



**THE CENTER FOR
TRANSDISCIPLINARY LEARNING & INNOVATION**

**NEW AREA PROJECT
BELLEVUE COLLEGE**

Project Request Report 2019-2021
Washington State Board for Community and Technical Colleges

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Table of Contents

1. Executive Summary	1
2. Problem Statement, Opportunity, Program Requirement	3
3. Analysis of Alternatives	10
4. Project Planning of Preferred Alternative	16
5. Project Budget Analysis of Preferred Alternative	19

Attachments

Project Budget (Form C-100) - Preferred Option	23
Project Budget (Form C-100) - Renovation Alternative	25
Project Parameters Form	27
Minimum & Overarching Criteria	29
LEED Checklist	31
Construction Cost Estimate	33
Construction Cost Estimate - Alternate	49

Diagrams & Sketches

Campus Master Plan	79
Site Plan	80
Building Plans	81
Collaborative Cross-disciplinary Classroom	84

Appendix

Basis of Design - Consultant Narratives	87
Strategic Plan - Excerpts	103
Master Plan - Excerpts	105
Mid Cycle Evaluation - Excerpts	123
Partnerships - Letter from Eastside Pathways	131
Computer Science Advisory Board Meeting Minutes	133
Computer Science Advisory Board Profiles	139
iBIT Partnerships	141
Best Practices to Reduce Greenhouse Gas Emissions	143

Attached Support Files

Space Utilization Calculations (see attached excel file.)	
C-100 Preferred Option (see attached excel file.) C-100 Alternative (see attached excel file.)	

1. EXECUTIVE SUMMARY

1.1 PROBLEM STATEMENT / TYPE OF PROJECT REQUEST

CRITICAL NEEDS

Enrollment Growth

Bellevue College's student headcount of 32,000 makes it the third largest public institution for higher education in the state. Enrollment, which has increased dramatically since college opened in 1967, will continue to grow. FTES increased by 49% over the ten-year period between 1990 and 2000. Currently more than half of its students live outside the service district. The state board forecasts 743 new FTES by 2026, bringing the total count to 12,034 FTE.

Existing campus facilities do not have capacity to support the projected enrollment. Given the state board's growth projections, space will be reduced to 95 gross square feet per student, 21% lower than the system wide average of 121 gross square feet per student by 2026. To be on par with the system average for community and technical colleges, 26 additional gross square feet per FTE or 312,884 gross square feet would need to be added to the campus by 2026.

Meanwhile, existing capacity is inadequate to meet current enrollment demand. In order to meet program needs, classrooms have been converted to labs reducing the number of classroom seats. Remodeling space to create labs for science, interior design and computer science has eliminated 13 classrooms and 512 classroom seats.

Program Growth

Enrollment growth is the result, in part, of expanded course and degree offerings. The college offers twelve bachelor degrees. Six of them have been added since 2010 including interior design, computer science, and four in business and information technologies (iBIT). The number of new degree programs continues to grow. The state board recently approved a new associate's degree in robotics and artificial intelligence which will be expanded over time to include a bachelor's degree.

Enrollment in computer science, iBIT and interior design has increased in each program every year since their inception. Existing facilities do not have adequate space or technology to support the required learning environments for any of these programs. There is no space for the new robotics and artificial intelligence program.

Washington State's tech-sector, where demand for skilled employees already exceeds supply, will have 250,000 job openings over the next five years. The demand for tech sector jobs will continue to fuel growth in Bellevue College's computer science, and information technology programs. The college will also continue to new develop programs to fill skills gaps in the workforce.

Preparing Students for the Contemporary Workplace

This project will contribute to the college's response to contemporary workplace environments by incorporating new teaching and learning techniques. The college's RISE Learning Institute responds to the needs of the region's economy and residents.

RISE (research, innovation, service, experiential) is shaping the evolution of teaching and learning at Bellevue College. It is a transdisciplinary learning approach that teaches students life-long skills in the acquisition and application of knowledge, comprehension, analysis, and synthesis providing an education that transcends traditional subject matter content. The RISE learning paradigm promotes student achievement by developing communications, collaboration and creativity. It teaches skills that are portable across industries enabling students to succeed as they adapt to change which studies indicate may be as many as sixteen different jobs in five different industries over a working lifetime.

The foundation of the RISE program is in STEM as established by the RISE learning lab. Students from multiple disciplines have access to space and equipment that enables project based research. The college's goal is to extend the RISE approach to teaching and learning to other disciplines. New hands-on learning environments are required to realize the potential of this approach. Labs must be configured and equipped to provide opportunities for teamwork and innovation that prepares students for the contemporary workplace. They must provide space for industry partners to work together with students. The college's existing facilities do not have adequate space or technology to support the RISE learning experience. A significant portion of the existing instructional spaces were designed for traditional, lecture-style learning. 60% of the existing classrooms are too small (10-30 students) for project based learning that supports RISE.

TYPE OF REQUEST

The Center for Transdisciplinary Learning & Innovation is a growth project that creates new area on campus.

1.2 PROPOSED SOLUTION

The Center for Transdisciplinary Learning & Innovation will provide 70,000 gross square feet of new area that will bring the gross square feet per student up to 106 by 2026 to address enrollment growth. The new building will replace the classroom seats lost to program growth in existing buildings. It will provide flexible labs for future growth in existing programs and for new programs that will be developed to respond to industry needs.

The Center for Transdisciplinary Learning & Innovation will co-locate business and information technology, computer science, art, interior design, and engineering. These five related disciplines have grown and will continue to grow. It will provide facilities with adequate space and technology to support the required learning environments for these programs. Co-location of programs will encourage interdisciplinary engagement as well as enable shared use of resources.

The learning environments will prepare students for the contemporary workplace. At the heart of the new building will be a makerspace which will enable students in the co-located programs to emulate the project based teamwork that occurs in real-life working environments. It is a hands-on lab that contains a variety of low and high tech fabrication tools that enable the programs in the building and from across campus to collaborate and create. The makerspace facilitates discovery, exploration, and problem solving, thereby

fostering communications and critical thinking. It provides a place for students to work side-by-side with the college's industry partners to develop innovative solutions.

1.3 PROGRAMS ADDRESSED BY PROJECT

The new building will provide space for the information and business technologies (iBIT), computer science, interior design, art and engineering programs. The choice of programs is based on enrollment demand, integration of programs providing associate and baccalaureate degrees, and the potential for collaboration among disciplines. They will share the new facility's classrooms, work together in the makerspace and engage in the informal student study spaces. The facilities will be a resource to other disciplines on campus.

1.4 PROBABLE COST SUMMARY AND COMPARISON TO BENCHMARK

Category	Cost
Construction Contracts	\$34,531,671
Other Costs	\$6,323,757
Total	\$40,855,428

Total project cost is less than 100% of the expected cost of \$40,866,210 for the facility type.

1.5 PROJECT SCHEDULE

Phase	Start	Complete
Pre-design	Sep-2018	Mar-2019
Design	Jul-2019	Jun-2021
Construction	Jul-2021	Jan-2023

1.6 FUNDING

The project is anticipated to be funded through general obligation bonds allocated in the state's capital budget.

2. PROBLEM STATEMENT, OPPORTUNITY, PROGRAM REQUIREMENT

2.1 DESCRIPTION OF THE PROJECT AND ITS BENEFITS

PROJECT DESCRIPTION

The proposed Center for Transdisciplinary Learning & Innovation will right-size the college's facilities to support enrollment growth projected by the state board over the next ten years. The new building will provide ten general purpose classrooms and twenty dedicated labs. The academic program mix for labs will include interior design, art, engineering, computer science and the Institute for Business and Information Technologies (iBIT). A makerspace that will serve these academic

programs and others outside the building will be included on the ground floor. The program mix combined with the makerspace addresses Bellevue College's goal for fostering innovation and transdisciplinary education. The proposed building will elevate the gross square feet per student in 2026 to 106, which is still well below the SBCTC system average of 121.

BENEFITS

Student Centered Learning

The Center for Transdisciplinary Learning & Innovation has campus wide benefits for the students of Bellevue College. The project will enable the college to carry out its mission of being a student centered, comprehensive, and innovative college that is committed to teaching excellence, that advances the lifelong educational development of its students.

Student-centered learning requires students to be active, responsible participants in their own learning. It is a movement away from the lecture mode that much of the campus was designed for where the instructor is in the primary active role. The center will provide classrooms and labs that enable collaborative, project based learning where students are active participants in learning. Students will be able to engage with topical content in multiple ways which maximizes their learning potential regardless of how they inherently perceive and comprehend information.

Commitment to teaching excellence is written into faculty contracts. Tenure track faculties are required to "seek opportunities to apply creativity and to innovate in courses and programs; and to integrate new pedagogy, classroom research or project based learning." There is a lack of collaborative and flexible space for active learning as noted in the campus master plan. Space for active, project based learning with instructional equipment will enable faculty to be creative in the way they engage students with topical content. The labs and makerspace in the new building will give faculty the space and access to tools and equipment that enables creativity leading to innovation in teaching and learning.

Student Support

The new building will support student learning beyond the classroom by providing much needed informal student study space. As a non-scheduled lab, the makerspace will be used as student gathering space that supports project teams. Faculty will use the makerspace for meetings with students when access to collaboration tools benefits the student. The makerspace will also be a place for the college to engage with its many industry partners in ways they are not able to currently due to limits of space. (See page 131-142 in the Appendix for partnerships.)

2.2 FACILITIES MASTER PLAN, INSTITUTIONAL & STRATEGIC PLANS

1. FACILITIES MASTER PLAN

The new building as planned addresses the college's master plan goals and space needs as outlined in the 2017 Campus Master Plan. It is the college's first capital priority.

The 2017 facilities master plan for Bellevue College projects space needs via a combination of right-sizing for current need, projecting growth based on historic data, and then comparing the findings with the state board’s Capital Analysis Model (CAM). The master plan projects that an additional 310,800 gross square feet of new area would be needed by 2026. (See page 113 in the Appendix) This amount of added square footage is similar to the additional 312,884 gross square feet that would put the college on par with the system average of 121 gross square feet per student in 2026.

The master plan proposes growth to the south and east of the existing campus buildings. The site for the Center for Transdisciplinary Learning and Innovation building will be on the leading edge of future campus growth. It will be integrated with existing and future campus pedestrian circulation patterns.

Master Plan Center for Transdisciplinary Learning & Innovation (CTL&I)

SERVE THE COMMUNITY AND LOCAL INDUSTRY

<i>Leverage and strengthen relationships with the community and local industry with openness, access, and flexibility.</i>	The center contains a makerspace which provides a place for private industries and civic partners to collaborate with the college. Industries will contribute to programming and provide equipment for the makerspace, working with the college to develop student skills in innovation and teamwork. The makerspace will be shared by multiple disciplines in the new facility and across campus.
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BE RESPONSIVE TO CHANGE

<i>Provide flexible facilities that enable Bellevue College to be responsive to evolving needs, changing pedagogies, and progressive industries.</i>	The center provides flexible classrooms and labs that respond to evolving programs and changing pedagogies. They are sized for project based learning and will be equipped with instructional equipment that simulates the contemporary workplace. The iBIT labs will enable students to learn individually and collaboratively, and present their ideas back to the class in one lab space. Working in teams teaches communications and problem solving skills required for success in today’s workplace.
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COLLEGE VISION

<i>Showcase a place that fosters excellence, innovation, and national recognition.</i>	The center is planned to showcase the innovations that drive teaching and learning at Bellevue College. The makerspace on the ground floor is the focus of the building and will be used by multiple disciplines on campus for hands on, experiential learning. Faculty in art, interior, design, engineering, computer science and health science have already noted many possibilities for how the makerspace can foster deeper understanding of subject matter through the hands on learning experience. As an open lab, the faculty also plans to use it as a venue for bringing in industry and community partners to work with students to develop, test, present, critique, and share their work.
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SPECIFIC FUNCTIONAL AND SPACE ISSUES

<p><i>Provide additional collaborative/ flexible space, active learning classrooms, flexibility in iBIT classrooms, student gathering space and informal student study space.</i></p>	<p>Classrooms and labs are planned for active, project based learning which requires more space per student seat to allow students and faculty to move around and collaborate using both digital and analog tools. Classrooms that accommodate 36 students in learning groups enable project based learning. Class labs for iBIT are flexible for multiple modes of learning in one classroom including lecture, individual work, and collaborative group learning.</p> <p>The most common concern shared between all disciplines that participated in focus groups for the master plan was the need for student gathering and informal student study space. The center provides centrally located student study spaces on each floor to support learning outside the classroom. The makerspace at the heart of the plan is another form of informal breakout space where students can learn from each other by collaborating, networking and testing ideas.</p>
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2. STRATEGIC PLAN AND INSTITUTIONAL GOALS

The project serves Bellevue College’s institutional goals which are defined in its five-year Strategic Plan. The plan is organized around four core themes that are articulated by priority initiatives.

CORE THEME 1: STUDENT SUCCESS

<p>BC supports the success of all students in meeting their educational goals...</p> <p><i>Provide equitable services through universal design, accessible facilities, and multi-lingual communication</i></p> <p><i>Promote efficient transitions into and through BC, supporting the complete pre-K-20 continuum.</i></p>	<p>To assure that all students are able to meet their educational goals, classrooms and labs are being planned to meet the principles of Universal Design for Learning (UDL).</p> <p>UDL advocates content delivery in multiple modes to accommodate all learners regardless of how they perceive and comprehend information.</p> <p>Labs in the building will serve the range of degree programs Bellevue College offers including AA degrees, transfer programs, and baccalaureate degrees.</p>
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CORE THEME 2: TEACHING AND LEARNING EXCELLENCE

BC prepares and enables excellence in teaching and learning...

Develop and support new initiatives, certificates, credentialing models, and degrees—such as expanded baccalaureate programs—that meet the needs of the region.

Incorporate undergraduate research and experiential learning into the curriculum.

Incorporate personal effectiveness—communication, team-building, and leadership—skills throughout the curriculum.

Prepare students to succeed in an interconnected and interdependent world through interdisciplinary learning, focused on economic, social, and environmental sustainability.

Foster disciplinary and pedagogical currency and innovation through faculty professional development.

The new building is planned to foster the development of new initiatives through collocation of academic disciplines combined with appropriate space for collaborative learning.

Labs will support expanding baccalaureate programs in business and information technologies and computer science.

The makerspace enables hands on, experiential learning that motivates students to learn more deeply by doing.

Classrooms and labs designed for active, project based learning enable students to develop communications, team building and leadership skills as they learn specific subject matter.

The focus of the building is the makerspace that will be shared by students from multiple disciplines. It is structured for students to interact and collaborate as they share space and equipment and learn from each other.

The new building will provide space that enables the faculty to utilize active learning pedagogies that promote student centered learning and innovation.

CORE THEME 3: COLLEGE LIFE AND CULTURE

BC values the learning and working environment...

Be the region's college of choice for employment—providing employees with an engaging climate, competitive compensation, and shared value system.

The learning and working environments planned for the new building encourage collaboration and peer-to-peer engagement through shared space, public display and critique space, and informal break out spaces located throughout the building.

CORE THEME 4: INSTITUTIONAL EXCELLENCE

BC strives to be a leader and partner in building a strong and vibrant region ...

Forge strong relationships with community partners—employers, pre-K-12, higher education institutions, community organizations, service groups, businesses, neighbors—to build and sustain relevant programs.

The makerspace at the heart of the building will be designed so that industry and community partners can collaborate with students providing an incentive for collaboration and innovation that serves education and employment.

2.3 RELATIONSHIP TO SBCTC SYSTEM DIRECTION GOALS

SBCTC System Direction Goal Center for Transdisciplinary Learning & Innovation

PROMOTE STUDENT ACHIEVEMENT AND SUCCESS

Increase student transfers as measured by per-student enrollment and increase the number of applied baccalaureate degrees conferred.

In Washington State, Bellevue College educates the largest number of students transferring to colleges and universities. The center provides new labs and classrooms to increase enrollment capacity for existing associate degree programs in business and information technology and for a new program in robotics and artificial intelligence.

The center will also provide labs and classrooms for six bachelor degree programs. The robotics and artificial intelligence program will offer a seventh baccalaureate program in the future.

Close skill gaps within the workforce to ensure workforce training capacity is sufficient for demand and increase awards in high-demand professional-technical programs.

The center increases enrollment capacity for student seeking baccalaureate degrees in business and information technologies, computer science, engineering, and robotics and artificial intelligence - preparing them for high demand occupations in the Puget Sound region's growing tech sector.

The center enables Bellevue to fulfill its mission as an open-access college, increasing baccalaureate production and making Washington State more attractive to employers.

INCREASE ACCESS TO POST-SECONDARY EDUCATION

Enroll more underrepresented, first-generation and adult students, active military, veterans and their dependents and develop means to attract former students needing credits for degrees, certificates, or credentials.

The center provides new space that will allow Bellevue College to enroll more under represented student populations and increase its ability to attract former students needing additional education.

As an open access college, Bellevue offers a critical opportunity for under represented populations and returning students to obtain a baccalaureate education that prepares them for success in high demand occupations. As a result, a regional audience attends Bellevue College - more than half of its students come from outside its service district. New space is required to meet continuing growth in enrollment demand.

BUILD ON THE SYSTEM'S STRENGTH AND SUCCESSES

Ensure balance among mission areas: basic skills, workforce, transfer and applied baccalaureate

The academic programs housed in the center are a balanced mix of workforce education (iBIT), business transfer degrees, and applied baccalaureate degrees in business and information technologies, computer science and interior design.

SBCTC System Direction Goal	Center for Transdisciplinary Learning & Innovation
<i>Increase communication and partnerships within the system, including faculty, students and staff, and with business, labor, K-12, four-year institutions and other stakeholders.</i>	<p>Bellevue College has numerous partnerships with K-12 institutions, business, and industry that will be positively impacted by the new building. The tech professionals on the college’s computer science advisory board advised the college to provide dedicated lab space including space that the program’s graduates can revisit after graduation. The new building will increase lab space which allows for a senior design project lab. The board noted what skills employers deemed important including communication skills and breadth of knowledge. The makerspace will provide space for graduates to revisit, will enable collaboration and team project work as suggested by the advisory board. The program mix in the building fosters transdisciplinary education increasing students’ breadth of knowledge.</p> <p>The makerspace will also be a venue for interaction with K-12 administrators and teachers who come to the college for meetings of Bellevue School District’s Career and Technical Education program, Eastside Pathways, and Tech Prep, a dual credit program for high school students that enables them to earn college credit. Current space on the campus limits the activities that can be scheduled with these partners. (See page 131-142 in the Appendix for partnerships.)</p>

2.4 PROGRAM AND RELATED SPACE TABLE

The project provides new lab and classroom workstations to accommodate enrollment growth at the college. New furniture, included in the project budget, will allow space in Buildings L and C to be re-purposed as classrooms after interior design and 2D art programs are relocated to the new building.

There will be a total of 966 new student workstations including 394 lab stations and 572 classroom stations. Future utilization as noted below is based on adding these 966 new workstations.

	Contact Hours	Workstations	Future Utilization (hours per week)
Classes	88,978.50	4,040	22.02
Labs	27,074.84	1,675	16.16
Campus	116,053.33	5,715	20.31

Program	ASF	GSF	New Workstations
CLASSROOMS	10,800	16,241	360
Repurposed labs in Buildings L & C			212
DEDICATED LABS	26,128	39,231	334
Interior Design	7,264		
2D Art	6,540		
iBIT Collaborative Cross Disciplinary	6,200		
Engineering	1,392		
Digital Media Arts & Marketing	2,100		
Computer Science	2,632		
NON-SCHEDULED LAB	5,000	7,519	60
Makerspace	5,000		
INSTITUTIONAL SPACE	2,960	4,444	
Student Study	520		
Breakout space	800		
Multi use /critique space	1,340		
Faculty/student 1:1 meeting	300		
FACULTY OFFICES & SUPPORT	1,700	2,553	
Total	46,588	69,988	966

2.5 INCREASED TYPE 1 AND TYPE 2 FTES ACCOMMODATED BY THIS PROJECT

7,342	Fall 2016 Type 1 FTE
7,825	Fall 2026 Type 1 FTE
483	Net New Type 1 FTE

There are 636 new Type 2 FTE.

2.6 TABLE OF AFFECTED EXISTING BUILDINGS

Not applicable for a growth project.

3. ANALYSIS OF ALTERNATIVES

3.1 DEFINITION OF CAPITAL PROBLEM

New area is required to serve the state's board estimated enrollment growth.

3.2 OBVIOUS AND CRITICAL NEEDS

1. NEW SPACE FOR ENROLLMENT DEMAND

Bellevue College serves a regional audience. The state board predicts enrollment growth of 743 new FTES by 2026. Increased enrollment will reduce the existing space to 95 gross square feet (gsf)/student in 2026, well below the system average of 121 gsf/student. The proposed new building will improve the situation, increasing space per student to 106 gsf/square feet per student but it will still be below the system average of 121 gsf/student for 2026.

Program & Enrollment Growth

Interior Design

One of the college's first programs to offer a baccalaureate degree, the interior design program has grown rapidly since its inception in 2006. Along with WSU it is one of the state's two programs and the only one on the west side of the state. The program has taken over all the first-floor classroom space in the L Building. Lack of space prevents the college from accommodating projected new FTES and providing student digital fabrication equipment that supports training required for critical workplace skills.

The Institute for Business and Information Technologies (iBIT)

Four Bachelor of Applied Science programs in iBIT have been started since 2013 resulting in enrollment increases each year. iBIT education requires computer labs that enable students to work in groups, emulating industry. The state board recently approved a new AA degree for Robotics and Artificial Intelligence which will add new FTES in iBIT. The program, which will also offer baccalaureate degrees in the future, requires dedicated labs and classrooms that do not currently exist.

Computer Science

Growth of students in the computer science bachelor's degree program grew from five in winter of 2017 to 32 in fall 2017. Enrollment is expected to be at 48 in fall of 2018. Based on applications, it is projected to grow rapidly over the next few years.

Initiatives that Increase Participation

The college's Strategic Plan includes the development and implementation of a Strategic Enrollment Management Plan (SEMP). See page 103 in the Appendix. The goal of the SEMP is to assure that state allocations of FTE's are met or surpassed. The college's Student Success Center, which is partially funded with the college's capital reserves, is currently being designed with the goal of increasing enrollment by 2% through recruitment and retention. Both of these initiatives demonstrate Bellevue College's focus on serving students which will increase participation.

Space Needs

Recent enrollment and program growth have been accommodated by incremental conversion of classrooms to labs, reducing classroom space and total student capacity. Remodelling space for the transdisciplinary RISE Undergraduate Research Lab for

the sciences resulted in the loss of six classrooms with 174 seats. Remodelling space to create labs for the computer science program resulted in the loss of three classrooms with 106 seats. Remodeling space to create labs for the interior design program resulted in the loss of four classrooms with 232 seats. In total, 512 class seats were lost.

Demand for new area is also driven by requirements for learning environments that accommodate contemporary pedagogies. The college's facilities master plan identified the lack of flexible, collaborative learning spaces required for professional technical programs that teach workplace skills.

The college embraces Universal Design for Learning (UDL) which is an educational framework based on research in the learning sciences, including cognitive neuroscience, that guides the development of flexible learning environments that can accommodate individual learning differences. UDL involves labs and classrooms that facilitate multiple ways of communicating content to students. The small and extra small classrooms that make up 60% of the existing classrooms at the college are not sized or equipped for project based learning, group work and other modes of instruction that are critical to UDL.

2. NEW AREA

Program Mix Changes & Simplifying Space Relationships

Opportunities for Interdisciplinary Collaboration

Co-locating the interior design, art, engineering, computer science and iBIT programs, which are currently in separate buildings, creates opportunities for disciplines to work together and share of resources. Students will engage with their peers in a variety of disciplines in ways that prepares them for the contemporary workplace.

- Digital media artists in iBIT are exploring the intersection of gaming environments with architectural design and visualization, using virtual and augmented reality programs that will engage the interior design students.
- Interior designers create web pages and graphic design, and will benefit from proximity to digital media arts and marketing students.
- Computer science and Data Analytics students will be able to collaborate on the design and development of mobile apps.

The arts are a fundamental part of education that exposes students to thinking in ways that complement technical training. They teach design thinking, a contemporary approach to problem solving. Design is what distinguishes mere functionality from a great product.

Access to Shared Resources

Programs that will be housed in the center utilize digital fabrication and related equipment as part of their project based learning exercises. None of them have adequate space or equipment for these activities today. Co-located in the center they will have shared access to a fully equipped makerspace which increases efficiency,

faculty's ability to utilize their expertise and learning opportunities for students. The building's makerspace will be a hub for collaboration.

The makerspace will be a centralized lab with large-format and photo printing, laser cutters, 3-D printers, and a universal testing machine (UTM) used to test the tensile strength and compressive strength of materials. The shared lab will be managed by a technician who maintains the lab and instructs students on equipment use increasing safety and efficiency.

The makerspace will engage students in the full spectrum of project development from design ideation to prototyping, project assembly, testing and final product delivery. The hands-on learning experience will benefit programs in the center and be accessible to other disciplines across campus.

- Interior design students will use laser cutters and 3-D printers for model making and to create furniture and modular interior elements.
- Engineering students will gain experience with equipment that they will encounter in the real world.
- Robotics/artificial intelligence students will use the makerspace for programing and testing, working with clients on demonstrations and presentations, open critiques, competitions and capstone presentations.
- iBIT students will work on projects alongside industry employers.
- Radiologic technology students will utilize 3-D printing to create skeletal structures to aid in visualizing skeletal anatomy in multiple planes.
- Radiation therapy students will utilize 3-D printing to create personalized masks and other positioning aids to increase comfort for patients undergoing radiation therapy.
- Diagnostic medical sonography students will utilize 3-D printing to better visualize the interaction between sound waves and human anatomy.

3. ACCREDITATION NEEDS

The most recent accreditation report for Bellevue College was completed in 2014 (See [page 123](#) in the Appendix). Computer science and interior design are preparing for their next round of accreditation. For both programs improvement in facilities will be an issue for accreditation.

The computer science program intends to gain accreditation from the Accreditation Board for Engineering and Technology (ABET). The proposed new labs for computer science in the new building will be needed to achieve accreditation based on general criterion #7 of the ABET standards for computing programs which requires:

Classrooms, offices, laboratories, and associated equipment must be adequate to support attainment of the student outcomes and to provide an atmosphere conducive to learning. Modern tools, equipment, computing resources, and laboratories appropriate to the program must be available, accessible, and systematically maintained and upgraded to

enable students to attain the student outcomes and to support program needs. Students must be provided appropriate guidance regarding the use of the tools, equipment, computing resources, and laboratories available to the program.

The Interior Design program is accredited by the Council of Interior Design Accreditation (CIDA). The program has prepared a 4-Year Self Study in anticipation of their next accreditation review in 2018. Areas of concern note the need for multi-use critique space, an equipment printing room, space for continuous display of student work, and expanding space to accommodate more equipment including laser cutters and 3D printers.

3.3 ALTERNATIVES CONSIDERED

1. PROGRAMMATIC & FACILITY-RELATED

The college considered two other facility related alternates, leasing space off campus and a renovation of Building C with a substantial addition.

Leasing Space

The 2017 Facilities Master Plan identifies the college's interest in off-campus properties that have strategic value for expansion, programmatic needs, and/or proximity to existing college properties. The college regularly monitors real estate that is directly adjacent to its current holdings. Opportunities that would be considered for off campus real estate include:

- Expansion programming with proximity to existing college properties
- Partnership opportunities with a local employer for training
- Test marketing programming before making a permanent investment
- Embedding targeted programs into the communities of the service district

Putting the proposed growth project off the main campus meets neither the goals of the campus master plan nor any of the above criteria. The new construction is planned to serve the proposed academic programs on the main campus that are growing. The classrooms and makerspace will serve many disciplines beyond the walls of the proposed building. Lastly, because the college regularly monitors real estate parcels, there is no available property in proximity to current holdings. Leasing space off campus for this growth project is neither feasible nor compliant with the campus master plan. As a result, this alternative has not been estimated.

Renovation with a Substantial Addition

Building C currently houses arts programs, some of which will relocate to the new building, and could serve as a base for the proposed project. A substantial addition would be required to provide the same program as proposed for the new building. The renovation/addition alternate would impact square footage in two existing buildings and would also include new construction.

Approximately 44,000 gross square feet of new construction would have to be added to Building C for the additional labs proposed for the new building. The Interior Design labs in Building L that would be vacated with the move of Interior Design into the new construction would require remodeling to add the 10 general purpose classrooms needed for growth. In this alternate Building C is primarily labs and Building L is primarily classrooms.

A significant addition to Building C will be required. All the Building C space, including 18,000 assignable square feet of labs, would be required to be comprehensively renovated to meet building and energy code. The resulting gross square feet that is impacted is 28,960 existing square feet in Building C, 12,800 assignable in Building L and 44,000 gross square feet of new construction totaling 85,760 square feet.

2. CONSEQUENCES OF DOING NOTHING

The do nothing alternate will not address the enrollment growth projected by the state at Bellevue College. The college will not be able to address growth in high demand fields. It will not be able to utilize the pedagogies that are needed to give students the soft skills and technical knowledge they need to compete in the current workplace.

Business and information technology programs are experiencing enough demand for their courses to create an additional cohort. To accommodate the additional cohort the only option is to add all online classes. Students complain that classes entirely online are not providing satisfactory learning outcomes.

Computer science will not be able to add additional sections for this high demand field. Without proper lab spaces they will need to restructure the classes to be more lecture based and less hands on. The consequences for computer science are similar to those of business and information technology programs; all lectures to larger classes or all online does not provide students with the comprehensive learning outcomes they seek and need for success in today's economy.

The college will not be able to contribute the educational needs of the region. Washington State will fall further behind in educating its residents for the region's high demand fields resulting in increased importing of college graduates from out of state to fill jobs.

3. COST ESTIMATE FOR RENOVATION ALTERNATE

Category	Cost
Acquisition	\$0
Consultant Services	\$5,485,032
Construction Contracts	\$37,457,100
Equipment	\$1,512,703
Artwork	\$162,140
Other Costs	\$369,288
Total (Rounded to \$1,000)	\$44,986,000

A significant expenditure of state funds will be required for this alternate and it does not meet the state's criteria for a capital request.

- It is 110% of project cost of new construction.
- It impacts more than 70,000 GSF
- A substantial addition on the western edge of the main campus does not meet the goals of the campus master plan which acknowledges and builds upon recent expansion eastward of STEM instructional and student services buildings.

4. PROJECT PLANNING OF PREFERRED ALTERNATIVE

4.1 HISTORY OF BUILDING AND ORIGINAL FUNDING SOURCE

Bellevue College was constructed in the 1960's during a nationwide community college building boom. It was funded by the state of Washington.

4.2 USEFUL LIFE OF PROPOSED FACILITY

The new building is planning and budgeted to be a flexible durable facility that will serve Bellevue College for 50 years. Classrooms and labs are sized to accommodate evolving pedagogies.

4.3 SUSTAINABILITY

The new building is targeted for LEEDv4 Silver certification which places significant emphasis on energy efficiency and material selection (see [page 31](#) in the Appendix). Eight of the state's required Best Practices to Reduce Greenhouse Gas Emissions have been identified as achievable for this project (see [page 143](#) in the Appendix).

4.4 HOW THIS PROJECT WILL IMPACT DEFERRED MAINTENANCE AND REPAIR BACKLOG

This project is a new building with new area for the campus. There is no impact to deferred maintenance.

4.5 ACQUISITION NEEDS

The new construction is on Bellevue College's main campus. No property acquisition is required.

4.6 MITIGATION AND NEIGHBORHOOD RELATED ISSUES

There are no neighborhood or mitigation issues.

4.7 PARKING EXPANSION DIRECTLY RELATED TO THE PROJECT

This project will not trigger any parking expansion.

4.8 PERMIT ISSUES, VARIANCES REQUIRED

There are no expected permitting issues or variances required for this project beyond normal building and energy code issues. The new structure will generate significant traffic impact fees that will need to be negotiated with the City of Bellevue. The project will disturb more than one acre, so an NPDES permit will be required for construction runoff monitoring.

4.9 UTILITY AND OTHER INFRASTRUCTURE NEEDS

Existing utilities will be rerouted to maintain services to the surrounding infrastructure. A storm drain pipe serving Building T and an adjacent parking lot to the east will need to be rerouted around the proposed building. Existing parking lot lighting will need also to be relocated.

There is an existing 8-inch water main located west of the site (east of Building A) which can be tapped to provide both domestic and fire service. Fire service will likely require a booster pump to augment the available water pressure depending on the height, construction type, and fire sprinkler requirements for the building.

4.10 STORM WATER AND OTHER ENVIRONMENTAL ISSUES

The proposed site is part of a larger developed campus and will be subject to “Redevelopment Requirements” per City of Bellevue codes. Redevelopment requirements assume the site is to be redeveloped from a forested site condition. Detention for all impervious surfaces will be required. Stormwater runoff from the site will need to be detained in a below-grade structure and released to match peak flows and flow durations of a forested site. Stormwater will discharge to an existing storm conveyance system located west of the proposed project site.

Water quality treatment will be required for hard surfaces subject to vehicular traffic greater than 5,000 square feet. The required fire access road around the building will require water quality treatment unless it is gated and only used for fire access vehicles.

4.11 ROADS AND TRAFFIC SIGNALS

In order to maintain fire access to Buildings A and T, a fire access drive within 200 feet of all points of the exterior of the building will be required. There is no impact to traffic signals outside the campus.

4.12 DEPARTMENT OF ARCHAEOLOGY AND HISTORIC PRESERVATION AND TRIBAL REVIEWS

The new building does not impact any existing buildings or sites requiring DAHP review.

4.13 FALL 2016 UTILIZATION OF CLASSROOMS, LABORATORIES AND ALL INSTRUCTIONAL AREAS ON CAMPUS.

Space utilization yields the following recent data for classrooms and labs on campus (see attached excel file.)

Quarter	Program Space	Utilization (hours per week)
Fall Quarter 2016	Classrooms	24.10
	Labs	18.24
	Campus	22.52

4.14 NEW PROGRAMS, CHANGING MIX OF PROGRAMS

The building will serve a mix of existing academic programs including interior design, art, engineering, business and computer science as well as future programs that include an AA in Robotics and Artificial Intelligence. To create a mix of programs to foster transdisciplinary learning that simulates real world industry collaborations, interior design and 2D art programs are being relocated from existing buildings into the new building which will contain labs for Business and Information Technologies, engineering, and computer science. These programs will all use the building’s proposed makerspace to collaborate on issues relative to design, commerce, and engineering.

4.15 NEW SPACE AND WHAT HAPPENS TO VACATED SPACE

The vacated interior design labs in Building L and the 2D art labs in Building C will be repurposed for classrooms. Repurposing these labs for classrooms will require a change of furniture from the large class stations that design disciplines use. The project budget includes the furniture required for active, project based learning. Repurposing these labs will add 212 class seats to the campus. The existing computer labs in Building L will remain in use that will be used by multiple disciplines across campus.

4.16 COMPARISON OF EXISTING AND NEW SPACES TO THE CAM

The current CAM on file with the state board has not been updated for Bellevue College. The CAM model was, however, updated in the college’s master plan to reflect the college’s current functional categories. The CAM for current need and 2026 need shows shortages of dedicated space for academic divisions (39,047 ASF) and for classrooms (26,571 ASF). The Center for Transdisciplinary Learning and Innovation will provide 26,128 ASF for dedicated labs and 10,800 ASF of classrooms, which will reduce but not eliminate shortages. (see page 118 in the Appendix)

4.17 NEED AND AVAILABILITY OF SURGE SPACE

Surge space is not required for this project.

4.18 FLEXIBILITY AND ADAPTABILITY OF PROPOSED SPACE

The building is being planned on a flexible structural module to accommodate classrooms and labs that are designed for evolving pedagogies. The college's contract with tenure track faculty mandates the integration of innovation with new pedagogy, project based learning and research. To assure that all students are able to meet their educational goals, classrooms and labs are being planned to meet the principles of Universal Design for Learning (UDL).

The college has identified Universal Design for Learning (UDL) principals as an important aspect of curriculum development. Recognizing that learners differ in the ways they perceive and comprehend information, UDL advocates content delivery in multiple modes.

Classrooms and labs are being planned to provide the flexibility needed for the faculty to be innovative in content delivery. They are designed for multiple delivery modes including collaborative, project based learning, hybrid models where content is online and applications are in class, and lecture. Classrooms are sized for the furniture that enables students to learn individually or in groups. Labs are sized to accommodate instructional equipment and furniture that enable lecture, individual work and collaboration all in the same room.

5. PROJECT BUDGET ANALYSIS OF PREFERRED ALTERNATIVE

5.1 PREDICTION OF OVERALL PROJECT COST

PROJECT BUDGET

Category	Cost
Acquisition	\$0
Consultant Services	\$4,292,291
Construction Contracts	\$34,531,671
Equipment	\$1,512,703
Artwork	\$149,475
Other Costs	\$369,288
Total (Rounded to \$1,000)	\$40,855,000

EXPECTED COST CALCULATION

Facility Type	Expected \$/SF	GSF	Expected Cost
Classrooms	\$582	65,000	\$ 37,837,800
Makerspace Labs	\$606	5,000	\$ 3,028,410
Total		70,000	\$ 40,866,210

The makerspace is similar to a science lab in its mechanical, electrical, and plumbing features. It will have specialty exhaust systems, compressed air, some fixed equipment,

and lab style casework with access to power and plumbing. Therefore the lab expected cost has been used to calculate cost of the makerspace. The faculty offices are included in the classroom building cost. At 3% of the gross square feet they do not generate the cost associated with an administrative building. The cost of the building is driven by the instructional space. See [page 89](#) for the mechanical narrative in the Appendix.

5.2 COMPARISON OF \$/FTE TO SIMILAR SBCTC PROJECTS

PROJECT BUDGET / NET NEW FTES COMPARISON

Current SBCTC Projects	Project Cost	New FTES	\$/Net New FTES	GSF
Clark College North Clark County Classroom Project	\$54,923,000	550	\$99,860	69,000
Cascadia College Center for Science & Technology	\$41,147,000	254	\$161,996	66,100
Bellevue College Center for Transdisciplinary Learning & Innovation	\$40,855,428	744	\$54,913	70,000

The above comparison projects are from the SBCTC 2018 Major Project List.

The 2026 FTES are the total net FTE growth of each college in 2026.

5.3 ANTICIPATED ANNUAL IMPACT ON THE COLLEGE'S O&M BUDGET

Item	Annual Cost
Janitorial	\$115,000
Utility	\$175,000
Technology - Infrastructure & Technician Support, Voice, Data & Video	\$0
Capital Maintenance, General Repair, Furniture & Equipment Replacement (not needed for 3 biennia)	\$0
Roads, Walks, Landscaping & Grounds Maintenance	\$62,500
Security (negligible)	\$0
Administration	\$100,000
Total	\$452,000

5.4 JUSTIFICATION FOR DESIRED METHOD OF CONSTRUCTION

The college evaluated three options for project delivery, general contractor construction manager (GCCM), design-build and design-bid-build. Design-bid-build was selected because it aligns with the college's priorities. It enables the college to involve its stakeholders during the planning, design and construction phases of the project and typically results in the lowest cost at bid. The state's biennial funding schedule does not take advantage of design-build's schedule efficiency.

ATTACHMENTS

PROJECT BUDGET (FORM C-100) - PREFERRED OPTION

The full C-100 is available in the attached excel file.

STATE OF WASHINGTON		
AGENCY / INSTITUTION PROJECT COST SUMMARY		
Agency	Bellevue College	
Project Name	2019-21 PRR - Preferred Option	
OFM Project Number		

Contact Information		
Name	Vidya Ramachandran - Director of Capital Projects	
Phone Number	(425) 564-2473	
Email	vidya.ramachandran@bellevuecollege.edu	

Statistics			
Gross Square Feet	70,000	MACC per Square Foot	\$380
Usable Square Feet	46,588	Escalated MACC per Square Foot	\$427
Space Efficiency	66.6%	A/E Fee Class	B
Construction Type	College classroom facilit	A/E Fee Percentage	6.87%
Remodel	No	Projected Life of Asset (Years)	50
Additional Project Details			
Alternative Public Works Project	No	Art Requirement Applies	Yes
Inflation Rate	2.80%	Higher Ed Institution	Yes
Sales Tax Rate %	10.00%	Location Used for Tax Rate	Bellevue, WA
Contingency Rate	5%		
Base Month	December-17		
Project Administered By	DES		

Schedule			
Predesign Start	September-18	Predesign End	March-19
Design Start	July-19	Design End	June-21
Construction Start	July-21	Construction End	January-23
Construction Duration	18 Months		

Green cells must be filled in by user

Project Cost Estimate			
Total Project	\$36,445,698	Total Project Escalated	\$40,855,428
		Rounded Escalated Total	\$40,855,000

STATE OF WASHINGTON		
AGENCY / INSTITUTION PROJECT COST SUMMARY		
Agency	Bellevue College	
Project Name	2019-21 PRR - Renovation Alternative	
OFM Project Number		

Cost Estimate Summary

Acquisition			
Acquisition Subtotal	\$0	Acquisition Subtotal Escalated	\$0

Consultant Services			
Predesign Services	\$250,000		
A/E Basic Design Services	\$2,041,713		
Extra Services	\$938,000		
Other Services	\$1,559,291		
Design Services Contingency	\$239,450		
Consultant Services Subtotal	\$5,028,454	Consultant Services Subtotal Escalated	\$5,485,032

Construction			
Construction Contingencies	\$1,440,746	Construction Contingencies Escalated	\$1,624,009
Maximum Allowable Construction Cost (MACC)	\$28,814,917	Maximum Allowable Construction Cost (MACC) Escalated	\$32,427,900
Sales Tax	\$3,025,566	Sales Tax Escalated	\$3,405,191
Construction Subtotal	\$33,281,229	Construction Subtotal Escalated	\$37,457,100

Equipment			
Equipment	\$1,220,000		
Sales Tax	\$122,000		
Non-Taxable Items	\$0		
Equipment Subtotal	\$1,342,000	Equipment Subtotal Escalated	\$1,512,703

Artwork			
Artwork Subtotal	\$162,140	Artwork Subtotal Escalated	\$162,140

Agency Project Administration			
Agency Project Administration Subtotal	\$0		
DES Additional Services Subtotal	\$0		
Other Project Admin Costs	\$0		
Project Administration Subtotal	\$0	Project Administration Subtotal Escalated	\$0

Other Costs			
Other Costs Subtotal	\$334,500	Other Costs Subtotal Escalated	\$369,288

Project Cost Estimate			
Total Project	\$40,148,323	Total Project Escalated	\$44,986,263
		Rounded Escalated Total	\$44,986,000

PROJECT BUDGET (FORM C-100) - RENOVATION ALTERNATIVE

The full C-100 is available in the attached excel file.

STATE OF WASHINGTON		
AGENCY / INSTITUTION PROJECT COST SUMMARY		
Agency	Bellevue College	
Project Name	2019-21 PRR - Renovation Alternative	
OFM Project Number		

Contact Information		
Name	Vidya Ramachandran - Director of Capital Projects	
Phone Number	(425) 564-2473	
Email	vidya.ramachandran@bellevuecollege.edu	

Statistics			
Gross Square Feet	87,680	MACC per Square Foot	\$329
Usable Square Feet	56,992	Escalated MACC per Square Foot	\$370
Space Efficiency	65.0%	A/E Fee Class	B
Construction Type	College classroom facilit	A/E Fee Percentage	9.78%
Remodel	yes	Projected Life of Asset (Years)	50
Additional Project Details			
Alternative Public Works Project	No	Art Requirement Applies	Yes
Inflation Rate	2.80%	Higher Ed Institution	Yes
Sales Tax Rate %	10.00%	Location Used for Tax Rate	Bellevue, WA
Contingency Rate	5%		
Base Month	December-17		
Project Administered By	DES		

Schedule			
Predesign Start	September-18	Predesign End	March-19
Design Start	July-19	Design End	June-21
Construction Start	July-21	Construction End	January-23
Construction Duration	18 Months		

Green cells must be filled in by user

Project Cost Estimate			
Total Project	\$40,148,323	Total Project Escalated	\$44,986,263
		Rounded Escalated Total	\$44,986,000

STATE OF WASHINGTON		
AGENCY / INSTITUTION PROJECT COST SUMMARY		
Agency	Bellevue College	
Project Name	2019-21 PRR - Renovation Alternative	
OFM Project Number		

Cost Estimate Summary

Acquisition			
Acquisition Subtotal	\$0	Acquisition Subtotal Escalated	\$0

Consultant Services			
Predesign Services	\$250,000		
A/E Basic Design Services	\$2,041,713		
Extra Services	\$938,000		
Other Services	\$1,559,291		
Design Services Contingency	\$239,450		
Consultant Services Subtotal	\$5,028,454	Consultant Services Subtotal Escalated	\$5,485,032

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Construction Subtotal	\$33,281,229	Construction Subtotal Escalated	\$37,457,100

Equipment			
Equipment	\$1,220,000		
Sales Tax	\$122,000		
Non-Taxable Items	\$0		
Equipment Subtotal	\$1,342,000	Equipment Subtotal Escalated	\$1,512,703

Artwork			
Artwork Subtotal	\$162,140	Artwork Subtotal Escalated	\$162,140

Agency Project Administration			
Agency Project Administration Subtotal	\$0		
DES Additional Services Subtotal	\$0		
Other Project Admin Costs	\$0		
Project Administration Subtotal	\$0	Project Administration Subtotal Escalated	\$0

Other Costs			
Other Costs Subtotal	\$334,500	Other Costs Subtotal Escalated	\$369,288

Project Cost Estimate			
Total Project	\$40,148,323	Total Project Escalated	\$44,986,263
		Rounded Escalated Total	\$44,986,000

PROJECT PARAMETERS FORM

Type of Space	Square Footage	Percent
Renovation of Existing	(S1) 0	
New Space	(S2) 70,000	
Exterior Circulation of Existing. See Appendix H.	(S6) 0	
Demolished Area	(S3) 0	
Total Affected Area	(S4) 70,000	100%
Net Area Change = New – Demo – Circulation	S5 0	

Costs	Dollars	Percent
Acquisition	\$0	0%
Consultant Services	\$4,292,291	11%
Construction Contracts (w/o eligible Infrastructure)	Ca \$34,531,671	85%
Eligible Infrastructure Contracts (from C100)	Cb N/A	0%
Equipment	\$1,512,703	4%
Artwork	\$149,475	<1%
Other Costs	\$369,288	1%
Project Management	\$0	0%
Total Project Cost (C1)	\$40,855,000	100%

Funding	Dollars	Percent
State Appropriation	\$40,855,000	100%
Financed – backed by State Appropriation	N/A	
Local Funds – Cash (see list of qualifying funds)	N/A	
Financed – backed by Local Funds	N/A	
Total Project Funding	(F1) \$40,855,000	100%
Matching		
Variance = Cost – Funding		

Project Weighting	Equivalent Area	Percent
Matching		
Infrastructure		
Renovation		
Replacement		
New	70,000	100%
Total	S4 70,000	100%

MINIMUM & OVERARCHING CRITERIA

2019-21 Minimum and Overarching Criteria Points

Evaluation Criteria	Scoring Standard	
College Response	Affected buildings are at a single site.	Yes / No
College Response	Project does not include improvements to temporary or portable facilities.	Yes / No
College Response	Project is not a gymnasium or recreational facility.	Yes / No
College Response	Project is not an exclusive enterprise function such as a bookstore, dormitory or contract food service.	Yes / No
College Response	Project is not dependent on another project in the current request.	Yes / No
College Response	Project meets LEED Silver Standard requirements.	Yes / No
College Response	College has a Greenhouse Gas Emission Reduction plan.	Yes / No
College Response	The facility is state-owned or a condominium interest is held (state capital funds cannot be spent on leased space).	Yes / No
College Response	Project will take more than one biennium. And, project costs at least \$5,000,000 and does not exceed 70,000 gsf without WACTC Capital Budget Committee approval.	Yes / No
College Response	If project includes renovation or replacement, then affected buildings have been owned by the college for 20 years at the time of the request.	Yes / No
College Response	If project includes renovation, then the project extends the useful life of the affected building at least 20 years.	Yes / No
College Response	If project includes renovation, then the cost does not exceed 80% of the current replacement cost.	Yes / No N/A
Effective use of existing facilities See Appendix C for guidelines on determining existing utilization.	Fall 2016 space utilization relative to standards and other proposals. Standards are: Classroom seats used 22 hours per week. Laboratory seats used 16 hours per week.	Up to 9 points
Ability to enhance state and institution's achievement of goals	<i>Add up points from each category: (Max 14)</i> Directly tied to facilities master plan Directly tied to objectives in strategic plan Include clear and succinct description of the relationship between the project and its impact on partnerships with K-12, 4 yrs, business, etc. This may be supported by letters from partners describing how the project will benefit the partnership. Project includes at least seven of the best practices identified in Appendix A to reduce greenhouse gas emissions.	4 4 4 2
Overarching Subtotal (O1)		
Overarching Weighting (O2)		
Overarching Weighted Subtotal (O3 = O1 x O2)		
Overarching Portion of Project (O4)		
Overarching Points (O5 = O3 x O4)		

LEED CHECKLIST

LEED v4 for BD+C: New Construction and Major Renovation Project Checklist



Project Name: Bellevue College 2019-21 Project Request Report
Date: Dec-17

Y	?	N	Credit	Integrative Process	1
1				Integrative Process	1
8 5 19 Location and Transportation 16					
			16	LEED for Neighborhood Development Location	16
			1	Sensitive Land Protection	1
			2	High Priority Site	2
			5	Surrounding Density and Diverse Uses	5
			5	Access to Quality Transit	5
			1	Bicycle Facilities	1
			1	Reduced Parking Footprint	1
			1	Green Vehicles	1
3 5 2 Sustainable Sites 10					
			10	Construction Activity Pollution Prevention	10
			1	Site Assessment	1
			2	Site Development - Protect or Restore Habitat	2
			1	Open Space	1
			3	Rainwater Management	3
			2	Heat Island Reduction	2
			1	Light Pollution Reduction	1
6 1 4 Water Efficiency 11					
			11	Outdoor Water Use Reduction	11
				Indoor Water Use Reduction	Required
				Building-Level Water Metering	Required
			2	Outdoor Water Use Reduction	2
			6	Indoor Water Use Reduction	6
			2	Cooling Tower Water Use	2
			1	Water Metering	1
13 5 9 Energy and Atmosphere 33					
			33	Fundamental Commissioning and Verification	33
				Minimum Energy Performance	Required
				Building-Level Energy Metering	Required
				Fundamental Refrigerant Management	Required
			6	Enhanced Commissioning	6
			18	Optimize Energy Performance	18
			1	Advanced Energy Metering	1
			2	Demand Response	2
			3	Renewable Energy Production	3
14 1 1 Indoor Environmental Quality 16					
			16	Minimum Indoor Air Quality Performance	16
				Environmental Tobacco Smoke Control	Required
			2	Enhanced Indoor Air Quality Strategies	2
			3	Low-Emitting Materials	3
			1	Construction Indoor Air Quality Management Plan	1
			2	Indoor Air Quality Assessment	2
			1	Thermal Comfort	1
			2	Interior Lighting	2
			3	Daylight	3
			1	Quality Views	1
			1	Acoustic Performance	1
2 1 3 Innovation 6					
			6	Innovation	6
			5	LEED Accredited Professional	5
2 0 2 Regional Priority 4					
			4	Regional Priority: Specific Credit	4
			1	Regional Priority: Specific Credit	1
			1	Regional Priority: Specific Credit	1
			1	Regional Priority: Specific Credit	1
54 20 46 TOTALS Possible Points: 110					
Certified: 40 to 49 points, Silver: 50 to 59 points, Gold: 60 to 79 points, Platinum: 80 to 110					

CONSTRUCTION COST ESTIMATE

Bellevue College
 Arts Classroom Building
 Bellevue, WA
 PRR Estimate



Date: December 5, 2017
 Prepared By: AC

OVERALL SUMMARY CONSTRUCTION COST

	Gross Area	\$/SF	\$
Building - New	70,000 SF	347.35	24,314,667
Sitework			2,253,230
TOTAL CONSTRUCTION COST			26,567,896
Building - New	45,920 SF	371.46	17,057,571
Building C - Renovation	28,960 SF	286.38	8,293,549
Building L - T.I.	12,800 SF	94.58	1,210,568
Sitework			2,253,230
TOTAL CONSTRUCTION COST ALTERNATE			28,814,917

Note: Washington State Sales Tax is assumed to be included in Soft Costs.

Bellevue College		 C & N Consultants, Inc. Construction Cost Consultants		
Arts Classroom Building		Gross Floor Area: 70,000 SF		
Bellevue, WA		Date: December 5, 2017		
PRR Estimate		Prepared By: AC		
New Building		Summary of Estimate		
No.	Element Description	Element Totals	Group Totals	Cost Per SF
A10	FOUNDATIONS		1,050,067	15.00
A1010	Standard Foundation	298,975		4.27
A1020	Special Foundation	529,751		7.57
A1030	Slab on grade	221,340		3.16
A20	BASEMENT WALL CONSTRUCTION			-
A2010	Basement Excavation			-
A2020	Basement Wall Construction			-
B10	SUPERSTRUCTURE		3,318,526	47.41
B1010	Floor Construction	2,547,896		36.40
B1020	Roof Construction	770,629		11.01
B20	EXTERIOR ENCLOSURE		3,196,165	45.66
B2010	Exterior Walls	2,012,095		28.74
B2020	Exterior Windows	1,135,950		16.23
B2030	Exterior Doors	48,120		0.69
B30	ROOFING		841,204	12.02
B3010	Roof Covering	841,204		12.02
C10	INTERIOR CONSTRUCTION		1,821,020	26.01
C1010	Partitions	1,214,336		17.35
C1020	Interior Doors	295,988		4.23
C1030	Fittings	310,695		4.44
C20	STAIRS		265,825	3.80
C2010	Stair Construction	265,825		3.80
C30	INTERIOR FINISHES		1,380,916	19.73
C3010	Wall Finishes	376,389		5.38
C3020	Floor Finishes	500,153		7.15
C3030	Ceiling Finishes	504,374		7.21
D10	CONVEYING		184,450	2.64
D1010	Elevators & Lifts	184,450		2.64
D20	PLUMBING		1,000,073	14.29
D2010	Plumbing	1,000,073		14.29

Bellevue College Arts Classroom Building Bellevue, WA PRR Estimate New Building		Summary of Estimate		Gross Floor Area: 70,000 SF Date: December 5, 2017 Prepared By: AC	
					
No.	Element Description		Element Totals	Group Totals	Cost Per SF
D30	HVAC			3,497,241	49.96
D3010	HVAC		3,497,241		49.96
D40	FIRE PROTECTION			442,750	6.33
D4010	Sprinkler System		442,750		6.33
D50	ELECTRICAL			3,469,551	49.57
D5000	Electrical		3,469,551		49.57
E10	EQUIPMENT			154,436	2.21
E1010	Equipment		154,436		2.21
E20	FURNISHINGS			334,180	4.77
E2010	Fixed Furnishings		334,180		4.77
F10	SPECIAL CONSTRUCTION			-	-
F1010	Special Structure				
F1020	Special Construction				
F20	SELECTIVE BUILDING DEMOLITION			-	-
F2010	Building Demolition				-
	Sub-Total			20,956,403	299.38
	Estimating / Design Contingency	10.00%		Included in Rates	
	General Conditions / General Requirements	10.50%		2,200,422	31.43
	Sub-Total			23,156,826	330.81
	GC Fee	5.00%		1,157,841	16.54
	November 2017 Construction Cost			24,314,667	347.35
	Escalation, excluded (Included in C100 Forms)				-
	TOTAL CONSTRUCTION COST			\$24,314,667	347.35

Bellevue College Arts Classroom Building Bellevue, WA PRR Estimate New Building	 Gross Floor Area: 70,000 SF Date: December 5, 2017 Prepared By: AC			
DETAIL OF ESTIMATE				
Item Description	Quantity	Unit	Unit Cost	Totals

A10 FOUNDATIONS

A1010 Standard Foundation

A1011 Wall foundations				
Reinforced concrete continuous footings and spread footings	268	CY	786.63	210,816
Miscellaneous				
Elevator pits including slabs, walls and waterproofing	1	EA	12,097.75	12,098
Sump pit including metal grating	1	EA	2,224.25	2,224
Slab depressions / thickened slabs	1	LS	2,712.50	2,713
Perimeter drain pipe and rock	774	LF	23.87	18,475
Rigid insulation at slab perimeter	774	LF	5.64	4,367
Reinforced concrete stem walls	930	SF	43.40	40,362
Bentonite waterproofing system at stem walls	930	SF	8.52	7,921
Total For Standard Foundations				298,975

A1020 Special Foundation

A1021 Pile foundations

A1021 Pile foundations				
Pile foundations, assumed not required				N/A

A1022 Grade beams				
Reinforced concrete brace frame footings	630	CY	840.88	529,751
Total For Special Foundations				529,751

A1030 Slab on Grade

A1031 Standard slab on grade				
Reinforced concrete slab on grade	25,500	SF	8.68	221,340
Total For Slab on Grade				221,340

A20 BASEMENT CONSTRUCTION

A2010 Basement Excavation

No work anticipated				N/A
Total For Basement Excavation				

A2010 Basement Walls

No work anticipated				N/A
Total For Basement Walls				

Bellevue College Arts Classroom Building Bellevue, WA PRR Estimate New Building	 Gross Floor Area: 70,000 SF Date: December 5, 2017 Prepared By: AC			
DETAIL OF ESTIMATE				
Item Description	Quantity	Unit	Unit Cost	Totals

B1010 Floor Construction

B1012 Upper floors construction				
Steel columns, allow 1.05#/SF	46,725	LB	2.60	121,672
Steel beams, allow 9#/SF	400,500	LB	2.60	1,042,902
Miscellaneous steel (Angle and channel steel)	18,000	LB	2.60	46,872
Moment connections	36	EA	868.00	31,248
Metal deck	44,500	SF	4.23	188,302
Reinforced concrete topping slab	44,500	SF	7.60	337,978
Brace frames				
Steel columns, allow 1.65#/SF	115,500	LB	2.60	300,762
Wide flange beams, allow 1.45#/SF	101,500	LB	2.60	264,306
Pipe steel bracing, allow 0.75#/SF	52,500	LB	3.26	170,888
Miscellaneous				
Spray applied fire proofing at 20% floor and roof structure	141,434	LB	0.30	42,967
Total For Floor Construction				2,547,896

B1020 Roof Construction

B 1020 Roof Construction				
Steel columns, allow 1.05#/SF	27,143	LB	2.60	70,679
Steel beams, allow 8#/SF	206,800	LB	2.60	538,507
Miscellaneous steel (Angle and channel steel)	8,000	LB	2.60	20,832
Moment connections	12	EA	868.00	10,416
Metal deck	25,850	SF	4.07	105,177
Reinforced concrete topping slab	3,294	SF	7.60	25,018
Total For Roof Construction				770,629

B20 EXTERIOR CLOSURE

B2010 Exterior Walls

B2011 Exterior wall construction				
Aluminum wall panels	15,903	SF	49.91	793,734
Corrugated steel panels (AEP Span)	10,602	SF	26.04	276,081
Metal stud framing	26,506	SF	9.22	244,447
Batt insulation, R19	26,506	SF	1.36	35,948
Rigid insulation	26,506	SF	3.53	93,465
Gypsum sheathing, 5/8" thick	26,506	SF	3.80	100,655
Air / Vapor barrier, building paper and wrap	26,506	SF	4.56	120,786
Gypsum board, 5/8" at interior finish side	26,506	SF	3.39	89,726
B2013 Exterior louvers, screens and fencing				
Louvers and sun control devices	1	LS	87,342.50	87,343

Bellevue College
Arts Classroom Building
Bellevue, WA
PRR Estimate
New Building



Gross Floor Area: **70,000 SF**

Date: **December 5, 2017**

Prepared By: **AC**

DETAIL OF ESTIMATE

Item Description	Quantity	Unit	Unit Cost	Totals
B2016 Exterior soffits				
Exterior gypsum soffits including WAB and metal framing	335	SF	21.70	7,270
Caulking, sealants and firestopping				
Caulking, sealants and firestopping	1	LS	83,545.00	83,545
Miscellaneous				
Finish to backside of parapet walls	1,730	SF	13.56	23,463
Sheet metal coping	865	LF	37.98	32,848
Canopies	200	SF	113.93	22,785
Total For Exterior Walls				2,012,095
B2020 Exterior Windows				
B2021 Windows / Storefronts				
Windows / Storefronts, 50% of glazed area	5,680	SF	80.00	454,380
Curtain wall				
Curtain wall glazing system, 50% of glazed area	5,680	SF	120.00	681,570
Total For Exterior Windows				1,135,950
B2030 Exterior Doors				
B 2030 Exterior Doors, frames and hardware				
Glazed aluminum entrance doors, double	2	EA	7,595.00	15,190
HM / Solid core wood door and HM frame, per leaf	6	EA	2,414.13	14,485
Specialty hardware	1	LS	7,052.50	7,053
B2034 Overhead doors				
Sectional insulated glazed door, 10'-0" x 10'-0"	1	EA	11,392.50	11,393
Total For Exterior Doors				48,120
B30 ROOFING				
B3010 Roof Covering				
B3011 Roof finishes				
Roofing system with 1/2" cover board, R30 Rigid insulation, vapor retarder and gypsum base board, 1/2" thick	25,850	SF	20.07	518,874
Green roofing system	3,294	SF	39.60	130,451
B3012 Traffic toppings and paving membranes				
TPO walkway	2,585	SF	9.22	23,840
B3014 Flashings and trim				
Sheet metal flashings	1	LS	37,975.00	37,975

Bellevue College Arts Classroom Building Bellevue, WA PRR Estimate New Building	 Gross Floor Area: 70,000 SF Date: December 5, 2017 Prepared By: AC
DETAIL OF ESTIMATE	

Item Description	Quantity	Unit	Unit Cost	Totals
B3021 Glazed roof openings Skylights, unit	620	SF	86.80	53,816
Miscellaneous				
Rough carpentry	1	LS	34,177.50	34,178
Fall anchors including cable	1	LS	42,070.88	42,071
Total For Roofing				841,204

C10 INTERIOR CONSTRUCTION
C1010 Partitions

C1011 Fixed partitions				
Metal studs	64,260	SF	4.94	317,236
Batt insulation	64,260	SF	1.09	69,722
Gypsum board, 5/8"	128,520	SF	3.31	425,305
Gypsum board underlayment / multiple layers	48,500	SF	2.82	136,819
C1013 Operable and folding panel partitions Operable partitions, not required				
C1016 Interior balustrades and screens Guardrails, decorative at open to below	40	LF	287.53	11,501
C1017 Interior windows and storefronts				
Interior glazing including transoms and sidelights	1,800	SF	65.10	117,180
Fire rated aluminum storefront	675	SF	157.33	106,194
Miscellaneous				
Bulkheads and soffits	1	LS	18,987.50	18,988
Blocking and backing	1	LS	11,392.50	11,393
Total For Interior Partitions				1,214,336

C1020 Interior Doors

C1021 Interior doors				
Interior doors, frames and hardware				
Solid core wood / wood glazed doors and HM frame				
Per leaf	110	EA	2,495.50	274,505
Specialty hardware / rated doors / power actuators / acoustics	1	LS	21,483.00	21,483
Total For Interior Doors				295,988

C1030 Specialties

C1032 Fabricated compartments and cubicles				
Toilet partitions				
ADA toilet partition	6	EA	1,746.85	10,481

Bellevue College Arts Classroom Building Bellevue, WA PRR Estimate New Building	 C & N Consultants, Inc. <small>Construction Cost Consultants</small>
	Gross Floor Area: 70,000 SF
	Date: December 5, 2017
	Prepared By: AC

DETAIL OF ESTIMATE

Item Description	Quantity	Unit	Unit Cost	Totals
STD toilet partition	12	EA	1,535.28	18,423
Urinal screens	6	EA	602.18	3,613
C1033 Storage shelving and lockers				
Janitors mop rack and shelving	3	EA	488.25	1,465
C1035 Identifying devices				
Code signage	70,000	SF	0.17	12,152
Wayfinding and room identification signage	70,000	SF	0.41	28,861
Exterior building signage	1	LS	17,360.00	17,360
C1037 General fittings and misc. metals				
Miscellaneous metals, allow 0.4#/SF	28,000	LB	3.53	98,735
Elevator pit ladders	1	EA	868.00	868
Fire extinguisher cabinets	15	EA	249.55	3,743
Corner guards	10	EA	200.73	2,007
Grab bars at restrooms	9	EA	260.40	2,344
Mirrors at restrooms	15	EA	179.03	2,685
Restroom accessories	1	LS	20,072.50	20,073
Fixed tackboards and whiteboards	1	LS	87,885.00	87,885
Total For Fittings and Specialty Items				310,695
C20 STAIRS				
C2010 Stair Construction				
C 2010 Stair Construction including railings and finish				
Custom stairs, complete	7	FLT	37,975.00	265,825
Total For Stair Construction				265,825
C30 INTERIOR FINISHES				
C3010 Wall Finishes				
C3011 Wall finishes to inside exterior walls				
Paint to interior side of exterior walls	26,506	SF	1.19	31,634
C3012 Wall finishes to interior walls				
Paint to walls	128,520	SF	1.19	153,389
Ceramic tile	1,680	SF	18.99	31,899
FRP	609	SF	10.20	6,211
Acoustical wall panels	1,500	SF	18.99	28,481
Miscellaneous wall finishes / acoustical treatments	1	LS	124,775.00	124,775
Total For Wall Finishes				376,389
C3020 Floor Finishes				
C3024 Flooring including base				
Linoleum at corridors / public space	19,121	SF	7.43	142,112

Bellevue College Arts Classroom Building Bellevue, WA PRR Estimate New Building	 Gross Floor Area: 70,000 SF Date: December 5, 2017 Prepared By: AC
DETAIL OF ESTIMATE	

Item Description	Quantity	Unit	Unit Cost	Totals
Linoleum at Art rooms	6,807	SF	7.43	50,591
Linoleum at engineering labs	1,412	SF	7.43	10,494
Carpet at CCDL	7,353	SF	4.94	36,300
Linoleum at ID labs	8,253	SF	7.43	61,338
Ceramic tile at restrooms	1,976	SF	17.90	35,375
Carpet tile at offices and meeting rooms	2,308	SF	4.94	11,394
Carpet tile at general classrooms, digital classrooms	12,785	SF	4.94	63,116
Polished concrete at makers space / equipment	5,702	SF	8.35	47,637
Sealed concrete at MEP / Janitor areas	2,634	SF	1.74	4,573
Rubber base	11,435	LF	3.26	37,221

Total For Floor Finishes **500,153**

C3030 Ceiling Finishes

C3031 Ceiling finishes				
2 x 6 ACT Optima plank ceiling and grid corridors	19,121	SF	8.68	165,970
2 x 4 ACT Optima plank ceiling and grid	46,269	SF	6.62	306,231
Gypsum board, painted at restrooms	1,976	SF	13.56	26,800
Paint to exposed	2,634	SF	2.04	5,373

Total For Ceiling Finishes **504,374**

D10 CONVEYING
D1010 Elevator & Lift

D1011 Passenger elevators				
Passenger elevator, 3 stop including cab finish, 5,000# capacity	1	EA	184,450.00	184,450

Total For Elevator & Lifts **184,450**

D20 PLUMBING
D2010 Plumbing

Plumbing estimate				
Division 22 - Plumbing, Waste and Vent	70,000	SF	1.90	132,913
Division 22 - Plumbing, Cold and Hot Water Piping	70,000	SF	2.39	167,090
Division 22 - Plumbing, Fixtures and Water Heaters	70,000	SF	7.27	508,865
Division 22 - Plumbing, Insulation	70,000	SF	0.87	60,760
Sub-Contractor Overhead and profit	15%		869,628.34	130,444

Total For Plumbing **1,000,073**

D30 HVAC
D3010 HVAC

HVAC estimate				
Division 23 - HVAC, General Provisions	70,000	SF	3.40	237,999

Bellevue College	 C & N Consultants, Inc. Construction Cost Consultants
Arts Classroom Building	Gross Floor Area: 70,000 SF
Bellevue, WA	Date: December 5, 2017
PRR Estimate	Prepared By: AC
New Building	

DETAIL OF ESTIMATE

Item Description	Quantity	Unit	Unit Cost	Totals
Division 23 - HVAC, VRF Equipment and Piping	70,000	SF	8.80	616,000
Division 23 - HVAC, Ductwork and Insulation	70,000	SF	6.80	476,000
Division 23 - HVAC, Built Up HVAC Units	50,400	CF	10.40	524,160
Division 23 - HVAC, DOAS Unit	30,800	CF	6.40	197,120
Division 23 - HVAC, Support equipment	70,000	SF	4.70	329,000
Division 23 - HVAC, Variable Air Volume Units	32	EA	1,400.00	44,800
Division 23 - HVAC, Outlets, Inlets, Exhaust fans, etc	70,000	SF	1.40	97,999
Division 23 - HVAC, Energy Management System	70,000	SF	7.40	517,999
Sub-Contractor Overhead and profit	15%		3,041,079.30	456,162
			Total For HVAC	3,497,241
D40				
D4010 Fire Protection				
Fire protection estimate				
Division 21 - Fire Protection	70,000	SF	5.50	385,000
Sub-Contractor Overhead and profit	15%		385,000.00	57,750
			Total For Fire Sprinkler System	442,750
D50				
ELECTRICAL				
D5000 Electrical				
Electrical estimate completed by Hargis Engineers dated November 10th, 2017				
Building Electrical (Division 26)	70,000	SF	32.00	2,240,000
Building Telecommunications (Division 27)	70,000	SF	5.50	385,001
Building Audio Visual Rough-In (Division 27)	70,000	SF	1.50	105,001
Building Fire Alarm (Division 28)	70,000	SF	1.85	129,500
Building Electronic Security (Division 28)	70,000	SF	2.25	157,500
Rooftop photovoltaic array, excluded				N/A
Sub-Contractor Overhead and profit	15%		3,017,001.26	452,550
			Total For Electrical	3,469,551
E10				
E1010 EQUIPMENT				
E1025 Audio-visual equipment				
Projection screens and projector ceiling mounts, allow	30	EA	4,948.96	148,469
E1094 Residential equipment				
Break room appliances	1	LS	5,967.50	5,968
			Total For Equipment	154,436
E20				
FURNISHINGS				
E2010 Fixed Furnishing				
E2012 Fixed casework				

Bellevue College Arts Classroom Building Bellevue, WA PRR Estimate New Building	 Gross Floor Area: 70,000 SF Date: December 5, 2017 Prepared By: AC
DETAIL OF ESTIMATE	

Item Description	Quantity	Unit	Unit Cost	Totals
Casework	1	LS	250,635.00	250,635
E2013 Blinds and other window treatments Window treatments	1	LS	70,525.00	70,525
E2014 Fixed floor grilles and mats Entrance mats and frames	1	LS	13,020.00	13,020
Total For Furniture				334,180
 F10 SPECIAL STRUCTURES				
F1010 <u>Special Structure</u>				
No work anticipated				N/A
Total For Special Structure				
 F1020 <u>Special Construction</u>				
No work anticipated				N/A
Total For Special Construction				
 F20 SELECTIVE BUILDING DEMOLITION				
F2010 <u>Building Element Demolition</u>				
No work anticipated				N/A
Total For Selected Demolition				

Bellevue College Arts Classroom Building Bellevue, WA PRR Estimate Sitework - New Building		 C & N Consultants, Inc. Construction Cost Consultants		Date: December 5, 2017 Prepared By: AC	
		Sitework Summary			
No.	Element Description		Element Totals	Group Totals	
G	BUILDING SITEWORK			1,942,021	
G10	Site Preparation		655,611		
G20	Site Improvement		314,148		
G30	Site Mechanical Utilities		672,865		
G40	Site Electrical Utilities		299,397		
	Sub-Total			1,942,021	
	General Conditions / General Requirements	10.50%		203,912	
	Sub-Total MACC			2,145,933	
	GC Fee	5.00%		107,297	
	November 2017 Construction Cost			2,253,230	
	Escalation, excluded (Included in C100 Forms)				
	TOTAL CONSTRUCTION COST			\$2,253,230	

Bellevue College Arts Classroom Building Bellevue, WA PRR Estimate Sitework - New Building	 C & N Consultants, Inc. <small>Construction Cost Consultants</small> Date: December 5, 2017 Prepared By: AC			
DETAIL OF ESTIMATE				
Item Description	Quantity	Unit	Unit Cost	Totals

G10 Site Preparation estimate prepared by civil engineer

G 1020 Site Demolition and Relocations				
Demolish and remove				
Site Mobilization (excluded from Civil estimate)	2.25	Acre	1,150.00	2,588
Remove Curb, Off-site Disposal	1,250	LF	2.30	2,875
AC Removal & Disposal	51,500	SF	1.44	74,031
Asphalt Sawcutting 2" Depth	800	LF	0.86	690
Remove Signage	1	LS	1,725.00	1,725
Remove Existing Light Poles	5	EA	575.00	2,875
Remove Existing Trees	12	EA	115.00	1,380
Remove Existing 6" Storm Drainage Piping	280	LF	2.30	644
Misc. Utility Removal	1	LS	5,750.00	5,750
G 1030 Site Earthwork				
Site Mobilization	2.25	Acre	1,150.00	2,588
Stripping (Haul Off)	1,815	CY	32.20	58,443
Excavate and haul off excess and unsuitable soils	500	CY	34.50	17,250
Import Structural Fill	5,340	CY	40.25	214,954
Rough Grading (landscape)	20,000	SF	0.29	5,750
Fine Grading (building and paving areas)	78,000	SF	0.40	31,395
G1037 Erosion control				
Silt Fence	250	LF	6.33	1,581
Rock Construction Entrance	2	EA	2,875.00	5,750
Truck Wash	1	EA	4,025.00	4,025
Catch Basin Protection	5	EA	92.00	460
Sediment Storage	9	MO	6,900.00	62,100
Interceptor Ditches	600	LF	3.45	2,070
Temp Const. Fence	1,000	LF	3.74	3,738
Turbidity Monitoring	12	MO	1,725.00	20,700
Quarry Spalls Working Pad/Laydown	2,600	CY	40.25	104,650
ESC Allowance (CESCL Monitoring)	12	MO	2,300.00	27,600
Total For Site Preparation				655,611

G20 Site Improvements

Asphalt Concrete				
4" HMA over 6" CSBC	1,058	SY	40.25	42,576
Pavement Markings and Signage	1	LS	23,000.00	23,000
Portland Cement Concrete				
Curb, Vertical	1,610	LF	17.25	27,773
Concrete Paving 4" Slab On Grade	5,000	SF	6.90	34,500
Curbed access ramps	2	EA	2,875.00	5,750
Bike Rack	2	EA	1,150.00	2,300
G 2040 Site Development				
Allowance for walls, steps, site furnishings and miscellaneous structures	1	LS	86,250.00	86,250

Bellevue College				
Arts Classroom Building		Date: December 5, 2017		
Bellevue, WA		Prepared By: AC		
PRR Estimate				
Sitework - New Building				
DETAIL OF ESTIMATE				
Item Description	Quantity	Unit	Unit Cost	Totals
G 2050 Landscaping				
Landscaping, allow	1	LS	92,000.00	92,000
Total For Site Improvement				314,148

G30 Site Mechanical Utilities

Mechanical utilities

On Site Water Distribution

Connect to existing line	2	EA	3,450.00	6,900
4-inch DI pipe, includes fittings & trenching	690	LF	57.50	39,675
6-inch DI pipe, includes fittings & trenching	340	LF	74.75	25,415
6" Tees	2	EA	345.00	690
6" Bends	4	EA	345.00	1,380
4" Gate Valve	1	EA	1,150.00	1,150
6" Gate Valve	2	EA	1,265.00	2,530
8" Gate Valve	4	EA	1,380.00	5,520
8"x6" Reducer	2	EA	1,150.00	2,300
Thrust Blocks	8	EA	345.00	2,760
Fire Dept. Connection (FDC)	1	EA	2,300.00	2,300
Post Indicator Valve (PIV)	1	EA	2,070.00	2,070
6" Fire DDCV in Vault	1	EA	14,375.00	14,375
3" Domestic Meter (vault and setter)	1	EA	17,250.00	17,250
2" Landscape Meter (box and setter)	1	EA	2,300.00	2,300
2" Landscape Backflow DCVA	1	EA	2,300.00	2,300

Sanitary Sewer System

Connect to Existing	3	EA	3,450.00	10,350
Sanitary Sewer Cleanouts	6	EA	557.75	3,347
6-inch PVC pipe	160	LF	51.75	8,280
Lower/Raise Manhole Cover	1	EA	1,437.50	1,438

Storm drainage

Connection to existing storm system	4	EA	1,725.00	6,900
Area Drains	8	EA	862.50	6,900
Walk Off Grille	2	SF	80.50	161
CB Type I	6	EA	2,127.50	12,765
CB type II, 48" diameter	2	EA	3,450.00	6,900
CB Type II, 54" diameter	2	EA	4,025.00	8,050
Flow Control Riser	1	EA	2,875.00	2,875
6-inch Det. Tank Sub Drainage	600	LF	23.00	13,800
6-inch Perforated Pipe (Footing Drain - Bldg/Ftg)	730	LF	23.00	16,790
6-inch SD (Import Structural Backfill)	200	LF	51.75	10,350
8-inch SD (Import Structural Backfill)	750	LF	63.25	47,438
12-inch SD (Import Structural Backfill)	270	LF	74.75	20,183
Rain Gardens (With Mulch)	5000	SF	8.05	40,250
Concrete Detention Vaults	20000	CF	13.80	276,000

Bellevue College Arts Classroom Building Bellevue, WA PRR Estimate Sitework - New Building	 Date: December 5, 2017 Prepared By: AC
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DETAIL OF ESTIMATE

Item Description	Quantity	Unit	Unit Cost	Totals
Water quality system - modular wetland	1	EA	34,500.00	34,500
Storm Drain Cleanouts	20	EA	442.75	8,855
Downspout Connections	12	EA	460.00	5,520
Lower/Raise CB Rim	4	EA	575.00	2,300
Total For Site Mechanical Utilities				672,865

G40 Site Electrical Utilities & Site Lighting

Site electrical estimate completed by Hargis Engineers dated November 10th, 2017

Primary power ductbank, SCC MV	150	LF	154.00	23,100
Primary power vaults/manholes	1	EA	14,080.00	14,080
Grounding	1	LS	14,300.00	14,300
B1800 Building Connection / Rework / Temp Provisions	1	LS	22,000.00	22,000
B2000/B2100 Building Connection / Rework / Temp Provisions	1	LS	22,000.00	22,000
Primary Power - Selective Demolition	1	LS	27,500.00	27,500
Site Lighting	1	LS	36,000.00	36,000
Telecomm Handholes	1	LS	13,640.00	13,640
Telecomm Duct Banks	1	LS	41,800.00	41,800
Inter-building Telecomm Backbone Cabling Infrastructure	1	LS	37,400.00	37,400
Site Security Systems	1	LS	8,525.00	8,525
Sub-Contractor Overhead and profit	15%		260,345.00	39,052

Total For Site Electrical Utilities **299,397**

CONSTRUCTION COST ESTIMATE - ALTERNATE

Bellevue College
 Arts Classroom Building
 Bellevue, WA
 PRR Estimate
 New Building - Alternate



C & N Consultants, Inc.
 Construction Cost Consultants

Date: December 5, 2017

Prepared By: AC

BUILDING DATA

Building Area		
Level 1	16,960 SF	
Level 2	28,960 SF	
Total Gross Floor Area		45,920 SF

		Quantity	Unit	Ratio to Gross Area
Number of stories (x1,000)		2	EA	0.044
Gross Area		45,920	SF	1.000
Footprint Area		16,960	SF	0.369
Volume		688,800	CF	15.000
Gross Wall Area		25,157	SF	0.548
Retaining Wall Area		-	SF	
Finished Wall Area		25,157	SF	0.548
Windows or Glazing Area	30.00%	7,547	SF	0.164
Roof Area - Flat		27,200	SF	0.592
Roof Area - Sloping		-	SF	
Roof Area - Total		27,200	SF	0.592
Roof Glazing Area		620	SF	0.014
Interior Partition Length		3,050	LF	0.066
Interior Doors Per Leaf		72	EA	0.002
Interior Glazing		2,263	SF	0.049
Finished Area		45,920	SF	1.000
Elevators (x10,000)		1	EA	0.022

Bellevue College		 C & N Consultants, Inc. Construction Cost Consultants		
Arts Classroom Building		Gross Floor Area: 45,920 SF		
Bellevue, WA		Date: December 5, 2017		
PRR Estimate		Prepared By: AC		
New Building - Alternate		Summary of Estimate		
No.	Element Description	Element Totals	Group Totals	Cost Per SF
A10	FOUNDATIONS		704,103	15.33
A1010	Standard Foundation	209,373		4.56
A1020	Special Foundation	347,517		7.57
A1030	Slab on grade	147,213		3.21
A20	BASEMENT WALL CONSTRUCTION			-
A2010	Basement Excavation			-
A2020	Basement Wall Construction			-
B10	SUPERSTRUCTURE		2,469,872	53.79
B1010	Floor Construction	1,669,107		36.35
B1020	Roof Construction	800,765		17.44
B20	EXTERIOR ENCLOSURE		2,383,651	51.91
B2010	Exterior Walls	1,585,649		34.53
B2020	Exterior Windows	754,710		16.44
B2030	Exterior Doors	43,292		0.94
B30	ROOFING		756,985	16.48
B3010	Roof Covering	756,985		16.48
C10	INTERIOR CONSTRUCTION		1,284,976	27.98
C1010	Partitions	884,296		19.26
C1020	Interior Doors	194,168		4.23
C1030	Fittings	206,511		4.50
C20	STAIRS		189,875	4.13
C2010	Stair Construction	189,875		4.13
C30	INTERIOR FINISHES		929,000	20.23
C3010	Wall Finishes	248,925		5.42
C3020	Floor Finishes	344,859		7.51
C3030	Ceiling Finishes	335,216		7.30
D10	CONVEYING		135,000	2.94
D1010	Elevators & Lifts	135,000		2.94
D20	PLUMBING		604,652	13.17
D2010	Plumbing	604,652		13.17

Bellevue College				 C & N Consultants, Inc. Construction Cost Consultants	
Arts Classroom Building				Gross Floor Area: 45,920 SF	
Bellevue, WA				Date: December 5, 2017	
PRR Estimate				Prepared By: AC	
New Building - Alternate		Summary of Estimate			
No.	Element Description		Element Totals	Group Totals	Cost Per SF
D30	HVAC			2,294,190	49.96
D3010	HVAC		2,294,190		49.96
D40	FIRE PROTECTION			290,444	6.33
D4010	Sprinkler System		290,444		6.33
D50	ELECTRICAL			2,276,026	49.57
D5000	Electrical		2,276,026		49.57
E10	EQUIPMENT			102,195	2.23
E1010	Equipment		102,195		2.23
E20	FURNISHINGS			219,903	4.79
E2010	Fixed Furnishings		219,903		4.79
F10	SPECIAL CONSTRUCTION			-	-
F1010	Special Structure				
F1020	Special Construction				
F20	SELECTIVE BUILDING DEMOLITION			60,760	
F2010	Building Demolition		60,760		1.32
	Sub-Total			14,701,634	320.16
	Estimating / Design Contingency	10.00%		Included in Rates	
	General Conditions / General Requirements	10.50%		1,543,672	33.62
	Sub-Total			16,245,305	353.77
	GC Fee	5.00%		812,265	17.69
	November 2017 Construction Cost			17,057,571	371.46
	Escalation, excluded (Included in C100 Forms)				-
	TOTAL CONSTRUCTION COST			\$17,057,571	371.46

Bellevue College Arts Classroom Building Bellevue, WA PRR Estimate New Building - Alternate	 Gross Floor Area: 45,920 SF Date: December 5, 2017 Prepared By: AC			
DETAIL OF ESTIMATE				
Item Description	Quantity	Unit	Unit Cost	Totals

A10	FOUNDATIONS			
	A1010 <u>Standard Foundation</u>			
	A1011 Wall foundations			
	Reinforced concrete continuous footings and spread footings	176	CY	786.63
				138,295
	Miscellaneous			
	Elevator pits including slabs, walls and waterproofing	1	EA	12,097.75
	Sump pit including metal grating	1	EA	2,224.25
	Slab depressions / thickened slabs	1	LS	2,712.50
	Perimeter drain pipe and rock	758	LF	23.87
	Rigid insulation at slab perimeter	758	LF	5.64
	Reinforced concrete stem walls	610	SF	43.40
	Bentonite waterproofing system at stem walls	610	SF	8.52
				5,196
	Total For Standard Foundations			209,373
	A1020 <u>Special Foundation</u>			
	A1021 <u>Pile foundations</u>			
	A1021 Pile foundations			
	Pile foundations, assumed not required			N/A
	A1022 Grade beams			
	Reinforced concrete brace frame footings	413	CY	840.88
				347,517
	Total For Special Foundations			347,517
	A1030 <u>Slab on Grade</u>			
	A1031 Standard slab on grade			
	Reinforced concrete slab on grade	16,960	SF	8.68
				147,213
	Total For Slab on Grade			147,213
A20	BASEMENT CONSTRUCTION			
	A2010 <u>Basement Excavation</u>			
	No work anticipated			N/A
	Total For Basement Excavation			
	A2010 <u>Basement Walls</u>			
	No work anticipated			N/A
	Total For Basement Walls			

Bellevue College Arts Classroom Building Bellevue, WA PRR Estimate New Building - Alternate		 Gross Floor Area: 45,920 SF Date: December 5, 2017 Prepared By: AC		
DETAIL OF ESTIMATE				
Item Description	Quantity	Unit	Unit Cost	Totals

B1010 Floor Construction

B1012 Upper floors construction				
Steel columns, allow 1.05#/SF	30,408	LB	2.60	79,182
Steel beams, allow 9#/SF	260,640	LB	2.60	678,707
Miscellaneous steel (Angle and channel steel)	12,000	LB	2.60	31,248
Moment connections	24	EA	868.00	20,832
Metal deck	28,960	SF	4.23	122,544
Reinforced concrete topping slab	28,960	SF	7.60	219,951
Brace frames				
Steel columns, allow 1.65#/SF	75,768	LB	2.60	197,300
Wide flange beams, allow 1.45#/SF	66,584	LB	2.60	173,385
Pipe steel bracing, allow 0.75#/SF	34,440	LB	3.26	112,102
Miscellaneous				
Spray applied fire proofing at 20% floor and roof structure	111,442	LB	0.30	33,856
Total For Floor Construction				1,669,107

B1020 Roof Construction

B 1020 Roof Construction				
Steel columns, allow 1.05#/SF	28,560	LB	2.60	74,370
Steel beams, allow 8#/SF	217,600	LB	2.60	566,630
Miscellaneous steel (Angle and channel steel)	8,000	LB	2.60	20,832
Moment connections	12	EA	868.00	10,416
Metal deck	25,850	SF	4.07	105,177
Reinforced concrete topping slab	3,073	SF	7.60	23,339
Total For Roof Construction				800,765

B20 EXTERIOR CLOSURE**B2010 Exterior Walls**

B2011 Exterior wall construction				
Aluminum wall panels	10,566	SF	49.91	527,346
Corrugated steel panels (AEP Span)	7,044	SF	26.04	183,425
Metal stud framing	17,610	SF	9.22	162,407
Batt insulation, R19	17,610	SF	1.36	23,883
Rigid insulation	17,610	SF	3.53	62,097
Gypsum sheathing, 5/8" thick	17,610	SF	3.80	66,874
Air / Vapor barrier, building paper and wrap	17,610	SF	4.56	80,248
Gypsum board, 5/8" at interior finish side	17,610	SF	3.39	59,613
Modifications to existing walls	8,680	SF	26.00	225,680
B2013 Exterior louvers, screens and fencing				
Louvers and sun control devices	1	LS	56,420.00	56,420

Bellevue College Arts Classroom Building Bellevue, WA PRR Estimate New Building - Alternate	 Gross Floor Area: 45,920 SF Date: December 5, 2017 Prepared By: AC
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DETAIL OF ESTIMATE

Item Description	Quantity	Unit	Unit Cost	Totals
B2016 Exterior soffits				
Exterior gypsum soffits including WAB and metal framing	335	SF	21.70	7,270
Caulking, sealants and firestopping				
Caulking, sealants and firestopping	1	LS	54,805.52	54,806
Miscellaneous				
Finish to backside of parapet walls	1,622	SF	13.56	21,998
Sheet metal coping	811	LF	37.98	30,798
Canopies	200	SF	113.93	22,785
Total For Exterior Walls				1,585,649
 B2020 Exterior Windows				
B2021 Windows / Storefronts				
Windows / Storefronts, 50% of glazed area	3,774	SF	80.00	301,884
Curtain wall				
Curtain wall glazing system, 50% of glazed area	3,774	SF	120.00	452,826
Total For Exterior Windows				754,710
 B2030 Exterior Doors				
B 2030 Exterior Doors, frames and hardware				
Glazed aluminum entrance doors, double	2	EA	7,595.00	15,190
HM / Solid core wood door and HM frame, per leaf	4	EA	2,414.13	9,657
Specialty hardware	1	LS	7,052.50	7,053
 B2034 Overhead doors				
Sectional insulated glazed door, 10'-0" x 10'-0"	1	EA	11,392.50	11,393
Total For Exterior Doors				43,292
 B30 ROOFING				
B3010 Roof Covering				
B3011 Roof finishes				
Roofing system with 1/2" cover board, R30 Rigid insulation, vapor retarder and gypsum base board, 1/2" thick	24,127	SF	20.07	484,289
Green roofing system	3,073	SF	39.60	121,698
 B3012 Traffic toppings and paving membranes				
TPO walkway	2,413	SF	9.22	22,251
 B3014 Flashings and trim				
Sheet metal flashings	1	LS	24,911.60	24,912

Bellevue College Arts Classroom Building Bellevue, WA PRR Estimate New Building - Alternate	 Gross Floor Area: 45,920 SF Date: December 5, 2017 Prepared By: AC
DETAIL OF ESTIMATE	

Item Description	Quantity	Unit	Unit Cost	Totals
B3021 Glazed roof openings Skylights, unit	620	SF	86.80	53,816
Miscellaneous				
Rough carpentry	1	LS	22,420.44	22,420
Fall anchors including cable	1	LS	27,598.49	27,598
Total For Roofing				756,985

C10 INTERIOR CONSTRUCTION

C1010 Partitions

C1011 Fixed partitions				
Metal studs	42,700	SF	4.94	210,799
Batt insulation	42,700	SF	1.09	46,330
Gypsum board, 5/8"	85,400	SF	3.31	282,610
Gypsum board underlayment / multiple layers	31,816	SF	2.82	89,753
C1013 Operable and folding panel partitions				
Operable partitions, not required				
C1016 Interior balustrades and screens				
Guardrails, decorative at open to below	40	LF	287.53	11,501
C1017 Interior windows and storefronts				
Interior glazing including transoms and sidelights	1,800	SF	65.10	117,180
Fire rated aluminum storefront	675	SF	157.33	106,194
Miscellaneous				
Bulkheads and soffits	1	LS	12,455.80	12,456
Blocking and backing	1	LS	7,473.48	7,473
Total For Interior Partitions				884,296

C1020 Interior Doors

C1021 Interior doors				
Interior doors, frames and hardware				
Solid core wood / wood glazed doors and HM frame				
Per leaf	72	EA	2,495.50	180,075
Specialty hardware / rated doors / power actuators / acoustics	1	LS	14,092.85	14,093
Total For Interior Doors				194,168

C1030 Specialties

C1032 Fabricated compartments and cubicles				
Toilet partitions				
ADA toilet partition	4	EA	1,746.85	6,987

Bellevue College Arts Classroom Building Bellevue, WA PRR Estimate New Building - Alternate	 Gross Floor Area: 45,920 SF Date: December 5, 2017 Prepared By: AC
DETAIL OF ESTIMATE	

Item Description	Quantity	Unit	Unit Cost	Totals
STD toilet partition	8	EA	1,535.28	12,282
Urinal screens	4	EA	602.18	2,409
C1033 Storage shelving and lockers				
Janitors mop rack and shelving	2	EA	488.25	977
C1035 Identifying devices				
Code signage	45,920	SF	0.17	7,972
Wayfinding and room identification signage	45,920	SF	0.41	18,933
Exterior building signage	1	LS	13,020.00	13,020
C1037 General fittings and misc. metals				
Miscellaneous metals, allow 0.4#/SF	18,368	LB	3.53	64,770
Elevator pit ladders	1	EA	868.00	868
Fire extinguisher cabinets	10	EA	249.55	2,456
Corner guards	7	EA	200.73	1,405
Grab bars at restrooms	7	EA	260.40	1,823
Mirrors at restrooms	10	EA	179.03	1,790
Restroom accessories	1	LS	13,167.56	13,168
Fixed tackboards and whiteboards	1	LS	57,652.56	57,653
Total For Fittings and Specialty Items				206,511
C20 STAIRS				
C2010 Stair Construction				
C 2010 Stair Construction including railings and finish				
Custom stairs, complete	5	FLT	37,975.00	189,875
Total For Stair Construction				189,875
C30 INTERIOR FINISHES				
C3010 Wall Finishes				
C3011 Wall finishes to inside exterior walls				
Paint to interior side of exterior walls	17,610	SF	1.19	21,017
C3012 Wall finishes to interior walls				
Paint to walls	85,400	SF	1.19	101,925
Ceramic tile	1,126	SF	18.99	21,372
FRP	400	SF	10.20	4,075
Acoustical wall panels	984	SF	18.99	18,684
Miscellaneous wall finishes / acoustical treatments	1	LS	81,852.40	81,852
Total For Wall Finishes				248,925
C3020 Floor Finishes				
C3024 Flooring including base				
Floor finishes	45,920	SF	7.51	344,859

Bellevue College Arts Classroom Building Bellevue, WA PRR Estimate New Building - Alternate	
	Gross Floor Area: 45,920 SF
	Date: December 5, 2017
	Prepared By: AC
DETAIL OF ESTIMATE	

Item Description	Quantity	Unit	Unit Cost	Totals
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Total For Floor Finishes **344,859**

C3030 Ceiling Finishes

C3031 Ceiling finishes				
Ceiling finishes	45,920	SF	7.30	335,216

Total For Ceiling Finishes **335,216**

D10 CONVEYING
D1010 Elevator & Lift

D1011 Passenger elevators				
Passenger elevator, 2 stop including cab finish, 5,000# capacity	1	EA	135,000.00	135,000

Total For Elevator & Lifts **135,000**

D20 PLUMBING
D2010 Plumbing

Plumbing estimate				
Division 22 - Plumbing, Waste and Vent	45,920	SF	1.75	80,360
Division 22 - Plumbing, Cold and Hot Water Piping	45,920	SF	2.20	101,024
Division 22 - Plumbing, Fixtures and Water Heaters	45,920	SF	6.70	307,664
Division 22 - Plumbing, Insulation	45,920	SF	0.80	36,736
Sub-Contractor Overhead and profit	15%		525,784.51	78,868

Total For Plumbing **604,652**

D30 HVAC
D3010 HVAC

HVAC estimate				
Division 23 - HVAC, General Provisions	45,920	SF	3.40	156,128
Division 23 - HVAC, VRF Equipment and Piping	45,920	SF	8.80	404,096
Division 23 - HVAC, Ductwork and Insulation	45,920	SF	6.80	312,256
Division 23 - HVAC, Built Up HVAC Units	33,062	CF	10.40	343,849
Division 23 - HVAC, DOAS Unit	20,205	CF	6.40	129,311
Division 23 - HVAC, Support equipment	45,920	SF	4.70	215,824
Division 23 - HVAC, Variable Air Volume Units	21	EA	1,400.00	29,389
Division 23 - HVAC, Outlets, Inlets, Exhaust fans, etc	45,920	SF	1.40	64,288
Division 23 - HVAC, Energy Management System	45,920	SF	7.40	339,808
Sub-Contractor Overhead and profit	15%		1,994,948.02	299,242

Total For HVAC **2,294,190**

D40

Bellevue College Arts Classroom Building Bellevue, WA PRR Estimate New Building - Alternate	 Gross Floor Area: 45,920 SF Date: December 5, 2017 Prepared By: AC
DETAIL OF ESTIMATE	

Item Description	Quantity	Unit	Unit Cost	Totals
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D4010 Fire Protection

Fire protection estimate				
Division 21 - Fire Protection	45,920	SF	5.50	252,560
Sub-Contractor Overhead and profit	15%		252,560.00	37,884
Total For Fire Sprinkler System				290,444

D50 ELECTRICAL

D5000 Electrical

Electrical estimate completed by Hargis Engineers dated November 10th, 2017

Building Electrical (Division 26)	45,920	SF	32.00	1,469,440
Building Telecommunications (Division 27)	45,920	SF	5.50	252,560
Building Audio Visual Rough-In (Division 27)	45,920	SF	1.50	68,880
Building Fire Alarm (Division 28)	45,920	SF	1.85	84,952
Building Electronic Security (Division 28)	45,920	SF	2.25	103,320
Rooftop photovoltaic array, excluded				N/A
Sub-Contractor Overhead and profit	15%		1,979,152.83	296,873
Total For Electrical				2,276,026

E10 E1010 EQUIPMENT

E1025 Audio-visual equipment				
Projection screens and projector ceiling mounts, allow	20	EA	4,948.96	97,395
E1094 Residential equipment				
Break room appliances	1	LS	4,800.00	4,800
Total For Equipment				102,195

E20 FURNISHINGS

E2010 Fixed Furnishing

E2012 Fixed casework				
Casework	1	LS	164,416.56	164,417
E2013 Blinds and other window treatments				
Window treatments	1	LS	46,264.40	46,264
E2014 Fixed floor grilles and mats				
Entrance mats and frames	1	LS	9,222.50	9,223
Total For Furniture				219,903

F10 SPECIAL STRUCTURES

F1010 Special Structure

Bellevue College Arts Classroom Building Bellevue, WA PRR Estimate New Building - Alternate	 Gross Floor Area: 45,920 SF Date: December 5, 2017 Prepared By: AC
DETAIL OF ESTIMATE	

Item Description	Quantity	Unit	Unit Cost	Totals
No work anticipated				N/A
Total For Special Structure				
F1020 <u>Special Construction</u>				
No work anticipated				N/A
Total For Special Construction				
F20 SELECTIVE BUILDING DEMOLITION				
F2010 <u>Building Element Demolition</u>				
F2012 Building exterior demolition				
Building exterior demolition	1	LS	60,760.00	60,760
Total For Selected Demolition				60,760

<p>Bellevue College Arts Classroom Building Bellevue, WA PRR Estimate Building C Renovation - Alternate</p>	 <p>C & N Consultants, Inc. Construction Cost Consultants</p> <p>Date: December 5, 2017 Prepared By: AC</p>
BUILDING DATA	

Building Area	
Level 1	19,600 SF
Level 2	9,360 SF
Total Gross Floor Area	28,960 SF

		Quantity	Unit	Ratio to Gross Area
Number of stories (x1,000)		2	EA	0.069
Gross Area		28,960	SF	1.000
Footprint Area		19,600	SF	0.677
Volume		434,400	CF	15.000
Gross Wall Area		7,359	SF	0.254
Retaining Wall Area		-	SF	
Finished Wall Area		7,359	SF	0.254
Windows or Glazing Area	30.00%	2,208	SF	0.076
Roof Area - Flat		19,600	SF	0.677
Roof Area - Sloping		-	SF	
Roof Area - Total		19,600	SF	0.677
Roof Glazing Area		-	SF	
Interior Partition Length		1,910	LF	0.066
Interior Doors Per Leaf		38	EA	0.001
Interior Glazing		212	SF	0.007
Finished Area		28,960	SF	1.000
Elevators (x10,000)		-	EA	

Bellevue College Arts Classroom Building Bellevue, WA PRR Estimate Building C Renovation - Alternate		 Gross Floor Area: 28,960 SF Date: December 5, 2017 Prepared By: AC		
		Summary of Estimate		
No.	Element Description	Element Totals	Group Totals	Cost Per SF
A10	FOUNDATIONS		59,871	2.07
A1010	Standard Foundation	27,321		0.94
A1020	Special Foundation			-
A1030	Slab on grade	32,550		1.12
A20	BASEMENT WALL CONSTRUCTION			-
A2010	Basement Excavation			-
A2020	Basement Wall Construction			-
B10	SUPERSTRUCTURE		395,724	13.66
B1010	Floor Construction	267,114		9.22
B1020	Roof Construction	128,610		4.44
B20	EXTERIOR ENCLOSURE		775,897	26.79
B2010	Exterior Walls	535,127		18.48
B2020	Exterior Windows	220,770		7.62
B2030	Exterior Doors	20,000		0.69
B30	ROOFING		458,753	15.84
B3010	Roof Covering	458,753		15.84
C10	INTERIOR CONSTRUCTION		659,647	22.78
C1010	Partitions	422,684		14.60
C1020	Interior Doors	102,250		3.53
C1030	Fittings	134,712		4.65
C20	STAIRS		15,000	0.52
C2010	Stair Construction	15,000		0.52
C30	INTERIOR FINISHES		594,820	20.54
C3010	Wall Finishes	165,922		5.73
C3020	Floor Finishes	217,490		7.51
C3030	Ceiling Finishes	211,408		7.30
D10	CONVEYING		-	-
D1010	Elevators & Lifts			-
D20	PLUMBING		381,331	13.17
D2010	Plumbing	381,331		13.17

Bellevue College Arts Classroom Building Bellevue, WA PRR Estimate Building C Renovation - Alternate				Gross Floor Area: 28,960 SF Date: December 5, 2017 Prepared By: AC	
Summary of Estimate			Element Totals	Group Totals	Cost Per SF
No.	Element Description				
D30	HVAC			1,446,859	49.96
D3010	HVAC		1,446,859		49.96
D40	FIRE PROTECTION			183,172	6.33
D4010	Sprinkler System		183,172		6.33
D50	ELECTRICAL			1,435,403	49.57
D5000	Electrical		1,435,403		49.57
E10	EQUIPMENT			49,490	1.71
E1010	Equipment		49,490		1.71
E20	FURNISHINGS			127,817	4.41
E2010	Fixed Furnishings		127,817		4.41
F10	SPECIAL CONSTRUCTION			-	-
F1010	Special Structure				
F1020	Special Construction				
F20	SELECTIVE BUILDING DEMOLITION			564,288	
F2010	Building Demolition		564,288		19.49
	Sub-Total			7,148,071	246.83
	Estimating / Design Contingency	10.00%		Included in Rates	
	General Conditions / General Requirements	10.50%		750,547	25.92
	Sub-Total			7,898,618	272.74
	GC Fee	5.00%		394,931	13.64
	November 2017 Construction Cost			8,293,549	286.38
	Escalation, excluded (Included in C100 Forms)				-
	TOTAL CONSTRUCTION COST			\$8,293,549	286.38

Bellevue College Arts Classroom Building Bellevue, WA PRR Estimate Building C Renovation - Alternate	 Gross Floor Area: 28,960 SF Date: December 5, 2017 Prepared By: AC			
DETAIL OF ESTIMATE				
Item Description	Quantity	Unit	Unit Cost	Totals

A10 FOUNDATIONS

A1010 Standard Foundation

A1011 Wall foundations Shear wall foundation	35	CY	786.63	27,321
Total For Standard Foundations				27,321

A1020 Special Foundation

A1021 Pile foundations

A1021 Pile foundations Pile foundations, assumed not required				N/A
Total For Special Foundations				

A1030 Slab on Grade

A1031 Standard slab on grade Reinforced concrete slab on grade for new shear walls	2,000	SF	16.28	32,550
Total For Slab on Grade				32,550

A20 BASEMENT CONSTRUCTION

A2010 Basement Excavation

No work anticipated				N/A
Total For Basement Excavation				

A2010 Basement Walls

No work anticipated				N/A
Total For Basement Walls				

B1010 Floor Construction

B1012 Upper floors construction Reinforced concrete shear walls	2,201	SF	62.93	138,503
Tying new shear wall into existing structure	314	LF	70.53	22,174
Remove and replace suspended slab where required for new shear wall construction	1,886	SF	56.42	106,436
Total For Floor Construction				267,114

Bellevue College Arts Classroom Building Bellevue, WA PRR Estimate Building C Renovation - Alternate	 Gross Floor Area: 28,960 SF Date: December 5, 2017 Prepared By: AC
DETAIL OF ESTIMATE	

Item Description	Quantity	Unit	Unit Cost	Totals
B1020 <u>Roof Construction</u>				
B 1020 Roof Construction				
Tying new shear wall into existing structure	314	LF	70.53	22,174
Remove and replace suspended slab where required for new shear wall construction	1,886	SF	56.42	106,436
Total For Roof Construction				128,610
B20 <u>EXTERIOR CLOSURE</u>				
B2010 <u>Exterior Walls</u>				
B2011 Exterior wall construction				
Aluminum wall panels	3,091	SF	49.91	154,261
Corrugated steel panels (AEP Span)	2,061	SF	26.04	53,656
Metal stud framing	5,151	SF	9.22	47,508
Batt insulation, R19	5,151	SF	1.36	6,986
Rigid insulation	5,151	SF	3.53	18,165
Gypsum sheathing, 5/8" thick	5,151	SF	3.80	19,562
Air / Vapor barrier, building paper and wrap	5,151	SF	4.56	23,474
Gypsum board, 5/8" at interior finish side	5,151	SF	3.39	17,438
B2013 Exterior louvers, screens and fencing				
Louvers and sun control devices	1	LS	56,420.00	56,420
B2016 Exterior soffits				
Exterior gypsum soffits including WAB and metal framing	335	SF	21.70	7,270
Caulking, sealants and firestopping				
Caulking, sealants and firestopping	1	LS	54,805.52	54,806
Miscellaneous				
Finish to backside of parapet walls	1,622	SF	13.56	21,998
Sheet metal coping	811	LF	37.98	30,798
Canopies	200	SF	113.93	22,785
Total For Exterior Walls				535,127
B2020 <u>Exterior Windows</u>				
B2021 Windows / Storefronts				
Windows / Storefronts, 50% of glazed area	1,104	SF	80.00	88,308
Curtain wall				
Curtain wall glazing system, 50% of glazed area	1,104	SF	120.00	132,462
Total For Exterior Windows				220,770

Bellevue College Arts Classroom Building Bellevue, WA PRR Estimate Building C Renovation - Alternate	 Gross Floor Area: 28,960 SF Date: December 5, 2017 Prepared By: AC
DETAIL OF ESTIMATE	

Item Description	Quantity	Unit	Unit Cost	Totals
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B2030 Exterior Doors

B 2030 Exterior Doors, frames and hardware Exterior doors, allow	1	LS	20,000.00	20,000
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Total For Exterior Doors **20,000**

B30 ROOFING

B3010 Roof Covering

B3011 Roof finishes Roofing system with 1/2" cover board, R30 Rigid insulation, vapor retarder and gypsum base board, 1/2" thick	19,600	SF	20.07	393,421
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B3012 Traffic toppings and paving membranes TPO walkway	1,960	SF	9.22	18,076
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B3014 Flashings and trim Sheet metal flashings	1	LS	15,710.80	15,711
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Miscellaneous Rough carpentry	1	LS	14,139.72	14,140
Fall anchors including cable	1	LS	17,405.32	17,405

Total For Roofing **458,753**

C10 INTERIOR CONSTRUCTION

C1010 Partitions

C1011 Fixed partitions Metal studs	26,740	SF	4.94	132,009
Batt insulation	26,740	SF	1.09	29,013
Gypsum board, 5/8"	53,480	SF	3.31	176,979
Gypsum board underlayment / multiple layers	20,065	SF	2.82	56,604

C1013 Operable and folding panel partitions Operable partitions, not required				
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C1017 Interior windows and storefronts Interior glazing including transoms and sidelights	212	SF	73.24	15,512
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Miscellaneous Bulkheads and soffits	1	LS	7,855.40	7,855
Blocking and backing	1	LS	4,713.24	4,713

Total For Interior Partitions **422,684**

Bellevue College Arts Classroom Building Bellevue, WA PRR Estimate Building C Renovation - Alternate	 Gross Floor Area: 28,960 SF Date: December 5, 2017 Prepared By: AC
DETAIL OF ESTIMATE	

Item Description	Quantity	Unit	Unit Cost	Totals
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C1020 Interior Doors

C1021 Interior doors				
Interior doors, frames and hardware				
Solid core wood / wood glazed doors and HM frame				
Per leaf	38	EA	2,495.50	94,829
Specialty hardware / rated doors / power actuators / acoustics	1	LS	7,421.40	7,421
Total For Interior Doors				102,250

C1030 Specialties

C1032 Fabricated compartments and cubicles				
Toilet partitions				
ADA toilet partition	4	EA	1,746.85	6,987
STD toilet partition	8	EA	1,535.28	12,282
Urinal screens	4	EA	602.18	2,409
C1033 Storage shelving and lockers				
Janitors mop rack and shelving	2	EA	488.25	977
C1035 Identifying devices				
Code signage	28,960	SF	0.17	5,027
Wayfinding and room identification signage	28,960	SF	0.41	11,940
Exterior building signage	1	LS	6,510.00	6,510
C1037 General fittings and misc. metals				
Miscellaneous metals, allow 0.4#/SF	11,584	LB	3.53	40,848
Fire extinguisher cabinets	6	EA	249.55	1,549
Corner guards	4	EA	200.73	803
Grab bars at restrooms	4	EA	260.40	1,042
Mirrors at restrooms	6	EA	179.03	1,074
Restroom accessories	1	LS	6,904.94	6,905
Fixed tackboards and whiteboards	1	LS	36,359.28	36,359
Total For Fittings and Specialty Items				134,712

C20 STAIRS

C2010 Stair Construction

C 2010 Stair Construction including railings and finish				
Refinish stairs	1	FLT	15,000.00	15,000
Total For Stair Construction				15,000

C30 INTERIOR FINISHES

C3010 Wall Finishes

C3011 Wall finishes to inside exterior walls

Bellevue College Arts Classroom Building Bellevue, WA PRR Estimate Building C Renovation - Alternate	 C & N Consultants, Inc. <small>Construction Cost Consultants</small>
	Gross Floor Area: 28,960 SF
	Date: December 5, 2017
	Prepared By: AC
DETAIL OF ESTIMATE	

Item Description	Quantity	Unit	Unit Cost	Totals
Paint to interior side of exterior walls	5,151	SF	1.19	6,148
C3012 Wall finishes to interior walls				
Paint to walls	53,480	SF	1.19	63,828
Ceramic tile	650	SF	18.99	12,342
Acoustical wall panels	621	SF	18.99	11,783
Miscellaneous wall finishes / acoustical treatments	1	LS	71,820.80	71,821
Total For Wall Finishes				165,922
C3020 Floor Finishes				
C3024 Flooring including base				
Floor finishes	28,960	SF	7.51	217,490
Total For Floor Finishes				217,490
C3030 Ceiling Finishes				
C3031 Ceiling finishes				
Ceiling finishes	28,960	SF	7.30	211,408
Total For Ceiling Finishes				211,408
D10 CONVEYING				
D1010 Elevator & Lift				
D1011 Passenger elevators				
Passenger elevator, 2 stop including cab finish, 5,000# capacity, assumed not required				N/A
Total For Elevator & Lifts				
D20 PLUMBING				
D2010 Plumbing				
Plumbing estimate				
Division 22 - Plumbing, Waste and Vent	28,960	SF	1.75	50,680
Division 22 - Plumbing, Cold and Hot Water Piping	28,960	SF	2.20	63,712
Division 22 - Plumbing, Fixtures and Water Heaters	28,960	SF	6.70	194,032
Division 22 - Plumbing, Insulation	28,960	SF	0.80	23,168
Sub-Contractor Overhead and profit	15%		331,592.32	49,739
Total For Plumbing				381,331

Bellevue College Arts Classroom Building Bellevue, WA PRR Estimate Building C Renovation - Alternate	 Gross Floor Area: 28,960 SF Date: December 5, 2017 Prepared By: AC				
DETAIL OF ESTIMATE					
Item Description	Quantity	Unit	Unit Cost	Totals	

D30 HVAC					
D3010 HVAC					
HVAC estimate					
Division 23 - HVAC, General Provisions	28,960	SF	3.40	98,464	
Division 23 - HVAC, VRF Equipment and Piping	28,960	SF	8.80	254,848	
Division 23 - HVAC, Ductwork and Insulation	28,960	SF	6.80	196,928	
Division 23 - HVAC, Built Up HVAC Units	20,851	CF	10.40	216,852	
Division 23 - HVAC, DOAS Unit	12,742	CF	6.40	81,551	
Division 23 - HVAC, Support equipment	28,960	SF	4.70	136,112	
Division 23 - HVAC, Variable Air Volume Units	13	EA	1,400.00	18,534	
Division 23 - HVAC, Outlets, Inlets, Exhaust fans, etc	28,960	SF	1.40	40,544	
Division 23 - HVAC, Energy Management System	28,960	SF	7.40	214,304	
Sub-Contractor Overhead and profit	15%		1,258,137.95	188,721	
Total For HVAC				1,446,859	

D40 Fire Protection					
D4010 Fire Protection					
Fire protection estimate					
Division 21 - Fire Protection	28,960	SF	5.50	159,280	
Sub-Contractor Overhead and profit	15%		159,280.00	23,892	
Total For Fire Sprinkler System				183,172	

D50 ELECTRICAL					
D5000 Electrical					
Electrical estimate completed by Hargis Engineers dated November 10th, 2017					
Building Electrical (Division 26)	28,960	SF	32.00	926,720	
Building Telecommunications (Division 27)	28,960	SF	5.50	159,280	
Building Audio Visual Rough-In (Division 27)	28,960	SF	1.50	43,440	
Building Fire Alarm (Division 28)	28,960	SF	1.85	53,576	
Building Electronic Security (Division 28)	28,960	SF	2.25	65,160	
Rooftop photovoltaic array, excluded				N/A	
Sub-Contractor Overhead and profit	15%		1,248,176.52	187,226	
Total For Electrical				1,435,403	

E10 E1010 EQUIPMENT					
E1025 Audio-visual equipment					
Projection screens and projector ceiling mounts, allow	10	EA	4,948.96	49,490	
Total For Equipment				49,490	

Bellevue College Arts Classroom Building Bellevue, WA PRR Estimate Building C Renovation - Alternate	 Gross Floor Area: 28,960 SF Date: December 5, 2017 Prepared By: AC			
DETAIL OF ESTIMATE				
Item Description	Quantity	Unit	Unit Cost	Totals

E20 FURNISHINGS
E2010 Fixed Furnishing

E2012 Fixed casework Casework	1	LS	103,691.28	103,691
E2013 Blinds and other window treatments Window treatments	1	LS	20,328.13	20,328
E2014 Fixed floor grilles and mats Entrance mats and frames	1	LS	3,797.50	3,798
Total For Furniture				127,817

F10 SPECIAL STRUCTURES
F1010 Special Structure

No work anticipated				N/A
Total For Special Structure				N/A

F1020 Special Construction

No work anticipated				N/A
Total For Special Construction				N/A

F20 SELECTIVE BUILDING DEMOLITION
F2010 Building Element Demolition

F2011 Building interior demolition Selective interior demolition	28,960	SF	11.75	340,280
F2012 Building exterior demolition Building exterior demolition and roofing	1	LS	85,000.00	85,000
F 2020 Hazardous Components Abatement HAZMAT Abatement	28,960	SF	4.80	139,008
Total For Selected Demolition				564,288

Bellevue College Arts Classroom Building Bellevue, WA PRR Estimate Building C Renovation - Alternate		Summary of Estimate		Gross Floor Area: 12,800 SF Date: December 5, 2017 Prepared By: AC	
No.	Element Description		Element Totals	Group Totals	Cost Per SF
A10	FOUNDATIONS				-
A1010	Standard Foundation				-
A1020	Special Foundation				-
A1030	Slab on grade				-
A20	BASEMENT WALL CONSTRUCTION				-
A2010	Basement Excavation				-
A2020	Basement Wall Construction				-
B10	SUPERSTRUCTURE				-
B1010	Floor Construction				-
B1020	Roof Construction				-
B20	EXTERIOR ENCLOSURE				-
B2010	Exterior Walls				-
B2020	Exterior Windows				-
B2030	Exterior Doors				-
B30	ROOFING				-
B3010	Roof Covering				-
C10	INTERIOR CONSTRUCTION			200,320	15.65
C1010	Partitions		120,320		9.40
C1020	Interior Doors		44,800		3.50
C1030	Fittings		35,200		2.75
C20	STAIRS			-	-
C2010	Stair Construction				-
C30	INTERIOR FINISHES			203,520	15.90
C3010	Wall Finishes		47,360		3.70
C3020	Floor Finishes		79,360		6.20
C3030	Ceiling Finishes		76,800		6.00
D10	CONVEYING			-	-
D1010	Elevators & Lifts				-
D20	PLUMBING			35,200	2.75
D2010	Plumbing		35,200		2.75

Bellevue College Arts Classroom Building Bellevue, WA PRR Estimate Building C Renovation - Alternate		Summary of Estimate		Gross Floor Area: 12,800 SF Date: December 5, 2017 Prepared By: AC	
					
No.	Element Description		Element Totals	Group Totals	Cost Per SF
D30	HVAC			128,000	10.00
D3010	HVAC		128,000		10.00
D40	FIRE PROTECTION			35,200	2.75
D4010	Sprinkler System		35,200		2.75
D50	ELECTRICAL			220,160	17.20
D5000	Electrical		220,160		17.20
E10	EQUIPMENT			19,796	1.55
E1010	Equipment		19,796		1.55
E20	FURNISHINGS			53,972	4.22
E2010	Fixed Furnishings		53,972		4.22
F10	SPECIAL CONSTRUCTION			-	-
F1010	Special Structure				
F1020	Special Construction				
F20	SELECTIVE BUILDING DEMOLITION			147,200	
F2010	Building Demolition		147,200		11.50
	Sub-Total			1,043,368	81.51
	Estimating / Design Contingency	10.00%		Included in Rates	
	General Conditions / General Requirements	10.50%		109,554	8.56
	Sub-Total			1,152,922	90.07
	GC Fee	5.00%		57,646	4.50
	November 2017 Construction Cost			1,210,568	94.58
	Escalation, excluded (Included in C100 Forms)				-
	TOTAL CONSTRUCTION COST			\$1,210,568	94.58

Bellevue College Arts Classroom Building Bellevue, WA PRR Estimate Building L Renovation - Alternate	 Gross Floor Area: 12,800 SF Date: December 5, 2017 Prepared By: AC
DETAIL OF ESTIMATE	

Item Description	Quantity	Unit	Unit Cost	Totals
A10 FOUNDATIONS				
A1010 <u>Standard Foundation</u>				
No work anticipated				N/A
Total For Standard Foundations				
A1020 <u>Special Foundation</u>				
No work anticipated				N/A
Total For Special Foundations				
A1030 <u>Slab on Grade</u>				
No work anticipated				N/A
Total For Slab on Grade				
A20 BASEMENT CONSTRUCTION				
A2010 <u>Basement Excavation</u>				
No work anticipated				N/A
Total For Basement Excavation				
A2010 <u>Basement Walls</u>				
No work anticipated				N/A
Total For Basement Walls				
B1010 <u>Floor Construction</u>				
No work anticipated				N/A
Total For Floor Construction				
B1020 <u>Roof Construction</u>				
No work anticipated				N/A
Total For Roof Construction				
B20 EXTERIOR CLOSURE				
B2010 <u>Exterior Walls</u>				
No work anticipated				N/A

Bellevue College Arts Classroom Building Bellevue, WA PRR Estimate Building L Renovation - Alternate	 Gross Floor Area: 12,800 SF Date: December 5, 2017 Prepared By: AC
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DETAIL OF ESTIMATE

Item Description	Quantity	Unit	Unit Cost	Totals
Total For Exterior Walls				
B2020 <u>Exterior Windows</u>				
No work anticipated				N/A
Total For Exterior Windows				
B2030 <u>Exterior Doors</u>				
No work anticipated				N/A
Total For Exterior Doors				
B30 ROOFING				
B3010 <u>Roof Covering</u>				
No work anticipated				N/A
Total For Roofing				
C10 INTERIOR CONSTRUCTION				
C1010 <u>Partitions</u>				
C1011 Fixed partitions				
Allowance for partition modifications				120,320
				120,320
Total For Interior Partitions				120,320
C1020 <u>Interior Doors</u>				
C1021 Interior doors				
Interior doors, frames and hardware				
Interior doors				44,800
				44,800
Total For Interior Doors				44,800
C1030 <u>Specialties</u>				
Specialties				35,200
				35,200
Total For Fittings and Specialty Items				35,200
C20 STAIRS				
C2010 <u>Stair Construction</u>				
No work anticipated				N/A
Total For Stair Construction				

Bellevue College Arts Classroom Building Bellevue, WA PRR Estimate Building L Renovation - Alternate	 Gross Floor Area: 12,800 SF Date: December 5, 2017 Prepared By: AC
DETAIL OF ESTIMATE	

Item Description	Quantity	Unit	Unit Cost	Totals
C30 INTERIOR FINISHES				
C3010 <u>Wall Finishes</u>				
C3012 Wall finishes to interior walls Wall finishes	1	LS	47,360.00	47,360
Total For Wall Finishes				47,360
C3020 <u>Floor Finishes</u>				
C3024 Flooring including base Floor finishes	12,800	SF	6.20	79,360
Total For Floor Finishes				79,360
C3030 <u>Ceiling Finishes</u>				
C3031 Ceiling finishes Ceiling finishes	12,800	SF	6.00	76,800
Total For Ceiling Finishes				76,800
D10 CONVEYING				
D1010 <u>Elevator & Lift</u>				
No work anticipated				N/A
Total For Elevator & Lifts				N/A
D20 PLUMBING				
D2010 <u>Plumbing</u>				
Plumbing	12,800	SF	2.75	35,200
Total For Plumbing				35,200
D30 HVAC				
D3010 <u>HVAC</u>				
HVAC modifications	12,800	SF	10.00	128,000
Total For HVAC				128,000
D40				
D4010 <u>Fire Protection</u>				
Fire protection modifications	12,800	SF	2.75	35,200
Total For Fire Sprinkler System				35,200

Bellevue College Arts Classroom Building Bellevue, WA PRR Estimate Building L Renovation - Alternate		 Gross Floor Area: 12,800 SF Date: December 5, 2017 Prepared By: AC	
DETAIL OF ESTIMATE			

	Item Description	Quantity	Unit	Unit Cost	Totals
D50	ELECTRICAL				
	D5000 <u>Electrical</u>				
	Electrical	12,800	SF	17.20	220,160
	Total For Electrical				220,160
E10	E1010 EQUIPMENT				
	E1025 Audio-visual equipment				
	Projection screens and projector ceiling mounts, allow	4	EA	4,948.96	19,796
	Total For Equipment				19,796
E20	FURNISHINGS				
	E2010 <u>Fixed Furnishing</u>				
	E2012 Fixed casework				
	Casework	1	LS	41,772.50	41,773
	E2013 Blinds and other window treatments				
	Window treatments	1	LS	12,199.74	12,200
	Total For Furniture				53,972
	F10 SPECIAL STRUCTURES				
	F1010 <u>Special Structure</u>				
	No work anticipated				N/A
	Total For Special Structure				
	F1020 <u>Special Construction</u>				
	No work anticipated				N/A
	Total For Special Construction				
	F20 SELECTIVE BUILDING DEMOLITION				
	F2010 <u>Building Element Demolition</u>				
	F2011 Building interior demolition				
	Selective interior demolition	12,800	SF	6.70	85,760
	F 2020 Hazardous Components Abatement				
	HAZMAT Abatement	12,800	SF	4.80	61,440
	Total For Selected Demolition				147,200

DIAGRAMS & SKETCHES

CAMPUS MASTER PLAN



The Center for
Transdisciplinary Learning
& Innovation

Base master plan from the 2017 Facilities Plan by Perkins + Will

SITE PLAN



LEGEND

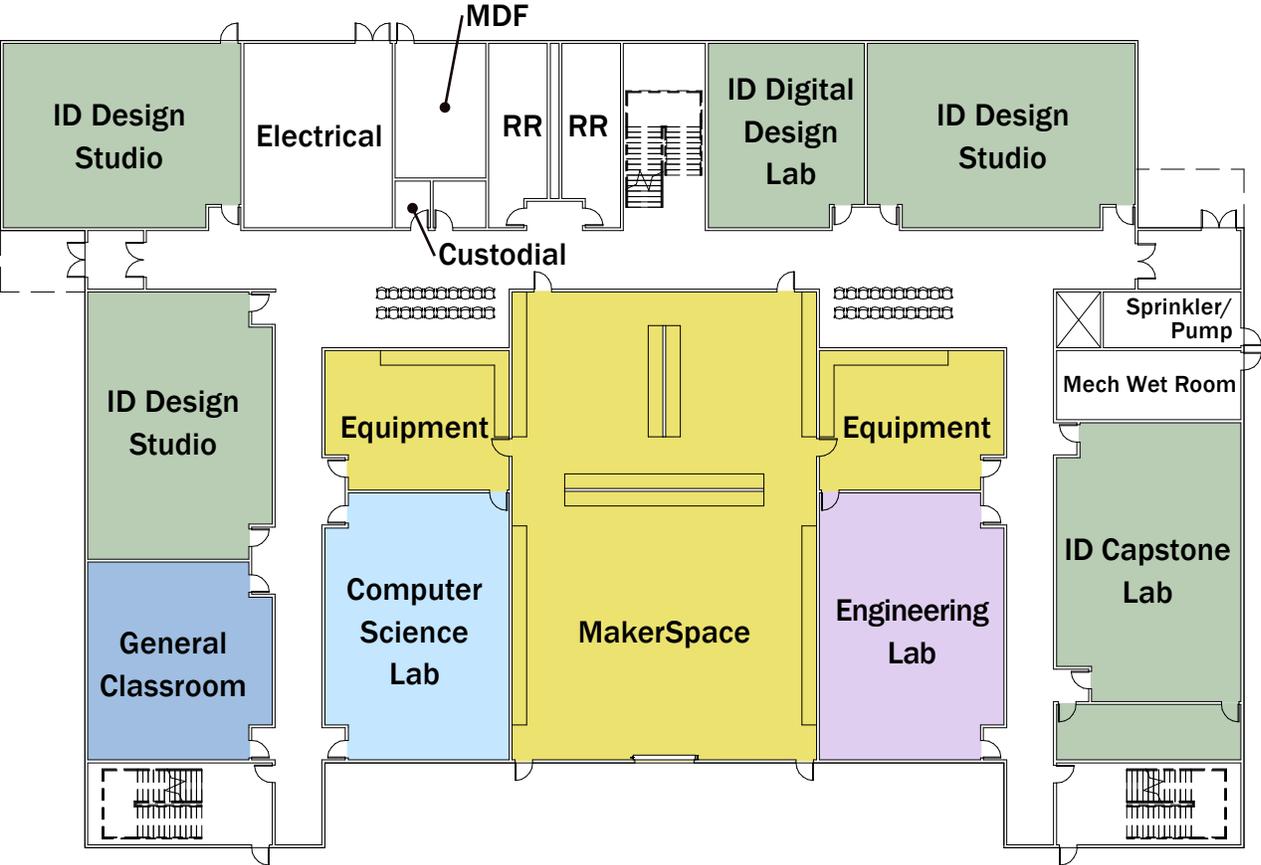
- | | |
|---|--|
|  Academic |  Pedestrian Circulation |
|  Community Partnership |  Vehicular Circulation |
|  Service |  Pedestrian Oriented Transit Zone |
|  Housing |  Expanded Campus Boundary |
|  Athletics |  Existing Buildings |

**The Center for
Transdisciplinary Learning
& Innovation**



Base site plan from the 2017 Facilities Plan by Perkins + Will

BUILDING PLANS



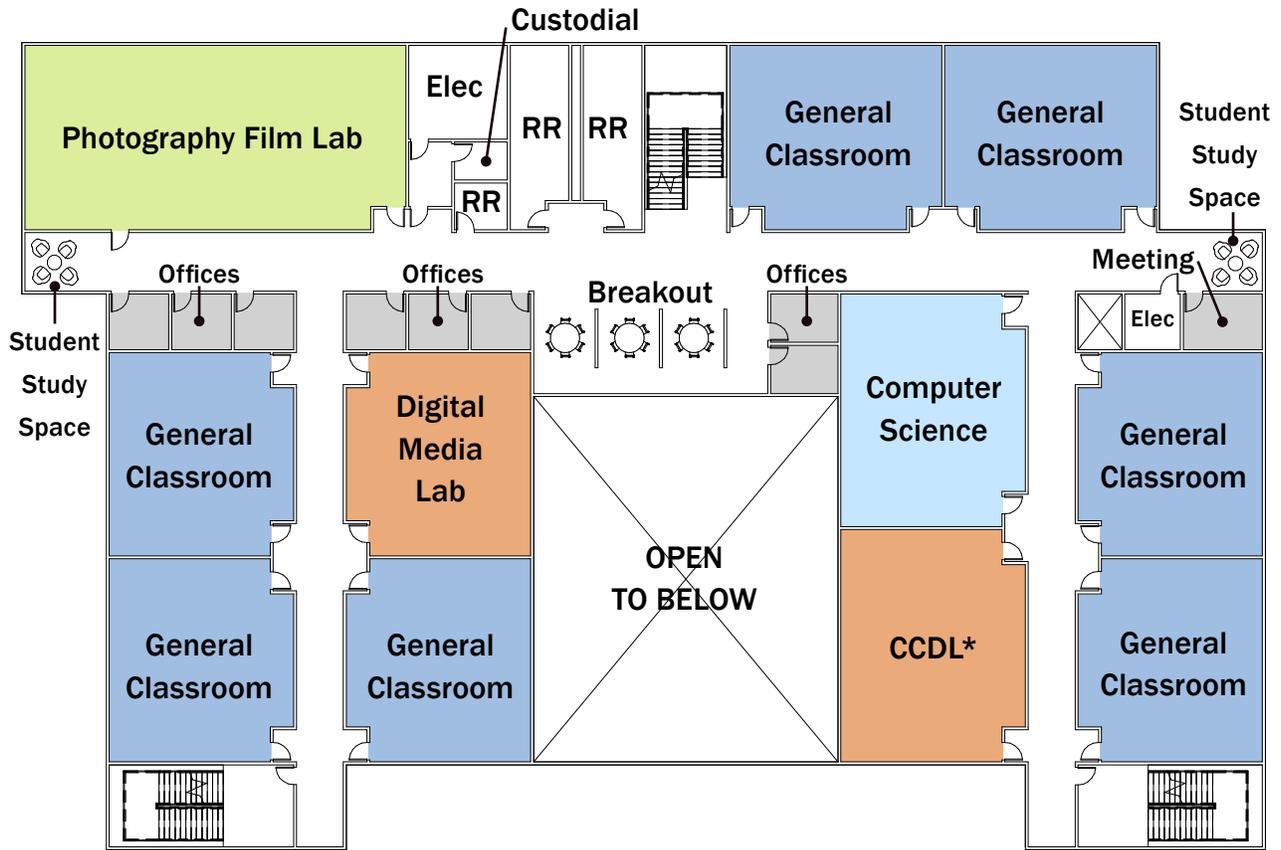
Level One Plan

LEGEND

- Classrooms
- Interior Design
- Business & Information Technology (iBIT)
- Makerspace
- 2D Arts
- Computer Science
- Engineering
- Faculty



BUILDING PLANS



*Collaborative Cross Disciplinary Lab

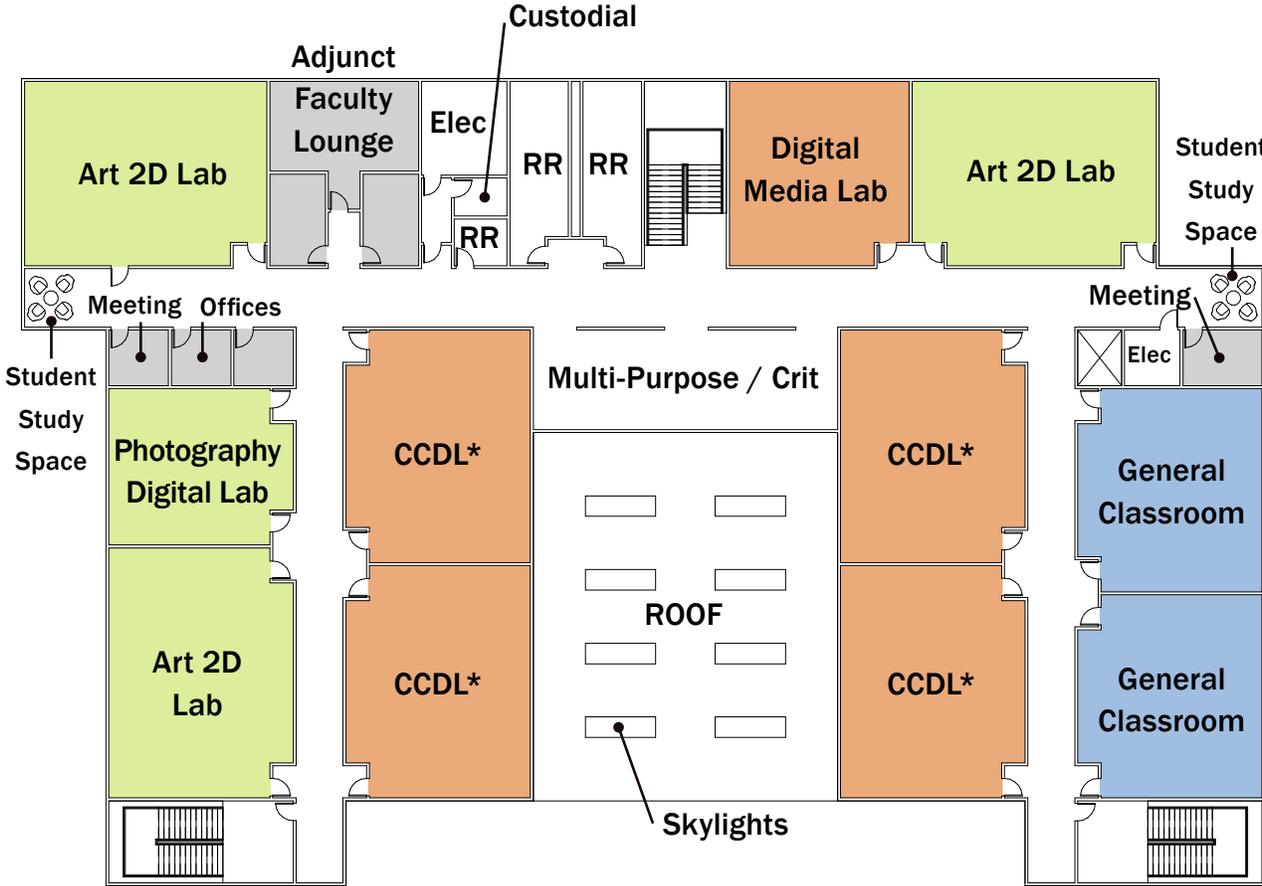
Level Two Plan

LEGEND

- Classrooms
- Interior Design
- Business & Information Technology (iBIT)
- Makerspace
- 2D Arts
- Computer Science
- Engineering
- Faculty



BUILDING PLANS



*Collaborative Cross Disciplinary Lab

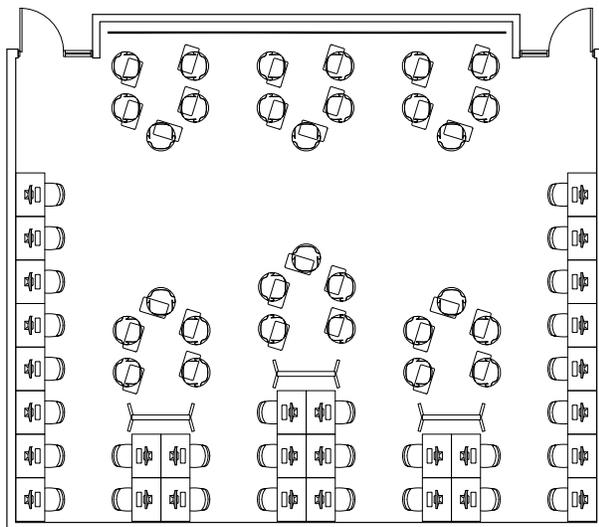
Level Three Plan

LEGEND

- Classrooms
- Interior Design
- Business & Information Technology (iBIT)
- Makerspace
- 2D Arts
- Computer Science
- Engineering
- Faculty

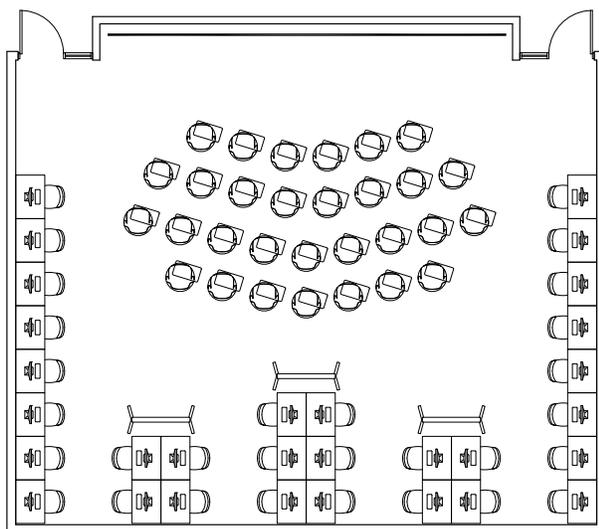


COLLABORATIVE CROSS-DISCIPLINARY CLASSROOM



COLLABORATION OR INDIVIDUAL COMPUTER WORK

- 30 COMPUTER STATIONS
- 30 MOVABLE DESK STATIONS
- 3 PORTABLE WHITE BOARDS



LECTURE OR PRESENTING BACK

This classroom layout enables multiple modes of teaching and learning within the same classroom. Students are able to move from collaboration to individual work and then to presentation mode.

APPENDIX

BASIS OF DESIGN - CONSULTANT NARRATIVES

CIVIL ENGINEER

Civil Site Narrative

Bellevue College
Center for Transdisciplinary Learning and Innovation
Coughlin Porter Lundeen, Inc.
Project No. C170624-03
December 11, 2017

Bellevue College is proposing to develop a new 70,000 square-foot Center for Transdisciplinary Learning and Innovation located in the main campus in Bellevue. Following is a summary of the civil site development requirements necessary to construct this building at the chosen location.

Reviewed Information

We reviewed the following information to inform our analysis:

1. "Planning-level" survey of the campus created for the College Campus Master Plan
2. 2016 Bellevue College Campus Master Plan (2016).
3. Topographic Survey and Geotechnical Report from T Building north of the project area.
4. Topographic Survey and Geotechnical Report from a new northeast of the project area development currently under design.

Survey information on the south side of the site is very limited. A detailed topographic survey and geotechnical report will be required for this site prior to detailed design work.

Existing Site Conditions

The proposed location of this building is south of T Building and east of A Building in existing parking lots. Elevations range from approximately 400 at the northeast corner to 390 at the southwest corner. There is a grade change of 10 feet over approximately 210 feet (average 5% slope). The majority of the site is paved with asphalt with the exception of some landscaping areas between parking areas. There are no existing structures which need to be removed for the proposed development.

Existing utilities will be required to be rerouted to maintain services to the surrounding infrastructure. Based on information available, a storm drain pipe serving T Building and an adjacent parking lot to the east will need to be rerouted around this proposed building. Existing parking lot lighting will need also to be relocated.

PROPOSED DEVELOPMENT

Site Preparation

The surrounding campus will be occupied, so separation from construction activities will be required. Existing asphalt paving, landscaping (including trees), curbs, and other typical parking lot features will need to be removed and disposed of offsite. Erosion control measures will be required to stabilize the soil and minimize turbidity levels to acceptable standards. Temporary stormwater systems will be required to control stormwater runoff rates during construction. This project will disturb more than 1 acre, so a NPDES permit will be required for construction runoff monitoring.

Based on adjacent campus developments, the exposed surficial site soils may be unconsolidated fill material and will likely not be suitable for foundation support. Based on adjacent construction projects, approximately three to five feet of excavation may be required to reach bearing material for foundation elements. Building slabs typically require less soil mitigation, and recompaction of the native soil prior to placing the slab system may be sufficient. The native soils are anticipated to be moisture sensitive and will likely not meet structural requirements once they are excavated, particularly in the wet season. Fill material below the building and associated pavements should be an imported granular material.

Site Paving

Associated infrastructure will include a fire access drive within 200 feet of all points of the exterior of the building. In order to maintain fire access to A Building and T Building, we recommend locating the fire access drive on the north and west sides of this building. This drive may also be used for maintenance access if required, or as a pedestrian plaza. Pedestrian paving will be required to connect this building to other areas of campus and for entryways at a minimum, and may also incorporate gathering areas. We anticipate pedestrian spaces to be concrete paving and vehicular surfaces to be asphalt. We are not anticipating new parking stalls for this project.

Storm Water Runoff

This development will be permitted through the City of Bellevue for stormwater mitigation. Since the site is part of a larger developed campus, it will be subject to "Redevelopment Requirements" including detention for all impervious surfaces that replace pervious surfaces. Stormwater runoff from the site will be detained in a below-grade structure and released to match peak flows and flow durations from a forested site condition. Stormwater will discharge to an existing storm conveyance system located west of the proposed project site.

Installation of Low Impact Design (LID) systems will be required to the maximum extent feasible. Based on other developments on the campus, many of the available LID systems may not be feasible due to native soil characteristics (lack of infiltration), and space requirements. However, both porous paving and rain gardens (bioretention areas) may be used successfully in limited and appropriate applications.

Water quality treatment will be required for hard surfaces subject to vehicular traffic greater than 5,000 square feet. Unless gated, the fire access road around the building will require water quality treatment. Options for water quality treatment facilities include bioretention areas and vaults containing media-filled cartridges, depending on available space and site programming.

Foundation drains will be required along the perimeter foundation and will discharge to the downstream stormwater system. Depending on groundwater conditions, there may need to be a sub-slab drainage system, as well. These drains will be separated from building downspouts.

Water Distribution

There is an existing 8-inch water main located west of the site (east of A Building) which can be tapped to provide both domestic and fire service. This water main is privately owned and metered at two connection points to the City water system. Bellevue College standards include adding meters for irrigation and domestic services for each development.

Fire service will likely require a booster pump (based on similar developments on campus) to augment the available water pressure depending on the height, construction type, and fire sprinkler requirements. We recommend a fire flow test be conducted early in the design process to better understand the available water pressure. A fire service connection will consist of a backflow prevention device, indicator valve, and a fire department connection.

Sanitary Sewer

There is an existing sanitary sewer main located west of the proposed building location. A 6-inch gravity side sewer will need to be routed from the proposed building to the existing sewer system.

Gas Service

We understand gas will not be required for this project.

MECHANICAL ENGINEER

basis of mechanical design narrative

December 5, 2017

PROJECT Center for Transdisciplinary Learning and Innovation PRR
Bellevue College | Bellevue, WA

PHASE PRR Pre-Design

SUMMARY

The mechanical system for Center for Transdisciplinary Learning and Innovation project is proposed to best suit Bellevue College’s desire to provide a cost effective and comfortable mechanical system that requires low maintenance and provides for mechanical cooling. The mechanical system design is intended to be a balanced concept that adequately addresses other equally important operational features and project goals, including but not limited to maintenance, budget, life cycle costs, occupant comfort, indoor air quality, acoustics, and varied use of spaces.

FIRE SUPPRESSION SYSTEMS

Fire Sprinkler System

Fire-sprinkler system will be hydraulically designed and installed by Fire-Sprinkler Contractor (certified in the State of Washington) in accordance with the requirements under NFPA 13 and specific requirements per City of Bellevue Fire Marshall. Based on similar buildings near the project site on the Bellevue College Campus it is anticipated that water pressure will not be sufficient to serve the building without a fire pump. A fire pump shall be provided to provide to serve the building.

A double check valve assembly installed inside the fire pump room shall be used to separate the fire sprinkler system from the city water supply.

A class 1 standpipe system with 2-1/2” hose connections at each intermediate landing between floors shall be installed in each of the three exit stairwells in accordance with authority having jurisdiction (AHJ) requirements. An interconnecting pipe shall be installed between the standpipes on one floor per AHJ requirements.

Materials/Products: All materials and installation of the fire-sprinkler system will comply with the standards described in NFPA 13.

The Tele Comm rooms and electrical room shall be protected by a wet sprinkler system. There shall be no pre-action system. Freeze protection type heads shall be required in spaces subject to freezing.

PLUMBING SYSTEMS

Domestic Cold Water System

The water service will enter the main building east side of the building and will be located in the Mechanical Room. The water service will consist of a reduced pressure backflow assembly, water meter, and pressure reducing valve. It will serve the domestic cold water systems,

domestic hot water systems and hydronic water systems. All domestic water piping will be copper. Based on similar buildings near the project site on the Bellevue College Campus it is anticipated that water pressure will not be sufficient to serve the building without a pressure booster pump. The booster pump shall be a skid mounted pump package with multi-stage pumps controlled by VFDs.

Domestic Hot Water System

Two domestic water source heat pumps (Colmac or approved), one electric water heater and two water storage tanks will provide hot water for domestic use in the building. One electric water heater will provide heating for the domestic water circulation loop to manage heat loss in the loop. Hot water re-circulation and a central thermostatic mixing valve will be provided on the domestic hot water system to maintain between 115°F to 120°F hot water temperature at all plumbing fixtures. Hot water will be generated and stored at 140°F and mixed down to 115°F for building use by the thermostatic mixing valve. Tempered water will be provided to all emergency shower/eyewash fixtures and all eyewash fixtures. Tempered water will be provided through the use of thermostatic mixing valves located near the emergency fixtures.

Solar Hot Water System (Alternative)

Provisions shall be made in the design for future installation of solar water panels on the roof of the building. Pipe will be provided from the central mechanical room up the designated roof area for future connection. Future solar water system would be sized for 460 MBH capacity comprised of (14) 4'x10' flat plate solar collector panels, 750 gallon storage tank, (8) transfer coils, (2) pumps, (1) drain-back tank, associated piping, controls, supports and all related appurtenances.

Plumbing Fixtures

All plumbing fixtures will be new and selected for the application. Fixtures and trim will be coordinated with the architect and owner. The components of all fixtures will meet ANSI/NSF 61 for low lead content.

Specialty plumbing fixtures shall be provided in the Maker Space including utility sinks for general use, drains with solids interceptors for washdown as well as emergency shower/eyewash units for safety.

Sanitary Waste and Vent System

A sanitary waste and vent system will be provided to serve all fixtures within the building. Where possible, common roof vents will be used to minimize roof penetrations. Vandal resistant vent caps will be installed to prevent damaging debris from entering the system from the roof. Cleanouts will be located to facilitate maintenance access. Sanitary waste and vent piping will be no-hub cast-iron with heavy duty couplings. Sanitary waste will exit the building in multiple locations to minimize excavation and allow for higher invert elevations.

An acid waste and vent system will be provided to serve the fixtures in the Photography. Piping and fittings for the acid waste and vent system will be constructed of schedule 40 polypropylene

pipng with socket fused fittings. The waste will be routed through an acid neutralization tank equipped with a pH monitoring system.

Rainleader System

A rainleader system will be provided to accommodate roof drainage for the building. The rainleaders will be routed to the discharge location 18 inches above grade. Overflow roof drainage will be accomplished by connecting overflow drains to the primary drains and oversizing the primary drain piping in accordance with the UPC. Cleanouts will be located to facilitate maintenance access. Piping will be no-hub cast-iron with heavy duty couplings. Refer to the civil drawings for the site storm drainage plan.

Natural Gas System

Natural gas will not be provided to the building.

Compressed Air Systems

An air compressor shall provide compressed air to the Maker Space and adjacent Engineering Labs. Piping will be schedule 40 steel piping with screwed joints and fittings. Compressor size and piping shall be confirmed during design. The air compressor shall be a packaged screw type machine with horizontal tank and refrigerated dryer.

HEATING VENTILATION AND AIR CONDITIONING SYSTEMS

The HVAC system shall consist of multiple roof mounted custom dedicated outside air system (DOAS) heat recovery air handling units to provide ventilation air to the building. Heating and cooling will be provided by a condenser water system served by an air to water heat pump located on the roof with an electric boiler. The condenser water will be piped to water to air heat pumps that will provide zone temperature control to all spaces in the building. Dedicated split system cooling units shall be provided to any space requiring 24/7 cooling. Exhaust fans shall be provided to ventilate the mechanical and electrical rooms. Electric heaters shall be provided in the mechanical room, fire pump room, entry vestibules, and stairwells to provide freeze protection for those spaces.

HVAC DESIGN CRITERIA

Design Temperatures per Energy Code

	input	source
Outdoor air temp	24°F for heating 82°F db, 66°F wb for cooling	Washington State Energy Code, ASHRAE
Indoor air temp	70°F or lower for heating 75°F or higher for cooling	Washington State Energy Code

Building Envelope

	Energy Code Requirements
Roof	R-38 rigid insulation for membrane roofing
Opaque Walls	R-13 + R-10 continuous insulation
Doors	U=0.37

basis of mechanical design:

Slab Perimeter	R-10 rigid insulation
Glazing	South, East and West: Max. U=0.4, Max. SHGC=0.4 North: U=0.4, Max. SHGC=0.53 Max. glazing to be approx. 30% of the exterior gross wall area.

Condenser Water System

Condenser water (with 30% propylene glycol) will be generated by an air to water heat pump located on the roof and an electric boiler located in the mechanical room in the building with associated wetside system hydronic components included pumps, air separator, glycol feeder, and associated components.

Air Distribution Equipment

Central custom manufactured DOAS HRUs will provide ventilation air to the building. Each unit shall be a custom manufactured heat recovery air-handling unit will provide ventilation air to all spaces in the building. The DOAS units (AHUs) shall be roof mounted. All ductwork shall be connected to the bottom of the unit and be enclosed inside the roof curb. The AHUs have an outside air intake louver with weather hood, an outside air damper, a pre-filter, a final filter, VAV coil, an air to air heat exchanger, heat exchanger bypass dampers for use during economizer operation, a supply fan with VFD, a return fan with VFD, a return filter, a relief air isolation damper, and a relief louver with weather hood. Airflow measuring stations shall be provided on both supply and return/exhaust fans.

Restroom and Break Room Exhaust

The DOAS AHUs are 100% outside air units. They shall provide all ventilation air to the building. All air returned to the unit will be exhausted once energy is recovered from the return air. No air is recirculated with the new ventilation air. A portion of the air supplied to the building will be returned to the DOAS AHUs through restrooms, custodial rooms, break rooms, or other rooms with odor concerns to ensure those spaces remain negative to the surrounding spaces and receive their code required exhaust air rates. The Maker Space shall have increased air change rates of 10 ACH to adequately ventilate the room and accommodate multiple types of uses for the space.

Air Distribution

All distribution ductwork shall be constructed in accordance with the SMACNA standards as specified and as shown on the drawings. Distribution ventilation ductwork shall be 4” pressure class construction. Ductwork downstream of VAV units shall be 2” pressure class construction.

The ventilation air system shall be fully ducted. The return/exhaust air to the restrooms, custodial rooms, and break rooms shall be fully ducted.

Occupancy sensors shall be installed in all conference/meeting rooms over 500 sf indoor equipment and ventilation air serving the space. This results in the need to install VAV (variable air volume) terminal units on all ventilation ductwork to all spaces to maintain proper system operation and ventilation airflow to all spaces. VAV terminal units shall be provided on all constant volume exhaust spaces and at the return air plenum ducts at each shaft.

Combination fire-smoke dampers shall be provided at all duct-penetrations through fire-separations and fire rated shafts.

Grilles, registers, diffusers, volume dampers, and other ductwork accessories shall be provided as required to achieve satisfactory system operation, performance, and design capacities. Linear diffusers shall be used at perimeter spaces.

Terminal Heating Equipment

The specialty heating equipment for this project consists of small electric cabinet unit heaters and unit heaters which serve entry vestibule and mechanical room spaces.

Specialty Cooling Equipment

The specialty cooling equipment for this project consists of a small split system cooling units which serve the IT rooms, Auditorium Control Room, Elevator Machine Room, and other spaces which require year around cooling.

Exhaust Systems

Dedicated fans handle the exhaust air for Toilet Rooms, Custodial Rooms, Science Room fume hoods, and rooms where excessive heat and/or odors are present. The exhaust fans are located on the roof or in mechanical spaces near the area served.

Specialty Exhaust Systems

The specialty exhaust systems for this project require equipment specifically designed for the task. Anticipated exhaust systems include source capture for the Maker Space (separate metal and woods work areas), Engineering Labs, Photography and Art Spaces. System requirements will be identified as design progresses.

Building Pressurization

Building infiltration shall be controlled via a fixed offset between the supply fan and return fan airflow from the AHUs. Fan offsets shall be determined during TAB and commissioning.

Seismic Control

All mechanical systems shall be seismically restrained to meet an importance factor of $I_p=1.0$.

Noise and Vibration Control

Sound attenuation and vibration isolation will be provided for the Mechanical Systems in accordance with the Basis of Acoustical design criteria and recommendations to be provided separately by the Acoustical Consultant to be hired by the Architect or by the Owner.

Diffusers shall be selected to perform at 5 NC below the room NC rating.

Direct Digital Controls

DDC controls for the facility shall be by Alerton as installed by ATS Automation, or approved equal. Controls will be microprocessor based Direct Digital Controls (DDC) standards and the

2015 Washington State Energy Code (WSEC). The DDC controls shall include provision for remote monitoring from the existing central operator’s workstation in Building K.

Controls Sequence of Operation

Control sequences of operations and shall be created to meet requirements of the 2015 WSEC.

Testing, Adjusting and Balancing

Contractor shall hire an independent Balancing Agency (holding current certification from the National Environmental Balancing Bureau or from the Associated Air Balance Council) subject to approval by the Owner. Balancing agency shall have experience with minimum three successfully completed projects of similar size and complexity during the last five years. Contractor shall be responsible for coordinating and scheduling necessary equipment operation with the assistance of appropriate-trades to support the work to be performed by the Balancing Agency.

Commissioning

Mechanical and electrical systems shall be commissioned by an independent Commissioning Agent in accordance with Washington State Energy Code. Mechanical systems shall be commissioned in accordance with the Specifications (including Functional Performance Testing of components as well as systems) to be provided by Commissioning Consultant hired by the Owner.

Sustainable Design

This project will be designed to meet LEED Silver. The following sustainable design credits will be pursued which will impact the mechanical systems. Sustainable design strategies will be implemented where viable.

LEED v4	Possible Pts.	Points
Integrative Process	1	1
Water Efficiency	Possible Pts.	Points
Building Level Water Metering	Required	X
Indoor Water Use Reduction	6	3
Water Metering	1	1
Energy & Atmosphere	Possible Pts.	Points
Minimum Energy Performance	Required	X
Building-Level Energy Metering	Required	X
Optimize Energy Performance	18	10
Advanced Energy Metering	1	1
Indoor Environmental Quality	Possible Pts.	Points
Minimum Indoor Air Quality Performance	Required	X
Enhanced Indoor Air Quality Strategies	2	1

Indoor Air Quality Assessment	2	1
Thermal Comfort	1	1

Energy Life Cycle Cost Analysis

Washington State Department of General Administration requires an ELCCA for the project. Three system alternatives must be analyzed and compared to the ASHRAE 90.1 code baseline system. One of the alternatives must be a renewable energy system and another must be a high performance building alternative. The remaining system must meet code minimum requirements, but has no other restrictions.

ASHRAE 90.1 Baseline System

The code baseline model is based on code minimum requirements for building, envelope, lighting, domestic hot water, and HVAC systems. The HVAC system consists of packaged VAV rooftop units equipped with direct expansion cooling and natural gas fired heat changers. Natural gas fired hot water boilers provide heating water for the VAV unit heating coils.

ELECTRICAL ENGINEER

basis of electrical design narrative

December 5, 2017

PROJECT Center for Transdisciplinary Learning and Innovation PRR
Bellevue College | Bellevue, WA

PHASE PRR Pre-Design

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seattle, washington 98101
t 206.448.3376 w hargis.biz
mechanical
electrical
telecommunications
security
energy

H A R G I S

SUMMARY

The electrical design will incorporate systems which will be low-maintenance and have a long life span. Systems and components in the Center for Transdisciplinary Learning and Innovation will be flexible and robust, suitable for the modular spaces they serve. Care should be taken throughout the design process to ensure that the systems specified do not limit the use of the facility. Spare capacity will need to be provided to allow the building to accommodate growth into the future.

The telecommunications system will be a structured cabling system to support Wide Area Network (WAN) and Local Area Network (LAN) transport of voice (analog and Voice-Over-IP), data, wireless and streaming video applications. The structured cabling system shall enable the transport of data, telephony, intercom, clock, audio visual, security, building automation, and other Internet Protocol (IP) applications to be converged onto a common cabling and network infrastructure.

SITE

Power - Utility Service

The existing Bellevue College campus electrical service is primary metered and served from Puget Sound Energy (PSE) at 12.47kV, 3 phase. There are two campus primary utility meters. Primary utility service and meter #1 is located at North end of campus near the corner of SE 24th St and 145th Place SE. Primary service and utility meter #2 is located at the South end of campus near building N off 142nd Place SE. As part of the Center for Transdisciplinary Learning and Innovation project a new loop feed medium voltage pad mounted switch as well as a new pad mounted transformer will need to be provided. The existing medium voltage, concrete-encased ductbank system will be extended to serve the new building. New medium voltage feeder cables will be extended from the existing loop-feed switchgear in the parking lot area south of T building via the new ductbank system to the new loop feed medium voltage switch and pad mounted transformer.

Telecommunications Site Services

The new Center for Transdisciplinary Learning and Innovation will require new underground ductbank extending from the existing telecommunications vault located South of T Building into the new building. The interbuilding backbone cabling will extend from D Building for new single mode optical fiber and A Building for copper. Pathways from D Building and A Building will

December 5, 2017

Center for Transdisciplinary Learning and
Innovation PRR
Basis of electrical design

page 2

extend through the ceiling space of exterior walkways of D and A Buildings then transition into the underground ductbank system on the east side of A Building.

BUILDING ELECTRICAL SYSTEMS

The Center for Transdisciplinary Learning and Innovation will require electrical systems that are flexible and robust to meet the specific program requirements of this facility. Application of energy efficient, low-maintenance systems will be a priority. Systems will be provided in accordance with current codes, including the International Building Code, International Fire Code, Washington State Energy Code and National Electrical Code, all as amended by the State of Washington and City of Bellevue.

Power Distribution

The Center for Transdisciplinary Learning and Innovation will be fed from the primary-metered campus power distribution system. The building power distribution voltage will be 480 / 277 Volts wye, 3 phase, 4 wire with a preliminary size of 20000 kVA with a 3000 Amp main switchboard, providing over 25 VA/ square foot of capacity. This includes provisions for building lighting, mechanical, plug and miscellaneous power loads as well as an allowance for any shop/lab equipment. A minimum of 20% spare capacity and circuit breaker provisions will be provided in all switchboards and panelboards to allow for future growth.

A building main distribution switchboard will be provided in the Main Electrical Room located on the lowest level. The new switchboard will include a fixed-mounted main insulated case circuit breaker with ground fault protection, Arc Energy reduction, fixed-mounted molded case circuit breakers for feeders, surge protection, and electronic metering for the main. Copper bus will be provided. Panelboards will have bolt-on circuit breakers and copper bus. Transformers will be energy efficient dry-type, 480 Volts primary to 208Y/120 Volt secondary and copper windings. All equipment will be fully rated for the available fault current; series-rated devices will not be utilized.

To enhance power quality and facilitate tracking of energy consumption, the electrical distribution system will be segregated by load type as much as practical. Separate panelboards for lighting, mechanical equipment, equipment power and classroom power will be provided. Large electrical loads and motors sized at 3/4 HP and larger will be served at 480 Volts, 3 phase. Lighting will be primarily 277 Volts and small convenience loads as well as power receptacles will be 120 Volts. Power for shop or lab equipment will be in accordance with manufacturer requirements.

Power Monitoring

Power monitoring will be provided at the main switchboard to allow for capturing the building energy data. In addition, power monitoring will be provided at major feeders to allow for capturing segregated data by load type (e.g. lighting, mechanical, etc.) as required by Washington State Energy Code. Integration of this system with the building management system is anticipated.

December 5, 2017

Center for Transdisciplinary Learning and
Innovation PRR
Basis of electrical design

page 3

Surge Suppression Devices

Surge Suppression Devices (SPD) will be provided at the service entrance switchboard to protect from utility switching transients and other outside disturbances. In addition, SPD's will be provided at panelboards serving classroom loads and select lab receptacles designated for computers.

Emergency and Standby Power

An emergency/standby generator is not anticipated for this facility. A 16 KW lighting Inverter with batteries to provide 2 hours of run time is planned for emergency loads such as egress and exit lighting. Fire alarm equipment shall be provided with batteries in accordance with code requirements

Wiring Methods

Feeders and branch circuits will utilize copper conductors with 600 Volt THWN/THHN insulation. Raceways will primarily consist of electrical metallic tubing with steel compression fittings

Lighting and Lighting Controls Systems

The lighting system will address specific "visibility" requirements for the project and each individual space. "Visibility" includes issues such as light quality, occupant comfort and aesthetics as well as industry standards including the Illuminating Engineering Society (IES). Energy-efficient lighting sources such as LED will be utilized throughout. Lighting fixtures will primarily be LED but other fixtures will be considered based on final lighting design. LED lamps shall be rated for 50,000 hours of life. Lighting will be connected to the 277 volt circuits. Lamp types will be specified in accordance with campus standards, while minimizing the number of different lamps.

Lighting controls will be provided to meet the programmatic requirements for each space while optimizing energy performance and meeting energy code and project sustainability goals. Occupancy sensors will be utilized for many spaces including classrooms, offices and restrooms. Supplemental time-of-day controls are anticipated for areas such as building common areas and exterior lighting. Automatic daylight harvesting controls will be provided.

Fire Alarm System

The building fire alarm system shall be a standalone intelligent, software-controlled addressable fire alarm and detection system. Fire alarm panel shall be Edwards EST-3 type with Ethernet switch to connect into the campus fire alarm network. Building fire alarm wiring shall be open wiring above accessible ceilings and installed within a raceway system where routed through open to structure areas or to wall mounted devices. Voice notification to be provided.

December 5, 2017

Center for Transdisciplinary Learning and
Innovation PRR
Basis of electrical design

page 4

Structured Cabling System

The structured cabling system for the Center for Transdisciplinary Learning and Innovation will provide transport for voice, data, wireless and streaming video applications and will include telecommunications rooms and spaces, horizontal and backbone cabling infrastructure and pathways. The structured cabling system will be designed in accordance with TIA industry and Bellevue College standards.

The telecommunication rooms will be secure, dedicated and environmentally controlled spaces designed for the termination of horizontal and backbone cabling and telecommunication equipment and connections.

The structured cabling Infrastructure will be a hierarchical star topology using the most current standards for optical fiber backbone and twisted-pair copper horizontal cabling to provide capacity for high-bandwidth administrative and instructional applications. The building will include a wireless network to support mobile and handheld devices. Labs and Classroom areas will receive a minimum of (2) antenna per room.

Horizontal cables will be installed from telecommunications outlets in classrooms and offices and other network device locations to a telecommunication room. The horizontal cabling will typically terminate on a modular connector mounted in a flush wall mounted face plate. The location and quantity of the telecommunications outlets for the building will be based on the programming requirements of the spaces and will include connections to support mechanical and electrical systems, and other automated building systems.

The structured cabling will be installed above the accessible ceilings in cable trays or J-hooks. Conduit pathways will be used in areas without accessible ceilings or where the spaces are open to structure

Audio Visual Systems

Audio Visual (AV) systems will distribute audio and video signaling within classroom, conference room, and other spaces requiring AV capability. The AV systems will localized to the space and typically include AV input plate(s), speakers, amplifier, video switcher, control panel, mounting hardware, video projector or flat panel display, and wireless microphone system, and cabling.

Security/Safety Systems

The building will be equipped with electronic security systems including access control and local video surveillance to protect the property and the occupants of the building. A Distributed Antenna System (DAS) will provide enhanced two-way radio coverage for emergency responders and a Rescue Assistance system will provide two-way communication at elevator lobbies for persons requiring assistance exiting the building in the event the elevators have been recalled.

December 5, 2017

Center for Transdisciplinary Learning and
Innovation PRR
Basis of electrical design

page 5

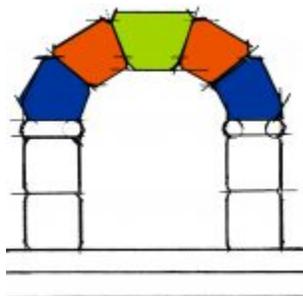
Sustainable Design

This project will be designed to meet LEED Silver. The following sustainable design credits will be pursued which will impact the electrical systems. Sustainable design strategies will be implemented where viable.

Sustainable Sites	Possible	Points
Light Pollution Reduction	1	1
Energy & Atmosphere	Possible	Points
Minimum Energy Performance	Required	X
Advanced Energy Metering	1	1
Demand Response	2	1*
Renewable Energy Production	3	2*
Indoor Environmental Quality	Possible	Points
Interior Lighting	2	1

* = depends on what options are available from Puget Sound Energy

STRATEGIC PLAN - EXCERPTS



The Bellevue College (BC) Strategic Plan, updated in 2017, organizes priority initiatives for the next five years around the college's established four core themes. This revised plan honors many of the priority initiatives from the 2014 Strategic Plan, while maintaining the commitments of the original plan: delivering high quality educational opportunities, educating students to be global citizens, promoting social justice in all we do, interacting with the community, rebuilding our foundations, and cultivating our human potential.

The initiatives have been updated and aligned with the college's core theme indicators; additional plan actions and indicators are in development. [Four core theme indicators have been identified as key benchmarks for 2017-2018](#). Representatives from BC Governance served on the [Strategic Plan Update Task Force](#) during spring quarter 2017. Their work was presented to the Board of Trustees on June 7, 2017. [Strategic Plan pdf version](#).

Student Success Core Theme

BC supports the success of all students in meeting their educational goals through its commitments to open access learning; to offer a portfolio of appropriate and well-chosen educational programs, services, and activities; and to its ongoing attention to student persistence and educational attainment. Key concepts: access, persistence, completions, success initiatives, demographics.

Student Success Priority Initiatives

A. Develop and implement a strategic enrollment management plan that promotes the success of all student populations.

- **Responsibility leaders: vice president of Student Affairs, vice president of Instruction, associate vice president of Effectiveness and Strategic Planning**
- [How we're measuring success](#)

Note: Bellevue College tracks 41 core theme indicators (CTIs) to assess mission fulfillment. The CTIs listed below are also used to assess the college's success with its priority initiatives.

Student Success Priority Initiative A

Develop and implement a strategic enrollment management plan that promotes the success of all student populations.

- CTI 1.1.1. State allocations are met or surpassed
 - Measure: % of state FTE allocations that are met or surpassed
- CTI 1.1.4. BC operates as an open access institution by admitting all eligible applicants based on Policy 2200.
 - Measure: % of applications that are processed and yield enrollments

MASTER PLAN - EXCERPTS

BELLEVUE COLLEGE CAMPUS MASTER PLAN

PERKINS+WILL
SWIFT COMPANY LLC
7 Transpo

DAE
MAGNUSSON
KLEMENCIC
ASSOCIATES

FEBRUARY 2017

SECTION ONE / Executive Summary

PURPOSE

This Campus Master Plan is intended to guide the future growth of Bellevue College in a way that reinforces the core values of an accessible, student-centered, pluralistic, and collaborative college. The physical campus should support and enhance these values and provide flexibility that acknowledges the evolving and innovating landscape of education.

The Campus Master Plan uses the college mission as its foundation and builds upon its life-long values as a student-focused, open access and community-based institution.

MASTER PLAN GOALS

- Support the college mission, strategic plan and academic plan through physical development of the campus.
- Plan for flexibility to accommodate changing needs of education.
- Establish a strong relationship with the community.
- Create sustainable, healthy and nurturing space for student learning.

OVERVIEW AND PLANNING PROCESS

In addition to the future vision of the main campus, this document includes additional information resources for future development planning including guiding principles, detailed analysis and long term development implementation strategies with input from campus, community and City of Bellevue stakeholders throughout the design process.

SECTION ONE / Executive Summary



Figure 1-01: Long-Term Vision, Campus at Full Build-Out. Graphics are for Illustrative Purposes Only

Bellevue College Campus Master Plan / February 2017 5

VISION

Bellevue College is the region's college of choice, based on its excellence, innovation, and national recognition for exemplary programs.

CORE VALUES

We, the Board of Trustees, faculty, staff and administration of Bellevue College, place students at the center of all we do and support and promote the excellence of their efforts. We affirm and embody pluralism, value collaboration and shared decision making, and honor creativity and innovation.

We consider it our duty to anticipate changing demands in education and welcome the opportunity to shape its future. We acknowledge our responsibility to society and embrace the belief that widespread access to excellent post-secondary education is the cornerstone of a democratic society.

MISSION

Bellevue College is a student-centered, comprehensive and innovative college, committed to teaching excellence, that advances the life-long educational development of its students while strengthening the economic, social and cultural life of its diverse community. The college promotes student success by providing high-quality, flexible, accessible educational programs and services; advancing pluralism, inclusion and global awareness; and acting as a catalyst and collaborator for a vibrant region.

WE ARE

Bellevue College is the region's college of choice, based on its excellence, innovation, and national recognition for exemplary programs. Initial visioning with college leadership resulted in a clearly articulated set of Guiding Principles along with a Master Plan Vision for the near and long terms. The master plan vision identifies student housing, academic and support facilities for the near term. In the long term, the college seeks to achieve energy neutrality, expand its social justice focus, expand access and sense of belonging to students and embrace transportation alternatives along with untethered common work spaces. These were reviewed regularly through the process to ensure they were supported by the master plan concepts.

GUIDING PRINCIPLES

The following principles provided important direction to the campus plan and should serve to guide project decisions in the future. Developed by college leadership with input during the outreach process, the principles reflect the college's primary values, which must be supported by the plan, and evaluated against, for every project. The Bellevue Campus Master Plan is a physical vision for the future, clearly conveying that:

We Are Bellevue

- Support the Mission and Strategic, Academic, Equity and Student Services Plans in every possible move

We Are Open and Accessible

- Create a Welcoming Place, Bringing People In and Conveying the Opportunities For All
- Inclusive of All Cultures

We Are Student-Centered

- Strengthen a Sense of Belonging by Grounding the Campus to its Place and People
- Create a Healthy and Nurturing Place that Feels Comfortable and Supportive

We Are Responsive

- Stay Flexible to Evolving Needs, Changing Pedagogies, Progressing Industries

We Care

- Social Equity - Offer Equal Access, Supports Pluralism, and Encourages Real Collaboration
- The Earth - Develop and Expands with Sustainable Strategies
- Responsibly Stewarding and Effectively Using Resources Judiciously

We Serve - the Community and Local Industry

- Leverage and Strengthen Relationships with the Community and Industry - with Openness, Access, Flexibility
- Be a Welcoming Resource

We Have a Vision

- Showcase a Place that Fosters Excellence, Innovation, National Recognition

MAIN CAMPUS HISTORY

Bellevue College campus celebrated its 50th anniversary in 2015. Constructed in the 1960's during a nationwide community college building boom, the original buildings established the academic core. This initial period set the form for a campus that was internally focused and set apart from the main entry and public edges. Much of the development that followed reinforced this orientation and relationship to the outside community. Subsequent development added support, common use and additional academic building to support growth and change.

1960-1970

The original layout of the campus was designed between 1965-1969. Initial orientation was orthogonal with open space continuous through the north/south and east/west axes and internally

focused. Building circulation is accommodated on the exterior via both at-grade and second level covered walkways, stairs and elevators.

1970-1980

Phase Two of the new campus was completed in 1973, and included a 300-seat theater (the largest public theater in Bellevue at the time), 2,500-seat gymnasium and sports complex, planetarium, day care center and greenhouse. Building off the strong north/south spine extending through campus, the next generation of buildings attempted to book-end and reinforce internally focused open spaces. A third phase was finished in 1974 with the running track.

1980-2000

The turn of the century saw various forms of campus infill, including expansion to the south, east and north-east. During this period, development reached beyond the original core yet continued to reinforce it.

2000-Today

Over the past few years, the first major above-grade parking structure was completed and established a major transit hub near the center of campus, further expanding instructional and functional buildings eastward. With eastward expansion, new opportunities exist for an expanded long term plan that is less driven by the college's original footprint. This includes opportunities to engage the campus edges and create a new campus center while strengthening connections to the original core.

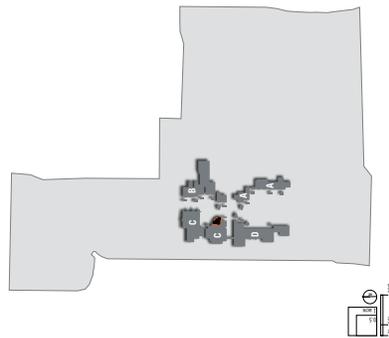


Figure 2-03: 1960-1970

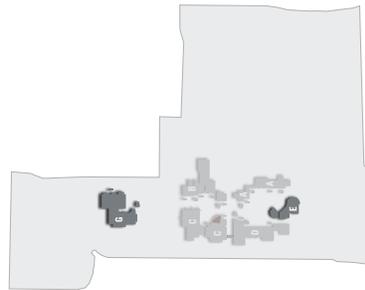


Figure 2-04: 1970-1980

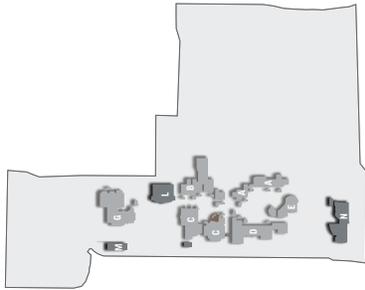


Figure 2-05: 1980-2000

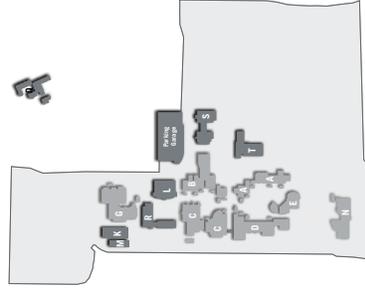


Figure 2-06: 2000-Today



SECTION THREE / We Have

PHYSICAL CONDITION

The lowest overall scores are associated with the oldest college buildings (A-G), the maintenance shop (M) and the converted single family houses. Of the original buildings, E received the lowest score. Almost every building is in superior or adequate condition structurally.

Each of the original buildings (A-G) requires improvements or additional maintenance to their mechanical systems (typically rooftop units). Building envelopes, accessibility and sustainability all require renovation or improvements, save for the newer buildings R,S,T and the parking garage.

Finally, interior finishes vary across the board, depending on which areas have received recent improvements. As the college considers future replacement needs and opportunities, the original campus core and other selected buildings are likely candidates. **With funding uncertain however, a future plan should include a framework whose strength is independent of whether these buildings stay or go.**

LEGEND

- Superior Condition
- Adequate Condition
- Needs Improvement
- Inadequate Condition
- Not Functional
- Campus Boundary
- BC Owned Property
- Future Housing



Figure 3-15: Physical Condition Assessment

SECTION THREE / We Have

FUNCTIONAL CONDITION
 Many of the original buildings received poor scores for wayfinding, comfort, image and character. Much of this relates to the deeply recessed facades that result from exterior building circulation and contribute to reduced access to daylight. The recesses as well as lack of hierarchy also contribute to difficulty in wayfinding and a marginal relationship between indoor and outdoor spaces. Program fit was also assessed as needing improvement in the original buildings, particularly for Building C (lack of space in cafeteria) and Building D (stronger identity for the library). See table on pg. 33 for further detail.

The functional condition assessment is based on how well each building currently performs to support college functions, or may be able to support functions in the future with minor changes. The review is based on information provided by users, stakeholder participants and observations from facility tours. Criteria include a building's program fit, flexibility to support different uses, level of comfort (independent of the mechanical system performance such as access to daylight and ceiling heights), contribution to visitor wayfinding, and image/character.

- LEGEND**
- Superior Condition
 - Adequate Condition
 - Needs Improvement
 - Inadequate Condition
 - Not Functional
 - Campus Boundary
 - BC Owned Property
 - Future Housing



Figure 3-16: Functional Condition Assessment

SECTION FOUR / We Need

INTRODUCTION

This section summarizes the outcomes and process for the high-level analysis of space needs to develop current requirements and projected growth for Bellevue College.

Enrollment projections which impact space requirements were developed through a review of historic growth, population projections and steering committee discussions. Current needs were identified with input from department representatives and under the guidance of the Steering Committee. The analysis included a review of existing space data and observations through building tours while verifying department locations at the main campus and the North Extension Center. Projected space needs were then developed using the identified current need applied to enrollment projections, and compared against the Capital Analysis Model (CAM).

Interviews were conducted with the following groups:

- Instruction
- Arts and Humanities
- Health Sciences Education + Wellness Institute
- Institute for Business + Information Technology
- Social Science
- Science
- Economic and Workforce Development
- Information Technology Services
- Institutional Advancement
- Human Resources
- Effectiveness and Strategic Planning
- Equity + Pluralism
- Administrative Services
- Student Affairs
- Athletics

Summaries of functional space needs for each group are provided in Appendix B.



Figure 4-01: Building T Corridor

SECTION FOUR / We Need

ACADEMIC SPACE NEEDS SUMMARY

Current needs for the college's academic space (not including housing and parking) indicate 770,000 assignable square feet (asf) required as identified through the space needs analysis. With existing space at 720,000 asf, an additional 50,000 asf (or 7%) is required to meet current needs.

The future academic space need was based on historic student enrollment, expected to continue to grow 1.8% yearly, indicating a future need of 922,000 asf, an increase of 202,000 asf (or 28%) over the next 10 years. This translates to 310,800 gsf of new development, beyond what the college currently has.

Space currently allocated within the North Extension Center was not included in the assessment, as continuing education needs are typically based on immediate needs and opportunities, and factored independently from enrollment projected space needs.

Process

The current space analysis assessed "right-sized" needs. This was done through focus group sessions with college departments and walk-through tours to understand the current use of space within each department. Feedback was documented and evaluated against scheduling and utilization data, project goals, and input from the Steering Committee. This user-based assessment of current needs was also compared against the State Board for Community and Technical College's (SBCTC) Capital Analysis Model (CAM).

See Appendix B for detailed space analysis, general themes and issues that resulted from the focus groups including space, functional and adjacency needs.

	2016 Existing (ASF)	2016 Current Need (ASF)	2026 Future Need (ASF)
Academic Divisions	296,761	310,104	370,600
Other Academic	77,461	79,321	94,300
General Classrooms	95,393	101,147	120,900
Support	128,254	138,129	160,800
Student Affairs	88,579	107,359	135,380
Undefined or Support Space	33,780	33,780	40,400
Main Campus Subtotal	720,228	769,840	922,380
Total ASF Main Campus w/o Housing	720,228	769,840	922,380
ASF PER FTE	65	70	70

Table 4-02: Academic Space Needs Analysis

PARKING SUPPLY

Parking supply was counted in October 2015 including all lots and designated parking along Snoqualmie River Road, and did not include parking on streets adjacent to campus (such as SE 24th Street).

EXISTING SUPPLY	3,850	STALLS
CURRENT DEMAND	3,227	STALLS
FUTURE DEMAND	4,026	STALLS

Parking demand was assessed by looking at current parking counts and occupancy rates during peak times. Though some users may experience limited availability in certain parts of campus during certain times of the day, current demand is less than the supply per campus wide availability. Future demand was calculated by applying the same rate of current demand to future enrollment, with some reductions related to new student housing. With increases in the

transit service, ride share and other alternatives to single occupant vehicle travel, parking demand may be further reduced.

See Appendix D for detailed parking and transportation analysis.

SECTION SIX / Our Plan

REAL ESTATE STRATEGY AND PRACTICES

Practices and Process

Bellevue College trustees and the president are responsible for the long-range planning of the college which includes monitoring and evaluating real estate opportunities. The Vice President of Administrative Services and BC's capital team seek to maintain an appropriate portfolio of real properties to provide flexibility for growth and changes in the academic program of the college. The authority to purchase and sell real property, however, lies with the State Board for Community and Technical Colleges (SBCTC) which is also the legal owner of all land and facilities.

Properties of Interest

The college has an interest in properties (raw and developed) with strategic value for expansion, programmatic needs and/or proximity to existing college properties.

- **Expansion / Growth** – As college enrollments continue to increase, future access to teaching and support facilities must be considered. Dramatic population growth within the district also continues, most evident are the communities in the eastern part of the district suggesting need for development of the east extension center.
- **Programmatic Demands** – Purchasing facilities to suit new programs of study can be an effective strategy with potential savings of both time and money. In this way, for example, the college might respond nimbly to a partnership opportunity with a local employer for training.
- **Proximity / Adjacency** – Real estate parcels with direct adjacencies to current holding are regularly monitored and considered for purchase when they become available. As an urban campus, existing properties are typically landlocked. This practice ensures that all potential opportunities are considered.

Real Estate Strategies

Three strategies are leased facilities, land acquisitions and extension sites.

- **Leased Facilities** – A strategy of leasing facilities has provided the college the opportunity to
 - respond quickly to emerging needs,
 - test market programming before making a permanent investment,
 - execute partnership opportunities and
 - embed targeted programs / services into the communities of the district.

- **Land Acquisitions** – Since the 1990's, the Board of Trustees has maintained support for a program of purchasing adjacent properties to meet future campus expansion demands. These properties have largely been residential lots within the neighborhoods to the east of the main campus. A 20 acre parcel of raw land was also purchased (2011) in the Issaquah Highlands area as a potential site for a future extension center or second campus. Properties further east have also been considered for expansion purposes in the cities of Snoqualmie and North Bend.

- **Extension Centers** - Additional sites for course delivery are an effective way to meet specific program needs and create access. This strategy has been very successfully implemented at BC's north extension center – Building V, a two-story office building purchased in 2008. This extension center serves students in the northern parts of the district well. The college also utilizes leased facilities within the district to deliver classes (mostly continuing education) closer to the communities served.

Legal Issues

As the legal owner of all land and facilities, the SBCTC determines real estate decisions. Proposals from the college are submitted for review and approval at the quarterly meeting of the state board. Real estate transactions are handled by the State Office of Financial Management (OFM). As a college in the community and technical college system, BC is further restricted to real estate acquisitions within Bellevue College District Eight.

The Bellevue College Foundation can be a powerful partner to the college in real estate management. Under a variety of scenarios (e.g., purchase and lease back), the Foundation can help the college be more flexible, timely and responsive in securing facilities and/or taking advantage of opportunities as they arise.

Legal precedence has been set and the opinion upheld in 1985 when the court found that Bellevue College was not subject to municipal regulation (see Appendix H). Since that time, however, the college has made it a practice to use the city's development and land use regulations as a guide, and in most cases campus development has not been in conflict with city standards.

A strong relationship with the City of Bellevue is invaluable for the college. In recent years, an ongoing dialogue between staff and administrators has been fostered. The college and city regularly share planning efforts and development intentions. As partners, and through joint communications within the community, we have been very successful in moving projects forward for both the college and the city.

SECTION FIVE / Our Vision

USE ZONES

The use zones are identified to support community-building:

- **Academic** uses are concentrated in the campus core and toward the main entry so that learning is most prominent. Administrative office uses can be integrated with academic uses in this zone.
- **Housing** is concentrated to the north to create a zone where residential students are adjacent to each other, enabling interaction during all times of the week.
- The **Service** zone includes facility operations and warehouse storage. Access is convenient from adjacent streets and minimally impacts the pedestrian-oriented inner campus.
- **Community Partnerships** are concentrated at the southeast corner, adjacent to commercial functions in an area that the city plans to rezone with a connection to the campus.
- The **Athletic** zone includes recreation and athletic fields in the north east corner of campus, tying the gymnasium and athletics areas together.

In addition, common use functions should be in prominent and easily accessible locations within the academic and athletic zones.

LEGEND

	Academic		Pedestrian Circulation
	Community Partnership		Vehicular Circulation
	Service		Pedestrian Oriented Transit Zone
	Housing		Expanded Campus Boundary
	Athletics		Existing Buildings



Figure 5-04: Campus Zones

INTRODUCTION

This section summarizes the outcomes and process for the high-level analysis of space needs to develop current requirements and projected growth for Bellevue College.

Enrollment projections which impact space requirements were developed through a review of historic growth, population projections and steering committee discussions. Current needs were identified with input from department representatives and under the guidance of the Steering Committee. The analysis included a review of existing space data and observations through building tours while verifying department locations at the main campus and the North Extension Center. **Projected space needs were then developed using the identified current need applied to enrollment projections, and compared against the Capital Analysis Model (CAM).**

Summaries of functional space needs for each group are provided on page B7. Interviews were conducted with the following groups:

- Instruction
- Arts and Humanities
- Health Sciences Education + Wellness Institute
- Institute for Business + Information Technology
- Social Science
- Science
- Economic and Workforce Development
- Information Technology Services
- Institutional Advancement
- Human Resources
- Effectiveness and Strategic Planning
- Equity + Pluralism
- Administrative Services
- Student Affairs
- Athletics

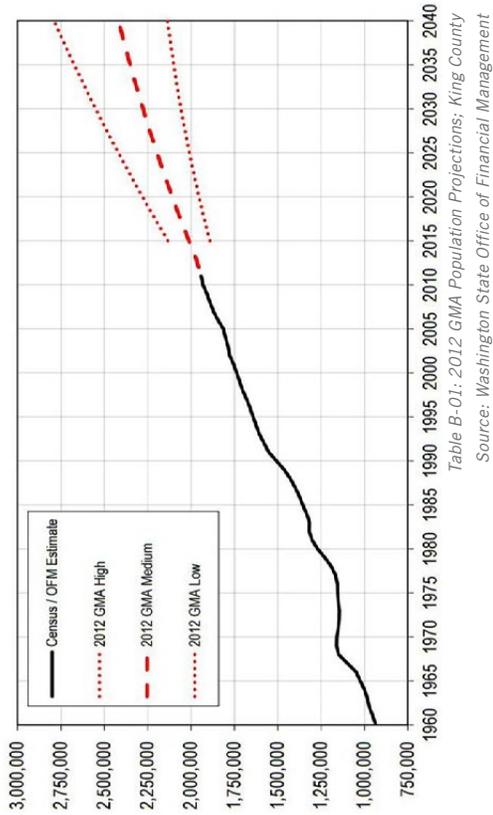


Table B-01: 2012 GMA Population Projections; King County
Source: Washington State Office of Financial Management

FUTURE PROJECTIONS Demographics

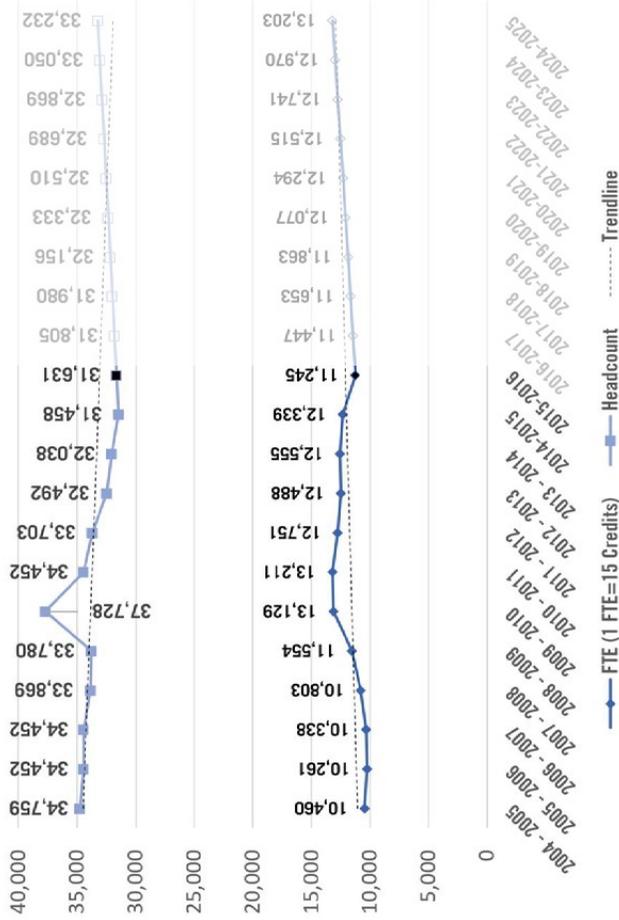
The State of Washington's Office of Financial Management (OFM) regularly develops population projections for each county in the state. As shown in *Table 4-02*, OFM projections for King County indicate a steady increase for the next 24 years. **Consequently, the college can expect increases in educational needs within its service area which includes some of the largest and fastest growing cities in King County.**

APPENDIX B / Space Analysis

ACADEMIC ENROLLMENT

Historic Enrollment

Over the last 15 years, and with the addition of four-year programs at Bellevue College, full time equivalent (FTE) student counts have risen steadily, averaging 1.8% per year. At the same time, headcounts have declined with increasing proportions of full-time students. Table 4-03 illustrates how enrollment was affected by economic factors, typical of community colleges across the country. Enrollment spiked during the “Dot Com bust” in 2001, and the “Great Recession” from 2008-2011. A breakdown by division for Fall of 2015 shows the largest enrollment in Arts and Humanities and Science, as shown in Table 4-05.



Enrollment Projections

Based on historic student enrollment, future enrollment is expected to continue to grow by an average of 1.8% yearly for the next 10 years, from 11,000 to 13,200 FTEs. During the same period, headcount is expected to grow, but at a much slower rate. (While online enrollment is also expected to increase, those FTEs will likely be in addition to the projected numbers expected on campus. Online opportunities typically further increase access to students who would not otherwise enroll.)

TYPE	Existing (2015)	Future (10-year)	Annual Rate
FTE	11,046	13,203	1.8%
Headcount	31,458	33,232	.55%

Table B-03: Projected Enrollment

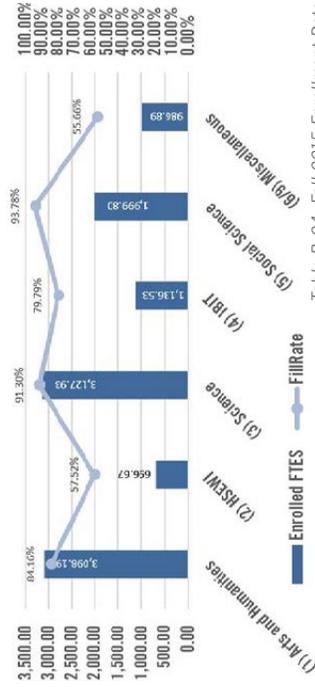


Table B-04: Fall 2015 Enrollment Data

APPENDIX B / Space Analysis

	Current Need (ASF)		Future Need - 2025 (ASF)		Shortage ASF (39,047) (26,571)
	Current (ASF)	User Based Right-Sized ASF Need	Right-Sized x Growth Projections	Future Need, CAM Model	
Academic Divisions	296,761	310,104	370,600	271,980	
Other Academic	77,461	79,321	94,300	124,528	
General Classrooms	95,393	101,147	120,900	163,721	
Support	128,254	138,129	160,800	100,704	
Student Affairs	88,579	107,359	135,380	71,583	
Undefined or Support Space	33,780	33,780	40,400	110,450	
Main Campus Subtotal	720,228	769,840	922,380	842,967	
Total ASF Main Campus w/o Housing	720,228	769,840	922,380	842,967	
ASF PER FTE	65	70	70	64	

Table B-05: Academic Space Needs Analysis

the State's general standards. This model however was last updated in the early 1990's before the latest evolution in pedagogy that calls for more active learning and group work, both in and out of the classroom, requiring more space per seat.

In addition, the CAM model's subcategories of space types are often difficult to compare against as college functional categories have evolved and changed including growth in student affairs functions. Total numbers are typically most useful to evaluate against each other. For this reason, the CAM model results should be considered as one approach and likely an approach that underestimates space needs.

Discussion with Bellevue College faculty and staff clarified specific deficiencies in areas including recreation/athletics space, student center and student affairs space/support. These deficiencies may differ with the CAM model as a result of a growing focus on student support.

ACADEMIC SPACE NEEDS COMPARISON
 "Right Sized x Growth Projections" is based on applying the enrollment growth factor to the current "Right Sized Need" with 922,000 sf projected.
 For the purposes of this study, the "Right Sized x Growth Projections" was determined to be the method by which to plan due to its tailored approach and the ability to provide for the potential greatest need. In addition, the difference falls within 10% of the CAM model projection - a typical planning parameter. As the college moves forward, space needs for specific projects will need to be studied and validated in more detail.

Using the "right-size x growth projections" approach, the college needs an additional 50,000 asf now and will need a total of 202,000 additional asf in the future.

The CAM model is typically used as an important reference to ensure that stated needs are in line with

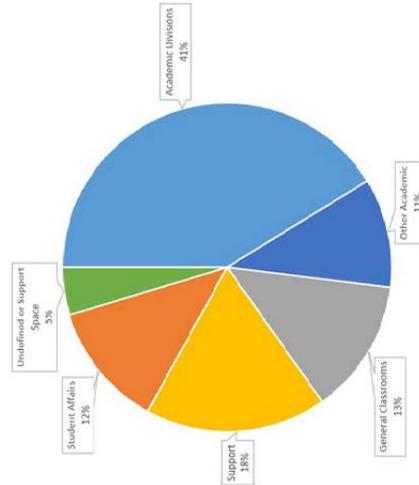


Figure B-06: Existing Academic Space by Department

APPENDIX B / Space Analysis

CLASSROOM SPACE ANALYSIS

A high level review of general classroom space on the BC main campus was initiated to examine utilization by classroom type, and understand the current breakdown of classrooms. **There are 34 general classrooms in total; most general classrooms fall in the "small" category.**

Over a typical week, classroom utilization is often **below the standard of 70%**, with classes in **highest demand during the 8am-3pm time period**, a jump in demand between 5-6pm. Unfortunately, utilization rate was not available by classroom type, limiting the ability to conduct further analysis. **Future review of classroom utilization by type would help clarify classroom categories that are either over-abundant or short in meeting needs.** Results may then help to provide direction for classroom reuse opportunities and identify more specific classroom needs to be addressed with future development.

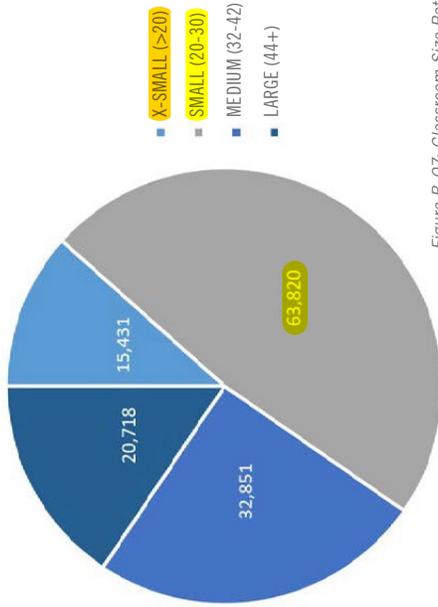


Figure B-07: Classroom Size Ratios
Source: Bellevue College (Fall 15 DIV)

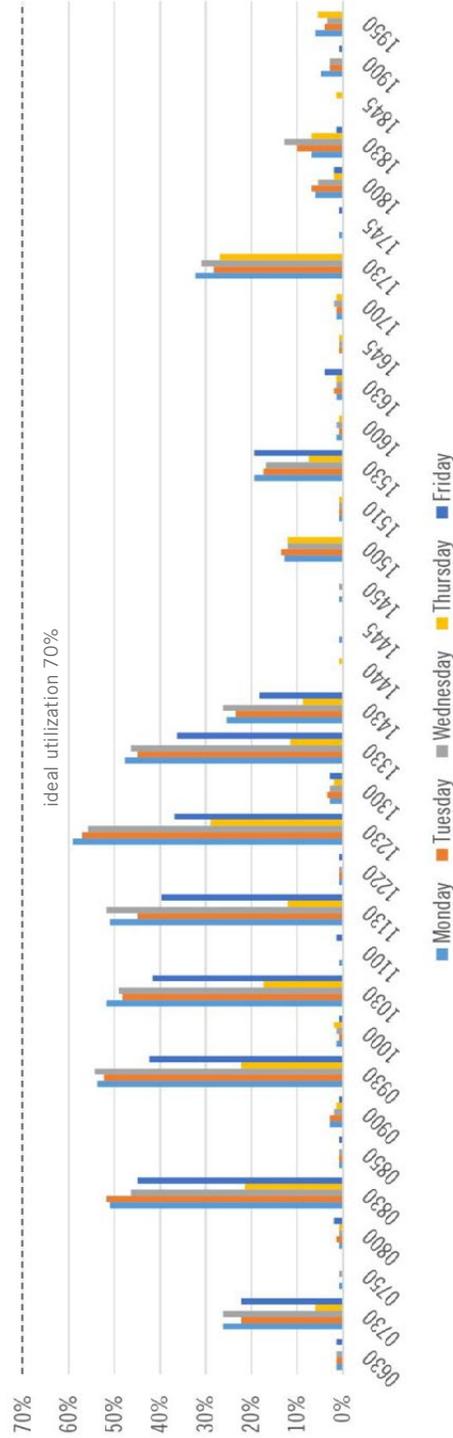


Table B-08: % of Classes in Use in Fall 2014 (149 Total)
Source: Bellevue College (RoomUseXP_PJ)

FOCUS GROUP SUMMARIES

Overall, the most common concern shared between all groups was the need for student and community gathering space as well as informed student study space.

Meetings with deans and various units were conducted, followed by a tour of their facilities. A total of 18 department meetings took place with each of the following groups. Each group was asked to share information regarding their current organizational make up and operations, current space issues, adjacency needs, anticipated growth or changes, potential future space issues, and general campus concerns.

The following summarizes key needs expressed during the department focus groups:

Functional and Space Issues

Instruction

- Remodeling recently completed
- More efficient layouts in existing spaces are possible
- Need additional collaborative/flexible space

Arts and Humanities

- Short on office space
- Need for flexible (active learning) classrooms
- Contiguous and adjacent department needs

Health Sciences Education + Wellness Institute

- Building G renovations are needed to expand and increase accessibility
- Movement towards simulation pedagogies

Institute for Business + Information Technology

- Need central location
- Space needs are proportional to enrollment
- Need increased flexibility for classrooms

Social Science

- Office space and storage needs
- Prefer contiguous space to foster interdisciplinary programs within Social Science division

Science

- Saw largest growth of a single program, and growth of faculty is expected
- Office space is noisy and crowded
- Flexible space is important

Economic and Workforce Development

- Prefer co-location of department
- Occupy North Extension Center Building, growth may spur possible expansion to Main Campus

Information Technology Services

- Proximity of staff across main campus is a high priority
- Reorganization of space would increase efficiency
- KBCS needs a new building w/ public access

Institutional Advancement

- New space works well
- Accessible and highly visible space
- Utilize daily access to storage

Human Resources

- Prefer contiguous and accessible space
- Long-term need for areas with confidentiality and privacy
- Ideally adjacent to Payroll

Effectiveness and Strategic Planning

- New space works well, lacks privacy
- Utilize workroom/kitchen for informal meeting space

Administrative Services

- Non-dedicated space is valuable
- Space ownership confusion
- Don't foresee many changes

Student Affairs

- Co-location of programs
- Need easy access and visibility
- Building C is not as ideal as current location, prefer to be centralized

Athletics

- Short on locker/team rooms
- Year-round athletics planned

APPENDIX G / Sustainability

CLIMATE ACTION PLAN

The 2010 BC Climate Action Plan (CAP) acts as the guiding document for the Presidents' Climate Commitment and satisfies the core requirement of ACUPCC. The CAP identifies strategies for reducing carbon emissions and campus-wide environmental impacts over the next 40 years. The CAP is updated every five years, and requires an annual progress report, which includes a Carbon Audit Report. In addition to the annual Carbon Audit Report, key components of the 2010 CAP include:

Buildings and Energy Use

- Overall Goal: Set a baseline in 2010-11 of energy use per square foot per year. Reduce conventional energy use (fossil fuel) by three percent per year through 2030 and a two percent reduction per year through 2050 over baseline (averaged out in five year increments).

- In addition to holding membership with the Resource Conservation Management program for Puget Sound Energy, BC invests in multiple on-campus projects to reduce energy consumption, including: Resource Conservation Procedures, HVAC Scheduling, Controls, and Maintenance, installation of Renewable Energy Projects, and Building Dashboard Energy Monitoring. Customized for BC, the Building Dashboard provides real-time information on energy usage per building on campus.

Transportation

- Overall Goal: Set a baseline in 2010-11 of single occupancy vehicle commuting and carbon emissions from college vehicles and travel miles. Reduce single occupancy vehicle commuting and carbon emissions from campus vehicles and other travel by two percent per year over baseline

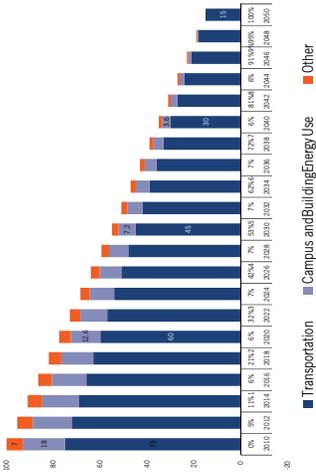


Figure G-01: Carbon Assessment
Source: Bellevue College Climate Action Plan

(averaged out in five year increments). This would result in an 80% reduction by 2050.

- To guide transportation improvements stemming from the CAP, a Transportation Management Task Force (TMTF) was formed in 2010 to advise and recommend on and off campus transportation management initiatives.

Purchasing, Waste, And "Other" Strategies

- Overall Goal: Set a baseline in 2010-11 of waste production per square foot per year. Reduce solid waste production by five percent per year over baseline (averaged out in five year increments) for first ten years (50% reduction). Continue to reduce waste with a goal of reaching a 75% reduction by 2030 and 100% by 2050.

- Food sustainability on campus is guided by multiple programs, including the Bellevue College Garden/Garden Club, Sustainable Foods Group, Community Supported Agriculture (CSA) Delivery to Campus, and IDEA Garden. Additionally, the Bellevue College Cafeteria offers sustainable food

service options, and sells waste oil for reuse into biodiesel. The bookstore has also ceased the use of plastic bags.

Education And Culture Change

- Overall Goal: Evaluate current education in sustainability and climate change in 2010-11. Over the next ten years, work to embed education across the curriculum and create more ways to interact and educate the community.

- In addition to drafting and advising on campus sustainability policies and programs, the Office of Sustainability, EAC, and SSA hosts an annual Earth Week festival. The 2015 subject for Earth Week was titled "Environmental Justice."

The college has committed to achieving carbon neutrality by year 2050. By working closely with local organizations such as Metro, Sound Transit, the City of Bellevue, and Puget Sound Energy, the college implements alternative transportation options, energy and water savings programs, and waste reduction measures. The college closely measures these efforts and aims to commission future projects.

Major barriers to achieving neutrality are:

- Central HVAC controls do not allow for decentralized system management. Operable windows disrupt the system.
- Transportation to/from campus by students, faculty and staff. This is the largest contributor to the campus' carbon footprint.
- Classroom manual lighting controls contribute to high energy use when not utilized. A long term automation upgrade would help with cost reduction.

MID CYCLE EVALUATION - EXCERPTS



NWCCU Mid Cycle Evaluation

July 21, 2014

List of Acronyms

AA	Associate in Arts
AAS-DTA	Associate in Arts and Sciences-Direct Transfer Agreement
AAS-T	Associate of Applied Science-Transfer
AS-T	Associate of Science-Transfer
AC	Accreditation Coordinator
ACC	All College Council
ACCT	Association of Community College Trustees
AGO	Attorney General's Office, Washington State
ALO	Accreditation Liaison Officer
AP	Advanced Placement
AS	Administrative Services
ASG	Associated Student Government
BAA	Bachelor of Applied Arts
BAS	Bachelor of Applied Science
BC	Bellevue College
BCAHE	Bellevue College Association of Higher Education
BCCE	Bellevue College Continuing Education
BIRST	Bias Incident Report and Support Team
CAC	Curriculum Advisory Committee
CDC	Curriculum Development Coordinator
CE	Continuing Education
CERT	Community Emergency Response Team
CEU	Continuing Education Unit
CIDA	Council for Interior Design Accreditation
CIM	Curriculum Information Management Committee
DES	Department of Enterprise Services, Washington State
DTA	Direct Transfer Agreement
ELC	Early Learning Center
ERP	Enterprise Resource Planning
ESL	English as a Second Language
ESP	Effectiveness and Strategic Planning
EWD	Economic and Workforce Development
EWU	Eastern Washington University
FA	Financial Aid
FACT	Faculty Assessment Coordinating Team
FAFSA	Free Application for Federal Student Aid
FERPA	Family Educational Rights and Privacy Act
FMS	Financial Management System
FYE	First Year Experience
HR	Human Resources
IACET	International Association of Continuing Education and Training
IB	International Baccalaureate
IBIT	Institute for Business and Information Technology

cultural Center, now Vice President of Student Services (2013); and Aaron Hilliard, Vice President of Human Resources (2014). Two new deans have also been named: Leslie Heizer-Newquist was promoted to dean of the Health Sciences, Education, and Wellness Institute in 2014; and Mahalaxmi (Gita) Bangera assumed a new position, dean of undergraduate research, in the same year. Bangera will oversee development of a new Center for Undergraduate Research, Innovation, and Experiential Learning.

Two additional new positions have also been added in 2014, one in the Office of Instruction and one in the Office of Equity and Pluralism. Ekaterina Stoops has assumed the new position of eLearning Manager within the Office of Instruction. Among her responsibilities, Stoops will develop and maintain the strategic plan for eLearning, develop training resources, and provide analysis and support for online, hybrid and on-ground instruction. She previously worked for the State Board for Community and Technical Colleges (SBCTC) coordinating the development of digital materials and providing professional development for faculty teams. In response to Title IX requirement changes, BC has also hired a Compliance Title IX Coordinator, who will work out of the Office of Equity and Pluralism. Rachel Wellman will oversee Title IX practices and training, ensuring that the college remains in regulatory compliance. She has worked in higher education for more than a decade and was part of a team that developed the SBCTC Framework for Diversity Assessment and Planning for Students of Color.

A student trustee position was added to the BC Board of Trustees following the 2012 passage of [RCW 28B.50.102](#), which allows for a sixth trustee position to be filled by a student. The student trustee has all the duties and powers of a regular trustee, but does not participate or vote on matters related to hiring, discipline, or tenure for faculty and personnel; or collective bargaining. BC is the only college in Washington's community and technical college system that has taken advantage of this opportunity for student involvement.

Strategic and other planning efforts

Completion of a set of campus-wide plans was one of six goals set for AY 2013-2014 that the Board of Trustees set for President Rule. This ambitious project has been accomplished, with three major plans submitted to the board in spring 2014: strategic, student affairs, and academic master. The process was coordinated by a steering committee, with outside support provided by two consulting firms. Development of an equity plan and implementation strategies for all plans is scheduled for 2014-2015. This process was characterized by a high degree of involvement across the main and north campuses and has resulted in some of the most substantive and wide-ranging planning in the institution's history.

Increase in baccalaureate degrees

Washington's SBCTC anticipates that state baccalaureate completions will fall short of projected demand by 12,883 every year from 2016 through 2021. One reason for this gap is that the minimum education to enter particular fields, such as nursing, has shifted from a two-year to a four-year degree. BC's location, on the eastside of the Seattle Metro area, is particularly underserved by traditional four-year institutions. To respond to the regional employment

situation, BC has worked closely with local business and community leaders to assess their needs and create programs valuable to students and employers.

As a result, BC has developed, and will continue to develop, appropriate applied baccalaureate degrees. In 2007 Radiation and Imaging Sciences began enrolling students who had already completed a 2-year degree and graduated its first class in 2009. Baccalaureate degrees have also been added in Interior Design (2009), Healthcare Technology and Management (2012), Nursing (2013) and Information Systems and Technology (2013). A BAS in Data Analytics has been approved by the legislature and will begin enrolling students in fall 2014.

Construction on health sciences facility

In 2013, BC began construction on the T Building, a \$39 million, 70,000 square foot project, scheduled for completion in 2016. This state-of-the-art facility will house BC's growing health science programs, with laboratories incorporating the latest technology. Nursing, BC's oldest and most established health science program, dating from the college's founding in the mid-sixties, will benefit greatly from the new facilities, which will feature two dedicated nursing labs, 20 hospital beds, and a five-room medical simulation lab. The new building will complement the expected growth of the nursing program, including its bachelor's degree.

Additional programs that will relocate to the new building include Radiation Therapy, Radiologic Technology, Radiation and Imaging Sciences, Diagnostic Ultrasound, Neurodiagnostic Technology, Nuclear Medicine Technology, and BC's bachelor's degree program in Healthcare Technology and Management. To accommodate these programs, the building will incorporate two radiology labs with X-ray machines, separate labs for radiation therapy, nuclear medicine technology and phlebotomy, and classrooms, administrative offices and meeting space. The building is being constructed according to LEED Gold standards, the second highest rating, and will incorporate environmentally-sustainable features such as a vegetation-covered living roof, use of recycled building materials, and geothermal heating.

Plans for Issaquah land development

In early 2014, the City of Issaquah approved a site development plan for Bellevue College Issaquah, ensuring for the next thirty years the college's right to build on the site. The college anticipates that more than 4,000 FTEs will come from the Issaquah area by 2040; a campus located in the Issaquah Highlands is one possible strategy for addressing that growth. The site development plan envisions what the 20 acres purchased by the college in 2010 could look like when fully built. The approved concept calls for seven four-story buildings, which would offer 427,000 square feet of classrooms, meeting rooms, an amphitheater, offices, and accessory space.

ctcLink implementation

The college has begun preparing to replace the current 30-year-old administrative system with ctcLink, as part of the Enterprise Resource Planning (ERP) Replacement Project under the management of the SBCTC. The new software will provide a single, centralized suite of online functions for college business, replacing the four modules of the current Hewlett Packard

Selective admissions processes apply to several healthcare professional programs at the associate level as well as all applied baccalaureate degree programs. BC is authorized to award baccalaureate degrees in Healthcare Technology & Management concentrations (BAS)—[Healthcare Information Technology](#), [Healthcare Management](#), [Information Systems & Technology](#); [Nursing](#); five concentrations within Radiation & Imaging Sciences—[Nuclear Medicine](#), [Management](#), [Technology](#), [Radiologist Assistant](#), and [Medical Dosimetry](#); [Interior Design](#); and [Data Analytics](#).

BC continues to improve its assessment processes in order to enroll students in appropriate courses. The college has [mandatory assessment policies](#) for initial placement into English composition and mathematics courses to properly identify students' [current skill levels](#). Assessment [can be waived](#) for students with proof of completion of equivalent college-level English composition and mathematics courses or qualified advanced placement (AP) or International Baccalaureate (IB) credits. Recent high school graduates can place into college-level English if their high school GPA was 3.0 or higher. In 2011, English faculty reviewed data from ACT to analyze the correlation between Compass scores and course success. This analysis led to discontinuation of the Compass writing skills test, in favor of using the Compass reading skills test for English placement. To ensure that students are prepared for each course, prerequisites are clearly identified in the catalog and quarterly schedule and reviewed by the Curriculum Advisory Committee. Students who have completed prerequisites from other institutions are placed based on review by the Evaluations Office or program faculty. English and mathematics placements and course completions from community colleges in Washington are now honored due to a recent statewide [reciprocity agreement](#).

Washington is one of 24 states working with the Smarter Balanced Assessment Consortium, which is developing next-generation assessments aligned to the Common Core State Standards in English and mathematics. Full implementation of adaptive assessments is scheduled for the 2014-2015 school year. A component of this initiative is the formation of workgroups, comprised of K-12 and higher education faculty and administrators, which have developed a framework of college and career-ready standards. One workgroup is finalizing recommendations that will allow two- and four-year colleges and universities to use the Smarter Balanced 11th grade assessment as evidence that students are ready for entry-level, transferable, credit-bearing courses in English and mathematics. If students score below the college-ready level, additional placement or diagnostic assessments may be needed. In addition to using the Smarter Balanced assessment, BC has expanded its multiple-measures for placement to eventually include high school transcript review and review of writing samples.

2.D.6. Publish Information Regarding Educational Programs

Publications describing educational programs include accurate information on

- National and/or state legal eligibility requirements for licensure or entry into an occupation or profession for which education and training are offered;
- Descriptions of unique requirements for employment and advancement in the occupation or profession.

Baccalaureate and professional/technical programs publish state and federal legal eligibility requirements for licensure or entry to occupations or professions where they are applicable. This information is found in the college catalog, print materials (located in Academic Advising and division offices), and program webpages on the Bellevue College website. Programs with credentialing requirements include Diagnostic Ultrasound, Neurodiagnostic Technology, Nuclear Medicine, Nursing, Nursing Assistant, Radiologist Assistant, Radiologic Technology, and Radiation Therapy. Typically, any status that would disqualify an individual from entry into or advancement in a profession will be identified in the application process, and applicants will not be accepted if they would be unable to progress. For example, healthcare programs all require an initial national background check prior to acceptance, as well as documentation of immunizations. Details can be found on program webpages within the [Health Sciences, Education and Wellness Institute](#).

Business and information technology certificates and degrees often prepare students to test for professional certification, which is noted on the program websites for [Information Technology](#) and the [Institute for Business and Information Technology \(IBIT\)](#). For example, programs within the IBIT include Cisco Support Technician, Business Software Specialist, and Network Support. Individual courses whose outcomes map to external certification credentials include:

- TECH215/217: Analysis & Configuration 1 & 2 – Comptia A+
- IT103: Networking Basics – Comptia Network+
- IT128: Information Security Essentials – Comptia Security+
- NSCOM 220: Implementing Client Operating Systems – MCTS 70-680
- NSCOM 221 Implementing Server Operating Systems– MCTS 70-643
- NSCOM 223: Managing a Network Environment– MCTS 70-642
- NSCOM 227: Implementing Directory Services – MCTS 70-640

2.D.6. Publish Information Regarding Educational Programs URLs	
Health Sciences, Education and Wellness Institute	http://www.bellevuecollege.edu/health/
Information Technology	http://www.bellevuecollege.edu/prog/ns
Institute for Business and Information Technology	http://www.bellevuecollege.edu/ibit/

Library and Information Resources

2.E.1. Access, currency, depth and breadth of library and information resources

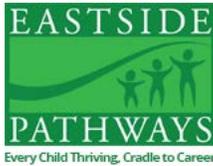
Consistent with its mission and core themes, the institution holds or provides access to library and information resources with an appropriate level of currency, depth, and breadth to support the institution's mission, core themes, programs, and services, wherever offered and however delivered.

The Library Media Center (LMC) plays a central role in accomplishing Bellevue College's mission and goals by being student-centered and committed to teaching excellence. In order to advance the lifelong educational development of students, the LMC continually strengthens its collections and services in breadth and depth, supporting increased curricular offerings and varied instructional modes of delivery.

Beginning in fall 2007 when the Bachelor of Applied Science in Radiation and Imaging became the first baccalaureate degree offered by the college, library resources have been acquired to support higher level courses. The same is true for the Bachelor of Applied Arts in Interior Design and the Bachelor of Applied Science in Healthcare Technology and Management. The positive comments about library resources from the Council for Interior Design Accreditation (CIDA), which evaluated the Bachelor of Applied Arts Degree (BAA) for the Interior Design program in 2012 reflect the ability of the LMC collection to support program needs. As with all LMC resource acquisition, collaboration between library and discipline faculty has been key.

Supported by its [budget allocation](#), the [LMC collection](#), including books, media materials and subscriptions, has grown. This growth includes a nineteen percent increase in the [circulating print collection](#) and the addition of new [online databases](#) that bring the total to fifty-five. Institutional site licenses to several online databases are acquired through [Orbis Cascade](#), a consortium of higher education institutions in Oregon and Washington. Database use statistics are reviewed annually by librarians and faculty members before renewals. Four new online tools (LibGuides, Reference Universe, Choice, Serials Solutions) allow librarians to facilitate resource use. An inter-library loan (ILL) system expands access to print and media materials; and a [reciprocal agreement](#) allows the LMC to borrow and makes LMC materials available for loan to other institutions. [LMC records](#) show that among Washington community and technical colleges, BC lends more than it borrows. [Guidelines](#) for mailing print materials have been established to expand hard copy book access for distance education students.

PARTNERSHIPS - LETTER FROM EASTSIDE PATHWAYS

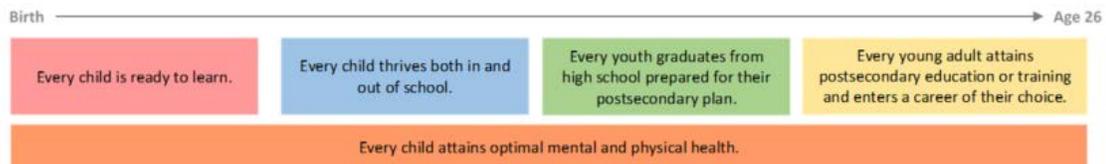


December 14, 2017

RE: Letter of Recommendation for Bellevue College

To Whom It May Concern:

As the Executive Director of [Eastside Pathways](#), an East King County collective impact Partnership of 65+ public, private and non-profit organizations, please accept this letter of support on behalf of Bellevue College's submission for funding for capital investments. Eastside Pathways is working to attain better outcomes for our children, cradle to career. The partnership is supported by a backbone organization that mobilizes, convenes and facilitates the work. The five goals of the partnership are:



We know that the goal areas noted above can only be achieved when organizations achieve their own mission while also working to align programs and work together. As one of the initial Eastside Pathways Partners, it has been clear that though Bellevue College's work directly supports several of the goal areas noted above, it is their long-term commitment to, and involvement with, Eastside Pathways that has been instrumental as we work across sectors on curriculum, innovation, internships and project-based learning. Aligning to common goals, reviewing data, agreeing to shared responsibility and accountability, as well as refining its own programmatic work, Bellevue College offers a number of programs which allow students in our region to earn college credit, including ones which allow students earn credit as they complete their high school graduation requirements.

The new facility will provide relief from current space constraints and allow for expansion of existing programs and growth, ultimately strengthening pathways for high school students to move smoothly and seamlessly into higher education. The new building will also provide the room to accommodate increased interaction with K-12 administrators, teachers, counselors as well as business partners and service providers. These are critical components of our mutual work.

Thank you for your careful consideration of Bellevue College as a recipient of your support for this important capital investment. We believe this will improve the lives of our young adults as well as the many organizations who are a part of this vital community.

Regards,

Stephanie M. Cherrington
Executive Director

We envision a community where every child is happy, healthy, and successful.

eastsidepathways.org | P.O. Box 913, Bellevue, WA 98009

COMPUTER SCIENCE ADVISORY BOARD MEETING MINUTES



COMPUTER SCIENCE ADVISORY BOARD MEETING SUMMARY

Computer Science Advisory Board Minutes May 10, 2017, 10:00 AM, Room B201A

Advisory Board meeting was called to order at 10:20 AM by Fatma Cemile Serce.

Members present

Rick Carragher, Torsten Grabs, Cher Rowland Henton, John Henton, Srujana Punyapu, Anna Wawrzniak, Margo Ikegami, William Iverson, Frank Lee, Winnie Li, Fatma C Serce and Robert Viens.

Members not present

Thomas Ball, Marek Brejl, and Rafael Fernandez.

Discussed Topics

- *Introductions of Industrial Advisory Members and BC Computer Science Team*
 - a. Torsten Grabs updated his biography. Torsten currently serves as Director of Product Management for Snowflake.
- *Overview of Bellevue College, History of the Bachelor of Science in Computer Science degree program.*
 - a. First bachelor of science program in state
 - b. CS program was launched on Winter 17 with 6 students
 - c. The full-admission of the program is in Fall 17. Expecting 30 transfer students and 23 first year students.
- *Bachelor of Science in Computer Science: Vision, Mission, Educational Goals*
 - a. CS team is planning to build a student advisory board to get students involved in discussing the vision, mission and education goals of the program next academic year.
- *Role of Advisory Board*
- **DISCUSSION TOPIC-I: Curriculum**
 - a. An overview of CS curriculum was introduced by *Fatma Cemile Serce*.
 - b. The primary programming language is Java

- c. CS 300 (Data structures) is taught with C++
 - d. In CS 351 (Computer Architecture I), students learn C and assembly programming languages. The students are asked to write assembly codes for ARM processor using Raspberry Pi 3 Model B small computers. Also, students did some experiments with Arduino
 - e. In CS 360 (Operating Systems), students are exposed to variety of programming languages such as C, C++ and Java. As an open-source instructional operating system, OS/161 is introduced, and students are asked to implement its missing features and functionalities such as locks.
 - f. The capstone project course is a three-quarter sequence course project. In the first course, CS 481, the students are going to work in the requirements analysis and initial project plan of the projects, and they are going to build initial prototypes. In CS 482, they are supposed to develop detail design and complete %60 of the requirements. In CS 483, the teams are needed to complete all the requirements and run all the tests.
 - g. Software engineering course is the prerequisite course for the capstone project course. The students will study and experience different software development life cycles in advance to their capstone project.
 - h. BSCS program is the only program in the state offering Machine Learning and Cloud computing in undergraduate education.
- b. *Rob Viens* added the point out the balance between that we want our students be competitive. But also, as a community college, we don't want to not restricting the program so much that people have difficulty time to get in.
- c. *Advisory Board members* mentioned about the needs of CS workforce and gave suggestions on curriculum design to meet these needs:
- ability to apply object-oriented design principles
 - knowledge for building the software. CS graduates might know how to compile the java program or they might know how to design a chessboard in classis object-oriented programming. However, they need both experience and knowledge in testing, automating, fitting into an agile team, managing projects, doing iterative design etc.
 - need for the ability to get into a team, and actually a being a productive member of that team.
 - modern developers develop in multiple programming languages
 - ability to learn new language in two weeks
- d. *Advisory Board members* provided suggestions on curriculum design to meet the needs of today's workforce:
- A course on functional programming
 - A course giving business perspective
 - A course in distributed systems
 - A course enhancing communication skills

- A course or course module on compilers
- Make sure abstract types like rings are taught in math courses
- Integrate building web services into curriculum (REST API, REACT-nativ).
- Integrate UI/UX concepts and principles into the curriculum
- MySQL, PostgreSQL would be sufficient to teach database systems
- Dedicated lab space and lab hours are required. A space where even students who graduated the program can revisit and work
- ABET accreditation might be important from the marketing perspective just to demonstrate that the program is standing among others.

2. DISCUSSION TOPIC-II: Employer Survey

The employer survey was administered to the board. Here are the results of the analysis:

- Programming skills are *extremely important*
- Internship experience is *extremely important*
- Proficiency in fundamentals of Computer Science is *very important*
- Analytical and quantitative reasoning skills is *very important*
- Communication skills are *very important*
- Breadth of knowledge within Computer Science is *important*
- Breadth of knowledge beyond Computer Science is *important*
- Senior Design Project is *important*
- Research experience is *important*
- Accreditation is *important*
- Leadership experience is *not important*
- References are *not important*

3. DISCUSSION TOPIC-III: Tools/Technical Skills

Advisory board members provided suggestions for tools and technical skills set for the courses in the curriculum as follows:

- CS 210 Fundamentals of Computer Science I
 - *java, eclipse, IntelliJ*
- CS 210 Fundamentals of Computer Science II
 - *JUnit, Maven, Gradle, Ant*
- CS 300 Data Structures
 - *C++, eclipse, Git, Big O*
- CS 320 Programming Languages
 - *Erlang/Elixir, Lisp, Dynamic (Ruby/Python), Perl, Scala, C#, JScript*
- CS 331 Database Systems
 - *RDBMS, SQL, MySQL, Normalization Theory, NoSQL: DynamoDB, BigTable, BigQuery, Key-Value store, Hadoop, Columnstore indexes, clustered and nonclustered indexes*
- CS 352 Computer Architecture II

- *Cache, concurrency models*
- CS 356 Computer Security
 - *Tokenization, symmetric/asymmetric encryption, hashing*
- CS 360 Operating Systems
 - *Shell scripting (AWK, grep, regexp), file systems, processes, threads, synchronization, iOS*
- CS 405 Numerical Methods
 - *error rounding*
- CS 410 Software Engineering
 - *Agile/Scrum process, DevOpS, Continuous Integration, Build Management, OO Design, Modularization, Requirement gathering, Model-View-Controller design, Cohesion/coupling, component-oriented architecture*
- CS 420 Theory of Computation
 - *Lambda expressions, state machines, formal languages*
- CS 341 Computer Networks
 - *TCP/IP, UDP, Load balancers, Routers, Block Chain, Network Stack*
- CS 411 Software Engineering Project Management
 - *JIRA, Agile*
- CS 455 Cloud Computing
 - *Web service design (APIs, REST), AWS*
- CS 460 Machine Learning
 - *Python*
- CS 470 Mobile Application Development
 - *React Native, Cross platform development, Android, iOS*

4. Soft Skills/Values

Advisory board members provided their top-10 priority list of soft skills as follows.

Advisory Board's Top-10

1. Timeliness/meeting deadlines
2. Being proactive
3. Honesty
4. Good work ethic
5. Being a productive member
6. Learn new skills
7. Inclusivity/diversity
8. Attention to detail
9. Reliability
10. Take on responsibility and Group cohesion

II. **Suggestions:** Advisory board members are asked to provide suggestions for further collaboration with the industry. Here is the summary of the suggestions:

- a. *Make sure students have a compelling history to tell about working with people, technology and how they are continually evolving*

- b. Clear examples of how school projects/classes relate to industry needs/norms
- c. Add 5 credit business-focused course, maybe drop one of the physics classes
- d. Encourage team and project work
- e. Teach data encoding and compression
- f. Add a course on distributed systems
- g. Find industry volunteers to allow students to follow a real project
- h. Bring guest speakers
- i. Organize weekly tech-talks, help students with understanding the relevance of CS.
- j. Hands-on lab experiences
- k. Reach out companies for mentors. Setup online mentor-mentee collaboration and discussion platform
- l. Help students to establish strong LinkedIn profile
- m. Organize informational interviews
- n. Connectivity with industry

III. Group Photo

- IV. Lunch with invited guests: Jill Wakefield (Interim College President), Gita Bangera (Interim VP of Instruction), Chris Bell (Associate Dean of Instruction), Michael Reese (Director of RISE(Research Innovation Service Experiential)).
- V. Advisory board meeting was adjourned at 1:00 PM by Fatma Cemile Serce.

Next Meeting: Wednesday, November 8th, 10:00 AM, Bellevue College, Room TBA.

Tentative Agenda: Curriculum, capstone project course and current developments in the field.

COMPUTER SCIENCE ADVISORY BOARD PROFILES



ADVISORY BOARD MEMBERS

Spring 2017



Thomas Ball
Research Manager
Microsoft Research

Thomas (Tom) Ball is a principal researcher and manager at Microsoft Research. Tom initiated the influential SLAM software model-checking project with Sriram Rajamani, which led to the creation of the Static Driver Verifier tool for finding defects in Windows device drivers. Tom is a 2011 ACM Fellow for "contributions to software analysis and defect detection." As a manager, he has nurtured research areas such as automated theorem proving, program testing/verification, and empirical software engineering. His current focus is CS education and the Microsoft MakeCode platform for programming with physical computing (www.makecode.com).



Marek Brejl
Founder
Coding with Kids

Marek has spent over 15 years in the software industry - from pioneering automated 3D disease detections algorithms for radiology, to leading large multi-national software development teams at Microsoft. Marek now leads Coding with Kids full-time and is dedicated to building the best coding education program for children in the country. Marek has two elementary school age children who are becoming coders of their own. Marek is a climber and a hiker, and has travelled around the globe.

<https://www.codingwithkids.com>



Rick Carragher
Director
Amazon

Rick Carragher is currently a Director, Technology at Amazon Video, focusing on the content catalog and X-Ray features. He has over 20 years of technology experience, including roles as a developer, consultant, architect, and CTO with companies like EDS, IBM, SAP, ThoughtWorks, and now Amazon. Rick likes to focus on hard technology problems, and forming teams that can effectively solve them. He's still a developer at heart, and loves to hack code on the weekends. Rick graduated from Lehigh University with a Bachelor of Engineering in Computer Engineering. He lives in Issaquah, WA, is married to Danielle and has two children, Ryan (16) and Julianna (12).



Rafael Fernandez
Engineering Manager
Google

Rafael is an Engineering Manager in Google Cloud Platform. Rafael's interests are in data processing, distributed systems, and parallel computing. Rafael has 7 years of industry experience, and has taught Computer Science classes at high school and college levels. He holds a PhD in Computer Science from Portland State University.



Torsten Grabs
Director
Snowflake

Torsten is a Principal Program Manager in the Cloud and Enterprise division at Microsoft. Torsten's focus areas are Microsoft's relational database offerings in Azure and on premises. He currently oversees and defines Microsoft's data warehousing capabilities in Azure. A special interest for Torsten is helping customers adopt Azure for their data processing needs. Torsten has more than 15 years of experience working with Microsoft SQL Server products, and has been with the SQL Server product group in Redmond for more than 12 years serving in different roles in software engineering and product management. In his spare time, Torsten teaches cloud databases in the Cloud Data Management and Analytics program at the University of Washington, Seattle. He holds a PhD in computer science from Swiss Federal Institute of Technology (ETH), Zurich, Switzerland, where he also served as a post-doctoral researcher and lecturer.



**Cher Rowland
Henton**
Owner
WiTest Inc

Cher is currently the owner of WiTest Inc, a telecommunications engineering firm located in Bellevue, WA. Through WiTest, product companies are supported to develop and deliver new innovations to the top US cellular service providers. Cher has 20 years' experience in the wireless industry including positions at Hewlett Packard, Agilent, T-Mobile, and Anritsu. Most non-working hours are spent supporting studies and athletic endeavors of her 2 elementary aged boys. Executive Development Program, Foster School of Business, Un Wa 2012; MS Electrical Engineering, Stanford University 2001; BSEE The Ohio State University 1997



William Mortl
Software Engineer
Microsoft

William Mortl has more than 20 years of professional software engineering experience with diverse experience ranging from startups, to particle accelerators, to the largest bank in the US, to a certain software titan in Redmond. William holds B.S. degrees in Physics and Computer Science from Purdue University as well as M.S. degrees in Computational Finance and Computer Science from DePaul University. William's computing interests are distributed systems, operating systems, algorithms, machine learning, and programming languages.



Punyapu, Srujana
Product Manager
T-Mobile.com

Srujana(aka Sue) Punyapu is a 2016 Foster Alumna and is currently a Product Manager in T-Mobile's Corporate Strategy Team. She has a decade of cross-functional experience in IT, Middleware, Networking, and Telecomm industries, having worked at Seagate, AT&T, and now T-Mobile. She was instrumental in growing original Seattle's Lean in Chapter by 800% in two years and is now part of the Women in Technology Group at T-Mobile. She loves to build Legos with her 5 year old son and to hike with her family.



Anna Wawrzyniak
*Staff Software
Engineer*
Twitter

Anna Wawrzyniak is a Staff Software Engineer at Twitter. She currently leads one of the Twitter's big-data projects. Anna has over 10 years of engineering experience, including 7 years at Microsoft in Server & Tools division, where she worked on NoSQL database query engine, distributed systems in SQL Azure, and language tools for SQL Server. She particularly enjoys solving problems that involve data storage, compilers, query processing, data compression and complex algorithms. Anna moved to Seattle from Poland, where she graduated from University of Wroclaw with a Master's degree in Computer Science.

IBIT PARTNERSHIPS



3000 Landerholm Circle SE • Bellevue, WA 98007-6484 • www.bellevuecollege.edu

The Institute of Business and Information Technology (iBIT) Division Partnerships and Agreements

Four year institutions All iBIT's BAS degrees (Digital Marketing, Applied Accounting, Information Systems/Technology and Data Analytics) have agreements with local four-year graduate institutions who will accept the BAS degrees in to Master's programs. These institutions include:

- University of Washington Bothell
- Northeastern University
- Seattle University
- Washington State University
- Western Governor's University
- Western Washington University

K-12 partnerships for all of iBIT's programs are arranged through Tech Prep and through alignment with the Bellevue School District's CTE (Career and Technical Education) program.

Industry partnerships with iBIT programs that will participate in maker's space events include:

- Cybersecurity program alignment toward program articulation and internship with T-Mobile
- Network Administration curriculum and learning/academy partnerships with Amazon Web Services (AWS) and Microsoft Azure
- Membership – Microsoft Learning Academy
- Membership – Cisco Net Academy
- Feeder school for Washington Technology Industry Association Apprentice program
- BC is an approved internship partner college for Boeing, Tableau, T-Mobile, Ernst & Young, Deloitte, Expedia, ARVR Academy, and many small- and medium-sized companies as well.
- Newport High School (BSD) – Cisco Networking Program. We award about 1200 college credits each year to their students. This is an active partnership.
- VMware – We are an active academy/partner.
- Dell EMC – We are an active academy/partner.
- Cisco Systems – Active contributing partner.
- NDG – Active contributing partner.
- LPI – Active partner
- Comptia – Active partner
- Digital Media Arts has partnered with Bellevue's ARVR Academy on the development of VR/MR curriculum since 2016.



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Tech Prep K-12 Partnership Agreements:

College in the High School is one of five dual credit programs for high school students at Bellevue College. The others include Tech Prep, Summer Enrichment, College Education Options, and Running Start. These programs allow students in our region to earn college credit at the same time they complete their high school graduation requirements. Credits earned can then be applied directly to certificate and degree programs, upon graduation.

The new facility will allow for expansion of existing programs and growth of some new baccalaureate programs, ultimately strengthening pathways for high school students to move smoothly and seamlessly into higher education. Digital Media Arts, Interior Design, Engineering and Computer Science, in particular, are of interest to our K-12 students and their parents. The new building will also provide the room to accommodate increased interaction with K-12 administrators, teachers, counselors as well as business partners and service providers.

The Tech Prep program has a need to hold articulation meetings with high school teachers on a regular basis. College in the High School is working on national accreditation and must provide evidence of regular interaction between Bellevue College faculty and their high school counterparts. Running Start holds regular institutes for high school counselors. For all of those interactions, space constraints have made it challenging to convene the meetings. The addition of a building will provide relief from the current space-squeeze situation and will free up spaces for K-12/community meeting and collaboration.

Last year, just under 1,000 college credits were awarded through Bellevue College's College in the High School program. Every year our high school teachers are invited to Bellevue College to attend our CHS Fall Kickoff. As part of the kickoff, our CHS Faculty Coordinators facilitate an orientation and discipline-specific training for their high school colleagues. Many of the teachers come back to campus to observe the on-campus college class and/or attend professional development.

BEST PRACTICES TO REDUCE GREENHOUSE GAS EMISSIONS

System / Best Practices	Included in Project?
Mechanical	
Solar water heating	
Above code HVAC system efficiency	YES
Use natural gas instead of electricity for heating	YES
Geothermal heat pump	
Post occupancy commissioning	YES
Interconnectivity of room scheduling in 25Live and HVAC controls	
Electrical	
Photovoltaic energy systems	
Time of day and occupancy programming of lighting	YES
Efficient lighting	YES
Envelope	
Minimize building surface area for necessary floor area	YES
Roofing materials with high solar reflectance and reliability	YES
Green roofs to absorb heat and act as insulators for ceilings	
Site	
Orient building for natural light and reduced heating and cooling loads	YES
Trees and vegetation planted to directly shade building	
Paving materials with high solar reflectance, enhanced water evaporation, or otherwise designed to remain cooler or require less lighting than conventional pavements	
Increase transportation choices – drive, walk, bike or public transit	
Total number of these best practices included in project:	8

