



Planning Commission
Regular Meeting
Thursday, March 23, 2017
6:00 – 8:30 PM
Council Chamber
280 Madison Ave N
Bainbridge Island, WA 98110

AGENDA

- 6:00 PM** **CALL TO ORDER**
Call to Order, Agenda Review, Conflict Disclosure
- 6:05 PM** **REVIEW AND APPROVAL OF MINUTES**
March 9, 2017
- 6:10 PM** **PUBLIC COMMENT**
Accept public comment on off agenda items
- 6:15 PM** **INTRODUCTION TO CRITICAL AREAS ORDINANCE**
Christy Carr, Senior Planner
- 6:45 PM** **MADRONA SCHOOL ([PLN 18970B SPR/CUP](#))**
SITE PLAN & DESIGN REVIEW/CONDITIONAL USE PERMIT
Recommendation
Project Manager: Joshua Machen
- 8:25 PM** **NEW/OLD BUSINESS**
- 8:30 PM** **ADJOURN**

*****TIMES ARE ESTIMATES*****

Public comment time at meeting may be limited to allow time for Commissioners to deliberate. To provide additional comment to the City outside of this meeting, e-mail us at pcd@bainbridgewa.gov or write us at Planning and Community Development, 280 Madison Avenue, Bainbridge Island, WA 98110.

**For special accommodations, please contact Jane Rasely, Planning & Community Development
206-780-3758 or at jrasely@bainbridgewa.gov**

CALL TO ORDER – Call to Order, Agenda Review, Conflict Disclosure
REVIEW AND APPROVAL OF MINUTES - January 12, 2017 and February 9, 2017
PUBLIC COMMENT – Accept public comment on off agenda items
NICKUM OPEN SPACE TAX CLASSIFICATION – Public Hearing
CARLSON OPEN SPACE TAX CLASSIFICATION – Public Hearing
BAINBRIDGE LANDING – Site Plan and Design Review/Subdivision
MADRONA SCHOOL – Site Plan and Design Review/Conditional Use Permit
NEW/OLD BUSINESS
ADJOURN

CALL TO ORDER – Call to Order, Agenda Review, Conflict Disclosure

Chair J. Mack Pearl called the meeting to order at 6:00 PM. Planning Commissioners in attendance were Michael Lewars, Maradel Gale, Jon Quitslund, William Chester and Lisa Macchio. Michael Killion was absent and excused. City Staff present were Planning Director Gary Christensen, Planning Manager Josh Machen, Senior Planners Jennifer Sutton and Heather Wright and Administrative Specialist Lara Lant who monitored recording and prepared minutes.

The agenda was reviewed. There were not any conflicts disclosed.

REVIEW AND APPROVAL OF MINUTES - January 21, 2016

Motion: I move to approve the minutes as distributed of January 12th and February 9th, 2017.

Gale/Quitslund: Passed Unanimously 6-0.

PUBLIC COMMENT – Accept public comment on off agenda items

None.

NICKUM OPEN SPACE TAX CLASSIFICATION – Public Hearing

Senior Planner Jennifer Sutton began the Open Space Classification Public Hearing with a description of the Nickum's property and a statement about the process. The Nickums own a 5.88 acre parcel and have applied to reclassify 4.15 acres of it to Open Space Land. A good portion of the property is taken up by Springbrook Creek and associated wetlands. Springbrook Creek is a fish bearing stream. This property is a good candidate for Open Space Land classification as it is adjacent to other properties already designated as Open Space Land. It would contribute to a larger, ecosystem protected corridor surrounding Springbrook Creek. The Planning Commission is a recommending body to both the City Council and the County Commissioners who will make a decision on this project at a separate meeting. Commissioner Quitslund asked if the city had an Open Space Plan that mapped these spaces and looked at perspective candidates for future Open Space classification. Planner Sutton said the city doesn't

look at perspective candidates under the tax program and perhaps that could be a feature of the city's outreach in the future. Commissioner Quitslund stated he would like more progress with Land Trust planning. Chair Pearl asked if this was a permanent classification? Planner Sutton said it was permanent unless the property owner removed it from the classification and paid the tax penalty. Commissioner Macchio said the property fit the criteria that was provided in State law and thanked both the Nickums and the Carlsons for putting their properties into Open Space designations.

Mr Nickum said they wished they had done this sooner. They had known about the process for years but only now got around to applying for the Open Space Classification. Commissioner Quitslund said there was a discrepancy in the record which mentioned one house but there were really two - a house and an additional dwelling unit.

Motion: I move we recommend approval of the Open Space Application for the Nickum Open Space property, PLN50744OS.
Gale/Lewars: Passed Unanimously.

CARLSON OPEN SPACE TAX CLASSIFICATION – Public Hearing

Jennifer Sutton introduced the Carlson properties as three properties located south of Arrow Point Drive, adjacent to the Forest to Sky Trail. The northern property was undeveloped, the southern two were classified as Timberland Open Space and all three will be reclassified as Open Space. Mr Carlson entered into an agreement with the Park District and the Land Trust and a public trail had been constructed which connected the Grand Forest to Battle Point Park. Commissioner Quitslund said title to the land was retained by the Carlson but Land Trust easement governs the uses of it. Planner Sutton agreed this was true.

Commissioner Pearl asked for public comment. There was none. Commissioner Pearl asked if city staff recommended this reclassification and Planner Sutton said yes.

Commissioner Lewars asked what the point of the reclassification was, since taxes decreased on one property but increased on the two others. Mr Carlson said he couldn't leave the property classified as Timberland Open Space because he eliminated harvesting with a conservation easement. Though taxes will increase, he's reclassifying the property because Kitsap County indicated they would fine him for having property in the Timberland Open Space classification that wasn't harvestable. Commissioner Quitslund asked Mr Carlson if development rights were transferrable or extinguished and Mr Carlson replied they were extinguished. Mr Carlson said historically there were fish up to Arrow Point until an improper culvert was placed on Arrow Point Drive. Anything the city could do to remedy this situation they would appreciate. Commissioner Gale wanted to know what the city could do to remedy the improper culvert.

Planner Sutton replied she noted it and would contact the Public Works Department about it. Commissioner Macchio thanked Mr Carlson.

Motion: I move that we recommend approval of application PLN50745OS.
Lewars/Quitslund: Passed Unanimously.

**BAINBRIDGE LANDING (PLN 50520 SPR/SUB) SITE PLAN AND DESIGN
REVIEW/SUBDIVISION - Recommendation**

Chair J. Mack Pearl stated this had been a difficult project for the Planning Commissioners to get their arms around. It was a large project and this was the first time they had formally seen it. He said it seemed they were expected to approve it without really reviewing it which was not the correct thing to do. Chair Pearl noted they were not going to make a recommendation tonight but listen to the applicant describe the project and listen to public comment. After the Planning Commissioners receive the staff report and conditions they will review it again. They will talk about it in a public hearing, listen to public comment and have a discussion themselves. And if there is a need to make the public hearing open, they will do that.

Planner Heather Wright thanked the Planning Commission Chair for expressing that concern. She said they had a major issues memo they'd like to proceed with. She requested the Planning Commission come back next Thursday, March 16th if possible to make the city's timeline for required application review. Chair Pearl said there was a one-hundred day period before the application goes before the Hearing Examiner and it would be appropriate for the Planning Commission to review the application earlier in the process. He stated it was not fair to the Planning Commissioners to have only one week to review it. They had reservations about the process but would try to review it as requested. Commissioner Lewars said the small amount of project information the Planning Commission was supplied for review, especially in a compressed time, was unlike anything he had seen before.

Planner Wright presented a slide show about Major Issues and Specific Aspects of Bainbridge Landing, as required by the municipal code. These issues and aspects were identified after review by the Planning Director, the project had been reviewed by the Design Review Board and opened to two public comment periods due to modification of the plan. It was scheduled for Hearing. The proposed project was just to the north of Harbor Square on a 4.86 acre site. It would be developed with 140 residential units comprised of 18 townhomes, 7 lofts, and a 115 unit apartment building. Part of the project scope included removal and relocation of the historic house on the property and the applicant has proposed a 1 acre park to be located east of the project site abutting Ferncliff Avenue. This park was being proposed to acquire a floor area ratio bonus. In addition to the site plan review, the applicant was proposing to subdivide the property into 27 lots to include 25 single family homes, 1 multi-family home and a 1 acre park. This was a Tier One project under the HDDP program and will be considered a LEED community. In accordance with Tier One projects, they are required to restrict home size to no greater than 1600

square feet, receive 5 points within the housing diversity category and receive a minimum of 16 points in innovative site design.

Architect Charles Wenzlau gave a slide presentation of the proposal. Olympic Property Group was the project developer, the company that originally owned and founded Port Gamble and the Pope and Talbot Company. They had deep roots in Kitsap County. The site had been in the ownership of the Cave Family since about 1890. The Harbor Square development property was also owned by the same family. In addition to required public meetings, Olympic Property Group had a series of 8 meetings held over the last year, starting before the project was designed and meeting in cycles to keep neighbors informed of what they were doing. This outreach has been successful. The developers want to realize a neighborhood that becomes part of the community. Additional public features include a community space in the northeast corner of the development which will be a significant connection point in the neighborhood. The park has been created by a Cave family member who contributed 1 acre. The historic house that sits in the park will be relocated and preserved just north of the project site. Sustainability goals are characterized as a transit-oriented development where there is opportunity to reduce vehicle usage including extensive bike facilities with bike storage in the main entry lobby. There will be both ownership and rental properties to encourage multi-generational residents. The entire project complies with LEED certification.

The site would be served by two public roads. The north access lane would be a two-way public street through the site. The access lane on the south closest to Harbor Square would be one-way, moving from Ferncliff Ave towards Cave Avenue, to the primary access to parking underneath the apartment building. Chair Pearl asked if this parking would exit onto Cave Avenue. Charles Wenzlau replied that parking associated with the apartment building would exit on the south access lane onto Cave Avenue. This design was done in coordination with the city's Public Works Department and they were following their recommendation. Charles Wenzlau stated they were required to have access on all four sides of the apartment building. The access on the south side of the apartment building was similar to Harbor Square's design. It had about 30 feet of grade drop from the high corner on Ferncliff Avenue to the low corner at Cave Avenue. The logical place to avoid big ramps was to enter as that parking garage emerged out of grade. The rest of the building was set below grade. The townhouses were set up as fee simple, for sale homes. Olympic Property Group was subdividing the property, so they could sell those as single family homes. The reason for HDDP was so they had the right to subdivide within the mixed-use town center. Pedestrian facilities, including through the park and courtyard would be open to the public. The loading area was located on the north access lane. They planned ahead for residents moving into the apartment building. The trash for the apartment building would be kept inside the parking garage until the day of pickup and then brought up to the access lane. The site was set up so garbage trucks would not be backing out. Residential parking was under the buildings. Almost 30 on-street parking space would meet guest parking needs in the neighborhood. These spaces would be public. Chair Pearl asked if they had considered ferry

commuters using those spaces and Charlie Wenzlau replied that that the City of Bainbridge Island would regulate that.

Commissioner Macchio asked what the tallest height of the building structures were and Charlie Wenzlau replied the site was unique to downtown with specific standards set up. The buildings had a wedding cake design starting at 45 feet and stairstepping down to the neighborhood to the north. Charlie Wenzlau said they went to the Design Review Board and their main discussion was focused on exterior materials. The consensus of the Design Review Board was they liked the warm natural colors. Commissioner Gale asked what else in their process needed to be refined. He said the exterior material selection needed to be finalized and they would try to use a variety of materials to break down the scale of the building to differentiate them as much as they could. Commissioner Gale asked if solar panels would be installed on the townhouses. Charles Wenzlau replied yes, the entire project would be pv ready but they wouldn't put panels on the townhouses. They hoped to put photovoltaic on the roof. Commissioner Quitslund asked about the size of the units. Charles Wenzlau replied that the larger ones were 1600 square feet, the units on Gilmore Lane were 1400 square feet and the lofts were under 1000 square feet. The materials would be stained wood, dark cedar and core ten.

Charlie Wenzlau stated Gilmore Lane had migrated over the years and was not where it was originally located. It was an encroachment onto the project. Olympic Property Group was discussing with residents the idea of abandoning the western segment. They would then fully landscape it. Commissioner Pearl asked if this was encroachment or were they claiming adverse possession. Charles Wenzlau replied it was a more a matter of would it stay or would it move. Commision Pearl said if they were claiming the road, it would change their change setbacks.

Commissioner Macchio asked what their ideas were concerning environmentally friendly features outside the building. Charles Wenzlau said covered parking made a huge difference and was big investment to help protect the environment. He also said the soils didn't infiltrated well and they would be doing water quality treatment on site then a direct discharge to salt water. There would be no on site detention tanks because they were in proximity to Eagle Harbor. Within the building, all fixtures would be low water use and would have sub meters within the buildings to monitor energy use. Commission Macchio then asked about densified small units and elements that people like when they're living so closely, such as a community pea patch. Charles Wenzlau said they looked at rooftop gardening and there was potential for a community pea patch in the park. Commissioner Macchio asked if they would take out units to put the garden in their project and not give it to the park? Charles Wenzlau said a garden was best realized on the rooftop or part of the park space. Chair Pearl asked about the structure of the land, how the 1 acre park related to the density of the buildings and the tree count. Charles Wenzlau stated that they don't regulate by density but by floor area ration (FAR) in the mixed use town centers. The code provided a public amenities bonus where you can receive up to 70 percent of your bonus FAR through a one acre park. They would receive about 80,000 square

feet less than what the maximum bonus would be through the FAR bonus provision.

Commissioner Pearl asked if the park's function was just for a density bonus because it didn't take care of setbacks or open space requirements. Charles Wenzlau said the park was part of the original site and being dedicated as a park. Chair Pearl asked about the buffers around the park as he didn't see any. Charles Wenzlau replied he wasn't familiar with that rule. Chair Pearl said there was a 25 foot buffer around parkland and Charlie Wenzlau replied the 25 foot buffer came out of transition standards and right of way standards. Charles Wenzlau said they hoped the depth of the park would satisfy the screening requirement. They were preserving many of the trees in the park and the location of the park was based on the wishes of the donator of the property. The developers would be getting a financial benefit of not purchasing FARs from the city. Planner Heather Wright confirmed the park was part of the project. Chair Pearl asked if the park was part of the development then why were they giving it to the Parks to develop. Charles Wenzlau said they would give the Park District a "finished park" and the Park District could furnish it further if they chose. Chair Pearl said if they gave the park away then the development would no longer front the street. Charles Wenzlau said there were too many liability issues to maintain it as a private park. Jon Rose of Olympic Property Group stated the park would be for passive recreation. Chair Pearl asked if construction would happen on park land and Jon Rose said yes. Chair Pearl said he would like the park not touched during construction and Jon Rose said there was a lot of earth being moved for the parking garage and the park site may be used for soil storage. Jon Rose clarified the Gilmore way status: They own it but people who use it have rights of necessity, which is a permanent easement. Commissioner Lewars said this project was an opportunity to create some affordable housing. Charles Wenzlau replied that there was no requirement in the code for affordable housing, under HDDP. Jon Rose said this project would introduce more housing affordability than any other island project. Commissioner Gale asked how many parking spaces there were per apartment units and Jon Rose said there was 1 stall per unit and extra for guests. She also asked about access roads and traffic calming measures. Charles Wenzlau stated that the roads were designed to reduce traffic issues and they would be introducing speed tables to the project. Because the roads were public, they could not put No Through Access signage to prevent pass through traffic. Commissioner Gale also wanted to confirm that vehicle lights wouldn't impact neighbors at Harbor Square. Charles Wenzlau said they addressed that issue with landscape buffers and no on street parking.

Commissioner Chester asked if Gilmore Lane was in the buffer and Jon Rose replied they were working with the neighbors to shut down a portion of Gilmore Lane. Chair Pearl said they didn't really know where the property line was until this issue was resolved. Planner Heather Wright said for Cave Avenue, this project had a very specific buffer and believed the property lines were correct. Commissioner Chester stated they have a 25 foot buffer from property line and it so happens that Gilmore Lane happens to be in the buffer but that the road has never existed officially...and now it's in the buffer. Charles Wenzlau said where Gilmore Lane should be is full of mature trees. There was no motivation to push back the road. Commissioner Gale asked why they didn't use Gilmore Lane for access and Jon Rose said residents had the Right of

Necessity and still couldn't take the road. There was discussion whether to open the meeting to public comment and the decision was made to allow it.

Public Comment:

Mark Epstein, Citizen – He lives at Harbor Square and stated there were positive things about the plan but was concerned about the buffer between the Bainbridge Landing and Harbor Square. He wanted the landscape buffer to be increased as much as possible. It would be a benefit to both benefit to developments.

Dave Ward, Citizen– He lives on Cave Avenue directly across from the proposed development. He complimented Jon Rose on engaging the neighborhood on this project. He did have a concern about how the city executed the traffic study. Cave Ave is a dead end road that ends close to highway 305. Traffic is challenging and there are long delays getting in and out of Cave Avenue as the ferry is loading and offloading. The two problems with the study were they used 2014 data which didn't include the Tawresy development on Cave Avenue– those 8 units were not part of the traffic study. The second problem was the time of afternoon data collection. The afternoon collection time was from 4-6 pm which stopped 5 minutes short of the offloading 5:30 Seattle ferry and an hour short of the 6:20 offloading ferry – the 2 biggest ferry runs. It gave a false traffic picture. He hoped a 5-7 pm collection window would be used in a revised study. Finally, the 140 unit development, which he was not trying to stop, is only one of 3 developments happening on Cave Avenue. If we keep looking at traffic in tiny bites we never see it as a whole. The city has limited options dealing with a failed intersection (see attached letter referencing concurrency requirements of Growth Management Act.) Please consider the traffic study be revised.

Chair Gale asked what he hoped the outcome of the revised traffic study would be. He replied that looking at capacity of transportation was an element that should be considered in approving the size of developments. He wasn't a traffic engineer but a botanist, but thought anything that could move traffic away from the Cave Avenue intersection was a good thing.

Neil Johannsen, Citizen – He lives on Cave and Gilmore. He's a retired State Park Director. He wanted to say how good it has been working with Jon Rose and Charlie Wenzlau. They've been helpful, they've engaged us. Charlie was right that there weren't a 100 people screaming at this meeting because *they've* had meetings, even in his own living room. It seemed odd that the traffic study didn't consider the 5:30 ferry. He's actually backed cars up trying to get out of Cave Avenue because he couldn't make a left turn. He thinks the traffic study deserves more examination for a development of this size and complexity. He doesn't think the city sent out a notice about this meeting, there might be more people here if they'd receive a notice. He wanted to make a point about Gilmore. It was an old dirt, gravel road. It was not an easement, it would be perhaps a prescriptive easement. The only way to perfect that would be to go to court. They

would like to close 326 feet of the west end of Gilmore. His solution would be, instead of having 3 roads across this parcel, to close Gilmore entirely and build a trail. Take that western 326 feet and take the 15 feet OPG needs as a buffer. Not fair to call something a buffer...in front of his house it's a road. He would strongly recommend closing Gilmore, at least the western end. Because access is coming off of Ferncliff, why did they need a little dirt road? It could be revegetated and could have a trail.

Linda Mallon, Citizen – She lives on Hawley Way and has for 33 years. Her home is the first home on Hawley Way and is concerned about the urban interaction of these developments. Hawley Way is under development of new homes, home renovations, ADUs. Density is on the move there. What's happening to east side of the site, it's of concern to her. There are 2 vacant lots on Hawley Way and the owners are under press to develop their properties. We find people circle around Winslow Way to Hawley to find some traffic relief. We are offset from current fire lane at Harbor Square. Alignment is an issue. She would ask that park would have activities, how are people getting there? What activities would be sanctioned? Where are people parking? How are they getting in and out? What about Portland, they have developments with zero parking. Has this been considered? Deliveries? Moving vans? UPS etc? Urban design, how does this fit in? Help! We need we need to talk about this. We need time. Please take time to consider quality of life for existing residences as well as newly developed property to accommodate new residences.

Charles Schmid, ABC

This is one of the largest urban projects the city has seen. You have to be careful. The more decision made now make things easier in the future. The staff is so busy on things, there were no decision made but mentions that the city is "thinking" or "considering" conditions instead of stating them. These things should have been in a staff report. The issue on parks is confusing to me. You must be careful. There's nothing in here written about. Donating a park has resulted in doubling density. He would forward on more comments.

Commissioner Macchio thanked everyone who commented.

Director Christensen offered some comments about where we they were in the process. He understood the interest in the scale and scope of this project. There was a lot of community interest. It was helpful to have the applicant provide information. He respected this. He heard some good comments and Q&A and felt more knowledgeable about the project. Earlier they talked about a process in the code that a Director directive be sent to the Planning Commission. The Department has done that. He suggested we allow Planner Heather Wright time to summarize details. If there were any particular details the Commissioners wanted more information on, we would work on that for you. It was a collaborative process in formulating a recommendation. The Hearing Examiner will make the final recommendation. The Design Review Board, Planning Commission and the Planning Department will have recommendations

to be considered as well as public testimony and written comment. Ultimately, it was the Hearing Examiner's decision. He asked they allow Planner Heather Wright to speak. He didn't want them to feel rushed to judgement and they wanted to get it right.

Chair Pearl replied he wasn't prepared to comment on anything tonight except he agreed the traffic study should be amended. Director Christensen asked if there were details or questions the Planning Department hadn't identified. Commissioner Gale wanted more information on stormwater details and Design Review Board minutes. She also wanted solid conditions from the Planning Department, not tentative information. Commissioner Chester said they received a thin package of information in the mail and were asked to go online for complete details. He wanted a complete printed package. He wanted city staffs' concerns and recommendations so he could do a good job. Commissioner Gale added it was difficult to get through public comments.

Planner Wright said they spoke of most things with a few exceptions. Did the Commissioners want to ask questions of the have traffic engineers. Commissioner Quitslund said there was not enough time. Chair Pearl had questions about tree removal and other things about the project. Planner Wright requested they continue next Thursday. Chair Pearl checked with the other Commissioners before confirming they would have a quorum. Planner Wright would gather materials and forward before the next meeting.

MADRONA SCHOOL – Site Plan and Design Review/Conditional Use Permit

Planning Manager Josh Machen stated the combined application goes before the Planning Commission and ultimately to the Hearing Examiner for decision because it is a conditional use permit. The Hearing is tentatively scheduled for April 12th, 2017. Madrona School has proposed construction of a new kindergarten through 8th grade private school with a maximum of 200 students and 27 staff. The 5 acre property is on North Madison Avenue and is close proximity to Windsong Loop. The proposed project includes classrooms, a gymnasium, auditorium, and offices as well as 39 parking stalls, 5 additional drop off stalls, a playfield, stormwater facilities, and an on-site septic system. There is an existing home on the site that will remain in the initial phases of construction but may be removed later.

Missy Goss, head of Madrona School said it started in 1999 with families who wanted a Waldorf education which included a holistic curriculum and play-based learning. Madrona School has grown steadily and this year serves 145 students and rents classrooms and a greenhouse from Eagle Harbor Church. The Waldorf experience is constrained at this location and they found this 5 acre property that met the criteria for their school.

John Kennedy, Madrona School's architect, presented details of the proposal. The site was in a R-1 residential neighborhood. The school would be developed in three phases. Phase One: 1st grade through 8th grade classrooms and an administrative area with offices. Phase Two: An early childhood wing with 4 classrooms. Phase Three: A gymnasium/assembly with 3 classrooms

tucked underneath. Total square footage is 26,000 square feet. The school is generally on two floors and the footprint is 15,640 square feet, which is 7.5% of lot area. The underlying zoning allows 15% but for institutional uses, it's cut in half to 7.5 %. Their goals included retaining existing trees and buffers, good solar access for pv panels and people, keeping cars near the road, using existing features and topography, not allow offsite parking, onsite queuing for pickup and dropoff and use of the field for overflow parking. Parking was proposed for 39 cars plus 5 additional stalls for pickup and dropoff. Parents would drive up, drop off children and go fairly quickly in the am. In the pm, children would be waiting outside for pickup, which would speed up traffic flow. They wanted to limit mass to no more than 2 stories, sink the building into the ground, and break up the buildings into three different parts rather than one large one. They were considering simple construction materials such as clear low-E glass, cedar, and stained wood. Pathway lighting was downward directed and buildings had downward sconces. There would be no direct light from the site.

Commissioner Quitslund asked if the parents considered carpooling and Ms Goss replied that it was part of their parking and traffic plan and would encourage it.

Mack invited public comment.

Barbara Stuart – We have lived within 500 feet of the proposed development for over 30 years and are strongly opposed granting a conditional use permit. It's nothing against the school but it is too huge and doesn't belong in a residential neighborhood. We check the zoning carefully before moving there and didn't want to be near a school because of the congestion. What's being built is not a neighborhood school but a regional school and kids from off island are being driven in. 39 parking spaces is inadequate – they have a meeting room for 400 people. She can see parents parking and dropping students off on Windsong Loop. Fire and police access will be compromised. They shouldn't have to absorb this. She asked for two conditions: that there would be permanent No Madrona Parking signs placed on Windsong Loop and the school cannot rent out the building for non-school use.

Bill Stuart – The bottom line is, the school is too big. No private campus enterprise can be that harmonious in a quiet neighborhood. Building plans call for 200 students, 27 instructors, and a caretaker. There are flex rooms and large classrooms and pre-kindergarten building in the plans. He can see the flex rooms becoming overflow classrooms. The auditorium built for 400 people might easily seat 600 people. We would want hard conditions, a cap on the number of people, if this goes ahead. If the school grows to 600 students, all the traffic plans would go out the window. He was unhappy he and his neighbors weren't notified before the meeting.

Pat Egaas – She lives a few hundred feet from proposed school lived at property since 1960. Nothing against Madrona program but this is over the top. She has written a letter for the record but she will summarize: The school does not blend into surrounding area. I urge you to vote no to conditional use permit. I read decision criteria, and this is a giant school campus squeezed onto

5 acres and not harmonious. Most of the building will be on the western half of the building where they live. It does not fit into the intended character of the vicinity. Per line 1A, it does not meet requirements. Compare the plan to building a retail business in the same place. Put yourself in my shoes and in the shoes of all my neighbors and imagine this coming to your neighborhood.

Lisa Foisy – Madrona is a great school and used to be a parent there. She lives in the Windsong neighborhood. She moved to neighborhood for characteristics of that place. It had low traffic and a rural feel. Very concerned about any of that being changed. She doesn't understand why there isn't another space in a differently zoned area. Her family made a huge commitment to being in that area. Things like staggered starts and carpooling, half the time parents can't due to other appointments. Where there are assumptions we need data to support. She videotaped the wait at the intersection of Hwy 305 and Sportsman Club Rd and it took 7 minutes to get through the lights during school time. She hoped that was addressed. She does everything she can do to avoid going through that intersection when school in session. Also, that's a lot of cars coming in. I have a hard time seeing how the solutions are going to work. She appreciates good intentions of the school, but like at Blakely, there's a drop off line and cars everywhere.

Ana Bucy - I have lived for 18 years on Windsong Loop and when she found out the school would be built here she broke down. This area has always been magical to her. Having possibly 200 students and 27 teachers, that's a lot of people going through that area. I don't know what time you used. The kids going to the high school will have to change their commutes. People from the north end will come in to the traffic area. She's not sure how valid the traffic statement is. Great idea but opposed to it being here. Historic Moran school would be a consideration. She's opposed to what's going on.

Steve Bucy – He lives and Windsong Loop and is proud of his daughter coming up from Spring Break to talk. He passed out comments from other neighbors. He cautioned them to pay attention of Directive memorandum. Question the numbers you see, there are some typos. He's up here not to disparage the school and has had opportunity to coach some Madrona kids in soccer. Concerned about traffic on site. If school goes forward, there may be a rezone the speed limit. Impacts if school is put forth. Excited to hear about the school's ride share program. He is suspect of plan being successful. He thinks traffic will head south not north, which is a problem. Stormwater is an issue.

Commissioner Pearl asked if traffic speed would change and Planner Machen replied it was a public safety issue and be up to the police department.

Bill Eckel – They moved here 3 years ago and did their homework – the neighborhood is all R-1 zoning. It's quiet. It's the place to retire. They were surprised and feel betrayed if the city approves the development because it's not harmonious with the neighborhood. Not disparagement of Waldorf system, just the school's location. He understands they're trying hard to accommodate

us. Education, communication, Encouragement of students and parents to control parking and traffic is what the school's goal is. So, five years, ten years from now, this institution is still here. We are still here. But maybe Missy Goss is gone and enforce this goal. They're basing their mitigation plan on people who aren't even here yet. How can you approve a conditional use permit based on the promise of people who aren't even there yet? Other issues include noise, the city has a noise ordinance. Playground noise level exceeds that ordinance. There is an exception in the city noise ordinance for screaming children but that just points out the school is not harmonious with the neighborhood. Auditorium events, no control. Traffic study needs a lot of work. Huge inconsistencies.

Reed Martic – They moved to Windsong neighborhood for same reasons as others; to find a rural quality of life. He submitted a letter. The side of traffic study we don't necessarily study - children walking up and down road, and bike traffic commuters. He would argue that though the study says this is not a problem, he believes it is and there will be unintended consequences.

Ron Peltier – He is not an immediate neighbor but lives close to the school. He read a letter from his neighbor and former classmate, Pam Quitslund-Halvorsen and Dana Quitslund. They were we were not notified of the meeting tonight. All of the neighbors will be affected but none more than they would be. Their property borders the entire southern property line. It's been in the Halvorsen family for over 100 years. They would not be able to get away from the noise, no privacy. Nancy Lowery was a close friend of Pam for over 50 years and would be upset if she knew her property had been sold to a school, changing the neighborhood so drastically. The school would dominate the neighborhood and all next door to our property. Please consider the impact on our property and our lives. We've lived here for over 100 years and this development is just not fair and just not right.

Mr Peltier added that the traffic study showed the school would add 720 vehicle trips to the site through the day.

Deena Hanke - She lives directly across from property on Windsong loop. Lights from cars exiting the school would shine in their house. They bought the property because of the peace and quiet and hoped to lived out their days there. She doesn't believe it will be possible to do that if the school is there. She doesn't believe school is compatible in residential area.

Mike Hoffman - Lives on Windsong Loop with 40 other families. Things could change in the future. It's imperative that group hands down numbers now on use, to establish limits to population, paved areas – especially population. Another boogeyman, the 80 car field parking and gymnasium could turn into a major use for the school. They want no commercial aspect of this thing. The field could turn into a mudhole and might want to pave it and then the retainage won't work. Things like that should be specified if it's going to go ahead. I don't want it to go ahead. Good site plan but may be months and years before they finish construction.

Rebecca Rockefeller – She is a lifelong resident and moved here for rural quality of life. Her daughter is a Madrona student because public schools didn't work for her. She has seen so much change come to this island. She knows the visceral feel when fields become houses. But to be a vital and sustainable community there must be room for schools and families. I know your job is difficult, to meet the needs of individuals as well as the community – but hard truth is change is inevitable. I believe what Madrona wants to do to this property is the most Bainbridge use for this property – the Bainbridge I knew from growing up. I feel for all of you that would be impacted by the property, whatever will happen to it. Madrona would be a good neighbor. It's the nature of the school and the heart of the curriculum.

Chair Pearl said the school was applying for a conditional use permit. This activity was allowed in the zone but conditions are placed on it to make it compatible with the zone. They are a recommending body. The final decision is not made by us. Their first job is to come up with conditions to make it compatible with the neighborhood. If that's impossible, then maybe the Hearing Examiner would turn it down. At this stage the conditions are important. Due to the lateness of the evening, we will push this discussion another meeting.

NEW/OLD BUSINESS

None.

ADJOURN

The meeting was adjourned at 9:08 pm.

Approved by:

J. Mack Pearl, Chair

Lara Lant, Administrative Specialist

PLEASE PRINT

Name	Address	Phone/ E-Mail	Join ListServ Yes/No	Would like to speak	Subject
David Ward	317 Cave Ave	707-6877		Yes	Bainbridge Lnd.
Neil Johannsen	330 Cave Ave	604-6459		yes	Beina Landing
Chunren Sennib	ABC			yes	Bainb. Land
✓ Barbara Stuart	11330 Southwind Ct NE			yes	Madrona School
✓ Bill Stuart	11330 Southwind Ct NE	425 417-2125		yes	Madrona School
✓ Pat Egaas	11330 madison NE	206 842 2037		yes	"
✓ Craig Olson	10705 Heells Hill NE	858-829-7957		yes/parent	Madrona School
✓ Lisa Foisy	9424 Windsong Loop	206 902 8580		yes	Madrona School
✓ Ann Bury	11435 Eastwind Ct NE	206 321 9565		maybe	ll "
✓ Steve Buce	Windsong loop 11435	425 345 1546		yes	"
✓ Bill Eckert	11300 Southwind CT NE	206-445-4720		yes	"
✓ Reed Martic	9485 WINDSONG Loop NE	503-332-3902		y	"
Kim Vannerholm	11478 Mad. son Ave NE	206 234 2674		?	Madrona School



March 9, 2017

PLEASE PRINT

[illegible]

I. BACKGROUND

The Growth Management Act of Washington (GMA) requires cities to review and evaluate comprehensive plans and development regulations (RCW 36.70A.130). The City of Bainbridge Island (City) completed its review and update of the Comprehensive Plan in February, 2017. The City's development regulations now need to be updated to support the goals and policies articulated in the Comprehensive Plan. The City's review of development regulations includes the Critical Areas Ordinance (CAO) adopted pursuant to state law that requires cities to designate and adopt regulations for the protection of critical areas. The City's CAO is codified in Bainbridge Island Municipal Code (BIMC) Chapter 16.20. Critical areas include:

- Aquifer recharge areas
- Fish and wildlife habitat conservation areas
- Frequently flooded areas
- Geologically hazardous areas
- Wetlands

The City last completed a comprehensive update of its CAO in 2005 with updates in 2007 and 2008. The updates addressed only geologically hazardous areas. The primary intent of the current update is to revise code as necessary to comply with state mandates that require cities to periodically review and evaluate their adopted critical areas policies and regulations, including consideration and use of best available science (BAS). The update also provides the opportunity to update the CAO to reflect and support the recently updated Comprehensive Plan, address code conflicts and internal inconsistencies and better align development regulations with changes in the island's physical landscape and development pattern since 2005.

The CAO update will also include comparison with relevant sections of the City's Shoreline Master Program (SMP) to bring the two regulatory documents into alignment. The SMP includes policies and regulations for critical areas located within the shoreline jurisdiction. The City completed a comprehensive review and update of its SMP in 2014 that essentially adopted the current CAO in whole with minor differences and exceptions of certain sections that do not apply or are covered by other provisions in the SMP. Following adoption of the updated CAO, the City will include these revisions in the SMP through a limited amendment.

II. SCOPE OF WORK

The 2005 comprehensive update of the City's CAO included 28 workshops and six public hearings. Staff does not anticipate such an intensive effort for this update. Rather, the update will be more narrowly focused on revisions necessary to incorporate recent BAS, comply with updates to GMA since 2005, and to support other City plans and policies. The update will include:

- Incorporation of Comprehensive Plan policies and implementing actions
- Correction of inconsistencies with the SMP
- Incorporation of relevant BAS available since the last update

- Updates to comply with GMA updates and/or other laws or recent decisions
- Corrections of errors or internal inconsistencies
- Inclusion of code updates identified by staff to improve implementation
- Consideration of other updates proposed through the public process

The critical areas update will address these issues through three specific steps:

Review of Existing Conditions: Staff will prepare a brief summary of existing conditions that describes the location, extent and general conditions of critical area resources within the City based on the City's GIS mapping, existing City studies and documents, documents and information obtained through land use review, public input, and staff's familiarity with the City's critical area resources.

Review of BAS and Gap Analysis: Staff will conduct a review of the existing critical areas regulations and identify areas of the code that should be updated to be consistent with science-based recommendations. Staff will review relevant BAS documents and gather additional scientific and technical information through input from local experts, consultations with agency staff, site-specific studies and/or field studies. General recommendations concerning BIMC 16.20 organization, internal consistency, compliance and enforcement, and consistency with the GMA and City's Comprehensive Plan and SMP will also be included in the gap analysis. The review of BAS and gap analysis will be summarized in a technical report.

Required and Recommended Revisions: Two sets of proposed revisions will be developed: a list of changes required to meet state mandates and consistency with BAS and a list of discretionary changes that meet other City objectives. Staff will develop a strike-through-and-underline revision of the relevant critical areas regulations (both within the CAO, BIMC 16.20 and the SMP, BIMC 16.12) as necessary to implement required and discretionary revisions.

Public participation will be invited and actively encouraged throughout the CAO update process. Staff anticipates Planning Commission and City Council meetings will include opportunity for public comment and that they will each hold at least one public hearing. A project page on the City's website will be established to house project information, timelines, draft documents and meeting notices and an email listserv will be created to provide timely project notifications.

III. SCHEDULE

The City's state-mandated timeline to complete a review and update to its critical areas ordinance is June 30, 2017. Staff anticipates that the review will not be complete until later in the year, with Council approval and adoption by the end of September, 2017. As was the case with the City's Comprehensive Plan Update, staff will notify the Department of Commerce of the delay and keep them abreast of the City's progress.

The anticipated schedule for Planning Commission review is provided below. The schedule is deliberately ambitious to have the Planning Commission provide its recommendation to the City Council prior to the end of term for several commissioners at the end of June, 2017. Staff will coordinate with

the City Council to develop a schedule for their review, public hearing and approval by the end of September, 2017.

Anticipated Schedule for Planning Commission Review

	March 23	April 13	April 27	May 11	May 25	June 8	June 15	June 22
Introduction	✕							
Wetlands, Fish and Wildlife Conservation Areas and Frequently Flooded Areas								
Best Available Science (BAS) Review and Gap Analysis		✕						
Recommended Revisions			✕					
Geologically Hazardous Areas and Critical Aquifer Recharge Areas								
Best Available Science (BAS) Review and Gap Analysis				✕				
Recommended Revisions					✕			
Public Hearing						✕		
<i>Extra meeting (if needed)</i>							✕	
Recommendation								✕

Chapter 16.20

CRITICAL AREAS

Sections:

- 16.20.010 Purpose and intent**
- 16.20.020 Interpretation, procedures, and program review**
- 16.20.030 Definitions**
- 16.20.040 Applicability, exemptions, and prior development activity**
- 16.20.050 Alternatives to prescriptive buffers**
- 16.20.060 Habitat management plans**
- 16.20.070 Variances**
- 16.20.080 Reasonable use exceptions**
- 16.20.090 Application requirements**
- 16.20.100 Minimizing impacts to critical areas**
- 16.20.110 Mitigation plan requirements**
- 16.20.120 Aquifer recharge areas**
- 16.20.130 Fish and wildlife habitat conservation areas**
- 16.20.140 Frequently flooded areas**
- 16.20.150 Geologically hazardous areas**
- 16.20.160 Wetlands**
- 16.20.170 The Winslow Ravine**
- 16.20.180 Performance and maintenance surety**
- 16.20.190 Notice on title**
- 16.20.200 Compliance and enforcement**
- 16.20.210 Suspension – Revocation**
- 16.20.220 Assessment relief**
- 16.20.230 Other laws and regulations**
- 16.20.240 Conflict**
- 16.20.250 Severability**

16.20.010 Purpose and intent.

The City Council finds that aquifer recharge areas, frequently flooded areas, geologically hazardous areas, wetlands, and fish and wildlife habitat conservation areas constitute critical areas that are of special concern to the City. The City's policies in regard to the natural systems and environment of Bainbridge Island, as well as the Washington Growth Management Act, Chapter 36.70 RCW, require that critical areas of Bainbridge Island be protected by establishing minimum standards for the impact of development of properties which contain or adjoin critical areas. Cumulative impacts to critical areas shall be addressed in the administration of this chapter by assuring there is no net loss of the function and values of the critical areas. It is the intent of this chapter to protect the public health, safety, and welfare by:

- A. Avoiding the impact;

- B. Minimizing or limiting the degree or magnitude of the impact of an action by using appropriate technology or by taking affirmative steps to avoid or reduce impacts;
- C. Rectifying the impact by repairing, rehabilitating, or restoring the affected environment;
- D. Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action;
- E. Compensating for unavoidable impacts by replacing, enhancing or providing substitute resources or environments;
- F. Reducing the potential for personal injury, loss of life, or property damage due to flooding, erosion, landslides, seismic events, or soil subsidence;
- G. Protecting against publicly financed expenditures due to the misuse of critical areas which cause:
 - 1. Unnecessary maintenance and replacement of public facilities;
 - 2. Public funding of mitigation for avoidable impacts;
 - 3. Cost for public emergency rescue and relief operations where the causes are avoidable; or
 - 4. Degradation of the natural environment;
- H. Preserving aquatic resources by ensuring that development activities maintain and protect aquatic resources, natural drainage systems, and water quality;
- I. Protecting unique, fragile, and valuable elements of the environment, including wildlife and its habitat;
- J. Alerting appraisers, assessors, owners, potential buyers, or lessees to the development limitations of critical areas; and
- K. Providing City officials with sufficient information to adequately protect critical areas when approving, conditioning, or denying public or private development proposals.

16.20.020 Interpretation, procedures, and program review.

- A. Interpretation. The provisions of this chapter shall be held to be minimum requirements in their interpretation and application and shall be liberally construed to serve the purposes of this chapter.
- B. Procedures. The Director is authorized to adopt written procedures for the purpose of carrying out the provisions of this chapter.
- C. Non-Regulatory Program Review. Annually, the City Council shall review the status of the non-regulatory program and adopt a resolution implementing appropriate elements that help landowners comply with the critical areas ordinance. Elements that shall be reviewed include but are not limited to:
 - 1. Education and Outreach Measures.
 - a. Develop or provide clear and understandable manuals explaining recommended best management practices for typical land owner activities;
 - b. Conduct seminars and presentations for interested owners and groups;
 - c. Coordinate efforts with existing conservation, stewardship, or small resource-user groups with expertise in wildlife or habitat area land management issues;
 - d. Expand local wildlife inventory information through baseline survey of local habitats and species; and

e. Perform outreach to individual property owners in critical areas who wish to develop stewardship plans to establish parameters for future activities.

2. Tax Incentive Measures. Coordinate with Kitsap County to provide incentives through the current use taxation program, and encourage land owners with critical areas to enroll their property in open space tax status and/or conservation easements.

D. Regulatory Program Review. The City Council shall review, on an annual basis, the implementation of this ordinance. The public shall be involved in the review.

Elements that shall be reviewed include, but are not limited to:

1. Administration of its provisions;
2. Impact upon critical areas protection; and
3. Collection of scientific data of local conditions.

16.20.030 Definitions.

A. For the purposes of this chapter, the following definitions shall apply:

1. “Applicant” means a person, corporation, or organization that files an application for a development permit with the City and that is either the owner of the land on which that proposed activity would be located, a contract vendee, a lessee of the land, the person who would actually control and direct the proposed activity, or the authorized agent of such a person.

2. “Aquifer recharge area” means the surface area of any geological formation sufficiently pervious to provide fresh water to an aquifer through the process of infiltration and percolation.

3. “Base flood” means a general and temporary condition of partial or complete inundation of normally dry land areas having a one percent chance of being equaled or exceeded in any given year. Base flood elevation data is commonly displayed as an elevation line on flood insurance maps, showing the location of the expected whole-foot water-surface elevation of the base (100-year) flood.

4. “Best available science” (BAS) means scientifically valid information derived in accordance with WAC 365-195-905, now or as amended hereafter, that is used to develop and implement critical areas policies or regulations.

5. “Best management practices” (BMPs) means conservation practices or systems of practices and management measures that:

a. Control soil loss and protect water quality from degradation caused by nutrients, animal waste, toxins, and sediment; and

b. Minimize adverse impacts to surface water and groundwater flow, and to the chemical, physical, and biological characteristics of critical areas.

BMPs are defined by the United States Department of Agriculture, the State of Washington Department of Agriculture, the Washington State Department of Ecology, Washington State Department of Health, Kitsap Conservation District, and other professional organizations.

6. “Buffer” means an area adjoining to and a part of a critical area that is required for the continued maintenance, functioning, and/or structural stability of that critical area, or an area adjacent to a stream or wetland that (a) surrounds and protects the functions and values of

the stream or wetland from adverse impacts, (b) is an integral part of a stream or wetland ecosystem, and (c) provides shading, input of organic debris and coarse sediments, room for variation in stream or wetland edge, habitat for wildlife, and protection from harmful intrusion, to protect the public from losses suffered when the functions and values of the wetland or stream are degraded.

7. “Category I, II, III, IV wetlands”: see “Wetland category”.

8. “Critical areas” means aquifer recharge areas, fish and wildlife habitat conservation areas, frequently flooded areas, geologically hazardous areas, and wetlands.

9. “Critical habitat” means a habitat identified by US Fish and Wildlife Service or the National Marine Fisheries Service as habitat necessary for survival of endangered or threatened species.

10. “Director” means the director of the City’s Planning and Community Development Department or his/her designee.

11. “Educational or scientific activities” means controlled and/or supervised scientific activities or educational activities that are associated with an educational program that is approved through a conditional use permit.

12. “Engineering geologist” means a practicing engineering geologist who has at least four years of professional employment as an engineering geologist with experience in landslide evaluation, and a Washington State specialty license in engineering geology as specified in Chapter 18.220 RCW.

13. “Erosion hazard area” means a landform or soil type subject to being worn away by the action of water, wind, freeze-thaw, or ice, and which are:

a. Rated in the Soil Survey of Kitsap County Area, Washington, USDA (1980), as having severe hazard of water erosion, including:

- i. Indianola-Kitsap Complex, 45 to 70 percent slope;
- ii. Kitsap Silt Loam, 15 to 30 percent slope, 30 to 45 percent slope;
- iii. Ragnar Fine Sandy Loam, 15 to 30 percent slope; and
- iv. Schneider very gravelly loam, 45 to 70 percent slope;

b. Classified in the Department of Ecology Coast Zone Atlas as:

- i. Class 3, class U (unstable) includes severe erosion hazards and rapid surface runoff areas;
- ii. Class 4, class UOS (unstable old slides) includes areas having severe limitations due to slope; and
- iii. Class 5, class URS (unstable recent slides); and

c. Identified by the USGS Surface Geology Map of Bainbridge Island (Haugerud, 2001) as rilled slopes/scarps.

14. “Existing development” means a development that was lawfully constructed, approved or established prior to the effective date of the ordinance codified in this chapter.

15. “Fish” means species of the vertebrate taxonomic groups *Cephalospidomorphi* and *Osteichthyes*.

16. “Fish and wildlife habitat” means a seasonal range or habitat element with which a given species has a primary association, and which, if altered, may reduce the likelihood that the species will maintain and reproduce over the long-term. These include areas of relative density or species richness, breeding habitat, winter range, and movement corridors. These also include habitats of limited availability or high vulnerability to alteration, such as cliffs, streams and wetlands.

17. “Fisheries biologist” means a person with experience and training in fisheries who is able to submit substantially correct reports on fish population surveys, stream surveys and other related data analyses of fisheries resources. “Substantially correct” means that technical or scientific errors, if any, are minor and do not delay or affect the site plan review process. Qualifications of a fisheries biologist include:

- a. Either:
 - i. Certification by the American Fisheries Society, or;
 - ii. Bachelor of Science degree in fisheries or the biological sciences from an accredited institution and five years of professional fisheries experience; and
- b. The prior successful completion of at least three habitat management plans; and
- c. The biologist is listed on a roster of qualified professionals prepared by the Director.

18. “Frequently flooded areas” means lands subject to a one percent or greater chance of flooding in any given year, as determined by the Federal Emergency Management Agency. These areas include, but are not limited to, floodplains adjacent to streams, lakes, coastal areas, and wetlands. (Also see Chapter 15.16 BIMC, Flood Damage Prevention.)

19. “Functions” means the beneficial roles served by critical areas including, but not limited to, water quality protection and enhancement, fish and wildlife habitat, food chain support, flood storage, conveyance and attenuation, groundwater recharge and discharge, erosion control, wave attenuation, aesthetic value protection, and recreation. These roles are not listed in order of priority.

20. “Geologically hazardous areas” means areas susceptible to significant erosion, sliding, or other geological events. They pose a threat to the health and safety of citizens when used as sites for incompatible commercial, residential or industrial development. Geologically hazardous areas include erosion hazard areas, landslide hazard areas, and seismic hazard areas.

21. “Geotechnical engineer” means a practicing geotechnical/civil engineer who has a valid Washington engineering license and a valid certificate of registration in civil engineering, at least four years of professional employment as a geotechnical engineer with experience in landslide evaluation, and appropriate training and experience as specified in Chapter 18.43 RCW.

22. “Habitat Management Plan” (HMP) means a report prepared by a professional wildlife biologist or fisheries biologist which discusses and evaluates critical fish and wildlife habitat functions and identifies and evaluates measures necessary to enhance and improve habitat conservation on a proposed development site.

23. “Habitat of local importance” means a seasonal range or habitat element with which a given species has a primary association, and which, if altered, may reduce the likelihood that the species will maintain their population and reproduce over the long-term. These might include areas of high relative density or species richness, breeding habitat, winter range, and movement corridors. These might also include habitats that are of limited availability or areas of high vulnerability to alteration, such as cliffs and wetlands.

24. “Hazard tree” means a tree with structural defects likely to cause failure of all or part of the tree, which could strike a “target.” A target can be a building or a place where people gather such as a park bench, picnic table, street, or backyard. In the case of steep slopes, a hazard tree can also be a tree that is a hazard to stability of the slope, as determined by a geotechnical engineer.

25. “Hazardous substances” means any liquid, solid, gas, or sludge, including any material, substance, product, commodity, or waste, regardless of quantity, that exhibits any of the characteristics or criteria of hazardous waste as specified in RCW 70.105.010. (Also see BIMC 18.06.450 through 18.06.510).

26. “Hydric soil” means soil which is saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions in the upper part.

27. “Hydrogeologist” means a practicing hydrogeologist who has at least four years of professional employment as a hydrogeologist with experience in the specific subject area in which they are providing a report, and a Washington specialty license in hydrogeology as specified in RCW Chapter 18.220.

28. “Hydrophyte or hydrophytic vegetation” means plant life growing in water or on a substrate that is at least periodically deficient in oxygen as a result of excessive water content. The presence of hydrophytic vegetation shall be determined following the methods described in the “Washington State Wetlands Identification and Delineation Manual (Department of Ecology publication #96-94)” or its most current edition.

29. “Impact of land use” means the relative measure of the intensity of land use used to determine the appropriate buffer widths for wetlands and streams which is categorized as follows:

a. High impact land use includes commercial development, industrial development, institutional development, residential (more than one unit per acre) development, new agriculture (high-intensity such as dairies, nurseries, greenhouses, raising and harvesting crops requiring annual tilling, raising and maintaining animals), and high-intensity recreation such as golf courses and ballfields.

b. Moderate impact land use includes residential development (1 unit/acre or less), new agriculture (moderate-intensity such as orchard and hay fields), paved trails, and building of logging roads.

c. Low impact land use includes low-intensity open space such as passive recreation, natural resources preservation, and unpaved trails.

30. “Invasive/exotic species” means plants and animals that are not native to the Puget Sound lowlands and are recognized by wetland professionals or biologists to be highly competitive with native vegetation and animals. Invasive/exotic plant species include those listed on the noxious weed list developed by the Washington State Noxious

Weed Board, nonnative blackberries and English ivy. Invasive/exotic animal species include any species, such as rats, bullfrogs, zebra mussels and green crabs, considered by resource professionals to be damaging to the native animal populations.

31. “Land divisions” means any of the following: Subdivisions (Chapter 17.04 BIMC); Short Subdivisions (Chapter 17.12 BIMC); and/or Large Lot Plats (Chapter 17.16 BIMC).

32. “Land Use Permit” means any of the following: Planned Unit Developments (Chapter 18.120 BIMC); Conditional Use Permits (Chapter 18.108 BIMC); and/or Site Plan Review (Chapter 18.105 BIMC).

33. “Landslide hazard areas” means areas which are potentially subject to risk of mass movement due to a combination of factors, including historic failures, geologic, topographic, and hydrologic features. Some of these areas are identified in the Department of Ecology Coastal Zone Atlas and USGS Surface Geology Map of Bainbridge Island (Haugerud, 2001). The presence of these factors shall be determined through assessment, by the least intrusive means, by the City Engineer or at the City Engineer’s request by a third party geoengineer or geotechnical expert, prior to issuance of any permit.

Landslide hazard areas include the following:

- a. Areas characterized by slopes greater than 15 percent having springs or groundwater seepage and having impermeable soils (typically silt and clay) overlain or frequently interbedded with permeable granular soils (predominantly sand and gravel);
- b. Any area potentially unstable due to rapid stream incision or stream bank erosion;
- c. Any area located on an alluvial fan, debris flow deposit, or in a debris flowpath, presently or potentially subject to impacts or inundation by debris flows or deposition of stream-transported sediments;
- d. Any area with a slope of 40 percent or greater and with a vertical relief of 10 or more feet except areas composed of competent consolidated rock;
- e. Any area designated or mapped as class U, UOS, or URS by the Department of Ecology Coastal Zone Atlas and/or mapped as a landslide or scarp on the USGS Surface Geology Map of Bainbridge Island (Haugerud, 2001); or
- ~~f. Any area within 50 feet of the top, toe, or sides of any of the above landslide hazard areas, except debris flow areas or stream deposition areas. This 50 foot area may be expanded in special cases at the discretion of the City Engineer.~~

34. “Liquefaction” means a process in which a water-saturated soil, upon shaking, suddenly loses strength and behaves as a fluid.

35. "Mitigation" includes:
- a. Avoiding, minimizing or compensating for adverse impacts, in the following order of preference:
 - i. Avoiding the impact altogether by not taking a certain action or parts of an action;
 - ii. Minimizing impacts by limiting the degree or magnitude of the action and its implementation, by using appropriate technology, or by taking affirmative steps to avoid or reduce impacts;
 - iii. Rectifying the impacts by repairing, rehabilitating or restoring the affected environment;
 - iv. Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action;
 - v. Compensating for the impact by replacing, enhancing, or providing substitute resources or environments; and
 - vi. Monitoring the impact and the compensation project and taking appropriate corrective measures. Mitigation for individual actions may include a combination of the above measures; and
 - b. The following specific categories:
 - i. Mitigation, Compensatory: replacing project-induced critical area losses or impacts, including, but not limited to, establishment, re-establishment, rehabilitation or enhancement.
 - ii. Mitigation, Establishment: Mitigation performed to intentionally establish a critical area (e.g., wetland) at a site where it does not currently exist.
 - iii. Mitigation, Re-Establishment: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural or historic functions to a former critical area.
 - iv. Mitigation, Rehabilitation: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of repairing natural or historic functions and processes to a degraded critical area.
 - v. Mitigation, Enhancement: The manipulation of the physical, chemical, or biological characteristics of a biological wetland to heighten, intensify or improve specific function(s) or to change for specific purposes such as water quality improvement, flood water retention, or wildlife habitat.

36. "Native or equivalent vegetation" means species which are indigenous to the Puget Sound lowlands ecoregion; or a species that is equivalent in providing the same site-specific functional arrays as would the native species and which is selected from a list of preferred acceptable equivalent vegetation prepared by the Planning Department. Functional arrays may include forage, floodwater restraint, hiding habitat, or other physical or biologic roles in the ecosystem, that singly or in combinations correspond to those of the native species. As with natives, the role mix of an alternative species may vary depending on the site and its surrounding ecosystem. Invasive/exotic species shall not be considered equivalent species.

37. "Normal maintenance" means those usual acts to prevent a decline, lapse or cessation from a lawfully established condition. Normal maintenance includes removing

debris from and cutting or manual removal of vegetation in crossing and bridge areas. Normal maintenance does *not* include:

- a. Use of fertilizer or pesticide application in wetlands, Fish and Wildlife Habitat Conservation Areas, or their buffers;
- b. Re-digging ditches in wetlands or their buffers to expand the depth and width beyond the original ditch dimensions;
- c. Re-digging existing drainage ditches in order to drain wetlands on lands not classified as existing and ongoing agriculture under BIMC 16.20.040(C) (Exemptions).

38. "Open space" means undeveloped areas of varied size. Open space often contains distinctive geologic, botanic, zoologic, historic, scenic or other critical area, or natural resource land features.

39. Ordinary high water mark: See the Shoreline Master Program (Chapter 16.12 BIMC), Section II, Definitions.

40. "Ravine" means a V-shaped landform generally having little to no floodplain and normally containing steep slopes, which is deeper than 10 vertical feet as measured from the centerline of the ravine to the top of the slope. Ravines are typically created by the wearing action of streams. The top of the slope is determined where there is a significant change in the slope to generally less than a 15 percent slope.

41. "Reasonable alternative" means an activity that could feasibly attain or approximate a proposal's objectives, but at a lower environmental cost or decreased level of environmental degradation.

42. "Reasonable use exception (RUE)" is a means of relief that is available for a property that is encumbered to such an extent by critical areas and/or water quality buffers that application of this chapter would deny all reasonable use of the subject property, as further defined by the decision criteria of BIMC 16.20.080.G, and reasonable use of a property cannot be achieved through any other means.

43. "Repair" means activities that restore the character, size, or scope of a project only to the previously authorized condition.

44. "Seismic hazard areas" means areas subject to severe risk of damage as a result of seismic induced ground shaking, or surface faulting. While ground shaking is the principal risk because the entire island will shake significantly, severe damage will occur where slope failure, liquefaction, and settlement are induced by the shaking and surface rupture is created by fault movement. The following areas are considered seismic hazard areas:

- a. Seismic Landslide Hazard Areas - Slopes which are stable in non-earthquake periods, but fail and slide during ground shaking;
- b. Liquefaction Hazard Areas - Areas of cohesionless, loose or soft, saturated soils of low density in association with a shallow groundwater table that are subject to settlement and/or liquefaction from ground shaking, or;
- c. Fault Hazard Areas - Areas of known surface rupture or significant surface deformation as a result of an active fault movement, including 50 feet on either side.

45. "Site" means the entire lot, series of lots, or parcels on which a development is located or proposed to be located, including all contiguous undeveloped lots or parcels under common ownership.

46. "Streams" means those areas in the City of Bainbridge Island where the surface water flows are sufficient to produce a defined channel or bed. A defined channel or bed is an area which demonstrates clear evidence of the passage of water and includes but is not limited to bedrock channels, gravel beds, sand and silt beds, and defined-channel swales. The channel or bed need not contain water year-round. This definition is not meant to include irrigation ditches, canals, storm or surface water runoff devices, or other artificial watercourses unless they are used by fish or used to convey streams naturally occurring prior to construction.

47. "Stream Types" means a streams classification system based on fish usage and perennial or seasonal water regime as found in WAC 222-16-030 and meeting the standards listed below.

a. "Type F Stream" means a stream that has suitable fish habitat. If fish usage has not been determined, water having the following characteristics are presumed to have fish use: Streams segments having a defined channel of 2 feet or greater within the bankfull width and having a gradient of 16 percent or less. Determination of fish usage shall use the methodology found in Washington Department of Natural Resource's Forest Practice Board Manual, Section 13.

b. "Type Np" means all segments of natural waters within the bankfull width of defined channels that are perennial nonfish habitat streams. Perennial streams are waters that do not go dry any time of a year of normal rainfall. However, for the purpose of water typing, Type Np Waters include the intermittent dry portions of the perennial channel below the uppermost point of perennial flow.

c. "Type Ns" means all segments of natural waters within the bankfull width of the defined channels that are not Type S, F, or Np Waters. These are seasonal, nonfish habitat streams in which surface flow is not present for at least some portion of a year of normal rainfall and are not located downstream from any stream reach that is a Type Np Water. Ns Waters must be physically connected by an above-ground channel system to marine waters, Type F, or Np Waters.

48. "Urban natural open space" means an open space that (a) a priority species either resides within, or resides adjacent to and uses the open space for breeding and/or regular feeding; and/or (b) functions as a corridor connecting other priority habitats, especially those that would otherwise be isolated; and/or (c) is an isolated remnant of natural habitat larger than 10 acres and is surrounded by urban development.

"49. "Variance" means relief from the provisions of the habitat buffer standards for wetlands or fish and wildlife habitat conservation areas; ~~or provisions of section 16.20.150(E) (2) (a) pertaining to setbacks from slopes classified as a geologically hazardous area,~~ where strict application of this chapter renders compliance with these provisions an unnecessary hardship by strict application of this Chapter, as provided for in BIMC 16.20.070."

50. “Wetland” means areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support a prevalence of vegetation typically adapted for life in saturated soil conditions, as defined in Department of Ecology publication #96-94, Washington State Wetlands Identification and Delineation Manual or the current Washington State Department of Ecology methodology. Wetlands generally include swamps, estuaries, marshes, bogs, and similar areas.

51. “Wetland boundary” means the boundary or edge of a wetland as delineated using the methodology found in Department of Ecology publication #96-94, Washington State Wetlands Identification and Delineation Manual or Washington State Department of Ecology current methodology.

52. “Wetland category” means category as defined in “Washington State Wetland Rating System for Western Washington, Revised,” Department of Ecology publication #04-06-025, or as revised and adopted by the department.

53. “Wetland classes” means the classification system of the U.S. Fish and Wildlife Service (Cowardin, et al. 1979).

54. Wetland Mitigation.

a. In-kind: To replace wetlands with substitute wetlands whose characteristics closely approximate those destroyed or degraded by a regulated activity. It does not mean replacement “in-category.”

b. Off-site: To replace wetlands away from the site on which a wetland has been impacted by a regulated activity.

c. On-site: To replace wetlands at or adjacent to the site on which a wetland has been impacted by a regulated activity.

d. Out-of-kind: To replace wetlands with substitute wetlands whose characteristics do not closely approximate those destroyed or degraded by a regulated activity. It does not refer to replacement “out-of-category.”

55. Wetlands, Regulated.

a. “Regulated wetlands” means:

i. All Category I and II wetlands;

ii. All Category III and Category IV wetlands that are greater than 1,000 square feet;

b. Category I, II, III and IV wetlands include:

i. Lands defined as wetlands shall be those areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.

ii. Wetlands created as mitigation and wetlands modified for approved land use activities.

c. Regulated wetlands do not include artificial wetlands intentionally created from nonwetland sites, including, but not limited to, irrigation and drainage ditches, grass-lined swales, canals, detention facilities, wastewater treatment facilities, farm ponds, and landscape amenities, or those wetlands created after July 1, 1990 that were unintentionally created as a result of the construction of a road, street, or highway.

56. “Wetlands specialist” means a person with experience and training in wetland issues who is able to submit substantially correct reports on wetland delineations, classifications, functional assessments and mitigation plans. “Substantially correct” means that errors, if any, are minor and do not delay or affect the site plan review process. Qualifications of a wetlands specialist include:

- a. Either:
 - i. Certification as a Professional Wetland Scientist (PWS) or Wetland Professional in Training (WPIT) through the Society of Wetland Scientists, or;
 - ii. Bachelor of science degree in the biological sciences from an accredited institution and five years of professional field experience; and
- b. The prior successful completion of at least three wetland reports; and
- c. The specialist is listed on a roster of qualified professionals prepared by the Director.

57. “Wildlife biologist” means a person with experience and training in the principles of wildlife management and with practical knowledge in the habits, distribution and environmental management of wildlife. Qualifications include:

- a. Either:
 - i. Certification as a professional wildlife biologist through The Wildlife Society, or;
 - ii. Bachelor of science or bachelor of arts degree in wildlife management, wildlife biology, ecology, zoology, or a related field, from an accredited institution and five years of professional field experience; and
- b. The prior successful completion of at least three habitat managements plans; and
- c. The biologist is listed on a roster of qualified professionals prepared by the Director.

58. “Zone of Influence” means an area, usually upslope from a geologically hazardous area, where changes in land use and hydrology can affect the stability of the geologically hazardous area. The zone of influence is defined as 300 feet upslope from slopes greater than 40 percent, and 200 feet upslope from slopes greater than 15 percent but less than 40 percent that are determined to be geologically hazardous areas.

16.20.040 Applicability, exemptions, and prior development activity.

A. Applicability. This chapter establishes regulations for the protection of sites which contain critical areas or are adjacent to sites which contain critical areas. Development and land use activities proposed on critical area sites shall comply with the provisions of this chapter. No action shall be taken by any person, company, agency, governmental body (including the City), or applicant, which results in any alteration of a critical area except as consistent with the purposes, requirements, objectives, and goals of this chapter.

B. Inventory of Critical Areas. This chapter shall apply to all critical areas located within the jurisdiction of the city. The approximate location and extent of these areas on Bainbridge Island is displayed on various inventory maps available at the city’s Department of Planning and Community Development. Maps and inventory lists are

guides to the general location and extent of critical areas. Critical areas not shown are presumed to exist on Bainbridge Island and are protected under all the provisions of this chapter. In the event that any of the designations shown on the maps or inventory lists conflict with the site-specific conditions, site-specific conditions shall control.

C. Exemptions. The following activities are exempt from the requirements of this chapter:

1. Emergencies that threaten the public health, safety and welfare. An "emergency" is an unanticipated and immediate threat to public health, safety, or the environment which requires action within a time too short to allow compliance with this chapter. Restoration or mitigation of critical areas and buffers impacted by emergency action shall be required in a timely matter.
2. Ongoing agricultural activities using best management practices as included in a farm management plan developed by the Kitsap Conservation District.
3. Normal and routine maintenance of structures, landscaping and vegetation that will not further impact or alter critical areas or buffers.
4. Normal and routine maintenance and operation of pre-existing retention/detention facilities, biofilters and other stormwater management facilities, irrigation and drainage ditches, farm ponds, fish ponds, manure lagoons, and livestock water ponds; provided, that such activities shall not involve conversion of any wetland not currently being used for such activity. Any maintenance of ponds located in stream habitat areas shall require appropriate approval from the Washington Department of Fish and Wildlife.
5. Structural alterations to buildings that do not increase the structural footprint or introduce new adverse impacts to an adjacent critical area, except for structures located on geologically hazardous areas which are not exempt.
6. Normal and routine maintenance or repair of existing utility structures within a right-of-way or existing utility corridor or easements, including the cutting, removal and/or mowing of vegetation.
7. Forest practices conducted pursuant to Chapter 76.09 RCW, except Class IV (general conversions) and Conversion Option Harvest Plans (COHP).
8. Activities within a portion of a wetland buffer or fish and wildlife habitat area buffer located landward of an existing, substantially developed area, such as a paved area, or permanent structure, which eliminates or greatly reduces the impact of the proposed activities on the wetland or fish and wildlife habitat area. The Director shall review the proposal to determine the likelihood of associated impacts.
9. Hazard Tree Removal. Where a threat to human life, property, or slope stability is demonstrated, the Director may allow removal of danger or hazard trees subject to the following criteria:
 - a. Tree removal is the minimum necessary to balance protection of the critical area and its buffer with protection of life and property; and
 - b. The critical area or its buffer shall be replanted as determined by the Director.

The Director shall coordinate review with the Washington State Department of Fish and Wildlife as determined necessary to assure habitat protection. The Director may require the applicant to consult with a professional forester or a certified arborist prior to tree removal. Hazard tree abatement can sometimes be achieved by felling the tree or trimming the tree. Habitat needs may require leaving the fallen tree in the riparian corridor or maintaining a high stump for wildlife habitat.

10. Aquifer recharge areas. A person, or property, shall be exempt from the provisions of this chapter unless either of the following is true:

- a. The property is located in a fish and wildlife habitat conservation area, frequently flooded area, geologically hazardous area, and/or wetland; or
- b. One of more of the uses identified in BIMC 16.20.120.B-E are proposed.

D. Standards for existing development.

1. Existing structures and related improvements. Structures and related improvements that were legally built or vested prior to the effective date of Ordinance No. 2005-03 that do not meet the setback or buffer requirements of this chapter may continue to exist in their present form, and may be altered, including remodeled, reconstructed, or expanded, if such alteration complies with the provisions of this Section.

2. Existing structures, not located in a geologically hazardous area, that were legally built or vested prior to the effective date of Ordinance No. 2005-03 may be altered if:

- a. There is no change in the footprint of the building;
- b. The remodel is entirely inside the existing building;
- c. There is no further encroachment into the buffers required pursuant to this chapter unless a Variance is first approved; or
- d. Any expansion of the building footprint is exclusively on the sides that do not touch the buffers.

3. Existing property improvements other than structures, including driveways, parking areas, yards, play areas, storage areas, and similar improvements that were legally established or vested prior to the effective date of Ordinance No. 2005-03 may be altered if:

- a. There is no change in the location of the improvement;
- b. Any alteration of the improvement is entirely inside of the existing boundaries of the improvement;
- c. There is no further encroachment into the buffers unless a Variance is first approved; or
- d. Any increase in the area of the improvement is exclusively on the sides that do not touch the buffers.

4. Alterations permitted by this Section shall not be exempt from applicable City review or permit requirements or other applicable City codes.

E. Conservation Agreements. The City will honor conservation agreements on regulated wetlands that were improved as a result of collaborative enhancement, restoration, or conservation projects. Where enhancements or restorations are made to

wetlands for purposes other than mitigation, the original wetland rating shall be maintained, even if the changes result in a higher classification.

16.20.050 Prescriptive buffers variations.

A. Intent. The City recognizes that in some cases it may not be possible to provide a critical area buffer that meets the dimensions prescribed by this ordinance, due to land area or other constraints. The City further recognizes that in some cases the desired or better critical area protection can be achieved through alternative approaches.

This section provides alternatives that can be pursued in lieu of the prescribed buffers when warranted by site-specific conditions. In considering an application for any of these alternatives, it shall always be the primary intent of the City to protect the functions and values of the critical areas. It is further the intent of the City to ensure that the application of the provisions of this chapter does not deprive an owner from reasonable use of their property.

Any proposed use of the following alternatives shall be supported by analysis utilizing best available science, to determine and minimize the impacts of the alternative:

B. Buffer Averaging. If characteristics of the property do not allow reasonable use with prescribed buffers, the Director may allow wetland and/or fish and wildlife conservation area buffer widths to be averaged. It is intended that the process for reviewing a buffer averaging proposal be as simple as possible, while ensuring that the following criteria are met:

1. The total area contained within the buffer after averaging shall be no less than that contained within the standard buffer prior to averaging;
2. The applicant demonstrates that such averaging will clearly provide greater protection of the functions and values of critical areas than would be provided by the prescribed habitat buffers.
3. The averaging will not result in reduced buffers next to highly sensitive habitat areas; and
4. The applicant demonstrates one or more of the following:
 - a. That the wetland contains variations in sensitivity due to existing physical characteristics;
 - b. That only low intensity uses would be located within 200 feet of areas where the buffer width is reduced, and that such low intensity uses restrictions are guaranteed in perpetuity by covenant, deed restriction, easement, or other legally binding mechanism; or
 - c. That buffer averaging is necessary to avoid an extraordinary hardship to the applicant caused by circumstances peculiar to the property.

C. Habitat Management Plan. A Habitat Management Plan may be prepared pursuant to BIMC 16.20.060 when it can clearly be demonstrated that greater protection of the functions and values of critical areas can be achieved through the HMP than could be achieved through providing the prescribed habitat buffers. A Habitat Management Plan may be used as a means to protect wetland and/or fish and wildlife habitat conservation area buffers. Habitat Management Plans may not be used to reduce the water quality buffers for wetlands and/or fish and wildlife habitat conservation areas.

D. Variances. Variances to reduce the prescribed habitat buffers for wetlands and/or fish and wildlife habitat conservation areas may be pursued pursuant to BIMC 16.20.070. Variances may not be used to reduce the prescribed water quality buffers for wetlands and/or fish and wildlife habitat conservation areas.

E. Reasonable Use Exceptions. If the application of this chapter would deny all reasonable use of the subject property, the property owner may apply for an exception pursuant to BIMC 16.20.080.

F. Pilot Projects. The City Council may, by Resolution, establish a site specific pilot project in partnership with an applicant that encourages the applicant to undertake creative, non-standard efforts that were not envisioned during the development of this chapter, but through which a greater conservation of critical areas will be achieved; provided that such project will satisfy the intent of this chapter as expressed in BIMC 16.20.010, and will provide greater protection of the functions and values of affected critical areas and their buffers. The applicant will cooperate with the City through the permitting and SEPA review process, and the Council will develop criteria for its review as well as a public process for the Council Resolution.

G. Public notice. Appropriate notice of, and opportunity to comment on, the proposed use of any of the foregoing alternatives shall be given to surrounding property owners and the general public, in a manner to be established by the Director.

16.20.060 Habitat management plan.

A. General. A Habitat Management Plan shall comply with the requirements of this Section, and shall clearly demonstrate that greater protection of the functions and values of critical areas can be achieved through the HMP than could be achieved through providing the prescribed habitat buffers. The Director shall prepare performance standards and monitoring guidelines for Habitat Management Plans, including a program for City oversight of such plans. Once the standards and guidelines are in place, an applicant may propose to implement an HMP as a means to protect habitat buffers associated with wetlands and/or fish and wildlife conservation areas.

B. Intent. HMPs are primarily intended as a means to restore or improve buffers that have been degraded by past activity, and should preserve, and not reduce, existing high quality habitat buffers. While not primarily intended as a means to reduce buffers, the HMP may propose a reduction of the habitat buffer width where it is shown that the HMP will comply with the other requirements of this Section. An HMP shall not reduce the prescribed water quality buffer width as listed in BIMC 16.20.130 and 16.20.160 under any circumstance.

C. Effect of buffers. An HMP shall provide habitat functions and values that are greater than would be provided by the prescribed habitat buffers. When habitat buffers are a component of an HMP, they shall be at least the minimum size necessary to accomplish the objectives of the HMP. The HMP may propose, but the City shall not require, a habitat buffer containing a greater area than is required by the prescribed habitat buffer.

D. Impact mitigation - general. The HMP shall encompass an area large enough to provide mitigation for buffer reduction below the standard required buffers, and shall

identify how the development impacts resulting from the proposed project will be mitigated. The developer of the plan shall use the best available science in all facets of the analyses. The Washington Department of Fish and Wildlife Priority Habitat and Species Management Recommendations, dated May 1991, and/or bald eagle protection rules outlined in WAC 232-12-292, as now or hereafter amended, may serve as guidance for this report. For Habitat Management Plans addressing wetland buffers, *Method for Assessing Wetland Functions*, Ecology Publication #99-116 shall be used for guidance in determining function equivalency.

E. HMP review. All Habitat Management Plans shall be submitted to the Washington State Department of Fish and Wildlife habitat biologist and to the Suquamish Tribe for review and comment. Within that same time frame, the City's Environmental Technical Advisory Committee shall be asked to review the HMP and provide comments.

F. Map. The Habitat Management Plan shall contain a map prepared at an easily readable scale, showing:

1. The location of the proposed development site;
2. Property boundaries;
3. The relationship of the site to surrounding topographic, water features, and cultural features;
4. Proposed building locations and arrangements;
5. A legend which includes a complete legal description, acreage of the parcel, scale, north arrow, and date of map revision.

G. Report. The Habitat Management Plan shall also contain a report which contains:

1. A description of the nature and intensity of the proposed development;
2. An analysis of the effect of the proposed development, activity or land use change upon the wildlife species and habitat identified for protection. If the Habitat Management Plan is addressing wetland habitat, the analysis shall compare an assessment of wildlife habitat suitability of the wetland applying standard buffers with an assessment of habitat suitability as proposed using *Method for Assessing Wetland Functions*, Washington State Department of Ecology (if available for the specific Hydrogeomorphic classification); and

3. A plan which identifies how the applicant proposes to mitigate any adverse impacts to wildlife habitats created by the proposed development. For wetland or other habitats protected by this chapter, the application shall show, using the appropriate function assessment methodology, that habitat functions and values are greater after the development than would occur had the prescribed buffers been provided (see Mitigation Plan requirements, Section 16.20.110).

4. All review comments received from a habitat biologist from the Washington State Department of Fish and Wildlife (WDFW) and the Suquamish Tribe. If the HMP recommends mitigation involving federally listed threatened or endangered species, migratory waterfowl or wetlands, the U.S. Fish and Wildlife Service shall receive a copy of the draft HMP.

5. For properties subject to the provisions of the City's Shoreline Master Program, Chapter 16.12 BIMC, a site specific analysis of the project's impact on

shoreline fish and wildlife habitat, as currently required by the SMMP, utilizing the provisions for environmentally sensitive areas as provided in Exhibit A.

6. The HMP shall specifically address, as appropriate, the following:
 - a. Enhancement of existing degraded buffer area and replanting of the disturbed buffer area with native or equivalent vegetation;
 - b. The use of alternative on-site wastewater systems in order to minimize site clearing;
 - c. Infiltration of stormwater where soils permit;
 - d. Retention of existing native or equivalent vegetation on other portions of the site in order to offset habitat loss from buffer reduction; and
 - e. The need for fencing and signage along the buffer edge.

H. Mitigation measures. Possible mitigation measures to be included in the report, or required by the Director, could include, but are not limited to:

1. Establishment of buffer zones;
2. Preservation of critically important plants and trees;
3. Limitation of access to habitat areas;
4. Seasonal restriction of construction activities;
5. Establishing phased development requirements; and
6. Monitoring plan for a period necessary to establish that performance standards have been met. Generally this will be for a period of seven to ten years.

I. HMP adequacy. The HMP shall demonstrate to the satisfaction of the Director that the habitat functions and values are improved by implementation of the HMP. If there is a disagreement between the Director and the applicant as to the adequacy of the HMP, the issue of plan adequacy shall be resolved by consulting with the Washington Department of Fish and Wildlife for HMPs relating to streams or the Washington Department of Ecology for HMPs relating to wetlands. If the State agencies are not available in a timely manner, the applicant may choose to have the City refer the HMPs to a third party consultant at the expense of the applicant. After consultation with such State departments or third party consultant, the Director shall make a final decision on the adequacy of the HMP.

J. Timing. An HMP must be developed and approved either prior to preliminary plat approval or issuance of the building permit, as applicable, and must be implemented before the City grants either final plat approval or an occupancy permit, as applicable.

K. Performance Surety. The Director may require that the applicant provide a performance surety to ensure conformance with mitigation requirements of the habitat management plan pursuant to BIMC 16.20.180.

16.20.070 Variances

A. Applicability. An applicant may seek a variance from habitat buffer standards for wetlands or fish and wildlife habitat conservation areas, ~~or provisions of section 16.20.150(E)(2)(a) pertaining to setbacks from slopes classified as a geologically hazardous area,~~ where application of the standards renders compliance with these provisions an unnecessary hardship. A variance is authorized primarily for relief from wetland and stream habitat buffer standards that result in greater reduction than can be

achieved through the buffer averaging in Subsection 16.20.050(B) above. A variance will not be allowed for reduction of the water quality buffers. Alterations specific to wetlands and streams and their water quality buffers are processed pursuant to a reasonable use exception, BIMC 16.20.080.

B. A variance may be granted by the Director when it can be shown that the application meets all of the following criteria:

1. Special circumstances applicable to the subject property, including size, shape, or topography, and the strict application of this chapter is found to deprive the subject property of rights and privileges enjoyed by other properties in the vicinity; provided, however, the fact that those surrounding properties have been developed under regulations in force prior to the adoption of Ordinance No. 2005-03 shall not be the sole basis for the granting of a variance; and

2. The special circumstances referred to in Subsection (a) above are not the result of the actions of the current or previous owner; and

3. The granting of the variance will not result in substantial detrimental impact to the critical area, public welfare or injurious to the property or improvements in the vicinity and area in which the property is situated; and

4. The granting of the variance is the minimum necessary to accommodate the permitted use; and

5. No other practicable or reasonable alternative exists; and

6. A mitigation plan has been submitted and is approved for the proposed use of the critical area; and

7. If structures are the approved use for which the variance is applied, the structures shall be no greater than the minimum size necessary to accommodate the permitted use; and

8. Retention of existing native or equivalent vegetation in other portions of the site is provided in order to offset habitat loss from buffer reduction; and

9. A Habitat Management Plan has been prepared pursuant to BIMC 16.20.060, unless it is determined through the applicable review process that such a plan is unnecessary.

C. Requests for variances shall include the application requirements of BIMC 16.20.060, 16.20.090, 16.20.110, or 16.20.150, whichever is applicable, and payment of an appropriate application fee.

D. The Director shall administratively review variances based on the criteria and standards referenced in this Section.

E. The Director may grant a variance from the substantive or procedural requirements of this chapter for the development of public utilities when:

1. The application of the requirements of this chapter would be inconsistent with the Comprehensive Plan or the utility's public service obligations; and,

2. The proposed utility activity does not pose an unreasonable threat to the public health, safety or welfare on or off the development proposal site; and,

3. Any alterations to critical areas and buffers are the minimum necessary to reasonably accommodate the proposed utility activity and any impacts are mitigated.

16.20.080 Reasonable use exceptions

A. Applicability and Intent. A reasonable use exception (RUE) is intended to ensure reasonable use of a property when reasonable use of that property cannot be achieved through any other means. An applicant may request an RUE pursuant to this Section if the applicant demonstrates that:

1. The subject property is encumbered to such an extent by critical areas and/or water quality buffers that application of this chapter would deny all reasonable use of the subject property; and

2. Reasonable use of the subject property cannot be achieved through Buffer Averaging (BIMC 16.20.050.B), a Habitat Management Plan (BIMC 16.20.060), or a Variance (BIMC 16.20.070).

B. Exception Request and Review Process. An application for an RUE shall be made to the City and shall include a critical area report, including mitigation plan, if necessary; and any other relevant information and reports that are necessary, in the opinion of the Director, to process and prepare the recommendation on the application, such as permit applications to other agencies, special studies, and environmental documents prepared pursuant to the State Environmental Policy Act, Chapter 43.21C RCW (SEPA documents).

C. After receiving the application, the Director shall determine whether the property qualifies for inclusion in any program established by the City that would eliminate the need for an RUE including, but not limited to, programs regarding transfer of development rights, mitigation banking, and open space acquisition. If the property qualifies for inclusion in one or more of such programs, the Director shall notify the applicant in writing of such qualification and of the applicable rules and regulations, and shall send an application form for inclusion in such program(s). If the property is included in one or more of such programs, the application shall be further processed as amended or withdrawn, as appropriate.

D. After receiving the application, the City may, at its sole discretion, offer to purchase the development rights rather than grant an RUE, and the applicant, at his/her sole discretion, may agree to accept the offer to purchase said development rights rather than pursue an RUE.

E. The Director shall prepare a recommendation to the Hearing Examiner based on review of the submitted information and reports, a site inspection, and the proposal's compliance with the criteria in Subsection (G), below.

F. Hearing Examiner Review. The hearing examiner shall review the RUE application and conduct a public hearing pursuant to the provisions of the BIMC 2.16.100. The Hearing Examiner shall approve, approve with conditions, or deny the request based on the proposal's compliance with all of the RUE review criteria in Subsection (G), below.

G. Reasonable Use Review Criteria. Criteria for review and approval of reasonable use exceptions are as follows:

1. The application of this chapter would deny all reasonable use of the property;
2. There is no reasonable alternative to the proposal;

3. The proposed impact to the critical area is the minimum necessary to allow reasonable use of the property;
 4. The inability of the applicant to derive reasonable use of the property is not the result of actions by the applicant, or of the applicant's predecessor, that occurred after February 20, 1992;
 5. The proposed total lot coverage does not exceed 1,200 square feet;
 6. The proposal does not pose an unreasonable threat to the public health, safety, or welfare on or off the property;
 7. Any net loss of critical area functions and values, as determined by a qualified consultant through the application of best available science, will be mitigated on-site to the extent feasible if off-site options are not available. If off-site options, such as a fee-in-lieu or mitigation banking program, are available, the mix of on-site and off-site mitigation should be based on recommendations of the consultant; and
 8. A Habitat Management Plan has been prepared pursuant to BIMC 16.20.060, unless it is determined through the applicable review process that such a plan is unnecessary; and
 9. The proposal is consistent with other applicable regulations and standards.
- H. Burden of Proof. The burden of proof shall be on the applicant to bring forth evidence in support of the application and to provide sufficient information on which any decision has to be made on the application. The standard for the burden of proof shall be clear and convincing evidence.

16.20.090 Application requirements.

A. Submittal Requirements. Applications for land use or development proposals within critical areas or their buffers shall be filed with the information requested on the application forms available from the Department of Planning and Community Development. The applicant shall not be granted any approval or permission to conduct development or land use in a critical area and/or its buffer prior to fulfilling the requirements of this chapter.

B. Support Information Requirements. When support information is required by the Director it shall contain the following and be prepared by one or more of the experts listed in Subsection B.4 of this section:

1. A description of the critical areas on or adjoining the site and how the proposed development will or will not impact critical areas, their buffers, and adjoining properties, including:
 - a. Drainage, surface and subsurface hydrology, and water quality;
 - b. Existing vegetation as it relates to wetlands, steep slopes, soil stability, and fish and wildlife habitat value; and
 - c. Other critical area characteristics and functions.
2. Recommended methods for mitigating impacts and a description of how these methods may impact adjacent properties;
3. Any additional information determined as relevant by the Director;
4. Such studies shall be prepared by experts in the area of concern, who shall be selected from a list of approved consultants prepared by the Director, as follows:

- a. Aquifer recharge study: Hydrogeologist;
 - b. Flood hazard area study: Professional civil engineer; hydro-geologist;
 - c. Geologically hazardous area study: Engineering geologist; geotechnical engineer, provided that:
 - i. An engineering geologist may provide a study, including interpretation, evaluation, analysis, and application of geological information and data and may predict potential or likely changes in types and rates of surficial geologic processes due to proposed changes to a location, provided it does not contain recommended methods for mitigating identified impacts, other than avoidance, structural impacts to, or suitability of civil works; and
 - ii. Engineering geologists may not provide engineering recommendations or design recommendations, but may contribute to a complete geotechnical report that is co-sealed by a geotechnical engineer.
 - d. Stream, riparian area, drainage corridor study: Biologist with stream ecology expertise; fish or wildlife biologist; a civil engineer may provide studies for drainage, surface and subsurface hydrology, and water quality;
 - e. Wetland study: Wetlands specialist.
 - f. Habitat Management Plans: Wildlife biologist and/or fisheries biologist.
5. The Director may in some cases retain experts at the applicant's expense to assist in the review of studies; and
6. Such studies shall be prepared in accordance with procedures established by the Director or City Engineer as specified.

16.20.100 Minimizing impacts to critical areas.

- A. If the Director determines that negative impacts to critical areas are necessary and unavoidable, the applicant shall take measures to minimize the impacts.
- B. Such measures shall include but are not limited to:
 - 1. Limiting the degree or magnitude of the regulated activity;
 - 2. Limiting the implementation of the regulated activity;
 - 3. Using appropriate and best available technology;
 - 4. Taking affirmative steps to avoid or reduce impacts;
 - 5. Sensitive site design and siting of facilities and construction staging areas away from critical areas and their buffers;
 - 6. Involving resource agencies early in site planning; and
 - 7. Providing protective measures such as siltation curtains, hay bales and other siltation prevention measures, scheduling the regulated activity to avoid interference with wildlife and fisheries rearing, resting, nesting or spawning activities.

16.20.110 Mitigation plan requirements.

- A. All critical area restoration, creation and/or enhancement projects required pursuant to this chapter either as a permit condition or as a result of an enforcement action shall follow a mitigation plan prepared by an expert approved by the Director. The applicant or violator shall receive written approval of the mitigation plan by the Director prior to commencement. Compensatory mitigation is not required for allowed activities

which utilize best management practices to protect the functions and values of regulated critical areas.

B. Purpose of Mitigation Plan. The mitigation plan shall provide information on land acquisition, construction, maintenance and monitoring of the replaced critical area. The mitigation plan shall recreate as nearly as possible the original critical area in terms of its acreage, function, geographic location and setting.

C. Mitigation Plan Submittal Requirements. A complete mitigation plan shall consist of plot plans, a written report, and performance bonds, as required below. The plot plans and written report shall be prepared by qualified professionals approved by the Director.

1. Plot Plan Requirements. The following information shall be submitted on one or more plot plans (as determined by the Director):

a. A legal description and a survey (boundary and topography) prepared by a licensed surveyor of the proposed development site, compensation site, and location of existing critical area(s) on each. This shall include wetland delineation and existing wetland acreage.

b. Scaled plot plan(s) indicating:

i. Proposed construction;

ii. Zoning setback and critical area buffer requirements;

iii. Construction phasing and sequence of construction;

iv. Site cross-sections, percent slope, existing and finished grade elevations;

v. Soil and substrate conditions;

vi. Grading and excavation plan, including erosion and sediment control plans needed for construction and long-term survival; substrate stockpiling locations and techniques, and source controls needed for critical area construction and maintenance;

vii. Landscape plans indicating species, types, quantities, locations, size, spacing or density of planting; planting season or timing; planting instructions, watering schedule and nutrient requirements; source of plant materials or seeds; and, where appropriate, measures to protect plants from destruction or predation; and

viii. Water control structures and water-level maintenance practices needed to achieve the necessary hydrocycle/hydroperiod characteristics, etc.

2. Written Report Requirements. A written report shall accompany the plot plan(s) and shall provide the additional information required below. In addition, the report should be used as needed to clarify or explain elements of the plot plan(s).

a. Baseline Information.

i. Wetland delineation and existing wetland acreage;

ii. Vegetative, faunal and hydrologic characteristics;

iii. Soil and substrate conditions;

iv. Relationship within watershed and to existing streams, wetlands, ponds, or saltwater;

v. Existing and proposed adjacent site conditions; and

vi. Existing and proposed ownership.

b. Environmental Goals and Objectives. The report shall contain a description of the environmental goals and objectives to be met by the compensation

plan. The goals and objectives shall be related to the functions and values of the original critical area or, if out-of-kind wetland mitigation, the type of wetland to be emulated. This analysis shall include, but is not limited to the following:

- i. Site selection criteria;
 - ii. Identification of compensation goals;
 - iii. Identification of functions and values;
 - iv. Dates for beginning and completion of the project and compensation plan;
 - v. A complete description of the relationship between and among structures and functions sought;
 - vi. Review of available literature and/or known like-projects to date in restoring or creating the type of critical area proposed;
 - vii. Likelihood of success of the proposed compensation project at duplicating the original critical area. This shall be based on experiences of comparable projects identified in the literature review or existing projects, if any; and
 - viii. Likelihood of the ability of the created or restored critical area to provide the functions and values of the original critical area. This shall be based on such factors as surface water and groundwater supply and flow patterns; dynamics of the ecosystem; sediment or pollutant influx and/or erosion, periodic flooding and drought, etc.; presence of invasive flora or fauna; potential human or animal disturbance; and previous comparable projects, if any.
- c. Performance Standards. Specific criteria shall be provided for evaluating whether or not the goals and objectives of the project are met and for beginning remedial action or contingency measures. Such criteria may include water quality standards, survival rates of planted vegetation, species abundance, and diversity targets, habitat diversity indices, or other ecological, geological or hydrological criteria.
- d. Detailed Specifications. Written specifications and descriptions of compensation techniques shall be provided. These shall include, but not be limited to, items in Subsection C.2 of this Section.
- e. Monitoring Program. A program outlining the approach for monitoring construction of the compensation project and for assessing a completed project shall be provided. Monitoring may include, but is not limited to:
- i. Establishing vegetation plots to track changes in plant species composition and density over time;
 - ii. Using photo stations to evaluate vegetation community response;
 - iii. Sampling surface and subsurface waters to determine pollutant loading, and changes from the natural variability of background conditions (pH, nutrients, heavy metals);
 - iv. Measuring base flow rates and storm water runoff to model and evaluate water quality predictions, if appropriate;
 - v. Measuring sedimentation rates, if applicable; and
 - vi. Sampling fish and wildlife populations to determine habitat utilization, species abundance and diversity.

f. A protocol shall be included outlining how the monitoring data will be evaluated by agencies that are tracking the progress of the compensation project. A monitoring report shall be submitted annually, at a minimum, documenting milestones, successes, problems, and contingency actions of the compensation project. The compensation project shall be monitored for a period necessary to establish that performance standards have been met, but not for a period less than seven years.

g. Contingency Plan. Identification of potential courses of action, and any corrective measures to be taken when monitoring or evaluation indicates project performance standards are not being met.

D. Performance and Maintenance Surety and Demonstration of Competence. A demonstration of financial resources, administrative, supervisory, and technical competence and scientific expertise to successfully execute the compensation project shall be provided. A compensation project manager shall be named and the qualifications of each team member involved in preparing the mitigation plan and implementing and supervising the project shall be provided, including educational background and areas of expertise, training and experience with comparable projects. In addition, a surety ensuring fulfillment of the compensation project, monitoring program, and any contingency measure shall be posted pursuant to BIMC 16.20.180.

E. City Consultation. The City may consult with and solicit comments from any federal, state, regional, or local agency, including tribes, having any special expertise with respect to any environmental impact prior to approving a mitigation proposal which includes critical areas compensation. The compensation project proponents should provide sufficient information on plan design and implementation in order for such agencies to comment on the overall adequacy of the mitigation proposal.

F. Permit Conditions. Any compensation project prepared pursuant to this section and approved by the Director shall become part of the application for the permit.

16.20.120 Aquifer recharge areas.

A. Classification. The entirety of Bainbridge Island is the recharge area for the island aquifers. Certain uses must be carefully evaluated before being approved, and others must be prohibited, in order to protect the city's aquifers, due to the following:

1. Bainbridge Island is dependent upon its aquifers as the sole and essential source for drinking water. Critical recharge areas have the potential to affect potable water where an essential source of drinking water is vulnerable to contamination.

2. The island aquifers are vulnerable to pollution that has the potential to create a significant public health hazard. High vulnerability is indicative of land uses which produce contaminants that may degrade groundwater and low vulnerability is indicative of land uses which will not.

3. Susceptibility to pollution is a function of depth of groundwater, permeability of soils, soil types, presence of potential sources of contamination and any other relevant factors.

4. Soil types that transfer water to the aquifer are rated in terms of infiltration rate. Soil types with the high infiltration rates are associated with areas of high aquifer

recharge. The rates and soil types are defined by the U.S. Department of Agriculture, Soil Conservation Service, in the Soil Survey of Kitsap County.

5. The island aquifers are vulnerable to a reduction in recharge from activities that reduce the infiltration rate on a site.

B. Hydrogeologic Assessment. The following proposed activities will require the preparation of a hydrogeologic assessment:

1. The use of hazardous substances, other than household chemicals used according to the directions specified on the packaging for domestic applications;
2. The use of injection wells, including on-site septic systems, except those domestic septic systems releasing less than 14,500 gallons of effluent per day; or
3. Any other activity determined by the Director likely to have an adverse impact on ground water quality or quantity or on the recharge of the aquifer.

C. Hydrogeologic Assessment Requirements. A hydrogeologic assessment shall include, at a minimum, the following site and proposal-related information:

1. Available information regarding geologic and hydrogeologic characteristics of the site including the surface location of all critical aquifer recharge areas located on site or immediately adjacent to the site, and permeability of the unsaturated zone;
2. Ground water depth, flow direction, and gradient based on available information;
3. Currently available data on wells and springs within 1,300 feet of the project area;
4. Location of other critical areas, including surface waters, within 1,300 feet of the project area;
5. Available historic water quality data for the area to be affected by the proposed activity;
6. Best management practices proposed to be utilized to protect groundwater quality; and
7. Low impact development practices designed to maintain infiltration rates to the underlying aquifers.

D. Performance Standards – Specific Uses.

1. Storage Tanks. All storage tanks proposed in a critical aquifer recharge area must comply with local building code requirements and must conform to the following requirements:

- a. Underground Tanks. All new underground storage facilities proposed for the storage of hazardous substances or hazardous wastes shall be designed and constructed so as to:
 - i. Prevent releases due to corrosion or structural failure for the operational life of the tank;
 - ii. Be protected against corrosion, constructed of noncorrosive material, steel clad with a noncorrosive material, or designed to include a secondary containment system to prevent the release or threatened release of any stored substances; and
 - iii. Use material in the construction or lining of the tank that is compatible with the substance to be stored.

b. Aboveground Tanks. All new aboveground storage facilities proposed for the storage of hazardous substances or hazardous wastes shall be designed and constructed so as to:

- i. Not allow the release of a hazardous substance to the ground, ground waters, or surface waters;
- ii. Have a primary containment area enclosing or underlying the tank or part thereof; and
- iii. A secondary containment system either built into the tank structure or a dike system built outside the tank for all tanks.

2. Vehicle Repair and Servicing

a. Vehicle repair and servicing must be conducted over impermeable pads and within a covered structure capable of withstanding normally expected weather conditions. Chemicals used in the process of vehicle repair and servicing must be stored in a manner that protects them from weather and provides containment should leaks occur.

b. No dry wells shall be allowed on sites used for vehicle repair and servicing. Dry wells existing on the site prior to facility establishment must be abandoned using techniques approved by the state Department of Ecology prior to commencement of the proposed activity.

3. Residential Use of Pesticides and Nutrients. Application of household pesticides, herbicides, and fertilizers shall not exceed times and rates specified on the packaging.

4. Use of Reclaimed Water for Surface Percolation or Direct Recharge. Water reuse projects for reclaimed water must be in accordance with the adopted water or sewer comprehensive plans that have been approved by the state departments of Ecology and Health.

a. Use of reclaimed water for surface percolation must meet the ground water recharge criteria given in Chapter 90.46.080(1) and Chapter 90.46.010(10) RCW. The state Department of Ecology may establish additional discharge limits in accordance with Chapter 90.46.080(2) RCW.

b. Direct injection must be in accordance with the standards developed by authority of Chapter 90.46.042 RCW.

5. State and Federal Regulations. The uses listed below shall be conditioned as necessary to protect critical aquifer recharge areas in accordance with the applicable state and federal regulations.

Table 1: Statutes, Regulations, and Guidance Pertaining to
Ground Water Impacting Activities

Activity	Statute – Regulation – Guidance
Above Ground Storage Tanks	Chapter 173-303-640 WAC
Animal Feedlots	Chapter 173-216 WAC, Chapter 173-220 WAC

Activity	Statute – Regulation – Guidance
Automobile Washers	Chapter 173-216 WAC, Best Management Practices for Vehicle and Equipment Discharges (Washington Department of Ecology WQ-R-95-56)
Below Ground Storage Tanks	Chapter 173-360 WAC
Chemical Treatment Storage and Disposal Facilities	Chapter 173-303-182 WAC
Hazardous Waste Generator (<i>Boat Repair Shops, Biological Research Facility, Dry Cleaners, Furniture Stripping, Motor Vehicle Service Garages, Photographic Processing, Printing and Publishing Shops, etc.</i>)	Chapter 173-303 WAC
Injection Wells	Federal 40 CFR Parts 144 and 146, Chapter 173-218 WAC
Junk Yards and Salvage Yards	Chapter 173-304 WAC, Best Management Practices to Prevent Stormwater Pollution at Vehicles Recycler Facilities (Washington State Department of Ecology 94-146)
Oil and Gas Drilling	Chapter 332-12-450 WAC, Chapter 173-218 WAC
On-Site Sewage Systems (Large Scale)	Chapter 173-240 WAC
On-Site Sewage Systems (< 14,500 gal/day)	Chapter 246-272 WAC, Local Health Ordinances
Pesticide Storage and Use	Chapter 15.54 RCW, Chapter 17.21 RCW
Sawmills	Chapter 173-303 WAC, Chapter 173-304 WAC, Best Management Practices to Prevent Stormwater Pollution at Log Yards (Washington State Department of Ecology, 95-53)
Solid Waste Handling and Recycling Facilities	Chapter 173-304 WAC
Surface Mining	Chapter 332-18-015 WAC

Activity	Statute – Regulation – Guidance
Wastewater Application to Land Surface	Chapter 173-216 WAC, Chapter 173-200 WAC, Washington State Department of Ecology Land Application Guidelines, Best Management Practices for Irrigated Agriculture

E. Prohibited Uses. Uses Prohibited In Aquifer Recharge Areas. The following activities and uses are prohibited in Aquifer Recharge Areas:

1. Landfills. Landfills, including hazardous or dangerous waste, municipal solid waste, special waste, wood waste, and inert and demolition waste landfills;
2. Underground Injection Wells. Class I, III, and IV wells and subclasses 5F01, 5D03, 5F04, 5W09, 5W10, 5W11, 5W31, 5X13, 5X14, 5X15, 5W20, 5X28, and 5N24 of Class V wells;
3. Wood Treatment Facilities. Wood treatment facilities that allow any portion of the treatment process to occur over permeable surfaces (both natural and manmade);
4. Storage, Processing, or Disposal of Radioactive Substances. Facilities that store (other than minor sources such as medicinal uses or industrial testing devices) process, or dispose of radioactive substances; and
5. Other Prohibited Uses or Activities:
 - a. Activities that would significantly reduce the recharge to aquifers currently or potentially used as a potable water source; and
 - b. Activities that would significantly reduce the recharge to aquifers that are a source of significant baseflow to a regulated stream.

16.20.130 Fish and wildlife habitat conservation areas.

A. Purpose. This section applies to all Fish and Wildlife Habitat Conservation Areas, as categorized in Section 16.20.130(B) below. The intent of this Section is to:

1. Preserve natural flood control, stormwater storage, and drainage or stream flow patterns;
2. Control siltation, protect nutrient reserves, and maintain stream flows and stream quality for fish and marine shellfish;
3. Prevent turbidity and pollution of streams and fish or shellfish bearing waters;
4. Preserve and protect habitat adequate to support viable populations of native wildlife and fish on Bainbridge Island; and,
5. Encourage non-regulatory methods of habitat retention whenever practical, through education and the Open Space Tax Program.

B. Fish and Wildlife Habitat Conservation Areas Categories.

1. Classification. The following categories shall be used in classifying Fish and Wildlife Habitat Conservation Areas:
 - a. Marine Critical Areas. Commercial and recreational shellfish areas; kelp and eelgrass beds; marine and estuarine waters of the state and herring, sand lance and smelt spawning areas.

b. Streams: All streams which meet the criteria for Type F, Np and Ns waters as set forth in WAC 222-16-030 of the Department of Natural Resources Water Typing System and as further modified by the definitions in this chapter. Once a stream has been classified, the City must document the reasons for changes in the classification.

c. Fish and Wildlife Conservation Areas:

i. Class I Fish and Wildlife Conservation Areas: Habitats recognized by federal or state agencies for federal and/or state listed endangered, threatened, and sensitive species documented in maps or data bases available to the City of Bainbridge Island and which, if altered, may reduce the likelihood that the species will maintain and reproduce over the long term.

ii. Class II Fish and Wildlife Conservation Areas. Habitats for State listed candidate, monitor, or priority species documented in maps or data bases available to City of Bainbridge Island and its citizens, and which, if altered, may reduce the likelihood that the species will maintain and reproduce over the long term.

d. Habitats and Species of Local Importance. This section provides for the designation and protection of habitats and species of local importance.

i. Designation of species of habitat of local importance can be based on any of the following circumstances:

(a) Local populations of native species are in danger of extirpation based on existing trends.

(b) Local populations of native species are likely to become threatened or endangered under state or federal law.

(c) Local populations of native species are vulnerable or declining.

(d) The species or habitat has recreation, commercial, game, tribal, or other special value.

(e) Long-term persistence of a species is dependent on the protection, maintenance, and/or restoration of the nominated habitat.

(f) Protection by other county, state, or federal policies, laws, regulations, or non-regulatory tools is not adequate to prevent degradation of the species or habitat in the city.

(g) Without protection, there is likelihood that the species or habitat will be diminished over the long term.

ii. Nomination.

(a) Any person may nominate habitats and species for designation.

(b) The nomination should indicate whether specific habitat features are to be protected (for example, nest sites, breeding areas, and nurseries), or whether the habitat or ecosystem is being nominated in its entirety.

(c) Where the nomination is a specific habitat site, the nomination shall include the name and address of all property owners of record of all assessor parcels within the area potentially affected by the management recommendations. The list shall at a minimum include all properties within 300 feet from the edge of all property identified for special designation.

(d) The nomination shall include recommended management strategies for the species or habitats. Management strategies must be supported by the

best available science, and where restoration of habitat is proposed, a specific plan for restoration must be provided prior to nomination.

iii. Nomination processing and approval. The decision whether to designate a nominated species or habitat as one of local importance shall be made by the City Council. If approved, the City Council shall pass an ordinance establishing the designation.

iv. Establishment of specific rules for protection. Within 120 days of the effective date of an ordinance designating a species or habitat of local importance, the Director shall develop an administrative rule addressing protection in compliance with this section.

C. Development Standards. Regulated uses in designated Fish and Wildlife Habitat Conservation Areas and/or buffers shall comply with the performance standards outlined in this Section.

1. Development standards for Marine Critical Areas are defined in the City's Shoreline Master Program, Chapter 16.12 BIMC. The shoreline studies that are currently required from all applicants under the Shoreline Master Program, Chapter 16.12 BIMC, are summarized in Exhibit A. Marine Critical Areas are not subject to Development Standards 2-16 of this Subsection C.

2. Development standards – streams:

a. Water quality buffers – An applicant shall provide the prescribed water quality buffers in Table 2 unless a Reasonable Use Exception is granted pursuant to BIMC 16.20.080.

b. Habitat buffers – An applicant shall provide either:

i. The prescribed habitat buffers in Table 2; or

ii. An approved Habitat Management Plan, pursuant to BIMC 16.20.060, that clearly provides greater habitat functions and values in perpetuity than the prescribed habitat buffers in Table 2.

c. Buffer distances shall be measured from the ordinary high water mark (OHM) or from the top of the bank where the OHM cannot be identified. Buffers shall be retained in their natural condition. It is acceptable, however, to enhance the buffer by planting native or equivalent vegetation as approved by the Director.

d. Alteration of habitat buffer areas may be allowed for water dependent and water related activities and for development authorized by BIMC 16.20.040.C (Exemptions), or BIMC 16.20.040.D (Standards for Existing Development), or BIMC 16.20.050.B (Buffer Averaging), or BIMC 16.20.070 (Variances), or BIMC 16.20.080 (Reasonable Use Exception).

e. The buffer width shall be increased to include streamside wetlands which provide overflow storage for stormwater, feed water back to the stream during low flow, or provide shelter and food for fish. In braided channels, the ordinary high water mark or top of bank shall be defined so as to include the entire stream feature.

f. Refuse and landscaping debris shall not be placed in buffers.

g. Streams in Ravines - Buffers. For streams in ravines outside the Mixed Use Town Center with ravine sides 10 feet or greater in height, the buffer width shall be the greater of:

- i. The buffer width required for the stream type; or
- ii. A buffer width which extends 25 feet beyond the top of the ravine.
- h. Building Setback Line. A building surface setback line of 15 feet is required from the edge of any fish and wildlife habitat conservation area buffer except as provided for in BIMC 16.20.170. Minor structures such as decks or impervious surfaces such as driveways may be permitted if the Director determines that such intrusions will not adversely impact the fish and wildlife habitat conservation area. The setback shall be identified on the site plan and filed as an attachment to the notice on title as required by BIMC 16.20.190.

Table 2: Stream Buffers

Stream Category	Water Quality Buffer	Habitat Buffer	Total Buffer
Fish Bearing (F)	100 ft	50 ft	150 ft
Non-Fish Perennial (Np)	40 ft	10 ft	50 ft
Non-Fish Seasonal (Ns)	40 ft	10 ft	50 ft

3. Class I Fish and Wildlife Conservation Areas Development Standards. All development as described within this chapter or within 200 feet of designated Class I Wildlife Conservation Areas, except Marine Critical Areas, shall adhere to the following standards:

- a. The applicant shall submit a Habitat Management Plan as specified in BIMC 16.20.060 for approval by the Director. If a wildlife conservation area designation is based on the presence of bald eagles, a Bald Eagle Management Plan, approved by the Washington State Department of Fish and Wildlife and meeting the requirements and guidelines of the bald eagle protection rules, WAC 232-12-292, as now or hereafter amended, shall satisfy the requirements for a Habitat Management Plan (HMP).
- b. All new development within ranges and habitat elements with which Class I Fish and Wildlife have a significant relationship may require the submittal of a Habitat Management Plan (HMP) as specified in BIMC 16.20.060. The requirement for an HMP shall be determined during the SEPA/Critical Areas review on the project.
- c. An HMP required pursuant to this section shall consider measures to retain and protect the wildlife habitat and shall consider effects of land use intensity, buffers, setbacks, impervious surfaces, erosion control and retention of native or equivalent vegetation.
- d. Increased Buffer Provisions. The Director may increase buffer widths, up to 50% greater than the applicable buffer set in this chapter for critical areas with known locations of endangered, threatened, or state monitor or priority species for which a habitat management plan indicates a larger buffer is necessary to protect habitat values for such species. Such determination shall be based on site-specific and project-related conditions.

4. Class II Fish and Wildlife Conservation Area Development Standards. All development within designated Class II Wildlife Conservation Areas shall adhere to the following standards:

a. An HMP may be required for any proposed development within designated Class II Fish and Wildlife Conservation Areas. The HMP shall consider measures to retain and protect the wildlife habitat and shall consider effects of land use intensity, buffers, setbacks, impervious surfaces, erosion control and retention of native or equivalent vegetation. The requirement for an HMP shall be determined during the SEPA/Critical Areas review on the project.

b. Increased Buffer Provisions. The Director may increase buffer widths, up to 50% greater than the applicable buffer set in this chapter for critical areas with known locations of endangered, threatened, or state monitor or priority species for which a habitat management plan indicates a larger buffer is necessary to protect habitat values for such species. Such determination shall be based on site-specific and project-related conditions.

5. Stream Crossings. Any private or public road expansion or construction which is allowed and must cross streams classified within this chapter, shall comply with the following minimum development standards:

a. Bridges or bottomless culverts shall be required for all streams which have Salmonid breeding habitat. Other alternatives may be allowed upon submittal of a Habitat Management Plan which demonstrates that other alternatives would not result in significant impacts to the Fish and Wildlife Conservation Area, as determined appropriate through the Washington State Department of Fish and Wildlife, Hydraulics Project Approval process. The plan must demonstrate that salmon habitat will be replaced on a 1:1 ratio.

b. Crossings shall not occur in Salmonid spawning areas unless no other feasible crossing site exists. For new development proposals, if existing crossings are determined to adversely impact salmon spawning or passage areas, new or upgraded crossings shall be located as determined necessary through coordination with the Washington State Department of Fish and Wildlife;

c. Bridge piers or abutments shall not be placed in either the floodway or between the ordinary, high water marks unless no other feasible alternative placement exists;

d. Crossings shall not diminish flood carrying capacity;

e. Crossings shall serve multiple properties whenever possible;

f. Where there is no reasonable alternative to providing a conventional culvert, the culvert shall be the minimum length necessary to accommodate the permitted activity.

6. Stream Relocations. Stream relocations for the purpose of flood protection and/or fisheries restoration shall only be permitted when adhering to the following minimum performance standards and when consistent with Washington State Department of Fish and Wildlife Hydraulic Project Approval:

a. The channel, bank, and buffer areas should be replanted with native or equivalent vegetation that replicates a natural, undisturbed riparian condition;

b. For those shorelands and waters designated as Frequently Flooded Areas pursuant to BIMC 16.20.140, a professional engineer licensed in the State of Washington shall provide information demonstrating that the equivalent base flood storage volume and function will be maintained; and

c. Relocated stream channels shall be designed to meet or exceed the functions and values of the stream to be relocated.

7. Pesticides, Fertilizers and Herbicides. No pesticides, herbicides or fertilizers may be used in Fish and Wildlife Conservation Areas or their buffers, except those approved by the EPA and approved under a DOE Water Quality Modification Permit for use in Fish and Wildlife Habitat Conservation Area environments. Where approved, herbicides must be applied by a licensed applicator in accordance with the safe application practices on the label.

8. Land Divisions and Land Use Permits. All land divisions and land uses proposed on a site that includes Fish and Wildlife Habitat Conservation Areas shall comply with the following procedures and development standards:

a. The open water area of lakes, streams, and tidal lands shall not be permitted for use in calculating minimum lot area.

b. Land division approvals shall be conditioned so that all required buffers are designated as an easement or covenant encumbering the buffer. Such easement or covenant shall be recorded together with the land division and represented on the final plat, short plat or binding site plan.

c. In order to avoid the creation of non-conforming lots, each new lot shall contain at least one building site that meets the requirements of this chapter, including buffer requirements for habitat conservation areas. Each lot must also have access and a sewage disposal system location that are suitable for development which do not adversely impact the Fish and Wildlife Conservation Area.

d. After preliminary approval and prior to final land division approval, the Director may require that the common boundary between a required buffer and the adjacent lands be identified using permanent signs. In lieu of signs, alternative methods of buffer identification may be approved when such methods are determined by the Director to provide adequate protection to the aquatic buffer.

9. Agricultural Restrictions. In all development proposals which would permit introduction of agriculture to Fish and Wildlife Habitat Conservation Areas, damage to the area shall be avoided by one of the following methods:

a. Implementation of the farm conservation plan agreed upon by the Kitsap Conservation District and the applicant, to protect and enhance the water quality of the aquatic area; and/or,

b. Fencing located not closer than the outer buffer edge.

10. Trails and Trail-Related Facilities. Construction of public and private trails and trail-related facilities, such as benches, interpretive centers, and viewing platforms, may be allowed in Fish and Wildlife Habitat Conservation Areas or their buffers pursuant to the following standards:

a. Trails and related facilities shall, to the extent feasible, be placed on existing road grades, utility corridors, or other such previously disturbed areas;

b. Trails and related facilities shall be planned to minimize removal of trees, shrubs, snags and important wildlife habitat;

c. Viewing platforms, interpretive centers, benches and access to them, shall be designed and located to minimize disturbance of wildlife habitat and/or critical characteristics of the affected conservation area;

d. Trails, in general, shall be set back from streams so that there will be no or minimal impact to the stream from trail use or maintenance. Trails shall be constructed with pervious surfaces when feasible.

11. Utilities. Placement of utilities within designated Fish and Wildlife Habitat Conservation Areas may be allowed pursuant to the following standards:

a. The minor utility maintenance authorized in BIMC 16.20.040(C) shall be allowed within designated Fish and Wildlife Habitat Conservation areas, subject to best management practices.

b. Construction of utilities may be permitted in Fish and Wildlife Habitat Conservation Areas or their buffers, only when no practicable or reasonable alternative location is available and the utility corridor meets the requirements for installation, replacement of vegetation and maintenance outlined below, and as required pursuant to BIMC 16.20.160(G) (Special Use Review), which may be required by this Chapter.

c. Sewer or on-site Sewage Utility. Construction of sewer lines or on-site sewage systems may be permitted in Fish and Wildlife Habitat Conservation Areas or their buffers when the applicant demonstrates it is necessary to meet State and/or local health code requirements; there are no other practicable alternatives available; and construction meets the requirement of this section. Joint use of the sewer utility corridor by other utilities may be allowed.

d. New utility corridors shall not be allowed in Fish and Wildlife Habitat Conservation Areas with known locations of federal or state listed endangered, threatened or sensitive species, heron rookeries or nesting sites of raptors which are listed as state candidates except in those circumstances where an approved Habitat Management Plan indicates that the utility corridor will not significantly impact the conservation area;

e. New Utility Corridor Construction. Utility corridor construction and maintenance shall protect the environment of Fish and Wildlife Habitat Conservation Areas and their buffers.

i. New utility corridors shall be aligned whenever possible to avoid cutting or root damage to trees greater than 12 inches in diameter at breast height (four and one-half feet) measured on the uphill side.

ii. New utility corridors shall be revegetated with appropriate native or equivalent vegetation at not less than pre-construction vegetation densities or greater, immediately upon completion of construction or as soon thereafter as possible due to seasonal growing constraints. The utility shall ensure that such vegetation survives.

iii. Any additional corridor access for maintenance shall be provided wherever possible at specific points rather than by parallel roads. If parallel roads are necessary, they shall be of a minimum width but no greater than 15 feet; and shall be contiguous to the location of the utility corridor on the side away from the conservation area.

f. Utility corridor maintenance shall include the following measures to protect the environment of regulated Fish and Wildlife Habitat Conservation Areas.

i. Utility towers should be painted with brush, pad or roller and should not be sandblasted or spray-painted, nor should lead base paints be used.

ii. Pesticides, fertilizers and herbicides: No pesticides or fertilizers may be used in Fish and Wildlife Conservation Areas or their buffers, except those herbicides applied by a licensed applicator in accordance with the safe application practices on the label.

12. Bank Stabilization.

a. A stream channel and bank may be stabilized when naturally occurring earth movement threatens existing structures (defined as requiring a Building Permit pursuant to the applicable building code), public improvements, unique natural resources, public health, safety or welfare, or the only feasible access to property, and, in the case of streams, when such stabilization results in maintenance of Fish and Wildlife Habitat, flood control, and improved water quality.

b. Where bank stabilization is determined to be necessary, bioengineering or other non-structural methods should be the first option for protection. Bulkheads and retaining walls may only be utilized as an engineering solution where it can be demonstrated that an existing residential structure cannot be safely maintained without such measures, and that the resulting retaining wall is the minimum length necessary to provide a stable building area for the structure. The Director may require that bank stabilization be designed by a professional engineer licensed in the State of Washington with demonstrated expertise in hydraulic actions of shorelines. Bank stabilization projects may also require a City of Bainbridge Island clearing or grading permit and Hydraulic Project Approval from the Washington Department of Fish and Wildlife.

c. Nonstructural streambank protective techniques are preferred to bulkheads or other types of streambank armoring. Nonstructural techniques include but are not limited to vegetation plantings and bioengineering.

13. Fencing and Signs. Prior to approval or issuance of permits for land divisions or other new development, the Director may require that the common boundary between a required buffer and the adjacent lands be identified using fencing or permanent signs. In lieu of fencing or signs, alternative methods of buffer identification may be approved when such methods are determined by the Director to provide adequate protection to the buffer.

14. Forest Practice, Class IV General and Conversion Option Harvest Plans (COHPs). All timber harvesting and associated development activity, such as construction of roads, shall comply with the provisions of this chapter, and the Stormwater Management standards in Chapters 15.20 and 15.21 BIMC, including the maintenance of buffers, where required.

15. Road/Street Repair & Construction. Any private or public road or street expansion or construction which may be allowed in a Fish and Wildlife Habitat Conservation Area or its buffer shall comply with the following minimum development standards:

- a. No other reasonable or practicable alternative exists and the road or street crossing serves multiple properties whenever possible;
- b. Expansion or construction of any private or public road shall only be allowed when adverse impacts cannot be avoided;
- c. Public and private roads should provide for other purposes, such as utility crossings, pedestrian or bicycle easements, viewing points, etc.; and
- d. The road or street construction is the minimum necessary, as required by the Department of Public Works, and shall comply with the Department of Public Works' guidelines to provide public safety and mitigated stormwater impacts.
- e. Construction time limits shall be determined in consultation with the Washington State Department of Fish and Wildlife in order to ensure habitat protection.

16. Other allowed Uses in Fish and Wildlife Conservation Areas. Other activities may be allowed using the standard for a category II wetland buffer in BIMC 16.20.160(E), Table 4.

16.20.140 Frequently flooded areas.

A. Classification. Classification for frequently flooded areas shall be consistent with the 100-year floodplain designation of the Federal Emergency Management Agency and the National Flood Insurance Program. In addition the following criteria shall be considered when designating and classifying these areas:

- 1. Flooding impact to human health, safety, and welfare and to public facilities and services;
- 2. Available documentation including federal, state, and local laws, regulations and programs, local maps, and federally subsidized flood insurance programs;
- 3. The future floodplain defined as a channel of the stream and that portion of the adjoining floodplain which is necessary to contain and discharge the base flood flow at build-out without any measurable increase in flood heights; and
- 4. The effect of high tides with strong winds, and greater surface runoff caused by increasing impervious surfaces.

B. Standards.

- 1. Development shall not reduce the effective base flood storage volume. Effective storage capacity shall be maintained.
- 2. Grading or other regulated activities which would reduce the flood water storage volume shall be mitigated by creating compensatory storage on- or off-site. Applicants must provide mitigation plans pursuant to this chapter.
- 3. Base flood data and flood hazard notes shall be on the face of any recorded plat or site plan including, but not limited to, base flood elevations, flood protection elevation, boundary of floodplain, and zero rise floodway.
- 4. Applicants for development in low lying shoreline areas and other areas where flood elevation is controlled by tide level shall be provided with information on sea level rise.

16.20.150 Geologically hazardous areas.

A. General. Geologically hazardous areas include erosion hazard areas, landslide hazard areas, and seismic hazard areas. Zone of influence areas are not considered geologically hazardous areas.

B. Purpose. The intent of this section is to prevent the potential for personal injury or loss of life or property due to flooding, erosion, landslides, seismic events, or soil subsidence. Development must not increase slope instability, and must avoid on-site and off-site impacts, as well as potential risk to structures. Preserving the existing vegetation may be an important part of minimizing those risks.

C. Classification. Geologically hazardous areas shall be classified based upon landslide history and the presence of unstable soils, steepness of slopes, erosion potential, and seismic hazards. Areas in this category are a potential threat to public health, safety, and welfare when construction is allowed. While some potential risk due to construction can be reduced through structural engineering design, construction in these areas should be avoided when the potential risk cannot be reduced to a level comparable to the risk if the site were initially stable prior to construction. Classification and rating shall be based upon the risk to the environment and to development in geologically hazardous areas.

D. Minimum Submittal Requirements.

1. All geologically hazardous areas and buffers.

a. Indemnification. An indemnification or hold harmless agreement shall be required for all projects in geologically hazardous areas and buffers except erosion hazard areas and tsunami hazard areas. The form of the agreement shall be approved by the City and executed prior to the commencement of construction or site alteration.

b. Notice. ~~If no other public notice is required for a proposed development located in a landslide hazard areas, a~~ A notice of intent to construct on a landslide hazard area or reduce the minimum buffer in a landslide hazard area shall be given pursuant to BIMC 2.16.085.C.2. The notice of intent shall be issued within 14 days of a completed application pursuant to BIMC 2.16.055. The notice shall include a 21-day comment period and no permits or approval of reduced buffers shall be issued before the end of the comment period.

c. All reports or analyses required or prepared pursuant to this Section shall be prepared pursuant to BIMC 16.20.090, 16.20.150, and/or any other applicable provisions of this chapter, and shall meet the satisfaction of, and be approved by, the City Engineer prior to the commencement of any development activity.

d. To protect public health, safety and welfare, the City Engineer may call for a third party review of any geotechnical report in cases where there may be potential for substantial damage to life, property or the environment should the proposed engineering solution fail. When a third party review is required, costs incurred for a qualified third party geotechnical engineer to perform the review shall be borne by the applicant.

~~d. Mitigation plans. The City Engineer may determine that a mitigation plan is necessary. The mitigation plan shall propose, and the City Engineer may approve, appropriate mitigation measures, which may include, among others, removal of groundwater, vegetation management, and/or construction of bulkheads or retaining walls. No mitigation plan shall be approved that increases the risk of landslide or erosion on-site or off-site. Bulkheads and retaining walls may only be utilized as engineering solutions where it can be demonstrated that a structure will be more safely protected than without the use of such measures, and that the resulting retaining wall is the minimum size necessary to protect the structure, and that no other reasonable project alternative exists. The mitigation plan shall be prepared by qualified professionals, which may include geotechnical engineer, hydrogeologist, arborist, and/or fisheries biologist, depending on specific circumstances and as deemed appropriate by the City Engineer.~~

e. Geological Hazards Assessment. A Critical Area report is required for all projects in geologically hazardous areas and buffers and shall contain an assessment of geological hazards including the following site- and proposal-related information at a minimum:

i. Site and Construction Plans. The report shall include a copy of the site plans for the proposal showing:

A. The type and extent of geologic hazard areas, any other Critical Areas, and buffers on, adjacent to, or within a zone or distance of potential significant influence as determined by a professional engineer/ geologist;

B. Proposed development, including the location of existing and proposed structures, fill, storage of materials, and drainage facilities, with dimensions indicating distances to the floodplain, if available;

C. The topography, as determined by a professional engineer or geologist, of the project area and all hazard areas addressed in the report; and

D. Clearing limits.

ii. Assessment of Geological Characteristics. The report shall include an assessment of the geologic characteristics of the soils, sediments, and/or rock of the project area and potentially affected adjacent properties, and a review of the site history regarding landslides, erosion, and prior grading. Soils analysis shall be accomplished in accordance with accepted classification systems in use in the region. The assessment shall include, but not be limited to:

A. A description of the surface and subsurface geology, hydrology, soils, and vegetation found in the project area and in all hazard areas addressed in the report;

B. A detailed overview of the field investigations, published data, and references; data and conclusions from past assessments of the site; and site specific measurements, test, investigations, or studies that support the identification of geologically hazardous areas; and

C. A description of the vulnerability of the site to seismic and other geologic events.

iii. Analysis of Proposal. The report shall contain a hazards analysis including a detailed description of the project, its relationship to the geologic hazard(s), and its potential impact upon the hazard area, the subject property, and affected adjacent properties.

iv. Minimum Buffer and Building Setback. The report shall make a recommendation for the minimum no-disturbance buffer and minimum building setback from any geologic hazard based upon the geotechnical analysis. Where the recommended buffers are less than the standard buffers set forth in section 16.20.150(E) of BIMC, the rationale and basis for the reduced buffer shall be clearly articulated and demonstrate that the protection standard set forth in that section has been met.

f. Incorporation of Previous Study. Where a valid Critical Areas report has been prepared for a specific site, and where the proposed land use activity and surrounding site conditions are unchanged, said report may be incorporated into the required Critical Area report, if deemed still valid and appropriate by a professional engineer or geologist. The applicant shall submit a hazards assessment detailing any changed environmental conditions associated with the site based on best professional judgment of the engineer/ geologist.

g. Mitigation of Long-Term Impacts. When hazard mitigation is required, the mitigation plan shall specifically address how the activity maintains or reduces the pre-existing level of risk to the site and adjacent properties on a long-term basis (equal to or exceeding the projected life span of the activity or occupation). Proposed mitigation techniques shall be considered to provide long-term hazard reduction only if they do not require regular maintenance or

other actions to maintain their function. Mitigation may also be required to avoid any increase in risk above the pre-existing conditions following abandonment of the activity.

h. In addition to the general Critical Area report requirements of section 16.20.150(D)(1)(e), Critical Area reports for geologically hazardous areas must meet requirements of this section. Critical Area reports for two or more types of Critical Areas must meet the report requirements for each relevant type of Critical Area.

~~2. Erosion Hazard Areas. An erosion control plan prepared by a duly licensed civil engineer shall be submitted to the City prior to the issuance of a clearing or grading permit.~~

3.2 Landslide Hazard and Erosion Hazard Areas. In addition to the basic Critical Areas report, a Critical Area report for an erosion hazard or landslide hazard area shall include the following information at a minimum:

a. Erosion Control. An erosion control plan prepared by a civil engineer shall be submitted to the City prior to the issuance of a clearing or grading permit.

b. The applicant shall provide a geotechnical analysis containing the following information: specified by the City Engineer, which concludes that the development proposal meets the standards of this section.

i. Site Plan. The Critical Area report shall include a copy of the site plan for the proposal showing:

A. The height of slope, slope gradient, and cross-section of the project area;

B. The location of springs, seeps, or other surface expressions of ground water on or a zone or distance of potential significant influence as determined by a professional engineer/ geologist; and

C. The location and description of surface water run-off features.

ii. Hazards Analysis. The hazards analysis component of the Critical Areas report shall specifically include:

A. A description of the extent and type of vegetative cover;

B. A description of subsurface conditions based on data from site-specific explorations;

C. Descriptions of surface and ground water conditions, public and private sewage disposal systems, fills and excavations, and all structural improvements;

D. An estimate of slope stability and the effect construction and placement of structures will have on the slope over the estimated life of the structure;

- E.. An estimate of the bluff retreat rate that recognizes and reflects potential catastrophic events such as seismic activity or a one hundred-year storm event;
- F. Consideration of the run-out hazard of landslide debris and/or the impacts of landslide run-out on down slope properties;
- G. A study of slope stability including an analysis of proposed cuts, fills, and other site grading;
- H. Recommendations for building siting limitations; and
- I. An analysis of proposed surface and subsurface drainage, and the vulnerability of the site to erosion.

iii. Geotechnical Engineering Report. The technical information for a project within a landslide hazard area shall include a geotechnical engineering report prepared by a licensed engineer that presents engineering recommendations for the following:

- A. Parameters for design of site improvements including appropriate foundations and retaining structures. These should include allowable load and resistance capacities for bearing and lateral loads, installation considerations, and estimates of settlement performance;
- B. Recommendations for drainage and subdrainage improvements;
- C. Earthwork recommendations including clearing and site preparation criteria, fill placement and compaction criteria, temporary and permanent slope inclinations and protection, and temporary excavation support, if necessary; and
- D. Mitigation of adverse site conditions including slope stabilization measures for seismically unstable soils, surface water management, location and methods of erosion control, a vegetation management and/or replanting plan, and/or other means for maintaining long-term soil stability if appropriate.

43. Seismic Hazards Areas. In addition to the basic report requirements, a Critical Area report for a seismic hazard area shall also meet the following requirements:

- a. **Fault Hazard.** The applicant shall provide a geologic/geotechnical analysis containing information specified by the City Engineer that documents the presence or absence of any surface deformation on the site in areas mapped by the City. If deformation is located, the applicant shall provide a geotechnical analysis containing information specified by the City Engineer, which concludes that the development proposal as mitigated meets the standards of this section.
- b. **Liquefaction Hazard.** The applicant shall provide a geotechnical analysis containing information specified by the City Engineer that meets the standards of this section (as mitigated).

c. Seismic Landslide Hazard. The applicant shall provide the same analysis and plan as required for landslide hazard areas, pursuant to BIMC 16.20.150(D)(1)(h)(1).

54. Tsunami Hazards. The City shall provide applicants for development in low lying shoreline areas and other areas where flood elevation is controlled by tide level with information on tsunami hazards.

65. Zone of Influence Areas beyond the established buffer. The applicant shall have the surface and storm water management plan for the project reviewed by a geotechnical engineer to determine if there is any potentially adverse impacts to the landslide hazardous area. If the geotechnical engineer or the City Engineer determines that there are potential adverse impacts, the applicant shall provide a geotechnical analysis containing information specified by the City Engineer which analyzes the potential impacts to the geological hazard from the proposed development in the zone of influence and meets the standards of this section. The report shall contain recommendations to avoid adverse impacts to the geologically hazardous area. Concentrated discharge of stormwater shall only be allowed where specially recommended in the report and authorized by the City Engineer."

E. Development Standards.

1. General Requirements. The City Engineer shall establish administrative procedures to implement BIMC 16.20.150. These procedures shall include review by an administrative Technical Review Committee if the development is proposed in a landslide hazard area and/or its buffer. The Technical Review Committee shall include a civil engineer, a geologist or geotechnical engineer and hydrologist. Where landslide areas are associated with other critical areas in shall also include an experienced biologist, ecologist or wetland specialist. The City Engineer must document in the file those involved in the Technical Review Committee and their expertise. The City Engineer shall determine professionally acceptable levels of risk for all activities within geologically hazardous areas. The applicant shall meet the following standards for all activities permitted in geologically hazardous areas or associated buffers:

- a. The proposed activity shall not create a net increase in geological instability, either on- or off-site, which is defined as follows:
 - i. The subject parcel shall not be less stable after the planned development than before; and
 - ii. The adjacent parcels shall not have greater risk or be less stable after the planned development than before.
- b. The proposed activity shall not increase the risk of life safety due to geological hazards above professionally acceptable levels.
- c. The proposed activity shall not increase the risk due to geological hazards above professionally acceptable levels for:
 - i. Property loss of any habitable structures or their necessary supporting infrastructure on-site or;

- ii. Risk to any off-site structures or property of any kind; and
- d. Proposed buildings shall be constructed using appropriate engineering methods that respond to the geologic characteristics specific to the site in order to achieve the highest standard of safety feasible.
- e. The proposed development shall not decrease the factor of safety for landslide occurrences below the limits of 1.5 for static conditions and ~~1.2~~ 1.0 for dynamic conditions. Analysis of dynamic conditions shall be based on the minimum horizontal acceleration for the probabilistic maximum considered earthquake as established by the currently adopted version of the International Building Code. *(Note: change in (e) is from ordinance 2008-13)*
- f. The proposed activity shall not further degrade the values and functions of the associated critical areas.

2. Development Design and Location.

- ~~a. There shall be no clearing, grading, or new construction within 50 feet of the edge of all slopes that are classified as geologically hazardous areas. This 50 foot area may be reduced, as outlined in 16.20.070 (Variances), only if the applicant provides expert verification by a geotechnical engineer, as specified by the City Engineer, that demonstrates that the proposal will not increase slope instability, and that no other reasonable project alternative exists;~~
The following requirements shall apply to any land or vegetation modification or construction within a landslide hazard area and/or its buffer as described herein:

- a. Buffer Requirement: A buffer equal to the height of the slope or fifty (50) feet, whichever is greater, shall be established from all edges of a landslide hazard area except where no other reasonable alternative exists, reduction may be allowed as follows:

i. Buffer Reduction.

A. Buffer reductions may be allowed provided a critical areas report, pursuant to BIMC 16.20.150(D)(1)(2) and any other related section of BIMC 16.20, demonstrates to the Director that the buffer reduction will not reduce the level of protection to the proposed development, adjacent properties, and other associated critical areas as required by BIMC 16.20.150(E)(1).

B. For slopes forty (40) percent or greater the buffer may in no case be reduced to less than ten (10) feet. A decision by the Director to reduce the buffer shall be based on a critical areas report pursuant to BIMC 16.20.150(D)(1)(2) that includes a third-party independent review by a qualified geotechnical engineer pursuant to BIMC 16.20.150(D)(1)(d);

- ii. Increased Buffer. The buffer may be increased beyond that specified in subsection (a) above if the Director determines a larger buffer is necessary to prevent risk of damage to proposed development, adjacent development, and uses and the associated critical areas;

iii. Building Setback. All building and structures shall have a minimum setback of (15) feet from the outer edge of the buffer around landslide hazard areas to allow for construction activity; and

iv. Vegetation Retention. Unless otherwise provided or as part of an approved alteration, removal of vegetation from an erosion or landslide hazard area or related buffer shall be prohibited.

b. All development proposals shall be designed to avoid impacts to the geologically hazardous areas. The development shall be designed to minimize the footprint of building in other disturbed areas, minimize removal of vegetation, minimize topographic change, and retain open space to the maximum extent practicable;

c. Development design shall utilize clustering, under-structure parking, multi-level construction, and tiered foundations to the extent feasible to minimize impervious lot coverage, slope disturbance, and changes to the natural topography;

d. Access shall be in the least sensitive part of the site, and common access drives and utility corridors are required to the extent feasible;

e. Roads, walkways and parking areas shall be designed to parallel the natural contours to the extent feasible;

f. All proposed clearing and tree removal shall be marked in the field for inspection and approval prior to alteration of the site;

g. Cut and fill slopes shall be prepared and maintained to control against erosion and instability; ~~and~~

h. Drainage and stormwater designs in zones of influence shall incorporate elements of low impact design, to the extent feasible, and shall be designed in such a manner that stormwater outlet discharges do not create additional impacts. The proposed activities shall not increase surface water discharge or sedimentation to adjacent properties beyond the pre-development condition; and

i. Landslide hazard areas on slopes forty (40) percent or greater shall only be altered as allowed by the exemptions listed in 16.20.150(F). A landslide or erosion hazard area, located on a slopes less than forty (40) percent, may only be altered pursuant to the standards of BIMC 16.20.150(E)(1).

“F. Exemptions. The following activities are permitted in geologically hazardous areas or associated buffers; provided, that the applicant can demonstrate that

applicable standards in Subsection ~~(C)~~ 16.20.150(E)(1) can be met, or where the applicant has demonstrated through a Critical Areas report prepared by a geotechnical engineer in accordance with the specifications of the City Engineer that no adverse impact will result from the proposal and where approved surface water drainage will result in minimum slope and vegetation disturbance:

1. Structural alteration to an existing legally constructed structure that does not increase the structural footprint and are determined by the City Engineer as having a minimal potential for increasing landslide hazard;

2. Surface Water Management: Slopes or buffers may be used for approved surface water conveyance if no other reasonable alternative route is available. Installation techniques shall minimize disturbance to the slope and vegetation.

4.3. The construction of approved public or private trails; provided, they are constructed of material, for example cable lift access, which will not contribute to surface water runoff;

2.4. The construction of public or private utility corridors or streets; provided, it has been demonstrated that such alterations will not increase landslide or erosion risks through required analysis pursuant to 16.20.150(D)(1) and the City determines that no other feasible alternative exists;

35 Select Vegetation Removal Activities. The following vegetation removal activities are allowed, provided that no vegetation shall be removed from a geologically hazardous area or its buffer without approval from the Director;

a. Removal of noxious weeds using non-motorized equipment or light equipment if approved by the Director. If herbicides are used to control these weeds, a licensed applicator is required, unless otherwise authorized by the Director. Bare areas remaining after weed removal shall be re-vegetated with native plant species pursuant to an enhancement plan approved by the City.

b. Removal and pruning of hazard trees as defined ISA (International Society of Arboriculture) standards by provided that a ISA certified arborist documents the hazard and provides a report to the Director for review and approval. The landowner shall replace any cut tree with three replacement trees (3:1 replacement ratio) six months prior to tree removal with trees at six feet in height and 4 inches in diameter, in accordance with an approved replacement plan. The Director may require a second opinion from a certified ISA arborist in cases of removal of hazard trees. Replacement trees shall be native species

indigenous to the vicinity and approved by the Director. Size of trees shall be approved by the Director. The landowner shall ensure 100% survival of replacement trees

~~4.6. The trimming and limbing of vegetation and the removal of trees for the creation and maintenance of view corridors in accordance with the pruning standards of the International Society of Arboriculture; provided, that the soils are not disturbed and activity will not increase the risk of landslide or erosion. The thinning of limbs on individual trees is preferred to removal of trees for view corridors.~~ All vegetation removal must be based on a plan developed by a certified arborist and reviewed by a geotechnical engineer to determine if it will impact slope stability.

7. Limited Exemption - For landslide areas 40% or greater with a vertical elevation change of up to twenty (20) feet may be exempted from 16.20.150(E)(2)(i) based on the City review and acceptance of a Critical Areas report from a geologist or licensed geotechnical engineer in accordance with 16.20.150(D) when no adverse impact will result from the exemption.

16.20.160 Wetlands.

A. Purpose. This section applies to all regulated uses within or adjacent to areas designated as wetlands, as categorized in BIMC 16.20.160(B) below. The intent of this Section is listed in no specific priority, as follows:

1. Preserve, protect, restore, and improve wetland functions and values. Achieve no net loss and increase the quality of wetland acreage, functions, and values within the city. Mitigation measures, as conditions of permits, must have a reasonable expectation of success. Under the conditions of this Section, the Director may deny development proposals that would irreparably impact regulated wetlands; and
2. Protect the public's health, safety, and welfare, while preventing public expenditures that could arise from improper wetland uses and activities; and
3. Plan wetland uses and activities in a manner that protects and enhances the natural systems and environmental quality of Bainbridge Island and allows property holders to benefit from wetland property ownership wherever allowable under the conditions of this chapter; and
4. Preserve ecological functions and values of wetlands which provide water quality protection, natural flood control, stormwater storage, contributes to groundwater and stream flow, shoreline stabilization, and wildlife and fish habitat; and
5. Prevent turbidity and pollution of wetlands and fish or shellfish bearing waters, and maintain healthy wildlife habitat; and
6. Encourage land use development patterns that maintain, enhance, or restore natural wetland systems and protect disturbance-sensitive and wetland-dependent wildlife, fish resources, and open space; and

7. Protect and preserve wetlands values as natural areas providing aesthetic, recreational, and educational opportunities that need to be preserved for future generations; and

8. Enhance the connectivity between wetland landscapes.

B. Wetland Categories. For regulatory purposes, wetland delineations shall be determined by using the Washington State Wetlands Identification and Delineation Manual, March 1997, or as amended hereafter.

The City uses the Department of Ecology's (DOE's) Washington State Wetland Rating System for Western Washington, 2004, or as amended hereafter and adopted by the Director to categorize wetlands for the purposes of establishing wetland buffer widths, wetland uses and replacement ratios for wetlands. Once a wetland has been classified using the current DOE rating system, the City shall not reclassify the wetland without clearly documenting the reason for the change. If the wetland has a rating in the City GIS system, this rating can be used for regulatory purposes. This system consists of four wetland categories generally described as follows:

1. Category I wetlands are those that:

- a. Represent unique or rare wetland type; or
- b. Are more sensitive to disturbance than most wetlands; or
- c. Are relatively undisturbed and contain ecological attributes that are impossible to replace within a human lifetime; or
- d. Provide a high level of function.

Category I wetlands include estuarine wetlands larger than one acre, bogs, mature and old-growth wetlands over one acre, wetlands in coastal lagoons, and wetlands that perform many functions very well as demonstrated by a score of over 70 points using the DOE rating system.

2. Category II wetlands are difficult, though not impossible, to replace, and provide a high level of function. Category II wetlands include estuarine wetlands smaller than one acre or disturbed and larger than one acre and wetlands that perform functions well as demonstrated by a score of 51-69 using the DOE rating system.

3. Category III wetlands are wetlands with a moderate level of function as demonstrated by a score of 30-50 points using the DOE rating system.

4. Category IV wetlands have the lowest level of function as demonstrated by a score less than 30 points using the DOE rating system and are often heavily disturbed.

C. Regulated and Non-Regulated Wetlands Classification.

1. Regulated Wetlands:

a. All natural wetlands that meet the criteria in the Washington State Wetland Identification and Delineation manual and are greater than 1000 square feet.

b. Unintentionally created wetlands that meet the criteria in the Washington State Wetland Identification and Delineation manual except as listed in subsection (C)(2)(b) of this section.

c. Wetlands intentionally created from non-wetland areas to mitigate conversion of other wetlands.

d. Wetlands less than or equal to 1000 square feet if the wetland is associated with a riparian corridor or is part of a wetland mosaic, or contains habitat identified as

essential for local populations of priority species identified by the Washington State Department of Fish and Wildlife.

2. Non-Regulated Wetlands:

a. Wetlands less than or equal to 1000 square feet if the wetland is not associated with a riparian corridor or is not part of a wetland mosaic, or does not contain habitat identified as essential for local populations of priority species identified by the Washington State Department of Fish and Wildlife.

b. Created Wetlands. Wetlands created intentionally from a non-wetland site that was not required to be constructed as mitigation for adverse wetland impacts. These may include, but are not limited to, irrigation and drainage ditches, grass-lined swales, canals, detention facilities, wastewater treatment ponds, farm ponds not contiguous, as defined in this chapter, and landscape amenities. The applicant shall bear the burden of proving that the wetland was intentionally created from a non-wetland site. Where enhancements or restorations are made to wetlands for purposes other than mitigation, the original rating shall be maintained even if the changes would otherwise result in a higher classification.

b. Recent, Road Construction Related Wetlands. Wetlands created after July 1, 1990, that were unintentionally created as a result of the construction of a road, street, or highway. The applicant shall bear the burden of proving that the wetland meets these criteria.

D. Development Standards.

1. Water quality buffers – An applicant shall provide the prescribed water quality buffers in this section (Tables 3-6) unless a Reasonable Use Exception is granted pursuant to BIMC 16.20.080.

2. Habitat buffers – An applicant shall provide either:

a. The prescribed habitat buffers specified in this section (Tables 3, 4, 5, and 6); or

b. An approved Habitat Management Plan, pursuant to BIMC 16.20.060, that clearly provides greater habitat functions and values in perpetuity than the prescribed habitat buffers in this section (Tables 3, 4, 5, and 6).

3. Buffers. Buffers shall remain undisturbed natural vegetation areas except where the buffer can be enhanced to improve its functional attributes. Any buffer enhancement and/or limited view clearing activity must be reviewed and approved by the Director. No refuse shall be placed in the buffer. Alteration of habitat buffer areas may be allowed for water dependent and water related activities and for development authorized by BIMC 16.20.040.C (Exemptions), or BIMC 16.20.040.D (Standards for Existing Development), or BIMC 16.20.050.B (Buffer Averaging), or BIMC 16.20.070 (Variances), or BIMC 16.20.080 (Reasonable Use Exception).

4. If a wetland meets more than one of the criteria listed in each table, the buffer needed to protect the wetland is the widest one.

Table 3: Category I Wetlands - Buffers

Wetland Characteristics	Impact of Land Use	Water Quality Buffer	Habitat Buffer	Total Buffer	Other Protection
Natural Heritage Wetlands	Low Moderate High	50 ft 75 ft 100 ft	75 ft 115 ft 150 ft	125 ft 190 ft 250 ft	No additional discharge of surface water. No septic systems within 300 ft. Restore degraded parts of the buffer
Bogs	Low Moderate High	50 ft 75 ft 100 ft	75 ft 115 ft 150 ft	125 ft 190 ft 250 ft	No additional surface discharges. Restore degraded parts of the buffer.
Forested	Low Moderate High	50 ft 75 ft 100 ft	75 ft 115 ft 150 ft	125 ft 190 ft 250 ft	If forested wetland scores high for habitat, maintain connectivity to other natural areas.
Estuarine	Low Moderate High	50 ft 75 ft 100 ft	50 ft 75 ft 100 ft	100 ft 150 ft 200 ft	N/A
Wetlands in Coastal Lagoon	Low Moderate High	50 ft 75 ft 100 ft	50 ft 75 ft 100 ft	100 ft 150 ft 200 ft	N/A
High level of function for habitat (score for habitat is 29-36 pts.)	Low Moderate High	50 ft 75 ft 100 ft	100 ft 150 ft 200 ft	150 ft 225 ft 300 ft	Maintain connectivity to other natural areas. Restore degraded parts of the buffer.
Moderate level of function for habitat (score for habitat is 20-28 pts.)	Low Moderate High	50 ft 75 ft 100 ft	25 ft 35 ft 50 ft	75 ft 110 ft 150 ft	N/A
High level of function for water quality improvement and low for habitat (score for water quality 24-32 pts.; habitat less than 20	Low Moderate High	50 ft 75 ft 100 ft	0 ft 0 ft 0 ft	50 ft 75 ft 100 ft	No additional discharges of untreated runoff.

Wetland Characteristics	Impact of Land Use	Water Quality Buffer	Habitat Buffer	Total Buffer	Other Protection
pts.)					
Not meeting any of the above criteria.	Low Moderate High	50 ft 75 ft 100 ft	0 ft 0 ft 0 ft	50 ft 75 ft 100 ft	N/A

Table 4: Category II Wetlands - Buffers

Wetland Characteristics	Impact of Land Use	Water Quality Buffer	Habitat Buffer	Total Buffer	Other Protection
High level of function for habitat (score for habitat is 29-36 pts.)	Low Moderate High	50 ft 75 ft 100 ft	100 ft 150 ft 200 ft	150 ft 225 ft 300 ft	Maintain connectivity to other natural areas.
Moderate level of function for habitat (score for habitat is 20-28 pts.)	Low Moderate High	50 ft 75 ft 100 ft	25 ft 35 ft 50 ft	75 ft 110 ft 150 ft	N/A
Estuarine	Low Moderate High	50 ft 75 ft 100 ft	25 ft 35 ft 15 ft	75 ft 110 ft 115 ft	N/A
Not meeting any of the above criteria	Low Moderate High	50 ft 75 ft 100 ft	0 ft 0 ft 0 ft	50 ft 75 ft 100 ft	N/A

Table 5: Category III Wetlands - Buffers

Wetland Characteristics	Impact of Land Use	Water Quality Buffer	Habitat Buffer	Total Buffer	Other Protection
Moderate level of function for habitat (score for habitat is 20-28 pts.)	Low Moderate High	40 ft 60 ft 80 ft	35 ft 50 ft 70 ft	75 ft 110 ft 150 ft	N/A
Not meeting above criterion	Low Moderate High	40 ft 60 ft 80 ft	0 ft 0 ft 0 ft	40 ft 60 ft 80 ft	N/A

Table 6: Category IV Wetlands - Buffers

Wetland Characteristics	Impact of Land Use	Water Quality Buffer	Habitat Buffer	Total Buffer	Other Protection
Larger than 10,000 square feet	Low Moderate High	25 ft 40 ft 50 ft	0 ft 0 ft 0 ft	25 ft 40 ft 50 ft	N/A
Smaller than 10,000 square feet	Low Moderate High	25 ft 25 ft 25 ft	0 ft 0 ft 0 ft	25 ft 25 ft 25 ft	N/A

a. For Category II or III wetlands smaller than 10,000 square feet with a habitat score of less than 20 points, the buffer may be reduced by 50 percent.

b. For the purpose of determining the impact of land use, unless the Director determines a lesser level of impact is appropriate based on information provided by the applicant, the intensity of impact of the adjacent land use is determined based on the “impact of land use” definition.

5. If an applicant elects to propose an HMP, and that HMP proposes habitat buffer widths less than those prescribed in Tables 3 – 6, the HMP shall be prepared pursuant to BIMC 16.20.060 and fulfill all requirements specified therein.

6. Table 7 provides examples of measures that might be provided in an HMP or when prescribed buffers are otherwise altered with by Buffer Averaging (BIMC 16.20.050.B), Variance (BIMC 16.20.070), or Reasonable Use Exception (BIMC 16.20.080), to minimize impacts of certain activities. Other measures may also be effective in minimizing impacts depending on site-specific circumstances and the nature of proposed activity.

Table 7: Examples of measures to minimize impacts to wetlands from different types of activities.

Examples of Disturbance	Examples of Measures to Minimize Impacts	Activities that Cause the Disturbance
Lights	Direct lights away from wetland.	Parking lots, warehouses, manufacturing, residential
Noise	Locate activity that generates noise away from wetland.	Manufacturing, residential
Toxic runoff*	Route all new runoff away from wetland. Establish covenants limiting use of pesticides within 150 ft of wetland. Apply integrated pest management.	Parking lots, roads, manufacturing, residential areas, application of agricultural pesticides, landscaping
Change in water regime	Infiltrate or treat, detain, and disperse new runoff into buffer.	Impermeable surfaces, lawns, tilling
Pets	Plant dense vegetation around buffer, such as rose, hawthorn, etc.	Residential areas
Human disturbance	Plant buffer with impenetrable natural vegetation appropriate for region.	Residential areas
Dust	Utilize best management practices to control dust.	Tilled fields
* These examples are not necessarily adequate to meet the rules for minimizing toxic runoff if threatened or endangered species are present at the site.		

7. Small wetlands

a. Wetlands of less than 1,000 square feet are exempt from regulation of this section where the applicant has shown that they are not associated with a riparian corridor, are not part of a wetland mosaic, and do not contain habitat identified as essential for local populations of priority species identified by the Washington State Department of Fish and Wildlife.

b. All wetlands between 1,000 and 4,000 square feet shall be evaluated using Department of Ecology's Wetland Rating System for Western Washington (2004) to establish category and evaluate functions. Using the following criteria, the Director shall determine whether to exempt wetlands between 1,000 and 4,000 square feet from the requirement to avoid impacts:

i. The wetland is not associated with a riparian corridor; and

- ii. The wetland is not part of a wetland mosaic; and
- iii. The wetland does not score 20 points or more for habitat in the Wetland Rating System; and
- iv. The wetland does not contain habitat identified as essential for local populations of priority species identified by Washington Department of Fish and Wildlife; and
- v. The wetland is substantially covered by invasive species or otherwise severely disturbed.

8. Buffer Measurement. All buffers shall be measured on a horizontal plane from the regulated wetland edge as marked in the field.

9. Fencing and Signs. This section applies to those wetlands and their buffers that are within 200 feet of regulated development activities.

a. Wetland buffers shall be temporarily fenced or otherwise suitably marked, as required by the Director, between the area where the construction activity occurs and the buffer. Fences shall be made of a durable protective barrier and shall be highly visible. Silt fences and plastic construction fences may be used to prevent encroachment on wetlands or their buffers by construction. Temporary fencing shall be removed after the site work has been completed and the site is fully stabilized per City approval.

b. The Director may require that permanent signs and/or fencing be placed on the common boundary between a wetland buffer and the adjacent land. Such signs will identify the wetland buffer. The Director may approve an alternate method of wetland and buffer identification, if it provides adequate protection to the wetland and buffer.

10. Building or Impervious Surface Setback Lines. A building or impervious surface setback line of 15 feet is required from the edge of any wetland buffer. Minor structural or impervious surface intrusions into the areas of the setback may be permitted if the Director determines that such intrusions will not adversely impact the wetland. The setback shall be identified on a site plan and filed as an attachment to the notice on title as required by Section 16.20.190 (Notice on Title).

E. Regulated Uses And Activities. New development activities on properties containing regulated wetlands and buffers are subject to the development standards in this section, as permitted in the underlying zoning designation. Requirements for additional activities are specified in Table 8. The City may grant exceptions to these uses and activities according to the intent and specifications of this chapter. All authorized uses and activities in a regulated wetland or its buffer shall be subject to conditions established by the Director and may be subject to mitigation as required by this chapter.

Development shall be classified as “allowed,” “permitted,” “special use” or “prohibited” according to this Section. Any regulated uses not specifically listed in Table 8 shall be considered unclassified and may be allowed if granted a special use review in accordance with this chapter. For the purpose of Table 8, “W” and “B” refer to the terms “wetland” and “buffer.”

Table 8: Regulated Uses and Activities in Regulated Wetlands and Buffers

	Category I		Category II		Category III		Category IV	
	W	B	W	B	W	B	W	B
1. Agriculture-existing & ongoing	A	A	A	A	A	A	A	A
2. Agriculture-Building (Grazed Wet Meadows)	X	X	X	S	S	S	S	S
3. A) Agriculture Conversion (Wetland dependent)	X	S	X	S	S	S	S	S
B) (Non-wetland dependent)	X	S	X	S	X	S	X	S
4. Bank stabilization	X	X	S	S	S	S	P	P
5. Boat ramp	X	X	S	S	S	S	S	S
6. Dock/float	S	S	S	S	S	S	P	P
7. Draining Wetlands (associated with no other permitted use, except as allowed under Section 120.C)	X	N/A	X	N/A	X	N/A	X	N/A
8. Educational or Scientific Activities	P	P	P	P	P	P	P	P
9. Enhancement	S	S	P	P	P	P	P	P
10. Excavation (not associated with enhancement)	X	X	S	S	S	S	S	S
11. Fill (associated with no other use)	X	X	X	X	X	X	X	X

	Category I		Category II		Category III		Category IV	
	W	B	W	B	W	B	W	B
12. Fish Hatchery	X	X	S	S	S	S	S	S
13. Flooding (associated with no other use)	X	X	S	S	S	S	S	S
14. Forest Practice-Class IV General or COHP	X	X	X	X	X	X	X	X
15. Golf Course	X	X	X	X	S	S	S	S
16. Land Division	P	P	P	P	P	P	P	P
17. Mineral extraction	X	X	S	S	S	S	S	S
18. Parks Development-Public & Private	S	S	S	S	S	S	P	P
19. Ponds-Stock Watering	X	X	X	S	X	S	S	P
20. Public Facility	X	X	X	S	S	S	S	S
21. Public Project of Significant Importance	S	S	S	S	S	S	S	S
22. Radio/TV Towers	X	X	S	S	S	S	S	S
23. Restoration/Revegetation of Site	S	S	P	P	P	P	P	P
24. Road/Street-Public/Private Access								
A) Expand within existing ROW	S	S	S	S	S	S	P	P
B) New Facilities	X	X	S	S	S	S	S	S

	Category I		Category II		Category III		Category IV	
	W	B	W	B	W	B	W	B
25. Signs- (Interpretation, Hazard, Critical Area Boundary, Survey Markers)	P	P	P	P	P	P	P	P
26. Site Investigation (non- mechanized)	A	A	A	A	A	A	A	A
Site Investigation (mechanized)	P	P	P	P	P	P	P	P
27. Stormwater, Private R/D Facility	X	X	X	S	S	S	S	S
28. Stormwater, Regional R/D Facility	X	X	X	S	S	S	S	S
29. Trails and Trail Related Facilities	P	P	P	P	P	P	P	P
30. Utility Facility	X	X	S	S	S	S	S	S
31. Utility-On- Site Sewage Facility	X	X	X	S	X	S	X	S
32. Utility Line- Overhead	S	S	S	S	S	S	P	P
33. Utility Line- Underground	X	S	S	S	S	S	S	S

Key: A = Allowed Outright P = Permitted Subject to Development Standards and Underlying Permit S = Special Use Review Required X = Prohibited

F. Additional development standards for regulated uses. In addition to meeting the Development Standards in section D, above, those regulated uses identified below shall also comply with the standards of this section and other applicable state, federal and local ordinances.

1. Docks. Construction of a dock, pier, moorage, float, or launch facility may be permitted where no existing buffer or wetland vegetation would be significantly altered.

2. Forest Practice, Class IV General, and Conversion Option Harvest Plans (COHPs). All timber harvesting and associated development activity, such as construction of roads, shall comply with the provisions of this chapter, including the maintenance of buffers around regulated wetlands.

3. Agricultural restrictions. In all development proposals which would permit introduction of agricultural uses, all regulated wetlands shall be avoided. These restrictions shall not apply to those regulated wetlands defined as grazed wet meadows, regardless of their classification, only where grazing has occurred within the last five (5) years. Wetlands shall be protected by installation of fencing located not closer than the outer buffer edge.

4. Road/street repair and construction: Any private or public road or street repair, maintenance, expansion or construction may be permitted, subject to the following standards:

a. No other reasonable or practicable alternative exists and the road or street crossing serves multiple properties whenever possible;

b. Publicly owned or maintained road or street crossings should provide for other purposes, such as utility crossings, pedestrian or bicycle easements, viewing points, etc.; and

c. The road or street repair and construction are the minimum necessary to provide safe roads and streets.

d. Mitigation shall be performed in accordance with specific project mitigation plan requirements.

5. Land Divisions and Land Use Permits. All land divisions and land uses proposed on a site that include regulated wetlands, shall comply with the procedures and standards listed below. When a parcel contains a wetland, City policy shall always be to primarily protect the functions and values of the wetland, while recognizing the value of the development rights provided to the property by its zoning.

a. Density Calculation.

i. The actual density that will allowed to be built upon a parcel containing a wetland shall ultimately be determined during the site specific review of the parcel's planned development.

ii. In determining the actual density of a parcel based on a specific site plan, the site plan shall locate all buildings outside of the wetland buffers;

iii. The number of development rights allowed for any residentially-zoned parcel shall be its size in square feet divided by the number of square feet per home that is required by its zoning;

iv. If the land can be subdivided such that all setbacks, buffers, and other zoning requirements can be observed, and no variances are requested, the density from the wetland can be transferred within the property;

v. To the extent that the number of allowable development rights cannot be used on-site, they may be sold, traded, or transferred by the property owner through the transfer of development rights program pursuant to Chapter 18.37 BIMC;

vi. Property owners may voluntarily extinguish development rights that are provided by the underlying zoning, but the City shall not extinguish any of these rights outside the aforementioned transactions.

b. Land division approvals shall be conditioned to require that regulated wetlands and regulated wetland buffers be designated as an easement or covenant encumbering the wetland and wetland buffer. Such easement or covenant shall be recorded together with the land division and represented on the final plat or binding site plan, and title.

c. In order to implement the goals and policies of this chapter, to accommodate innovation, creativity, and design flexibility, and to achieve a level of environmental protection that would not be possible by typical lot-by-lot development, the use of the clustered development or similar innovative site planning is strongly encouraged for projects with regulated wetlands on the site.

6. Surface Water Management. The following stormwater management activities may be allowed within wetland or buffer areas only if they meet the following requirements, in addition to the development standards in this section and in conformance with the Stormwater Management Ordinance, Chapter 15.20 BIMC:

a. Surface water discharges from stormwater facilities or structures; provided, that the new surface water discharges to regulated wetlands from retention/detention facilities;

b. Pre-settlement ponds or other surface water management structures; provided, that the discharge does not significantly increase or decrease the rate of flow and/or hydro-period, nor decrease the water quality of the wetland. Water quality treatment best management practices will be required prior to discharge. Pre-treatment of surface water discharge through biofiltration or other means shall be required.

7. Trails and Trail-Related Facilities: Construction of public and private trails and trail-related facilities, such as benches and viewing platforms, may be allowed in wetlands or wetland buffers pursuant to the following guidelines:

a. Trails and related facilities shall, to the extent feasible, be placed on existing road grades, utility corridors, or any other previously disturbed areas.

b. Trails and related facilities shall be planned to minimize removal of trees, soil disturbance, and existing hydrological characteristics, shrubs, snags, and important wildlife habitat.

c. Viewing platforms and benches, and access to them, shall be designed and located to minimize disturbance of wildlife habitat and/or critical characteristics of the affected wetland.

d. Trails and related facilities shall generally be located outside required buffers. Where trails are permitted within buffers they shall be located in the outer portion of the buffer and a minimum of 25 feet from the wetland edge, except where wetland crossings or viewing areas have been approved by the Director. Trail locations close to the wetland may be allowed if the primary purpose of the trail is wetland viewing or enjoyment.

e. Trails shall generally be limited to pedestrian use unless other more intensive uses, such as bike or horse trails, have been specifically allowed and mitigation

has been provided. Trail width shall not exceed five feet unless there is a demonstrated need, subject to review and approval by the Director. Trails shall be constructed with pervious materials unless otherwise approved by the Director.

8. Utilities in Wetlands or Wetland Buffers:

a. The utility maintenance authorized in BIMC 16.20.040(C) shall be allowed, subject to best management practices in wetlands and wetland buffers.

b. Construction of new utilities outside the road right-of-way or existing utility corridors may be permitted in wetlands or wetland buffers, only when no reasonable alternative location is available and the utility corridor meets the requirements for installation, replacement of vegetation and maintenance outlined below, and as required in the filing and approval of applicable permits and special reports required by this chapter.

c. Sewer or On-site Sewage Utility. Construction of sewer lines or on-site sewage systems may be permitted in regulated wetland buffers only when:

i. The applicant demonstrates it is necessary to meet state and/or local health code minimum design standards (not requiring a variance for either horizontal setback or vertical separation); and/or

ii. There are no other practicable or reasonable alternatives available and construction meets all other applicable requirements of this section and the special use review requirements pursuant to BIMC 16.20.160(G). Joint use of the sewer utility corridor by other utilities may be allowed.

d. New utility corridors shall not be allowed when the regulated wetland or buffer has known locations of federal or state listed endangered, threatened or sensitive species, heron rookeries or nesting sites of raptors which are listed as species of concern, except in those circumstances where an approved Habitat Management Plan indicates that the utility corridor will not significantly impact the wetland or wetland buffer;

e. New utility corridor construction and maintenance shall protect the regulated wetland and buffer environment by utilizing the following methods:

i. New utility corridors shall be aligned when possible to avoid cutting trees greater than 12 inches in diameter at breast height (four and one-half feet), measured on the uphill side.

ii. New utility corridors shall be revegetated with appropriate native or equivalent vegetation at preconstruction densities or greater, immediately upon completion of construction, or as soon thereafter as possible, if due to seasonal growing constraints. The utility shall ensure that such vegetation survives.

iii. Any additional utility corridor access for maintenance shall be provided as much as possible at specific points, rather than by parallel roads. If parallel roads are necessary, they shall be of a minimum width but no greater than 15 feet; and shall be contiguous to the location of the utility corridor on the side away from the wetland. Mitigation will be required for any additional access through restoration of vegetation in disturbed areas.

iv. The Director may require other additional mitigation measures.

f. Utility corridor maintenance shall include the following measures to protect the regulated wetland and buffer environment:

i. Where feasible, painting of utility equipment such as power towers shall not be sprayed or sandblasted, nor should lead-based paints be used.

ii. No pesticides, herbicides or fertilizers may be used in wetland areas or their buffers except those approved by the EPA and Ecology. Where approved, herbicides must be applied by a licensed applicator in accordance with the safe application practices on the label.

9. Parks. Development of public park and recreation facilities may be permitted; provided, that no alteration of wetlands or wetland buffers is allowed except for uses allowed in Table 8. For example, enhancement of wetlands and development of trails may be allowed in wetlands and wetland buffers subject to special use requirements and approval of a Wetland Mitigation Plan.

10. Educational or scientific activities. These activities shall only be permitted if they are directly related to the affected wetland and related buffers, and may include the viewing and sampling of natural systems. They may also include the installation of physical structures, including pervious trails, benches, permanent wildlife watching blinds, boardwalks, viewing platforms, or similar structures, or minor modifications to wetlands and their buffers. Any physical structures or minor modifications are subject to City approval to minimize the impacts of human intrusion on the functions and values of critical areas and their buffers according to the following criteria:

a. Minimize the footprint of structures and the number of access points to any particular critical area;

b. Minimize the amount of clearing and grading;

c. Elevate structures where possible;

d. Avoid impacting the flow of water;

e. Use appropriate building materials; and

f. Minimize the impacts of construction.

G. Special Use Review. Development identified as a Special Use Review in Table 8 of this section may be approved, with conditions, or denied according to the procedures and criteria outlined in this subsection. Special Use Review is an administrative process unless the underlying permit requires a public hearing.

1. The Director is authorized to take action on permits as required by this chapter.

2. The Director may approve a permit after review of the application and a Wetland Mitigation Plan submitted in accordance with this chapter. The Director shall determine whether the use or activity cannot be avoided because no reasonable or practicable alternative exists, the proposed use is consistent with the spirit and intent of this chapter and it will not cause adverse impacts to the wetland or the wetland buffer which cannot be mitigated. In taking action to approve a Special Use Review, the Director may attach reasonable conditions as necessary to minimize impacts, rectify impacts or compensate for impacts to the wetland or wetland buffer.

3. The Director shall deny a Special Use Review request if the proposed use or activity is inconsistent with this chapter and/or will cause adverse impacts to the wetland or wetland buffer, which cannot be adequately mitigated and/or avoided.

4. Special use review requests for agricultural conversions shall include a farm plan developed by the Kitsap Conservation District. The plan shall identify the best management practices for the proposed agricultural activity.

5. Special Use Review determinations are appealable to the hearings examiner pursuant to BIMC 2.16.130.

H. Wetlands and Streams Restoration, Creation, Mitigation, or Enhancement.

1. Any person who alters regulated wetlands or streams or their standard buffers as required by this chapter shall restore, create or enhance equivalent areas or greater areas than those altered in order to compensate for losses. In the alternative, conservation easements or mitigation banking may be considered as appropriate mitigation provided that areas equivalent to those altered are achieved.

2. Where feasible, restored or created wetlands and streams shall be a higher category than the altered wetland or stream.

3. Compensation areas shall be determined according to function, acreage, type, location, time factors, ability to be self-sustaining and projected success. Multiple compensation projects may be proposed for one project in order to best achieve the goal of no net loss.

4. Given the need for expertise and monitoring, voluntary restoration, creation or enhancement projects or compensatory projects may be permitted only when the Director finds that the proposed project is associated with an activity or development otherwise permitted. Additionally, the applicant shall:

a. Demonstrate sufficient scientific expertise, supervisory capability, and financial resources to carry out the project;

b. Demonstrate the capability for monitoring the site and to make corrections during this period if the project fails to meet projected goals and plans; and

c. Provide for the long-term protection and management of the compensation area to avoid further development or degradation.

5. Acreage Replacement Ratio. Any applicant proposing to alter wetlands may propose to reestablish, create, rehabilitate, or enhance wetlands in order to compensate for the wetland losses.

a. Replacement Ratios for Wetlands. Table 9 provides the required replacement ratios for the reestablishment or creation, rehabilitation, or enhancement of a wetland. The first number specifies the replacement acreage of wetlands and the second specifies the acreage of wetlands altered.

Table 9: Replacement Ratios for Wetlands

Category and Type	Re-establishment or Creation	Rehabilitation	1:1 Re-establishment or Creation (R/C) or Enhancement (E)	Enhancement Only
I - Forested	6:1	12:1	1:1 R/C 10:1 E	24:1
I – Highly functioning	4:1	8:1	1:1 R/C 6:1 E	16:1

I - Bog	Not possible	6:1 of a Bog	Case by Case	Case by Case
I - Estuarine	Case by Case	6:1 - Estuarine	Case by Case	Case by Case
II - Estuarine	Case by Case	4:1 - Estuarine	Case by Case	Case by Case
II - Others	3:1	8:1	1:1 R/C 4:1 E	12:1
III	2:1	4:1	1:1 R/C 2:1 E	8:1
IV	1.5:1	3:1	1:1 R/C 2:1 E	6:1

- b. Replacement ratios for buffers shall be 1:1.
- c. Increased Replacement Ratio. The Director may increase the ratios under the following circumstances:
 - i. Uncertainty as to the probable success of the proposed rehabilitation or creation;
 - ii. Significant period of time between destruction and replication of wetland functions; or
 - iii. Projected losses in functional value.
- d. Decreased Replacement Ratio. The Director may decrease these ratios when there are findings of special studies coordinated with agencies with expertise which demonstrate that no net loss of wetland function or value is attained under the decreased ratio.
- e. In all cases, a minimum acreage replacement ratio of 1:1 shall be required.
- 6. Wetland Type. In-kind compensation shall be provided except where the applicant can demonstrate that:
 - a. The wetland system is already significantly degraded and out-of-kind replacement will result in a wetland with greater functions and values;
 - b. Scientific problems such as invasive/exotic vegetation and changes in watershed hydrology make implementation of in-kind compensation impossible;
 - c. Out-of-kind replacement will best meet identified regional goals (e.g., replacement of historically diminished wetland types); and
 - d. Where out-of-kind replacement is accepted, greater acreage replacement ratios may be required to compensate for lost functions and values.
- 7. Location. On-site compensation shall be provided except where the applicant can demonstrate that:
 - a. The hydrology and ecosystem of the original wetland and those who benefit from the hydrology and ecosystem will not be substantially damaged by the on-site loss;
 - b. On-site compensation is not scientifically feasible due to problems with hydrology, soils, or other factors;
 - c. Compensation is not practical due to potentially adverse impacts from surrounding land uses;
 - d. Existing functions and values at the site of the proposed restoration are significantly greater than lost wetland functional values;

e. That established regional goals for flood storage, flood conveyance, habitat or other wetland functions have been established and strongly justify location of compensatory measures at another site;

f. There is no feasible location for on-site mitigation;

g. Off-site compensation shall occur within the same watershed, if feasible, as the wetland loss occurred; provided, that Category IV wetlands may be replaced outside of the watershed when there is no reasonable alternative; and

h. In selecting compensation sites, an applicant shall pursue siting in the following order of preference:

i. Upland sites which were formerly wetlands;

ii. Idled upland sites generally having bare ground or vegetative cover consisting primarily of invasive introduced species, weeds, or emergent vegetation; or

iii. Other disturbed upland.

8. Timing. Wherever feasible, compensatory projects shall be completed prior to activities that will disturb wetlands, and immediately after activities that will temporarily disturb wetlands. In all other cases, except for Category I wetlands, compensatory projects should be completed prior to use or occupancy of the activity or development which was conditioned upon such compensation. Construction of compensation projects shall be timed to reduce impacts to existing wildlife and flora.

9. Cooperative Restoration, Creation or Enhancement Projects. The Director may encourage, facilitate, and approve cooperative projects wherein a single applicant or other organization with demonstrated capability may undertake a compensation project with funding from other applicants under the following circumstances:

a. Restoration, creation or enhancement at a particular site may be scientifically difficult or impossible; or

b. Creation of one or several larger wetlands may be preferable to many small wetlands;

c. Persons proposing cooperative compensation projects shall:

i. Submit a joint permit application;

ii. Demonstrate compliance with all standards;

iii. Demonstrate the organizational and fiscal capability to act cooperatively; and

iv. Demonstrate that long-term management can and will be provided.

10. Mitigation Banking.

a. The City may consider and approve replacement or enhancement of wetlands to address unavoidable adverse impacts caused by development activities through an approved wetland mitigation bank. Compensatory mitigation in advance of authorized impacts must be provided through an approved mitigation bank if a bank is used.

b. When off-site mitigation is authorized, the Director shall give priority to locations within the same drainage basin as the development proposal site that meet the following:

i. Mitigation banking sites and resource mitigation reserves as authorized by this chapter;

- ii. Private mitigation sites that are established in compliance with the requirements of this chapter and approved by the Director; and
- iii. Public mitigation sites that have been ranked in a process that has been supported by ecological assessments.
- c. The Director may require documentation that the mitigation site has been permanently preserved from future development or alteration that would be inconsistent with the functions of the mitigation. The documentation may include, but need not be limited to, a conservation easement, transfer of clearing credits or other agreement between the applicant and owner of the mitigation site. The City may enter into agreements or become a party to any easement or other agreement necessary to ensure that the site continues to exist in its mitigated condition.
- d. The Director shall maintain a list of sites available for use for off-site mitigation projects.
- e. The Director may develop a program to allow the payment of a fee in lieu of providing mitigation on a development site. The program should address:
 - i. When the payment of a fee is allowed, considering the availability of a site in geographic proximity with comparable hydrologic and biological functions and potential for future habitat fragmentation and degradation; and
 - ii. The use of the fees for mitigation on public or private sites that have been ranked according to ecological criteria through one or more programs that have included a public process.

16.20.170 The Winslow Ravine – Special Rules in Mixed Use Town Center.

A stream commonly known as the “Winslow Ravine Stream” is located in a ravine commonly known as, and identified on department maps as, the “Winslow Ravine”. Both the stream and the ravine are partially located in the Mixed Use Town Center (MUTC). In order to accommodate more dense development within the MUTC, and recognizing the significant distance from the top of the ravine to the stream and its adjacent wetlands, in lieu of the buffer and setback rules provided for Fish and Wildlife Conservation Areas (BIMC 16.20.130) and Wetlands (BIMC 16.20.160), the applicant may select the prescriptive option or the mitigated option with respect to the Winslow Ravine Stream and the Winslow Ravine within the MUTC as described below:

A. “Option A” - Prescriptive Standards.

CATEGORIES	BUFFER WIDTH STANDARD	MINIMUM BUILDING SETBACK	OTHER DEVELOPMENT STANDARDS
Streams, Wetlands and Wildlife Conservation Areas associated with the Winslow Ravine or Winslow Ravine	50 feet beyond the top of the Winslow Ravine.	15 feet beyond the buffer.	

Stream within the MUTC.			
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B. “Option B” - Mitigated Standards. The applicant shall demonstrate by submittal of necessary studies and proposed mitigation, that measures can and will be taken to ensure that the functions and values provided by the buffers prescribed under “Option A” are retained or improved.

CATEGORIES	BUFFER WIDTH STANDARD	MINIMUM BUILDING SETBACK	OTHER DEVELOPMENT STANDARDS
Streams, Wetlands and Wildlife Conservation Areas associated with the Winslow Ravine or Winslow Ravine Stream within the MUTC.	25 feet beyond the top of the Winslow Ravine.	10 feet beyond the buffer.	The buffer area shall be landscaped to facilitate filtration and infiltration of storm water. If such landscaping is installed, the buffer area may be used for recreational purposes. Fences, sitting areas and walking paths are allowed within the buffer area. There is no requirement that the buffer be dedicated as permanent open space tracts or otherwise.

16.20.180 Performance and maintenance surety.

A. Performance Surety. The Director shall decide when a performance surety is required of an applicant, and the acceptable form of such surety. The amount and the conditions of the surety shall be consistent with the purposes of this chapter; provided, that the minimum amount of the surety, when required, shall be 125% of the estimated cost of performance. A performance surety shall not be required when the actual cost of performance, as documented in a form acceptable to the Director, is less than \$1,000. The Director shall release the surety upon determining that:

1. All activities, including any required compensatory mitigation, have been completed in compliance with the terms and conditions of the permit and the requirements of this chapter;
2. A maintenance surety has been posted by the applicant, where deemed appropriate by the Director.

Until such written release of the surety, the principal or surety cannot be terminated or canceled.

B. Maintenance Surety. When a maintenance surety is required, the holder of a development permit issued pursuant to this chapter shall post a surety for an amount and in a form acceptable to the Director, with conditions sufficient to guarantee that maintenance of structures, improvements, and mitigation required by the permit or by this chapter perform satisfactorily for a minimum of two years after they have been completed. The Director shall release the maintenance surety upon determining that performance standards established for evaluating the effectiveness and success of the structures, improvements, and/or compensatory mitigation have been satisfactorily met

for the required period. For compensation projects, the performance standards shall be those contained in the mitigation plan developed and approved during the review process. The maintenance surety applicable to a compensation project shall not be released until the Director determines that performance standards established for evaluating the effect and success of the project have been met.

C. Deposit Instruments. The deposit instrument for the performance or warranty deposit shall be cash, a non-revocable letter of credit, an assignment of funds, bond or other readily accessible source of funds approved by the Director. The deposit instruments shall be on a form acceptable to the Director. Any issuer of a deposit instrument shall pay invoices presented by the City pursuant to this chapter within 45 days. A bond will be accepted only for amounts over \$1,000.00 or when State Law requires a bond. Interest on deposited funds will accrue to the benefit of the depositor, except that any interest earned on a cash deposit will be retained by the City for account administration.

D. Default on deposit.

1. If the work covered by the deposit is not completed within the time specified in the notice given under this chapter, the City shall obtain the proceeds of the deposit and do the work covered by the deposit. The City may either have its employees or a contractor do the work.

2. If, at any time, the Director determines that actions or inactions associated with permit work have created an emergency situation endangering public health, safety, or welfare, creating a potential liability for the City, or such an emergency precludes the notification of applicants as provided in this chapter while still minimizing or avoiding the effects of the emergency, the City may use the deposit to cover costs incurred by the City to correct the emergency situation. The City may either have employees of the City or a contractor do the work. If the City uses the deposit as provided by this section, the applicant shall be notified in writing within four working days of the commencement of emergency work. The notice must state the work that was completed and the nature or timing of the emergency that necessitated the use of the deposit without prior notification.

3. The permittee is responsible for all costs incurred by the City in doing the work covered by the deposit. The City shall release or refund any proceeds of a deposit remaining after subtracting all costs incurred. The permittee shall reimburse the City for any amount expended by the City that exceeds the deposit.

4. If the City uses any of the deposit it shall, within 30 days, provide the owner of the permit an itemized statement of all proceeds and funds used.

16.20.190 Notice on title.

A. The owner of any property with field-verified presence of critical area or buffer on which a development proposal is submitted shall file for record with the Kitsap County auditor a notice approved by the Director in a form substantially as set forth in Subsection B of this Section. Such notice shall provide notice in the public record of the presence of a critical area and buffer, the application of this chapter to the property, and that limitations on actions in or affecting such areas may exist. The applicant shall submit proof that the notice has been filed for record before the City shall approve any development proposal for such site. The notice shall run with the land and failure to

provide such notice to any purchaser prior to transferring any interest in the property shall be in violation of this chapter.

B. Form of Notice.

Critical Areas
and/or
Critical Areas Buffer Notice

Legal

Description: _____

Present owner: _____

NOTICE: This property contains critical areas or their buffers as defined by the City of Bainbridge Island Ordinance No. _____. The property

_____ was the subject of a development proposal for

_____ (type of permit) application # _____ filed on ____ (date) ____.

Restrictions on use or alteration of the critical areas or their buffers may exist due to natural conditions of the property and resulting regulations. Review of such application has provided information on the location of critical areas or critical area buffers and restrictions on their use through setback areas. A copy of the plan showing such setback areas and other restrictions or required enhancements is attached hereto.

Signature of owner _____

STATE OF WASHINGTON)

COUNTY OF _____)

On this day personally appeared before me to me known to be the individual(s) described in and who executed the within and foregoing instrument and acknowledged that they signed the same as their free and voluntary act and deed for the uses and purposes therein stated.

Given under my hand and official seal this ____ day of _____, _____. NOTARY PUBLIC in and for the state of Washington, residing at _____.

16.20.200 Compliance and enforcement.

A. It is a violation of this chapter for any person to fail to comply with the requirements of this chapter. It is further a violation of this chapter for any person to:

1. Initiate or maintain, or cause to be initiated or maintained, the use, construction, placement, alteration, or demolition of any structure, land, or property within the city without first obtaining permits or authorizations required by this chapter, or in a manner that violates the terms or conditions of such permits or authorizations;
2. Misrepresent any material fact in any application, plans or other information submitted to obtain permits or authorizations under this chapter; or

3. Remove or deface any sign, notice, complaint, or order required by or posted in accordance with this chapter.

B. When a critical area or its buffer has been altered in violation of this chapter, all ongoing development work shall stop and the critical area shall be restored. The City shall have the authority to issue a stop work order to cease all ongoing development work, and order restoration, rehabilitation, or replacement measures at the owner's or other responsible party's expense to compensate for violation of provisions of this chapter.

C. Restoration plan required. All development work shall remain stopped until a restoration plan is prepared and approved by the Director. Such a plan shall be prepared by a qualified professional using the best available science and shall describe how the actions proposed meet the minimum requirements described in Subsection (D) below. The Director shall, at the violator's expense, seek expert advice in determining the adequacy of the plan. Inadequate plans shall be returned to the applicant or violator for revision and resubmittal.

D. Minimum performance standard for restoration.

1. For alterations to critical aquifer recharge areas, frequently flooded areas, wetlands, and habitat conservation areas, the following minimum performance standards shall be met for the restoration of a critical area; provided, that if the violator can demonstrate that greater functional and habitat values can be obtained, these standards may be modified:

- a. The historic structural and functional values shall be restored, including water quality and habitat functions;
- b. The historic soil types and configuration shall be replicated;
- c. The critical area and buffers shall be replanted with native vegetation that replicates the vegetation historically found on the site in species types, sizes, and densities. The historic functions and values should be replicated at the location of the alteration; and
- d. Information demonstrating compliance with the requirements in Section BIMC 16.20.110 shall be submitted to the Director.

2. For alterations to flood and geological hazard areas, the following minimum performance standards shall be met for the restoration of a critical area; provided, that if the violator can demonstrate that greater safety can be obtained, these standards may be modified:

- a. The hazard shall be reduced to a level equal to, or less than, the pre-development hazard;
- b. Any risk of personal injury resulting from the alteration shall be eliminated or minimized; and
- c. The hazard area and buffers shall be replanted with native vegetation sufficient to minimize the hazard.

3. All restoration plans shall include a detailed estimate of the cost for implementation of the restoration plan.

E. Site investigations. The Director is authorized to make site inspections and take such actions as are necessary to enforce this chapter. The Director shall present proper

credentials and make a reasonable effort to contact any property owner before entering onto private property.

F. Penalties. Any development carried out contrary to the provisions of this chapter shall constitute a public nuisance and may be enjoined as provided by the statutes of the State of Washington. Enforcement of this chapter and the imposition of penalties for violations of this chapter shall be as provided for in Chapter 1.26 BIMC; provided, that in addition to the civil penalties provided for in BIMC 1.26.090, an additional penalty shall be imposed on any person, party, firm, corporation, property owner, or other legal entity who fails to complete a required restoration plan or who conducts any willful disturbance (including cutting vegetation) of a critical area or its associated buffer in violation of this chapter. For such violations, the additional penalty shall be in the amount equal to 200% of the cost of restoration as approved under a restoration plan pursuant to Subsections (C) and (D) above. Any person, party, firm, corporation, or other legal entity who knowingly and willfully refuses to complete a required restoration pursuant to Subsections (C) and (D) above shall be guilty of a misdemeanor punishable by not more than 30 days in jail and/or not more than a \$1,000 fine.

16.20.210 Suspension – Revocation.

In addition to other penalties provided for elsewhere, the Director may suspend or revoke a permit if it is found that the applicant or permittee has not complied with any or all of the conditions or limitations set forth in accordance with this chapter, has exceeded the scope of work set forth in the permit, or has failed to undertake the project in the manner set forth in the approved application.

16.20.220 Assessment relief.

The City of Bainbridge Island, in imposing special assessments, shall take into account the easements or perpetual conservation restrictions in critical areas.

16.20.230 Other laws and regulations.

No permit granted pursuant to this chapter shall remove an applicant's obligation to comply in all respects with the applicable provisions of any other federal, state, or local law or regulation.

16.20.240 Conflict.

A. General. When any provision of any other chapter of the BIMC conflicts with this chapter (or any existing regulations, easements, covenants, or deed restrictions), that which provides more protection to critical areas shall apply.

B. Shoreline Master Program. In case of conflict between the provisions of this chapter and the provisions of the Shoreline Master Program, Chapter 16.12 BIMC, the provisions of the Shoreline Master Program, Chapter 16.12 BIMC, shall prevail unless the Critical Areas Ordinance provides greater protection for critical areas. However, the classification or designation of any of the shoreline of Bainbridge Island shall not change from what it is under the Shoreline Master Program as a result of any provisions of the Critical Areas Ordinance.

16.20.250 Severability.

If any clause, sentence, paragraph, section or part of this chapter or the application thereof to any person or circumstances shall be adjudged by any court of competent jurisdiction to be invalid, such order or judgment shall be confined in its operation to the controversy in which it was rendered and shall not affect or invalidate the remainder of any part thereof to any other person or circumstances and to this end the provisions of each clause, sentence, paragraph, section or part of this law are hereby declared to be severable.

Chapter 16.20 - Exhibit A
Table I – Shoreline Study Requirements

Use	Analyses Required
All Activities below Mean Higher High Water	Dive Survey and/or Biological Evaluation or Biological Assessment ¹
Pier and Docks	Dive Survey and/or Biological Evaluation or Biological Assessment ¹
Shoreline Armoring (bulkhead and revetments)	Sediment analyses Biological Evaluation or Biological Assessment ¹
Development Activities Disturbing Native Vegetation Zone (Single Family Residences or Commercial)	Re-vegetation Plan

Footnotes:

¹Only as required by Washington Department of Fish and Wildlife, US Army Corp of Engineers, NOAA Fisheries or US Fish and Wildlife.

Additional Studies may be required by the Director as necessary to determine whether the application meets the decision criteria for Shoreline Substantial Development Permit, Shoreline Substantial Development Exemption, Shoreline Conditional Use Permit or Shoreline Variance.

Section 3. Effective Date. This ordinance shall take effect on February 15, 2006.

PASSED by the City Council this ____ day of _____, 2005.

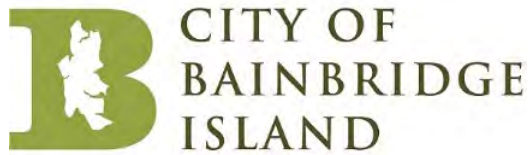
APPROVED by the Mayor this ____ day of _____, 2005.

DARLENE KORDONOWY, Mayor

ATTEST/AUTHENTICATE:

SUE P. KASPER, City Clerk

FILED WITH THE CITY CLERK:	_____ 2005
PASSED BY THE CITY COUNCIL:	_____ 2005
PUBLISHED:	_____ 2005
EFFECTIVE DATE:	_____ 2005
ORDINANCE NUMBER:	2005-03



Department of Planning and Community Development

Staff Recommendation

Date: March 17, 2017
To: City of Bainbridge Island Planning Commission
From: Joshua Machen, AICP, Planning Manager
Gary R. Christensen, AICP, Director
Project: Madrona School
File No: PLN 18970B SPR / CUP

Applicant: Madrona School
219 Madison Avenue S.
Bainbridge Island, WA 98110

Request: Construction of a new PK-8 private school, which includes classrooms, offices, and a gymnasium/auditorium. Site improvements include 39+ parking spaces, play field, stormwater facilities and on-site septic system. An existing residence, barn and two sheds will be demolished (Reference Documents A, B, & C)

Location: 11478 N. Madison Avenue NE

Consolidated Project Review:

In accordance with regulations contained in BIMC 2.16.170, an applicant for a single project proposal requiring more than one of the land use applications identified in BIMC 2.16.010 may be processed under the consolidated project review process. The applicant requests consolidated review of the applications for Site Plan and Design Review and Conditional Use Permit.

Public Notice / Environmental Review:

The first pre-application conference was held on October 8, 2013. No formal plans had been developed, so the discussion was generally about zoning and the process. A second pre-application conference was held on July 19, 2016. A public participation meeting was held on July 18th, 2016. Applications for Site Plan Review and Conditional Use Permit were received on August 2, 2016.

After deeming the application complete the City determined that the project is subject to State Environmental Policy Act (SEPA) review as provided in Washington Administrative Code (WAC 197-11-800). Utilizing the **optional DNS process** provided in WAC 197-11-355, the City issued a combined Notice of Application/SEPA comment period on October 14, 2016 (Reference Document D). The 14-day comment period ended on October 28, 2016; public comment is discussed in Section I.C. of this report. The City, acting as lead agency, issued a SEPA threshold determination for this proposal on February 27, 2017 (Reference Document E). No appeals were filed.

Planning Commission Review:

The Planning Commission shall provide a recommendation to the Hearing Examiner pursuant to BIMC 2.14.020, BIMC 2.16.040.C.2, and BIMC 2.16.110.C.

Recommendation:

Approval of the request subject to the following conditions:

SEPA CONDITIONS

1. To avoid impacts to vegetation, no construction activity shall occur in landscape buffers or within the critical root zone of significant trees within landscape buffers, including staging, storage, materials laydown, parking, construction vehicle turnaround, or equipment.
2. Prior to clearing permit or construction permit issuance, fencing shall be erected and posted with signage to protect areas of prohibited disturbance. Signs shall be affixed to the fence every 50 feet indicating the protected area. Fencing shall remain in place until construction is complete, and removal shall be subject to approval of the Planning Division. No construction activities, including grading and/or vegetation removal, shall occur prior 'area of disturbance' plan approval, and inspection and approval of the fencing installation, by the Planning Division.
3. Temporary chain link fence a minimum five feet in height with tubular steel poles or "T" posts shall delineate the area of prohibited disturbance in the following locations:
 - a. At the edge of the drip line of trees proposed to be preserved between N. Madison Avenue and the proposed access drive. Special care shall be taken to protect the significant trees, vegetation, and rain garden area adjacent to the driveway.
 - b. Along the buffer adjacent to the north property line.
4. Orange plastic fencing shall delineate the perimeter buffer where chain link fencing is not required and where existing vegetation is being preserved to meet the buffer requirement.
5. All graded materials removed from the subject property shall be hauled to and deposited at City approved locations (Note: local regulations require that a grade/fill permit is obtained for any grading or filling of 50 cubic yards of material or more if the grading or filling occurs on sites that have not been previously approved for such activities. A SEPA Threshold Determination is required for any fill over 100 cubic yards on sites that have not been previously received a SEPA determination).
6. Contractor is required to stop work if any historical or archaeological artifacts are uncovered during excavation or construction and immediately notify the Department of Planning and Community Development and the Washington State Office of Archaeology and Historic Preservation.
7. To mitigate the possible impact on adjacent properties from light and glare, all exterior lighting shall be hooded and shielded so that the bulb is not visible from adjacent properties. All landscape lighting shall be downcast and lighting within surface parking lots shall be no higher than 5 feet above grade. All exterior lighting shall comply with BIMC Chapter 15.34.

8. All on-site stormwater facilities shall remain privately owned and maintained. The owner shall be responsible for maintenance of the storm drainage facilities for this development following construction. Annual inspection and maintenance reports shall be provided to the City. A Declaration of Covenant for stormwater system operation and maintenance will be required to be recorded before issuance of occupancy permits. The approved language for the Declaration of Covenant is found in BIMC 15.21 Exhibit A.
9. Stormwater detained in the proposed detention pond will be released at a controlled rate through a control structure and ultimately out through a dispersion tee located within 25 feet of the north-eastern property line. The nearest residence downgradient of the dispersion tee is within 50 feet. The release of stormwater from the detention pond shall be monitored for a minimum of 5 years to ensure proper function of pond and control structure and to ensure stormwater release is not detrimental to the neighboring property or structures. The monitoring plan shall be developed by the project stormwater engineer, reviewed and approved by the city, and included with the overall stormwater operation and maintenance plan developed under condition number 1 above.
10. The applicant shall be responsible for verifying water pressure and fire flows are adequate from connections to water mains.
11. All construction activities shall comply with the construction operating hours limitations contained in BIMC Chapter 16.16.
12. Noise produced by this development must comply with the maximum environmental noise levels established by the Washington Administrative Code 173-60 or its successor.

PROJECT CONDITIONS

13. To ensure the Madrona School facility remains compatible with the surrounding neighborhood, the school is limited to an occupancy of 200 students and 27 teachers for standard school days (this limitation does not apply to special events or functions).
14. To ensure historic and cultural resource preservation, a completed Washington State Historic Property Inventory Field Form shall be recorded with the State Department of Archeology and Historic Preservation prior to the demolition of the historic home on the property.
15. A NPDES permit from the Department of Ecology will be required prior to ground disturbing activities.
16. A Right-of-Way permit will be required prior to any work within the right of way. The ROW permit will be subject to separate conditions and bonding requirements.
17. Except for modifications reflecting compliance with these conditions of approval, building plans shall substantially conform to plans submitted on August 2, 2016, except as follows: Sheet A-1.00 submitted on September 12, 2016; Sheet C1-C3 submitted on January 10, 2017.
18. Prior to any construction activities, the applicant shall obtain the appropriate permits from the City of Bainbridge Island, including but not limited to clearing, grading, and/or building permits.

19. The project shall comply with the following conditions of the Fire Marshal:
 - a. The project shall comply with all applicable provisions of the adopted Fire Code.
 - b. All driving lanes within the project are considered Fire Lanes and shall be labeled as such as directed by the Fire Marshal.
 - c. Landscaping shall not impede access of fire department apparatus and personnel.
20. Prior to building permit issuance a Boundary Line Adjustment shall be submitted and approved. The structures on any resultant lot must meet zoning requirements.
21. A minimum of nine bicycle spaces must be provided. Bicycle facilities shall allow secure locking of both the frame and wheels of a bicycle.
22. In order to screen the proposed school from the adjacent single-family home to the south, a six-foot high solid wood fence shall be erected along the property line adjacent to the parking lot and play field prior to final inspection of the first phase of the project. (Note: this condition may be waived upon written request from the property owner to the south).
23. All perimeter buffers shall be planted to the full screen landscape requirements in accordance with the submitted landscaping plan during the first planting season following the grading and access construction phase.
24. Landscape buffers shall be maintained for the life of the project.
25. New plantings shall be the following heights at time of planting: Evergreen trees shall be not less than six feet in height; Deciduous trees shall be not less than two-inch (caliper in diameter?) dbh; Evergreen shrubs shall be not less than 18 inches in height.
26. All plantings shall be installed or installation financially assured in accordance with BIMC 18.15.010.H. prior to occupancy of any of the new buildings. Subsequent to installation approval by the Department, maintenance assurity shall be required in accordance with BIMC 18.15.010.H.
27. The primary internal walkways shall be surfaced with nonskid hard surfaces (asphalt pavement or concrete), meet handicapped-accessibility requirements and be designed to provide a minimum of five feet of unobstructed width.
28. The walkway adjacent to the pick-up / drop-off lane shall be curbed and raised six inches above adjacent vehicular surface grade, except where required to meet accessibility standards.
29. Raised curbs shall be used to define driveways from the public right-of-way, landscape areas within the parking lot, the ends of parking aisles, and the vehicular circulation pattern.
30. No parking or pick-up/drop-off shall occur on Madison Avenue or Windsong Loop.
31. Outdoor trash / recycle receptacles shall be enclosed with a solid structure / gated and screened from view with evergreen vegetation.
32. No high field lights are allowed for the school.
33. The project is allowed one sign at the entrance to the school. The sign shall be located outside of the public right-of-way and not exceed 10 square feet in size and shall be constructed of natural materials. The height of the sign shall not exceed five feet from existing grade.
34. Prior to building permit issuance of any phase, an approved building site application for on-site septic system and water availability shall be obtained from the Kitsap Public Health District.

35. Prior to building permit issuance, the landowner must record a notice on title listing these conditions of approval with the Kitsap County Auditor.

Staff Analysis

I. Findings of Fact

A. Site Characteristics

1. Tax Assessor Information:

- a. Tax Lot Numbers: 112502-3-099-2008
112502-3-102-2003
112502-3-1003-2005
112502-3-001-2004
- b. Owner of record: Center Tree LLC
- c. Lot size: the total of the four lots is 4.79 acres
- d. Existing land use: Single -family residence and associated outbuildings.

2. Background

The Madrona School is a non-profit private school that is currently located in the congregational church in downtown Winslow. The school is proposing to relocate to the North Madison Avenue property to accommodate their increase in student population and to address learning needs that their own campus can provide that the constrained property in Winslow can't provide. The proposed school is designed to accommodate up to 200 students and 27 teachers and administration personnel.

The proposed school is proposed to be developed in three phases as follows:

Phase 1: Grades 1-8, Administrative Offices

Nine classrooms and four offices -11,000 square feet on two levels

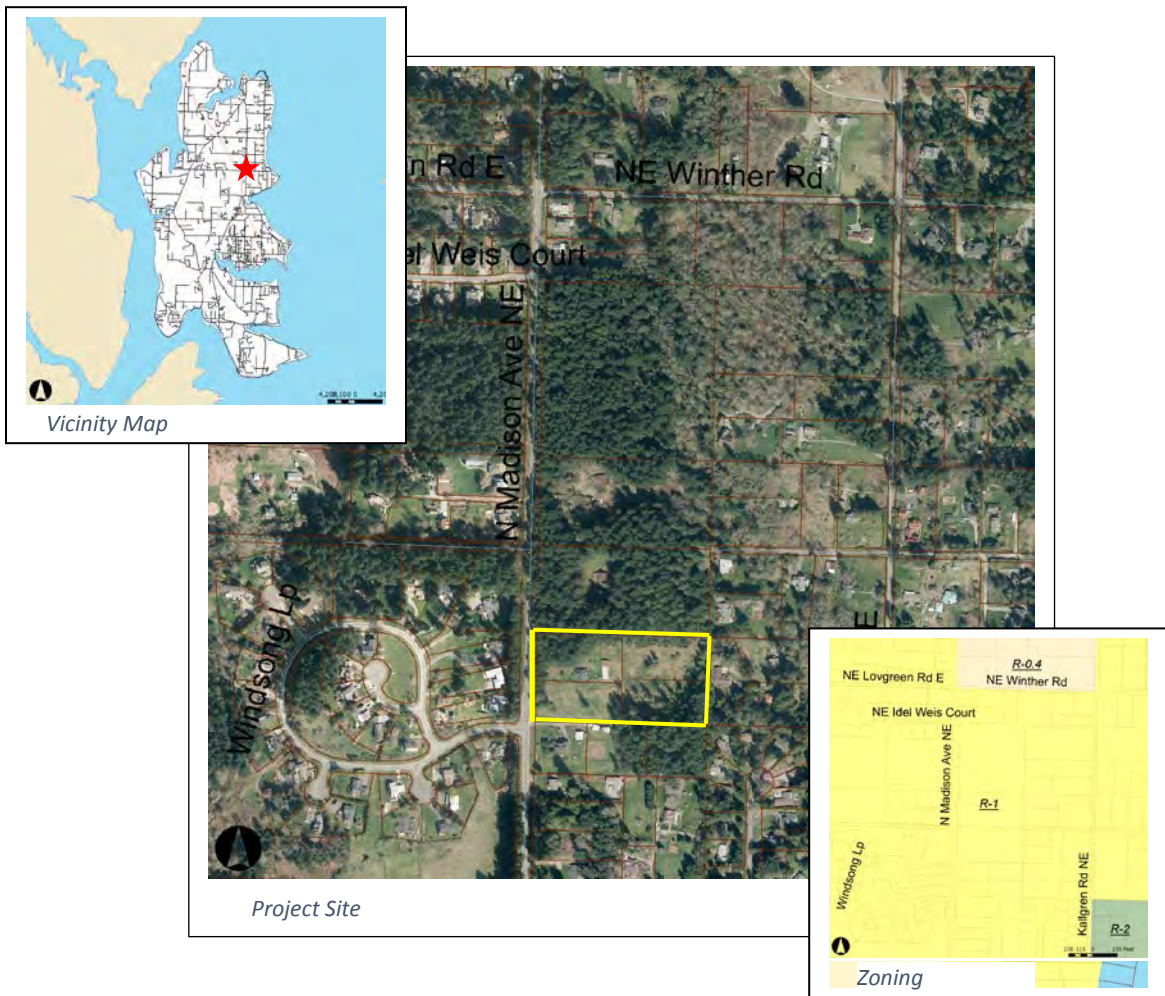
Phase 2: Early Childhood

Four classrooms -5,000 square feet on two levels

Phase 3: Gymnasium/Auditorium

GYM, three classrooms, kitchen, and apartment- 10,000 square feet on two levels

The existing house on the site will be demolished with the construction of Phase 3. No off-site road construction is proposed, other than entry and exit drive aprons connecting to N. Madison Avenue NE.



3. Zoning and Comprehensive Plan Designation: The subject property is within the R-1 district and the Open Space Residential (OSR-1) designation. All the surrounding properties are also zoned R-1 and the Comprehensive Plan Designation is OSR-1.
4. Existing Development: The property contains an existing single-family residence and accessory buildings. The surrounding properties are either developed with single-family homes or are currently undeveloped.
5. Access: Vehicular access is provided from N. Madison Avenue NE.
6. Soils and Terrain:

Site soils are composed of Harstine and Ragnar gravelly/sandy loams. Much of the site is cleared pasture/grass area with a perimeter buffer of trees around the property except the southwest portion of the site which is cleared pasture area adjacent to the adjoining property's access driveway and garage/outbuilding.

The topography of the site is generally flat in the middle with a gradual slope to the southwest and southeast.

7. Public Services and Utilities:

- a. Police: City of Bainbridge Island Police Department
- b. Fire: Bainbridge Island Fire District
- c. Water: On-site Well
- d. Sewer / Septic: On-site Septic
- e. Storm drainage: On-site detention and dispersion is proposed for the east side of the site, and on-site detention for the west side.

B. Comprehensive Plan Goals and Policies

1. Land Use Element

- a. Historic Preservation - Goal 3

Archaeological resources should be identified, preserved, and / or left undisturbed.

The site contains a historic home that the City has found to be eligible for the local register. The applicant has indicated they intend to maintain the house during the first two phases of construction, but that the house is not in a condition to be preserved into the future and would be demolished during the third phase. To ensure historic and cultural resource preservation, a completed Washington State Historic Property Inventory Field Form shall be recorded with the State Department of Archeology and Historic Preservation prior to the demolition of the historic home on the property (Condition 14).

Should any historical or archaeological artifacts be uncovered during excavation or construction, project work must stop and the applicant must notify the Department of Planning and Community Development and the Washington State Office of Archeology and Historic Preservation. (Condition 6)

2. Economic Element

- a. Economic Element - Goal 1

Retain and enhance a diversified local economy. The City should embrace diverse and innovative business opportunities compatible with the community and develop programs to make Bainbridge Island an attractive location for those businesses.

The development provides for a private not-for-profit elementary and pre-school educational facility.

3. Cultural Element

- a. Arts Education - Goal 2

Demonstrate commitment to quality arts education and lifelong learning by advocating for comprehensive inclusion of the arts in our schools and community settings. Support a comprehensive quality arts education program in the schools and the community.

The development provides for a learning environment that emphasis the natural environment and the arts.

b. Humanities - Goal 7

Foster the spirit of community in which the richness of human experience is explored and nurtured through ongoing analysis and exchange of ideas about the relation to self, others and the natural world.

The school relies on the natural environment to address Waldorf education principles and methods. The Waldorf program provides a broad curriculum, including academics, art and music education, physical education, and emotional and social education.

The project emphasizes outdoor spaces and the discovery of the natural world. For example: The proposed development provides playgrounds with all-natural materials, a campus with trails through a natural environment. Buildings are oriented to capture natural light and to fit into the natural topography of the land avoiding competition with the natural setting.

C. Public / Agency Comment

Multiple public comments were received. The comments are summarized as follows:

1. **Neighborhood/Zoning Compatibility:**

Several public comments were received regarding the scale of the proposed development and the structures are too large and non-compatible with the existing residential neighborhood character. **The school does represent a distinct change from the single-family homes within the immediate vicinity. The property upon which the school is proposed is 4.79 acres in total which under current zoning could support up to five single-family residences each with an accessory dwelling unit and associated out buildings. Under the conditional use permit requirements, the allowed lot coverage (the area of the lot allowed to be covered by buildings) is limited to half the amount that would be allowed if single-family homes and accessory structures were proposed on this same site.**

Multiple comments suggested that the zoning should not allow a use that is like a commercial development and questioned why private schools are allowed in a residential zone. **The zoning for the subject property is R-1, Residential one unit per acre zone. However, the R-1 zone allows schools (public or private) under the provisions of obtaining a conditional use permit. Washington State laws grant local jurisdictions (i.e., city) land use regulatory authority. The elected City Officials of Bainbridge Island have adopted zoning definitions for commercial and educational development and adopted zoning regulations as to where these uses may be allowed, or allowed through a conditional use permit. Educational facilities are an allowed use in the R-1 zone through the issuance of a conditional use permit.**

2. **Traffic and vehicular trips:**

Several public comments expressed concern regarding the number of vehicular trips proposed to the subject property each day and the impact those trips may have on adjacent roadways and transportation systems. **The school facility poses a significant increase in vehicular trips per day when compared to single-family homes. The submitted traffic study indicates the school at full capacity is expected to generate 720 daily trips, 360 in and 360 out. Educational facilities requiring a conditional use permit and must be located on roads classified as residential suburban, collector, or arterial on the Bainbridge Island functional road classification map. N. Madison Avenue NE is listed as an arterial road on the classification map. Two traffic studies were performed to address the issue of traffic generation and the impact that the proposed**

development would have on surrounding roadways. Typically, traffic calculations look at the PM peak hour because that is the hour of highest congestion. The proposed development's typical traffic patterns fall outside of this peak hour, so the school is likely to have little to no impacts on the PM peak hour. However, in consideration of public comments received a second traffic study was performed to analyze the morning peak hour and specifically the potential impact on the Sportsman's Club/SR305 intersection (Reference Document H). The traffic studies indicate that this intersection will fail in the year 2040 with or without the proposed school. The City has generally accepted that improvements at major intersections that serve large populations of the island are a City and State responsibility and that individual project are not expected to make the improvements when their portion of the impact is very minimal.

3. **Noise from children:**

Only a couple of public comments expressed concern regarding noise emanating from children's play. **While many of the surrounding properties are developed with single-family homes, only one is in proximity to the playfield to be impacted by noise from children's play.** The closest house is approximately 75 feet away from the property line and the proposed playfields would be over 100 feet from the residence and will have a new 15-foot landscape buffer and possible fence between the properties. In accordance with a recent City of Bainbridge Island Hearing Examiner Decision and Analysis on the Montessori Country School, noise from children (unamplified human noise) is exempt from noise standards of the Municipal Code or state law. In that same decision, the examiner referred to a noise study at an existing school of 400 students and the noise from an active play area at 25 feet was 60-64 dBA. Since the nearest existing house is over 100 feet away and will be screened with vegetation and a fence, it is likely that the noise would be significantly diminished not having an adverse impact on the neighbor.

4. **Visual impact:**

A few public comments received expressed concern that the proposed school would have a negative visual impact on the surrounding residential neighborhood character. **As proposed and required by the municipal code, the proposed project is providing a dense buffer of existing trees and shrubs along N. Madison Avenue. The closest parking spaces will be almost 45 feet back from the edge of right-of-way. Existing native tree and shrub buffer also exists along the north, east and half of the south property lines. Where no buffer exists along a portion of the south property line a new 15-foot full screen buffer will be planted as part of this proposed development. These buffers will help ensure the residential nature of area is not visually altered by the proposed private school.**

5. **Lighting:**

Concerns were raised that the school may employ high intruding parking lot lighting or lighting for the play fields that would adversely impact surrounding properties. **As part of their application the school was required to submit a lighting plan with proposed fixtures. As proposed, only a few low bollard lights are proposed around the parking area and pedestrian paths and there are some entry sconces proposed on the buildings. The proposed fixtures are all shielded and downlight only.**

6. **Parking:**

Public comments were received regarding the adequacy of the number of parking spaces being provided, especially for large events involving the whole school. **The proposed school is providing 39 parking stalls in addition to five load/unload spaces that would be available for long-term parking outside of pick-up/drop-off times. The number of stalls is consistent with the City's regulations for schools including staff, parents, and visitors. The school has recognized for large**

events alternative parking would be necessary. For these events, the school play field could be accessed and used for overflow parking in addition to shuttle programs from either Rolling Bay Presbyterian Church or from the Grange Hall parking lot.

7. **Signs:**

Concerns were raised that a large lighted sign at the entrance of the school on Madison could detract from the residential neighborhood character. **A school sign, consistent with the municipal code and as specified in a conditional use permit, would be limited in size, and be required to meet lighting requirements, and to assure compatibility with the surrounding neighborhood. Any sign not visible from the public right-of-way or adjacent property is not considered a regulated sign under the City's regulations.**

8. **No rental clause:**

A concern was raised that the school would rent out their space to commercial endeavors during non-school hours causing additional traffic and potential impacts on the surrounding properties. **Often schools or other public facilities are rented out to other non-profit clubs or religious groups for use on off hours. No commercial businesses would be allowed to use the school facilities as this would be a violation of the municipal code. Other uses wanting to rent space from the school would have to demonstrate that their intended use would not adversely affect the neighborhood, cause a burden on parking or have any other impact greater than the school use.**

9. **Support for Waldorf education/school-**

Many comments were received that expressed their support of both the school and the Waldorf education the school is proposed to provide. The commenters indicated school provides a different type of education offered at other private or public schools on the island. **The Madrona School, which offers a Waldorf education system has operated on Bainbridge Island for many years in the church at the corner of Winslow Way and Madison Avenue in downtown Winslow. Due to space constraints and the desire to connect the children with the land and natural environment, they are proposing to relocate to the "Lowery Farm" property. As a private school offering a Waldorf education they provide an educational diversity on the island that would be lost if they were unable to maintain their school on the Island. Many citizens have indicated that this large clear farm property is a suitable location for the school, as it is centrally located on an arterial road, while providing a natural setting for educational needs of the children without having to remove a significant amount of existing significant trees to build the facilities.**

D. Land Use Code Analysis

1. BIMC Title 18 Zoning

a. BIMC 18.09.020 Use Table

Educational facilities are conditional uses in the R-1 district, and shall be processed as major conditional uses in residential zones (BIMC 18.09.030). **The applicant has properly applied for a major conditional use permit along with a site plan and design review application.**

b. BIMC 18.12.020-2 Standard Lot Dimensional Standards for Residential Districts

i. Lot Size, Lot Coverage and Building Height Requirements

Minimum lot size is 40,000 square feet in the R-1 district, and minimum lot width is 80 feet. Lot coverage is the portion of the lot area that may be covered by buildings

(BIMC 18.12.050.K). Maximum lot coverage for lots in the district is 15 percent provided, institutions located in residential districts may not exceed 50 percent of the allowable lot coverage (i.e. 7.5 percent). Maximum building height is 30 feet.

The combined lots are 4.79 acres in size, and therefore meets the minimum lot size requirement (Note a Boundary Line Adjustment combining the lots will be required prior to building permit issuance-Condition #20). The lot width well exceeds the required 80 feet. Proposed lot coverage is 16,260 square feet 7.4 percent of lot area, and therefore meets this requirement. All existing and proposed buildings are less than 30 feet in height.

ii. Setbacks

The front lot line setback is a minimum of 25 feet. The minimum side setback is ten feet, and side setbacks must total 25 feet. The rear lot line setback is a minimum of 15 feet.

All proposed buildings exceed the minimum building setbacks. The closest classroom building is 28 feet to the north property line. The proposed gymnasium/auditorium building is 32 feet from the south property line.

b. BIMC 18.15.010 Landscaping, Screening, and Tree Retention, Protection, Replacement

A 25-foot width full screen buffer is required along the perimeter of the property for non-residential use in residential districts; this buffer may be averaged to provide not less than a 15-foot width to accommodate a unique situation, such as continuation of an existing use or to incorporate existing trees. A 25-foot width partial screen is required along rights-of-way; this buffer may be averaged to provide not less than a 15 foot width. The site must have at least 40 tree units per acre following redevelopment (BIMC 18.15.010.G.4.ii).

Parking lots adjacent to the right-of-way must provide one tree for every four parking stalls; a minimum of 30 percent of the trees must be evergreen. Deciduous trees must be at least two-inch caliper and evergreen at least six feet high at time of planting. Evergreen shrubs must be at least 18 inches in height at time of planting and spaced no more than three feet on center to provide a continuous hedge. Evergreen ground cover must be planted and spaced to achieve total coverage within two years. The parking lot must provide a landscaped area at the end of parking aisles.

To protect retained vegetation within buffers, raingarden areas, and planting areas which are larger than 400 square feet in size, the applicant must identify areas of prohibited disturbance, generally corresponding to the dripline or critical root zone of the trees as identified by a consulting arborist. A temporary five-foot high chain link fence with tubular steel poles or "T" posts shall delineate the area of prohibited disturbance, unless the Director approves use of a four-foot high plastic net fence as an alternative, and the fencing must be posted with signage denoting the protection area.

Buffer averaging reduces buffer widths along the northwest and southwest from 25 feet to 15 feet in three locations. Buffer widths are increased along the northeast and

southeast property boundaries to provide a contiguous 35-53-foot width boundary. The averaging considers the preservation of existing mature trees and vegetation.

The proposed development provides adequate parking lot and buffer landscaping. The project is conditioned to identify areas of prohibited disturbance, and to adequately protect those areas. (Conditions 1-4)

Non-residential development within the R-1 zone requires 40 tree units per acre to either be preserved or planted. The subject property is 4.79 acres in size requiring 192 tree units. **In accordance with the submitted Tree Retention Plan (Reference Document B), the proposed development is retaining 640 tree units. Most of these preserved trees are within expanded/averaged buffers along Madison Avenue and surrounding the proposed school. In addition to the existing trees, the proposal will plant over 40 new trees within the buffers and parking areas (Reference Document B).**

c. BIMC 18.15.020 Parking Spaces Required

Elementary school must provide one space per 50 students and one space per employee. Parking lots must comply with State minimum requirements for handicapped-accessible parking spaces. Above-ground parking lots exceeding the number of spaces required by this section are not allowed unless approved by the Planning Commission.

The proposed development serves a maximum of 200 students and 27 staff (Condition #13). The required parking is 40 spaces. The proposed parking lot provides 39 dedicated spaces and an addition five load/unload spaces that will be available for long term parking outside of the pick-up/drop-off periods. The parking lot includes two handicapped-accessible parking space. Additionally, to accommodate all-school event parking, such as an open house, the school has identified overflow parking within the playfield and a possible shuttle service program from Rolling Bay Presbyterian Church or the Grange.

d. BIMC 18.15.030 Mobility and Access

i. Circulation and Walkways for Non-residential Development

Parking lots and driveways shall provide well-defined, safe and efficient circulation for motor vehicles, bicycles and pedestrians. Entrances from the right-of-way, ends of parking aisles and the circulation pattern shall be defined by landscaped areas with raised curbs. Pedestrian walkways should be provided around buildings to assure safe access. Internal walkways shall be surfaced with nonskid hard surfaces, meet accessibility requirements and provide at least five feet of unobstructed width. Walkways that cross driving lanes shall be constructed of contrasting materials or maintained painted markings. Walkways must be curbed and raised six inches above adjacent vehicular surface grade, except where the walkway crosses vehicular driving lanes or to meet accessibility standards.

The project provides vehicular and pedestrian access from N. Madison Avenue through one way entrance and exiting lanes to the parking lot. The proposal includes multiple pedestrian walkways from the parking lot to all the school buildings. Dedicated drop-off / pick-up parking spaces allows students to exit

directly onto the internal sidewalk, avoiding interaction between students and vehicles in the parking lot. Internal walkways provide pedestrian connectivity between buildings.

The project conditions provide appropriate curbs, walkway dimensions and surfacing. As determined by the City Engineer, the streets and pedestrian ways that serve the site are well-defined, safe, and efficient. (Conditions #27-29)

ii. Bicycle facilities

The development must provide one bicycle space for every five vehicle parking spaces, with a minimum of four spaces provided for each parking lot.

A bicycle rack is proposed on the north side of the entry plaza. Based on the number of vehicular parking spaces, nine bicycle spaces are required. The project is conditioned to provide nine bicycle spaces at a minimum. (Condition #21)

e. BIMC 18.15.040 Outdoor Lighting

All outdoor lighting must result in no light trespass. Outdoor lighting must be shielded and aimed downward, with no escaping direct light permitted to contribute to light pollution by shining upward into the sky or onto adjacent properties. Spotlighting on landscaping and foliage is limited to 150 watts incandescent (2,220 lumens output).

Outdoor lighting is proposed on buildings with downlight scone fixtures and along walkways with downlight bollard type light fixtures. As proposed, the lighting meets regulations. The project is conditioned to demonstrate compliance with these regulations at time of building permit application. (Condition #7)

f. BIMC Chapter 18.18 Design Guidelines

The project is subject to the General and Commercial and Mixed Use Guidelines.

The Design Review Board reviewed the proposal and unanimously recommended approval on December 19, 2017 (Reference Document L).

- i. Site Design. Create small parking clusters connected by vegetated landscaping and pedestrian walkways. Parking lots should be located behind or to the side of buildings. Pedestrian walkways should offer connections to adjoining properties. Exterior lighting should not exceed 14 feet in height and should incorporate shields. Trash containers should be shielded from view.

The development provides a buffer more than 25-feet wide from N. Madison Avenue, and the parking lot lies between the buffer and the buildings, which are set back over 185 feet from the right-of-way. Parking facilities are in a manner that provides appropriate separation between vehicular traffic and the campus. The parking lot is comprised of grouped spaces which are separated by landscape areas.

Pedestrian walkways provide internal connection between the buildings and between the parking lot and the buildings. The development provides numerous outdoor spaces, including playgrounds, play fields and trails; while most are

oriented to the side of the buildings to serve the student population, one plaza feature is prominently in front of the buildings and is to provide a waiting area for parents to pick-up their children on the pick-up loop.

The proposed outdoor lighting appears to meet design guidelines, and the project is conditioned to demonstrate compliance with regulations at time of building permit application. Trash containers are in a screened service area between the grades building and the early childhood building. The proposed screening appears meet design guidelines; the project is conditioned to demonstrate compliance with this guideline at time of building permit application. (Conditions #31)

- ii. Building Design. Buildings should utilize elements such as massing, materials, windows, canopies, and pitched or terraced roof forms to create a visually distinct base and cap. Building materials and patterns should be varied to produce variations in texture. Building elevations shall be vertically and horizontally modulated to avoid massive scale. Facades facing public ways shall incorporate setbacks or articulation, and shall include features such as columns or recessed entries. Blank walls shall not be visible to public spaces. Building designs should respond to nearby buildings by using shared elements, materials or massing. Principal entrances should be visually prominent and incorporate elements such as setbacks, recesses, and porches. Rooftop mechanical equipment should be concealed by and integrated within the roof form.

The architect's goal is to create a campus that exemplifies environmentally aware building practices and design. Buildings are oriented to capture natural light and provide views of the outdoors. Building materials include natural wood siding and large windows that let in natural light and views of the natural landscape. While the buildings are two-story, they use the natural topography to blend in to the site, and no blank walls are proposed. Covered walkways, porches and canopies afford protection from the elements. The roof form or parapet walls properly screen roof top mechanical equipment. Other mechanical equipment is to the side of the building and is screened by landscaping.

2. BIMC 2.16 Decision Criteria

This staff report shall be considered the written findings of fact and conclusions of law for Site Plan and Design Review and Conditional Use Permit. As conditioned, the development meets the decision criteria for approval:

a. BIMC 2.16.040.E Site Plan and Design Review – Decision Criteria

- i. The site plan and design is in conformance with applicable code provisions and development standards of the applicable zoning district.

All proposed improvements and buildings meet applicable development standards, including but not limited to: setbacks, height limitations, and lot coverage. Landscape buffer widths are averaged as provided in BIMC 18.15.010, and where necessary, the project is conditioned to specify vegetation protection. The project provides adequate parking facilities, including overflow parking for

events. The development meets applicable design guidelines, and is conditioned to meet lighting regulations. (Conditions #7)

- ii. The locations of the buildings and structures, open spaces, landscaping, pedestrian, bicycle and vehicular circulation systems are adequate, safe, efficient and in conformance with the Non-Motorized Transportation Plan.

The City Engineer finds that as conditioned, the project provides adequate circulation systems. (Condition #29)

- iii. The Kitsap County Health District has determined that the site plan and design meets the following decision criteria: The proposal conforms to current standards regarding domestic water supply and sewage disposal; or if the proposal is not to be served by public sewers, then the lot has sufficient area and soil, topographic and drainage characteristics to permit an on-site sewage disposal system.

The Kitsap Public Health District has determined that the proposed lot has sufficient area, soil, topographic and drainage characteristics to permit on-site sewage disposal systems. While final on-site septic system designs and binding water availability are not yet approved, the project is conditioned to obtain an approved building site application for on-site septic and water supply prior to building permit issuance (Condition #34).

- iv. The City Engineer has determined that the site plan and design meets the following decision criteria: The site plan and design conforms to regulations concerning drainage in BIMC 15.20 and 15.21; The site plan and design will not cause an undue burden on the drainage basin or water quality and will not unreasonably interfere with the use and enjoyment of properties downstream; The streets and pedestrian ways as proposed align with and are otherwise coordinated with streets serving adjacent properties; The streets and pedestrian ways as proposed are adequate to accommodate anticipated traffic; The site plan and design conforms to the "City of Bainbridge Island Engineering Design and Development Standards Manual".

The City Engineer finds that, as conditioned, the project conforms to surface and stormwater requirements, will not cause undue burden on the drainage basin, and will not unreasonably interfere with the use and enjoyment of properties downstream. The stormwater management plan is prepared by a licensed professional engineer in accordance with BIMC 15.20. On-site stormwater is managed through dispersion, infiltration, and detention. The applicant's model demonstrates that surface and stormwater that flows off-site mimics pre-developed conditions. The stormwater management system must be monitored and maintained as required in BIMC 15.20 / 15.21.

The traffic impact analysis provides adequate information to demonstrate that the impact of development passes the concurrency test (BIMC 15.32.020), and the City Engineer issued a Certificate of Concurrency (Reference Document K).

- v. The site plan and design is consistent with applicable design guidelines.

The Design Review Board recommends approval of the project as proposed.

- vi. No harmful or unhealthful conditions are likely to result from the proposed plan.

Adequate provision is made for the public health, safety and welfare, and public use and interest. The project is conditioned to ensure adequate access, including emergency services, water, septic, and stormwater facilities. (Conditions #19 &34)

- vii. The site plan and design is in conformance with the comprehensive plan and other applicable adopted community plans.

The project provides for relocation of a not-for-profit educational facility which includes an arts education program and fosters appreciation of the natural environment. Which is consistent with the goals and policies of the comprehensive plan.

- viii. Any property subject to site plan and design review that contains a critical area or buffer conforms to all requirements of that chapter.

The site is unencumbered by critical areas or their buffers.

- ix. Any property subject to site plan and design review that is within shoreline jurisdiction conforms to all requirements of that chapter.

The property is not within shoreline jurisdiction.

- x. The site plan and design has been prepared consistent with the purpose of the site design review process and open space goals.

The purpose of Site Plan and Design Review to establish a comprehensive site plan and design review process that ensures compliance with the adopted plans, policies, and ordinances of the City. This application for Site Plan and Design Review permit is reviewed consistent with the adopted review process to ensure compliance with current plans, policies, and regulations.

b. BIMC 2.16.050.D Conditional Use Permit – Decision Criteria

- i. The conditional use is harmonious and compatible in design, character and appearance with the intended character and quality of development in the vicinity of the subject property and with the physical characteristics of the subject property.

The school is located on a 4.79-acre property that is adjacent to N. Madison Avenue, a secondary arterial road. The proposed buildings are two-story buildings that conform to the natural topography of the land and are designed to complement the natural setting. The total building coverage is half that could be approved if this was a residential development. The building design is residential in nature as the building architecture breaks the buildings up into smaller units with shed roofs and the building are set into the sloping topography giving the appearance of single story buildings from several elevations. The development will remove few trees for the access road and siting of the structures while preserving existing native vegetation buffers around the perimeter of the perimeter. Where no trees exist or the trees do not provide a full screen within the buffers, additional trees and shrubs are proposed to be planted (Condition #23). The house on the property to the north will be over 200 feet from the back

of the school building. The closest house to the proposed school is on the property to the south of the subject property, which is over 100 feet to the play field and over 200 feet from the school buildings. As proposed and conditioned, a full screen buffer of new trees and shrubs along with a solid fence will be placed between on the subject property between the school facilities and this property to the south (Conditions #22).

- ii. The conditional use will be served by adequate public facilities including roads, water, fire protection, sewage disposal facilities and storm drainage facilities.

The City Engineer finds that the access and pedestrian ways are coordinated with Madison Avenue, which is a secondary arterial which serves the subject property. Per the city contracted traffic engineer and the City's Development Engineer the existing roads are adequate to accommodate anticipated traffic. The project will also be adequately served by public water, fire protection, on-site septic and storm drainage facilities. As conditioned, the City Engineer recommends project approval.

Prior to building permit issuance the applicant is required to obtain approval of their on-site septic system and obtain a binding water availability letter from KPUD (Condition #34). The Fire Marshal finds that as conditioned, the development provides adequate fire protection facilities (Condition #19).

- iii. The conditional use will not be materially detrimental to uses or property in the immediate vicinity of the subject property.

The proposed school is providing significant setbacks, landscape screening and fencing to ensure the development will not be materially detrimental to uses or property in the immediate vicinity. The stormwater system has been designed by a professional engineer and requires monitoring to ensure that water leaving the site is not increased due to the development. All outdoor lighting will be down lite and will not intrude on to neighboring properties. No high field lights will be permissible (Condition #32).

- iv. The conditional use is in accord with the Comprehensive Plan and other applicable adopted community plans, including the Non-Motorized Transportation Plan.

The development is in accord with economic and cultural goals contained in the Comprehensive Plan. The Madrona School provides a diverse Waldorf educational experience that is not available elsewhere on the Island.

- v. The conditional use complies with all other provisions of the Bainbridge Island Municipal Code.

The project complies with all applicable provisions of the municipal code as discussed in Section I.D.2.g. of this report.

- vi. All necessary measures have been taken to eliminate or reduce to the greatest extent possible the impacts that the proposed use may have on the immediate vicinity of the subject property.

The project is conditioned to take special care to protect retained trees and

vegetation within buffers. The school has agreed to a carpooling/rideshare program to limit traffic and to staggered start times to ensure that traffic along N. Madison Avenue is not adversely affected during drop-off and pick-up times. The school has also provided a shuttle plan for alternative parking for large school events. Off-site parking and shuttle could occur from the Rolling Bay Presbyterian Church or Grange if the school and those facilities can come to a common agreement. No parking or drop-off/pick-up is allowed on Madison Avenue or Windsong loop (Condition #30)

- vii. Noise levels shall be in compliance with BIMC 16.16.020 and 16.16.040.A.

All development within the City is subject to noise limitations in BIMC 16.16.

- vii. The City Engineer has determined that the conditional use meets the following decision criteria: The conditional use conforms to regulations concerning drainage in Chapters 15.20 and 15.21 BIMC; The conditional use will not cause an undue burden on the drainage basin or water quality and will not unreasonably interfere with the use and enjoyment of properties downstream; The streets and pedestrian ways as proposed align with and are otherwise coordinated with streets serving adjacent properties; The streets and pedestrian ways as proposed are adequate to accommodate anticipated traffic; If the conditional use will rely on public water or sewer services, there is capacity in the water or sewer system (as applicable) to serve the conditional use, and the applicable service(s) can be made available at the site; The conditional use conforms to the "City of Bainbridge Island Engineering Design and Development Standards Manual," unless the City Engineer has approved a variation to the road standards in that document based on his or her determination that the variation meets the purposes of BIMC Title 18.

The City Engineer finds that, as conditioned, the project conforms to surface and stormwater requirements, will not cause undue burden on the drainage basin, and will not unreasonably interfere with the use and enjoyment of properties downstream. The stormwater management plan follows BIMC 15.20 and utilizes on-site dispersion, infiltration, and detention. Post-development off-site flows mimic pre-developed conditions. Ongoing monitoring and maintenance is required once the stormwater facilities are place (BIMC 15.20 / 15.21).

The traffic impact analysis demonstrates that the project passes the concurrency test, and the City Engineer issued a Certificate of Concurrency. Access to the public streets are located to have minimal impacts and meet safety requirements. Water and septic systems provide adequately for the site and as conditioned, the project conforms to the City Design and Construction Standards and Specifications manual. As conditioned, the City Engineer recommends project approval. (Conditions #8-10 and 34)

- viii. A conditional use may be approved with conditions. If no reasonable conditions can be imposed that ensure the application meets the decision criteria of this chapter, then the application shall be denied.

The project is conditioned to ensure compliance with all applicable regulations and address environmental impact (Conditions #1 – 12).

ix. Additional Decision Criteria for Institutions in Residential Zones:

- a) All sites must front on roads classified as residential suburban, collector or arterial on the Bainbridge Island functional road classification map.

The property fronts N. Madison Avenue NE classified as a secondary arterial road, and therefore the site meets this requirement.

- b) If the traffic study shows an impact on the level of service, those impacts have been mitigated as required by the City Engineer.

The City Engineer finds the traffic study shows an acceptable level of service impact with the conditional use and issued a certificate of concurrency.

- c) If the application is located outside the Winslow Study Area, the project shall provide vegetated perimeter buffers in compliance with BIMC 18.15.010.

The site is outside the Winslow Study Area. As provided in BIMC 18.15.010, buffer averaging is utilized to reduce the buffers to the minimum allowed width of 15 feet, while increasing the buffer in the areas that have existing mature trees and shrubs.

- d) The proposal meets the Commercial / Mixed Use Design Guidelines.

Compliance with the Commercial / Mixed Use guidelines, is discussed in Section D.1.f of this report above. The Design Review Board unanimously recommends approval of the project.

- e) The scale of proposed construction including bulk and height and architectural design features is compatible with the immediately surrounding area.

The buildings are two- story and incorporate various materials designed to be compatible with the natural/residential setting.

- f) If the facility will have attendees and employees numbering fewer than 50 or an assembly seating area of less than 50, the Director may waive any or all of the additional decision criteria requirements for institutions in residential zones.

This criterion is not applicable, as there are more than 50 students and staff.

- g) Lot coverage does not exceed 50 percent of the allowable lot coverage in the zone in which the institution is located.

Maximum lot coverage in the R-1 zoning district is 15 percent; institutions including religious facilities may not exceed 50 percent of the allowable lot coverage (i.e. 7.5 percent). Lot coverage is approximately 16,260 square feet, or 7.4 percent of the lot area, and therefore meets this requirement.

II. Conclusions

As conditioned, the proposed development is consistent with the Comprehensive Plan and zoning regulations. The project meets the decision criteria of BIMC 2.16.040 Site Plan and Design Review and BIMC 2.16.050 Conditional Use Permit.

Appropriate notice of application was made and comments were considered. The application is properly before the Planning Commission for recommendation to the Hearing Examiner.

A land use permit automatically expires and is void if the applicant fails to file for a building permit or other necessary development permit within three years of the effective date of the permit unless the applicant has received an extension for the permit in accordance with BIMC 2.16.020.2.

Reference Documents:

(note all reference material may be accessed via the City's Website Online Permit Portal-Smartgov or by clicking on the Hyper-links below)

Madrona School Site Plan Review

(The following reference documents can be found under the "submittals" and "notes" sections under this file number: [PLN18970B SPR](#))

- A. 18970B SPR MADRONA SCHOOL APP
- B. 18970 CUP set (Drawings)

Madrona School Conditional Use Permit

(The following reference materials can be found under the "submittals" and "notes" sections under this file number: [PLN18970B C UP](#))

- C. 18970B CUP MADRONA SCHOOL APP
- D. 18970B CUP SPR NOA for Mailing 101416
- E. 18970B CUP SPR Madrona School MDNS
- F. 18970 Traffic Impact Analysis
- G. 18970B CUP Traffic and parking mitigation plan
- H. 2017-01-24 Madrona School SR 305 Analysis
- I. 18970 CUP-SPR DE COA
- J. 18970B CUP Traffic and parking mitigation plan
- K. 18970 COC
- L. 18970B CUP Draft Design Review Board minutes



CITY OF BAINBRIDGE ISLAND

Department of Planning & Community Development

280 Madison Avenue North, Bainbridge Island, WA 98110

Phone: 206-842-2552 Email: pcd@bainbridgewa.gov

Website: www.bainbridgewa.gov

Portal: <https://ci-bainbridgeisland-wa.smartgovcommunity.com/portal>

APPLICATION - PAGE 1

DATE STAMP

City of Bainbridge Island

AUG 02 2016

Planning and
Community Development

DATE SUBMITTED
08/02/2016

PROJECT NUMBER
PLN18970B CUP

PROJECT NAME **Madrona School CUP**

PROJECT TYPE **Conditional Use**

PROJECT ADDRESS OR ACCESS STREET
11478 NORTH MADISON AVE NE

TAX PARCEL NUMBER(S)
11250230992008, 11250231002005, 11250231012004,
11250231022003

REVISIONS RECEIVED:

FEE HISTORY

AMOUNT

PAID

Condition Use Permit Fee

\$10,494.00

\$10,494.00

PROJECT DESCRIPTION

Construct new K-8 school which includes classrooms, offices, and assembly hall. 39+ parking stalls, play field, stormwater facilities, and septic. Demo existing SFR, barn, and two sheds. Phased construction.

PEOPLE ASSOCIATED WITH CASE

COBI PROJECT MANAGER

JOSH MACHEN -- PHONE: 206-780-3765 E-MAIL: jmachen@bainbridgewa.gov

OWNER

TREE LLC CENTER, , 416 COSGROVE STREET NW, BAINBRIDGE ISLAND, WA 98110

Phone:

E-MAIL:

CITY OF BAINBRIDGE ISLAND

CONDITIONAL USE PERMIT APPLICATION

FORM MUST BE COMPLETED IN INK, PREFERABLY BLUE.

PENCIL WILL NOT BE ACCEPTED.



<u>DATE STAMP FOR CITY USE ONLY</u> City of Bainbridge Island AUG 02 2016 Planning and Community Development	<u>TO BE FILLED OUT BY APPLICANT</u> PROJECT NAME: <u>MADRONA SCHOOL</u> TAX ASSESSOR'S NUMBER: _____ 112502-3-099-2008, 11502-3-102-2003 11502-3-100-2005, 112505-3-001-2004 PROJECT STREET ADDRESS OR ACCESS STREET: <u>11478 N Madison Ave NE</u> ENVIRONMENTAL CHECKLIST SUBMITTED: ☒ YES ☐ NO <u>FOR CITY USE ONLY</u> FILE NUMBER: <u>PLN 18970B CUP</u> PROJECT NUMBER: <u>18970B</u> DATE RECEIVED: <u>08/02/2016</u> APPLICATION FEE: <u>\$10,494.00</u> TREASURER'S RECEIPT NUMBER: <u>16-00820</u>
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SUBMITTAL REQUIREMENTS	
APPLICATION	<i>One original (which must contain an original signature) and six copies</i> must be provided. Whenever possible, originals must be <i>signed in blue</i> . Please identify the original document.
SUPPORTING DOCUMENTS	<i>One original (which must contain an original signature)</i> , where applicable, <i>and six copies</i> (if an original is not applicable, <i>seven copies</i> must be provided).
FULL-SIZE DRAWINGS	<i>Seven copies</i> of the required drawings must be provided. Drawings must be folded and 18" x 24" in size. <i>No construction drawings or other sized drawings</i> will be accepted unless specifically requested.
REDUCED DRAWINGS	<i>Two copies (five if commercial)</i> of the drawings reduced to 11" x 17" must be provided.
SUBMITTING APPLICATIONS	Applications must be submitted in person by either the owner or the owner's designated agent. Should an agent submit the application, a notarized Owner/Agent Agreement must accompany the application. Please call (206) 780-3762 to make an appointment to submit your application.
FEES	Please call the Department of Planning & Community Development for submittal fee information.
ATTACHED SUBMITTAL CHECKLIST	Please refer to attached Submittal Checklist for further information. NOTE: when submitting this application, please do not copy or include the Submittal Checklist sheets attached to the back of this application.

APPLICATIONS WILL NOT BE ACCEPTED
unless these basic requirements are met and the submittal packet is deemed counter complete.

DEPARTMENT OF PLANNING AND COMMUNITY DEVELOPMENT
 280 MADISON AVENUE NORTH • BAINBRIDGE ISLAND, WA • 98110-1812
 PHONE: (206) 842-2552 • FAX: (206) 780-0955 • EMAIL: pcd@bainbridgewa.gov
www.ci.bainbridge-isl.wa.us

CITY OF BAINBRIDGE ISLAND

CONDITIONAL USE PERMIT APPLICATION

FORM MUST BE COMPLETED IN INK, PREFERABLY BLUE.

PENCIL WILL NOT BE ACCEPTED.



A. GENERAL INFORMATION

Please indicate which of the following is the reason for which you are applying:

_____ Height _____ Use

1. Name of property owner: Center Tree LLC
Address: 416 Cosgrove Street NW, Bainbridge Island, WA 98110
Phone: 206-842-8664 Fax: _____
E-mail: TGossia@msn.com (Tim Goss)

Name of property owner: _____
Address: _____
Phone: _____ Fax: _____
E-mail: _____

Name of property owner: _____
Address: _____
Phone: _____ Fax: _____
E-mail: _____

*If the owner(s) of record as shown by the county assessor's office is (are) not the agent,
the owner's (owners') signed and notarized authorization(s) must accompany this application.*

2. Authorized agent: John Kennedy 9/6 SKL ARCHITECTS
Address: 240 2nd Ave S, Suite 450, Seattle, WA 98104
Phone: 206-322-1130 Fax: _____
E-mail: john@sklarchitects.com

3. Person responsible for payment: Missi Goss
Address: 219 Madison Ave S, Bainbridge Island, WA 98110
Phone: 855-8041 Fax: _____
E-mail: mgoss@madronaschool.org

DEPARTMENT OF PLANNING AND COMMUNITY DEVELOPMENT
280 MADISON AVENUE NORTH • BAINBRIDGE ISLAND, WA • 98110-1812
PHONE: (206) 842-2552 • FAX: (206) 780-0955 • EMAIL: pcd@bainbridgewa.gov
www.ci.bainbridge-isl.wa.us

CITY OF BAINBRIDGE ISLAND

CONDITIONAL USE PERMIT APPLICATION

FORM MUST BE COMPLETED IN INK, PREFERABLY BLUE.
PENCIL WILL NOT BE ACCEPTED.



4. Project contact: Myra Lara
Address: 240 2nd Ave S, Suite 450, Seattle, WA 98104
Phone: 206-322-1130 Fax: _____
E-mail: myra@sklarchitects.com
5. Name of land surveyor: DC Surveying (Tim Cartwright)
Address: P.O. Box 1090, 371 Lindvig Way, Poulsbo, WA 98370
Phone: 360-779-6633 Fax: _____
E-mail: tim@dcsurveyors.com
6. Planning department personnel familiar with site: Josh Machen, Aaron Quitslund

7. Description of proposal: _____

Construct a new K-8 school which includes classrooms, offices and a gymnasium/auditorium.
Site improvements include 39+ parking spaces, play field, stormwater facilities and on-site
septic system. An existing residence, barn and two sheds will be demolished. Phased
construction is proposed.

8. Driving directions to site: N Madison Ave between NE Morgan Rd to the north and NE Valley
Rd to the south.

9. Please give the following existing parcel information:

Assessor's Parcel Number	Parcel Owner	*Lot Area
3-099	Center Tree LLC	1.30 (56,628 sq ft)
3-100	Center Tree LLC	1.20 (52,272 sq ft)
3-101	Center Tree LLC	1.09 (47,480 sq ft)
3-102	Center Tree LLC	1.20 (52,272 sq ft)
Use additional sheet if necessary	Total of all parcels:	4.79 (208,652 sq ft)

** As defined in Bainbridge Island Municipal Code 18.12.050*

DEPARTMENT OF PLANNING AND COMMUNITY DEVELOPMENT
280 MADISON AVENUE NORTH • BAINBRIDGE ISLAND, WA • 98110-1812
PHONE: (206) 842-2552 • FAX: (206) 780-0955 • EMAIL: pcd@bainbridgewa.gov
www.ci.bainbridge-isl.wa.us

CITY OF BAINBRIDGE ISLAND

CONDITIONAL USE PERMIT APPLICATION

FORM MUST BE COMPLETED IN INK, PREFERABLY BLUE.

PENCIL WILL NOT BE ACCEPTED.

10. Legal description (or attach): See Attachment #111. Current comprehensive plan, zoning and shoreline designations and use of subject parcel(s):

Lot Number	Comp Plan Designation	Zoning Designation	Shoreline Designation	Current Use
Lot 3-099	SR	CITY R-1		111 - Single family residence
Lot 3-100		CITY R-1		910 - Undeveloped land
Lot 3-101		CITY R-1		910 - Undeveloped land
Lot 3-102		CITY R-1		910 - Undeveloped land

12. Current comprehensive plan, zoning and shoreline designations and use of adjacent properties:

Property	Comp Plan Designation	Zoning Designation	Shoreline Designation	Current Use
North 3-035	SR	CITY R-1		111-Single family residence
South 3-096, 097, 098		CITY R-1		111-Single family, 183-Sheds and garages, 910 Undeveloped
East 3-078		CITY R-1		111-Single family residence
West 0-032		CITY R-1		911-Common Area

13. Common name of adjacent water area or wetlands area: N/A14. Does the site contain an environmentally sensitive area as defined in Critical Areas Ordinance (*Bainbridge Island Municipal Code Chapter 16.20*)?☒ yes ☐ no ☐ unknown

If yes, check as appropriate:

☐ wetland*	☐ geologically hazardous area**
☐ wetland buffer*	☐ zone of influence**
☐ stream*	☒ slope buffer**
☐ stream buffer*	☐ fish and wildlife habitat area

* If your site includes a wetland or wetland buffer, a wetland report is required with your application.

**If your site includes a geologically hazardous area or is within the zone of influence as defined in Bainbridge Island Municipal Code 16.20, a geotechnical report is required with your application. ✓

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15. Are there underlying/overlying agreements on the property? ☐ yes ☒ no ☐ unknown
If yes, check as appropriate and provide a copy of the decision document:

☐ CUP Conditional Use Permit	☐ SPR Site Plan Review
☐ MPD Master Planned Development	☐ SPT Short Plat
☐ PUD Planned Unit Development	☐ SSDP Shoreline Permit
☐ REZ Contract Rezone	☐ SUB Prior Subdivision
☐ RUE Reasonable Use Exception	☐ VAR Zoning Variance
	☐ Other: _____

Under which jurisdiction was the approval given?

☐ City of Bainbridge Island ☐ Kitsap County

Approval date: N/A

16. Is there any other information which is pertinent to this project? ☒ yes ☐ no

If yes, please explain: _____

We have had two preliminary meetings with the City of Bainbridge Island on January 28, 2016. Notes from these meetings are attached for reference- See Attachment #2.

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B. TECHNICAL INFORMATION

1. Name of water purveyor: North Bainbridge Water KPUD 1
If a private well, what class? _____
2. Type of sewage disposal: ☒ on-site septic ☐ off-site septic ☐ sewer
Sewer district: ☐ City of Bainbridge Island ☐ Sewer District 7
3. General description of the existing terrain: Majority is open pasture, relatively flat to gently sloping towards east across the site, with a max elevaion at 312 feet and minimum at 260 feet.

4. Soil survey classification: modified land soils = OSHA Type C / Vashon till soils = Type A
5. Flood plain designation: ☐ A ☐ AE Assume not a flood plain due to elevation.
6. Access (street functional road classifications):

Street Type	Required ROW Width	Street Name	Existing ROW Width
primary arterial	150 feet		
secondary arterial	60 feet		
collector	50 feet		
residential urban	40 feet		
residential suburban	30 feet	<u>N Madison Ave NE</u>	
private	20 - 30 feet		

7. Sidewalks are adjacent to the parcel: ☐ yes ☒ no
If yes, existing sidewalks are _____ feet wide.
Sidewalk installation is proposed as part of the development project: ☐ yes ☒ no

Proposed sidewalks: ☐ adjacent to the parcel and are to be _____ feet wide.
☐ internal to the proposal and are to be _____ feet wide.

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8. Intended use of the land, as well as the sequence and timing of the proposed development:

Proposed development will take place in three phases:

Phase 1: Classrooms, administration, parking and related infrastructure.

Phase 2: Early childhood wing

Phase 3: School gym/ Auditorium and caretaker apartment

9. Dimensions of proposed structures:

10. Height of proposed buildings or structures:

All structures to be below 30' height limit of zone

11. Square footage of all spaces:

retail: N/A

office: 1140 sq ft

storage: 1170 sq ft

residential: 850 sq ft

other: ~~10125~~ sq ft 22,890 SF

12. Number of stories proposed: 2 stories max each (3 buildings total)

13. Square feet per story: (1) 12,400 sf (2) 12,400 sf (3) _____

14. Setback requirements:

north: 15'-0" Req. / 27'-0" proposed

south: 15'-0" Req. / 19'-0" proposed

east: 25'-0" Req. / 175'-0" proposed

west: 25'-0"

15. Number of parking stalls required: 34

16. Number of parking stalls proposed: 39 (+5 drop off areas)

17. Amount of square footage of proposed paved areas: 16,410 sq ft (parking lot) / 17,520 sq ft (site circulation and fire access)

18. Square footage of building area: 24,800 sf total (16,260 footprint)

19. Percent of site to be covered by impervious surfaces: 24% %

(If the proposal results in more than 1,000 square feet of additional impervious surface, a drainage plan shall be required.)

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20. Percentage of site to be covered by landscaping: 25% %

21. Percentage of parking area to be covered by landscaping: 7% %

22. Percentage of site to remain undeveloped: 47% %

23. Is the applicant proposing any terms, conditions, covenants and agreements or other documents regarding the intended development: (If yes, attach copies)

☐ yes ☒ no ☐ unknown

24. Is the proposal part of a phased development plan? (If so, an outline of the future plans must be submitted.)

Yes, see item #8

25. List any other permits for this project from state, federal or local governmental agencies for which you have applied or will apply, including the name of the issuing agency, whether the permit has been applied for, and if so, the date the application was approved or denied, and the application or permit number:

Health Department approval for septic system in progress.

26. Will the completed project result in 800 or more square feet of impervious surface

(building footprint + driveways + parking)?

☒ yes ☐ no ☐ unknown

27. Will the project result in clearing more than six significant trees or 2,500 square feet of ground?

☒ yes ☒ no ☐ unknown

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28. Do storm water systems exist on the site? ☐ yes ☒ no ☐ unknown

If yes, were they constructed after 1982? ☐ yes ☐ no ☐ unknown

If yes, what type of storm water system exists on the site?

☐ infiltration ☐ open ditching ☐ closed conveyance ☐ detention

29. Will the completed project result in excavating of or filling in:

☐ less than 50 cubic yards. ☐ more than 50 cubic yards but less than 100 cubic yards. ☒ more than 100 cubic yards.

C. Conditional Use Permit Criteria

In accordance with Chapter 2.16.050 and 2.16.110 of the City of Bainbridge Island Municipal Code, the applicant must answer the following questions:

1. In what manner is the requested conditional use harmonious and compatible in design, character and appearance with the existing or intended character and quality of development in the vicinity of the subject property and with the physical characteristics of the subject property?

The site is surrounded by R-1 single family residential zoning. Existing landscape buffers surrounding the site will be maintained, with a new buffer planted at the SW corner of the site. The facility is broken down into three smaller scale, wood framed buildings in order to reflect the scale and character of surrounding residential development.

2. How has the proposed conditional use made adequate provision for the following facilities:
- | | |
|------------------------------------|---|
| a) roads; | <u>Site is served by N. Madison Ave NE, a secondary arterial</u> |
| b) water availability; | <u>Site is served by a 6" AC Main, provided by KPUD</u> |
| c) fire protection; | <u>Fire Hydrant and fire sprinklers to be installed</u> |
| d) sewage disposal facilities, and | <u>Septic system proposed- currently under permit with Kitsap</u> |
| e) storm drainage facilities. | <u>Rain gardens and detention pond proposed, designed by Civil engineer</u> |

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3. Describe how the proposed conditional use will not be materially detrimental to uses or property in the vicinity of the subject property:

The site is bounded by a continuous landscape buffer so as not to be detrimental to surrounding properties. The project retains more open space than the underlying zoning by limiting development to 7-1/2% of the site area instead of 15%. A traffic study commissioned by the City shows no significant reductions in Level of Service at nearby intersections, and the school has developed a transportation plan to assure that parking does not spill over to surrounding public streets, and that cars leaving the site in the morning are directed northward to avoid impacts at the intersection of 305 and Madison.

4. Relate how the proposed conditional use will meet all the criteria otherwise applicable to the zone in which it is to be developed:

The proposed project is lower than R-1 height limit of 30', and all setbacks proposed are greater than required. Maximum lot coverage (7-1/2%) is half of underlying R-1 coverage (15%) that would be allowed if houses were developed on the site instead of a school.

5. How is the conditional use in conformance with the Comprehensive Plan?

The comprehensive plan's first three goals are to preserve open space and the character of the natural landscape, preserve environmentally sensitive areas, and protect the water resources of the island. The proposal supports all three goals by preserving 92.5% of the site without buildings, greater than is required by the underlying R-1 zone, with 76% of the site as unpaved/unbuilt ground. Creating a home for Waldorf Education on the island aligns with the plan's last goal "support, protect, and enhance the value of the arts and humanities as essential to education, quality of life, vitality, broadening of mind and spirit, and as treasure in trust for our descendants."

6. How does the conditional use comply with all of the other provisions of the city code?

It is our belief that the Conditional Use complies with all other provisions of the City Code.

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7. Describe how the conditional use will not adversely affect the area or alter the area's predominantly residential nature?

The project has been designed not to adversely affect the area's residential nature. Landscape buffers will be maintained and installed as noted above. Buildings are broken down into smaller masses and are kept well within zoning limits, with greater setbacks than required. On-site parking is provided, with an overflow area designated in order to assure that parking does not spill over to surrounding public streets.

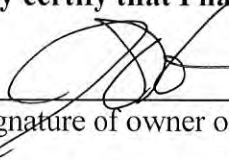
8. How is the subject property suitable for the proposed conditional use and will it be detrimental to surrounding land uses or sensitive areas? Consideration shall include items such as topography, streets and adjacent land uses:

The property is large, with a meadow in the middle, and mostly wooded around its perimeter. It is thus well suited for a school that promotes natural outdoor experience as a key part of learning. A steeply sloped area at the east end of the site will not be developed with buildings. Both stormwater and septic will be managed on-site with engineered systems to avoid affecting surrounding residences.

9. Describe how all necessary measures have been taken to eliminate the impacts that issuance of the conditional use permit may have on the area in which it is to be located:

Buildings are designed to be small scale, development footprint is limited to 7.5%, significant landscape buffers and natural areas are maintained, stormwater and septic is managed on-site, both daily parking and occasional event parking is provided on-site, a parking and transportation plan has been developed by the School to avoid parking on neighboring public streets, and all exterior lighting is to be shielded.

I hereby certify that I have read this application and know the same to be true and correct.



*Signature of owner or authorized agent

8/1/2016

Date

JOHN KENNEDY

Please Print

****If signatory is not the owner of record, the attached "Owner/Agent Agreement" must be signed and notarized.***

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12-11-1911

12-11-1911

12-11-1911

Owner/Agent Agreement

AUG 02 2016

Planning and
Community Development

The undersigned is (are) the owner(s) of record of the property identified by the Kitsap County

Assessor's account number 112502-3-099-2008, 3-102, 3-100, 3-001

located at 11478 N MADISON AVE. NE,

Bainbridge Island, Washington. The undersigned hereby gives (give) consent and approval to _____

JOHN KENNEDY to act

on his/her (their) behalf as his/her (their) agent to proceed with an application for (please check all items that apply): ☒ preapplication conference

☒ planning permits

☐ construction permits (i.e. building, water/sewer availability, right-of-way, etc)

on the property referenced herein. This agreement authorizes the agent to act on the owner's

behalf for the above checked applications through (date or specific phase) _____.

TIMOTHY Goss 6.2.16
OWNER OF RECORD DATE
Manager

[Signature]
OWNER OF RECORD DATE

STATE OF WASHINGTON)
) ss.
COUNTY OF KITSAP)

On this 2nd day of June, 2016, before me, the undersigned, a Notary Public in and for the State of Washington, duly commissioned and sworn, personally appeared:

Timothy Goss

to me known as the individual(s) described in and who executed the foregoing instrument, and acknowledged to me that he/she/they signed and sealed the said instrument, as his/her/their free and voluntary act and deed for the uses and purposes therein mentioned, and on oath stated that he/she/they was (were) authorized to execute said instrument.

WITNESS MY HAND AND OFFICIAL SEAL, hereto affixed the day and year in this certificate above written.



Lydia Moore
Notary Public in and for the State of Washington
Residing at Bainbridge Island
My appointment expires: May 2, 2019

AUG 02 2016

Planning and
Community Development

STATEMENT OF INTENDED USE OF LAND

The site is intended to be used to construct a K-8 school, built in three phases as follows:

PHASE 1: GRADES 1-8, ADMINISTRATIVE OFFICES.

9 CLASSROOMS, 4 OFFICES 11,000 SF ON TWO LEVELS

PHASE 2: EARLY CHILDHOOD

4 CLASSROOMS 5,000 SF ON TWO LEVELS

PHASE 3: GYMNASIUM/AUDITORIUM

GYM, 3 CLASSROOMS, KITCHEN, APARTMENT 10,000 SF ON TWO LEVELS

TOTAL SF 26,000 SF

TOTAL FOOTPRINT 15,640 SF (7.5% of Lot Area)

PARKING: 39 CARS (+3 temp)

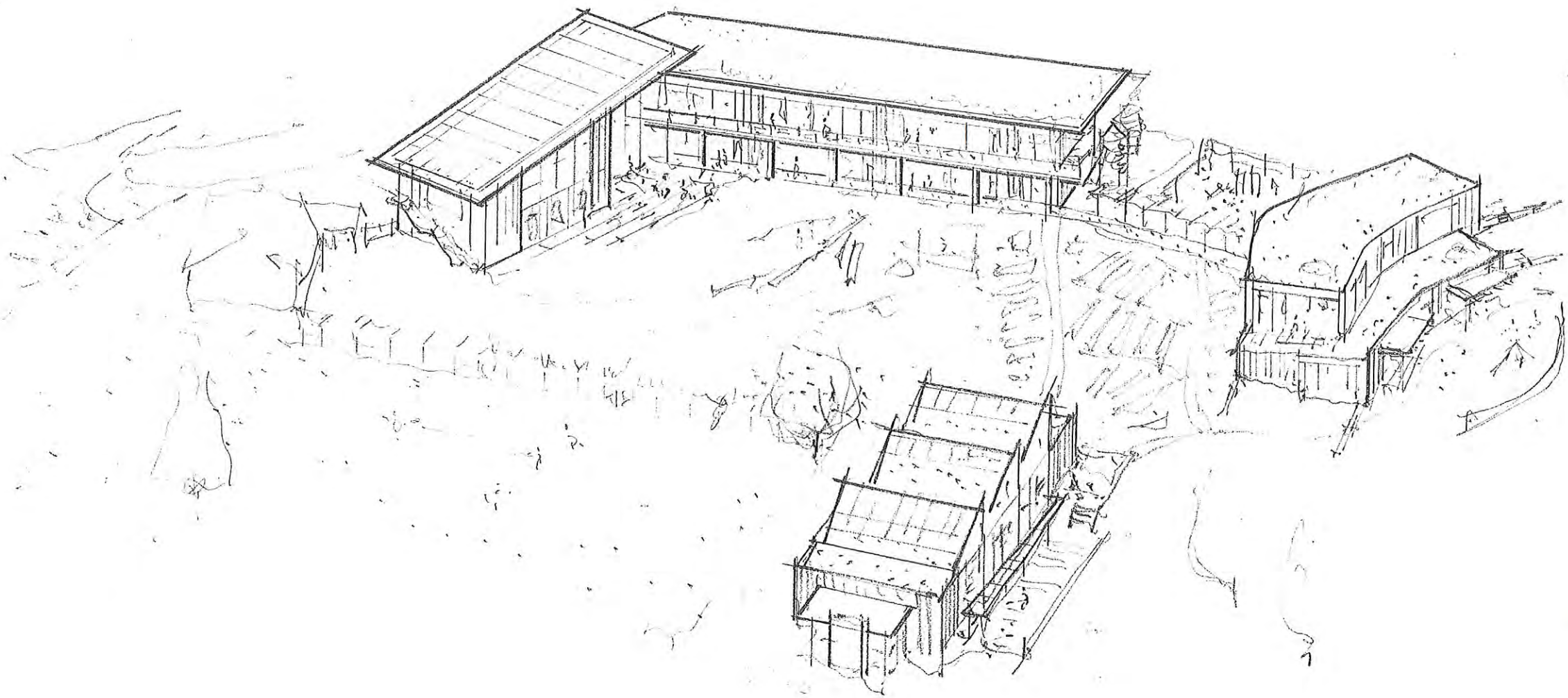
The existing house on site will be demolished with the construction of Phase 3. No off-site road construction is proposed, other than entry and exit drive aprons connecting to N. Madison Ave NE.

Water is to be provided by a 6" AC main that runs along Madison. An on-site septic system, currently under review with the Kitsap County Health Department, will be installed at the east end of the site. Site pathways, parking lot, and north on-site Fire Department access will be installed with Phase 1. The south on-site Fire Department access will be installed with Phase 3.

TABLE OF CONTENTS

COVER PAGE
A0.00 ZONING CODE INFORMATION
SURVEY: LOT LINES
SURVEY: TOPOGRAPHY
C1 GRADING PLAN
C2 GRADING SECTIONS AND PROFILES
C3 UTILITY PLAN
LANDSCAPE PLAN
TREE RETENTION PLAN
A1.00 SITE PLAN
A2.11 PHASE 1 BUILDING FLOOR PLANS
A2.12 PHASE 2 BUILDING FLOOR PLANS
A2.13 PHASE 3 BUILDING FLOOR PLANS
A3.01 BUILDING ELEVATIONS
A3.02 BUILDING ELEVATIONS
A3.03 BUILDING SECTIONS

16 TOTAL SHEETS



City of Bainbridge Island

AUG 02 2016

Planning and
Community Development

SUNDBERG
KENNEDY
LY-AU YOUNG
ARCHITECTS

240 2ND AVE S, SUITE 450
SEATTLE WA 98104
206.322.1130

MADRONA SCHOOL
11478 N MADISON AVE NE
BAINBRIDGE ISLAND, WA 98110

PROJECT NUMBER 15020
DATE 08-02-2016
PROPERTY OWNER Center Tree LLC
SEC-TWN-RNG-QTR Sec 11 Township 25 Range 2E SW Qtr

MADRONA SCHOOL - LOWERY FARM

CONDITIONAL USE PERMIT

REVISION	DATE

ZONING INFORMATION

SITE INFORMATION

ADDRESS	11478 N MADISON AVE NE, BAINBRIDGE ISLAND, WA 98110	
PARCEL ID	112502-3-099-2008	NW= HOUSE
ACCOUNT ID	2118941	
PARCEL ID	112502-3-102-2003	SW
ACCOUNT ID	2118974	
PARCEL ID	112502-3-100-2005	NE
ACCOUNT ID	2118958	
PARCEL ID	112502-3-001-2004	SE
ACCOUNT ID	112502-3-001-2004	
SITE DIMENSIONS	632' x 330'	
LOT SIZE	208,560 SF	(APPROX 52K PER LOT)
ACRES	5.5 ACRES	
ZONE	R-1 RESIDENTIAL, ONE UNIT PER ACRE OR 40,000 SF	
Table 18.09.020		
PERMITTED USES	SINGLE FAMILY DWELLING, AGRICULTURE (CROP), COMMUNITY GARDEN	
CONDITIONAL USES	EDUCATIONAL FACILITY	
ACCESSORY USES	MINOR AGRICULTURAL RETAIL, ADU, SOLAR PANELS, RAIN GARDENS/BARRELS, ETC	
18.09.030		
MAJOR CUP REQ'D	& 2.16.110 E	
18.09.030 C.5 Use Specific	A. DESIGN REVIEW, B. 4'-0" FENCE, C. 300'-0" DISPERSION, F. PARKING - 1 PER	
DAY CARE	EMPLOYEE, 1 PER 12 KIDS	

STANDARDS

18.12.010 Dimensions	
Table 18.12.020-3:	
MAX LOT COVERAGE	7.5 % ALLOWED / 7.5% PROPOSED
FOOTPRINT ALLOWED	15,642 ALLOWED / 15,600 PROPOSED
MIN LOT SIZE	40,000 SF, 80'-0" WIDTH OR DEPTH
FRONT YARD SETBACK	25'-0" ALLOWED / 25'-0" PROPOSED
SIDE YARD SETBACK	12'-6" AVERAGE ALLOWED / 15'-0" PROPOSED
REAR YARD SETBACK	25'-0" ALLOWED / 30'-0" PROPOSED
MAX HEIGHT	30'-0" ALLOWED / VARIES PROPOSED - SEE ELEVATIONS
FENCES	6'-0"
"GRADE" DEFINITION	AVERAGE OF LOW AND HIGH POINTS OF ELEVATION UP TO 5'-0" AWAY FROM BUILDING INCLUDES ANY DECKS ABOVE 5'-0"

LANDSCAPE

A.2.C RETAIN EXIST BUFFERS	
TREE AND STAND RETENTION	REQUIRED: RETAIN SIGNIFICANT TREES IN PERIMETER ZONES, UNLESS SAFETY HAZARD, OR REPLACE X 1.5 PROPOSED: REFER TO LANDSCAPE DRAWINGS AND ARBORIST REPORT
PERIMETER LANDSCAPE	REQUIRED: "FULL SCREEN" 25'-0" WIDTH, 15'-0" MIN (AVERAGING ALLOWED) PROPOSED: EXISTING BUFFERS AND AVERAGING TO BE USED, WITH NEW FULL SCREEN AT WEST PORTION OF SOUTH PROPERTY LINE. SEE LANDSCAPE AND SITE PLANS
ROADSIDE BUFFER	REQUIRED: "PARTIAL SCREEN", 25'-0" WIDTH, 15'-0" MIN PROPOSED: EXISTING 25'-0" BUFFER TO REMAIN EXCEPT AT TWO AUTO ACCESS POINTS
PARKING LOT LANDSCAPE	REQUIRED: ONE TREE PER 4 STALLS (CAN OVERLAP WITH PERIMETER LANDSCAPE AT ROAD). LANDSCAPE AT END OF STALLS, 100 SF MIN, GROUND COVER (1 PER 8 STALLS NOT ABUTTING ROAD). PROPOSED: SEE LANDSCAPE PLAN
TOTAL SITE TREE UNIT	REQUIRED: 40 TREE UNITS PER ACRE x 5.5 ACRES = 220 TREE UNITS PROPOSED: 220+, SEE LANDSCAPE PLAN
PLANTING REQUIREMENT	GENERAL REQUIREMENTS FOR AREAS NOT COVERED SPECIFICALLY ABOVE INCLUDE MAINTENANCE ASSURANCES.
IRRIGATION	REQUIRED AT NEW LANDSCAPE AREA WITHOUT "HIGH MOISTURE CONDITIONS"
SCREENING	REQUIRED FOR DUMPSTERS, EQUIPMENT

PARKING REQUIREMENTS

1 SPACE PER 50 STUDENTS	4	160 GRADES STUDENTS
1 SPACE PER EMPLOYEE	25	BOTH PRE-K AND GRADES
1 SPACE PER 12 "DAY CARE"	4	40 EARLY CHILDHOOD
EXISTING HOUSE	1	
TOTAL REQUIRED (PHASE 1 & 2)	34	
TOTAL PROVIDED (PHASE 1 & 2)	39	PLUS 5 PART TIME SPACES AT DROP OFF ZONE
AUDITORIUM: 10 SPACES PER 1,000 SF	42	ADDED IN PHASE 3, CALCULATED AS STAND ALONE FACILITY FOR NON-SCHOOL HOURS USE 4,200 SF FLOOR AREA = 42 SPACES REQUIRED
CARETAKER APARTMENT	1	ADDED IN PHASE 3, EXISTING HOUSE DEMOLISHED
TOTAL REQUIRED (PHASE 3)	43	
TOTAL PROVIDED (ALL)	45	FIVE PART TIME SPACES AT SCHOOL DROP OFF ZONE INCLUDED, PLUS ONE CARETAKER APARTMENT SPACE ADDED IN PHASE 3 ADDITIONAL OCCASIONAL PARKING MAY BE PROVIDED BY THE SCHOOL ON THE PLAYFIELD FOR SEASONAL SPECIAL EVENTS, APPROXIMATELY 6 PER YEAR. SEE SITE PLAN.

SURFACES	REQUIRED: ALL DRIVEWAYS AND PARKING TO BE PAVED, WITH POLLUTION CONTROL *GRAVEL PARKING OK IF LOT IS LESS THAN 10,000 SF OR LESS THAN 5% SLOPE PROPOSED: PAVED PARKING LOT, GRAVEL FIRE ACCESS ROADS - SEE CIVIL DRAWING
ACCESS	REQUIRED: ONE ACCESS POINT PER LOT, UNLESS TRAFFIC FLOW IS IMPROVED PROPOSED: ONE IN, ONE OUT, FOR BETTER TRAFFIC FLOW. SEE TIA DOCUMENT
CARE SHARE/ELECTRIC	COMMERCIAL... ASSUME THIS DOES NOT APPLY. ONE SPACE FOR GREATER THAN 25 CARS.
LOCATION	REQUIRED: NOTE NO PARKING OR DRIVE AISLES IN SETBACKS PROPOSED: SEE SITE PLAN
PARKING SPACE SIZES	REQUIRED: 70% LARGE: 8'-6" x 20'-0" WITH 24'-0" AISLE, MAX 30% SMALL: 7'-6" x 16'-0" WITH 20'-0" AISLE PROPOSED: 70% LARGE, 30% SMALL. SEE SITE PLAN
ACCESSIBLE SPACES	REQUIRED: 2 SPACES REQUIRED UP TO 50 CARS. 1 VAN ACCESSIBLE SPACE REQUIRED. PROPOSED: 2 ACCESSIBLE SPACES + 1 VAN ACCESSIBLE
BIKES	REQUIRED: 1 PER 5 PARKING SPACES MINIMUM PROPOSED: 10 BIKE SPACES
LIGHTING	SHIELDED REQUIRED AND PROPOSED

DESIGN GUIDELINES

18.18.030 Design Standards	USE "DESIGN" GUIDELINES FOR COMMERCIAL AND MIXED USE PROPERTIES - INCLUDING LYNNWOOD, ETC"
NON RES IN RESIDENTIAL	
DESIGN GUIDELINES	SEE DESIGN GUIDELINES CHECKLIST INCLUDED WITH APPLICATION FOR RESPONSE TO DESIGN GUIDELINES
MODULATION	SEE ELEVATIONS
FACADE LENGTH	128'-0" MAXIMUM ALLOWED. LONGER THAN 128'-0" PROPOSED AT CLASSROOM WING DUE TO FUNCTIONAL REQUIREMENT

11478 N MADISON AVE NE

VICINITY MAP (NOT TO SCALE)



SITE MAP (NOT TO SCALE)



SUNDBERG
KENNEDY
LY-AU YOUNG
ARCHITECTS

240 2ND AVE S, SUITE 450
SEATTLE WA 98104
206.322.1130

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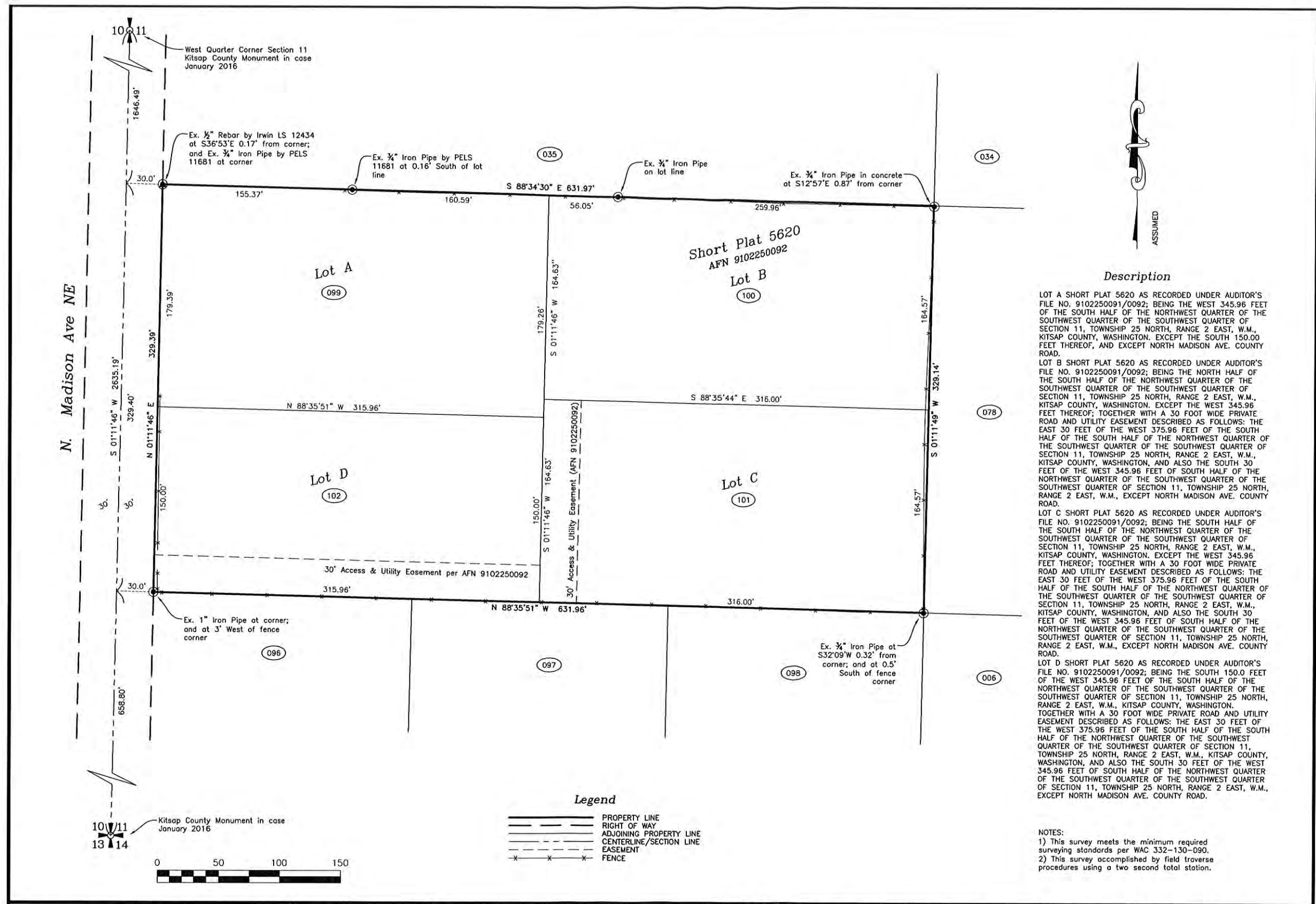
CONDITIONAL USE PERMIT

PROJECT NUMBER 15020
DATE 08-02-2016
PROPERTY OWNER Center Tree LLC
SEC-TWN-RNG-QTR Sec 11 Township 25 Range 2E SW Qtr

REVISION DATE

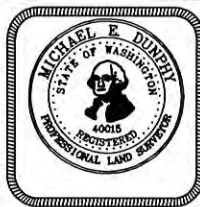
A0.00

ZONING CODE INFORMATION



SURVEYOR'S CERTIFICATE

This map correctly represents a
survey made by me or under my
direction in conformance with the
requirements of the survey
recording act at the request of
Madrona School % Haig Townsend
Date: _____



DRAWN BY:	TMC
DATE:	3-2-16
JOB NUMBER:	16-7486
FIELD BOOK:	2866/44-48
CHECKED:	MED
SCALE:	1"=50'

Survey of Lots A, B, C, and D of
Short Plat 5620
AFN 9102250092
Section. 11, Township 25 N., Range 2 E., W.M.
Kitsap County, Washington

DC SURVEYING
SURVEYING ~ PLANNING
P.O. BOX 1090
POULSBORO, WA 98370
360-779-6633
206-842-6123
tim@dcsurveyors.com

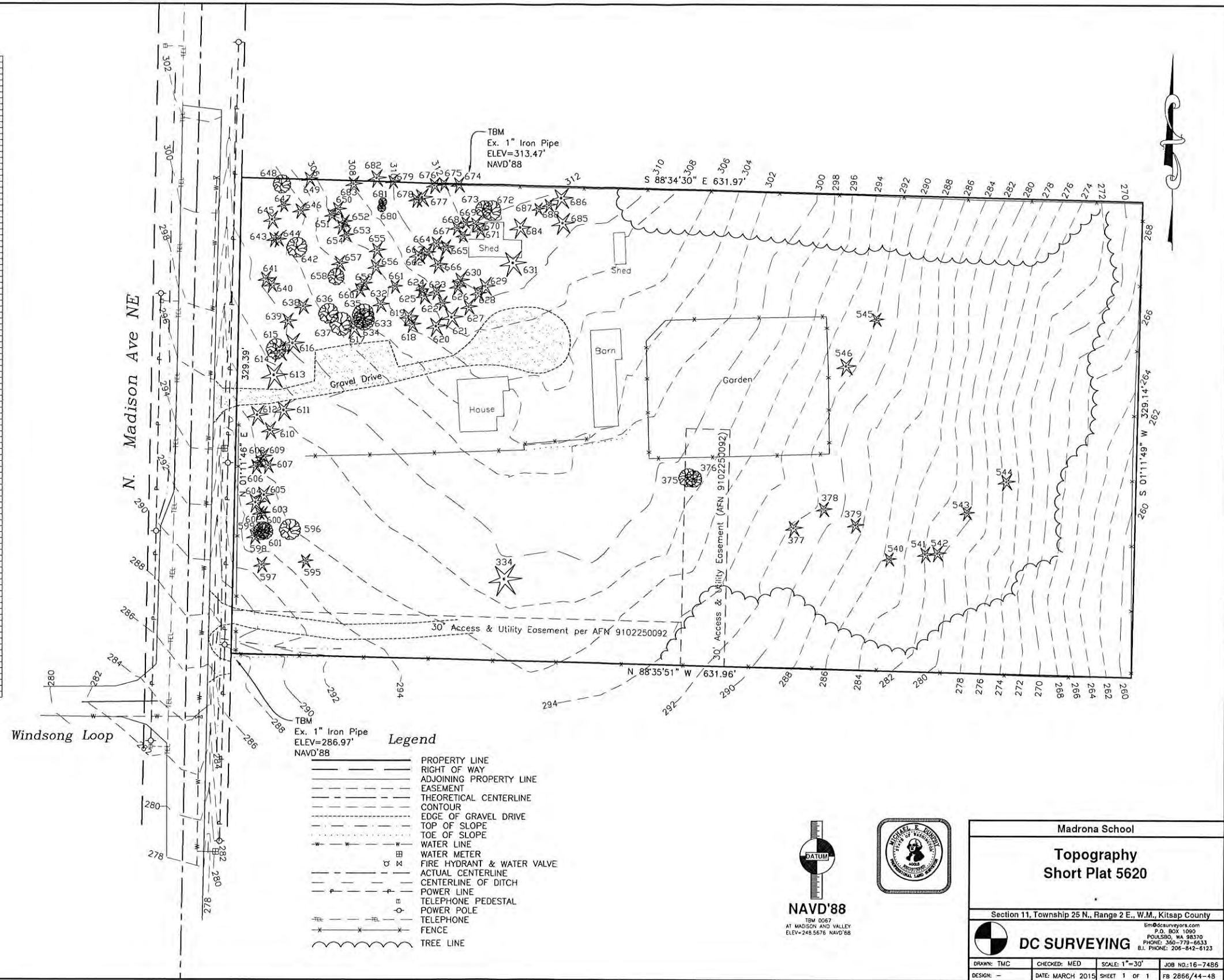
SW 1/4, SW 1/4

AUDITOR'S CERTIFICATE
Filed for record this _____ day of _____
20__ at _____ in book _____

of _____ at page _____ Records of
Kitsap County, WA

Signed _____

Tree No.	Description and DBH
334	CEDAR 32"
375	MADRONA 12"
376	MADRONA 10"
377	CEDAR 16"
378	CEDAR 14"
379	CEDAR 14"
340	HEMLOCK 12"
341	CEDAR 15"
342	CEDAR 15"
343	CEDAR 12"
344	CEDAR 16"
345	CEDAR 12"
346	CEDAR 18"
395	FIR 12"
396	MADRONA 15"
397	FIR 15"
398	FIR 15"
399	MAPLE 10"
400	MAPLE 10"
401	MAPLE 10"
402	CEDAR 12"
403	FIR 10"
404	FIR 20"
405	FIR 20"
406	FIR 14"
407	FIR 15"
408	FIR 12"
409	FIR 15"
410	FIR 18"
411	FIR 24"
412	FIR 24"
413	FIR 32"
414	FIR 24"
415	MADRONA 15"
416	FIR 24"
417	FIR 24"
418	FIR 18"
419	FIR 18"
420	FIR 24"
421	FIR 28"
422	FIR 10"
423	FIR 14"
424	FIR 10"
425	CEDAR 14"
426	FIR 15"
427	FIR 15"
428	FIR 15"
429	FIR 20"
430	CEDAR 18"
431	FIR 32"
432	FIR 15"
433	MADRONA 10"
434	MADRONA 16"
435	MADRONA 16"
436	MADRONA 14"
437	MADRONA 18"
438	FIR 15"
439	FIR 12"
440	FIR 15"
441	FIR 15"
442	MADRONA 14"
443	FIR 14"
444	CEDAR 14"
445	FIR 18"
446	FIR 14"
447	CEDAR 10"
448	MADRONA 12"
449	FIR 15"
450	FIR 15"
451	FIR 12"
452	FIR 12"
453	FIR 14"
454	FIR 12"
455	FIR 16"
456	FIR 16"
457	FIR 15"
458	MADRONA 10"
459	FIR 14"
460	FIR 14"
461	FIR 12"
462	FIR 18"
463	FIR 14"
464	FIR 14"
465	FIR 14"
466	FIR 18"
467	FIR 12"
468	FIR 12"
469	FIR 10"
470	FIR 14"
471	FIR 18"
472	MADRONA 14"
473	MADRONA 10"
474	FIR 15"
475	FIR 12"
476	FIR 15"
477	FIR 20"
478	FIR 14"
479	FIR 12"
480	MADRONA 14"
481	MADRONA 10"
482	FIR 18"
483	FIR 15"
484	FIR 26"
485	FIR 26"
486	FIR 26"
487	FIR 10"
488	FIR 12"



Madrona School			
Topography Short Plat 5620			
Section 11, Township 25 N., Range 2 E., W.M., Kitsap County			
DC SURVEYING Email: dcsurveyors.com P.O. Box 1090 Poulsbo, WA 98370 Phone: 360-779-6533 B.I. Phone: 206-842-6123			
DRAWN: TMC	CHECKED: MED	SCALE: 1"=30'	JOB NO: 16-7486
DESIGN: -	DATE: MARCH 2015	SHEET 1 OF 1	FB 2856/44-48

MADRONA SCHOOL

SITE ADDRESS: 11478 Madison Ave NE, Bainbridge Island, WA 98110

PARCEL #S: 112502-3-099-2008
112502-3-102-2003
112502-3-100-2005
112502-3-001-2004

PARKING COUNT:
39 SPACES + 5 DROP OFF SPOTS PROPOSED
1/3 OF SPACES ALLOWED TO BE COMPACT PER BIMC
13 COMPACT SPACES SHOWN
2 ADA SPACES SHOWN

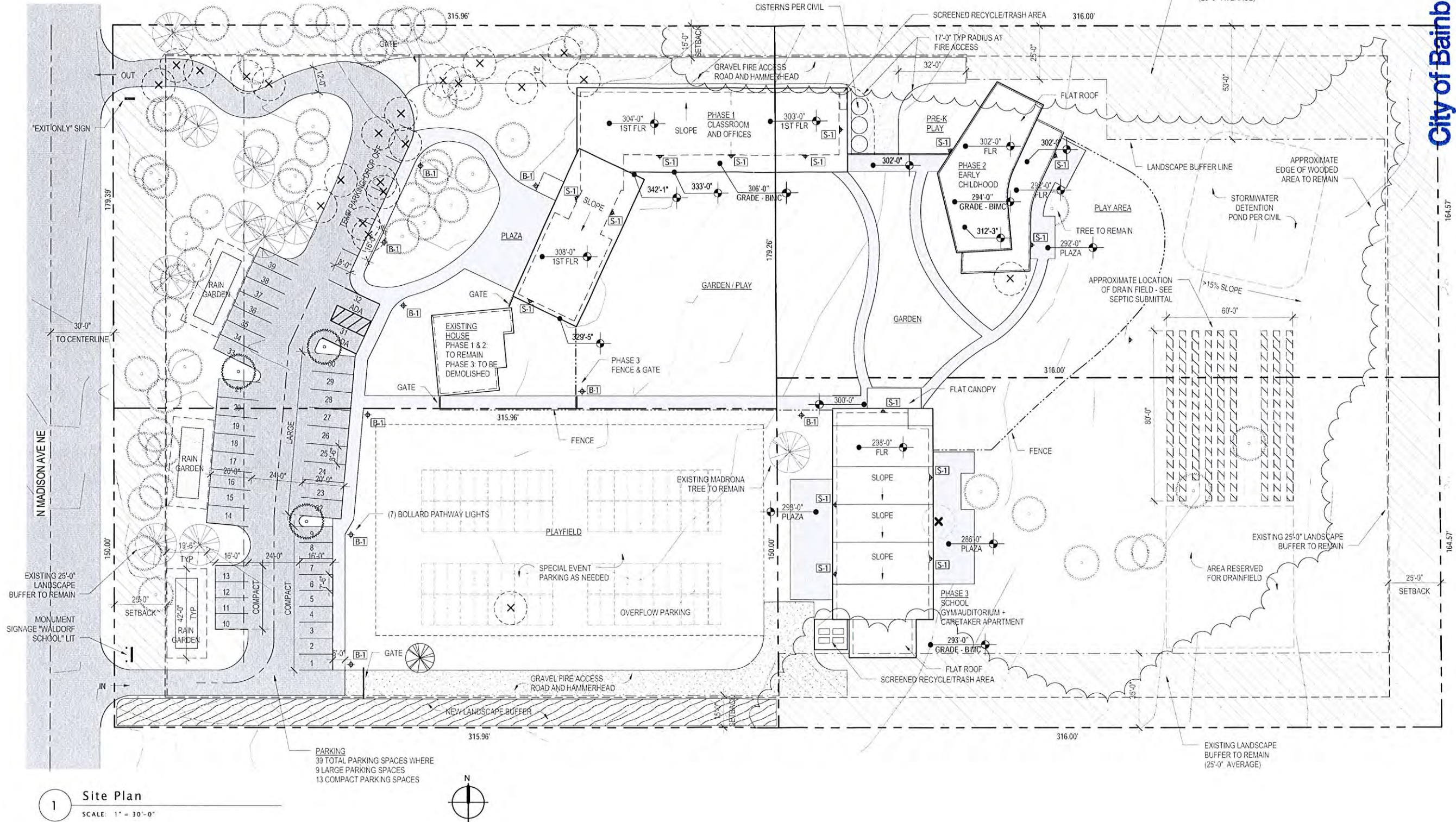
MAX LOT COVERAGE = 7.5% OR 15,642 SF

NOTE
ALL FIXTURES TO BE SHIELDED
- DOWNLIGHT ONLY



SITE LIGHTING KEY		
TYPE	MANUFACTURER - MODEL	NOTES
[B-1] BOLLARD LIGHT	B-K LIGHTING: MICRO NITE STYLE L STAFF STAR	
[S-1] ENTRY SCONCE	ACCLAIM: 1401ABZ	WALL-MOUNTED TYP. MOUNTING HEIGHT 7'-6" A.F.F.

LEGEND	
[X]	TREE TO BE REMOVED
[Hatched Box]	PARKING/ROAD
[Dashed Line]	PEDESTRIAN PATH
[Dotted Box]	GRAVEL PATH



1 Site Plan
SCALE: 1" = 30'-0"

City of Bainbridge Island

SEP 12 2016

Planning and
Community Development

SUNDBERG
KENNEDY
LY-AU YOUNG
ARCHITECTS

240 2ND AVE S, SUITE 450
SEATTLE WA 98104
206.433.1140

MADRONA SCHOOL
11478 N MADISON AVE NE
BAINBRIDGE ISLAND, WA 98110

CONDITIONAL USE PERMIT

PROJECT NUMBER 15020
DATE 08-02-2016
PROPERTY OWNER Center Tree LLC
SEC-TWN-RNG-QTR Sec 11 Township 25 Range 2E SW Qtr

REVISION DATE

1 09/07/2016

A1.00

SITE AND SITE LIGHTING PLAN

Tree Retention / Survey

GOAL: Maintain the majority of existing trees and shrubs

Tree Units required: 220 (40/acre x 5.5 acres)

Tree Units removed: 120

Tree Units retained: 640

Tree Survey

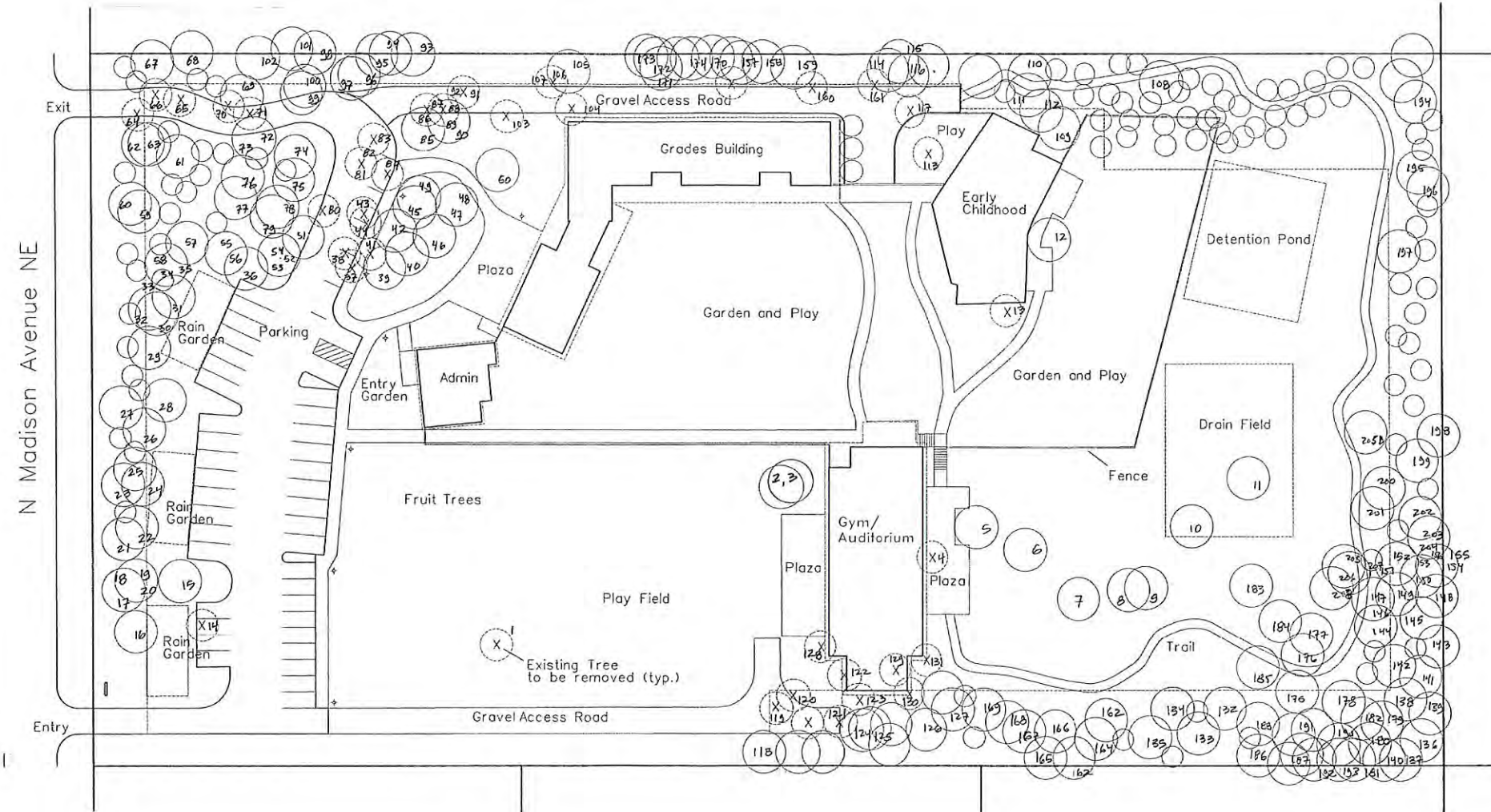
#	ref. #	Description	DBH (")	Tree Units
1	334	Cedar	36	9.6
2	375	Madrona	12	1.4
3	376	Madrona	10	1.2
4	377	Cedar	16	3.2
5	378	Cedar	14	2
6	379	Cedar	14	2
7	540	Hemlock	12	1.4
8	541	Cedar	15	2
9	542	Cedar	15	2
10	543	Cedar	12	1.4
11	544	Cedar	16	3.2
12	545	Cedar	12	1.4
13	546	Cedar	18	3.2
14	595	Douglas Fir	12	1.4
15	596	Madrona	15	2
16	597	Douglas Fir	15	2
17	598	Douglas Fir	15	2
18	599	Big Leaf Maple	10	1.2
19	600	Big Leaf Maple	10	1.2
20	601	Big Leaf Maple	10	1.2
21	602	Cedar	12	1.4
22	603	Douglas Fir	10	1.2
23	604	Douglas Fir	20	3.8
24	605	Douglas Fir	20	3.8
25	606	Douglas Fir	14	2
26	607	Douglas Fir	15	2
27	608	Douglas Fir	12	1.4
28	609	Douglas Fir	15	2
29	610	Douglas Fir	18	3.2
30	611	Douglas Fir	24	6.2
31	612	Douglas Fir	32	9
32	613	Douglas Fir	32	9
33	614	Douglas Fir	24	6.2
34	615	Madrona	15	2
35	616	Douglas Fir	24	6.2
36	617	Douglas Fir	24	6.2
37	618	Douglas Fir	18	3.2
38	619	Douglas Fir	18	3.2
39	620	Douglas Fir	24	6.2
40	621	Douglas Fir	28	7
41	622	Douglas Fir	10	1.2
42	623	Douglas Fir	14	2
43	624	Douglas Fir	10	1.2
44	625	Cedar	14	2
45	626	Douglas Fir	15	2
46	627	Douglas Fir	15	2
47	628	Douglas Fir	15	2
48	629	Douglas Fir	20	3.8
49	630	Cedar	16	3.2
50	631	Douglas Fir	32	9
51	632	Douglas Fir	15	2
52	633	Madrona	10	1.2
53	634	Madrona	16	3.2
54	635	Madrona	16	3.2
55	636	Madrona	14	2
56	637	Madrona	18	3.2
57	638	Douglas Fir	15	2
58	639	Douglas Fir	15	2
59	640	Douglas Fir	15	2
60	641	Douglas Fir	15	2
61	642	Madrona	14	2
62	643	Douglas Fir	14	2
63	644	Cedar	14	2
64	645	Douglas Fir	18	3.2
65	646	Douglas Fir	14	2
66	647	Cedar	10	1.2
67	648	Madrona	12	1.4
68	649	Douglas Fir	15	2
69	650	Douglas Fir	15	2

70	651	Douglas Fir	12	1.4
71	652	Douglas Fir	12	1.4
72	653	Douglas Fir	14	2
73	654	Douglas Fir	12	1.4
74	655	Douglas Fir	16	3.2
75	656	Douglas Fir	16	3.2
76	657	Douglas Fir	15	2
77	658	Madrona	10	1.2
78	659	Douglas Fir	14	2
79	660	Douglas Fir	14	2
80	661	Douglas Fir	12	1.4
81	662	Douglas Fir	18	3.2
82	663	Douglas Fir	14	2
83	664	Douglas Fir	14	2
84	665	Douglas Fir	14	2
85	666	Douglas Fir	16	3.2
86	667	Douglas Fir	12	1.4
87	668	Douglas Fir	12	1.4
88	669	Douglas Fir	10	1.2
89	670	Douglas Fir	14	2

Tree Retention Plan



0 15 30 60



#	ref. #	Description	DBH (")	Tree Units
125	18	Douglas Fir	23	4.6
126	19	Big Leaf Maple	13	3
127	20	Douglas Fir	17	3.2
128	21	Madrona	13	2
129	22	Douglas Fir	12	1.4
130	23	Big Leaf Maple	14	2
131	24	Cedar	19	7.6
132	25	Douglas Fir	19	3.8
133	26	Douglas Fir	16	3.2
134	27	Douglas Fir	10	1.2
135	28	Grand Fir	12	1.4
136	29	Madrona	19	3.8
137	30	Douglas Fir	24	6.2
138	31	Cedar	15	2
139	32	Douglas Fir	25	6.2
140	33	Douglas Fir	24	6.2
141	34	Douglas Fir	18	3.2
142	35	Douglas Fir	12	1.4
143	36	Cedar	13	2
144	37	Douglas Fir	12	1.4
145	38	Douglas Fir	13	2
146	39	Douglas Fir	13	2
147	40	Douglas Fir	18	3.2
148	41	Cedar	18	3.2
149	42	Douglas Fir	21	4.6
150	43	Cedar	17	3.2
151	44	Douglas Fir	17	3.2
152	45	Douglas Fir	16	3.2
153	46	Douglas Fir	13	2
154	47	Douglas Fir	16	3.2
155	48	Douglas Fir	16	3.2
156	49	Douglas Fir	16	3.2
157	50	Douglas Fir	16	3.2
158	51	Douglas Fir	16	3.2
159	52	Douglas Fir	16	3.2
160	53	Douglas Fir	16	3.2

#	ref. #	Description	DBH (")	Tree Units
161	54	Douglas Fir	23	4.6
162	55	Douglas Fir	15	2
163	56	Grand Fir	22	4.6
164	57	Douglas Fir	16	3.2
165	58	Big Leaf Maple	14	2
166	59	Douglas Fir	22	4.6
167	60	Big Leaf Maple	12	1.4
168	61	Madrona	13	2
169	62	Douglas Fir	11	1.4
170	63	Douglas Fir	19	3.8
171	64	Madrona	21	4.6
172	65	Madrona	17	3.2
173	66	Cedar	20	3.8
174	67	Douglas Fir	20	3.8
175	68	Douglas Fir	18	3.2
176	69	Douglas Fir	16	3.2
177	70	Douglas Fir	19	3.8
178	71	Cedar	19	3.8
179	72	Douglas Fir	16	3.2
180	73	Douglas Fir	16	3.2
181	74	Douglas Fir	16	3.2
182	75	Douglas Fir	14	2
183	76	Douglas Fir	14	2
184	77	Grand Fir	11	1.4
185	78	Douglas Fir	21	4.6
186	79	Douglas Fir	18	3.2
187	80	Douglas Fir	16	3.2
188	81	Douglas Fir	14	2
189	82	Douglas Fir	14	2
190	83	Douglas Fir	14	2
191	84	Douglas Fir	11	1.4
192	85	Douglas Fir	11	1.4
193	86	Douglas Fir	14	2
194	87	Hemlock	12	1.4
195	88	Cedar	20	3.8

*reference numbers taken from DC and Madrona School tree surveys.

#	ref. #	Description	DBH (")	Tree Units
196	203	Cedar	23	4.6
197	204	Cedar	25	6.2
198	205	Hemlock	13	2
199	206	Cedar	17	3.2
200	207	Cedar	25	6.2
201	208	Douglas Fir	23	4.6
202	209	Douglas Fir	19	3.8
203	210	Cedar	20	3.8
204	211	Douglas Fir	19	3.8
205	212	Douglas Fir	25	6.2
206	213	Douglas Fir	15	2
207	214	Cedar	17	3.2
208	215	Cedar	19	3.8

TIM GOSS
LANDSCAPE ARCHITECT
416 GOSBROVE ST NW
BAINBRIDGE ISLAND
WASHINGTON 98110
206.842.8664

CUP Submittal
With SKL Architects

Owner: Center Tree, LLC
Parcel numbers:
112502-3-009-2008
112502-3-100-2005
112502-3-101-2004
112502-3-102-2003

Madrona School
11478 Madison Avenue NE
Bainbridge Island, WA
Tree Retention Plan



Scale: 1"=30'
Date: 7/21/16
Rev:

Perimeter buffers (existing)

Augment as necessary with native plants:

Trees

Pseudotsuga menziesii (Douglas Fir)

Thuja plicata (Western Red Cedar)

Acer circinatum (Vine Maple)

Shrubs

Holodiscus discolor

Corylus cornuta

Oemleria cerasiformis

Symphoricarpos alba

Vaccinium ovatum

Rosa gymnocarpa

Gaultheria shallon

Plaza and Entry Gardens

3400 sq.ft.

Trees

Fruit Trees

Amelanchier alnifolia (Serviceberry)

Acer circinatum (Vine Maple)

Shrubs

Vaccinium ovatum

Vaccinium corymbosum

Gaultheria shallon

Mahonia repens

Herbs and Perennials

New Rain Gardens:

3 @ 800 sq.ft.

Each:

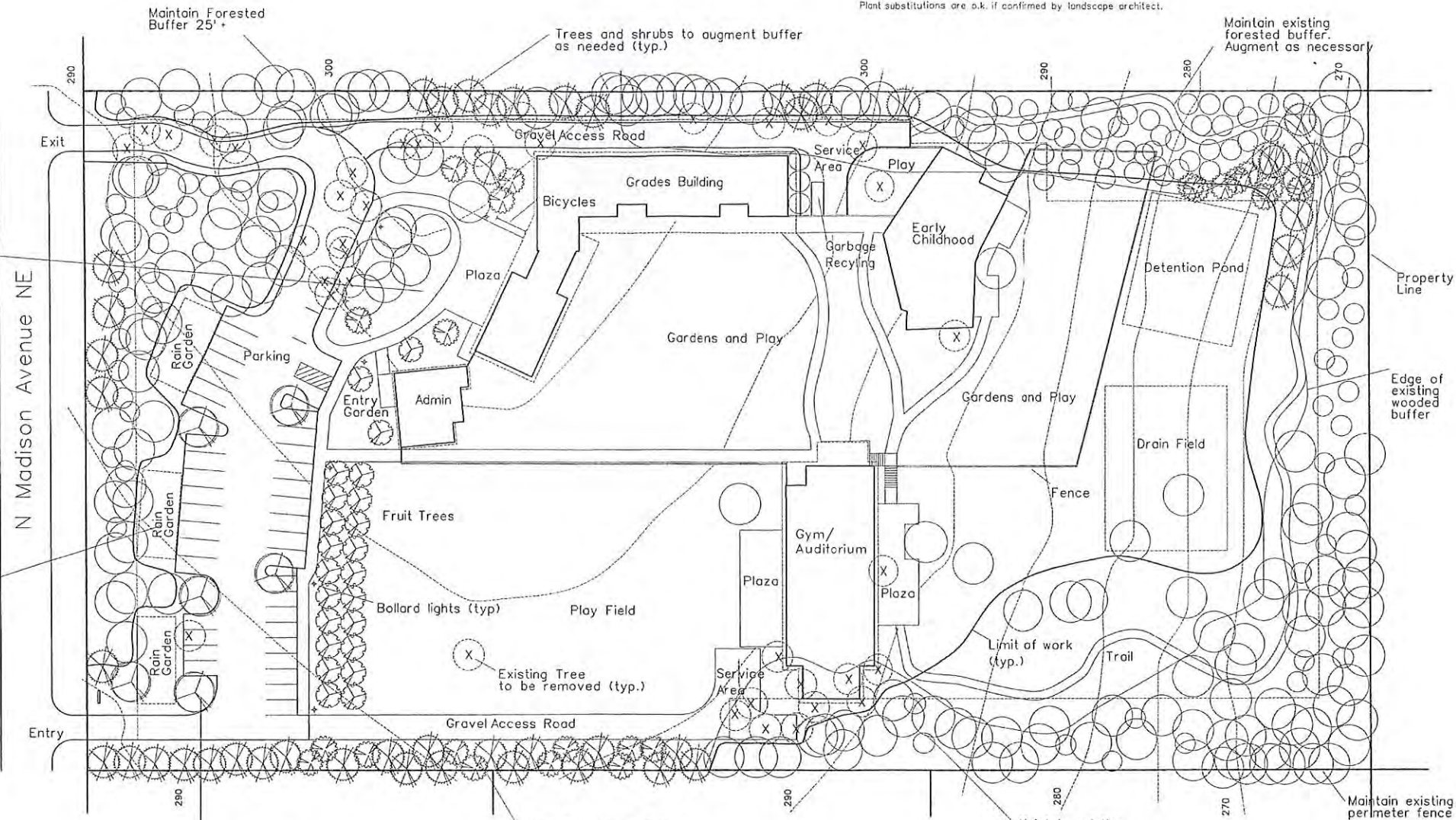
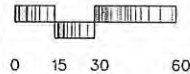
16 - *Cornus stolonifera* 'kelseyi' - 1 gal.

8 - *Myrica californica* - 2 gal.

24 - *Salix purpurea* 'nana' - 1 gal.

16 - *Vaccinium corymbosum* - 2 gal.

Landscape Plan



New Parking Islands

1200 sq.ft.

5 - *Quercus garryana* - 6-7'

60 - Perennials asst. - 1 gal.

60 - *Fragaria chiloensis* - 4" -

New FullScreen Buffer:

310 ln.ft. / 4650 sq.ft.

31 trees required

22 conifers - 5-6' Shore Pine

9 deciduous - 5-6' Serviceberry

92 shrubs required; 117 provided

38 - *Myrica californica* - 2 gal.

27 - *Mahonia aquifolium* - 2 gal.

10 - *Corylus cornuta* - 5 gal.

42 - *Symphoricarpos alba* - 2 gal.

300 - *Rubus calcinoides* - 4"

Notes:

All compacted soils to be ripped to 8" depth.
Blend 6" sandy loam in all beds.

Amend all planting areas with 3" of compost
e.g. cedar groves compost or graco.

Mulch all planting beds with 4" wood or bark mulch.

Provide establishment irrigation for new plantings

Provide sleeves for piping under sidewalks and drives to
access all planting areas.

Stake new trees as necessary.

Plant substitutions are o.k. if confirmed by landscape architect.

During excavation strip, stockpile and cover
existing topsoil for reuse.

Avoid planting in summer months.

For tree and buffer zone protection do not work
beyond the limit of work (LOW). Designate the L.O.W.
with construction fencing. Protect trees
within the L.O.W. with perimeter fencing - 1' for
every 1' d.b.h.

TIM GOSS

LANDSCAPE ARCHITECT

416 GOSSE ROVE ST NW

BAINBRIDGE ISLAND

WASHINGTON 98110

206.612.0664

CUP Submittal

With SKL Architects

Owner: Center Tree, LLC

Parcel numbers:

112502-3-009-2008

112502-3-100-2005

112502-3-101-2004

112502-3-102-2003

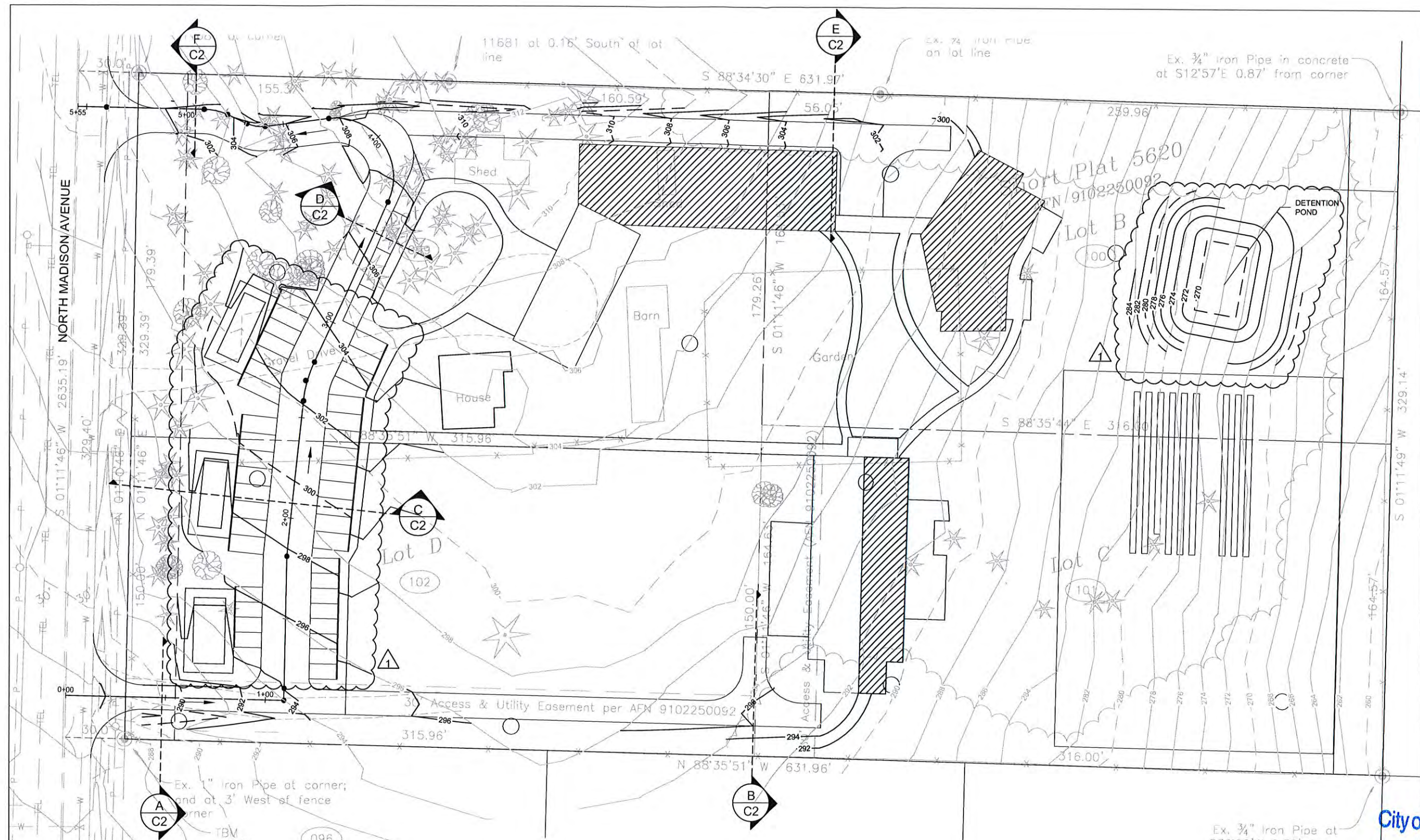
Madrona School
11478 Madison Avenue NE
Bainbridge Island, WA
Landscape Plan



Scale: 1"=30'

Date: 7/21/16

Rev:



GRADING PLAN
 SCALE: 1" = 30'

PRELIMINARY
 NOT FOR CONSTRUCTION

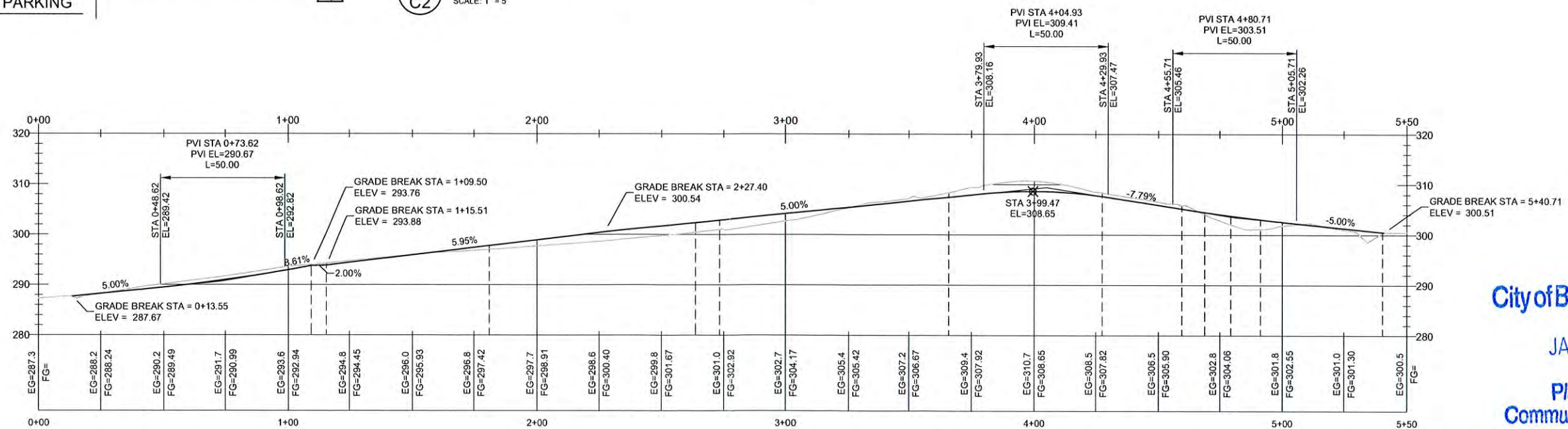
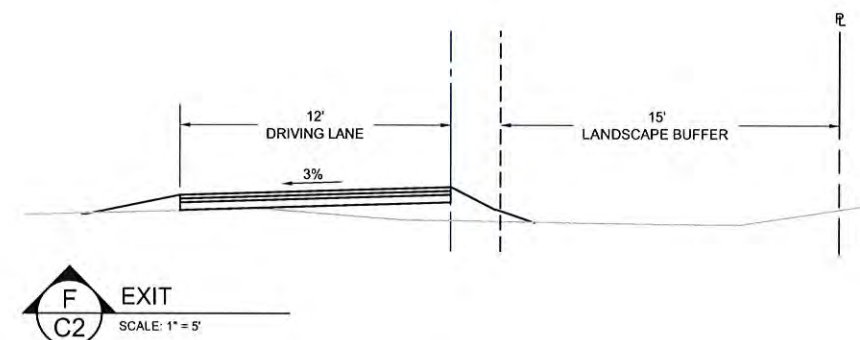
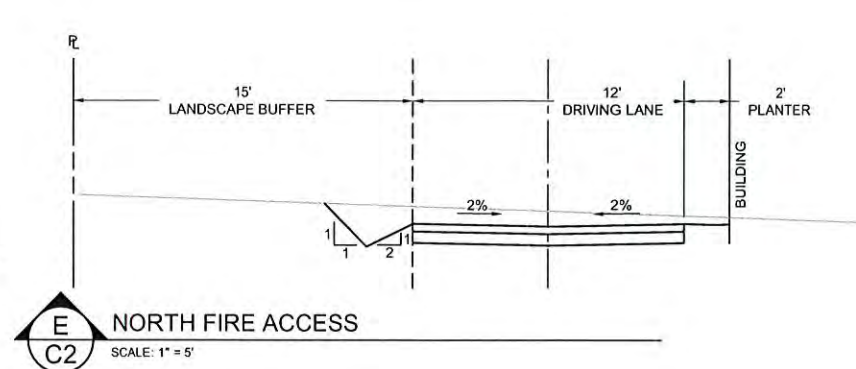
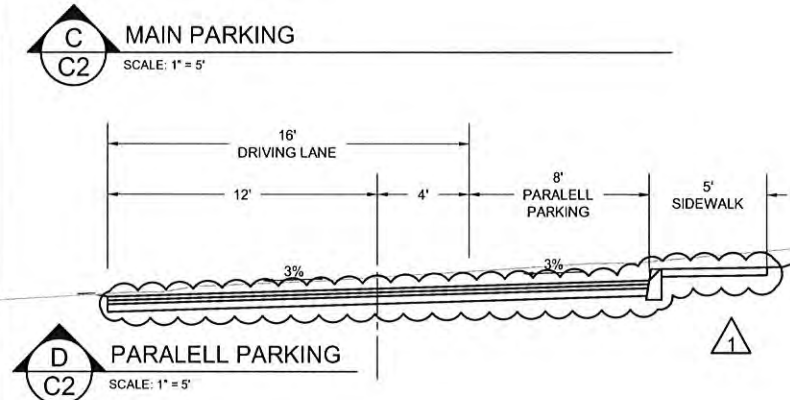
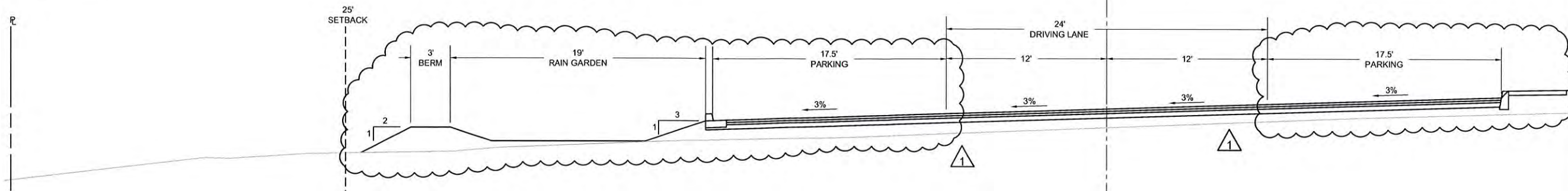
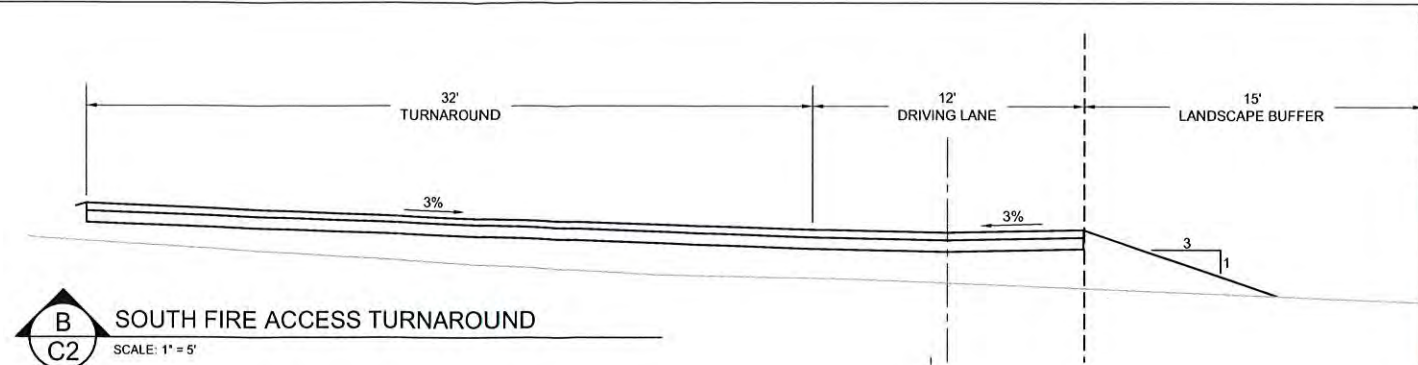
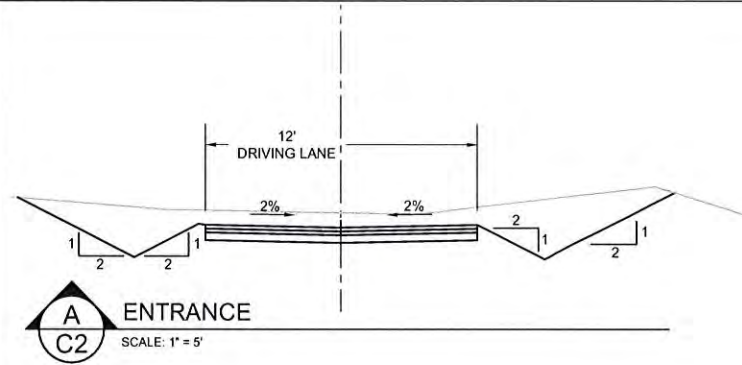


REVISION 1 1/3/17 AEW MODIFIED PRELIMINARY DESIGN TO COMPLY WITH NEW STORMWATER ORDINANCE.

GRADING PLAN MADRONA SCHOOL CONDITIONAL USE PERMIT		
BROWNE • WHEELER ENGINEERS, INC 241 ERICKSEN AVENUE NE BAINBRIDGE ISLAND, WA 98110 P 206.842.0605 INFO@BrowneWheeler.COM	MADRONA SCHOOL PO BOX 11371 BAINBRIDGE ISLAND WA 98110	
	DATE	8/1/16
	DESIGNED	AEW
	DRAWN	NDW
	CHECKED	DWB
	PROJECT #	MA

City of Bainbridge Island
 JAN 10 2017
 Planning and
 Community Development

C1
 1 OF 3



City of Bainbridge Island
JAN 10 2017
Planning and
Community Development

PRELIMINARY
NOT FOR CONSTRUCTION

REVISION 1 1/3/17 AEW MODIFIED PRELIMINARY DESIGN TO COMPLY WITH NEW STORMWATER ORDINANCE.

GRADING SECTIONS AND PROFILES
MADRONA SCHOOL
CONDITIONAL USE PERMIT



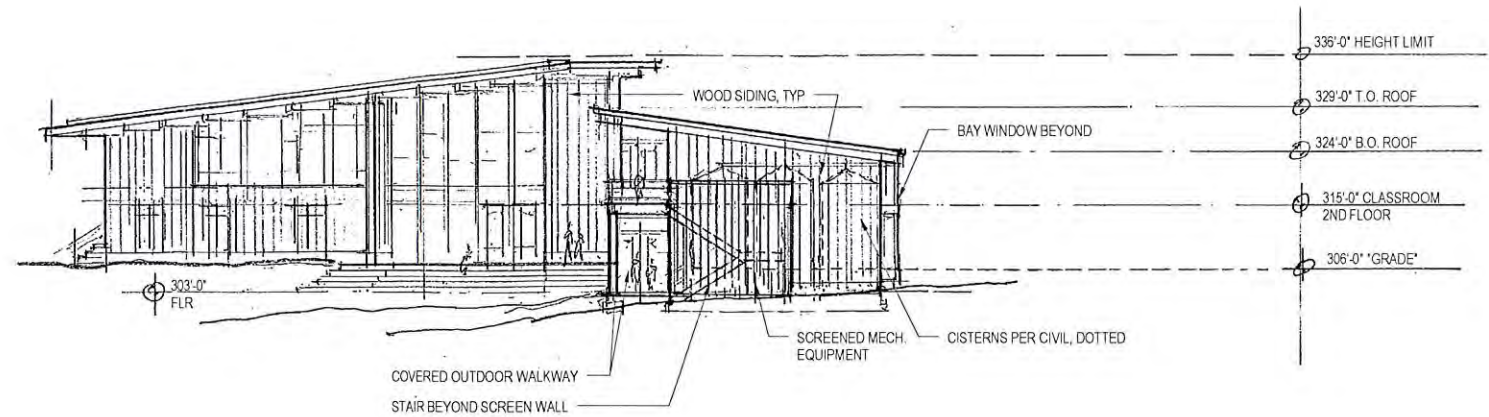
BROWNE • WHEELER
ENGINEERS, INC
241 ERICKSEN AVENUE NE
BAINBRIDGE ISLAND, WA 98110
P 206.842.0605 INFO@BrowneWheeler.COM

MADRONA SCHOOL
PO BOX 11371
BAINBRIDGE ISLAND WA 98110

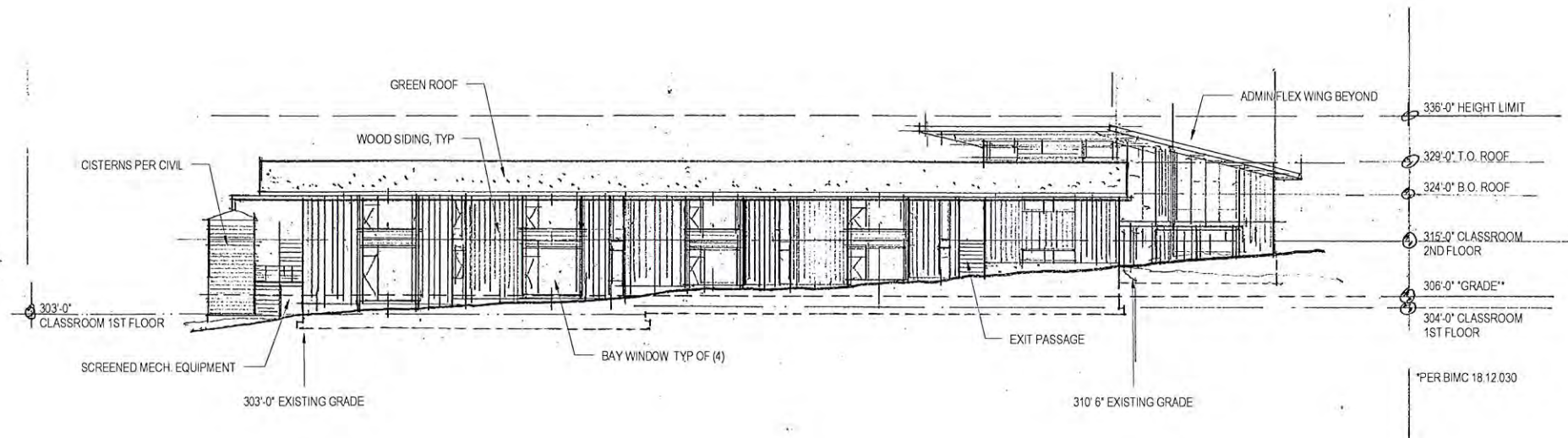
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DESIGNED AEW
DRAWN NDW
CHECKED DWB
PROJECT # MA

C2

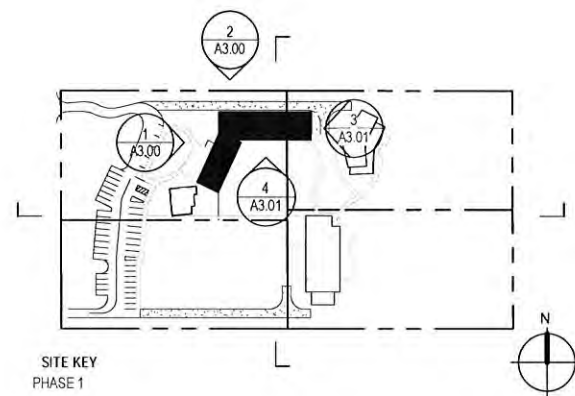
2 OF 3



1 CLASSROOM - EAST
SCALE = 1/16" = 1'-0"



2 CLASSROOM - NORTH
SCALE = 1/16" = 1'-0"



SUNDBERG
KENNEDY
LY-AU YOUNG
ARCHITECTS

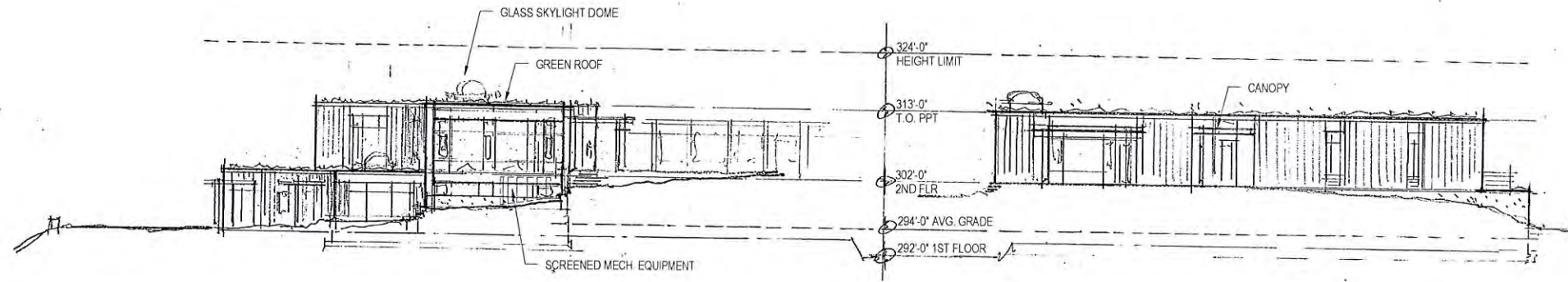
240 2ND AVE S, SUITE 450
SEATTLE WA 98104
206.322.1130

MADRONA SCHOOL
11478 N MADISON AVE NE
BAINBRIDGE ISLAND, WA 98110

CONDITIONAL USE PERMIT
PROJECT NUMBER 15020
DATE 08-02-2016
PROPERTY OWNER Center Tree LLC
SEC-TWN-RNG-QTR Sec 11 Township 25 Range 2E SW Qtr

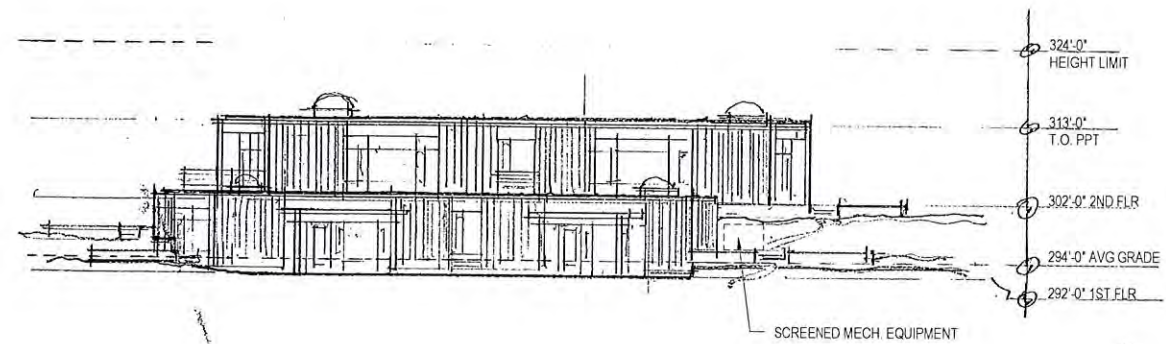
REVISION DATE

A3.01
BUILDING ELEVATIONS

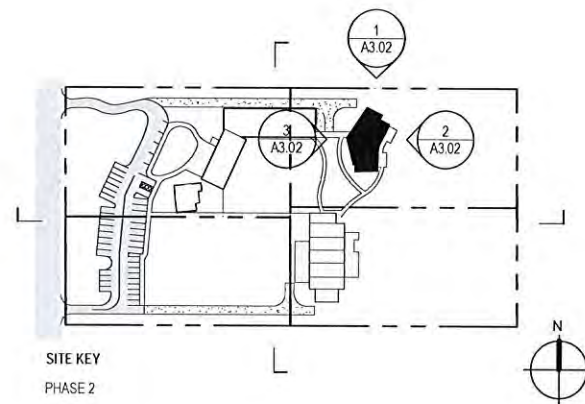


1 EARLY CHILDHOOD - NORTH
SCALE = 1/16" = 1'-0"

2 EARLY CHILDHOOD - WEST
SCALE = 1/16" = 1'-0"



3 EARLY CHILDHOOD - EAST
SCALE = 1/16" = 1'-0"



SUNDBERG
KENNEDY
LY-AU YOUNG
ARCHITECTS

240 2ND AVE S, SUITE 450
SEATTLE WA 98104
206.322.1130

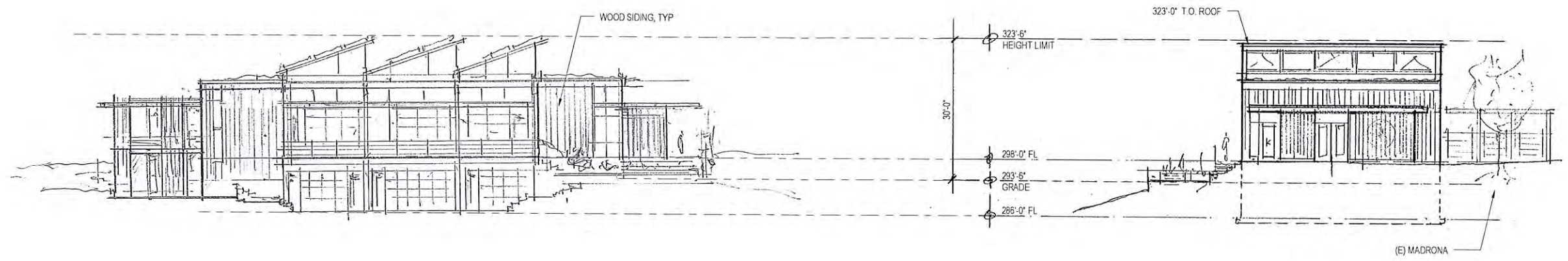
MADRONA SCHOOL
11478 N MADISON AVE NE
BAINBRIDGE ISLAND, WA 98110

CONDITIONAL USE PERMIT
PROJECT NUMBER 15020
DATE 08-02-2016
PROPERTY OWNER Center Tree LLC
SEC-TWN-RNG-QTR Sec 11 Township 25 Range 2E SW Qtr

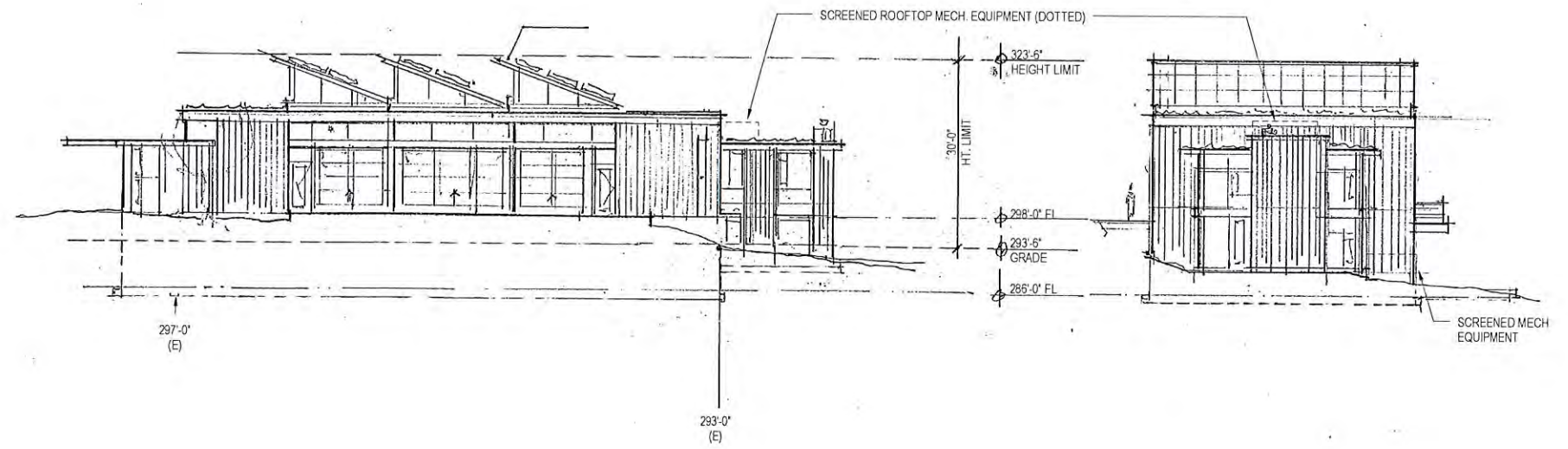
REVISION	DATE

A3.02

BUILDING ELEVATIONS

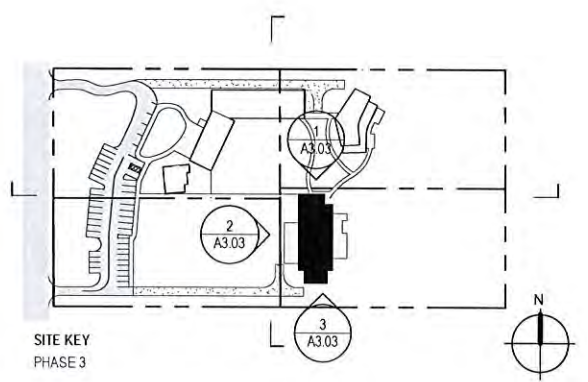


1 GYM / AUDITORIUM - NORTH
SCALE = 1/16" = 1'-0"



2 GYM / AUDITORIUM - WEST
SCALE = 1/16" = 1'-0"

3 GYM / AUDITORIUM - SOUTH
SCALE = 1/16" = 1'-0"



SUNDBERG
KENNEDY
LY-AU YOUNG
ARCHITECTS

240 2ND AVE S, SUITE 450
SEATTLE WA 98104
206.322.1130

MADRONA SCHOOL
11478 N MADISON AVE NE
BAINBRIDGE ISLAND, WA 98110

CONDITIONAL USE PERMIT
PROJECT NUMBER 15020
DATE 08-02-2016
PROPERTY OWNER Center Tree LLC
SEC-TWN-RNG-QTR Sec 11 Township 25 Range 2E SW Qtr

REVISION	DATE

A3.03
BUILDING ELEVATIONS

****You are receiving this notification because our records indicate you own property within 500' of the proposed land use application.**

NOTICE OF APPLICATION/SEPA COMMENT PERIOD

The City of Bainbridge Island has received the following land use application:

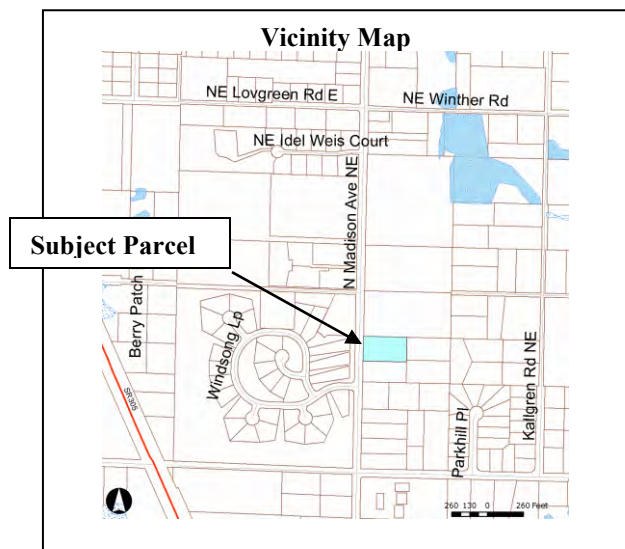
Date of Issuance:	October 14, 2016
Project Name & Number:	Madrona School Conditional Use Permit and Site Plan and Design Review PLN18970B CUP/SPR
Project Type:	Conditional Use/Site Plan and Design Review
Applicant:	John Kennedy
Owner:	Tree LLC Center
Project Site & Tax Parcel:	11478 NORTH MADISON AVE NE, TA#11250230992008

Project Description: Construction of a new K-8 school which includes classrooms, offices, and assembly hall. 39+ parking stalls, play field, stormwater facilities, and septic. The project will also include the demolition of an existing single-family residence, barn, and two sheds. The project is proposed as phased construction.

Environmental Review: This proposal is subject to State Environmental Policy Act (SEPA) review as provided in WAC 197-11-800. The City, acting as lead agency expects to issue a Determination of Non-significance (DNS) threshold determination for this proposal. Utilizing the **optional DNS process** provided in WAC 197-11-355, the comment period specified in this notice may be the only opportunity to comment on the environmental impact of this proposal. The Proposal may include mitigation measures under applicable codes, and the project review process may incorporate or require mitigation measures regardless of whether an EIS is prepared. A copy of the subsequent threshold determination for the proposal may be obtained upon request.

Comment period: The City will not take a final action on the proposal nor make a threshold determination for 14 days from the date of this notice. Any person may comment on the proposal and/or the SEPA review. Additionally, any person may participate in a public hearing, if any, and may request a copy of any decision. **For consideration under SEPA environmental review, comments must be submitted by October 28, 2016. (See map of subject parcel on back)**

If you have any questions, contact:
Joshua Machen, AICP, Planning Manager
City of Bainbridge Island
280 Madison Ave North
Bainbridge Island, WA 98110
206-780-3765 or pcd@bainbridgewa.gov



NOTICE OF MITIGATED DETERMINATION OF NONSIGNIFICANCE (MDNS)

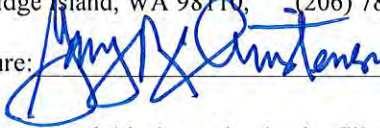
The City of Bainbridge Island has made a decision concerning the following land use application:

Date of Issuance: February 27, 2017
Project Name & Number: Madrona School PLN18970B CUP/SPR
Project Type: Conditional Use/Site Plan and Design Review
Applicant: John Kennedy
Owner: TREE LLC CENTER
Project Site & Tax Parcel: 11478 NORTH MADISON AVE NE, TA# 11250230992008

Project Description: Construction of a new K-8 private school, which includes classrooms, offices, and a gymnasium/auditorium. Site improvements include 39+ parking spaces, play field, stormwater facilities and on-site septic system. An existing residence, barn and two sheds will be demolished.

SEPA Decision: The City of Bainbridge Island (lead agency) has determined that the proposal does not have a probable significant impact on the environment if measures to mitigate the proposal are used. This MDNS is issued under WAC 197-11-355. This determination was made and mitigation measures were applied after review of a completed environmental checklist and other information on file with the lead agency. This information is available to the public upon request. An environmental impact statement (EIS) is not required under RCW 43.21C.030 (2) c.

Responsible Official: Gary R. Christensen
City of Bainbridge Island
Address: Department of Planning and Community Development
280 Madison Avenue North
Bainbridge Island, WA 98110, (206) 780-3756

Signature: 

Date: 2/27/17

APPEAL: You may appeal this determination by filing a written appeal and paying the \$530.00 appeal fee to the City Clerk, at 280 Madison Avenue North, Bainbridge Island, WA 98110, in accordance with the procedures set forth in the Bainbridge Island Municipal Code, Section 16.04.170 by no **later than 4:00 p.m. March 13, 2017. You should be prepared to make specific factual objections**

If you have any questions, contact:
Joshua Machen, AICP, Planning Manager
City of Bainbridge Island
280 Madison Ave North
Bainbridge Island, WA 98110
206-780-3765 or pcd@bainbridgewa.gov

Mitigation measures for Madrona School CUP/SPR SEPA Determination

This threshold determination is for file number PLN18970B CUP/SPR. A threshold determination under the State Environmental Policy Act in no way allows construction work to commence without appropriate construction permits, such as a building or grading permit. Mitigation measures become conditions of approval for the permit.

Mitigation measures to ensure no probable adverse environmental impact will occur during project construction:

1. To avoid impacts to vegetation, no construction activity shall occur in landscape buffers or within the critical root zone of significant trees within landscape buffers, including staging, storage, materials laydown, parking, construction vehicle turnaround, or equipment.
2. Prior to clearing permit or construction permit issuance, fencing shall be erected and posted with signage to protect areas of prohibited disturbance. Signs shall be affixed to the fence every 50 feet indicating the protected area. Fencing shall remain in place until construction is complete, and removal shall be subject to approval of the Planning Division. No construction activities, including grading and/or vegetation removal, shall occur prior 'area of disturbance' plan approval, and inspection and approval of the fencing installation, by the Planning Division.
3. Temporary chain link fence a minimum five feet in height with tubular steel poles or "T" posts shall delineate the area of prohibited disturbance in the following locations:
 - a. At the edge of the drip line of trees proposed to be preserved between N. Madison Avenue and the proposed access drive. Special care shall be taken to protect the significant trees, vegetation, and rain garden area adjacent to the driveway.
 - b. Along the buffer adjacent to the north property line.
4. Orange plastic fencing shall delineate the perimeter buffer where chain link fencing is not required and where existing vegetation is being preserved to meet the buffer requirement.
5. All graded materials removed from the subject property shall be hauled to and deposited at City approved locations (Note: local regulations require that a grade/fill permit is obtained for any grading or filling of 50 cubic yards of material or more if the grading or filling occurs on sites that have not been previously approved for such activities. A SEPA Threshold Determination is required for any fill over 100 cubic yards on sites that have not been previously received a SEPA determination).
6. Contractor is required to stop work if any historical or archaeological artifacts are uncovered during excavation or construction and immediately notify the Department of Planning and Community Development and the Washington State Office of Archaeology and Historic Preservation.

7. To mitigate the possible impact on adjacent properties from light and glare, all exterior lighting shall be hooded and shielded so that the bulb is not visible from adjacent properties. All landscape lighting shall be downcast and lighting within surface parking lots shall be no higher than 5 feet above grade. All exterior lighting shall comply with BIMC Chapter 15.34.
8. All on-site stormwater facilities shall remain privately owned and maintained. The owner shall be responsible for maintenance of the storm drainage facilities for this development following construction. Annual inspection and maintenance reports shall be provided to the City. A Declaration of Covenant for stormwater system operation and maintenance will be required to be recorded before issuance of occupancy permits. The approved language for the Declaration of Covenant is found in BIMC 15.21 Exhibit A.
9. Stormwater detained in the proposed detention pond will be released at a controlled rate through a control structure and ultimately out through a dispersion tee located within 25 feet of the north-eastern property line. The nearest residence downgradient of the dispersion tee is within 50 feet. The release of stormwater from the detention pond shall be monitored for a minimum of 5 years to ensure proper function of pond and control structure and to ensure stormwater release is not detrimental to the neighboring property or structures. The monitoring plan shall be developed by the project stormwater engineer, reviewed and approved by the city, and included with the overall stormwater operation and maintenance plan developed under condition number 1 above.
10. The applicant shall be responsible for verifying water pressure and fire flows are adequate from connections to water mains.
11. All construction activities shall comply with the construction operating hours limitations contained in BIMC Chapter 16.16.
12. Noise produced by this development must comply with the maximum environmental noise levels established by the Washington Administrative Code 173-60 or its successor.

8250 - 165th Avenue NE
Suite 100
Redmond, WA 98052-6628
T 425-883-4134
F 425-867-0898
www.tsinw.com

April 14, 2016

Janell Hitch, PE
Development Engineer
City of Bainbridge Island
280 Madison Ave N
Bainbridge Island, WA 98110

Subject: Madrona School Traffic Impact Analysis
11478 Madison Avenue NE
Bainbridge Island, Washington



Dear Ms. Hitch,

Thank you for asking TSI to prepare this limited scope traffic impact analysis for evaluating the traffic impacts associated with the development and operation of Madrona School, a pre-school through 8th grade school, proposed at Lowry Farm (11478 Madison Avenue NE).

The purpose of this report is to identify potentially significant traffic-related impacts generated by the proposal and, where appropriate, outline programmatic and/or physical improvements to reduce or eliminate potential adverse impacts.

This document generally follows the traffic impact analysis guidelines from the City of Bainbridge Island, but is tailored to address the conditions outlined in the approved January 13, 2016 work proposal.

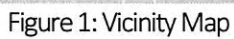
Project Description

Madrona School currently operates at Eagle Harbor Congregational Church (105 Winslow Way W), at the southwest corner of Winslow Way W and Madison Avenue S. The existing school serves between 130 and 140 students in parent-child, preschool, and kindergarten through 8th grades.

Madrona School is proposing to relocate to the Lowry Farm property. The proposal would redevelop the following four land parcels 112502-3-099-2008, 112502-3-100-2005, 112502-3-101-2004 and 112502-3-102-2003. Kitsap County Assessor records note one existing single-family home on the site.

A vicinity map is provided as **Figure 1** and shows the location of the proposed school compared to the existing campus. Madrona School currently uses the Lowry Farm site for school activities; and is proposing to relocate all school operations to the farm property.

A conceptual site plan is provided as **Figure 2**. Two site vehicles are proposed to Madison Ave N, an inbound only access at the south end of the property and an outbound only access at the north end of the property.



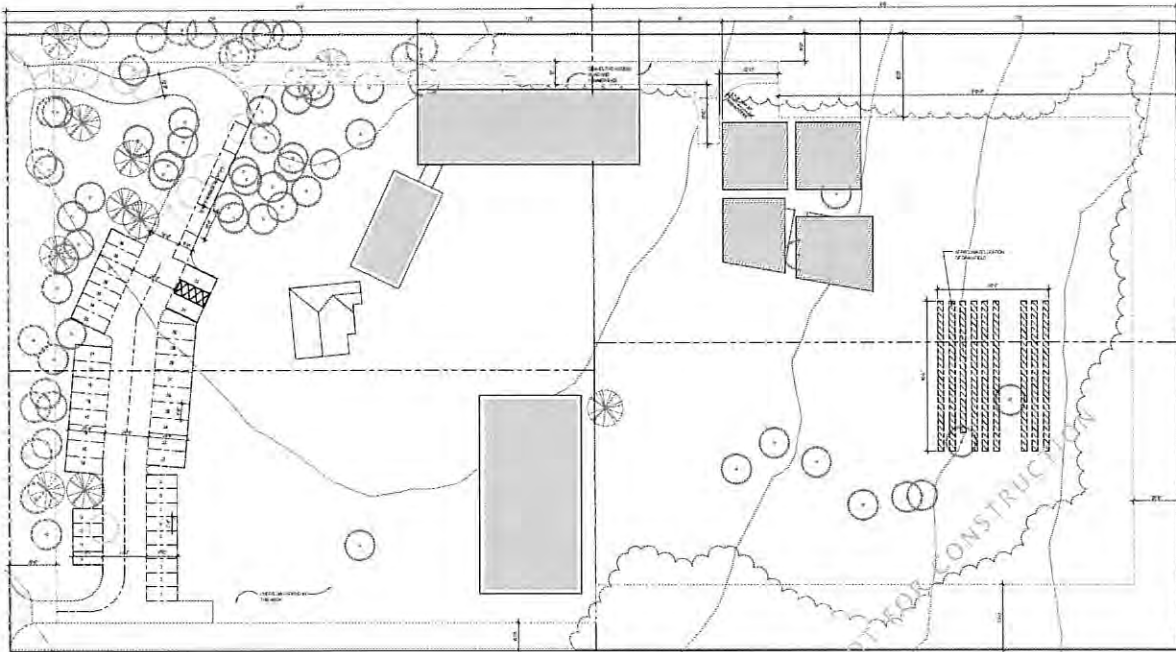


Figure 2: Conceptual Site Plan

School officials indicated that over the next ten years student enrollment is anticipated to increase to between 190 and 200 students. Future school hours are typically between 8:10 AM and 3:20 PM. At full enrollment the campus is anticipated with 14 full-time and 13 part-time teachers and staff.

The applicant anticipates the begin operating full time at the Lowry Farm campus by 2017.

Trip Generation

Trip generation for the Lowry Farm campus is based on the anticipated future class sizes and staffing and schedule. **Table 1** summarizes the class sizes and class schedules.

Table 2 summarizes the trip generation forecast based on the class schedule above for a typical week, Monday through Thursday. In addition, the following assumptions were used to document vehicle trip generation:

- All teachers and staff drive alone.
- All trips are vehicle trips to the site, non-motorized and transit is not assumed. The school does not contract or provide bus service, at this time.
- Parent-child class parents are on campus, parked, through the duration of the 4-hour class.
- A preschool, kindergarten or grade school student trips includes: dropping off and picking up a student(s) which include one arrival and one departure to drop-off a student(s) and a second arrival and one departure to pick-up a student(s), or four total trips.
- Parent-child, preschool and kindergarten student-vehicle occupancy ratios are assumed at 1 student per vehicle.
- Grade school students-vehicle occupancy ratios are assumed at 1.25 students per vehicle to accounts for families with multiple children attending school and for families with carpool arrangements.
- Vehicle arrival and departure times are within a 15-minute time period, which is typical of most schools in the State of Washington and reflects the short amount of time that families spend dropping off and picking up a student(s).

Based on the assumptions above, the proposed Madrona school campus generates:

- 720 daily trips, split 360 in and 360 out.
- 313 AM peak hour trips (8:00 AM to 9:00 AM), split 167 in and 146 out. This time period corresponds to teacher and staff arrivals and student drop-offs: the playfield for grade school students opens at 8:10 AM and class start times are between 8:30 AM and 9:00 AM. Student drop-offs start at 8:10 AM and end around 9:00 AM.
- 143 midday peak hour trips (12:30 PM to 1:30 PM), split 62 in and 81 out. This time period corresponds to the end of the parent-child, preschool and kindergarten classes by 1:00 PM. The midday peak includes part time staff and parents (parent-child classes) departing campus.
- 218 early afternoon peak hour trips (3:00 PM to 4:00 PM), split 101 in and 117 out. This time period corresponds with the end of afternoon grade school classes and includes most of the teachers and staff departing the campus.

The City of Bainbridge Island's Transportation Concurrency requirements are based on an assessment of PM peak hour traffic during the 4:00 PM to 6:00 PM, traditional, PM peak hour period. During the time frame background traffic volumes on local roadways is generally at its highest.

Madrona School operations fall outside, specifically before, the traditional 4:00 PM to 6:00 PM peak hour period. The school's traffic impacts during the PM peak hour are minimal to negligible. Conservatively some staff may depart the campus after 4:00 PM.

Trip Distribution

State Highway 305 is the principal thoroughfare through Bainbridge Island and intersects with Madison Avenue N at Sportsman Club Road NE. Other byways to the site include Sportsman Club Road NE, Madison Avenue N via Moran Road NE, NE Lovgren/Winthers Road, and Miller Road NE.

Current enrollment show about 28% of school families living to the north of NE Lovgren/Winthers Road, to the north of Lowry Farm, while the remaining 62% generally live to the south of Lowry Farm.

Figure 3 illustrates the forecasted peak hour trip distribution to the future Madrona School site.



Figure 3: Peak Hour Trip Distribution

As indicated above, school-related PM peak hour impacts are negligible.

AM Peak Hour Traffic Volumes and Level of Service

In the vicinity of the campus, the City of Bainbridge Island classifies Madison Avenue N as a secondary arterial. Madison Avenue N is oriented north-south, includes one lane in each direction, and has a posted speed limit of 35 mph. Fronting Lowry Farm the road includes a 2-foot wide paved shoulder and the west side of the road also includes a 2-foot wide paved shoulder that widens to about 10-feet in the vicinity of the 27-lot housing development off of Windsong Loop NE, to the south of the site.

As indicated above, school-related impacts at and after 4:00 PM are negligible. Therefore, the following AM peak hour analysis was prepared to project traffic conditions at the two site accesses and at the Windsong Loop NE intersection with Madison Avenue N.

Figure 4 summarizes:

- Existing 2015 AM peak hour traffic conditions (volumes and intersection level of service (LOS)).
- Future 2017 build-out conditions without and with the school. These conditions include trips generated by the school and by the proposed Rolling Bay Mixed-Use development (traffic study dated December 2015), and a 1%-annual background growth rate in traffic volumes between 2015 and 2017.
- Future 2030 long-range planning conditions without and with the school. These conditions include trips generated by the school and by Rolling Bay Mixed-Use, and a 1%-annual background growth rate in traffic volumes between 2015 and 2030.
- AM peak hour trip assignment.

With the school and during the AM peak hour, the study intersections operate well at LOS B or better. School-related AM peak hour trips do not adversely impact delay and LOS the local intersections on Madison Avenue N.

Site Access

The south (inbound-only) campus access is about 50-feet north of Windsong Loop NE and adjacent to an existing private driveway serving one single-family residence. The north (outbound-only) campus access is about 245-feet north of the south access and about 300-feet south of NE Morgan Road.

Bainbridge Island Design Standards indicate the minimum access spacing requirement is 135 feet between adjacent access points and streets. The south (inbound-only) site accesses does not meet the City's spacing requirements from the private driveway and Windsong Loop NE.

The following outlines why the south (inbound-only) site access location is reasonable:

- Future traffic volumes on Madison Avenue N, with Madrona School, are not projected to adversely impact local intersections and driveways, during the AM peak hour. Delays, with school traffic at Windsong Loop NE are not significant, less than 15 seconds.
- The bulk of school-related traffic will be generated during a relatively short time duration, 50 minutes, with class schedules staggered such that peak demand periods are represented by two 20 minutes traffic surges (between 8:10 AM and 8:30 AM, for grade school students and between 8:30 AM and 8:50 AM, for preschool and kindergarten students). School-related traffic impacts outside of this time frame will be significantly less. Other traffic surges occur when classes are over during the midday, for preschool and 1st grade students, and early afternoon, for the remaining grade school students.
- Sightlines at both accesses satisfy AASHTO guidelines, documented later in this report.

- Onsite traffic flow in one-way south to north. A drop-off area for up to five vehicles will be provided to the north of the parking area. In general, grade school student-families will use the drop-off area. Younger student-families are more likely to utilize available parking. The staggered class times allows most of the grade school traffic to clear prior to the pre-school and kindergarten traffic arrives. Parent-child class parents and students arrive after the pre-school and kindergarten traffic leaves. Departures are also staggered based on class end times.

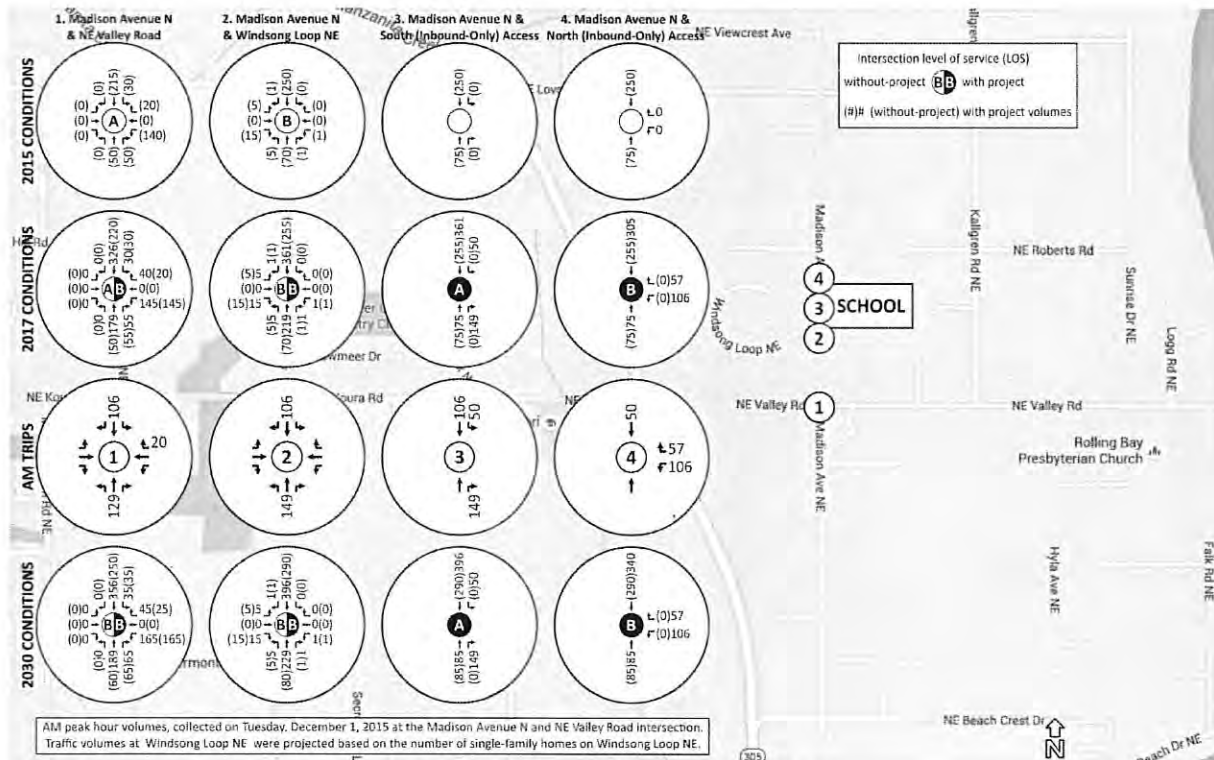


Figure 4: AM Peak Hour Traffic Conditions

Sight Distance

Table 3 summarizes the field review of the available sight distance at both of the campus driveway locations. Intersection sight distance does not apply at the south (inbound-only) driveway.

Sightlines at both site driveways satisfy the AASHTO guidelines.

Table 3: Sight Distance

Location	Orientation	Sight Distance ¹	Requirement ²	Field Measure	Okay?
North (outbound-only) Driveway	Looking North	Intersection	500 feet	500 feet	Yes
		Stopping	360 feet	500 feet	Yes
	Looking South	Intersection	500 feet	500 feet	Yes
		Stopping	360 feet	500 feet	Yes
South (inbound-only) Driveway	Looking North	Stopping	360 feet	500 feet	Yes
	Looking South	Stopping	360 feet	500 feet	Yes

- Intersection sight distance, for vehicles entering the major roadway (Madison Ave N)
Stopping sight distance, for approaching vehicles to see an object at the edge of the driveway
- AASHTO Green Book, 6th Edition (2011), with a 45 mph design speed

Safety

Crash statistics between 2011 and 2015 were provided by WSDOT and were used to evaluate general safety trends on Madison Avenue N between NE Day Road south to SR 305. Within the past five years, eleven crashes were reported on Madison Avenue N, six resulted in property damage only and no fatalities were reported. **Table 4** summarizes the crash data.

Table 4: Crash History

Location On Madison Ave N	Crashes Per Year				
	2011	2012	2013	2014	2015
at NE Day Road	0	1	0	0	0
from Day to Winthers	0	0	1	0	0
at NE Winthers Road	0	0	0	1	0
from Winthers to Valley	0	0	1	0	0
at NE Valley Road	0	0	0	0	1
from Valley to Beach Crest	0	0	0	2	0
at NE Beach Crest Drive	0	0	0	1	0
at Manitou Beach Drive NE	0	1	0	0	0
at Moran Road NE	0	0	0	2	0

Other than a spike in crashes in 2014, crash rates have been generally between 1 and 2 per year. No crashes were reported near the site or Windsong Loop NE.

There was no significant crash pattern or trend on Madison Avenue N near the Lowry Farm over the past 5 years. Future Madrona School operations are not anticipated to significantly affect the crash potential on Madison Avenue N.

Parking

A total of 39 parking spaces are proposed.

Parking requirements are documented in the Bainbridge Island Municipal Code Table 18.15.020-1: Off-Street Parking Spaces Required for Residential, Neighborhood Service Center, Business/Industrial, and Water-Dependent Industrial Zone Districts. **Table 5** summarizes the parking requirements based on the numbers of students, parents, teachers and staff.

Table 5: Code Parking Requirements

Land Use	Persons	Parking Ratio	Spaces Required
Parent-Child	8 kids/parents	1 space : 1 parent	8
	2 teachers	1 space: 1 teacher	2
Preschool (Day Care)	12 kids	1 space: 12 kids	1
	2 teachers	1 space: 1 teacher	2
School (K-8 Grade)	180 students	1 space : 50 students	4
	14 teachers	1 space: 1 teacher	14
Other Staff & Admin.	9 teachers/staff	1 space: 1 teacher/staff	9
Total			40

The parking requirements exceed the parking supply by one space, which is negligible considering a load area (for up to five vehicles) is also provided. The load area may be utilized for long-term parking by visitors outside of student drop-off and pick-up times, which should offset any immediate need to provide one additional parking space.

It is noted that the onsite parking will turnover in the early afternoons after the Parent-Child, preschool, elementary and 1st grade classes end by 1:00 PM. Also, part-time teachers and staff schedules will allow some parking spaces to turnover throughout the day.

Between 16 and 20 teachers and staff will be on campus during the morning peak hour, when school starts. The remaining, and part-time staff, arrive around 11:15 AM. Based on the campus' proposed parking supply, between 19 and 23 parking spaces will be available to support student drop-off, in addition to the load area (with room for up to five vehicles). At the existing campus, similar measures are in place for student drop-offs and pick-ups, without the proposed space available for on campus loading and unloading.

Parking and student drop-off and pick-up will be monitored by school staff.

School officials have indicated that in the event that overflow parking is needed, the play-area will be designed to accommodate vehicles.

Circulation

Onsite vehicle traffic flows from south (inbound) to north (outbound).

School officials indicated that they plan to generally maintain their current student drop-off and pick-up procedures from the existing campus at Eagle Harbor Congressional Church. General procedures include parents parking on campus and walking their student(s) to a waiting staff member (unload) or picking up their student(s) from a waiting staff member. These procedures will be slightly modified with the load area at the north end of the parking lot.

As indicated above, the campus includes 39 parking spaces and between 19 and 23 parking spaces will be available to support student drop-off.

The staggered class times, classes start at 8:30 AM, 8:50 AM and 9:00 AM, is intended to facilitate use of the on campus parking and load area for drop-off, pick-up and circulation.

Recommendations

- *Traffic reduction:*
 - Encourage carpooling.
 - Consider providing a centralized area (or webpage) to post carpool, walking and transit opportunities to staff and families.
- Onsite circulation, unloading and loading and parking:
 - Provide a clear plan to families and staff regarding student circulation from the parking/drop-off/pick-up areas to school buildings/the play area.
 - Have staff use parking spaces near the site entrance and adjacent to Madison Ave N with a goal to maximize the available short-term parking spaces and time needed to load and unload students.
 - Staff should continue to monitor student loading and unloading.
- Offsite Circulation:
 - Develop a contingency plan and work with neighbors and the city to resolve any potential stacking that may occasionally occur outside of the campus.
 - Generate, post and share with the city preferred traffic routes and arrival times for families and staff.
- For special events advance notices should be provided to the neighbors.

- If afterschool activities are planned, the school will need to work with the City to identify and mitigate impacts.
- Outline penalties for parents and staff who fail to meet established guidelines.

Conclusions

Madrona School is projected to generate 720 daily trips on a typical weekday.

In the AM peak hour traffic impacts are generally concentrated from 8:10 AM to 9:00 AM when the play field is opened for grade school students and classes start. Staggered class times allow traffic surges to clear prior to facilitate circulation within the parking area and at the load zone. During the one-hour morning peak the school is forecast to generate 313 AM peak hour trips, split 167 in and 146 out.

Other traffic peaks are related to the staggered end times of school classes. Peak occur midday, 12:30 PM to 1:30 PM with 143 trips, and early afternoon, 3:00 PM to 4:00 PM with 218 trips.

There are negligible school-related traffic impacts projected during the PM peak hour. All classes end by 3:30 PM, and all students will typically depart by 3:45 PM. Also, most, if not all, of the staff will typically depart before 4:00 PM.

Conditions at both site accesses provide for adequate sight distance. The location of the inbound only site access does not satisfy the City's access spacing requirements, based on the access' location adjacent to a private driveway and about 50 feet north of Windsong Loop NE.

There is a limited amount of potential conflicting traffic generated by the adjacent properties. Quantified using HCM level of service methodology, both site accesses and adjacent Windsong Loop NE and private driveway intersections operate well at LOS B, which is representative of reasonably free traffic flow with some restrictive, but not confining maneuverability.

School officials are advised to provide a clear plan for student drop-off and pick-up operations and also to assist in facilitating traffic flow through the site. "Good" traffic flow onsite will minimize the potential for traffic spilling out onto Madison Avenue N and impeding the mainline, adjacent driveway and Windsong Loop NE.

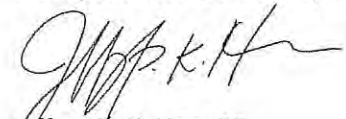
We strongly advise the school to continually work with their neighbors discuss and work through any offsite vehicle stacking issues that may arise with the school's activities.

The on campus parking supply is reasonable, with 39 parking spaces and a load area for up to 5 vehicles.

Contingency plans may include providing additional stacking space or parking on campus, or working with the city to allow some stacking along, a section of cleared, road shoulder of Madison Avenue N.

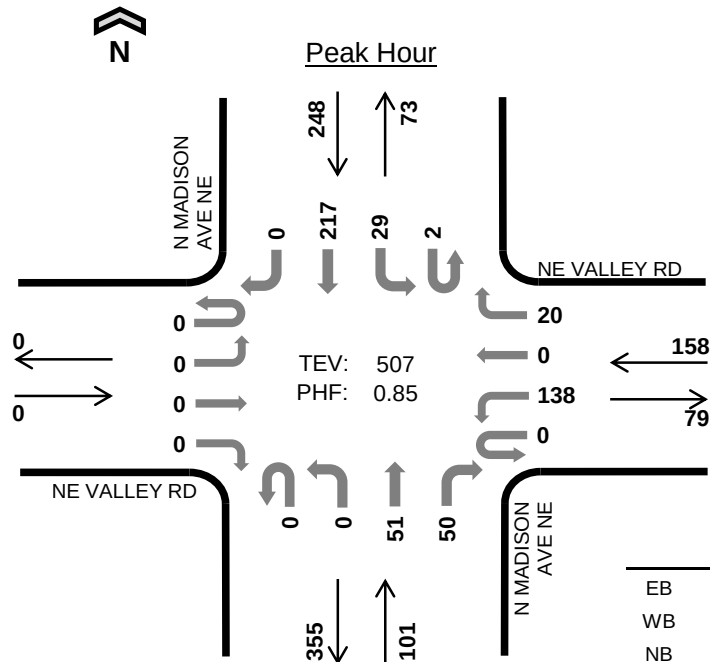
We trust that this technical memorandum will assist you with your planning needs. Please contact TSI at your convenience.

Thank you,
Transportation Solutions, Inc.

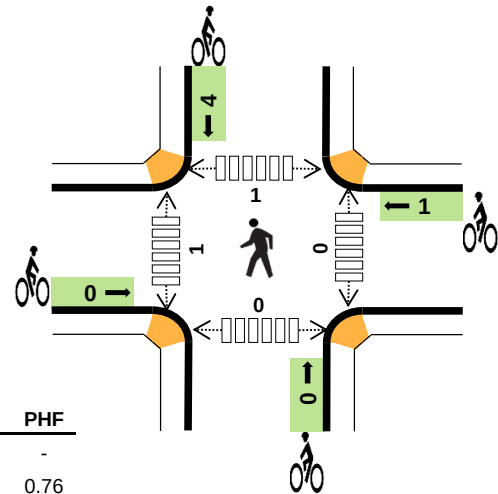


Jeffrey P. K. Hee, PE
Project Engineer

N MADISON AVE NE NE VALLEY RD



Date: Tue, Dec 01, 2015
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:30 AM to 8:30 AM



	HV %:	PHF
EB	-	-
WB	3.2%	0.76
NB	3.0%	0.79
SB	2.0%	0.84
TOTAL	2.6%	0.85

Two-Hour Count Summaries

Interval Start	NE VALLEY RD Eastbound				NE VALLEY RD Westbound				N MADISON AVE NE Northbound				N MADISON AVE NE Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	1	0	8	1	1	0	0	14	11	0	3	7	0	46	0
7:15 AM	0	0	0	0	0	16	0	1	0	0	12	6	0	8	22	0	65	0
7:30 AM	0	0	0	0	0	29	0	9	0	0	18	5	1	4	59	0	125	0
7:45 AM	0	0	0	0	0	24	0	3	0	0	13	19	0	12	54	0	125	361
8:00 AM	0	0	0	0	0	37	0	4	0	0	11	11	0	7	37	0	107	422
8:15 AM	0	0	0	0	0	48	0	4	0	0	9	15	1	6	67	0	150	507
8:30 AM	0	0	0	0	0	16	0	7	0	0	14	18	0	15	24	0	94	476
8:45 AM	0	0	0	0	0	22	0	5	0	0	8	23	0	8	22	0	88	439
Count Total	0	0	0	1	0	200	1	34	0	0	99	108	2	63	292	0	800	0
Peak Hour	0	0	0	0	0	138	0	20	0	0	51	50	2	29	217	0	507	0

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	0	1	4	1	6	0	0	0	1	1	1	0	0	0	1
7:15 AM	0	0	1	1	2	0	0	0	0	0	0	0	1	0	1
7:30 AM	0	2	1	0	3	0	0	0	1	1	0	0	0	0	0
7:45 AM	0	0	0	4	4	0	0	0	1	1	0	0	1	0	1
8:00 AM	0	2	1	1	4	0	1	0	1	2	0	1	0	0	1
8:15 AM	0	1	1	0	2	0	0	0	1	1	0	0	0	0	0
8:30 AM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0
Count Total	0	7	9	7	23	0	1	0	5	6	1	1	2	0	4
Peak Hour	0	5	3	5	13	0	1	0	4	5	0	1	1	0	2

Intersection												
Intersection Delay, s/veh	9.7											
Intersection LOS	A											
Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Traffic Vol, veh/h	0	0	0	0	0	140	0	20	0	0	50	50
Future Vol, veh/h	0	0	0	0	0	140	0	20	0	0	50	50
Peak Hour Factor	0.92	0.85	0.85	0.85	0.92	0.85	0.85	0.85	0.92	0.85	0.85	0.85
Heavy Vehicles, %	2	0	0	0	2	3	3	3	2	3	3	3
Mvmt Flow	0	0	0	0	0	165	0	24	0	0	59	59
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0
Approach			EB		WB			NB				
Opposing Approach			WB		EB			SB				
Opposing Lanes			1		1			1				
Conflicting Approach Left			SB		NB			EB				
Conflicting Lanes Left			1		1			1				
Conflicting Approach Right			NB		SB			WB				
Conflicting Lanes Right			1		1			1				
HCM Control Delay			0		9.8			8.3				
HCM LOS			-		A			A				
Lane	NBLn1	EBLn1	WBLn1	SBLn1								
Vol Left, %	0%	0%	88%	12%								
Vol Thru, %	50%	100%	0%	88%								
Vol Right, %	50%	0%	12%	0%								
Sign Control	Stop	Stop	Stop	Stop								
Traffic Vol by Lane	100	0	160	245								
LT Vol	0	0	140	30								
Through Vol	50	0	0	215								
RT Vol	50	0	20	0								
Lane Flow Rate	118	0	188	288								
Geometry Grp	1	1	1	1								
Degree of Util (X)	0.146	0	0.26	0.366								
Departure Headway (Hd)	4.467	5.096	4.974	4.577								
Convergence, Y/N	Yes	Yes	Yes	Yes								
Cap	800	0	721	784								
Service Time	2.507	3.155	3.016	2.609								
HCM Lane V/C Ratio	0.147	0	0.261	0.367								
HCM Control Delay	8.3	8.2	9.8	10.2								
HCM Lane LOS	A	N	A	B								
HCM 95th-tile Q	0.5	0	1	1.7								

Intersection

Intersection Delay, s/veh

Intersection LOS

Movement	SBU	SBL	SBT	SBR
Traffic Vol, veh/h	0	30	215	0
Future Vol, veh/h	0	30	215	0
Peak Hour Factor	0.92	0.85	0.85	0.85
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	35	253	0
Number of Lanes	0	0	1	0

Approach

SB

Opposing Approach

NB

Opposing Lanes

1

Conflicting Approach Left

WB

Conflicting Lanes Left

1

Conflicting Approach Right

EB

Conflicting Lanes Right

1

HCM Control Delay

10.2

HCM LOS

B

Lane

Intersection												
Int Delay, s/veh		0.7										
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	5	0	15	0	0	1	5	70	1	0	250	1
Future Vol, veh/h	5	0	15	0	0	1	5	70	1	0	250	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	5	0	16	0	0	1	5	76	1	0	272	1
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	360	360	272	368	361	77	273	0	0	77	0	0
Stage 1	272	272	-	88	88	-	-	-	-	-	-	-
Stage 2	88	88	-	280	273	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	596	567	767	588	566	984	1290	-	-	1522	-	-
Stage 1	734	685	-	920	822	-	-	-	-	-	-	-
Stage 2	920	822	-	727	684	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	594	565	767	574	564	984	1290	-	-	1522	-	-
Mov Cap-2 Maneuver	594	565	-	574	564	-	-	-	-	-	-	-
Stage 1	731	685	-	916	819	-	-	-	-	-	-	-
Stage 2	915	819	-	712	684	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	10.2			8.7			0.5			0		
HCM LOS	B			A								
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1290	-	-	715	984	1522	-	-				
HCM Lane V/C Ratio	0.004	-	-	0.03	0.001	-	-	-				
HCM Control Delay (s)	7.8	0	-	10.2	8.7	0	-	-				
HCM Lane LOS	A	A	-	B	A	A	-	-				
HCM 95th %tile Q(veh)	0	-	-	0.1	0	0	-	-				

Intersection												
Intersection Delay, s/veh	9.8											
Intersection LOS	A											
Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Traffic Vol, veh/h	0	0	0	0	0	145	0	20	0	0	50	55
Future Vol, veh/h	0	0	0	0	0	145	0	20	0	0	50	55
Peak Hour Factor	0.92	0.85	0.85	0.85	0.92	0.85	0.85	0.85	0.92	0.85	0.85	0.85
Heavy Vehicles, %	2	0	0	0	2	3	3	3	2	3	3	3
Mvmt Flow	0	0	0	0	0	171	0	24	0	0	59	65
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0
Approach			EB		WB			NB				
Opposing Approach			WB		EB			SB				
Opposing Lanes			1		1			1				
Conflicting Approach Left			SB		NB			EB				
Conflicting Lanes Left			1		1			1				
Conflicting Approach Right			NB		SB			WB				
Conflicting Lanes Right			1		1			1				
HCM Control Delay			0		9.9			8.3				
HCM LOS			-		A			A				
Lane	NBLn1	EBLn1	WBLn1	SBLn1								
Vol Left, %	0%	0%	88%	12%								
Vol Thru, %	48%	100%	0%	88%								
Vol Right, %	52%	0%	12%	0%								
Sign Control	Stop	Stop	Stop	Stop								
Traffic Vol by Lane	105	0	165	250								
LT Vol	0	0	145	30								
Through Vol	50	0	0	220								
RT Vol	55	0	20	0								
Lane Flow Rate	124	0	194	294								
Geometry Grp	1	1	1	1								
Degree of Util (X)	0.154	0	0.27	0.376								
Departure Headway (Hd)	4.48	5.135	5.004	4.602								
Convergence, Y/N	Yes	Yes	Yes	Yes								
Cap	798	0	716	779								
Service Time	2.523	3.201	3.051	2.637								
HCM Lane V/C Ratio	0.155	0	0.271	0.377								
HCM Control Delay	8.3	8.2	9.9	10.4								
HCM Lane LOS	A	N	A	B								
HCM 95th-tile Q	0.5	0	1.1	1.8								

Intersection

Intersection Delay, s/veh

Intersection LOS

Movement	SBU	SBL	SBT	SBR
Traffic Vol, veh/h	0	30	220	0
Future Vol, veh/h	0	30	220	0
Peak Hour Factor	0.92	0.85	0.85	0.85
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	35	259	0
Number of Lanes	0	0	1	0

Approach

SB

Opposing Approach

NB

Opposing Lanes

1

Conflicting Approach Left

WB

Conflicting Lanes Left

1

Conflicting Approach Right

EB

Conflicting Lanes Right

1

HCM Control Delay

10.4

HCM LOS

B

Lane

Intersection												
Int Delay, s/veh		0.7										
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	5	0	15	0	0	1	5	70	1	0	255	1
Future Vol, veh/h	5	0	15	0	0	1	5	70	1	0	255	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	5	0	16	0	0	1	5	76	1	0	277	1
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	366	366	278	374	366	77	278	0	0	77	0	0
Stage 1	278	278	-	88	88	-	-	-	-	-	-	-
Stage 2	88	88	-	286	278	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	590	562	761	583	562	984	1285	-	-	1522	-	-
Stage 1	728	680	-	920	822	-	-	-	-	-	-	-
Stage 2	920	822	-	721	680	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	588	560	761	569	560	984	1285	-	-	1522	-	-
Mov Cap-2 Maneuver	588	560	-	569	560	-	-	-	-	-	-	-
Stage 1	725	680	-	916	819	-	-	-	-	-	-	-
Stage 2	915	819	-	706	680	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	10.2			8.7			0.5			0		
HCM LOS	B			A								
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1285	-	-	709	984	1522	-	-				
HCM Lane V/C Ratio	0.004	-	-	0.031	0.001	-	-	-				
HCM Control Delay (s)	7.8	0	-	10.2	8.7	0	-	-				
HCM Lane LOS	A	A	-	B	A	A	-	-				
HCM 95th %tile Q(veh)	0	-	-	0.1	0	0	-	-				

Intersection												
Intersection Delay, s/veh	12.7											
Intersection LOS	B											
Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Traffic Vol, veh/h	0	0	0	0	0	145	0	40	0	0	179	55
Future Vol, veh/h	0	0	0	0	0	145	0	40	0	0	179	55
Peak Hour Factor	0.92	0.85	0.85	0.85	0.92	0.85	0.85	0.85	0.92	0.85	0.85	0.85
Heavy Vehicles, %	2	0	0	0	2	3	3	3	2	3	3	3
Mvmt Flow	0	0	0	0	0	171	0	47	0	0	211	65
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0
Approach			EB		WB			NB				
Opposing Approach			WB		EB			SB				
Opposing Lanes			1		1			1				
Conflicting Approach Left			SB		NB			EB				
Conflicting Lanes Left			1		1			1				
Conflicting Approach Right			NB		SB			WB				
Conflicting Lanes Right			1		1			1				
HCM Control Delay			0		11.6			11.1				
HCM LOS			-		B			B				
Lane	NBLn1	EBLn1	WBLn1	SBLn1								
Vol Left, %	0%	0%	78%	8%								
Vol Thru, %	76%	100%	0%	92%								
Vol Right, %	24%	0%	22%	0%								
Sign Control	Stop	Stop	Stop	Stop								
Traffic Vol by Lane	234	0	185	356								
LT Vol	0	0	145	30								
Through Vol	179	0	0	326								
RT Vol	55	0	40	0								
Lane Flow Rate	275	0	218	419								
Geometry Grp	1	1	1	1								
Degree of Util (X)	0.377	0	0.344	0.57								
Departure Headway (Hd)	5.045	6.096	5.682	4.999								
Convergence, Y/N	Yes	Yes	Yes	Yes								
Cap	719	0	638	725								
Service Time	3.045	4.107	3.682	2.999								
HCM Lane V/C Ratio	0.382	0	0.342	0.578								
HCM Control Delay	11.1	9.1	11.6	14.4								
HCM Lane LOS	B	N	B	B								
HCM 95th-tile Q	1.8	0	1.5	3.6								

Intersection

Intersection Delay, s/veh

Intersection LOS

Movement	SBU	SBL	SBT	SBR
Traffic Vol, veh/h	0	30	326	0
Future Vol, veh/h	0	30	326	0
Peak Hour Factor	0.92	0.85	0.85	0.85
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	35	384	0
Number of Lanes	0	0	1	0

Approach

SB

Opposing Approach	NB
Opposing Lanes	1
Conflicting Approach Left	WB
Conflicting Lanes Left	1
Conflicting Approach Right	EB
Conflicting Lanes Right	1
HCM Control Delay	14.4
HCM LOS	B

Lane

Intersection												
Int Delay, s/veh		0.5										
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	5	0	15	0	0	1	5	219	1	0	361	1
Future Vol, veh/h	5	0	15	0	0	1	5	219	1	0	361	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	5	0	16	0	0	1	5	238	1	0	392	1
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	643	643	393	650	642	239	393	0	0	239	0	0
Stage 1	393	393	-	249	249	-	-	-	-	-	-	-
Stage 2	250	250	-	401	393	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	386	392	656	382	392	800	1166	-	-	1328	-	-
Stage 1	632	606	-	755	701	-	-	-	-	-	-	-
Stage 2	754	700	-	626	606	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	384	390	656	371	390	800	1166	-	-	1328	-	-
Mov Cap-2 Maneuver	384	390	-	371	390	-	-	-	-	-	-	-
Stage 1	629	606	-	751	697	-	-	-	-	-	-	-
Stage 2	749	697	-	610	606	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	11.7			9.5			0.2			0		
HCM LOS	B			A								
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1166	-	-	557	800	1328	-	-				
HCM Lane V/C Ratio	0.005	-	-	0.039	0.001	-	-	-				
HCM Control Delay (s)	8.1	0	-	11.7	9.5	0	-	-				
HCM Lane LOS	A	A	-	B	A	A	-	-				
HCM 95th %tile Q(veh)	0	-	-	0.1	0	0	-	-				

Intersection						
Int Delay, s/veh	0.6					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Vol, veh/h	0	0	75	149	50	361
Future Vol, veh/h	0	0	75	149	50	361
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	82	162	54	392
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	664	163	0	0	243	0
Stage 1	163	-	-	-	-	-
Stage 2	501	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	426	882	-	-	1323	-
Stage 1	866	-	-	-	-	-
Stage 2	609	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	404	882	-	-	1323	-
Mov Cap-2 Maneuver	404	-	-	-	-	-
Stage 1	866	-	-	-	-	-
Stage 2	577	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	0	0		1		
HCM LOS	A					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	-	1323	-	
HCM Lane V/C Ratio	-	-	-	0.041	-	
HCM Control Delay (s)	-	-	0	7.8	0	
HCM Lane LOS	-	-	A	A	A	
HCM 95th %tile Q(veh)	-	-	-	0.1	-	

Intersection						
Int Delay, s/veh	3.6					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Vol, veh/h	106	57	75	0	0	305
Future Vol, veh/h	106	57	75	0	0	305
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	115	62	82	0	0	332
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	414	82	0	0	82	0
Stage 1	82	-	-	-	-	-
Stage 2	332	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	595	978	-	-	1515	-
Stage 1	941	-	-	-	-	-
Stage 2	727	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	595	978	-	-	1515	-
Mov Cap-2 Maneuver	595	-	-	-	-	-
Stage 1	941	-	-	-	-	-
Stage 2	727	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	12	0		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	- 689	1515	-		
HCM Lane V/C Ratio	-	- 0.257	-	-		
HCM Control Delay (s)	-	- 12	0	-		
HCM Lane LOS	-	- B	A	-		
HCM 95th %tile Q(veh)	-	- 1	0	-		

Intersection												
Intersection Delay, s/veh	10.7											
Intersection LOS	B											
Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Traffic Vol, veh/h	0	0	0	0	0	165	0	25	0	0	60	65
Future Vol, veh/h	0	0	0	0	0	165	0	25	0	0	60	65
Peak Hour Factor	0.92	0.85	0.85	0.85	0.92	0.85	0.85	0.85	0.92	0.85	0.85	0.85
Heavy Vehicles, %	2	0	0	0	2	3	3	3	2	3	3	3
Mvmt Flow	0	0	0	0	0	194	0	29	0	0	71	76
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0
Approach			EB		WB			NB				
Opposing Approach			WB		EB			SB				
Opposing Lanes			1		1			1				
Conflicting Approach Left			SB		NB			EB				
Conflicting Lanes Left			1		1			1				
Conflicting Approach Right			NB		SB			WB				
Conflicting Lanes Right			1		1			1				
HCM Control Delay			0		10.7			8.8				
HCM LOS			-		B			A				
Lane	NBLn1	EBLn1	WBLn1	SBLn1								
Vol Left, %	0%	0%	87%	12%								
Vol Thru, %	48%	100%	0%	88%								
Vol Right, %	52%	0%	13%	0%								
Sign Control	Stop	Stop	Stop	Stop								
Traffic Vol by Lane	125	0	190	285								
LT Vol	0	0	165	35								
Through Vol	60	0	0	250								
RT Vol	65	0	25	0								
Lane Flow Rate	147	0	224	335								
Geometry Grp	1	1	1	1								
Degree of Util (X)	0.189	0	0.32	0.44								
Departure Headway (Hd)	4.633	5.362	5.155	4.724								
Convergence, Y/N	Yes	Yes	Yes	Yes								
Cap	769	0	693	758								
Service Time	2.694	3.455	3.219	2.773								
HCM Lane V/C Ratio	0.191	0	0.323	0.442								
HCM Control Delay	8.8	8.5	10.7	11.5								
HCM Lane LOS	A	N	B	B								
HCM 95th-tile Q	0.7	0	1.4	2.3								

Intersection

Intersection Delay, s/veh

Intersection LOS

Movement	SBU	SBL	SBT	SBR
Traffic Vol, veh/h	0	35	250	0
Future Vol, veh/h	0	35	250	0
Peak Hour Factor	0.92	0.85	0.85	0.85
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	41	294	0
Number of Lanes	0	0	1	0

Approach SB

Opposing Approach NB

Opposing Lanes 1

Conflicting Approach Left WB

Conflicting Lanes Left 1

Conflicting Approach Right EB

Conflicting Lanes Right 1

HCM Control Delay 11.5

HCM LOS B

Lane

Intersection												
Int Delay, s/veh		0.7										
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	5	0	15	0	0	1	5	80	1	0	290	1
Future Vol, veh/h	5	0	15	0	0	1	5	80	1	0	290	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	5	0	16	0	0	1	5	87	1	0	315	1
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	415	415	316	422	414	88	316	0	0	88	0	0
Stage 1	316	316	-	98	98	-	-	-	-	-	-	-
Stage 2	99	99	-	324	316	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	548	528	724	542	529	970	1244	-	-	1508	-	-
Stage 1	695	655	-	908	814	-	-	-	-	-	-	-
Stage 2	907	813	-	688	655	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	546	526	724	528	527	970	1244	-	-	1508	-	-
Mov Cap-2 Maneuver	546	526	-	528	527	-	-	-	-	-	-	-
Stage 1	692	655	-	904	811	-	-	-	-	-	-	-
Stage 2	902	810	-	673	655	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	10.6			8.7			0.5			0		
HCM LOS	B			A								
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1244	-	-	669	970	1508	-	-				
HCM Lane V/C Ratio	0.004	-	-	0.032	0.001	-	-	-				
HCM Control Delay (s)	7.9	0	-	10.6	8.7	0	-	-				
HCM Lane LOS	A	A	-	B	A	A	-	-				
HCM 95th %tile Q(veh)	0	-	-	0.1	0	0	-	-				

Intersection												
Intersection Delay, s/veh	14.8											
Intersection LOS	B											
Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Traffic Vol, veh/h	0	0	0	0	0	165	0	45	0	0	189	65
Future Vol, veh/h	0	0	0	0	0	165	0	45	0	0	189	65
Peak Hour Factor	0.92	0.85	0.85	0.85	0.92	0.85	0.85	0.85	0.92	0.85	0.85	0.85
Heavy Vehicles, %	2	0	0	0	2	3	3	3	2	3	3	3
Mvmt Flow	0	0	0	0	0	194	0	53	0	0	222	76
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0
Approach			EB		WB			NB				
Opposing Approach			WB		EB			SB				
Opposing Lanes			1		1			1				
Conflicting Approach Left			SB		NB			EB				
Conflicting Lanes Left			1		1			1				
Conflicting Approach Right			NB		SB			WB				
Conflicting Lanes Right			1		1			1				
HCM Control Delay			0		12.9			12.2				
HCM LOS			-		B			B				
Lane	NBLn1	EBLn1	WBLn1	SBLn1								
Vol Left, %	0%	0%	79%	9%								
Vol Thru, %	74%	100%	0%	91%								
Vol Right, %	26%	0%	21%	0%								
Sign Control	Stop	Stop	Stop	Stop								
Traffic Vol by Lane	254	0	210	391								
LT Vol	0	0	165	35								
Through Vol	189	0	0	356								
RT Vol	65	0	45	0								
Lane Flow Rate	299	0	247	460								
Geometry Grp	1	1	1	1								
Degree of Util (X)	0.433	0	0.403	0.658								
Departure Headway (Hd)	5.215	6.414	5.877	5.15								
Convergence, Y/N	Yes	Yes	Yes	Yes								
Cap	690	0	613	704								
Service Time	3.252	4.479	3.917	3.182								
HCM Lane V/C Ratio	0.433	0	0.403	0.653								
HCM Control Delay	12.2	9.5	12.9	17.6								
HCM Lane LOS	B	N	B	C								
HCM 95th-tile Q	2.2	0	1.9	4.9								

Intersection

Intersection Delay, s/veh

Intersection LOS

Movement	SBU	SBL	SBT	SBR
Traffic Vol, veh/h	0	35	356	0
Future Vol, veh/h	0	35	356	0
Peak Hour Factor	0.92	0.85	0.85	0.85
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	41	419	0
Number of Lanes	0	0	1	0

Approach SB

Opposing Approach NB

Opposing Lanes 1

Conflicting Approach Left WB

Conflicting Lanes Left 1

Conflicting Approach Right EB

Conflicting Lanes Right 1

HCM Control Delay 17.6

HCM LOS C

Lane

Intersection												
Int Delay, s/veh		0.5										
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	5	0	15	0	0	1	5	229	1	0	396	1
Future Vol, veh/h	5	0	15	0	0	1	5	229	1	0	396	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	5	0	16	0	0	1	5	249	1	0	430	1
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	692	692	431	699	692	249	432	0	0	250	0	0
Stage 1	431	431	-	260	260	-	-	-	-	-	-	-
Stage 2	261	261	-	439	432	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	358	367	624	354	367	790	1128	-	-	1316	-	-
Stage 1	603	583	-	745	693	-	-	-	-	-	-	-
Stage 2	744	692	-	597	582	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	356	365	624	343	365	790	1128	-	-	1316	-	-
Mov Cap-2 Maneuver	356	365	-	343	365	-	-	-	-	-	-	-
Stage 1	600	583	-	741	690	-	-	-	-	-	-	-
Stage 2	739	689	-	581	582	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	12.2			9.6			0.2			0		
HCM LOS	B			A								
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1128	-	-	525	790	1316	-	-				
HCM Lane V/C Ratio	0.005	-	-	0.041	0.001	-	-	-				
HCM Control Delay (s)	8.2	0	-	12.2	9.6	0	-	-				
HCM Lane LOS	A	A	-	B	A	A	-	-				
HCM 95th %tile Q(veh)	0	-	-	0.1	0	0	-	-				

Intersection						
Int Delay, s/veh	0.6					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Vol, veh/h	0	0	85	149	50	396
Future Vol, veh/h	0	0	85	149	50	396
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	92	162	54	430
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	712	173	0	0	254	0
Stage 1	173	-	-	-	-	-
Stage 2	539	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	399	871	-	-	1311	-
Stage 1	857	-	-	-	-	-
Stage 2	585	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	377	871	-	-	1311	-
Mov Cap-2 Maneuver	377	-	-	-	-	-
Stage 1	857	-	-	-	-	-
Stage 2	553	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	0	0		0.9		
HCM LOS	A					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	-	1311	-	
HCM Lane V/C Ratio	-	-	-	0.041	-	
HCM Control Delay (s)	-	-	0	7.9	0	
HCM Lane LOS	-	-	A	A	A	
HCM 95th %tile Q(veh)	-	-	-	0.1	-	

Intersection						
Int Delay, s/veh	3.5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Vol, veh/h	106	57	85	0	0	340
Future Vol, veh/h	106	57	85	0	0	340
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	115	62	92	0	0	370
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	462	92	0	0	92	0
Stage 1	92	-	-	-	-	-
Stage 2	370	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	558	965	-	-	1503	-
Stage 1	932	-	-	-	-	-
Stage 2	699	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	558	965	-	-	1503	-
Mov Cap-2 Maneuver	558	-	-	-	-	-
Stage 1	932	-	-	-	-	-
Stage 2	699	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	12.5	0		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	655	1503	-	
HCM Lane V/C Ratio	-	-	0.27	-	-	
HCM Control Delay (s)	-	-	12.5	0	-	
HCM Lane LOS	-	-	B	A	-	
HCM 95th %tile Q(veh)	-	-	1.1	0	-	



Madrona School traffic mitigation plan for Lowery Farm Campus

In recognition of the residential / rural neighborhood, Madrona School will make concerted efforts to reduce the impact of vehicle traffic to and from the school. Specifically we plan to:

- 1) Encourage carpooling by developing strategies to connect parents, create incentives for carpooling and reduce the overall number of car trips. We will further encourage bicycle riding and walking to school whenever possible.
- 2) Create and communicate a clear protocol for efficient drop-off and pick-up monitored by school staff.
- 3) Develop a contingency plan in the unlikely event that there is an issue with queuing (e.g. car break down).
- 4) Work with neighbors and city to resolve any concerns or complaints.
- 5) Educate parents of city-preferred routes and arrival times.
- 6) Provide neighbors with advance notice of special events.
- 7) To minimize impact at the 305/Madison Ave. intersection, cars exiting the Madrona School parking lot after morning drop-off, will be directed north onto Madison Avenue during peak congestion times.
- 8) Madrona School will work with residents of Windsong Loop neighborhood to create a traffic safety plan that includes awareness of the children and commuters being picked up by buses at the shelter immediately across from the school.
- 9) Madrona School will petition the city to reduce the speed limit along Madison Avenue in the vicinity of the school to enhance safety for children and adult pedestrians.

Madrona School event parking plan

The proposed parking lot (39 spaces) has been designed to fully accommodate staff parking and guests for daily operations and parent meetings in the evenings.

Performances whose attendance will exceed the capacity of the parking lot such as all-school assemblies, class plays, and student concerts will be held off-site until the school gym/ auditorium is constructed in Phase III. At that time, overflow parking, when necessary, will be accommodated on the play field or at an off-site location with shuttle service.

For our two annual outdoor festival events (Michaelmas in late September and May Day in early May), we will partner with nearby organizations to use their parking lots and develop a shuttle system to keep cars from parking along Madison Avenue.

Description of the school gym/auditorium

In Phase III, we intend to build a multi-purpose hall to house a variety of activities. Its dimensions of 43' x 70' make it comparable in size to the Webster Hall at Island School (approximately 48' x 60' for the gym floor) or the City Council Chambers room. On a daily basis, it will be used as a gymnasium and covered recess area. An elevated platform at one end will make it suitable for presenting class plays or music performances to the parents, which occur about once a month. There will be seating on folding chairs for adults and seating on the floor for the students.

While the school may rent it from time to time to third party users, the restricted parking will make it unsuitable for regular use by church groups or large gatherings. It has not been over-designed to accommodate other uses beyond what the school needs.

Description of the outdoor areas and the lighting

Because the rural character of the site is one of its chief appeals, Madrona School is preserving as much open space on the site as possible. There will be a large garden and several distinct play areas for children of different ages. Most of the existing forest along the east, south and western boundaries of the property will be preserved. The largest open area presently, the meadow in the south-west quadrant of the property, will be retained for running and throwing games such as frisbee, dodge-ball etc. And while students may kick around a soccer ball there, it is not big enough to be a proper soccer field; there will be no striping or lighting or permanent goal posts such as are found on conventional school sports fields.

The lighting on the site will be minimal: only what is needed to safely guide visitors from the parking lot to the buildings during the evening events. We imagine low bollard-style lights shining down on the walkways. The buildings will not be lit at night except for tasteful exterior sconces at doorways. Similarly, the parking lot lighting will be low-level and will be turned on and off as needed, rather than being on continually to the extent allowed by code.

**Development Engineer
Project Review**

To: Joshua Machen, Planning Manager

From: Janelle Hitch, Development Engineer *JCH*

Date: February 7, 2017

Re: Madrona School

Related Application Number:

PLN18970-SPR/CUP

Project Description:

The proposal includes the construction of a new K-8 School including classrooms, offices, gymnasium/auditorium, driveway and parking lot. Also included is a new septic system, playfields and detention pond. The total area of the property is 4.79 acres. The property currently contains an existing residence, barn and two sheds. The land is cleared with pasture area in the center and with trees and native vegetation bordering the property. Traffic impacts will include the trips generated by 200 students and 27 teachers and staff. Two access points on Madison Avenue are proposed. A traffic impact analysis was conducted by Transportation Solutions, Inc.

The site address is 11478 N Madison Avenue NE on Bainbridge Island. The site tax parcel numbers are 112502-3-099-2008, 11502-3-102-2003, 11502-3-100-2005, 112505-3-001-2004.

Comments:

I have completed a reviewed of the above referenced project materials received by the City of Bainbridge Island. Please see the comment below for information on the proposed development.

1. The conditional use conforms to regulations concerning drainage in BIMC 15.20 and 15.21;
2. The conditional use will not cause an undue burden on the drainage basin or water quality and will not unreasonably interfere with the use and enjoyment of properties downstream;
3. The streets and pedestrian ways as proposed align with and are otherwise coordinated with streets serving adjacent properties, see additional condition.
4. The streets and pedestrian ways as proposed are adequate to accommodate anticipated traffic;

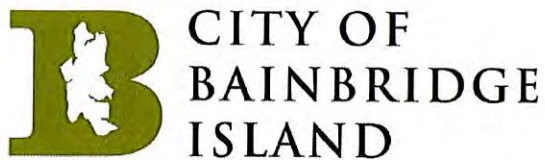
5. There is capacity in the water system to serve the conditional use, and the applicable services can be made available at the site; and
6. The conditional use conforms to the "City of Bainbridge Island Design and Construction Standards and Specifications Manual".

Proposed Conditions of Approval:

1. All on-site stormwater facilities shall remain privately owned and maintained. The owner shall be responsible for maintenance of the storm drainage facilities for this development following construction. Annual inspection and maintenance reports shall be provided to the City. A Declaration of Covenant for stormwater system operation and maintenance will be required to be recorded before issuance of occupancy permits. The approved language for the Declaration of Covenant is found in BIMC 15.21 Exhibit A.
2. Stormwater detained in the proposed detention pond will be released at a controlled rate through a control structure and ultimately out through a dispersion tee located within 25 feet of the north-eastern property line. The nearest residence downgradient of the dispersion tee is within 50 feet. The release of stormwater from the detention pond shall be monitored for a minimum of 5 years to ensure proper function of pond and control structure and to ensure stormwater release is not detrimental to the neighboring property or structures. The monitoring plan shall be developed by the project stormwater engineer, reviewed and approved by the city, and included with the overall stormwater operation and maintenance plan developed under condition number 1 above.
3. The applicant shall be responsible for verifying water pressure and fire flows are adequate from connections to water mains.

Permits Required:

1. A NPDES permit from the Department of Ecology will be required prior to ground disturbing activities.
2. A Right-of-Way permit will be required prior to any work within the right of way. The ROW permit will be subject to separate conditions and bonding requirements.



Department of Planning and Community Development

Certificate of Concurrency

Pursuant to The City of Bainbridge Island Municipal Code 15.32.040.B; the City Engineer has determined that the capacity of transportation facilities affected by the proposed development is equal to or greater than the capacity required to maintain the level of service standard for the impact of the development.

Property Location or Description: **Madrona School**
11478 N. Madison Avenue NE
Bainbridge Island, WA
Tax Parcels: 112502-3-099-2008, 11502-3-102-2003, 11502-3-100-2005,
112505-3-001-2004
Permit Number: PLN18970 SPR/CUP

Development Type: **Conditional Use Permit - School**

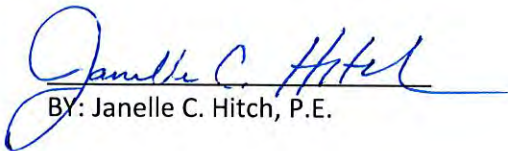
Approved Uses: **School: K-8**

Approved Intensity: **295 AM Peak Hour/185 PM Peak Hour**

Basis for Concurrency: **Attached traffic study, prepared by Transportation Solutions, Inc. (TSI), dated January 24, 2017**

Date Issued: **This certificate is effective on the issuance date of the above referenced permit number.**

Expiration Date: **This certificate expires on the earlier of: 1) The date of expiration of the above referenced permit number, or 2) Three years after the above effective (issuance) date of this certificate.**


BY: Janelle C. Hitch, P.E.

Attachments:

☐

1: Concurrency Test; or

☒

2: Traffic Analysis



8250 - 165th Avenue NE
Suite 100
Redmond, WA 98052-6628
T 425-883-4134
F 425-867-0898
www.tsinw.com

January 24, 2017

Janell Hitch, PE
Development Engineer
City of Bainbridge Island
280 Madison Ave N
Bainbridge Island, WA 98110

Subject: Madrona School SR 305 Traffic Impact Analysis
11478 Madison Avenue NE
Bainbridge Island, Washington

Dear Ms. Hitch,

This analysis is an addendum of the April 14, 2016 traffic impact analysis of the same name and focuses on traffic operations at the SR 305 and Sportsman Club Road and Madison Ave S intersection and refined school-trip generation and distribution based a request by the City of Bainbridge of additional analysis of the SR 305 intersection due to morning traffic forecasted by development of the Madrona School. This intersection was considered outside of the scope of the past traffic impact analysis report. In addition, this document updates the trip generation and traffic distribution forecasts based on new information regarding from Madrona School administration.

This document generally follows the tasks outlined in December 20, 2016 Agreement of Services.

Trip Generation

School trip generation was revised based on additional information from school administration. The trip generation was also supplemented using Institute of Transportation Engineers (ITE) data for a Private School (K-8).

Madrona School administration stated that currently they have 140 students. School administration monitored their existing traffic demand on a typical week and stated that based on their observations there are about 207 AM peak hour trips between 8 AM and 9 AM, split 122 in and 85 out.

Trip generation data for ITE land use 534, "Private School (K-8)" was used as a basis for forecasting and comparing trip generation for Madrona School. The ITE data notes that some schools surveyed include preschool classes. The ITE data was used to project afterschool trip generation.

Table 1 summarizes the AM peak hour and afterschool peak hour trip generation forecasts for the.

Madrona School is forecast to generate:

- 295 AM peak hour trips (between 8 AM and 9 AM), split 175 in and 120 out.
- 185 afterschool peak hour trips (between 2:30 PM and 3:30 PM), split 85 in and 100 out.

Table 1: Trip Generation Madrona School

AM Peak Hour	Students	Trip Rate	Trips-In	Trips-Out	Total
ITE	140	0.92 ¹	71	58	129
Observed	140	1.48 ²	122	85	207
Proposed	200	1.48 ²	175	120	295
Afterschool Peak Hour	Students	Trip Rate	Trips-In	Trips-Out	Total
ITE	140	0.58 ^{3,4}	38	43	81
Calculated	140	0.93 ⁵	60	70	130
Proposed	200	0.93 ⁵	85	100	185

1. Rate from ITE fitted curve equation ($T = 0.90(X) + 3.01$). Range of observed rates 0.75 to 1.58
2. Resulting rate from school administration's count of existing traffic
3. ITE PM peak hour of generator, which represents afterschool (2:30-3:30 PM) peak period
4. Rate from ITE fitted curve equation ($T = 0.61(X) + 3.01$). Range of observed rates 0.42 to 0.75
5. Rate computed as ratio between the AM ITE rate and observed school rate and PM ITE rate

The trip generation above is between 18 (6%) AM peak hour and 33 (15%) afterschool peak hour trips less than the April 2016 trip generation forecast.

The trip generation analysis, above, accounts for current arrival and departure patterns at the existing Madrona School campus in Downtown Bainbridge Island. Also, the trip generation forecast includes more current data, compared to the April 2016 traffic analysis, of carpooling, families with multiple-children at the school and staff with students at the school. This trip generation analysis assumes that the student-to-vehicle ratios observed at the existing campus will remain with the Lowry Farm campus.

The trip generation above is greater than the average trip rates documented by ITE. The observed AM peak hour trip rate is at the upper end of the range of trip rates compiled by ITE; and is reasonable. The afterschool trip rate is greater than range of trip rates compiled by ITE. Madrona School does not offer afterschool programs, like some of the ITE uses; and thus, a higher afterschool peak hour trip generation is reasonable with students, faculty and staff departing at the end of classes and before 4 PM

The City of Bainbridge Island's Transportation Concurrency requirements are based on traffic impacts generated during the traditional 4-6 PM peak hour-period. Like the April 2016 analysis, Madrona School traffic during the PM peak hour is negligible; and thus, the proposal will continue to satisfy Transportation Concurrency, and is not required to provide concurrency-related mitigation.

Trip Assignment

Trips were assigned to the future campus based on the addresses of the current study population. In addition, the trip distribution was adjusted based on employment centers in the area. Current enrollment show about 50% of school families north of Lowry Farm and 50% south of Lowry Farm.

The April 2016 analysis, assumed a more school traffic from the south, specifically via the SR 305/Sportsman Club Road/Madison Avenue NE intersection (65% of the traffic to/from the south of NE Valley Road), this was assumed based on the school's location in downtown Bainbridge Island. Based on the current distribution of the student population, based on addresses, there are more students residing to the north of Bainbridge Island, than previously assumed. The change in traffic distribution suggests more vehicle traffic to and from the north of the Lowry Farm campus.

Figure 1 illustrates the forecasted AM peak hour trip distribution and assignment and **Figure 2** illustrates the forecasted afterschool peak hour trip distribution and assignment.

Traffic Volumes

This analysis focuses on traffic impacts at the SR 305/Sportsman Club Road/Madison Avenue NE intersection. This section presents the volume analysis related to SR 305/Sportsman Club Road/Madison Avenue NE and local intersection at Moran Road NE and NE Wardwell Road.

2016 Conditions

Peak hour intersection turning movement volumes were collected at Sportsman Club Road/Wardwell Road; SR 305/Sportsman Club Road/Madison Avenue NE; and Madison Avenue NE /Moran Road NE on Thursday, December 1, 2016 between 7 and 9 AM and between 2 and 5 PM. The count times capture school generated traffic volumes.

These intersections were not part of the April 2016 traffic impact analysis. AM peak hour traffic volumes were collected in 2015 at the SR 305/Sportsman Club Road/Madison Avenue NE; and Madison Avenue NE /Moran Road NE intersections for a separate development in the Rolling Bay neighborhood. **Table 1** compares the year 2015 and year 2016 AM peak hour traffic volumes and shows that total intersection traffic volumes, since 2015, have increased by 16% at the SR 305 intersection and by 7% at the Moran Road NE intersection.

Table 1: Comparison of 2015 and 2016 AM Peak Hour Volumes

Intersection	Year	EB Vol.	WB Vol.	NB Vol.	SB Vol.	Total Vol.
SR 305/Sportsman/Madison	2015 ¹	218	337	290	824	1,669
	2016 ²	206	320	480	937	1,943
Madison/Moran	2015 ¹	148	397	20	-	565
	2016 ²	205	358	39	-	602

1. Count Date: December 1, 2015

2. Count Date: December 1, 2016

Year 2016 intersection volumes are illustrated in **Figure 3**, for the AM peak hour (7:30-8:30 AM), and **Figure 4** (3:15-4:15 PM), for the afterschool peak hour. The school is closed by 4 PM and does not generate a noticeable amount of traffic during the PM peak hour; thus, traditional PM peak hour traffic impacts are not evaluated in detail in this report. Non-school volumes are rounded to the nearest multiple of 5 to account of typical daily variations in traffic volumes.

2018 Conditions

Year 2018 traffic conditions were forecast to evaluate conditions present with opening of the school.

Background, non-school conditions include traffic growth related to general traffic growth in the region and trips generated by new development. Consistent with past analyses a 1% annual growth rate was applied to the 2016 conditions over a two-year period to forecast background non-school related traffic conditions. Also, traffic generated by the proposed development of Sunrise Square, formerly Rolling Bay Mixed-Use, at the NE Valley Road and Sunrise Drive NE was also included to forecast future background, non-school, conditions.

School-generate peak hour traffic was superimposed onto the future background conditions to forecast future conditions with the school occupied.

The year 2018 AM and afterschool peak hour volumes are illustrated in **Figures 3 and 4**. The April 2016 traffic impact analysis reviewed conditions through year 2017. To be conservative this analysis used 2018 as the horizon analysis year, to represent future conditions with the Lowry Farm site occupied.

2040 Conditions

Year 2040 traffic conditions represent a comprehensive, long-term, look at traffic conditions with the school in operation. Year 2040 is consistent with future planned efforts by the City and with recent traffic analysis completed by TSI for the City.

Background, non-school conditions include a 1% annual traffic growth rate and trips generated by Sunrise Square. School-generate peak hour traffic was superimposed onto the future background conditions to forecast future conditions with the school operational.

The year 2040 AM and afterschool peak hour volumes are illustrated in **Figures 3 and 4**. The April 2016 traffic impact analysis reviewed conditions through year 2030.

Level of Service and Mitigation

This section evaluates intersection operations at the study intersections and reviews options to mitigate traffic impacts, as applicable. Traffic operations were reviewed based on the Highway Capacity Manual intersection level of service (LOS) methods.

A less than 10% increase in traffic volume on Madison Avenue NE will not significantly impact the intersection LOS along Madison Avenue NE near the school or at NE Valley Road. The April 2016 analysis showed these intersections continuing to operate well, at LOS B or better, currently and in year 2030. Level of service near the school is acceptable and was not reevaluated. With a lower trip generation forecast and shift in school-traffic volumes to the north, traffic impacts in the vicinity of the school will be similar or less than reported in the April 2016 traffic analysis.

2016 Conditions

Table 2 summarizes the existing 2016 AM and afterschool traffic operations.

Table 2: 2016 Existing AM and Afterschool LOS

	LOS	Delay ¹	V/C ²	Volume
AM Peak Hour				
Sportsman Club/Wardwell	B	11.2	0.07	450
SR 305/Sportsman/Madison	D	36.9	0.88	1,945
Madison/Moran	A	9.5	0.06	605
Afterschool Peak Hour				
Sportsman Club/Wardwell	B	10.8	0.02	510
SR 305/Sportsman/Madison	D	37.0	0.90	2,180
Madison/Moran	B	10.1	0.07	625

1. Seconds of vehicles delay
2. Volume-to-Capacity ratio for the worst movement

The study intersections operate at LOS D or better. The WSDOT LOS threshold is "D" at the SR 305 intersection. The City of Bainbridge Island LOS threshold is "C" at the other intersections. The study intersections satisfy the LOS standards.

2018 Conditions

Table 3 summarizes the future 2018 AM and afterschool traffic operations.

In 2018 with Madrona School at Lowry Farm, the study intersections operate at LOS D or better. The WSDOT LOS threshold is "D" at the SR 305 intersection. The City of Bainbridge Island LOS threshold is "C" at the other intersections. The study intersections satisfy the LOS standards.

Table 3: 2018 Without and With School AM and Afterschool LOS

	Without School				With School			
	LOS	Delay ¹	V/C ²	Volume	LOS	Delay ¹	V/C ²	Volume
AM Peak Hour								
Sportsman Club/Wardwell	B	11.3	0.06	460	B	12.3	0.07	504
SR 305/Sportsman/Madison	D	40.1	0.89	1,990	D	52.8	0.92	2,120
Madison/Moran	A	9.6	0.06	620	B	10.3	0.09	768
Afterschool Peak Hour								
Sportsman Club/Wardwell	B	10.9	0.02	525	B	11.5	0.02	553
SR 305/Sportsman/Madison	D	40.9	0.91	2,230	D	50.1	0.97	2,315
Madison/Moran	B	10.6	0.08	645	B	10.5	0.10	738

1. Seconds of vehicles delay

2. Volume-to-Capacity ratio for the worst movement

Year 2018 conditions with the school document SEPA responsibility for the proposed school. The study intersections operate within the acceptable thresholds; and thus, the school is not responsible for SEPA-related mitigation.

2040 Conditions

Table 4 summarizes the future 2040 AM and afterschool traffic operations. Year 2040 conditions are included to assist the City of Bainbridge Island with long-range comprehensive planning.

Table 4: 2040 Without and With School AM and Afterschool LOS

	Without School				With School			
	LOS	Delay ¹	V/C ²	Volume	LOS	Delay ¹	V/C ²	Volume
AM Peak Hour								
Sportsman Club/Wardwell	B	12.1	0.09	575	B	12.5	0.09	619
SR 305/Sportsman/Madison	F	83.7	1.11	2,470	F	95.9	1.21	2,600
Madison/Moran	A	9.8	0.07	775	B	10.4	0.10	923
Afterschool Peak Hour								
Sportsman Club/Wardwell	B	11.6	0.02	645	B	11.9	0.02	673
SR 305/Sportsman/Madison	E	80.0	1.13	2,775	F	89.8	1.16	2,860
Madison/Moran	B	10.8	0.10	810	B	11.2	0.12	903

1. Seconds of vehicles delay

2. Volume-to-Capacity ratio for the worst movement

In 2040 without Madrona School at Lowry Farm, the SR 305 intersection operates at LOS F. The other study intersections operate at LOS C or better. The WSDOT LOS threshold is "D" at the SR 305 intersection. The City of Bainbridge Island LOS threshold is "C" at the other intersections. The SR 305 intersection does not satisfy the LOS standards, for conditions without and with the school.

An improvement option to address the LOS F conditions forecast in year 2040 is to modify the SR 305 signal with eastbound and westbound left turn lanes and updated signal phasing to allow concurrent and "protected" eastbound and westbound left turns and to restrict left turns to Moran Road NE from Madison Avenue NE.

Table 5 compares the intersection LOS in 2040 without and with the school with the improvement. The traffic conditions at the Sportsman Club Road NE intersection with Wardwell Road do not change with the improvement.

Table 5: 2040 Without and With School AM and Afterschool LOS with Improvements

	Without School				With School			
	LOS	Delay ¹	V/C ²	Volume	LOS	Delay ¹	V/C ²	Volume
AM Peak Hour								
Sportsman Club/Wardwell	B	12.1	0.09	575	B	12.5	0.09	619
SR 305/Sportsman/Madison	D	38.1	0.99	2,520	D	43.0	1.00	2,650
Madison/Moran	A	9.8	0.07	775	B	10.4	0.10	923
Afterschool Peak Hour								
Sportsman Club/Wardwell	B	11.6	0.02	645	B	11.9	0.02	673
SR 305/Sportsman/Madison	D	37.4	0.96	2,835	D	41.4	0.98	2,920
Madison/Moran	B	10.8	0.10	810	B	11.2	0.12	903

1. Seconds of vehicles delay
2. Volume-to-Capacity ratio for the worst movement

With the improvements, the SR 305 intersection with Sportsman Club Road and Madison Avenue NE operates at LOS D and satisfies the WSDOT LOS F threshold.

The volume-to-capacity (V/C) ratios at the SR 305/Sportsman Club Road/Madison Avenue NE intersection are at 1.00 or approaching 1.00 with the improvements. The V/C ratio is a measure of a movement's capacity, and while the V/C ratios are improved with the proposed signal modifications, they are still likely to show congestion in year 2040.

Madrona School traffic makes up about 5.2% of the year 2040 AM peak hour traffic and about 3.0% of the year 2040 afterschool peak hour traffic through the SR 305 intersection.

Site Access/Circulation

Using the ITE data and the proposed school's trip generation is less than what was forecast in the April 2016 traffic study. The ITE data is a reasonable representation of the school's traffic generation, based on information from school administration on the nature of the proposed campus's operations.

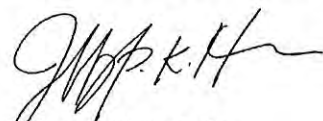
Furthermore, the staggering of class times by administration will help to offset the rush to school traffic at the campus.

The distribution of school traffic to and from the campus is generally split 45/55 to the north and south of Lowry Farm. Compared to the April 2016 traffic study, more traffic will be destined to/from the north of Lowry Farm. The distribution and slightly lower trip generation creates fewer impacts to the Windsong Loop NE community and area to the south of the campus.

Overall, the conclusions from the April 2016 traffic study are similar with this amended traffic analysis.

We trust that this updated information will assist you with your planning needs. Please contact TSI at your convenience.

Thank you,
Transportation Solutions, Inc.



Jeffrey P. K. Hee, PE
Project Engineer





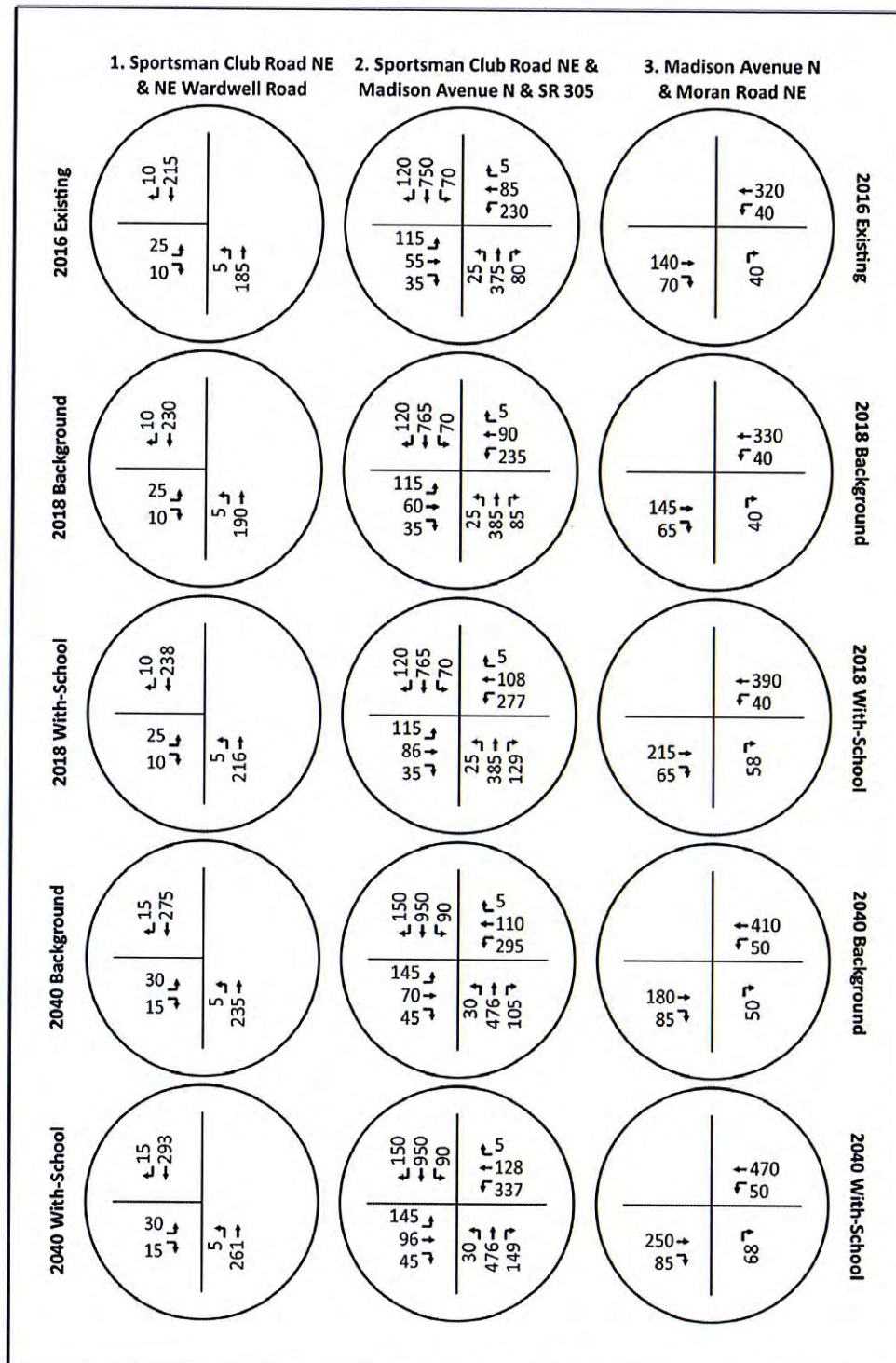


Figure 3: AM Peak Hour Volumes

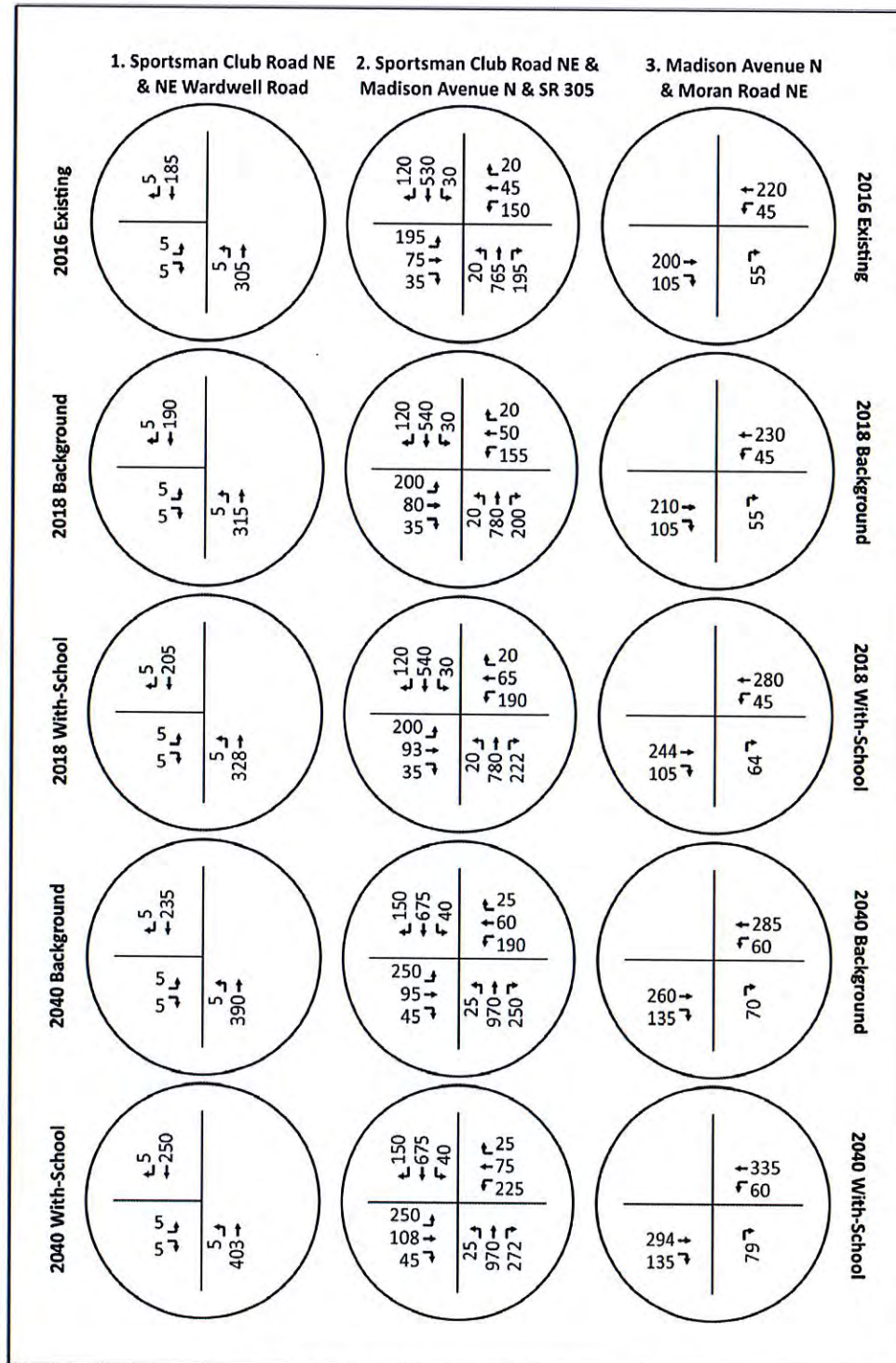


Figure 4: Afterschool Peak Hour Volumes



Prepared for: **Transportation Solutions, Inc.**
Traffic Count Consultants, Inc.

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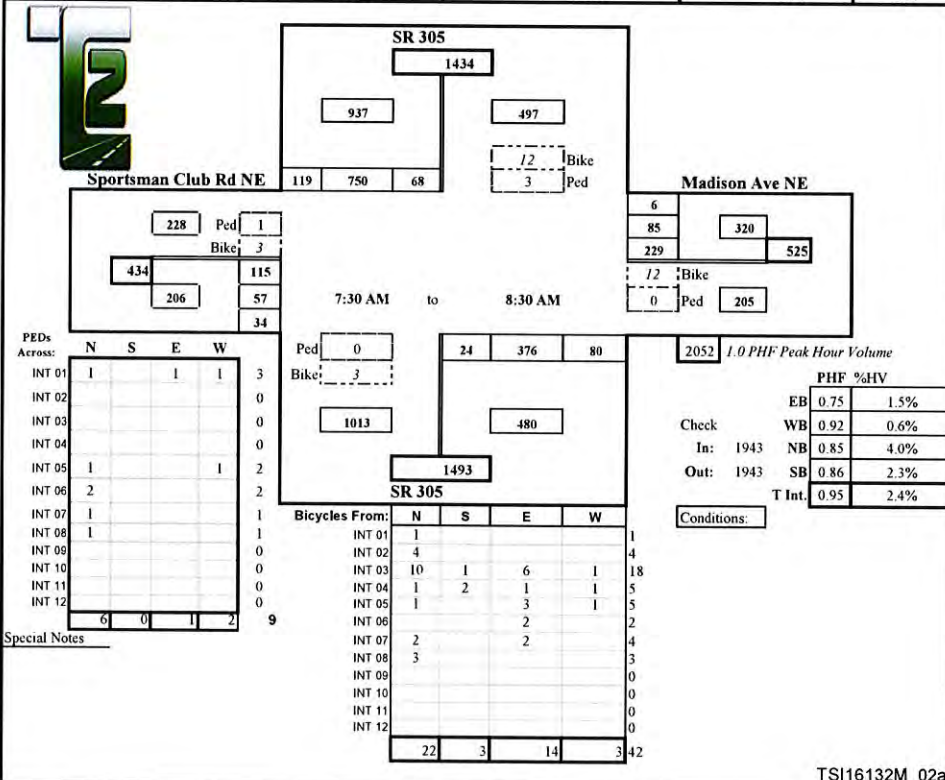
WBE/DBE

Intersection: SR 305 & Madison Ave NE/Sportsman Club Rd NE
Location: Bainbridge Island, Washington

Date of Count: Thurs 12/01/2016
Checked By: Jess

Time Interval	From North on (SB)				From South on (NB)				From East on (WB)				From West on (EB)				Interval Total
	T	L	S	R	T	L	S	R	T	L	S	R	T	L	S	R	
7:15 A	4	3	135	23	10	4	68	10	1	17	4	5	1	17	4	1	291
7:30 A	7	7	202	23	3	3	44	5	2	46	8	5	1	15	6	4	368
7:45 A	9	39	200	32	5	8	89	22	0	56	16	1	2	20	12	5	500
8:00 A	4	14	202	29	9	8	120	13	0	51	29	2	1	27	12	6	513
8:15 A	5	6	174	31	1	3	69	20	2	60	15	3	0	32	16	7	436
8:30 A	4	9	174	27	4	5	98	25	0	62	25	0	0	36	17	16	494
8:45 A	7	4	144	26	6	4	122	28	1	74	14	8	2	35	17	19	495
9:00 A	12	14	171	27	4	3	88	19	1	60	13	4	0	27	10	9	445
9:15 A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:30 A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45 A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:00 A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Total Survey	52	96	1402	218	42	38	698	142	7	426	124	28	7	209	94	67	3542
Peak Hour: 7:30 AM to 8:30 AM																	
Total	22	68	750	119	19	24	376	80	2	229	85	6	3	115	57	34	1943
Approach	937				480				320				206				1943
%HV	2.3%				4.0%				0.6%				1.5%				2.4%
PHF	0.86				0.85				0.92				0.75				0.95





Prepared for: **Transportation Solutions, Inc.**

Traffic Count Consultants, Inc.

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WBE/DBE

Intersection: SR 305 & Madison Ave NE/Sportsman Club Rd NE

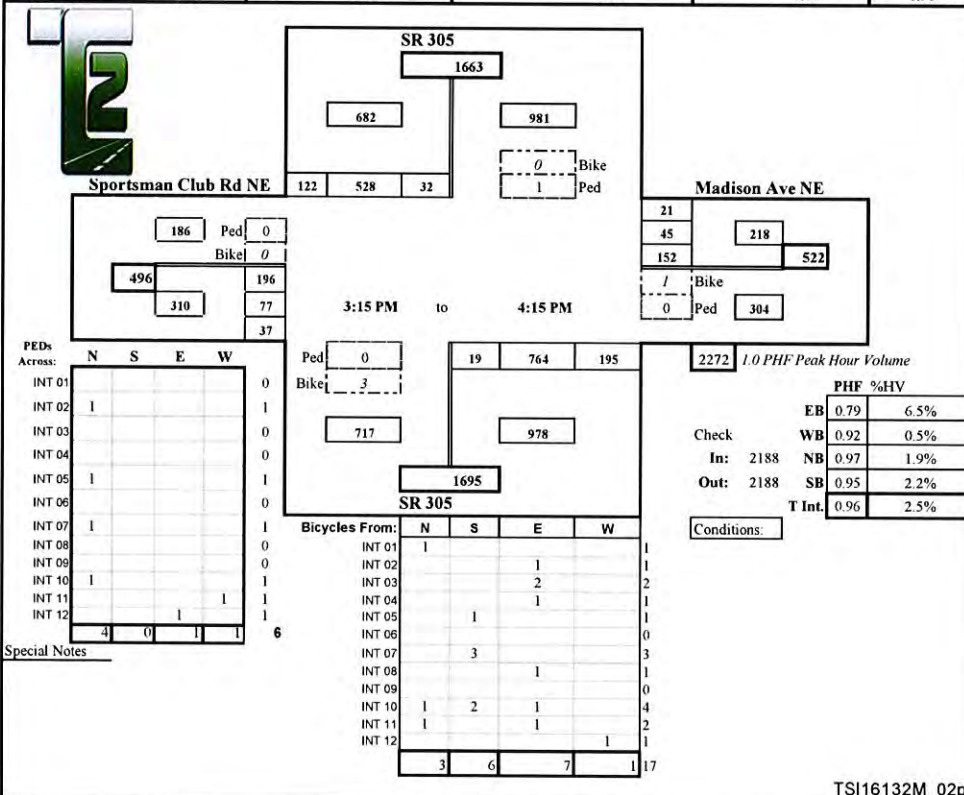
Date of Count: Thurs 12/01/2016

Location: Bainbridge Island, Washington

Checked By: Jess

Time Interval	From North on (SB) SR 305				From South on (NB) SR 305				From East on (WB) Madison Ave NE				From West on (EB) Sportsman Club Rd NE				Interval Total
Ending at	T	L	S	R	T	L	S	R	T	L	S	R	T	L	S	R	
2:15 P	3	7	110	18	12	2	142	41	0	31	7	6	3	29	9	5	407
2:30 P	3	9	148	15	8	6	130	26	0	26	15	11	2	30	9	2	427
2:45 P	8	3	162	26	1	9	172	35	1	40	16	6	5	32	7	6	514
3:00 P	2	5	131	24	3	14	221	42	4	45	25	4	0	28	9	8	556
3:15 P	12	6	114	30	4	11	133	44	1	37	15	3	2	41	19	13	466
3:30 P	8	4	149	27	5	7	201	35	0	39	4	4	4	64	18	16	568
3:45 P	1	9	128	30	3	3	200	49	0	39	11	4	9	52	25	7	557
4:00 P	4	8	120	31	7	5	188	58	0	37	13	8	4	37	13	4	522
4:15 P	2	11	131	34	4	4	175	53	1	37	17	5	3	43	21	10	541
4:30 P	3	6	123	27	4	10	184	55	0	41	12	4	4	32	19	6	519
4:45 P	1	6	118	19	1	6	147	47	1	29	7	3	1	32	17	6	437
5:00 P	1	2	118	12	2	3	128	32	0	23	3	3	0	25	11	4	364

Total Survey	48	76	1552	293	54	80	2021	517	8	424	145	61	37	445	177	87	5878
Peak Hour: 3:15 PM to 4:15 PM																	
Total	15	32	528	122	19	19	764	195	1	152	45	21	20	196	77	37	2188
Approach	682				978				218				310				2188
%HV	2.2%				1.9%				0.5%				6.5%				2.5%
PHF	0.95				0.97				0.92				0.79				0.96



TS16132M_02p



Prepared for: **Transportation Solutions, Inc.**

Traffic Count Consultants, Inc.

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WBE/DBE

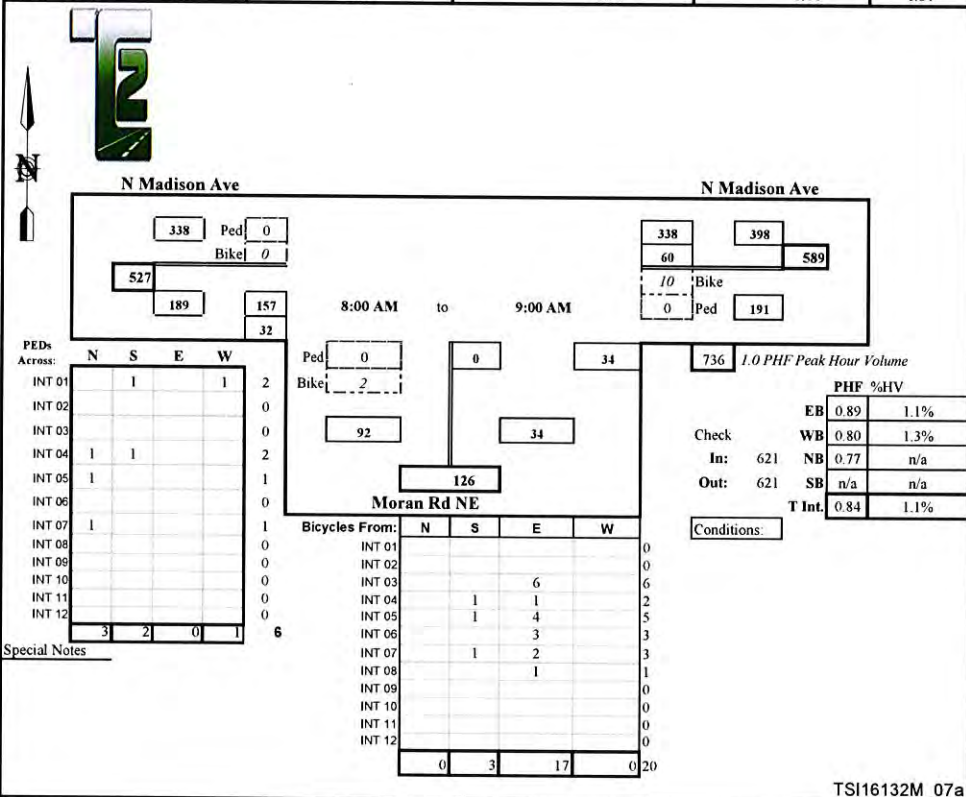
Intersection: Moran Rd NE & N Madison Ave

Date of Count: Thurs 12/01/2016

Location: Bainbridge Island, Washington

Checked By: Jess

Time Interval Ending at	From North on (SB)				From South on (NB)				From East on (WB)				From West on (EB)				Interval Total
	T	L	S	R	T	L	S	R	T	L	S	R	T	L	S	R	
7:15 A	0	0	0	0	1	2	0	9	0	3	24	0	0	0	15	2	55
7:30 A	0	0	0	0	0	0	0	1	0	2	59	0	3	0	11	7	80
7:45 A	0	0	0	0	0	0	0	14	0	7	73	0	1	0	36	37	167
8:00 A	0	0	0	0	0	0	0	9	1	5	82	0	1	0	25	14	135
8:15 A	0	0	0	0	0	0	0	6	3	7	78	0	0	0	36	6	133
8:30 A	0	0	0	0	0	0	0	10	0	19	87	0	1	0	41	10	167
8:45 A	0	0	0	0	0	0	0	7	1	28	96	0	0	0	49	4	184
9:00 A	0	0	0	0	0	0	0	11	1	6	77	0	1	0	31	12	137
9:15 A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:30 A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45 A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:00 A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Survey	0	0	0	0	1	2	0	67	6	77	576	0	7	0	244	92	1058
Peak Hour: 8:00 AM to 9:00 AM																	
Total	0	0	0	0	0	0	0	34	5	60	338	0	2	0	157	32	621
Approach	0				34				398				189				621
%HV	n/a				n/a				1.3%				1.1%				1.1%
PHF	n/a				0.77				0.80				0.89				0.84



TS16132M_07a



Prepared for: **Transportation Solutions, Inc.**

Traffic Count Consultants, Inc.

Phone: (253) 926-6009 FAX: (253) 922-7211 E-Mail: Team@TC2inc.com

WBE/DBE

Intersection: Moran Rd NE & N Madison Ave

Date of Count: Thurs 12/01/2016

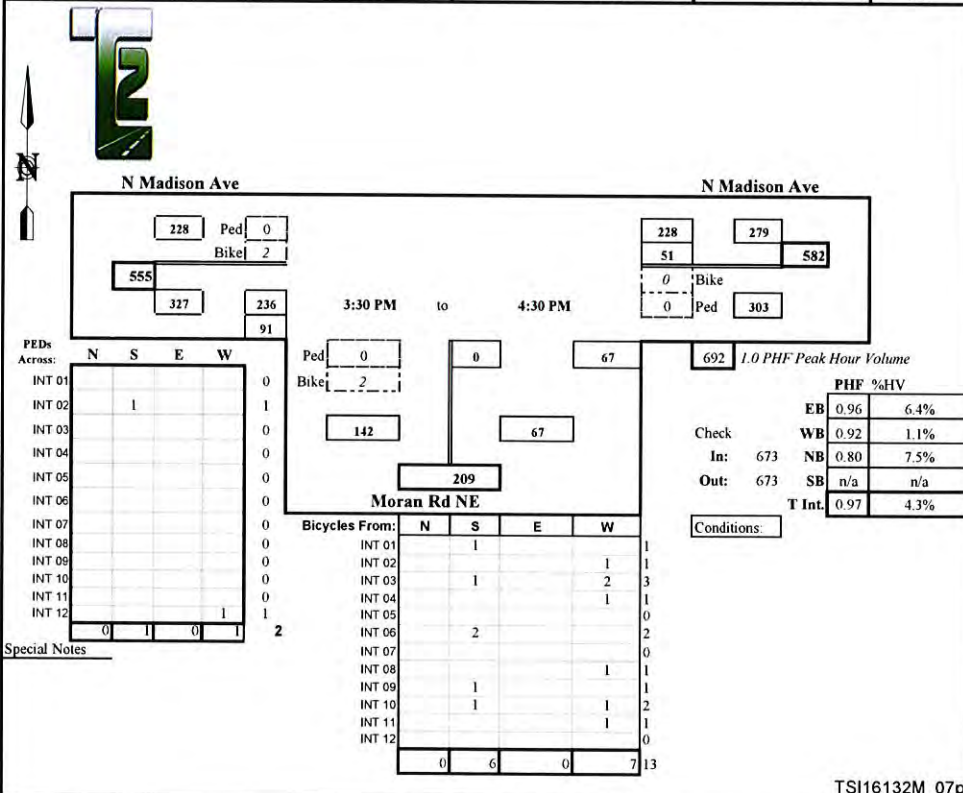
Location: Bainbridge Island, Washington

Checked By: Jess

Time Interval Ending at	From North on (SB)				From South on (NB)				From East on (WB)				From West on (EB)				Interval Total
	T	L	S	R	T	L	S	R	T	L	S	R	T	L	S	R	
2:15 P	0	0	0	0	0	0	0	5	1	3	44	0	3	0	55	2	109
2:30 P	0	0	0	0	2	0	0	12	4	6	52	0	6	0	33	11	114
2:45 P	0	0	0	0	1	0	0	7	2	12	62	0	7	0	27	18	126
3:00 P	0	0	0	0	1	0	0	11	5	12	74	0	1	0	35	21	153
3:15 P	0	0	0	0	0	0	0	11	2	16	55	0	2	0	43	26	151
3:30 P	0	0	0	0	0	0	0	9	0	6	47	0	4	0	25	32	119
3:45 P	0	0	0	0	2	0	0	15	0	12	54	0	9	0	51	32	164
4:00 P	0	0	0	0	2	0	0	12	2	18	58	0	5	0	58	21	167
4:15 P	0	0	0	0	1	0	0	19	1	10	59	0	3	0	64	21	173
4:30 P	0	0	0	0	0	0	0	21	0	11	57	0	4	0	63	17	169
4:45 P	0	0	0	0	0	0	0	23	1	7	39	0	1	0	59	11	139
5:00 P	0	0	0	0	0	0	0	14	0	5	29	0	0	0	38	7	93

Total Survey	0	0	0	0	9	0	0	159	18	118	630	0	45	0	551	219	1677
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Peak Hour: 3:30 PM to 4:30 PM																	
Total	0	0	0	0	5	0	0	67	3	51	228	0	21	0	236	91	673
Approach	0				67				279				327				673
%HV	n/a				7.5%				1.1%				6.4%				4.3%
PHF	n/a				0.80				0.92				0.96				0.97



TSI16132M_07p



Prepared for: **Transportation Solutions, Inc.**

Traffic Count Consultants, Inc.

Phone: (253) 926-6009 FAX: (253) 922-7211 E-Mail: Team@TC2inc.com

WBE/DBE

Intersection: Sportsman Club Rd NE & NE Wardwell Rd

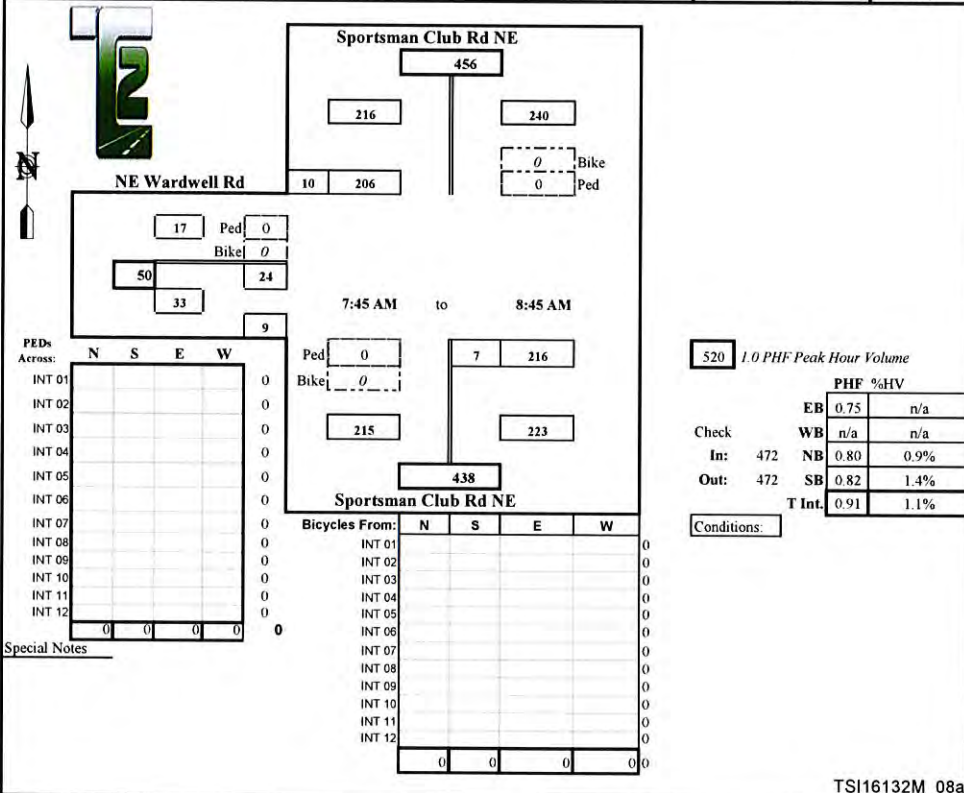
Date of Count: Thurs 12/01/2016

Location: Bainbridge Island, Washington

Checked By: Jess

Time Interval	From North on (SB) Sportsman Club Rd NE				From South on (NB) Sportsman Club Rd NE				From East on (WB) 0				From West on (EB) NE Wardwell Rd				Interval Total
Ending at	T	L	S	R	T	L	S	R	T	L	S	R	T	L	S	R	
7:15 A	1	0	28	3	1	0	19	0	0	0	0	0	0	3	0	0	53
7:30 A	2	0	32	2	1	1	21	0	0	0	0	0	2	4	0	6	66
7:45 A	0	0	54	2	2	1	34	0	0	0	0	0	0	3	0	2	96
8:00 A	1	0	63	3	0	3	41	0	0	0	0	0	0	4	0	4	118
8:15 A	1	0	45	4	0	0	46	0	0	0	0	0	0	9	0	2	106
8:30 A	1	0	55	2	0	1	62	0	0	0	0	0	0	7	0	3	130
8:45 A	0	0	43	1	2	3	67	0	0	0	0	0	0	4	0	0	118
9:00 A	3	0	42	1	1	2	39	0	0	0	0	0	0	7	0	1	92
9:15 A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:30 A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45 A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:00 A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Total Survey	9	0	362	18	7	11	329	0	0	0	0	0	2	41	0	18	779
Peak Hour: 7:45 AM to 8:45 AM																	
Total	3	0	206	10	2	7	216	0	0	0	0	0	0	24	0	9	472
Approach	216				223				0				33				472
%HV	1.4%				0.9%				n/a				n/a				1.1%
PHF	0.82				0.80				n/a				0.75				0.91



TS16132M_08a



Prepared for: **Transportation Solutions, Inc.**

Traffic Count Consultants, Inc.

Phone: (253) 926-6009 FAX: (253) 922-7211 E-Mail: Team@TC2inc.com

WBE/DBE

Intersection: Sportsman Club Rd NE & NE Wardwell Rd

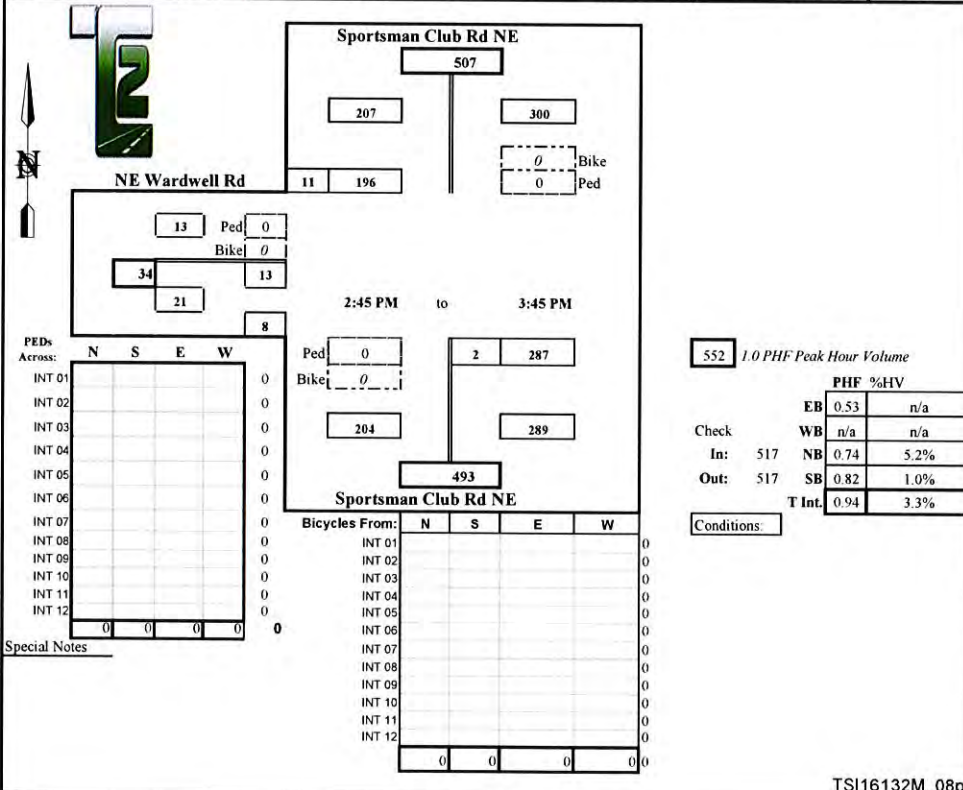
Date of Count: Thurs 12/01/2016

Location: Bainbridge Island, Washington

Checked By: Jess

Time Interval	From North on (SB) Sportsman Club Rd NE				From South on (NB) Sportsman Club Rd NE				From East on (WB) 0				From West on (EB) NE Wardwell Rd				Interval Total
Ending at	T	L	S	R	T	L	S	R	T	L	S	R	T	L	S	R	
2:15 P	2	0	26	1	3	0	41	0	0	0	0	0	0	2	0	2	72
2:30 P	3	0	32	4	2	1	39	0	0	0	0	0	0	2	0	1	79
2:45 P	2	0	48	3	5	2	41	0	0	0	0	0	0	4	0	1	99
3:00 P	0	0	56	7	0	0	42	0	0	0	0	0	0	3	0	4	112
3:15 P	0	0	54	2	2	1	66	0	0	0	0	0	0	7	0	3	133
3:30 P	1	0	37	1	4	1	97	0	0	0	0	0	0	1	0	1	138
3:45 P	1	0	49	1	9	0	82	0	0	0	0	0	0	2	0	0	134
4:00 P	0	0	46	3	4	3	53	0	0	0	0	0	0	1	0	2	108
4:15 P	2	0	54	1	3	0	73	0	0	0	0	0	0	1	0	1	130
4:30 P	0	0	47	2	4	1	54	0	0	0	0	0	0	3	0	1	108
4:45 P	1	0	30	2	1	0	53	0	0	0	0	0	0	2	0	3	90
5:00 P	0	0	17	1	0	0	38	0	0	0	0	0	0	2	0	0	58

Total Survey	12	0	496	28	37	9	679	0	0	0	0	0	0	30	0	19	1261
Peak Hour: 2:45 PM to 3:45 PM																	
Total	2	0	196	11	15	2	287	0	0	0	0	0	0	13	0	8	517
Approach	207				289				0				21				517
%HV	1.0%				5.2%				n/a				n/a				3.3%
PHF	0.82				0.74				n/a				0.53				0.94



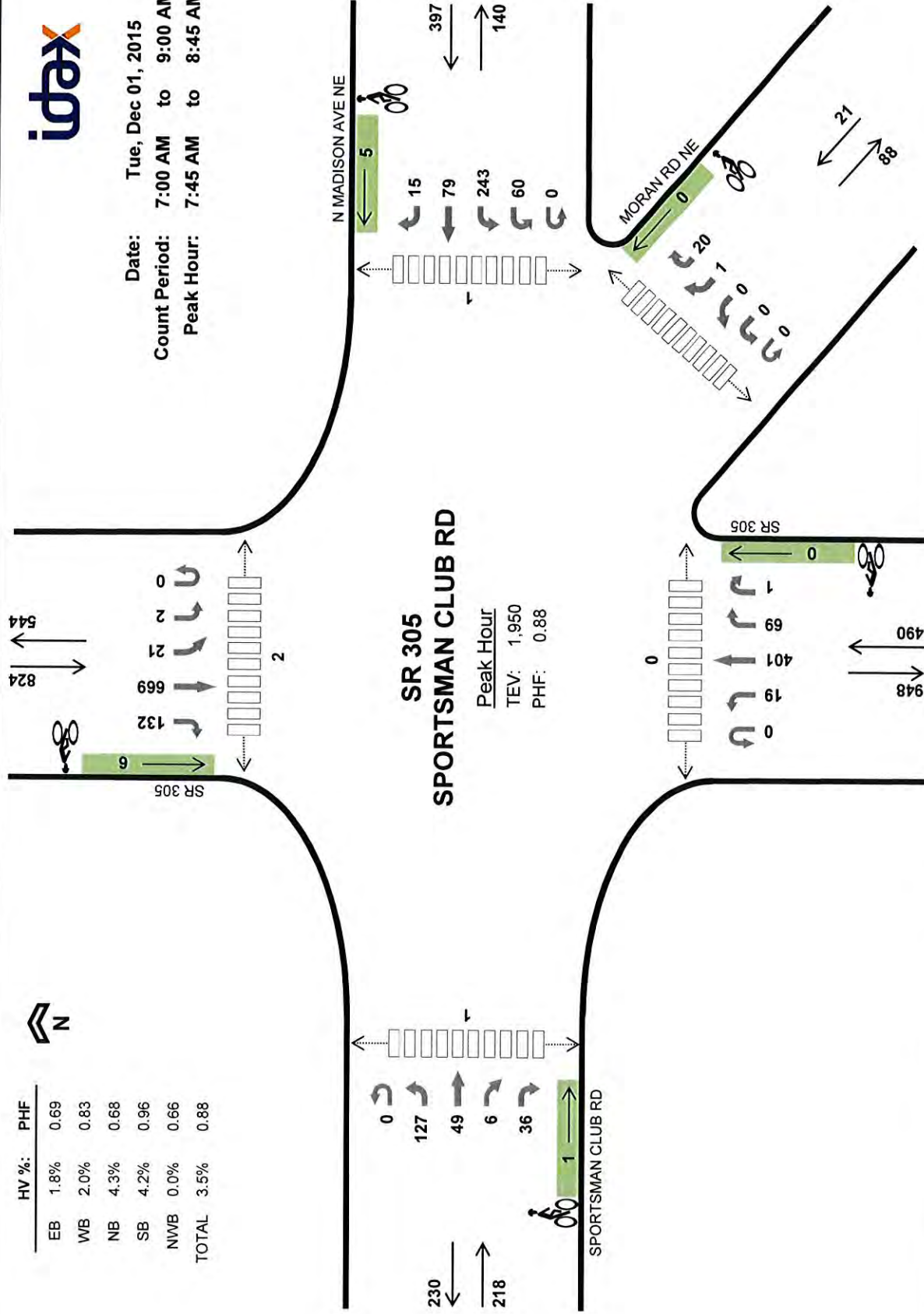
TS16132M_08p



HV %:	PHF
EB 1.8%	0.69
WB 2.0%	0.83
NB 4.3%	0.68
SB 4.2%	0.96
NWB 0.0%	0.66
TOTAL 3.5%	0.88



Date: Tue, Dec 01, 2015
 Count Period: 7:00 AM to 9:00 AM
 Peak Hour: 7:45 AM to 8:45 AM



Two-Hour Count Summaries

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval	Heavy Vehicle Totals
0-10	10
10-20	10
20-30	10
30-40	10
40-50	10
50-60	10
60-70	10
70-80	10
80-90	10
90-100	10
TOTAL	100

Interval	Heavy Vehicle Totals
0-10	10
10-20	10
20-30	10
30-40	10
40-50	10
50-60	10
60-70	10
70-80	10
80-90	10
90-100	10
TOTAL	100

HCM 2010 TWSC
1: Sportsman Club Rd & Wardwell Rd

Madrona School SR 305 Analysis
2016 Existing AM

Intersection						
Int Delay, s/veh	1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	25	10	5	185	215	10
Future Vol, veh/h	25	10	5	185	215	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	0	0	0	1	1	0
Mvmt Flow	27	11	5	203	236	11

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	456	242	247	0	0
Stage 1	242	-	-	-	-
Stage 2	214	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-
Pot Cap-1 Maneuver	566	802	1331	-	-
Stage 1	803	-	-	-	-
Stage 2	826	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	564	802	1331	-	-
Mov Cap-2 Maneuver	564	-	-	-	-
Stage 1	803	-	-	-	-
Stage 2	823	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.2	0.2	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1331	-	616	-	-
HCM Lane V/C Ratio	0.004	-	0.062	-	-
HCM Control Delay (s)	7.7	0	11.2	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

HCM 2010 Signalized Intersection Summary
2: SR 305 & Sportsman Club Rd/Madison Ave

Madrona School SR 305 Analysis
2016 Existing AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	115	55	35	230	85	5	25	375	80	70	750	120
Future Volume (veh/h)	115	55	35	230	85	5	25	375	80	70	750	120
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1881	1900	1827	1827	1827	1863	1863	1863
Adj Flow Rate, veh/h	121	58	37	242	89	5	26	395	84	74	789	126
Adj No. of Lanes	0	1	0	0	1	0	1	1	1	1	1	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	1	1	1	4	4	4	2	2	2
Cap, veh/h	141	67	43	278	102	6	35	817	695	95	896	762
Arrive On Green	0.14	0.14	0.14	0.21	0.21	0.21	0.02	0.45	0.45	0.05	0.48	0.48
Sat Flow, veh/h	986	473	302	1304	480	27	1740	1827	1553	1774	1863	1583
Grp Volume(v), veh/h	216	0	0	336	0	0	26	395	84	74	789	126
Grp Sat Flow(s),veh/h/ln	1760	0	0	1811	0	0	1740	1827	1553	1774	1863	1583
Q Serve(g_s), s	13.4	0.0	0.0	20.0	0.0	0.0	1.7	17.0	3.5	4.6	42.6	5.0
Cycle Q Clear(g_c), s	13.4	0.0	0.0	20.0	0.0	0.0	1.7	17.0	3.5	4.6	42.6	5.0
Prop In Lane	0.56		0.17	0.72		0.01	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	251	0	0	386	0	0	35	817	695	95	896	762
V/C Ratio(X)	0.86	0.00	0.00	0.87	0.00	0.00	0.75	0.48	0.12	0.78	0.88	0.17
Avail Cap(c_a), veh/h	331	0	0	584	0	0	62	1064	904	191	1218	1035
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	46.8	0.0	0.0	42.4	0.0	0.0	54.4	21.7	18.0	52.2	26.1	16.3
Incr Delay (d2), s/veh	16.1	0.0	0.0	9.0	0.0	0.0	27.6	0.4	0.1	12.7	6.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.7	0.0	0.0	11.0	0.0	0.0	1.1	8.7	1.5	2.6	23.2	2.2
LnGrp Delay(d),s/veh	62.9	0.0	0.0	51.5	0.0	0.0	82.0	22.2	18.1	64.9	32.0	16.4
LnGrp LOS	E			D			F	C	B	E	C	B
Approach Vol, veh/h	216			336			505			989		
Approach Delay, s/veh	62.9			51.5			24.6			32.5		
Approach LOS	E			D			C			C		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	4		5	6	8					
Phs Duration (G+Y+Rc), s	10.0	53.9	19.9		6.2	57.7	27.8					
Change Period (Y+Rc), s	4.0	4.0	4.0		4.0	4.0	4.0					
Max Green Setting (Gmax), s	12.0	65.0	21.0		4.0	73.0	36.0					
Max Q Clear Time (g_c+I1), s	6.6	19.0	15.4		3.7	44.6	22.0					
Green Ext Time (p_c), s	0.1	10.1	0.5		0.0	9.1	1.8					
Intersection Summary												
HCM 2010 Ctrl Delay				36.9								
HCM 2010 LOS				D								

Intersection

Int Delay, s/veh 1.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	140	65	40	320	0	40
Future Vol, veh/h	140	65	40	320	0	40
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	1	1	0	1	0	0
Mvmt Flow	167	77	48	381	0	48

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	244	0	-	205
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	4.1	-	-	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	2.2	-	-	3.3
Pot Cap-1 Maneuver	-	-	1334	-	0	841
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1334	-	-	841
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.9	9.5
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	841	-	-	1334	-
HCM Lane V/C Ratio	0.057	-	-	0.036	-
HCM Control Delay (s)	9.5	-	-	7.8	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0.1	-

HCM 2010 TWSC
1: Sportsman Club Rd & Wardwell Rd

Madrona School - SR 305 Analysis
2018 Without School Afterschool

Intersection

Int Delay, s/veh 0.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	5	5	5	305	185	5
Future Vol, veh/h	5	5	5	305	185	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	0	0	5	1	0
Mvmt Flow	5	5	5	324	197	5

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	534	199	202	0	-	0
Stage 1	199	-	-	-	-	-
Stage 2	335	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	510	847	1382	-	-	-
Stage 1	839	-	-	-	-	-
Stage 2	729	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	508	847	1382	-	-	-
Mov Cap-2 Maneuver	508	-	-	-	-	-
Stage 1	839	-	-	-	-	-
Stage 2	726	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.8	0.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1382	-	635	-	-
HCM Lane V/C Ratio	0.004	-	0.017	-	-
HCM Control Delay (s)	7.6	0	10.8	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

HCM 2010 Signalized Intersection Summary
2: SR 305 & Sportsman Club Rd/Madison Ave

Madrona School - SR 305 Analysis
2018 Without School Afterschool

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	195	75	35	150	45	20	20	765	195	30	530	120
Future Volume (veh/h)	195	75	35	150	45	20	20	765	195	30	530	120
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1776	1900	1900	1881	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	203	78	36	156	47	21	21	797	203	31	552	125
Adj No. of Lanes	0	1	0	0	1	0	1	1	1	1	1	1
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	7	7	7	1	1	1	2	2	2	2	2	2
Cap, veh/h	226	87	40	180	54	24	30	914	777	39	924	785
Arrive On Green	0.21	0.21	0.21	0.14	0.14	0.14	0.02	0.49	0.49	0.02	0.50	0.50
Sat Flow, veh/h	1081	415	192	1246	375	168	1774	1863	1583	1774	1863	1583
Grp Volume(v), veh/h	317	0	0	224	0	0	21	797	203	31	552	125
Grp Sat Flow(s), veh/h/ln	1688	0	0	1789	0	0	1774	1863	1583	1774	1863	1583
Q Serve(g_s), s	21.9	0.0	0.0	14.7	0.0	0.0	1.4	45.6	9.0	2.1	25.4	5.2
Cycle Q Clear(g_c), s	21.9	0.0	0.0	14.7	0.0	0.0	1.4	45.6	9.0	2.1	25.4	5.2
Prop In Lane	0.64		0.11	0.70		0.09	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	353	0	0	258	0	0	30	914	777	39	924	785
V/C Ratio(X)	0.90	0.00	0.00	0.87	0.00	0.00	0.70	0.87	0.26	0.80	0.60	0.16
Avail Cap(c_a), veh/h	451	0	0	344	0	0	89	1167	992	59	1136	965
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	46.1	0.0	0.0	50.1	0.0	0.0	58.6	27.1	17.8	58.3	21.6	16.5
Incr Delay (d2), s/veh	17.3	0.0	0.0	16.2	0.0	0.0	26.1	6.1	0.2	33.4	0.6	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	11.9	0.0	0.0	8.4	0.0	0.0	0.9	24.8	3.9	1.4	13.2	2.3
LnGrp Delay(d),s/veh	63.4	0.0	0.0	66.3	0.0	0.0	84.6	33.2	18.0	91.7	22.3	16.6
LnGrp LOS	E			E			F	C	B	F	C	B
Approach Vol, veh/h	317			224			1021			708		
Approach Delay, s/veh	63.4			66.3			31.3			24.3		
Approach LOS	E			E			C			C		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.6	62.7		29.1	6.0	63.4		21.3				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	4.0	75.0		32.0	6.0	73.0		23.0				
Max Q Clear Time (g_c+I1), s	4.1	47.6		23.9	3.4	27.4		16.7				
Green Ext Time (p_c), s	0.0	11.1		1.2	0.0	12.9		0.6				
Intersection Summary												
HCM 2010 Ctrl Delay				37.0								
HCM 2010 LOS				D								

Intersection

Int Delay, s/veh 1.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	200	105	45	220	0	55
Future Vol, veh/h	200	105	45	220	0	55
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	6	0	0	2	0	8
Mvmt Flow	206	108	46	227	0	57

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	314	0	-	260
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	4.1	-	-	6.28
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	2.2	-	-	3.372
Pot Cap-1 Maneuver	-	-	1258	-	0	764
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1258	-	-	764
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.4	10.1
HCM LOS	B		

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	764	-	-	1258	-
HCM Lane V/C Ratio	0.074	-	-	0.037	-
HCM Control Delay (s)	10.1	-	-	8	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0.1	-

HCM 2010 TWSC
1: Sportsman Club Rd & Wardwell Rd

Madrona School SR 305 Analysis
2018 Without School AM

Intersection						
Int Delay, s/veh	0.9					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	25	10	5	190	220	10
Future Vol, veh/h	25	10	5	190	220	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	0	0	0	1	1	0
Mvmt Flow	27	11	5	209	242	11

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	467	247	253	0	- 0
Stage 1	247	-	-	-	-
Stage 2	220	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-
Pot Cap-1 Maneuver	558	797	1324	-	-
Stage 1	799	-	-	-	-
Stage 2	821	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	556	797	1324	-	-
Mov Cap-2 Maneuver	556	-	-	-	-
Stage 1	799	-	-	-	-
Stage 2	818	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.3	0.2	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1324	-	609	-	-
HCM Lane V/C Ratio	0.004	-	0.063	-	-
HCM Control Delay (s)	7.7	0	11.3	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

HCM 2010 Signalized Intersection Summary
2: SR 305 & Sportsman Club Rd/Madison Ave

Madrona School SR 305 Analysis
2018 Without School AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	115	60	35	235	90	5	25	385	85	70	765	120
Future Volume (veh/h)	115	60	35	235	90	5	25	385	85	70	765	120
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1881	1900	1827	1827	1827	1863	1863	1863
Adj Flow Rate, veh/h	121	63	37	247	95	5	26	405	89	74	805	126
Adj No. of Lanes	0	1	0	0	1	0	1	1	1	1	1	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	1	1	1	4	4	4	2	2	2
Cap, veh/h	138	72	42	280	108	6	34	824	700	95	903	768
Arrive On Green	0.14	0.14	0.14	0.22	0.22	0.22	0.02	0.45	0.45	0.05	0.48	0.48
Sat Flow, veh/h	965	502	295	1290	496	26	1740	1827	1553	1774	1863	1583
Grp Volume(v), veh/h	221	0	0	347	0	0	26	405	89	74	805	126
Grp Sat Flow(s),veh/h/ln	1762	0	0	1812	0	0	1740	1827	1553	1774	1863	1583
Q Serve(g_s), s	14.5	0.0	0.0	21.9	0.0	0.0	1.8	18.5	3.9	4.9	46.4	5.3
Cycle Q Clear(g_c), s	14.5	0.0	0.0	21.9	0.0	0.0	1.8	18.5	3.9	4.9	46.4	5.3
Prop In Lane	0.55		0.17	0.71		0.01	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	253	0	0	393	0	0	34	824	700	95	903	768
V/C Ratio(X)	0.87	0.00	0.00	0.88	0.00	0.00	0.77	0.49	0.13	0.78	0.89	0.16
Avail Cap(c_a), veh/h	313	0	0	551	0	0	59	1004	853	180	1149	977
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	49.6	0.0	0.0	44.9	0.0	0.0	57.8	22.9	18.9	55.3	27.6	17.1
Incr Delay (d2), s/veh	19.7	0.0	0.0	11.8	0.0	0.0	29.8	0.5	0.1	13.0	7.5	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.4	0.0	0.0	12.3	0.0	0.0	1.1	9.4	1.7	2.7	25.6	2.3
LnGrp Delay(d),s/veh	69.4	0.0	0.0	56.7	0.0	0.0	87.6	23.4	19.0	68.3	35.1	17.2
LnGrp LOS	E			E			F	C	B	E	D	B
Approach Vol, veh/h	221			347			520			1005		
Approach Delay, s/veh	69.4			56.7			25.8			35.3		
Approach LOS	E			E			C			D		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	10.3	57.4		21.0	6.3	61.4		29.7				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	12.0	65.0		21.0	4.0	73.0		36.0				
Max Q Clear Time (g_c+I1), s	6.9	20.5		16.5	3.8	48.4		23.9				
Green Ext Time (p_c), s	0.1	10.5		0.5	0.0	9.0		1.7				
Intersection Summary												
HCM 2010 Ctrl Delay	40.1											
HCM 2010 LOS	D											

Intersection

Int Delay, s/veh 1.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	145	65	40	330	0	40
Future Vol, veh/h	145	65	40	330	0	40
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	1	1	0	1	0	0
Mvmt Flow	173	77	48	393	0	48

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	250	0	-	211
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	4.1	-	-	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	2.2	-	-	3.3
Pot Cap-1 Maneuver	-	-	1327	-	0	834
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1327	-	-	834
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.8	9.6
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	834	-	-	1327	-
HCM Lane V/C Ratio	0.057	-	-	0.036	-
HCM Control Delay (s)	9.6	-	-	7.8	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0.1	-

HCM 2010 TWSC
1: Sportsman Club Rd & Wardwell Rd

Madrona School - SR 305 Analysis
2018 Without School Afterschool

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	5	5	5	315	190	5
Future Vol, veh/h	5	5	5	315	190	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	0	0	5	1	0
Mvmt Flow	5	5	5	335	202	5

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	551	205	207	0	0
Stage 1	205	-	-	-	-
Stage 2	346	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-
Pot Cap-1 Maneuver	499	841	1376	-	-
Stage 1	834	-	-	-	-
Stage 2	721	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	497	841	1376	-	-
Mov Cap-2 Maneuver	497	-	-	-	-
Stage 1	834	-	-	-	-
Stage 2	718	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.9	0.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1376	-	625	-	-
HCM Lane V/C Ratio	0.004	-	0.017	-	-
HCM Control Delay (s)	7.6	0	10.9	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

HCM 2010 Signalized Intersection Summary
2: SR 305 & Sportsman Club Rd/Madison Ave

Madrona School - SR 305 Analysis
2018 Without School Afterschool

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	200	80	35	155	50	20	20	780	200	30	540	120
Future Volume (veh/h)	200	80	35	155	50	20	20	780	200	30	540	120
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1776	1900	1900	1881	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	208	83	36	161	52	21	21	812	208	31	562	125
Adj No. of Lanes	0	1	0	0	1	0	1	1	1	1	1	1
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	7	7	7	1	1	1	2	2	2	2	2	2
Cap, veh/h	228	91	40	182	59	24	29	916	779	39	926	787
Arrive On Green	0.21	0.21	0.21	0.15	0.15	0.15	0.02	0.49	0.49	0.02	0.50	0.50
Sat Flow, veh/h	1074	429	186	1232	398	161	1774	1863	1583	1774	1863	1583
Grp Volume(v), veh/h	327	0	0	234	0	0	21	812	208	31	562	125
Grp Sat Flow(s),veh/h/ln	1689	0	0	1791	0	0	1774	1863	1583	1774	1863	1583
Q Serve(g_s), s	24.1	0.0	0.0	16.3	0.0	0.0	1.5	50.0	9.8	2.2	27.6	5.5
Cycle Q Clear(g_c), s	24.1	0.0	0.0	16.3	0.0	0.0	1.5	50.0	9.8	2.2	27.6	5.5
Prop In Lane	0.64		0.11	0.69		0.09	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	359	0	0	265	0	0	29	916	779	39	926	787
V/C Ratio(X)	0.91	0.00	0.00	0.88	0.00	0.00	0.72	0.89	0.27	0.79	0.61	0.16
Avail Cap(c_a), veh/h	425	0	0	324	0	0	84	1098	933	56	1069	908
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	48.9	0.0	0.0	53.1	0.0	0.0	62.3	29.1	18.9	61.9	23.0	17.4
Incr Delay (d2), s/veh	21.4	0.0	0.0	20.8	0.0	0.0	27.9	7.9	0.2	38.0	0.8	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	13.4	0.0	0.0	9.6	0.0	0.0	1.0	27.5	4.3	1.5	14.4	2.4
LnGrp Delay(d),s/veh	70.3	0.0	0.0	73.9	0.0	0.0	90.1	37.0	19.1	99.9	23.8	17.5
LnGrp LOS	E			E			F	D	B	F	C	B
Approach Vol, veh/h	327			234			1041			718		
Approach Delay, s/veh	70.3			73.9			34.5			26.0		
Approach LOS	E			E			C			C		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.8	66.6		31.0	6.1	67.3		22.8				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	4.0	75.0		32.0	6.0	73.0		23.0				
Max Q Clear Time (g_c+I1), s	4.2	52.0		26.1	3.5	29.6		18.3				
Green Ext Time (p_c), s	0.0	10.6		1.0	0.0	13.2		0.5				
Intersection Summary												
HCM 2010 Ctrl Delay				40.9								
HCM 2010 LOS				D								

Intersection	
Int Delay, s/veh	1.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑		↑
Traffic Vol, veh/h	210	105	45	230	0	55
Future Vol, veh/h	210	105	45	230	0	55
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	6	0	0	2	0	8
Mvmt Flow	216	108	46	237	0	57

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	325	0	-	271
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	4.1	-	-	6.28
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	2.2	-	-	3.372
Pot Cap-1 Maneuver	-	-	1246	-	0	753
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1246	-	-	753
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.3	10.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	753	-	-	1246	-
HCM Lane V/C Ratio	0.075	-	-	0.037	-
HCM Control Delay (s)	10.2	-	-	8	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0.1	-

HCM 2010 TWSC
1: Sportsman Club Rd & Wardwell Rd

Madrona School SR 305 Analysis
2018 With School AM

Intersection

Int Delay, s/veh 0.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	25	10	5	216	238	10
Future Vol, veh/h	25	10	5	216	238	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	0	0	0	1	1	0
Mvmt Flow	27	11	5	237	262	11

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	515	267	273 0
Stage 1	267	-	- -
Stage 2	248	-	- -
Critical Hdwy	7.1	6.2	4.1 -
Critical Hdwy Stg 1	6.1	-	- -
Critical Hdwy Stg 2	6.1	-	- -
Follow-up Hdwy	3.5	3.3	2.2 -
Pot Cap-1 Maneuver	474	777	1302 -
Stage 1	743	-	- -
Stage 2	760	-	- -
Platoon blocked, %			- -
Mov Cap-1 Maneuver	473	777	1302 -
Mov Cap-2 Maneuver	473	-	- -
Stage 1	740	-	- -
Stage 2	757	-	- -

Approach	EB	NB	SB
HCM Control Delay, s	12.3	0.2	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1302	-	533	-	-
HCM Lane V/C Ratio	0.004	-	0.072	-	-
HCM Control Delay (s)	7.8	0	12.3	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

HCM 2010 Signalized Intersection Summary 2: SR 305 & Sportsman Club Rd/Madison Ave

Madrona School SR 305 Analysis
2018 With School AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	115	86	35	277	108	5	25	385	129	70	765	120
Future Volume (veh/h)	115	86	35	277	108	5	25	385	129	70	765	120
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1881	1900	1827	1827	1827	1863	1863	1863
Adj Flow Rate, veh/h	121	91	37	292	114	5	26	405	136	74	805	126
Adj No. of Lanes	0	1	0	0	1	0	1	1	1	1	1	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	1	1	1	4	4	4	2	2	2
Cap, veh/h	131	99	40	313	122	5	32	797	678	94	877	745
Arrive On Green	0.15	0.15	0.15	0.24	0.24	0.24	0.02	0.44	0.44	0.05	0.47	0.47
Sat Flow, veh/h	862	648	263	1288	503	22	1740	1827	1553	1774	1863	1583
Grp Volume(v), veh/h	249	0	0	411	0	0	26	405	136	74	805	126
Grp Sat Flow(s),veh/h/ln	1773	0	0	1813	0	0	1740	1827	1553	1774	1863	1583
Q Serve(g_s), s	19.1	0.0	0.0	30.6	0.0	0.0	2.1	22.1	7.5	5.7	55.6	6.3
Cycle Q Clear(g_c), s	19.1	0.0	0.0	30.6	0.0	0.0	2.1	22.1	7.5	5.7	55.6	6.3
Prop In Lane	0.49		0.15	0.71		0.01	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	270	0	0	440	0	0	32	797	678	94	877	745
V/C Ratio(X)	0.92	0.00	0.00	0.93	0.00	0.00	0.81	0.51	0.20	0.79	0.92	0.17
Avail Cap(c_a), veh/h	270	0	0	473	0	0	50	860	731	154	985	838
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	57.7	0.0	0.0	51.2	0.0	0.0	67.5	28.2	24.0	64.6	34.0	21.0
Incr Delay (d2), s/veh	34.9	0.0	0.0	25.0	0.0	0.0	38.7	0.5	0.1	13.7	12.3	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	12.0	0.0	0.0	18.4	0.0	0.0	1.3	11.2	3.2	3.2	31.4	2.8
LnGrp Delay(d),s/veh	92.6	0.0	0.0	76.2	0.0	0.0	106.1	28.7	24.2	78.3	46.3	21.1
LnGrp LOS	F			E			F	C	C	E	D	C
Approach Vol, veh/h		249			411			567			1005	
Approach Delay, s/veh		92.6			76.2			31.1			45.5	
Approach LOS		F			E			C			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	11.3	64.2		25.0	6.6	69.0		37.5				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	12.0	65.0		21.0	4.0	73.0		36.0				
Max Q Clear Time (g_c+I1), s	7.7	24.1		21.1	4.1	57.6		32.6				
Green Ext Time (p_c), s	0.0	10.6		0.0	0.0	7.4		0.8				
Intersection Summary												
HCM 2010 Ctrl Delay			52.8									
HCM 2010 LOS			D									

Intersection

Int Delay, s/veh 1.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	215	65	40	390	0	58
Future Vol, veh/h	215	65	40	390	0	58
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	1	1	0	1	0	0
Mvmt Flow	256	77	48	464	0	69

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	333	0	-	295
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	4.1	-	-	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	2.2	-	-	3.3
Pot Cap-1 Maneuver	-	-	1238	-	0	749
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1238	-	-	749
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.7	10.3
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	749	-	-	1238	-
HCM Lane V/C Ratio	0.092	-	-	0.038	-
HCM Control Delay (s)	10.3	-	-	8	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.3	-	-	0.1	-

HCM 2010 TWSC
1: Sportsman Club Rd & Wardwell Rd

Madrona School - SR 305 Analysis
2018 With School Afterschool

Intersection

Int Delay, s/veh 0.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	5	5	5	328	205	5
Future Vol, veh/h	5	5	5	328	205	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	0	0	5	1	0
Mvmt Flow	5	5	5	349	218	5

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	581	221	223	0	-	0
Stage 1	221	-	-	-	-	-
Stage 2	360	-	-	-	-	-
Critical Hdwy	7.1	6.2	4.1	-	-	-
Critical Hdwy Stg 1	6.1	-	-	-	-	-
Critical Hdwy Stg 2	6.1	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	428	824	1358	-	-	-
Stage 1	786	-	-	-	-	-
Stage 2	662	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	426	824	1358	-	-	-
Mov Cap-2 Maneuver	426	-	-	-	-	-
Stage 1	782	-	-	-	-	-
Stage 2	659	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.5	0.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1358	-	562	-	-
HCM Lane V/C Ratio	0.004	-	0.019	-	-
HCM Control Delay (s)	7.7	0	11.5	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

HCM 2010 Signalized Intersection Summary

2: SR 305 & Sportsman Club Rd/Madison Ave

Madrona School - SR 305 Analysis
2018 With School Afterschool

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	200	93	35	190	65	20	20	780	222	30	540	120
Future Volume (veh/h)	200	93	35	190	65	20	20	780	222	30	540	120
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1776	1900	1900	1881	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	208	97	36	198	68	21	21	812	231	31	562	125
Adj No. of Lanes	0	1	0	0	1	0	1	1	1	1	1	1
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	7	7	7	1	1	1	2	2	2	2	2	2
Cap, veh/h	223	104	39	205	70	22	28	897	762	39	908	772
Arrive On Green	0.22	0.22	0.22	0.17	0.17	0.17	0.02	0.48	0.48	0.02	0.49	0.49
Sat Flow, veh/h	1032	481	179	1239	426	131	1774	1863	1583	1774	1863	1583
Grp Volume(v), veh/h	341	0	0	287	0	0	21	812	231	31	562	125
Grp Sat Flow(s), veh/h/ln	1693	0	0	1796	0	0	1774	1863	1583	1774	1863	1583
Q Serve(g_s), s	27.5	0.0	0.0	22.1	0.0	0.0	1.6	55.7	12.3	2.4	30.8	6.1
Cycle Q Clear(g_c), s	27.5	0.0	0.0	22.1	0.0	0.0	1.6	55.7	12.3	2.4	30.8	6.1
Prop In Lane	0.61		0.11	0.69		0.07	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	365	0	0	297	0	0	28	897	762	39	908	772
V/C Ratio(X)	0.93	0.00	0.00	0.97	0.00	0.00	0.74	0.91	0.30	0.79	0.62	0.16
Avail Cap(c_a), veh/h	390	0	0	297	0	0	77	1005	855	51	979	832
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.5	0.0	0.0	57.6	0.0	0.0	68.1	33.1	21.9	67.6	26.1	19.8
Incr Delay (d2), s/veh	28.5	0.0	0.0	42.7	0.0	0.0	30.9	10.7	0.2	44.5	1.1	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	15.8	0.0	0.0	14.4	0.0	0.0	1.0	31.3	5.4	1.7	16.0	2.7
LnGrp Delay(d),s/veh	82.0	0.0	0.0	100.3	0.0	0.0	99.0	43.9	22.1	112.1	27.2	19.9
LnGrp LOS	F			F			F	D	C	F	C	B
Approach Vol, veh/h		341			287			1064			718	
Approach Delay, s/veh		82.0			100.3			40.2			29.6	
Approach LOS		F			F			D			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.1	70.9		34.0	6.2	71.7		27.0				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	4.0	75.0		32.0	6.0	73.0		23.0				
Max Q Clear Time (g_c+I1), s	4.4	57.7		29.5	3.6	32.8		24.1				
Green Ext Time (p_c), s	0.0	9.2		0.5	0.0	13.2		0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			50.1									
HCM 2010 LOS			D									

Intersection

Int Delay, s/veh 1.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	244	105	45	280	0	64
Future Vol, veh/h	244	105	45	280	0	64
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	6	0	0	2	0	8
Mvmt Flow	252	108	46	289	0	66

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	360	0	-	306
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	4.1	-	-	6.28
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	2.2	-	-	3.372
Pot Cap-1 Maneuver	-	-	1210	-	0	720
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1210	-	-	720
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.1	10.5
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	720	-	-	1210	-
HCM Lane V/C Ratio	0.092	-	-	0.038	-
HCM Control Delay (s)	10.5	-	-	8.1	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.3	-	-	0.1	-

HCM 2010 TWSC
1: Sportsman Club Rd & Wardwell Rd

Madrona School SR 305 Analysis
2040 Without School AM

Intersection

Int Delay, s/veh 1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	30	15	5	235	275	15
Future Vol, veh/h	30	15	5	235	275	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	1	1	0
Mvmt Flow	32	16	5	247	289	16

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	555	297	305	0	-	0
Stage 1	297	-	-	-	-	-
Stage 2	258	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	496	747	1267	-	-	-
Stage 1	758	-	-	-	-	-
Stage 2	790	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	494	747	1267	-	-	-
Mov Cap-2 Maneuver	494	-	-	-	-	-
Stage 1	758	-	-	-	-	-
Stage 2	786	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.1	0.2	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1267	-	557	-	-
HCM Lane V/C Ratio	0.004	-	0.085	-	-
HCM Control Delay (s)	7.9	0	12.1	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.3	-	-

HCM 2010 Signalized Intersection Summary

2: SR 305 & Sportsman Club Rd/Madison Ave

Madrona School SR 305 Analysis
2040 Without School AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	145	70	45	295	110	5	30	475	105	90	950	150
Future Volume (veh/h)	145	70	45	295	110	5	30	475	105	90	950	150
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1881	1900	1827	1827	1827	1863	1863	1863
Adj Flow Rate, veh/h	153	74	47	311	116	5	32	500	111	95	1000	158
Adj No. of Lanes	0	1	0	0	1	0	1	1	1	1	1	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	1	1	1	4	4	4	2	2	2
Cap, veh/h	138	67	42	314	117	5	41	815	693	116	910	773
Arrive On Green	0.14	0.14	0.14	0.24	0.24	0.24	0.02	0.45	0.45	0.07	0.49	0.49
Sat Flow, veh/h	983	475	302	1305	487	21	1740	1827	1553	1774	1863	1583
Grp Volume(v), veh/h	274	0	0	432	0	0	32	500	111	95	1000	158
Grp Sat Flow(s), veh/h/ln	1760	0	0	1812	0	0	1740	1827	1553	1774	1863	1583
Q Serve(g_s), s	21.0	0.0	0.0	35.5	0.0	0.0	2.7	31.2	6.4	7.9	73.0	8.5
Cycle Q Clear(g_c), s	21.0	0.0	0.0	35.5	0.0	0.0	2.7	31.2	6.4	7.9	73.0	8.5
Prop In Lane	0.56		0.17	0.72		0.01	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	247	0	0	436	0	0	41	815	693	116	910	773
V/C Ratio(X)	1.11	0.00	0.00	0.99	0.00	0.00	0.79	0.61	0.16	0.82	1.10	0.20
Avail Cap(c_a), veh/h	247	0	0	436	0	0	47	815	693	178	910	773
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	64.2	0.0	0.0	56.6	0.0	0.0	72.6	31.6	24.7	69.0	38.2	21.7
Incr Delay (d2), s/veh	89.2	0.0	0.0	40.3	0.0	0.0	54.1	1.4	0.1	15.7	60.8	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	16.3	0.0	0.0	22.6	0.0	0.0	1.9	16.0	2.8	4.4	52.8	3.7
LnGrp Delay(d),s/veh	153.5	0.0	0.0	96.8	0.0	0.0	126.7	32.9	24.8	84.7	99.0	21.9
LnGrp LOS	F			F			F	C	C	F	F	C
Approach Vol, veh/h	274			432			643			1253		
Approach Delay, s/veh	153.5			96.8			36.2			88.2		
Approach LOS	F			F			D			F		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	13.8	70.7		25.0	7.5	77.0		40.0				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	15.0	62.0		21.0	4.0	73.0		36.0				
Max Q Clear Time (g_c+I1), s	9.9	33.2		23.0	4.7	75.0		37.5				
Green Ext Time (p_c), s	0.1	13.4		0.0	0.0	0.0		0.0				
Intersection Summary												
HCM 2010 Ctrl Delay				83.7								
HCM 2010 LOS				F								

Intersection

Int Delay, s/veh 1.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	180	85	50	410	0	50
Future Vol, veh/h	180	85	50	410	0	50
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	1	1	0	1	0	0
Mvmt Flow	189	89	53	432	0	53

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	279	0	-	234
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	4.1	-	-	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	2.2	-	-	3.3
Pot Cap-1 Maneuver	-	-	1295	-	0	810
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1295	-	-	810
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.9	9.8
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	810	-	-	1295	-
HCM Lane V/C Ratio	0.065	-	-	0.041	-
HCM Control Delay (s)	9.8	-	-	7.9	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0.1	-

HCM 2010 TWSC
1: Sportsman Club Rd & Wardwell Rd

Madrona School - SR 305 Analysis
2040 Without School Afterschool

Intersection

Int Delay, s/veh 0.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	5	5	5	390	235	5
Future Vol, veh/h	5	5	5	390	235	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	5	1	0
Mvmt Flow	5	5	5	411	247	5

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	671	250	253	0	-	0
Stage 1	250	-	-	-	-	-
Stage 2	421	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	425	794	1324	-	-	-
Stage 1	796	-	-	-	-	-
Stage 2	667	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	423	794	1324	-	-	-
Mov Cap-2 Maneuver	423	-	-	-	-	-
Stage 1	796	-	-	-	-	-
Stage 2	664	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.6	0.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1324	-	552	-	-
HCM Lane V/C Ratio	0.004	-	0.019	-	-
HCM Control Delay (s)	7.7	0	11.6	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

HCM 2010 Signalized Intersection Summary
2: SR 305 & Sportsman Club Rd/Madison Ave

Madrona School - SR 305 Analysis
2040 Without School Afterschool

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	250	95	45	190	60	25	25	970	250	40	675	150
Future Volume (veh/h)	250	95	45	190	60	25	25	970	250	40	675	150
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1776	1900	1900	1881	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	260	99	47	198	62	26	26	1010	260	42	703	156
Adj No. of Lanes	0	1	0	0	1	0	1	1	1	1	1	1
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	7	7	7	1	1	1	2	2	2	2	2	2
Cap, veh/h	231	88	42	190	60	25	33	931	792	47	947	805
Arrive On Green	0.21	0.21	0.21	0.15	0.15	0.15	0.02	0.50	0.50	0.03	0.51	0.51
Sat Flow, veh/h	1080	411	195	1240	388	163	1774	1863	1583	1774	1863	1583
Grp Volume(v), veh/h	406	0	0	286	0	0	26	1010	260	42	703	156
Grp Sat Flow(s),veh/h/ln	1687	0	0	1790	0	0	1774	1863	1583	1774	1863	1583
Q Serve(g_s), s	32.0	0.0	0.0	23.0	0.0	0.0	2.2	75.0	14.7	3.5	44.7	8.1
Cycle Q Clear(g_c), s	32.0	0.0	0.0	23.0	0.0	0.0	2.2	75.0	14.7	3.5	44.7	8.1
Prop In Lane	0.64		0.12	0.69		0.09	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	360	0	0	275	0	0	33	931	792	47	947	805
V/C Ratio(X)	1.13	0.00	0.00	1.04	0.00	0.00	0.79	1.08	0.33	0.89	0.74	0.19
Avail Cap(c_a), veh/h	360	0	0	275	0	0	59	931	792	47	947	805
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	59.0	0.0	0.0	63.5	0.0	0.0	73.3	37.5	22.4	72.8	29.1	20.1
Incr Delay (d2), s/veh	86.8	0.0	0.0	65.6	0.0	0.0	33.4	55.1	0.2	89.5	3.2	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	23.6	0.0	0.0	16.4	0.0	0.0	1.4	52.5	6.5	2.9	23.7	3.5
LnGrp Delay(d),s/veh	145.8	0.0	0.0	129.1	0.0	0.0	106.7	92.6	22.7	162.3	32.3	20.2
LnGrp LOS	F			F			F	F	C	F	C	C
Approach Vol, veh/h	406			286			1296			901		
Approach Delay, s/veh	145.8			129.1			78.9			36.3		
Approach LOS	F			F			E			D		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.0	79.0		36.0	6.8	80.2		27.0				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	4.0	75.0		32.0	5.0	74.0		23.0				
Max Q Clear Time (g_c+I1), s	5.5	77.0		34.0	4.2	46.7		25.0				
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	15.9		0.0				
Intersection Summary												
HCM 2010 Ctrl Delay				80.0								
HCM 2010 LOS				E								

Intersection	
Int Delay, s/veh	1.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	260	135	60	285	0	70
Future Vol, veh/h	260	135	60	285	0	70
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	6	0	0	2	0	8
Mvmt Flow	268	139	62	294	0	72

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	407	0	-	338
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	4.1	-	-	6.28
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	2.2	-	-	3.372
Pot Cap-1 Maneuver	-	-	1163	-	0	691
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1163	-	-	691
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.4	10.8
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	691	-	-	1163	-
HCM Lane V/C Ratio	0.104	-	-	0.053	-
HCM Control Delay (s)	10.8	-	-	8.3	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.3	-	-	0.2	-

HCM 2010 TWSC
1: Sportsman Club Rd & Wardwell Rd

Madrona School SR 305 Analysis
2040 With School AM

Intersection

Int Delay, s/veh 1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	30	15	5	261	293	15
Future Vol, veh/h	30	15	5	261	293	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	1	1	0
Mvmt Flow	32	16	5	275	308	16

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	601	316	324	0	- 0
Stage 1	316	-	-	-	-
Stage 2	285	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-
Pot Cap-1 Maneuver	467	729	1247	-	-
Stage 1	744	-	-	-	-
Stage 2	768	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	465	729	1247	-	-
Mov Cap-2 Maneuver	465	-	-	-	-
Stage 1	744	-	-	-	-
Stage 2	764	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.5	0.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1247	-	529	-	-
HCM Lane V/C Ratio	0.004	-	0.09	-	-
HCM Control Delay (s)	7.9	0	12.5	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.3	-	-

HCM 2010 Signalized Intersection Summary
2: SR 305 & Sportsman Club Rd/Madison Ave

Madrona School SR 305 Analysis
2040 With School AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	145	96	45	337	128	5	30	475	149	90	950	150
Future Volume (veh/h)	145	96	45	337	128	5	30	475	149	90	950	150
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1881	1900	1827	1827	1827	1863	1863	1863
Adj Flow Rate, veh/h	153	101	47	355	135	5	32	500	157	95	1000	158
Adj No. of Lanes	0	1	0	0	1	0	1	1	1	1	1	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	1	1	1	4	4	4	2	2	2
Cap, veh/h	126	83	39	313	119	4	41	815	693	116	910	773
Arrive On Green	0.14	0.14	0.14	0.24	0.24	0.24	0.02	0.45	0.45	0.07	0.49	0.49
Sat Flow, veh/h	899	594	276	1300	494	18	1740	1827	1553	1774	1863	1583
Grp Volume(v), veh/h	301	0	0	495	0	0	32	500	157	95	1000	158
Grp Sat Flow(s),veh/h/ln	1769	0	0	1813	0	0	1740	1827	1553	1774	1863	1583
Q Serve(g_s), s	21.0	0.0	0.0	36.0	0.0	0.0	2.7	31.2	9.3	7.9	73.0	8.5
Cycle Q Clear(g_c), s	21.0	0.0	0.0	36.0	0.0	0.0	2.7	31.2	9.3	7.9	73.0	8.5
Prop In Lane	0.51		0.16	0.72		0.01	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	249	0	0	437	0	0	41	815	693	116	910	773
V/C Ratio(X)	1.21	0.00	0.00	1.13	0.00	0.00	0.79	0.61	0.23	0.82	1.10	0.20
Avail Cap(c_a), veh/h	249	0	0	437	0	0	47	815	693	178	910	773
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	64.2	0.0	0.0	56.7	0.0	0.0	72.6	31.6	25.5	69.0	38.2	21.7
Incr Delay (d2), s/veh	126.3	0.0	0.0	84.9	0.0	0.0	54.1	1.4	0.2	15.7	60.8	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	18.9	0.0	0.0	28.3	0.0	0.0	1.9	16.0	4.0	4.4	52.8	3.7
LnGrp Delay(d),s/veh	190.5	0.0	0.0	141.7	0.0	0.0	126.7	32.9	25.7	84.7	99.0	21.9
LnGrp LOS	F			F			F	C	C	F	F	C
Approach Vol, veh/h	301			495			689			1253		
Approach Delay, s/veh	190.5			141.7			35.6			88.2		
Approach LOS	F			F			D			F		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	13.8	70.7		25.0	7.5	77.0		40.0				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	15.0	62.0		21.0	4.0	73.0		36.0				
Max Q Clear Time (g_c+I1), s	9.9	33.2		23.0	4.7	75.0		38.0				
Green Ext Time (p_c), s	0.1	13.7		0.0	0.0	0.0		0.0				
Intersection Summary												
HCM 2010 Ctrl Delay				95.9								
HCM 2010 LOS				F								

Intersection						
Int Delay, s/veh	1.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	250	85	50	470	0	68
Future Vol, veh/h	250	85	50	470	0	68
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	1	1	0	1	0	0
Mvmt Flow	263	89	53	495	0	72
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	353	0	-	308
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	4.1	-	-	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	2.2	-	-	3.3
Pot Cap-1 Maneuver	-	-	1217	-	0	737
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1217	-	-	737
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		0.8		10.4	
HCM LOS					B	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	737	-	-	1217	-	
HCM Lane V/C Ratio	0.097	-	-	0.043	-	
HCM Control Delay (s)	10.4	-	-	8.1	0	
HCM Lane LOS	B	-	-	A	A	
HCM 95th %tile Q(veh)	0.3	-	-	0.1	-	

HCM 2010 TWSC
1: Sportsman Club Rd & Wardwell Rd

Madrona School - SR 305 Analysis
2040 With School Afterschool

Intersection

Int Delay, s/veh 0.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	5	5	5	403	250	5
Future Vol, veh/h	5	5	5	403	250	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	5	1	0
Mvmt Flow	5	5	5	424	263	5

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	701	266	268	0	0
Stage 1	266	-	-	-	-
Stage 2	435	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-
Pot Cap-1 Maneuver	408	778	1307	-	-
Stage 1	783	-	-	-	-
Stage 2	657	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	406	778	1307	-	-
Mov Cap-2 Maneuver	406	-	-	-	-
Stage 1	783	-	-	-	-
Stage 2	654	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.9	0.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1307	-	534	-	-
HCM Lane V/C Ratio	0.004	-	0.02	-	-
HCM Control Delay (s)	7.8	0	11.9	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

HCM 2010 Signalized Intersection Summary

2: SR 305 & Sportsman Club Rd/Madison Ave

Madrona School - SR 305 Analysis
2040 With School Afterschool

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	250	108	45	225	75	25	25	970	272	40	675	150
Future Volume (veh/h)	250	108	45	225	75	25	25	970	272	40	675	150
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1776	1900	1900	1881	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	260	112	47	234	78	26	26	1010	283	42	703	156
Adj No. of Lanes	0	1	0	0	1	0	1	1	1	1	1	1
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	7	7	7	1	1	1	2	2	2	2	2	2
Cap, veh/h	224	96	40	191	64	21	33	931	792	47	947	805
Arrive On Green	0.21	0.21	0.21	0.15	0.15	0.15	0.02	0.50	0.50	0.03	0.51	0.51
Sat Flow, veh/h	1049	452	190	1242	414	138	1774	1863	1583	1774	1863	1583
Grp Volume(v), veh/h	419	0	0	338	0	0	26	1010	283	42	703	156
Grp Sat Flow(s),veh/h/ln	1690	0	0	1795	0	0	1774	1863	1583	1774	1863	1583
Q Serve(g_s), s	32.0	0.0	0.0	23.0	0.0	0.0	2.2	75.0	16.3	3.5	44.7	8.1
Cycle Q Clear(g_c), s	32.0	0.0	0.0	23.0	0.0	0.0	2.2	75.0	16.3	3.5	44.7	8.1
Prop In Lane	0.62		0.11	0.69		0.08	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	360	0	0	275	0	0	33	931	792	47	947	805
V/C Ratio(X)	1.16	0.00	0.00	1.23	0.00	0.00	0.79	1.08	0.36	0.89	0.74	0.19
Avail Cap(c_a), veh/h	360	0	0	275	0	0	59	931	792	47	947	805
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	59.0	0.0	0.0	63.5	0.0	0.0	73.3	37.5	22.8	72.8	29.1	20.1
Incr Delay (d2), s/veh	99.3	0.0	0.0	130.4	0.0	0.0	33.4	55.1	0.3	89.5	3.2	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	24.9	0.0	0.0	21.4	0.0	0.0	1.4	52.5	7.2	2.9	23.7	3.5
LnGrp Delay(d),s/veh	158.3	0.0	0.0	193.9	0.0	0.0	106.7	92.6	23.1	162.3	32.3	20.2
LnGrp LOS	F			F			F	F	C	F	C	C
Approach Vol, veh/h	419			338			1319			901		
Approach Delay, s/veh	158.3			193.9			78.0			36.3		
Approach LOS	F			F			E			D		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.0	79.0		36.0	6.8	80.2		27.0				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	4.0	75.0		32.0	5.0	74.0		23.0				
Max Q Clear Time (g_c+I1), s	5.5	77.0		34.0	4.2	46.7		25.0				
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	16.0		0.0				
Intersection Summary												
HCM 2010 Ctrl Delay	89.8											
HCM 2010 LOS	F											

Intersection

Int Delay, s/veh 1.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑		↑
Traffic Vol, veh/h	294	135	60	335	0	79
Future Vol, veh/h	294	135	60	335	0	79
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	6	0	0	2	0	8
Mvmt Flow	303	139	62	345	0	81

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	442	0	-	373
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	4.1	-	-	6.28
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	2.2	-	-	3.372
Pot Cap-1 Maneuver	-	-	1129	-	0	660
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1129	-	-	660
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.3	11.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	660	-	-	1129	-
HCM Lane V/C Ratio	0.123	-	-	0.055	-
HCM Control Delay (s)	11.2	-	-	8.4	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.4	-	-	0.2	-

HCM 2010 TWSC
1: Sportsman Club Rd & Wardwell Rd

Madrona School SR 305 Analysis
2040 With School AM - Signal Modification

Intersection

Int Delay, s/veh 1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	30	15	5	235	275	15
Future Vol, veh/h	30	15	5	235	275	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	1	1	0
Mvmt Flow	32	16	5	247	289	16

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	555	297	305	0	-	0
Stage 1	297	-	-	-	-	-
Stage 2	258	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	496	747	1267	-	-	-
Stage 1	758	-	-	-	-	-
Stage 2	790	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	494	747	1267	-	-	-
Mov Cap-2 Maneuver	494	-	-	-	-	-
Stage 1	758	-	-	-	-	-
Stage 2	786	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.1	0.2	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1267	-	557	-	-
HCM Lane V/C Ratio	0.004	-	0.085	-	-
HCM Control Delay (s)	7.9	0	12.1	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.3	-	-

Timings
2: SR 305 & Sportsman Club Rd/Madison Ave

Madrona School SR 305 Analysis
2040 With School AM - Signal Modification

										
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	145	70	345	110	30	475	105	90	950	150
Future Volume (vph)	145	70	345	110	30	475	105	90	950	150
Turn Type	pm+pt	NA	pm+pt	NA	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4	3	8	5	2		1	6	
Permitted Phases	4		8				2			6
Detector Phase	7	4	3	8	5	2	2	1	6	6
Switch Phase										
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	22.0	22.0	22.0	22.0	8.0	22.0	22.0	8.0	22.0	22.0
Total Split (s)	22.0	22.0	22.0	22.0	8.0	50.0	50.0	16.0	58.0	58.0
Total Split (%)	20.0%	20.0%	20.0%	20.0%	7.3%	45.5%	45.5%	14.5%	52.7%	52.7%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lag	Lag	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	None	None	None
Act Effect Green (s)	22.7	10.8	31.8	16.4	4.0	47.3	47.3	9.9	54.4	54.4
Actuated g/C Ratio	0.23	0.11	0.32	0.17	0.04	0.48	0.48	0.10	0.55	0.55
v/c Ratio	0.44	0.57	0.87	0.39	0.46	0.57	0.14	0.54	0.98	0.17
Control Delay	29.7	44.3	51.5	42.0	70.5	24.2	4.1	55.5	48.6	6.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.7	44.3	51.5	42.0	70.5	24.2	4.1	55.5	48.6	6.8
LOS	C	D	D	D	E	C	A	E	D	A
Approach Delay		36.2		49.1		23.0			43.8	
Approach LOS		D		D		C			D	

Intersection Summary

Cycle Length: 110

Actuated Cycle Length: 99.2

Natural Cycle: 110

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.98

Intersection Signal Delay: 39.0

Intersection LOS: D

Intersection Capacity Utilization 89.1%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 2: SR 305 & Sportsman Club Rd/Madison Ave

 Ø1	 Ø2	 Ø3	 Ø4
16 s	50 s	22 s	22 s
 Ø6	 Ø5	 Ø7	 Ø8
53 s	8 s	22 s	22 s

HCM 2010 Signalized Intersection Summary 2: SR 305 & Sportsman Club Rd/Madison Ave

Madrona School SR 305 Analysis
2040 With School AM - Signal Modification

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	145	70	45	345	110	5	30	475	105	90	950	150
Future Volume (veh/h)	145	70	45	345	110	5	30	475	105	90	950	150
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1881	1881	1900	1827	1827	1827	1863	1863	1863
Adj Flow Rate, veh/h	153	74	47	363	116	5	32	500	111	95	1000	158
Adj No. of Lanes	1	1	0	1	1	0	1	1	1	1	1	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	1	1	1	4	4	4	2	2	2
Cap, veh/h	368	103	65	432	319	14	40	905	769	121	1007	856
Arrive On Green	0.10	0.10	0.10	0.18	0.18	0.18	0.02	0.50	0.50	0.07	0.54	0.54
Sat Flow, veh/h	1774	1066	677	1792	1790	77	1740	1827	1553	1774	1863	1583
Grp Volume(v), veh/h	153	0	121	363	0	121	32	500	111	95	1000	158
Grp Sat Flow(s),veh/h/ln	1774	0	1743	1792	0	1868	1740	1827	1553	1774	1863	1583
Q Serve(g_s), s	7.6	0.0	6.7	17.9	0.0	5.7	1.8	19.0	3.9	5.3	53.2	3.1
Cycle Q Clear(g_c), s	7.6	0.0	6.7	17.9	0.0	5.7	1.8	19.0	3.9	5.3	53.2	3.1
Prop In Lane	1.00		0.39	1.00		0.04	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	368	0	168	432	0	332	40	905	769	121	1007	856
V/C Ratio(X)	0.42	0.00	0.72	0.84	0.00	0.36	0.80	0.55	0.14	0.79	0.99	0.18
Avail Cap(c_a), veh/h	513	0	314	432	0	336	70	905	769	213	1007	856
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	35.5	0.0	43.8	31.5	0.0	36.1	48.6	17.5	13.7	45.8	22.8	4.4
Incr Delay (d2), s/veh	0.7	0.0	5.7	13.9	0.0	0.7	29.6	0.7	0.1	10.6	26.6	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.8	0.0	3.5	10.3	0.0	3.0	1.2	9.8	1.7	2.9	34.7	2.0
LnGrp Delay(d),s/veh	36.2	0.0	49.6	45.4	0.0	36.8	78.2	18.3	13.8	56.4	49.4	4.5
LnGrp LOS	D		D	D		D	E	B	B	E	D	A
Approach Vol, veh/h	274		484				643			1253		
Approach Delay, s/veh	42.1		43.2				20.5			44.3		
Approach LOS	D		D				C			D		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.8	53.5	22.0	13.6	6.3	58.0	13.8	21.8				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	12.0	46.0	18.0	18.0	4.0	54.0	18.0	18.0				
Max Q Clear Time (g_c+I1), s	7.3	21.0	19.9	8.7	3.8	55.2	9.6	7.7				
Green Ext Time (p_c), s	0.1	3.3	0.0	0.9	0.0	0.0	0.2	0.9				
Intersection Summary												
HCM 2010 Ctrl Delay			38.1									
HCM 2010 LOS			D									

HCM 2010 TWSC
3: Moran Rd & Madison Ave

Madrona School SR 305 Analysis
2040 With School AM - Signal Modification

Intersection

Int Delay, s/veh 0.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑		↑
Traffic Vol, veh/h	180	85	0	460	0	50
Future Vol, veh/h	180	85	0	460	0	50
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	1	1	0	1	0	0
Mvmt Flow	189	89	0	484	0	53

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	234
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.3
Pot Cap-1 Maneuver	-	-	0	-	0	810
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	-	-	810
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9.8
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	810	-	-	-
HCM Lane V/C Ratio	0.065	-	-	-
HCM Control Delay (s)	9.8	-	-	-
HCM Lane LOS	A	-	-	-
HCM 95th %tile Q(veh)	0.2	-	-	-

HCM 2010 TWSC
1: Sportsman Club Rd & Wardwell Rd

Madrona School - SR 305 Analysis
2040 Without School Afterschool - Signal Mod

Intersection

Int Delay, s/veh 0.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	5	5	5	390	235	5
Future Vol, veh/h	5	5	5	390	235	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	5	1	0
Mvmt Flow	5	5	5	411	247	5

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	671	250	253	0	-	0
Stage 1	250	-	-	-	-	-
Stage 2	421	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	425	794	1324	-	-	-
Stage 1	796	-	-	-	-	-
Stage 2	667	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	423	794	1324	-	-	-
Mov Cap-2 Maneuver	423	-	-	-	-	-
Stage 1	796	-	-	-	-	-
Stage 2	664	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.6	0.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1324	-	552	-	-
HCM Lane V/C Ratio	0.004	-	0.019	-	-
HCM Control Delay (s)	7.7	0	11.6	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Timings

2: SR 305 & Sportsman Club Rd/Madison Ave

Madrona School - SR 305 Analysis

2040 Without School Afterschool - Signal Mod

										
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	250	95	250	60	25	970	250	40	675	150
Future Volume (vph)	250	95	250	60	25	970	250	40	675	150
Turn Type	pm+pt	NA	pm+pt	NA	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4	3	8	5	2		1	6	
Permitted Phases	4		8				2			6
Detector Phase	7	4	3	8	5	2	2	1	6	6
Switch Phase										
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	22.0	22.0	22.0	22.0	8.0	22.0	22.0	8.0	22.0	22.0
Total Split (s)	22.0	22.0	22.0	22.0	10.0	68.0	68.0	8.0	66.0	66.0
Total Split (%)	18.3%	18.3%	18.3%	18.3%	8.3%	56.7%	56.7%	6.7%	55.0%	55.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lag	Lag	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	None	None	None
Act Effct Green (s)	31.2	13.5	28.2	12.9	6.6	64.4	64.4	4.0	66.1	66.1
Actuated g/C Ratio	0.28	0.12	0.25	0.11	0.06	0.57	0.57	0.04	0.59	0.59
v/c Ratio	0.68	0.67	0.70	0.41	0.25	0.95	0.27	0.67	0.64	0.16
Control Delay	42.8	58.2	44.6	44.3	59.4	43.3	5.2	102.0	21.4	6.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.8	58.2	44.6	44.3	59.4	43.3	5.2	102.0	21.4	6.3
LOS	D	E	D	D	E	D	A	F	C	A
Approach Delay		48.3		44.5		36.0			22.5	
Approach LOS		D		D		D			C	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 112.8

Natural Cycle: 120

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.95

Intersection Signal Delay: 34.6

Intersection LOS: C

Intersection Capacity Utilization 82.6%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 2: SR 305 & Sportsman Club Rd/Madison Ave

 Ø1	 Ø2	 Ø3	 Ø4
5 s	68 s	22 s	22 s
 Ø6	 Ø5	 Ø7	 Ø8
66 s	10 s	22 s	22 s

HCM 2010 Signalized Intersection Summary 2: SR 305 & Sportsman Club Rd/Madison Ave

Madrona School - SR 305 Analysis
2040 Without School Afterschool - Signal Mod

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	250	95	45	250	60	25	25	970	250	40	675	150
Future Volume (veh/h)	250	95	45	250	60	25	25	970	250	40	675	150
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1776	1776	1900	1881	1881	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	260	99	47	260	62	26	26	1010	260	42	703	156
Adj No. of Lanes	1	1	0	1	1	0	1	1	1	1	1	1
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	7	7	7	1	1	1	2	2	2	2	2	2
Cap, veh/h	397	125	59	361	129	54	319	1055	896	53	776	659
Arrive On Green	0.15	0.11	0.11	0.15	0.10	0.10	0.18	0.57	0.57	0.03	0.42	0.42
Sat Flow, veh/h	1691	1139	541	1792	1260	528	1774	1863	1583	1774	1863	1583
Grp Volume(v), veh/h	260	0	146	260	0	88	26	1010	260	42	703	156
Grp Sat Flow(s), veh/h/ln	1691	0	1680	1792	0	1788	1774	1863	1583	1774	1863	1583
Q Serve(g_s), s	14.7	0.0	9.2	13.9	0.0	5.1	1.3	55.9	9.3	2.6	38.5	4.2
Cycle Q Clear(g_c), s	14.7	0.0	9.2	13.9	0.0	5.1	1.3	55.9	9.3	2.6	38.5	4.2
Prop In Lane	1.00		0.32	1.00		0.30	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	397	0	184	361	0	183	319	1055	896	53	776	659
V/C Ratio(X)	0.66	0.00	0.79	0.72	0.00	0.48	0.08	0.96	0.29	0.79	0.91	0.24
Avail Cap(c_a), veh/h	415	0	278	393	0	296	319	1095	931	65	1061	902
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	35.7	0.0	47.3	36.3	0.0	46.1	37.2	22.4	12.3	52.4	29.8	7.6
Incr Delay (d2), s/veh	3.5	0.0	8.8	5.8	0.0	2.0	0.1	17.6	0.2	38.9	8.8	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.2	0.0	4.7	7.4	0.0	2.6	0.7	33.8	4.1	1.8	21.6	2.7
LnGrp Delay(d),s/veh	39.2	0.0	56.1	42.0	0.0	48.1	37.3	40.0	12.4	91.4	38.5	7.8
LnGrp LOS	D		E	D		D	D	D	B	F	D	A
Approach Vol, veh/h	406			348			1296			901		
Approach Delay, s/veh	45.3			43.6			34.4			35.7		
Approach LOS	D			D			C			D		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	7.3	65.6	20.0	15.9	23.6	49.3	20.8	15.1				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	4.0	64.0	18.0	18.0	6.0	62.0	18.0	18.0				
Max Q Clear Time (g_c+I1), s	4.6	57.9	15.9	11.2	3.3	40.5	16.7	7.1				
Green Ext Time (p_c), s	0.0	3.7	0.2	0.7	1.8	4.8	0.1	0.9				
Intersection Summary												
HCM 2010 Ctrl Delay	37.4											
HCM 2010 LOS	D											

Intersection

Int Delay, s/veh 0.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	260	135	0	345	0	70
Future Vol, veh/h	260	135	0	345	0	70
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	6	0	0	2	0	8
Mvmt Flow	268	139	0	356	0	72

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	338
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.28
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.372
Pot Cap-1 Maneuver	-	-	0	-	0	691
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	-	-	691
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	10.8
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	691	-	-	-
HCM Lane V/C Ratio	0.104	-	-	-
HCM Control Delay (s)	10.8	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	0.3	-	-	-

HCM 2010 TWSC
1: Sportsman Club Rd & Wardwell Rd

Madrona School SR 305 Analysis
2040 With School AM - Signal Modification

Intersection						
Int Delay, s/veh	1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	30	15	5	261	293	15
Future Vol, veh/h	30	15	5	261	293	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	1	1	0
Mvmt Flow	32	16	5	275	308	16
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	601	316	324	0	-	0
Stage 1	316	-	-	-	-	-
Stage 2	285	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	467	729	1247	-	-	-
Stage 1	744	-	-	-	-	-
Stage 2	768	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	465	729	1247	-	-	-
Mov Cap-2 Maneuver	465	-	-	-	-	-
Stage 1	744	-	-	-	-	-
Stage 2	764	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	12.5	0.1		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1247	-	529	-	-	
HCM Lane V/C Ratio	0.004	-	0.09	-	-	
HCM Control Delay (s)	7.9	0	12.5	-	-	
HCM Lane LOS	A	A	B	-	-	
HCM 95th %tile Q(veh)	0	-	0.3	-	-	

Timings
2: SR 305 & Sportsman Club Rd/Madison Ave

Madrona School SR 305 Analysis
2040 With School AM - Signal Modification

										
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	145	96	387	128	30	475	149	90	950	150
Future Volume (vph)	145	96	387	128	30	475	149	90	950	150
Turn Type	pm+pt	NA	pm+pt	NA	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4	3	8	5	2		1	6	
Permitted Phases	4		8				2			6
Detector Phase	7	4	3	8	5	2	2	1	6	6
Switch Phase										
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	22.0	22.0	22.0	22.0	8.0	22.0	22.0	8.0	22.0	22.0
Total Split (s)	22.0	22.0	22.0	22.0	8.0	50.0	50.0	16.0	58.0	58.0
Total Split (%)	20.0%	20.0%	20.0%	20.0%	7.3%	45.5%	45.5%	14.5%	52.7%	52.7%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lag	Lag	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	None	None	None
Act Effct Green (s)	24.5	12.6	34.3	18.9	4.0	47.2	47.2	10.0	54.3	54.3
Actuated g/C Ratio	0.24	0.12	0.34	0.19	0.04	0.46	0.46	0.10	0.53	0.53
v/c Ratio	0.42	0.63	0.97	0.40	0.47	0.59	0.20	0.55	1.01	0.18
Control Delay	28.9	49.6	68.8	41.7	72.8	25.7	3.8	57.1	56.0	7.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	28.9	49.6	68.8	41.7	72.8	25.7	3.8	57.1	56.0	7.2
LOS	C	D	E	D	E	C	A	E	E	A
Approach Delay		39.1		61.9		22.9			49.9	
Approach LOS		D		E		C			D	

Intersection Summary

Cycle Length: 110

Actuated Cycle Length: 101.6

Natural Cycle: 110

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.01

Intersection Signal Delay: 44.4

Intersection LOS: D

Intersection Capacity Utilization 95.9%

ICU Level of Service F

Analysis Period (min) 15

Splits and Phases: 2: SR 305 & Sportsman Club Rd/Madison Ave

			
16 s	50 s	22 s	22 s
			
58 s	8 s	22 s	22 s

HCM 2010 Signalized Intersection Summary 2: SR 305 & Sportsman Club Rd/Madison Ave

Madrona School SR 305 Analysis 2040 With School AM - Signal Modification

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	145	96	45	387	128	5	30	475	149	90	950	150
Future Volume (veh/h)	145	96	45	387	128	5	30	475	149	90	950	150
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1881	1881	1900	1827	1827	1827	1863	1863	1863
Adj Flow Rate, veh/h	153	101	47	407	135	5	32	500	157	95	1000	158
Adj No. of Lanes	1	1	0	1	1	0	1	1	1	1	1	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	1	1	1	4	4	4	2	2	2
Cap, veh/h	376	128	60	421	338	13	40	893	759	121	995	846
Arrive On Green	0.10	0.11	0.11	0.18	0.19	0.19	0.02	0.49	0.49	0.07	0.53	0.53
Sat Flow, veh/h	1774	1204	560	1792	1803	67	1740	1827	1553	1774	1863	1583
Grp Volume(v), veh/h	153	0	148	407	0	140	32	500	157	95	1000	158
Grp Sat Flow(s), veh/h/ln	1774	0	1764	1792	0	1869	1740	1827	1553	1774	1863	1583
Q Serve(g_s), s	7.6	0.0	8.3	18.0	0.0	6.6	1.9	19.5	5.8	5.3	54.0	3.2
Cycle Q Clear(g_c), s	7.6	0.0	8.3	18.0	0.0	6.6	1.9	19.5	5.8	5.3	54.0	3.2
Prop In Lane	1.00		0.32	1.00		0.04	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	376	0	188	421	0	350	40	893	759	121	995	846
V/C Ratio(X)	0.41	0.00	0.79	0.97	0.00	0.40	0.80	0.56	0.21	0.79	1.00	0.19
Avail Cap(c_a), veh/h	520	0	314	421	0	350	69	893	759	211	995	846
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	35.1	0.0	44.0	33.4	0.0	36.1	49.2	18.2	14.7	46.4	23.5	4.7
Incr Delay (d2), s/veh	0.7	0.0	7.1	35.1	0.0	0.7	29.9	0.8	0.1	10.7	29.7	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.8	0.0	4.4	6.5	0.0	3.5	1.2	9.9	2.5	3.0	35.6	2.0
LnGrp Delay(d),s/veh	35.8	0.0	51.2	68.5	0.0	36.8	79.0	19.0	14.8	57.0	53.3	4.8
LnGrp LOS	D		D	E		D	E	B	B	E	F	A
Approach Vol, veh/h	301			547			689			1253		
Approach Delay, s/veh	43.3			60.4			20.8			47.4		
Approach LOS	D			E			C			D		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.9	53.4	22.0	14.8	6.3	58.0	13.8	22.9				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	12.0	46.0	18.0	18.0	4.0	54.0	18.0	18.0				
Max Q Clear Time (g_c+I1), s	7.3	21.5	20.0	10.3	3.9	56.0	9.6	8.6				
Green Ext Time (p_c), s	0.1	3.4	0.0	0.5	0.0	0.0	0.2	1.1				
Intersection Summary												
HCM 2010 Ctrl Delay			43.0									
HCM 2010 LOS			D									

HCM 2010 TWSC
3: Moran Rd & Madison Ave

Madrona School SR 305 Analysis
2040 With School AM - Signal Modification

Intersection

Int Delay, s/veh 0.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑		↑
Traffic Vol, veh/h	250	85	0	520	0	68
Future Vol, veh/h	250	85	0	520	0	68
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	1	1	0	1	0	0
Mvmt Flow	263	89	0	547	0	72

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	308
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.3
Pot Cap-1 Maneuver	-	-	0	-	0	737
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	-	-	737
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	10.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	737	-	-	-
HCM Lane V/C Ratio	0.097	-	-	-
HCM Control Delay (s)	10.4	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	0.3	-	-	-

HCM 2010 TWSC
1: Sportsman Club Rd & Wardwell Rd

Madrona School - SR 305 Analysis
2040 With School Afterschool - Signal Mod

Intersection

Int Delay, s/veh 0.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	5	5	5	403	250	5
Future Vol, veh/h	5	5	5	403	250	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	5	1	0
Mvmt Flow	5	5	5	424	263	5

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	701	266	268	0	0
Stage 1	266	-	-	-	-
Stage 2	435	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-
Pot Cap-1 Maneuver	408	778	1307	-	-
Stage 1	783	-	-	-	-
Stage 2	657	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	406	778	1307	-	-
Mov Cap-2 Maneuver	406	-	-	-	-
Stage 1	783	-	-	-	-
Stage 2	654	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.9	0.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1307	-	534	-	-
HCM Lane V/C Ratio	0.004	-	0.02	-	-
HCM Control Delay (s)	7.8	0	11.9	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Timings
2: SR 305 & Sportsman Club Rd/Madison Ave

Madrona School - SR 305 Analysis
2040 With School Afterschool - Signal Mod

										
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	250	108	285	75	25	970	272	40	675	150
Future Volume (vph)	250	108	285	75	25	970	272	40	675	150
Turn Type	pm+pt	NA	pm+pt	NA	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4	3	8	5	2		1	6	
Permitted Phases	4		8				2			6
Detector Phase	7	4	3	8	5	2	2	1	6	6
Switch Phase										
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	22.0	22.0	22.0	22.0	8.0	22.0	22.0	8.0	22.0	22.0
Total Split (s)	22.0	22.0	22.0	22.0	10.0	68.0	68.0	8.0	66.0	66.0
Total Split (%)	18.3%	18.3%	18.3%	18.3%	8.3%	56.7%	56.7%	6.7%	55.0%	55.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lag	Lag	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	None	None	None
Act Effct Green (s)	31.0	14.3	32.0	14.8	6.5	64.4	64.4	4.0	66.2	66.2
Actuated g/C Ratio	0.27	0.13	0.28	0.13	0.06	0.56	0.56	0.04	0.58	0.58
v/c Ratio	0.68	0.71	0.83	0.42	0.26	0.96	0.29	0.68	0.65	0.16
Control Delay	42.4	61.1	53.4	46.5	60.6	46.0	5.4	103.7	21.9	6.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.4	61.1	53.4	46.5	60.6	46.0	5.4	103.7	21.9	6.4
LOS	D	E	D	D	E	D	A	F	C	A
Approach Delay		49.5		51.6		37.6			23.0	
Approach LOS		D		D		D			C	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 114.1

Natural Cycle: 120

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.96

Intersection Signal Delay: 36.8

Intersection LOS: D

Intersection Capacity Utilization 85.3%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 2: SR 305 & Sportsman Club Rd/Madison Ave

			
8 s	66 s	22 s	22 s
			
66 s	10 s	22 s	22 s

HCM 2010 Signalized Intersection Summary 2: SR 305 & Sportsman Club Rd/Madison Ave

Madrona School - SR 305 Analysis
2040 With School Afterschool - Signal Mod

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	250	108	45	285	75	25	25	970	272	40	675	150
Future Volume (veh/h)	250	108	45	285	75	25	25	970	272	40	675	150
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1776	1776	1900	1881	1881	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	260	112	47	297	78	26	26	1010	283	42	703	156
Adj No. of Lanes	1	1	0	1	1	0	1	1	1	1	1	1
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	7	7	7	1	1	1	2	2	2	2	2	2
Cap, veh/h	403	137	58	375	165	55	306	1036	880	54	771	655
Arrive On Green	0.15	0.12	0.12	0.16	0.12	0.12	0.17	0.56	0.56	0.03	0.41	0.41
Sat Flow, veh/h	1691	1189	499	1792	1351	450	1774	1863	1583	1774	1863	1583
Grp Volume(v), veh/h	260	0	159	297	0	104	26	1010	283	42	703	156
Grp Sat Flow(s),veh/h/ln	1691	0	1688	1792	0	1802	1774	1863	1583	1774	1863	1583
Q Serve(g_s), s	15.2	0.0	10.5	16.5	0.0	6.1	1.4	59.9	11.0	2.7	40.5	4.5
Cycle Q Clear(g_c), s	15.2	0.0	10.5	16.5	0.0	6.1	1.4	59.9	11.0	2.7	40.5	4.5
Prop In Lane	1.00		0.30	1.00		0.25	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	403	0	195	375	0	220	306	1036	880	54	771	655
V/C Ratio(X)	0.65	0.00	0.82	0.79	0.00	0.47	0.09	0.98	0.32	0.78	0.91	0.24
Avail Cap(c_a), veh/h	414	0	267	375	0	285	306	1046	889	62	1013	861
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	36.4	0.0	49.2	36.7	0.0	46.6	39.6	24.5	13.7	54.9	31.5	8.4
Incr Delay (d2), s/veh	3.3	0.0	13.0	11.0	0.0	1.6	0.1	21.8	0.2	41.8	10.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.4	0.0	5.6	9.2	0.0	3.2	0.7	36.9	4.8	1.9	22.8	2.0
LnGrp Delay(d),s/veh	39.7	0.0	62.2	47.7	0.0	48.2	39.7	46.4	13.9	96.7	41.5	8.6
LnGrp LOS	D		E	D		D	D	D	B	F	D	A
Approach Vol, veh/h	419			401			1319			901		
Approach Delay, s/veh	48.2			47.8			39.3			38.4		
Approach LOS	D			D			D			D		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	7.4	67.4	22.0	17.2	23.6	51.2	21.3	17.9				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	4.0	64.0	18.0	18.0	6.0	62.0	18.0	18.0				
Max Q Clear Time (g_c+I1), s	4.7	61.9	18.5	12.5	3.4	42.5	17.2	8.1				
Green Ext Time (p_c), s	0.0	1.4	0.0	0.7	1.8	4.7	0.1	1.0				
Intersection Summary												
HCM 2010 Ctrl Delay	41.4											
HCM 2010 LOS	D											

Intersection

Int Delay, s/veh 1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑		↑
Traffic Vol, veh/h	294	135	0	335	0	79
Future Vol, veh/h	294	135	0	335	0	79
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	6	0	0	2	0	8
Mvmt Flow	303	139	0	345	0	81

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	373
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.28
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.372
Pot Cap-1 Maneuver	-	-	0	-	0	660
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	-	660
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	11.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	660	-	-	-
HCM Lane V/C Ratio	0.123	-	-	-
HCM Control Delay (s)	11.2	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	0.4	-	-	-

Call to Order (Attendance, Agenda, Ethics)
Madrona School (PLN18970B CUP)
Wallace Cottages HDDP (PLN50589 PRE)
Low Impact Development
New/Old Business
Adjourn

Call to Order (Attendance, Agenda, Ethics)

Chair Alan Grainger called the meeting to order at 2 pm. Design Review Board (DRB) members in attendance were Peter Perry, Jeffrey Boon, Joseph Dunstan, and Jim McNett.

DRB members Jason Wilkinson and Chris Gutsche were absent and excused. City Staff present were Planning Manager Josh Machen, Planner Kelly Tayara, Structural Engineers Janelle Hitch and Peter Corelis and Administrative Specialist Lara Lant who monitored recording and prepared minutes.

There were no conflicts disclosed.

Madrona School (PLN18970B CUP)

Eric Engelbrecht from the Madrona School Board gave a summary of the school's history. Architect John Kennedy of SKL Architects stated they were at the master planning phase and proceeded with a slide show of the project site, recapping earlier presentations to the DRB. There was a house on site which would be demolished due to age. It would remain, however, until at least Phase 3 of the project. Jim McNett said he hoped they would reconsider the demolition. He thought the house was on a secondary list of significant buildings. John Kennedy said the parking area would be asphalted with gravel access roads on the edges. He discussed the site design and said they wanted to keep cars at the edges of the site. Joe Dunstan asked about the potential for cars spilling onto the street as parents line up for student drop off and pickup. John Kennedy replied the drive through lane would be bordered by a parking and pickup zone. Their traffic study showed the parking area plus the drop off and pickup zone would be sufficient. Joe Dunstan and Jeff Boon agreed that overflow traffic on North Madison Avenue would be a potential problem. Alan Grainger said kindergarten and prekindergarten classes were sited furthest from vehicle access, increasing traffic congestion. John Kennedy said it was favorable to the school that younger students be located further from the parking area and it would take parent cooperation to transfer children from cars to classrooms. Alan Grainger asked about the additional request of a traffic study at Highway 305 and Sportsman Club Road. Ron Peltier said most traffic turned south and the planned traffic flow would be a major inconvenience for that intersection. John Kennedy said they'd erect right-turn-only signage at the school's exit to avoid congestion. Alan Grainger said drivers would be u-turning on N Madison. Alan Grainger asked John Kennedy if they thought of connecting foot paths for pedestrian traffic to the school and he replied the school didn't want parents to pull over on

North Madison Ave so they didn't include pathways and shortcuts. Their intent was to keep all parking off North Madison Avenue and parents would self-correct driving habits once the school's headmistress communicated the rules. Eric Englebrecht said they'd been in communications with Windsong Loop residents about parking plans. He also stated the traffic study wasn't initially included because of timing with permit issuance and new regulations. Alan Grainger asked Eric Englebrecht if the school would use busses in the future and he replied it might be a future inclusion. Alan Grainger asked if busses could be incorporated as a requirement for future school permits and Josh Machen agreed this was possible. Jeff Boon suggested the left turn lane be extra wide so cars could easily exit and that angled parking be considered. John Kennedy said they will continue to work on parking design, including angled parking, with a traffic engineer. He said that an area of the playfield would be developed for occasional parking of up to 80 vehicles during events. Ron Peltier said neighbors were concerned about on street parking during events. The school's auditorium was designed to hold up to 400 people. A secondary plan such as shuttles picking people up from offsite locations should be considered.

Peter Perry asked if the school considered replanting trees to replace the ones that would be cleared. John Kennedy replied yes, that fell in line with the mission of the school. Peter Perry noted the code didn't require tree replacement, would the school commit to doing this anyway? Eric Englebrecht said yes, the school would commit to replanting trees.

Joe Dunstan asked about accessibility; he assumed that pathways would be ADA approved design and noted the grade would present challenges. Jim McNett stated adding ADA parking near fire lanes would be easy to do. John Kennedy updated the DRB on lighting plans. He said lighting would be minimal because of residential location. They were considering changes to the roof slope to take advantage of solar energy. A portion of the site didn't perc well and might have to have a retention pond. They would consider various alternatives to move stormwater to the retention pond. Materials used for the main building would include cedar and clear low e glass with punctuations of color and the main entry would not be easily visible from the street.

Motion: I move the Design Review Board approves the site plan review with the additional condition of replacing trees with trees.

Perry/McNett: The motion carried 5-0.

Wallace Cottages HDDP (PLN50589 PRE)

Kelly Tayara started the conversation with recent information regarding the access to the lots. Peter Corelis stated that the city's original preference was that access through Wallace Way continued through Fir Acres Drive to mitigate traffic impacts, but the city attorney determined this would not be a requirement. An access easement from Fir Acres Drive that was recorded on the original short plat was encumbered by a private covenant, and the easement was not depicted in subsequent recordings of the short plat and boundary line adjustment. Peter Corelis said

access to the lots had been proposed through private easement but the city's requirement for subdivisions stated that the road be dedicated as public with a 40' right of way. Dave Smith of Central Highlands said they wanted the road to be private so the lot sizes, open space and setbacks would not be affected. Nick Smith noted that originally their plan included a public road but they incorporated Design Review Board suggestions to meander the road and decided it was easier to do that with a private road. Alan Grainger asked why Central Highlands had come before the Design Review Board with a site plan with the wrong property lines and without a required right of way. Dave Smith replied that they had deadlines to meet and wanted to proceed with the meeting because the design would remain the same whether the street was public or private. Kelly Tayara said she wasn't sure how the designs could stay the same but was open to discussion. There was confusion about what existed and what was proposed. Peter Corelis said a reduction in road width could be requested but it had not been yet. He spoke about the requirements of a public road regarding turnarounds: the existing plan included a hammerhead turnaround which didn't accommodate updated access needs. Joe Dunstan said the DRB gave the initial turnaround design a "minimal" ok but now the city had a problem with the design too. Alan Grainger recommended the DRB table this review until the city and the applicant resolve the property line, right of way, easement and access issues. If the city could work it, out, the project could return to the DRB as the first agenda item on January 9th.

Dave Smith wanted clarification of which areas of the project the DRB would review. Alan replied the DRB makes recommendations to the Planning Director who then writes a letter to the Planning Commission. City Council and the Hearing Examiner would receive the information. The DRB is very clear about documents they're commenting on so the Hearing Examiner can be clear about their recommendation. Dave Smith wanted to know which parts of his presentation the DRB would comment on. Alan replied it was a HDDP project therefore demonstrating innovative site development and a site plan was part of review.

Jeff Boon asked the applicants for the status of the acquisition of the veterinary clinic property. Dave Smith said the acquisition would improve circulation and safety and they were halfway way to completing the purchase. Jeff Boon reminded him that the Design Review Board needed to look at the property the applicant currently owned. Peter Perry asked the applicant to make sure they brought a tree plan to the next review.

Alan Grainger invited members of the public to comment. Billie Nash asked Peter Corelis if he was aware of the neighborhood impact of Wallace Way being paved from Madison Avenue N to Grow Avenue. Peter Corelis replied he was aware but that it would be a system improvement for the greater good with a local impact. Betty Weiss submitted a letter from neighbors in the area in support of the purchase of the veterinary clinic by the applicant. This letter was sent to the property owner of the clinic, not the city (the letter was submitted for the record.)

Low Impact Development

Janelle Hitch, Development Engineer for the city, introduced herself to the Design Review Board and told them about new code requirements based on recently adopted 2012 stormwater requirements. These requirements were mandated by the city's National Pollutant Discharge Elimination System (NPDES) permit. The new code requirements would take effect January 2017. She presented information from the Washington Stormwater Center's Low Impact Development Training Program: <http://www.wastormwatercenter.org/lidswtrainingprogram/>, specifically slides from Module 3.4 – Intermediate Low Impact Development (LID) Topics: Site Assessment, Planning, and Layout (Western Washington). She stated the Department of Ecology's definition of LID: LID is a stormwater and land use management strategy that strives to mimic pre-disturbance hydrologic processes by emphasizing conservation, use of on-site natural features, site planning, and distributed stormwater management practices (BMPs) that are integrated into a project design. LID BMPs emphasize pre-disturbance hydrologic process of infiltration, filtration, storage, evaporation and transpiration. Common LID BMPs include: bioretention, rain gardens, permeable pavements, minimal excavation foundations, vegetated roofs, and rainwater harvesting.

Alan Grainger said it was important to the Design Review Board to have applicants talk to them about site plan concepts so they could understand their approach to LID. Janelle Hitch said LID began with site assessment and that the city had updated the Administrative Manual to reflect additional requirements. Site assessments would be required at the preapplication stage and applicants would need to consider LID when they came to the Design Review Board for conceptual review. Topography, soil, hydrography, wetlands, surrounding land use, zoning, and utility placement are examples of applicant considerations. Janelle Hitch stated applicants will have to manage their water, especially quantity, based on stormwater management manual requirements. The keystone of LID is full dispersion or full infiltration. In order to get full dispersion, it's the 65-10-25 rule: 65% native vegetation, 10% hard surface, and 25% lawn/landscape. The problem on this island is the hardpan makes it difficult for full infiltration. Some combination of infiltration and dispersion is how to accomplish LID. Some things that strip away our ability to do these things, is what the city thinks is practical differs from what a developer thinks is practical. Janelle Hitch spoke about "exempt water", which means a developer able to move their clean stormwater to an exempt body of water (such as Puget Sound) doesn't have to manage it.

Councilmember Peltier asked if developers accessed city stormwater pipes, would that be exempt water and developers wouldn't have to worry about LID? Janelle Hitch replied they would still need infiltration where feasible but wouldn't have to meet full dispersion. The city is still working on how to deal with this. Some projects may have unintended consequences like removing trees to allow water to infiltrate on site per rules vs dispersing on site. Councilmember Peltier said the Tree Ad Hoc/LID committee was considering these same things and invited the Design Review Board members to attend the next meeting.

Joe Dunstan noted the Planning Department had to look at projects in total. LID would fail if planners only considered the parcel in front of them. Janelle Hitch said these practices would be developing over time. The adopted DOE guidelines had been in place in other cities for a few years, developers should be aware it was coming to Bainbridge Island. Peter Perry noted that this practice needed to be adopted to protect the community from overdevelopment. Alan Grainger said this was music to the Design Review Board's ears and they would be extremely supportive to influence site plans to meet requirements of LID. He stated the Design Review Board would be cautious not to be the enforcer. Ron Peltier again invited the Design Review Board to the Tree Ad Hoc meetings – Wednesdays at 3 pm.

New/Old Business

Alan Grainger reported that at the request of Bainbridge Island School District (BISD), he represented Design Review Board recommendations to City Council. He said there was a misunderstanding about lot coverage. BISD wanted a more creative site plan through a more flexible arrangement of structures. City Council seemed to think this was adding density. Alan Grainger said one way density is considered is floor area ratio, another way is dwellings per acre. He said the way it had been discussed, it was as if the proposal was increasing what they could build. BISD wanted a bigger footprint but they didn't want additional floor area, which Alan Grainger thought was a more appropriate design for a school.

Alan Grainger noted that the Design Review Board meeting dates in January fell on holidays. He proposed two special meetings, one on January 9th and one on January 23rd. Alan Grainger noted that the City Council wanted a report from the Design Review Board on their 2016 activities and provide a plan for 2017. He would put together a draft of 2016 work and present it to the group for consideration. He would like, as a group, to put together 2017 plans.

Adjourn

Motion: I move to adjourn.

Boon/Dunstan: The motion passes unanimously.

The meeting adjourned at 5:27 pm

Approved by:

Alan Grainger, Chair

Lara Lant, Administrative Specialist