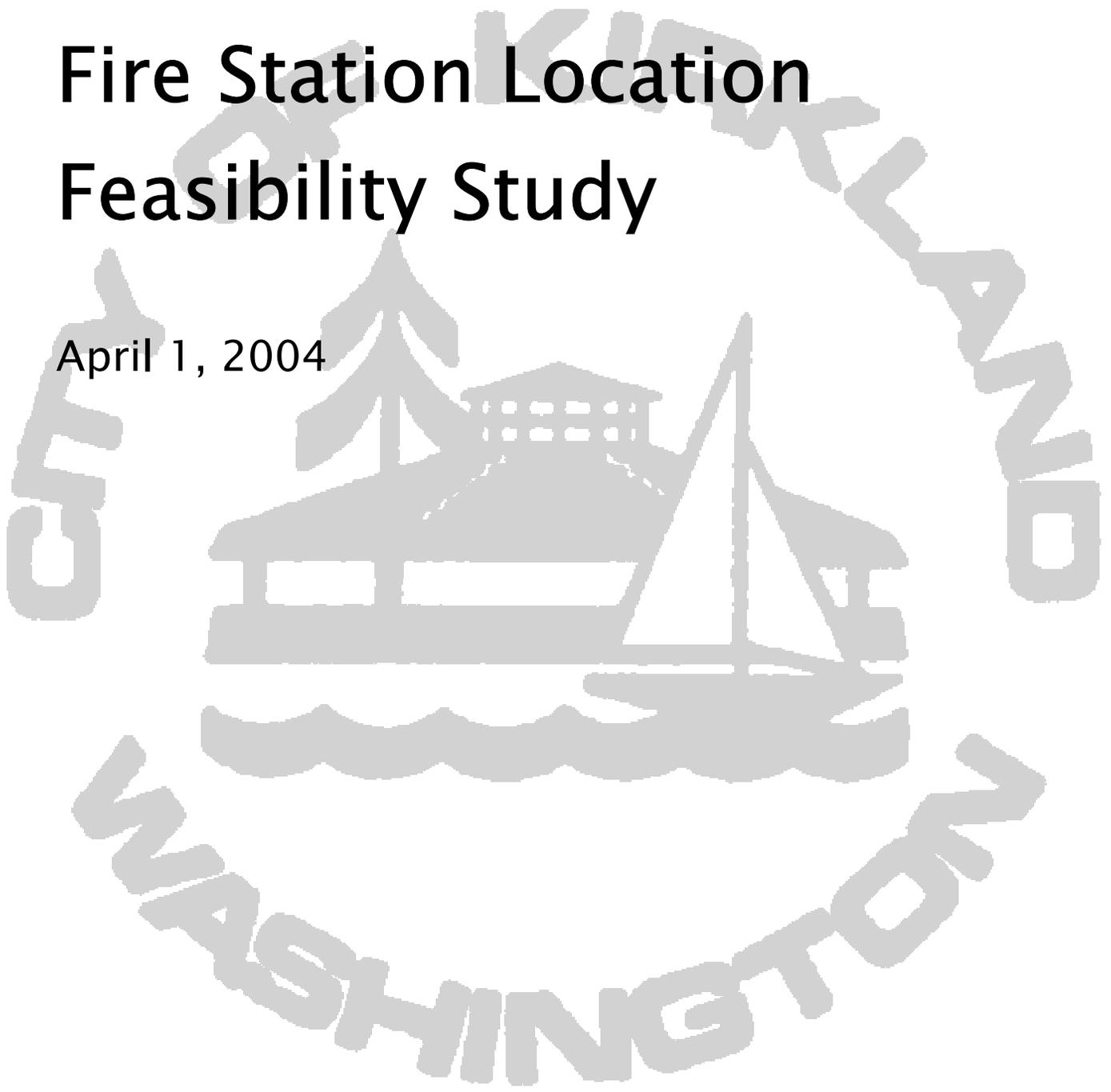


City of Kirkland Fire Station Location Feasibility Study

April 1, 2004



T C A

architecture • planning



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EXECUTIVE SUMMARY

As communities throughout King County continue to develop, the need for enhanced and cost effective civic infrastructure and public services increases. The growing population and increased density of cities such as Kirkland can provide particular challenges in terms of providing space to physically accommodate public services that are necessary to support a thriving community.

The following study explores the potential for two apparently disparate public entities, the Kirkland Fire Department and Lake Washington School District, to share property in a way that could ultimately benefit the overall community. Although emergency service and public education are independent disciplines, both have long been symbols for demonstrating commitment to and fostering the success of neighborhoods, towns and cities.

A unique opportunity exists here to address the possibilities of co-locating two vital public services on one site. Paramount to this opportunity, this study recognizes that both the fire department and LWSD need to provide the best service possible to the community without programmatic interference. If the policy makers determine that this is feasible, it may open the door to new possibilities for combining services to enhance the community.

A variety of concepts were developed to examine the possibilities for co-locating the fire station and junior high school. Given the current site constraints and property development, there is sufficient space to accommodate the program needs of both buildings. The primary challenge is to provide a site arrangement that will allow each facility to operate independently and at the same time benefit from each other. Since the fire station would be constructed prior to modernization or replacement of the school, it must be located and designed to permit maximum flexibility for planning of the school. The site concepts pay particularly close attention to vehicular and pedestrian circulation patterns, separation of fire station traffic from school traffic, separation of car traffic from bus traffic, as well as sufficient sight lines and stacking room for vehicles. There are two concepts that locate the fire station at the extreme southwest corner of the site. This is the preferred location for both the Fire Department and LWSD in terms of emergency response from the fire station and maximum flexibility for the school district.

Executive Summary

BACKGROUND

In October 2003, the Kirkland Fire Department initiated a proposal to consolidate Station 24 and Station 25 into a new fire station to be located in Fire District 41 on Finn Hill (Refer to Appendix C). It was determined that the current Finn Hill Junior High site might be an appropriate location for the new station in terms of access and response times to better serve the community. This study attached in Appendix C shows that the consolidation of the two existing stations into what would be referred to as the “New Finn Hill Station” would be cost effective for the department, and would enhance emergency service for the community.

PURPOSE

The following study will analyze and determine the feasibility of locating the new fire station adjacent to Finn Hill Junior High School. Proposed future planning for the school as well as operational needs for the fire station, and the potential for sharing space between the two facilities, will be considered in the development of site plan concepts. Several concepts will be explored and a preferred Concept will be identified based upon the needs of Kirkland Fire Department (KFD) and the Lake Washington School District (LWSD). Since the property is currently owned by the school district, if they choose to allow the fire station to be constructed here the necessary property would be either sold or leased to the City of Kirkland.

CONTRIBUTORS:

City of Kirkland Fire Department

Lake Washington School District

TCA Architecture-Planning

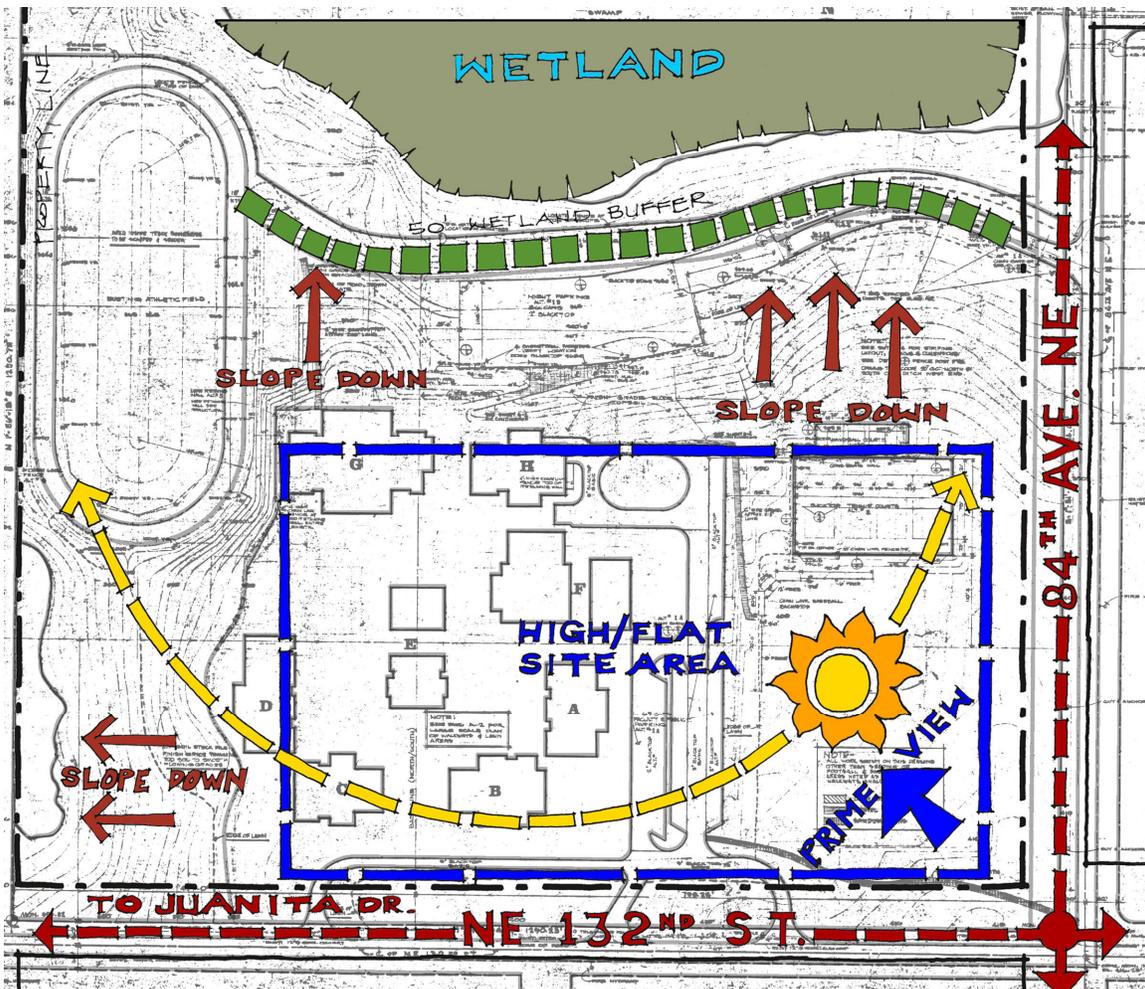
Mahlum Architects

Reid Middleton

Background & Purpose

PROPOSED SITE

The existing Finn Hill Junior High School site is located at the northwest corner of NE 132nd Street and 84th Avenue NE. King County land use records indicate that the north end of the property is classified as a Class 2 Wetland. The north end of the developed property slopes down significantly, with an approximately 10% gradient, from south to north along 84th Avenue. The southwest portion of the property also has a significant slope of approximately 10%, and has a considerable amount of vegetation. The current location of the junior high school and ball fields, which cover the majority of the developed site, have the highest elevation and are the flattest areas of the site.



Proposed Site

SPACE AND OPERATIONAL NEEDS – Fire Department



Program Summary

Building

Approx. 10,000 Square Feet – Preferably a Two-Story Structure – 5 Sleeping Rooms
This will be an accessible facility. An elevator will be required for a two-story structure

Staff:

5 Crew Members + 1 Part-Time District Secretary

Apparatus Bays:

(2) Full-Size Drive-Thru (for stacking two engines in each), (1) Half-Size for Aid Vehicle

Parking

10 Crew, 3 Visitor – 13 Total Spaces (Barrier Free Spaces as required by code).

See the following Finn Hill Fire Station Operational Needs Assessment

Facility Description:

The Department has three shifts. Maximum projected in-service operational staffing in the next 20 years could increase to 5/shift.

Staffing Overview -	Current	Future
Administration	0	0
Operations	3	5
Additional Assigned	0	0
Total	3	5

Company Staffing- (Operations)						
Apparatus	Ladder (0)	Aid (1)	Engine (1)	Support (1)	Operational Notes	Total
Current Staffing	0	0	3	0	Jump Crew	3
Future Staffing	0	2	3	0		5

Space Type	Operational Criteria	Min. Dim.	Quant.	01/05/04 NSF	0/0/04
1.0 ADMINISTRATION AREA					
1.1 Lobby	Lobby to support visitors and information distribution. Access to restrooms. Secured separation between public spaces and administrative area.		1 @	120	
1.3 Public Restroom	ADA accessible. Directly adjacent to Lobby.		1 @	65	
1.5 Multi-Purpose Room Storage-AV Storage-table & chair	NA		1 @ 1 @ 1 @	0 0 0	
1.6 Copy/Workroom	Admin. work area for supply storage, project support, copying, faxing.		1 @	100	
1.7 Office	Work space for part-time district secretary and amateur radio operations		1 @	150	
1.8 Firefighter Work Area / Library	(4) work stations, file drawers for each station. Report writing, shift work, training.		1 @	200	
1.10 Server Room	Separate heat, cooling, humidity control.		1 @	64	
				699	

Space Type	Operational Criteria	Min. Dim.	Quant.	NSF	
2.0 APPARATUS AREA					
2.1 Apparatus Bays	Two double-deep drive thru bays for engines, one half-bay for aid vehicle.	45' x 20' 80' x 18' 80' x 20'	1 @ 900 1 @ 1,440 1 @ 1,600	3,940	
2.2 EMS Storage	Medica equipment supply and storage. Lockable meds storage.		1 @	100	
2.3 General Storage	Apparatus Equipment Homeland Security Storage & 72 hours of food for F.F. Public Education Nozzle Storage		1 @	300	
2.4 SCBA-repair	Tech repair - test bench, parts		1 @	0	
2.5 Bunker Gear Storage/Drying	20 sets of gear. Separate clean room. Wash-down area.		1 @	256	
2.6 Custodial	Storage of cleaning equipment and supplies		1 @	56	
2.8 Decon/Disinfecting Area/Bunker Cleaning	Separate cleaning and disinfecting. Space to clean equipment and gear. Decon space		1 @	180	
2.9 Maintenance/Work Area	Daily equipment checks, tool repair and maintenance, house air compressor.		1 @	120	
2.11 Compressor/Air Room	Remote SCBA compressor at centralized facility		1 @	80	
2.12 Battery/Charging Alcove	Provide space in firefighter work area		1 @		
2.13 Hose Dryer/ Hose Storage Alcove	Wall mounted rack in Apparatus Bay		1 @	0	
2.14 Emergency Supplies	Supplies for mass casualty. Crew, family and community related supplies		1 @	120	
				5,152	0

Space Type	Operational Criteria		01/05/04	0/0/04	
3.0 CREW AREA		Min. Dim.	Quant.	NSF	
3.1 Kitchen	Accommodate crew of 5		1 @	800	
3.2 Dining	Seating for 5 to allow for crew and guests and support interaction.		1 @	see kitchen 3.1	
3.3 Dayroom	5 recliners to support crew		1 @	see kitchen 3.1	
3.4 Exercise Room	Physical training are for mandated personal training		1 @	400	
3.5 Restroom- Men/Women	(3) separate individual toilet/shower rooms		3 @81	243	
3.6 Laundry/Utility	Washer/Dryer for in-house linens, mop sink, cleaning supply storage		1 @	90	
3.7 Sleeping Room	(5) dedicated rooms with (4) wardrobe lockers in each.		5 @ 110	550	
				2,083	0

4.0 SYSTEMS & CIRCULATION		Min. Dim.	Quant.	NSF	NSF
4.1 Mechanical Room	Sized to support facility.		1 @	216	
4.2 Electrical Room	Sized to support facility.	8' x 12'	1 @	96	
4.3 Telephone Demarcation Room	Sized to support facility.	8' x 10'	1 @	80	
				392	0

5.0 Site		Min. Dim.	Quant.	NSF	NSF
5.1 Public Parking	3 spaces	parking stalls 9'x20' if possible		YES	
5.2 Fire Department parking	10 spaces	12'x12'		YES	
5.3 Apron	As required			YES	
5.3 Generator	Fixed location for emergency power			YES	
5.3 Fueling	Gas and deisel supply			YES	
5.4 Site Maintenance Equip	As required			YES	
5.4 Rear apron & yard	Sized to support normal drilling including laying out hose			YES	
5.5 Trash / Recycling	As required			YES	
				0	0

Operational Needs Summary				
1.0	ADMINISTRATION AREA:		699	0
2.0	APPARATUS AREA:		5,152	0
3.0	CREW AREA:		2,083	0
4.0	SYSTEMS & CIRCULATION:		392	0
SUBTOTAL NET SQUARE FEET			8,326	0
CIRCULATION/WALLS (20% NSF GROSSING FACTOR)			1,665	0
TOTAL GROSS SQUARE FEET			9,991	0

SPACE AND OPERATIONAL NEEDS – School District



Lake Washington *School District No. 414*

Program Summary (New Junior High School – Approx. 900 Students)

Building(s)

120,000 Square Feet – Preferably a Single-Story Structure

Fields

Football/Track & Field (Existing)

Baseball/Softball Fields

Tennis Courts (6) & Practice Wall

Parking

70 Staff, 30 Visitor – 100 Total Spaces (Barrier Free Spaces as required by code)

Bus Pick-up and Drop-off Area (As required)

Car Pick-up and Drop-off Area (As required)

Space and Operational Needs

SITE PLAN CONCEPTS

The following six diagrams demonstrate primary conceptual alternatives for development of the site to provide a new or remodeled junior high school as well as a new fire station on the same property. These concepts represent program and building placeholders for what is required for the junior high school, but do not reflect LWSD's master plan for the site. Some key elements that are essential to allow for both facilities to co-exist on a single property are as follows:

Concurrent Occupancy:

Assuming that a new or remodeled junior high school will be located on site, LWSD would like to maintain and occupy the existing school buildings during construction of the new facility.

Flexibility:

The site layout and building arrangement for the school should be designed for maximum flexibility so that future design Concepts for LWSD are not limited. Many school time and after-hours activities will occur at this location, allowing for concurrent multi-use activities is vitally important. There are currently two schools on the Finn Hill campus and LWSD wants to maintain flexibility to accommodate more than one school on the site.

Daylighting:

The orientation of the school building(s), particularly the classrooms, as well as the fire station, should be considered to achieve sufficient daylighting for interior spaces. South facing apparatus bays for the fire station are preferable for response safety.

Civic Presence:

Both facilities exist for the benefit of the community. The design of each building should suggest a civic presence while being sympathetic to the scale and materiality of the surrounding neighborhood.

Security:

Since the fire station will be occupied 24 hours a day, the fire department will be perceived as stewards of the property by the school as well as the surrounding neighborhood. The location of the fire station relative to the site layout should take this into consideration, as well as the site layout for the school.

Site Plan Concepts

Shared Functions:

As a public building, the school, particularly the gymnasium and other more public spaces such as classrooms and fields, may be available for use by the fire department, dependent upon LWSD policy at the time of construction.

Shared Infrastructure:

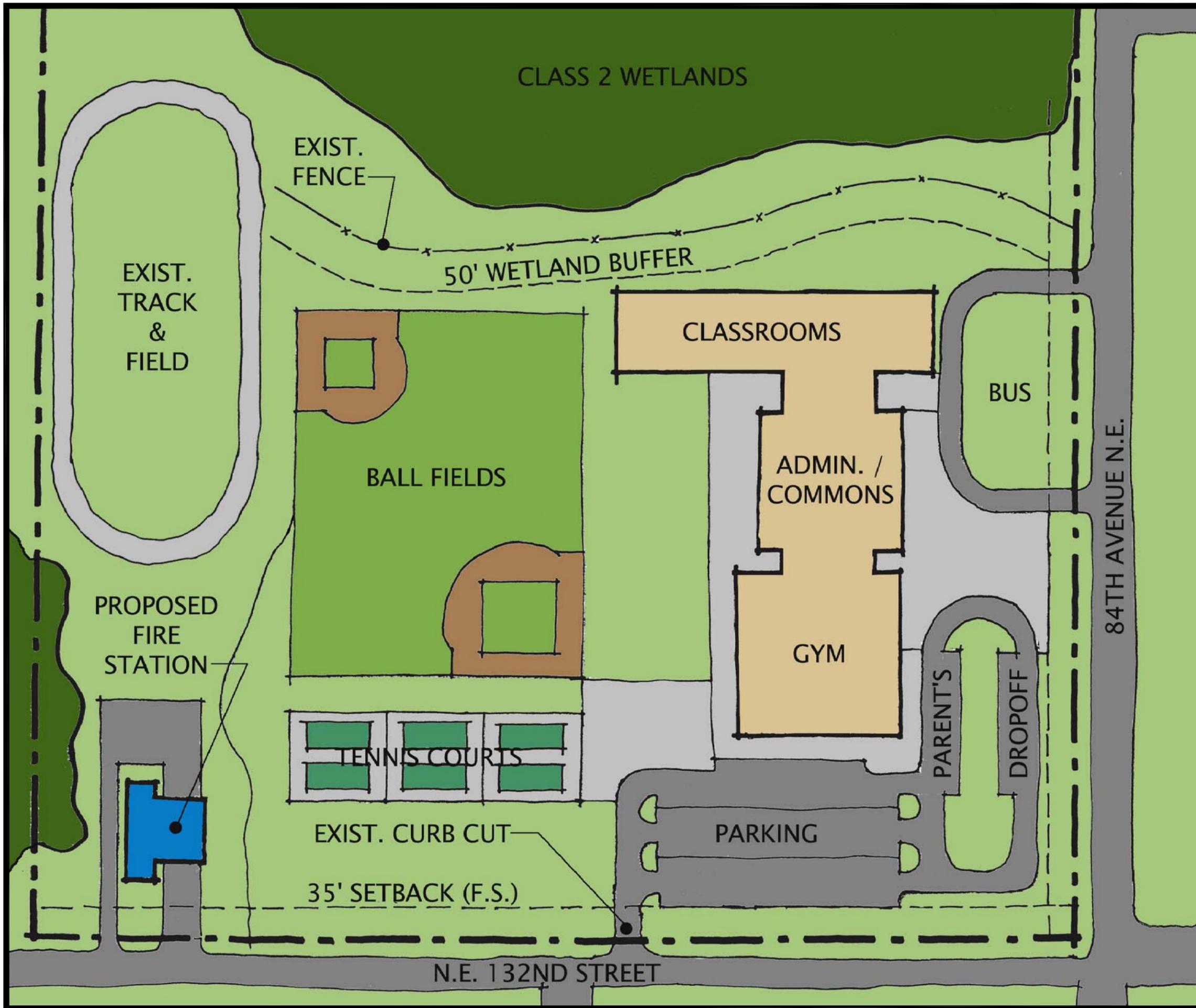
The potential exists for the fire station and the school to share stormwater management systems if the facilities were to be constructed concurrently. LWSD prefers not to use open ponds for detention and would opt for a more economical conduit system over a vault system, unless the site conditions prohibit this application.

Careers & Education:

Opportunities for training programs, mentoring, safety instruction, etc., exist programmatically between the school and fire station.

Noise Separation:

The potential for noise related to emergency response from the fire station to be disruptive to learning activities in the school should be considered. LWSD believes that the best solution for co-locating the fire station and the school should address this issue.



City of Kirkland
 NEW FINN HILL STATION
 Site Feasibility Study



Concept #1

1" = 120'

PROS & CONS (Refer to the Traffic Analysis for Additional Information)

Concept #1

Pros

F.S. location has minimum impact on the school property, providing flexibility for future school design.

F.S. traffic and school traffic are appropriately separated for adequate vehicular stacking.

F.S. has visibility and access to the track area as well as the new fields for site security and emergency response.

Concurrent occupancy is possible during construction if the school is replaced.

The school has a prominent location on the site.

Classroom wing has east-west orientation for optimum daylighting.

A minimum of regrading is necessary to construct a new school.

The higher building masses (gymnasium) are at the back of the site.

Parking is kept away from the street intersection.

Green space surrounds the school.

Fire station response to Juanita Drive is improved.

Pros & Cons

Concept #1

Cons

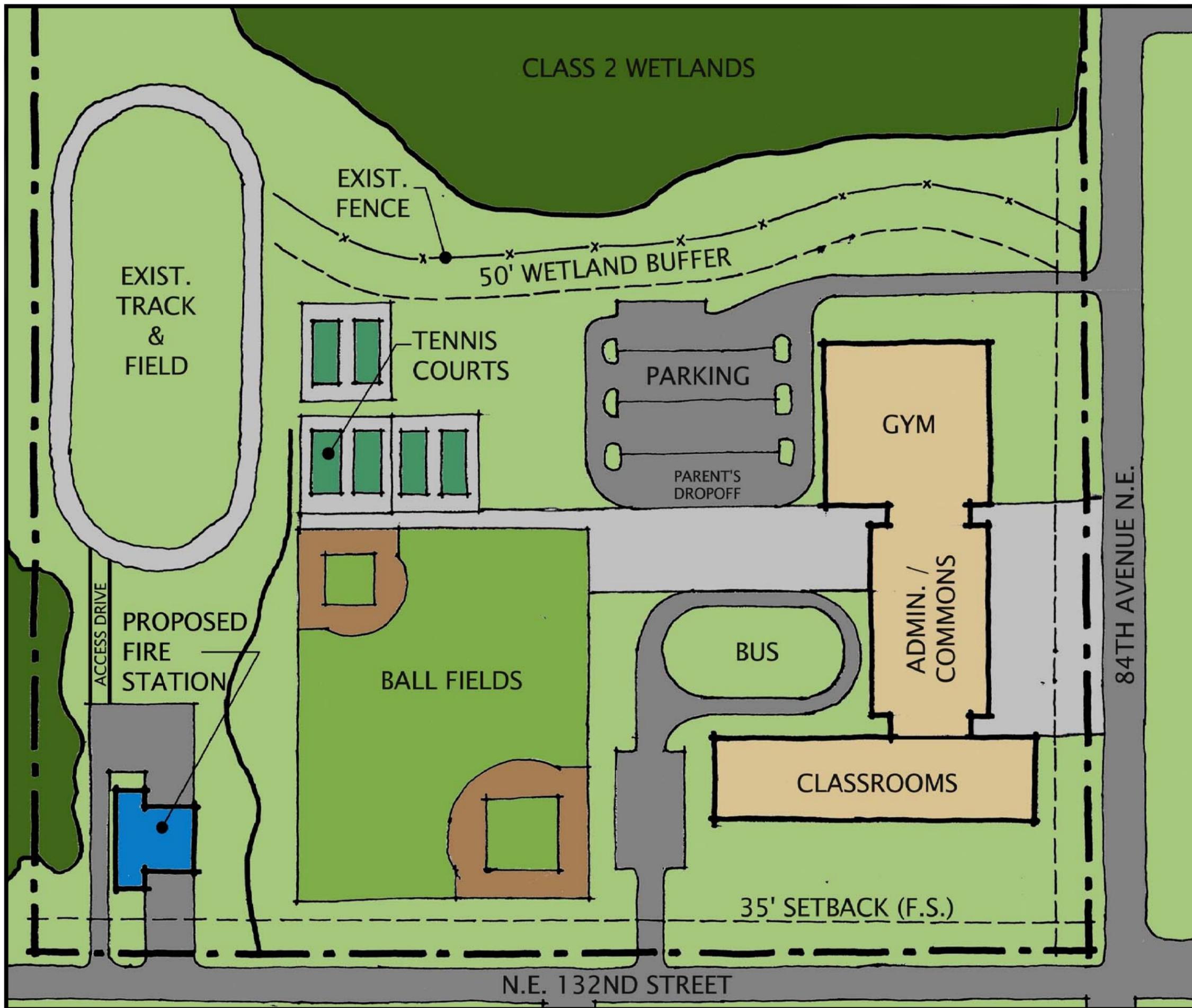
Bus egress is too close to intersection.

Car pick-up/drop-off is not visible from the street.

Main entry to school is not visible from the intersection.

The fire station location requires a great deal of clearing and regrading. A soils study will be required to survey geo-technical conditions of the hillside.

Pros & Cons



City of Kirkland
 NEW FINN HILL STATION
 Site Feasibility Study



Concept #1A

1" = 120'

Concept #1A

Pros

F.S. location has minimum impact on the school property, providing flexibility for future school design.

F.S. traffic and school traffic are appropriately separated for adequate vehicular stacking.

F.S. has visibility and access to the track area as well as the new fields for site security and emergency response.

Concurrent occupancy is possible during construction if the school is replaced.

The school has a prominent location on the site.

Classroom wing has east-west orientation for optimum daylighting.

A minimum of regrading is necessary to construct a new school.

The higher building masses (gymnasium) are at the back of the site.

Parking is kept away from the street intersection.

Green space surrounds the school.

Fire station response to Juanita Drive is improved.

Pros & Cons

Concept #1A

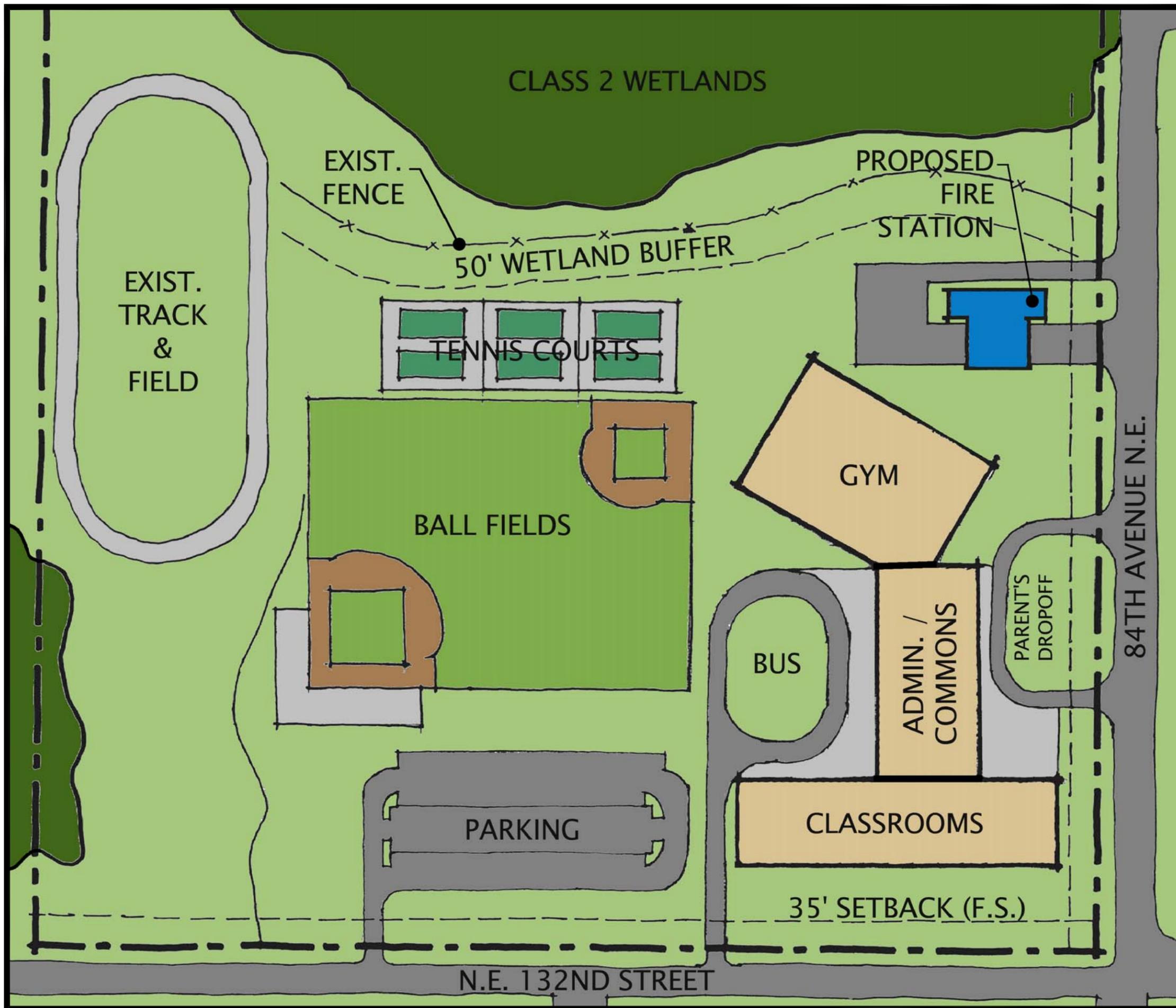
Cons

Car pick-up/drop-off is not visible from the street.

Main entry to school is not visible from the intersection.

The fire station location requires a great deal of clearing and regrading. A soils study will be required to survey geo-technical conditions of the hillside.

Pros & Cons



City of Kirkland
 NEW FINN HILL STATION
 Site Feasibility Study



Concept #2

1" = 120'

Concept #2

Pros

Bus and F.S. traffic are appropriately separated.

Concurrent occupancy during construction is possible if the school is replaced.

The school and F.S. have prominent locations on the site.

Classroom wing has east-west orientation for optimum daylighting.

A minimum of regrading is necessary to construct a new school.

The higher building masses (gymnasium) are at the back of the site.

There is potential for sharing stormwater management system.

Cons

Bus access/egress is too close to intersection.

Bus pick-up/drop-off is not visible from the street.

Main entry to school is not visible from the intersection.

Most of the site is not visible from the F.S., making site security an issue.

The classroom wing is surrounded by traffic and too close to the intersection.

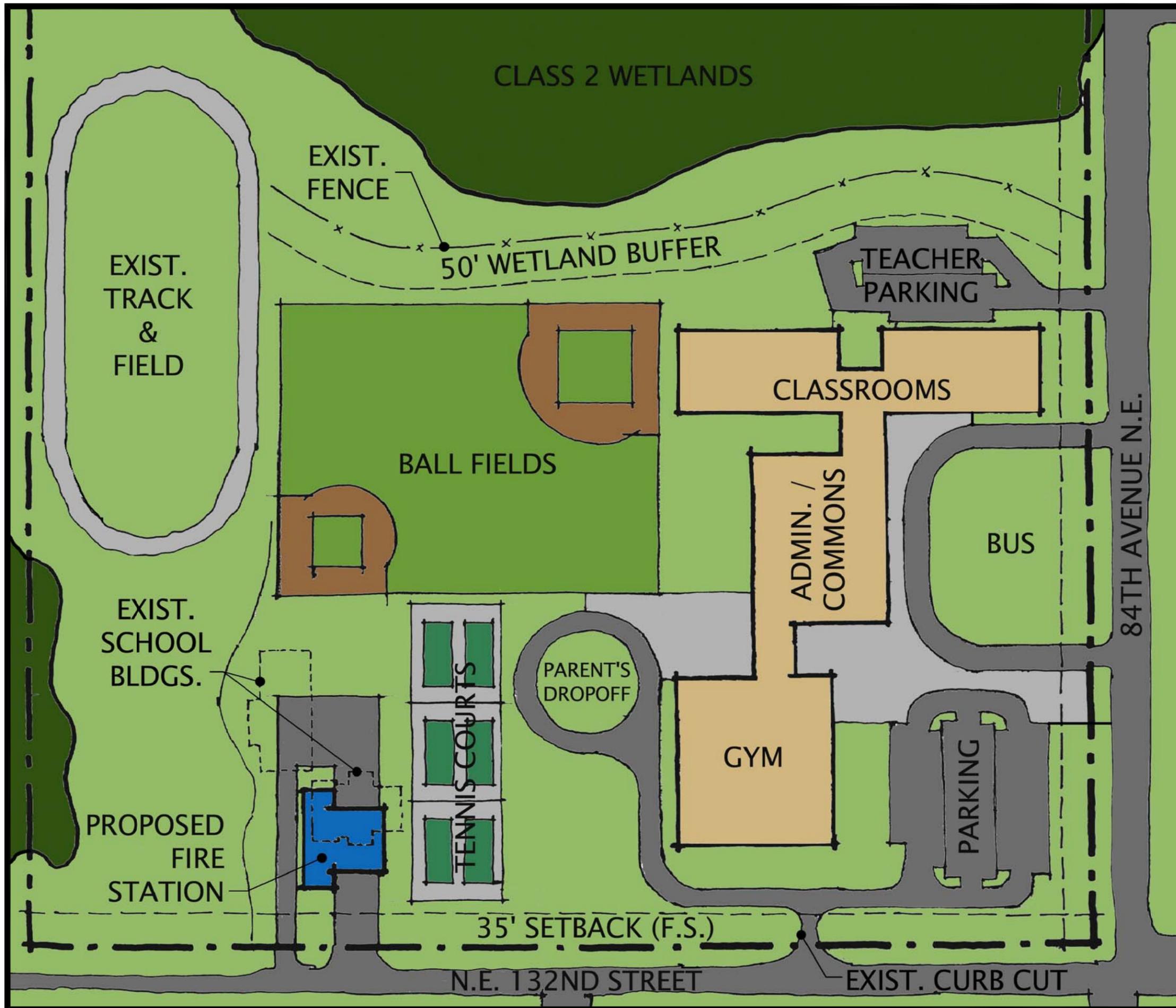
The number of curb cuts is excessive.

The school and F.S. buildings are too close. Noise may be disruptive to school.

Bus and car pick-up/drop-off areas are too close to the intersection.

Existing grades provide sightline issues for fire station response.

Pros & Cons



City of Kirkland
 NEW FINN HILL STATION
 Site Feasibility Study



Concept #3

1" = 120'

Concept #3

Pros

F.S. has visibility of the track area as well as the new fields for site security.

The school has a prominent location on the site.

Classroom wing has east-west orientation for optimum daylighting.

The proximity of the classrooms to the wetland area provides a quiet environment and supports the school's environmental learning program.

Staff parking is adjacent to the classrooms.

Cons

Bus egress is too close to intersection, stacking on the street is an issue.

Car pick-up/drop-off is not visible from the intersection

F.S. location makes phasing difficult for construction of a new school.

The number of curb cuts is excessive.

Vehicle circulation is spread out across the site.

The largest mass of the school building (the gymnasium) is on the street.

The location of the new fields would require extensive regarding and added costs.

Pros & Cons



City of Kirkland
 NEW FINN HILL STATION
 Site Feasibility Study



Concept #4

1" = 120'

Concept #4

Pros

Classroom wing has east-west orientation for optimum daylighting.

The higher building masses (gymnasium) are at the back of the site.

Parking is concentrated and kept away from the street intersection.

Green space surrounds the school.

Cons

F.S. location makes phasing difficult for construction of a new school.

F.S. location limits the flexibility of site planning and vehicular and pedestrian traffic for the school.

The school parking area is too far from the fields.

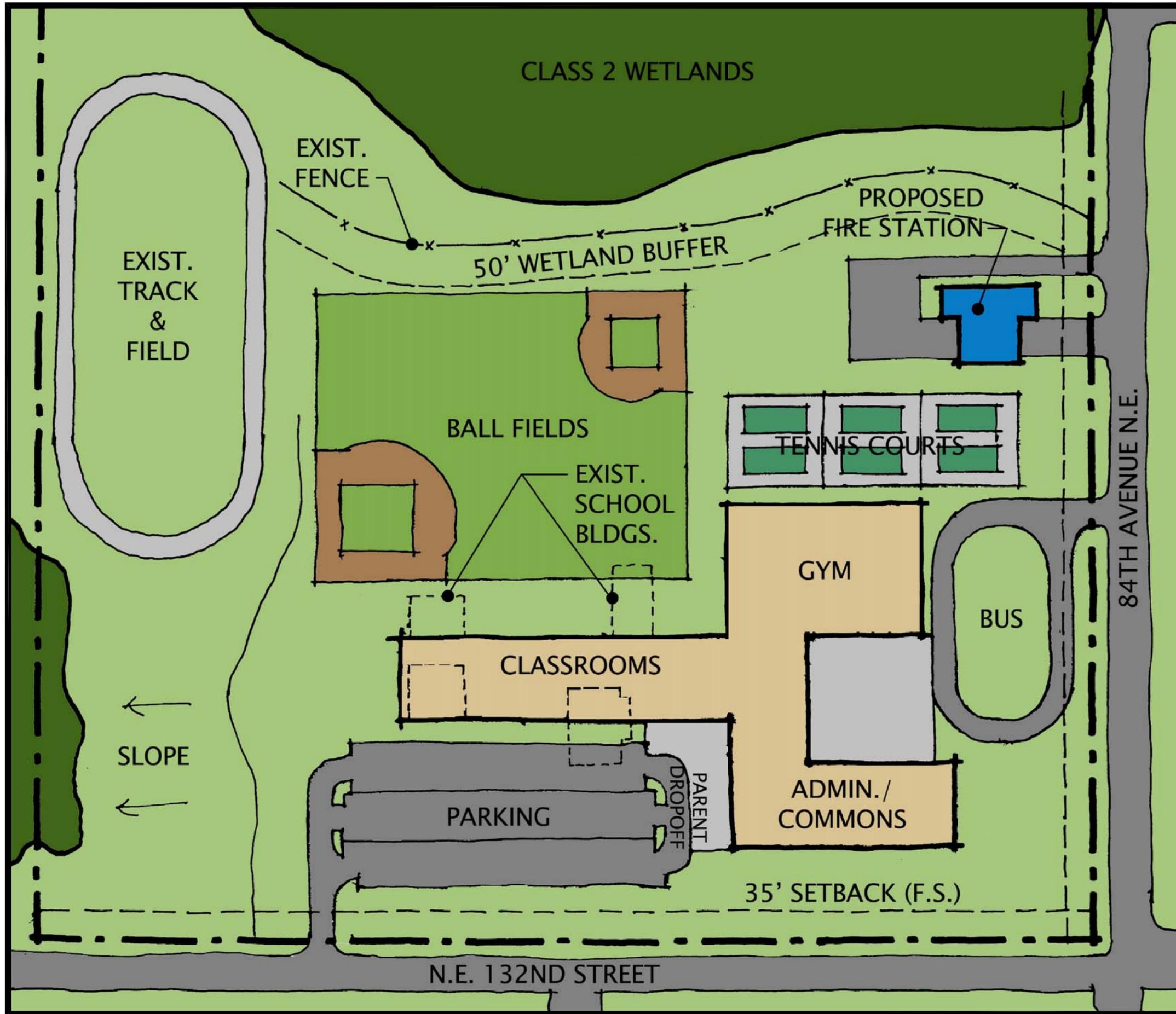
Bus and car access and egress points are too close to each other.

Classrooms are too close to the fire station.

The tennis courts location requires extensive regarding.

The school building is too far from the intersection.

Pros & Cons



City of Kirkland
 NEW FINN HILL STATION
 Site Feasibility Study



Concept #5

1" = 120'

Concept #5

Pros

F.S. traffic and car traffic for the school are appropriately separated.

The school has a prominent location on the site.

Classroom wing has east-west orientation for optimum daylighting.

F.S. has convenient access to the fields, courts and gymnasium.

The school building has a strong presence on the site.

Cons

Bus access/egress is too close to the F.S. access/egress. Vehicle stacking is an issue.

The new school location presents phasing issues. Concurrent occupancy during construction would be difficult.

The school building is too stretched out.

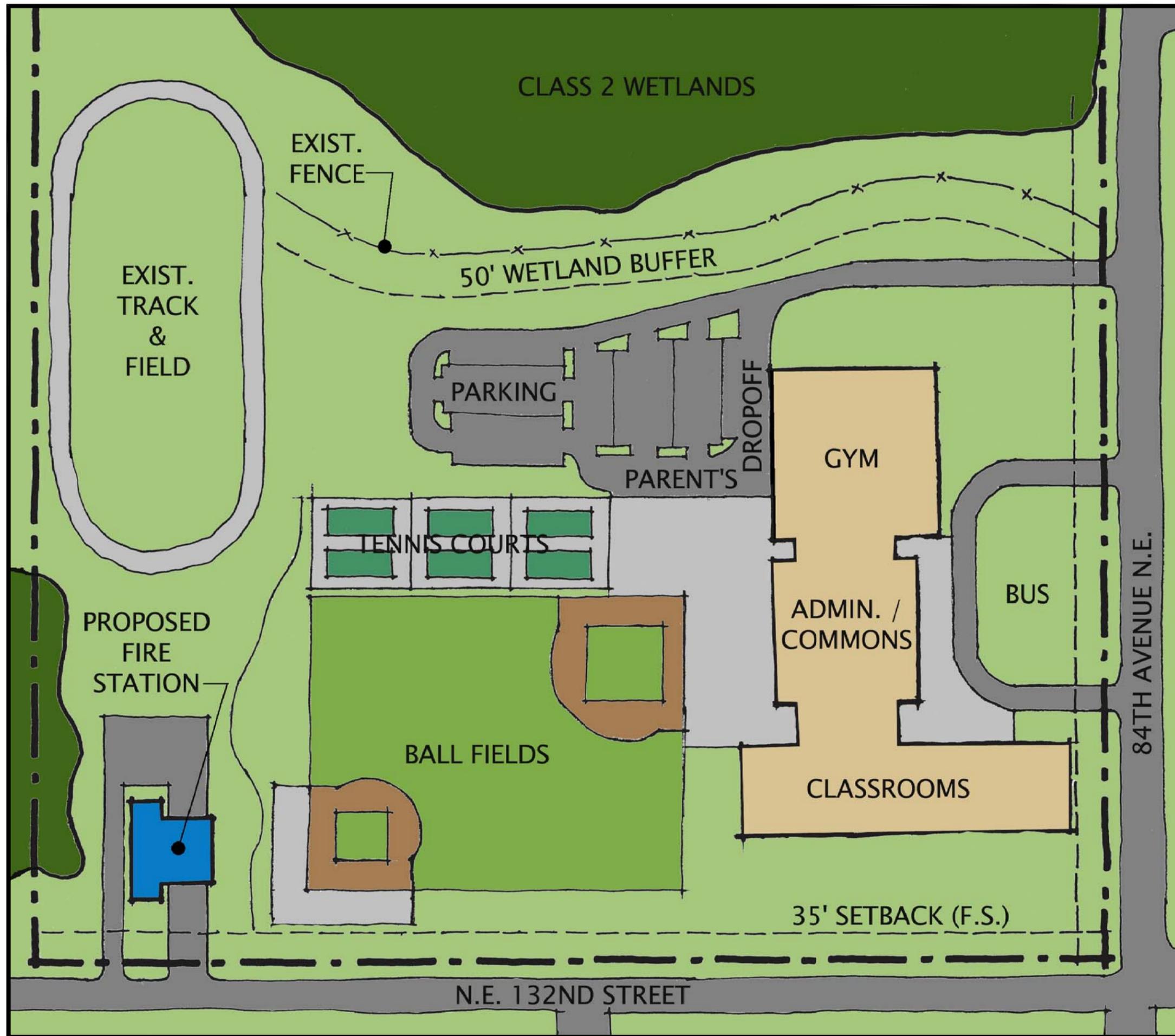
The location of the new fields would require extensive regrading.

Visual access from the F.S. to the fields is limited.

Parent pick-up/drop-off may interfere with parking circulation, and it is not visible from the intersection.

The overall site layout is inefficient. There is a lot of wasted space on the site.

Pros & Cons



City of Kirkland
 NEW FINN HILL STATION
 Site Feasibility Study



Concept #6

1" = 120'

Concept #6

Pros

F.S. location has minimum impact on the school property, providing flexibility for future school design.

F.S. traffic and school traffic are appropriately separated.

F.S. has visibility and access to the track area as well as the new fields for site security.

Concurrent occupancy during construction is possible if the school is replaced.

Classroom wing has east-west orientation for optimum daylighting.

A minimum of regrading is necessary to construct a new school.

Bus access/egress is away from the intersection.

Classrooms are close to the wetland area, which supports the school's environmental learning program.

Fire station response to Juanita Drive is improved.

Pros & Cons

Concept #6

Cons

Pedestrian access to the school from the intersection is through a parking area.

Main entry to school is not visible from the intersection.

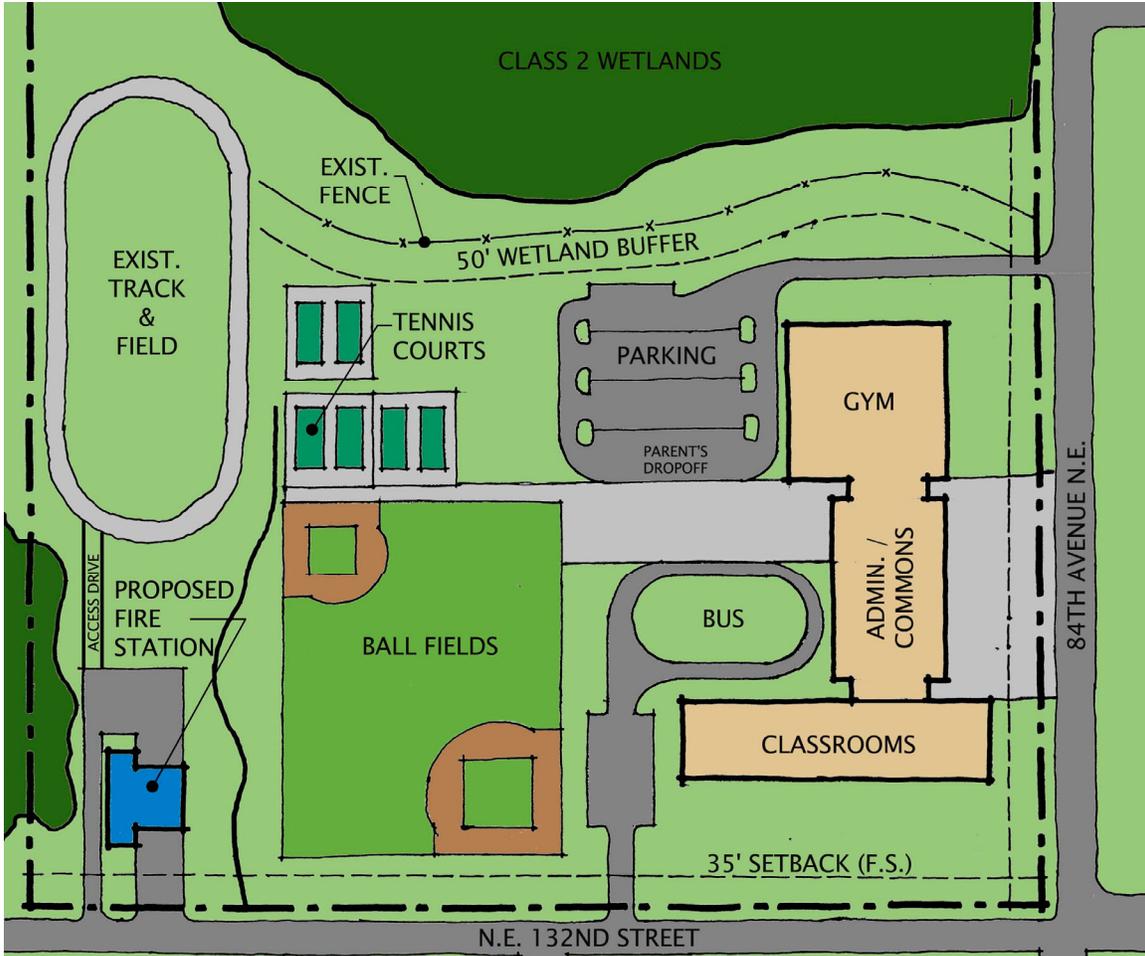
The main parking area is located on the most prominent area of the site.

The largest mass of the school building (the gymnasium) is close to pedestrian site circulation.

The fire station location requires a great deal of clearing and regrading. A soils study will be required to survey geo-technical conditions of the hillside.

Pros & Cons

PREFERRED SITE CONCEPT



Concept #1A

Not to Scale

Preferred Site Concept

SHARED FUNCTIONS

The Lake Washington School District considers all schools within the system to be public facilities, and therefore available for scheduled use by all members of the community. Any use of the school buildings or fields by the fire department will be in accordance with school district policy

Fitness Facilities:

The fire department would be welcome to use the track & field as well as gymnasium facilities at the school.

Grounds Maintenance:

The fire department and school district could potentially share grounds maintenance services for the site.

Education & Safety:

There is tremendous potential for the fire department and the school to collaborate with mentoring programs, career guidance, and fire fighter training. The school would have the opportunity to receive emergency planning guidance, as well as CPR and first aid training from the fire department.

Restrooms:

Perhaps a public restroom associated with the fire station could be incorporated, serving the athletic fields on the site.

TRAFFIC ANALYSIS

Finn Hill Junior High School – Kirkland Fire Department Concepts Analysis March 23, 2004

1. Field investigation to observe traffic flows in and around the school.

School

Finn Hill Jr. High School, located at 8040 NE 132nd Street. The current enrollment is 650 students and served by five school buses, Metro Transit, parents, and pedestrian traffic. The maximum typical capacity of the school is 900 students.

Adjacent Roads

The school is bordered on the south by NE 132nd Street and on the east by 84th Avenue NE. NE 132nd Street is an east-west two-lane roadway providing three access points to the school. The travel lanes are eleven feet wide with three-foot shoulders. There are currently no pedestrian facilities on NE 132nd Street with the exception of a separated walkway between the intersection of NE 132nd Street and 84th Avenue NE and to the east driveway. The posted speed limit is 25 mph. There is no on-street parking along the school frontage. Both roadways are also posted 20 mph for school zone.

84th Ave NE is a north-south two-lane roadway with eleven-foot travel lanes and a six-foot shoulder on the east side of the roadway. On the west side of the roadway there is a one-foot shy distance to an extruded curb and then a five-foot asphalt walkway. The posted speed limit is 35 mph. There is no on-street parking along the school frontage. Approximately 350 to 400 feet north of the NE 132nd Street/84th Avenue NE intersection sight distance is limited due to vertical curves on 84th Avenue NE.

The NE 132nd Street/84th Avenue NE intersection is an all-way stop.

Traffic Analysis

Transit

King County/Metro Transit route 234 serves a bus stop at the northeast corner of the NE 132nd Street/84th Avenue NE intersection.

Traffic

Site visits were conducted during the school AM and PM peak hours on February 26, 2004 and on March 10, 2004, respectively. Students arrive and depart on foot, bicycle, school buses, Metro Transit, and parent's vehicles. Field observations indicated that the PM peak hour is the critical hour. During the PM peak hour 35 vehicles (parents) queued around the school parking lot and extended briefly, 20 seconds, into NE 132nd Street blocking the westbound lane. Since the school buses share the same driveway entrance, a school bus was blocked for this same short period of time.

The PM peak hour queues at the all-way stop controlled intersection of NE 132nd Street and 84th Avenue NE were nine vehicles eastbound, seven vehicles westbound, and two vehicles northbound and southbound. The intersection is operating well below capacity and is anticipated to continue to do so when the school population increases to 900 students.

When the school enrollment is at capacity, the queue at the school driveway is anticipated to increase proportionately to 49 vehicles during the PM peak hour and school buses will increase to seven buses.

Nearby fire stations and schools include:

- An existing fire station on the southeast corner of NE 141st Street and 84th Avenue NE approximately half a mile north.
- Henry David Thoreau Elementary school at NE 138th Street and 84th Avenue NE.
- Carl Sandburg Elementary school NE 128th Street and 84th Avenue NE.

Traffic Analysis

2. Existing signalized intersections around the site.

There are two signalized intersections in the vicinity of Finn Hill Jr. High. Emergency vehicle preemption exists on both signals. Both signals are far removed from the site and have no impact on the analysis.

- Juanita Drive and NE 141st Street.
- Juanita Drive and NE 122nd Place.

Concerns regarding the co-location of schools and fire stations based on input from fire departments.

The City of Mukilteo Fire Department is located adjacent to Harbour Pointe Middle School in Mukilteo, Washington. The fire chief stated that the traffic impacts from the middle school are “insignificant.” However, the school district desires further exploration of the impact that a fire station would have on the educational process at the site being considered in this study.

3. Review “sketch” concepts provided by TCA

Issues taken into consideration when evaluating the sketch concepts:

1. Adequate distance between driveways and the NE 132nd Street and 84th Avenue NE intersection.
2. Adequate distance between school and fire station driveways.
3. Adequate off-street storage for school buses. Forecasted queue length 315 feet (7 school buses, 45 feet/school bus).
4. Adequate off-street storage for parents dropping off and picking up students. Forecasted queue length for parents is 1,225 feet (49 vehicles, 25 feet/vehicle).
5. Utilization of queuing area by parents. Parents want to park and wait next to the building their child will exit. They will not drive to the far side of the parking lot, away from the building, and wait for their child.
6. Segregating school bus and parent traffic.
7. Segregating motor vehicle and pedestrian traffic.
8. Adequate sight distance at bus driveways.
9. Adequate sight distance at parent/teacher driveways.
10. Adequate sight distance at fire station driveways.

The Evaluation Matrix ranks the issues from 1 (bad) to 5 (good).

Evaluation Matrix – March 19, 2004 Submittal (See Site Plan Concepts)

Issues	Concepts					
	1	2	3	4	5	6
1. Distance between driveways and intersection.	4	4	4	4	5	5
2. Distance between driveways.	4	3	4	4	5	5
3. Off-street storage for buses.	5	5	5	5	5	5
4. Off-street storage for parents.	4	1*	2	2	3	5
5. Utilization of off-street storage by parents.	5	3	3	3	3	4
6. Segregating school bus and parent traffic.	5	5	5	5	5	5
7. Segregating motor vehicle and pedestrian traffic.	5	5	3	4	4	1
8. Sight distance at bus driveways.	1*	5	1*	1*	5	1*
9. Sight distance at parent/teacher driveways.	5	5	5	5	5	5
10. Sight distance at fire station driveways.	5	1*	5	5	1*	5
Total	43	37	37	38	41	41

* Fatal design flaw.

The asterisks in the above tables are not only a very low score but are considered a fatal design flaw and the concept should not be considered.

NOTES: (TCA)

The Evaluation Matrices rank traffic conditions only.

Preferred Concept 1A (pages 14 & 28) was created in reference to Preliminary Concept 1 (See 2/27/04 Matrix), which has the highest ranking, and as a hybrid of Concepts 1 & 6, the school district’s preferred Concepts. This new concept mitigates bus drive sight distance issues, indicated as a “fatal flaw” for Concepts 1 & 6 in the above Matrix.

Traffic Analysis

Evaluation Matrix – February 27, 2004 Submittal (See Appendix A)

Issues	Preliminary Concepts				
	P1	P2	P3	P4	P5
1. Distance between driveways and intersection.	5	2	4	3	2
2. Distance between driveways.	5	3	5	4	5
3. Off-street storage for buses.	5	4	5	5	5
4. Off-street storage for parents.	4	2	4	3	2
5. Utilization of off-street storage by parents.	5	1*	3	4	1*
6. Segregating school bus and parent traffic.	5	5	5	5	5
7. Segregating motor vehicle and pedestrian traffic.	5	4	3	3	2
8. Sight distance at bus driveways.	5	1*	5	1*	1*
9. Sight distance at parent/teacher driveways.	5	5	5	1*	5
10. Sight distance at fire station driveways.	5	1*	1*	5	5
Total	49	28	40	34	33

* Fatal design flaw.

NOTES: (TCA)

The original conceptual sketches for Preliminary Concepts 1 thru 5 in the above Matrix are shown in Appendix A.

The highlighted concept ranks highest in the traffic analysis.

Traffic Analysis

Preliminary Recommendations

February 27, 2004 Submittal (Preliminary Concepts)

The greatest issue with all concepts (February 27 and March 19, 2004) is required sight distances on 84th Avenue NE. As you drive north from the NE 132nd Street/84th Avenue NE intersection the roadway profile climbs slightly over a crest vertical-curve and then drops into a sag vertical-curve. This roadway profile presents a challenge to locate driveways that meet minimum sight distance requirements.

The City of Kirkland uses the *American Association of State Highway and Transportation Officials (AASHTO) a Policy on Geometric Design of Highways and Streets* for sight distance standards. Three sight distance standards must be met for the school driveways:

1. Adequate sight distance must be provided at a driveway to allow the driver a sufficient view of the roadway, in this case 84th Avenue NE, to determine when it is safe to enter the roadway.
2. Adequate sight distance must be provided for a northbound vehicle to determine when it is safe to turn left across the southbound lane and enter a school driveway.
3. Adequate sight distance must be provided so a northbound vehicle does not rear-end a second northbound vehicle that is waiting to turn left into a school driveway.

One or more of the 84th Avenue NE driveways on Concepts 2 through 5 do not meet the sight distance requirements. Mitigating the sight distance issues to maintain the Concept 2 through 5 driveway locations would require adjusting the 84th Avenue NE vertical alignment at great expense to the school district.

Preliminary Concept 1 may require a northbound left-turn lane be constructed at the parent/teacher driveway to meet Sight Distance Standard #3. The City of Kirkland would have final determination. This would require an on-site meeting with a City traffic engineer and further analysis to include 84th Avenue NE traffic volumes, forecasted traffic volumes entering the driveway and from what direction, and a roadway profile.

We also recommend that the circulating lane in the school parking lot be designed to accommodate stopped vehicles at the curbside and continuous moving traffic adjacent to the stopped vehicles.

Traffic Analysis

March 19, 2004 Submittal

One or more of the 84th Avenue NE driveways on Concepts 1 through 6 do not meet the sight distance requirements.

Concept 6 also scores very low in segregating motor vehicles and pedestrian traffic. The majority of the students that walk to school live east of the campus and are good about crossing 84th Avenue NE at the intersection of NE 132nd Street. With parking and parent traffic located on the southeast corner of the campus, walking students will naturally cut across the parking lot. Years of conducting traffic studies for schools or in the vicinity of schools has consistently shown that parents departing the school site after dropping off or picking up their child can be very aggressive.

This issue would be considered a fatal flaw for Concept 6 if a means of segregating the student pedestrians and the parent motor vehicles cannot be achieved.

Summary

The traffic analysis prefers February 27, 2004, Preliminary Concept 1 (Refer to Preferred Concept #1A- Pages 14 & 28). It does the best job of segregating the student pedestrians and parent traffic. Its only unresolved issue is a possible northbound left-turn lane at the parent/teacher driveway.

PERMITTING AND CONSTRUCTION TIMELINES

LWSD – New School Construction or Modernization – Not Before 2006

KFD – Begin Construction in 2005 (Somewhat flexible)

Permitting:

Building Permit: 120-Day Review Process (Independent of C.U.P. Permitting process)

Drainage Review:

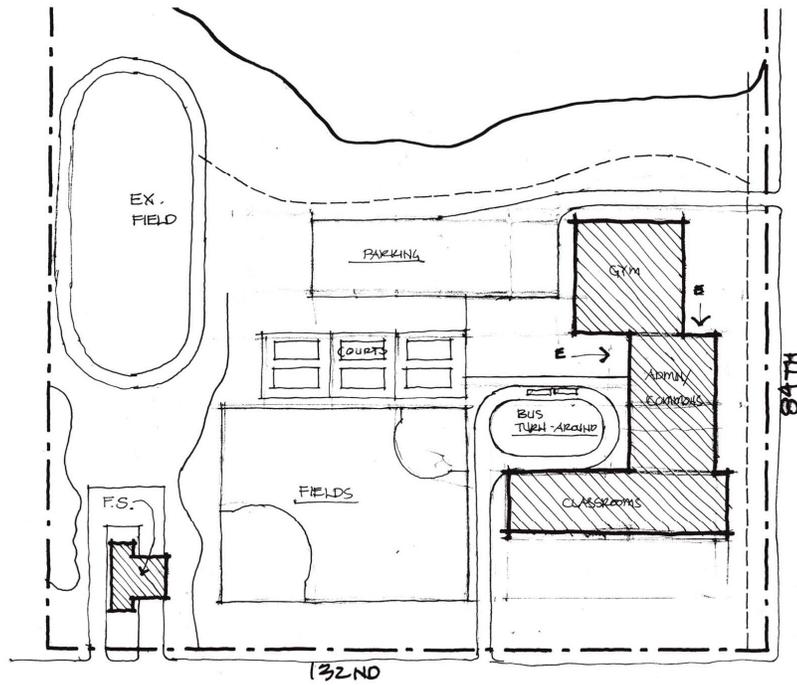
The fire station would involve several planned actions that would require a drainage review including adding more than 5,000 S.F. of impervious surface and its potential location adjacent to a wetland.

Conditional Use Permit:

The site is currently zoned R-4-SO/R-6-20. The construction of a Fire Facility on this property would require a C.U.P. , which involves a 120-Day review process.

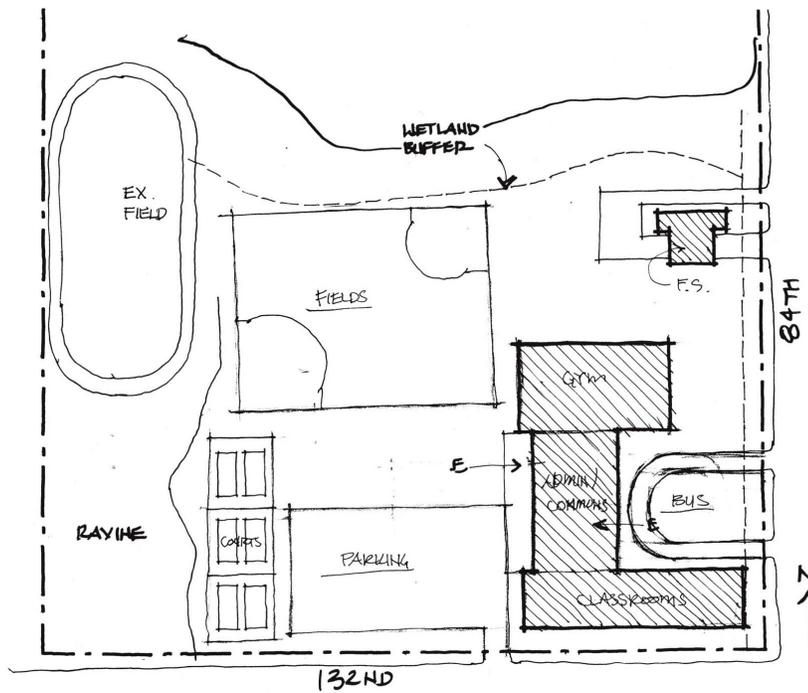
Permitting and Construction Timelines

Appendix A -Preliminary Concepts



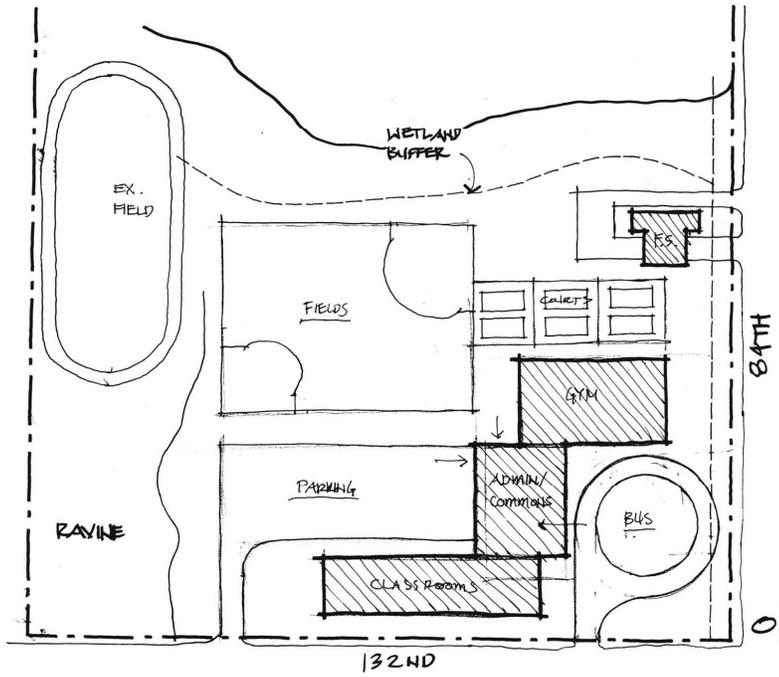
PRELIMINARY CONCEPT No.1

2-27-04



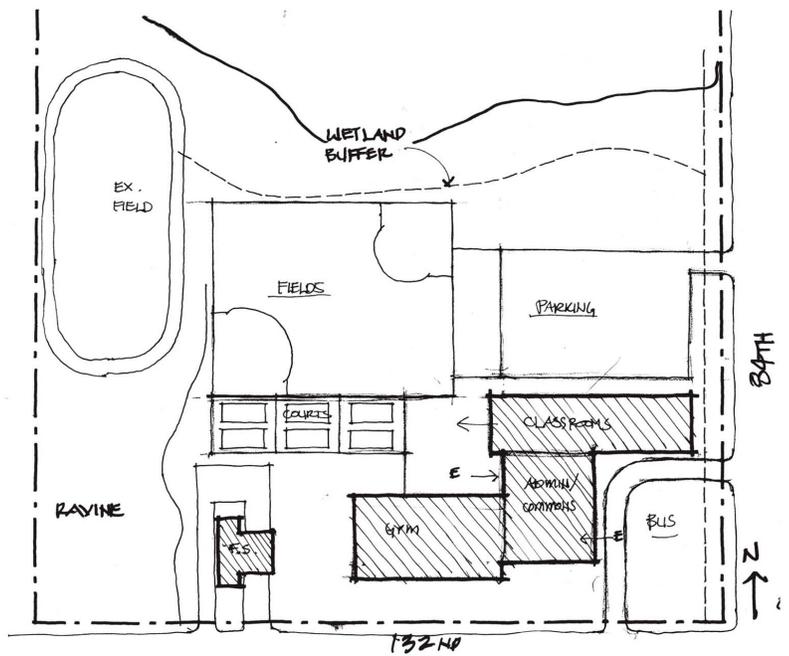
PRELIMINARY CONCEPT No.2

2-27-04



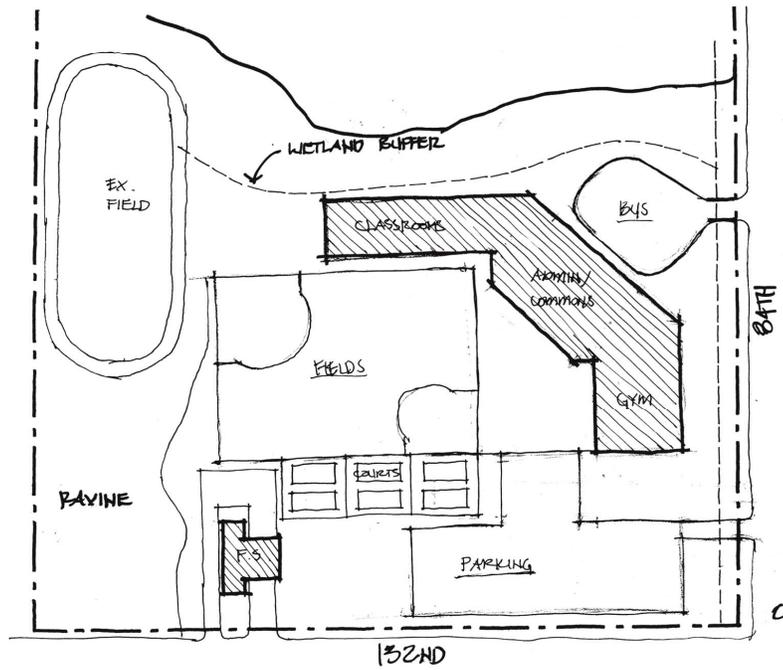
PRELIMINARY CONCEPT No.3

2-27-04



PRELIMINARY CONCEPT No.4

2-27-04



PRELIMINARY CONCEPT No.5

2-27-04

Appendix B – Meeting Minutes



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MEETING MINUTES

Notes by: Myles Huddart

Date: 1/9/04

Project: Kirkland Finn Hill Station

Meeting: Kick-off Meeting

Time: 9:00 A.M.

No.	Name	Company / Organization
1.	Brian Harris	TCA
2.	Myles Huddart	TCA
3.	Jeff Blake	COK
4.	Jack Henderson	COK
5.	Butch Reifert	MA
6.	Mitch Kent	MA

Representatives attending meeting shall be qualified and authorized to act on behalf of the entity that each represents. To the best of our knowledge, this is an accurate summary of the discussion, decisions, and representations of all parties during the meeting. Notifications of exceptions to this summary are to be submitted in writing within seven days of receipt. Failure to notify shall be deemed an endorsement of the accuracy of these minutes.

General:

- 1.0 The fire department would like to build in 2005, but they are somewhat flexible. The construction schedule could dovetail with that of the school. Some infrastructure for the two projects could end up being shared.
- 1.1 Mahlum Architects can assist in keeping those involved in the school project at an appropriate distance with regards to the fire station project by keeping them updated with its progress. The main concerns for the school district in terms of the overall project will be long-term flexibility, safety, and educational opportunities.

Architecture:

- 1.2 It would be desirable for the design of the school and the fire station to be architecturally compatible. They should look like they were designed and planned together. However, it may not be possible to coordinate the design and construction timeline to allow this.

- 1.3 Ideally, the fire station would be designed as a 20-year building, however, given the budget its more realistic to design a ten-year building that can be upgraded in the future.
- 1.4 Schools in this district are designed as 40-year buildings and sustainability issues such as day-lighting and design flexibility are considered. As with the fire station, it is important for the schools to establish a civic presence architecturally.

Operations:

- 1.5 Long term staffing for the fire station will be 5 people, 3 career fire personnel and 2 reserves. Apparatus will include and Aid Car, Engine, Air Unit and full-size Special Ops vehicle in 2005.
- 1.6 It won't be necessary to have a public meeting room in the fire station. There are meeting rooms available in the vicinity. However, a large office/work area will be needed.
- 1.7 In terms of site circulation, separation between buses, cars, and pedestrian traffic is important, requiring separate curb cuts on the site. Also to consider is how to separate/protect pedestrian traffic related to the school from fire station emergency operations. The school has peak and off-peak times in terms of queuing of traffic on the site. The fire department uses an Opticom system for signaling, which also needs to be considered.

Technical:

- 1.8 If possible, there should be no open ponds for water treatment. The fire department is interested in any possibility to plan the site infrastructure to serve both the school and the fire station, with the understanding that variations in planning and construction timelines may limit these possibilities.

Functional:

- 1.9 The fire station will be considered to be an essential facility. A back-up generator will be provided. The fire station will be a central location for assisting the public during a disaster situation.
- 2.0 There should be secured crew parking for 10 (2 shifts of 5) and 3-4 spaces for the public.
- 2.1 The selection of this site for the station was primarily driven by its proximity to arterial roads. It happens to be an ideal location in terms of responding to calls. Land availability was a secondary factor.

Community/Partnering Opportunities:

- 2.2 The fire department is open to the possibility of sharing facilities such as supply storage, exercise rooms, food service, etc. with the school district.
- 2.3 There may be an opportunity for the school and fire station to share grounds maintenance crews, which could benefit the school sine they are short-staffed. Currently the city crews maintain the fire station facilities.
- 2.4 The fire station may also be interested in providing fire prevention education and job programs in conjunction with the school.

Data Collection:

- 2.5 TCA and Mahlum will begin collection of information for the site. A Conditional Use Permit will eventually be required (Ken Carlson should be contacted). This process should be started as soon as possible. Contact for the school district is Forest Miller.



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MEETING MINUTES

Notes by: Myles Huddart

Date: 1/23/04

Project: Kirkland Finn Hill Station

Meeting: Operations Meeting (Sta. 26)

Time: 9:00 A.M.

No.	Name	Company / Organization
1.	Brian Harris	TCA
2.	Myles Huddart	TCA
3.	Jeff Blake	COK
4.	Jack Henderson	COK

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Operations:

- 1.0 A district secretary will be assigned to the new station and will require an individual office separate from the crew office area. The crew office area should accommodate 5-6 people, but initially there should be 4 work stations with a file drawer at each station, and the rest of the under counter space open. Copy equipment can be shared between the secretary and crew. The dist. sec. office should be approx. 150 S.F., connected to the crew area and have space for a desk to be used for amateur radio operations.
- 1.1 Sleeping rooms should consist of 5 dedicated individual rooms with 4 wardrobe lockers in each room. Shift changes occur at 7:00 am, outgoing shift is up by 6:00 am.
- 1.2 Crew restroom facilities should consist of three (3) separate individual toilet/shower rooms (similar to Woodinville). The showers should have adjacent space for drying and dressing.
- 1.3 The new station will require two full-size drive-thru bays deep enough to stack two engines, and one half-bay for backing in an aid vehicle. All bays should have 14 ft. O.H. doors. Exhaust ventilation should be an evacuation system similar to existing stations (no source capture).
- 1.4 On-site training will consist of normal drilling including laying out hose, which can be done using the rear parking/drive area for the station.

Appendix B

- 1.5 The fitness/training room (naming not an issue) should be big enough to accommodate all equipment with some breathing room to provide a good layout. The fire department will provide a list of equipment for their standard set-up. The station 26 exercise room is too small. Station 27 should be looked at.
- 1.6 The facility will require thirteen parking spaces, 10 for the crew and 3 visitor spaces.
- 1.7 The ability to wash down bunker gear will be necessary. Each crew member will have two sets, which means 20 sets of gear total for this station). A separate clean room is to be provided for replacement gear (similar to Duvall).
- 1.8 A tower will not be necessary for hose drying. The fire department may want to have drying cabinets provided (quantity TBD).
- 1.9 For disaster supply storage, the fire department currently uses Conex boxes outside the stations. There is an opportunity here to incorporate this space into the building with access from both the interior and exterior, with a keypad lock on the outside. Supplies to be stored here include those for mass casualties as well a crew, family and community related supplies. The space should be about 120 S.F.
- 2.0 No separate report desk is required, but a map wall would be OK. The call radio can be in the crew work area.
- 2.1 The lobby should be of minimal size to accommodate 2 chairs and a small table for B.P. checks as well as a wall-mounted brochure rack. An accessible public restroom should also be provided adjacent to the lobby and the district secretary's office.
- 2.2 The dayroom/kitchen/dining space should have five chairs and three refrigerators.
- 2.3 The new station will be an accessible facility.
- 2.4 The new station will have a fixed location diesel generator for emergency power.
- 2.5 The crew assigned to this station will be responsible for day-to-day maintenance.
- 2.6 Brian and Myles will visit the site after the meeting to look at potential locations for the new station. It is possible that the station will be two stories, since one potential location for the site has a considerable slope.



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MEETING MINUTES

Notes by: Myles Huddart

Date: 2/20/04

Project: Kirkland Finn Hill Station Site Study

Meeting: Site Concepts

Time: 9:30 A.M.

No.	Name	Company / Organization
1.	Brian Harris	TCA
2.	Myles Huddart	TCA
3.	Mitch Kent	MA
4.	Butch Reifert	MA

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School/Site:

- 1.0 The new Finn Hill Junior High School will be approximately 120,000 S.F. The school district would prefer to have all spaces on the ground floor.
- 1.1 The school will need approximately 100 parking stalls with a 2:1 ratio for staff and visitors, all with access to the front door. The Redmond school has 73 staff spaces and 36 visitor spaces.
- 1.2 The school district strongly prefers to maintain occupancy of the existing school during construction of the new school. It is very expensive to bring in portables. However, a phasing plan may be proposed to allow for demolition of portions of the existing school prior to completion of the new school.
- 1.3 A large detention facility will be needed for the newly developed site. It is preferred that this be underground. The use of a tubular vault detention system is a possibility.
- 1.4 In terms of maintaining athletic field locations, the priority is the keep the football fields in place. Baseball diamonds and courts are more flexible.
- 1.5 The school district is not inclined to share building space with the fire department, but is willing to explore the possibility of sharing site infrastructure.

- 1.6 Typically the schools store enough supplies and rations to sustain the students for 72 hours in the event of an emergency, but the schools are not designated for disaster relief.
- 1.7 Separate curb cuts and vehicular circulation are necessary between bus and car traffic. Staff parking and car pick-up and drop-off do not necessarily have to be separated.
- 1.8 New curbs, gutters and sidewalks will be required for the entire length of the site along 132nd and 84th.
- 1.9 LWSD will be going after a bond for the new school in 2006 and will probably construct in 2007 or 2008.
- 2.0 New schools are typically constructed of durable, low maintenance exterior materials (e.g.: CMU). The height limit for the site is 35'.

Fire Station/School/Site:

- 2.1 The city's Risk Management Department may have a great deal of influence over how the fire station and school get developed on the site.
- 2.2 The northeast corner of the site seems like the most logical location for the fire station, however several schemes, which include variants of TCA site concepts 1 & 2, can be explored. It may be worthwhile to explore the feasibility of locating the station at the southwest corner of the site where it might have the least impact on site planning for the school.
- 2.3 It may be preferable to separate the classroom portion of the school from the fire station to minimize noise disturbance between the two facilities.
- 2.4 The two facilities might also be arranged on the site so that both have sufficient access to the athletic fields and courts.

Site Study:

- 2.5 Mahlum will prepare a narrative with a list of assumptions to describe how the construction of the new school will impact the development of the site. The school focuses on environmental studies, so the adjacent wetland should be taken into consideration in terms of access from the school.
- 2.6 The site study should focus on planning flexibility, multiple pick-up and drop-off points to separate bus and car traffic, lines of sight, safety, sidewalk layouts.
- 2.7 This study could potentially become part of a joint agreement between the school district and the fire department.
- 2.8 A site analysis should be included as part of the study to identify existing conditions, constraints, traffic flows, setbacks, etc. Mahlum will provide TCA with examples of site analyses for school projects.
- 2.9 TCA will develop several site concepts over the next week and coordinate with Mahlum.
- 3.0 A meeting will be arranged by TCA with the fire department to discuss the site concepts.



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MEETING MINUTES

Notes by: Myles Huddart

Date: 3/19/04

Project: Kirkland Finn Hill Station Site Study

Meeting: Site Concepts

Time: 2:30 A.M.

No.	Name	Company / Organization
1.	Brian Harris	TCA
2.	Myles Huddart	TCA
3.	Mitch Kent	MA
4.	Forrest Miller	LWSD

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Site Options:

- 1.0 Option #1: It would be very beneficial to locate the fire station to oversee the track & field area, which is very dark in the evenings. Bus and car separation is good. Perhaps a firelane could be established between the fire station and the track for easier access by the school district maintenance staff.
- 1.1 Option #2: The fire station is too close to the school. Although the close proximity could benefit the fire department in emergency situations, LWSD schools are not considered Red Cross shelters. Phasing is not as issue with this scheme, and the close proximity may allow sharing of a storm water management system. It is unlikely that this will occur due to the disparate construction timelines.
- 1.2 Option #3: The fire station location overlaps the existing school location, This location may be available if the fire department is willing to wait as much as 5-10 years to build. This scheme has too many curb cuts.
- 1.3 Option #4: Not a good scheme. Too disruptive.
- 1.4 Option #5: Visual access to fields is limited. The new school building would obstruct observation of the fields. The school building is too stretched out. The classroom wing has good day lighting possibilities. There is fair visibility of the fields from the station.

- 1.5 Option #6: There is no staff parking close to the classrooms. Combining bus access with staff parking could solve this problem. There is typically no conflict with bus traffic and staff car traffic.

Basic Needs (LWSD):

- 1.6 Vehicle and pedestrian circulation patterns are important
Keep bus and car traffic separated
Keep staff and parent parking separated
Provide efficient after-hours/event parking
Provide pedestrian access that doesn't conflict with vehicle circulation
- 1.7 LWSSD has yet to determine if the existing school will be modernized or replaced. The future school would be approximately 120,000 square feet, preferably all on one floor, serving approximately 900 students with 70 staff.
- 1.8 The school district will view Options 1 & 6 equally and would probably do a hybrid of the two. Forrest Miller will show these to the Superintendent. They will want to maintain the option to install curb cuts wherever they are needed for the school. The fire department should not count on having no curb cuts for the school on 132nd, as shown in Option #1.

Sharing Opportunities:

- 1.9 LWSD schools are considered part of the public. The fire department could be a great asset to the school in terms of mentoring, career education, and emergency planning.
- 2.0 Perhaps a public restroom associated with the fire station could be incorporated, serving the athletic fields on the site.
- 2.1 LWSD is open to the fire department's use of the track and gymnasium.
- 2.2 There is the potential for the fire department to provide CPR and first aid training to the school.
- 2.3 Grounds maintenance equipment storage will not be on site.
- 2.4 An access road from the station into the school property for emergency response would be beneficial.

Report:

- 2.5 The level of detail and information on the Site Options is sufficient for the report. TCA will send a draft of the text narrative for the report to Forrest Miller for his review next week. A public safety meeting will occur on April 1. The final report will be presented then.

Appendix C – The New Finn Hill Station Proposal

THE NEW FINN HILL STATION PROPOSAL

STATION CONSOLIDATION

The staffing of any fire station is based upon a cost-benefit analysis that every fire department must consider when looking to provide emergency services.

Station 25 is currently staffed by 3 career firefighters, 24 hours a day, with a fire engine and aid car. Station 24 is staffed from 0700-1900 hours, with a 2 person career crew and an aid car and an air unit (a support unit for fire calls). Station 24's crew consists of 2 career firefighters that are paid OT for these 12 hours, and are not based at Station 24. Station 24 is staffed for most of the night hours by a 3 person crew of reserve firefighters.

The reason for considering the consolidation of Station 24 and Station 25 into The New Finn Hill Station is due to the very low call volume of these two stations, versus the cost of operating both of these stations.

Figure 1 shows the call volume that is generated in the "first in" geographic area of Stations 24 and 25. These are calls that originated in the geographic fire demand zones of these two stations.

Figure 1 – Finn Hill Area and Station Summary

Calls by Fire Demand Zone (All of Finn Hill)			
Year	ST 24 Area	ST 25 Area	Combined ST 24 and ST 25
1998	378	270	648
1999	381	271	652
2000	345	255	600
2001	250	227	477
2002	311	308	619
2003*	292	272	563
2004*	300	279	578
2005*	308	287	594
2006*	317	295	611
2007*	325	303	628
2008*	334	312	645

2003* numbers are projected from calls through September 1st, 2003.
2004-2008* numbers are projected based on the department average increase of 2.75% per year, over the last 5 years.

The projected number of calls for this area five years from now is 645 calls in 2008. These numbers are based on a 2.75% percent increase per year. This percent increase was the average increase for all calls in the Kirkland Fire Department over the last 5 years.

2002 STATISTICS

The current combined total call volume of these two stations is significantly less than that of any of the other fire station. These are the calls that they responded to inside and outside of their area. See the charts below for details.

Below are the 2002 statistics for all calls that each station responded to.

Figure 2 – Actual Station Responses

ACTUAL STATION RESPONSES							
(note- multiple stations can respond to a single call)							
	21	22	24	25	26	27	ALL
AID	1161	1084	216	339	568	1428	4796
ENG./TRUCK/Air Unit	63	832	105	323	845	694	2862
TOTAL	1224	1916	321	662	1413	2122	7658

If we combine the total actual responses for both Station 24 and Station 25 for 2002, we get a total of 983 calls. This is only 80% of the calls of our next slowest station, which is Station 21.

Figure 3 – Actual Station Responses

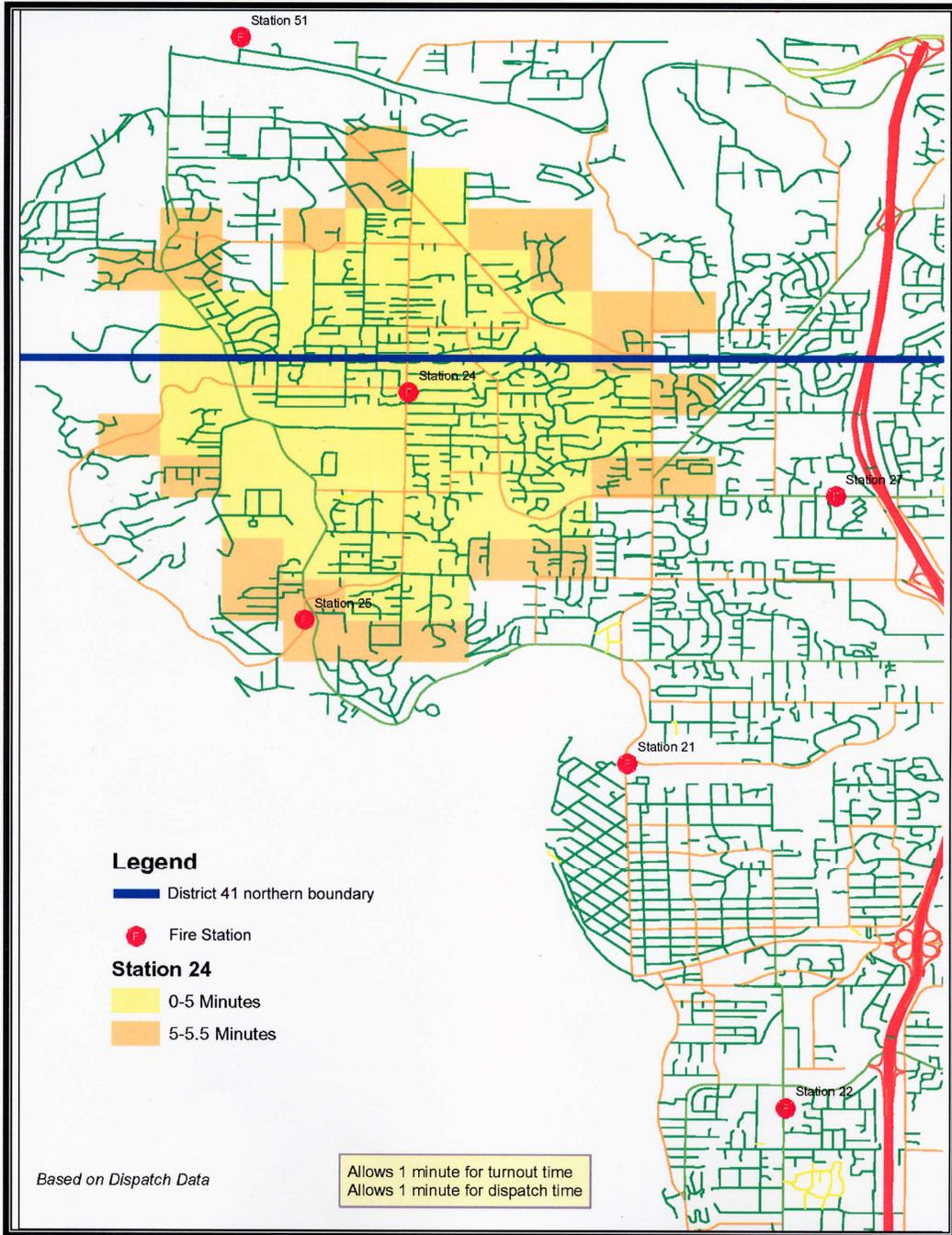
ACTUAL STATION RESPONSES for 2002			
(multiple stations can respond to a call)			
	Station 21 (our slowest station, excluding 24 and 25. Usually only an aid car here)	Station 26 (Our slowest station with a full time fire response vehicle)	24 and 25 Combined (25 runs an Engine and Aid Car, 24 runs an Air Unit and Aid Car)
AID	1161	568	555
ENG./TRUCK/Air Unit	63	845	428
TOTAL	1224	1413	983

Note that Station 21 currently only runs an aid car about 2/3 of the time, which reduces the amount of fire calls that they run compared to a regular station.

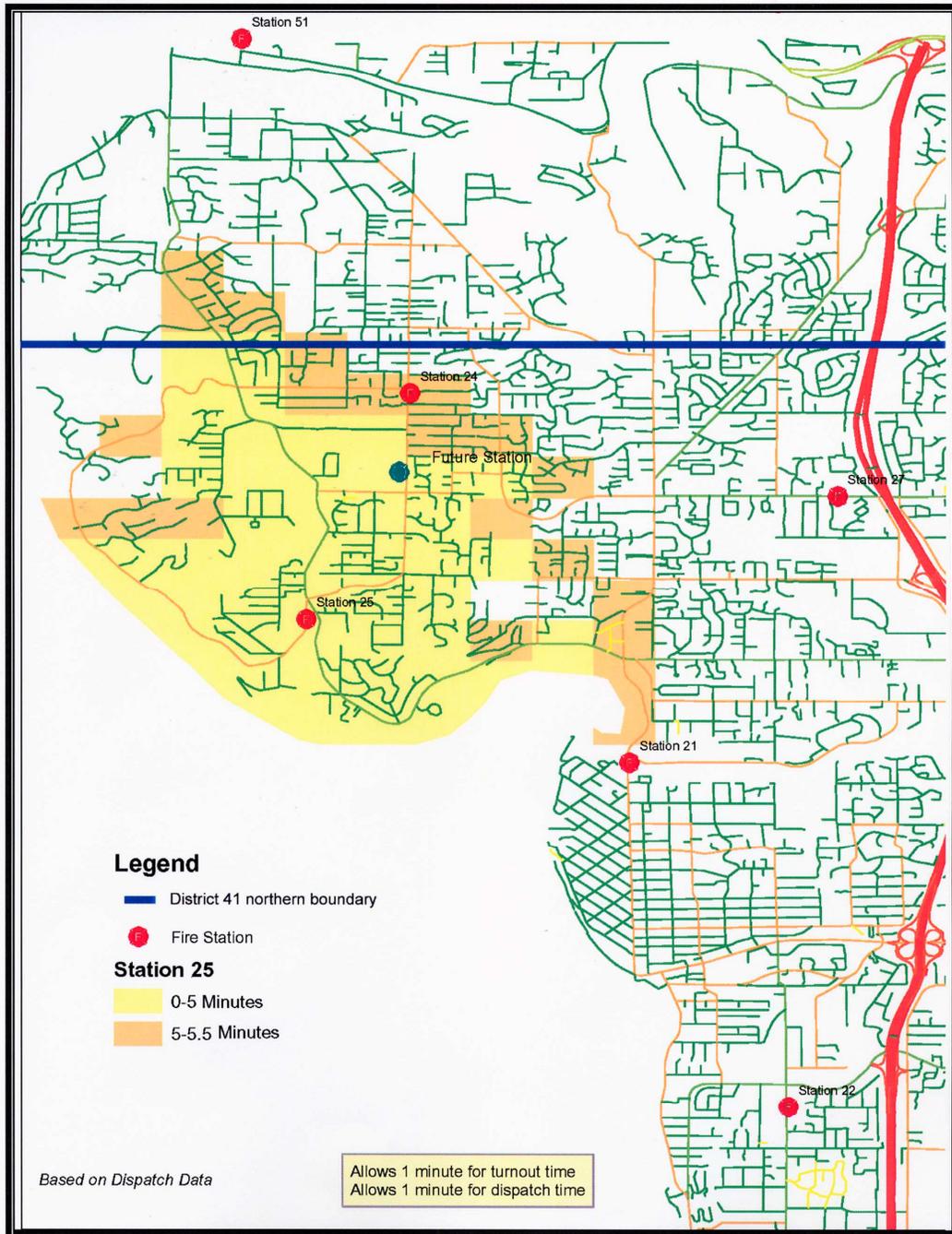
As we can see, the current combined call volume of both Station 24 and Station 25 was only 80% of the call volume of our next slowest station which is Station 21 (primarily only an aid car station). Station 24 and Station 25 combined run less than 70% of the calls of our next slowest "fire response" station which is Station 26.

Both Station 27 and Station 22 each run about twice the amount of calls as the combined total of Station 24 and Station 25.

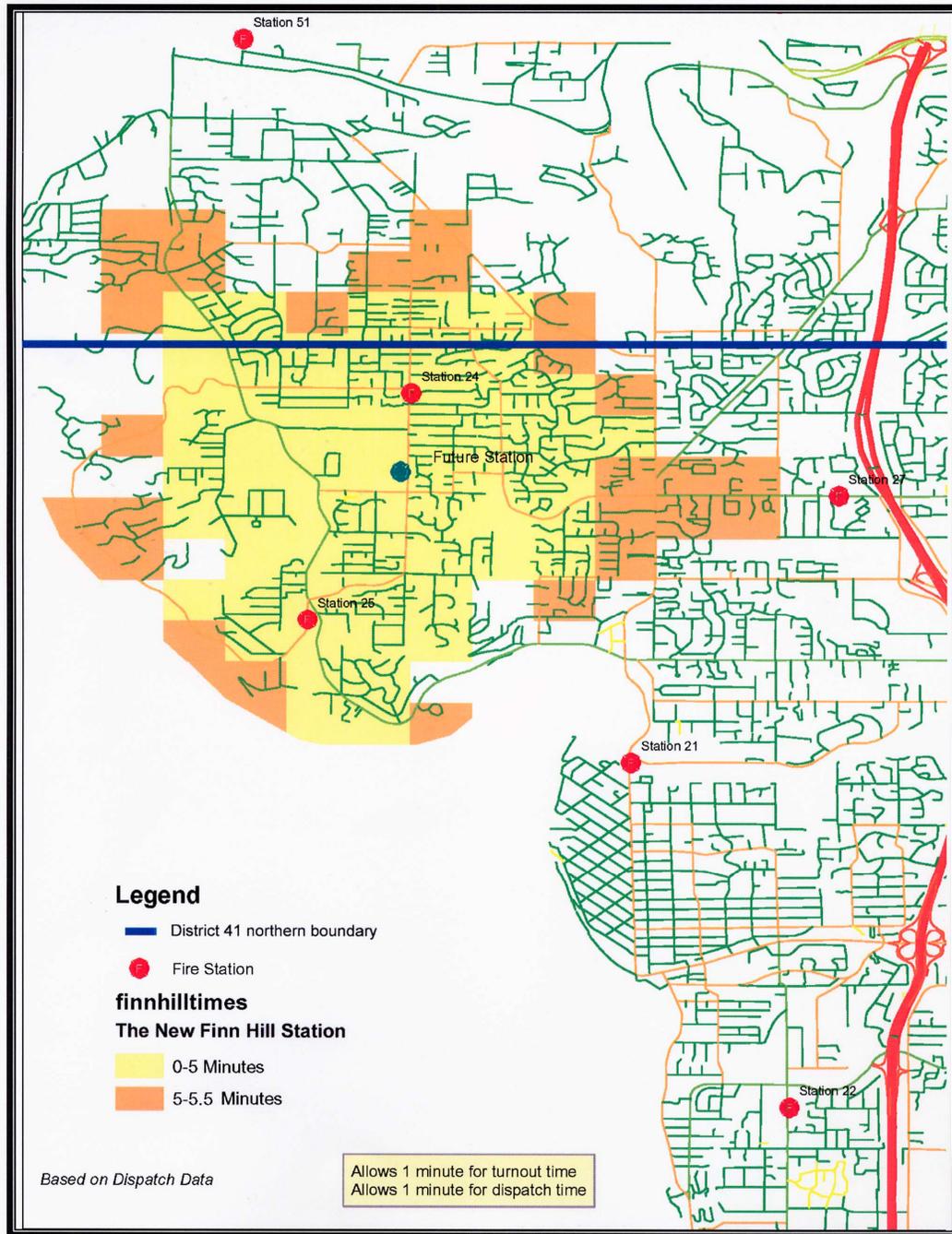
THE NEW FINN HILL STATION PROPOSAL

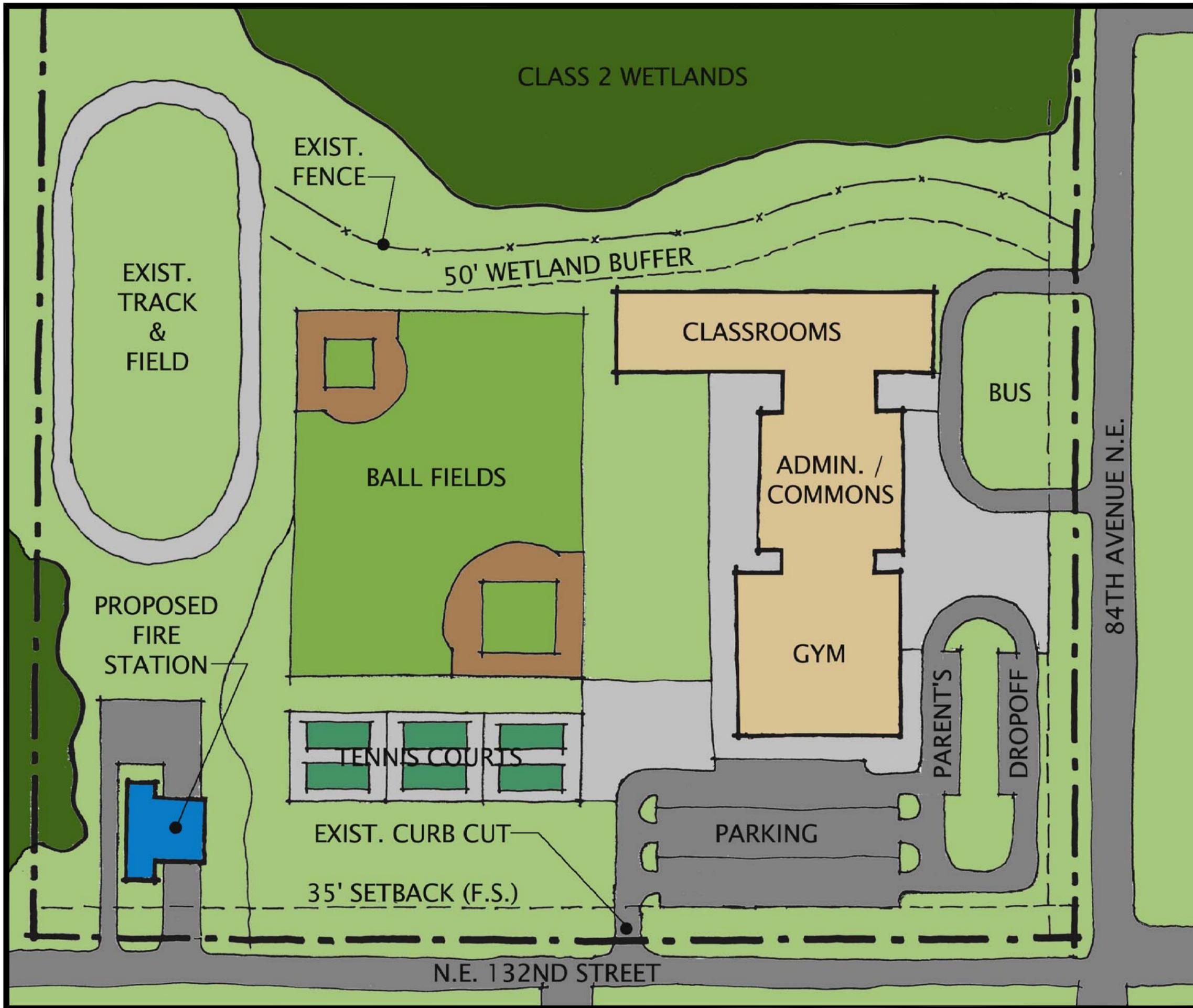


THE NEW FINN HILL STATION PROPOSAL



THE NEW FINN HILL STATION PROPOSAL



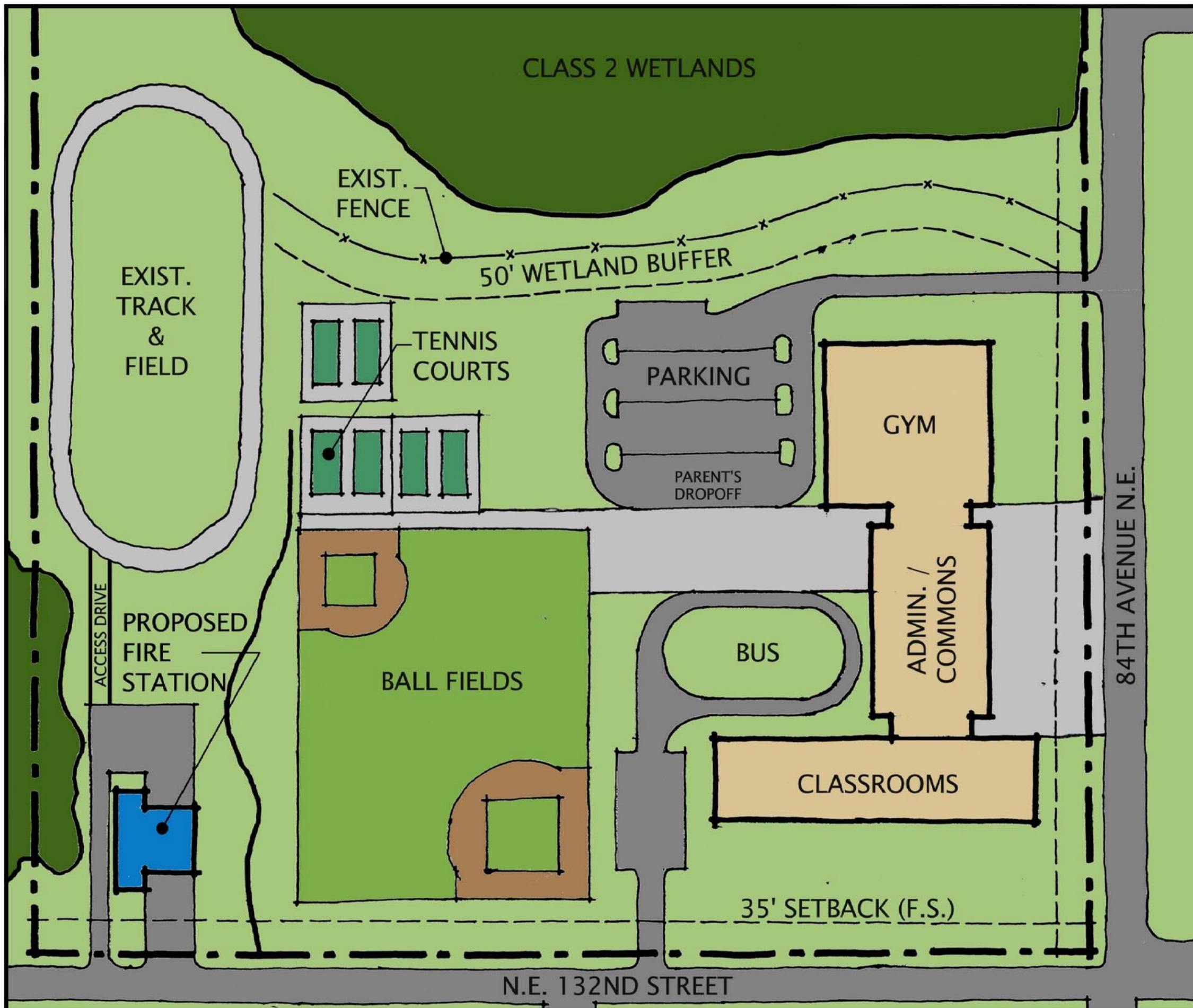


City of Kirkland
 NEW FINN HILL STATION
 Site Feasibility Study



Concept #1

1" = 120'

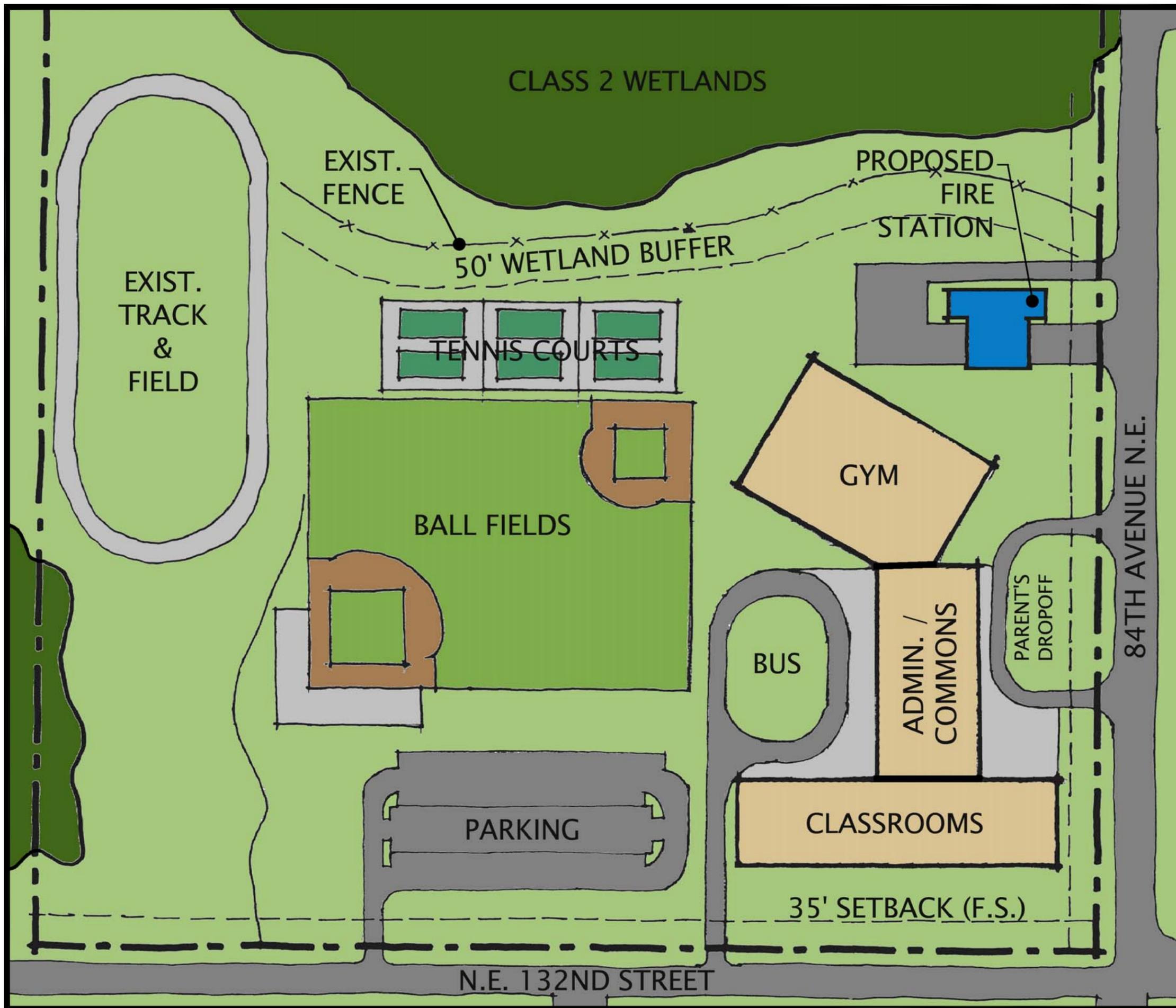


City of Kirkland
 NEW FINN HILL STATION
 Site Feasibility Study



Concept #1A

1" = 120'

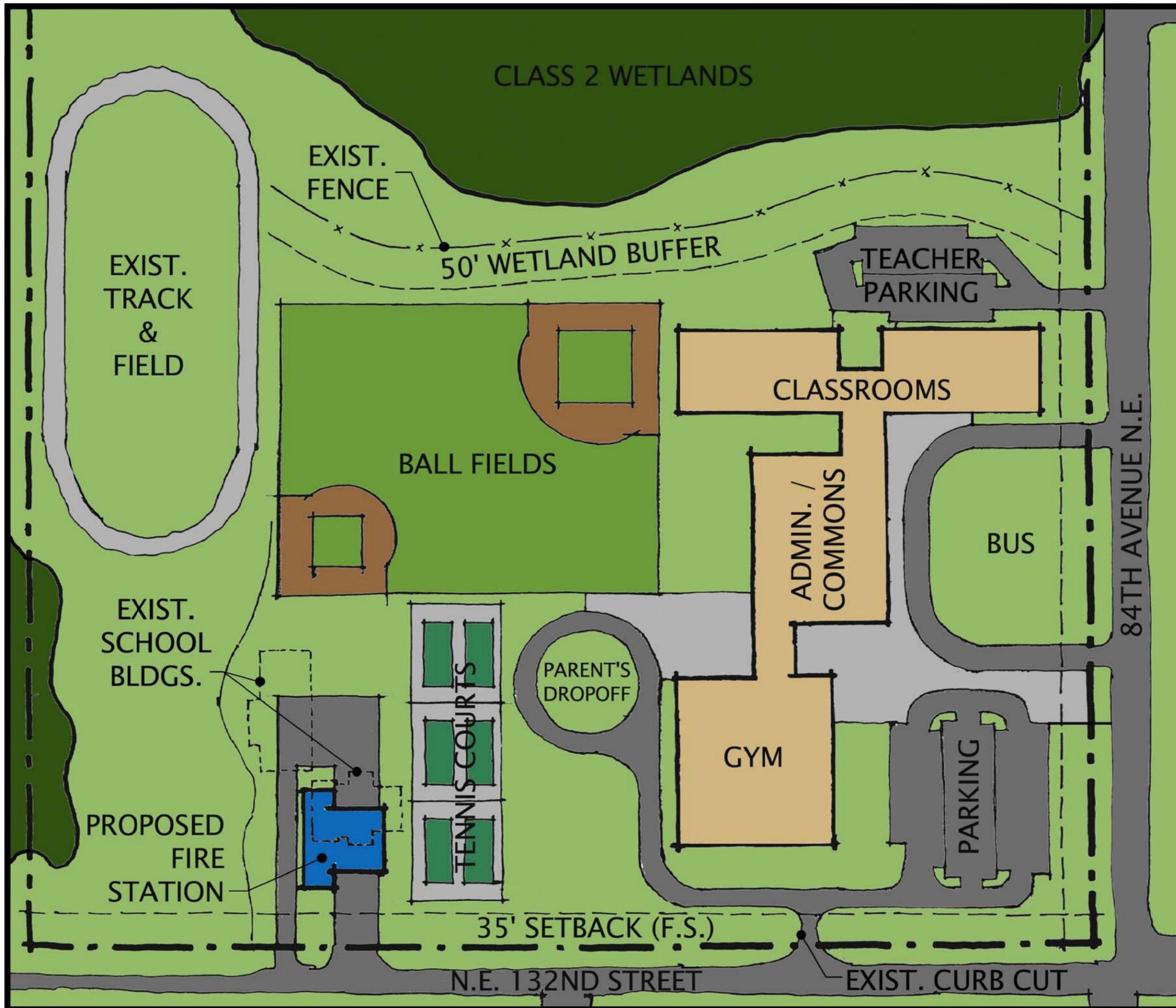


City of Kirkland
 NEW FINN HILL STATION
 Site Feasibility Study



Concept #2

1" = 120'



City of Kirkland
 NEW FINN HILL STATION
 Site Feasibility Study



Concept #3

1" = 120'

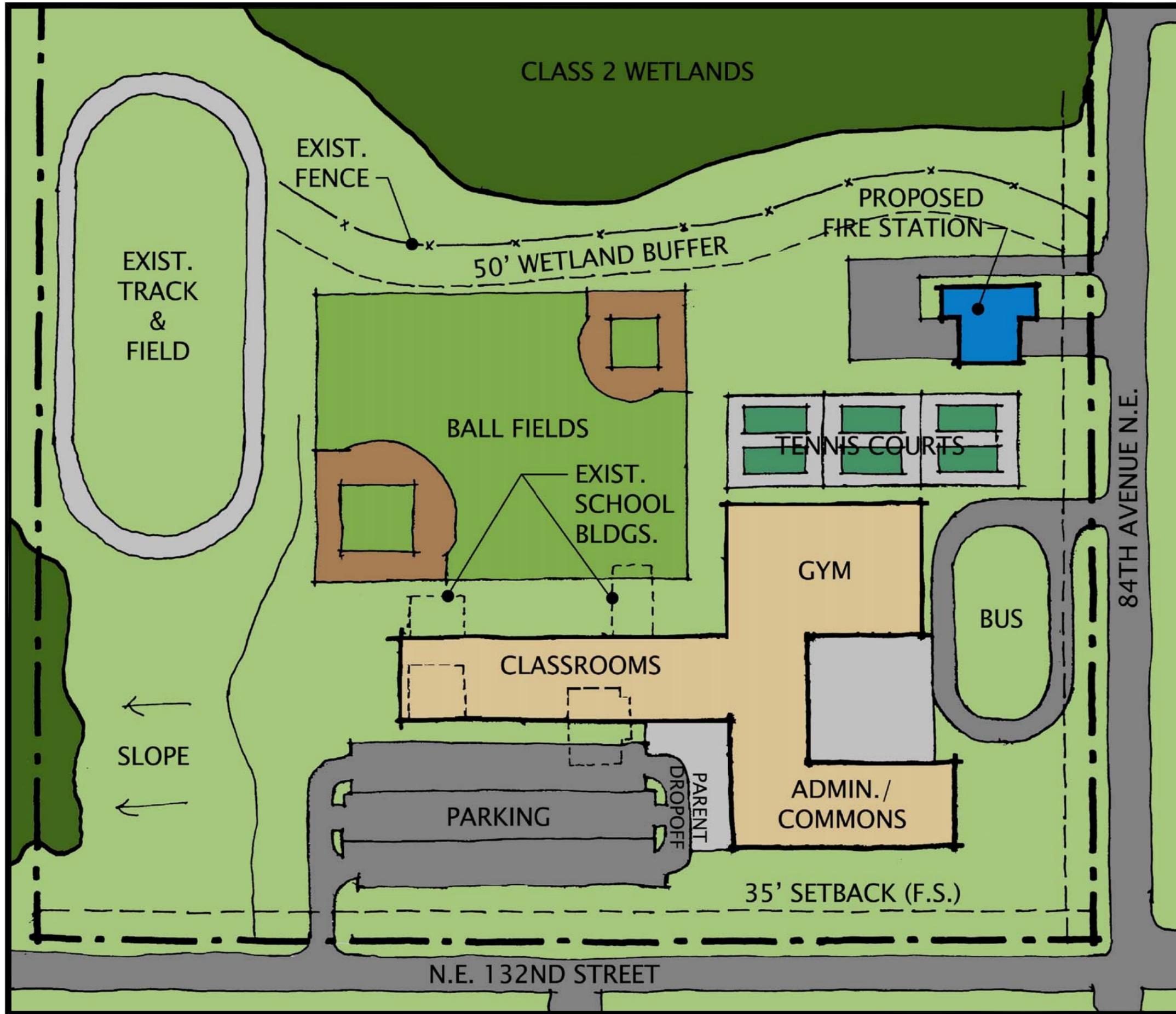


City of Kirkland
 NEW FINN HILL STATION
 Site Feasibility Study



Concept #4

1" = 120'

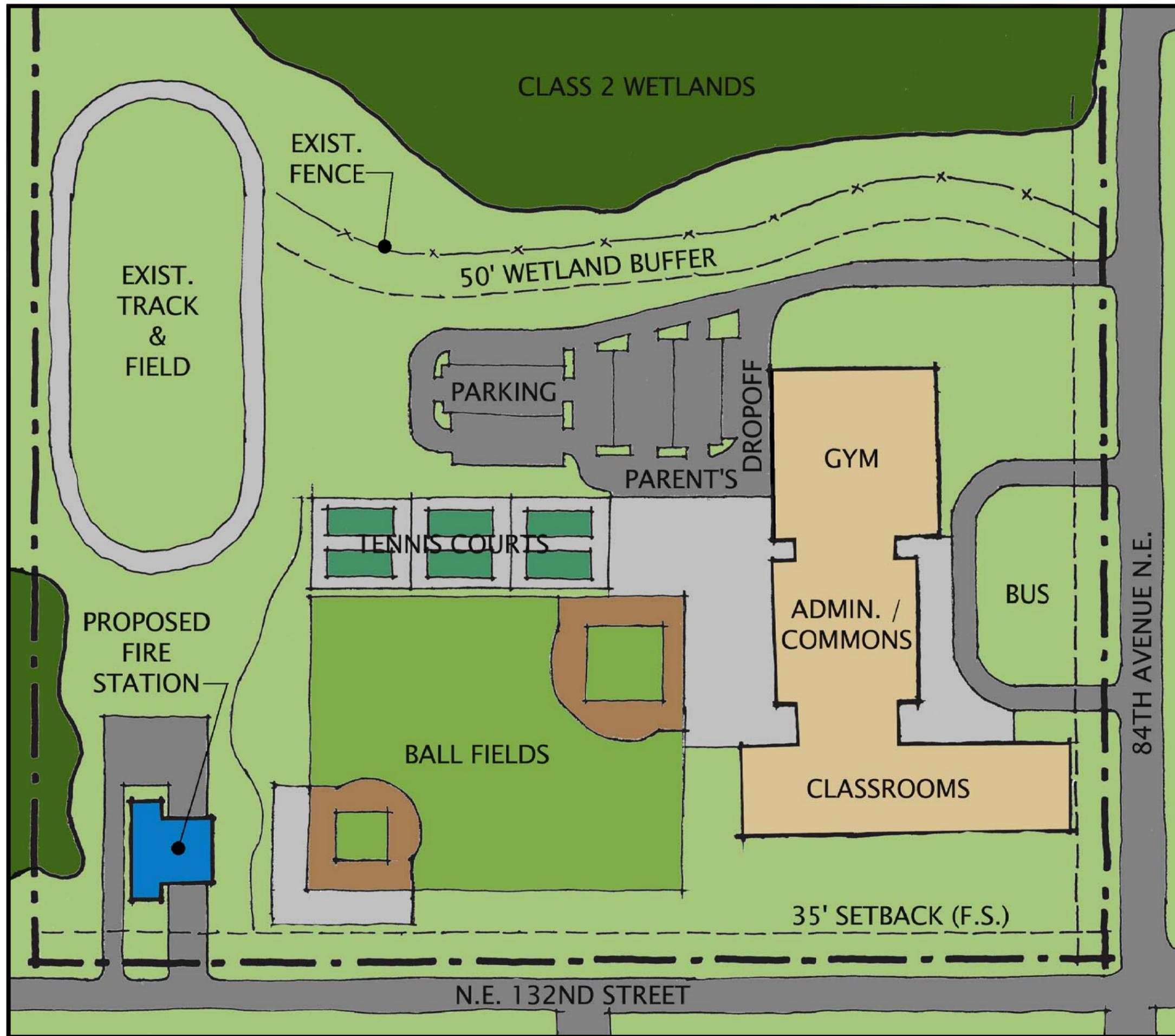


City of Kirkland
 NEW FINN HILL STATION
 Site Feasibility Study



Concept #5

1" = 120'



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 NEW FINN HILL STATION
 Site Feasibility Study



Concept #6

1" = 120'