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Printer-friendly

# Neighborhood Walking Maps

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## Neighborhood Walking Maps

The following maps of easy neighborhood walks are provided to you by the City of Kirkland and the local neighborhood association in cooperation with Public Health - Seattle & King County.

It is our hope that these maps of neighborhood parks and walking routes will inspire you and give you new ideas of places to walk! All files are in pdf format.

Everest Neighborhood

Houghton Neighborhood

Juanita Neighborhood

Lakeview Neighborhood

Moss Bay Neighborhood

North Rose Hill Neighborhood

Totem Lake Neighborhood

Find information on regional trails at:

MyParksandRecreation.com
A Service of eCityGov.net

Links to Juanita Neighborhood Walking Loop Map



Links to AG Bell Trail Connector webpage (see next page)

MyParksandRecreation.com
A Service of eCityGov.net

Home | Recreation Search | Park/Trail/Facility Search | Policies | Related Links

« Back to Search Results

Print Page

# AG Bell Trail Connector

This route connects the Juanita Neigborhood Yellow, Green and Purple routes. While this connection is mostly along sidewalks and paved trails, it does include some unpaved natural trails near A.G. Bell Elementary School.

**Quick Facts:**

- Low Difficulty
- On-site Parking
- Paved Pathways
- Natural Trails

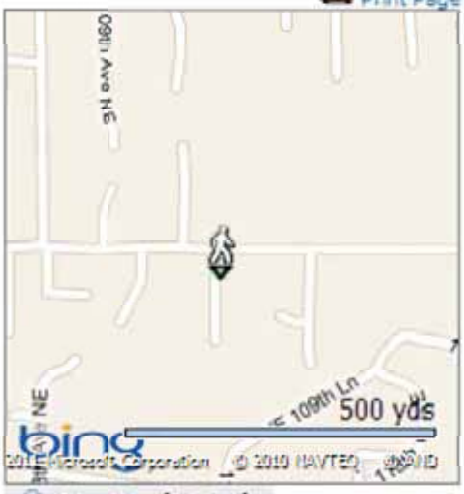
**Activities:**

Basketball
Biking/Cycling
Hiking/Trail Running
Exercise & Fitness
Walking

**Directions:**

From I-405 N, take Exit 20A to NE 116th Street. Turn left onto NE 116th Street. Turn left onto 120th Avenue NE then turn right onto NE 112th Street.

From I-405 S, take Exit 20 to NE 124th Street. Turn right onto NE 124th Street. Turn left onto 116th Avenue NE, continue along 120th Avenue NE then turn right onto NE 112th Street.




View Trail Detail

**11212 NE 112th Street**
**KIRKLAND, WA**
Map / Directions

**Hours**
Dusk to Dawn

**Phone**
425-587-3908
**Email**
mpadgett@ci.kirkland.wa.us
**Fax**
425-587-3902

**Related Parks, Trails & Facilities**

- McAuliffe Park
- Juanita Yellow Route

**Other Links**

Juanita Neighborhood Walking Routes

**Other Parks, Trails & Facilities Nearby**

- McAuliffe Park
- Juanita Green Route

# JUANITA WALKING LOOP MAP

## Route Descriptions

*This map depicts paths that are low to moderate in difficulty. Not all are ADA accessible. Walkers assume risk for their own safety when walking the routes indicated on this map. The descriptions below should give you an idea of difficulty and potential obstacles.*

### The Red Route

This route is 2 miles long and takes approximately one hour to walk. This route includes lots of ups and downs and trail connections. You'll stroll through resicential neighborhoods and right by the North Kirkland Community Center. At this time, there is no trail connection on the south side of Juanita High School. The city is coordinating with neighboring property owners to determine interest in this connection.

### The Yellow Route

This route is 1.3 miles long and takes approximately 40 minutes to walk. It passes by McAuliffe Park, which is a nice rest stop or exploration point. The streets are residential in character, with some hilly sections. Sidewalks are available along the whole route.

### The Orange Route

This route is 3 miles long and takes approximately 90 minutes to walk. Enjoy the scenery and breathtaking views from Juanita Beach Park and then grab a coffee or bite to eat at Juanita Village. The rest of the walk takes you through nearby residential neighborhoods. This walk is almost exclusively along sidewalks, except for a short stretch on 94th Avenue NE that includes some walking on the shoulder.

### The Green Route

This route is 1 mile long and takes approximately 30 minutes to walk. It's a steep up and down with two sets of stairs. It takes through a mix of residential and commercial neighborhoods. Stroll through The Enclave, a residential community to an interesting territorial viewpoint. Then proceed down the stairs to a walking loop nestled within the office development. Here there are good connections to nearby shopping.

### The Purple Route

This route is 2.25 miles long and takes approximately one hour. It includes uphill and downhill segments and a portion of unpaved trail. This route connects to the AG Bell trail connector. It goes up a paved, lighted path behind the Park at Forbes Creek Apartments, through residential neighborhoods and along a lovely, unpaved trail on the NE 108th Street right of way. This loop connects to Crestwoods Park via a stairway at the south end of 108th Avenue NE.

### The Blue Connectors

These connections link the walking loops. While these connections are mostly along sidewalks or paved trails, they do include some unpaved trails near the A.G. Bell School.

## Legend

Juanita Neighborhood Walking Loops

- The Red Route
- Proposed Loop
- The Orange Route
- Proposed Loop
- The Yellow Loop
- The Green Loop
- The Purple Loop
- Blue Connector
- Proposed Connection
- Uphill Slope
- Stairs
- Viewpoint
- Low Traffic Street
- High Traffic Street
- Interstate
- Railroad
- City of Kirkland Limits
- Park or Open Space
- School
- Lake
- Commercial and Business Districts
- Unincorporated King County

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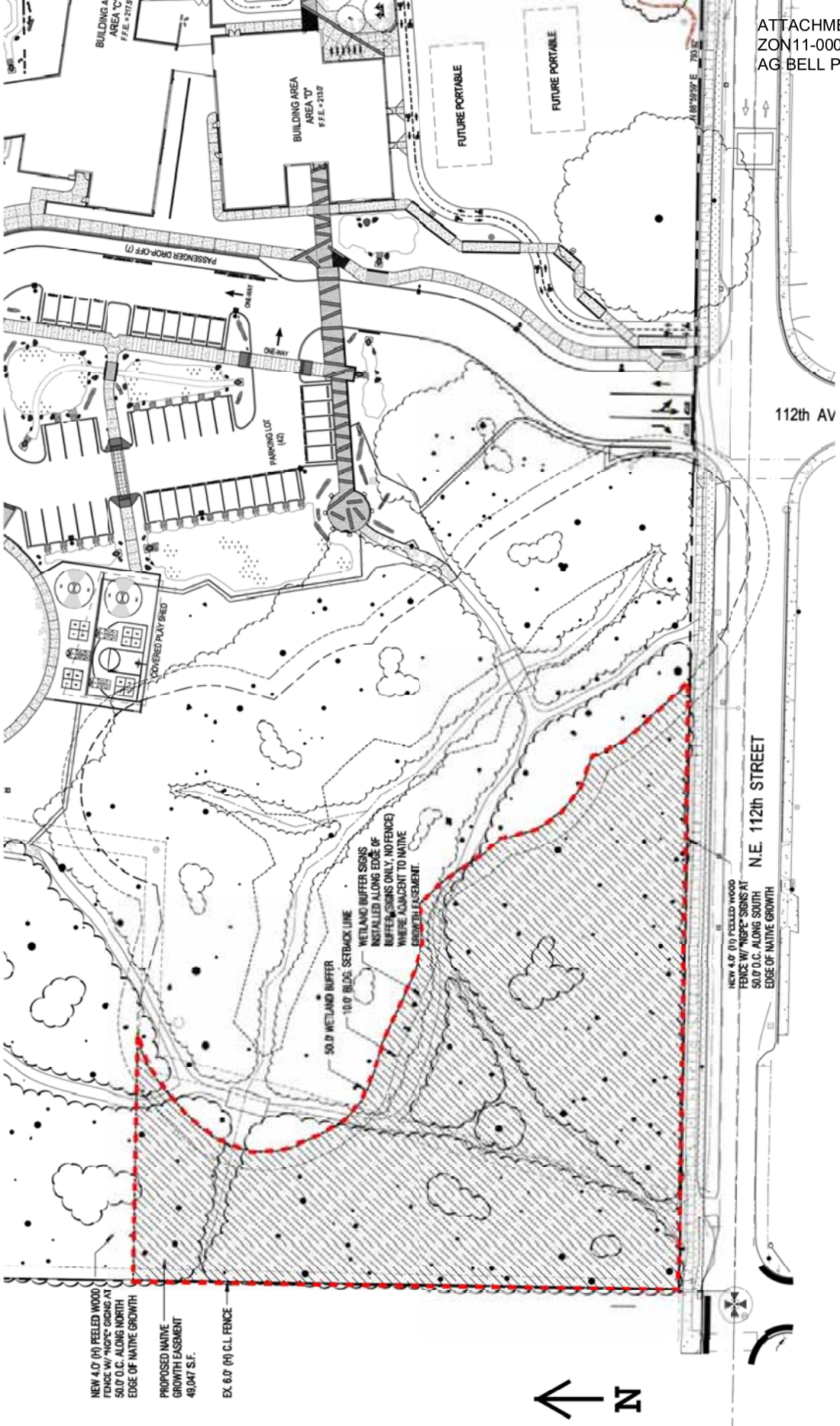
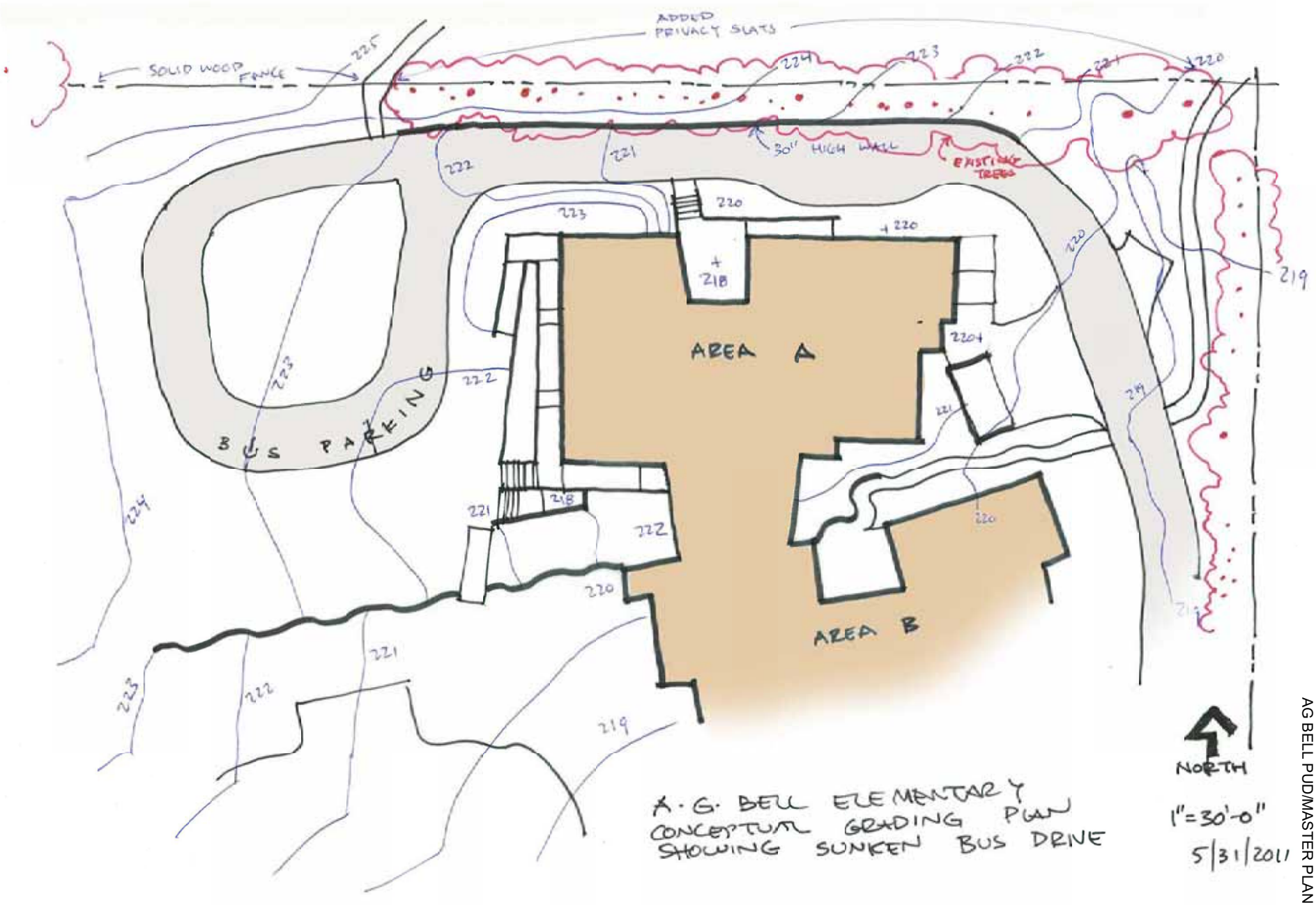
No warranties of any sort, including but not limited to accuracy, fitness or merchantability, accompany this product.




PROPOSED NATIVE GROWTH PROTECTION AREA


ADDED PRIVACY SLATS
SOLID WOOD FENCE
30" HIGH WALL
EXISTING TREES
BUS PARKING
AREA A
AREA B
NORTH
A.G. BELL ELEMENTARY
CONCEPTUAL GRADING PLAN
SHOWING SUNKEN BUS DRIVE
1"=30'-0"
5/31/2011

# ALEXANDER GRAHAM BELL ELEMENTARY TRAFFIC IMPACT ANALYSIS

## Kirkland, Washington

Prepared for:
**Lake Washington School District No. 414**

Prepared by:
**DAVID EVANS AND ASSOCIATES, INC.**
415 - 118th Avenue SE
Bellevue, WA 98005-3518

LWSD0000-0001

***December 2010***

# ALEXANDER GRAHAM BELL ELEMENTARY TRAFFIC IMPACT ANALYSIS

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***December 2010***

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## EXECUTIVE SUMMARY

David Evans and Associates, Inc. (DEA) has been contracted by the Lake Washington School District No. 414 to provide a traffic impact analysis for the proposed Alexander Graham Bell Elementary School (Bell Elementary) reconstruction in the city of Kirkland, Washington. This traffic impact analysis is intended to provide the City of Kirkland with the required traffic analysis and proposed mitigation. Below is a summary of the pertinent project information.

The proposed development will consist of replacing the existing Bell Elementary School with a new and updated facility on the existing school site. The LWSD had identified that the existing school operates with a current enrollment/capacity of 550 students. The new school will offer the same amount of student enrollment/capacity. Although capacity is remaining constant, the square footage will increase from 53,001 square feet to 65,306 square feet. The additional 12,305 square feet will provide updated spaces for classroom, administrative, vocational/technical, staff, and operational uses. These new facilities will provide updated spaces for teachers, school and administrative staff, and students, allowing for higher productivity and a better teaching/learning environment. The planned completion date is by the winter of 2012.

This traffic analysis demonstrates no additional site traffic will be generated by the reconstruction of the Bell Elementary School. Since no additional trips are being generated by the site, no off-site traffic impacts will result. Although no trips are being generated, the mitigation will be provided by frontage improvements at the school site. Upgraded frontage will consist of curb, gutter, landscaping strip, and sidewalks. Additional frontage improvements to increase pedestrian safety include new crosswalks and curb bulb-outs (a form of traffic calming mitigation). The site access points are being reconfigured to a separate entrance and exit system for busses and all other vehicles. This frontage mitigation will create a safer environment for students, staff, and parents when entering and exiting the Bell Elementary School site via walking or driving.

## PROJECT IDENTIFICATION

David Evans and Associates, Inc. (DEA) has been contracted by the Lake Washington School District (LWSD) No. 414 to provide a traffic impact analysis for the proposed Alexander Graham Bell Elementary (Bell Elementary) School reconstruction in the city of Kirkland, Washington. This traffic impact analysis is intended to provide the City of Kirkland with the required traffic analysis and proposed mitigation. Below is a summary of the pertinent project information.

| | |
|---|---|
| Name of Project: | Alexander Graham Bell Elementary School<br>Traffic Impact Analysis |
| Applicant's Name: | Lake Washington School District No. 414 |
| Traffic Engineer: | David Evans and Associates, Inc.<br>415 - 118th Avenue SE<br>Bellevue, WA 98005<br><br>Victor Salemann, P.E., Member of ITE<br>Anthony Wilen, E.I.T., LEED A.P., Member of ITE<br>Telephone: (425) 519-6500<br>Fax: (425) 519-5361 |

## PROPOSED DEVELOPMENT

The proposed development will consist of replacing the existing Bell Elementary School with a new and updated facility on the existing school site. The LWSD had identified that the existing school operates with a current enrollment/capacity of 550 students. The new school will offer the same amount of student enrollment/capacity. Although capacity is remaining constant, the square footage will increase from 53,001 square feet to 65,306 square feet. The additional 12,305 square feet will provide updated spaces for classroom, administrative, vocational/technical, staff, and operational uses. These new facilities will provide updated spaces for teachers, school and administrative staff, and students, allowing for higher productivity and a better teaching/learning environment. The planned completion date is by the winter of 2012.

The Alexander Graham Bell Elementary address information is as follows:

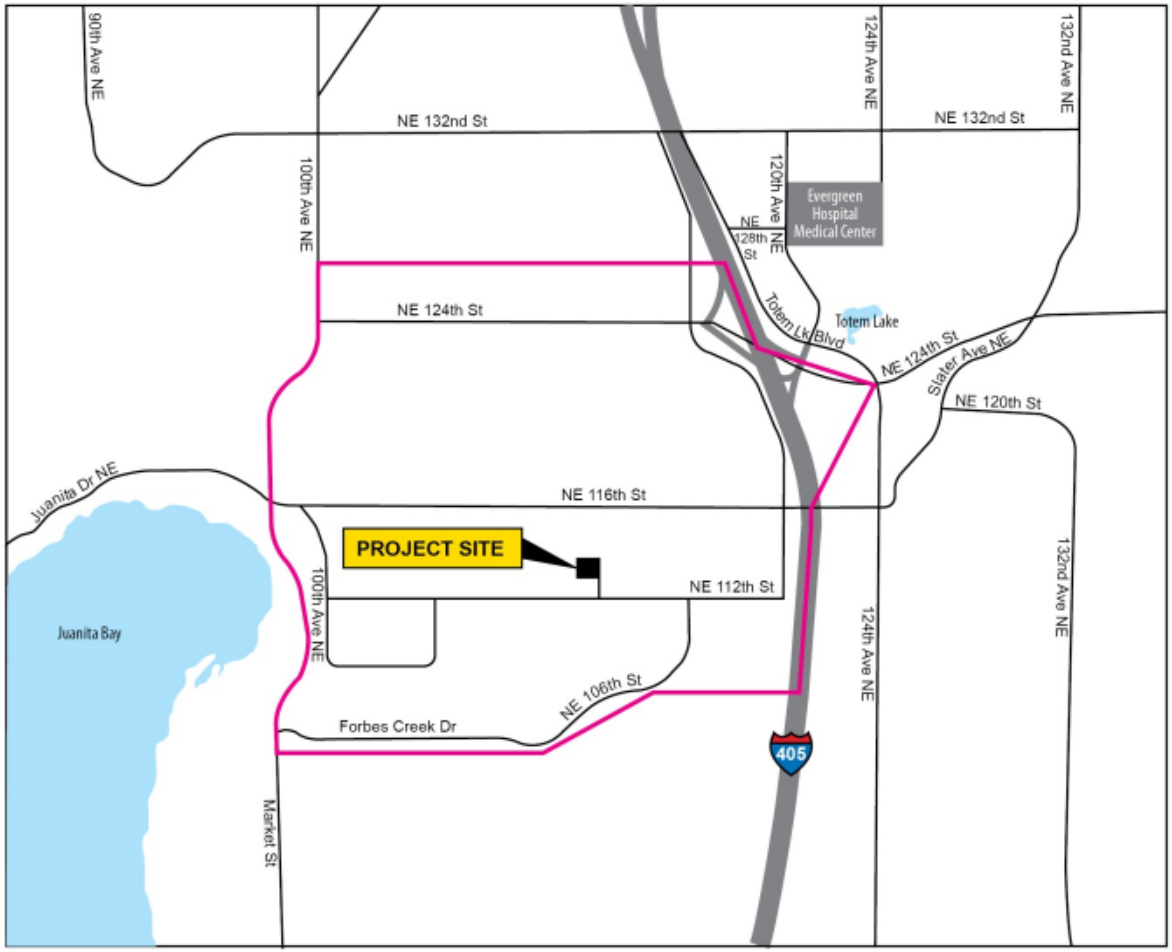
Alexander Graham Bell Elementary
11212 NE 112th Street
Kirkland, WA 98033

**Figure 1** is a Vicinity Map for the proposed project.

There is currently one site access point connecting the existing Bell Elementary School campus to the city roadway network. This access point is located along NE 112th Street, near the southeast corner of the school property. The driveway serves staff, students, busses, visitors, event parking, etc.

The Bell Elementary site is within the zoned area RS 8.5 and is a Completed Planned Unit Development.

This report is supplementary data to the Transportation Concurrency Management Review Application Form submitted to the City of Kirkland for the project.




School Boundary

N

NOT TO SCALE

Gx2082

Vicinity Map

AG Bell Elementary School

LWSD0000-0001

November 2010

Figure 1

DAVID EVANS AND ASSOCIATES INC.

# AREA CONDITIONS

## SCHOOL CONDITIONS

Currently, the Bell Elementary School site has a single-story, 53,001 square-foot structure housing all teaching, staff, student, and mechanical areas. The site is located in the South Juanita portion of the city of Kirkland. The site falls in a residential zone area of the city and is surrounded primarily by single-family dwelling units.

The existing school site has a single access point from NE 112th Street. The access directs vehicles north onto the site where the main portion of parking exists. All drop-off and bus trips enter and proceed in a circular pattern around the lot, exiting at the same entrance point. In addition to functional areas used for teaching, administration, mechanical, and transportation, other areas are dedicated to a playground, ball field, basketball court, and other outdoor activities.

The average school day schedule runs from 9:00am to 3:30pm. Bell Elementary School draws students from the immediate project vicinity. The school attendance boundaries are just north of NE 124th Street, west to 100th Avenue NE, south to Forbes Creek Drive, and east to Interstate 405. The current allowable school enrollment is 550 students.

## ROADWAY CONDITIONS

The project vicinity transportation facilities offer multiple routes for students, parents, teachers, and administrative staff to arrive at and depart from their work facilities. The existing transportation facilities are as follows.

**NE 112th Street** is a two-lane collector street that runs east-west along the entire south edge of the elementary school property and provides access to the school. Each end of the street ends in a T-intersection; to the west is 100th Avenue NE and to the east is 120th Avenue NE. The total length of NE 112th Street is 1.25 miles. NE 112th Street has 12-foot lanes directly in front of the school, but the overall roadway varies from 10 to 12-foot lanes while shoulders have an average range of 1 to 6 six feet in width. NE 112th Street offers little to no on-street parking, however vehicles are often parked alongside the road on the gravel right-of-way, especially during the drop-off and pick-up times of day.

There are two speed humps just to the east and west of the access point to the site. The posted speed limit is 25 miles per hour. Additionally, "School: Speed limit 20 When Children Are Present" signs are posted along the roadway. Numerous crosswalks are found in the immediate vicinity of the project site.

If traffic controls are present, they are generally two-way stop controlled intersections, with the east-west movement being free. There are no all-way stop intersections or traffic signals along NE 112th Street.

**116th Avenue NE (Forbes Creek Drive)/NE 106th Street** is primarily a east-west collector street that connects with NE 112th Street at the northeastern end while connecting to Market Street at the west end of the roadway. There is one traffic signal at the westerly terminus of the roadway (at Market Street). Most intersections are two-way stop controlled, including the northeastern terminus. The roadway consists of two lanes with extra turn pockets or two-way left-turn sections at several of the two-way stop controlled intersections along Forbes Creek Drive. Roadway shoulders range from one to nine feet, and offer limited on-street parking and occasional sidewalks or pathways along the street. The posted speed limit is 25 mph in the study area.

**NE 116th Street** is a principal arterial running east-west on the north side of the project site. NE 116th Street does not directly connect to the project site, however it runs directly through the middle of the Bell Elementary School boundary. There are traffic signals at the connections of 98th Avenue NE and 120th Avenue NE. There are two lanes with a two-way left-turn pocket that extends the full length of the roadway in the immediate project vicinity. Each of the two signalized and many of the unsignalized intersections between have additional left- and/or right-turn pockets. Sidewalks and bike lanes are present

on both the north and south sides of the street, for the entire length. A number of bus pull-outs are the only widened areas of the road, and parking is prohibited in those areas and along the entire stretch of roadway in the project vicinity. The speed limit is 35 mph in the study area.

There are a number of other **residential streets** in the immediate vicinity of the elementary school that carry traffic to NE 112th Street, 116th Avenue NE, and NE 116th Street. These local collector streets are low-speed residential streets with limited pavement width, multiple accesses, and minimal shoulders, curbs, gutters, and sidewalks. Many of these streets have intermittent on-street parking.

Existing Bell Elementary School **parking facilities** are located on-site along the eastern side of the property connecting to NE 112th Street. These parking areas are dedicated to teachers, administrative staff, operations staff, visitors, parents, and on-site programs/activities/events, and the areas fulfill the needs of these commuters. On a daily basis the parking areas may/may not reach maximum capacity due to work and class shifts at the Bell Elementary School.

### TRAFFIC SAFETY

Collision data from the past 5 years (2005-2009) has been gathered from the City of Kirkland Public Works Department. It was identified by Ms. Iris Cabrera of the City of Kirkland that only three (3) accidents have occurred in the Bell Elementary School project vicinity along NE 112th Street. The three accidents have been identified to be outside of peak hours and none were school related. Ms. Cabrera stated that these accidents did not offer any patterns in regards to the local roadway system. Therefore, it has been deemed that the three recorded accidents in the past five years are of no significance.

### PLANNED TRANSPORTATION IMPROVEMENTS

Upon review of the City of Kirkland 2009-2014 Capital Improvements Plan and the Preliminary 2011-2016 Capital Improvement Plan, only one improvement is currently planned within the general vicinity of the Bell Elementary School project. The project within the general project vicinity is:

- **Safe School Walk Route Improvements**: The City has been awarded state grant funding to construct walk route enhancements. The grant addresses the top priority route at each public elementary school and proposes to connect sidewalks, construct curb and gutter, and make storm drainage improvements. The location directly adjacent to the Bell Elementary project site is the east side of 110th Avenue NE from NE 116th Street leading into the back entrance of Bell Elementary. The project is totally funded with a cost of $498,000 (for all schools), of which 41% is provided by grant funding.

The safe school walk route project listed above will help improve access and safety for the Bell Elementary students, while also enhancing/improving pedestrian and non-motorized facilities around the project site.

## PROJECT TRAFFIC IMPACTS

### TRIP GENERATION

As discussed in the project description, the LWSD has identified that the new Bell Elementary School will be an additional 12,305 square feet in comparison to the existing structure. Although the new building will be bigger in size (total square feet), the additional area will not increase the total enrollment capacity of the school, which will remain at 550 students. The new spaces will provide updated areas for classroom, administrative, vocational/technical, staff, and operational uses; thus allowing higher productivity and a better teaching/learning environment.

Since the enrollment will not increase, no additional AM peak, PM peak, or daily trips are expected at the new Bell Elementary site.

### PM PEAK TRIP DISTRIBUTION

Trip distribution estimates the likely origin and destination of the site "users" based on residential areas within the school boundary. Since Bell Elementary will not generate any additional trips, no distribution of trips was conducted. The distribution, however, shall remain the same, compared to the existing school.

### SITE ACCESS/CIRCULATION

Upon completion of the site redesign at Bell Elementary School, two separate driveways will be utilized for vehicular trips. Bus, fire, and LWSD service vehicles will enter the site by utilizing the upgraded existing site access from NE 112th Street. This access, primarily for busses, will run along the eastern side of the site to a dedicated bus parking area. This access allows district busses to have an area separate from the general parking and pick-up/drop-off areas. The area provides a safer, more efficient location to transport students to and from bus stops, other district schools, field trips, etc., with a reduced potential for accidents.

All other vehicles (parents, visitors, staff, etc.) will travel into the site at a new site access directly across from the NE 112th Street & 112th Avenue NE intersection. This access will make the current 3-leg intersection a 4-leg intersection. This access enters the main driveway, parking, and the parent pick-up/drop-off loop. Directly adjacent to the parent loop will be the site parking facilities for both visitor or staff. This separation of the two driveways will provide improved visibility to other vehicles and students along NE 112th Street and vehicular and pedestrian safety. In the area of Bell Elementary, NE 112th Street has no horizontal curvature nor vertical curvature, therefore, no visual impairments to the sight distance are expected from the improved site entrance/exit.

## PROJECT MITIGATION

No project traffic-related roadway, capacity, or intersection mitigation is being proposed for the Bell Elementary School. It is anticipated that no additional traffic impacts will be generated by upgrading the school. A result of the site redesign and frontage improvements will provide safer driveway areas with pedestrian facilities connecting to the local roadway system. Upgraded frontage will consist of curb, gutter, landscaping strip, and sidewalks. Additional frontage improvements to increase pedestrian safety include new crosswalks and curb bulb-outs (a form of traffic calming mitigation). The site access points are being reconfigured to a separate entrance and exit system for busses and all other vehicles. This frontage mitigation will create a safer environment for students, staff, and parents when entering and exiting the Bell Elementary School site via walking or driving. As a result of frontage improvements, additional on-street parking will be installed between the curb bulb-outs at each entrance.

### TRAFFIC IMPACT FEE

The traffic impact fee established by the City of Kirkland for Elementary School/Jr. High land uses is $485 per additional student. Bell Elementary School does not anticipate any additional students at the new school, so no mitigation fee is being proposed.

DAVID EVANS AND ASSOCIATES INC.

# Memorandum

**DATE:** May 31, 2011

**TO:** Sean Ryan
Heery International, Inc.

**FROM:** Victor Salemann, P.E.
Senior Associate

**SUBJECT:** AG BELL ELEMENTARY – EXPANDED TRAFFIC DATA & PARKING

**PROJECT:** AG Bell Elementary School Modernization

**PROJECT NO.:** LWSD0000-0001

**COPIES:** File

The following Expanded Traffic Analysis review is provided at the request of the Lake Washington School District (LWSD) for the proposed AG Bell Elementary School (Bell Elementary) modernization project. Additional analysis has been requested for topics including trip generation, site parking, and queuing/traffic flow to and from the site.

## Project Description

The proposed development will consist of replacing the existing Bell Elementary School with a new and updated facility on the existing school site. The LWSD had identified that the existing school operates with a current enrollment/capacity of 550 students. The new school will offer the same amount of student enrollment/capacity. Although capacity is remaining constant, the square footage will increase from 53,001 square feet to 65,306 square feet. The additional 12,305 square feet will provide updated spaces for classroom, administrative, vocational/technical, staff, and operational uses. These new facilities will provide updated spaces for teachers, school and administrative staff, and students, allowing for higher productivity and a better teaching/learning environment. The planned completion date is by the winter of 2012.

The proposed land uses at the project site are described in **Table 1**:

**Table 1: Bell Elementary Land Use Details**

| Building | Land Use | Enrollment Size |
|---|---|---|
| Proposed | AG Bell Elementary School | 550 Students |

415-118th Avenue Southeast Bellevue Washington 98005 Telephone: 425.519.6500 Facsimile: 425.519.5361

## Trip Generation

The trip generation method documented in the Institute of Transportation Engineers (ITE) *Trip Generation* (8th Edition) report was used to calculate the site-generated trips. Trip generation rates for the AM and PM peak hours (one hour between 7:00 AM & 9:00 AM and 4:00 PM & 6:00 PM) of the adjacent street traffic on a weekday were calculated using the ITE Average Rates.

The land use category of Elementary School (Land Use Code 520) was reasonably selected to estimate the site-generated trips for the existing and proposed development. There is no enrollment growth for the school; therefore no additional student and corresponding traffic increases are expected.

Based on the land use code, no trip reductions were assumed, including pass-by and diverted link. **Attachment 1** shows the existing and proposed site-generated gross new trips estimated from the ITE average trip generation rate. There are, and will be, a total of 248 AM site-generated trips (136 in/112 out) and 83 PM site-generated trips (41 in/42 out).

The Bell Elementary School currently has, and will continue to utilize, a six (6) bus system. There is a total of one (1) full-size bus and five (5) shorter-size busses that pick up and drop off students.

The land use code, project size, ITE average trip generation rates, directional splits, and site-generated trips in the AM and PM peak hour are shown in **Attachment 1**.

## Traffic Operations

The existing Bell Elementary site offers a single ingress/egress point, providing access to busses, staff, parents, and visitors. This existing site plan does not provide efficient access to/from NE 112th Street and has a number of on-site safety areas of concern, primarily with the pedestrian and vehicle conflict points.

The new site plan utilizes a two-driveway system. Driveway #1 is the school's main entrance and is the ingress/egress for all parents, students, visitors, and staff. This one-way site driveway and parking area includes a passenger drop-off zone crossing areas, walkways, and parking areas. Driveway #1 has removed the pedestrian/vehicle conflict points by creating a 160-foot internal drop-off zone. Full on-site walkways and bikeways will be created to direct students towards the center of the site, away from vehicular traffic.

Driveway #2 is for bus pick-up/drop-off and staff parking areas. This loop-type lot has areas for standard parking, mini-bus parking, and full-size bus parking. Walkways and bikeways allow students and visitors areas of minimal vehicular conflict points along this driveway.

Refer to **Table 2** for the directional splits, per driveway in both the AM and PM peak hours. The driveway demand is based on the proportion of parking per driveway.

**Table 2: Bell Elementary Driveway Volumes**

| | Proportion of Parking | AM Entering | AM Exiting | PM Entering | PM Exiting |
|---|---|---|---|---|---|
| Driveway #1 (Main Entrance) | 76% | 103 | 85 | 31 | 32 |
| Driveway #2 (Secondary- Busses and Staffing) | 24% | 33 | 27 | 10 | 10 |

In conjunction with the two-driveway layout, the new site plan allows for greater on-site queuing areas for pick-up and drop-off. This additional area helps to alleviate potential congestion at the ingress/egress point along NE 112th Street and to separate busses from all other vehicular traffic.

## ITE Parking Generation

The parking generation method documented in the Institute of Transportation Engineers (ITE) *Parking Generation* (3th Edition) report was used to calculate the site-generated parking demand.

The land use category of Elementary School (Land Use Code 520) was selected to estimate the site-generated parking for the existing and proposed development. The identified site-generated parking is 0.28 vehicles per student. This rate is based on a total of six (6) different school sites in Norman, Oklahoma, recorded in 1992. The range of rates identified for elementary schools are as follows:

Minimum Peak Period Demand: $550\ students * 0.18 \frac{vehicles}{student} = 99\ parking\ stalls$

Average Peak Period Demand: $550\ students * 0.28 \frac{vehicles}{student} = 154\ parking\ stalls$

Maximum Peak Period Demand: $550\ students * 0.54 \frac{vehicles}{student} = 297\ parking\ stalls$

The elementary school rates in the ITE Report are higher than other typical school land uses, including middle and high schools. The existing Bell Elementary site parking is 68 stalls. The proposed parking includes 56 on-site stalls and assumes the use of 23 on-street parking stalls.

An independent study of a local elementary school was prepared to determine a more locally appropriate parking generation rate.

## Robert Frost Elementary School Parking Analysis

The following parking study was conducted in order to determine the number of parking stalls required for the Bell Elementary School Modernization project. It includes data collected at another LWSD school in Kirkland, Washington. Robert Frost Elementary (Frost Elementary) was selected as a similarly-sized school with similar parking demands as the Bell Elementary School project. Both schools are located on non-primary arterials within developed residential neighborhoods.

The Frost Elementary site is located at:
11801 NE 140th Street
Kirkland, WA 98034

Frost Elementary has three distinctive parking areas, all signed for their particular use:

a) **Area 1**: Dedicated to staff and busses only. This area contains 20 general stalls and 2 handicap stalls. Busses are provided with a loop area for queuing that is separated from the staff parking areas. There is signage indicating no student pick-up or drop-off.
b) **Area 2:** This area is for general visitors and student pick-up and drop-off. This area includes 27 standard stalls and 2 handicap stalls. The parking areas are completely separated from the parent/student pick-up and drop-off areas.

c) **Area 3:** Behind the building is an area which includes 2 stalls for service vehicles and/or LWSD vehicles. This area provides access to garbage and recycling facilities and is used as a delivery area.

*Existing Usage Analysis*

To determine the existing parking demand at the Frost Elementary, David Evans and Associates, Inc. (DEA) visited the campus on Thursday, May 26, 2011 and observed the current parking operations at three time periods throughout the day. The three time periods of interest for the parking study included an AM period (at 9:00am), a mid-day period (at 1:00pm), and a PM period (at 5:45pm). Data was collected for the visitor parking/pick-up and drop-off areas, staff/bus parking areas, and service/LWSD official vehicle parking areas. All values represent a combination (the total) of all site parking areas.

**Table 3** indicates the parking usage of the Frost Elementary parking areas during the AM, mid-day, and PM hours during a normal school day. The locations of the existing and proposed parking bays inventoried are identified in **Attachment 2**.

**Table 3: Frost Elementary Parking Data & Usage**

| Time Period | Standard Stalls Used | Handicap Stalls Used | Service Vehicle Stalls Used | Total Used Stalls | Total Available Stalls | Percentage Used |
|---|---|---|---|---|---|---|
| AM (9:00am) | 44 | 2 | 1 | 47 | 52 | 90.4% |
| Mid-Day (1:00pm) | 41 | 3 | 1 | 45 | 52 | 86.5% |
| PM (5:45pm) | 32 | 2 | 0 | 34 | 52 | 65.4% |

The data in **Table 3** indicates that the highest percentage of existing parking used during the inventory was 90.4% during the AM recording period, where a total of 5 (2 standard, 2 handicap, and 1 service) parking stalls remained available for others parking at the Frost Elementary campus.

It is to be noted that parking during the PM peak was higher than the average day because of an after-school activity. Most participants had already arrived and two other vehicles parked during the PM study period.

Additional parking was available on the street; however during the three time periods it appeared that no school-related vehicles were parked along NE 140th Street. Those parked along NE 140th Street during the PM peak study period appeared to be residents of the nearby homes.

*Peak Parking Demand*

The data above in **Table 3** was used to determine the peak parking demand at the Frost Elementary School. During the peak time period (AM), 47 of the available 52 parking stalls were used. Based on the 418 students enrolled (based on 2009-2010 LWSD student enrollment data), this ratio results in .112 parking stalls/student.

$$\frac{47\ occupied\ stalls}{418\ enrolled\ students} = .112\ parking\ stalls/student$$

Equating the existing Frost Elementary parking data (.112 parking stalls/student) to the proposed Bell Elementary School, 550 enrolled students generates a total estimated parking usage of 62 parking stalls.

$$.112\frac{stalls}{student} * 550\ students = \mathbf{62\ required\ parking\ stalls}$$

Therefore, a total of 62 stalls are required to meet the average daily Bell Elementary School peak parking demand.

*King County Parking Requirements*

King County provides standardized parking requirements for particular land uses. The parking requirement for an elementary school in King County is determined as follows:

a) 1 parking stall per classroom, AND
b) 1 parking stall for every 50 students

The proposed Bell Elementary site will have a total of 27 classrooms (including future portables) and a student population of 550 students (based on building capacity). The following calculation identifies the total number of parking stalls required by King County:

27 classrooms = 27 parking stalls
550 students/1 parking stall per 50 students = 11 parking stalls
Total = 27+11 = **38 required parking stalls**

## Conclusions

This Bell Elementary School parking study indicates that the required site parking is between 38 and 62 total stalls. This data comes from King County's parking requirements code 21A.18 and from a study conducted at Frost Elementary, another LWSD school located in Kirkland, Washington. The proposed Bell Elementary parking supply of 57 stalls exceeds the King County requirements. The Frost Elementary data suggests that the proposed on-site parking would likely accommodate 509 students, and available on-street parking would accommodate the demand created by the additional 41 students.

Enclosures: Attachment 1 & 2

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**Project:** AG Bell Elementary

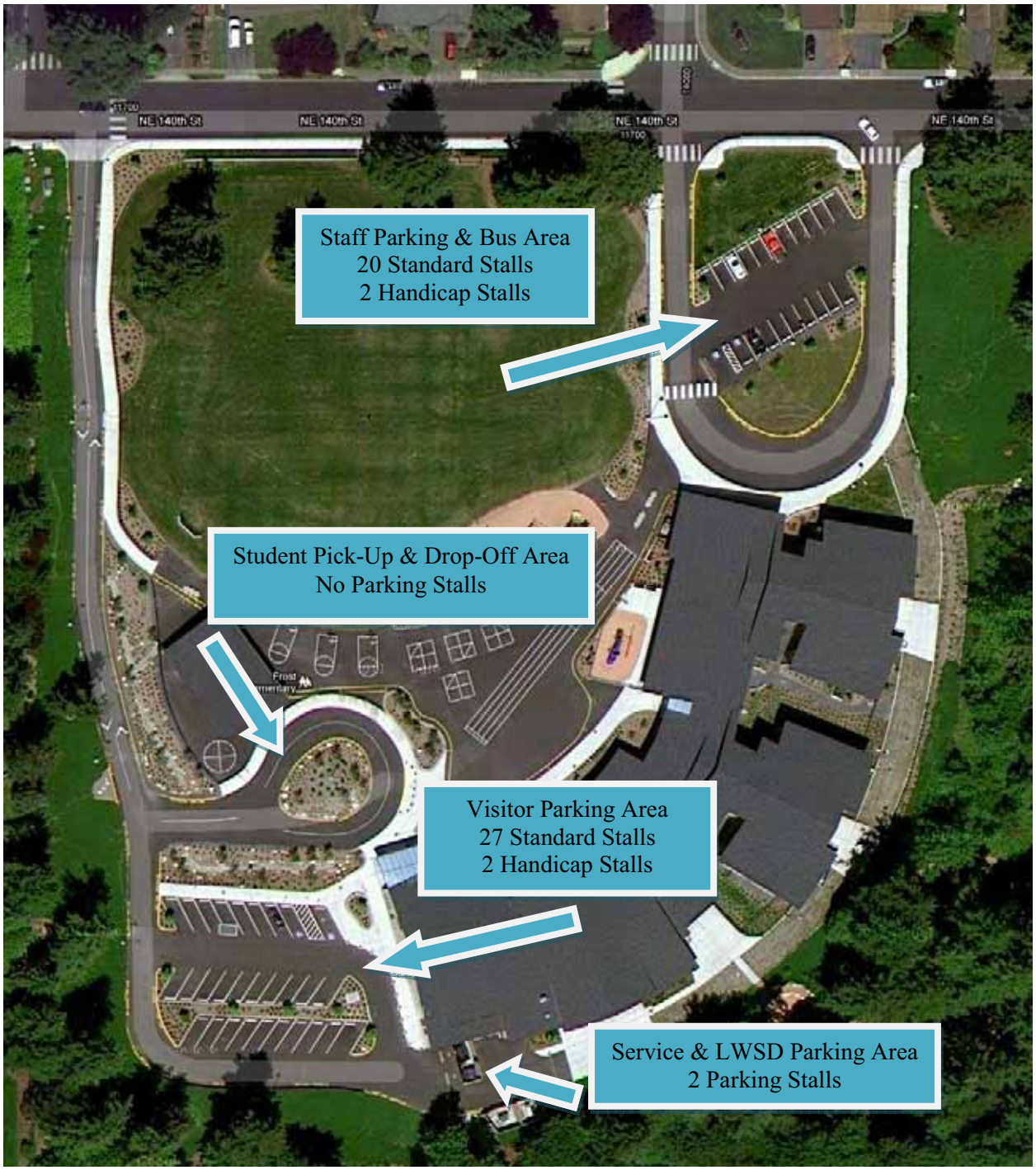
**Project Number:** LWSD0000-0001

DAVID EVANS AND ASSOCIATES INC.

| Description | Land Use Code | Units | Planned Units | ITE Vehicle Trip Generation Rates & Distribution Split | | | | | | Total Generated Trips | | Total Distribution of Generated Trips | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | AM | PM | AM In | AM Out | PM In | PM Out | AM Peak | PM Peak | AM In | AM Out | PM In | PM Out |
| AG Bell Elementary School | 520 | Students | 550 | 0.45 | 0.15 | 55% | 45% | 49% | 51% | 248 | 83 | 136 | 112 | 41 | 42 |

ATTACHMENT 1

ATTACHMENT 19
ZON11-00003
AG BELL PUD/MASTER PLAN


NE 140th St
NE 140th St
NE 140th St
NE 140th St
Staff Parking & Bus Area
20 Standard Stalls
2 Handicap Stalls
Student Pick-Up & Drop-Off Area
No Parking Stalls
Visitor Parking Area
27 Standard Stalls
2 Handicap Stalls
Service & LWSD Parking Area
2 Parking Stalls

DAVID EVANS
AND ASSOCIATES INC.

# Memorandum

**DATE:** June 7, 2011

**TO:** Sean Ryan
Lake Washington School District

**FROM:** Victor Salemann, P.E.
Senior Associate

**SUBJECT:** Response to Impacts Created by the Temporary Bell Elementary School Parking & Bus Facilities

**PROJECT:** AG Bell Elementary School Modernization

**PROJECT NO.:** LWSD0000-0001

**COPIES:** Nick Diede, Lake Washington School District
File

*Temporary Layout Description:*

As part of the Bell Elementary School Modernization project, the school district and contractor will construct a temporary staff and visitor parking area with bus facilities, a parent/student pick-up and drop-off zone, and a fire lane. This temporary vehicle access point will allow the contractors to close the existing vehicle areas, which will then be used for the new school construction.

The temporary parking facility has two "loops" to be utilized by staff, visitors, and the bus systems. The southern loop is connected directly to the site access along NE 112th Street. This loop has two travel lanes for mini-busses and all parent/student pick-ups and drop-offs. This area has parking for visitors to the Bell Elementary site. The northern loop has access to staff parking facilities and provides a continuation to the fire lane, including truck turnaround.

Additional off-site street improvements will be made in the vicinity of the Bell Elementary site. These improvements are to be constructed at the same time as the temporary parking facility. The on-street improvement area will be used as a bus loading area with parallel parking stalls during the project's construction. Upon completion of the project, the temporary bus loading zone will be converted into additional on-street parking.

415-118th Avenue Southeast Bellevue Washington 98005 Telephone: 425.519.6500 Facsimile: 425.519.5361

*Temporary Layout Comparison:*
The new temporary driveway, frontage improvements, and parking areas will provide the following:

| | Existing | Proposed | Comments |
|---|---|---|---|
| **On-Site Parking** | 66 Parking Stalls | 62 Parking Stalls | |
| **Off-Site Parking (North Side of Road)** | 0 Parking Stalls, 0 Loading Zones | 0 Parking Stalls, Temporary Bus Loading Zone | Future on-street parking area |
| **Parent Pick-Up & Drop-Off (Queuing) Area** | ~450 Feet | ~350 Feet | |
| **Driveway Layout** | One Entrance Lane, Two Exit Lanes (R & L) | One Entrance Lane, One Exit Lane | |
| **Driveway Sight Distance Issues** | Nearly flat horizontal and vertical alignments along NE 112th Street | Driveway will move west ~260 feet. NE 112th Street hor. & vert. alignments similar to existing conditions | Shrubs may need to be trimmed, depending on the season |

*Site Safety:*
The new temporary driveway and parking areas will all have sidewalks, walkways, and painted crosswalk areas for staff, parents, and students to navigate the site. All temporary pedestrian facilities connect to existing site walkways and corridors for seamless integration into the school grounds.

*Construction Support:*
If needed, the Lake Washington School District could work with the contractor and City of Kirkland to allow for staggered work shifts (i.e., starting at 6 or 7 a.m. instead of 7 or 8 a.m.). This would assist in regulating construction-related traffic that would be arriving at the same time as parents and students. Construction impacts shouldn't be an issue during the summer and breaks when children are not at the school and staff roles are at a minimum.

*Mitigation Options:*
The School District could help by providing traffic mitigation outreach to parents, informing them of the reduced queuing and parking capacity as a result of the site construction. The School District could request that parents drop their kids off earlier, have them take the bus, or walk their children to school when possible during the construction period. Additionally, if the School District deems that there is too much congestion as a result of the temporary driveway and construction impacts, a flagger could be used to direct traffic during the school's highest travel times (~8:25-8:55 a.m. and ~3:15-3:45 p.m.).

DAVID EVANS AND ASSOCIATES INC.

# MEMORANDUM

**DATE:** June 14, 2011

**TO:** Thang Nguyen
Transportation Engineer – City of Kirkland, WA

**FROM:** Victor Salemann, P.E.
Senior Associate

**SUBJECT:** Responses to City of Kirkland's Traffic Study Request

**PROJECT:** AG Bell Elementary School Modernization

**PROJECT NO.:** LWSD0000-0001

**COPIES:** Sean Ryan, LWSD
Nick Diede, LWSD
Noah Greenberg, DLR Group
File

## Topic 1: Additional School Parking Analysis

***Kirkland Request: Provide parking generation study at the existing Bell Elementary Site to determine Final School Parking Requirements***

The following parking study was conducted in order to determine the number of parking stalls required for the Bell Elementary School Modernization project. The data was collected at the existing Bell Elementary School in Kirkland, Washington.

*Existing Bell Elementary Usage Analysis*

To determine the existing parking demand at Bell Elementary, David Evans and Associates, Inc. (DEA) visited the campus on Monday, June 13, 2011 and observed the current parking operations at three time periods throughout the day. The three time periods of interest for the parking study included an AM period (at 8:15am), a mid-day period (at 11:45am), and a PM period (at 4:30pm). Data was collected for the visitor parking/pick-up & drop-off areas, staff/bus parking areas, and service/LWSD official vehicle parking areas. All values represent a combination (the total) of all site parking areas.

**Table 1** indicates the parking usage of the Bell Elementary parking areas during the AM, mid-day, and PM hours during a normal academic school day.

415-118th Avenue Southeast Bellevue Washington 98005 Telephone: 425.519.6500 Facsimile: 425.519.5361

**Table 1: Bell Elementary Parking Data & Usage**

| Time Period | Standard Stalls Used | Handicap Stalls Used | Service Vehicle Stalls Used | Total Used Stalls | Total Available Stalls | Percentage Used |
|---|---|---|---|---|---|---|
| AM (8:15am) | 36 | 0 | 0 | 36 | 68 | 52.9% |
| Mid-Day (11:45am) | 62 | 0 | 0 | 62 | 68 | 91.2% |
| PM (4:30pm) | 29 | 0 | 0 | 29 | 68 | 42.6% |

The data in **Table 1** indicates that the highest percentage of existing parking used during the inventory was 91.2% during the mid-day recording period, where a total of six (6) parking stalls remained available for others parking at the Bell Elementary campus.

Additional parking was available on the street; however during the three time periods it appeared that no school-related vehicles were parked along NE 112th Street. Those parked along NE 112th Street during the PM peak study period appeared to be residents of the nearby homes.

Peak Parking Demand

The data above in **Table 1** was used to determine the peak parking demand at the existing Bell Elementary School. During the peak time period (mid-day), 62 of the available 68 parking stalls were used. Based on the current enrollment data of 503 students provided by the school district, this ratio results in 0.123 parking stalls/student.

$$\frac{62\ occupied\ stalls}{503\ enrolled\ students} = 0.123\ parking\ stalls/student$$

Equating the existing Bell Elementary parking data (0.123 parking stalls/student) to that of the proposed Bell Elementary School, the 550 student capacity generates a total estimated parking usage of 68 parking stalls.

$$0.123\frac{stalls}{student} * 550\ students = \mathbf{68\ required\ parking\ stalls}$$

An additional parking study was conducted at Frost Elementary School and is included in **Attachment 1**. This data was not used for calculating the final parking requirement, but is included as additional support data.

*Staff Parking – Resulting from Two (2) Future On-Site Portables*

In the future, there is the possibility of two additional portables on site, similar to that of the existing school. The capacity of the portables is included in the 550 student enrollment numbers. **Therefore, all parking stalls required for the additional two portables are included in the calculations above.**

*Final Parking Requirement*

Using the Bell Elementary School parking study, an average rate of 0.123 stalls per student was calculated. This rate was chosen as the rate for determining the new Bell Elementary School's daily peak parking demand.

A total of **68 required parking stalls** are recommended to meet the estimated daily Bell Elementary School peak parking demand.

## Topic 2: Temporary Parking Plan During Construction

***Kirkland Request: Will adequate parking be provided during construction?***

The parent, staff, administration, and visitor parking demand during construction will remain at 68 stalls, as identified in the "Final Parking Requirement" section. The temporary parking plan shows that 66 stalls will be provided. Additional on-street parking is provided but is not included in this number.

## Topic 3: Contractor Parking

***Kirkland Request: Where will the contractors park?***

The LWSD has worked with the selected contractor to host all construction personnel at an off-site parking area. The contractor and LWSD have an agreement with a company whose property is about one mile to the east of the Bell Elementary site. Workers would park there, and use it as a park-and-ride facility. The parking site is located near the corner of NE 112th Street & 118th Place NE (see **Attachment 2** for the parking location and construction haul routes). Workers would be shuttled to the Bell Elementary site, and would enter through the construction entrance. Any construction delivery trips will enter/exit through the construction driveway and will not impact the flow for the main/public entrance. This setup will prevent impacts to the proposed temporary public access to Bell Elementary. Construction impacts will not be an issue during the summer or during breaks when children are not at the school and staff roles are at a minimum.

## Topic 4: Operations Analysis

***Kirkland Request: Information on Site Circulation, Queuing, Bus Movements, and Driveway Level-of-Service***

*Site Circulation - Traffic "Coaching" at the Temporary Driveway*

The school district will provide traffic "coaching" to those who enter/exit the temporary driveway at the beginning of the academic school year. This will be achieved with a greater staff/flagger presence in the parking lot, and by providing an off-duty police officer/sheriff to help direct traffic during the first two weeks of school. This assistance will allow parents to become familiar with the new traffic operations at the temporary driveway during construction. Additionally, if LWSD deems that there is too much congestion as a result of the temporary driveway, it could be requested that parents drop their kids off earlier, have them take the bus, or walk their children to school when possible during the construction period.

*Site Queuing – Existing Driveway*

A queuing operations observation was conducted on June 13, 2011 during the school day dismissal period (between 3:15pm and 3:50pm). On-site queuing during the observation period indicated no major queuing problems for either the Bell Elementary site or NE 112th Street. The following details the operations during major dismissal time points:

- 3:25pm:
  - All queuing is contained within the Bell Elementary Parking lot and pick-up/drop-off zones.
  - Nearly all on-street parking along NE 112th Street is full.
  - School crossing guards are at the crosswalks.

- 3:30pm:
  - Students are dismissed.
- 3:30 – 3:35pm:
  - Student pick-up commences.
  - No on-street queuing is observed except when a car is making a left turn (eastbound to northbound into the site). There is no more than a five-second delay.
  - Traffic in/out of the site and along NE 112th Street is flowing smoothly as students are picked up. There are little-to-no queuing or delays, including periods when crossing guards have stopped traffic.
- 3:35pm
  - Busses leave the Bell Elementary site onto NE 112th Street without delay or queuing.
  - Nearly all queuing on-site has dissipated.
  - More than 75% of all people parked on the street have picked up their children and left.
- 3:40 – 3:50pm:
  - Crossing guards have left.
  - All roadway and driveway operations are running at near daily minimums.

*Site Queuing – Proposed Temporary Driveway*

The proposed temporary driveway is expected to operate equally to that of the existing driveway. Although slightly shorter, the temporary driveway offers two circulating lanes instead of only one, as provided in the existing parking lot. This will allow parents/visitors to more efficiently/quickly drop off or pick up their students for travel back to NE 112th Street with less delay than at the existing site.

*Bus Movements – Temporary Lot*

Two different types of busses will utilize the Bell Elementary site; shorter (reduced capacity) and full sized busses. All reduced capacity busses will enter and exit the site for student pick-up and drop-off at the main driveway. During the temporary configuration, the single full sized bus will drop off and pick up students in a stall along NE 112th Street. In reference to the existing driveway observation and traffic volumes along NE 112th Street, it is not expected that the single bus will cause any delays by maneuvering into its drop-off stall (~8:40am), nor will it affect or cause any queuing when leaving during the pick-up period (~3:30pm).

*Driveway Level-of-Service (LOS)*

At the request of the City of Kirkland, an existing and temporary driveway operational analysis was conducted for Bell Elementary in both the AM and PM peak hours. The 2011 counts were conducted on June 13, 2011 in the AM and PM peak hour for the two intersections of NE 112th Street & existing Bell Elementary Driveway, and NE 112th Street & 112th Avenue SE. These two count locations are the existing and proposed temporary driveway locations requested to be analyzed. Refer to **Attachment 3** for the June 13, 2011 traffic counts.

The 2011 volumes were converted to 2013 AM and PM peak values with a 3% per year growth factor to the horizon year of 2013. Refer to **Attachment 4** for the traffic count and growth rate calculation data sheet.

A level-of-service (LOS) operational analysis was conducted using Synchro 7.0, in accordance with the *2000 Highway Capacity Manual.* Refer to **Table 2** below for the existing and temporary driveway condition LOS results.

**Table 2: Bell Elementary Driveway Intersection LOS Analysis**

| Intersection Number | Intersection | Time Period | Critical Movement | Level-of-Service (LOS) | Delay (Seconds) |
|---|---|---|---|---|---|
| 1 - Existing | NE 112th Street & Existing Bell Driveway | AM | Southbound | A | 9.7 |
| 2 - Existing | NE 112th Street & 112th Avenue SE | AM | Northbound | A | 9.6 |
| 2 - Temporary | NE 112th Street & 112th Avenue SE | AM | Northbound<br>Southbound | B<br>B | 10.0<br>10.0 |
| 1 - Existing | NE 112th Street & Existing Bell Driveway | PM | Southbound | A | 9.0 |
| 2 - Existing | NE 112th Street & 112th Avenue SE | PM | Northbound | A | 8.6 |
| 2 - Temporary | NE 112th Street & 112th Avenue SE | PM | Northbound<br>Southbound | A<br>A | 8.6<br>9.2 |

*LOS was not calculated for Intersection 1 in the Temporary condition because the construction trips are being mitigated by a single shuttle trip, and no other trips will utilize that driveway.

See **Attachment 5** for the Synchro LOS reports for the existing and temporary driveway results. Referring to **Table 2**, the existing and proposed temporary driveway will operate at an acceptable LOS during both the AM and PM peak periods.

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# ATTACHMENT 1

*Existing Frost Elementary Usage Analysis*

The parking facilities at Frost Elementary School, a fully rebuilt LWSD elementary school, were studied as a comparison to the existing Bell Elementary School's facility. DEA visited the campus on Thursday, May 26, 2011 and observed the current parking operation at three time periods throughout the day. The three time periods of interest for the parking study included an AM period (at 9:00am), a mid-day period (at 1:00pm), and a PM period (at 5:45pm). Data was collected for the visitor parking/pick-up & drop-off areas, staff/bus parking areas, and service/LWSD official vehicle parking areas. All values represent a combination (the total) of all site parking areas.

**Table A** indicates the parking usage of the Frost Elementary parking areas during the AM, mid-day, and PM hours during a normal school day.

**Table A: Frost Elementary Parking Data & Usage**

| Time Period | Standard Stalls Used | Handicap Stalls Used | Service Vehicle Stalls Used | Total Used Stalls | Total Available Stalls | Percentage Used |
|---|---|---|---|---|---|---|
| AM (9:00am) | 44 | 2 | 1 | 47 | 52 | 90.4% |
| Mid-Day (1:00pm) | 41 | 3 | 1 | 45 | 52 | 86.5% |
| PM (5:45pm) | 32 | 2 | 0 | 34 | 52 | 65.4% |

Data in **Table A** indicates that the highest percentage of existing parking used during the inventory was 90.4% during the AM recording period, where a total of 5 (2 standard, 2 handicap, and 1 service) parking stalls remained available for others parking at the Frost Elementary campus.

It is to be noted that parking during the PM peak was higher than the average day because of an after-school activity. Most participants had already arrived and only two additional vehicles parked during the pm study period.

Additional parking was available on the street; however during the three time periods it appeared that no school-related vehicles were parked along NE 140th Street. Those parked along NE 140th Street during the PM peak study period appeared to be residents of the nearby homes.

Peak Parking Demand

The data above in **Table A** was used to determine the peak parking demand at Frost Elementary School. During the peak time period (AM), 47 of the available 52 parking stalls were used based on 424 students (2011 LWSD student enrollment data). This ratio results in .111 parking stalls/student.

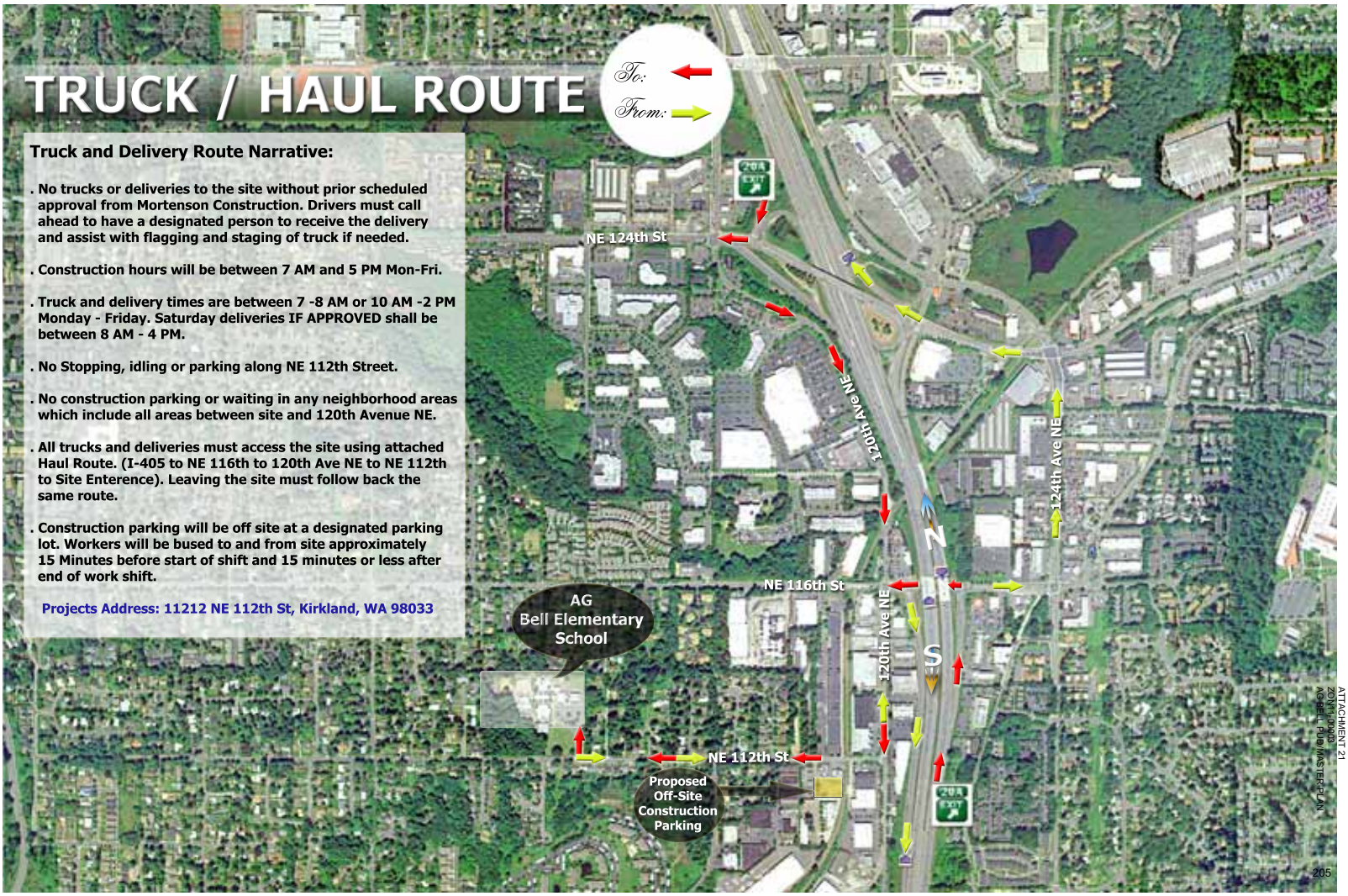
$$\frac{47\ occupied\ stalls}{424\ enrolled\ students} = .111\ parking\ stalls/student$$

Equating the existing Frost Elementary parking data (.111 parking stalls/student) to the proposed Bell Elementary School, 550 enrolled students generates a total estimated parking usage of 62 parking stalls.

$$.111\frac{stalls}{student} * 550\ students = 61\ required\ parking\ stalls$$

# ATTACHMENT 2

# TRUCK / HAUL ROUTE




**Truck and Delivery Route Narrative:**

- No trucks or deliveries to the site without prior scheduled approval from Mortenson Construction. Drivers must call ahead to have a designated person to receive the delivery and assist with flagging and staging of truck if needed.
- Construction hours will be between 7 AM and 5 PM Mon-Fri.
- Truck and delivery times are between 7 -8 AM or 10 AM -2 PM Monday - Friday. Saturday deliveries IF APPROVED shall be between 8 AM - 4 PM.
- No Stopping, idling or parking along NE 112th Street.
- No construction parking or waiting in any neighborhood areas which include all areas between site and 120th Avenue NE.
- All trucks and deliveries must access the site using attached Haul Route. (I-405 to NE 116th to 120th Ave NE to NE 112th to Site Enterence). Leaving the site must follow back the same route.
- Construction parking will be off site at a designated parking lot. Workers will be bused to and from site approximately 15 Minutes before start of shift and 15 minutes or less after end of work shift.

**Projects Address: 11212 NE 112th St, Kirkland, WA 98033**

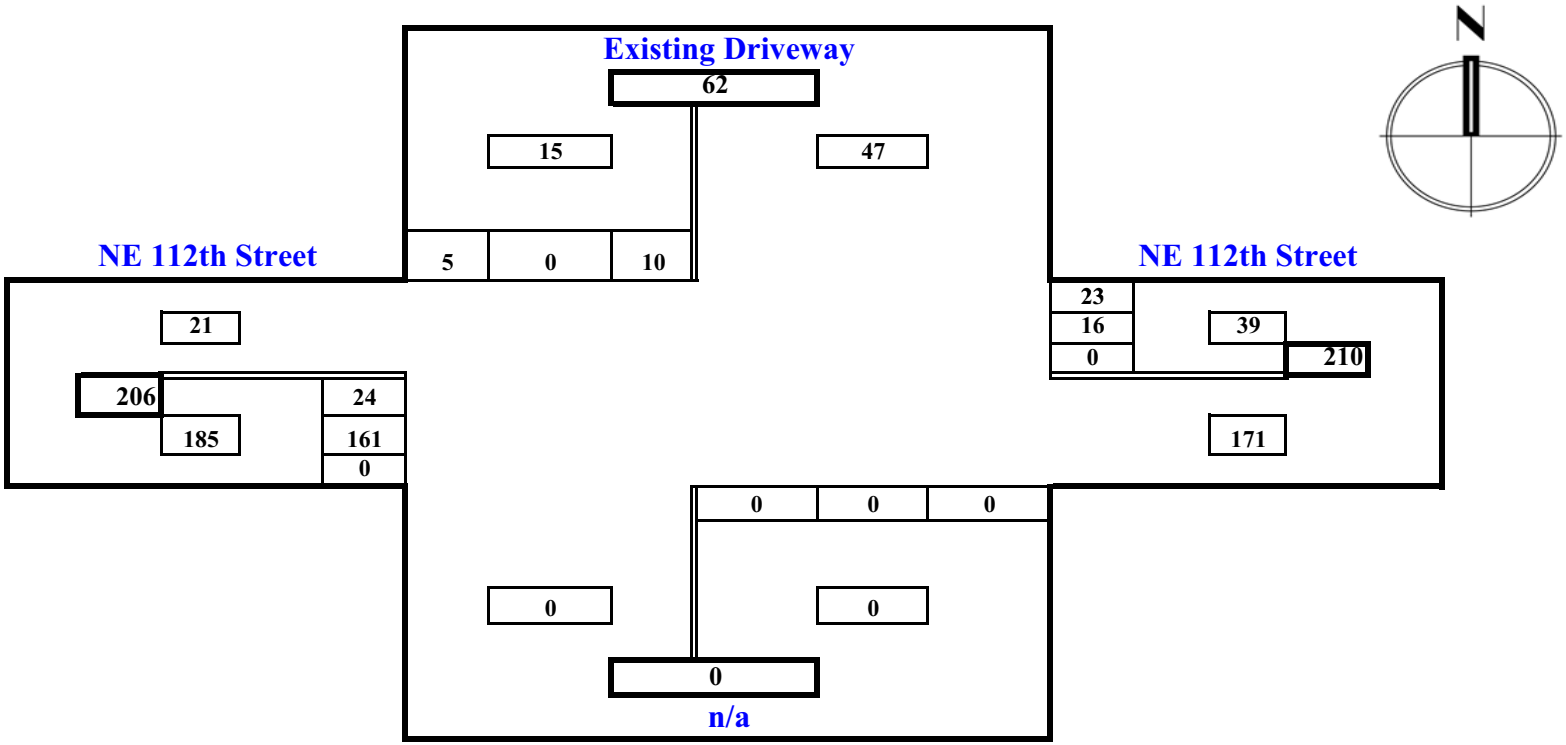
ATTACHMENT 21
ZON11-00003
AG-BELL PUD/MASTER PLAN

# ATTACHMENT 3

| | | | |
|---|---|---|---|
| **Project:** | Bell Elementary School | **Time Period** | AM Peak |
| **Intersection:** | NE 112th Street & Existing Bell El. Driveawy | **Date of Count:** | Monday, June 13, 2011 |
| **Location:** | Kirkland, WA | **Checked By:** | AOW |

| | **From North on (SB)** Existing Driveway | | | | **From South on (NB)** n/a | | | | **From East on (WB)** NE 112th Street | | | | **From West on (EB)** NE 112th Street | | | | **Interval Total** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Time Interval | HV | L | S | R | HV | L | S | R | HV | L | S | R | HV | L | S | R | |
| 7:00-8:00 AM | 3 | 10 | 0 | 5 | 0 | 0 | 0 | 0 | 2 | 0 | 16 | 23 | 1 | 24 | 161 | 0 | 239 |

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Total | 3 | 10 | 0 | 5 | 0 | 0 | 0 | 0 | 2 | 0 | 16 | 23 | 1 | 24 | 161 | 0 | |
| Approach | 15 | | | | 0 | | | | 39 | | | | 185 | | | | 239 |
| % HV | 20.0% | | | | n/a | | | | 5.1% | | | | 0.5% | | | | 8.6% |




ATTACHMENT 21
ZON11-00003
AG BELL PUD/MASTER PLAN

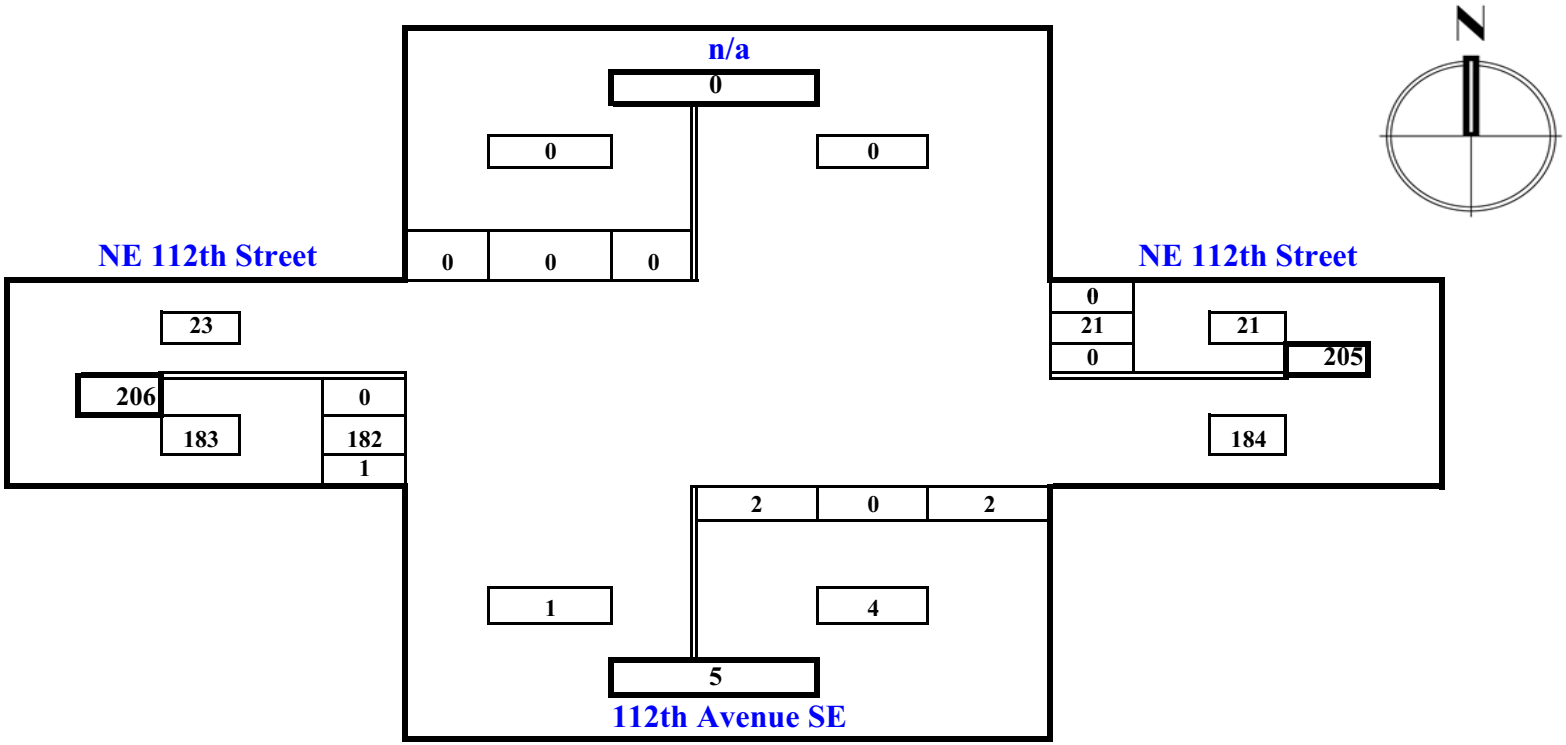


DAVID EVANS AND ASSOCIATES INC.

David Evans and Associates, Inc.

| | | | |
|---|---|---|---|
| **Project:** | Bell Elementary School | **Time Period** | AM Peak |
| **Intersection:** | NE 112th Street & 112th Avenue SE | **Date of Count:** | Monday, June 13, 2011 |
| **Location:** | Kirkland, WA | **Checked By:** | AOW |

| Time Interval | From North on (SB) n/a | | | | From South on (NB) 112th Avenue SE | | | | From East on (WB) NE 112th Street | | | | From West on (EB) NE 112th Street | | | | Interval Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | HV | L | S | R | HV | L | S | R | HV | L | S | R | HV | L | S | R | |
| 7:00-8:00 AM | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 21 | 0 | 0 | 0 | 182 | 1 | 208 |
| Total | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 21 | 0 | 0 | 0 | 182 | 1 | |
| Approach | 0 | | | | 4 | | | | 21 | | | | 183 | | | | 208 |
| % HV | n/a | | | | 0.0% | | | | 0.0% | | | | 0.0% | | | | 0.0% |




ATTACHMENT 21
ZON11-00003
AG BELL PUD/MASTER PLAN

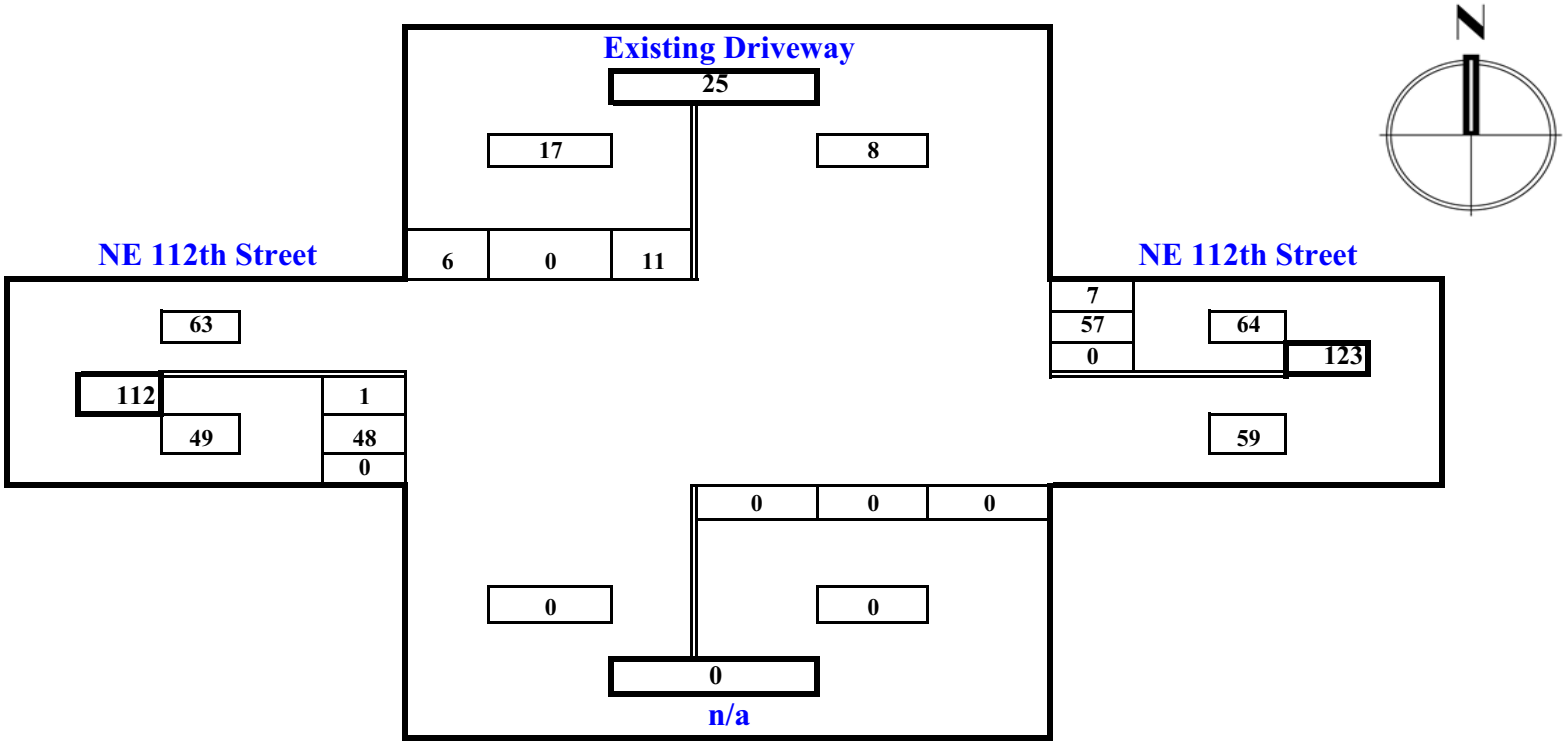
DAVID EVANS AND ASSOCIATES INC.

David Evans and Associates, Inc.

| | | | |
|---|---|---|---|
| **Project:** | Bell Elementary School | **Time Period** | PM Peak |
| **Intersection:** | NE 112th Street & Existing Bell El. Driveawy | **Date of Count:** | Monday, June 13, 2011 |
| **Location:** | Kirkland, WA | **Checked By:** | AOW |

| | **From North on (SB)** Existing Driveway | | | | **From South on (NB)** n/a | | | | **From East on (WB)** NE 112th Street | | | | **From West on (EB)** NE 112th Street | | | | **Interval Total** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Time Interval | HV | L | S | R | HV | L | S | R | HV | L | S | R | HV | L | S | R | |
| 4:30-5:30 PM | 0 | 11 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 57 | 7 | 0 | 1 | 48 | 0 | 130 |

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Total | 0 | 11 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 57 | 7 | 0 | 1 | 48 | 0 | |
| Approach | 17 | | | | 0 | | | | 64 | | | | 49 | | | | 130 |
| % HV | 0.0% | | | | n/a | | | | 0.0% | | | | 0.0% | | | | 0.0% |




ATTACHMENT 21
ZON11-00003
AG BELL PUD/MASTER PLAN



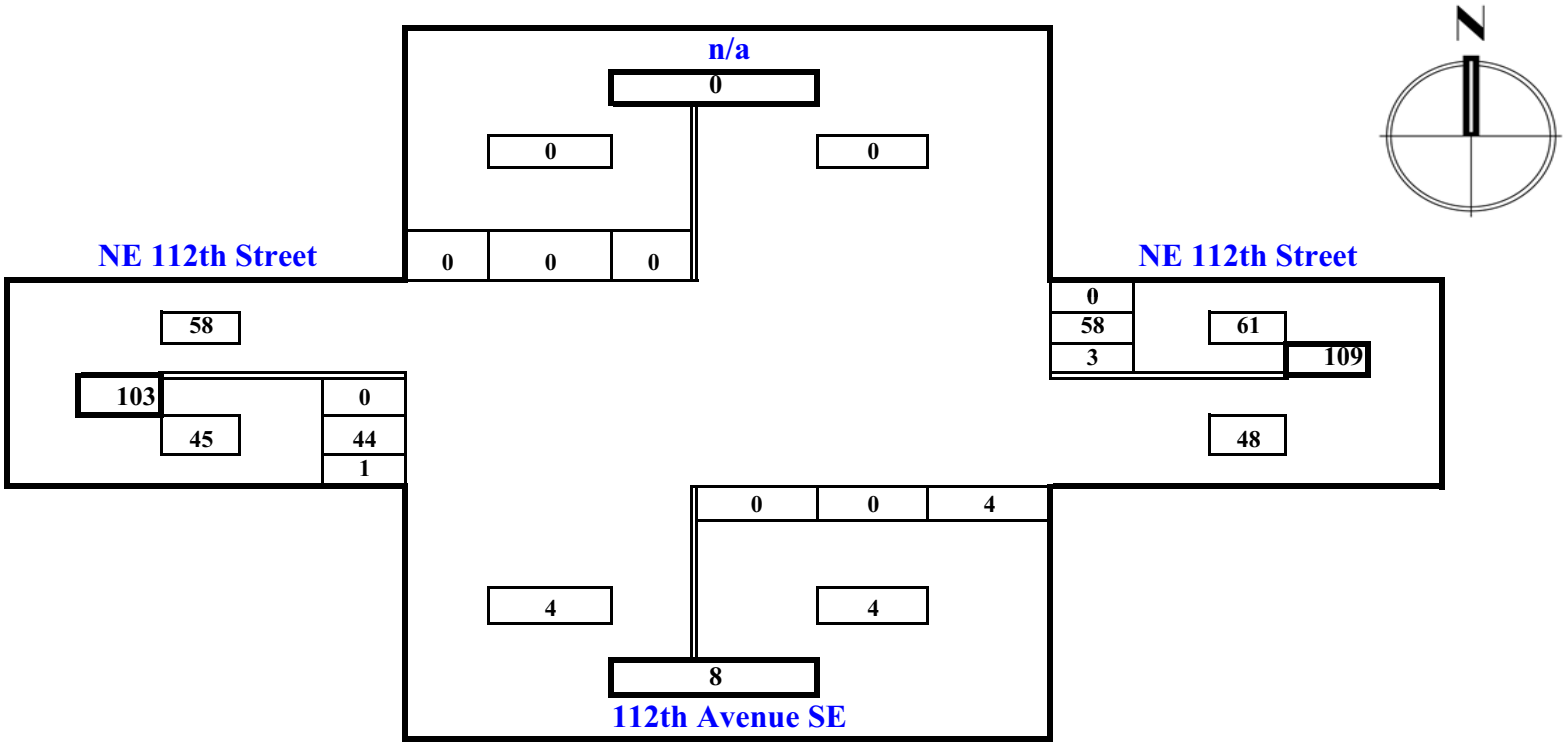
DAVID EVANS AND ASSOCIATES INC.

David Evans and Associates, Inc.

| | | | |
|---|---|---|---|
| **Project:** | Bell Elementary School | **Time Period** | PM Peak |
| **Intersection:** | NE 112th Street & 112th Avenue SE | **Date of Count:** | Monday, June 13, 2011 |
| **Location:** | Kirkland, WA | **Checked By:** | AOW |

| | **From North on (SB)** n/a | | | | **From South on (NB)** 112th Avenue SE | | | | **From East on (WB)** NE 112th Street | | | | **From West on (EB)** NE 112th Street | | | | **Interval Total** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Time Interval | HV | L | S | R | HV | L | S | R | HV | L | S | R | HV | L | S | R | |
| 4:30-5:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 3 | 58 | 0 | 0 | 0 | 44 | 1 | 110 |

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 3 | 58 | 0 | 0 | 0 | 44 | 1 | |
| Approach | 0 | | | | 4 | | | | 61 | | | | 45 | | | | 110 |
| % HV | n/a | | | | 0.0% | | | | 0.0% | | | | 0.0% | | | | 0.0% |




ATTACHMENT 21
ZON11-00003
AG BELL PUD/MASTER PLAN

DAVID EVANS AND ASSOCIATES INC.

David Evans and Associates, Inc.

# ATTACHMENT 4

AM Trips

DAVID EVANS AND ASSOCIATES INC.

| 3.0% | Annual Growth Rate | | | |
|---|---|---|---|---|
| | **Existing Volumes** | **Count Year** | **Years Until 2013** | **2013 Future Volumes** |
| | | | | |
| **1** | **NE 112th Street & Existing Bell Driveway** | | | |
| Enter values here | | 2011 | | |
| EBR | 0 | 2011 | 2 | 0 |
| EBT | 161 | 2011 | 2 | 171 |
| EBL | 24 | 2011 | 2 | 25 |
| SBR | 5 | 2011 | 2 | 5 |
| SBT | 0 | 2011 | 2 | 0 |
| SBL | 10 | 2011 | 2 | 11 |
| WBR | 23 | 2011 | 2 | 24 |
| WBT | 16 | 2011 | 2 | 17 |
| WBL | 0 | 2011 | 2 | 0 |
| NBR | 0 | 2011 | 2 | 0 |
| NBT | 0 | 2011 | 2 | 0 |
| NBL | 0 | 2011 | 2 | 0 |
| | ------- | | | ------- |
| TOTAL | 239 | | | 253 |
| | | | | |
| | | | | |
| **2** | **NE 112th Street & 112th Avenue SE** | | | |
| Enter values here | | 2011 | | |
| EBR | 1 | 2011 | 2 | 1 |
| EBT | 182 | 2011 | 2 | 193 |
| EBL | 0 | 2011 | 2 | 0 |
| SBR | 0 | 2011 | 2 | 0 |
| SBT | 0 | 2011 | 2 | 0 |
| SBL | 0 | 2011 | 2 | 0 |
| WBR | 0 | 2011 | 2 | 0 |
| WBT | 21 | 2011 | 2 | 22 |
| WBL | 0 | 2011 | 2 | 0 |
| NBR | 2 | 2011 | 2 | 2 |
| NBT | 0 | 2011 | 2 | 0 |
| NBL | 2 | 2011 | 2 | 2 |
| | ------- | | | ------- |
| TOTAL | 208 | | | 220 |
| | | | | |

PM Trips

DAVID EVANS AND ASSOCIATES INC.

| 3.0% | Annual Growth Rate | | | |
|---|---|---|---|---|
| | **Existing Volumes** | **Count Year** | **Years Until 2013** | **2013 Future Volumes** |
| | | | | |
| **1** | **NE 112th Street & Existing Bell Driveway** | | | |
| Enter values here | | 2011 | | |
| EBR | 0 | 2011 | 2 | 0 |
| EBT | 48 | 2011 | 2 | 51 |
| EBL | 1 | 2011 | 2 | 1 |
| SBR | 6 | 2011 | 2 | 6 |
| SBT | 0 | 2011 | 2 | 0 |
| SBL | 11 | 2011 | 2 | 12 |
| WBR | 7 | 2011 | 2 | 7 |
| WBT | 57 | 2011 | 2 | 60 |
| WBL | 0 | 2011 | 2 | 0 |
| NBR | 0 | 2011 | 2 | 0 |
| NBT | 0 | 2011 | 2 | 0 |
| NBL | 0 | 2011 | 2 | 0 |
| | ------- | | | ------- |
| TOTAL | 130 | | | 137 |
| | | | | |
| | | | | |
| **2** | **NE 112th Street & 112th Avenue SE** | | | |
| Enter values here | | 2011 | | |
| EBR | 1 | 2011 | 2 | 1 |
| EBT | 44 | 2011 | 2 | 47 |
| EBL | 0 | 2011 | 2 | 0 |
| SBR | 0 | 2011 | 2 | 0 |
| SBT | 0 | 2011 | 2 | 0 |
| SBL | 0 | 2011 | 2 | 0 |
| WBR | 0 | 2011 | 2 | 0 |
| WBT | 58 | 2011 | 2 | 61 |
| WBL | 3 | 2011 | 2 | 3 |
| NBR | 4 | 2011 | 2 | 4 |
| NBT | 0 | 2011 | 2 | 0 |
| NBL | 0 | 2011 | 2 | 0 |
| | ------- | | | ------- |
| TOTAL | 110 | | | 116 |
| | | | | |

# ATTACHMENT 5

# HCM Unsignalized Intersection Capacity Analysis
## 1: NE 112th Street & Existing Site Driveway

Bell Elementary School
AM Existing

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Volume (veh/h) | 25 | 171 | 17 | 24 | 11 | 5 |
| Sign Control | | Free | Free | | Stop | |
| Grade | | 0% | 0% | | 0% | |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Hourly flow rate (vph) | 27 | 186 | 18 | 26 | 12 | 5 |
| Pedestrians | | | | | | |
| Lane Width (ft) | | | | | | |
| Walking Speed (ft/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | | None | None | | | |
| Median storage veh) | | | | | | |
| Upstream signal (ft) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 45 | | | | 272 | 32 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 45 | | | | 272 | 32 |
| tC, single (s) | 4.1 | | | | 6.4 | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 2.2 | | | | 3.5 | 3.3 |
| p0 queue free % | 98 | | | | 98 | 99 |
| cM capacity (veh/h) | 1564 | | | | 705 | 1042 |

| Direction, Lane # | EB 1 | WB 1 | SB 1 | SB 2 |
|---|---|---|---|---|
| Volume Total | 213 | 45 | 12 | 5 |
| Volume Left | 27 | 0 | 12 | 0 |
| Volume Right | 0 | 26 | 0 | 5 |
| cSH | 1564 | 1700 | 705 | 1042 |
| Volume to Capacity | 0.02 | 0.03 | 0.02 | 0.01 |
| Queue Length 95th (ft) | 1 | 0 | 1 | 0 |
| Control Delay (s) | 1.1 | 0.0 | 10.2 | 8.5 |
| Lane LOS | A | | B | A |
| Approach Delay (s) | 1.1 | 0.0 | 9.7 | |
| Approach LOS | | | A | |

| Intersection Summary | | | |
|---|---|---|---|
| Average Delay | 1.4 | | |
| Intersection Capacity Utilization | 27.0% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |

# HCM Unsignalized Intersection Capacity Analysis
## 2: NE 112th Street & 112th Ave SE

Bell Elementary School
AM Existing

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Volume (veh/h) | 193 | 1 | 0 | 22 | 2 | 2 |
| Sign Control | Free | | | Free | Stop | |
| Grade | 0% | | | 0% | 0% | |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Hourly flow rate (vph) | 210 | 1 | 0 | 24 | 2 | 2 |
| Pedestrians | | | | | | |
| Lane Width (ft) | | | | | | |
| Walking Speed (ft/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | None | | | None | | |
| Median storage veh) | | | | | | |
| Upstream signal (ft) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | | | 211 | | 234 | 210 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | | | 211 | | 234 | 210 |
| tC, single (s) | | | 4.1 | | 6.4 | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | | | 2.2 | | 3.5 | 3.3 |
| p0 queue free % | | | 100 | | 100 | 100 |
| cM capacity (veh/h) | | | 1360 | | 754 | 830 |

| Direction, Lane # | EB 1 | WB 1 | NB 1 |
|---|---|---|---|
| Volume Total | 211 | 24 | 4 |
| Volume Left | 0 | 0 | 2 |
| Volume Right | 1 | 0 | 2 |
| cSH | 1700 | 1360 | 790 |
| Volume to Capacity | 0.12 | 0.00 | 0.01 |
| Queue Length 95th (ft) | 0 | 0 | 0 |
| Control Delay (s) | 0.0 | 0.0 | 9.6 |
| Lane LOS | | | A |
| Approach Delay (s) | 0.0 | 0.0 | 9.6 |
| Approach LOS | | | A |

| Intersection Summary | | | |
|---|---|---|---|
| Average Delay | 0.2 | | |
| Intersection Capacity Utilization | 20.2% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |

# HCM Unsignalized Intersection Capacity Analysis
## 2: NE 112th Street & Temporary Driveway

Bell Elementary School
AM Temporary

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Volume (veh/h) | 25 | 193 | 1 | 0 | 22 | 24 | 2 | 0 | 2 | 11 | 0 | 5 |
| Sign Control | | Free | | | Free | | | Stop | | | Stop | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Hourly flow rate (vph) | 27 | 210 | 1 | 0 | 24 | 26 | 2 | 0 | 2 | 12 | 0 | 5 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (ft) | | | | | | | | | | | | |
| Walking Speed (ft/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | None | | | None | | | | | | | |
| Median storage veh) | | | | | | | | | | | | |
| Upstream signal (ft) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 50 | | | 211 | | | 307 | 315 | 210 | 304 | 302 | 37 |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 50 | | | 211 | | | 307 | 315 | 210 | 304 | 302 | 37 |
| tC, single (s) | 4.1 | | | 4.1 | | | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 2.2 | | | 2.2 | | | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 |
| p0 queue free % | 98 | | | 100 | | | 100 | 100 | 100 | 98 | 100 | 99 |
| cM capacity (veh/h) | 1557 | | | 1360 | | | 633 | 590 | 830 | 638 | 600 | 1035 |

| Direction, Lane # | EB 1 | WB 1 | NB 1 | SB 1 |
|---|---|---|---|---|
| Volume Total | 238 | 50 | 4 | 17 |
| Volume Left | 27 | 0 | 2 | 12 |
| Volume Right | 1 | 26 | 2 | 5 |
| cSH | 1557 | 1360 | 718 | 725 |
| Volume to Capacity | 0.02 | 0.00 | 0.01 | 0.02 |
| Queue Length 95th (ft) | 1 | 0 | 0 | 2 |
| Control Delay (s) | 1.0 | 0.0 | 10.0 | 10.1 |
| Lane LOS | A | | B | B |
| Approach Delay (s) | 1.0 | 0.0 | 10.0 | 10.1 |
| Approach LOS | | | B | B |

| Intersection Summary | | | |
|---|---|---|---|
| Average Delay | 1.5 | | |
| Intersection Capacity Utilization | 28.3% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |

# HCM Unsignalized Intersection Capacity Analysis
## 1: NE 112th Street & Existing Site Driveway

Bell Elementary School
PM Existing

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Volume (veh/h) | 1 | 51 | 60 | 7 | 12 | 6 |
| Sign Control | | Free | Free | | Stop | |
| Grade | | 0% | 0% | | 0% | |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Hourly flow rate (vph) | 1 | 55 | 65 | 8 | 13 | 7 |
| Pedestrians | | | | | | |
| Lane Width (ft) | | | | | | |
| Walking Speed (ft/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | | None | None | | | |
| Median storage veh) | | | | | | |
| Upstream signal (ft) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 73 | | | | 127 | 69 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 73 | | | | 127 | 69 |
| tC, single (s) | 4.1 | | | | 6.4 | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 2.2 | | | | 3.5 | 3.3 |
| p0 queue free % | 100 | | | | 98 | 99 |
| cM capacity (veh/h) | 1527 | | | | 867 | 994 |

| Direction, Lane # | EB 1 | WB 1 | SB 1 | SB 2 |
|---|---|---|---|---|
| Volume Total | 57 | 73 | 13 | 7 |
| Volume Left | 1 | 0 | 13 | 0 |
| Volume Right | 0 | 8 | 0 | 7 |
| cSH | 1527 | 1700 | 867 | 994 |
| Volume to Capacity | 0.00 | 0.04 | 0.02 | 0.01 |
| Queue Length 95th (ft) | 0 | 0 | 1 | 0 |
| Control Delay (s) | 0.1 | 0.0 | 9.2 | 8.6 |
| Lane LOS | A | | A | A |
| Approach Delay (s) | 0.1 | 0.0 | 9.0 | |
| Approach LOS | | | A | |

| Intersection Summary | | | |
|---|---|---|---|
| Average Delay | 1.2 | | |
| Intersection Capacity Utilization | 13.6% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |

# HCM Unsignalized Intersection Capacity Analysis
## 2: NE 112th Street & 112th Ave SE

Bell Elementary School
PM Existing

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Volume (veh/h) | 47 | 1 | 3 | 61 | 0 | 4 |
| Sign Control | Free | | | Free | Stop | |
| Grade | 0% | | | 0% | 0% | |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Hourly flow rate (vph) | 51 | 1 | 3 | 66 | 0 | 4 |
| Pedestrians | | | | | | |
| Lane Width (ft) | | | | | | |
| Walking Speed (ft/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | None | | | None | | |
| Median storage veh) | | | | | | |
| Upstream signal (ft) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | | | 52 | | 124 | 52 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | | | 52 | | 124 | 52 |
| tC, single (s) | | | 4.1 | | 6.4 | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | | | 2.2 | | 3.5 | 3.3 |
| p0 queue free % | | | 100 | | 100 | 100 |
| cM capacity (veh/h) | | | 1554 | | 869 | 1016 |

| Direction, Lane # | EB 1 | WB 1 | NB 1 |
|---|---|---|---|
| Volume Total | 52 | 70 | 4 |
| Volume Left | 0 | 3 | 0 |
| Volume Right | 1 | 0 | 4 |
| cSH | 1700 | 1554 | 1016 |
| Volume to Capacity | 0.03 | 0.00 | 0.00 |
| Queue Length 95th (ft) | 0 | 0 | 0 |
| Control Delay (s) | 0.0 | 0.4 | 8.6 |
| Lane LOS | | A | A |
| Approach Delay (s) | 0.0 | 0.4 | 8.6 |
| Approach LOS | | | A |

| Intersection Summary | | | |
|---|---|---|---|
| Average Delay | 0.5 | | |
| Intersection Capacity Utilization | 15.7% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |

# HCM Unsignalized Intersection Capacity Analysis
## 2: NE 112th Street & Temporary Driveway

Bell Elementary School
PM Temporary

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Volume (veh/h) | 1 | 47 | 1 | 3 | 61 | 7 | 0 | 0 | 4 | 12 | 0 | 6 |
| Sign Control | | Free | | | Free | | | Stop | | | Stop | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Hourly flow rate (vph) | 1 | 51 | 1 | 3 | 66 | 8 | 0 | 0 | 4 | 13 | 0 | 7 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (ft) | | | | | | | | | | | | |
| Walking Speed (ft/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | None | | | None | | | | | | | |
| Median storage veh) | | | | | | | | | | | | |
| Upstream signal (ft) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 74 | | | 52 | | | 137 | 134 | 52 | 135 | 131 | 70 |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 74 | | | 52 | | | 137 | 134 | 52 | 135 | 131 | 70 |
| tC, single (s) | 4.1 | | | 4.1 | | | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 2.2 | | | 2.2 | | | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 |
| p0 queue free % | 100 | | | 100 | | | 100 | 100 | 100 | 98 | 100 | 99 |
| cM capacity (veh/h) | 1526 | | | 1554 | | | 827 | 754 | 1016 | 831 | 758 | 993 |

| Direction, Lane # | EB 1 | WB 1 | NB 1 | SB 1 |
|---|---|---|---|---|
| Volume Total | 53 | 77 | 4 | 20 |
| Volume Left | 1 | 3 | 0 | 13 |
| Volume Right | 1 | 8 | 4 | 7 |
| cSH | 1526 | 1554 | 1016 | 879 |
| Volume to Capacity | 0.00 | 0.00 | 0.00 | 0.02 |
| Queue Length 95th (ft) | 0 | 0 | 0 | 2 |
| Control Delay (s) | 0.2 | 0.3 | 8.6 | 9.2 |
| Lane LOS | A | A | A | A |
| Approach Delay (s) | 0.2 | 0.3 | 8.6 | 9.2 |
| Approach LOS | | | A | A |

| Intersection Summary | | | |
|---|---|---|---|
| Average Delay | 1.6 | | |
| Intersection Capacity Utilization | 19.6% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |

# CITY OF KIRKLAND

123 FIFTH AVENUE • KIRKLAND, WASHINGTON 98033-6189 • (425) 587-3800

## DEPARTMENT OF PUBLIC WORKS
## MEMORANDUM

**To:** Jon Regala, Senior Planner

**From:** Thang Nguyen, Transportation Engineer

**Date:** June 14, 2011

**Subject:** AG Bell Elementary Traffic Impact Review

This memo summarizes public works review of the traffic impact analysis for the proposed redevelopment of AG Bell Elementary school located off NE 112th Street in Kirkland.

### Project Description

The Washington Lake School District (WLSD) is proposing to rebuild the existing 53,001 square foot school to 65,306 square feet. The proposal includes providing 56 on-site parking spaces for staff and visitors and 23 on-street parking along the school frontage on the north side of NE 112th Street. Two driveways are proposed with the new school. The planned completion of the school is winter 2012. The School will be open during the construction phase. The school will have a maximum student capacity of 550 students. However, it is not anticipated that the school will have the maximum enrollment at the completion of the new school.

### Project Trip Generation

Based on the traffic analysis, it is estimated that the proposed project will generate 1,067 additional daily trips, 86 additional AM peak hour trips and 107 additional PM peak hour trips. It is anticipated that the project will be built, fully occupied and traffic patterns would have normalized by 2014.

### Traffic Concurrency

The purpose of traffic concurrency is to ensure that the City roadway network is built concurrent with land use growth. The project passed traffic concurrency and the concurrency test notice is valid until November 17, 2011 by which time the project must obtain a building or development permit in order to maintain a valid traffic concurrency status.

**Traffic Impacts**
The traffic analysis was provided based on the scope provided by the City of Kirkland transportation engineer and is limited to on-site circulation, parking demand analysis, construction vehicle and parking impacts and level of service analysis at the proposed driveways.

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.

**Driveway Analysis**
All driveways are calculated at LOS-B or better. Thus, no off-site traffic mitigation is warranted.

The western-most driveway will have a dedicated right-turn lane and a shared left-turn/Through lane with queue length over 350 feet. This is an improvement over existing condition because there will be two lanes out of the driveway instead of one lane.

A safe sight distance check was completed at the project proposed driveway locations. According to the distance check, the sight distances at the driveways meet the City's standards. Fixed objects and landscaping must be kept to maintain a safe sight distance.

**Parking**
The applicant is proposing to provide 57 parking on-site and 23 on-street parking stalls along the north side of NE 112th Street.

Based on the parking study at the site and another school within Kirkland with similar characteristics, the peak parking demand rate per student is 0.123 parking space per student. Calculating for the maximum capacity of the school, 68 parking stalls are required to meet the demand. The applicant's parking supply 57 parking spaces is 11 spaces short of the demand. Staff does not anticipate significant parking impact to the neighborhood. The on-street parking is expected to be similar to existing condition. Staff does not anticipated significant parking impacts to the neighborhood.

There will be after hour activities at the school. There are approximately 20 night functions at the school such as parent/faculty meeting, school plays...etc. the school expect approximately similar amount of activities in the future. Kirkland Public Works has not received complaints about evening events or parking spilling into the surrounding residential neighborhood. Public Works do

not anticipate a significant increase of evening activities in the future and therefore, do not anticipate parking impacts to neighbor.

**Internal Circulation**

In reviewing the site plan layout and internal circulation, public works do not anticipate significant impact that would affect the traffic flow on site or on NE 112th Street.

**Temporary Traffic Impacts and Site Operation during Construction**

The applicant proposes to provide 62 parking spaces on-site for staff and visitors during construction. In addition, a location off-site about half mile away toward the east away from residential area has been identified for construction staff parking. It is expected that some construction staff will need to drive to the site, the majority of the construction staff will be shuttled in. Therefore, public works does not anticipate significant parking impact to the neighborhood or the operation of the school.

**Traffic Mitigation**

The school will provide additional flagger and police at the beginning of the school year to alert and coach drivers entering and exiting the school. The school plans to notify parents about the construction and circulation changes to minimize any traffic conflict. Parents may be asked to drop off their children earlier if necessary to spread the congestion as necessary.

**Road Impact Fees**

Per City's Ordinance 3685, Road Impact Fees per Impact Fee Schedule in effect January 1, 2009 are required for all developments. Road impact fees are used to construct transportation improvements throughout the City. 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 |
|---|---|---|---|
| **Maximum Enrollment** | $4.85 per student | 550 | $266,750.00 |
| **Highest Enrollment since 2005** | $4.85 per student | 505 | $244,925 |
| **Net Road Impact Fee** | | | **$21,825.00** |

**Staff Recommendations**

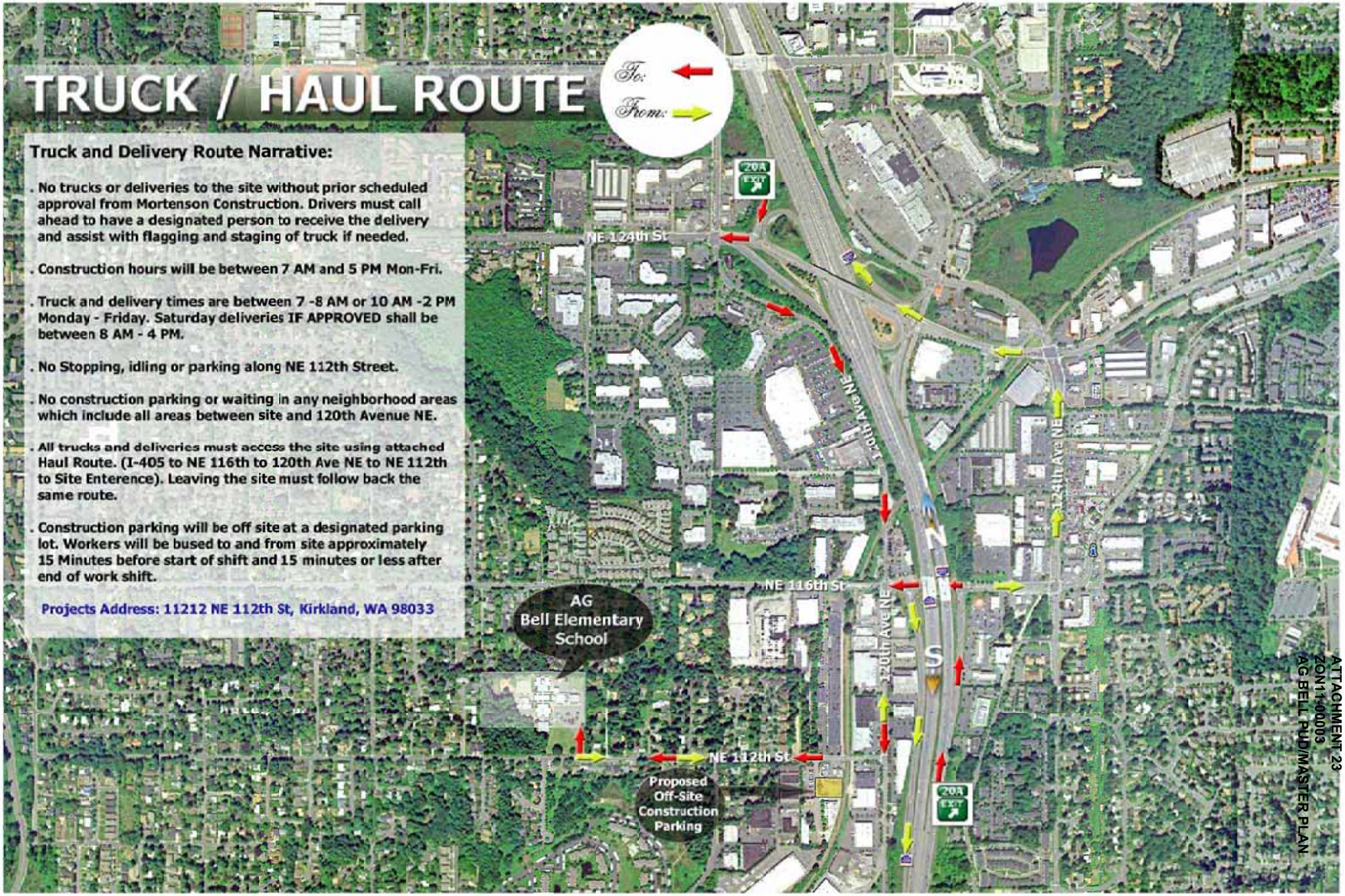
Public Works Staff concludes that the proposed project will not create significant traffic impacts that would require specific off-site traffic mitigation. Staff recommends approval of the proposed project with the following conditions:

- Pay Road Impact Fee.
- The development shall allocate at least 68 parking spaces on-site.
- Implement the Traffic Mitigation as described in the Traffic Mitigation of this memo.

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

cc: Advantage

# TRUCK / HAUL ROUTE




## Truck and Delivery Route Narrative:

- No trucks or deliveries to the site without prior scheduled approval from Mortenson Construction. Drivers must call ahead to have a designated person to receive the delivery and assist with flagging and staging of truck if needed.
- Construction hours will be between 7 AM and 5 PM Mon-Fri.
- Truck and delivery times are between 7 -8 AM or 10 AM -2 PM Monday - Friday. Saturday deliveries IF APPROVED shall be between 8 AM - 4 PM.
- No Stopping, idling or parking along NE 112th Street.
- No construction parking or waiting in any neighborhood areas which include all areas between site and 120th Avenue NE.
- All trucks and deliveries must access the site using attached Haul Route. (I-405 to NE 116th to 120th Ave NE to NE 112th to Site Enterence). Leaving the site must follow back the same route.
- Construction parking will be off site at a designated parking lot. Workers will be bused to and from site approximately 15 Minutes before start of shift and 15 minutes or less after end of work shift.

**Projects Address: 11212 NE 112th St, Kirkland, WA 98033**

## KZC Section 105.18.2 – Pedestrian Walkway Standards

2. Development Standards Required for Pedestrian Improvements

a. Pedestrian Walkway Standards – General – The applicant shall install pedestrian walkways pursuant to the following standards:

1) Must be at least five (5) feet wide;

2) Must be distinguishable from traffic lanes by painted markings, pavement material, texture, or raised in elevation;

3) Must have adequate lighting for security and safety. Lights must be nonglare and mounted no more than 20 feet above the ground;

4) Will not be included with other impervious surfaces for lot coverage calculations;

5) Must be centrally located on the subject property;

6) Must be accessible;

7) Barriers which limit future pedestrian access between the subject property and adjacent properties are not permitted;

8) Easements to provide rights of access between adjacent properties shall be recorded prior to project occupancy.

## KZC 105.19.3 – Through-Block Pathway Standards

3. Through-Block Pathway Standards – General – If a through-block pathway is designated to be installed on the subject property, the applicant shall install a through-block pathway pursuant to the following standards, except for Design Districts listed in subsection (4) of this section:

a. A minimum unobstructed pavement width of eight (8) feet, paved with decorative concrete. A minimum of five (5) feet may be approved for residential uses.

b. Trees placed at an average of 30 feet on-center between the pathway and any parking or vehicular access area (see Figure 105.19.A). Exceptions:

1) To increase business visibility and accessibility, the City may allow modifications in the required tree coverage adjacent to primary building entries; however, no less than one (1) tree per 60 lineal feet of the required pathway shall be provided.

2) The required trees must be placed in planting strips at least 4.5 feet in width or within tree grates.

c. Adequate pedestrian lighting at a maximum of 12 feet in height shall be provided along the pathway.

d. Barriers that will limit pedestrian access between the subject property and adjacent properties are not permitted.

e. The through-block pathway may be retained within dedicated rights-of-way, tracts, or easements at the City's option. The width of the pathway right-of-way, tract, or easement will be determined by the Planning Official.

f. If subject to Design Review the City will specifically review and approve the material and configuration of all through-block pathways as part of the Design Review decision.

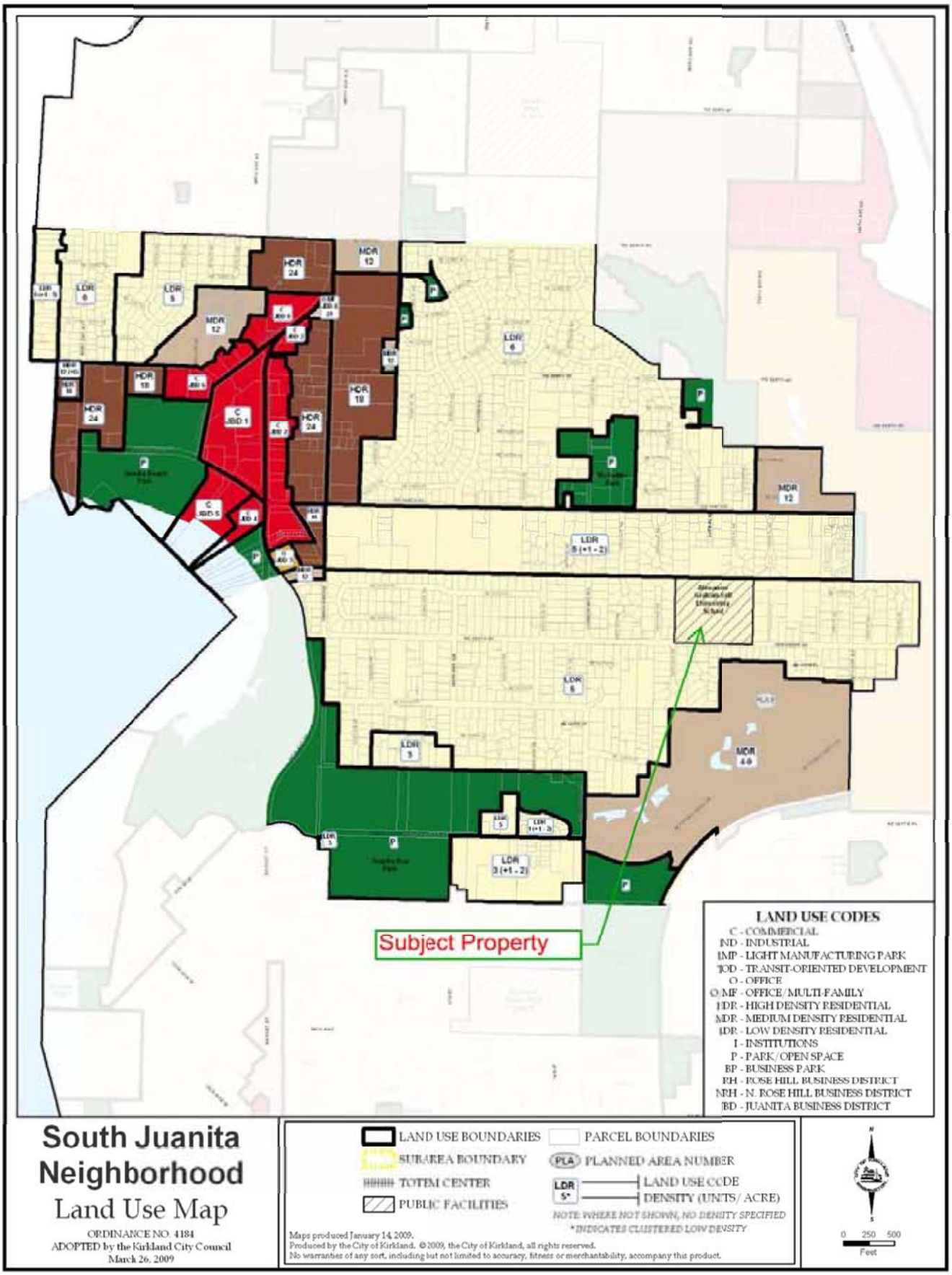



**Figure J-2b: South Juanita Land Use**