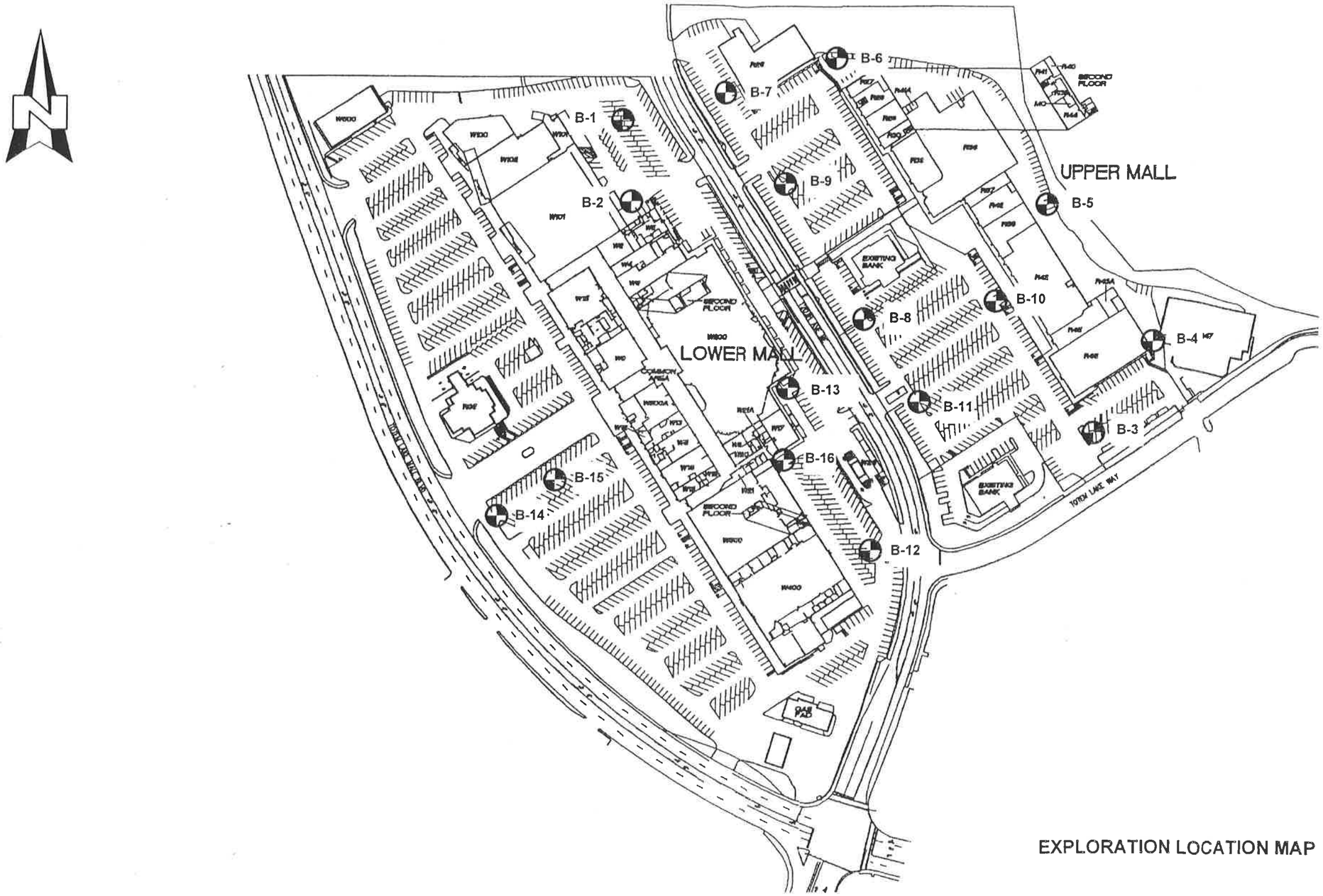


VICINITY MAP

Source: Yahoo Maps, 2004

Not to Scale

Project No.: 875-45083	Developers Diversified Realty Totem Lake Malls Renovation 12500 Totem Lake Boulevard Kirkland, Washington	psi Information To Build On Engineering • Consulting • Testing
Date: June 2004		
Drawn by: TDH		
Checked by: TH		Figure 1



EXPLORATION LOCATION MAP

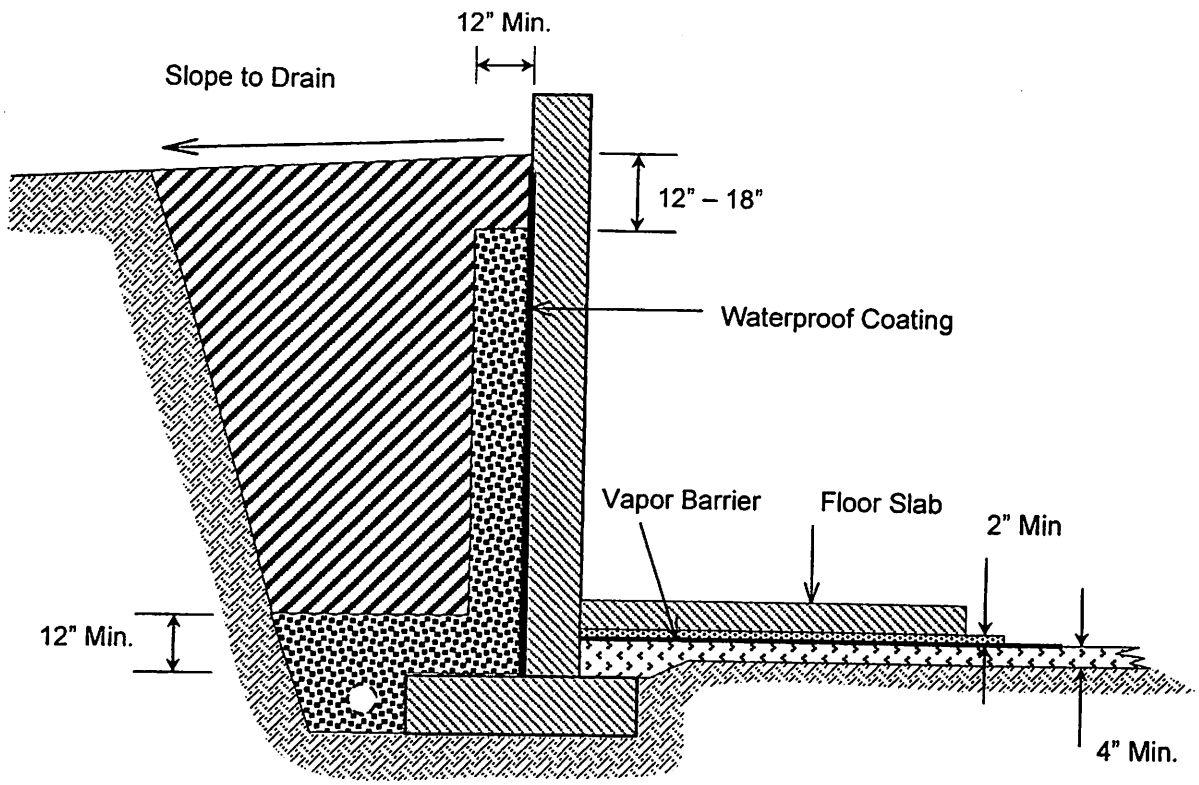
Not To Scale

LEGEND

APPROXIMATE BORING LOCATION

Source: Lease Plan LP-1 by Donahou Design Group, 2003

Project No.: 875-45083	Developers Diversified Realty Totem Lake Malls Renovation 12500 Totem Lake Boulevard Kirkland, Washington	psi Information To Build On Engineering • Consulting • Testing
Date: June 2004		
Drawn by: TDH		
Checked by: TH		Figure 2



LEGEND

- Compacted Structural Fill
- Free-Draining, Granular Fill
- Drain Pipe
- Clean Sand
- Capillary Break

Note: See body of report for recommended material specifications and additional information.

TYPICAL WALL DRAINAGE DETAIL
Not to Scale

Project No.: 875-45083	Developers Diversified Realty Totem Lake Malls Renovation 12500 Totem Lake Boulevard Kirkland, Washington	psi Information To Build On Engineering • Consulting • Testing
Date: June 2004		
Drawn by: TDH		
Checked by: TH		Figure 3

APPENDIX A

FIELD EXPLORATION
AND
LABORATORY TESTING

FIELD EXPLORATION AND LABORATORY TESTING

Field Exploration

We performed our field exploration on April 26 through 30, 2004. The exploration program was coordinated by a geotechnical engineer from PSI, who maintained detailed records of encountered subsurface soil and groundwater conditions, obtained representative samples, and observed pertinent site features.

Subsurface soil and groundwater conditions at the site were explored by advancing 16 soil test borings at locations selected by PSI. Logs of the explorations are presented on Figures A-1 through A-16. The approximate locations of the explorations are shown on the Exploration Location Map, Figure 2. The borings were drilled to depths varying from 11.5 to 36.5 feet below existing surfaces. The soil borings were advanced with a truck-mounted drill rig equipped with continuous-flight, hollow-stem auger (HSA) or mud rotary (MR) tools.

Disturbed, representative samples of the soil encountered from the borings were obtained at intervals of 2.5 and 5 feet. Soils encountered were described using the Unified Soil Classification System (USCS), in general accordance with American Society of Testing and Materials (ASTM) procedure D 2488, *Standard Recommended Practice for Description of Soil (Visual-Manual Procedures)*. Collected soil samples were placed in plastic jars, sealed, labeled, and transmitted to our laboratory for further examination and appropriate testing.

Standard penetration tests (SPTs) were performed in substantial accordance ASTM Test Designation D 1586 using a 2.0-inch outside diameter split-spoon sampler. The sampler was driven into the undisturbed soil ahead of the auger bit with a 140-pound automatic hammer falling a distance of 30 inches. The number of blows required to drive the sampler for the final foot of soil penetration, or part thereof, is noted on the boring logs adjacent to the appropriate sample notation. These blow counts are unadjusted standard penetration resistance values (N-value). This value is used to characterize the relative density of sandy soils or consistency of clayey soils. It should be noted that the automatic hammer is more efficient (delivers more energy to the sampler) than the system used to develop the standard correlation used in the geotechnical engineering community.

Exploration locations were determined in the field by pacing from existing site features. Ground surface elevations for the explorations were estimated by interpolation from contour lines shown on a previous site topographic survey provided by Triad Associates. It should be noted that locations of the explorations are considered accurate only to the degree implied by the method used.

The logs included in this report depict subsurface conditions only at the specified location and at the date designated on the logs. Soil and groundwater conditions at other locations may differ from conditions occurring at these locations. Also, the passage of time may result in a change in the conditions at these locations. Information presented on the summary logs represents our interpretation of the field logs and results of laboratory examination and tests of selected samples. The stratification lines on the logs represent approximate boundaries between soil types. Actual transitions of varying soil strata may be more gradual in the field.

Laboratory Testing

Collected soil samples were returned to our laboratory for further examination and limited testing. Samples were checked against field log descriptions, which were updated where appropriate in general accordance with ASTM D-2487, *Standard Test Method for Classification of Soils for Engineering Purposes.*

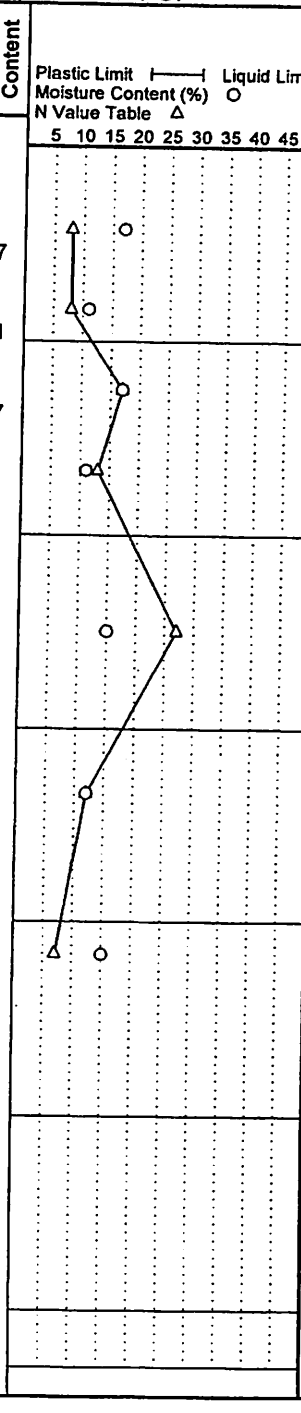
Representative samples were selected for testing to evaluate general physical properties and engineering characteristics of the materials encountered. Natural moisture content determinations and grain size analyses were performed in general accordance with the ASTM D 2216 and ASTM D 422 test procedures, respectively. Moisture content determination results are shown at the respective sample depths on the exploration logs in Appendix A. Samples with grain size analyses are identified on the logs with the GS symbol followed by the amount finer than the U.S. No. 200 sieve, in the Remarks column. The results are presented in the form of grain size distribution curves on Figures A-17 through A-23.

Boring B-3

Location: Upper mall, proposed hotel, west end
Elevation: 137 feet **Datum:** Assumed
Type of Boring: HSA with automatic SPT hammer
Started: 04/26/04 **Completed:** 04/26/04

Total Depth: 26.5 feet
Drill Rig: CME 75
Driller: PSI

Elevation	Depth	Graphic Log	USCS	Description of Materials (Classification)	Sampler	Blows/6"	N-Value	Moisture Content	Remarks
	0		SM	Approx. 4" asphalt pavement Gray silty SAND with gravel (moist to wet, loose) (FILL)		3 5 3	8	17	
132	6		ML	Gray clayey SILT with scattered pockets of yellow- brown medium sand (moist, stiff)		2 4 4	8	11	
						4 8 9	17	17	
126	12		SM	Gray-brown silty fine to medium SAND with trace gravel (moist, medium dense)		3 5 8	13	11	
120	18			- interbedded with brown medium to coarse grained sand		6 11 16	27	15	
114	24		SM	Gray silty fine to coarse SAND with gravel (wet, medium dense)		1 7 5	12	12	GS: -#200 = 19%
			GM	Gray silty GRAVEL with medium sand (wet, loose) (Blow counts suspect)		5 3 4	7	15	
108	30			End of Boring.					
102	36								



Notes:
Stratigraphic contacts are based on interpretations and are approximate. Contacts may vary from those shown or may be more gradual.
Soil and groundwater conditions encountered during construction may differ from those shown on the log.

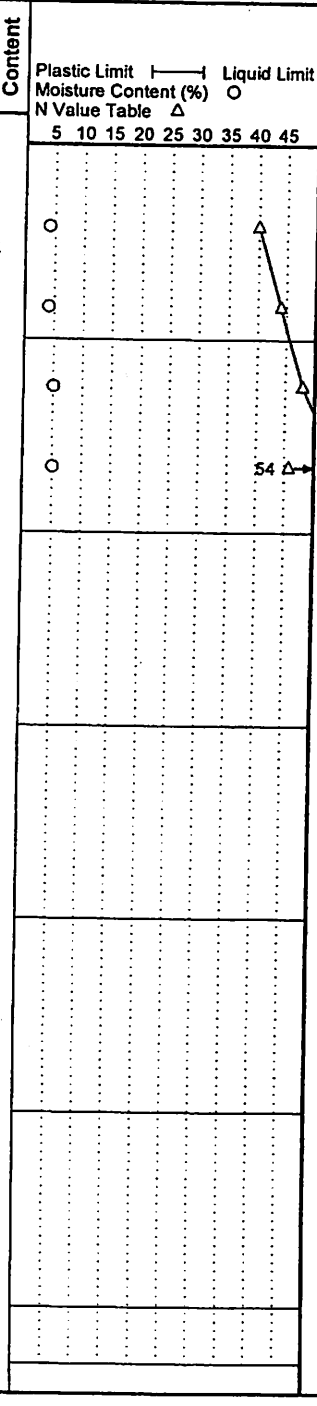
Project No.: 875-45083	Developers Diversified Realty	psi Information To Build On
Date: June 2004	Totem Lake Malls Renovation	Engineering • Consulting • Testing
Logged By: S. Johnson	12500 Totem Lake Boulevard	
Checked By: T. Hull	Kirkland, Washington	Figure A-3 (1 of 1)

Boring B-4

Location: Upper mall, proposed garage, south end & hotel, east end
Elevation: 140 **feet** **Datum:** Assumed
Type of Boring: HSA with automatic SPT hammer
Started: 04/27/04 **Completed:** 04/27/04

Total Depth: 11.5 **feet**
Drill Rig: CME 75
Driller: PSI

Elevation	Depth	Graphic Log	USCS	Description of Materials (Classification)	Sampler	Blows/6"	N-Value	Moisture Content	Remarks
	0								
			SP	Approx. 4" asphalt pavement and 1" crushed rock base					
138				Brown fine to medium SAND with some coarse sand (damp, dense to very dense)		9 18 22	40	4	
	6					13 21 23	44	4	
132						13 23 25	48	5	
						8 24 30	54	5	
	12			End of Boring. No groundwater encountered.					
126									
	18								
120									
	24								
114									
	30								
108									
	36								



Notes:
Stratigraphic contacts are based on interpretations and are approximate. Contacts may vary from those shown or may be more gradual.
Soil and groundwater conditions encountered during construction may differ from those shown on the log.

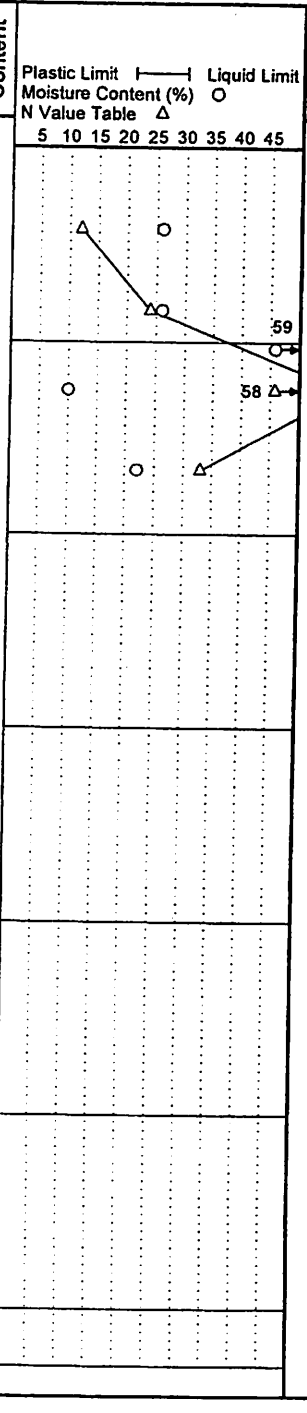
Project No.: 875-45083	Developers Diversified Realty	psi Information To Build On
Date: June 2004	Totem Lake Malls Renovation	Engineering • Consulting • Testing
Logged By: T. Huntting	12500 Totem Lake Boulevard	
Checked By: T. Hull	Kirkland, Washington	Figure A-4 (1 of 1)

Boring B-5

Location: Upper mall, proposed garage, middle
Elevation: 140 feet **Datum:** Assumed
Type of Boring: HSA with automatic SPT hammer
Started: 04/27/04 **Completed:** 04/27/04

Total Depth: 11.5 feet
Drill Rig: CME 75
Driller: PSI

Elevation	Depth	Graphic Log	USCS	Description of Materials (Classification)	Sampler	Blows/6"	N-Value	Moisture Content	Remarks
	0		SM-ML	Approx. 4" asphalt pavement					
138				Gray silty very fine SAND to fine sandy SILT with trace organics (moist, medium dense)		3 6 6	12	26	
	6		OL	Dark brown organic SILT and PEAT to clayey SILT (wet, soft)		4 9 15	24	26 59	
132			SM	Gray silty fine to medium SAND (moist to wet, very dense)		13 25 33	58	10	
			ML	Gray fine sandy SILT with thin seam of peat (wet, hard)		8 14 19	33	22	
	12			End of Boring.					
126									
	18								
120									
	24								
114									
	30								
108									
	36								



Notes:
Stratigraphic contacts are based on interpretations and are approximate. Contacts may vary from those shown or may be more gradual.
Soil and groundwater conditions encountered during construction may differ from those shown on the log.

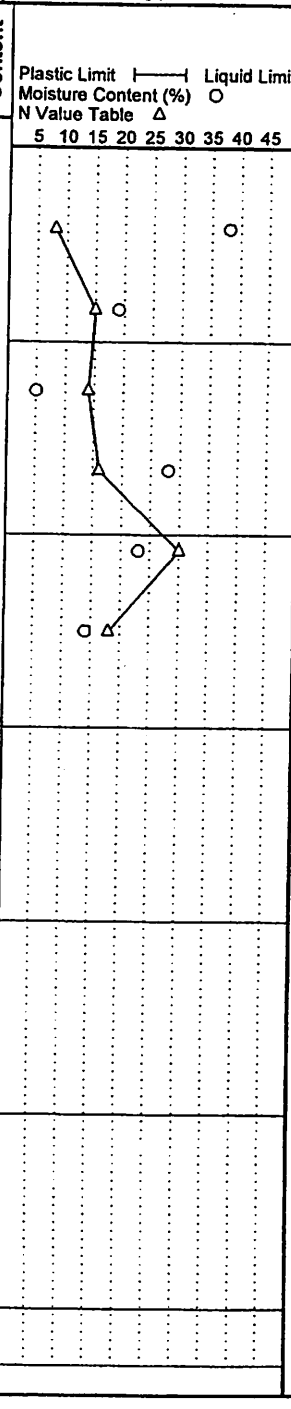
Project No.: 875-45083	Developers Diversified Realty	psi Information To Build On
Date: June 2004	Totem Lake Malls Renovation	Engineering • Consulting • Testing
Logged By: T. Huntting	12500 Totem Lake Boulevard	
Checked By: T. Hull	Kirkland, Washington	Figure A-5 (1 of 1)

Boring B-6

Location: Upper mall, proposed north building, north corner
Elevation: 140 **feet** **Datum:** Assumed
Type of Boring: HSA with automatic SPT hammer
Started: 04/27/04 **Completed:** 04/27/04

Total Depth: 16.5 **feet**
Drill Rig: CME 75
Driller: PSI

Elevation	Depth	Graphic Log	USCS	Description of Materials (Classification)	Sampler	Blows/6"	N-Value	Moisture Content
	0							
			SM	Approx. 4" asphalt pavement				
138				Brown to dark brown silty fine to medium SAND (moist, loose) (FILL)				
			ML	Yellow and light red-brown clayey SILT (moist, firm)	◪	2 2 6	8	38
			SP-SM	Red-brown silty SAND interbedded with fine to coarse sand (moist, medium dense)	◪	4 7 8	15	19
	6							
132			SW-SM	Gray-brown fine to coarse SAND with gravel and lenses of silty sand (moist, medium dense)	◪	2 7 7	14	5
			ML	Dark red-brown, red-brown, and olive brown clayey and sandy SILT interbedded with lenses of fine sand and sandy gravel (moist, stiff)	◪	5 6 10	16	28
	12				◪	4 9 21	30	23
126 ▽			GM	Red-brown silty GRAVEL (wet, medium dense)				
			SM	Gray-brown silty SAND with gravel (wet, medium dense)	◪	5 7 11	18	14
	18			End of Boring.				
120								
	24							
114								
	30							
108								
	36							



Remarks

Notes:
Stratigraphic contacts are based on interpretations and are approximate. Contacts may vary from those shown or may be more gradual.
Soil and groundwater conditions encountered during construction may differ from those shown on the log.

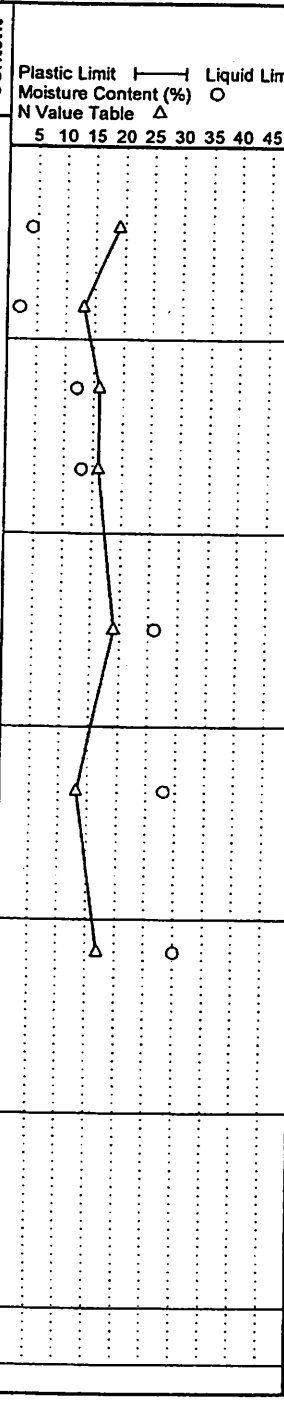
Project No.: 875-45083	Developers Diversified Realty	psi Information To Build On
Date: June 2004	Totem Lake Malls Renovation	Engineering • Consulting • Testing
Logged By: T. Huntting	12500 Totem Lake Boulevard	
Checked By: T. Hull	Kirkland, Washington	Figure A-6 (1 of 1)

Boring B-7

Location: Upper mall, proposed north building, west corner
Elevation: 139 **feet** **Datum:** Assumed
Type of Boring: HSA with automatic SPT hammer
Started: 04/27/04 **Completed:** 04/27/04

Total Depth: 26.5 **feet**
Drill Rig: CME 75
Driller: PSI

Elevation	Depth	Graphic Log	USCS	Description of Materials (Classification)	Sampler	Blows/6"	N-Value	Moisture Content	Remarks
	0			Approx. 4" asphalt pavement					
138			SP-SM	Red-brown sandy GRAVEL with trace to some silt (damp to moist, medium dense) (Outwash?)		8 10 9	19	4	
	6		GW	Red-brown to gray-brown fine to coarse sandy GRAVEL with trace silt (damp, medium dense) (Outwash?)		5 6 7	13	2	
132						7 8 8	16	12	
	12		GM	Brown silty GRAVEL with sand (moist to wet, medium dense)		6 8 8	16	13	
126									
	18		SM-ML	Gray fine to medium SAND interbedded with very fine sandy silt with scattered organics (wet, medium dense)		5 9 10	19	26	
120				- color change to gray and gray-brown, contains gravel		3 5 8	13	28	
	24					2 7 10	17	30	
114				End of Boring.					
	30								
108									
	36								
102									



Notes:
Stratigraphic contacts are based on interpretations and are approximate. Contacts may vary from those shown or may be more gradual.
Soil and groundwater conditions encountered during construction may differ from those shown on the log.

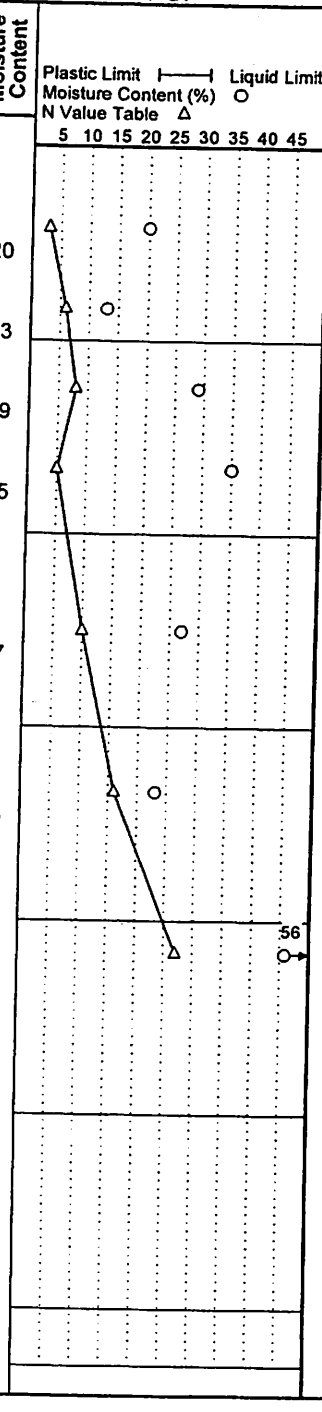
Project No.: 875-45083	Developers Diversified Realty	psi Information To Build On
Date: June 2004	Totem Lake Malls Renovation	Engineering • Consulting • Testing
Logged By: T. Huntting	12500 Totem Lake Boulevard	Figure A-7
Checked By: T. Hull	Kirkland, Washington	(1 of 1)

Boring B-8

Location: Upper mall, proposed south building, west corner
Elevation: 134 feet **Datum:** Assumed
Type of Boring: HSA with automatic SPT hammer
Started: 04/27/04 **Completed:** 04/27/04

Total Depth: 26.5 feet
Drill Rig: CME 75
Driller: PSI

Elevation	Depth	Graphic Log	USCS	Description of Materials (Classification)	Sampler	Blows/6"	N-Value	Moisture Content	Remarks
	0			Approx. 4" asphalt pavement					
132			SM	Dark brown silty GRAVEL with sand (moist, very loose) (FILL)					
			GM	Brown and gray silty GRAVEL with woody organics (moist to wet, very loose) (FILL)		3 1 2	3	20	
	6		ML	Mottled gray-brown, brown, and red SILT and sandy SILT with clay (moist, firm to stiff)		5 3 3	6	13	
126				- interbedded with orange-brown sand and gravel (moist, loose)		4 4 4	8	29	
	12		ML	Blue-gray fine sandy SILT interbedded with lenses of silty medium sand and gray mottled with red silt (moist, firm to stiff)		2 2 3	5	35	
120						2 4 6	10	27	
	18								
114			SM	Orange-brown silty fine to medium SAND interbedded with silty GRAVEL with sand (wet, loose to medium dense)		3 6 10	16	23	
	24		ML	Dark red-brown and gray-brown SILT with wood and other organic matter (wet, very stiff)		7 12 15	27	56	
108				End of Boring.					
	30								
102									
	36								



Notes:
Stratigraphic contacts are based on interpretations and are approximate. Contacts may vary from those shown or may be more gradual.
Soil and groundwater conditions encountered during construction may differ from those shown on the log.

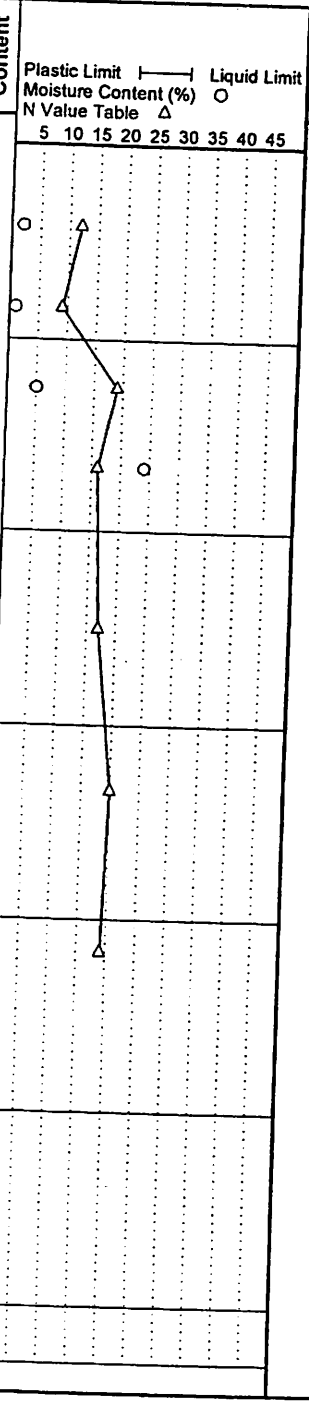
Project No.: 875-45083	Developers Diversified Realty	psi Information To Build On
Date: June 2004	Totem Lake Malls Renovation	Engineering • Consulting • Testing
Logged By: T. Huntting	12500 Totem Lake Boulevard	
Checked By: T. Hull	Kirkland, Washington	Figure A-8 (1 of 1)

Boring B-9

Location: Upper mall, proposed north building, south corner
Elevation: 136 **feet** **Datum:** Assumed
Type of Boring: HSA with automatic SPT hammer
Started: 04/28/04 **Completed:** 04/28/04

Total Depth: 26.5 **feet**
Drill Rig: CME 75
Driller: PSI

Elevation	Depth	Graphic Log	USCS	Description of Materials (Classification)	Sampler	Blows/6"	N-Value	Moisture Content	Remarks
	0			Approx. 4" asphalt pavement					
			GP-GM	Red-brown sandy GRAVEL with silt (damp to moist, loose to medium dense) (Outwash?)					
132						4 7 5	12	2	
	6					4 4 5	9	1	
						7 9 10	19	5	
126									
			ML	Brown with lenses of orange fine sandy SILT (moist, stiff)		4 7 9	16	24	
	12		GP-GM	Light yellow and brown sandy GRAVEL with silt (wet, medium dense)					
120						4 7 10	17		GS: -#200 = 12%
	18								
			ML	Brown sandy SILT with gravel (wet, stiff)		4 8 12	20		
114			GM	Brown silty GRAVEL with sand (wet, medium dense)					
	24		SM-ML	Blue-gray, brown-gray, and gray silty fine to medium SAND to sandy SILT with lenses of peat (wet, medium dense)		7 8 9	19		
108				End of Boring.					
	30								
102									
	36								



Notes:
Stratigraphic contacts are based on interpretations and are approximate. Contacts may vary from those shown or may be more gradual.
Soil and groundwater conditions encountered during construction may differ from those shown on the log.

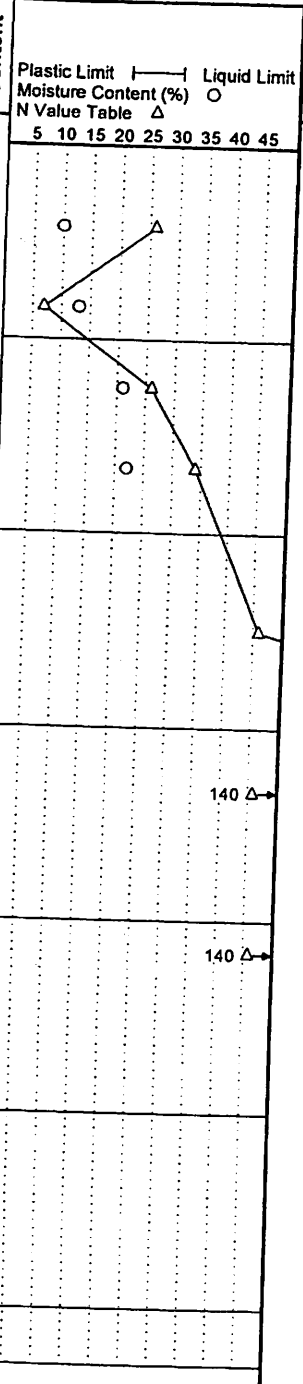
Project No.: 875-45083	Developers Diversified Realty	psi Information To Build On
Date: June 2004	Totem Lake Malls Renovation	Engineering • Consulting • Testing
Logged By: T. Huntting	12500 Totem Lake Boulevard	
Checked By: T. Hull	Kirkland, Washington	Figure A-9 (1 of 1)

Boring B-12

Location: Lower mall, proposed south garage, south end
Elevation: 130 feet **Datum:** Assumed
Type of Boring: HSA/Mud Rotary with automatic SPT hammmer
Started: 04/28/04 **Completed:** 04/29/04

Total Depth: 25.5 feet
Drill Rig: CME 75
Driller: PSI

Elevation	Depth	Graphic Log	USCS	Description of Materials (Classification)	Sampler	Blows/6"	N-Value	Moisture Content	Remarks
	0			Approx. 4" asphalt pavement					
			GM	Gray-brown sandy GRAVEL with silt (damp to moist, medium dense) (FILL)		7 10 16	26	10	
126	6					2 3 4	7	13	
			SP-SM	Gray fine to medium SAND with trace to some silt (moist to wet, medium dense to dense) - with orange staining at 7.5'		4 11 15	26	21	
120	12					5 14 20	34	22	GS: -#200 = 17%
				- gravelly zone					
114	18			- with lense of medium sand, scattered fine gravel and scattered wood		5 16 30	46		
				- with gravel and possible cobbles		14 35/3"	140		
108	24		GP-GM	Gray sandy fine to coarse GRAVEL with trace to some silt (wet, very dense)					
				End of Boring.		35/6"	140		
102									
	30								
96									
	36								



Notes:
Stratigraphic contacts are based on interpretations and are approximate. Contacts may vary from those shown or may be more gradual.
Soil and groundwater conditions encountered during construction may differ from those shown on the log.
Started with hollow stem augers. Abandoned at 20 feet due to heaving gravel. Moved 4 feet and redrilled using mud rotary.

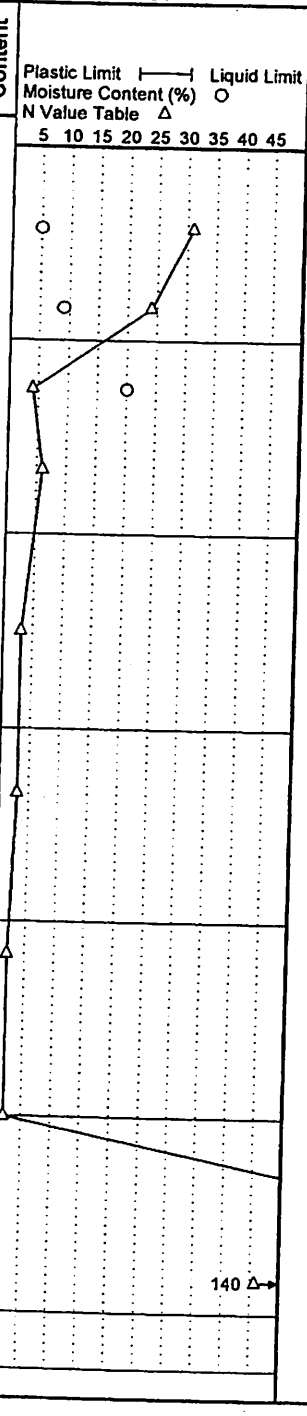
Project No.: 875-45083	Developers Diversified Realty	psi Information To Build On
Date: June 2004	Totem Lake Malls Renovation	Engineering • Consulting • Testing
Logged By: T. Huntting	12500 Totem Lake Boulevard	
Checked By: T. Hull	Kirkland, Washington	Figure A-12 (1 of 1)

Boring B-11

Location: Upper mall, proposed south building, south corner
Elevation: 133 **feet** **Datum:** Assumed
Type of Boring: HSAm with automatic SPT hammer
Started: 04/28/04 **Completed:** 04/28/04

Total Depth: 35.8 **feet**
Drill Rig: CME 75
Driller: PSI

Elevation	Depth	Graphic Log	USCS	Description of Materials (Classification)	Sampler	Blows/6"	N-Value	Moisture Content	Remarks
	0								
132			SM	Approx. 4" asphalt pavement					
				Gray-brown silty fine to medium SAND with gravel (moist, loose) (FILL)					
			GM	Light gray silty fine to coarse GRAVEL with sand (damp, medium dense) (FILL)		6 16 15	31	5	
	6					4 10 14	24	9	
126			ML	Gray, blue-gray, and gray-brown sandy SILT with gravel (moist, soft) (FILL?)		1 2 2	4	20	
			GM	Brown and gray silty fine to coarse GRAVEL with sand (wet, loose to very loose)		1 3 3	6		
	12								
120									
				- color change to orange-brown, interbedded with gravelly silt with sand		1 1 2	3		
	18								
114									
				- color change to brown, more sandy		2 1 2	3		GS: #200 = 28%
			PEAT	Dark red-brown to black PEAT and organic silt with wood (wet, very soft)					
	24								
108						1 1 1	2		
				- gravelly zone					
	30								
102						0 1 1	2		
	36		GP-GM	Gray sandy GRAVEL with some silt (wet, very dense)		29 35/3"	140		
96				End of Boring.					



Notes:
Stratigraphic contacts are based on interpretations and are approximate. Contacts may vary from those shown or may be more gradual.
Soil and groundwater conditions encountered during construction may differ from those shown on the log.

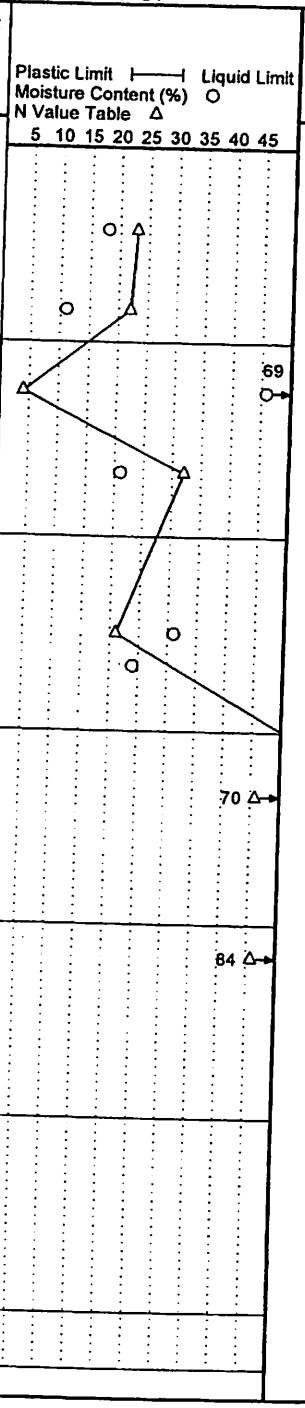
Project No.: 875-45083	Developers Diversified Realty	psi Information To Build On
Date: June 2004	Totem Lake Malls Renovation	Engineering • Consulting • Testing
Logged By: T. Huntting	12500 Totem Lake Boulevard	
Checked By: T. Hull	Kirkland, Washington	Figure A-11 (1 of 1)

Boring B-14

Location: Lower mall, proposed restaurant, west end
Elevation: 127 feet **Datum:** Assumed
Type of Boring: Mud Rotary with automatic SPT hammer
Started: 04/30/04 **Completed:** 04/30/04

Total Depth: 25.4 feet
Drill Rig: CME 75
Driller: PSI

Elevation	Depth	Graphic Log	USCS	Description of Materials (Classification)	Sampler	Blows/6"	N-Value	Moisture Content	Remarks
	0			Approx. 4" asphalt pavement					
126			GM	Brown silty GRAVEL with sand (moist to wet, loose) (FILL)					
			SM	Gray with 3" lense of orange-brown silty fine to medium SAND interbedded with silty gravel with sand (mosit to wet, medium dense) (FILL)		6 11 12	23	18	
	6					12 12 10	22	11	
120			ML	Dark brown gravelly SILT with organics (wet, soft)		3 2 2	4	69	
	12		SM-ML	Light gray, orange-brown, and gray-brown silty fine SAND to very fine sandy SILT with scattered organics (wet, medium dense/very stiff)		5 11 21	32	21	
114									
			SP-SM	Gray fine to medium SAND with trace to some silt (wet, dense)		7 8 13	21	31 24	GS: -#200 = 11%
	18								
108			GW-GM	Gray sandy fine to coarse GRAVEL with some silt (wet, very dense)		35/6"	70		
	24								
102				End of Boring. Depth to groundwater approximate.		35/5"	84		
	30								
96									
	36								
90									



Notes:
Stratigraphic contacts are based on interpretations and are approximate. Contacts may vary from those shown or may be more gradual.
Soil and groundwater conditions encountered during construction may differ from those shown on the log.

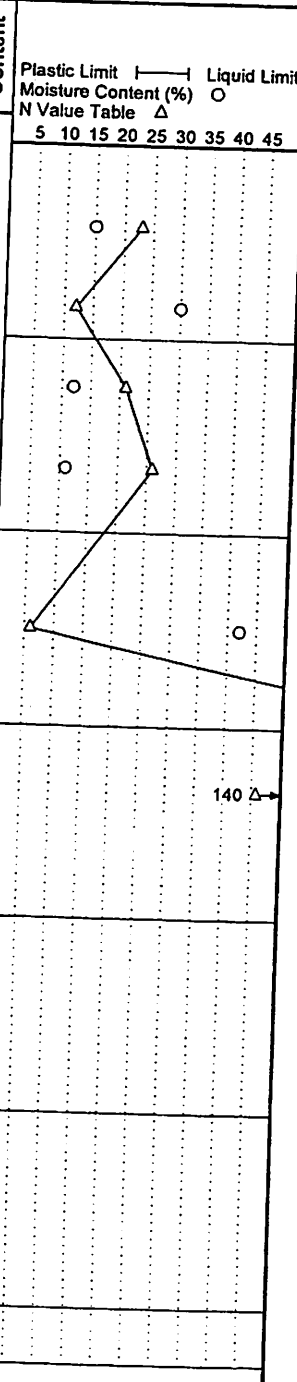
Project No.: 875-45083	Developers Diversified Realty	psi Information To Build On
Date: June 2004	Totem Lake Malls Renovation	Engineering • Consulting • Testing
Logged By: T. Huntting	12500 Totem Lake Boulevard	
Checked By: T. Hull	Kirkland, Washington	Figure A-14 (1of 1)

Boring B-15

Location: Lower mall, proposed restaurant, east end
Elevation: 127 feet **Datum:** Assumed
Type of Boring: Mud Rotary with automatic SPT hammer
Started: 04/30/04 **Completed:** 04/30/04

Total Depth: 20.3 feet
Drill Rig: CME 75
Driller: PSI

Elevation	Depth	Graphic Log	USCS	Description of Materials (Classification)	Sampler	Blows/6"	N-Value	Moisture Content	Remarks
126	0		GW	Approx. 4" asphalt pavement					
			GM	Brown-gray sandy GRAVEL (damp, medium dense) (Base Course)					
				Brown very silty GRAVEL to gravelly SILT (moist, medium dense) (FILL) - color change to gray, less silty		8 13 10	23	15	
	6		SM	Brown medium to coarse SAND with silt (wet, medium dense) (FILL?)		7 6 6	12	30	
120 ▽			GM-SM	Gray-brown silty SAND to silty GRAVEL (wet, medium dense)		5 10 11	21	12	
	12					11 16 10	26	11	
114			OL	Dark brown organic SILT (wet, very soft)					
			ML	Brown sandy silt with organics (wet, soft)					
	18		SP-SM	Brown very fine sandy SILT interbedded with gray fine to medium SAND with trace to some silt (wet, loose)		1 2 4	6	42	
108			GW-GM	Gray sandy fine to coarse GRAVEL with silt (wet, very dense)		35/3"	140		
				End of Boring. Depth to groundwater approximate.					
	24								
102									
	30								
96									
	36								
90									



Notes:
Stratigraphic contacts are based on interpretations and are approximate. Contacts may vary from those shown or may be more gradual.
Soil and groundwater conditions encountered during construction may differ from those shown on the log.

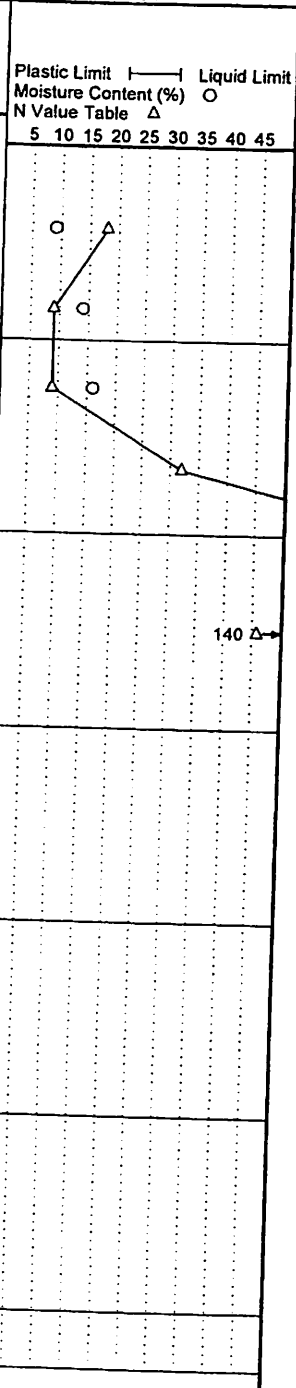
Project No.: 875-45083	Developers Diversified Realty	psi Information To Build On
Date: June 2004	Totem Lake Malls Renovation	Engineering • Consulting • Testing
Logged By: T. Huntting	12500 Totem Lake Boulevard	
Checked By: T. Hull	Kirkland, Washington	Figure A-15 (1 of 1)

Boring B-16

Location: Lower mall, proposed expansion of south building, northeast side
Elevation: 129 **feet** **Datum:** Assumed
Type of Boring: Mud Rotary with automatic SPT hammer
Started: 04/30/04 **Completed:** 04/30/04

Total Depth: 15.8 **feet**
Drill Rig: CME 75
Driller: PSI

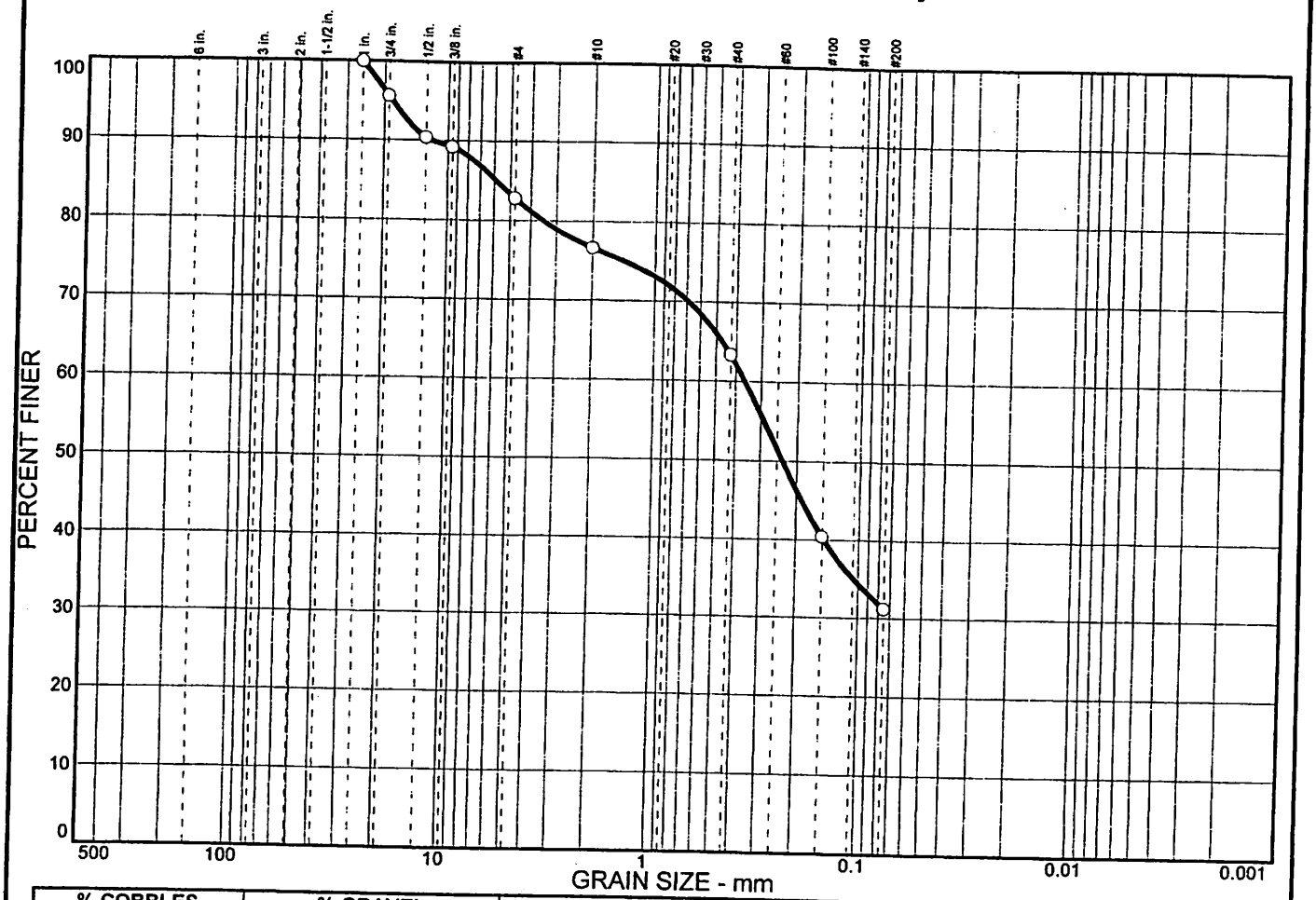
Elevation	Depth	Graphic Log	USCS	Description of Materials (Classification)	Sampler	Blows/6"	N-Value	Moisture Content	Remarks
	0			Approx. 4" asphalt pavement					
126			GM	Red-brown to gray-brown silty GRAVEL with sand (moist, loose to medium dense) (FILL)		11 12 6	18	9	
	6					7 6 3	9	14	
120				Gray-brown silty GRAVEL with sand (wet, loose)		5 5 4	9	16	
	12		SM	Gray-brown silty SAND with gravel (wet, very dense)		8 13 19	32		
114			GP-GM	Gray-brown sandy GRAVEL with silt (wet, very dense)		14 35/3"	140		
	18			End of Boring. Depth to groundwater approximate.					
108									
	24								
102									
	30								
96									
	36								



Notes:
Stratigraphic contacts are based on interpretations and are approximate. Contacts may vary from those shown or may be more gradual.
Soil and groundwater conditions encountered during construction may differ from those shown on the log.

Project No.: 875-45083	Developers Diversified Realty	psi Information To Build On
Date: June 2004	Totem Lake Malls Renovation	Engineering • Consulting • Testing
Logged By: T. Huntting	12500 Totem Lake Boulevard	
Checked By: T. Hull	Kirkland, Washington	Figure A-16 (1 of 1)

Particle Size Distribution Report



% COBBLES	% GRAVEL	% SAND	% SILT	% CLAY
0.0	17.2	51.6	31.2	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1 in.	100.0		
3/4 in.	95.6		
1/2 in.	90.4		
3/8 in.	89.2		
#4	82.8		
#10	76.6		
#40	63.3		
#100	40.4		
#200	31.2		

* (no specification provided)

Soil Description

Drill sample B-2 @ minus 15' elevation.
Silty sand with gravel.

Atterberg Limits

PL= n/a LL= n/a PI= n/a

Coefficients

D_{85}= 5.84 D_{60}= 0.360 D_{50}= 0.234
D_{30}= D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= SM AASHTO= A-2-4(0)

Remarks

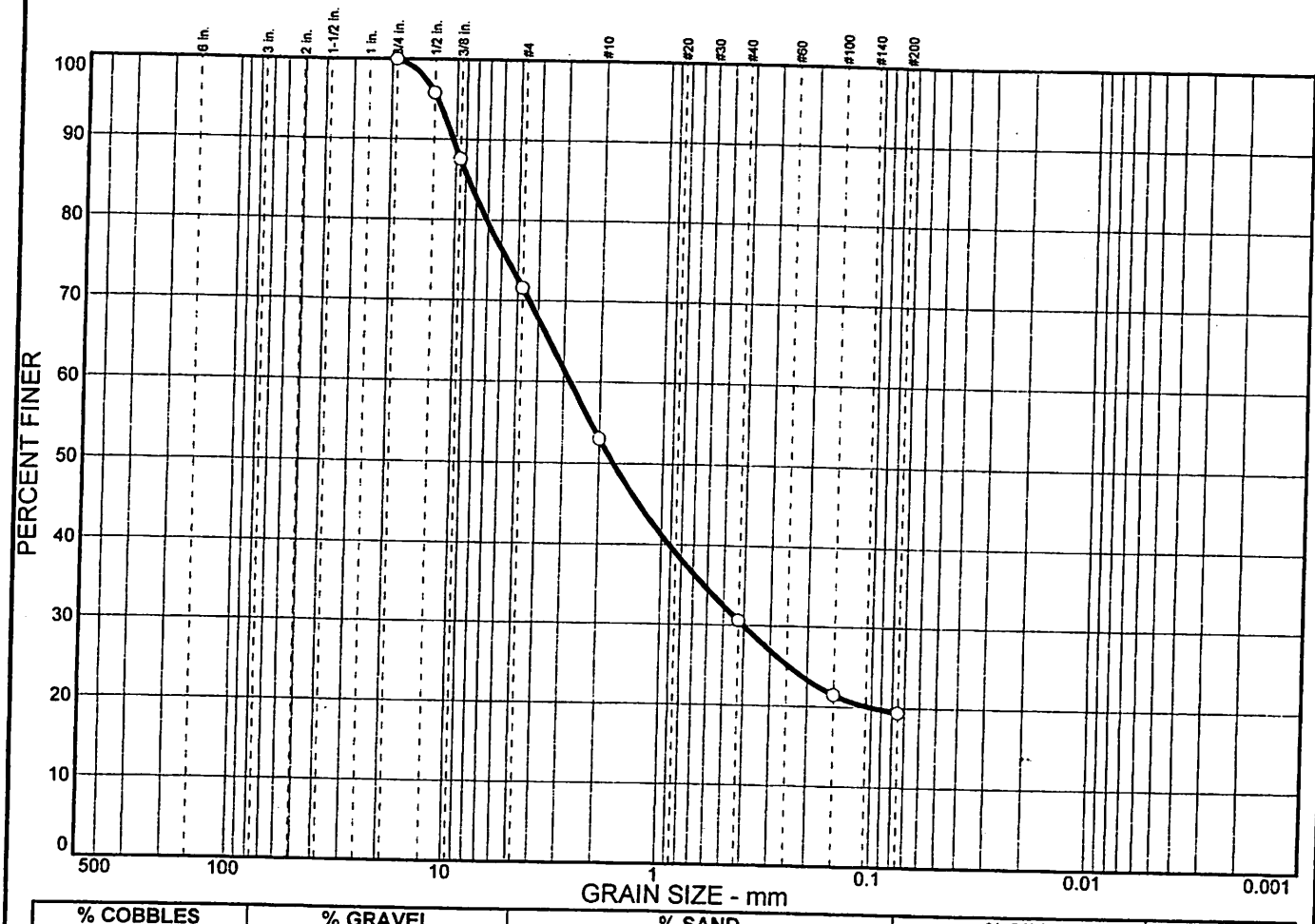
Tested by CH
Reviewed by: DB

Sample No.: FR42670-B2 **Source of Sample:** Native **Date:** 5/12/04
Location: **Elev./Depth:**

PROFESSIONAL SERVICE INDUSTRIES

Client: Developers Diversified Realty
Project: Totem Lake Malls Renovation
Project No: 875-45083 **Figure** A-17

Particle Size Distribution Report



% COBBLES	% GRAVEL	% SAND	% SILT	% CLAY
0.0	28.4	52.2	19.4	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3/4 in.	100.0		
1/2 in.	95.8		
3/8 in.	87.6		
#4	71.6		
#10	53.0		
#40	30.6		
#100	21.5		
#200	19.4		

* (no specification provided)

Soil Description

Drill sample B-3 @ minus 20' elevation.
Silty sand with gravel.

Atterberg Limits

PL= n/a LL= n/a PI= n/a

Coefficients

D_{85}= 8.69 D_{60}= 2.79 D_{50}= 1.71
D_{30}= 0.402 D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= SM AASHTO= A-1-b

Remarks

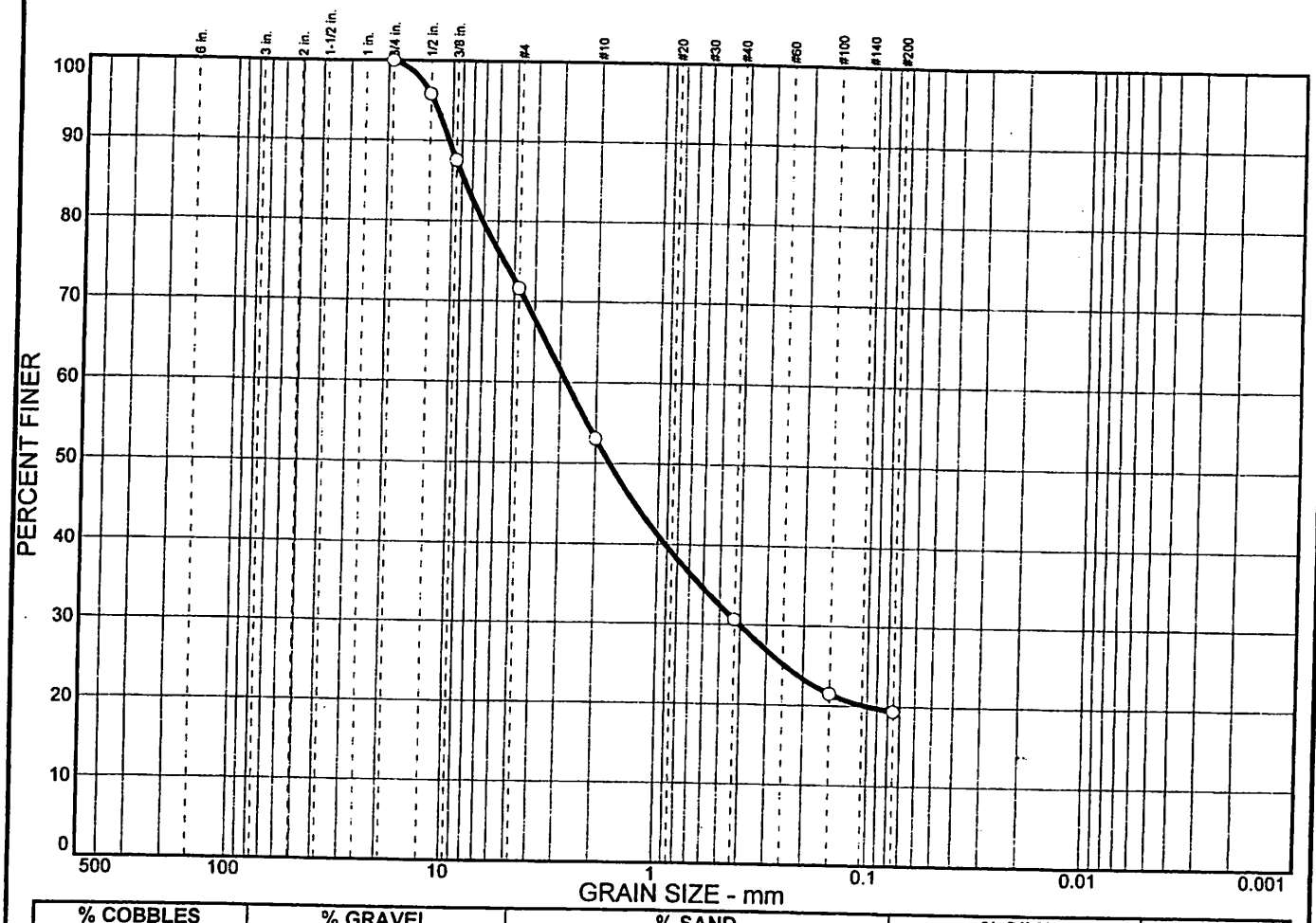
Tested by: CH
Reviewed by: DB

Sample No.: FR42670-B3 **Source of Sample:** Native **Date:** 5/12/04
Location: **Elev./Depth:**

PROFESSIONAL SERVICE INDUSTRIES

Client: Developers Diversified Realty
Project: Totem Lake Malls Renovation
Project No: 875-45083 **Figure** A-18

Particle Size Distribution Report



% COBBLES	% GRAVEL	% SAND	% SILT	% CLAY
0.0	28.4	52.2	19.4	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3/4 in.	100.0		
1/2 in.	95.8		
3/8 in.	87.6		
#4	71.6		
#10	53.0		
#40	30.6		
#100	21.5		
#200	19.4		

* (no specification provided)

Soil Description

Drill sample B-3 @ minus 20' elevation.
Silty sand with gravel.

Atterberg Limits

PL= n/a LL= n/a PI= n/a

Coefficients

D_{85}= 8.69 D_{60}= 2.79 D_{50}= 1.71
D_{30}= 0.402 D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= SM AASHTO= A-1-b

Remarks

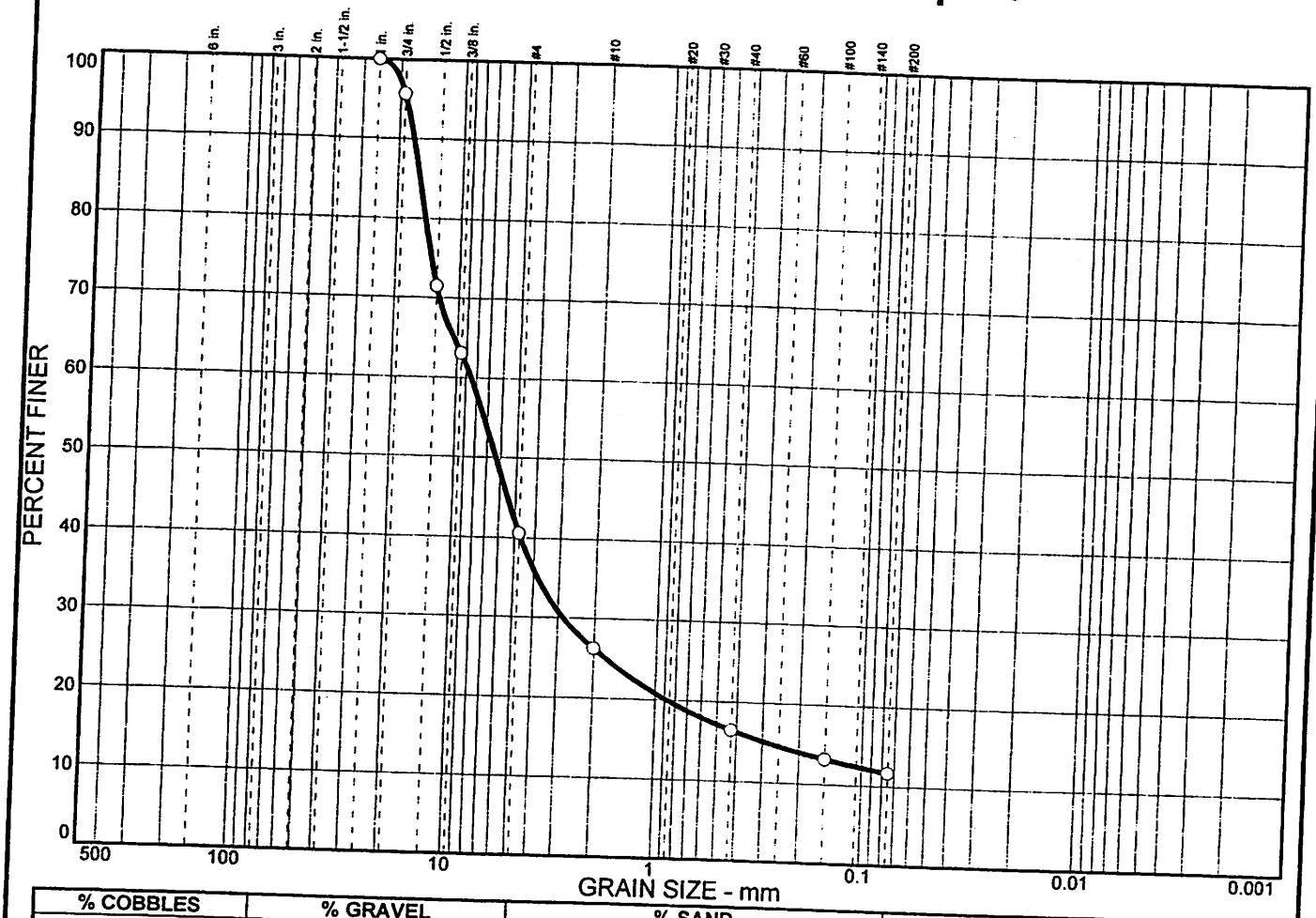
Tested by: CH
Reviewed by: DB

Sample No.: FR42670-B3 **Source of Sample:** Native **Date:** 5/12/04
Location: **Elev./Depth:**

PROFESSIONAL SERVICE INDUSTRIES

Client: Developers Diversified Realty
Project: Totem Lake Malls Renovation
Project No: 875-45083 **Figure** A-18

Particle Size Distribution Report



% COBBLES	% GRAVEL	% SAND	% SILT	% CLAY
0.0	59.4	28.9	11.7	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1 in.	100.0		
3/4 in.	95.7		
1/2 in.	71.5		
3/8 in.	63.1		
#4	40.6		
#10	26.2		
#40	16.5		
#100	13.2		
#200	11.7		

* (no specification provided)

Soil Description

Drill sample B-9 @ minus 15' elevation.
Poorly graded gravel with silt and sand.

Atterberg Limits

PL= n/a LL= n/a PI= n/a

Coefficients

D_{85}= 15.8 D_{60}= 8.49 D_{50}= 6.30
D_{30}= 2.83 D_{15}= 0.282 D_{10}=
C_u= C_c=

Classification

USCS= GP-GM AASHTO= A-1-a

Remarks

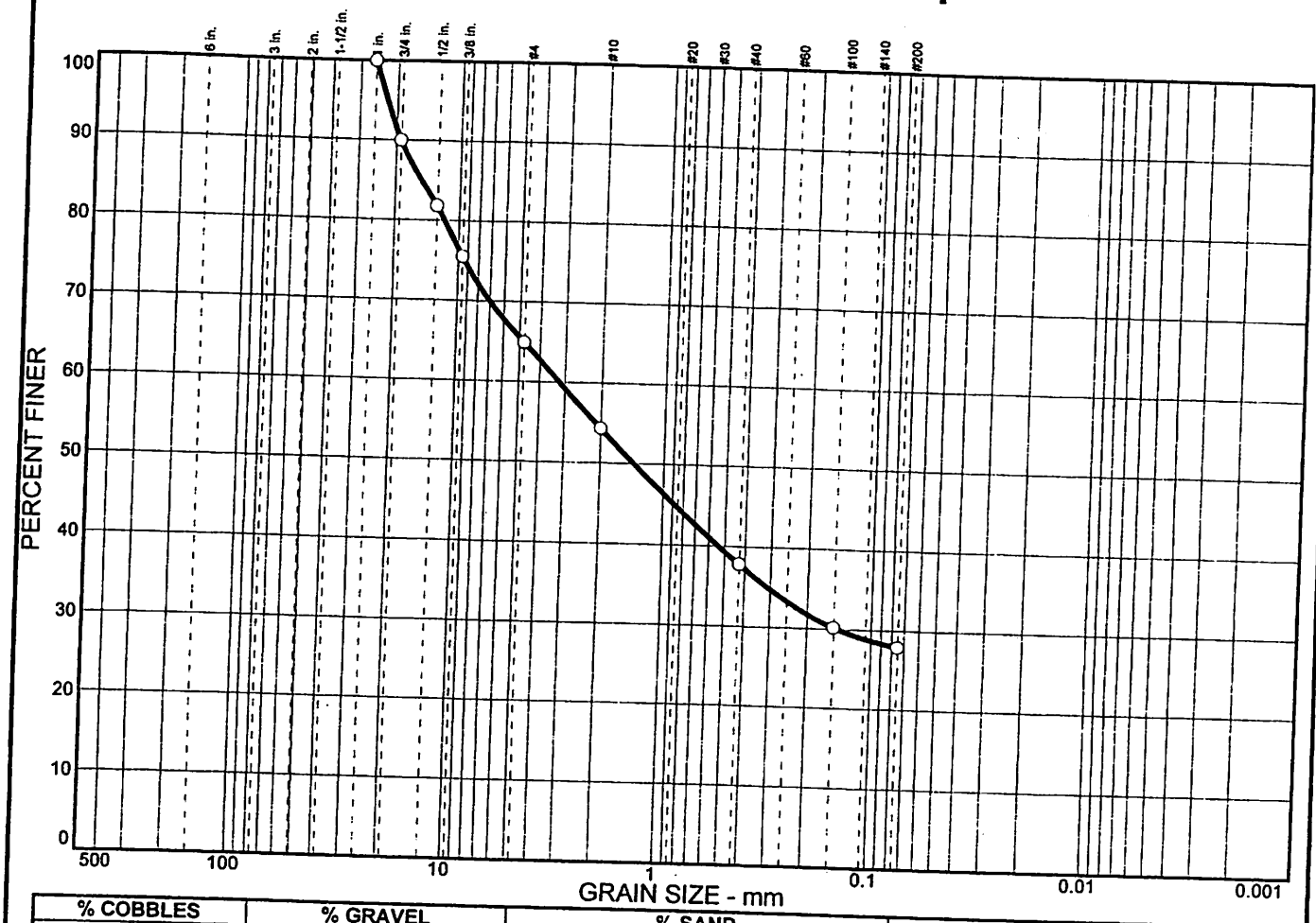
Tested by: CH
Reviewed by: DB

Sample No.: FR42670-B9 **Source of Sample:** Native **Date:** 5/12/04
Location: **Elev./Depth:**

PROFESSIONAL SERVICE INDUSTRIES

Client: Developers Diversified Realty
Project: Totem Lake Malls Renovation
Project No: 875-45083 **Figure** A-19

Particle Size Distribution Report



% COBBLES	% GRAVEL	% SAND	% SILT	% CLAY
0.0	35.1	37.0	27.9	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1 in.	100.0		
3/4 in.	90.0		
1/2 in.	81.8		
3/8 in.	75.5		
#4	64.9		
#10	54.3		
#40	37.8		
#100	30.2		
#200	27.9		

* (no specification provided)

Soil Description

Drill sample B-11 @ minus 20' elevation.
Silty sand with gravel.

Atterberg Limits

PL= n/a LL= n/a PI= n/a

Coefficients

D_{85}= 15.1 D_{60}= 3.20 D_{50}= 1.38
D_{30}= 0.144 D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= SM AASHTO= A-2-4(0)

Remarks

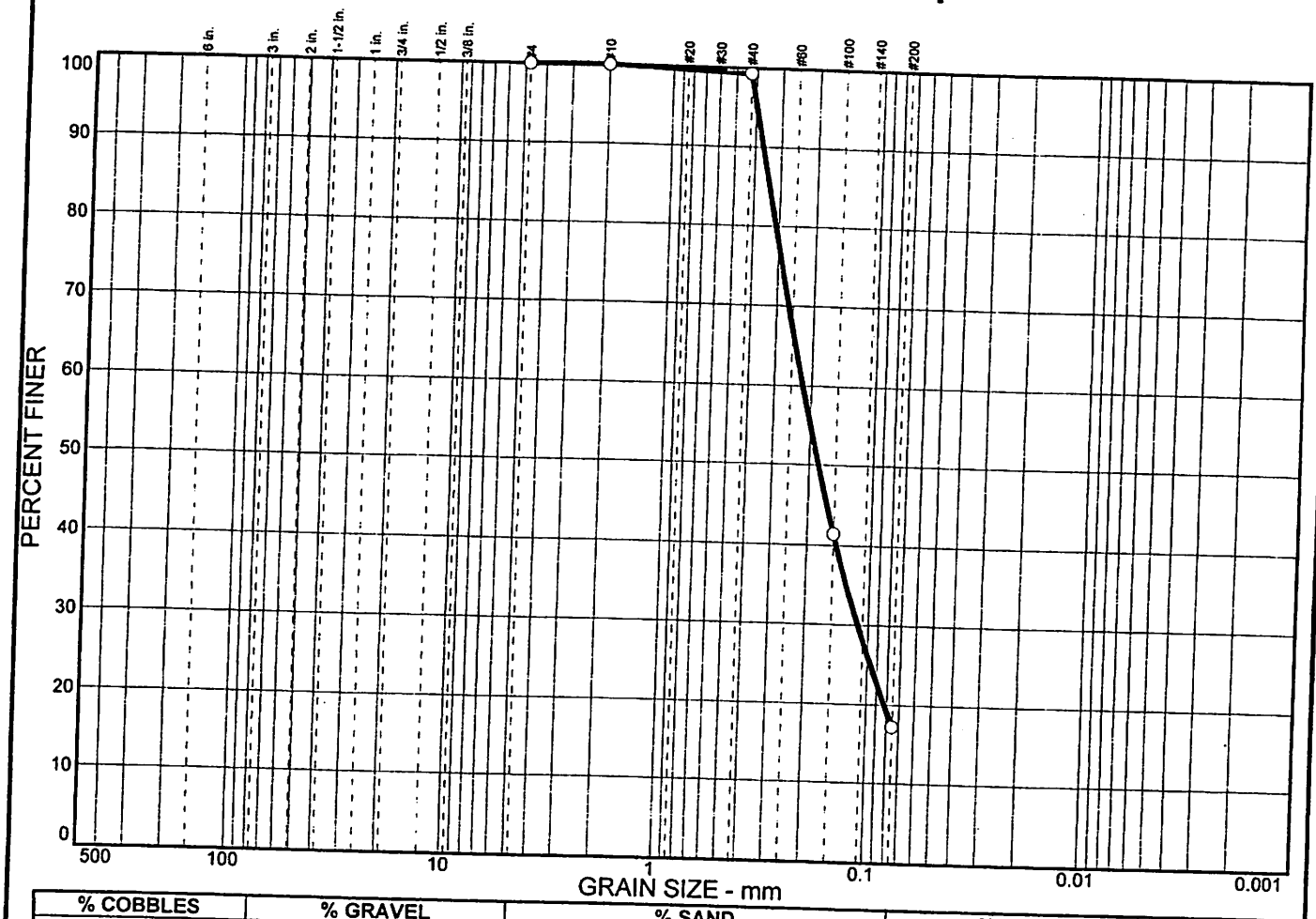
Tested by: CH
Reviewed by: DB

Sample No.: FR42670-B11 **Source of Sample:** Native **Date:** 5/12/04
Location: **Elev./Depth:**

PROFESSIONAL SERVICE INDUSTRIES

Client: Developers Diversified Realty
Project: Totem Lake Malls Renovation
Project No: 875-45083 **Figure** A-20

Particle Size Distribution Report



% COBBLES	% GRAVEL	% SAND	% SILT	% CLAY
0.0	0.0	82.8	17.2	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#4	100.0		
#10	100.0		
#40	99.3		
#100	41.4		
#200	17.2		

* (no specification provided)

Soil Description

Drill sample B-12 @ minus 10' elevation.
Silty sand.

Atterberg Limits

PL= n/a LL= n/a PI= n/a

Coefficients

D_{85}= 0.337 D_{60}= 0.219 D_{50}= 0.181
D_{30}= 0.112 D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= SM AASHTO= A-2-4(0)

Remarks

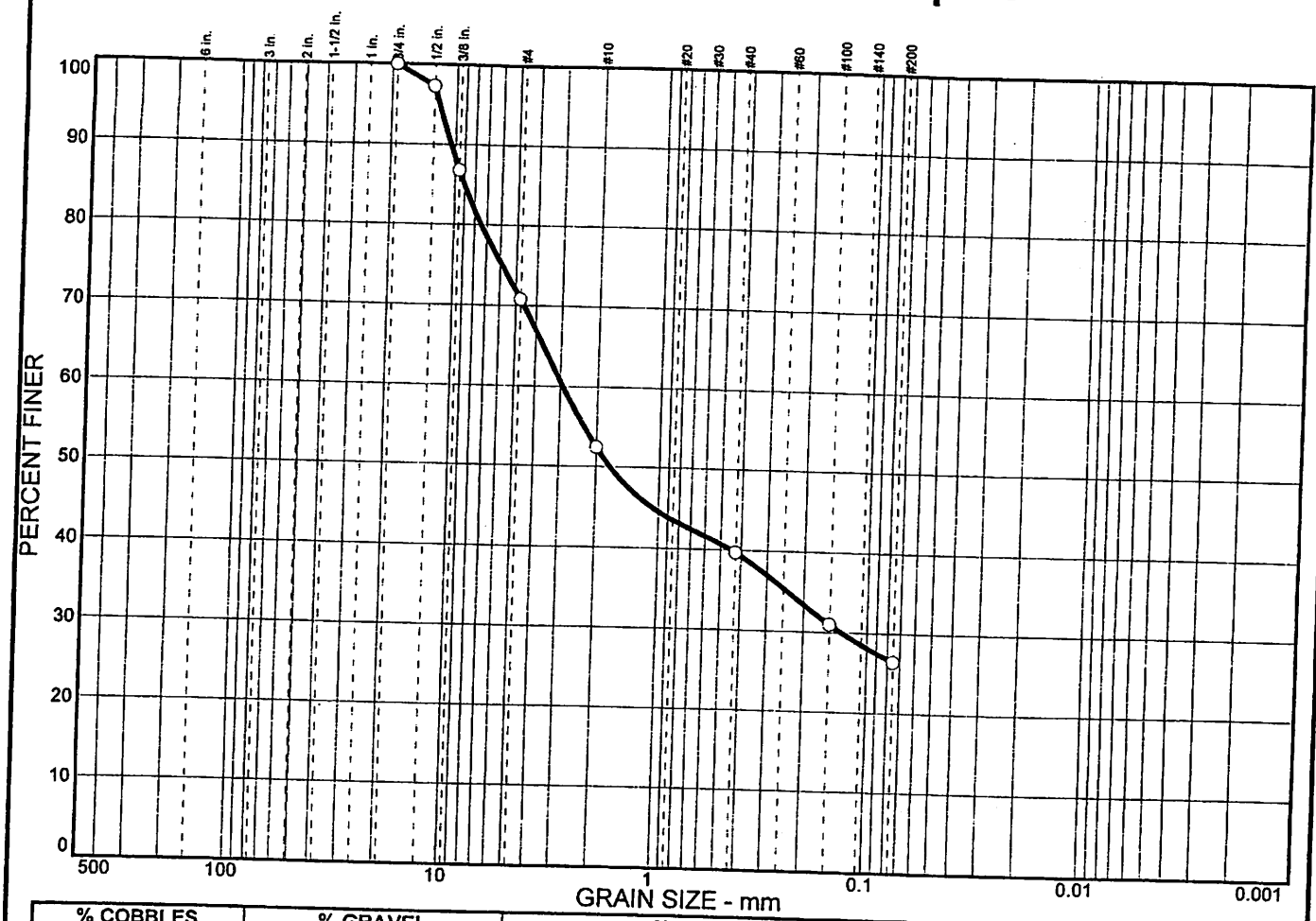
Tested by: CH
Reviewed by: DB

Sample No.: FR42670-B12 **Source of Sample:** Native **Date:** 5/12/04
Location: **Elev./Depth:**

PROFESSIONAL SERVICE INDUSTRIES

Client: Developers Diversified Realty
Project: Totem Lake Malls Renovation
Project No: 875-45083 **Figure** A-21

Particle Size Distribution Report



% COBBLES	% GRAVEL	% SAND	% SILT	% CLAY
0.0	29.2	44.4	26.4	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3/4 in.	100.0		
1/2 in.	97.3		
3/8 in.	86.8		
#4	70.8		
#10	52.4		
#40	39.7		
#100	31.0		
#200	26.4		

* (no specification provided)

Soil Description

Drill sample B-13 @ minus 12.5' elevation.
Silty sand with gravel.

Atterberg Limits

PL= n/a LL= n/a PI= n/a

Coefficients

D_{85}= 8.98 D_{60}= 2.92 D_{50}= 1.71
D_{30}= 0.131 D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= SM AASHTO= A-2-4(0)

Remarks

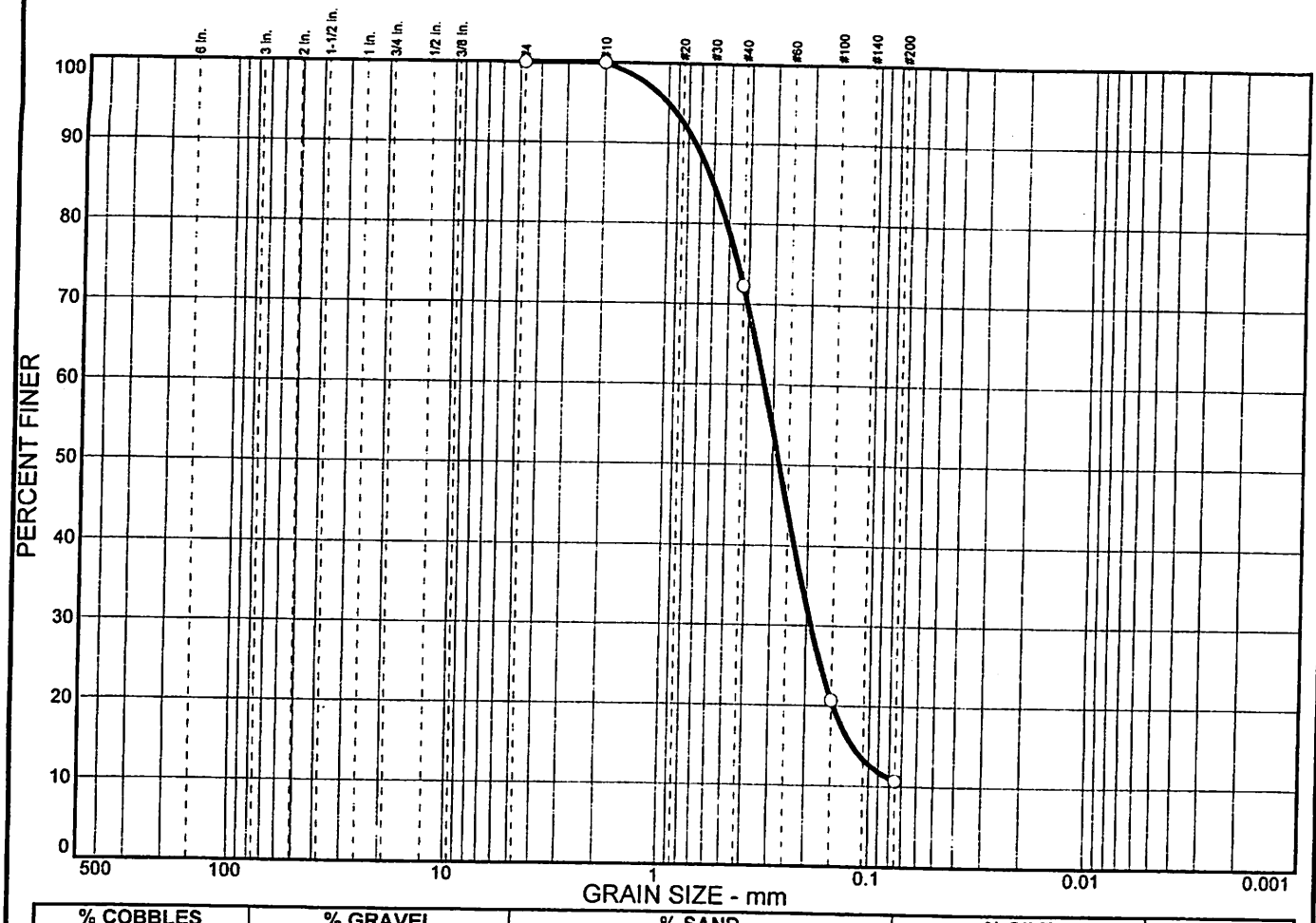
Tested by: CH
reviewed by: DB

Sample No.: FR42670-B13 **Source of Sample:** Native **Date:** 5/12/04
Location: **Elev./Depth:**

PROFESSIONAL SERVICE INDUSTRIES

Client: Developers Diversified Realty
Project: Totem Lake Malls Renovation
Project No: 875-45083 **Figure** A-22

Particle Size Distribution Report



% COBBLES	% GRAVEL	% SAND	% SILT	% CLAY
0.0	0.0	89.3	10.7	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#4	100.0		
#10	100.0		
#40	72.3		
#100	20.7		
#200	10.7		

* (no specification provided)

Soil Description

Drill sample B-14 @ minus 16' elevation.
Poorly graded sand with silt.

Atterberg Limits

PL= n/a LL= n/a PI= n/a

Coefficients

D_{85}= 0.603 D_{60}= 0.332 D_{50}= 0.277
D_{30}= 0.189 D_{15}= 0.118 D_{10}=
C_u= C_c=

Classification

USCS= SP-SM AASHTO= A-2-4(0)

Remarks

Tested by: CH
Reviewed by: DB

Sample No.: FR42670-B14 **Source of Sample:** Native **Date:** 5/12/04
Location: **Elev./Depth:**

PROFESSIONAL SERVICE INDUSTRIES

Client: Developers Diversified Realty
Project: Totem Lake Malls Renovation
Project No: 875-45083 **Figure** A-23

Totem Lake Mall Redevelopment

Traffic Impact Analysis

Prepared by:

Transportation Solutions, Inc.
8250 – 165th Avenue NE
Redmond, WA 98052
425-883-4134

December 28, 2005

ATTACHMENT 6
SEP06-00001

Table of Contents

Introduction 1
Existing Conditions 1
Existing Mall Trip Generation 6
Future Conditions without Mall Redevelopment 7
Future Conditions with a Redeveloped Mall 10
Mall Development and Trip Generation 10
Trip Distribution and Assignment 12
Intersection Operations 17
Level of Service Findings and Mitigation 17
Parking 19
Internal Vehicular and Pedestrian Circulation 19
Transportation Management Plan 20
Conclusions 21
Trip Generation 21
Intersection LOS 21
Transportation Management Program 21
Mitigation 21

Tables

Table 1: Analyzed Intersections 2
Table 2: Existing (2005) PM Peak Hour Level of Service 5
Table 3: Totem Lake Mall Existing Trip Generation 6
Table 4: Intersection Channelization Resulting from Planned Improvements 7
Table 5: Future (2011) *without* Mall Redevelopment PM Peak Hour Level of Service 9
Table 6: Redeveloped Mall Trip Generation Forecast 11
Table 7: Redeveloped Mall Trip Net New External Trips 11
Table 8: External Trip Types and Directions 12
Table 9: Future 2011 with Mall Redevelopment PM Peak Hour Level of Service 17
Table 10: Estimated Traffic Impact Fees 19

Figures

Figure 1: Street Network and Existing (2002) PM Peak Hour Turning Movement Volumes 3
Figure 2: Existing Mall Site Plan and Accesses 4
Figure 3: 2011 PM Peak Hour Turning Movement Volumes without Mall Redevelopment 8
Figure 4: Future 2011 PM Peak Hour Turning Movements with Redeveloped Mall 14
Figure 5: Future 2011 PM Peak Hour Project Traffic Assignment and Shift of Exiting Traffic Volumes from 120th Ave NE to Totem Lake Blvd 15
Figure 6: Proposed Site Plan, PM peak Hour Turning Movements at Mall Accesses, Channelization, and Traffic Controls 16

Introduction

The purpose of this report is to document existing transportation conditions in the vicinity of Totem Lake Mall and present an analysis of future traffic conditions resulting from the Mall redevelopment. Transportation related factors evaluated in this report include existing conditions, project trip generation, trip distribution, minimum parking requirements, and the relationship of these factors to proposed development standards.

The report follows City of Kirkland guidelines for preparing a traffic impact analysis and is organized to first establish existing transportation conditions, followed by an evaluation of future conditions without and with the redevelopment of the Totem Lake Mall.

Existing Conditions

Existing traffic conditions in the vicinity of the mall are based on 2004 PM peak hour intersection turning movement data collected as part of the city's annual traffic data collection program. Additionally, AM and PM peak hour turning movement volumes at mall accesses were collected in December 2005. AM peak hour counts at selected intersections adjacent to the Mall were also made.

The city's traffic impact analysis guidelines establish the methodology used to determine which intersections to include in the traffic impact analysis. The methodology is based on the forecasted number of daily trips generated by the proposed development and their distribution on the City's street network. Analysis of intersections that carry more than 1% of the daily trips is required. However, only those intersections that carry more than 5% of a project's daily trips are potentially subject to mitigation under SEPA. Based on this methodology the intersections identified for inclusion in this analysis are listed in Table 1 below. In addition, intersections providing access to the site and the intersection of Totem Lake Blvd/ NE 128th Street are also included in the analysis. Table 1 also summarizes the existing traffic control at each intersection and the peak periods analyzed.

For the purposes of expediting SEPA review, only site intersections and those intersections that could potentially be subject to mitigation under SEPA (those that carry more than 5% of the daily traffic generated by the project) are included in this report. The intersections in Table 1 that carry between 1% and 5% of the daily trips (grey text) will be analyzed in a supplemental report along with the analysis of AM peak hour conditions.

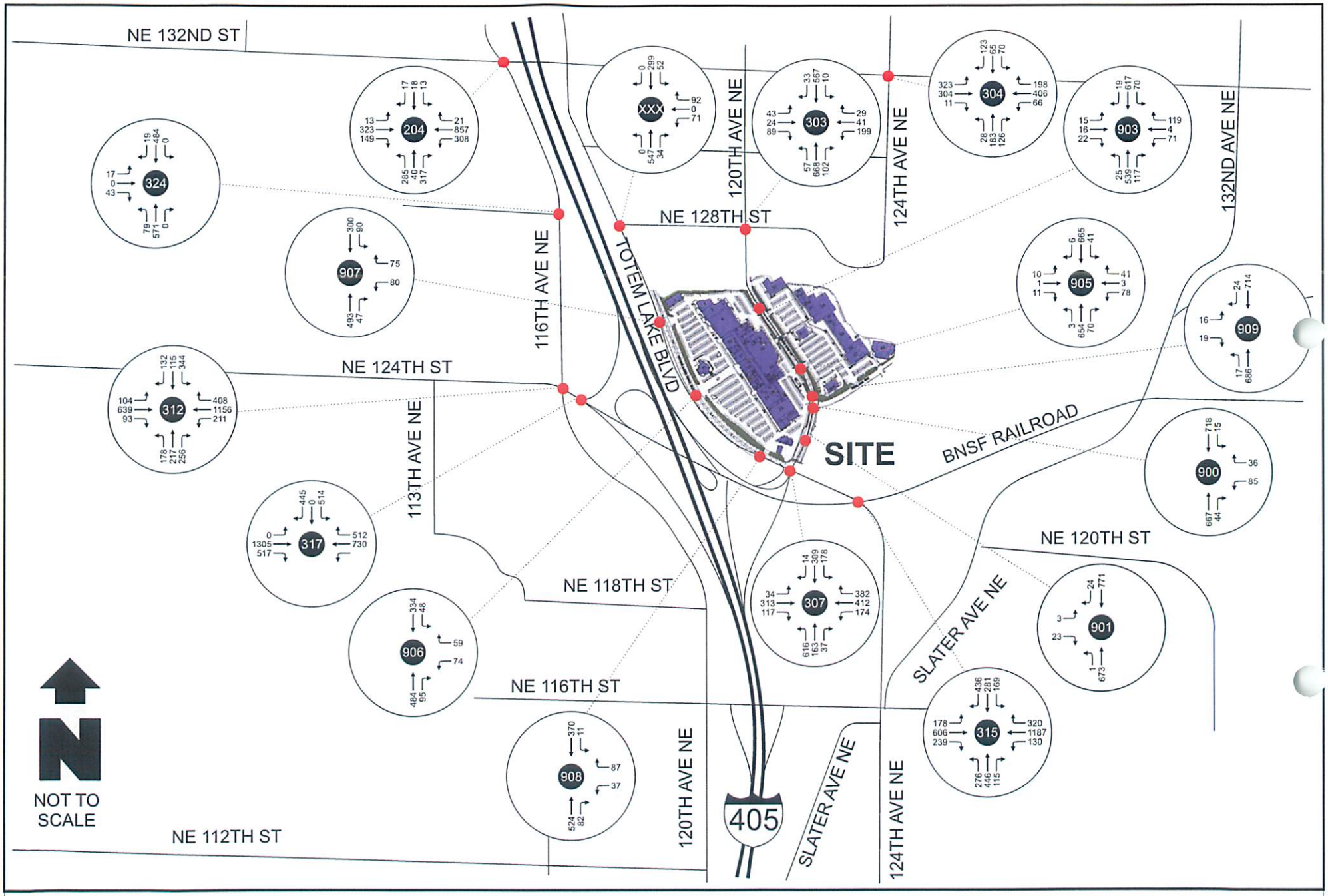
The location of the intersections analyzed in this study and existing (2005) turning movement volumes are depicted in Figure 1.

Table 1: Analyzed Intersections

Intersection ID	Major Street	Minor Street	% of Daily Trips and Notes	Control[1]	Peak Hour
204	NE 132nd St	116th Way NE	6.1%	S	PM
303	120th Ave NE	NE 128th St	12.7%	S	PM
304	NE 132nd St	124th Ave NE	4.8%	S	PM
307	Totem Lake Blvd	120th Ave NE	18.2%	S	AM/PM
312	NE 124th St	116th Ave NE	7.3%	S	PM
315	NE 124th St	Totem Lake Blvd	20.3%	S	AM/PM
317	NE 124th St	I-405 SB	8.8%	S	PM
324	116th Way NE	NE 128th St	18.0%	S	AM/PM
202	100th Ave NE	NE 124th St	3.3%	S	PM
203	100th Ave NE	NE 132nd St	4.5%	S	PM
206	98th Ave NE	NE 120th Pl	1.1%	S	PM
301	NE 132nd St	120th Ave NE	3.1%	S	PM
302	120th Ave NE	NE 130th St	2.1%	S	PM
306	NE 124th St	Slater Ave NE	3.0%	S	PM
308	NE 124th St	120th Pl NE	1.4%	S	PM
310	NE 116th St	120th Ave NE	3.2%	S	PM
311	124th Ave NE	NE 116th St	3.4%	S	PM
313	NE 124th St	113th Pl NE	1.6%	S	PM
316	NE 132nd St	Totem Lake Blvd	3.7%	S	PM
319	NE 116th St	I-405 SB	1.5%	S	PM
320	NE 116th St	I-405 NB	1.5%	S	PM
401	NE 85th St	132nd Ave NE	1.3%	S	PM
402	NE 85th St	124th Ave NE	1.4%	S	PM
404	124th Ave NE	NE 100th St	1.0%	S	PM
XXX	Totem Lake Blvd	NE 128th	22.3%	U	AM/PM
903	120th Ave NE	North Access	Relocated to the north as part of project.	U	AM/PM
904	120th Ave NE	Central Access	Constructed as part of project.	U	AM/PM
905	120th Ave NE	South Access	Removed as part of project.	U	AM/PM
900	120th Ave NE	Totem Lake Way		U	AM/PM
909	120th Ave NE	South Access #2		U	AM/PM
908	Totem Lake Blvd	South Access		U	AM/PM
906	Totem Lake Blvd	Central Access		U	AM/PM
907	Totem Lake Blvd	North Access		U	AM/PM

[1] S –signalized, U-unsignalized

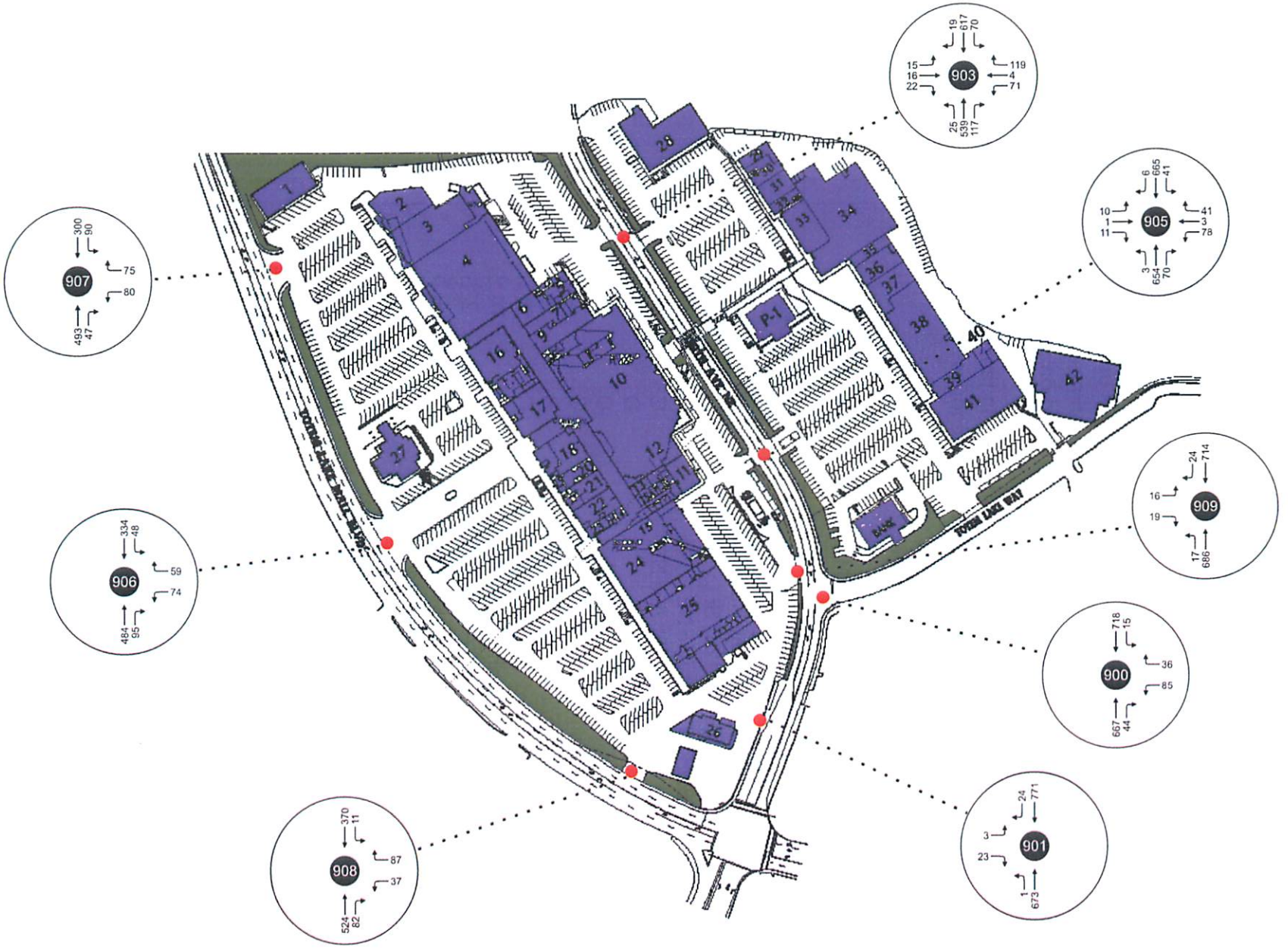
The location of these intersections and existing (2005) turning movement volumes are depicted in Figure 1. Figure 2 illustrates the site plan of the existing mall and its accesses.



TSI Transportation Solutions, Inc.

Figure 1
2005 Existing PM Peak Hour Traffic Volumes

Totem Lake Mall Redevelopment



TSI
Transportation Solutions, Inc.

Figure 2
Existing Mall Accesses & PM Peak Hour Turning Movement Volumes

Totem Lake Mall Redevelopment

Existing PM peak hour level of service (LOS) was calculated for the selected intersections using the 2000 Highway Capacity Manual (Transportation Research Board, Special Report 209) methodology. For signalized intersections, the LOS is defined by seconds of average vehicle delay at the intersection. The seconds of delay are divided into several categories or grade levels, ranging from LOS-A, which is very good, to LOS-F, which reflects a breakdown in traffic flow. Although these letter designations provide a simple basis for comparison, seconds of average vehicle delay should be used as the exact measure of comparison. For this analysis, the critical volume method was used to determine signal timings employed in the HCM calculations. This method optimizes traffic signal timings by proportioning out green time to each traffic movement, based on respective traffic volume.

For unsignalized intersections, the level of service is defined in terms of stopped time delay for the controlled movements, and is divided into LOS categories A through F.

The findings are summarized in Table 2 below.

Table 2: Existing (2005) PM Peak Hour Level of Service

City Identifier	Intersection	LOS	Delay (seconds)	Control
204	NE 132nd St/ 116th Way NE	D	54.2	S
303	120th Ave NE/ NE 128th St	B	18.4	S
304	NE 132nd St/ 124th Ave NE	C	21.7	S
307	Totem Lake Blvd/ 120th Ave NE	C	31.2	S
312	NE 124th St/ 116th Ave NE	D	37.1	S
315	NE 124th St/ Totem Lake Blvd	D	45.5	S
317	NE 124th St/ I-405 SB	C	25.5	S
324	116th Way NE/ NE 128th St	B	11.0	S
XXX	Totem Lake Blvd/ NE 128th St (WB)	C	21.6	U
903	120th Ave NE/ North Access (WB)	F	74.2	U
905	120th Ave NE/ South Access (WB)	F	235	U
900	120th Ave NE/ Totem Lake Way (WB)	D	34.5	U
909	120th Ave NE/ South Access #2 (EB)	C	19.2	U
901	120th Ave NE/ South Access #3 (EB)	C	17.0	U
908	Totem Lake Blvd/ South Access (WB)	C	17.0	U
906	Totem Lake Blvd/ Central Access (WB)	B	12.5	U
907	NE 132nd St/ 116th Way NE	B	12.9	U

[1] S –signalized, U-unsignalized

All signalized intersections operate at LOS-D or better during PM peak hour conditions. All of the unsignalized intersections serve mall accesses and are stop controlled on the minor approaches. The free flowing traffic volumes on Totem Lake Blvd and 120th Ave NE are not impeded while vehicles on the minor approaches have relatively short to very long delays before they can enter the major street.

Existing Mall Trip Generation

In order to establish the net growth in traffic volumes resulting from mall redevelopment, existing mall areas, uses, and occupancy were evaluated. Findings showed that approximately 266,500 SF of the commercial space was occupied, 7,500 SF of the office space was occupied, and that the existing cinema was operating.

Trip generation rates from the 7th edition of the *Institute of Transportation Engineers (ITE) Trip Generation Manual* were used to calculate vehicle trips associated with existing occupied uses. The appropriate land use classes for the existing mall include Land Use Class (LUC) 820 Shopping Center, LUC 710 – General Office Building, and LUC 443 Cinema. The existing uses are estimated to generate 14,104 daily, 1,252 PM peak hour, and 311 AM peak hour trips. The daily and peak hour trip generation characteristics for the proposed development are summarized in Table 3 below

Table 3: Totem Lake Mall Existing Trip Generation

Time Period	Area or Seating	Gross Trips		
		Total	Enter	Exit
Daily				
Shopping Center (LUC 820)	266,501 SF	12,842	6,421	6,421
Office (LUC 710)	7,500 SF	83	41	41
Cinema w/o Matinee (LUC 443)	670 seats	1,179	590	590
	Total	14,104	7,052	7,052
PM Peak				
Shopping Center (LUC 820)	266,501 SF	1,195	573	622
Office (LUC 710)	7,500 SF	11	1	10
Cinema w/o Matinee (LUC 443)	670 seats	46	34	12
	Total	1,252	608	644
AM Peak				
Shopping Center (LUC 820)	266,501 SF	282	172	110
Office (LUC 710)	7,500 SF	24	21	3
Cinema w/o Matinee (LUC 443)	670 seats	5	3	2
	Total	311	196	115

This information will be used in the 'future with project' section of this report to evaluate the net number of new trips generated by the proposed redevelopment.

Future Conditions without Mall Redevelopment

If the proposed mall redevelopment does not occur, it is assumed that further development within the mall would be limited and that occupancy would remain at current levels. However, future traffic volumes would increase due to development in the Totem Lake area and circulation patterns would change due to the I-405 overpass at NE 128th St that is currently under construction. In addition, the City of Kirkland CIP lists the following improvements that would affect intersections analyzed in this analysis.

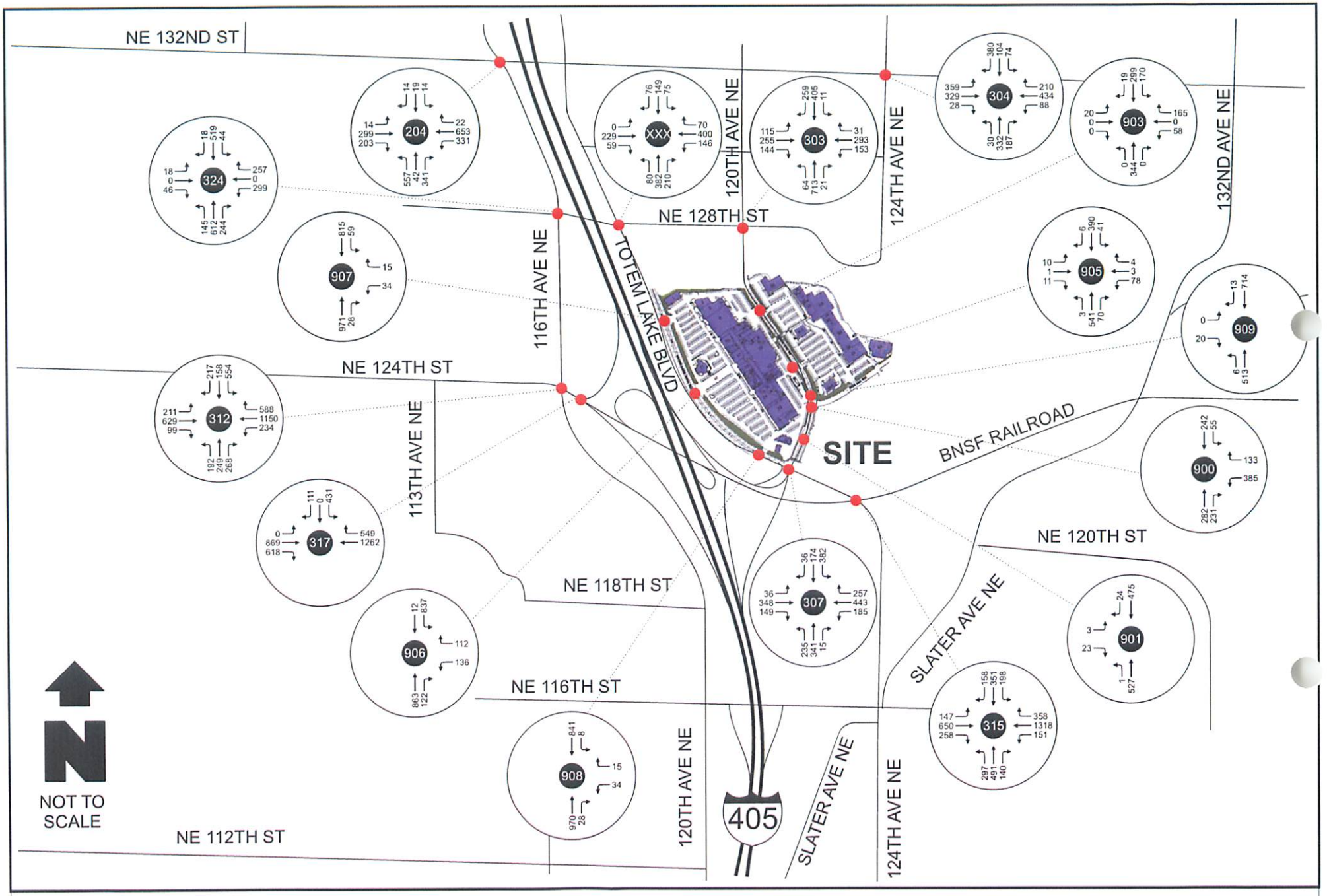
- Increase width of 120th Ave NE to five lanes and provide a bicycle lane in both directions from NE 128th St to NE 132nd St.
- Construction of an overpass on NE 128th St over I-405.
- Improvements to the intersections at 120th Ave NE/ NE 128th St, 116th Way NE/ NE 128th St, and Totem Lake Blvd/ NE 128th St as part of the planned I-405 overpass on NE 128th St.
- Improvements to the intersection of NE 124th St/ Totem Lake Blvd.

These improvements would result in additional turn and through lanes at affected intersections. The channelization resulting from these improvements is listed in Table 4 below.

Table 4: Intersection Channelization Resulting from Planned Improvements

City Identifier	Intersection	Channelization Resulting from Improvements	
302	120th Ave NE/ NE 130th St	North leg: L,T,T/R East leg: L,T/R	South leg: L,T,T/R West leg: L/T/R
303	120th Ave NE/ NE 128th St	North leg: L,T,T/R East leg: L,T/R	South leg: L,T,T/R West leg: L/T/,R
315	NE 124th St/ Totem Lake Blvd	North leg: L,T,T,R East leg: L,T,T,R	South leg: L,L,T,T,R West leg: L,T,T,R
324	116th Way NE/ NE 128th St	North leg: L,T,T/R East leg: L,L/T,R	South leg: L,T,T/R West leg: L,T/R
XXX	Totem Lake Blvd/ NE 128th St	North leg: L,T,T/R East leg: L,T/R	South leg: L,T,T/R West leg: L,T/R

Figure 3 depicts the projected turning movement volumes for 2011 *without* the mall redevelopment. This projection is based on City of Kirkland traffic modeling forecasts. A level of service analysis was performed to establish future conditions without mall redevelopment at the affected intersections. The results of this analysis are summarized in Table 5. Existing LOS is included for comparative purposes.



TSI
Transportation Solutions, Inc.

Figure 3
Future 2011 PM Peak
Hour Traffic Volumes
Without Mall Redevelopment

Totem Lake Mall
Redevelopment

Table 5: Future (2011) *without* Mall Redevelopment PM Peak Hour Level of Service

			Existing 2005		Future w/o 2011	
City Identifier	Cont-rol	Intersection	LOS	Delay (seconds)	LOS	Delay (seconds)
204	S	NE 132nd St/ 116th Way NE	D	54.2	F	81.3
303	S	120th Ave NE/ NE 128th St	B	18.4	C	25.0
304	S	NE 132nd St/ 124th Ave NE	C	21.7	D	37.3
307	S	Totem Lake Blvd/ 120th Ave NE	C	31.2	C	31.8
312	S	NE 124th St/ 116th Ave NE	D	37.1	D	51.4
315	S	NE 124th St/ Totem Lake Blvd	D	45.5	D	37.8
317	S	NE 124th St/ I-405 SB	C	25.5	C	26.2
324	S	116th Way NE/ NE 128th St	B	11.0	B	17.9
XXX	U→S	Totem Lake Blvd/ NE 128th St (WB)	C	21.6	C	35.0
903	U	120th Ave NE/ North Access (WB)	F	74.2	D	25.6
905	U	120th Ave NE/ South Access (WB)	F	235	C	24.5
900	U	120th Ave NE/ Totem Lake Way (WB)	D	34.5	C	22.2
909	U	120th Ave NE/ South Access #2 (EB)	C	19.2	B	14.3
901	U	120th Ave NE/ South Access #3 (EB)	C	17.0	B	12.6
908	U	Totem Lake Blvd/ South Access (WB)	B	12.5	B	12.1
906	U	Totem Lake Blvd/ Central Access (WB)	B	12.9	B	11.9
907	U	Totem Lake Blvd/ North Access (WB)	B	14.6	C	13.8

[1] S –signalized, U-unsignalized

All signalized intersections are predicted to operate at LOS-D or better during PM peak hour conditions with the exception of NE 132nd St/ 116th Way NE, which drops from LOS-D to LOS-F. The primary reason for the change in LOS at this intersection is the increase in northbound volumes making a left turn. This increase is due to the new I-405 overpass at NE 128th St. Intersection operations could be improved to LOS-D with a delay of 54 seconds if channelization at the northbound approach were changed from a shared left/through lane and a right only lane to a left only lane and shared through/right turn lane.

All of the unsignalized intersections serve mall accesses and are stop controlled on the minor approaches. The free flowing traffic volumes on Totem Lake Blvd and 120th Ave NE are not impeded while the minor approaches have relatively short delays before they can enter the major street. Delays on 120th Avenue NE are significantly less than under existing conditions due to a shift in traffic volumes to Totem Lake Blvd. This shift is due to the new I-405 overpass at NE 128th St.

Future Conditions with a Redeveloped Mall

Mall Development and Trip Generation

The redeveloped mall would include additional retail and office space, residential units, and a cinema. The existing and proposed uses would be served by surface parking on the lower mall and a parking structure on the upper mall. The redeveloped mall would provide 562,299 SF of retail space, 144,000 SF of office space, 216 condominiums, and a 3,000 seat multiplex theater.

The number of daily, AM peak hour, and PM peak hour trips generated by the redeveloped mall is calculated using the trip generation rates from the 7th edition of the *Institute of Transportation Engineers (ITE) Trip Generation Manual*. Table 6 summarizes the results of these calculations. The gross number of trips generated for each time period were adjusted using *ITE* methodologies for establishing the internal capture rates for a site that shares trips between complimentary uses. For example, residents of the mall and office workers would walk to retail services within the mall and some office or mall employees could live in the residential units. The result of these adjustments provides the external trips generated by the redeveloped mall.

The ITE rates used to calculate trips generated by the cinema are somewhat questionable due to the low number of data points and the inability to account for variables such as start times and their relationship to peak hour traffic volumes. The ITE rate for the PM peak hour is 0.08 trips per seat. A recent study (see appendix) documented cinema trip rates that were much lower than the ITE rate. In order to maintain a conservative analysis, the ITE rate of 0.08 trips per seat was used for the PM peak hour and the daily rate is assumed to be 12 times the PM peak hour rate or 0.96 trips per seat. An AM peak hour rate of 1.5 trips per screen was derived from an average of the rates documented in the study referenced above.

In order to establish the net new number of trips generated by the project, the external trip generation forecast must be adjusted to reflect those trips generated by existing mall uses. Subtracting the existing trips from the external trips generated by the redeveloped mall will result in the net number of new trips generated by the redevelopment. This calculation is summarized in Table 7 below. In summary, the redeveloped mall is forecasted to generate 9,561 daily, 1,009 PM peak hour, and 488 AM peak hour net new trips on the local road network. The spreadsheet used to calculate trip generation may be found in the appendix.

Table 6: Redeveloped Mall Trip Generation Forecast

	Gross Trips			External Trips		
Daily	Total	Enter	Exit	Total	Enter	Exit
Shopping Center (LUC 820)	20,863	10,432	10,432	19,337	9,622	9,715
Office (LUC 710)	1,766	883	883	1,327	694	633
Residential Condominiums (LUC 230)	1,235	618	618	416	205	212
Multiplex Movie Theater (LUC 445)	3,803	1,902	1,902	2,585	1,312	1,273
Total	27,667	13,834	13,834	23,665	11,832	11,832
PM Peak						
Shopping Center (LUC 820)	1,957	939	1,018	1,834	870	964
Office (LUC 710)	240	41	199	201	24	177
Residential Condominiums (LUC 230)	113	76	37	42	32	10
Multiplex Movie Theater (LUC 445)	240	86	154	159	60	100
Total	2550	1142	1408	2237	986	1251
AM Peak						
Shopping Center (LUC 820)	441	269	172	436	268	168
Office (LUC 710)	251	221	30	245	216	30
Residential Condominiums (LUC 230)	96	16	80	93	16	77
Multiplex Movie Theater (LUC 445)	20	12	8	20	12	8
Total	808	518	290	794	511	283

Table 7: Redeveloped Mall Trip Net New External Trips

Time Period	Net New External Trips		
	Total	Enter	Exit
Daily			
Proposed	23,665	11,832	11,832
Existing	14,104	7,052	7,052
Net New Trips	9,561	4,780	4,780
PM Peak Hour			
Proposed	2,237	986	1,251
Existing	1,228	596	632
Net New Trips	1,009	390	619
AM Peak Hour			
Proposed	794	511	283
Existing	306	194	112
Net New Trips	488	317	171

The external trips are separated into three trip types (see Table 8). Primary trips have the project as their primary destination and constitute new trips on the local road network.

Diverted trips divert from their primary route to stop at the project on their way to their primary destination. Diverted trips add trips to intersections adjacent to the project but do not add trips to intersections further from the project. Pass-by trips are those trips that travel on streets adjacent to the project and simply turn into the site. Such trips are new trips at project driveways but do not add trips to the local road network. For the purposes of this analysis, it is assumed that all office, residential, and cinema trip are primary. Of the shopping center trips: 51% are primary, 25% diverted, and 24% pass-by. Table 8 summarizes the trip types and their direction for each of the analyzed time periods.

Table 8: External Trip Types and Directions

Time Period	Primary		Diverted		Pass-by		Total
	Enter	Exit	Enter	Exit	Enter	Exit	
Daily	3,726	3,633	608	608	447	540	9,561
PM Peak Hour	287	525	59	69	44	25	1,009
AM Peak	317	171	0	0	0	0	488

Trip Distribution and Assignment

The city's traffic model distributes trips on the local network and assigns them to turning movements at intersections. This distribution includes trips generated by the redeveloped mall as well as the effects of proposed changes to 120th Ave NE adjacent to the mall. It is forecasted that the proposed mall access plan, on street parking, and the presence of two traffic signals on 120th Ave NE between Totem Lake Boulevard and NE 128th St would slow traffic and increase the amount of time it takes to drive between Totem Lake Boulevard and NE 128th St. A portion of the through traffic that currently uses this corridor would therefore shift to Totem Lake Boulevard to avoid delays.

Figure 4 illustrates future 2011 conditions with the redeveloped mall as forecasted by the city's traffic model. It should be noted that traffic models are not adept at assigning traffic on a micro level and that the actual distribution of project generated trips at access points may be somewhat different than forecasted. It follows, that the actual level of service at mall accesses may be better or worse than forecasted in the following analysis.

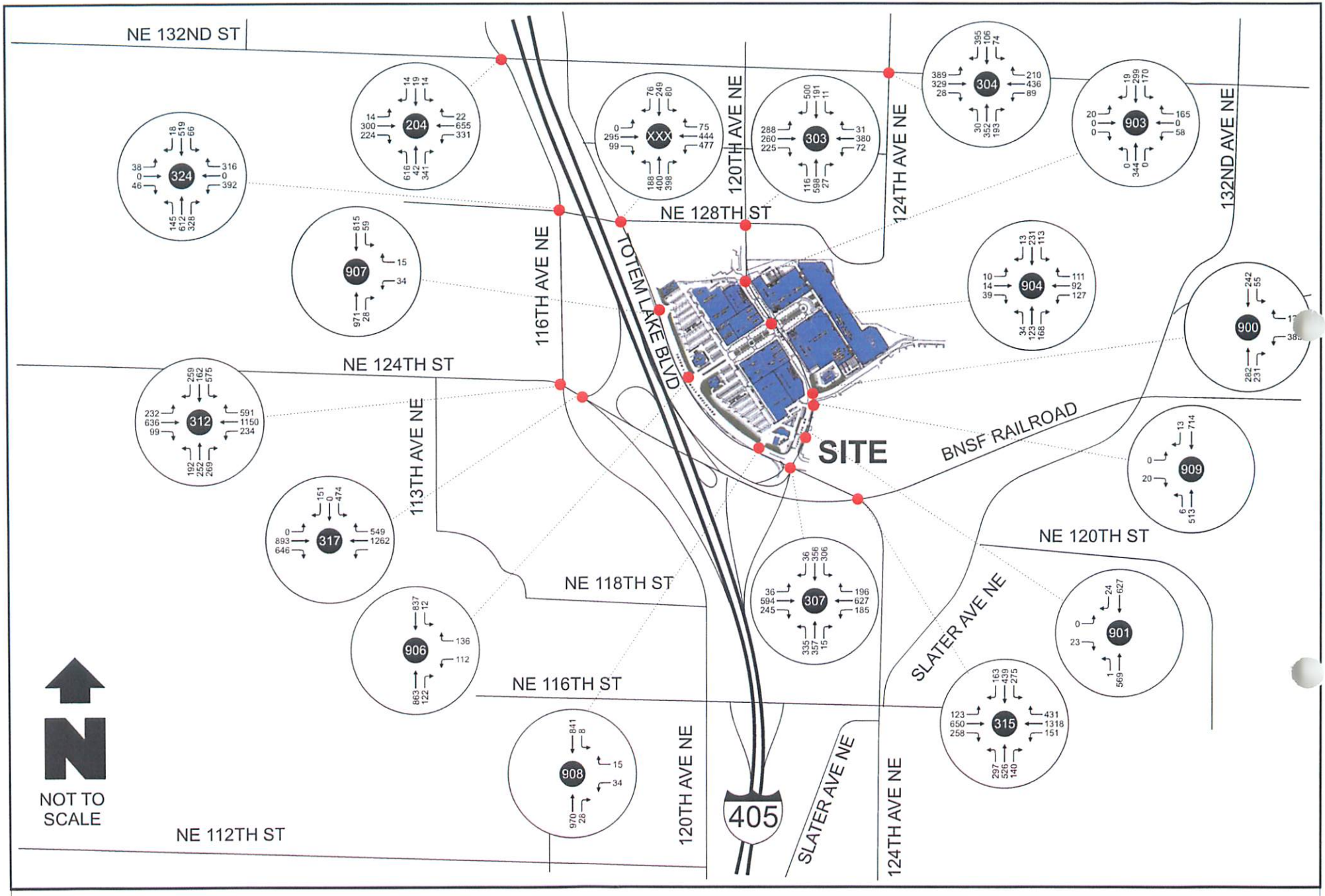
Figure 5 illustrates the difference between forecasted 2011 conditions without and with the project. Essentially, each tuning movement volume in Figure 5 is the sum of project traffic and the redistribution of existing traffic due to the forecasted shift in traffic volumes from 120th Avenue NE to Totem Lake Boulevard.

Figure 6 provides a closer look at the proposed site plan for the redeveloped mall and includes PM peak hour turning movement volumes at mall accesses as well as recommended channelization and traffic controls at mall accesses.

With mall redevelopment, the south access connecting the upper and lower mall would be removed and a more centrally located roadway would be constructed to link the upper mall garage with Totem Lake Blvd. The intersection of this 'Central Blvd.' with 120th Ave NE would be signalized. Totem Lake Way would provide access to the south end of the upper mall garage and service access to adjacent buildings. It would also be signalized. The existing access to the lower mall that is located just north of Totem Lake Way would be shifted to a point south of Totem Lake Way with outbound turning movements limited to right turn only. This is necessary in order to prevent vehicle conflicts at the adjacent Totem Lake Way intersection.

At the north end of the mall on 120th Ave NE, the existing access serving the upper mall would be removed and the service drive just to the north improved to provide access to the north end of the garage and service access to adjacent buildings. The north access to the lower mall would be shifted north. The presence of an existing driveway on property adjacent to the mall prevents alignment of the upper and lower mall north accesses.

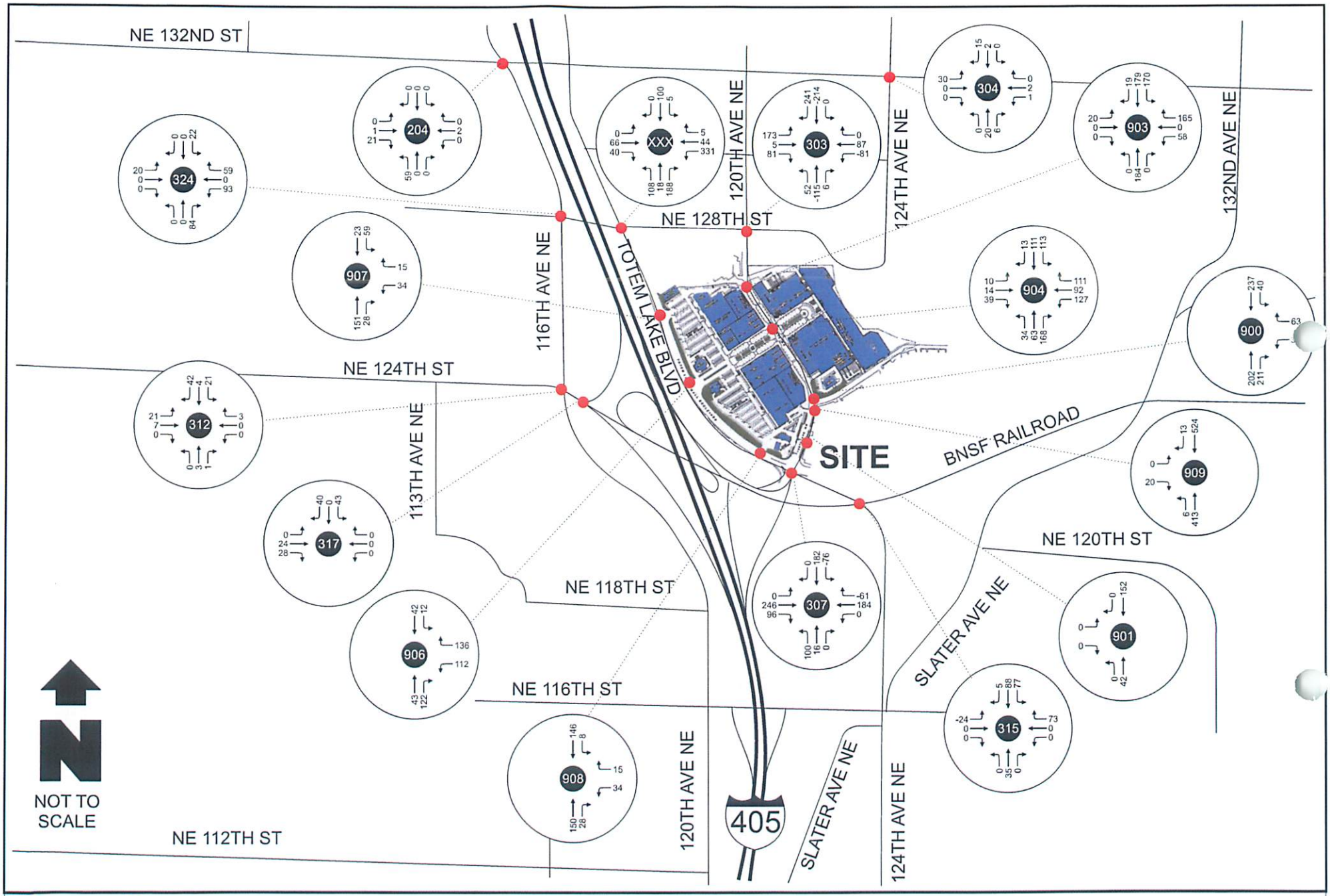
Accesses to the lower mall would remain in their present locations.



TSI Transportation Solutions, Inc.

Figure 4
Future 2011 PM Peak Hour Traffic Volumes With Mall Redevelopment

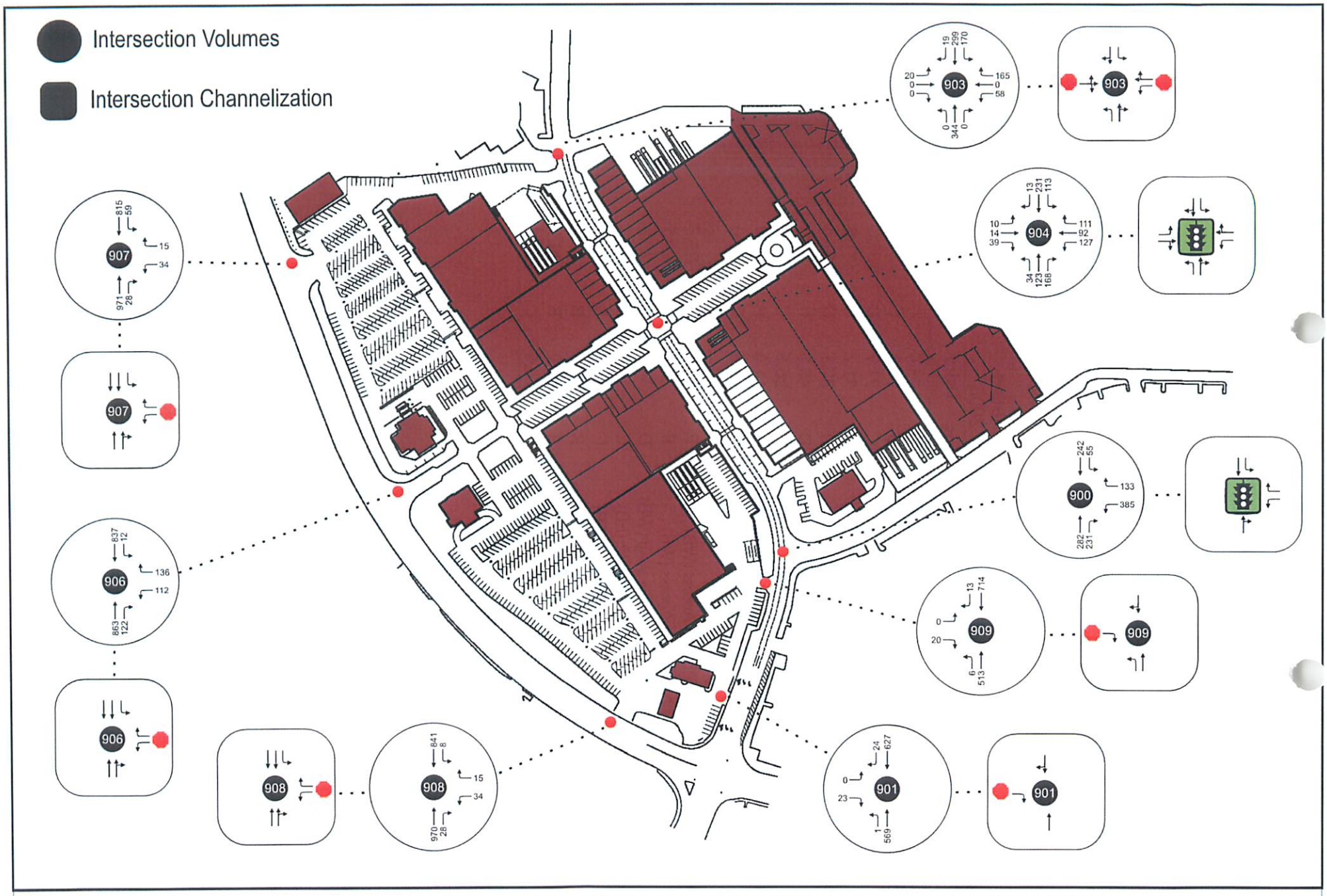
Totem Lake Mall Redevelopment



TSI Transportation Solutions, Inc.

Figure 5
Future 2011 Redistribution of Background Traffic Volumes and Assignment of Project Generated Trips

Totem Lake Mall Redevelopment



TSI
Transportation Solutions, Inc.

Figure 6
Future Mall Access Turning Movements, Channelization, & Traffic Controls

Totem Lake Mall Redevelopment

Intersection Operations

A level of service analysis was performed to establish future 2011 conditions with mall redevelopment at the affected intersections. The results of this analysis are summarized in Table 9. Existing and future without project LOS are included for comparative purposes.

Table 9: Future 2011 with Mall Redevelopment PM Peak Hour Level of Service

City Identifier	Control	Intersection	Existing 2005		Future w/o 2011		Future with 2011	
			LOS	Delay (seconds)	LOS	Delay (seconds)	LOS	Delay (seconds)
204	S	NE 132nd St/ 116th Way NE	D	54.2	F	81.3	F	95.9
303	S	120th Ave NE/ NE 128th St	B	18.4	C	25.0	C	29.3
304	S	NE 132nd St/ 124th Ave NE	C	21.7	D	37.3	C	28.7
307	S	Totem Lake Blvd/ 120th Ave NE	C	31.2	C	31.8	E	64.0
312	S	NE 124th St/ 116th Ave NE	D	37.1	D	51.4	D	53.5
315	S	NE 124th St/ Totem Lake Blvd	D	45.5	D	37.8	D	41.4
317	S	NE 124th St/ I-405 SB	C	25.5	C	26.2	C	26.2
324	S	116th Way NE/ NE 128th St	B	11.0	B	17.9	B	19.5
XXX	U→S	Totem Lake Blvd/ NE 128th St (WB)	C	21.6	C	35.0	D	43.3
904	U	120th Ave NE/ Center Blvd	N/A		N/A		C	250
903	U	120th Ave NE/ North Access (WB)	F	74.2	D	25.6	D	34.7
905	U	120th Ave NE/ South Access (WB)	F	235	C	24.5	N/A	
900	U	120th Ave NE/ Totem Lake Way (WB)	D	34.5	C	22.2	F	330
909	U	120th Ave NE/ South Access #2 (EB)	C	19.2	B	14.3	C	15.4
901	U	120th Ave NE/ South Access #3 (EB)	C	17.0	B	12.6	B	14.1
908	U	Totem Lake Blvd/ South Access (WB)	B	12.5	B	12.1	C	17.9
906	U	Totem Lake Blvd/ Central Access (WB)	B	12.9	B	11.9	C	23.0
907	U	Totem Lake Blvd/ North Access (WB)	B	14.6	C	13.8	C	19.0

[1] S –signalized, U-unsignalized

Level of Service Findings

A comparison of the future without mall redevelopment levels of service against the future with mall redevelopment levels shows that trips generated by the redevelopment would cause only one off the analyzed intersections to drop to LOS-E or LOS-F. City of Kirkland *Transportation Impact Analysis Guidelines* state that intersection mitigation may be required when either of the two following conditions are met:

1. The project causes an intersection to operate at LOS-E and the proportional share of project generated traffic exceeds 15% of the intersection volume.
2. The project causes an intersection to operate at LOS-F and the proportional share of project generated traffic exceeds 5% of the intersection volumes.

The intersection of Totem Lake Blvd/ 120th Ave NE, which carries an 18% proportional share of the project traffic, drops from LOS-C under future without project conditions to LOS-E under future with project conditions. The LOS would improve to LOS-D with the addition of an eastbound right turn lane and reconfiguring the northbound approach to the intersection from the existing left turn, shared left/through, and right turn lane configuring to two left turn lanes and a shared through and right turn lane.

The westbound approach to the intersection of 120th Ave NE/ Totem Lake Way would operate at LOS-F with the existing stop control. With signalization, the intersection would operate at LOS-C with an average delay of 26 seconds per vehicle.

Another site related impact would occur at 120th Ave NE/ Center Blvd. If left unsignalized with stop signs on the minor approaches, those approaches would operate at LOS-F. With signalization, the entire intersection would operate at LOS-C with an average vehicle delay of 28 seconds.

The intersection of NE 132nd St/ 116th Way NE is forecasted to continue operating at LOS-F. Although, this is not an impact of the proposed project, modifying the channelization on the northbound approach as described in the 'without project' discussion would improve intersection operations.

Site accesses may operated better or worse than forecasted due to motorist behavior, the desirability of destinations in the mall, utilization of the parking garage versus surface parking, and other factors affecting vehicular circulation in the vicinity of the mall. Because of this, it is recommended that mall accesses and adjacent intersections be analyzed at some point after full occupancy to determine if minor refinements in signage or access controls are warranted to ensure the best possible customer access.

Mitigation

Mitigation measures encompass three areas: concurrency, SEPA mitigation, and impact fees. The proposed redevelopment has met the concurrency requirements and a notice of concurrency has been issued that is valid for the life of the development agreement. SEPA mitigation is required at the intersections of:

- Totem Lake Blvd/ 120th Ave NE (reconfigure NB approach and add EB RTL)
- 120th Ave NE/ Totem Lake Way (signalize)
- 120th Ave NE/ Center Blvd (signalize)

Responsibility for mitigation at Totem Lake Blvd/ 120th Ave NE and 120th Ave NE/ Center Blvd is described in the Development Agreement. Responsibility for mitigation at 120th Ave NE/ Totem Lake Way is not addressed in the Development Agreement.

Impact fees are based on the size and type of development. A summary of the estimated traffic impact fees is presented in Table 10. This estimate applies to the net increase in mall development.

Table 10: Estimated Traffic Impact Fees

Use	Existing Occupied	Proposed Development	Net Development	Impact Fee/ Unit[2]	Impact Fee
Shopping Center (SF)	266,501	562,299	295,798	$1.39	$ 411,159
Cinema (screens)[1]	4	13	9	$23,780	$ 214,020
Sub-total Retail					*$ 625,179*
Office (SF)	7,500	144,000	136,500	$2.07	$ 282,555
Residential (units)	0	216	216	$586	$ 126,576
Sub-total					*$ 409,131*
Total					$ 1,034,310

[1] Note that the number of existing screens has not been verified and the number of proposed screens may change.
[2] Source: City of Kirkland

Parking

The project would provide in excess of 3,000 parking stalls in parking structures, surface lots, and adjacent streets. Approximately 1,900 stalls would be located in a parking structure within the upper mall. Parking structures in the lower mall provide reserved residential parking. Most of the remaining parking will be in existing surface lots with on-street parking provided along the public plaza connecting the upper and lower mall.

The proposed parking supply is consistent with city requirements and any modification to those requirements contained in the development agreement.

Internal Vehicular and Pedestrian Circulation

The distribution of mall accesses, multiple garage accesses, and the presence of a central access road connecting the upper and lower mall areas serve to distribute vehicular traffic throughout the site, which should preclude significant congestion at any given access. Angle parking is proposed along the central roadway linking the upper and lower malls. Vehicles backing out of the parking stalls into the roadway will have to wait for a sufficient gap in the traffic flow before making the movement. The traffic forecasts show a peak hourly volume of approximately 300 vehicles traveling between 120th Ave NE and the upper mall parking garage. This volume is similar to the volumes carried on minor streets with on-street parking in the Kirkland central business district. During peak periods, it is likely that motorists making parking maneuvers will be delayed occasionally. The design of the road

section will be reviewed in the supplement to this report to ensure that the travel lanes are wide enough so backing vehicles do not cross the centerline.

It is proposed that 120th Ave NE be configured to provide one travel lane in each direction, a shared center turn lane, and parallel parking on both sides of the road. Figure 6 illustrates the recommended channelization 120th Avenue NE and mall accesses. Current site plans will likely require refinement to provide additional turn lanes and sufficient lane storage capacity.

Service and freight access to the larger stores in the upper mall will be provided via Totem Lake Way and the north access road. Final intersection designs will need to ensure that turning radii are sufficient to accommodate the largest delivery trucks. Service and freight delivery access to smaller stores in the lower mall will be curbside unless loading docks are incorporated into new construction.

Pedestrian circulation will be facilitated by a network of sidewalks connecting parking areas with mall destinations. Crosswalks will be provided at the signalized intersections on 120th Ave NE with an additional mid-block crossing located between the central roadway and Totem Lake Way as well as the central roadway and the north access. Along the central roadway, a pedestrian crossing will be provided in the lower mall at the midpoint of the retail stores. There are not any pedestrian crossings planned for the roadway on the upper mall due to its short length and connecting sidewalk at the east end of the road. All crossings will incorporate curb extensions where there is sufficient road width and markings as per city standards.

Pedestrians will be able to walk between the mall and the planned transit center located at the southeast corner of NE 128th St/ 120th Ave NE. Geographic constraints and planned development preclude a more direct access between the upper mall and the transit center.

Transportation Management Plan

The proposed development is of sufficient size that enough employees will be present to require a trip reduction program consistent with the City's CTR ordinance.

Conclusions

Trip Generation

The proposed project would generate 9.561 daily, 1,009 PM peak hour, and 488 AM peak hour external trips.

Intersection LOS

Intersection LOS meets city standards with the exception of Totem Lake Blvd/ 120th Ave NE. The northbound approach would have to be reconfigured and an eastbound left turn lane added to improve level of service to LOS-D.

All site accesses are forecasted to operate at acceptable LOS during the PM peak hour. The intersection of 120th Ave NE with the central roadway and its intersection with Totem Lake Way will need to be signalized. Recommended channelization at mall accesses is illustrated in Figure 6.

While not required for purpose of mitigation, it is recommended that the operation of mall accesses and adjacent intersections be assessed following full occupancy in order to determine if minor refinements to traffic and access controls are warranted to improve customer access.

Transportation Management Program

A Transportation Management Program (TMP) will be required to meet the City's CTR ordinance requirements.

Mitigation

Concurrency has been met. SEPA mitigation is required at the following intersections:

- Totem Lake Blvd/ 120th Ave NE (reconfigure NB approach and add EB-RTL)
- 120th Ave NE/ Totem Lake Way (signalize)
- 120th Ave NE/ Center Blvd (signalize)

Responsibility for mitigation at Totem Lake Blvd/ 120th Ave NE and 120th Ave NE/ Center Blvd is described in the Development Agreement. Responsibility for mitigation at 120th Ave NE/ Totem Lake Way is not addressed in the Development Agreement.

Traffic impact fees are estimated to be $1,034,310. This number is an estimate pending any final refinements to the site plan and the number of screens provided in the cinema.

Totem Lake Mall Redevelopment

Traffic Impact Analysis

APPENDICES

Prepared by:

Transportation Solutions, Inc.
8250 – 165th Avenue NE
Redmond, WA 98052
425-883-4134

December 28, 2005

TSI
Transportation Solutions, Inc.

Appendices

Appendix 1: Existing and Proposed Project Trip Generation Worksheets

Appendix 2: Assignment of Project and Background Traffic Volumes Worksheets

Appendix 3: Affected Intersections Worksheets

Appendix 4: Movie Theater Trip Generation Reference

Appendix 5: Existing Conditions LOS Worksheets

Appendix 6: Future Conditions Without Project LOS Worksheets

Appendix 7: Future Conditions With Project LOS Worksheets

TSI
Transportation Solutions, Inc.

Appendix 1

Existing and Proposed Project Trip Generation Worksheets

TSI
Transportation Solutions, Inc.

	Lower Mall	Sq Feet
1	schucks's	5,700
2	Car Toys	5,546
3	Famous Footwear	9,777
4	Ross	29,172
5	Available	2,000
6	Radio Shack	2,698
7	Available	1,900
9	Totem Lake Antiques & Collectables	4,760
10	Halloween Superstore	44,705
11	Available	2,340
12	Mondo's (drive-up coffee shop)	350
13	Warren Jewelers (vacant)	2,620
14	Available	600
15	Adorable Treasures & Treats (vacant)	500
15A	Available	1,100
16	Old Contry Buffet Restaurant	9,450
17	Family Christian Stores	5,500
18	Sleep Country USA	4,658
19	Totem Lake Shoe Repair	480
20	Available	1,871
21	Available	3,200
22	Grab Bag	3,200
23	Available	1,000
24	Rite Aid	20,625
25	Comp USA	25,300
26	Chevron	8
27	Key Bank	4,790
	Subtotal Lower Mall (less Chevron)	**193,842**

	Upper Mall	Sq Feet
28	Trader Joe's	9,500
29	Available	1,200
30	Vitality Health Center	2,212
31	Available	2,400
32	Sakura Teriyaki	1,052
33	Hallmark	4,432
34	Guitar Center	20,216
35	US Post Office/Trading Post	1,600
36	Available	3,080
37	New Attitude Beauty Supplier	3,640
38	Denny's Pet World	17,138
41	Big 5	12,000
42	Totem Lake Cinema (13,345 sf), seats	670
P1	Wells Fargo Bank	9,000
	Washington Mutual	9,000
	Second Floor Offices	7,500
201	J. Patrick Mitchell Architects	
	Nelson & Associates	
	Totem Lake Malls Marketing	
	Totem Lake Security Office	
	Western Mutual Mortgage, Int	
203	William Wilmont, Certified Accountant	
	Subtotal Upper Mall (less cinema)	**103,970**
	Total Amount of Leaseable Space	**297,812**

Existing Trip Generation Bases

Vacant Shopping Center Space	23,811	sf
Occupied Shopping Center Space	266,501	sf
Occupied Office Space	7500	sf
Gas Station, pumps	8	pumps
Cinema w/o Matinee, seats	670	seats

Daily		Gross Trips			External			Internal		Primary		Diverted		Pass-by	
		Total	Enter	Exit	Total	Enter	Exit	Enter	Exit	Enter	Exit	Enter	Exit	Enter	Exit
Vacant Shopping Center Space	23,811 sf														
Shopping Center Occ. (LUC 820)	266,501 sf	12842	6421	6421	12485	6243	6243	179	179	2761	2761	1798	1798	1862	1862
Office (LUC 710)	7,500 sf	83	41	41	52	26	26	15	15	41	41	0	0	0	0
Cinema w/o Matinee (LUC 443)	670 seats	1179	590	590	822	411	411	179	179	590	590	0	0	0	0
Total		14104	7052	7052	13359	6680	6680	373	373	3392	3392	1798	1798	1862	1862

PM Peak		Gross Trips			External			Internal		Primary		Diverted		Pass-by	
		Total	Enter	Exit	Total	Enter	Exit	Enter	Exit	Enter	Exit	Enter	Exit	Enter	Exit
Vacant Shopping Center Space	23,811 sf														
Shopping Center Occ. (LUC 820)	266,501 sf	1195	573	622	1183	568	615	5	7	244	265	159	172	165	180
Office (LUC 710)	7500 sf	11	1	10	7	1	6	0	4	1	6	0	0	0	0
Cinema w/o Matinee (LUC 443)	670 seats	46	34	12	36	27	9	7	3	27	9	0	0	0	0
Total		1252	608	644	1226	596	630	12	14	272	279	159	172	165	180
						49%	51%								

	Primary	Diverted	Pass-by
Shopping Center	43%	28%	29%

	PM Peak		AM Peak	
	Entering	Exiting	Entering	Exiting
Shopping Center Occ. (LUC 820)	48%	52%	61%	39%
Office (LUC 710)	17%	83%	88%	12%
Cinema w/o Matinee (LUC 443)	75%	25%	60%	40%

AM Peak		Gross Trips			External			Internal		Primary		Diverted		Pass-by	
		Total	Enter	Exit	Total	Enter	Exit	Enter	Exit	Enter	Exit	Enter	Exit	Enter	Exit
Vacant Shopping Center Space	23,811 sf														
Shopping Center Occ. (LUC 820)	266,501 sf	282	172	110	280	171	109	1	1	171	109	0	0	0	0
Office (LUC 710)	7500 sf	24	21	3	22	20	2	1	1	20	2	0	0	0	0
Cinema w/o Matinee (LUC 443)	3 screens	5	3	2	4	3	1	0	1	3	1	0	0	0	0
Total		311	196	115	306	194	112	2	3	194	112	0	0	0	0
						63%	37%								

Daily		Gross Trips			External			Internal		External Trips						
										Primary		Diverted		Pass-by		
		Total	Enter	Exit	Total	Enter	Exit	Enter	Exit	Enter	Exit	Enter	Exit	Enter	Exit	
Shopping Center (LUC 820)	562,299 sf	20863	10432	10432	19337	9622	9715	809	717	4907	4907	2406	2406	2309	2402	19337
Office (LUC 710)	144,000 sf	1766	883	883	1327	694	633	189	250	694	633	0	0	0	0	1327
Residential, Condo/Townhouse (LUC 230)	216 units	1235	618	618	416	205	212	413	406	205	212	0	0	0	0	416
Multiplex Movie Theater (LUC 445)	3,000 seats	3803	1902	1902	2585	1312	1273	589	629	1312	1273	0	0	0	0	2585
Total		27667	13834	13834	23665	11832	11832	2001	2001	7118	7025	2406	2406	2309	2402	23665
													New Trips	*9523*	*9430*	

PM Peak		Gross Trips			External			Internal		External Trips						
										Primary		Diverted		Pass-by		
		Total	Enter	Exit	Total	Enter	Exit	Enter	Exit	Enter	Exit	Enter	Exit	Enter	Exit	
Shopping Center (LUC 820)	562,299 sf	1957	939	1018	1834	870	964	69	53	444	518	218	241	209	205	1834
Office (LUC 710)	144,000 sf	240	41	199	201	24	177	17	22	24	177	0	0	0	0	201
Residential, Condo/Townhouse (LUC 230)	216 units	113	76	37	42	32	10	43	28	32	10	0	0	0	0	42
Multiplex Movie Theater (LUC 445)	3,000 seats	240	86	154	159	60	100	27	54	60	100					159
Total		2550	1142	1408	2237	986	1251	157	157	559	805	218	241	209	205	2237
													New Trips	*777*	*1010*	

	Primary	Diverted	Pass-by
Shopping Center	51%	25%	24%

PM Peak	PM Peak		AM Peak	
	Entering	Exiting	Entering	Exiting
Shopping Center (LUC 820)	48%	52%		
Office (LUC 710)	17%	83%		
Residential, Condo/Townhouse (LUC 230)	67%	33%		
Multiplex Movie Theater (LUC 445)	36%	64%		

AM Peak		Gross Trips			External			Internal		External Trips						
										Primary		Diverted		Pass-by		
		Total	Enter	Exit	Total	Enter	Exit	Enter	Exit	Enter	Exit	Enter	Exit	Enter	Exit	
Shopping Center (LUC 820)	562,299 sf	441	269	172	436	268	168	1	4	268	168	0	0	0	0	436
Office (LUC 710)	144,000 sf	251	221	30	245	216	30	5	1	216	30	0	0	0	0	245
Residential, Condo/Townhouse (LUC 230)	216 units	96	16	80	93	16	77	0	2	16	77	0	0	0	0	93
Multiplex Movie Theater (LUC 445)	13 screens	20	12	8	20	12	8	0	0	12	8					20
Total		808	518	290	794	511	283	7	7	511	283	0	0	0	0	794
													New Trips	*511*	*283*	

Daily External Trips	Primary		Diverted		Pass-by			Totals	
	Enter	Exit	Enter	Exit	Enter	Exit	*TOTAL*	Enter	Exit
Proposed	7118	7025	2406	2406	2309	2402	*23,665*	11,832	11,832
Existing	3392	3392	1798	1798	1862	1862	*14,104*	7,052	7,052
New Trips	**3726**	**3633**	**608**	**608**	**447**	**540**	*9,561*	4,780	4,780

	Enter	*Exit*	*Total*
New Primary + Diverted Trips	*4333*	*4241*	*8574*

PM Peak Hour External Trips	Primary		Diverted		Pass-by			Totals	
	Enter	Exit	Enter	Exit	Enter	Exit	*TOTAL*	Enter	Exit
Proposed External Trips	559	805	218	241	209	205	*2,237*	986	1,251
Existing External Trips	272	279	159	172	165	180	*1,228*	596	632
New Trips	**287**	**525**	**59**	**69**	**44**	**25**	*1,009*	390	619

	Enter	*Exit*	*Total*
New Primary + Diverted Trips	*345*	*594*	*940*

AM Peak Hour External Trips	Primary		Diverted		Pass-by			Totals	
	Enter	Exit	Enter	Exit	Enter	Exit	*TOTAL*	Enter	Exit
Proposed External Trips	511	283	0	0	0	0	*794*	511	283
Existing External Trips	194	112	0	0	0	0	*306*	194	112
New Trips	**317**	**171**	**0**	**0**	**0**	**0**	*488*	317	171

	Enter	*Exit*	*Total*
New Primary + Diverted Trips	*317*	*171*	*488*

Comparison of Existing Mall Volumes (Dec 2005) to Forecasted Existing Mall Volumes

Exisitng Mall Counts (12/05)		Existing Forecast (from above)		Difference (Existing less Forecast)	
Enter	Exit	Enter	Exit	Enter	Exit
231	227				
120	140				
41	34				
93	124				
143	133				
137	155				
765	813	596	632	169	181
1578		1228		350	
48%	52%	49%	51%		

Volumes at Totem Lake Way/ 120th Ave NE excluded.

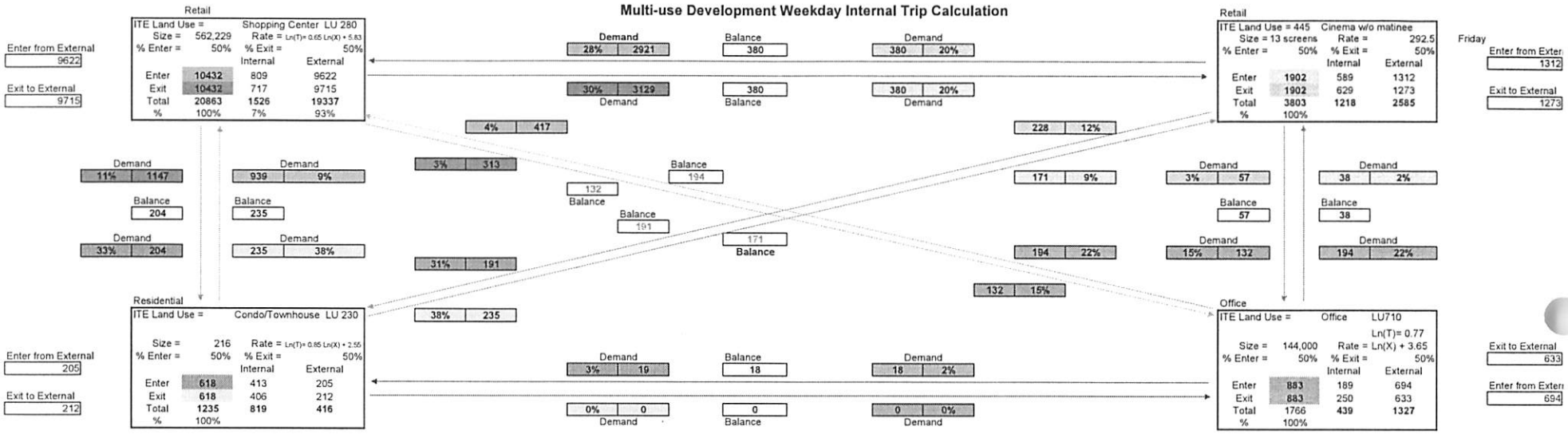
Adjusted net new trips

Enter	Exit	
986	1,251	Gross Forecast
765	813	Existing Count
221	438	
659		Actual Net New
390	619	Forecasted
1009		Net New
169	181	
350		Difference

Comparison of Mall Access Existing Counts to Forecasted Existing Conditions

	Existing (12/05)	Existing Forecast	Difference
Enter	765	596	169
Exit	813	632	181
Total	1,578	1,228	350

Multi-use Development Weekday Internal Trip Calculation

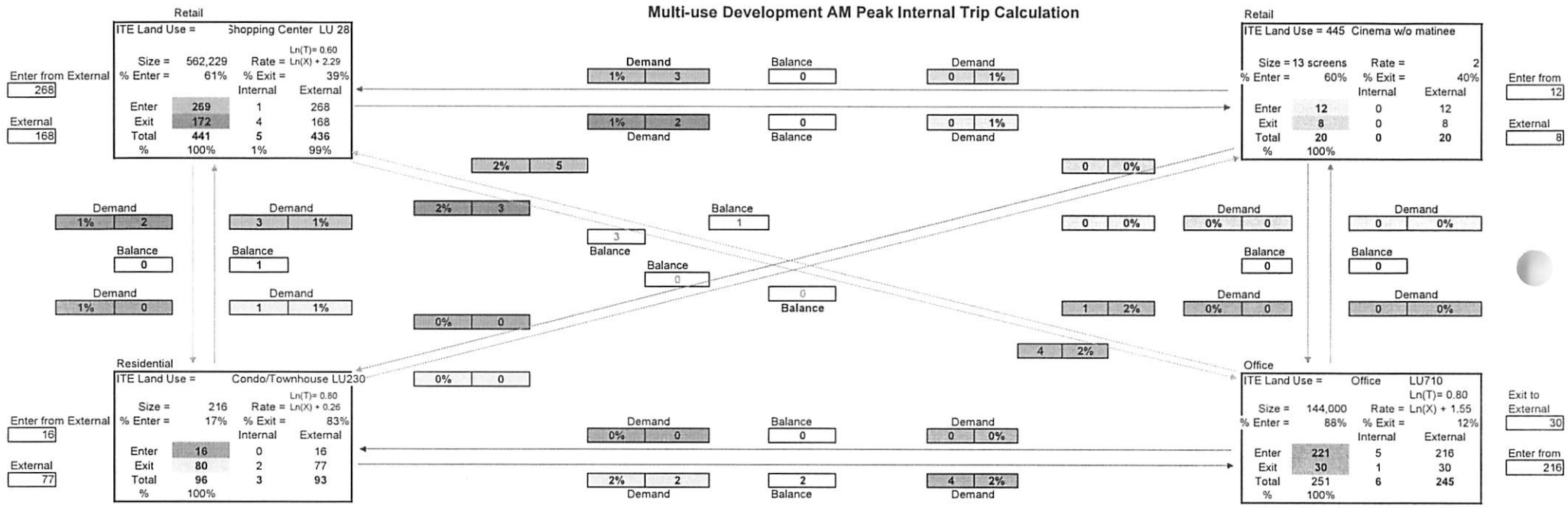


External Trips

	Shopping Center LU 280	Condo/Townhouse	Cinema w/o	Office	Sub-Total
External Enter	9622	205	1312	694	11832
External Exit	9715	212	1273	633	11832
Total External Trips	19337	416	2585	1327	23665
Internal Trips	1526	819	1218	439	4002
Gross Trips	20863	1235	3803	1766	27667
Overall Average Internal Capture Rate					14%

Source: 2001 ITE Trip Generation Handbook Methodology
Data Source: 7th Edition Trip Generation Report

Multi-use Development AM Peak Internal Trip Calculation



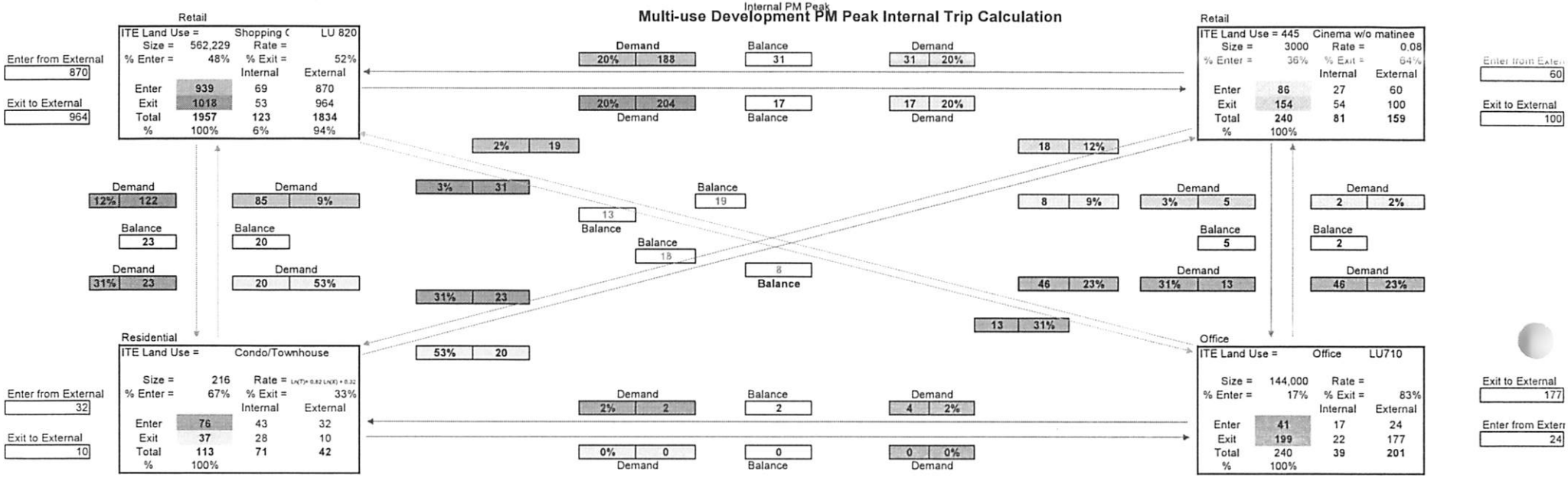
External Trips

	Shopping Center LU 280	Condo/Townhouse LU230	Cinema w/o matinee	Office	Sub-Total
External Enter	268	16	12	216	511
External Exit	168	77	8	30	283
Total External Trips	436	93	20	245	794
Internal Trips	5	3	0	6	14
Gross Trips	441	96	20	251	808
Overall Average Internal Capture Rate					2%

Source: 2001 ITE Trip Generation Handbook Methodology
Data Source: 7th Edition Trip Generation Report

Internal PM Peak

Multi-use Development PM Peak Internal Trip Calculation



External Trips

	Shopping Center	Condo/Townhouse	Cinema w/o	Office	Sub-Total
External Enter	870	32	60	24	986
External Exit	964	10	100	177	1251
Total External Trips	1834	42	159	201	2237
Internal Trips	123	71	81	39	313
Gross Trips	1957	113	240	240	2550
Overall Average Internal Capture Rate					12%

Source: 2001 ITE Trip Generation Handbook Methodology
Data Source: 7th Edition Trip Generation Report

Mall Access Assignment

PM Peak Hour

Mall Accesses	% Parking Supply		Enter	Exit	Enter %	Exit %	Enter	Exit
Upper North	15%	23%	148	100	15%	8%	151	209
Upper Central	25%	38%	246	626	25%	50%	251	349
Upper South	25%	38%	246	175	25%	14%	251	349
Lower North 120th	2%	6%	20	25	2%	2%	19	20
Lower Central 120th	5%	14%	49	50	5%	4%	47	49
Lower south 120th	2%	6%	20	25	2%	2%	19	20
TL North	5%	14%	49	50	5%	4%	47	49
TL Central	16%	46%	158	150	16%	12%	152	156
TL South	5%	14%	49	50	5%	4%	47	49
	100%		986	1251	100%	100%	**985**	**1249**
Parking Supply				2237				
Upper	2023	65%						
lower	1070	35%						
Total	3093							

Trips	Enter	Exit		Total Enter	Total Exit	TAZ Trips		x Factors	
Upper Office	24	177		657	913	395.37460	595.96020	1.662775	1.53267
Upper Cinema	60	100							
Upper Retail (66%)	574	636	OK						
Lower Retail (34%)	296	328		328	338	395.37460	595.96020	0.829907	0.566468
Lower Residential	32	10							
Totals	986	1251							
	2237								

Appendix 2

Assignment of Project and Background Traffic Volumes Worksheets

TSI
Transportation Solutions, Inc.

Assignment

Code	Intersection	Project PM Peak Turning Volumes											
		Eastbound			Westbound			Northbound			Southbound		
		LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
	120th Ave NE/North Driveway	20	0	0	0	0	0	0	10	0	0	26	19
	120th Ave NE/Center Blvd	10	0	39	0	0	0	34	0	0	0	13	13
	120th Ave NE/South Driveway	0	0	20	0	0	0	6	34	0	0	39	13
	Totem Lake Blvd/North Driveway	0	0	0	34	0	15	0	83	28	59	19	0
	Totem Lake Blvd/Central Blvd	0	0	0	88	0	68	0	43	112	8	42	0
	Totem Lake Blvd/South Driveway	0	0	0	34	0	15	0	140	28	8	122	0
301	120th Ave NE/NE 132nd St				5					6			
302	120th Ave NE/NE 130th St				2				6	5		5	
303	120th Ave NE/NE 128th St				1				13	1		8	
304	NE 132nd St/124th Ave NE	6			1	0			5	2		1	5
306	NE 124th St/ Slater Ave NE	0	19	1		14		1					
307	Totem Lake Blvd/120th Ave NE		62			59	6						
308	NE 124th St/120th Pl NE		34			1							
309	NE 118th ST/120th Ave NE	1											1
310	NE 116th St/120th Ave NE		1		3	2	0			2			
311	NE 116th ST/124th Ave NE	2					1		8		1	9	29
312	NE 124th St/116th Ave NE	5	5				1		1			1	11
313	NE 124th St/113th Pl NE		9			11							
314	Slater Ave NE/NE 120th St						1						
315	NE 124th St/124th Ave NE	34					24		12		21	40	1
316	Totem Lake Blvd/NE 132nd St			0	1			1	5	1		5	
317	I-405/SB Off NE 124th St		5								28		1
318	I-405/NB Off NE 124th St												
319	I-405/SB Off NE 116th St		2		24	5							
320	I-405/NB Off NE 116th St		2			29							
	Totem Lake Blvd/NE 128th St												
324	NE 128th ST/116th Way NE				12		16			7	6		
201	98th Ave NE/Juanita Dr				0				2			1	
202	100th Ave NE/NE 124th St		2		3	3	1			3			
203	100th Ave NE/NE 132nd St		2		0	4	4				2		
204	116th Way NE/NE 132nd St		0	6		1		16					
205	Market St/Forbes Creek				1				1				
206	98th Ave NE/NE 120th Pl	1							2			2	1
207	Juanita Drive/93rd Ave NE		1			0							
208	Juanita Dr/97th Ave NE	1											0
209	Market St/7th Ave												
211	Market St/15th Ave												
404	124th Ave NE/NE 100th St						1		4		1	5	
408	NE 90th St/ 124th Ave NE	0							4			3	0
403	NE 85th St/ 120th Ave NE	0	1			1							0
409	NE 85th St/122nd Ave NE		1			1							
402	NE 85th St/124th Ave NE	1					1		1		2		
412	NE 85th St/126th Ave NE		2			1							
401	NE 85th St/ 132nd Ave NE		2			1	1		2		1		
406	NE 70th St/132nd Ave NE								1			0	
101	Lake Wash/NE 38th Pl												
102	Lake Wash/Lakeview Dr												
103	State St/NE 68th St		1			0							
104	108th Ave NE/NE 68th St		0		0	0				0			
105	Central Way/6th St		1		0	1	1			0	1		
106	Central Way/3rd St		1			1							
107	Central Way/Lake St												
108	Lake St/Kirkland Ave												
109	NE 85th St/114th Ave NE		2							1	0		
110	6th St/4th Ave								0			0	
111	Kirkland Ave/3rd Ave												
112	Kirkland Way/6th St												0
113	Kirkland Ave/6th St								0				
411	NE 72nd Pl/I-405 SB Ramp				1		0						
407	NE 100th St/132nd Ave NE												
410	NE 70th St/116th Ave NE			1									
414	NE 60th St/116th Ave NE								1			0	
413	NE 60th St/132nd Ave NE								1			0	
405	120th Ave NE/NE 80th St												

Lower Mall Manual Adjustment due to 128th overpass

Code	Intersection	Project PM Peak Turning Volumes											
		Eastbound			Westbound			Northbound			Southbound		
		LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
	120th Ave NE/North Driveway								20			20	
	120th Ave NE/Center Blvd				-20		20				20		
	120th Ave NE/South Driveway								-20				
	Totem Lake Blvd/North Driveway												
	Totem Lake Blvd/Central Blvd												
	Totem Lake Blvd/South Driveway												
301	120th Ave NE/NE 132nd St												
302	120th Ave NE/NE 130th St												
303	120th Ave NE/NE 128th St												
304	NE 132nd St/124th Ave NE												
306	NE 124th St/ Slater Ave NE												
307	Totem Lake Blvd/120th Ave NE		-59			-44	24				39	20	
308	NE 124th St/120th Pl NE												
309	NE 118th ST/120th Ave NE												
310	NE 116th St/120th Ave NE						20				20		
311	NE 116th ST/124th Ave NE												-20
312	NE 124th St/116th Ave NE												
313	NE 124th St/113th Pl NE												
314	Slater Ave NE/NE 120th St												
315	NE 124th St/124th Ave NE	-20										-20	
316	Totem Lake Blvd/NE 132nd St												
317	I-405/SB Off NE 124th St												
318	I-405/NB Off NE 124th St												
319	I-405/SB Off NE 116th St				-20								
320	I-405/NB Off NE 116th St					-20							
	Totem Lake Blvd/NE 128th St			20				20					
324	NE 128th ST/116th Way NE	20								20			
201	98th Ave NE/Juanita Dr												
202	100th Ave NE/NE 124th St												
203	100th Ave NE/NE 132nd St												
204	116th Way NE/NE 132nd St												
205	Market St/Forbes Creek												
206	98th Ave NE/NE 120th Pl												
207	Juanita Drive/93rd Ave NE												
208	Juanita Dr/97th Ave NE												
209	Market St/7th Ave												
211	Market St/15th Ave												
404	124th Ave NE/NE 100th St												
408	NE 90th St/ 124th Ave NE												
403	NE 85th St/ 120th Ave NE												
409	NE 85th St/122nd Ave NE												
402	NE 85th St/124th Ave NE												
412	NE 85th St/126th Ave NE												
401	NE 85th St/ 132nd Ave NE												
406	NE 70th St/132nd Ave NE												
101	Lake Wash/NE 38th Pl												
102	Lake Wash/Lakeview Dr												
103	State St/NE 68th St												
104	108th Ave NE/NE 68th St												
105	Central Way/6th St												
106	Central Way/3rd St												
107	Central Way/Lake St												
108	Lake St/Kirkland Ave												
109	NE 85th St/114th Ave NE												
110	6th St/4th Ave												
111	Kirkland Ave/3rd Ave												
112	Kirkland Way/6th St												
113	Kirkland Ave/6th St												
411	NE 72nd Pl/I-405 SB Ramp												
407	NE 100th St/132nd Ave NE												
410	NE 70th St/116th Ave NE												
414	NE 60th St/116th Ave NE												
413	NE 60th St/132nd Ave NE												
405	120th Ave NE/NE 80th St												

Lower Mall Final Volumes

Code	Intersection	Project PM Peak Turning Volumes											
		Eastbound			Westbound			Northbound			Southbound		
		LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
	120th Ave NE/North Driveway	20							30			46	19
	120th Ave NE/Center Blvd	10		39	-20		20	34			20	13	13
	120th Ave NE/South Driveway			20				6	14			39	13
	Totem Lake Blvd/North Driveway				34		15		83	28	59	19	
	Totem Lake Blvd/Central Blvd				88		68		43	112	8	42	
	Totem Lake Blvd/South Driveway				34		15		140	28	8	122	
301	120th Ave NE/NE 132nd St				5					6			
302	120th Ave NE/NE 130th St				2				6	5		5	
303	120th Ave NE/NE 128th St				1				13	1		8	
304	NE 132nd St/124th Ave NE	6			1	0			5	2		1	5
306	NE 124th St/ Slater Ave NE	0	19	1		14		1					
307	Totem Lake Blvd/120th Ave NE		3			15	30				39	20	
308	NE 124th St/120th Pl NE		34			1							
309	NE 118th ST/120th Ave NE	1											1
310	NE 116th St/120th Ave NE		1		3	2	20			2	20		
311	NE 116th ST/124th Ave NE	2					1		8		1	9	9
312	NE 124th St/116th Ave NE	5	5				1		1			1	11
313	NE 124th St/113th Pl NE		9			11							
314	Slater Ave NE/NE 120th St						1						
315	NE 124th St/124th Ave NE	14					24		12		21	20	1
316	Totem Lake Blvd/NE 132nd St			0	1			1	5	1		5	
317	I-405/SB Off NE 124th St		5								28		1
318	I-405/NB Off NE 124th St												
319	I-405/SB Off NE 116th St		2		4	5							
320	I-405/NB Off NE 116th St		2			9							
	Totem Lake Blvd/NE 128th St			20				20					
324	NE 128th ST/116th Way NE	20			12		16			27	6		
201	98th Ave NE/Juanita Dr				0				2			1	
202	100th Ave NE/NE 124th St		2		3	3	1			3			
203	100th Ave NE/NE 132nd St		2		0	4	4				2		
204	116th Way NE/NE 132nd St		0	6		1		16					
205	Market St/Forbes Creek				1				1				
206	98th Ave NE/NE 120th Pl	1							2			2	1
207	Juanita Drive/93rd Ave NE		1			0							
208	Juanita Dr/97th Ave NE	1											0
209	Market St/7th Ave												
211	Market St/15th Ave												
404	124th Ave NE/NE 100th St						1		4		1	5	
408	NE 90th St/ 124th Ave NE	0							4			3	0
403	NE 85th St/ 120th Ave NE	0	1			1							0
409	NE 85th St/122nd Ave NE		1			1							
402	NE 85th St/124th Ave NE	1					1		1		2		
412	NE 85th St/128th Ave NE		2			1							
401	NE 85th St/ 132nd Ave NE		2			1	1		2		1		
406	NE 70th St/132nd Ave NE								1			0	
101	Lake Wash/NE 38th Pl												
102	Lake Wash/Lakeview Dr												
103	State St/NE 68th St		1			0							
104	108th Ave NE/NE 68th St		0		0	0				0			
105	Central Way/6th St		1		0	1	1			0	1		
106	Central Way/3rd St		1			1							
107	Central Way/Lake St												
108	Lake St/Kirkland Ave												
109	NE 85th St/114th Ave NE		2							1	0		
110	6th St/4th Ave								0			0	
111	Kirkland Ave/3rd Ave												
112	Kirkland Way/6th St												0
113	Kirkland Ave/6th St								0				
411	NE 72nd Pl/I-405 SB Ramp				1		0						
407	NE 100th St/132nd Ave NE												
410	NE 70th St/116th Ave NE			1									
414	NE 60th St/116th Ave NE								1			0	
413	NE 60th St/132nd Ave NE								1			0	
405	120th Ave NE/NE 80th St												

Assignment

Code	Intersection	Project PM Peak Turning Volumes											
		Eastbound			Westbound			Northbound			Southbound		
		LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
	120th Ave NE/North Driveway	0	0	0	58	0	151	0	159	0	151	74	0
	120th Ave NE/Center Blvd	0	14	0	147	92	110	0	49	163	74	58	0
	120th Ave NE/South Driveway	0	0	0	300	0	49	0	163	251	0	156	0
	Totem Lake Blvd/North Driveway	0	0	0	0	0	0	0	68	0	0	4	0
	Totem Lake Blvd/Central Blvd	0	0	0	24	0	68	0	0	10	4	0	0
	Totem Lake Blvd/South Driveway	0	0	0	0	0	0	0	10	0	0	24	0
301	120th Ave NE/NE 132nd St				12					23			
302	120th Ave NE/NE 130th St				4				23	15		12	
303	120th Ave NE/NE 128th St			43	4			112	46	10		19	
304	NE 132nd St/124th Ave NE	24			0	2			16	4		1	11
306	NE 124th St/ Slater Ave NE	1	50	2		29		4					
307	Totem Lake Blvd/120th Ave NE		11			4	113		46		145	108	
308	NE 124th St/120th Pl NE		57			4							
309	NE 118th ST/120th Ave NE	2											2
310	NE 116th St/120th Ave NE		1		8	4	0			4			
311	NE 116th ST/124th Ave NE	5					1		15		2	23	66
312	NE 124th St/116th Ave NE	17	3				2		2	1	21	3	31
313	NE 124th St/113th Pl NE		15			31							
314	Slater Ave NE/NE 120th St				0		3						
315	NE 124th St/124th Ave NE						48		23		57	96	4
316	Totem Lake Blvd/NE 132nd St			1	0			0	12	4		9	
317	I-405/SB Off NE 124th St		20								53		2
318	I-405/NB Off NE 124th St		57										
319	I-405/SB On NE 116th St		5		53	13							
320	I-405/NB Off NE 116th St		5			66							
	Totem Lake Blvd/NE 128th St		32			96	16				11		
324	NE 128th ST/116th Way NE				52		44			18	15		
201	98th Ave NE/Juanita Dr				1				4	0		3	
202	100th Ave NE/NE 124th St		4		9	8	4			7			
203	100th Ave NE/NE 132nd St		5		1	11	16				7		
204	116th Way NE/NE 132nd St		1	15		0		44					
205	Market St/Forbes Creek				3				2			0	
206	98th Ave NE/NE 120th Pl	1							14			21	2
207	Juanita Drive/93rd Ave NE		1			2							
208	Juanita Dr/97th Ave NE	1											2
209	Market St/7th Ave												
211	Market St/15th Ave												
404	124th Ave NE/NE 100th St						2		9		3	10	
408	NE 90th St/ 124th Ave NE	1							7			9	1
403	NE 85th St/ 120th Ave NE	1	3			1		0					0
409	NE 85th St/122nd Ave NE		3			1							
402	NE 85th St/124th Ave NE	2		1		1	3		2		8		
412	NE 85th St/128th Ave NE		6			2							
401	NE 85th St/ 132nd Ave NE		4	2		1	3		2		5		2
406	NE 70th St/132nd Ave NE		0				0		2			1	
101	Lake Wash/NE 38th Pl												
102	Lake Wash/Lakeview Dr												
103	State St/NE 68th St		0			0	1				1		
104	108th Ave NE/NE 68th St		2		1	2				1			
105	Central Way/6th St		4		1	6	0			1	0		
106	Central Way/3rd St		2		0	3				0			
107	Central Way/Lake St		1		1								
108	Lake St/Kirkland Ave		1			1							
109	NE 85th St/114th Ave NE		5		3	8	2			2	1		
110	6th St/4th Ave								1			1	
111	Kirkland Ave/3rd Ave	0										0	
112	Kirkland Way/6th St	1							0				1
113	Kirkland Ave/6th St								0			0	
411	NE 72nd Pl/I-405 SB Ramp				3		1			2			
407	NE 100th St/132nd Ave NE			1				1	5			5	
410	NE 70th St/116th Ave NE			3					1				
414	NE 60th St/116th Ave NE								1			1	
413	NE 60th St/132nd Ave NE								2			0	
405	120th Ave NE/NE 80th St		1										

Upper Mall Manual Adjustment due to 128th overpass

Code	Intersection	Project PM Peak Turning Volumes											
		Eastbound			Westbound			Northbound			Southbound		
		LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
	120th Ave NE/North Driveway						14		14		19	19	
	120th Ave NE/Center Blvd								14		19		
	120th Ave NE/South Driveway						14						
	Totem Lake Blvd/North Driveway												
	Totem Lake Blvd/Central Blvd												
	Totem Lake Blvd/South Driveway												
301	120th Ave NE/NE 132nd St												
302	120th Ave NE/NE 130th St												
303	120th Ave NE/NE 128th St			38				28					
304	NE 132nd St/124th Ave NE												
306	NE 124th St/ Slater Ave NE												
307	Totem Lake Blvd/120th Ave NE						-38				-28		
308	NE 124th St/120th Pl NE		-38										
309	NE 118th ST/120th Ave NE												
310	NE 116th St/120th Ave NE												
311	NE 116th ST/124th Ave NE												-28
312	NE 124th St/116th Ave NE												
313	NE 124th St/113th Pl NE												
314	Slater Ave NE/NE 120th St												
315	NE 124th St/124th Ave NE	-38										-28	
316	Totem Lake Blvd/NE 132nd St												
317	I-405/SB Off NE 124th St			28							-38		38
318	I-405/NB Off NE 124th St		-38										
319	I-405/SB On NE 116th St				-28								
320	I-405/NB Off NE 116th St					-28							
325	Totem Lake Blvd/NE 128th St		38			28							
324	NE 128th ST/116th Way NE				28					38			
201	98th Ave NE/Juanita Dr												
202	100th Ave NE/NE 124th St												
203	100th Ave NE/NE 132nd St												
204	116th Way NE/NE 132nd St												
205	Market St/Forbes Creek												
206	98th Ave NE/NE 120th Pl												
207	Juanita Drive/93rd Ave NE												
208	Juanita Dr/97th Ave NE												
209	Market St/7th Ave												
211	Market St/15th Ave												
404	124th Ave NE/NE 100th St												
408	NE 90th St/ 124th Ave NE												
403	NE 85th St/ 120th Ave NE												
409	NE 85th St/122nd Ave NE												
402	NE 85th St/124th Ave NE												
412	NE 85th St/128th Ave NE												
401	NE 85th St/ 132nd Ave NE												
406	NE 70th St/132nd Ave NE												
101	Lake Wash/NE 38th Pl												
102	Lake Wash/Lakeview Dr												
103	State St/NE 68th St												
104	108th Ave NE/NE 68th St												
105	Central Way/6th St												
106	Central Way/3rd St												
107	Central Way/Lake St												
108	Lake St/Kirkland Ave												
109	NE 85th St/114th Ave NE												
110	6th St/4th Ave												
111	Kirkland Ave/3rd Ave												
112	Kirkland Way/6th St												
113	Kirkland Ave/6th St												
411	NE 72nd Pl/I-405 SB Ramp												
407	NE 100th St/132nd Ave NE												
410	NE 70th St/116th Ave NE												
414	NE 60th St/116th Ave NE												
413	NE 60th St/132nd Ave NE												
405	120th Ave NE/NE 80th St												

Upper Mall Final Volumes

Code	Intersection	Project PM Peak Turning Volumes											
		Eastbound			Westbound			Northbound			Southbound		
		LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
	120th Ave NE/North Driveway				58		165		173		170	93	
	120th Ave NE/Center Blvd		14		147	92	110		63	163	93	58	
	120th Ave NE/South Driveway				300		63		163	251		156	
	Totem Lake Blvd/North Driveway								68			4	
	Totem Lake Blvd/Central Blvd				24		68			10	4		
	Totem Lake Blvd/South Driveway								10			24	
301	120th Ave NE/NE 132nd St				12					23			
302	120th Ave NE/NE 130th St				4				23	15		12	
303	120th Ave NE/NE 128th St			81	4			140	46	10		19	
304	NE 132nd St/124th Ave NE	24			0	2			16	4		1	11
306	NE 124th St/ Slater Ave NE	1	50	2		29		4					
307	Totem Lake Blvd/120th Ave NE		11			4	75		46		117	108	
308	NE 124th St/120th Pl NE		19			4							
309	NE 118th ST/120th Ave NE	2											2
310	NE 116th St/120th Ave NE		1		8	4	0			4			
311	NE 116th ST/124th Ave NE	5					1		15		2	23	38
312	NE 124th St/116th Ave NE	17	3				2		2	1	21	3	31
313	NE 124th St/113th Pl NE		15			31							
314	Slater Ave NE/NE 120th St				0		3						
315	NE 124th St/124th Ave NE	-38					48		23		57	68	4
316	Totem Lake Blvd/NE 132nd St			1	0			0	12	4		9	
317	I-405/SB Off NE 124th St		20	28							15		40
318	I-405/NB Off NE 124th St		19										
319	I-405/SB On NE 116th St		5		25	13							
320	I-405/NB Off NE 116th St		5			38							
	Totem Lake Blvd/NE 128th St		70			124	16				11		
324	NE 128th ST/116th Way NE				80		44			56	15		
201	98th Ave NE/Juanita Dr				1				4	0		3	
202	100th Ave NE/NE 124th St		4		9	8	4			7			
203	100th Ave NE/NE 132nd St		5		1	11	16				7		
204	116th Way NE/NE 132nd St		1	15		0		44					
205	Market St/Forbes Creek				3				2			0	
206	98th Ave NE/NE 120th Pl	1							14			21	2
207	Juanita Drive/93rd Ave NE		1			2							
208	Juanita Dr/97th Ave NE	1											2
209	Market St/7th Ave												
211	Market St/15th Ave												
404	124th Ave NE/NE 100th St						2		9		3	10	
408	NE 90th St/ 124th Ave NE	1							7			9	1
403	NE 85th St/ 120th Ave NE	1	3			1		0					0
409	NE 85th St/122nd Ave NE		3			1							
402	NE 85th St/124th Ave NE	2		1		1	3		2		8		
412	NE 85th St/128th Ave NE		6			2							
401	NE 85th St/ 132nd Ave NE		4	2		1	3		2		5		2
406	NE 70th St/132nd Ave NE		0				0		2			1	
101	Lake Wash/NE 38th Pl												
102	Lake Wash/Lakeview Dr												
103	State St/NE 68th St		0			0	1				1		
104	108th Ave NE/NE 68th St		2		1	2				1			
105	Central Way/6th St		4		1	6	0			1	0		
106	Central Way/3rd St		2		0	3				0			
107	Central Way/Lake St		1		1								
108	Lake St/Kirkland Ave		1			1							
109	NE 85th St/114th Ave NE		5		3	8	2			2	1		
110	6th St/4th Ave								1			1	
111	Kirkland Ave/3rd Ave	0										0	
112	Kirkland Way/6th St	1							0				1
113	Kirkland Ave/6th St								0			0	
411	NE 72nd Pl/I-405 SB Ramp				3		1			2			
407	NE 100th St/132nd Ave NE			1				1	5			5	
410	NE 70th St/116th Ave NE			3					1				
414	NE 60th St/116th Ave NE								1			1	
413	NE 60th St/132nd Ave NE								2			0	
405	120th Ave NE/NE 80th St		1										

BKR Assignment

Code	Intersection	Project PM Peak Turning Volumes											
		Eastbound			Westbound			Northbound			Southbound		
		LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
	120th Ave NE/North Driveway	20			58		151		169		151	100	19
	120th Ave NE/Center Blvd	10	14	39	147	92	110	34	49	163	74	71	13
	120th Ave NE/South Driveway			20	300		49	6	197	251		195	13
	Totem Lake Blvd/North Driveway				34		15		151	28	59	23	
	Totem Lake Blvd/Central Blvd				112		136		43	122	12	42	
	Totem Lake Blvd/South Driveway				34		15		150	28	8	146	
301	120th Ave NE/NE 132nd St				17					29			
302	120th Ave NE/NE 130th St				5				29	20		17	
303	120th Ave NE/NE 128th St			43	6			112	58	11		27	
304	NE 132nd St/124th Ave NE	30			1	2			20	6		2	15
306	NE 124th St/ Slater Ave NE	1	68	3		43		6					
307	Totem Lake Blvd/120th Ave NE		73			62	119		46		145	108	
308	NE 124th St/120th Pl NE		91			5							
309	NE 116th ST/120th Ave NE	3											3
310	NE 116th St/120th Ave NE		2		11	6	1			5			
311	NE 116th ST/124th Ave NE	7					2		23		3	31	95
312	NE 124th St/116th Ave NE	21	7				3		3	1	21	4	42
313	NE 124th St/113th Pl NE		25			42							
314	Slater Ave NE/NE 120th St				0		4						
315	NE 124th St/124th Ave NE	34					73		35		77	136	5
316	Totem Lake Blvd/NE 132nd St			1	1			2	17	5		15	
317	I-405/SB Off NE 124th St		24								81		2
318	I-405/NB Off NE 124th St		57										
319	I-405/SB On NE 116th St		7		77	18							
320	I-405/NB Off NE 116th St		7			95							
	Totem Lake Blvd/NE 128th St		32			96	16				11		
324	NE 128th ST/116th Way NE				65		59			26	22		
201	98th Ave NE/Juanita Dr				1				6	0		4	
202	100th Ave NE/NE 124th St		6		11	10	5			10			
203	100th Ave NE/NE 132nd St		7		2	16	20				10		
204	116th Way NE/NE 132nd St		1	21		2		59					
205	Market St/Forbes Creek				4				3			0	
206	98th Ave NE/NE 120th Pl	2							17			23	3
207	Juanita Drive/93rd Ave NE		2			2							
208	Juanita Dr/97th Ave NE	2											2
209	Market St/7th Ave												
211	Market St/15th Ave												
404	124th Ave NE/NE 100th St						3		13		4	14	
408	NE 90th St/ 124th Ave NE	2							11			12	1
403	NE 85th St/ 120th Ave NE	1	4			2		0					1
409	NE 85th St/122nd Ave NE		5			2							
402	NE 85th St/124th Ave NE	4		1		1	4		3		10		
412	NE 85th St/128th Ave NE		9			4							
401	NE 85th St/ 132nd Ave NE		6	2		2	4		4		6		2
406	NE 70th St/132nd Ave NE		0				0		4			1	
101	Lake Wash/NE 38th Pl												
102	Lake Wash/Lakeview Dr												
103	State St/NE 68th St		1			1	1				1		
104	108th Ave NE/NE 68th St		2		1	2				1			
105	Central Way/6th St		6		1	8	2			1	1		
106	Central Way/3rd St		3		0	4				0			
107	Central Way/Lake St		1		1								
108	Lake St/Kirkland Ave		1			1							
109	NE 85th St/114th Ave NE		8		3	8	2			3	1		
110	6th St/4th Ave								1			1	
111	Kirkland Ave/3rd Ave	0										0	
112	Kirkland Way/6th St	1							0				1
113	Kirkland Ave/6th St								1			0	
411	NE 72nd Pl/I-405 SB Ramp				4		1			2			
407	NE 100th St/132nd Ave NE			1				1	5			5	
410	NE 70th St/116th Ave NE			4					1				
414	NE 60th St/116th Ave NE								2			1	
413	NE 60th St/132nd Ave NE								4			1	
405	120th Ave NE/NE 80th St	0	1	0									

Manual Adjustment

Code	Intersection	Project PM Peak Turning Volumes											
		Eastbound			Westbound			Northbound			Southbound		
		LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
	120th Ave NE/North Driveway						14		34		19	39	
	120th Ave NE/Center Blvd				-20		20		14		39		
	120th Ave NE/South Driveway						14		-20				
	Totem Lake Blvd/North Driveway												
	Totem Lake Blvd/Central Blvd												
	Totem Lake Blvd/South Driveway												
301	120th Ave NE/NE 132nd St												
302	120th Ave NE/NE 130th St												
303	120th Ave NE/NE 128th St			38				28					
304	NE 132nd St/124th Ave NE												
306	NE 124th St/ Slater Ave NE												
307	Totem Lake Blvd/120th Ave NE		-59			-44	-14				11	20	
308	NE 124th St/120th Pl NE		-38										
309	NE 118th ST/120th Ave NE												
310	NE 116th St/120th Ave NE						20				20		
311	NE 116th ST/124th Ave NE												-48
312	NE 124th St/116th Ave NE												
313	NE 124th St/113th Pl NE												
314	Slater Ave NE/NE 120th St												
315	NE 124th St/124th Ave NE	-58										-48	
316	Totem Lake Blvd/NE 132nd St												
317	I-405/SB Off NE 124th St			28							-38		38
318	I-405/NB Off NE 124th St		-38										
319	I-405/SB On NE 116th St				-48								
320	I-405/NB Off NE 116th St					-48							
	Totem Lake Blvd/NE 128th St		38	20		28		20					
324	NE 128th ST/116th Way NE	20			28					58			
201	98th Ave NE/Juanita Dr												
202	100th Ave NE/NE 124th St												
203	100th Ave NE/NE 132nd St												
204	116th Way NE/NE 132nd St												
205	Market St/Forbes Creek												
206	98th Ave NE/NE 120th Pl												
207	Juanita Drive/93rd Ave NE												
208	Juanita Dr/97th Ave NE												
209	Market St/7th Ave												
211	Market St/15th Ave												
404	124th Ave NE/NE 100th St												
408	NE 90th St/ 124th Ave NE												
403	NE 85th St/ 120th Ave NE												
409	NE 85th St/122nd Ave NE												
402	NE 85th St/124th Ave NE												
412	NE 85th St/128th Ave NE												
401	NE 85th St/ 132nd Ave NE												
406	NE 70th St/132nd Ave NE												
101	Lake Wash/NE 38th Pl												
102	Lake Wash/Lakeview Dr												
103	State St/NE 68th St												
104	108th Ave NE/NE 68th St												
105	Central Way/6th St												
106	Central Way/3rd St												
107	Central Way/Lake St												
108	Lake St/Kirkland Ave												
109	NE 85th St/114th Ave NE												
110	6th St/4th Ave												
111	Kirkland Ave/3rd Ave												
112	Kirkland Way/6th St												
113	Kirkland Ave/6th St												
411	NE 72nd Pl/I-405 SB Ramp												
407	NE 100th St/132nd Ave NE												
410	NE 70th St/116th Ave NE												
414	NE 60th St/116th Ave NE												
413	NE 60th St/132nd Ave NE												
405	120th Ave NE/NE 80th St	0	0	0									

Final Volumes

Code	Intersection	Project PM Peak Turning Volumes											
		Eastbound			Westbound			Northbound			Southbound		
		LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
	120th Ave NE/North Driveway	20			58		165		203		170	139	19
	120th Ave NE/Center Blvd	10	14	39	127	92	111	34	63	168	113	71	13
	120th Ave NE/South Driveway			20	300		63	6	177	251		195	13
	Totem Lake Blvd/North Driveway				34		15		151	28	59	23	
	Totem Lake Blvd/Central Blvd				112		136		43	122	12	42	
	Totem Lake Blvd/South Driveway				34		15		150	28	8	146	
301	120th Ave NE/NE 132nd St				17					29			
302	120th Ave NE/NE 130th St				5				29	20		17	
303	120th Ave NE/NE 128th St			81	6			140	58	11		27	
304	NE 132nd St/124th Ave NE	30			1	2			20	6		2	15
306	NE 124th St/ Slater Ave NE	1	68	3		43		6					
307	Totem Lake Blvd/120th Ave NE		14			18	105		46		156	128	
308	NE 124th St/120th Pl NE		53			5							
309	NE 118th ST/120th Ave NE	3											3
310	NE 116th St/120th Ave NE		2		11	6	21			5	20		
311	NE 116th ST/124th Ave NE	7					2		23		3	31	47
312	NE 124th St/116th Ave NE	21	7				3		3	1	21	4	42
313	NE 124th St/113th Pl NE		25			42							
314	Slater Ave NE/NE 120th St				0		4						
315	NE 124th St/124th Ave NE	-24					73		35		77	88	5
316	Totem Lake Blvd/NE 132nd St			1	1			2	17	5		15	
317	I-405/SB Off NE 124th St		24	28							43		40
318	I-405/NB Off NE 124th St		19										
319	I-405/SB On NE 116th St		7		29	18							
320	I-405/NB Off NE 116th St		7			47							
xxx	Totem Lake Blvd/NE 128th St		70	20		124	16	20			11		
324	NE 128th ST/116th Way NE	20			93		59			84	22		
201	98th Ave NE/Juanita Dr				1				6	0		4	
202	100th Ave NE/NE 124th St		6		11	10	5			10			
203	100th Ave NE/NE 132nd St		7		2	16	20				10		
204	116th Way NE/NE 132nd St		1	21		2		59					
205	Market St/Forbes Creek				4				3			0	
206	98th Ave NE/NE 120th Pl	2							17			23	3
207	Juanita Drive/93rd Ave NE		2			2							
208	Juanita Dr/97th Ave NE	2											2
209	Market St/7th Ave												
211	Market St/15th Ave												
404	124th Ave NE/NE 100th St						3		13		4	14	
408	NE 90th St/ 124th Ave NE	2							11			12	1
403	NE 85th St/ 120th Ave NE	1	4			2		0					1
409	NE 85th St/122nd Ave NE		5			2							
402	NE 85th St/124th Ave NE	4		1		1	4		3		10		
412	NE 85th St/128th Ave NE		9			4							
401	NE 85th St/ 132nd Ave NE		6	2		2	4		4		6		2
406	NE 70th St/132nd Ave NE		0				0		4			1	
101	Lake Wash/NE 38th Pl												
102	Lake Wash/Lakeview Dr												
103	State St/NE 68th St		1			1	1				1		
104	108th Ave NE/NE 68th St		2		1	2				1			
105	Central Way/6th St		6		1	8	2			1	1		
106	Central Way/3rd St		3		0	4				0			
107	Central Way/Lake St		1		1								
108	Lake St/Kirkland Ave		1			1							
109	NE 85th St/114th Ave NE		8		3	8	2			3	1		
110	6th St/4th Ave								1			1	
111	Kirkland Ave/3rd Ave	0										0	
112	Kirkland Way/6th St	1							0				1
113	Kirkland Ave/5th St								1			0	
411	NE 72nd Pl/I-405 SB Ramp				4		1			2			
407	NE 100th St/132nd Ave NE			1				1	5			5	
410	NE 70th St/116th Ave NE			4					1				
414	NE 60th St/116th Ave NE								2			1	
413	NE 60th St/132nd Ave NE								4			1	
405	120th Ave NE/NE 80th St	0	1	0									

Diversion for Future Background traffic

Assignment

Code	Intersection	Project PM Peak Turning Volumes											
		Eastbound			Westbound			Northbound			Southbound		
		LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
	120th Ave NE/North Driveway												
	120th Ave NE/Center Blvd												
	120th Ave NE/South Driveway												
	Totem Lake Blvd/North Driveway												
	Totem Lake Blvd/Central Blvd												
	Totem Lake Blvd/South Driveway												
301	120th Ave NE/NE 132nd St												
302	120th Ave NE/NE 130th St												
303	120th Ave NE/NE 128th St												
304	NE 132nd St/124th Ave NE												
306	NE 124th St/ Slater Ave NE												
307	Totem Lake Blvd/120th Ave NE												
308	NE 124th St/120th Pl NE												
309	NE 118th ST/120th Ave NE												
310	NE 116th St/120th Ave NE												
311	NE 116th ST/124th Ave NE												
312	NE 124th St/116th Ave NE												
313	NE 124th St/113th Pl NE												
314	Slater Ave NE/NE 120th St												
315	NE 124th St/124th Ave NE												
316	Totem Lake Blvd/NE 132nd St												
317	I-405/SB Off NE 124th St												
318	I-405/NB Off NE 124th St												
319	I-405/SB On NE 116th St												
320	I-405/NB Off NE 116th St												
	Totem Lake Blvd/NE 128th St												
324	NE 128th ST/116th Way NE												
201	98th Ave NE/Juanita Dr												
202	100th Ave NE/NE 124th St												
203	100th Ave NE/NE 132nd St												
204	116th Way NE/NE 132nd St												
205	Market St/Forbes Creek												
206	98th Ave NE/NE 120th Pl												
207	Juanita Drive/93rd Ave NE												
208	Juanita Dr/97th Ave NE												
209	Market St/7th Ave												
211	Market St/15th Ave												
404	124th Ave NE/NE 100th St												
408	NE 90th St/ 124th Ave NE												
403	NE 85th St/ 120th Ave NE												
409	NE 85th St/122nd Ave NE												
402	NE 85th St/124th Ave NE												
412	NE 85th St/128th Ave NE												
401	NE 85th St/ 132nd Ave NE												
406	NE 70th St/132nd Ave NE												
101	Lake Wash/NE 38th Pl												
102	Lake Wash/Lakeview Dr												
103	State St/NE 68th St												
104	108th Ave NE/NE 68th St												
105	Central Way/6th St												
106	Central Way/3rd St												
107	Central Way/Lake St												
108	Lake St/Kirkland Ave												
109	NE 85th St/114th Ave NE												
110	6th St/4th Ave												
111	Kirkland Ave/3rd Ave												
112	Kirkland Way/6th St												
113	Kirkland Ave/6th St												
411	NE 72nd Pl/I-405 SB Ramp												
407	NE 100th St/132nd Ave NE												
410	NE 70th St/116th Ave NE												
414	NE 60th St/116th Ave NE												
413	NE 60th St/132nd Ave NE												
405	120th Ave NE/NE 60th St												

Diversion of Future background traffic due to traffic calming on 120th Ave NE

Code	Intersection	Project PM Peak Turning Volumes											
		Eastbound			Westbound			Northbound			Southbound		
		LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
	120th Ave NE/North Driveway								-266				
	120th Ave NE/Center Blvd								-266				
	120th Ave NE/South Driveway								-266				
	Totem Lake Blvd/North Driveway								266				
	Totem Lake Blvd/Central Blvd								266				
	Totem Lake Blvd/South Driveway								266				
301	120th Ave NE/NE 132nd St												
302	120th Ave NE/NE 130th St												
303	120th Ave NE/NE 128th St	173	32		-87	87		-61	-176	-32		-241	241
304	NE 132nd St/124th Ave NE												
306	NE 124th St/ Slater Ave NE												
307	Totem Lake Blvd/120th Ave NE		232	96		266	-266	164	-164		-232	-96	
308	NE 124th St/120th Pl NE												
309	NE 118th ST/120th Ave NE												
310	NE 116th St/120th Ave NE												
311	NE 116th ST/124th Ave NE												
312	NE 124th St/116th Ave NE												
313	NE 124th St/113th Pl NE												
314	Slater Ave NE/NE 120th St												
315	NE 124th St/124th Ave NE												
316	Totem Lake Blvd/NE 132nd St												
317	I-405/SB Off NE 124th St												
318	I-405/NB Off NE 124th St												
319	I-405/SB On NE 116th St												
320	I-405/NB Off NE 116th St												
	Totem Lake Blvd/NE 128th St				328					266			
324	NE 128th ST/116th Way NE												
201	98th Ave NE/Juanita Dr												
202	100th Ave NE/NE 124th St												
203	100th Ave NE/NE 132nd St												
204	116th Way NE/NE 132nd St												
205	Market St/Forbes Creek												
206	98th Ave NE/NE 120th Pl												
207	Juanita Drive/93rd Ave NE												
208	Juanita Dr/97th Ave NE												
209	Market St/7th Ave												
211	Market St/15th Ave												
404	124th Ave NE/NE 100th St												
408	NE 90th St/ 124th Ave NE												
403	NE 85th St/ 120th Ave NE												
409	NE 85th St/122nd Ave NE												
402	NE 85th St/124th Ave NE												
412	NE 85th St/128th Ave NE												
401	NE 85th St/ 132nd Ave NE												
406	NE 70th St/132nd Ave NE												
101	Lake Wash/NE 38th Pl												
102	Lake Wash/Lakeview Dr												
103	State St/NE 68th St												
104	108th Ave NE/NE 68th St												
105	Central Way/6th St												
106	Central Way/3rd St												
107	Central Way/Lake St												
108	Lake St/Kirkland Ave												
109	NE 85th St/114th Ave NE												
110	6th St/4th Ave												
111	Kirkland Ave/3rd Ave												
112	Kirkland Way/6th St												
113	Kirkland Ave/6th St												
411	NE 72nd Pl/I-405 SB Ramp												
407	NE 100th St/132nd Ave NE												
410	NE 70th St/116th Ave NE												
414	NE 60th St/116th Ave NE												
413	NE 60th St/132nd Ave NE												
405	120th Ave NE/NE 60th St												

Final Volumes Diversion of Future background traffic due to traffic calming on 120th Ave NE

Code	Intersection	Project PM Peak Turning Volumes											
		Eastbound			Westbound			Northbound			Southbound		
		LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
	120th Ave NE/North Driveway								-266			-328	
	120th Ave NE/Center Blvd								-266			-328	
	120th Ave NE/South Driveway								-266			-328	
	Totem Lake Blvd/North Driveway								266			328	
	Totem Lake Blvd/Central Blvd								266			328	
	Totem Lake Blvd/South Driveway								266			328	
301	120th Ave NE/NE 132nd St												
302	120th Ave NE/NE 130th St												
303	120th Ave NE/NE 128th St	173	5		-87	87		-88	-173	-5		-241	241
304	NE 132nd St/124th Ave NE												
306	NE 124th St/ Slater Ave NE												
307	Totem Lake Blvd/120th Ave NE	0	232	96		166	-166	100	-100	0	-232	-96	
308	NE 124th St/120th Pl NE												
309	NE 118th ST/120th Ave NE												
310	NE 116th St/120th Ave NE												
311	NE 115th ST/124th Ave NE												
312	NE 124th St/118th Ave NE												
313	NE 124th St/113th Pl NE												
314	Slater Ave NE/NE 120th St												
315	NE 124th St/124th Ave NE												
316	Totem Lake Blvd/NE 132nd St												
317	I-405/SB Off NE 124th St												
318	I-405/NB Off NE 124th St												
319	I-405/SB On NE 116th St												
320	I-405/NB Off NE 116th St												
xxx	Totem Lake Blvd/NE 128th St				328				100	166			
324	NE 128th ST/116th Way NE												
201	98th Ave NE/Juanita Dr												
202	100th Ave NE/NE 124th St												
203	100th Ave NE/NE 132nd St												
204	116th Way NE/NE 132nd St												
205	Market St/Forbes Creek												
206	98th Ave NE/NE 120th Pl												
207	Juanita Drive/93rd Ave NE												
208	Juanita Dr/97th Ave NE												
209	Market St/7th Ave												
211	Market St/15th Ave												
404	124th Ave NE/NE 100th St												
408	NE 90th St/ 124th Ave NE												
403	NE 85th St/ 120th Ave NE												
409	NE 85th St/122nd Ave NE												
402	NE 85th St/124th Ave NE												
412	NE 85th St/128th Ave NE												
401	NE 85th St/ 132nd Ave NE												
406	NE 70th St/132nd Ave NE												
101	Lake Wash/NE 38th Pl												
102	Lake Wash/Lakeview Dr												
103	State St/NE 68th St												
104	108th Ave NE/NE 68th St												
105	Central Way/6th St												
106	Central Way/3rd St												
107	Central Way/Lake St												
108	Lake St/Kirkland Ave												
109	NE 85th St/114th Ave NE												
110	6th St/4th Ave												
111	Kirkland Ave/3rd Ave												
112	Kirkland Way/6th St												
113	Kirkland Ave/6th St												
411	NE 72nd Pl/I-405 SB Ramp												
407	NE 100th St/132nd Ave NE												
410	NE 70th St/116th Ave NE												
414	NE 60th St/116th Ave NE												
413	NE 60th St/132nd Ave NE												
405	120th Ave NE/NE 60th St	0	0	0									

Diversion for Future Background traffic

Assignment

Code	Intersection	Project PM Peak Turning Volumes											
		Eastbound			Westbound			Northbound			Southbound		
		LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
	120th Ave NE/North Driveway												
	120th Ave NE/Center Blvd												
	120th Ave NE/South Driveway												
	Totem Lake Blvd/North Driveway												
	Totem Lake Blvd/Central Blvd												
	Totem Lake Blvd/South Driveway												
301	120th Ave NE/NE 132nd St												
302	120th Ave NE/NE 130th St												
303	120th Ave NE/NE 128th St												
304	NE 132nd St/124th Ave NE												
306	NE 124th St/ Slater Ave NE												
307	Totem Lake Blvd/120th Ave NE												
308	NE 124th St/120th Pl NE												
309	NE 118th ST/120th Ave NE												
310	NE 116th St/120th Ave NE												
311	NE 118th ST/124th Ave NE												
312	NE 124th St/116th Ave NE												
313	NE 124th St/113th Pl NE												
314	Slater Ave NE/NE 120th St												
315	NE 124th St/124th Ave NE												
316	Totem Lake Blvd/NE 132nd St												
317	I-405/SB Off NE 124th St												
318	I-405/NB Off NE 124th St												
319	I-405/SB On NE 116th St												
320	I-405/NB Off NE 116th St												
	Totem Lake Blvd/NE 128th St												
324	NE 128th ST/116th Way NE												
201	98th Ave NE/Juanita Dr												
202	100th Ave NE/NE 124th St												
203	100th Ave NE/NE 132nd St												
204	116th Way NE/NE 132nd St												
205	Market St/Forbes Creek												
206	98th Ave NE/NE 120th Pl												
207	Juanita Drive/93rd Ave NE												
208	Juanita Dr/97th Ave NE												
209	Market St/7th Ave												
211	Market St/15th Ave												
404	124th Ave NE/NE 100th St												
408	NE 90th St/ 124th Ave NE												
403	NE 85th St/ 120th Ave NE												
409	NE 85th St/122nd Ave NE												
402	NE 85th St/124th Ave NE												
412	NE 85th St/128th Ave NE												
401	NE 85th St/ 132nd Ave NE												
406	NE 70th St/132nd Ave NE												
101	Lake Wash/NE 38th Pl												
102	Lake Wash/Lakeview Dr												
103	State St/NE 68th St												
104	108th Ave NE/NE 68th St												
105	Central Way/6th St												
106	Central Way/3rd St												
107	Central Way/Lake St												
108	Lake St/Kirkland Ave												
109	NE 85th St/114th Ave NE												
110	6th St/4th Ave												
111	Kirkland Ave/3rd Ave												
112	Kirkland Way/8th St												
113	Kirkland Ave/6th St												
411	NE 72nd Pl/I-405 SB Ramp												
407	NE 100th St/132nd Ave NE												
410	NE 70th St/116th Ave NE												
414	NE 60th St/116th Ave NE												
413	NE 60th St/132nd Ave NE												
405	120th Ave NE/NE 80th St												

2011 Background traffic + pipeline w/o project Diversion due to 128th overpass

Code	Intersection	Project PM Peak Turning Volumes											
		Eastbound			Westbound			Northbound			Southbound		
		LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
	120th Ave NE/North Driveway								-126			-287	
	120th Ave NE/Center Blvd								-126			-287	
	120th Ave NE/South Driveway								-126	-40	40	-287	
	Totem Lake Blvd/North Driveway								-45			-79	
	Totem Lake Blvd/Central Blvd								-45			-79	
	Totem Lake Blvd/South Driveway								-45			-79	
301	120th Ave NE/NE 132nd St												
302	120th Ave NE/NE 130th St												
303	120th Ave NE/NE 128th St	10	110	46	-79	79			-10	-110		-208	208
304	NE 132nd St/124th Ave NE												
306	NE 124th St/ Slater Ave NE												
307	Totem Lake Blvd/120th Ave NE		-79			-45	-166				-287		
308	NE 124th St/120th Pl NE												
309	NE 118th ST/120th Ave NE												
310	NE 116th St/120th Ave NE												
311	NE 116th ST/124th Ave NE												
312	NE 124th St/116th Ave NE	74	-74		-23	-108	118		19	-19	155	23	108
313	NE 124th St/113th Pl NE		-211			-287							
314	Slater Ave NE/NE 120th St												
315	NE 124th St/124th Ave NE	-211											-287
316	Totem Lake Blvd/NE 132nd St							-257					
317	I-405/SB Off NE 124th St		85	71		-131					-118		118
318	I-405/NB Off NE 124th St		-211			-131							
319	I-405/SB On NE 116th St												
320	I-405/NB Off NE 116th St												
	Totem Lake Blvd/NE 128th St	63	166	26		287		178	-178			-79	79
324	NE 128th ST/116th Way NE				287		257			211	44		
201	98th Ave NE/Juanita Dr												
202	100th Ave NE/NE 124th St												
203	100th Ave NE/NE 132nd St												
204	116th Way NE/NE 132nd St		-44	44		-257		253					
205	Market St/Forbes Creek												
206	98th Ave NE/NE 120th Pl												
207	Juanita Drive/93rd Ave NE												
208	Juanita Dr/97th Ave NE												
209	Market St/7th Ave												
211	Market St/15th Ave												
404	124th Ave NE/NE 100th St												
408	NE 90th St/ 124th Ave NE												
403	NE 85th St/ 120th Ave NE												
409	NE 85th St/122nd Ave NE												
402	NE 85th St/124th Ave NE												
412	NE 85th St/128th Ave NE												
401	NE 85th St/ 132nd Ave NE												
406	NE 70th St/132nd Ave NE												
101	Lake Wash/NE 38th Pl												
102	Lake Wash/Lakeview Dr												
103	State St/NE 68th St												
104	108th Ave NE/NE 68th St												
105	Central Way/6th St												
106	Central Way/3rd St												
107	Central Way/Lake St												
108	Lake St/Kirkland Ave												
109	NE 85th St/114th Ave NE												
110	6th St/4th Ave												
111	Kirkland Ave/3rd Ave												
112	Kirkland Way/6th St												
113	Kirkland Ave/6th St												
411	NE 72nd Pl/I-405 SB Ramp												
407	NE 100th St/132nd Ave NE												
410	NE 70th St/116th Ave NE												
414	NE 60th St/116th Ave NE												
413	NE 60th St/132nd Ave NE												
405	120th Ave NE/NE 80th St												

Final Volumes for 2011 Background traffic + pipeline w/o project Diversion due to 126th overpass

Code	Intersection	Project PM Peak Turning Volumes											
		Eastbound			Westbound			Northbound			Southbound		
		LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
	120th Ave NE/North Driveway								-126			-287	
	120th Ave NE/Center Blvd								-126			-287	
	120th Ave NE/South Driveway								-126	-40	40	-287	
	Totem Lake Blvd/North Driveway								-45			-79	
	Totem Lake Blvd/Central Blvd								-45			-79	
	Totem Lake Blvd/South Driveway								-45			-79	
301	120th Ave NE/NE 132nd St												
302	120th Ave NE/NE 130th St												
303	120th Ave NE/NE 128th St	10	110	46	-79	79			-10	-110		-208	208
304	NE 132nd St/124th Ave NE												
306	NE 124th St/ Slater Ave NE												
307	Totem Lake Blvd/120th Ave NE	0	-79	0		-45	-166	0	0	0	-287		
308	NE 124th St/120th Pl NE		-211			-287							
309	NE 118th ST/120th Ave NE												
310	NE 116th St/120th Ave NE												
311	NE 116th ST/124th Ave NE												
312	NE 124th St/116th Ave NE	74	-74		-23	-108	118		19	-19	155	23	108
313	NE 124th St/113th Pl NE												
314	Slater Ave NE/NE 120th St												
315	NE 124th St/124th Ave NE	-211											-287
316	Totem Lake Blvd/NE 132nd St							-257					
317	I-405/SB Off NE 124th St		85	71		-131					-118		118
318	I-405/NB Off NE 124th St		-211			-131							
319	I-405/SB On NE 116th St												
320	I-405/NB Off NE 116th St												
xxx	Totem Lake Blvd/NE 128th St	63	166	26		287		178	-178			-79	79
324	NE 128th ST/116th Way NE				287		257			211	44		
201	98th Ave NE/Juanita Dr												
202	100th Ave NE/NE 124th St												
203	100th Ave NE/NE 132nd St												
204	116th Way NE/NE 132nd St		-44	44		-257		253					
205	Market St/Forbes Creek												
206	98th Ave NE/NE 120th Pl												
207	Juanita Drive/93rd Ave NE												
208	Juanita Dr/97th Ave NE												
209	Market St/7th Ave												
211	Market St/15th Ave												
404	124th Ave NE/NE 100th St												
408	NE 90th St/ 124th Ave NE												
403	NE 85th St/ 120th Ave NE												
409	NE 85th St/122nd Ave NE												
402	NE 85th St/124th Ave NE												
412	NE 85th St/128th Ave NE												
401	NE 85th St/ 132nd Ave NE												
406	NE 70th St/132nd Ave NE												
101	Lake Wash/NE 38th Pl												
102	Lake Wash/Lakeview Dr												
103	State St/NE 68th St												
104	108th Ave NE/NE 66th St												
105	Central Way/6th St												
106	Central Way/3rd St												
107	Central Way/Lake St												
108	Lake St/Kirkland Ave												
109	NE 85th St/114th Ave NE												
110	6th St/4th Ave												
111	Kirkland Ave/3rd Ave												
112	Kirkland Way/6th St												
113	Kirkland Ave/6th St												
411	NE 72nd Pl/I-405 SB Ramp												
407	NE 100th St/132nd Ave NE												
410	NE 70th St/116th Ave NE												
414	NE 60th St/116th Ave NE												
413	NE 60th St/132nd Ave NE												
405	120th Ave NE/NE 80th St	0	0	0									

Upper Mall + Lower Mall = Gross Project Trips

		PM Peak Turning Volumes											
		Eastbound			Westbound			Northbound			Southbound		
Code	Intersection	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
0	120th Ave NE/North Driveway	20	0	0	58	0	151	0	169	0	151	100	19
0	120th Ave NE/Center Blvd	10	14	39	147	92	110	34	49	163	74	71	13
0	120th Ave NE/South Driveway	0	0	20	300	0	49	6	197	251	0	195	13
0	Totem Lake Blvd/North Driveway	0	0	0	34	0	15	0	151	28	59	23	0
0	Totem Lake Blvd/Central Blvd	0	0	0	112	0	136	0	43	122	12	42	0
0	Totem Lake Blvd/South Driveway	0	0	0	34	0	15	0	150	28	8	146	0
301	120th Ave NE/NE 132nd St	0	2	0	49	2	0	0	0	61	0	0	0
302	120th Ave NE/NE 130th St	0	0	0	15	0	0	0	61	42	0	49	0
303	120th Ave NE/NE 128th St	1	4	122	16	2	0	235	123	23	0	76	0
304	NE 132nd St/124th Ave NE	64	0	0	4	6	0	0	43	12	0	6	43
306	NE 124th St/ Slater Ave NE	3	144	7	0	123	0	16	0	0	0	0	1
307	Totem Lake Blvd/120th Ave NE	0	154	98	0	177	338	58	130	0	306	227	0
308	NE 124th St/120th Pl NE	0	259	0	1	11	0	0	0	2	0	0	0
309	NE 118th ST/120th Ave NE	9	0	0	0	0	0	0	0	0	0	0	7
310	NE 116th St/120th Ave NE	0	6	0	23	13	2	0	0	15	0	0	0
311	NE 116th ST/124th Ave NE	21	0	0	0	0	6	0	66	0	7	66	199
312	NE 124th St/116th Ave NE	61	21	0	0	0	7	0	9	3	45	9	89
313	NE 124th St/113th Pl NE	0	71	0	0	88	0	0	0	0	0	0	0
314	Slater Ave NE/NE 120th St	0	0	0	1	0	12	0	0	0	0	0	0
315	NE 124th St/124th Ave NE	98	0	0	0	0	153	0	99	0	163	287	11
316	Totem Lake Blvd/NE 132nd St	0	0	3	3	0	0	4	36	10	0	42	0
317	I-405/SB Off NE 124th St	0	69	0	0	0	0	0	0	0	231	0	7
318	I-405/NB Off NE 124th St	0	161	0	0	0	0	0	0	0	0	0	0
319	I-405/SB On NE 116th St	0	21	0	161	38	0	0	0	0	0	0	0
320	I-405/NB Off NE 116th St	0	21	0	0	199	0	0	0	0	0	0	0
xxx	Totem Lake Blvd/NE 128th St	0	92	39	2	202	33	59	15	4	30	18	0
324	NE 128th ST/116th Way NE	0	0	0	136	0	125	0	0	73	62	0	0
201	98th Ave NE/Juanita Dr	0	0	0	3	0	0	0	17	1	0	9	0
202	100th Ave NE/NE 124th St	0	16	0	24	22	11	0	0	28	1	0	0
203	100th Ave NE/NE 132nd St	0	21	0	4	33	43	0	3	0	28	0	0
204	116th Way NE/NE 132nd St	0	3	61	0	4	0	125	0	0	0	0	0
205	Market St/Forbes Creek	0	0	0	9	0	0	0	9	0	0	1	0
206	98th Ave NE/NE 120th Pl	6	0	0	0	0	0	0	47	0	0	48	7
207	Juanita Drive/93rd Ave NE	0	5	0	0	5	0	0	0	0	0	0	0
208	Juanita Dr/97th Ave NE	5	0	0	0	0	0	0	0	0	0	0	5
209	Market St/7th Ave	0	0	0	0	0	0	0	0	0	0	0	0
211	Market St/15th Ave	0	0	0	0	0	0	0	2	0	0	1	0
404	124th Ave NE/NE 100th St	0	0	0	0	0	8	0	37	0	8	30	0
408	NE 90th St/ 124th Ave NE	5	0	0	0	0	0	0	31	0	0	25	3
403	NE 85th St/ 120th Ave NE	3	12	0	0	5	0	1	0	0	0	0	2
409	NE 85th St/122nd Ave NE	0	13	0	0	5	0	0	0	0	0	0	0
402	NE 85th St/124th Ave NE	10	0	3	0	3	11	0	8	0	21	0	1
412	NE 85th St/128th Ave NE	0	18	0	0	10	0	0	0	0	0	0	0
401	NE 85th St/ 132nd Ave NE	0	13	4	0	5	12	0	12	0	12	1	4
406	NE 70th St/132nd Ave NE	0	1	0	0	0	1	0	11	0	0	3	0
101	Lake Wash/NE 38th Pl	0	0	0	0	0	0	0	0	0	0	0	0
102	Lake Wash/Lakeview Dr	0	0	0	0	1	0	0	1	2	0	1	0
103	State St/NE 68th St	0	3	0	0	2	2	0	0	0	2	0	0
104	108th Ave NE/NE 68th St	0	6	0	3	5	1	0	1	3	0	0	0
105	Central Way/6th St	0	16	0	3	16	4	0	0	4	3	0	0
106	Central Way/3rd St	0	9	0	1	9	0	0	0	1	0	0	0
107	Central Way/Lake St	0	3	0	3	0	0	0	0	0	0	0	0
108	Lake St/Kirkland Ave	0	3	0	1	3	0	0	0	2	0	0	0
109	NE 85th St/114th Ave NE	0	22	0	6	16	4	2	7	9	4	0	0
110	6th St/4th Ave	0	0	0	0	0	0	0	4	0	0	3	0
111	Kirkland Ave/3rd Ave	1	3	0	0	3	0	0	0	0	0	1	0
112	Kirkland Way/6th St	2	1	0	0	0	0	0	1	1	0	0	3
113	Kirkland Ave/6th St	0	0	0	0	0	0	0	2	0	0	1	0
411	NE 72nd Pl/I-405 SB Ramp	0	0	0	9	0	3	0	2	7	0	0	0
407	NE 100th St/132nd Ave NE	0	0	3	0	0	0	4	14	0	0	11	0
410	NE 70th St/116th Ave NE	0	0	11	0	0	0	0	3	0	0	0	0
414	NE 60th St/116th Ave NE	0	0	0	0	0	0	0	6	0	0	3	0
413	NE 60th St/132nd Ave NE	0	0	0	0	0	0	0	11	0	0	2	0
405	120th Ave NE/NE 80th St	0	3	0	0	0	0	0	0	0	0	0	0

2011 With Project From 'Composite Counts' worksheet

		Project PM Peak Turning Volumes												
		Eastbound			Westbound			Northbound			Southbound			
Code	Intersection	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
	120th Ave NE/North Driveway													
	120th Ave NE/Center Blvd													
	120th Ave NE/South Driveway													
	Totem Lake Blvd/North Driveway								684			643		
	Totem Lake Blvd/Central Blvd								612			43		
	Totem Lake Blvd/South Driveway								599			446		
301		6	409	137	200	455	5	289	8	467	5	3	5	1989
302		53	55	44	253	9	120	30	541	216	65	264	53	1703
303		51	149	220	248	216	31	299	846	154	11	689	51	2965
304		423	329	28	92	440	210	30	375	199	74	110	423	2733
306		130	719	136	184	1279	231	219	521	164	159	31	130	3903
307		36	581	247	185	665	761	293	471	15	975	401	36	4666
308		18	1214	97	122	1863	17	128	1	90	0	6	18	3574
309		44	0	210	0	0	0	163	614	0	0	426	44	1501
310		123	530	30	227	816	557	40	149	258	288	115	123	3256
311		238	362	173	131	598	125	459	699	246	139	431	238	3839
312		198	724	99	257	1258	477	192	239	290	444	144	198	4520
313		31	701	47	75	1447	121	212	27	133	100	18	31	2943
314		2	2	4	336	1	444	3	455	112	202	311	2	1874
315		456	650	258	151	1318	511	297	590	140	361	638	456	5826
316		115	439	177	48	702	28	445	255	114	2	115	115	2555
317		0	853	547	0	1393	549	0	0	0	780	0	0	4122
318		0	1177	384	0	1449	671	558	0	156	0	0	0	4395
319		0	500	578	499	1577	0	0	0	0	0	0	0	3154
320		0	500	0	0	1427	0	681	0	267	0	0	0	2875
#N/A		#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
324		18	0	46	148	0	125	145	612	106	62	519	18	1799
201		82	324	209	63	447	165	572	922	123	176	291	82	3456
202		23	81	27	349	186	819	40	1006	305	353	451	23	3663
203		89	140	116	93	315	528	304	1380	98	254	679	89	4085
204		14	346	220	331	914	22	429	42	341	14	19	14	2706
205		5	0	1	48	0	20	0	1699	88	17	579	5	2462
206		142	2	37	4	0	5	33	1181	3	1	590	142	2140
207		0	7	0	0	6	0	0	0	0	0	0	0	13
208		81	653	3	6	980	130	5	2	3	74	4	81	2022
209		9	5	13	11	1	164	19	1174	15	61	490	9	1971
211		0	0	0	0	0	19	0	32	0	0	29	0	80
404		13	19	18	46	30	125	21	1056	58	46	472	13	1917
408		322	41	38	21	50	37	74	963	21	20	426	322	2335
403		225	1664	80	19	1603	77	281	151	74	107	37	225	4543
409		163	1627	70	42	1588	91	53	96	51	87	28	163	4059
402		347	1404	24	18	1324	328	141	439	71	258	92	347	4793
412		58	1472	58	37	1699	31	45	25	45	15	1	58	3544
401		198	1192	123	60	1524	704	92	360	64	181	135	198	4831
406		156	444	66	185	632	90	131	354	150	70	223	156	2657
101		10	1	25	212	3	154	22	1336	114	79	1054	10	3020
102		65	109	201	316	43	12	96	760	723	8	424	65	2822
103		410	490	5	12	270	259	1	13	5	169	8	410	2052
104		238	499	120	241	409	244	147	497	313	206	242	238	3394
105		53	671	81	256	1018	219	254	393	438	98	126	53	3660
106		44	456	56	194	736	105	169	241	186	118	84	44	2433
107		315	238	219	201	677	0	30	109	5	0	0	315	2109
108		7	27	34	156	8	140	14	642	90	18	385	7	1528
109		5	1194	11	309	1409	398	18	87	577	294	27	5	4334
110		84	18	51	70	43	292	60	660	119	179	258	84	1918
111		55	101	58	90	206	130	83	351	108	73	198	55	1508
112		104	161	18	59	103	41	86	490	57	25	179	104	1427
113		1	3	0	0	5	0	0	6	0	0	3	1	19
411		0	0	9	248	0	340	0	918	153	251	753	0	2672
407		284	615	359	364	482	39	318	561	331	17	65	284	3719
410		803	0	121	2	10	5	414	376	0	3	146	803	2685
414		3	0	2	46	1	101	1	549	81	68	117	3	972
413		113	1	36	0	0	3	76	430	0	3	177	113	952
405		11	15	0	0	0	12	0	0	0	5	0	11	54

Composite counts - Gross Project Trips + 128th St diversion = 2011 without Project [Mall access volumes need to be adjusted to equal/compare against existing]

		Project PM Peak Turning Volumes											
		Eastbound			Westbound			Northbound			Southbound		
Code	Intersection	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
0	120th Ave NE/North Driveway	0	0	0	0	0	0	0	-126	0	0	-287	0
0	120th Ave NE/Center Blvd	0	0	0	0	0	0	0	-126	0	0	-287	0
0	120th Ave NE/South Driveway	0	0	0	0	0	0	0	-126	-40	40	-287	0
0	Totem Lake Blvd/North Driveway	0	0	0	0	0	0	0	554	0	0	464	0
0	Totem Lake Blvd/Central Blvd	0	0	0	0	0	0	0	554	0	0	467	0
0	Totem Lake Blvd/South Driveway	0	0	0	0	0	0	0	554	0	0	367	0
301	120th Ave NE/NE 132nd St	6	407	137	151	453	5	289	8	406	5	3	5
302	120th Ave NE/NE 130th St	53	55	44	238	9	120	30	480	174	65	215	53
303	120th Ave NE/NE 128th St	60	255	144	153	293	31	64	713	21	11	405	259
304	NE 132nd St/124th Ave NE	359	329	28	88	434	210	30	332	187	74	104	380
306	NE 124th St/ Slater Ave NE	127	575	129	184	1156	231	203	521	164	159	31	129
307	Totem Lake Blvd/120th Ave NE	36	348	149	185	443	257	235	341	15	382	174	36
308	NE 124th St/120th Pl NE	18	744	97	121	1565	17	128	1	88	0	6	18
309	NE 118th ST/120th Ave NE	35	0	210	0	0	0	163	614	0	0	426	37
310	NE 116th St/120th Ave NE	123	524	30	204	803	555	40	149	243	288	115	123
311	NE 116th ST/124th Ave NE	217	362	173	131	598	119	459	633	246	132	365	39
312	NE 124th St/116th Ave NE	211	629	99	234	1150	588	192	249	268	554	158	217
313	NE 124th St/113th Pl NE	31	630	47	75	1359	121	212	27	133	100	18	31
314	Slater Ave NE/NE 120th St	2	2	4	335	1	432	3	455	112	202	311	2
315	NE 124th St/124th Ave NE	147	650	258	151	1318	358	297	491	140	198	351	158
316	Totem Lake Blvd/NE 132nd St	115	439	174	45	702	28	184	219	104	2	73	115
317	I-405/SB Off NE 124th St	0	869	618	0	1262	549	0	0	0	431	0	111
318	I-405/NB Off NE 124th St	0	805	384	0	1318	671	558	0	156	0	0	0
319	I-405/SB On NE 116th St	0	479	578	338	1539	0	0	0	0	0	0	0
320	I-405/NB Off NE 116th St	0	479	0	0	1228	0	681	0	267	0	0	0
xxx	Totem Lake Blvd/NE 128th St	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
324	NE 128th ST/116th Way NE	18	0	46	299	0	257	145	612	244	44	519	18
201	98th Ave NE/Juanita Dr	82	324	209	60	447	165	572	905	122	176	282	82
202	100th Ave NE/NE 124th St	23	65	27	325	164	808	40	1006	277	352	451	23
203	100th Ave NE/NE 132nd St	89	119	116	89	282	485	304	1377	98	226	679	89
204	116th Way NE/NE 132nd St	14	299	203	331	653	22	557	42	341	14	19	14
205	Market St/Forbes Creek	5	0	1	39	0	20	0	1690	88	17	578	5
206	98th Ave NE/NE 120th Pl	136	2	37	4	0	5	33	1134	3	1	542	135
207	Juanita Drive/93rd Ave NE	0	2	0	0	1	0	0	0	0	0	0	0
208	Juanita Dr/97th Ave NE	76	653	3	6	980	130	5	2	3	74	4	76
209	Market St/7th Ave	9	5	13	11	1	164	19	1174	15	61	490	9
211	Market St/15th Ave	0	0	0	0	0	19	0	30	0	0	28	0
404	124th Ave NE/NE 100th St	13	19	18	46	30	117	21	1019	58	38	442	13
408	NE 90th St/ 124th Ave NE	317	41	38	21	50	37	74	932	21	20	401	319
403	NE 85th St/ 120th Ave NE	222	1652	80	19	1598	77	280	151	74	107	37	223
409	NE 85th St/122nd Ave NE	163	1614	70	42	1583	91	53	96	51	87	28	163
402	NE 85th St/124th Ave NE	337	1404	21	18	1321	317	141	431	71	237	92	346
412	NE 85th St/128th Ave NE	58	1454	58	37	1689	31	45	25	45	15	1	58
401	NE 85th St/ 132nd Ave NE	198	1179	119	60	1519	692	92	348	64	169	134	194
406	NE 70th St/132nd Ave NE	156	443	66	185	632	89	131	343	150	70	220	156
101	Lake Wash/NE 38th Pl	10	1	25	212	3	154	22	1336	114	79	1054	10
102	Lake Wash/Lakeview Dr	65	109	201	316	42	12	96	759	721	8	423	65
103	State St/NE 68th St	410	487	5	12	268	257	1	13	5	167	8	410
104	108th Ave NE/NE 68th St	238	493	120	238	404	243	147	496	310	206	242	238
105	Central Way/6th St	53	655	81	253	1002	215	254	393	434	95	126	53
106	Central Way/3rd St	44	447	56	193	727	105	169	241	185	118	84	44
107	Central Way/Lake St	315	235	219	198	677	0	30	109	5	0	0	315
108	Lake St/Kirkland Ave	7	24	34	155	5	140	14	642	88	18	385	7
109	NE 85th St/114th Ave NE	5	1172	11	303	1393	394	16	80	568	290	27	5
110	6th St/4th Ave	84	18	51	70	43	292	60	656	119	179	255	84
111	Kirkland Ave/3rd Ave	54	98	58	90	203	130	83	351	108	73	197	55
112	Kirkland Way/6th St	102	160	18	59	103	41	86	489	56	25	179	101
113	Kirkland Ave/6th St	1	3	0	0	5	0	0	4	0	0	2	1
411	NE 72nd Pl/I-405 SB Ramp	0	0	9	239	0	337	0	916	146	251	753	0
407	NE 100th St/132nd Ave NE	284	615	356	364	482	39	314	547	331	17	54	284
410	NE 70th St/116th Ave NE	803	0	110	2	10	5	414	375	0	3	146	803
414	NE 60th St/116th Ave NE	3	0	2	46	1	101	1	543	81	68	114	3
413	NE 60th St/132nd Ave NE	113	1	36	0	0	3	76	419	0	3	175	113
405	120th Ave NE/NE 80th St	11	12	0	0	0	12	0	0	0	5	0	11

Field0	Eastbound			Westbound			Northbound			Southbound			
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	TOTAL
101	10	1	25	212	3	154	22	1336	114	79	1054	6	3117
102	65	109	201	316	43	12	96	760	723	8	424	39	2898
103	410	490	5	12	270	259	1	13	5	169	8	134	1879
104	238	499	120	241	409	244	147	497	313	206	242	146	3406
105	53	671	81	256	1018	219	254	393	438	98	126	35	3747
106	44	456	56	194	736	105	169	241	186	118	84	26	2521
107	315	238	219	201	677	0	30	109	5	0	0	0	1901
108	7	27	34	156	8	140	14	642	90	18	385	8	1637
109	5	1194	11	309	1409	398	18	87	577	294	27	17	4455
110	84	18	51	70	43	292	60	660	119	179	258	97	2041
111	55	101	58	90	206	130	83	351	108	73	198	84	1648
112	104	161	18	59	103	41	86	490	57	25	179	88	1523
113	1	3	0	0	5	0	0	6	0	0	3	0	131
201	82	324	209	63	447	165	572	922	123	176	291	77	3652
202	23	81	27	349	186	819	40	1006	305	353	451	38	3880
203	89	140	116	93	315	528	304	1380	98	254	679	74	4273
204	14	346	220	331	914	22	429	42	341	14	19	18	2914
205	5	0	1	48	0	20	0	1699	88	17	579	3	2665
206	142	2	37	4	0	5	33	1181	3	1	590	172	2376
207	0	7	0	0	6	0	0	0	0	0	0	0	220
208	81	653	3	6	980	130	5	2	3	74	4	141	2290
209	9	5	13	11	1	164	19	1174	15	61	490	0	2171
211	0	0	0	0	0	19	0	32	0	0	29	0	291
301	6	409	137	200	455	5	289	8	467	5	3	5	2290
302	53	55	44	253	9	120	30	541	216	65	264	17	1969
303	51	149	220	248	216	31	299	846	154	11	689	35	3252
304	423	329	28	92	440	210	30	375	199	74	110	179	2793
305	0	0	0	0	0	0	0	0	0	0	0	0	305
306	130	719	136	184	1279	231	219	521	164	159	31	190	4269
307	36	581	247	185	665	761	293	471	15	975	401	39	4976
308	18	1214	97	122	1863	17	128	1	90	0	6	12	3876
309	44	0	210	0	0	0	163	614	0	0	426	26	1792
310	123	530	30	227	816	557	40	149	258	288	115	141	3584
311	238	362	173	131	598	125	459	699	246	139	431	446	4358
312	198	724	99	257	1258	477	192	239	290	444	144	257	4891
313	31	701	47	75	1447	121	212	27	133	100	18	59	3284
314	2	2	4	336	1	444	3	455	112	202	311	2	2188
315	456	650	258	151	1318	511	297	590	140	361	638	475	6160
316	115	439	177	48	702	28	445	255	114	2	115	139	2895
317	0	853	547	0	1393	549	0	0	0	780	0	522	4961
318	0	1177	384	0	1449	671	558	0	156	0	0	0	4713
319	0	500	578	499	1577	0	0	0	0	0	0	0	3473
320	0	500	0	0	1427	0	681	0	267	0	0	0	3195
321	0	0	0	0	0	0	0	0	0	0	0	0	321
322	0	0	0	0	0	0	0	0	0	0	0	0	322
323	642	64	0	0	64	22	0	0	0	25	0	761	1901
324	18	0	46	148	0	125	145	612	106	62	519	51	2156
325	61	1015	49	3	1754	73	81	25	14	316	20	136	3872
401	198	1192	123	60	1524	704	92	360	64	181	135	89	5123
402	347	1404	24	18	1324	328	141	439	71	258	92	189	5037
403	225	1664	80	19	1603	77	281	151	74	107	37	277	4998
404	13	19	18	46	30	125	21	1056	58	46	472	12	2320
405	11	15	0	0	0	12	0	0	0	5	0	2	450
406	156	444	66	185	632	90	131	354	150	70	223	46	2953
407	284	615	359	364	482	39	318	561	331	17	65	229	4071
408	322	41	38	21	50	37	74	963	21	20	426	120	2541
409	163	1627	70	42	1588	91	53	96	51	87	28	117	4422
410	803	0	121	2	10	5	414	378	0	3	146	593	2885
411	0	0	9	248	0	340	0	918	153	251	753	2	3085
412	58	1472	58	37	1699	31	45	25	45	15	1	18	3916
413	113	1	36	0	0	3	76	430	0	3	177	98	1350
414	3	0	2	46	1	101	1	549	81	68	117	1	1384
415	0	0	0	0	0	0	0	0	0	0	0	0	415
416	65	111	82	20	155	28	114	431	37	20	224	45	1748
417	25	7	36	12	2	1	158	988	19	3	254	27	1949

Appendix 3

Affected Intersections Worksheets

TSI
Transportation Solutions, Inc.

Codes	Intersections	Major Street	Vol 1	Vol 2	Volume Average	Minor Street	Vol 1	Vol 2	Volume Average	Eastbound	Westbound	Northbound	Southbound
101	Lake Wash/NE 38th Pl	Lake Washington	0	0	0	NE 38th Pl	0	0	0	0	0	0	0
102	Lake Wash/Lakeview Dr	Lake Washington	0	1	0	Lakeview Dr	0	0	0	0	0	0	0
103	State St/NE 68th St	NE 68th St	10	18	14	State St	0	9	5	10	18	0	9
104	108th Ave NE/NE 68th St	108th Ave NE	10	0	5	NE 68th St	20	36	28	20	36	10	0
105	Central Way/6th St	Central Way	53	104	78	6th St	13	10	12	53	104	13	10
106	Central Way/3rd St	Central Way	30	45	38	3rd St	3	0	2	30	45	3	0
107	Central Way/Lake St	Central Way	10	14	12	Lake St	0	0	0	10	14	0	0
108	Lake St/Kirkland Ave	Lake St	0	0	0	Kirkland Ave	10	14	12	10	14	0	0
109	NE 85th St/114th Ave NE	NE 85th St	73	117	95	114th Ave NE	30	13	22	73	117	30	13
110	6th St/4th Ave	6th St	13	14	13	4th Ave	0	0	0	0	0	13	14
111	Kirkland Ave/3rd Ave	3rd Ave	0	5	2	Kirkland Ave	3	0	2	3	0	0	5
112	Kirkland Way/6th St	6th St	3	14	8	Kirkland Way	7	0	3	7	0	3	14
113	Kirkland Ave/6th St	6th St	7	5	6	Kirkland Ave	0	0	0	0	0	7	5
201	98th Ave NE/Juanita Dr	98th Ave NE	60	41	50	Juanita Dr	0	14	7	0	14	60	41
202	100th Ave NE/NE 124th St	100th Ave NE	93	0	47	NE 124th St	53	257	155	53	257	93	0
203	100th Ave NE/NE 132nd St	100th Ave NE	0	93	47	NE 132nd St	70	360	215	70	360	0	93
204	116th Way NE/NE 132nd St	NE 132nd St	213	18	116	116th Way NE	563	0	281	213	18	563	0
205	Market St/Forbes Creek	Market St	30	5	17	Forbes Creek	0	41	20	0	41	30	5
206	98th Ave NE/NE 120th Pl	98th Ave NE	157	248	202	NE 120th Pl	20	0	10	20	0	157	248
207	Juanita Drive/93rd Ave NE	Juanita Dr	17	23	20	93rd Ave NE	0	0	0	17	23	0	0
208	Juanita Dr/97th Ave NE	Juanita Dr	17	0	8	97th Ave NE	0	23	11	17	0	0	23
209	Market St/7th Ave	Market St	0	0	0	7th Ave	0	0	0	0	0	0	0
211	Market St/15th Ave	Market St	0	0	0	15th Ave	0	0	0	0	0	0	0
301	120th Ave NE/NE 132nd St	NE 132nd St	0	163	82	120th Ave NE	275	0	137	0	163	275	0
302	120th Ave NE/NE 130th St	120th Ave NE	464	163	314	NE 130th St	0	50	25	0	50	464	163
303	120th Ave NE/NE 128th St	120th Ave NE	1981	253	1117	NE 128th St	767	53	410	767	53	1981	253
304	NE 132nd St/124th Ave NE	NE 132nd St	288	33	161	124th Ave NE	248	163	205	288	33	248	163
306	NE 124th St/ Slater Ave NE	NE 124th St	693	410	552	Slater Ave NE	53	0	27	693	410	53	0
307	Totem Lake Blvd/120th Ave NE	Totem Lake Blvd	433	2694	1563	120th Ave NE	134	1167	650	134	1167	433	2694
308	NE 124th St/120th Pl NE	NE 124th St	503	50	276	120th Pl NE	0	0	0	503	50	0	0
309	NE 118th St/120th Ave NE	120th Ave NE	0	32	16	NE 118th St	30	0	15	30	0	0	32
310	NE 116th St/120th Ave NE	NE 116th St	20	361	190	120th Ave NE	50	190	120	20	361	50	190
311	NE 116th St/124th Ave NE	124th Ave NE	220	770	495	NE 116th St	70	20	45	70	20	220	770
312	NE 124th St/116th Ave NE	NE 124th St	273	32	152	116th Ave NE	40	644	342	273	32	40	644
313	NE 124th St/113th Pl NE	NE 124th St	237	396	316	113th Pl NE	0	0	0	237	396	0	0
314	Slater Ave NE/NE 120th St	Slater Ave NE	0	0	0	NE 120th St	0	43	22	0	43	0	0
315	NE 124th St/Totem Lake Blvd	NE 124th St	-223	689	233	Totem Lake Blvd	330	1621	975	-223	689	330	1621
316	Totem Lake Blvd/NE 132nd St	NE 132nd St	10	10	10	Totem Lake Blvd	225	140	183	10	10	225	140
317	I-405/SB Off NE 124th St	NE 124th St	495	0	248	I-405 SB	0	793	397	495	0	0	793
318	I-405/NB Off NE 124th St	NE 124th St	176	0	88	I-405 NB	0	0	0	176	0	0	0
319	I-405/SB Off NE 116th St	NE 116th St	70	441	256	I-405 SB	0	0	0	70	441	0	0
320	I-405/NB Off NE 116th St	NE 116th St	70	441	256	I-405 NB	0	0	0	70	441	0	0
321	120th Ave NE/NE 112th St	120th Ave NE	0	0	0	NE 112th St	0	0	0	0	0	0	0
322	NE 116th St/NE 118th St	NE 116th St	0	0	0	NE 118th St	0	0	0	0	0	0	0
323	Slater Ave NE/NE 116th St	NE 116th St	0	0	0	Slater Ave NE	0	0	0	0	0	0	0
324	NE 128th St/116th Way NE	116th Way NE	793	207	500	NE 128th St	190	1441	815	190	1441	793	207
325	NE 124th St/128th Ln NE	NE 124th St	0	0	0	128th Ln NE	0	0	0	0	0	0	0
401	NE 85th St/ 132nd Ave NE	NE 85th St	77	57	67	132nd Ave NE	40	72	56	77	57	40	72
402	NE 85th St/124th Ave NE	NE 85th St	47	50	48	124th Ave NE	27	95	61	47	50	27	95
403	NE 85th St/ 120th Ave NE	NE 85th St	50	23	36	120th Ave NE	3	9	6	50	23	3	9
404	124th Ave NE/NE 100th St	124th Ave NE	123	171	147	NE 100th St	0	27	13	0	27	123	171
405	120th Ave NE/NE 80th St	NE 80th St	10	0	5	120th Ave NE	0	0	0	10	0	0	0
406	NE 70th St/132nd Ave NE	132nd Ave NE	37	14	25	NE 70th St	5	3	4	5	3	37	14
407	NE 70th St/116th Ave NE	116th Ave NE	60	50	55	NE 70th St	14	0	7	14	0	60	50
408	NE 90th St/ 124th Ave NE	124th Ave NE	103	126	115	NE 90th St	17	0	8	17	0	103	126
409	NE 85th St/122nd Ave NE	NE 85th St	43	23	33	122nd Ave NE	0	0	0	43	23	0	0
412	NE 85th St/128th Ave NE	NE 85th St	81	33	57	128th Ave NE	0	0	0	81	33	0	0
413	NE 60th St/132nd Ave NE	132nd Ave NE	37	9	23	NE 60th St	0	0	0	0	0	37	9
414	NE 60th St/116th Ave NE	116th Ave NE	20	14	17	NE 60th St	0	0	0	0	0	20	14
415	NE 70th St/120th Ave NE	NE 70th St	0	0	0	120th Ave NE	0	0	0	0	0	0	0
416	NE 80th St/132nd Ave NE	132nd Ave NE	0	0	0	NE 80th St	0	0	0	0	0	0	0
417	NE 100th St/132nd Ave NE	132nd Ave NE	0	0	0	NE 100th St	0	0	0	0	0	0	0
XXX	Totem Lake Blvd/ NE 128th St	Totem Lake Blvd	190	100	145	NE 128th St	856	1323	1090	856	1323	190	100

Codes	Major Street	Minor Street	Major Street	Minor Street	Major Street	Minor Street	Prop. Share	Sig. Impact	f_1	f_2	f_3	f_4	P_1	P_2	P_3	P_4	S_1	S_2	Prop. Share
101	Lake Washington	NE 38th Pl	1	1	0	0	0.0%	No	0.833	1.000	0.833	1.000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.0%
102	Lake Washington	Lakeview Dr	1	1	0	0	0.0%	No	0.833	1.000	0.833	1.000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.0%
103	NE 68th St	State St	1	1	14	5	0.1%	No	0.833	1.000	0.833	1.000	0.001681	0.000901	0.001121	0.001801	0.001291	0.001461	0.1%
104	108th Ave NE	NE 68th St	1	1	5	28	0.6%	No	0.833	1.000	0.833	1.000	0.000600	0.005602	0.000400	0.011204	0.003101	0.005802	0.6%
105	Central Way	6th St	2	1	78	12	0.5%	No	1.000	1.000	1.000	1.000	0.007844	0.002333	0.005229	0.004665	0.005088	0.004947	0.5%
106	Central Way	3rd St	2	1	38	2	0.2%	No	1.000	1.000	1.000	1.000	0.003751	0.000333	0.002501	0.000666	0.002042	0.001584	0.2%
107	Central Way	Lake St	2	1	12	0	0.1%	No	1.000	1.000	1.000	1.000	0.001175	0.000000	0.000784	0.000000	0.000588	0.000392	0.1%
108	Lake St	Kirkland Ave	1	1	0	12	0.2%	No	0.833	1.000	0.833	1.000	0.000000	0.002351	0.000000	0.004701	0.001175	0.002351	0.2%
109	NE 85th St	114th Ave NE	2	1	95	22	0.8%	No	1.000	1.000	1.000	1.000	0.009519	0.004332	0.006346	0.008664	0.006926	0.007505	0.8%
110	6th St	4th Ave	1	1	13	0	0.1%	No	0.833	1.000	0.833	1.000	0.001611	0.000000	0.001074	0.000000	0.000805	0.000537	0.1%
111	3rd Ave	Kirkland Ave	1	1	2	2	0.0%	No	0.833	1.000	0.833	1.000	0.000270	0.000333	0.000180	0.000666	0.000302	0.000423	0.0%
112	6th St	Kirkland Way	1	1	8	3	0.1%	No	0.833	1.000	0.833	1.000	0.001011	0.000666	0.000674	0.001333	0.000839	0.001003	0.1%
113	6th St	Kirkland Ave	1	1	6	0	0.0%	No	0.833	1.000	0.833	1.000	0.000670	0.000000	0.000447	0.000000	0.000335	0.000223	0.0%
201	98th Ave NE	Juanita Dr	2	1	50	7	0.3%	No	1.000	1.000	1.000	1.000	0.005025	0.001351	0.003350	0.002702	0.003188	0.003026	0.3%
202	100th Ave NE	NE 124th St	2	1	47	155	3.3%	Yes	1.000	1.000	1.000	1.000	0.004665	0.030998	0.003110	0.061996	0.017832	0.032553	3.3%
203	100th Ave NE	NE 132nd St	2	1	47	215	4.5%	Yes	1.000	1.000	1.000	1.000	0.004665	0.043021	0.003110	0.086042	0.023843	0.044576	4.5%
204	NE 132nd St	116th Way NE	1	1	116	281	6.1%	Yes	0.833	1.000	0.833	1.000	0.013883	0.056286	0.009255	0.112572	0.035084	0.060913	6.1%
205	Market St	Forbes Creek	1	1	17	20	0.5%	No	0.833	1.000	0.833	1.000	0.002071	0.004053	0.001380	0.008105	0.003062	0.004743	0.5%
206	98th Ave NE	NE 120th Pl	2	1	202	10	1.1%	Yes	1.000	1.000	1.000	1.000	0.020214	0.001999	0.013476	0.003999	0.011107	0.008737	1.1%
207	Juanita Dr	93rd Ave NE	1	1	20	0	0.1%	No	0.833	1.000	0.833	1.000	0.002352	0.000000	0.001568	0.000000	0.001176	0.000784	0.1%
208	Juanita Dr	97th Ave NE	1	1	8	11	0.3%	No	0.833	1.000	0.833	1.000	0.001000	0.002251	0.000667	0.004503	0.001626	0.002585	0.3%
209	Market St	7th Ave	1	1	0	0	0.0%	No	0.833	1.000	0.833	1.000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.0%
211	Market St	15th Ave	1	1	0	0	0.0%	No	0.833	1.000	0.833	1.000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.0%
301	NE 132nd St	120th Ave NE	1	1	82	137	3.1%	Yes	0.833	1.000	0.833	1.000	0.009801	0.027467	0.006534	0.054935	0.018634	0.030735	3.1%
302	120th Ave NE	NE 130th St	1	1	314	25	2.1%	Yes	0.833	1.000	0.833	1.000	0.037640	0.004999	0.025093	0.009997	0.021319	0.017545	2.1%
303	120th Ave NE	NE 128th St	1	1	1117	410	12.7%	Yes	0.833	1.000	0.833	1.000	0.134104	0.081995	0.089403	0.163991	0.108050	0.126697	12.7%
304	NE 132nd St	124th Ave NE	1	1	161	205	4.8%	Yes	0.833	1.000	0.833	1.000	0.019298	0.041095	0.012865	0.082189	0.030196	0.047527	4.8%
306	NE 124th St	Slater Ave NE	2	1	552	27	3.0%	Yes	1.000	1.000	1.000	1.000	0.055167	0.005332	0.036778	0.010664	0.030249	0.023721	3.0%
307	Totem Lake Blvd	120th Ave NE	2	1	1563	650	18.2%	Yes	1.000	1.000	1.000	1.000	0.156349	0.130099	0.104233	0.260198	0.143224	0.182215	18.2%
308	NE 124th St	120th Pl NE	2	1	276	0	1.4%	Yes	1.000	1.000	1.000	1.000	0.027628	0.000000	0.018419	0.000000	0.013814	0.009209	1.4%
309	120th Ave NE	NE 118th St	1	1	16	15	0.4%	No	0.833	1.000	0.833	1.000	0.001892	0.002999	0.001261	0.005998	0.002446	0.003630	0.4%
310	NE 116th St	120th Ave NE	1	1	190	120	3.2%	Yes	0.833	1.000	0.833	1.000	0.022846	0.023950	0.015231	0.047900	0.023398	0.031565	3.2%
311	124th Ave NE	NE 116th St	1	1	495	45	3.4%	Yes	0.833	1.000	0.833	1.000	0.059417	0.008998	0.039611	0.017995	0.034207	0.028803	3.4%
312	NE 124th St	116th Ave NE	2	1	152	342	7.3%	Yes	1.000	1.000	1.000	1.000	0.015239	0.068390	0.010159	0.136780	0.041814	0.073470	7.3%
313	NE 124th St	113th Pl NE	2	1	316	0	1.6%	Yes	1.000	1.000	1.000	1.000	0.031643	0.000000	0.021095	0.000000	0.015821	0.010548	1.6%
314	Slater Ave NE	NE 120th St	1	1	0	22	0.4%	No	0.833	1.000	0.833	1.000	0.000000	0.004332	0.000000	0.008664	0.002166	0.004332	0.4%
315	NE 124th St	Totem Lake Blvd	2	1	233	975	20.3%	Yes	1.000	1.000	1.000	1.000	0.023296	0.195090	0.015531	0.390179	0.109193	0.202855	20.3%
316	NE 132nd St	Totem Lake Blvd	1	1	10	183	3.7%	Yes	0.833	1.000	0.833	1.000	0.001200	0.036511	0.000800	0.073021	0.018855	0.036911	3.7%
317	NE 124th St	I-405 SB	2	1	248	397	8.8%	Yes	1.000	1.000	1.000	1.000	0.024763	0.079312	0.016509	0.158624	0.052037	0.087566	8.8%
318	NE 124th St	I-405 NB	2	1	88	0	0.4%	No	1.000	1.000	1.000	1.000	0.008822	0.000000	0.005882	0.000000	0.004411	0.002941	0.4%
319	NE 116th St	I-405 SB	1	1	256	0	1.5%	Yes	0.833	1.000	0.833	1.000	0.030685	0.000000	0.020457	0.000000	0.015343	0.010228	1.5%
320	NE 116th St	I-405 NB	1	1	256	0	1.5%	Yes	0.833	1.000	0.833	1.000	0.030685	0.000000	0.020457	0.000000	0.015343	0.010228	1.5%
321	120th Ave NE	NE 112th St	1	1	0	0	0.0%	No	0.833	1.000	0.833	1.000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.0%
322	NE 116th St	NE 118th St	1	1	0	0	0.0%	No	0.833	1.000	0.833	1.000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.0%
323	NE 116th St	Slater Ave NE	1	1	0	0	0.0%	No	0.833	1.000	0.833	1.000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.0%
324	116th Way NE	NE 128th St	2	1	500	815	18.0%	Yes	1.000	1.000	1.000	1.000	0.049974	0.163008	0.033316	0.326016	0.106491	0.179666	18.0%
325	NE 124th St	128th Ln NE	2	1	0	0	0.0%	No	1.000	1.000	1.000	1.000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.0%
401	NE 85th St	132nd Ave NE	2	1	67	56	1.3%	Yes	1.000	1.000	1.000	1.000	0.006660	0.011204	0.004440	0.022407	0.008932	0.013424	1.3%
402	NE 85th St	124th Ave NE	2	1	48	61	1.4%	Yes	1.000	1.000	1.000	1.000	0.004850	0.012122	0.003233	0.024244	0.008486	0.013739	1.4%
403	NE 85th St	120th Ave NE	2	1	36	6	0.2%	No	1.000	1.000	1.000	1.000	0.003625	0.001234	0.002417	0.002468	0.002429	0.002442	0.2%
404	124th Ave NE	NE 100th St	1	1	147	13	1.0%	Yes	0.833	1.000	0.833	1.000	0.017672	0.002666	0.011781	0.005332	0.010169	0.008556	1.0%
405	NE 80th St	120th Ave NE	1	1	5	0	0.0%	No	0.833	1.000	0.833	1.000	0.000600	0.000000	0.000400	0.000000	0.000300	0.000200	0.0%
406	132nd Ave NE	NE 70th St	1	1	25	4	0.2%	No	0.833	1.000	0.833	1.000	0.003011	0.000784	0.002007	0.001567	0.001897	0.001787	0.2%
407	116th Ave NE	NE 70th St	1	1	55	7	0.4%	No	0.833	1.000	0.833	1.000	0.006574	0.001351	0.004382	0.002702	0.003962	0.003542	0.4%
408	124th Ave NE	NE 90th St	1	1	115	8	0.8%	No	0.833	1.000	0.833	1.000	0.013769	0.001666	0.009179	0.003332	0.007717	0.006256	0.8%
409	NE 85th St	122nd Ave NE	2	1	33	0	0.2%	No	1.000	1.000	1.000	1.000	0.003292	0.000000	0.002195	0.000000	0.001646	0.001097	0.2%
412	NE 85th St	128th Ave NE	2	1	57	0	0.3%	No	1.000	1.000	1.000	1.000	0.005719	0.000000	0.003813	0.000000	0.002859	0.001906	0.3%
413	132nd Ave NE	NE 60th St	1	1	23	0	0.1%	No	0.833	1.000	0.833	1.000	0.002741	0.000000	0.001827	0.000000	0.001370	0.000914	0.1%
414	116th Ave NE	NE 60th St	1	1	17	0	0.1%	No	0.833	1.000	0.833	1.000	0.002011	0.000000	0.001341	0.000000	0.001005	0.000670	0.1%
415	NE 70th St	120th Ave NE	1	1	0	0	0.0%	No	0.833	1.000	0.833	1.000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.0%
416	132nd Ave NE	NE 80th St	1	1	0	0	0.0%	No	0.833	1.000	0.833	1.000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.0%
417	132nd Ave NE	NE 100th St	1	1	0	0	0.0%	No	0.833	1.000	0.833	1.000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.0%
XXX	Totem Lake Blvd	NE 128th St	2	1	145	1090	22.3%	Yes	1.000	1.000	1.000	1.000	0.014474	0.217967	0.009650	0.435934	0.116221	0.222792	22.3%

101	Lake Wash/NE 38th Pl	Lake Washington	1	NE 38th Pl	1
102	Lake Wash/Lakeview Dr	Lake Washington	1	Lakeview Dr	1
103	State St/NE 68th St	NE 68th St	1	State St	1
104	108th Ave NE/NE 68th St	108th Ave NE	1	NE 68th St	1
105	Central Way/6th St	Central Way	2	6th St	1
106	Central Way/3rd St	Central Way	2	3rd St	1
107	Central Way/Lake St	Central Way	2	Lake St	1
108	Lake St/Kirkland Ave	Lake St	1	Kirkland Ave	1
109	NE 85th St/114th Ave NE	NE 85th St	2	114th Ave NE	1
110	6th St/4th Ave	6th St	1	4th Ave	1
111	Kirkland Ave/3rd Ave	3rd Ave	1	Kirkland Ave	1
112	Kirkland Way/6th St	6th St	1	Kirkland Way	1
113	Kirkland Ave/6th St	6th St	1	Kirkland Ave	1
201	98th Ave NE/Juanita Dr	98th Ave NE	2	Juanita Dr	1
202	100th Ave NE/NE 124th St	100th Ave NE	2	NE 124th St	1
203	100th Ave NE/NE 132nd St	100th Ave NE	2	NE 132nd St	1
204	116th Way NE/NE 132nd St	NE 132nd St	1	116th Way NE	1
205	Market St/Forbes Creek	Market St	1	Forbes Creek	1
206	98th Ave NE/NE 120th Pl	98th Ave NE	2	NE 120th Pl	1
207	Juanita Drive/93rd Ave NE	Juanita Dr	1	93rd Ave NE	1
208	Juanita Dr/97th Ave NE	Juanita Dr	1	97th Ave NE	1
209	Market St/7th Ave	Market St	1	7th Ave	1
211	Market St/15th Ave	Market St	1	15th Ave	1
301	120th Ave NE/NE 132nd St	NE 132nd St	1	120th Ave NE	1
302	120th Ave NE/NE 130th St	120th Ave NE	1	NE 130th St	1
303	120th Ave NE/NE 128th St	120th Ave NE	1	NE 128th St	1
304	NE 132nd St/124th Ave NE	NE 132nd St	1	124th Ave NE	1
306	NE 124th St/ Slater Ave NE	NE 124th St	2	Slater Ave NE	1
307	Totem Lake Blvd/120th Ave NE	Totem Lake Blvd	2	120th Ave NE	1
308	NE 124th St/120th Pl NE	NE 124th St	2	120th Pl NE	1
309	NE 118th St/120th Ave NE	120th Ave NE	1	NE 118th St	1
310	NE 116th St/120th Ave NE	NE 116th St	1	120th Ave NE	1
311	NE 116th St/124th Ave NE	124th Ave NE	1	NE 116th St	1
312	NE 124th St/116th Ave NE	NE 124th St	2	116th Ave NE	1
313	NE 124th St/113th Pl NE	NE 124th St	2	113th Pl NE	1
314	Slater Ave NE/NE 120th St	Slater Ave NE	1	NE 120th St	1
315	NE 124th St/Totem Lake Blvd	NE 124th St	2	Totem Lake Blvd	1
316	Totem Lake Blvd/NE 132nd St	NE 132nd St	1	Totem Lake Blvd	1
317	I-405/SB Off NE 124th St	NE 124th St	2	I-405 SB	1
318	I-405/NB Off NE 124th St	NE 124th St	2	I-405 NB	1
319	I-405/SB Off NE 116th St	NE 116th St	1	I-405 SB	1
320	I-405/NB Off NE 116th St	NE 116th St	1	I-405 NB	1
321	120th Ave NE/NE 112th St	120th Ave NE	1	NE 112th St	1
322	NE 116th St/NE 118th St	NE 116th St	1	NE 118th St	1
323	Slater Ave NE/NE 116th St	NE 116th St	1	Slater Ave NE	1
324	NE 128th St/116th Way NE	116th Way NE	2	NE 128th St	1
325	NE 124th St/128th Ln NE	NE 124th St	2	128th Ln NE	1
401	NE 85th St/ 132nd Ave NE	NE 85th St	2	132nd Ave NE	1
402	NE 85th St/124th Ave NE	NE 85th St	2	124th Ave NE	1
403	NE 85th St/ 120th Ave NE	NE 85th St	2	120th Ave NE	1
404	124th Ave NE/NE 100th St	124th Ave NE	1	NE 100th St	1
405	120th Ave NE/NE 80th St	NE 80th St	1	120th Ave NE	1
406	NE 70th St/132nd Ave NE	132nd Ave NE	1	NE 70th St	1
407	NE 70th St/116th Ave NE	116th Ave NE	1	NE 70th St	1
408	NE 90th St/ 124th Ave NE	124th Ave NE	1	NE 90th St	1
409	NE 85th St/122nd Ave NE	NE 85th St	2	122nd Ave NE	1
412	NE 85th St/128th Ave NE	NE 85th St	2	128th Ave NE	1
413	NE 60th St/132nd Ave NE	132nd Ave NE	1	NE 60th St	1
414	NE 60th St/116th Ave NE	116th Ave NE	1	NE 60th St	1
415	NE 70th St/120th Ave NE	NE 70th St	1	120th Ave NE	1
416	NE 80th St/132nd Ave NE	132nd Ave NE	1	NE 80th St	1
417	NE 100th St/132nd Ave NE	132nd Ave NE	1	NE 100th St	1

Code	Intersection	Project PM Peak Turning Volumes											
		Eastbound			Westbound			Northbound			Southbound		
		LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
	120th Ave NE/North Driveway				116	0	316		352		321	187	0
	120th Ave NE/Center Blvd		28		274	184	111		112	168	187	116	0
	120th Ave NE/South Driveway				600	0	112		306	502	0	312	0
	Totem Lake Blvd/North Driveway				0	0	0		136		0	8	0
	Totem Lake Blvd/Central Blvd				48	0	136			20	8	0	0
	Totem Lake Blvd/South Driveway				0	0	0		20		0	48	0
301	120th Ave NE/NE 132nd St				17					29			
302	120th Ave NE/NE 130th St				5				29	20		17	
303	120th Ave NE/NE 128th St			81	6			140	58	11		27	
304	NE 132nd St/124th Ave NE	30			1	2			20	6		2	15
306	NE 124th St/ Slater Ave NE	1	58	3		43		6					
307	Totem Lake Blvd/120th Ave NE		14			18	105		46		156	128	
308	NE 124th St/120th Pl NE		53			5							
309	NE 118th ST/120th Ave NE	3											3
310	NE 116th St/120th Ave NE		2		11	6	21			5	20		
311	NE 116th ST/124th Ave NE	7					2		23		3	31	47
312	NE 124th St/116th Ave NE	21	7				3		3	1	21	4	42
313	NE 124th St/113th Pl NE		25			42							
314	Slater Ave NE/NE 120th St				0		4						
315	NE 124th St/124th Ave NE	-24					73		35		77	88	5
316	Totem Lake Blvd/NE 132nd St			1	1			2	17	5		15	
317	I-405/SB Off NE 124th St		24	28							43		40
318	I-405/NB Off NE 124th St		19										
319	I-405/SB On NE 116th St		7		29	18							
320	I-405/NB Off NE 116th St		7			47							
xxx	Totem Lake Blvd/NE 128th St		70	20		124	16	20			11		
324	NE 128th ST/116th Way NE	20			93		59			84	22		
201	98th Ave NE/Juanita Dr				1				6	0		4	
202	100th Ave NE/NE 124th St		6		11	10	5			10			
203	100th Ave NE/NE 132nd St		7		2	16	20				10		
204	116th Way NE/NE 132nd St		1	21		2		59					
205	Market St/Forbes Creek				4				3			0	
206	98th Ave NE/NE 120th Pl	2							17			23	3
207	Juanita Drive/93rd Ave NE		2			2							
208	Juanita Dr/97th Ave NE	2											2
209	Market St/7th Ave												
211	Market St/15th Ave												
404	124th Ave NE/NE 100th St						3		13		4	14	
408	NE 90th St/ 124th Ave NE	2							11			12	1
403	NE 85th St/ 120th Ave NE	1	4			2		0					1
409	NE 85th St/122nd Ave NE		5			2							
402	NE 85th St/124th Ave NE	4		1		1	4		3		10		
412	NE 85th St/128th Ave NE		9			4							
401	NE 85th St/ 132nd Ave NE		6	2		2	4		4		6		2
406	NE 70th St/132nd Ave NE		0				0		4			1	
101	Lake Wash/NE 36th Pl												
102	Lake Wash/Lakeview Dr												
103	State St/NE 68th St		1			1	1				1		
104	108th Ave NE/NE 68th St		2		1	2				1			
105	Central Way/6th St		6		1	8	2			1	1		
106	Central Way/3rd St		3		0	4				0			
107	Central Way/Lake St		1		1								
108	Lake St/Kirkland Ave		1			1							
109	NE 85th St/114th Ave NE		8		3	8	2			3	1		
110	6th St/4th Ave								1			1	
111	Kirkland Ave/3rd Ave	0										0	
112	Kirkland Way/6th St	1							0				1
113	Kirkland Ave/6th St								1			0	
411	NE 72nd Pl/I-405 SB Ramp				4		1			2			
407	NE 100th St/132nd Ave NE			1				1	5			5	
410	NE 70th St/116th Ave NE			4					1				
414	NE 60th St/116th Ave NE								2			1	
413	NE 60th St/132nd Ave NE								4			1	
405	120th Ave NE/NE 80th St	0	1	0									
xxx	Totem Lake Blvd/NE 128th St		70	20		124	16	20			11		

	1009 PM project Trips									9561			
	Approach Volumes				%of PM Project Trips					Daily Trips			
	Eastbound	Westbound	Northbound	Southbound	Eastbound	Westbound	Northbound	Southbound		Eastbound	Westbound	Northbound	Southbound
301	0	17	29	0	0%	2%	3%	0%	301	0	163	275	0
302	0	5	49	17	0%	1%	5%	2%	302	0	50	464	163
303	81	6	209	27	8%	1%	21%	3%	303	767	53	1981	253
304	30	4	26	17	3%	0%	3%	2%	304	288	33	248	163
306	73	43	6	0	7%	4%	1%	0%	306	693	410	53	0
307	14	123	46	284	1%	12%	5%	28%	307	134	1167	433	2694
308	53	5	0	0	5%	1%	0%	0%	308	503	50	0	0
309	3	0	0	3	0%	0%	0%	0%	309	30	0	0	32
310	2	38	5	20	0%	4%	1%	2%	310	20	361	50	190
311	7	2	23	81	1%	0%	2%	8%	311	70	20	220	770
312	29	3	4	68	3%	0%	0%	7%	312	273	32	40	644
313	25	42	0	0	2%	4%	0%	0%	313	237	396	0	0
314	0	5	0	0	0%	0%	0%	0%	314	0	43	0	0
315	-24	73	35	171	-2%	7%	3%	17%	315	-223	689	330	1621
316	1	1	24	15	0%	0%	2%	1%	316	10	10	225	140
317	52	0	0	84	5%	0%	0%	8%	317	495	0	0	793
318	19	0	0	0	2%	0%	0%	0%	318	176	0	0	0
319	7	47	0	0	1%	5%	0%	0%	319	70	441	0	0
320	7	47	0	0	1%	5%	0%	0%	320	70	441	0	0
xxx	90	140	20	11	9%	14%	2%	1%	xxx	856	1323	190	100
324	20	152	84	22	2%	15%	8%	2%	324	190	1441	793	207
201	0	1	6	4	0%	0%	1%	0%	201	0	14	60	41
202	6	27	10	0	1%	3%	1%	0%	202	53	257	93	0
203	7	38	0	10	1%	4%	0%	1%	203	70	360	0	93
204	23	2	59	0	2%	0%	6%	0%	204	213	18	563	0
205	0	4	3	0	0%	0%	0%	0%	205	0	41	30	5
206	2	0	17	26	0%	0%	2%	3%	206	20	0	157	248
207	2	2	0	0	0%	0%	0%	0%	207	17	23	0	0
208	2	0	0	2	0%	0%	0%	0%	208	17	0	0	23
209	0	0	0	0	0%	0%	0%	0%	209	0	0	0	0
211	0	0	0	0	0%	0%	0%	0%	211	0	0	0	0
404	0	3	13	18	0%	0%	1%	2%	404	0	27	123	171
408	2	0	11	13	0%	0%	1%	1%	408	17	0	103	126
403	5	2	0	1	1%	0%	0%	0%	403	50	23	3	9
409	5	2	0	0	0%	0%	0%	0%	409	43	23	0	0
402	5	5	3	10	0%	1%	0%	1%	402	47	50	27	95
412	9	4	0	0	1%	0%	0%	0%	412	81	33	0	0
401	8	6	4	8	1%	1%	0%	1%	401	77	57	40	72
406	0	0	4	1	0%	0%	0%	0%	406	5	3	37	14
101	0	0	0	0	0%	0%	0%	0%	101	0	0	0	0
102	0	0	0	0	0%	0%	0%	0%	102	0	0	0	0
103	1	2	0	1	0%	0%	0%	0%	103	10	18	0	9
104	2	4	1	0	0%	0%	0%	0%	104	20	36	10	0
105	6	11	1	1	1%	1%	0%	0%	105	53	104	13	10
106	3	5	0	0	0%	0%	0%	0%	106	30	45	3	0
107	1	1	0	0	0%	0%	0%	0%	107	10	14	0	0
108	1	1	0	0	0%	0%	0%	0%	108	10	14	0	0
109	8	12	3	1	1%	1%	0%	0%	109	73	117	30	13
110	0	0	1	1	0%	0%	0%	0%	110	0	0	13	14
111	0	0	0	0	0%	0%	0%	0%	111	3	0	0	5
112	1	0	0	1	0%	0%	0%	0%	112	7	0	3	14
113	0	0	1	0	0%	0%	0%	0%	113	0	0	7	5
411	0	6	2	0	0%	1%	0%	0%	411	0	54	23	0
407	1	0	6	5	0%	0%	1%	1%	407	14	0	60	50
410	4	0	1	0	0%	0%	0%	0%	410	37	0	10	0
414	0	0	2	1	0%	0%	0%	0%	414	0	0	20	14
413	0	0	4	1	0%	0%	0%	0%	413	0	0	37	9
405	1	0	0	0	0%	0%	0%	0%	405	10	0	0	0
XXX	90	140	20	11	9%	14%	2%	1%	XXX	856	1323	190	100

Appendix 4

Movie Theater Trip Generation Reference

TSI
Transportation Solutions, Inc.

Trip Generation for Entertainment Land Uses

Julie M. Doyle, P.E.

This paper presents trip generation data collected by Street Smarts in the Atlanta, Georgia metropolitan area in early 1998 for some new and emerging land uses: a movie theater with a large number of screens, a coffee shop, a microbrewery, a laser tag facility, and a multi-use entertainment/sports activity complex.

The movie theater data were collected as part of a traffic impact study for a proposed 22-screen movie theater. The coffee shop, microbrewery, laser tag, and multi-use entertainment/sports activity complex data were collected as part of a traffic impact study for a proposed multi-use entertainment facility to include a bowling alley, health club and spa, restaurants, movie theater, coffee shop, microbrewery, and laser tag.

Movie Theaters

The trip generation rates given in the Institute of Transportation Engineers (ITE) *Trip Generation, 6th Edition* for movie theaters are for theaters with an average of six to nine screens. It was felt that the movie theaters which are being built today with at least twice as many screens would generate less traffic on a per screen basis. Therefore, trip generation studies were conducted at two movie theaters in suburban Atlanta to develop rates more appropriate for theaters with a large number of screens.

The theaters studied were selected based on the number of screens and the parking lot layouts. Many theaters that are part of shopping centers do not have distinct parking areas separate from the shopping centers; therefore, it would be difficult to separate the theater traffic from the shopping center traffic. These types of theaters were not selected. The theaters which were selected had their own parking areas with little opportunity for theater patrons to park elsewhere or for non-theater patrons to park in the theater lot and then walk to another facility.

One of the theaters studied had sixteen screens, and the other had 24 screens. 72-hour directional counts were taken on a Thursday, Friday, and Saturday for all the driveways at the two theaters using automatic traffic recorders. The trip generation rates developed using the data collected are shown in Table 1, as well as the rates given in the ITE *Trip Generation*.

Table 1. Trip Generation Rates per Screen for Movie Theaters

Facility	Day of Week	Daily	A.M. Peak Hour of Adjacent Street			P.M. Peak Hour of Adjacent Street			P.M. Peak Hour of Generator		
			Total	In	Out	Total	In	Out	Total	In	Out
16-Screen Theater	Thurs	95.06	1.88	60%	40%	9.44	60%	40%	14.63	40%	60%
	Fri	289.94	0.38	67%	33%	25.88	58%	42%	46.63	45%	55%
	Sat	524.88	-	-	-	-	-	-	74.63	52%	48%
24-Screen Theater	Thurs	98.96	0.96	57%	43%	9.38	55%	45%	13.33	51%	49%
	Fri	294.21	1.29	52%	48%	16.96	56%	44%	60.21	47%	53%
	Sat	494.83	-	-	-	-	-	-	75.13	51%	49%
16- & 24-Screen Theaters	Thurs	97.4	1.33	58%	42%	9.4	57%	43%	12.88	50%	50%
	Fri	292.5	0.88	51%	49%	20.18	57%	43%	48.95	46%	54%
	Sat	506.85	-	-	-	-	-	-	67.78	52%	48%
ITE *Trip Generation* (average of 6 to 9 screens)	Wkdy	153.33	9.50[1]	n/a	n/a	44.53	52%	48%	89.48	57%	43%
	Sat	529.47	-	-	-	-	-	-	89.81	58%	42%

[1] A.M. Peak Hour of Generator

The daily rate developed by Street Smarts for a Thursday, which is a typical weekday, is over 35% lower than the daily rate given in the ITE *Trip Generation* for a weekday. The daily rate developed by Street Smarts for a Friday is almost twice as high as the ITE weekday rate. The Saturday daily rate developed by Street Smarts is approximately 5% lower than the ITE rate for a Saturday.

The ITE *Trip Generation* does not give a rate for the weekday A.M. peak hour of the adjacent street; however, it does contain a rate for the A.M. peak hour of the generator. It is not surprising that the ITE rate for the A.M. peak hour of the generator is much higher than the rate developed by Street Smarts for the weekday A.M. peak hour of the adjacent street. Therefore, when determining the traffic impact of a movie theater during the A.M. peak hour, if the ITE rate for A.M. peak hour of the generator were used to be conservative because of a lack of other information, the number of trips estimated would be much higher than the Street Smarts data would indicate.

For the weekday P.M. peak hour of the adjacent street, the rate developed by Street Smarts for a Thursday is approximately 1/5 of the rate given in the ITE *Trip Generation*. The rate given in the ITE *Trip Generation* for the weekday P.M. peak hour of the adjacent street included counts taken on Fridays. The data collected by Street Smarts indicates that on Fridays, movie theaters generate over twice as many trips during the P.M. peak hour as on Thursdays. The Street Smarts rate for the P.M. peak hour of the adjacent street for Fridays is still over 50% lower than the ITE rate.

For the weekday P.M. peak hour of the generator, the ITE rate is much higher than the rates developed by Street Smarts for either a Thursday or a Friday.

For the Saturday P.M. peak hour of the generator, the rate developed by Street Smarts is approximately 25% lower than the rate given in the ITE *Trip Generation*. When estimating the trips expected from a 22-screen theater, this difference is substantial.

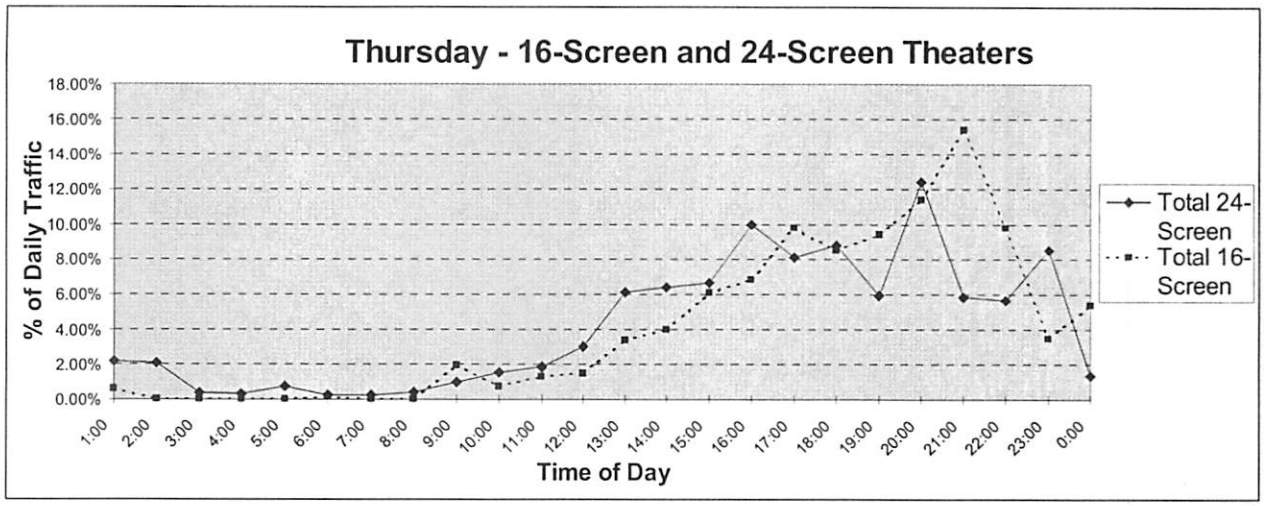
While the two facilities studied generated approximately the same number of trips per screen for their individual Thursday and Saturday P.M. peak hours of the generator, these peak hours occurred at different times. When the trips at the two theaters were combined, the resulting peak hour trip generation was lower than for the individual theaters.

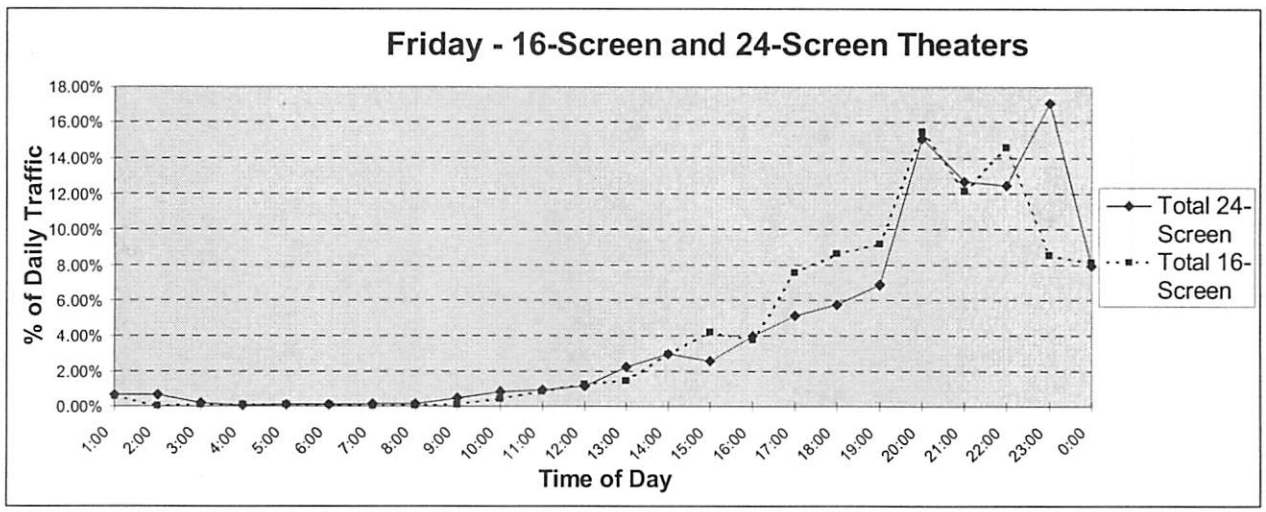
The time of day distribution for the combined trips from the two theaters is listed in Table 2. The time of day distribution for the individual theaters is shown in Figure 1. The time of day distribution shows that on Thursday, the theaters had a higher percentage of their daily trips during the afternoon hours than on Friday. Friday and Saturday had higher percentages of their daily trips during the late night hours than Thursday.

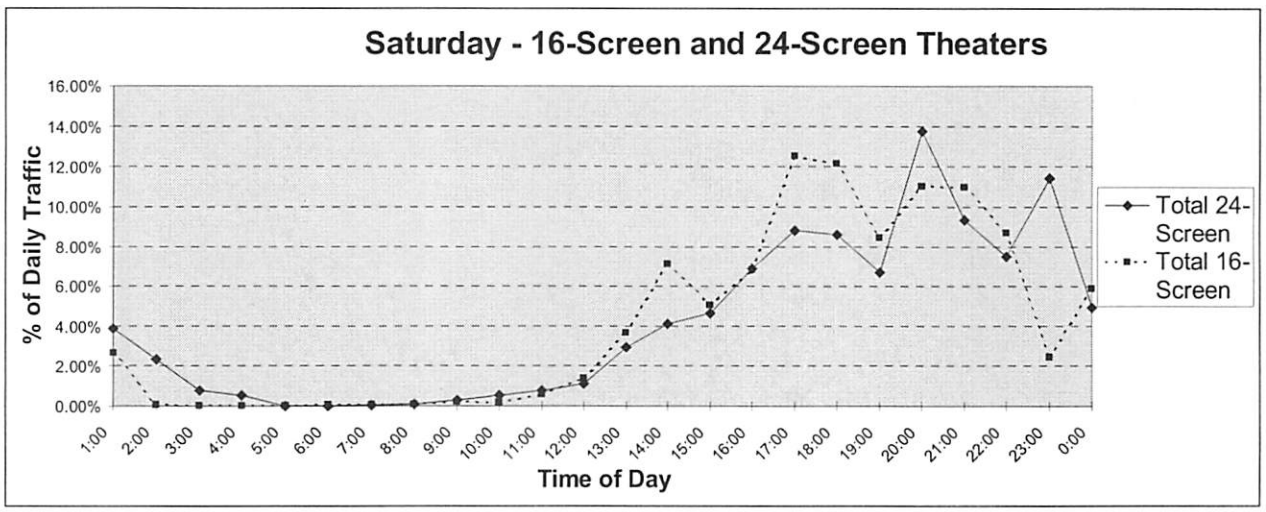
Table 2. Time of Day Distribution for Movie Theater Trips (Combined Theaters)

End	Thursday			Friday			Saturday		
	% of Daily			% of Daily			% of Daily		
Time	Total	In	Out	Total	In	Out	Total	In	Out
1:00	1.6%	1.5%	1.6%	0.6%	0.5%	0.7%	3.4%	2.7%	4.1%
2:00	1.3%	1.1%	1.5%	0.4%	0.3%	0.5%	1.4%	1.0%	1.8%
3:00	0.2%	0.3%	0.2%	0.1%	0.1%	0.2%	0.4%	0.3%	0.6%
4:00	0.2%	0.2%	0.2%	0.1%	0.1%	0.0%	0.3%	0.2%	0.4%
5:00	0.2%	0.3%	0.2%	0.1%	0.1%	0.2%	0.4%	0.3%	0.6%
6:00	0.2%	0.2%	0.2%	0.1%	0.1%	0.1%	0.0%	0.0%	0.0%
7:00	0.1%	0.2%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.0%
8:00	0.3%	0.3%	0.3%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
9:00	1.4%	1.6%	1.1%	0.3%	0.3%	0.3%	0.2%	0.2%	0.3%
10:00	1.2%	1.3%	1.1%	0.7%	0.7%	0.6%	0.4%	0.4%	0.4%
11:00	1.6%	1.9%	1.3%	0.9%	0.8%	0.9%	0.7%	0.7%	0.7%
12:00	2.4%	2.8%	2.0%	1.2%	1.2%	1.2%	1.2%	1.3%	1.1%
13:00	5.1%	5.3%	4.9%	1.9%	2.0%	1.8%	3.3%	3.5%	3.0%
14:00	5.5%	6.4%	4.5%	3.0%	3.3%	2.7%	5.4%	6.3%	4.4%
15:00	6.4%	6.6%	6.3%	3.2%	3.3%	3.1%	4.8%	5.1%	4.6%
16:00	8.8%	8.3%	9.2%	3.9%	3.7%	4.1%	6.9%	7.0%	6.7%
17:00	8.8%	8.3%	9.3%	6.1%	6.7%	5.4%	10.3%	10.9%	9.8%
18:00	8.7%	10.4%	7.0%	6.9%	7.7%	6.1%	10.1%	10.5%	9.6%
19:00	7.3%	7.6%	7.1%	7.8%	7.7%	7.9%	7.4%	7.1%	7.8%
20:00	12.0%	12.2%	11.8%	15.2%	15.8%	14.7%	12.6%	12.9%	12.3%
21:00	9.6%	8.4%	10.8%	12.5%	13.0%	12.0%	10.0%	10.2%	9.8%
22:00	7.3%	6.6%	8.0%	13.3%	12.6%	14.0%	8.0%	7.5%	8.5%
23:00	6.6%	5.7%	7.4%	13.7%	12.7%	14.7%	7.7%	7.3%	8.1%
24:00	2.9%	2.5%	3.4%	8.0%	7.2%	8.8%	5.3%	4.7%	6.0%

Figure 1. Time of Day Distribution for Movie Theater Trips (Individual Theaters)







Entertainment/Sports Activity Complex

Street Smarts conducted a study for a proposed multi-use entertainment facility that would combine dining places with opportunities for playing video games and other indoor sporting activities. This is a relatively new type of development.

It was not felt that the land uses in the ITE *Trip Generation* were appropriate for this type of recreational facility. The ITE *Trip Generation* has a Multipurpose Recreational Facility land use which is described as having mostly outdoor sports-type uses. Since the multi-use entertainment facility for which the study was conducted would have more indoor entertainment-type uses, it was felt that the Multipurpose Recreational Facility land use was inappropriate.

Therefore, data were collected at an entertainment/sports activity facility recently opened in Cobb County, Georgia, that was felt to be similar the development proposed. The facility studied contains restaurants, a bar, video games, games of skill, pool tables, and a bowling alley. The data were collected for the weekday A.M. and P.M. peak hours of the adjacent streets. Trip generation rates per 1,000 square feet were developed.

The number of vehicles arriving and departing between 7 and 9 a.m. and 4 and 6 p.m. on a typical weekday were manually counted. The facility studied is a stand-alone facility. The trip generation rates developed using the data collected are shown in Table 3.

Table 3. Weekday Trip Generation Rates, Entertainment/Sports Activity Complex (Trips per 1,000 Square Feet)

A.M. Peak Hour			P.M. Peak Hour		
Total	In	Out	Total	In	Out
0.14	100%	0%	2.28	62%	38%

Other New Types of Development

As with the Sports Complex, other elements of the proposed multi-use entertainment facility did not fit precisely into any of the categories in the ITE *Trip Generation* publication. Therefore, trip generation studies were also performed the following land uses:

- microbrewery
- coffee shop
- laser tag facility

The establishments that were studied are located in the Sandy Springs area of Atlanta. The microbrewery includes the brewing facilities and a bar and restaurant. The laser tag facility also includes some video games and games of skill.

Data were collected for the weekday A.M. and P.M. peak hours of the adjacent streets. All of the facilities are located in shopping centers and share parking with the other tenants. Manual counts were performed so that the counter could observe where the people getting in and out of the cars came from or went to in the shopping center. Only the vehicles coming to/from the facilities being studied were then counted. Trip generation rates per 1,000 square feet were developed. The results of the trip generation studies for these developments are provided in Table 4.

Table 4. Weekday Trip Generation Rates, Other New Types of Developments (Trips per 1,000 Square Feet)

	A.M. Peak Hour			P.M. Peak Hour		
Facility	**Total**	**In**	**Out**	**Total**	**In**	**Out**
Coffee Shop	119.41	51%	49%	49.8	57%	43%
Microbrewery	0	-	-	4.8	92%	8%
Laser Tag Facility	0	-	-	1.96	79%	21%

Conclusions

It was felt that the data collected for movie theaters by Street Smarts supported the hypothesis that the movie theaters being built today with at least twice as many screens as the movie theaters included in the ITE *Trip Generation* generate fewer trips per screen on a daily basis as well as during the weekday P.M. peak hour of the adjacent street and the weekday and Saturday P.M. peak hours of the generator.

For the other land uses, the limited locations studied suggest rates that could be applied elsewhere. It is clear that more trip generation studies should be performed at multi-use entertainment facilities as well as emerging restaurant land uses.

Author's Information

Julie M. Doyle, P.E., is an Engineer with Street Smarts in Duluth, Georgia. She holds a bachelor's and a master's degree in civil engineering from the Georgia Institute of Technology. She is an Associate of ITE and chair of the Georgia Section's Ambassador Committee.

CITY OF KIRKLAND
123 FIFTH AVENUE • KIRKLAND, WASHINGTON 98033-6189 • (425) 828-1243

DEPARTMENT OF PUBLIC WORKS MEMORANDUM

To: Jon Regala, Planner

From: Thang Nguyen, Transportation Engineer

Date: December 29, 2005

Subject: Totem Lake Mall Redevelopment

This memo summarizes Staff's review of the traffic impact analysis report for the proposed Totem Lake Mall Redevelopment.

Project Description

The applicant is proposing to redevelop the existing Totem Lake Mall in two phases. The first phase involves demolishing the existing upper mall (east of 120th Avenue NE) and rebuilding it to include retail, office and a multiplex movie theater. The second phase involves partial demolishing of the existing structures in the lower mall (west of 120th Avenue NE) then reconstructing it to include retail space and residential condominium on top. The completed mall will have approximately 562,299 square feet (sf) of retail space, 144,000 sf of office space, 216 condominiums, and a 3,000 seat multiplex theater.

There will be three driveways providing accesses to the Mall off Totem Lake Boulevard. The east-west center driveway will intersect with 120th Avenue NE and provide access into the parking garage on the upper mall. Three driveways will provide access to the Mall off 120th Avenue NE.

Two traffic signals are proposed to regulate the Mall traffic. One signal will be located at the intersection of 120th Avenue NE and the new center east-west connection between the upper and lower mall. The second signal will be install at the intersection of 120th Avenue NE/Totem Lake Way.

As part of the redevelopment of the mall, 120th Avenue NE will be redesigned to incorporate traffic calming such as parallel parking to slow down traffic and divert pass-by traffic to Totem Lake Boulevard. 120th Avenue NE will provide one lane of traffic in each direction and a shared center turn lane between Totem Lake Boulevard and NE 128th Street.

The applicant is proposing to provide back-out angle parking along the new east-west road connecting Totem Lake Boulevard the upper mall.

ATTACHMENT 7
SEP06-00001

The project would provide in excess of 3,000 parking stalls in parking structures, surface lots, and on-street parking. Approximately 1,900 parking stalls would be located in a parking structure within the upper mall. Parking structures in the lower mall will provide reserved residential parking.

A pedestrian connection will be provided between the upper mall and the future transit center located off NE 128th Street within the Evergreen Hospital campus.

Trip Generation

Trip generation was determined both by data from ITE (Institute of Transportation Engineers) Trip Generation Report and local data. Based on the trip generation data, the proposed project is forecasted to generate approximately 9,561 net new daily, 488 net new AM and 1,009 net new PM peak hour trips.

Trip Distribution and Assignment

Trip distribution and assignment for the proposed project were determined using the City's BKR traffic model. The distribution and assignment forecast of background and project traffic reflect the affect of the future NE 128th Street overpass and the traffic calming of 120th Avenue NE between Totem Lake Boulevard and NE 128th Street.

Traffic Concurrency

The proposed project passed traffic concurrency and the concurrency test notice for the proposed project will expire in six year (December 9, 2011) unless a development permit and certificate of concurrency are issued or an extension is granted. If the development program changes that result in more PM peak hour trips then a new concurrency test will be required.

Scope of Analysis

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 PM peak hour traffic volume share greater than 1%. Twenty four intersections listed in Table 1 below meet this requirement. 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.

For the purpose of identifying SEPA mitigation, only those intersections with 5% or more of proportional share of traffic volume were analyzed for this review. Analyses and documentation of other significant intersections with less than 5% will be provided in an addendum to the traffic report.

Table 1. Significant Proportional Share Intersections

Intersections	% Proportional Share	LOS Analysis
NE 132nd St/116th Way NE	6.7%	PM
120th Ave NE/NE 128th St	14.0%	PM
NE 132nd St/124th Ave NE	5.3%	PM
Totem Lake Blvd/120th Ave NE	20.2%	AM/PM
NE 124th St/116th Ave NE	8.1%	PM
NE 124th St/Totem Lake Blvd	22.4%	AM/PM
NE 124th St/I-405 SB	9.7%	PM
116th Way NE/ NE 128th St	19.9%	AM/PM
100th Ave NE/NE 124th St	3.6%	PM
100th Ave NE/NE 132nd St	4.9%	PM
98th Ave NE/NE 120th Pl	1.2%	PM
NE 132nd St/120th Ave NE	3.4%	PM
120th Ave NE/NE 130th St	2.4%	PM
NE 124th St/Slater Ave NE	3.3%	PM
NE 124th St/120th Pl NE	1.5%	PM
NE 116th St/120th Ave NE	3.5%	PM
124th Ave NE/NE 116th St	3.8%	PM
NE 124th St/113th Pl NE	1.7%	PM
NE 132nd St/Totem Lake Blvd	4.1%	PM
NE 116th St/I-405 SB	1.7%	PM
NE 116th St/I-405 NB	1.7%	PM
NE 85th St/132nd Ave NE	1.5%	PM
NE 85th St/124th Ave NE	1.5%	PM
124th Ave NE/NE 100th St	1.1%	PM
Totem Lake Blvd/NE 128th St	22.3%	AM/PM

In addition, the project driveways were also analyzed for traffic operation and safety. An addendum to the traffic report will provide analyses of on site circulation and road design, parking and pedestrian access for staff review and approval as the development plans are designed in more details.

Traffic Impacts

Based on the traffic impact analysis report, four intersections will operate poorly and require mitigations. The applicant proposes to signalize the intersections of 120th Avenue NE/Totem Lake Way and 120th Avenue NE/Central Boulevard (proposed East-West road connecting the upper and lower mall) to mitigate the level of service (LOS) impacts.

The intersection of Totem Lake Blvd/120th Avenue NE will require a right-turn lane on the east or west leg and the channelization of the south leg will need to be revised to provide a dual left-turn lane and a shared through-and-right-turn lane. The intersection of NE 132nd Street/116th Way NE will require revision to the south leg to provide for a separate left-turn lane and a shared through-and–right-turn lane to mitigate the

LOS. The City will monitor these two intersections and take appropriate action to mitigate the impact with the full build-out of the Mall.

The project driveway to the gas station off 120th Avenue NE does not meet the City's driveway spacing requirement. There is a very low demand for left-turns at that driveway. The southbound queue at the intersection of 120th Avenue NE/Totem Lake Boulevard often blocks the driveway. It is recommended that c-curb be installed to restrict left-turns at that driveway to maintain safe traffic operation.

Currently, the south driveway off Totem Lake Boulevard provides full access to the site. The increase and shift in traffic to Totem Lake Boulevard may affect left-turns in and out of the project's south driveway. The City will monitor the driveway for safety. If accidents increase at the south driveway, the City may extend the existing c-curbing to preclude left-turn in and out of the driveway. All other project driveways are forecasted to operate at an acceptable level of service.

Central Boulevard

The proposed redevelopment of the Totem Lake Mall will include a new east-west Street to connect Totem Lake Boulevard to 120th Avenue NE to provide access to the upper mall. The applicant proposes to provide angle parking along the new Central Boulevard. It is estimated that approximately 300 vehicle per hour will travel through this new connection. Back out angle parking presents a safety hazard to pedestrian, cyclist and other drivers because sight distance is often limited. There are no streets in the City that have back out angle parking and high traffic volumes. Staff recommends providing parallel parking instead of angle parking. However, the City is open to review additional information that may supports angle parking as a safe and viable alternative. Additional information shall be provided in the addendum to the TIA report.

Transportation Management Program (TMP)

The City of Kirkland requires office building with 50,000 square feet or more to provide a TMP. The City Comprehensive Plan Policy Goal T-3.1 encourages locating multi-modal facility in multi-use centers that contains residential, office and commercial use. The redevelopment of the Totem Lake Mall will have the ideal mix of land uses that would promote the use of multi-modal transportation. Thus, the redevelopment of the mall shall include an approved TMP. Components of the TMP should include one or more of the following: bus shelter, connection to the transit center, transit information center, parking management, bicycle facilities, etc. Details of the TMP shall be provided in the addendum to the traffic report subject to City's review and approval.

On-site Circulation

An analysis of Traffic calming on 120th Avenue NE, on-site pedestrian, traffic and truck circulation shall be provided in the addendum to the traffic report for City's review and approval.

Road Impact Fees

Per City's Ordinance 3685, Road Impact Fees per Impact Fee Schedule in effect June 14, 1999 are required for all developments. The development will be assessed road impact fees as summarized in Table 1. Final traffic fee will be determined at time of building permit issuance.

Table 1. Road Impact Fee Estimate

Uses	Fee Rate	Units	Impact Fees
Existing			

Shopping Center	$1.39/sf	266,501 sf	($370,436)
Office	$4.71/sf	7,500 sf	($35,325)
Movie Theater	$23,780/screen	4 screens	($95,120)
Net Credit			***($500,880)***
Proposed			
Shopping Center	$1.85/sf	562,299 sf	1,040,253
Office	$2.07/sf	136,500 sf	$282,555
Movie Theater	$23,780/screen	13 screens	$309,140
Multi-family	$586/unit	216 units	$126,576
Assessed Impact Fee			***$1,758,524***
NET IMPACT FEE			**$1,257,644**

Staff Recommendations

Staff recommends approval of the proposed project with the following mitigation measures and conditions:

- Pay road impact fees.
- Construct frontage improvements per the City of Kirkland requirements and standards.
- The south driveway off 120th Avenue NE should be restricted to right-turn in and out by constructing c-curbing on 120th Avenue NE.
- Enter into an agreement not to contest the installation of c-curb to restrict left-turns in and out of the south driveway off Totem Lake Boulevard.
- Install traffic signals at the intersection of 120th Avenue NE/Totem Lake Way and 120th Avenue NE/Central Blvd (new east-west street through the development)
- Provide parallel parking along the new Center Boulevard instead of angle parking to maintain traffic safety.
- Provide Transportation Management Program (TMP)

If other uses are to occupy the site, an updated traffic concurrency test and traffic impact analysis shall be required.

cc: David Johnson, Transportation Solutions, Inc.
John Burkhalter, Development Engineer