BELLEVUE COLLEGE
CAMPUS MASTER PLAN

APPENDIX

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APPENDIX A
PROJECT CONSIDERATIONS

INTRODUCTION

Several areas of the campus plan warranted focused study. A number of zones require an integrated examination tied with specific projects as these projects have the potential to influence and catalyze supporting infrastructure or open space improvements to support the larger framework. Each of the areas is described in detail in the following pages:

1. Building G Renovation, Woonerf and Wastewater Treatment Garden
2. Building B-East Wing Major Renovation or Replacement
3. Site 8 with Academic/Common Use
4. Site 7 with Academic/Common Use
5. Building C Renovation
6. Building B Renovation and South Court
7. Sites 13 and 14 with Academic/Mixed Use
8. Parking and Service

LEGEND

Influence Area

Special Consideration Area

Figure A-01: Influence Areas

ORIGINAL BUILDING RENOVATIONS

FOCUSED STUDY

Utilizing Exterior Corridors

The design team explored ways to capture the exterior ground level and upper level building corridors surrounding the original courtyards to provide to capture internal space for gathering or specific functions, improve access to daylight, overall identity, connectivity and feelings of safety. Such retrofits would also improve building performance and efficient building envelopes. By capturing space highlighted in Figures A-03 and A-04, the buildings could provide the college community with program expansion opportunities, areas of respite and informal gathering space in addition to primary building circulation.

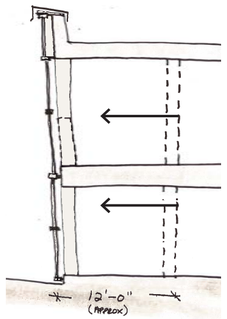


Figure A-02: Exterior Wall Section Sketch (NTS)

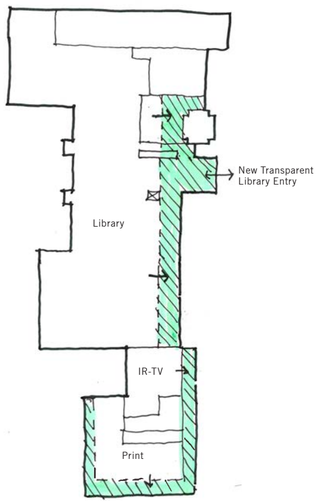


Figure A-03: Building D Library and Other Expansion Opportunities

Figure A-04: Building A Enclosing Circulation (NTS)

CONSIDERATION 1

BUILDING G RENOVATION

A. Community

Increased recreational needs fueled by new student housing development across from Building G and growing recreational programs (along with community access) points to the need for an expanded fitness center and supporting infrastructure.

B. Identity/Place

This influence area anchors the north-central area of campus, serving an essential college community-strengthening zone at the north entry. It is bisected by the future transit route and offers the opportunity to create a strong, welcoming identity.

Wayfinding is enhanced through an open space connection and views from the new campus heart between Building B and T. By including a water reclaim/reuse facility on the site to support the residence halls and integrating open space with a primary pedestrian corridor, the area can support many essential college functions where they come together.

LEGEND

Influence Area

Special Consideration Area

Figure A-05: Influence Area 1

C. Programmatic Drivers
Wrapping the existing Building G with a new active ground floor use along Kelsey Creek Road addresses the growing need for a fitness center expansion, visually connects fitness with housing and activates the surrounding pedestrian environment.

D. Campus Landscape/Open Space
Open space developments that align with Building G expansion include establishing a plaza that serves a new transit stop and repurposing a portion of Kelsey Creek Road to woonerf that supports service vehicles but is pedestrian-focused. The woonerf could incorporate wastewater and stormwater treatment and provide for student community gardens. This would provide a place for students to grow their own food, a direct and safe connection to the campus core, and proximate transit connection to Seattle, Bellevue, and other nearby cities.

E. Circulation
Several locations along Kelsey Creek Road have vehicle/pedestrian conflicts. The woonerf addresses these conflicts by limiting traffic to service vehicles and supporting pedestrians first. A new transit stop at Kelsey Creek and Snoqualmie roads would replace the current stop located adjacent to the parking garage further separating pedestrians from vehicles.

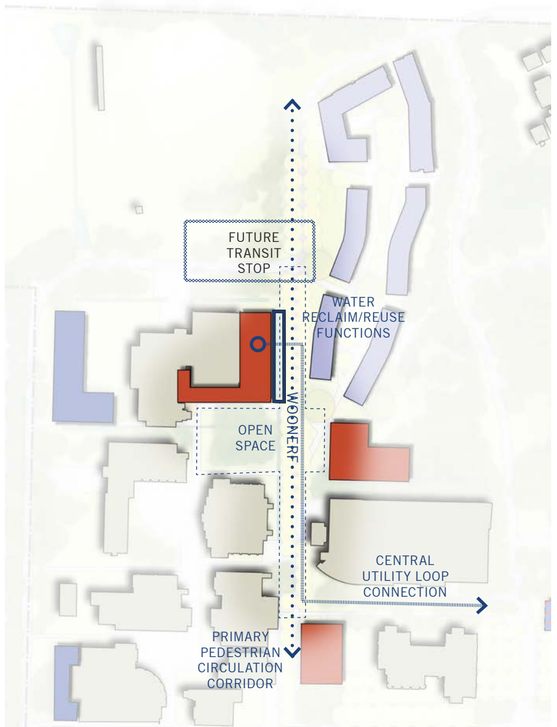


Figure A-06: Influence Area 1

F. Water Mangement
Waste Water Treatment System

An on-site wastewater treatment system, known as a Wastewater Treatment Garden, will be located on the east side of the gym expansion. The goal of the Wastewater Treatment Garden is to reclaim 70,000 gallons per day of blackwater (wastewater) to Washington State Class A water reuse standards. This will provide a sustainable water source to irrigate all of campus and to meet the toilet and urinal flush demands in new (or plumbing retrofit) buildings. In order to supply the Wastewater Treatment Garden, sewage would be diverted off of the existing sanitary main in Snoqualmie River Road. Wastewater from this gym expansion would also be directed into the diverted wastewater line. The Garden is proposed to be a hybrid of MBBR (Moving Bed Biofilm Reactor) technology and a Recirculating Gravel Filter that could be planted on the surface. This will provide an opportunity for the college to showcase its commitment to responsible water stewardship, as well as a platform to educate students about wastewater treatment process and technology. After wastewater flows through the full treatment garden, it is considered reclaimed. This new, cleansed water will then feed into the reclaimed water loops, serving the irrigation and flush demands of campus.

Stormwater Management System

Stormwater management in this area will be accomplished through low impact development techniques where rain is cleansed prior to infiltrating the ground. The building expansion will be partially mitigated through the use of a blue or green roof. Secondary roof management as well as ground surface runoff will be routed to bioretention cells or stormwater planters, helping to further return the campus to its native hydrology. Given the localized flooding issues in this area, bioretention cells are especially critical and useful for attenuating peak flows during large storms.

G. Building Upgrades
Electrical

The original medium voltage air switch, transformer, switchgear, and panelboards serving the Gym shall be replaced. The Building G switchgear also serves Buildings K, L, and the Warehouse, so the new equipment must be sized appropriately.

Building G is a good candidate for roof-mounted photovoltaics (PV), at minimum providing a solar-ready system and subject to approval from PSE, provide a complete PV system that makes full use of the available roof space. New lighting fixtures will be LED source. Fixture energy use and controls shall exceed Energy Code requirements.

Mechanical and Plumbing

Being an athletic facility, Building G has a larger amount of exhaust air and make-up air requirements. This building should be served with an Air Handling Unit (AHU) capable of 100% outside air economizer and heat recovery. Heating and cooling for this AHU in the long term should be from a water cooled heat recovery modular chiller connected to a fluid cooler and condenser water loop. The condenser water loop should extend to the boundary of the influence area to be connected to the campus condenser water system once available. This system shall be able to operate independently from the campus condenser water system, but have the capability to switch over automatically to the campus system once connected and the campus system is more favorable to use than the building's dedicated system. Natural gas should not be used for heating. Heating and cooling should be decoupled from the ventilation system by providing a dedicated outside air system (DOAS) or natural ventilation. If feasible, incorporate a ground source system into the design of the building's condenser water system. This will not only provide the building with a more efficient system, but it will also increase the overall efficiency of the campus condenser water loop.

Ideally, the building should be piped with a non-potable water (purple pipe) system to utilize reclaimed rainwater or treated gray/black water for flushing toilets and urinals. Domestic water heating should be electric based, such as an air source or water source heat pump. This system would be connected to the condenser water system via a heat exchanger for energy recovery when conditions are adequate.

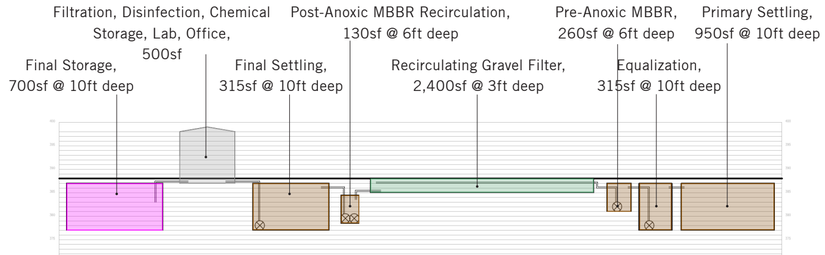


Figure A-04: Waste Water Treatment Garden

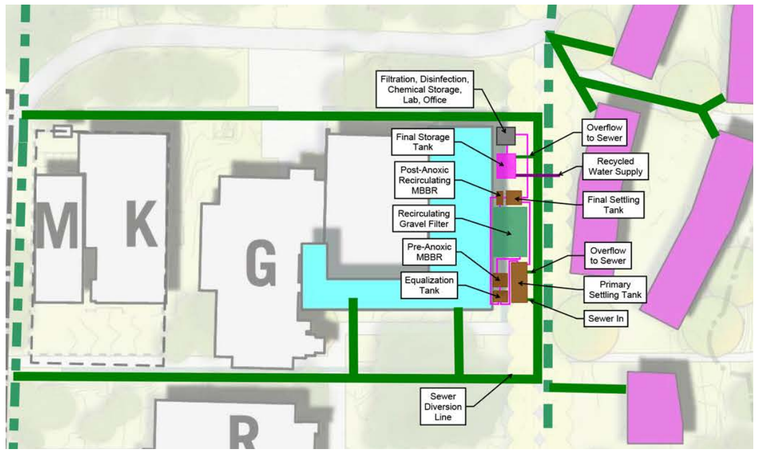


Figure A-07 Waste Water Treatment Garden

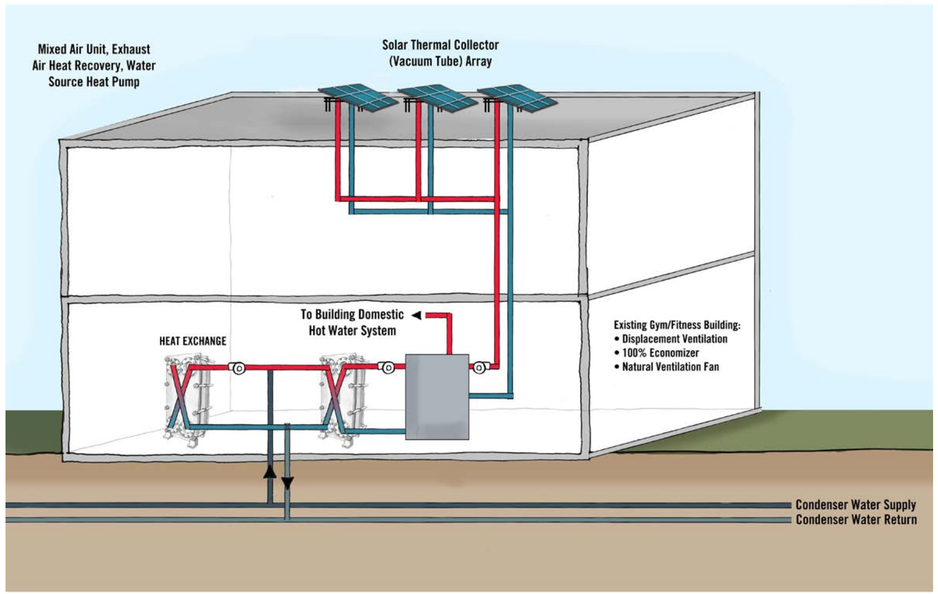


Figure A-08: Building G Heat Exchange

CONSIDERATION 2

BUILDING B

A. Community

By locating a common use such as a future student center on the site of Building B's East Wing, opportunities for interaction and amenities for students, faculty, staff and visitors in the new center of campus would be strengthened. The 'center of gravity' is shifting east, between Building B and T, with new development.

B. Identity/Place

Establishing a new heart to the campus at the apex of the primary circulation corridors improves wayfinding from any corner of campus. Coupled with other projects, development of this area will provide the opportunity for a more memorable campus experience with a vibrant campus center that is distinct to Bellevue College.

LEGEND

- Influence Area
- Special Consideration Area

Figure A-09: Influence Area 2

C. Programmatic Drivers

Locating a common use such as a student center or improved student affairs building to this new campus heart that is critical to its vitality. Visible from the campus threshold at the new drop-off (currently the vehicular roundabout), the common use will also be adjacent to the major campus crossroads, increasing accessibility.

D. Landscape/Open Space

A pedestrian-only central plaza would serve as the terminus to the primary pedestrian entry corridor. Development of this plaza is a critical component of Bellevue College's future campus improving connections between the existing campus core and the future eastern extents. A central plaza would also serve as a current larger open gathering space for college events, rallies, fairs - an ideal place to showcase, express and support social equity issues. This open space would also serve as a link to the future woonerf and residence halls.

E. Circulation

The woonerf described in Consideration 1 would extend south and connect through a vehicle-free campus heart. The connection can be supported with internal circulation through the building or making an external connection by reconfiguring the east wing massing.

LEGEND

- Circulation
- Transit
- Pedestrian Oriented Open Space
- Central Utility
- Water and Wayfinding

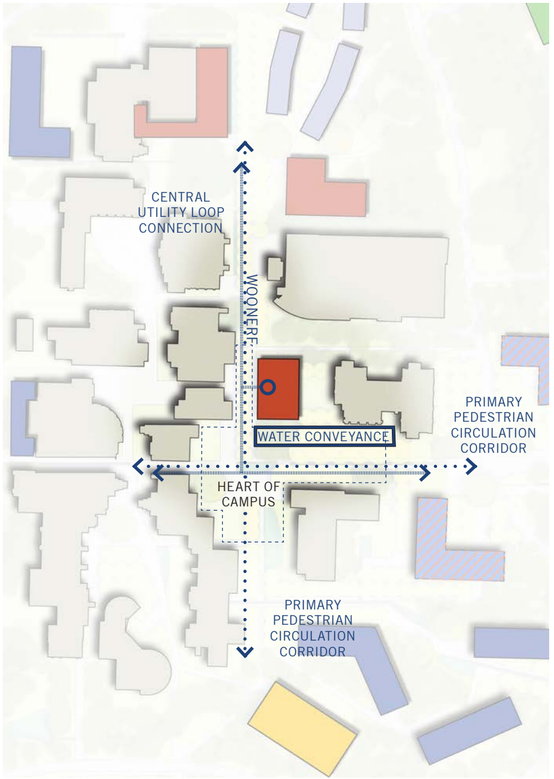


Figure A-10: Influence Area 2

F. Water Management

The existing water main routes east of Building B, and with the demolition of this portion of the building, the college has the opportunity to straighten the water main to keep it within the new corridor and remove the water main segment that lies due east of the new building. Regardless of whether or not the College decides to undertake this adjustment, the new student center will be served off of this water main for domestic water and fire suppression. A recycled water service for toilet and urinal flushing will be extended off of the recycled water main. Sewer service will come off of the line that serves the Science and Tech Building. Stormwater from the building replacement could be mitigated through a blue or green roof and/or bioretention cells or stormwater planters and runoff from the ground plane cleansed prior to being infiltrated. This could occur through permeable pavement over a sand layer, bioretention cells, or a proprietary treatment device such as Modular Wetlands.

G. Building Upgrades

Electrical

The original medium voltage air switch, transformer, switchgear, and panelboards serving Building B should be replaced. Campus emergency power fed from this building's service should be transferred to local battery ballasts or local inverters.

Depending on rooflines the Student Center may be a good candidate for roof-mounted photovoltaics (PV). At minimum a solar-ready system should be provided. Subject to approval from PSE, a complete PV system should make full use of the available roof space. New lighting fixtures should be LED source. Fixture energy use and controls should exceed Energy Code requirements.

Mechanical and Plumbing

Heating and cooling for the building should be provided by a system that utilizes a condenser water loop, such as a water cooled variable refrigerant flow (VRF) system with a fluid cooler. The condenser water loop should extend to the boundary of the influence area to be connected to the campus condenser water system once available. System should be able to operate independently from the campus condenser water system, but also have the capability to switch over automatically to the campus system once connected and the campus system is more favorable to use than the building's dedicated system. Natural gas should not be used for heating. Heating and cooling should be decoupled from the ventilation system by providing a dedicated outside air system (DOAS) or natural ventilation. Radiant systems (radiant panels, radiant floors, chilled beams, etc.) should be used in areas where the occupancy is consistent throughout the day. If feasible, incorporate a ground source system into the design of the building's condenser water system. This will not only provide the building with a more efficient system, but it will also increase the overall efficiency of the campus condenser water loop.

The building shall be piped with a non-potable water (purple pipe) system to utilize reclaimed rainwater or treated gray/black water for flushing toilets and urinals. Domestic water heating should be electric based, such as an air source or water source heat pump. This system shall be connected to the condenser water system via a heat exchanger for energy recovery when conditions are adequate.

APPENDIX A / Project Considerations

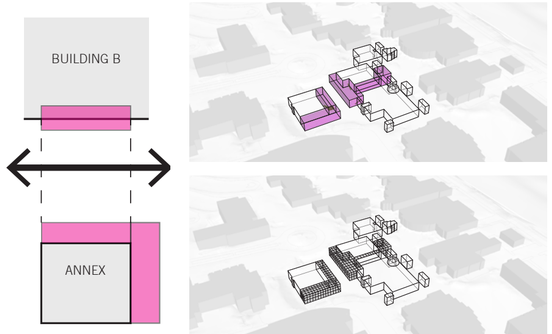


Figure A-11: Building B Focused Study

Clean Breaks

Separating the building and realigning the north-south connection to provide for direct, open circulation strengthens campus connectivity and wayfinding.

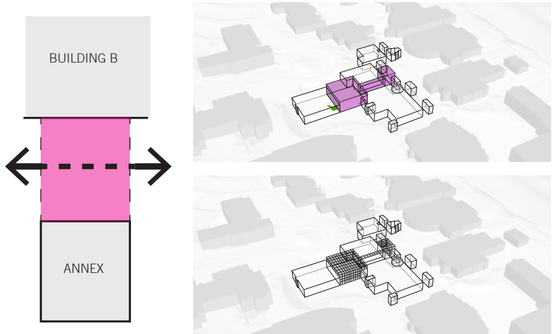


Figure A-12: Building B Focused Study

Bridge The Gap

A realigned but enclosed and fully transparent connector is also possible to improve wayfinding within and outside Building B. This also offer a strengthened connection east-west by extending an existing corridor.

CONSIDERATION 3

SITE 8

A. Mission: Community

Central to the campus, this area has many significant influences on the framework of the physical campus. As an important site for framing the campus threshold as well as a new campus zone, this site has the opportunity to strengthen campus community as well as connections with the public by welcoming them in.

B. Identity: Place

The site, perched on the top of the ridgeline, reinforces the front door to the campus. Adjacent to the E/W pedestrian corridor connecting the existing campus with future development, this site along with a new entry plaza holds opportunity for regional views to Bellevue and Seattle to the west.

LEGEND

- Influence Area
- Special Consideration Area

Figure A-13: Influence Area 3

C. Programmatic Drivers

Adjacent to the main threshold to campus and centralized, connected open spaces along the primary circulation corridor, this site would support both more common use, public academic and functions with access by all students, staff, faculty and visitors.

D. Landscape/Open Space

This area is located at the high point and encompasses an entry plaza that serves the primary threshold to campus with a drop-off area. Having this space at the high point allows for clearer wayfinding as visitors enter on foot.

E. Circulation

The western leg of Landerholm Circle SE should be closed to vehicles to provide free pedestrian access to the northern portion of the campus.

F. Water Management

The new building will receive domestic water and fire suppression services from the existing water main that resides due north. A recycled water service for toilet and urinal flushing will be extended off of the recycled water main. Sewer service will come off of the new sewer main that will be installed in Coal Creek Road. On the west end of Coal Creek Road, the existing sewer main will need to be upsized to accommodate the flows from the proposed buildings. It is envisioned that stormwater from the new academic/common use building will be mitigated through a blue or green roof and/or bioretention cells or stormwater planters and runoff from the ground plane will be cleansed prior to being infiltrated. This could occur through permeable pavement over a sand layer, bioretention cells, or a proprietary treatment device such as Modular Wetlands.

LEGEND

- Circulation
- Transit
- Pedestrian Oriented Open Space
- Central Utility
- Water and Wayfinding

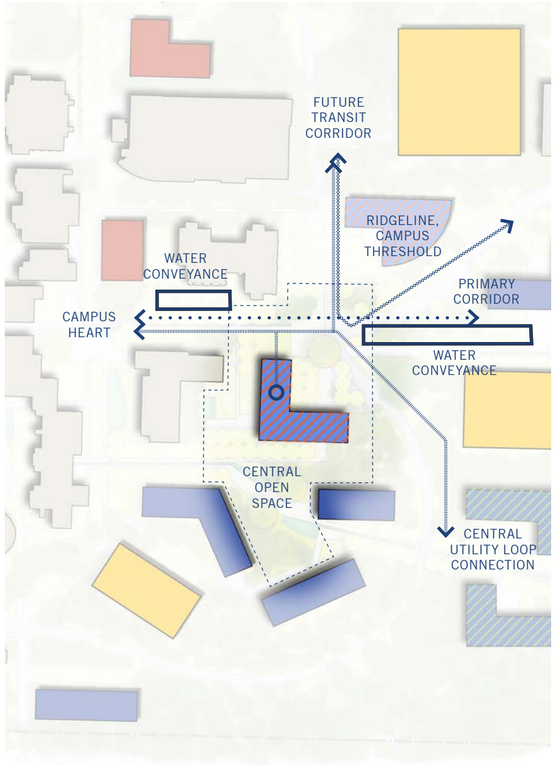


Figure A-14: Influence Area 3

G. Electrical
A new medium voltage air switch, transformer, and switchgear will serve the new building. If the new medium voltage loop has been already installed, the air switch will connect to it. If not, the existing medium voltage spur serving the Garage and Building S will be extended to the building.

Depending on rooflines and orientation, Site 5 may be a good candidate for roof-mounted photovoltaics (PV). At minimum provide a solar-ready system. Subject to approval from PSE, provide a complete PV system that makes full use of the available roof space. New lighting fixtures will be LED source. Fixture energy use and controls shall exceed Energy Code requirements.

H. Mechanical and Plumbing
Heating and cooling for the expansion should be provided by a system that utilizes a condenser water loop, such as a water cooled variable refrigerant flow (VRF) system with a fluid cooler. The condenser water loop should extend to the boundary of the influence area to be connected to the campus condenser water system once available. System should be able to operate independently from the campus condenser water system, but also have the capability to switch over automatically to the campus system once connected and the campus system is more favorable to use than the building's dedicated system. Natural gas should not be used for heating. Heating and cooling should be decoupled from the ventilation system by providing a dedicated outside air system (DOAS) or natural ventilation. Radiant systems (radiant panels, radiant floors, chilled beams, etc.) are to be used in areas where the occupancy is consistent throughout the day. The system shall be large enough to serve the existing building, with the actual connection to the existing building to be when a major renovation occurs.

The building should be piped with a non-potable water (purple pipe) system to utilize reclaimed rainwater or treated gray/black water for flushing toilets and urinals. Domestic water heating should be electric based, such as an air source or water source heat pump. This system should be connected to the condenser water system via a heat exchanger for energy recovery when conditions are adequate.

CONSIDERATION 3

SITE 7

A. Mission: Community
Located along the primary entrance drive, this site has the highest potential to physically connect the image and identity of the college with the community. Establishing a legible, porous and welcoming entrance will enhance the user's experience as they enter.

B. Identity: Place
The framework plan strives to establish a sense of arrival through an entry sequence that concludes at the top of the ridgeline with views of the campus and region. The entry sequence from 148th Ave SE to the central plaza critical to establishing wayfinding and a unique character for the college. This central site offers an opportunity to create a direct and visible connection to the adjacent arterial and signal the presence of the campus.

LEGEND

Influence Area

Special Consideration Area

Figure A-15: Influence Area 4

C. Programmatic Drivers
Functions that interface with the community would be ideal in this location. One example is a Performing Arts Center to address challanges with Building E.

D. Landscape/Open Space
With that, it is important that the entry corridor be legible from the adjacent arterial and provide a scale that is appropriate for both pedestrians and vehicles. Creating a tree-lined corridor where large canopy trees separate pedestrian and vehicular circulation helps achieve this. The open space associated with the site should visually link across the street to the other side of the ridge.

E. Circulation
The intersection at Landerholm Circle SE & Coal Creek Road would need an all-way stop or stop signs for traffic along Landerholm Circle SE.

F. Water Management
The building will receive domestic water and fire suppression services from the new water main loop that will encircle the building. A recycled water service for toilet and urinal flushing will be extended off of the recycled water main. Sewer service will come off of the new sewer main that will be installed in Landerholm Circle SE. It is envisioned that stormwater from the new academic / common use building will be mitigated through a blue or green roof and/or bioretention cells or stormwater planters and runoff from the ground plane will be cleansed prior to being infiltrated. This could occur through permeable pavement over a sand layer, bioretention cells, or a proprietary treatment device such as Modular Wetlands. As the pavement will be removed and replaced in Landerholm Circle SE to accommodate the utility trenching, stormwater runoff will be mitigated through linear bioretention swales or cells.

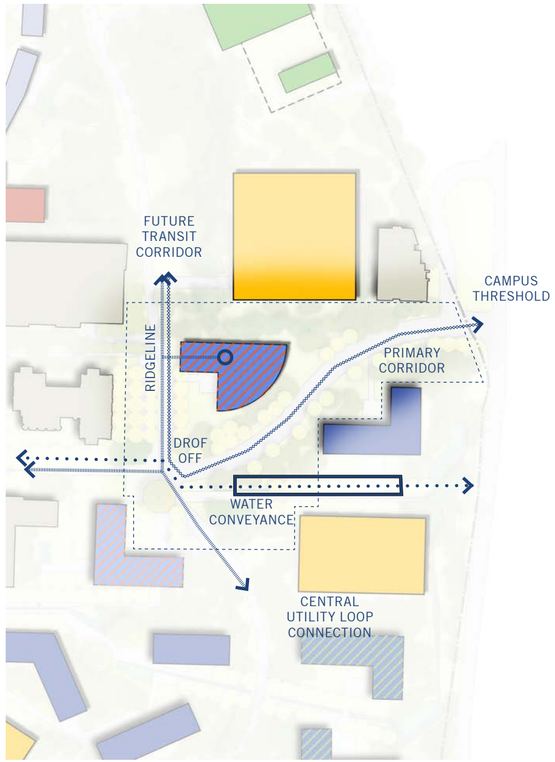


Figure A-16: Influence Area 4

G. Electrical
A new medium voltage air switch, transformer, and switchgear will serve the new building. If the new medium voltage loop has been already installed, the air switch will connect to it. If not, the existing medium voltage spur serving the Garage and Building S will be extended to the building.

Depending on rooflines and orientation the new building may be a good candidate for roof-mounted photovoltaics (PV). At minimum provide a solar-ready system. Subject to approval from PSE, provide a complete PV system that makes full use of the available roof space. New lighting fixtures will be LED source. Fixture energy use and controls shall exceed Energy Code requirements. Provisions for show power and theatrical lighting will be included. The fire alarm system will accommodate theater pyrotechnics.

H. Mechanical and Plumbing
If the building includes a high occupancy density such as performing arts, there will be a larger amount of exhaust air and make-up air requirements and should be served by displacement (under seats for auditorium areas) with an air handling unit capable of 100% outside air economizer and heat recovery. Heating and cooling for this AHU should be from a water cooled heat recovery modular chiller connected to a fluid cooler and condenser water loop. The condenser water loop should extend to the boundary of the influence area to be connected to the campus condenser water system once available. System should be able to operate independently from the campus condenser water system, but also have the capability to switch over automatically to the campus system once connected and the campus system is more favorable to use than the building's dedicated system. Natural gas should not be used for heating. Heating and cooling should be decoupled from the ventilation system by providing a dedicated outside air system (DOAS) or natural ventilation. The system should be large enough to serve the existing building if existing building expanded, with the actual connection to the existing building to be when a major renovation occurs. If feasible, incorporate a ground source system into the design of the building's condenser water system. This will not only provide the building with a more efficient system, but it will also increase the overall efficiency of the campus condenser water loop.

The building should be piped with a non-potable water (purple pipe) system to utilize reclaimed rainwater or treated gray/black water for flushing toilets and urinals. Domestic water heating shall be electric based, such as an air source or water source heat pump.

CONSIDERATION 4

BUILDING C RENOVATION

A. Mission: Community

Building C currently supports primary food service, student affairs, and various academic functions. The building requires renovation and expansion to support food service in particular. Enhancing and expanding dining and serving areas will offer the college community much needed daily gathering space that is pleasant and less crowded. Whether or not a future Student Center is located elsewhere, Building C improvements are critical for community building and availability of essential services. In addition, improvements in the north section of C will improve the student arts program needs.

B. Identity: Place

An expansion to the west and interior renovation will provide the opportunity to improve the college image and identity through such a critical function.

LEGEND

- Influence Area
- Special Consideration Area

Figure A-17: Influence Area 5

C. Programmatic Drivers

A major driver for students, staff, faculty and the future growth of the campus includes access to (and a variety of) food services.

D. Landscape/Open Space

Redevelopment of this zone is associated with an existing intact forested area and a proposed transit stop/plaza to the west. Current conditions along Snoqualmie River Road create a 'back of house' feel; it is not clear where to enter buildings and how to get into the campus core. Development of this area should include creating visual and physical access from buildings to the exterior on both the east and west sides and providing accessible exterior circulation. Along with this, creating a plaza that includes a transit stop on both sides of Snoqualmie River Road will help alleviate the 'back-of-house' feel. Retaining and enhancing the intact forest and providing visual and potentially physical access from the buildings will also serve to break down the west edge and providing much-needed daylight to building interiors.

E. Circulation

Potential connections to a possible future transit stop along Snoqualmie River Road should be taken into account.

F. Water Management

As Building C is renovated and rooftop mechanical equipment is removed, there is an opportunity to install a blue or green roof that is equivalent in weight to the removed equipment. Stormwater runoff on the ground plane will be cleansed prior to being infiltrated. This could occur through permeable pavement over a sand layer, bioretention cells, or a proprietary treatment device such as Modular Wetlands.

LEGEND

- Circulation
- Transit
- Pedestrian Oriented Open Space
- Central Utility
- Water and Wayfinding

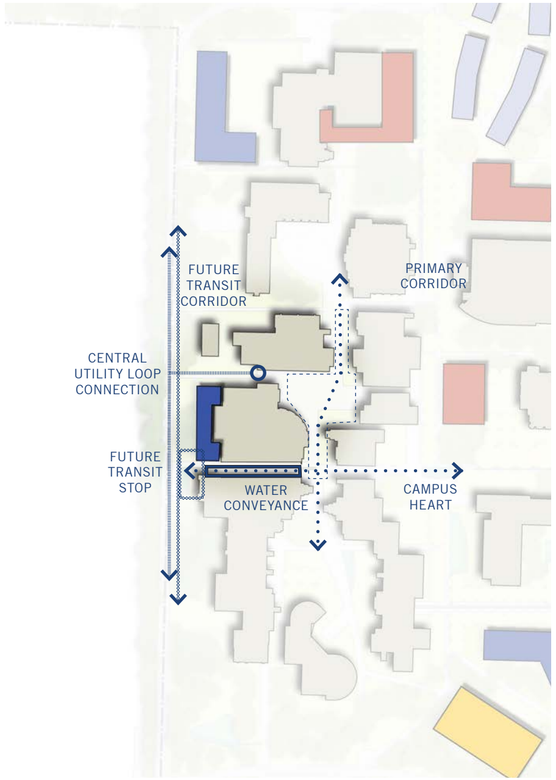


Figure A-18: Influence Area 5

G. Building Upgrades

Electrical

The medium voltage air switch and feeder have been replaced in 2016. The original transformer, switchgear, and panelboards should be replaced.

Depending on tree shading, Building C may be a good candidate for roof-mounted photovoltaics (PV). At minimum provide a solar-ready system. Subject to approval from PSE, provide a complete PV system that makes full use of the available roof space. New lighting fixtures will be LED source. Fixture energy use and controls should exceed Energy Code requirements.

Mechanical and Plumbing

The existing packaged rooftop air handling units with gas heat are to be demolished. Heating and cooling for the building is to be updated to a system that utilizes a condenser water loop, such as a water cooled variable refrigerant flow (VRF) system with a fluid cooler. The condenser water loop should extend to the boundary of the influence area to be connected to the campus condenser water system once available. System should be able to operate independently from the campus condenser water system, but also have the capability to switch over automatically to the campus system once connected and the campus system is more favorable to use than the building's dedicated system. Natural gas should not be used for heating. Heating and cooling should be decoupled from the ventilation system by providing a dedicated outside air system (DOAS) or natural ventilation. Radiant systems (radiant panels, radiant floors, chilled beams, etc.) are to be used in areas where the occupancy is consistent throughout the day.

The building should be piped with a non-potable water (purple pipe) system to utilize reclaimed rainwater or treated gray/black water for flushing toilets and urinals. Domestic water heating should be electric based, such as an air source or water source heat pump. This system should be connected to the condenser water system via a heat exchanger for energy recovery when conditions are adequate.

CONSIDERATION 5

BUILDING D RENOVATION

A. Mission: Community

A major component of any college campus, the Library serves multiple functions for students, faculty and visitors. Its current location is adequate for building community while a new location such as site 16 would also be beneficial. If the library stays in place, the southern portion of the campus core should be examined for improvements.

B. Identity: Place

Without a distinctive and obvious entrance, the Library and its courtyard lacks variety and interest from a wayfinding perspective. Interventions that work with the existing facility can provide this distinction and support a comprehensive pedestrian circulation strategy.

LEGEND

Influence Area

Special Consideration Area

Figure A-19: Influence Area 6

C. Programmatic Drivers
Located in one of the original courtyards, the library's location works. Other uses for Building D, if the library were to move, could include academic or administrative functions. For the success of the courtyard, some common use would be beneficial.

D. Landscape/Open Space
Potential renovation of the library should include retention of an existing intact forest area and contribution to the plaza / transit stop along Snoqualmie River Road. Breaking down the impenetrable-seeming west side of the campus by clarifying building and campus entries and providing visual and physical access to the outdoors will significantly improve this as a campus space. Development of this area also includes retrofitting of the southern-most campus quad. By incorporating a contiguous lawn area as well as outdoor gathering spaces of various scales, this quad can be a comfortable place for individual and group outdoor study, socializing, and reading. Accessible, ground-level exterior circulation should also be incorporated.

E. Circulation
Pedestrian access to Coal Creek Road and Snoqualmie River Road should be considered to provide a gateway to both existing and possible future transit stops.

F. Water Management
As the Library is renovated and rooftop mechanical equipment is removed, there is an opportunity to install a blue or green roof that is equivalent in weight to the removed equipment. Stormwater runoff on the ground plane will be cleansed prior to being infiltrated. This could occur through permeable pavement over a sand layer, bioretention cells, or a proprietary treatment device such as Modular Wetlands.

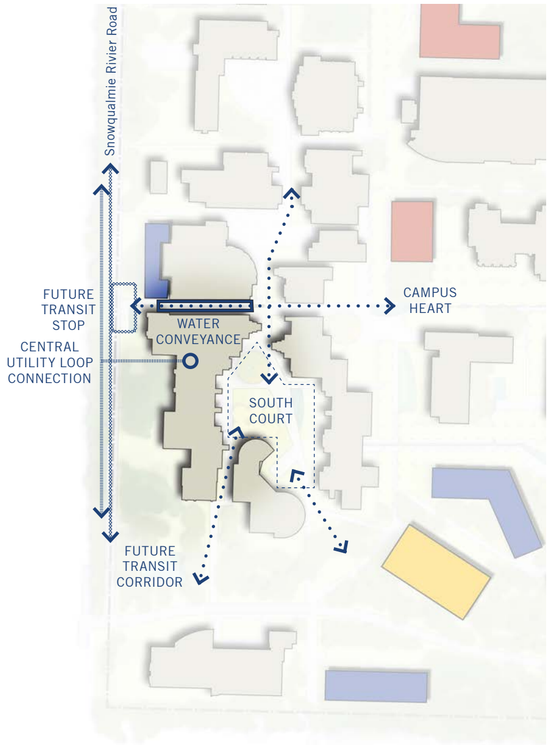


Figure A-20: Influence Area 6

G. Building Upgrades
Electrical

The medium voltage air switches and feeders serving Buildings D and E have been replaced in 2016. The original Building A medium voltage air switch, and the original service transformers, switchgears, and panelboards of all three buildings should be replaced. The design team may consider serving the new building from only one of the three services, depending on its size.

Depending on rooflines and orientation, a new building may be a good candidate for roof-mounted photovoltaics (PV). At minimum provide a solar-ready system. Subject to approval from PSE, provide a complete PV system that makes full use of the available roof space. New lighting fixtures will be LED source. Fixture energy use and controls shall exceed Energy Code requirements.

Mechanical and Plumbing

Heating and cooling for the expansion or relocated building should be provided by a system that utilizes a condenser water loop, such as a water cooled heat recovery chiller connected to a fluid cooler serving heating water and chilled water loops throughout the building. The library should be served by both natural ventilation and radiant systems (inactive chilled beams or radiant floors) and active chilled beams with a dedicated outside air system (DOAS). DOAS and active chilled beams will be utilized when outdoor air conditions are not adequate for natural ventilation. This will result is a very low energy and passive system. Condenser water loop shall extend to the boundary of the influence area to be connected to the campus condenser water system once available. System should be able to operate independently from the campus condenser water system, but also have the capability to switch over automatically to the campus system once connected and the campus system is more favorable to use than the building's dedicated system. Natural gas should not be used for heating. The system should be large enough to serve the existing building if existing building expanded, with the actual connection to the existing building to be when a major renovation occurs. If feasible, incorporate a ground source system into the design of the building's condenser water system. This will not only provide the building with a more efficient system, but it will also increase the overall efficiency of the campus condenser water loop.

The building should be piped with a non-potable water (purple pipe) system to utilize reclaimed rainwater or treated gray/black water for flushing toilets and urinals. Domestic water heating should be electric based, such as an air source or water source heat pump. This system should be connected to the condenser water system via a heat exchanger for energy recovery when conditions are adequate.

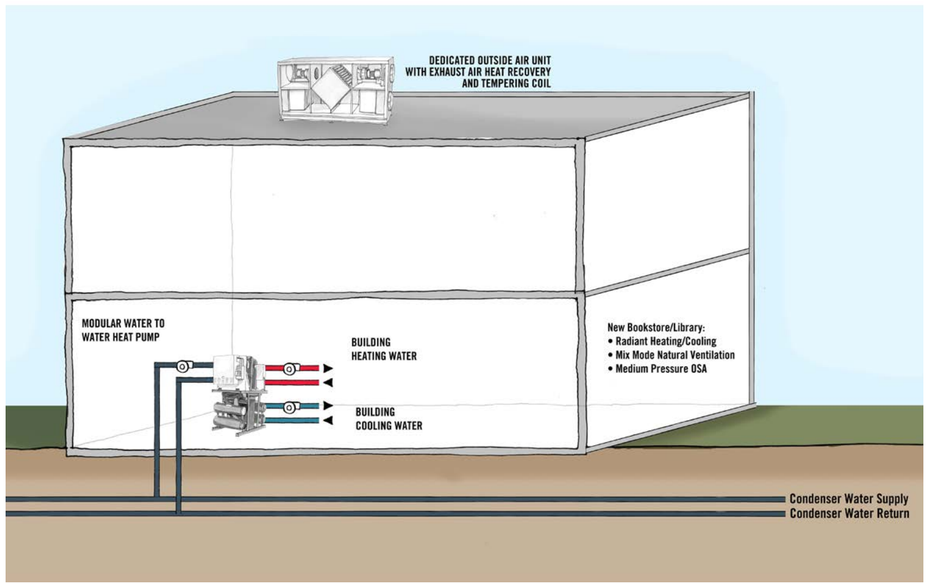


Figure A-21: Building D Retrofit

CONSIDERATION 6

SITES 13 + 14

A. Mission: Community

Increased enrollment and community uses may support a public/private partnership opportunity within an easily accessible and prominent area of campus.

B. Identity: Place

The topography of this area allows for the academic/ mixed-use structures to be built into the side of the hill, minimizing the impact of the large structures on the adjacent open spaces and neighbors. Replacing surface lot parking while developing the interior of campus allows for more efficient structures to support open space typologies and the associated parking needs for each development project.

LEGEND

Influence Area

Special Consideration Area

Figure A-22: Influence Area 7

C. Programmatic Drivers
Adjacency to the major arterial of 148th Ave SE and visual prominance accross the region make for a welcoming community partnership opportunity. Parking access into and out of the campus can be directed to this area, limiting the amount of vehicles that continue through to the center. This allows for safer pedestrian oriented open spaces.

D. Landscape/Open Space
Integrated wayfinding and sightlines into campus are major opportunieis on these sites. Development of parking near the entry but not prominently at the front door of the campus keeps more parking out of the campus core. The parking garage should be surrounded by a vegetated buffer.

E. Circulation
Safe pedestrian access across Coal Creek Road needs to be considered as part of the development.

F. Water Management
The buildings will receive domestic water and fire suppression services from the new water main in Coal Creek Road. A recycled water service for toilet and urinal flushing will be extended off of the new recycled water main in Coal Creek Road. Sewer service will come off of the new sewer main in Coal Creek Road. It is envisioned that stormwater from the new buildings will be mitigated through blue or green roofs and/or bioretention cells or stormwater planters and runoff from the ground plane will be cleansed prior to being infiltrated. This could occur through permeable pavement over a sand layer, bioretention cells, or a proprietary treatment device such as Modular Wetlands.

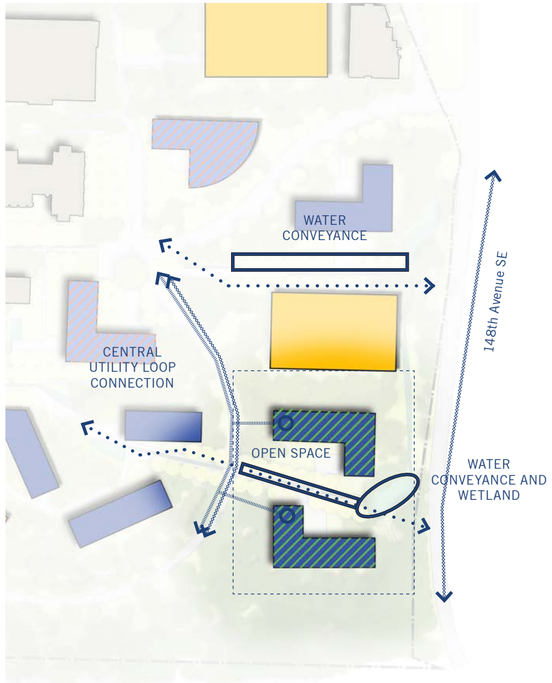


Figure A-23: Influence Area 7

G. Electrical
A new medium voltage air switch, transformer, and switchgear will serve the new building. If the new medium voltage loop has been already installed, the air switch will connect to it. If not, the existing medium voltage spur serving the Garage and Building S will be extended to the building.

Depending on rooflines, shading, and orientation the new buildings may be good candidates for roof-mounted photovoltaics (PV). At minimum provide a solar-ready system. Subject to approval from PSE, provide a complete PV system that makes full use of the available roof space. New lighting fixtures will be LED source. Fixture energy use and controls shall exceed Energy Code requirements.

H. Mechanical and Plumbing
Heating and cooling for the building should be provided by a system that utilizes a condenser water loop, such as a water cooled variable refrigerant flow (VRF) system with a fluid cooler serving radiant loops. For spaces that require heating and little or no cooling, provide radiant floors. Condenser water loop should extend to the boundary of the influence area to be connected to the campus condenser water system once available. System should be able to operate independently from the campus condenser water system, but also have the capability to switch over automatically to the campus system once connected and the campus system is more favorable to use than the building's dedicated system. Natural gas should not be used for heating. Heating and cooling should be decoupled from the ventilation system by providing a dedicated outside air system (DOAS) or natural ventilation. Spaces in this building may be used to house major components of the central condenser water system, such as pumping stations. This would allow for the major equipment to be located close to the facilities team that would be responsible for operation and maintenance of the system. If feasible, incorporate a ground source system into the design of the building's condenser water system. This will not only provide the building with a more efficient system, but it will also increase the overall efficiency of the campus condenser water loop.

The building should be piped with non-potable water (purple pipe) system to utilize reclaimed rainwater or treated gray/black water for flushing toilets and urinals. Domestic water heating should be electric based, such as an air source or water source heat pump. This system should be connected to the condenser water system via a heat exchanger for energy recovery when conditions are adequate.

CONSIDERATION 7

SITES 16 + 17

A. Mission: Community

Safe, accessible and attractive facilities are the backbone of Bellevue College. The functions are critical for the educational needs of the college community and Campus Operations serves as a critical support to these functions. For ease of access, while in close proximity to the main entrance, the majority of parking is focused to the NE edge of the proposed future campus boundary. Adjacent uses in Building Q and the Champions Center can also benefit from relocated parking stalls from the interior of campus to the periphery.

B. Identity: Place

Relocated from Buildings K and M, the new long-term location for Campus Operations and Maintenance offers a critical flexible expansion zone between Building Q and a new structured parking facility.

LEGEND

- Influence Area
- Special Consideration Area

Figure A-24: Influence Area 8

C. Programmatic Drivers

Campus support and operations functions can maintain safe and efficient facilities if moved away from the campus center. This “back of house” location provides nearby accessible and proximate uses for the college, with increased exterior yard capacity.

D. Landscape/Open Space

Facilities shops have outgrown their current space and equipment circulation and vehicular circulation on Snoqualmie River Road are regularly in conflict. Relocating Facilities to the southwest portion of campus allows for a larger facility and operations yard. This location reduces vehicular conflict and is still easily reached for deliveries. The additional yard space accommodates the current need for more storage as well as future additional operations such as onsite composting. Assuming that the need for parking diminishes in the future with more/better transit connections, the northern portion of this space is developed as an informal recreation field.

E. Circulation

Development of this area would require improved vehicular access along 145th Place SE. Driveway and intersection control would need to be evaluated along 145th Avenue SE for the parking garages, as would any future connection to the north along SE 24th Street. Campus circulation, both vehicular and pedestrian, would also likely change with the development of this area, and any safety conflicts should be considered.

LEGEND

- Circulation
- Transit
- Pedestrian Oriented Open Space
- Central Utility
- Water and Wayfinding

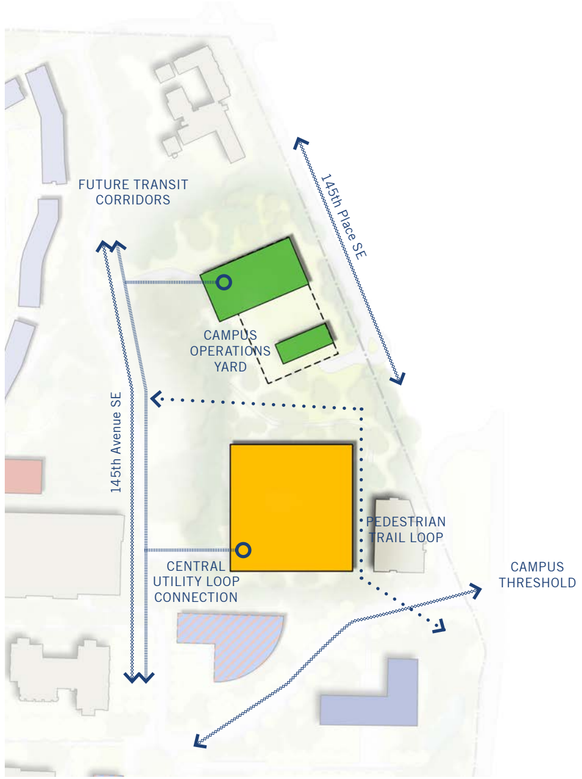


Figure A-25: Influence Area 8

F. Water Management
Site 22 (parking garage) will be served with domestic water and fire suppression services off of the main that encircles Site 7. Sewer service will come off of the new sewer main that will be installed in Landerholm Circle SE. It is envisioned that stormwater from the new Parking Structure will be mitigated through a blue or green roof and/or bioretention cells or stormwater planters and runoff from the ground plane will be cleansed prior to being infiltrated. This could occur through bioretention cells or a proprietary treatment device such as Modular Wetlands.

G. Electrical
If a central plant is provided for the campus condenser water system, a suitable sized service must be provided. A new medium voltage air switch, transformer, and switchgear will serve the garage and potential central plant building. If the new medium voltage loop has been already installed, the air switch will connect to it. If not, the existing medium voltage spur serving the Garage and Building S will be extended to the building.

Carport-style photovoltaics (PV) should be considered for the garage roof. At minimum provide a solar-ready system. Subject to approval from PSE, provide a complete PV system that makes full use of the available roof space. New lighting fixtures will be LED source. Fixture energy use and controls shall exceed Energy Code requirements.

H. Mechanical and Plumbing
Although the parking garage areas may not require any heating or cooling, they may still be utilized for housing major equipment serving the condenser water loop. Parking garage projects are typically less sensitive to dedicating spaces for mechanical systems and the space construction is less expensive. Central condenser water pumping stations could be located within the parking structures. The roof of the parking structure could also be utilized for heat rejection equipment such as cooling towers, fluid coolers, photovoltaic systems, or a solar water heat system. Centralizing larger equipment allows the facilities team to have a single location to maintain major equipment. If feasible, incorporate a ground source system into the design of the building to be connected to the condenser water system. This will increase the overall efficiency of the campus condenser water loop.

SPECIAL CONSIDERATIONS / Snoqualmie River Road

Programmatic Drivers
Parking access into and out of the campus can be directed to this area of campus, limiting the amount of vehicles that continue through to the center. This allows for safer pedestrian oriented open spaces.

Circulation
Changes to Snoqualmie River Road should consider surrounding jurisdictional plans, including the City of Bellevue's Transit Master Plan. Improvements to transit access, non-motorized circulation, and lighting for nighttime safety should be considered. Changes to the current on-street parking needs to be factored into the long-term parking strategies.

Electrical
Consideration shall be given to including the medium voltage loop expansion with any street upgrade project. This will allow each subsequent building to be connected with little additional infrastructure work. Providing a full looped system gives redundancy to the system in the event that portions of the medium voltage loop need to be shut down for an extended amount of time.

Mechanical and Plumbing
As part of any street upgrades, the condenser water system shall be extended through campus. This will allow the building to be full connected and looped giving the campus an efficient and reliable system. Providing a full looped system gives redundancy to the system in the event that portions of the condenser need to be shut down for an extended amount of time.

Civil
Perpendicular parking (east side) and parallel parking (west side) will be converted to programmed space. The western side of the street will include storm water bioretention cells/ swales that will also serve as a buffer between adjacent neighbors. The eastern side of the street will include sidewalks for pedestrian safety with connection to bus stops and academic buildings.

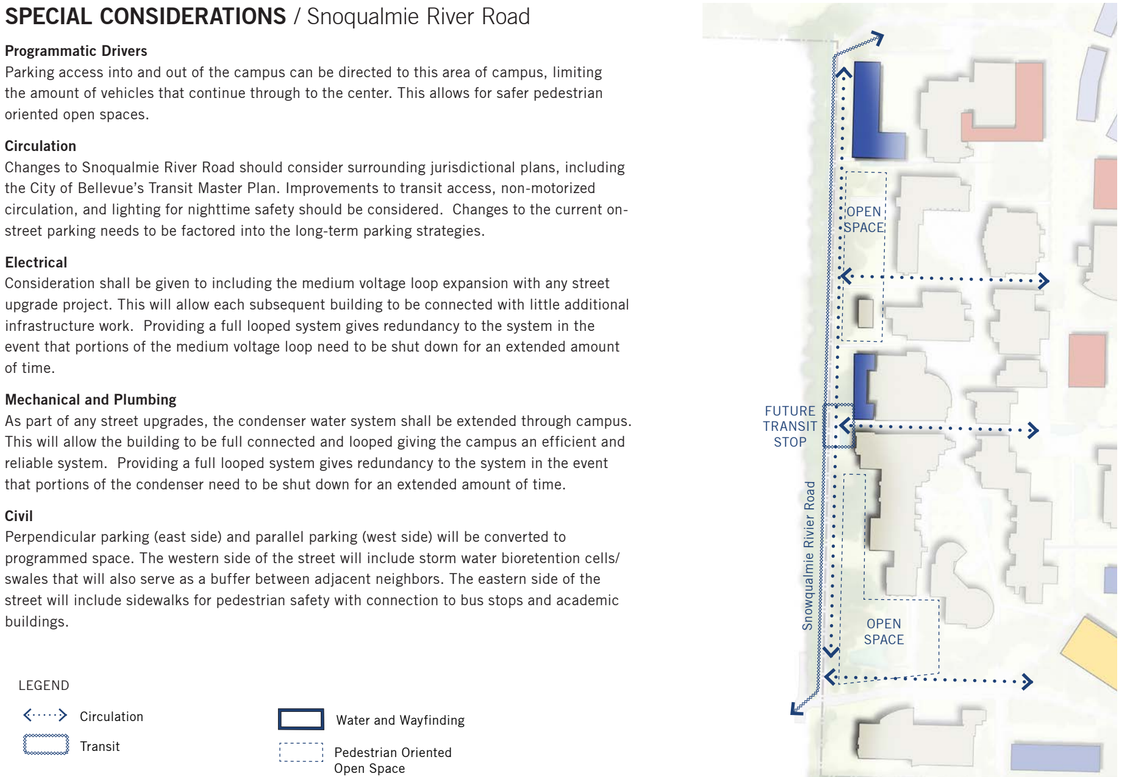


Figure A-27: Special Consideration Area

SPECIAL CONSIDERATIONS / 145th Avenue SE Expansion

Circulation

Development on campus may influence the need for a future expansion of 145th Avenue SE north, connecting with SE 24th Street. The expansion of 145th Avenue SE should accommodate both pedestrian and vehicular users. Given proximity to the new residential district, this may become a route for resident students to move in and out of campus on foot and by car. This road may also serve a future parking garage and be a main north-south route of vehicular circulation, so consideration must be given to provide the appropriate infrastructure to accommodate demand while ensuring safety of pedestrians and bikes as there are points at which there will be cross-street flow.

Electrical

Consideration shall be given to including the medium voltage loop expansion with the street upgrade project. This will allow each subsequent building to be connected with little additional infrastructure work. Providing a full looped system gives redundancy to the system in the event that portions of the medium voltage loop need to be shut down for an extended amount of time.

Mechanical and Plumbing

As part of the street upgrades, the condenser water system may be extended through this portion of campus if it is determined that it would be beneficial for the campus, but may not be required unless sequencing of campus construction dictates. This will allow the building to be full connected and looped giving the campus system an efficient and reliable system. Providing a full loop system gives redundancy to the system in the event that portions of the condenser need to be shut down for an extended amount of time.

Civil

Upgrade road from 20 foot fire access to 26+ feet to accommodate transit circulation with pedestrian sidewalks. Road shall be crowned and lined with with bioretention cells/swales to mitigate stormwater. Extend recycled water main through length of road. Depending on the outcome of future transit routing through campus, it is possible that this road will need to be upgraded from 20 foot fire access to 26+ feet to accommodate transit circulation with pedestrian sidewalks. The road shall be crowned with bioretetntion cells/swales to mitigate stormwater.

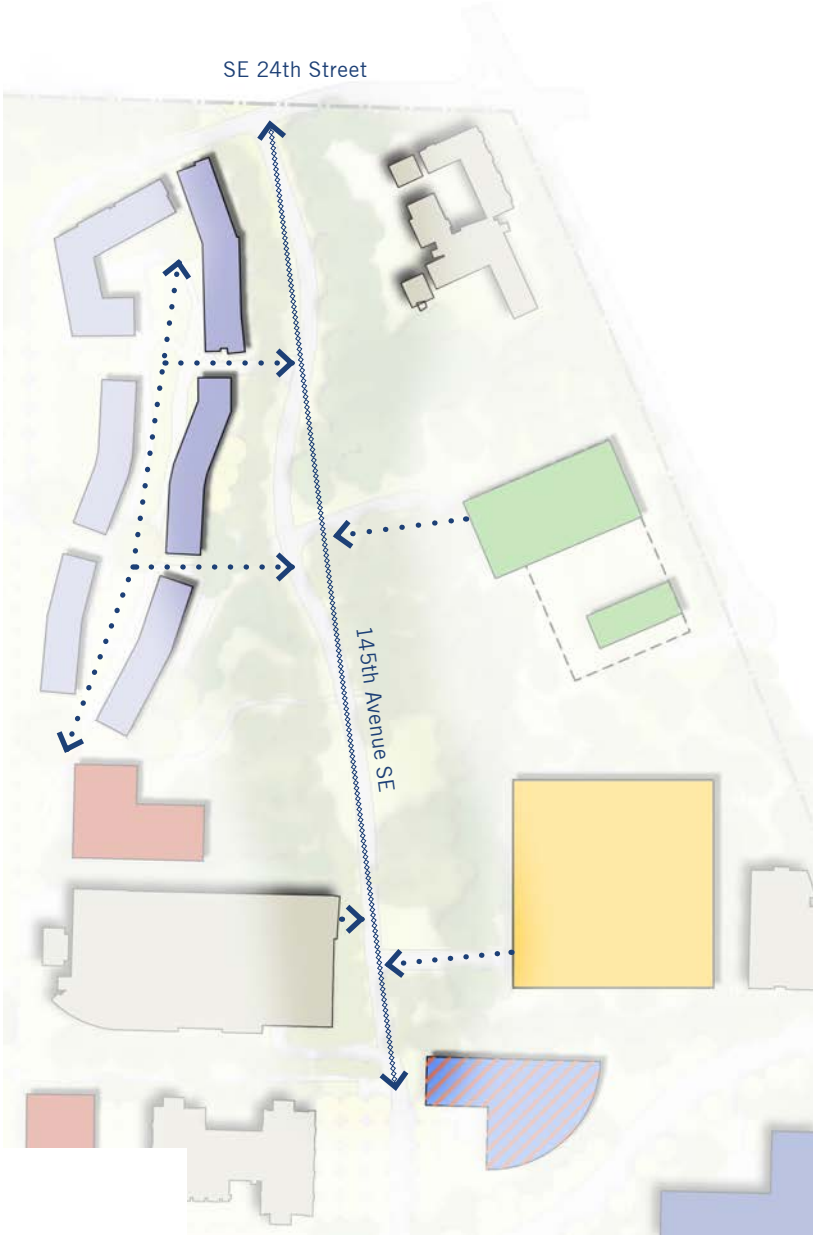


Figure A-28: Special Consideration Area

APPENDIX B
SPACE ANALYSIS

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

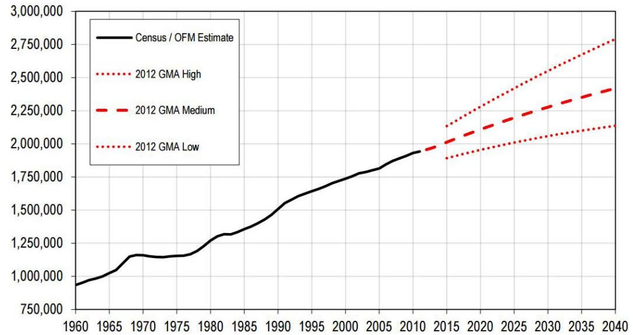


Table B-01: 2012 GMA Population Projections; King County
Source: Washington State Office of Financial Management

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. Consequentially, **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.

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.)

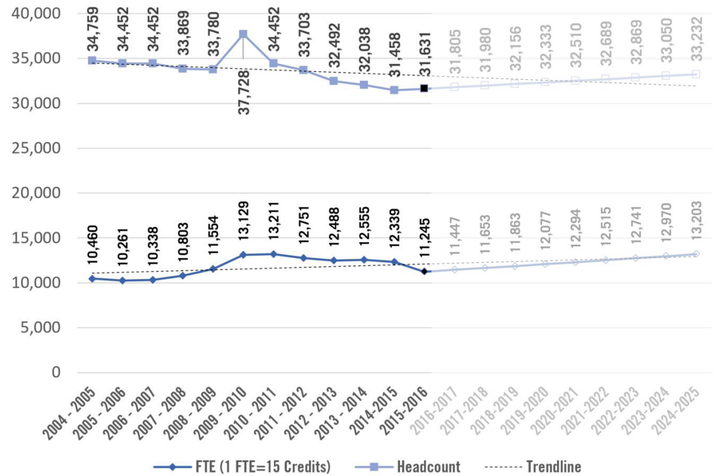


Table B-02: Student Enrollment Projections

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

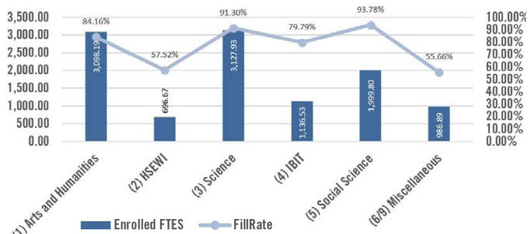


Table B-04: Fall 2015 Enrollment Data

	Current (ASF)	Current Need (ASF)		Future Need - 2026 (ASF)		
		User Based Right-Sized ASF Need	CAM Model	Per User Input	Right-Sized x Growth Projections	Future Need, CAM Model
Academic Divisions	296,761	310,104	232,933	324,224	370,600	271,980
Other Academic	77,461	79,321	106,191	85,321	94,300	124,528
General Classrooms	95,393	101,147	136,970	107,997	120,900	163,721
Support	128,254	138,129	84,740	145,569	160,800	100,704
Student Affairs	88,579	107,359	60,516	107,359	135,380	71,583
Undefined or Support Space	33,780	33,780	93,257	33,780	40,400	110,450
Main Campus Subtotal	720,228	769,840	714,607	804,250	922,380	842,967
Total ASF Main Campus w/o Housing	720,228	769,840	714,607	804,250	922,380	842,967
ASF PER FTE	65	70	65	61	70	64

Table B-05: Academic Space Needs Analysis

ACADEMIC SPACE NEEDS COMPARISON

"Right Sized × 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 × 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 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.

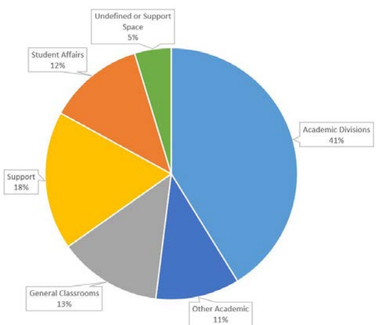


Figure B-06: Existing Academic Space by Department

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.

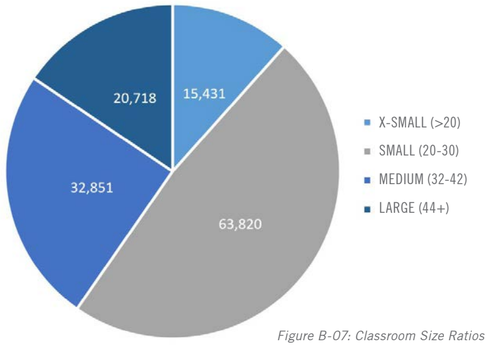


Figure B-07: Classroom Size Ratios
Source: Bellevue College (Fall 15 DIV)

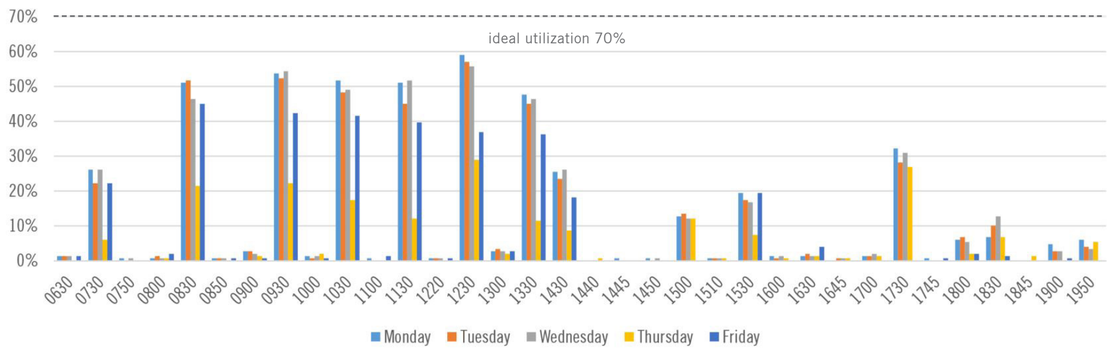


Table B-08: % of Classes in Use in Fall 2014 (149 Total)
Source: Bellevue College (RoomUseXP_PJ)

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

DEPARTMENT / PROGRAM / FUNCTION	Instruction	Arts and Humanities	Health Sciences Education + Wellness Institute	Institute for Business + Information Technology	Social Science	Science	Economic and Workforce Development	Information Technology Services (inc. TV/Radio)	Library Media Center	Art Collections/Gallery	General Classrooms	Institutional Advancement	Human Resources	President's Office	Administrative Services	Finance, Budget, PR	Food Services and Events	Campus Ops (Maint., Sustain., Transp.)	Bookstore	Early Learning Center (ELC)	Student Affairs	Student Services, Programs, Life & Leadership (incl. PALS)	Athletics / Rec	Residence Halls7	Public Interface	Parking	Loading Dock
Instruction		C	C	C	C	C		C	C	C	C	C		C			C	C	C	C	C	C		C	C	C	
Arts and Humanities	C			B					C	C	C																
Health Sciences Education + Wellness Institute	C																										
Institute for Business + Information Technology	C	B			B																						
Social Science	C			B		C		C																			
Science	C	C	C	C					C	C	C																
Economic and Workforce Development																											
Information Technology Services (inc. TV/Radio)	C			B																							
Library Media Center	C	C	C	C	C	C		C																			
Art Collections/Gallery		C																									
General Classrooms	C	C	C	C	C	C		C	C																		
Institutional Advancement													C														
Human Resources	C							C						B													
President's Office	C											C		B													
Administrative Services								B						B													
Finance, Budget, PR																											
Food Services and Events	C	C	C	C	C	C	C	C	C		C						C										
Campus Ops (Maint., Sustain., Transp.)															C												
Bookstore	C	C	C	C	C	C		C	C		C																
Early Learning Center (ELC)																											
Student Affairs	C							C																			
Student Services, Programs, Life & Leadership (incl. PALS)	C						C	C	C																		
Athletics / Rec			C																								
Residence Halls7	C	C	C	C	C	C		C			C						C				C	C	C				
Public Interface				C			B		C	C		C	C	C	C	C			C	C			C				
Parking												C	C	C	C			C	C					C			
Loading								C	C								C	C	C								
AmeriCorps																											
BC Association of Higher Ed																											
BC Foundation																											
Eastern Washington University					C																						

Source: User Meeting Notes

Table B-09: Department Adjacencies

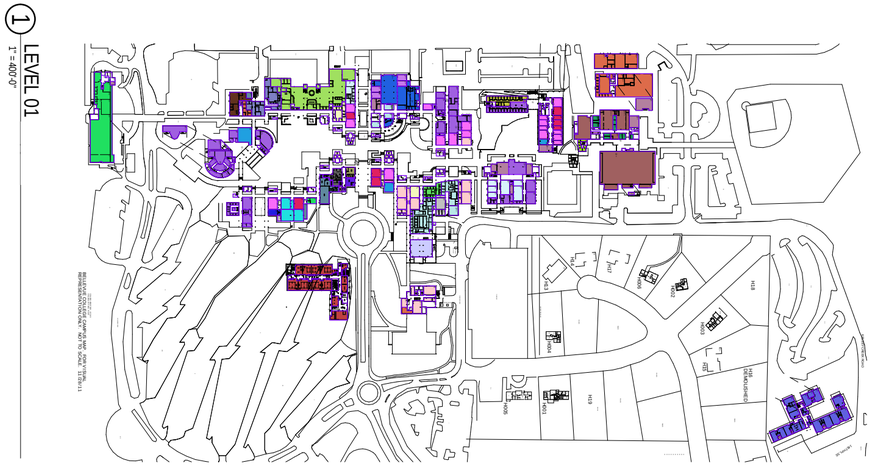
(blank)	No Adjacency Req.
C	Convenient Adjacency
D	Direct Adjacency

Adjacency Needs

Department administrators also identified direct and convenient adjacency needs. As renovation and new projects come about, the table above should be reviewed to optimize future adjacencies.

Locating Existing Functions

The following sheets document the existing locations of Bellevue College functions across campus and within each building.



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BELLEVUE COLLEGE CAMPUS MASTER PLAN

3000 Landeholm Cir, Bellevue WA 98007

161517.00

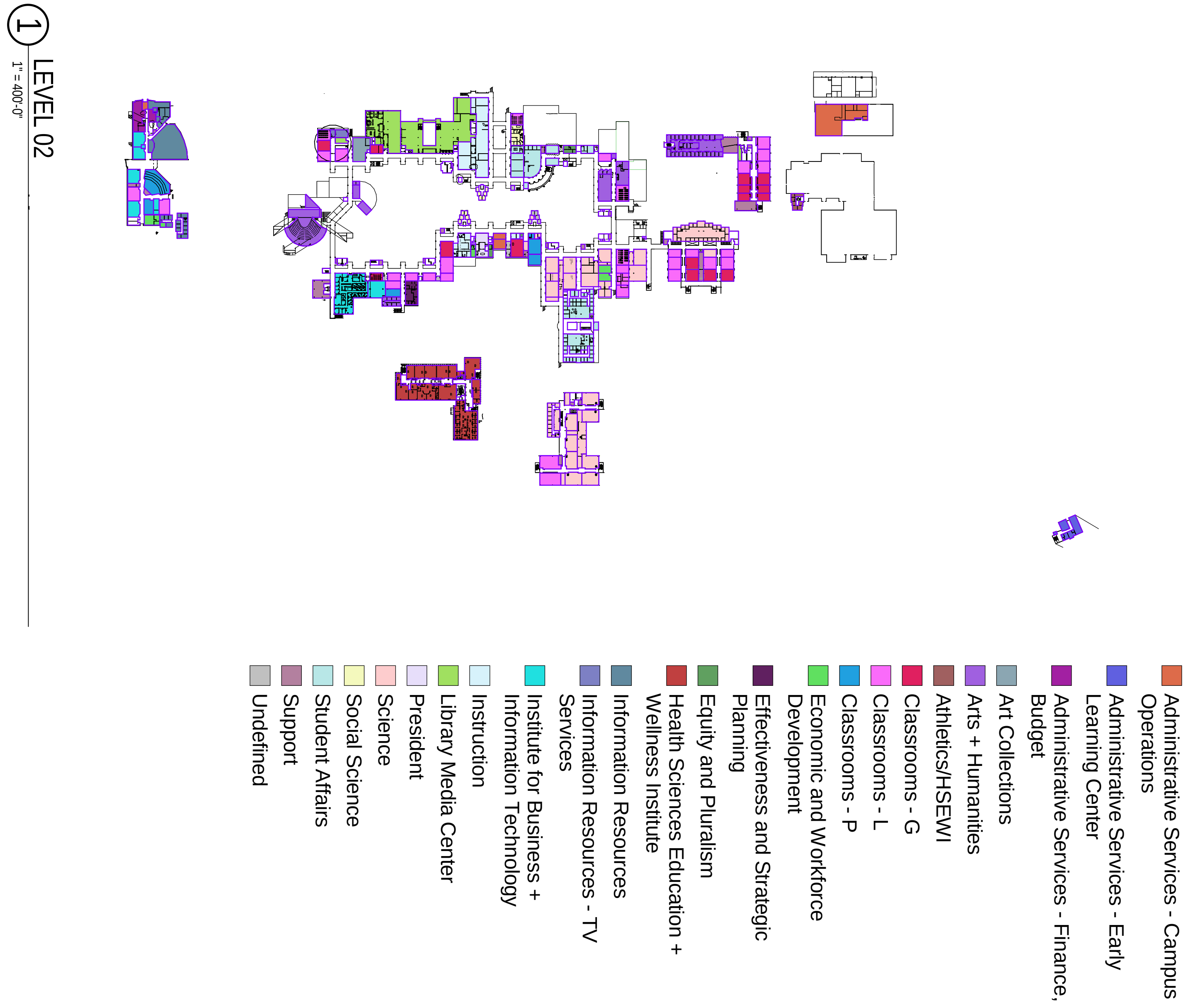
BUILDING FLOOR PLAN

PERKINS + WILL

(Swift Co., MKA, Transpo, Roen Assoc.)

SHEET NUMBER

01



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161517.00
BUILDING FLOOR PLAN

PERKINS + WILL
(Swift Co., MKA, Transpo, Roen Assoc.)

SHEET NUMBER
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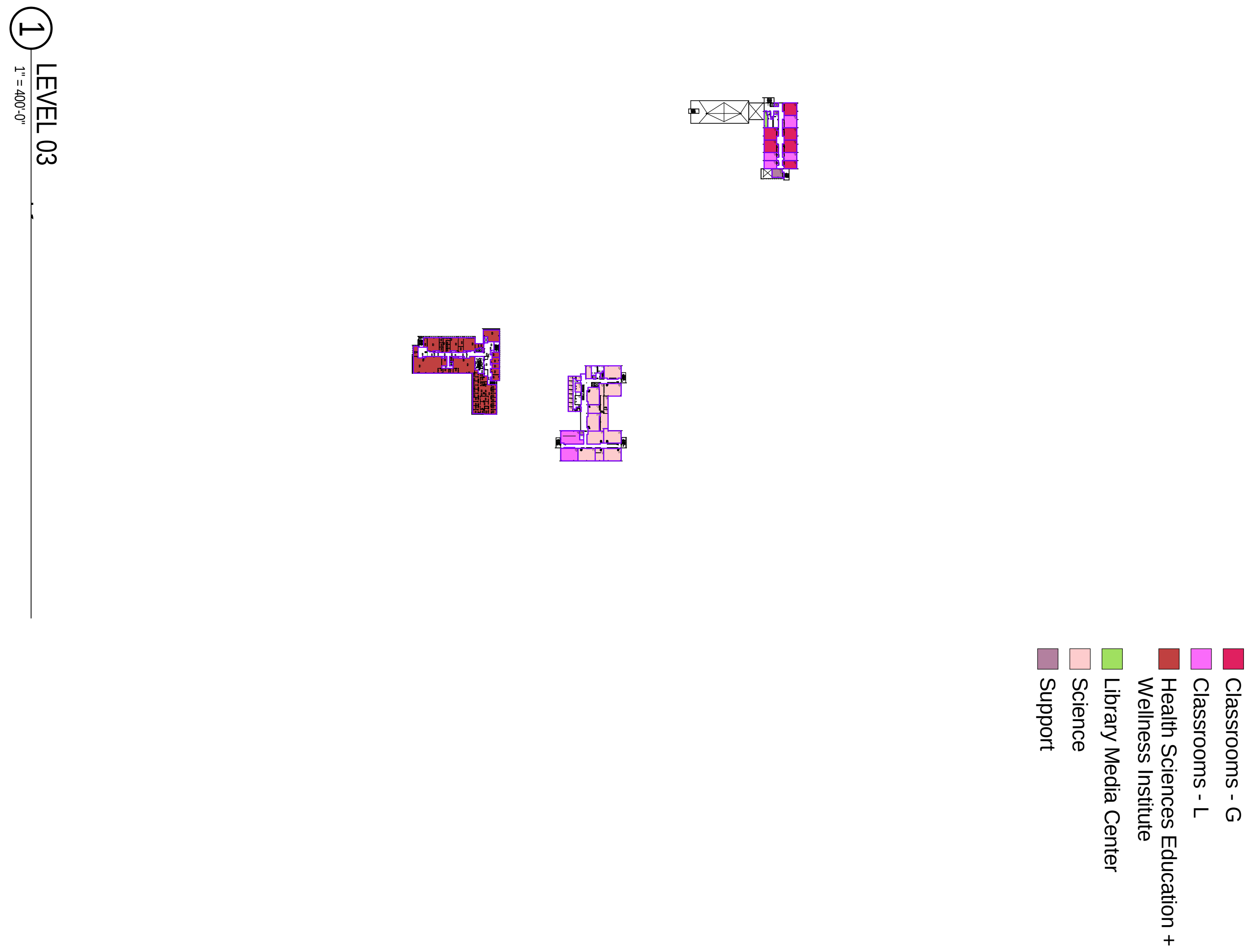

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SHEET NUMBER
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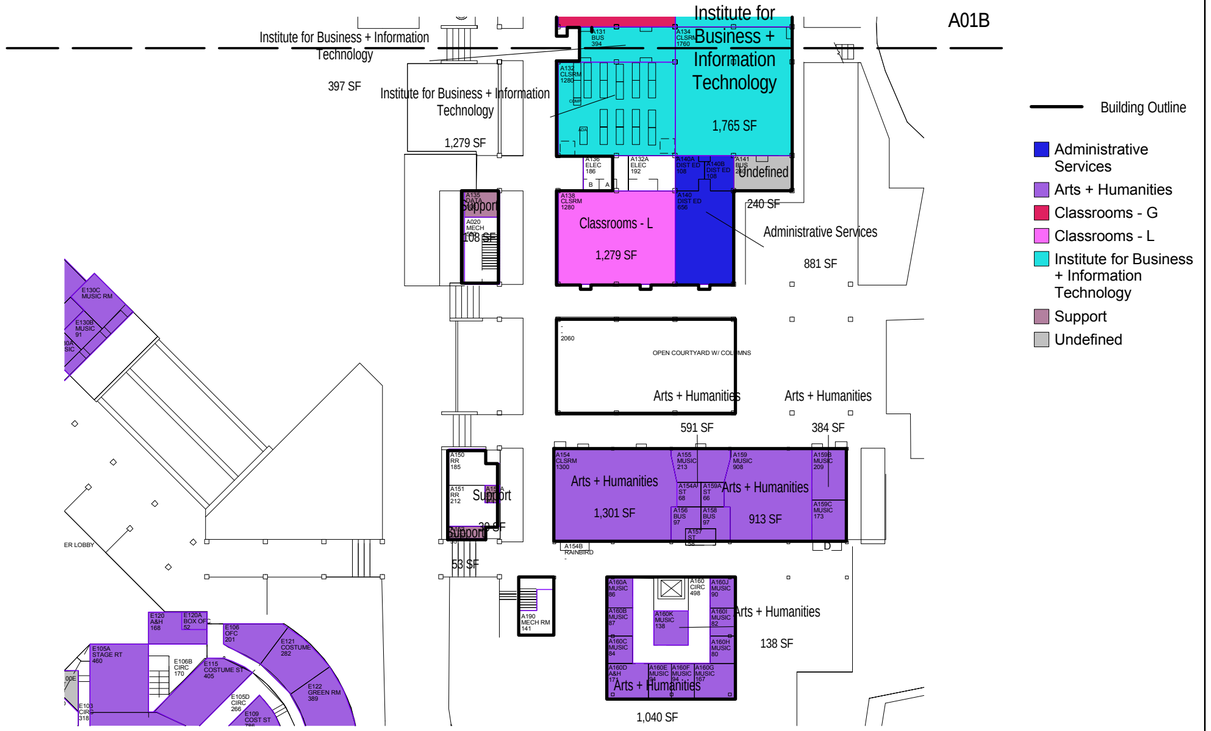

1 BUILDING A LEVEL 01 SHEET A

1" = 40'-0"

BELLEVUE COLLEGE CAMPUS MASTERPLAN

3000 Landeholm Cir, Bellevue WA 98007

161517.00

BUILDING FLOOR PLAN

PERKINS + WILL

(Swift Co., MKA, Transpo, Roen Assoc.)

SHEET NUMBER

A01A

1 BUILDING A, FLOOR 01, SHEET B

1" = 40'-0"

BELLEVUE COLLEGE CAMPUS MASTERPLAN

3000 Landeholm Cir, Bellevue WA 98007

161517.00

BUILDING FLOOR PLAN

PERKINS + WILL

(Swift Co., MKA, Transpo, Roen Assoc.)

SHEET NUMBER

A01B

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1" = 40'-0"

BELLEVUE COLLEGE CAMPUS MASTERPLAN

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161517.00

BUILDING FLOOR PLAN

PERKINS + WILL

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SHEET NUMBER

A02A

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1" = 40'-0"

BELLEVUE COLLEGE CAMPUS MASTERPLAN

3000 Landeholm Cir, Bellevue WA 98007

161517.00

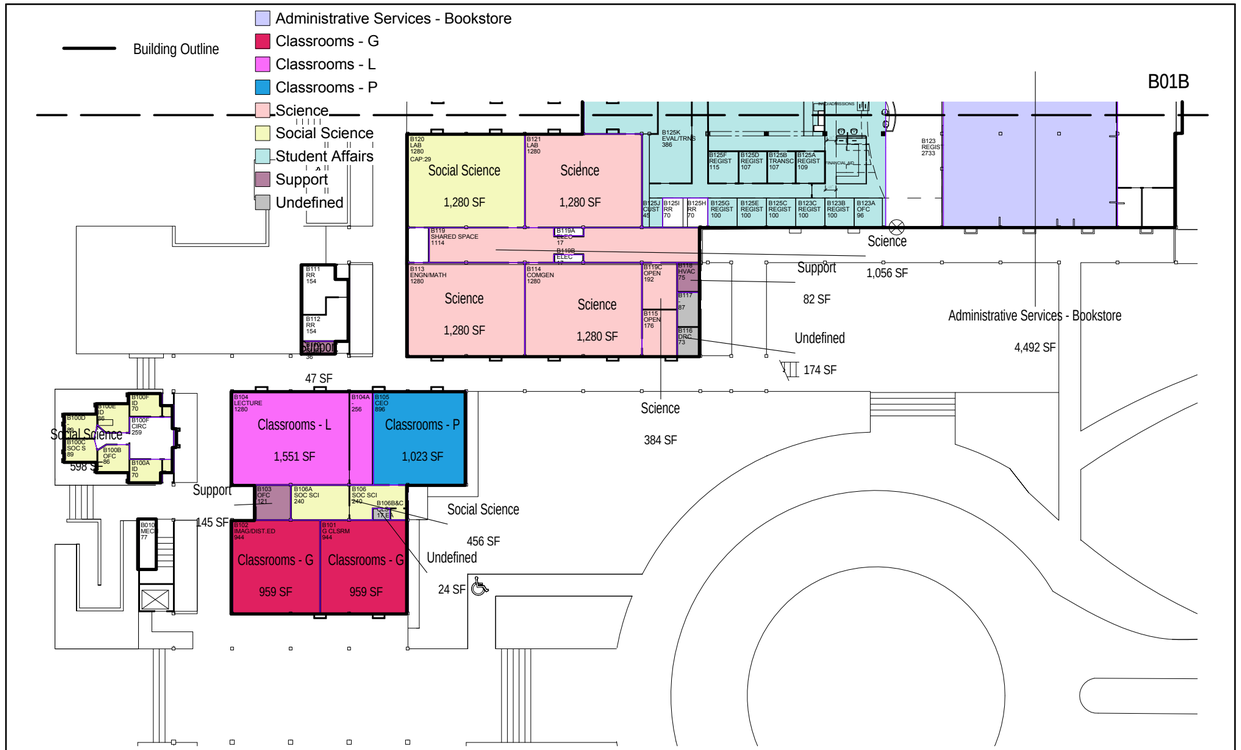
BUILDING FLOOR PLAN

PERKINS + WILL

(Swift Co., MKA, Transpo, Roen Assoc.)

SHEET NUMBER

A02B



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BELLEVUE COLLEGE CAMPUS MASTERPLAN
3000 Landeholm Cir, Bellevue WA 98007
161517.00
BUILDING FLOOR PLAN

PERKINS + WILL
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SHEET NUMBER
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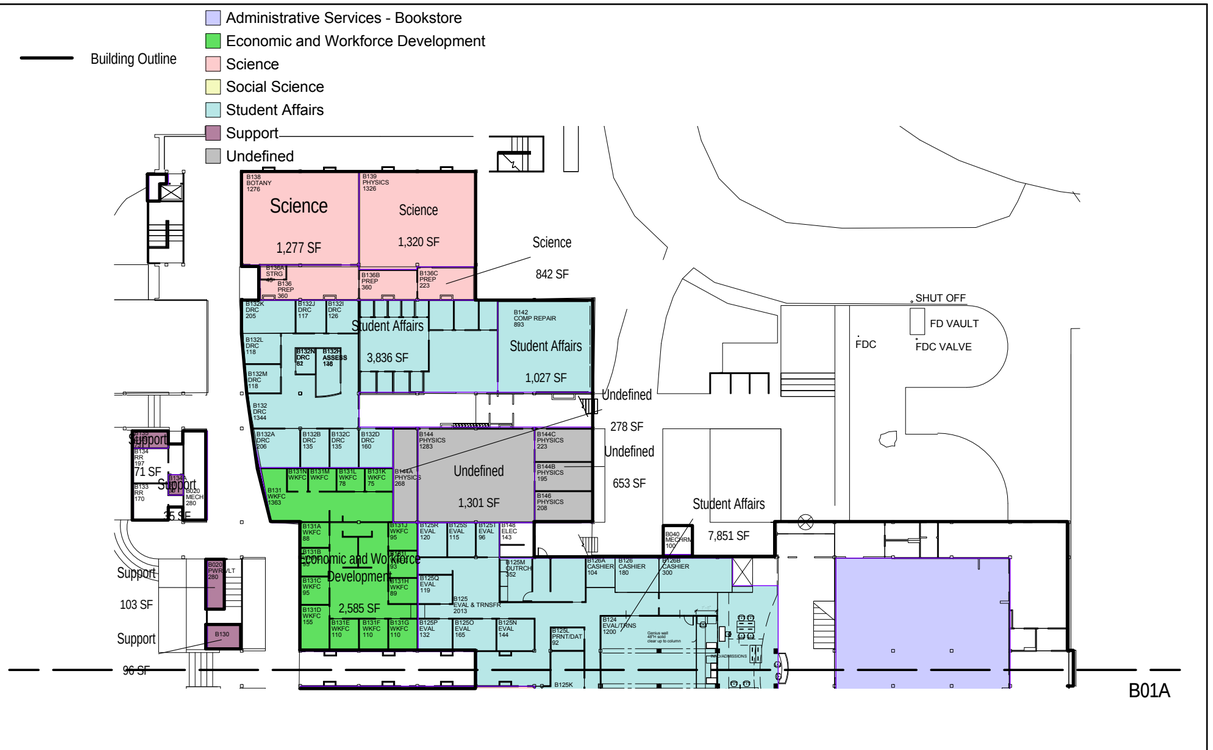

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3000 Landeholm Cir, Bellevue WA 98007
161517.00
BUILDING FLOOR PLAN

PERKINS + WILL
(Swift Co., MKA, Transpo, Roen Assoc.)

SHEET NUMBER
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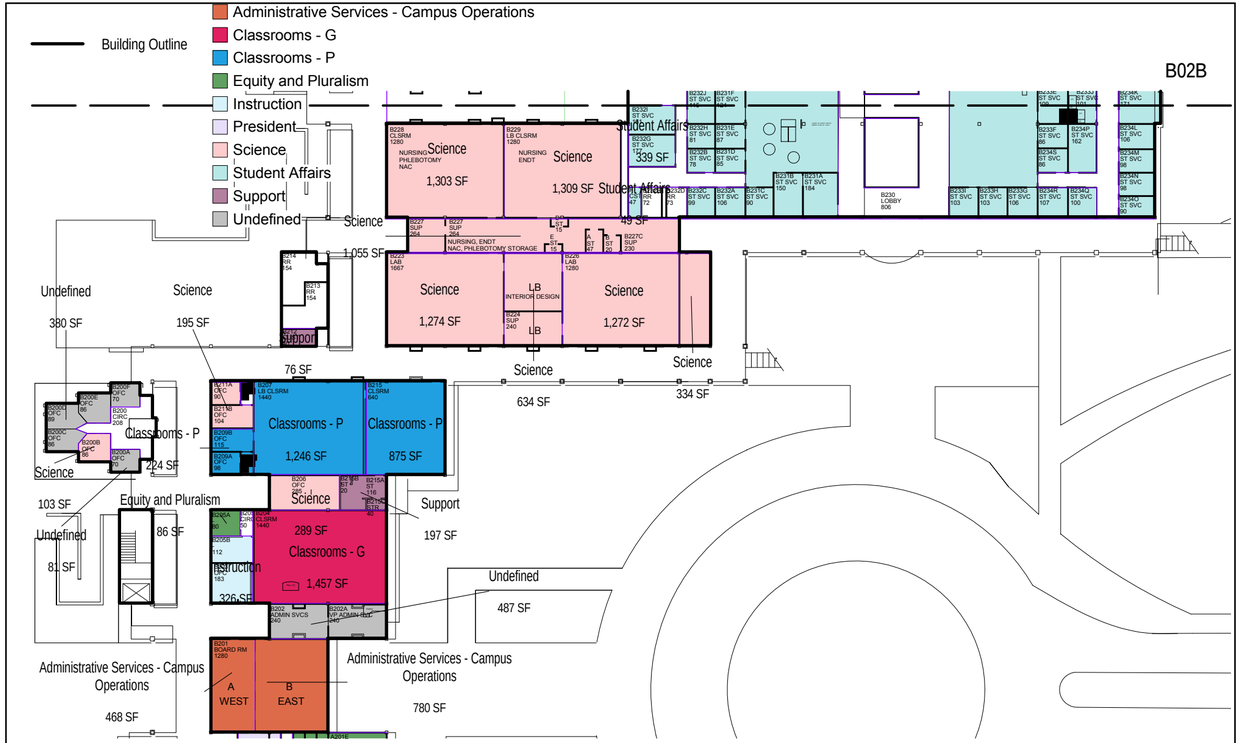

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161517.00

BUILDING FLOOR PLAN

PERKINS + WILL

(Swift Co., MKA, Transpo, Roen Assoc.)

SHEET NUMBER

B02A

1 BUILDING B LEVEL 02 SHEET B

1" = 40'-0"

BELLEVUE COLLEGE CAMPUS MASTERPLAN

3000 Landeholm Cir, Bellevue WA 98007

161517.00

BUILDING FLOOR PLAN

PERKINS + WILL

(Swift Co., MKA, Transpo, Roen Assoc.)

SHEET NUMBER

B02B

1 BUILDING C LEVEL 01 SHEET A

1" = 40'-0"

BELLEVUE COLLEGE CAMPUS MASTERPLAN

3000 Landeholm Cir, Bellevue WA 98007

161517.00

BUILDING FLOOR PLAN

PERKINS + WILL

(Swift Co., MKA, Transpo, Roen Assoc.)

SHEET NUMBER

C01A

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1" = 40'-0"

BELLEVUE COLLEGE CAMPUS MASTERPLAN

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161517.00

BUILDING FLOOR PLAN

PERKINS + WILL

(Swift Co., MKA, Transpo, Roen Assoc.)

SHEET NUMBER

C01B

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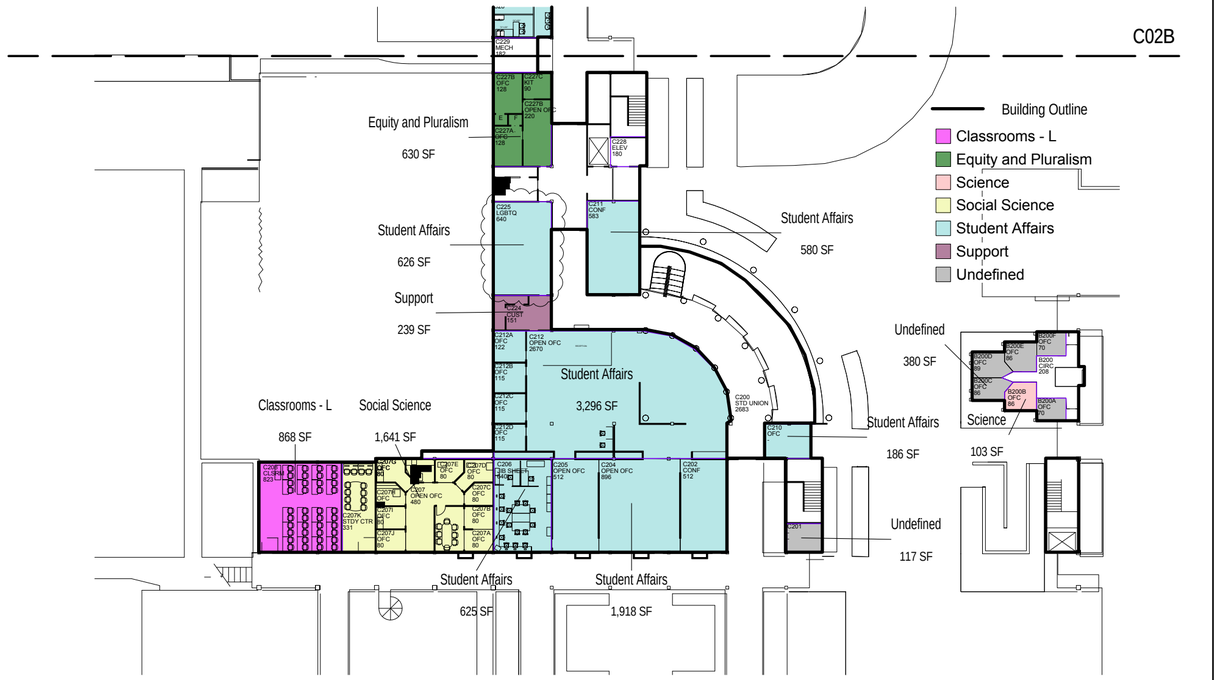

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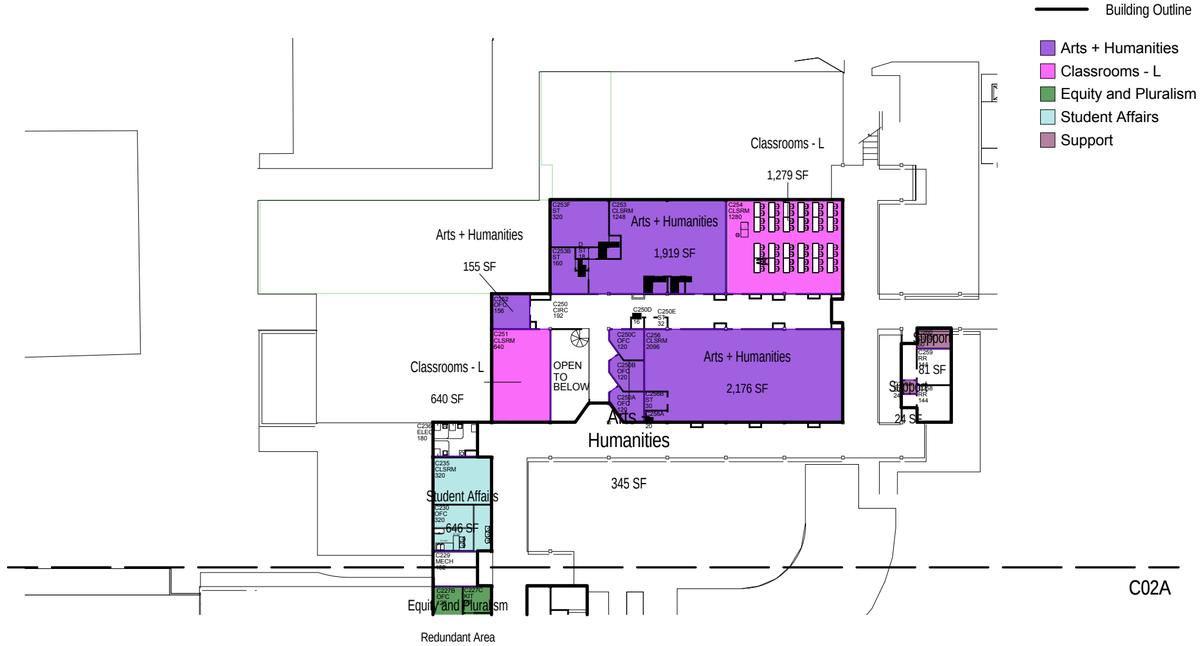

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BELLEVUE COLLEGE CAMPUS MASTERPLAN
3000 Landeholm Cir, Bellevue WA 98007
161517.00
BUILDING FLOOR PLAN

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SHEET NUMBER
C02A

BELLEVUE COLLEGE CAMPUS MASTERPLAN
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161517.00
BUILDING FLOOR PLAN

PERKINS + WILL
(Swift Co., MKA, Transpo, Roen Assoc.)

SHEET NUMBER
C02B

Building Outline
- Administrative Services - Campus Operations
- Administrative Services - Print Services
- Arts + Humanities
- Classrooms - P
- Information Resources
- Information Resources - TV Services
- Library Media Center
- Support

1 BUILDING D LEVEL 01 SHEET A
1" = 40'-0"

BELLEVUE COLLEGE CAMPUS MASTERPLAN
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161517.00
BUILDING FLOOR PLAN

PERKINS + WILL
(Swift Co., MKA, Transpo, Roen Assoc.)

SHEET NUMBER
D01A

Building Outline
- Classrooms - G
- Classrooms - L
- Instruction
- Library Media Center
- Social Science
- Support

1 BUILDING D LEVEL 01 SHEET B
1" = 40'-0"

BELLEVUE COLLEGE CAMPUS MASTERPLAN
3000 Landeholm Cir, Bellevue WA 98007
161517.00
BUILDING FLOOR PLAN

PERKINS + WILL
(Swift Co., MKA, Transpo, Roen Assoc.)

SHEET NUMBER
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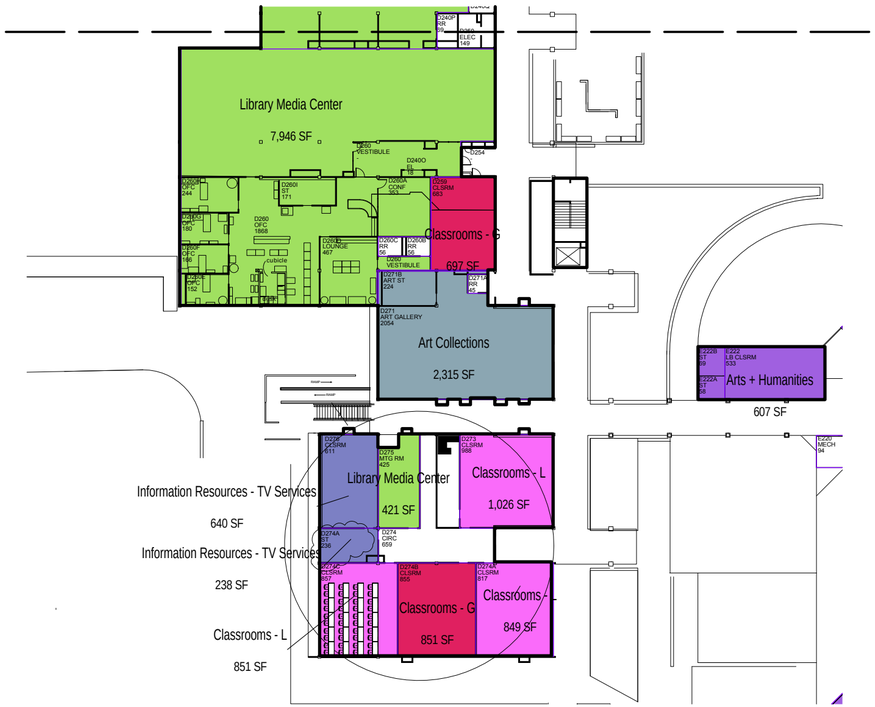

Building Outline
Art Collections
Arts + Humanities
Classrooms - G
Classrooms - L
Information Resources - TV Services
Library Media Center

1 BUILDING D LEVEL 02 SHEET A

1" = 40'-0"

BELLEVUE COLLEGE CAMPUS MASTERPLAN
3000 Landeholm Cir, Bellevue WA 98007
161517.00
BUILDING FLOOR PLAN

PERKINS + WILL
(Swift Co., MKA, Transpo, Roen Assoc.)

SHEET NUMBER
D02A

Building Outline
Instruction
Library Media Center
Social Science
Support

1 BUILDING D LEVEL 02 SHEET B

1" = 40'-0"

BELLEVUE COLLEGE CAMPUS MASTERPLAN
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161517.00
BUILDING FLOOR PLAN

PERKINS + WILL
(Swift Co., MKA, Transpo, Roen Assoc.)

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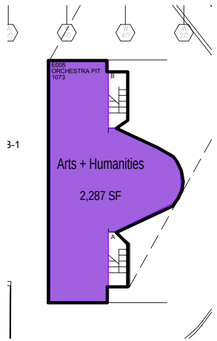

Building Outline

Arts + Humanities

1 BUILDING E LEVEL B

1" = 40'-0"

BELLEVUE COLLEGE CAMPUS MASTERPLAN

3000 Landeholm Cir, Bellevue WA 98007

161517.00

BUILDING FLOOR PLAN

PERKINS + WILL

(Swift Co., MKA, Transpo, Roen Assoc.)

SHEET NUMBER

BE

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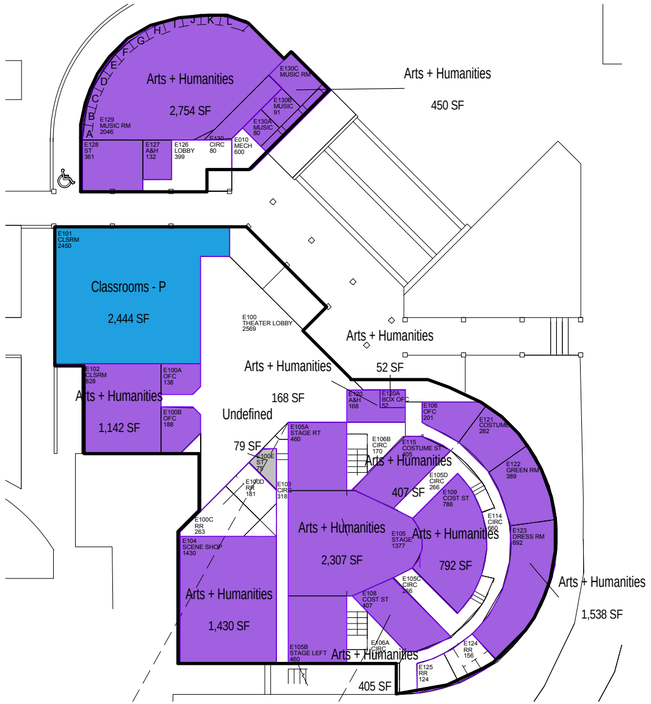

Building Outline

Arts + Humanities

Classrooms - P

Undefined

1 BUILDING E LEVEL 01

1" = 40'-0"

BELLEVUE COLLEGE CAMPUS MASTERPLAN

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161517.00

BUILDING FLOOR PLAN

PERKINS + WILL

(Swift Co., MKA, Transpo, Roen Assoc.)

SHEET NUMBER

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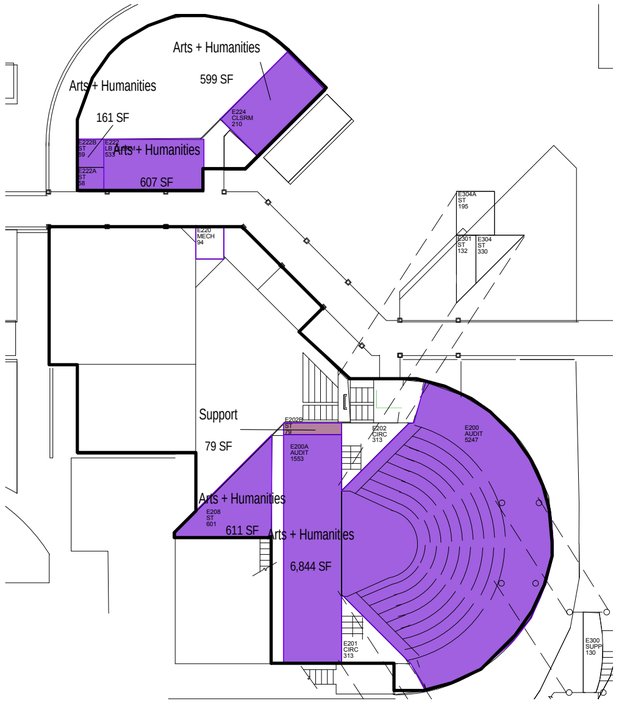

1 BUILDING E LEVEL 02

1" = 40'-0"

BELLEVUE COLLEGE CAMPUS MASTERPLAN

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161517.00
BUILDING FLOOR PLAN

PERKINS + WILL
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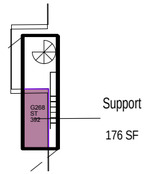
SHEET NUMBER

E02



1 BUILDING G LEVEL B

1" = 40'-0"

BELLEVUE COLLEGE CAMPUS MASTERPLAN

3000 Landeholm Cir, Bellevue WA 98007
161517.00
BUILDING FLOOR PLAN

PERKINS + WILL
(Swift Co., MKA, Transpo, Roen Assoc.)

SHEET NUMBER

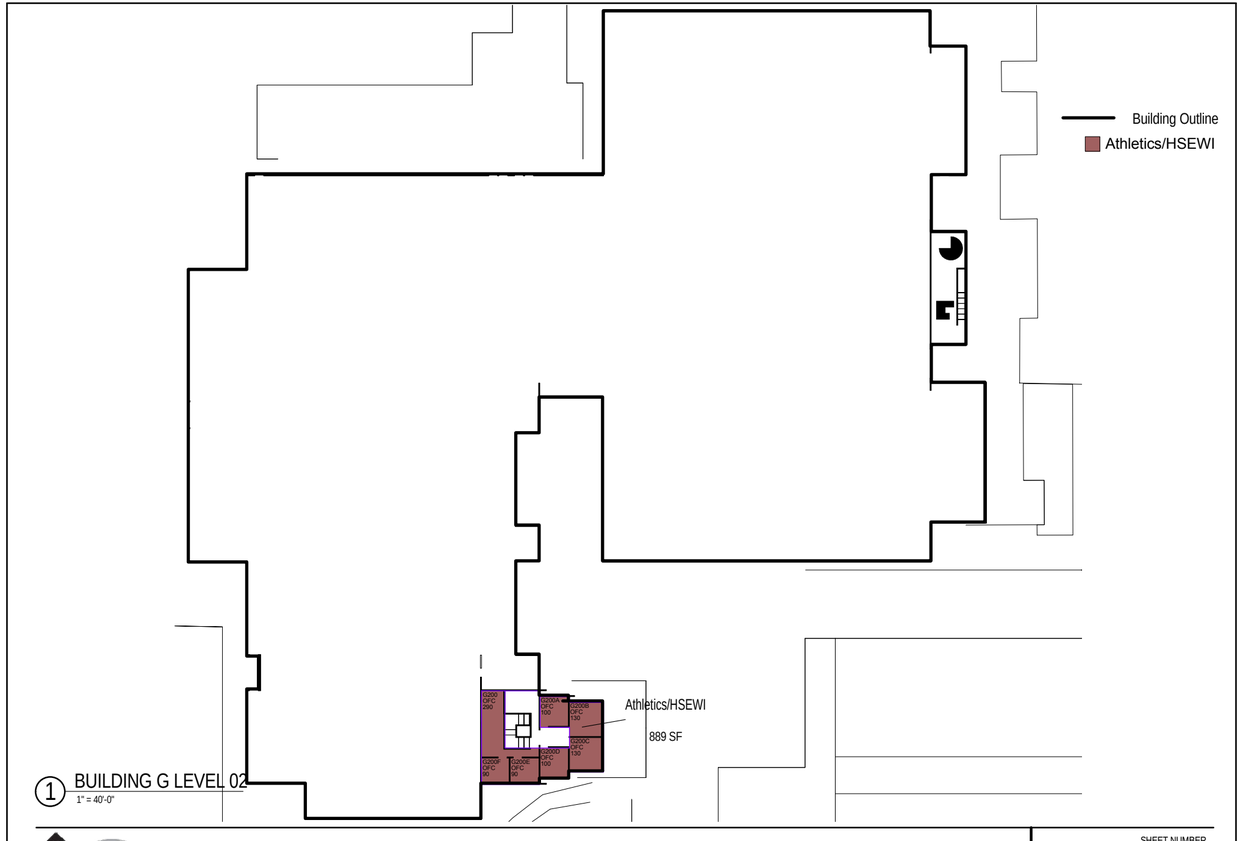
BG

1 BUILDING G LEVEL 01
1" = 40'-0"

BELLEVUE COLLEGE CAMPUS MASTERPLAN
3000 Landeholm Cir, Bellevue WA 98007
161517.00
BUILDING FLOOR PLAN

PERKINS + WILL
(Swift Co., MKA, Transpo, Roen Assoc.)

SHEET NUMBER
G01



1 BUILDING G LEVEL 02
1" = 40'-0"

BELLEVUE COLLEGE CAMPUS MASTERPLAN
3000 Landeholm Cir, Bellevue WA 98007
161517.00
BUILDING FLOOR PLAN

PERKINS + WILL
(Swift Co., MKA, Transpo, Roen Assoc.)

SHEET NUMBER
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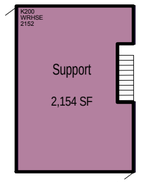

Building Outline

Support

1 BUILDING K LEVEL B

1" = 40'-0"

BELLEVUE COLLEGE CAMPUS MASTERPLAN

3000 Landeholm Cir, Bellevue WA 98007
161517.00
BUILDING FLOOR PLAN

PERKINS + WILL
(Swift Co., MKA, Transpo, Roen Assoc.)

SHEET NUMBER

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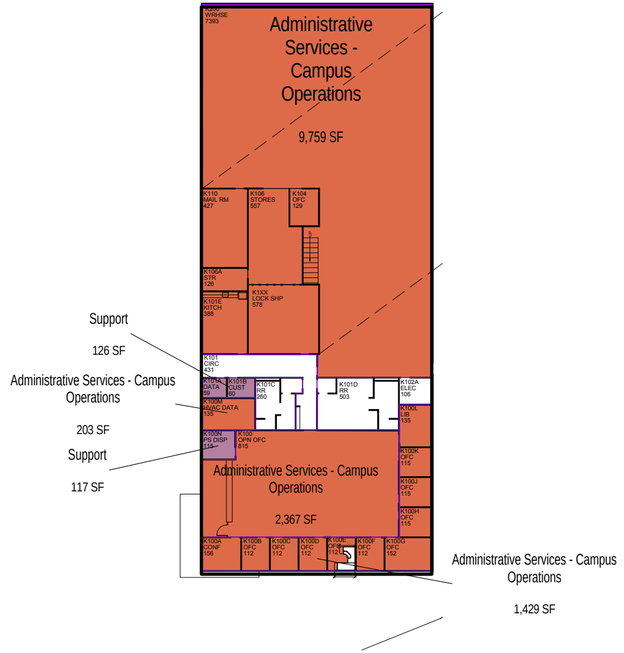

Building Outline

Administrative Services - Campus Operations

Support

1 BUILDING K LEVEL 01

1" = 40'-0"

BELLEVUE COLLEGE CAMPUS MASTERPLAN

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161517.00
BUILDING FLOOR PLAN

PERKINS + WILL
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SHEET NUMBER

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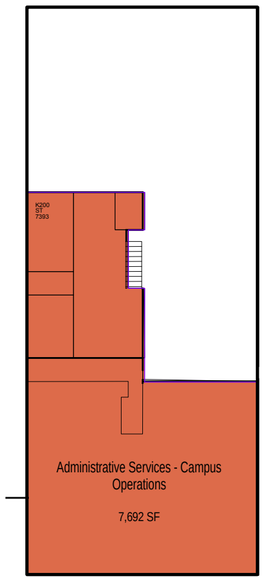

Building Outline

Administrative Services - Campus Operations

1 K02

1" = 40'-0"

BELLEVUE COLLEGE CAMPUS MASTERPLAN

3000 Landeholm Cir, Bellevue WA 98007

161517.00

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SHEET NUMBER

K02

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Building Outline

Arts + Humanities

Instruction

Support

1 BUILDING L LEVEL 01

1" = 40'-0"

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PERKINS + WILL

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SHEET NUMBER

L01

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Building Outline

Classrooms - G

Classrooms - L

Science

Support

1 BUILDING L LEVEL 02

1/32" = 1'-0"

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3000 Landeholm Cir, Bellevue WA 98007

161517.00

BUILDING FLOOR PLAN

PERKINS + WILL

(Swift Co., MKA, Transpo, Roen Assoc.)

SHEET NUMBER

L02

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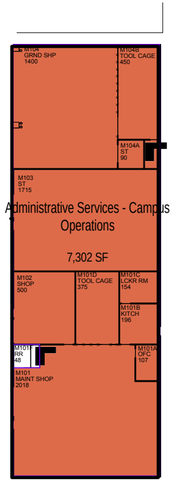
Building Outline

Administrative Services - Campus Operations



1 BUILDING M LEVEL 01

1" = 40'-0"

BELLEVUE COLLEGE CAMPUS MASTERPLAN

3000 Landeholm Cir, Bellevue WA 98007

161517.00

BUILDING FLOOR PLAN

PERKINS + WILL

(Swift Co., MKA, Transpo, Roen Assoc.)

SHEET NUMBER

M01

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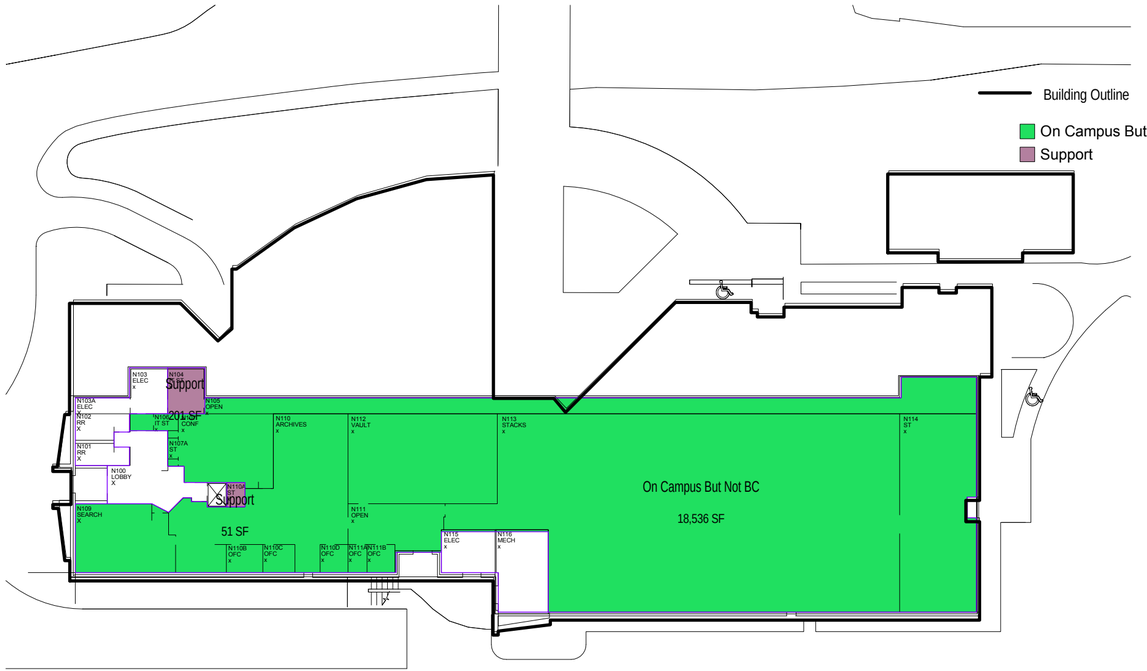

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1" = 40'-0"

BELLEVUE COLLEGE CAMPUS MASTERPLAN
3000 Landeholm Cir, Bellevue WA 98007
161517.00
BUILDING FLOOR PLAN

PERKINS + WILL
(Swift Co., MKA, Transpo, Roen Assoc.)

SHEET NUMBER
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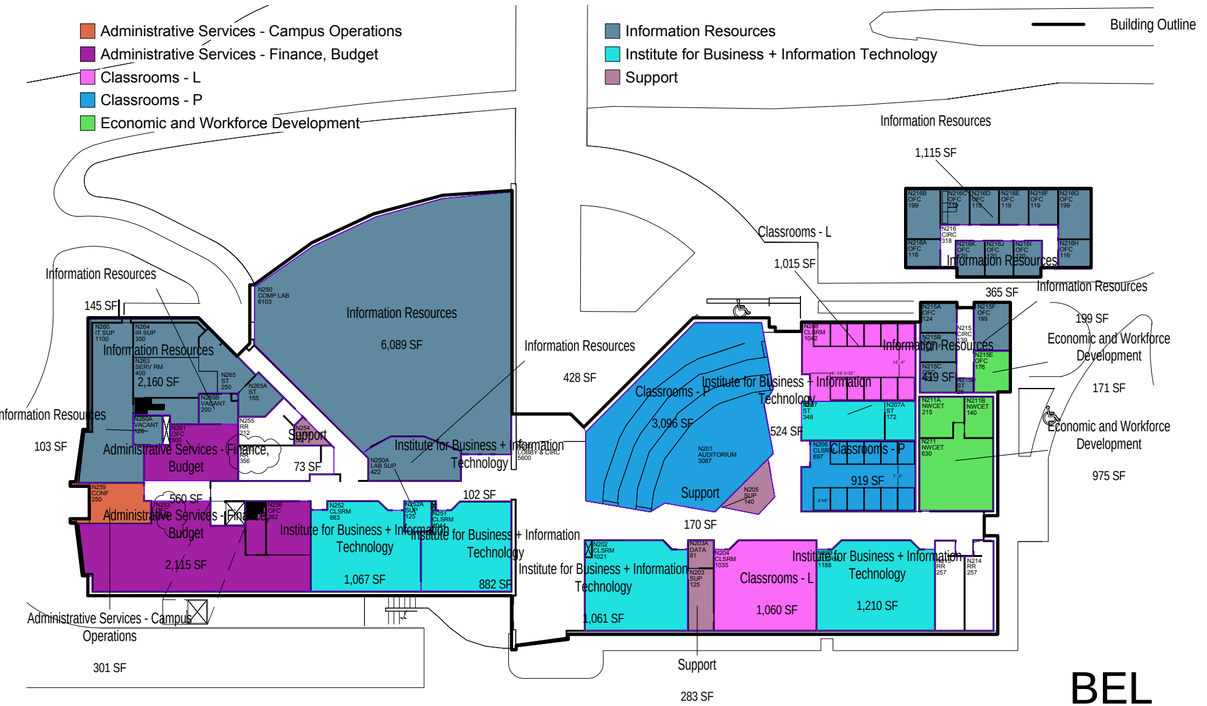

1 BUILDING N LEVEL 02
1" = 40'-0"

BELLEVUE COLLEGE CAMPUS MASTERPLAN
3000 Landeholm Cir, Bellevue WA 98007
161517.00
BUILDING FLOOR PLAN

PERKINS + WILL
(Swift Co., MKA, Transpo, Roen Assoc.)

SHEET NUMBER
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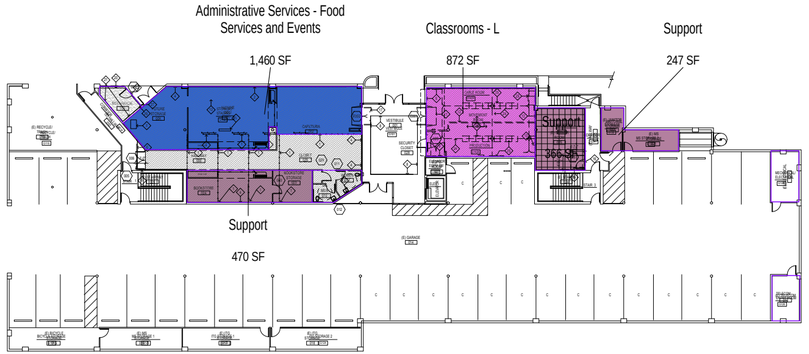

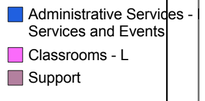

GENERAL NOTES

A. OVERLAPPING/CONFLICTING REQUIREMENTS:

1. MOST STRINGENT (GENERALLY MOST COSTLY) APPLIES AND WILL BE ENFORCED.
2. WHERE OPTIONAL REQUIREMENTS ARE SPECIFIED IN A PARALLEL MANNER, OCCUPANTS CLEARLY INDICATE THAT A LESS STRINGENT REQUIREMENT IS ACCEPTABLE, REFER UNCERTAINTIES TO ARCHITECT FOR DECISION BEFORE PROCEEDING.
3. WHERE OPTIONAL REQUIREMENTS ARE SPECIFIED IN A PARALLEL MANNER, OPTIONS ARE INTENDED TO BE CONTRACTOR'S VALUED ENGINEERING INDICATED.

B. SEE ELECTRICAL DRAWINGS FOR REMOVAL AND/OR RELOCATION OF ALL LIGHTING, ELECTRICAL EQUIPMENT AND DEVICES.

1 North Extension Center Level B
1" = 40'-0"

BELLEVUE COLLEGE CAMPUS MASTERPLAN
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161517.00
BUILDING FLOOR PLAN

PERKINS + WILL
(Swift Co., MKA, Transpo, Roen Assoc.)

SHEET NUMBER
NE-BNE

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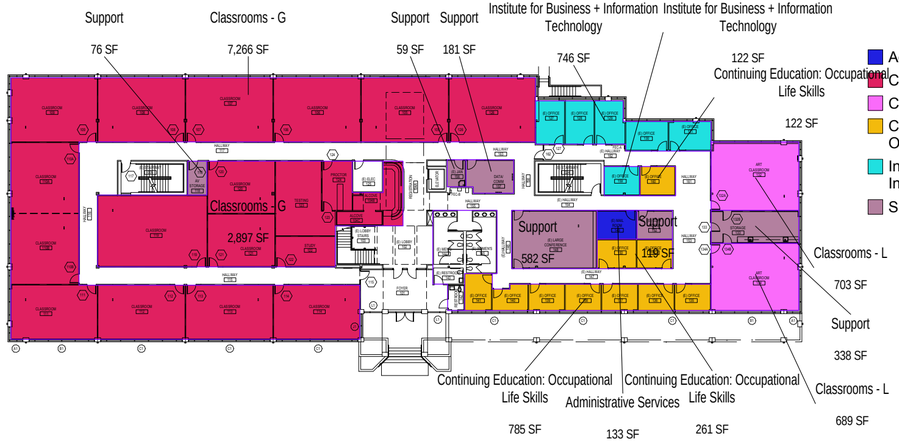

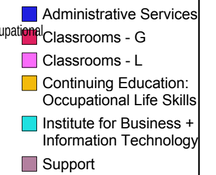

1 North Extension Center Level 01
1" = 40'-0"

BELLEVUE COLLEGE CAMPUS MASTERPLAN
3000 Landeholm Cir, Bellevue WA 98007
161517.00
BUILDING FLOOR PLAN

PERKINS + WILL
(Swift Co., MKA, Transpo, Roen Assoc.)

SHEET NUMBER
NE-01

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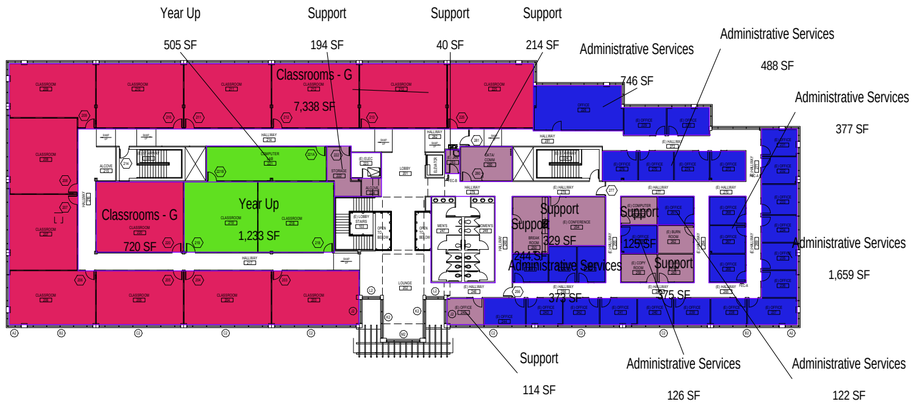

1 North Extension Center Level 02
1" = 40'-0"

BELLEVUE COLLEGE CAMPUS MASTERPLAN
3000 Landeholm Cir, Bellevue WA 98007
161517.00
BUILDING FLOOR PLAN

PERKINS + WILL
(Swift Co., MKA, Transpo, Roen Assoc.)

SHEET NUMBER
NE-02

1 BUILDING Q LEVEL 01
1" = 40'-0"

BELLEVUE COLLEGE CAMPUS MASTERPLAN
3000 Landeholm Cir, Bellevue WA 98007
161517.00
BUILDING FLOOR PLAN

PERKINS + WILL
(Swift Co., MKA, Transpo, Roen Assoc.)

SHEET NUMBER
Q01

Building Outline

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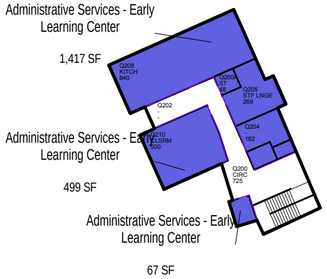

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BELLEVUE COLLEGE CAMPUS MASTERPLAN

3000 Landeholm Cir, Bellevue WA 98007
161517.00
BUILDING FLOOR PLAN

PERKINS + WILL
(Swift Co., MKA, Transpo, Roen Assoc.)

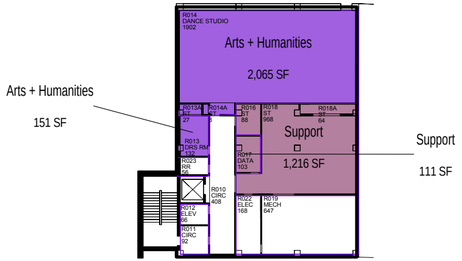
SHEET NUMBER

Q02

Building Outline

Arts + Humanities

Support



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BELLEVUE COLLEGE CAMPUS MASTERPLAN

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161517.00
BUILDING FLOOR PLAN

PERKINS + WILL
(Swift Co., MKA, Transpo, Roen Assoc.)

SHEET NUMBER

BR

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BELLEVUE COLLEGE CAMPUS MASTERPLAN
3000 Landeholm Cir, Bellevue WA 98007
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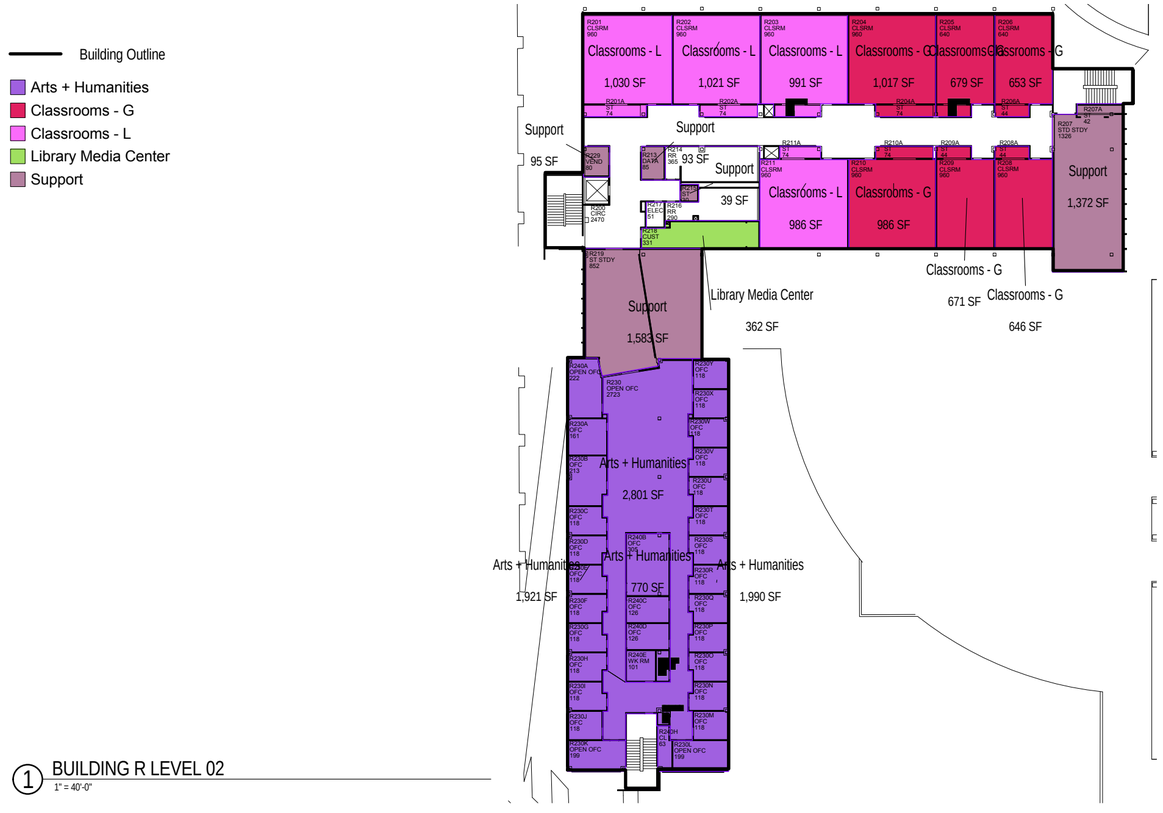
BUILDING FLOOR PLAN

PERKINS + WILL
(Swift Co., MKA, Transpo, Roen Assoc.)

SHEET NUMBER
R01



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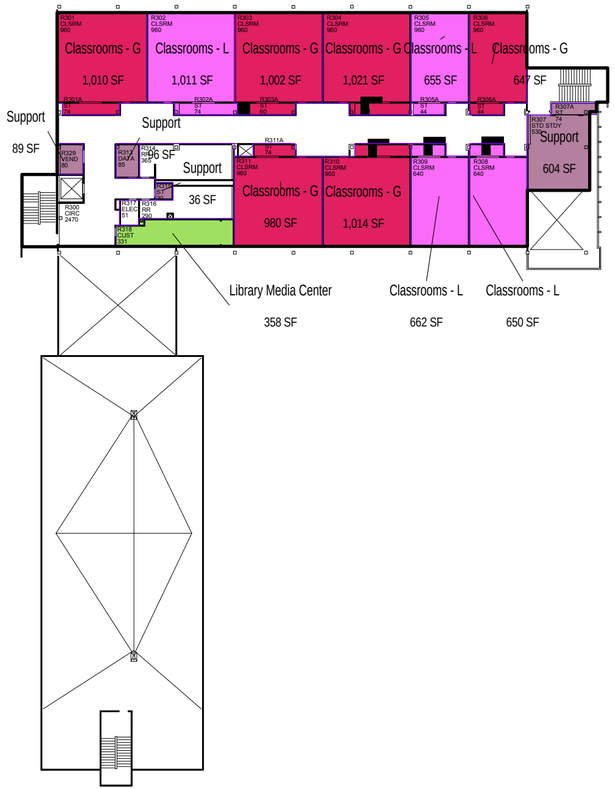
BELLEVUE COLLEGE CAMPUS MASTERPLAN
3000 Landeholm Cir, Bellevue WA 98007
161517.00
BUILDING FLOOR PLAN

PERKINS + WILL
(Swift Co., MKA, Transpo, Roen Assoc.)

SHEET NUMBER
R02

Building Outline

- Classrooms - G
- Classrooms - L
- Library Media Center
- Support



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1" = 40'-0"

BELLEVUE COLLEGE CAMPUS MASTERPLAN

3000 Landeholm Cir, Bellevue WA 98007

161517.00

BUILDING FLOOR PLAN

PERKINS + WILL

(Swift Co., MKA, Transpo, Roen Assoc.)

SHEET NUMBER

R03

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Building Outline

- Administrative Services - Campus Operations
- Science
- Support

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1" = 40'-0"

BELLEVUE COLLEGE CAMPUS MASTERPLAN

3000 Landeholm Cir, Bellevue WA 98007

161517.00

BUILDING FLOOR PLAN

PERKINS + WILL

(Swift Co., MKA, Transpo, Roen Assoc.)

SHEET NUMBER

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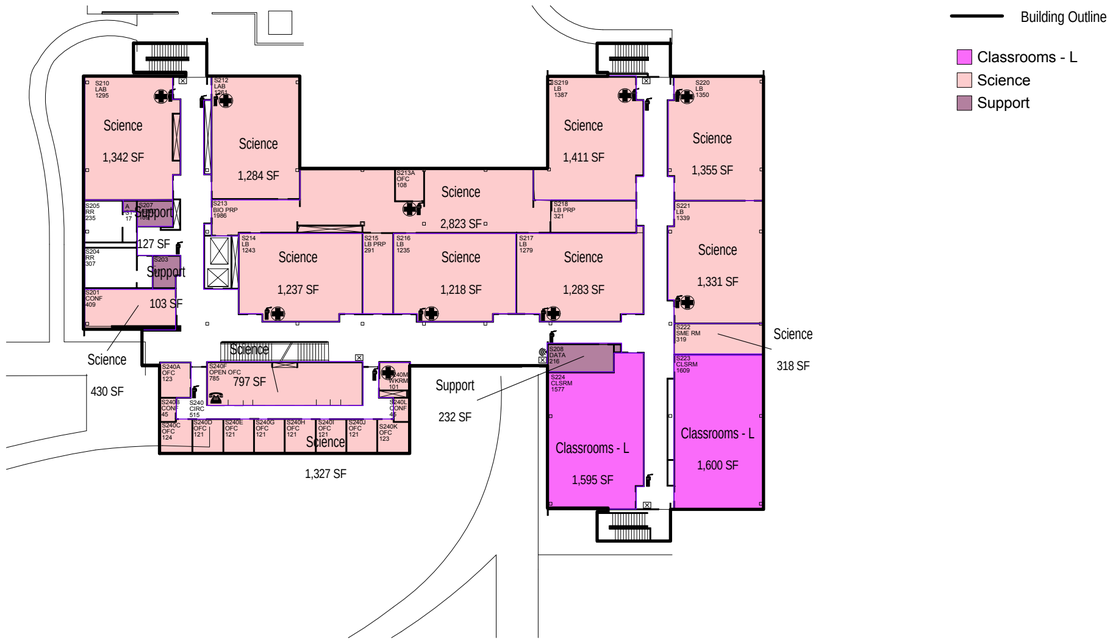

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BELLEVUE COLLEGE CAMPUS MASTERPLAN

3000 Landeholm Cir, Bellevue WA 98007

161517.00

BUILDING FLOOR PLAN

PERKINS + WILL

(Swift Co., MKA, Transpo, Roen Assoc.)

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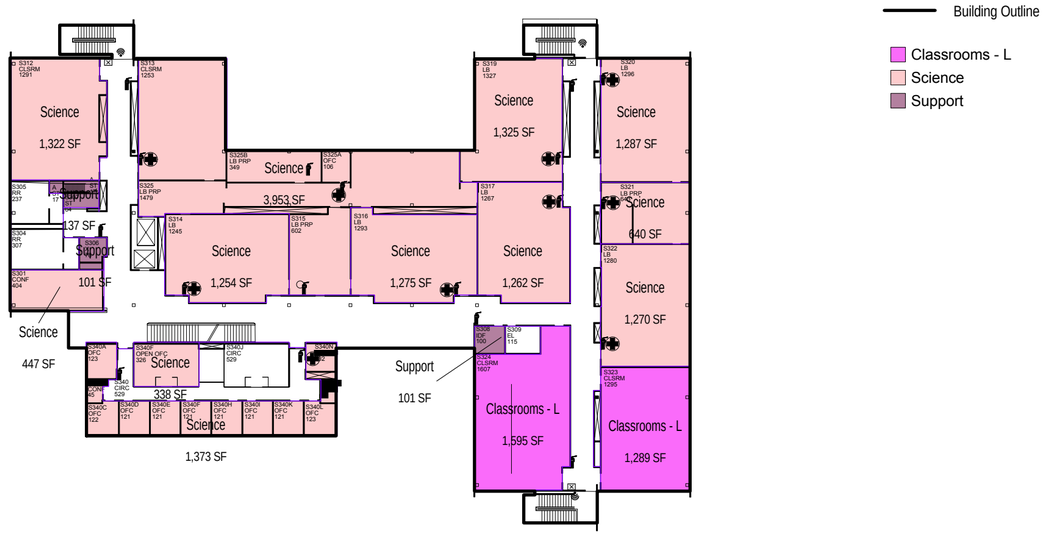

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3000 Landeholm Cir, Bellevue WA 98007

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BUILDING FLOOR PLAN

PERKINS + WILL

(Swift Co., MKA, Transpo, Roen Assoc.)

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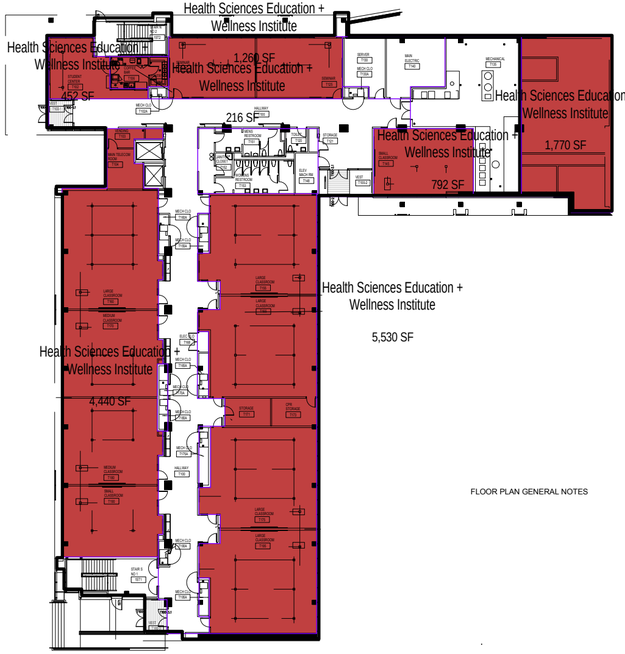


Building Outline

Health Sciences Education + Wellness Institute

1 BUILDING T LEVEL 01

1" = 40'-0"

BELLEVUE COLLEGE CAMPUS MASTERPLAN

3000 Landeholm Cir, Bellevue WA 98007

161517.00

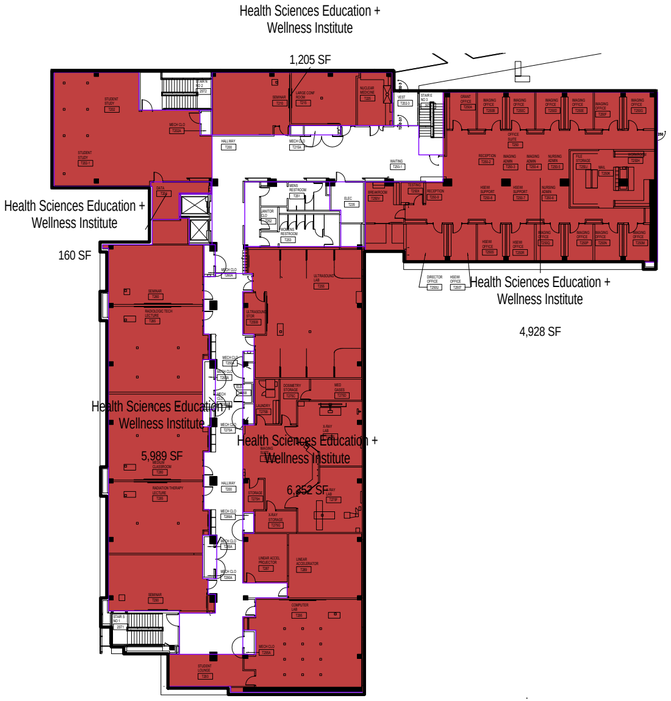
BUILDING FLOOR PLAN

PERKINS + WILL

(Swift Co., MKA, Transpo, Roen Assoc.)

SHEET NUMBER

T01



Building Outline

Health Sciences Education + Wellness Institute

1 BUILDING T LEVEL 02

1" = 40'-0"

BELLEVUE COLLEGE CAMPUS MASTERPLAN

3000 Landeholm Cir, Bellevue WA 98007

161517.00

BUILDING FLOOR PLAN

PERKINS + WILL

(Swift Co., MKA, Transpo, Roen Assoc.)

SHEET NUMBER

T02

Building Outline

Health Sciences Education + Wellness Institute

1 BUILDING T LEVEL 03

1" = 40'-0"

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2/26/2016 11:55:30 AM

BELLEVUE COLLEGE CAMPUS MASTERPLAN

3000 Landeholm Cir, Bellevue WA 98007
161517.00
BUILDING FLOOR PLAN

PERKINS + WILL
(Swift Co., MKA, Transpo, Roen Assoc.)

SHEET NUMBER

T03

APPENDIX C
LANDSCAPE FOCUSED STUDIES

INTRODUCTION

The campus and landscape are a reflection of Bellevue College's values and are central to its mission. Originally created in the context of the Puget Sound forest, the campus is intrinsically linked the larger region and is a source of pride and identity. The result is a unique and special legacy for Bellevue College now and into the future.

As a college grows and changes, the campus and landscape are integral to the continued success of the institution. Each change must include the consideration of strategies to increase the desired character, function, and benefits to the campus in relation to long term objectives. Changes without consideration of this context can result in incremental degradation to the larger campus character, function, and identity. This incremental impact can occur with major capital projects and the daily activities of operation and maintenance.

Research indicates that the perception of a college is defined in the initial visit. For all visitors, the quality and cohesive character of the campus identity is critical in positive long term perception. It is in the interest of the college to proactively manage this remarkable asset in support of a successful future.

A successful college campus includes a community, an assemblage of proximate buildings set within the fabric of open spaces, circulation, and landscape. These are critical in forming a collegiate atmosphere that creates a place where students, staff, and faculty have a sense of attachment and belonging. The following studies provide a holistic framework for the integration and development of the campus. These can be used in association with a stand-alone open space project, a series of exterior spaces developed in conjunction with infrastructure or a building project. The studies show how the master planning goals take a physical form, promote the landscape framework plan, and provide guidance that will result in consistent scale and function, while allowing for unique results that respond to a specific program and part of the campus.

The master plan sets a trajectory for managed growth that optimizes all aspects of the college. With this will come significant changes and opportunities to reinvigorate the campus legacy, repair incremental damage, and build an iconic college experience. Major planned changes that influence the campus include the following:

- With this reduction in the number of cars on campus, the interior campus circulation will center on a network of pedestrian and bike connections. Cars will be kept at the edges of campus and priority will be a walkable campus with a clear hierarchy of circulation and intuitive wayfinding. The changes in campus circulation coupled with strategically located plazas and large open spaces associated with the campus entries and thresholds will increasingly serve as signals or landmarks for the campus and become places where people meet up, are dropped off, and gather. This will enhance college identity and wayfinding.
- Future new buildings and existing buildings to be renovated will be developed with a clear hierarchy of entry, a reduction in long facades blocking movement, and direct connections with the outdoors, allowing exterior counterpoints, quads and courtyards, to be better visually and physically connected. These spaces are to be designed and renovated to accommodate varying sizes of groups, from one person reading, to small study groups, to providing an outdoor classroom.
- Leveraging the campus's significant and unique natural features--the ridgeline and forest frame--will create greater campus visibility and identity, and strengthen ties to the community. Examples of this would be locating a major open space such as a plaza at the ridge high point to take advantage of regional views and expanding and protecting the forest frame such that it remains intact and robust well into the future.
- Incorporating on-site infrastructure within the campus landscape communicates the college values and mission. The inclusion of natural wastewater treatment for both stormwater and black water has significant environmental and education impacts. There's an opportunity to leverage the water used on campus and stormwater falling on the site to create visible treatment systems that are networked throughout campus, thereby demonstrating Bellevue College's investment in the importance of natural systems and providing identity and wayfinding tools for campus circulation.

The focus studies are intended to be tools used by all to facilitate a shared approach to stewarding and developing the campus over time and they are structured for ease of use and enough information to support action. They should be used in association with all college projects and campus maintenance.

OPEN SPACE TYPOLOGIES

A robust network of different types and scales of open space help create a cohesive and legible campus while providing a sense of place for students. The open spaces serve as places for gathering, studying, and socializing in both large and small groups. They also give students a sense of belonging to the place, something that will be even more critical with the addition of residential student life onto the Bellevue College campus. The following pages outline the variety of open space typologies, show where these types can be located throughout the open space network, and describe the character of each type through text and imagery.

Figure C-01: Existing Lack of Visual Connection between Interior & Exterior

Figure C-02: Existing Lack of Visual Connection between Interior & Exterior

Figure C-03: Highpoint, Landerholm Circle SE

Figure C-04: Example of Trees Creating Scale

Figure C-05: Existing Uniform/Small Trees

Figure C-06: Existing Uniform/Small Trees

Figure C-07: Lewis and Clark College Library

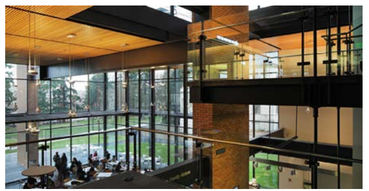


Figure C-08: UW Foster School of Business

PLAZAS

Plazas are large open spaces for gathering and often serve as the threshold or entry into the campus proper or major districts. They serve as landmarks within a campus and are often a place where college traditions and events such as graduation, rallies and protests, and fairs.

- Primarily hardscape with some planting areas
- Of a scale that can accommodate larger groups of people
- Within plazas, there are smaller sub-spaces of varying scales
- Furnished with seating and tables and chairs to support use
- Lighting that allows for safe late afternoon and evening use during the academic year

Figure C-09: Plan

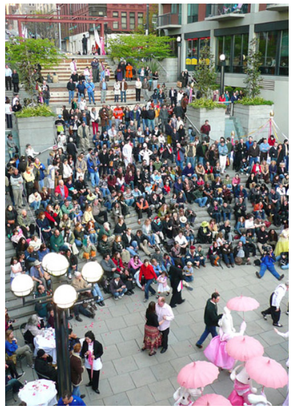


Figure C-10: Large Event Spaces

Figure C-11: Large Event Spaces

Figure C-12: Plaza With Seating

QUADS

Quads are expansive open spaces located in the core campus that are fronted by buildings. Quads serve both as meeting, ceremonial, and gathering spaces as well as places that people walk through as they move between buildings throughout the day.

- Mix of hardscape and softscape
- Planting areas often associated with building entries and facades
- Continuous lawn areas
- Large canopy trees
- Interconnecting paths
- Paths typically paved
- Seating elements in a variety of scales to allow for both larger and smaller groups
- Lighting that allows for safe late afternoon and evening use during the academic year

Figure C-14: Small Groups and Individuals

Figure C-15: Event/Procession

Figure C-13: Plan

Figure C-16: Quad Accommodating a College Fair

COURTYARDS

Courtyards range in size, but are relatively small, intimate spaces that are adjacent to and associated with a building (or several of buildings) and are, in part, defined by the building's edges. When associated with a building, it is important that courtyards have both visual and physical connection to the building. They serve as both a space for people to occupy as well as a space that provides a backdrop and connection to the outdoors from a building's interior. The physical form of a courtyard can be formal or informal, but layout supports people interacting and engaging.

- Mix of hardscape and softscape
- Hardscape of a scale that can accommodate small tables and chairs and/or small seating areas
- Planting areas with simple palettes and layered planting
- Lighting that allows for safe late afternoon and evening use during the academic year

Figure C-18: Courtyard as Occupiable Space and Interior Backdrop

Figure C-19: Small Gathering Space for Socializing or Study

Figure C-17: Plan

Figure C-20: Small Seating Area Associated with Building

RECREATIONAL AREAS

Recreational areas consist of expansive fields for both organized athletics as well as intramural and informal outdoor athletic activities.

- Open lawn or meadow, not surrounded by buildings
- Informal fields may have groupings of canopy trees
- Fields for organized athletics may have seating around the fields; this can be in the form of sloped lawn or more formal seats

Figure C-22: Informal Soccer Game

Figure C-23: Place to Read and Study

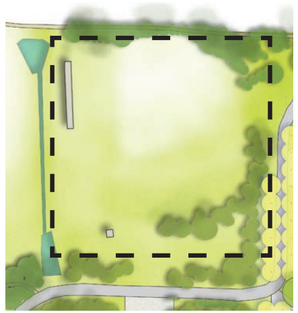


Figure C-21: Plan

Figure C-24: Unprogrammed Recreaton Area Used for Frisbee Golf

STUDENT COMMUNITY GARDENS

The current space on campus for community gardens is very well used, but limited. With residential student life being added to Bellevue College, there is likely to be an even higher demand for this kind of space.

- Locate adjacent to or near student housing and away from vehicular circulation
- Provide raised beds
- Can be located within other open spaces such as the Woonerf and courtyards
- Provide seating and other amenities so that they serve multiple functions; gardens can act as a gathering and study space

Figure C-26: College Community Garden

Figure C-27: University of Louisville Community Garden

Figure C-25: Plan

Figure C-28: Community Garden as Small Gathering Space

CIRCULATION TYPOLOGIES

A consistent language as well as a gradation in hierarchy of roads, walks, and paths within a campus helps build identity, provides intuitive wayfinding, and enhances campus legibility. While the details may differ based on design response to location and adjacencies, the experiential quality including relative scale, associated vegetation, and formality should be consistent within each typology to reinforce legibility. In the following pages, typical sections and precedent imagery illustrate the critical character and qualities of each typology.

Figure C-29: Circulation Typologies

TRANSIT ROAD

The transit road serves as the future proposed bus route along Snoqualmie River Road. It can also accommodate vehicular circulation, but because parking is primarily located at the south and east portion of campus, it's anticipated that vehicular traffic is limited.

- Perpendicular parking along Snoqualmie River Road is removed
- The street will be lined on both sides with trees; on the west side, existing large trees will be retained. On the east side, where there are existing large trees those will be retained and where there are not trees, groupings will be added
- Stormwater planters are located along the west side of the road; the road should be cross-sloped such that water sheet flows into these planters
- Pedestrian walks are added to both sides of the road
- Small plazas/bus stops are added to both sides of the road behind current Building C and to the north of the gym

Figure C-30: Plan

Figure C-31: Snoqualmie River Road

Figure C-32: Snoqualmie River Road

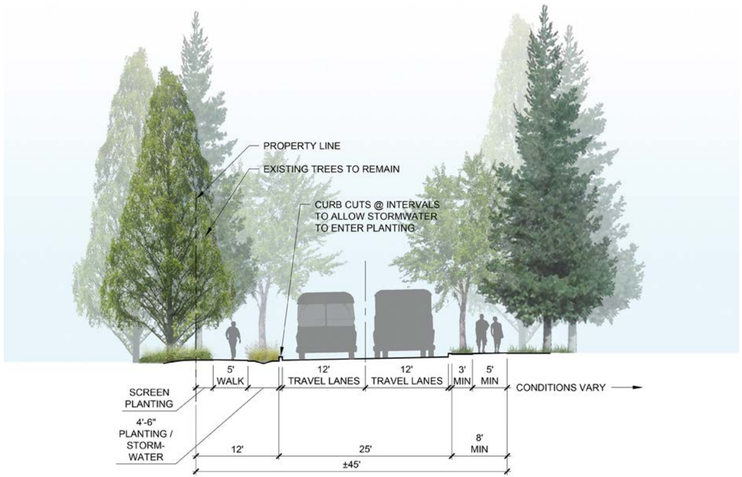


Figure C-33: Transit Road Section

WOONERF

A woonerf is a larger scale pedestrian walkway that can also accommodate service and emergency vehicles.

- Paved with planting areas on both sides
- Planting areas generally have an allee of canopy trees
- Paving type should be differentiated from roadways to indicate that it is a pedestrian space
- Seating or leaning rails located near where other paths intersect or meet up with the woonerf

Figure C-35: Bikes and Pedestrians as Primary Users

Figure C-36: Seating Can Allow Gathering and Resting

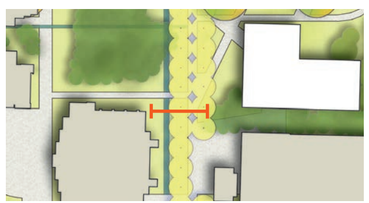


Figure C-34: Plan

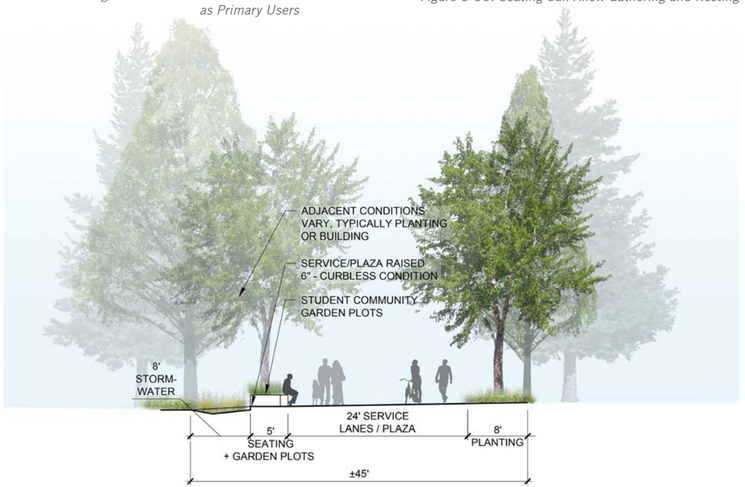


Figure C-37: Woonerf Section

VEHICULAR ENTRY

Landerholm Circle will be reworked but will remain as the primary vehicular entry into the campus.

- The existing Zelkovas will be retained along the south side and repeated and additional conifers will be added to create a more treed entry
- Zelkovas are planted along the north side to create and allee; like the south side of the road, groupings of conifers will be added to the north of the row of Zelkovas
- Along with the trees, the planting areas have low-growing shrubs and groundcovers
- The road remains four travel lanes but the center planting median is removed
- To maintain a pedestrian scale entry and provide separation from cars for those entering on foot, walkways are located on both sides between the Zelkovas and the new conifer groupings

Figure C-39: Pedestrian Path

Figure C-40: Tree-lined Walks

Figure C-41: Trees Provide Scale and Sense of Entry

Figure C-38: Plan

Figure C-42: Vehicular Entry Section

PEDESTRIAN ENTRY

The round-about is removed and Landerholm Circle transitions into a pedestrian-only entry lane. There is a plaza at this transition point that signals the threshold into the campus core and provides a place for drop-off and pick-up. This lane is both for movement through and gathering within the space. Water is a key element for pedestrian circulation within the Bellevue College campus and is featured prominently in the entry lane.

- The median is removed from this portion of Landerholm Circle as well
- A linear stormwater element holds the center of this lane; this feature consists of both water and low water-tolerant plantings
- Pedestrian circulation occurs on both sides of the stormwater feature and there are points at which the pedestrian circulation bridges the water to allow for east-west crossing
- Double-allees of canopy trees are located on both sides of this lane
- Plantings under the allees consist of either lawn or low plantings; this will be dependent on what is appropriate and connects with adjacent landscapes
- Seating elements and leaning rails are located along this corridor to provide places to rest and gather

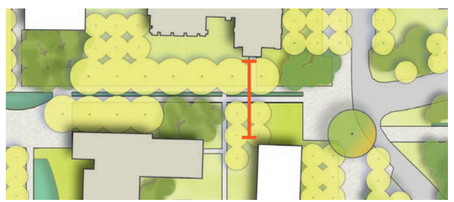


Figure C-43: Plan

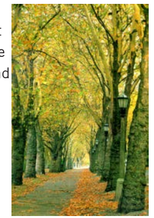


Figure C-44: Allee of Trees

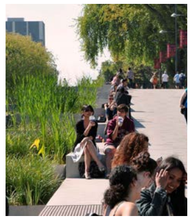


Figure C-45: Pedestrian Walk

Figure C-46: Pedestrian Walk with Reclaimed Storm Feature and Seating

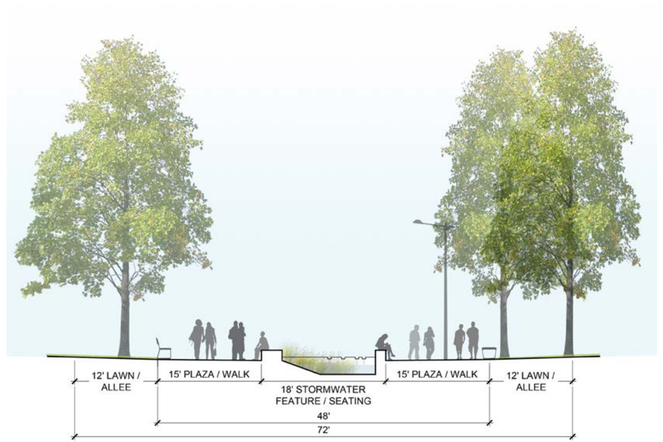


Figure C-47: Pedestrian Entry Section

PRIMARY PEDESTRIAN PATHS

Primary pedestrian paths are highly visible, generously scaled, and connect significant open spaces and points of entry to the campus core.

- Designed to accomodate a minimum of four to five people
- Primarily paved with either concrete or permeable pavers
- Paired with linear wetlands
- Lined with smaller canopy trees and low plantings

Figure C-48: Plan

Figure C-49: Path With Linear Wetland

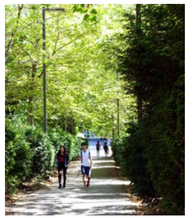


Figure C-50: Pedestrian Enclosure

Figure C-51: Smaller Canopy Trees

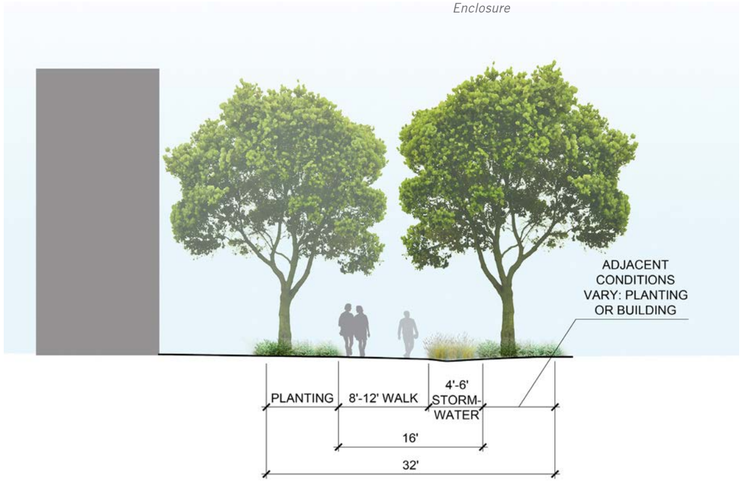


Figure C-52: Primary Pedestrian Path Section

SECONDARY & TERTIARY PEDESTRIAN PATHS

Secondary and tertiary pedestrian paths link smaller, less frequently used or busy spaces to the primary circulation network but are a critical part of the network.

- Smaller in scale than primary pedestrian paths; generally accomodate two to three people
- Paving material will vary depending on location and adjacencies
- Adjacencies will vary depending on location, but will generally have landscaping on one or both sides

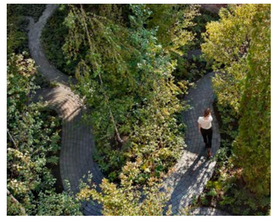


Figure C-54: Crushed Rock Tertiary Path

Figure C-55 Using Similar Building Materials on Secondary Paths

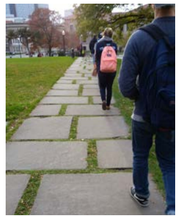


Figure C-56: Paver Path Through Quad

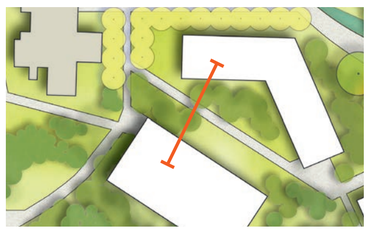


Figure C-53: Plan

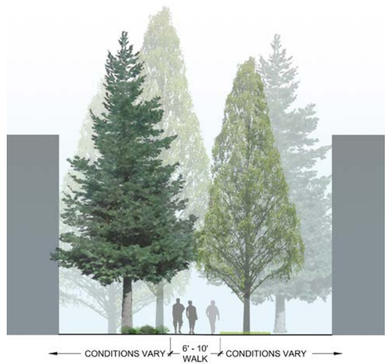


Figure C-57: Secondary Pedestrian Path Section

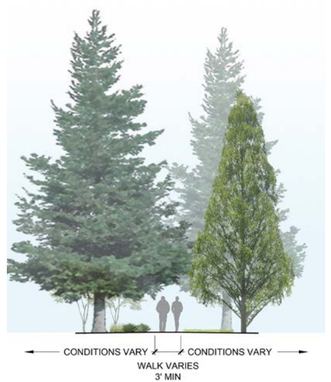


Figure C-58: Tertiary Pedestrian Path Section

PEDESTRIAN TRAILS

Creation of a trails network will not only serve the campus, but provide a regional amenity. Building upon the primary and secondary/tertiary circulation, more natural/informal paths will help connect and create a variety of loops for moving throughout campus whether it is for moving throughout campus or using this network for walking, jogging, or biking.

- Located within existing and future woodlands and groves
- Connected to more internal campus circulation so there are no 'dead-ends'
- Path surfacing may vary depending on the setting, but will primarily be crushed rock, asphalt, or wood chips

The new site will provide ample space to support a large warehouse, exterior lay-down space, "back of house" storage and operations, and office/ administrative office space.

Figure C-60: Crushed Rock Trail

Figure C-61: Crushed Rock Trail

Figure C-62: Wood Chip Trail

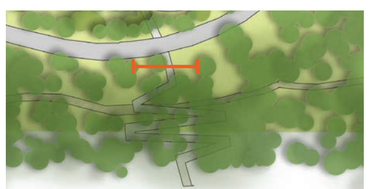


Figure C-59: Plan

Figure C-63: Pedestrian Trail Section

WATER

Because water is a prevalent natural resource on campus, it makes sense to use this asset to achieve both functional and campus landscape goals. Collecting, treating, and reusing water is progress toward Bellevue College's sustainability goals. Celebrating this hydrology by making the system visible and apparent furthers educational, wayfinding, and aesthetic objectives. Following are plans and imagery that suggest locations and describe and illustrate strategies recommended for stormwater and wastewater on campus.

Figure C-64: Water Infastructure Typologies

LINEAR URBAN WETLAND

Linear urban wetlands are more structured elements with defined edges that connect urban wetlands, carrying water throughout campus. This connected network of waterways not only slows, infiltrates, and moves stormwater, but acts as a wayfinding device.

- Located within the campus core along primary and secondary pedestrian paths
- Consists of areas with low wetland plantings as well as some non-planted areas
- Planting should be able to tolerate periods of dry soil

Figure C-66: Wetland Associated with Path

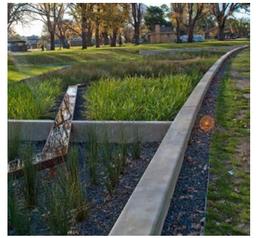


Figure C-67: Defined Edges

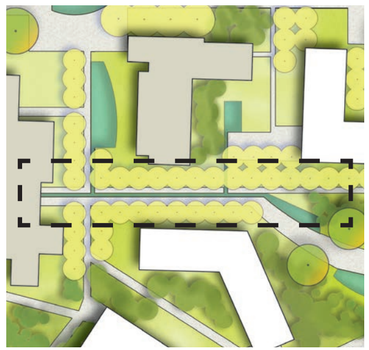


Figure C-65: Plan

Figure C-68: Highly Structured Wetland in Plaza Space

LINEAR NATURALISTIC WETLAND

Linear naturalistic wetlands are organic in form and their edges blend into the surrounding landscape. They connect both urban wetlands to naturalistic wetlands and naturalistic wetlands to each other. Like the linear urban wetlands, these tie into the larger network of waterways and move, infiltrate, and slow stormwater while also acting as a wayfinding tool.

- Located primarily outside the campus core and along secondary and tertiary paths
- Plantings are primarily low wetland plantings with some groupings of trees where appropriate
- Planting should be able to tolerate periods of dry soil

Figure C-70: Groundwater Infiltration

Figure C-71: Groundwater Infiltration

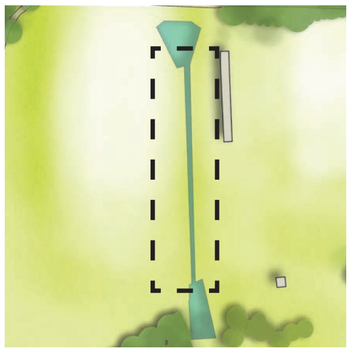


Figure C-69: Plan

Figure C-72: Wetland with Primarily Native Plantings and Co-located with Circulation

URBAN WETLAND

Urban wetlands are fed by stormwater and therefore have ponding on a seasonal basis. They are located within the primary campus core. The form will vary based on location and adjacencies but these features will have defined edges and provide a focal point within the open space.

- Located within plazas and quads
- Plantings consist of low growing, wetland plants that can tolerate short periods of inundation and periods of dry soil
- Seating and opportunities for gathering should be provided adjacent to these features

Figure C-74: Campus Forms Driven by Context

Figure C-75: Urban Campus Wetland

Figure C-73: Plan

Figure C-76: Urban Wetlands Associated with Significant Campus Open Space

NATURALISTIC WETLAND

Naturalistic wetlands are also fed by stormwater and will have ponding water on a seasonal basis. Naturalistic wetlands will have less defined edges and may blend into the surrounding landscape.

- Located outside the campus core and associated with woodlands and groves
- Plantings to consist of native wetland plants that tolerate moist soil and are of varying heights to provide a layering of vegetation that closely mimics Pacific Northwest native wetlands
- Accessed by secondary/tertiary paths and trails
- Include informal seating where appropriate

Figure C-78: Naturalistic Wetland

Figure C-79: Naturalistic Wetland

Figure C-77: Plan

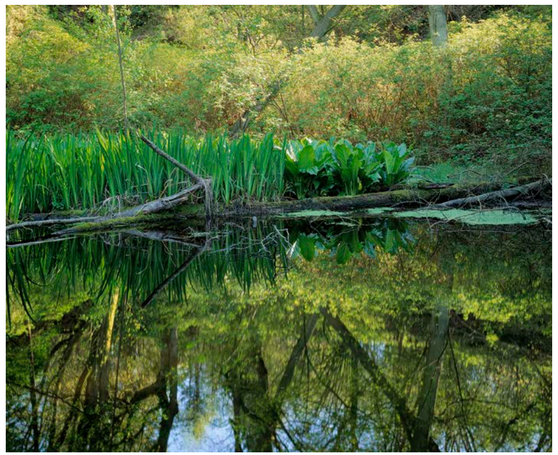


Figure C-80: During Portions of the Year, Standing Water May be Present

RECIRCULATING RECLAIMED WATER FEATURE

The recirculating reclaimed water feature originates in the primary entry plaza, at the top of the pedestrian entry corridor. This feature will remain wet throughout the year and consist of reclaimed campus wastewater.

- Originates at the entry plaza where Landerholm Circle SE terminates; runs through the primary pedestrian corridor
- Plantings consist of low growing, wetland plants that can tolerate inundation
- Seating and opportunities for gathering should be provided adjacent to these features

Figure C-82: Reclaimed Water Feature

Figure C-83: Structured Element

Figure C-81: Plan

Figure C-84: Circulating Water Year-Round

LANDSCAPE

Landscape not only shapes and provides context and scale to the overall campus, but it helps create identity and is a significant element in how visitors experience and remember a place. From a functional standpoint, landscape is a key component in the ecology of a place.

The current landscape within which the campus is set, Pacific Northwest lowland forest, frames and buffers the campus. There is an opportunity to capitalize on significant elements of this existing landscape, enhance those and draw them into the campus to better connect Bellevue College with its surroundings.

Repetition and continuity of landscape typologies also provides more intuitive wayfinding and a more cohesive sense of place. Currently, some parts of the campus landscape lack sufficient variation in scale to reinforce hierarchy of spaces and circulation. Defining these typologies, identifying the role that these landscapes play in creating space, and identifying existing and future locations for typologies to create a linked network of open spaces will strengthen the legibility and identity of the Bellevue College campus.

Figure C-85: Illustrative Plan

LOWLAND FOREST/EXISTING EDGE

Framing the current Bellevue College campus is a forested buffer consisting of a layered landscape of native conifer and broadleaf overstory, deciduous shrub middlestory, and a mixed understory. Enhancing this existing forest frame and bringing some of this native forest type into the campus core will strengthen the school's regional identity and help create a sense of place.

- Overstory: A mix of native trees with high canopy, both evergreen and deciduous, such as Western Red Cedar and Madrone
- Middlestory: A mix of native small trees and shrubs such as Vine Maple, Pacific Dogwood and Nootka Rose
- Understory: A mix of small native shrubs, perennials and groundcovers such as Sword Fern, Salal, and Kinnikinnick
- In areas where invasive species are present, these should be removed and replaced with native or native adapted plants

Figure C-87: Existing Condition

Figure C-88: Mix of Conifers, and Broadleaf Shrubs

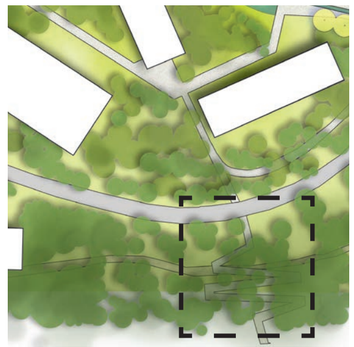


Figure C-86: Plan

Figure C-89: Maintaining Conifers And Native Vegetation At These Edges And Eliminating Invasives Will Help Continue The College's Legacy Of Forested Edges

TRANSITIONAL FOREST

A landscape consisting of more deciduous trees than evergreen and with a less dense middlestory will help create a transitional landscape of filtered light between the shaded forest frame and the open campus core.

- Trees that are primarily deciduous and native or native adapted such as Maples, Oaks and Birch
- Selective placement of groves of evergreens and conifers to help frame views, direct circulation and provide shading to buildings where appropriate
- Selective placement of middlestory small trees and large shrubs where they will not create safety and security issues
- Ground plane of native and native adapted small shrubs, groundcovers, ferns and perennials
- Layered landscape adjacent to paths that provides a sense of pedestrian scale while allowing enough visibility that students, faculty, and staff feel safe and secure inhabiting these spaces

Figure C-91: Mix of Trees and Native Evergreen Understory

Figure C-92: Filtered Light

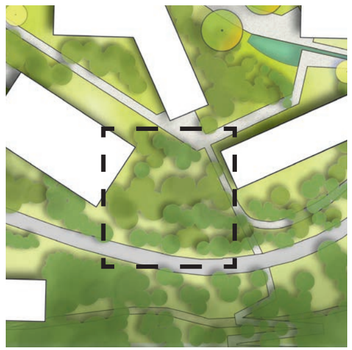


Figure C-90: Plan

Figure C-93: Transition Zones Through Campus

DECIDUOUS GROVE

Deciduous groves help frame views, create a pedestrian scale, and, paired with buildings, provide seasonal cooling.

- Located primarily in the campus core
- Deciduous trees with medium to high canopies
- Associated with low plantings and minimal middlestory so there is visual access through the grove

Figure C-95: Shade in Large Expanse of Lawn

Figure C-96: Tertiary Campus Path

Figure C-94: Plan

Figure C-97: Encourage Use as a Gathering Place

ALLEE/BOSQUE

The more formal structure of allees and bosques signals significant open spaces and circulation while also providing a pedestrian sense of scale to corridors and plazas.

- Generally consist of deciduous, high canopy trees
- Planting at the base of allees and bosques is low groundcovers and shrubs, and where appropriate, lawn
- Tree scale and space between trees is based on the scale of the space; for example, a large plaza would consist of larger trees with greater spacing while a secondary pedestrian path may consist of medium sized trees that are more closely spaced

Figure C-99: Allee of Trees for Wayfinding

Figure C-100: Major Path / Corridor

Figure C-98: Plan

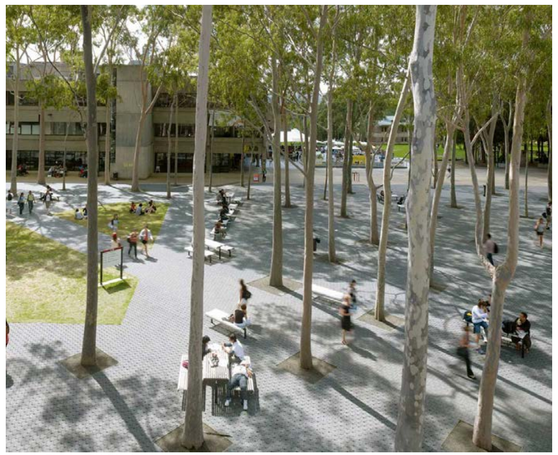


Figure C-101: A bosque of deciduous trees in a large paved open space provides shade during warm months and a sense of scale throughout the year

CAMPUS CORE

Plantings in the campus core will consist of a varied but simple palette of native and native adapted trees, shrubs, groundcovers, and perennials. Layered plantings at building facades help frame internal campus spaces, create a pedestrian scale, and provide shade and cooling for adjacent hardscape areas.

Planting areas may have more ornamental plantings than other landscape typologies

The qualities of the plant material should reflect and be related to the aesthetic qualities and scale of adjacent hardscapes and buildings. For example, smaller areas such as courtyards can accommodate more textural variety whereas larger quads will have a simpler palette.

Figure C-103: Simple Plant Palette Provides Scale

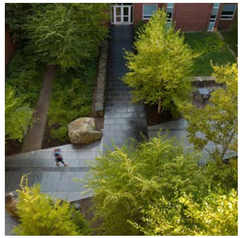


Figure C-104: Courtyard Scale

Figure C-102: Plan

Figure C-105: Differentiating select areas by providing a finer grain plant palette provide interest in smaller scale spaces while serving as a wayfinding device

BUILT FORM & SPATIAL RELATIONSHIPS

The BC campus has a distinct north-south orientation. Providing stronger east-west axes supports campus expansion, particularly in the north and south ends where topography allows for accessible routes. Creating openings on the east and west sides of the core campus buildings will provide improved east-west links and lessen the perception of these as campus edges.

Changing use of the campus high point, currently Landerholm Circle, from car-oriented to pedestrian-oriented to create a significant open space provides a prominent campus gateway visible from outside campus.

The permeability of Building C, its public / social use, and its adjacency to open space and active circulation routes creates a vibrant campus heart that encourages gathering and chance meetings. Additional strategic adjacencies, at-grade circulation, visually connected building interiors / exteriors, and active / social building uses fronted on open spaces will result in a more vibrant social and collegiate life. New and renovated buildings with greater legibility and more permeable facades will reinforce east-west links resulting in more networked, connected open space and circulation.

LEGEND

- Impermeable Facades
- Permeable Facades
- Primary Campus Corridors
- 0-5% Slope
- 5-8% Slope
- 8%+ Slope
- Axes
- Potential Accessible Corridor Connections
- Ridgeline
- Campus High Point
- Potential Campus Heart
- Existing Campus Heart
- Regional Views

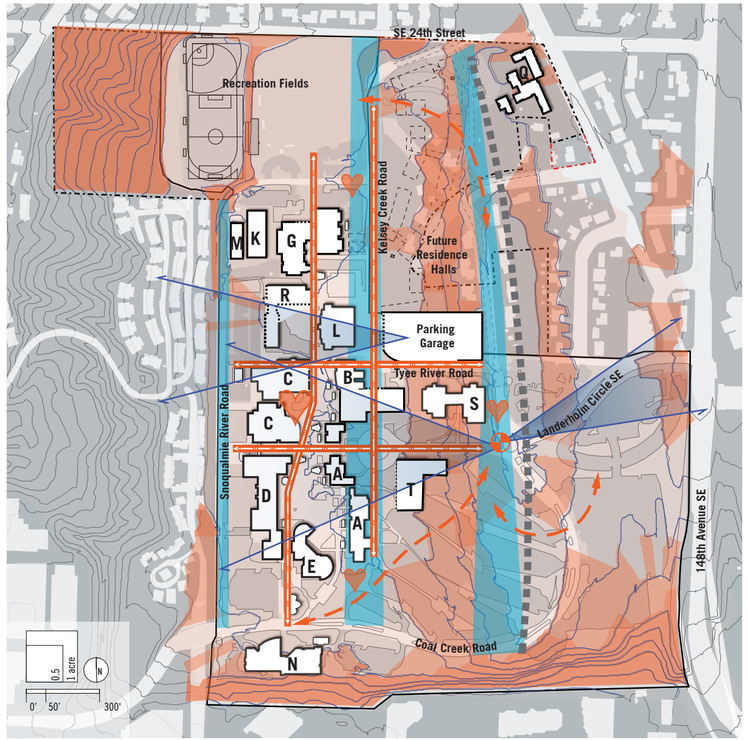


Figure C-106: Campus Zones

VEGETATION

Vegetative Health

There are several intact treed areas in which native tree canopy is robust, including to the west of the library and cafeteria and the ropes course space adjacent to the gym. Additionally, trees in the stormwater swales in the parking lot behind building R are thriving. Trees throughout the parking zone at the southeast portion of campus vary, but there are many large trees and groves in good health, providing important ecological function, campus scale, and campus identity.

The existing internal campus courtyards include trees that establish scale, provide shade and campus identity. Many of these, as well as those along Landerholm Circle SE are not thriving or attaining the size expected for the species. While the specific reasons for poor performance have not been determined, the combined issues of soils, soil volume, species selection, reradiated heat, and water are likely contributors to the current performance.

As the campus expands and develops, project sites should be reviewed through the lens of maximizing tree retension and health while also maximizing programmatic and development needs. Prioritizing preservation of large, healthy trees by locating buildings, utilities, and other improvements in such a way that the critical root zones are undisturbed or minimally disturbed will help sustain this legacy. Additionally, using current best management practices for soil preparation and tree selection in future plantings will help ensure this legacy is promoted into the future.

Figure C-109: Vegetative Health

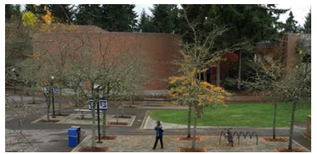


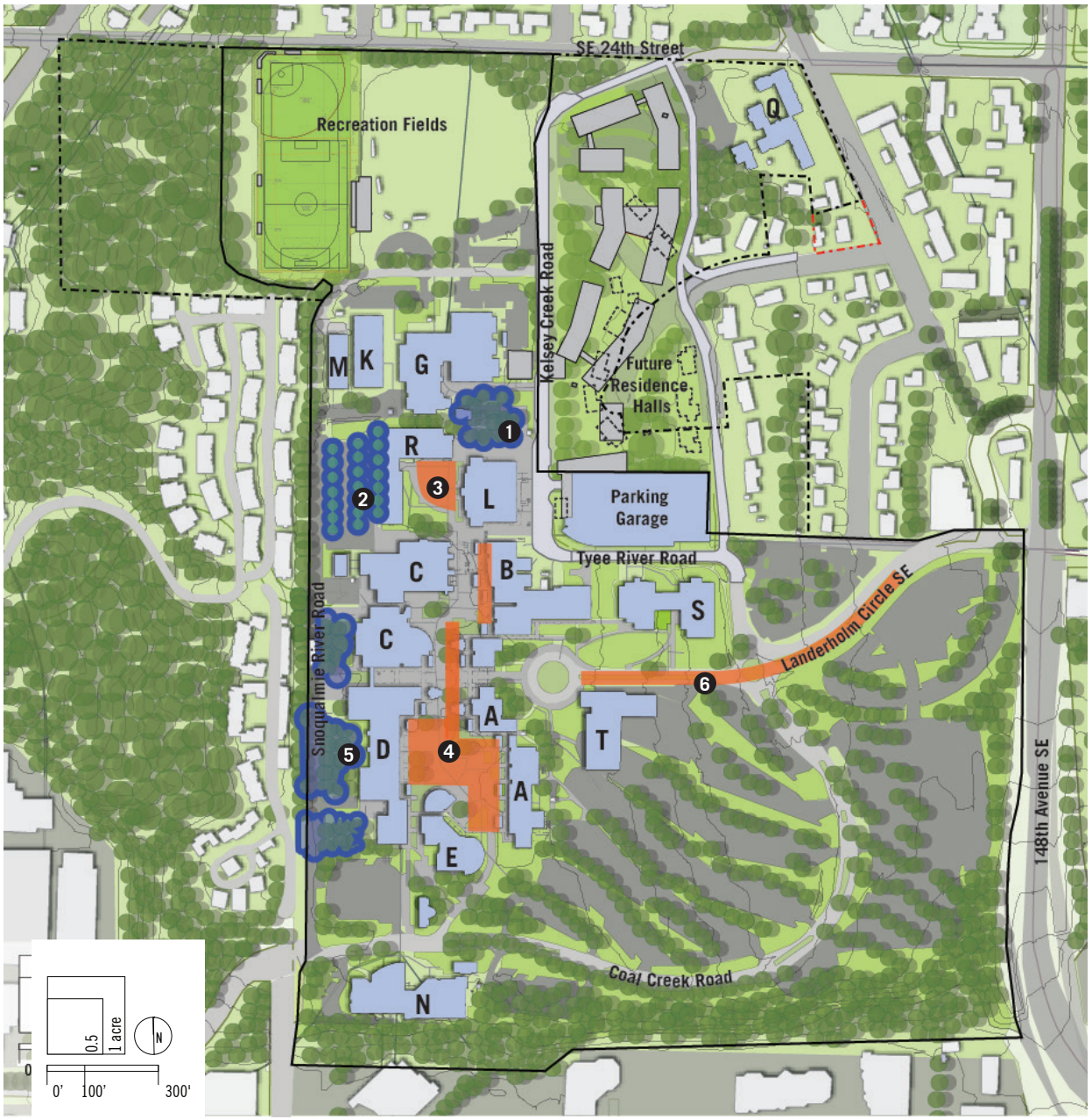
Figure C-110: Vegetative Health

Figure C-111: Vegetative Health

Figure C-107: Vegetative Health

Figure C-108: Vegetative Health

Figure C-112: Vegetative Health



LEGEND

- Current Campus Boundary
- BC Owned Property
- R BC Campus Buildings
- Future Residence Halls
- Areas with Trees in Exceptional Health
- Areas of Concern

Figure C-113: Vegetation Assessment

APPENDIX D
TRANSPORTATION

CURRENT PARKING

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

Peak parking demand was also counted in October 2015. The count was done on two typical weekdays, midweek, and was conducted hourly between 9am and 2pm each day to determine the hour which experienced the highest number of parked vehicles. This is typically referred to as the peak hour and represents the peak parking demand shown in the table. The 9am to 2pm time frame was determined as the peak usage time frame based on roadway counts also conducted in October 2015. These counts were at four locations on campus roadways and lasted for a full week.

Current Parking		
Supply	3,850	spaces
Peak Demand	3,227	vehicles
Future Parking		
Estimated Peak Parking Demand	4,026	vehicles
Effective Supply[1]	**4,430**	**spaces**
Net Increase in Supply[2]	**785**	**spaces**

1. Effective supply was calculated by factoring future peak parking demand up by 10%
2. Net increase in supply takes into account a 205 space reduction associated with building the residence halls.

Table D-01: Summary of Existing and Future Parking

Future Parking Demand

Future peak demand was estimated by calculating parking rates for three different groups of users: commuter students, residential students, and faculty/staff.

- **Commuter Students:** Based on 2015 data, there were 11,046 full-time equivalent (FTE) students on-campus. This FTE does not include online student enrollment. A parking demand rate for students was calculated by dividing the current parking demand associated with students by the number of full-time equivalents. The current parking demand associated with students was determined by taking the number of vehicles parked in areas specifically designated for students during the peak hour parking count described previously.
- **Faculty/Staff:** The headcount for faculty/staff in 2015 was 1,362. This headcount was divided by the current parking demand associated with these population groups to determine the parking rate. Similar to the student demand, the current parking demand associated with faculty and staff was determined by taking the number of vehicles parked in parking areas specifically designated for faculty and/or staff during the peak hour parking count described previously.
- **Residential Students.** There are currently no residence halls on-campus today; therefore, the residential student parking rate was based on parking studies conducted for a comparable university campus.

Peak parking rates were multiplied by the future population estimates to determine a future peak parking demand. Estimates assumed that current student FTE would grow by approximately 20 percent and that the faculty/staff headcount would grow by approximately five to six percent.

The future effective supply was calculated by factoring the future peak parking demand up by 10% to accommodate parking circulation, turnover, etc.

Beyond Future Need Parking Demand Calculations:
A parking rate was calculated by dividing the total future development (existing plus proposed new development) by the estimated future parking demand. The parking rate was then multiplied by the proposed long term development to calculate the beyond future parking demand.

Estimates for future demand are based on current trends, which could be considered conservative when considering transit improvements planned by the City and King County Metro outlined in the City of Bellevue's Transit Master Plan.

Strategies for reducing parking demand in the future could include installing more amenities to encourage use of alternative modes (including bicycle lockers), providing further subsidies for transit use or carpooling, or increasing parking prices on campus.

Current peak parking demands and growth in campus population should be reviewed for each development phase.

Future Parking Rates		
Existing Development	767,658	GSF
Near Term Development	427,000	GSF
Near Term Total Development	*1,194,658*	*GSF*
Future Parking Demand	4,026	vehicles
Parking Rate	**296.7**	**vehicles/GSF**
Beyond Future Parking Demand		
Long Term Development	823,500	GSF
Beyond Future Parking Demand	**2,775**	**vehicles**
Total Estimated Parking Demand (Future + Beyond Future)	**6,801**	**vehicles**

Table D-02: Beyond Future Parking Summary

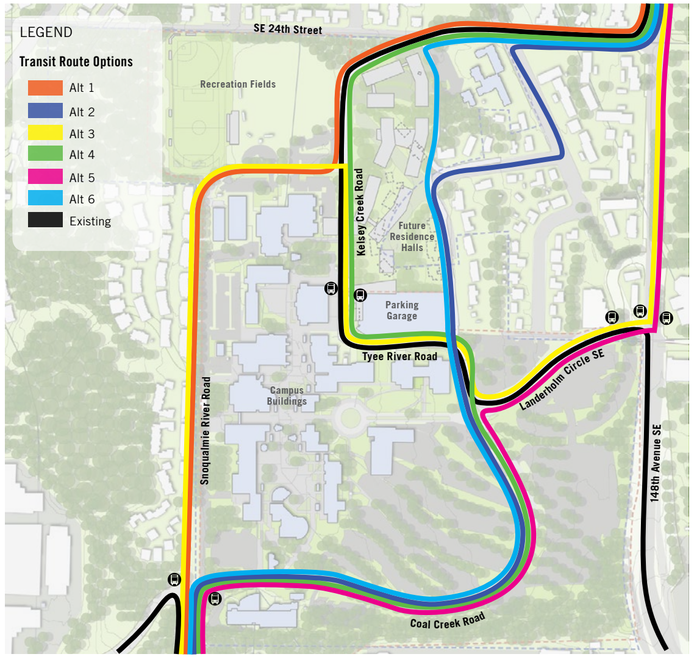
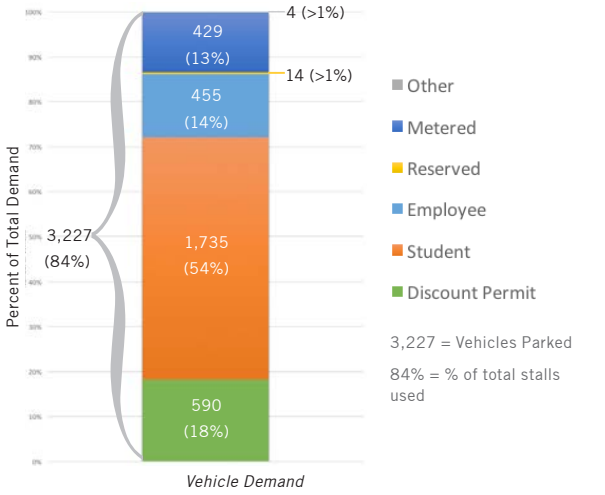


Figure D-03: Transit Route Options

TRANSIT EVALUATION CRITERIA

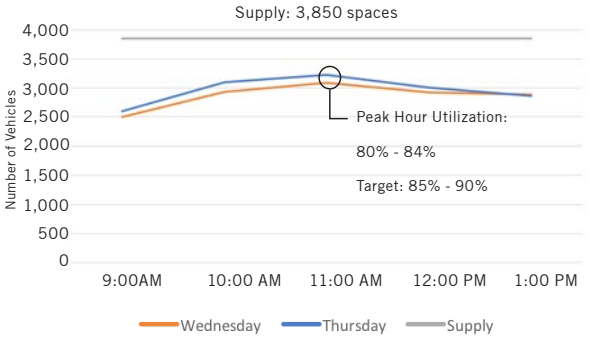
	CRITERIA	DESCRIPTION/EVALUATION METHOD
A	Safety Conflicts (Ped & Veh)	Assess the number of potential vehicle and pedestrian conflicts along the route.
B	Traffic Operations	Consider traffic control and vehicle volumes along the corridor that would impact delays to transit operations.
C	Right of Way	Consider if route is reliant on future right of way.
D	Land Use Compatibility	Identification of the existing and future land uses the route serves.
E	Proximity to Campus Core	Distance between route and access to Bellevue College core and how accessible it is to riders.
F	ADA Access	Consideration of how accessible the route is for ADA.
G	Lighting	Review of existing lighting along the route.
H	Change in Transit Travel Time	Comparison of transit travel times to existing conditions.
I	Master Plan Consistency	Consistency and Integration with Bellevue Transit and College Master Plans.

**Alternative routes measured against existing conditions.*



Note: The data reflects parking on October 21-22, 2015, with the peak hour on October 22 at 11 am

Figure D-04: Peak Hour Weekday Campus Parking Demand by Space Type



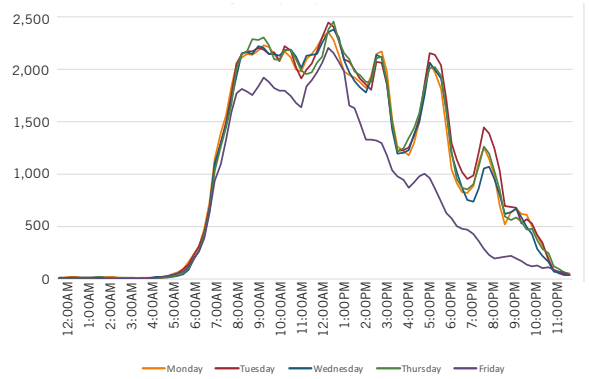
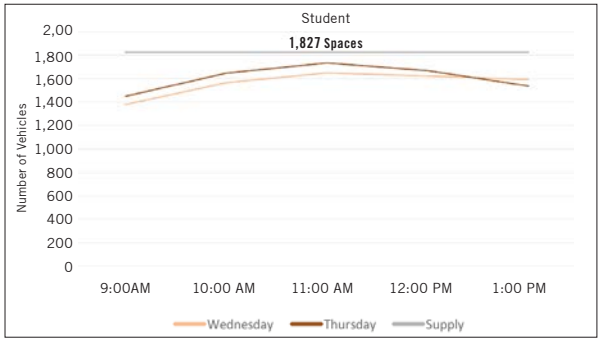
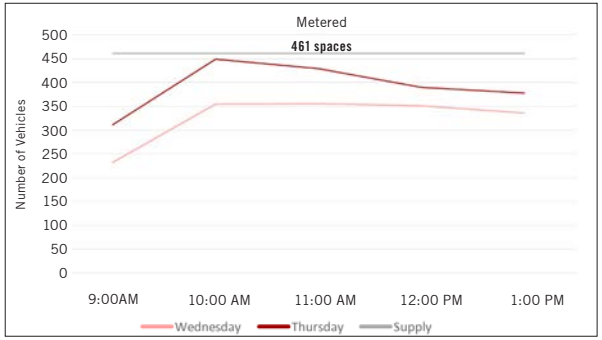


Figure D-05: Existing Weekday Hourly Traffic Distribution





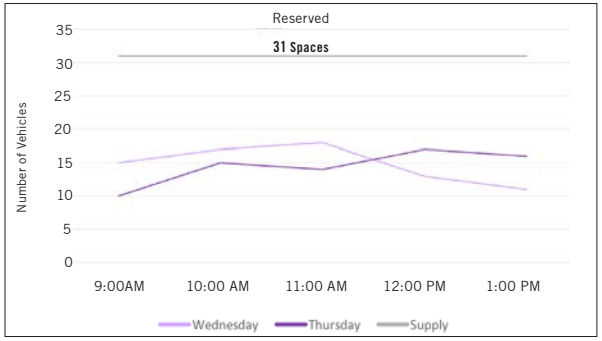


Figure D-06: Campus Parking Demand by Hour

APPENDIX E
CIVIL

ANNUAL WATER BALANCE

A campus water audit was performed to identify existing and future demands on the campus water infrastructure and operating budget. The annual water volumes presented in Appendix J are given by development stage: existing, existing with phase 1 of the residential buildings, existing with all phases of residential development, and nearterm master plan development. Each additional stage of development comes with an associated cost in the form of a King County Sewage Treatment Capacity Charge (STCC). See Section 06 for more information.

Phase One Residence Hall Impact Fee: $640,000

Existing + Phases 1-4 of Residence Hall Impact Fees: $3.4M

CAMPUS WATER AUDIT (GAL/YR)

	Precipitation	Evapotranspiration	Infiltration	Runoff	**Domestic Water**	Potable	Flush	Mechanical	Irrigation	**Wastewater**	Blackwater	Greywater	Blowdown	Condensate
Existing	100,210,000	21,920,000	45,970,000	32,320,000	15,033,000	3,238,000	7,556,000	1,094,000	3,145,000	10,468,000	7,178,000	3,076,000	168,000	46,000
Existing + Ph1 Res	100,210,000	21,920,000	45,510,000	32,780,000	19,315,000	5,513,000	9,418,000	1,239,000	3,145,000	14,423,000	8,670,000	5,510,000	191,000	52,000
Existing + Ph1-4 Res	100,210,000	21,920,000	44,690,000	33,600,000	37,910,000	14,800,000	18,259,000	1,706,000	3,145,000	31,738,000	16,570,000	14,830,000	265,000	73,000
Ex + Res + 10 Yr MP	100,210,000	22,500,000	42,750,000	34,960,000	42,590,000	16,100,000	21,310,000	2,035,000	3,145,000	35,946,000	19,470,000	16,074,000	315,000	87,000

	Percent of Precipitation			Percent of Domestic				Percent of Wastewater			
	Evapotranspiration	Infiltration	Runoff	Potable	Flush	Mechanical	Irrigation	Blackwater	Greywater	Blowdown	Condensate
Existing	22%	46%	32%	22%	50%	7%	21%	69%	29%	2%	0.4%
Existing + Ph1 Res	22%	45%	33%	29%	49%	6%	16%	60%	38%	1%	0.4%
Existing + Ph1-4 Res	22%	45%	34%	39%	48%	5%	8%	52%	47%	1%	0.2%
Ex + Res + 10 Yr MP	22%	43%	35%	38%	50%	5%	7%	54%	45%	1%	0.2%

Table E-01: Campus Water Audit

DEFINITIONS

Precipitation
All rain that falls on campus

Evapotranspiration
The portion of precipitation that evaporates from surfaces and is transpired by the landscape

Infiltration
The portion of precipitation that seeps into the ground

Runoff
The portion of precipitation that doesn't infiltrate or evaporate

Domestic Water
Piped water serving campus which is not used for fire suppression

Potable
Domestic water which is required to be drinking quality

Flush
Domestic water which is not required to be drinking quality (i.e. toilet and urinal flushing)

Mechanical
Domestic water used in cooling towers or other water-based HVAC systems

Irrigation
Domestic water used for irrigating the landscape

Wastewater
Domestic water which as been used, "wasted", and cannot be used again without additional cleaning

Blackwater
Wastewater from flush fixtures, kitchen sinks, and dishwashers

Greywater
Wastewater from potable fixutres (bathrooms sinks, showers, laundry)

Blowdown
Wastewater intentionally discharged from mechanical fixtures to avoid concentrating impurities

Condensate
Wastewater generated during hot or humid weather from the air around mechanical fixtures

Existing

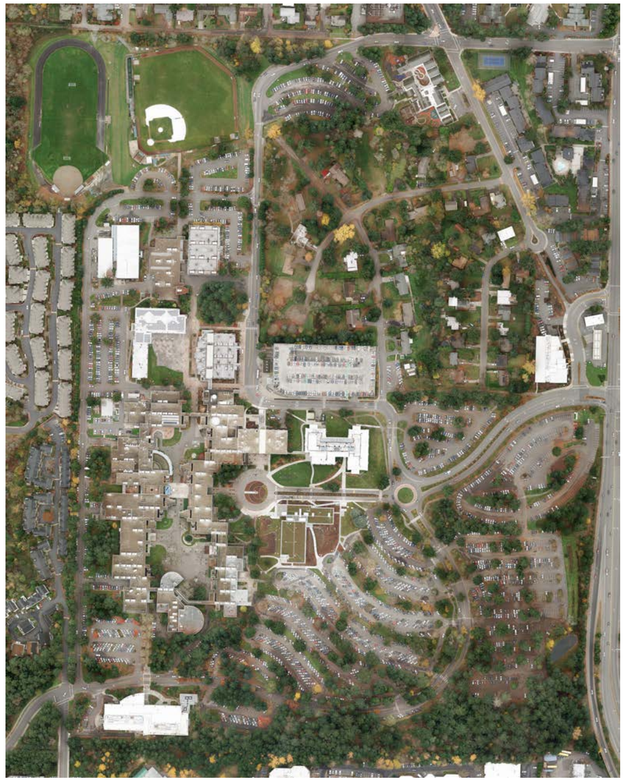
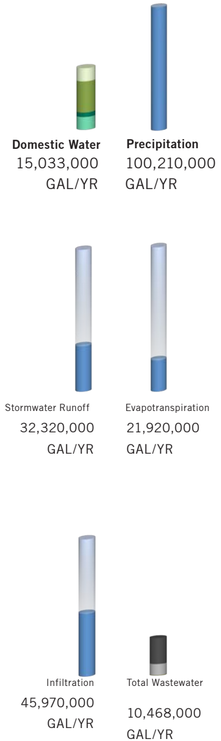
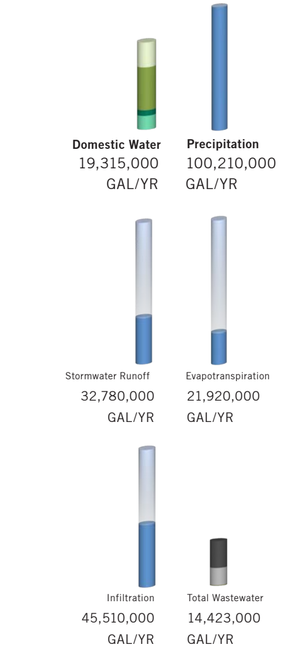


Figure E-02: Existing Campus Water Audit



EXISTING + PHASE 1 OF FUTURE RESIDENCE HALLS

Figure E-03: Existing Campus Water Audit



EXISTING + PHASES 1-4 WITH STUDENT SERVICES

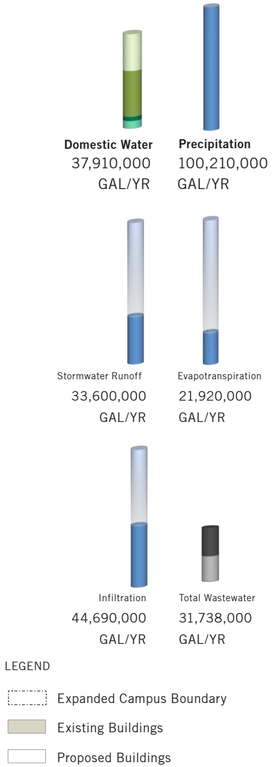


Figure E-04: Existing Campus Water Audit

EXISTING + PHASES 1-4 WITH STUDENT SERVICES + 10 YEAR MASTER PLAN (NON-RESIDENTIAL GROWTH)

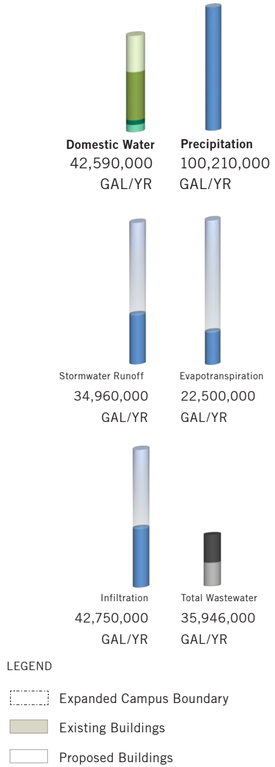


Figure E-05: Existing Campus Water Audit

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APPENDIX F
MECHANICAL, ELECTRICAL, PLUMBING

CONTENTS

Tables

PROJECT DESCRIPTION

The Bellevue College Master Plan provides a summary of objectives, values, and priorities for the physical planning and design of the main Bellevue College campus. Phase 1 consists of the assessment of the existing buildings in order to determine the overall conditions of the mechanical, electrical, and plumbing systems. PAE visited each building on campus, met with representatives of the college, and considered past facility reports as part of the building reviews. Existing assessment summaries provided by Bellevue College were also utilized in the evaluation of the buildings.

The contents of this narrative, specifically the building MEP ratings, are meant to supplement the Facility Conditions Assessment in Section 03.

The following buildings were not included in this assessment: Greenhouse, House 4, House 5, House 6, House 7, House 9, House 11, and Radio Tower Utility Building.

EXECUTIVE SUMMARY

The intent of this assessment summary is to get a broad understanding of how the mechanical, electrical, and plumbing systems (MEP) are operating. To determine this, multiple aspects of the building were reviewed including equipment lifespan, distribution systems, energy efficiency, and general conditions of the MEP system. To do this, a site visit was required to review all the buildings. This was a high level review of the major equipment and distribution systems that were easily accessible. The 2013 Facility Conditions Survey was also used because the information gathered pertains to the scope of this assessment. Any available electronic construction documents for each building, initial construction or renovation, was also gathered to aide in the understanding of the MEP systems in the buildings. Access was also allowed to Bellevue College's data collection software, SkySpark, which summarizes the energy and water use for all building within this report. This will give PAE the opportunity to review and compare current energy usage with local and national buildings of the same type.

Table 1 summarizes PAE's assessment of the existing mechanical, electrical, fire protection, and plumbing systems on campus. Each building is given a score, which has been weighted based on PAE's opinion of the Bellevue College's assumed priorities.

SUMMARY TABLE

Annual energy and water use data was removed from the campus system and evaluated to determine which buildings were high performing. This information was used when ranking the buildings based on energy or water. Some of the energy and water usage readings appeared to be incorrect based on extremely high or low reading based on the usage or installed system which indicated that there may have been inaccuracies during evaluation time. These values were not taken into consideration when ranking the buildings on energy usage or water use.

	Art Studio, Student Union and Student Programs	Theater, Printing, TV Services (Newcastle)	Early learning, Family, and Childcare Center	Labs, Classrooms, Offices, NWCET	Library, Classrooms, Faculty Offices	Parking Garage	Gymnasium	Classrooms, Labs, & Offices	Maintenance Facility	Greenhouse	Classrooms, Offices, Administration	Student Services, Calsrooms, Offices	Science Labs, Classrooms, Offices	Campus Operations
Building	C	E	Q	N	D	P	G	L	M	F	A	B	S	K
Building Area (SF)	83150	30745	23000	52700	92063	N/A	49225	40000	7500	25622	52495	89115	64611	19
Electricity Usage, Annual KWh	2480138	897427	195026	941952	540210	267233	1293207	892875	27142	13940	595277	743323	787493	370273
Gas Usage, Annual Therms	20368	7666	6592	12579	17848	0	13822	4061	0	0	4547	32693	29424	0
Annual Energy Usage (kBTU)	10498995	3828606	1324673	4471877	3627973	911799	5794670	3452559	92609	47563	2485788	5805522	5629350	1263371
EUI (kBTU/SF)	126.3	124.5	57.6	84.9	39.4	N/A	117.7	86.3	12.3	1.9	47.4	65.1	87.1	66493.2
EUI % Elect	81%	80%	50%	72%	51%	100%	76%	88%	100%	100%	82%	44%	48%	100%
EUI % Gas	19%	20%	50%	28%	49%	0%	24%	12%	0%	0%	18%	56%	52%	0%
Annual Water Consumption (Gallons)	1181090	230970	385280	438980	237090	N/A	636890.00	319602.50		36630.00	276430.00	577230.00	283700.00	45350.00
Gallons/SF	14.2	7.5	16.8	8.3	2.6	N/A	12.9	8.0	0.0	1.4	5.3	6.5	4.4	2386.8

Table F-01: Summary

The mechanical systems for the campus are all stand alone. There are no central plant systems that serve the campus or connect the buildings. The older buildings on campus are primarily served by packaged rooftop units with gas heat. Some of the more recently constructed buildings have utilized condenser water system and open/closed loop ground source heat pumps.

The campus electrical system is a college-owned, primary-metered, 12.47kV radial loop, fed by Puget Sound Energy (PSE) at both ends of the system. The main PSE service is the PSE substation at the north end of campus, which interfaces with the campus system at a pad-mounted point of service cabinet on SE 24th Street. The system is sub-grade, routed primarily along the central courtyard of the campus. The back-up PSE connection is at a pole adjacent to Building N at the south end of campus, and the system interface is at Building N's parking lot. Pad-mounted air switches provide junctions in the system at grade. Each building is served from the system by a 12.47kV-480V transformer (with the exception of smaller buildings as noted in this report).

Site lighting circuits are served from adjacent buildings, and controlled by timeclocks via contactor cabinets. Parking and roadway lighting is primarily pole-mounted sodium-halide fixtures, and pedestrian lighting is primarily pedestrian-scale sodium-halide fixtures. Pedestrian lighting near Buildings S and T are LED pole-top fixtures. Sodium- halide fixtures are inefficient users of energy, and a retrofit of the sodium-source fixtures with LED would offer energy savings.

The campus telecom backbone was converted from copper to fiber optic in the autumn of 2015. The backbone travels below-grade in the same path as the campus power system.

The campus fire alarm system is composed of an individual fire alarm control panel in each building, and a monitoring station at the Campus Facilities Office. The monitoring system monitors each building control panel for alarm or trouble alerts. The monitoring equipment is made up of several manufacturer's equipment in order to communicate with the numerous fire alarm manufacturers in use on campus. System reliability could be improved by consolidating the monitoring equipment into one unit, with translation modules used to connect with other manufacturers. The system cabling is routed underground with the telecom backbone.

APPENDIX F / Mechanical, Electrical and Plumbing

RENOVATION VS NEW CONSTRUCTION ANALYSIS

Renovation Candidates

Buildings that are served with a central hydronic system with smaller, single zone equipment distributed throughout the building are the easiest/less costly renovations. A change of use would require a plan for indoor equipment locations with minor changes to the building hydronic distribution. These also prove to be the most energy efficient buildings on campus due to high efficiencies of hydronic systems and the ground source and open well system installed by the university. These types of systems have the capability to transfer heat from zones that require heating to zones that require cooling, and vice versa. The following buildings are good candidates for renovations:

Building Q

Building R

Building S

Building T

New Construction Candidates

Buildings that are served by multiple, single zone package rooftop units would be more difficult to renovate due to the high number of large rooftop units. The distribution within the building is duct work which is rarely in the right location or the correct size for a renovation. These systems also prove to be less efficient because they are typically constant volume. The following buildings are good candidates for being completely gutted and have the mechanical system replaced:

Building A

Building B

Building C

Building D

Building E

Building L

EXISTING BUILDING PV ANALYSIS

In determining the potential size of a PV system, there are several things to consider. The size of the PV system can be restricted by site conditions, electrical equipment size, and owners' generation goals.

Site conditions can restrict the size of a PV array based space available for modules. If arrays are roof mounted there needs to be an adequate amount of unshaded roof space available. Ballast mounted rooftop arrays require more space on rooftop and a structural analysis to ensure roof can handle weight. Ground mounted systems must be located in an area with little to no shading. Remote locations with limited possibility of vandalism would be the ideal place.

The National Electrical Code (NEC) has requirements on how to connect PV systems with electrical systems connected to the grid. The two main options for connection are load-side and line-side. Load-side is a term that refers to connection within panelboards or the distribution section of switchboards (See Figure-1 Type 2: Load-side connection). The NEC sets limits on load-side connection, commonly referred to as the "120 Rule" and is determined by the breaker size of the panel. The line-side refers to the connection ahead of the service main breaker (See Figure-1 Type 1: Line-side connection). The switchboard must include a "tap section" ahead of main breaker that will allow for the PV System to connect. The NEC does not limit the size of the PV array with a line-side connection.

In many cases, owners looking into renewable energy systems are hoping to aid their existing energy conservation goals. The expectation could be going for net-zero, net-positive, or a percentage of energy savings. Depending on the expectations, this too could influence the size of the PV array.

Evaluation of the Bellevue College is based off the MEP Assessment recommendations. The report recommends outdated electrical equipped be replaced with new and a lot of mechanical equipment moved indoors. The only limitations examined was the roof spacing and electrical equipment restrictions (Refer to PV Readiness Capabilities). There's a lot that goes into the exact sizes of the systems, the values provided are preliminary. The actual size will be different than those shown. Size adjustments would consider inputs from inverter output values, modules in series, and modules in parallel.

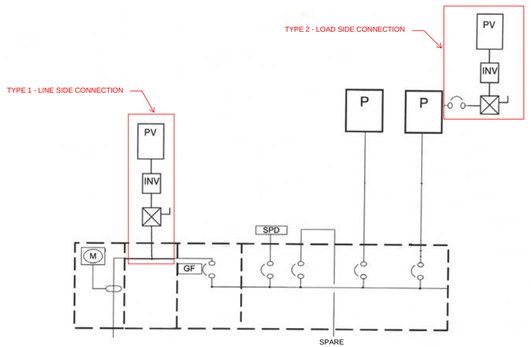


Table F-02: PV System Utility Grid Connection Schematic

PV Readiness Capabilities								
Building	Roof Availability				Electrical Equipment Restrictions			
	Total Roof Area	Available Roof Area[1]	Approximate # of PV Modules[3,4]	Estimated PV Array Size[3,4]	PV Breaker Size[6]	Tap ahead of main[2]	Max # of PV Modules[3,4]	Estimated PV Array Size[3,4]
A	30,300	19,695	346	104 kW	600 A	No Limit	576	173 kW
B	47,200	30,680	538	161 kW	600 A	No Limit	576	173 kW
C	43,400	28,210	495	148 kW	600 A	No Limit	576	173 kW
D	37,700	24,505	430	129 kW	600 A	No Limit	576	173 kW
E	20,000	13,000	228	68 kW	600 A	No Limit	576	173 kW
G	44,000	28,600	502	151 kW	800 A	No Limit	769	231 kW
K	15,000	9,750	171	51 kW	160 A	Not an option	154	46 kW
L	27,000	17,550	308	92 kW	320 A	No Limit[5]	307	92 kW
M	7,900	5,135	90	27 kW	No Space	Not an option		
N	38,300	24,895	437	131 kW	320 A	No Limit[5]	307	92 kW
Parking Garage	66,000	42,900	753	226 kW	80 A	No Limit[5]	77	23 kW
Q	23,000	14,950	262	79 kW	160 A	No Limit[5]	154	46 kW
R	26,000	16,900	296	89 kW	600 A	No Limit[5]	576	173 kW
S	24,000	15,600	274	82 kW	500 A	No Limit[5]	480	144 kW
T	24,300	15,795	277	83 kW	400 A	No Limit[5]	384	115 kW

Notes:

1. Available footprint is assumed to be 65% of Total Roof Area.
2. Tap information assumes that recommendations from MEP report have been implemented. New equipment will need to provide tap section in front of main.
3. PV Module is based off of 300W Sharp module ND-F4Q300.
4. Modules assumed to be roof-mounted at 45 degree tilt with 3 times the distance spacing between rows.
5. MEP Report suggest equipment is still in fair condition. Tap information is only useful if tap is already existing.
6. Breaker Size limit based on NEC 705.12(D)(2)(3)(b).

Table F-02: PV Readiness Capabilities

Building Summaries

BUILDING SUMMARIES

A Building

HVAC General Description

- The building was originally constructed in 1969. The system consists of constant volume, packaged units with DX cooling and gas heat. The packaged units were renovated in 2014 with a new gas heater and condensing unit which has increase the efficiency and longevity of the equipment. This type of system requires a large amount of equipment located on the roof.
- With the gas heater and condensing units recently renovated the efficiencies of the units have been greatly improved. The remaining components of the air handlers appear to reasonably good condition and are relatively easy to replace if needed.
- Each package air handling units serves a single zone. Per the 2015 Facilities Conditions Survey, there are not major issues with the conditions or controllability of the systems so the system is adequate for the current occupancy type and size. Any major modification to the building, such as changing the use or occupancy type, would be difficult because they may require extensive interior duct reconfiguration and possible equipment resizing and replacement.

Plumbing General Description

- Plumbing services installed at the time the original building was built in 1969. A building renovation was performed in 2003 that included plumbing fixture replacement. Hot water for the building is supplied by multiple water heaters of varying age, driven by replacement after end of life cycle. Water flow meters installed on building mains for tracking water consumption. Gas service for rooftop HVAC units is provided from the Building B gas meter, and distributed at the roof deck level.
- Plumbing services in serviceable condition. Backflow preventers inspected and tested yearly. Below grade drains are concrete pipe for phase 1 buildings, with instances of frequent clogging. Maintenance staff has added some 5 gallon/flush flush valves to remedy these locations. Original electric boiler for domestic water heating, built in 1971 and located at corridor restrooms, still in use.
- 5 Gallon/flush water closets are above code maximum.

Fire Protection General Description

- There is a 6” fire service with a 4” double detector check assemblies located in Fire Standpipe Room A-140. Building A is split into (2) dry sprinkler zones and (2) wet sprinkler zones.
- Backflow preventers are inspected and tested yearly. Sprinkler valves tested regularly.
- There are no code issues to note.

Electrical General Description

- Building A is one of the original buildings on campus, built in 1969, and the core electrical infrastructure appears to be original. A renovation in 2003 replaced a portion of the branch panelboards.
- The college-owned campus 12.47kV medium-voltage distribution system serves the building via an air switch and 1 MVA 480Y/277 Volt padmounted transformer located in a basement-level areaway.
- The main switchboard is located in the electrical room immediately adjacent to the areaway. The switchboard is a General Electric “AV-Line” front-access board, and appears to be original equipment from 1969. The bussing is a 3000 Amp main section and one 2000 Amp distribution section. The observed instantaneous load on the board was 230 Amps, however the building was unoccupied on this day.
- The distribution section circuit breakers are group-mounted. One subfeed breaker is labeled “Defective” by the agency SigmaSix, dated 2014. There is one spare 3-pole breaker, size unmarked. There appears to be one space at the bottom of the section, but it is unlabeled. The 45-year-old equipment is at the end of its lifespan, and replacement components will be increasingly difficult to acquire.
- Branch panels and 208Y/120 Volt transformers are distributed in electrical closets throughout the building.
- Lighting in the building is composed primarily of linear fluorescent fixtures, which have been retrofitted to more efficient ballasts and lamp types within the last three years. Lighting controls are ad-hoc, with exterior lighting controlled by a timeclock and interior spaces controlled by local controllers in each suite.
- Power for emergency egress lighting was originally derived from a “tap ahead of main” at the Building D service. Buildings A/B/C/D are being transitioned to emergency ballasts with integral batteries as part of the ongoing lighting retrofit project, begun in 2012ongoing ongoing lighting retrofit project, begun in 2012, begun in 2012.

Fire Alarm General Description

The fire alarm system is a Honeywell horn-strobe type system with accessible pull-stations provided in the outdoor hallways near stairwells. The building system is tied into the campus fire alarm system. The system was inspected in 2015 by Brimstone Fire Safety Company.

B Building

HVAC General Description

- The building was originally constructed in 1969. The system consists of constant volume, packaged units with DX cooling and gas heat. The packaged units were renovated in 2014 with a new gas heater and condensing unit which has increase the efficiency and longevity of the equipment. This type of system requires a large amount of equipment located on the roof.
- With the gas heater and condensing units recently renovated the efficiencies of the units have been greatly improved. The remaining components of the air handlers appear to reasonably good condition and are relatively easy to replace if needed.
- Each package air handling units serves a single zone. Per the 2015 Facilities Conditions Survey, there are not major issues with the conditions or controllability of the systems so the system is adequate for the current occupancy type and size. Any major modification to the building, such as changing the use or occupancy type, would be difficult because they may require extensive interior duct reconfiguration and possible equipment resizing and replacement.

Plumbing General Description

- Plumbing services installed at the time the original building was built in 1969. A building renovation was performed in 1998 that included plumbing fixture replacement. Hot water for the building is supplied by multiple water heaters of varying age, driven by replacement after end of life cycle. Water flow meters installed on building mains for tracking water consumption. Gas service at Building B supplies gas to rooftop HVAC units at multiple buildings, distributed at the roof deck level. Compressor and regulating station for laboratory compressed air and controls located at Electrical vault level.
- Plumbing services in serviceable condition. Backflow preventers inspected and tested yearly. Below grade drains are concrete pipe for phase 1 buildings, with instances of frequent clogging. Maintenance staff has added some 5 gallon/flush flush valves to remedy these locations. According to maintenance staff, mechanical controls no longer use compressed air. Minimal compressor use from many laboratories being moved to another building.
- 5 Gallon/flush water closets are above code maximum.

Fire Protection General Description

- There is an 8" fire service with a 6" double detector check assembly located in an exterior vault. Wet system sprinkler control valve located in riser room.
- Backflow preventers are inspected and tested yearly. Sprinkler valves tested regularly.
- There are no code issues to note.

Electrical General Description

- Building B is one of the original buildings on campus, built in 1969, and the core electrical infrastructure appears to be original.
- The college-owned campus 12.47kV medium-voltage distribution system serves the building via an air switch located in a basement-level areaway.
- The main switchboard and transformer are located in the electrical room immediately adjacent to the areaway. The transformer is a 1.5 MVA 12.47kV:480Y/277 Volt padmounted transformer unit located next to the switchboard. The switchboard is a General Electric "AV-Line" front-access board, and appears to be original equipment from 1969. The bussing is a 3000 Amp main section and two 2000 Amp distribution sections.
- The distribution section circuit breakers are group-mounted (with the exception of one independently-mounted panel feeder). There are no unused spaces in the distribution sections. The 45-year-old equipment is at the end of its lifespan, and replacement components will be increasingly difficult to acquire.
- Branch panels and 208Y/120 Volt transformers are distributed in electrical closets throughout the building, including a large room at level 1 and a closet at level 2.
- Lighting in the building is composed primarily of linear fluorescent fixtures, which have been retrofitted to more efficient ballasts and lamp types within the last three years. Lighting controls are ad-hoc, with exterior lighting controlled by a timeclock and interior spaces controlled by local controllers in each suite.

APPENDIX F / Mechanical, Electrical and Plumbing

- Power for emergency egress lighting was originally derived from a "tap ahead of main" at the Building D service. Buildings A/B/C/D are being transitioned to emergency ballasts with integral batteries as part of the ongoing lighting retrofit project, begun in 2012.

Fire Alarm General Description

The fire alarm system is a combination of Edwards EST-3 and Honeywell equipment cabinets. The notification devices are horn-strobes, and accessible pull-stations are provided in the outdoor hallways near stairwells. The building is tied into the campus fire alarm system.

C Building

HVAC General Description

- The building was originally constructed in 1969. The majority of the air handling equipment has an installation date in the 1990s. The system consists of constant volume, packaged units with DX cooling and gas heat. This type of system requires a large amount of equipment located on the roof.
- The equipment is now over 15 years old, for a packaged air handling equipment a median lifespan of approximately 15 years. Since the equipment is near the median lifespan it can be assumed that these systems are not operating at their optimum performance or efficiency.
- Each package air handling units serves a single zone. Per the 2015 Facilities Conditions Survey, there are some minor issues with the systems so the system but still adequate for the current occupancy type and size. Any major modification to the building, such as changing the use or occupancy type, would be difficult because they may require extensive interior duct reconfiguration and possible equipment resizing and replacement.

Plumbing General Description

- Plumbing services installed at the time the original building was built in 1969. A building renovation was performed in 1998 that included plumbing fixture replacement. Hot water for the building is supplied by a central gas, tank type, water heater replaced mid-2015. Gas boiler supplies steam to Cafeteria kitchen, and was replaced mid-2015. Water flow meters installed on building mains for tracking water consumption. Exterior underground grease interceptor for kitchen grease waste located outdoors. Gas service at Building C supplies gas to B Building labs, C building water heater and boiler, and C, D & E building HVAC units.
- Plumbing services in serviceable condition. Backflow preventers inspected and tested yearly. Below grade drains are concrete pipe for phase 1 buildings, with instances of frequent clogging. Maintenance staff has added some 5 gallon/flush flush valves to remedy these locations. Strong odor in restroom C109.
- 5 Gallon/flush water closets are above code maximum.

Fire Protection General Description

- There is an 8" fire service with a 6" double detector check assembly located in an exterior vault. Wet system sprinkler control valve located in Sprinkler Control Valve room C121.
- Backflow preventers are inspected and tested yearly. Sprinkler valves tested regularly.
- There are no code issues to note.

Electrical General Description

- Building C is one of the original buildings on campus, built in 1969, and the core electrical infrastructure appears to be original.
- The college-owned campus 12.47kV medium-voltage distribution system serves the building via an air switch located in a basement-level areaway.
- The main switchboard and transformer are located in the electrical room immediately adjacent to the areaway. The transformer is a 1 MVA 12.47kV:480Y/277 Volt padmounted transformer unit located next to the switchboard. The air switch and feeder from the switch to the transformer are being replaced in a 2016 project; the transformer will remain in place.
- The switchboard is a General Electric "AV-Line" front-access board, and appears to be original equipment from 1969. The bussing is a 3000 Amp main section, one 2000 Amp distribution section, and one 1200 Amp distribution section. The observed instantaneous load on the board was 210 Amps, however the building was unoccupied on this day.
- The circuit breakers in the first distribution section are group-mounted. The circuit breakers in the second distribution section are independently-mounted. There are no spares or spaces available in the distribution section. The 45-year-old equipment is at the end of its lifespan, and

replacement components will be increasingly difficult to acquire.

- Branch panels and 208Y/120 Volt transformers are distributed in electrical rooms and closets throughout the building. An electrical room at Level 1 is fed from the main electrical room via a below-grade wireway accessed through a hatch in the floor of Electrical Room C111.
- Lighting in the building is composed primarily of linear fluorescent fixtures, which have been retrofitted to more efficient ballasts and lamp types within the last three years. Lighting controls are ad-hoc, with exterior lighting controlled by a timeclock and interior spaces controlled by local controllers in each suite.
- Power for emergency egress lighting was originally derived from a "tap ahead of main" at the Building D service. Buildings A/B/C/D are being transitioned to emergency ballasts with integral batteries as part of the ongoing lighting retrofit project, begun in 2012.

Fire Alarm General Description

The fire alarm system is a combination of Edwards EST-3 and Honeywell equipment cabinets. The notification devices are horn-strobes, and accessible pull-stations are provided in the outdoor hallways near stairwells. The building is tied into the campus fire alarm system. The system was inspected in 2015 by Brimstone Fire Safety Company.

D Building

HVAC General Description

- The building was originally constructed in 1969. The majority of the air handling equipment has an installation date in the 1990s. The system consists of constant volume, packaged units with DX cooling and gas heat. This type of system requires a large amount of equipment located on the roof.
- The equipment is now over 15 years old, for a packaged air handling equipment a median lifespan of approximately 15 years. Since the equipment is near the median lifespan it can be assumed that these systems are not operating at their optimum performance or efficiency.
- Each package air handling units serves a single zone. Per the 2015 Facilities Conditions Survey, there are some minor issues with the systems so the system but still adequate for the current occupancy type and size. Any major modification to the building, such as changing the use or occupancy type, would be difficult because they may require extensive interior duct reconfiguration and possible equipment resizing and replacement.

Plumbing General Description

- Plumbing services installed at the time the original building was built in 1969. A building renovation was performed in 2007 that included plumbing fixture replacement. Hot water for the building is supplied by multiple water heaters of varying age, driven by replacement after end of life cycle. Water flow meters installed on building mains for tracking water consumption. Gas service for HVAC units supplied by gas meter at C building.
- Plumbing services in serviceable condition. Backflow preventers inspected and tested yearly. Below grade drains are concrete pipe for phase 1 buildings, with instances of frequent clogging. Maintenance staff has added some 5 gallon/flush flush valves to remedy these locations. Maintenance also commented that there are few domestic water isolation valves in the older buildings, often requiring entire building water supply shut-off for repairs. Sections of uninsulated hot water piping observed at water heater in Janitor's closet.
- 5 Gallon/flush water closets are above code maximum. Insulation on hot water piping required per code.

Fire Protection General Description

- There is an 8" fire service with a 6" double detector check assembly located in an exterior vault. Building contains both wet and dry sprinkler control valves.
- Backflow preventers are inspected and tested yearly. Sprinkler valves tested regularly.
- There are no code issues to note.

Electrical General Description

- Building D is one of the original buildings on campus, built in 1969, and the core electrical infrastructure appears to be original.
- The college-owned campus 12.47kV medium-voltage distribution system serves the building via an air switch and 1 MVA 480Y/277 Volt padmounted transformer located in a basement-level areaway. The air switch and feeder from the switch to the transformer are being replaced in a 2016 project; the transformer will remain in place.
- The main switchboard is located in the electrical room immediately adjacent to the areaway. The switchboard is a General Electric "AV-Line" front-access board, and appears to be original equipment from 1969. The bussing is a 3000 Amp main section and one 2000 Amp distribution section. The observed instantaneous load on the board was 450 Amps, however the building was unoccupied on this day.
- The distribution section circuit breakers are group-mounted. There are one full-width and two half-width spaces at the bottom of the section. The 45-year-old equipment is at the end of its lifespan, and replacement components will be increasingly difficult to acquire.
- Branch panels and 208Y/120 Volt transformers are distributed in electrical rooms and closets throughout the building, including two rooms at level 1 which contain a mix of original equipment and panels added in the 2007 remodel.
- Lighting in the building is composed primarily of linear fluorescent fixtures, which have been retrofitted to more efficient ballasts and lamp types within the last three years. Lighting controls are ad-hoc, with exterior lighting controlled by a timeclock and interior spaces controlled by local controllers in each suite.
- Power for emergency egress lighting was originally derived from a "tap ahead of main" at the Building D service. The conduits for these circuits terminate in a wireway in the Building D main electrical room. The wireway cover is not installed, and unterminated wiring is visible in the wireway. Buildings A/B/C/D are being transitioned to emergency ballasts with integral batteries as part of the ongoing lighting retrofit project, begun in 2012.

Fire Alarm General Description

The fire alarm system is an Edwards EST-2 horn-strobe type system with accessible pull-stations, tied into the campus fire alarm system.

E Building

HVAC General Description

- The building was originally constructed in 1973. The majority of the air handling equipment has an installation date in the 1990s. The system consists of constant volume, packaged units with DX cooling and gas heat. This type of system requires a large amount of equipment located on the roof.
- The equipment is now over 15 years old, for a packaged air handling equipment a median lifespan of approximately 15 years. Since the equipment is near the median lifespan it can be assumed that these systems are not operating at their optimum performance or efficiency.
- Each package air handling units serves a single zone. Per the 2015 Facilities Conditions Survey, there are not major issues with the conditions or controllability of the systems so the system is adequate for the current occupancy type and size. Although visually the units look be to be in poor condition due the rust, moss, chipping paint, and an air handling unit covered with a tarp (reason unknown). Any major modification to the building, such as changing the use or occupancy type, would be difficult because they may require extensive interior duct reconfiguration and possible equipment resizing and replacement.

Plumbing General Description

- Plumbing services installed at the time the original building was built in 1973. Plumbing fixtures in main restroom replaces in 2014 during a remodel. Hot water for the building is supplied by an electric tank type water heater that was replaced in 2008. Water flow meters installed on building mains for tracking water consumption. Gas service for HVAC units supplied by gas meter at C building.
- Plumbing services in serviceable condition. Backflow preventers inspected and tested yearly. Maintenance commented that there are few domestic water isolation valves, sometimes requiring entire building water supply shut-off for repairs.
- There are no code issues to note.

Fire Protection General Description

- Fire service with double detector check assembly located in an exterior vault. There is a 6" fire service entering the building at the Scene Shop room. Wet system sprinkler control valve is a 6" water motor alarm valve
- Backflow preventers are inspected and tested yearly. Sprinkler valves tested regularly.
- There are no code issues to note.

Electrical General Description

- Building E is one of the older buildings on campus, built in 1973, and the core electrical infrastructure appears to be original.
- The college-owned campus 12.47kV medium-voltage distribution system serves the building via an air switch and 1 MVA 480Y/277 Volt padmounted transformer

located in a basement-level areaway. The air switch and feeder from the switch to the transformer are being replaced in a 2016 project; the transformer will remain in place.

- The main switchboard is located in the electrical room immediately adjacent to the areaway. The switchboard is a General Electric “AV-Line” front-access board, and appears to be original equipment from 1973. The bussing is a 3000 Amp main section and four 2000 Amp distribution sections. The observed instantaneous load on the board was 240 Amps, however the building was unoccupied on this day.
- The circuit breakers in the first distribution section are group-mounted. The circuit breakers in the second and third distribution sections are independently-mounted. There are several unlabeled breakers in the group-mounted section, they are in the ‘on’ position. There appear to be two spaces available in the independently-mounted sections, however they are not labeled and it cannot be confirmed whether the spaces are bussed. The 45-year-old equipment is at the end of its lifespan, and replacement components will be increasingly difficult to acquire.
- Approximately two-thirds of the areaway is under a landscaped planter, reducing access to a dimension that may require structure demolition to replace the air switch or transformer. There is water on the floor of the main electrical room, touching the main switchboard enclosure.
- The building is a theater, and electrical distribution equipment, relay cabinets, and dimmer cabinets are located in a dimmer room at the upper floor of the building.
- Lighting in the building is composed primarily of incandescent fixtures. Where linear fluorescent fixtures are used, they have been retrofitted to more efficient ballasts and lamp types within the last three years. Exterior lighting is controlled by a timeclock, and interior spaces are locally controlled.
- Power for emergency egress lighting is derived from a “tap ahead of main” at the Building D service. Fluorescent fixtures are being transitioned to emergency ballasts with integral batteries as part of the ongoing lighting retrofit project, begun in 2012.

Fire Alarm General Description

The fire alarm system is a Honeywell horn-strobe type system with accessible pull-stations, tied into the campus fire alarm system. The system was inspected in 2015 by Brimstone Fire Safety Company.

The campus emergency voice alert system equipment is located in the Dimmer Room of this building. It serves two outdoor speaker arrays installed in approximately 2005. The speaker system is reported to be audible but not intelligible: it can be heard up to five miles away, but is not well-understood even within the bounds of the campus. The campus emergency alert system primarily functions by sending pop-up alerts to all campus PCs and text messages to all subscribed mobile phones.

G Building - Gym

HVAC General Description

- The building was originally constructed in 1973. The majority of the air handling equipment has an installation date in the 1990s. The system consists of constant volume, packaged units with DX cooling and gas heat. This type of system requires a large amount of equipment located on the roof.
- The equipment is now over 15 years old, for a packaged air handling equipment a median lifespan of approximately 15 years. Since the equipment is near the median lifespan it can be assumed that these systems are not operating at their optimum performance or efficiency.
- Each package air handling units serves a single zone. Per the 2015 Facilities Conditions Survey, there are not major issues with the conditions or controllability of the systems so the system is adequate for the current occupancy type and size. Any major modification to the building, such as changing the use or occupancy type, would be difficult because they may require extensive interior duct reconfiguration and possible equipment resizing and replacement.
- The water heating system is extremely oversized. There heating capacity and storage was based on heating a pool which was never installed. It is highly recommended that this system is replaced with a system that is sized based on its actual demand.

Plumbing General Description

- Plumbing services installed at the time the original building was built in 1972. Plumbing fixtures remodeled with manually operated vitreous fixtures since original construction. Hot water for the building is supplied by a central gas boiler supplying two storage tanks of approximately 5,000 gallons each. Building includes group showers in locker rooms. Water flow meters installed on building mains for tracking water consumption. Gas service for HVAC units and domestic water boiler supplied by gas meter for building.
- Plumbing services in serviceable condition. Backflow preventers inspected and tested yearly. Maintenance commented that hot water storage is more than needed, and one tank has been emptied and is no longer in use. Maintenance also commented that the compressor in the mechanical room is no longer in use, and the hot water master mixing valve station does not consistently deliver desired temperature. 2013 Facility Condition Survey noted that some recurring leaks were reported.
- There are no code issues to note.

Fire Protection General Description

- Fire service with double detector check assembly located in an exterior vault that also serves L building. Wet sprinkler system.
- Backflow preventers are inspected and tested yearly. Sprinkler valves tested regularly.
- There are no code issues to note.

Electrical General Description

- The gymnasium building was built in 1972, and the core electrical infrastructure appears to be original.
- The college-owned campus 12.47kV medium-voltage distribution system serves the building via an air switch located outside the building, and 2.5 MVA 480Y/277 Volt padmounted transformer located in a ground-level transformer room. Two secondaries exit the transformer. The first is a 400 Amp feed which crosses the room at floor level to a wall-mounted disconnect, which is off, and then proceeds out of the room to a roof soffit. Speculation by the campus facility staff is that this was intended for a natatorium building which was not built. The second secondary travels in a wireway through the wall to the building switchboard in the adjacent room.
- The main switchboard is located in the electrical room immediately adjacent to the transformer room. The switchboard is a General Electric “AV-Line” front-access board, and appears to be original equipment from 1972. The bussing is a 4000 Amp main section, one 2500 Amp section, and four 1600 Amp distribution sections.
- The circuit breakers in the first, second, and third distribution section are group-mounted. The circuit breakers in the fourth and fifth distribution sections are independently-mounted. There appears to be one space available in the independently-mounted section, however it is not labeled and it cannot be confirmed whether the space is bussed. There appears to be two spaces available in the group-mounted sections, however they are not labeled and it cannot be confirmed whether the space is bussed. There is one 200 Amp breaker, unlabeled and turned off, which may be spare. The 45-year-old equipment is at the end of its lifespan, and replacement components will be increasingly difficult to acquire.
- The switchgear in this building serves several other buildings: Building K, Building L, and the Warehouse.
- Branch panels and 208Y/120 Volt transformers are distributed in electrical closets throughout the building.
- Lighting controls are primarily relays and contactors located in the main electrical room. Fixtures are primarily older fluorescent fixtures, and can be improved by replacement with more energy-efficient fixtures. Emergency lighting is provided by emergency fixtures with integral batteries.

Fire Alarm General Description

The fire alarm system is a Honeywell horn-strobe type system with accessible pull-stations, tied into the campus fire alarm system.

K Building

HVAC General Description

- The building was originally constructed in 2000. The equipment was installed at the same time as the original construction. The system consists of constant volume, packaged units with DX cooling and gas heat for the office space and gas unit heaters for the warehouse.
- The 2015 Facility Conditions Survey did not note any inefficiencies with the equipment. The equipment appeared to be good condition. The equipment is still well within its lifespan so it be assumed to be able to continue to serve the building with only minor upgrades for an extended period of time.
- The gas unit heaters in the warehouse are fully exposed so modifications are relatively easy. The office space as a variable volume system so modification to the spaces is possible. If the occupancy changed from office to classroom the size of the central air handling equipment would have to be reviewed for capacity.

Plumbing General Description

- Plumbing services installed at the time the original building was

built in 2000. Plumbing fixtures are original fixtures.

- Plumbing services in serviceable condition. Backflow preventers inspected and tested yearly. No complaints from maintenance noted.
- There are no code issues to note.

Fire Protection General Description

- Fire service with double detector check assembly located in an exterior vault. Two wet sprinkler control valves for building interior, and one dry sprinkler control valve serving building exterior spaces.
- Backflow preventers are inspected and tested yearly. Sprinkler valves tested regularly.
- There are no code issues to note.

Electrical General Description

- The core electrical infrastructure appears to be original to the building in the year 2000.
- The building is fed from an 800 Amp breaker in the main switchboard of Building G.
- The main panelboard is located in the building electrical room. The panelboard is a Cutler Hammer wall-mounted distribution style panelboard, and appears to be original equipment from 2000. The bussing and main breaker are 800 Amps. The observed instantaneous load on the board was 50 Amps.
- The main panelboard in this building also serves Building M with a 400 Amp breaker.
- The distribution section circuit breakers are group-mounted. There are five spare breakers and no spaces available. The equipment is modern and at the beginning of its lifespan, and replacement components will be easy to acquire.
- Lighting in the building is locally controlled. Egress lighting is provided by integral batteries at the fixture.

Fire Alarm General Description

The fire alarm system is a Simplex horn-strobe type system with accessible pull-stations, tied into the campus fire alarm system.

L Building

HVAC General Description

- The building was originally constructed in 1998. The majority of the air handling equipment was installed during the original construction. The system consists of constant volume, packaged units with DX cooling and gas heat. This type of system requires a large amount of equipment located on the roof.
- The equipment is now over 15 years old, for a packaged air handling equipment a median lifespan of approximately 15 years. Since the equipment is near the median lifespan it can be assumed that these systems are not operating at their optimum performance or efficiency.
- Each package air handling units serves a single zone. Per the 2015 Facilities Conditions Survey, there are not major issues with the conditions or controllability of the systems so the system is adequate for the current occupancy type and size. Any major modification to the building, such as changing the use or occupancy type, would be difficult because they may require extensive interior duct reconfiguration and possible equipment resizing and replacement.

Plumbing General Description

- Plumbing services installed at the time the original building was built in 1998. Plumbing fixtures are original fixtures. Water heating by multiple tank type electric water heaters. Water flow meters installed on building mains for tracking water consumption.
- Plumbing services in serviceable condition. Backflow preventers inspected and tested yearly. Instance of uninsulated hot water piping seen at water heater at Janitor's Closet. No complaints by maintenance noted.
- There are no code issues to note.

Fire Protection General Description

- Fire service with double detector check assembly located in an exterior vault. Dry sprinkler and wet sprinkler control valves located in Sprinkler Control Room L109.
- Backflow preventers are inspected and tested yearly. Sprinkler valves tested regularly.
- There are no code issues to note.

Electrical General Description

- The core electrical infrastructure appears to be original to the building in the year 1998.
- The building is fed from a 1600 Amp breaker in the main switchboard of Building G.
- The main switchboard is located in the electrical room immediately adjacent to the areaway. The switchboard is a floor-mounted front-access board, and appears to be original equipment from 1998. The bussing and main breaker are 1600 Amps. The distribution section circuit breakers are group-mounted. The equipment is modern and early in its lifespan, and replacement components will be reasonably easy to acquire.
- Lighting in the building is locally controlled. Egress lighting is provided by integral batteries at the fixture.

Fire Alarm General Description

The fire alarm system is a horn-strobe type system with accessible pull-stations, tied into the campus fire alarm system.

M Building - Maintenance/Storage

HVAC General Description

The building was originally constructed in 1995. This building has ceiling hung gas unit heaters and no cooling. Everything is exposed in the space. Any modifications would be simple, but this is a building that would most likely never change use.

Plumbing General Description

- Plumbing services installed at the time the original building was built in 1995. No remodels noted. Shop area contains emergency eyewash and compressed air system.
- Plumbing services in serviceable condition. Backflow preventers inspected and tested yearly. Maintenance commented that domestic water main shut off does not occur until midway through the building.
- There are no code issues to note.

Fire Protection General Description

- Fire service with double detector check assembly located in an exterior vault. We sprinkler control valve located in shop.
- Backflow preventers are inspected and tested yearly. Sprinkler valves tested regularly.
- There are no code issues to note.

Electrical General Description

- The core electrical infrastructure appears to be original to the building in the year 1995.
- The building is fed from a 400 Amp breaker in the main panelboard of Building K.
- The main panelboard is located in the shop area. The panelboard is an Siemens wall-mounted branch circuit style panelboard, and appears to be original equipment from 1995. The bussing and main breaker are 400 Amps. There are no spare breakers or spaces available in the main panelboard.
- The equipment is modern and at the beginning of its lifespan, and replacement components will be easy to acquire.
- Lighting in the building is locally controlled. Egress lighting is provided by integral batteries at the fixture.

Fire Alarm General Description

The fire alarm system is a Simplex horn-strobe type system with accessible pull-stations, tied into the campus fire alarm system.

N Building - NWCET/Archives

HVAC General Description

- The building was originally constructed in 1998. This building is served by an air cooled chiller, heating hot water boiler, air handler, and variable air volume terminal units. There is also a dedicated air conditioning that appears to be dedicated to a single space that has been installed more recently.
- It appears the chiller was installed with the original construction making it over 15 years old. A chiller has a median lifespan of approximately 20 years. Since the equipment is near the of the median lifespan and there were no comments of insufficient capacity or controllability issues in the 2015 Facility Conditions Survey, the chiller appears to have several years left in operation before performance and efficiency is a concern. The air handling unit and boiler have a longer lifespan and can be assumed to be able to continue to serve the building with only minor upgrades for an extended period of time.
- The system serving the majority of the building utilizes variable volume terminal units for zoning. This makes it possible to modify the zone requirements

and configurations without any modifications to the central system, as long as the capacity is sufficient. Major renovations within the building are possible without completely changing the main mechanical system.

Plumbing General Description

- Plumbing services installed at the time the original building was built in 1998. No remodels noted. Fuel oil for emergency generator is supplied by an integral belly tank. Water flow meters installed on building mains for tracking water consumption. Hot water supplied by tank type gas water heater in mechanical room 117. Water flow meters installed on building mains for tracking water consumption.
- Plumbing services in serviceable condition. Backflow preventers inspected and tested yearly.
- There are no code issues to note.

Fire Protection General Description

- Fire service with double detector check assembly located in an exterior vault. In Mechanical room 117, a there is a pre-action system sprinkler control valve serves Archives east, a wet sprinkler control valve serves Upper East Classroom, and a dry sprinkler control valve that serves the mechanical room.
- Backflow preventers are inspected and tested yearly. Sprinkler valves tested regularly.
- There are no code issues to note.

Electrical General Description

- The core electrical infrastructure appears to be original to the building in the year 1998.
- The college-owned campus 12.47kV medium-voltage distribution system serves the building via an air switch and 1.5 MVA 480Y/277 Volt padmounted transformer located in a basement-level areaway.
- The main switchboard is located in the main electrical room. The switchboard is a Challenger "PowerMaster" front-access board, and appears to be original equipment from 1998. The bussing is a 1600 Amp main section and two 1600 Amp distribution sections. The observed instantaneous load on the board was 200 Amps, however the building was unoccupied on this day and the only load was associated with the server room.
- The distribution section circuit breakers are group-mounted. There are one 225 Amp and two 400 Amp spare breakers, and one full-width space.
- The equipment is modern and early in its lifespan. The Challenger brand was acquired by Eaton, and replacement components are available.
- The building is served by a dedicated generator for Optional Standby loads, located in a service yard near the main electrical room. The generator transfer equipment is located in the main electrical room.
- Lighting in the building is composed primarily of linear fluorescent fixtures. Lighting controls are ad-hoc, with exterior lighting controlled by a timeclock and interior spaces controlled by local controllers in each suite. Egress lighting is provided by emergency fixtures with integral batteries.

Fire Alarm General Description

The fire alarm system is an Edwards EST horn-strobe type system with accessible pull-stations, tied into the campus fire alarm system.

Parking Garage

HVAC General Description

The parking garage is not heated or cooled. There is no major equipment located in the parking garage.

Plumbing General Description

- Plumbing services installed at the time the original building was built in 2003. Hot water services to utility and toilet rooms supplied by an electric tank type water heater in Utility Room 005. A 1,000 gallon sand/oil interceptor is installed for garage drain treatment. Plumbing services include waste system for standpipe drains.
- Plumbing services in serviceable condition. Backflow preventers inspected and tested yearly.
- There are no code issues to note.

Fire Protection General Description

- Fire service provided by 6" fire line and 6" double detector check assembly located in Sprinkler Room 103. Sprinkler system is boosted by a jockey pump and a 40 horsepower Aurora model Fire pump capable of providing 80 psi of pressure boost at 500 gpm. The sprinkler room contains six dry system sprinkler control valves with alarms.
- Backflow preventers are inspected and tested yearly. Sprinkler valves tested regularly. Fire pump shows some rusting consistent with a leak. Compressor is loud and may indicate maintenance needed.
- There are no code issues to note.

Electrical General Description

- The core electrical infrastructure appears to be original to the building in the year 2003.
- The college-owned campus 12.47kV medium-voltage distribution system serves the building via an air switch located adjacent to building S, and a 300 kVA 480Y/277 Volt padmounted transformer located in the main electrical room.
- The main switchboard is located in the main electrical room. The main panelboard is rated at 400 Amps. The distribution circuit breakers are group-mounted.
- The equipment is modern and early in its lifespan. Replacement components are available.
- The building is served by a dedicated generator for emergency loads.
- Lighting in the building is composed of linear fluorescent and LED fixtures. Lighting controls are controlled by a timeclock and photocell via a central lighting control panel. Emergency lighting is served by the generator.

Fire Alarm General Description

The fire alarm system is a horn-strobe type system, tied into the campus fire alarm system.

Q Building - Early Learning Family/Child Care Center

HVAC General Description

- The building was originally constructed in 2000. This building is served by a water cooled chiller, cooling tower, boiler, and hat water furnace. The building is used as a child care facility.
- The 2015 Facility Conditions Survey did not note any inefficiencies with the equipment. The equipment that was reviewed did appeared to be in fair condition but had some rust. The equipment is still well within its lifespan so it be assumed to be able to continue to serve the building with only minor upgrades for an extended period of time.
- The distribution system is well suited for the current occupancy. The space were to change occupancy then it is most likely that the equipment and distribution system would have to be modified or replaced which would require a major project.

Plumbing General Description

- Plumbing services installed at the time the original building was built in 2002. No remodels noted. Water flow meters installed on building mains for tracking water consumption.
- Plumbing services in serviceable condition. Backflow preventers inspected and tested yearly. Rusting at main backflow preventer discharge. Section of piping above is uninsulated, indicating condensation issue that will continue to produce moisture for rusting. Maintenance commented that there are no bathroom isolation valves, requiring entire building shut-off for repairs.
- There are no code issues to note.

Fire Protection General Description

- Fire service with double detector check assembly located in an exterior vault. Wet sprinkler system control valve located in standpipe room.
- Backflow preventers are inspected and tested yearly. Sprinkler valves tested regularly.
- There are no code issues to note.

Electrical General Description

- The core electrical infrastructure appears to be original to the building in the year 2002.
- The college-owned campus 12.47kV medium-voltage distribution system serves the building via an air switch and 2 MVA 480Y/277 Volt padmounted transformer. The air switch is located across the driveway to the north, and the transformer is located in a side service yard.
- The main switchboard is located in the main electrical room. The switchboard is a Siemens front-access board, and appears to be original equipment from 2002. The bussing is an 800 Amp main section and one 800 Amp distribution section. The observed instantaneous load on the board was 90 Amps, however

the building was lightly occupied on this day and no cooking loads were in use.

- The distribution section circuit breakers are group-mounted. There appears to be one half-width and two full-width spaces.
- The equipment is modern and early in its lifespan, and replacement components will be easy to acquire.
- Lighting in the building is composed primarily of linear fluorescent fixtures. Lighting controls are ad-hoc, with exterior lighting controlled by a timeclock and interior spaces controlled by local controllers in each suite. Egress lighting is provided by integral batteries at the fixture.

Fire Alarm General Description

The fire alarm system is an Edwards EST-2 horn-strobe type system with accessible pull-stations, tied into the campus fire alarm system.

R Building - Instructional Building
HVAC General Description

- The building was originally constructed in 2001. The majority of the equipment was installed during the original construction. The system consists of a closed loop ground source loop serving single zone water source heat pumps. Multiple pumps are required for this type of system. There is also a heat recovery unit utilized for ventilation.
- The heating and cooling equipment are single zone heat pumps and relatively small and inexpensive to replace. If this equipment reaches the end of their life a replacement is not a major project. The closed loop ground source system has a very long lifespan and can be considered to be operable for the foreseeable future.
- The water source heat pumps are small and can be located in closets near the zone they serve. Hydronic piping and power are required to be routed to the equipment which does not take up much ceiling space compared to ductwork. This type of system is easy to reconfigure or change sizes making major renovations possible without replacing the central mechanical system. The heat recovery unit does require duct to be routed throughout the building, but the size is much smaller than the traditional overhead distributions system.

Plumbing General Description

- Plumbing services installed at the time the original building was built in 2001. No remodels noted. Urinals were changed from waterless to 0.5 gallon/flush in 2014. Hot water to building is supplied by a main tank type gas water heater in the mechanical room, and a 4 gallon electric tank type water heater for kitchen hot water service. Water flow meters installed on building mains for tracking water consumption. Gas service provided to building through building gas meter and regulator. Storm sump in basement for area and foundation drain.
- Plumbing services in serviceable condition. Backflow preventers inspected and tested yearly. Sump pumps recently replaced.
- Sump discharge piping is supported by an adjacent pipe, and is not acceptable per code.

Fire Protection General Description

- Fire service with double detector check assembly located in an exterior vault. Wet sprinkler system for building.
- Backflow preventers are inspected and tested yearly. Sprinkler valves tested regularly.
- There are no code issues to note.

Electrical General Description

- The core electrical infrastructure appears to be original to the building in the year 2001.
- The college-owned campus 12.47kV medium-voltage distribution system serves the building via an air switch and 1.5 MVA 480Y/277 Volt padmounted transformer, both located adjacent to the building between buildings R and G.
- The main switchboard is located in the main electrical room. The switchboard is a 2000 Amp floor-mounted front-access board, and appears to be original equipment from 2001. The equipment is modern and early in its lifespan. Replacement components are available.
- Lighting in the building is composed primarily of linear fluorescent fixtures. Lighting controls are ad-hoc, with exterior lighting controlled by a timeclock and interior spaces controlled by local controllers in each suite.
- Emergency lighting is served by a tap-ahead-of-main arrangement at the main switchboard.

Fire Alarm General Description

The fire alarm system is a Notifier horn-strobe type system with accessible pull-stations, tied into the campus fire alarm system.

S Building
HVAC General Description

- The building was originally constructed in 2009. The building is used as a science lab which the mechanical systems are well suited for. There are two hot water boilers for building heating, 100% outside air packaged air handling units, lab exhaust fans, heat recovery systems, variable volume terminal units, and fin tube radiators.
- With equipment being relatively new it is in good condition. It can be assumed to be able to continue to serve the building with only minor upgrades for an extended period of time.
- The mechanical system in this building is well suited for a lab. Being a variable volume system, modifications can be made to the building without major changes to the existing equipment. A change in occupancy would be somewhat difficult as this system would not be ideal for an office or classroom occupancy because it is served with 100% outside air.

Plumbing General Description

- Plumbing services installed at the time the original building was built in 2008. No remodels noted. Water flow meters installed on building mains for tracking water consumption. Gas service provided to building through building gas meter and regulator. Separate systems for domestic water service and laboratory water service which includes an additional reduced pressure backflow assembly. Separate systems for sanitary waste and laboratory waste. Water for building is boosted by a duplex pressure boosting pump with two 10 horsepower motors. Building contains lab vacuum and lab compressed air systems with a simplex vacuum pump and simplex air compressor at Mechanical Room S113. Non-potable hot water to laboratories is supplied by two tank type gas fired water heaters located in Boiler Room S402. Domestic hot water is supplied by a tank type gas fired water heater located in Boiler Room S402.
- Plumbing services in serviceable condition. Backflow preventers inspected and tested yearly.
- There are no code issues to note.

Fire Protection General Description

- Fire service with double detector check assembly located in an exterior vault. Sprinkler system is boosted by a jockey pump and a 30 horsepower PEERLESS model Fire pump capable of providing 175 feet of pressure boost at 400 gpm, and located in Mechanical Room S113. Sprinkler system is a wet system for building.
- Backflow preventers are inspected and tested yearly. Sprinkler valves tested regularly.
- There are no code issues to note.

Electrical General Description

- The core electrical infrastructure appears to be original to the building in the year 2008.
- The college-owned campus 12.47kV medium-voltage distribution system serves the building via an air switch and 2 MVA 480Y/277 Volt padmounted transformer, both located adjacent to the building in a service yard at the north side of the building.
- The main switchboard is located in the main electrical room. The switchboard is a 2500 Amp floor-mounted front-access board, and appears to be original equipment from 2008. The equipment is modern and early in its lifespan. Replacement components are available.
- Emergency power for the fire pump is provided from a tap-ahead-of-main arrangement at the main switchboard.
- Lighting in the building is composed primarily of linear fluorescent fixtures. Lighting controls are centralized relay panels. Egress lighting is provided by emergency fixtures with integral batteries.

Fire Alarm General Description

The fire alarm system is a horn-strobe type system with accessible pull-stations and full area smoke detection, tied into the campus fire alarm system.

T Building
HVAC General Description

- The building was originally constructed in 2013. The majority of the air handling equipment was installed during the original construction. The system consists of an open loop ground source loop serving single zone water

source heat pumps. Multiple pumps are required for this type of system. There are also multiple heat recovery units utilized for ventilation.

- The heating and cooling equipment are single zone heat pumps and relatively small and inexpensive to replace. If this equipment reaches the end of their life a replacement is not a major project. The open loop ground source system has a very long lifespan and can be considered to be operable for the foreseeable future. Being an open loop system does require some maintenance and possible equipment replacement in system over time but the system is reliable.
- The water source heat pumps are small and can be located in closets near the zone they serve. Hydronic piping and power are required to be routed to the equipment which does not take up much ceiling space compared to ductwork. This type of system is easy to reconfigure or change sizes making major renovations possible without replacing the central mechanical system. The heat recovery unit does require duct to be routed throughout the building, but the size is much smaller than the traditional overhead distributions system.

Plumbing General Description

- Plumbing services installed at the time the original building was built in 2015. No remodels noted. Domestic water supplied through reduced pressure backflow assembly located at Mechanical Room T135. Water flow meters installed on building mains for tracking water consumption. Water for building is boosted by a duplex pressure boosting pump. Hot water for building is supplied by a tank type electric water heater, assisted by two water source heat pumps.
- Plumbing services in serviceable condition. Backflow preventers inspected and tested yearly.
- There are no code issues to note.

Fire Protection General Description

- Fire service with double detector check assembly located in an exterior vault. Sprinkler system is a wet system for building.
- Backflow preventers are inspected and tested yearly. Sprinkler valves tested regularly.
- There are no code issues to note.

Electrical General Descrip tion

- The core electrical infrastructure appears to be original to the building in the year 2015.
- The college-owned campus 12.47kV medium-voltage distribution system serves the building via an air switch located west of the building, and 1.5 MVA 480Y/277 Volt vault-mounted transformer located within the building.
- The main switchboard is located in the main electrical room. The switchboard is a 2000 Amp floor-mounted front-access board, and is original equipment from 2015. The equipment is new, at the beginning of its lifespan. Replacement components are readily available.
- Lighting in the building is composed primarily of fluorescent and LED fixtures. Emergency lighting is integral battery packs.

Fire Alarm General Description

The fire alarm system is a horn-strobe type system with accessible pull-stations, tied into the campus fire alarm system.

Survey Photos

MECHANICAL PHOTOGRAPHS

The below pictures are a sampling of the photographs taken on the two-day campus survey. Building systems were reviewed to determine age, efficiency, and condition of all major equipment.

Building M

All equipment serving this building was located in an inadequate location for pictures. System described in assessment narrative.

BUILDING A

BUILDING B

APPENDIX F / Mechanical, Electrical and Plumbing

BUILDING C

BUILDING D

BUILDING E

BUILDING G



BUILDING K

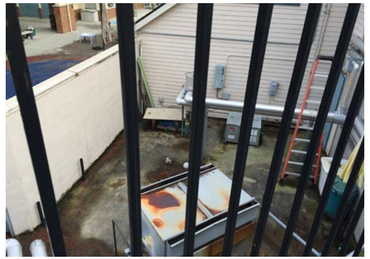


BUILDING L



BUILDING N


BUILDING Q

BUILDING R


BUILDING S

BUILDING T

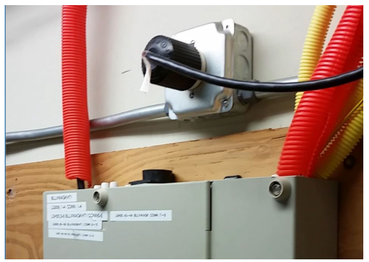
ELECTRICAL PHOTOGRAPHS

The below pictures are a sampling of the photographs taken on the two-day campus survey. Building systems were reviewed to determine age, efficiency, and condition of all major equipment.

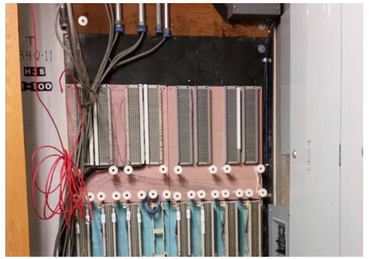
Buildings L, R, S, T

It was determined that the record documentations provided were sufficient for reviewing the electrical system. Buildings that were recently constructed required review time of the documentation rather than visiting all electrical spaces.

BUILDING A



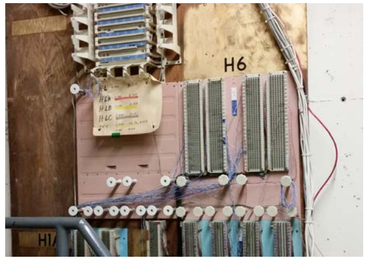
BUILDING B



BUILDING C

BUILDING D

BUILDING E

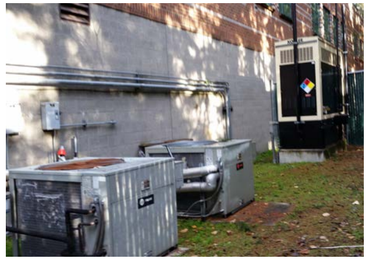


BUILDING G

BUILDING K

BUILDING M

BUILDING N



BUILDING Q

ONSITE ELECTRIC VEHICLE CHARGING

FP/PLUMBING PHOTOGRAPHS

The below pictures are a sampling of the photographs taken on the two-day campus survey. Building systems were reviewed to determine age, efficiency, and condition of all major equipment.

BUILDING A

BUILDING B

BUILDING C

BUILDING D

BUILDING E

BUILDING G

BUILDING K

BUILDING L

BUILDING M

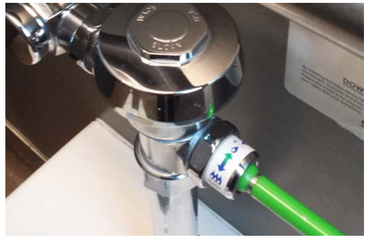
BUILDING N

PARKING GARAGE

BUILDING Q

BUILDING R

BUILDING S



BUILDING T

APPENDIX G
SUSTAINABILITY

SUSTAINABILITY

Bellevue College, the faculty, and students have focused on sustainability for a number of years. Faculty began an educational component in 2000 for facilitating conversations regarding climate impacts. In 2008, the student government created a self-taxed fund. The Student Environmental Sustainability Fund (SESF) pays $150,000 annually for projects and administration supporting sustainability across campus.

Initiatives created by this fund have been implemented in a range of applications such as monitoring energy usage within buildings through a Skyspark system, implementing policies for office composting, installing high efficiency fixtures, creating a student garden, and achieving Washington State new construction LEED goals. The fund led to the creation of the Office of Sustainability in 2012, which strategically guides the campus in achieving sustainability goals and works with faculty to incorporate sustainability into the curriculum.

The Office of Sustainability

Members of the BC Office of Sustainability are responsible for the drafting and implementation of on-campus sustainability initiatives and programs, collection and analysis of sustainability metrics, and coordination of alternative transportation options to and from campus. Programs also involved in the initiatives include:

- Environmental Advisory Committee
- Student Environmental Sustainability Fund Committee
- Sustainability Curriculum Committee
- Sustainability and Science Association

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 (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.

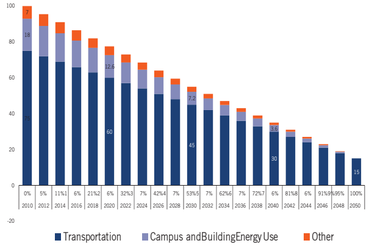


Figure G-01: Carbon Assessment
Source: Bellevue College Climate Action Plan

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.
- Expertise and management within Bellevue College.

As of 2013, Bellevue College was awarded the 2013 Climate Leadership Award for Associate's Colleges, which recognizes ten campuses annually that work to improve on-campus sustainability efforts. To understand the most current information for on-campus sustainability efforts, the campus sustainability website provides detailed information and supporting links on the academic/non-academic programs and initiatives offered on campus in progress to achieve carbon neutrality.

RECENT ACTIVITIES

Energy

As seen through some of the more recently developed buildings, there is a focus on more energy-efficient and sustainable mechanical systems. These systems include distributed ground source heat pump systems. Also, with the implementation of the Skyspark energy monitoring system, campus energy use is more transparent which will result in increased visibility of the sustainable actions across campus.

There are several, more recently constructed buildings that have systems that rely on electricity as the primary form of heat rather than natural gas, typically accomplished through heat pumps. These newer buildings also employ sustainable strategies, such as ground source systems, to further reduce the amount of energy and carbon required for heating and cooling the buildings. To meet the campus' carbon goals, an efficient and electrically-based mechanical strategy must be used campus-wide. Implementing renewable forms of energy throughout the campus would also increase the energy efficiency of the campus and reduce the overall carbon footprint.

Other projects completed include energy efficiency improvements to out-dated equipment. These projects include upgrading components on air handling units. Carbon neutrality goals will require further improvements to energy systems including the implementation of a campus-wide heat exchange loop (as described in the Campus Master Plan) and reduction of single occupancy vehicle trips to campus.

Wastewater Management System

On-site wastewater treatment and reuse makes the best business case for water conservation and should be implemented as described in the Campus Master Plan. In a time when a significant portion of Washington is in a drought emergency, major reductions in the amount of potable water used for non-potable uses such as toilet flushing makes environmental and financial sense, and reflects the college's strong environmental values.

The rates for water and sewer in the city of Bellevue are significantly higher than nearly all other cities in the U.S. and with the added King Country Sewer Impact fee the cost of water and sewer for a new project exceeds the costs of any other major city in the U.S., with the exception of the City of Seattle. There are many good examples of on-site wastewater treatment and reuse on the west coast, from the San Ysidro Land Port of Entry and the Oregon Health Sciences Membrane Bioreactors natural systems to the San Francisco Public Utilities Commission, and the Hassalo on 8th mixed use development. Recent counts revealed nearly 20 on-site wastewater treatment and reuse systems in operation on the west coast.

APPENDIX G / Sustainability

SUSTAINABLE PRACTICES

Protect or Restore Habitat

- Limit site disturbance
- Wetlands: maintain code required separation from development
- Promote biodiversity by providing a vegetated open space[1]

Landscape Materials

Provide primarily native and/or naturalized species planted in appropriate locations in such a way that emulates the density and biodiversity of indigenous ecosystems.

Agriculture

Integrate opportunities for agriculture.

Transportation Orientation and Circulation

Create a pedestrian-oriented community. Elements of a pedestrian orientation community (Walkable Project Site) include:

- A principal functional entry on the front façade faces a public space, but not a parking lot, and is connected to sidewalks or equivalent provisions for walking.
- Continuous sidewalks or equivalent all-weather route for walking that serve all building entrances and connect them with primary sidewalks with a width of at least 8 feet.
- Public Transportation Access: Work to create connections to the regional transit network within 1/4-mile walking distance (measured from a main building entrance) usable by building occupants and accommodate transit service on campus roads and through waiting areas.
- Provide barrier-free, dedicated walking and biking lanes.
- Bicycle Storage and Changing Rooms.
    - Provide secure bicycle racks and/or storage for building staff and students.
    - Provide shower and changing facilities.
- Parking Capacity & Pricing: Parking capacity to meet but not exceed minimum local zoning requirements and price parking to manage demand.

Joint Use of Facilities

Adopt joint use strategies and/or inter-local facility use agreements.

Construction Activity Pollution Prevention

Tightly enforce authorizing agency requirements for best practices for erosion control, wetland protection, and air quality practices including but not limited to:

- Prevent loss of soil during construction by storm-water runoff and/or wind erosion, including protecting topsoil by stockpiling for reuse.
- Prevent sedimentation of storm sewers or receiving streams.
- Prevent pollution of the air with dust and particulate matter.

Water

Water Conservation

Employ water conservation strategies that reduce aggregate water use within buildings (not including irrigation). Install metering devices on all major equipment to account and manage water usage. Use landscape plantings that do not require permanent irrigation. If permanent irrigation is necessary, use only captured or recycled water to eliminate use of City supplied potable water (except for initial plant establishment period).

Net Zero Water

Supply non-potable water by captured precipitation or other natural closed loop water systems that account for downstream ecosystem impacts, or by recycling used water. Water will be appropriately purified without the use of chemicals.

Ecological Water Flow

Manage storm water for events onsite using acceptable best management practices to feed non-potable water demands or on-site agricultural use or release into adjacent wetlands through acceptable natural time-scale surface flow, ground-water recharge that mimics predevelopment hydrology. Utilize best storm-water management practices including but not limited to rain gardens including roof gardens, pervious paving, cisterns, bio-swales, settlement and infiltration ponds, and similar water retaining features.

Continuous Commissioning

Regular evaluation of water systems for proper functioning and auditing using meter data.

Energy and Atmosphere

Energy Life Cycle Cost Analysis

Perform an energy life cycle cost analysis early in the building design phase. Compare sustainable alternate HVAC, envelope, lighting and plug load strategies.

Refrigerant Management and Enhanced Refrigerant Management

Prohibit CFC based refrigerants in HVAC and refrigeration systems to eliminate emission of compounds that contribute to ozone depletion and global climate change.

Verification

Provide for the ongoing accountability and optimization of building energy consumption over time using individual metering devices and a campus-wide digital control system that shows real-time temperatures, carbon monoxide levels, and equipment troubles.

Continuous Commissioning

Commissioning and Advanced Commissioning must be provided upon completion and following occupation. Ongoing building maintenance and operations plans will be implemented including management of plug load through energy-star purchasing and occupant engagement.

Health, Indoor & Environmental Quality

Light Quality

Provide ample natural day-lighting to reduce dependence on artificial lighting, provide occupants with a visual connection to the outdoors, and to take advantage of views.

Healthy Air

- Use high performance heating, ventilating, and air conditioning strategies that protect air quality.
- Ventilate indoor spaces without reliance on mechanical equipment wherever feasible and practical.
- Provide each space with some degree of user operated windows or ventilation intakes.
- Monitor and control carbon monoxide levels to optimize learning conditions.
- Meet the minimum requirements of the most current ASHRAE Standards related to ventilation.
- Monitor construction practices carefully to ensure moisture does not infiltrate building or products and may later contribute to mold growth.
- Specify only the type of products that do not contribute to odorous, irritating and/ or harmful conditions and well-being of installers and occupants such as found in adhesives and sealants, paints and coatings, flooring systems, wood treatment, and furnishings.
- If HVAC systems are used during construction require installation of filtration media on HVAC components and replacement of all filters prior to occupancy.
- Flush out all buildings following completion of construction and installation of furnishings and prior to occupancy.
- Conduct a baseline indoor air quality assessment at the end of flush out period and prior to occupancy.
- Train all maintenance and instructional staff about the heating, ventilation, and cooling systems as well as light control systems so they understand ventilation and light control system concepts.
- Provide building specific training to all facilities staff that oversee custodial care and building maintenance activities so they understand how to properly maintain and control the indoor climate.

Biophilia

Incorporate design elements that nurture the innate human attraction to natural systems and processes. These elements will include:

- Natural shapes and forms
- Natural patterns and processes
- Light and space
- Place-based relationships
- Evolved human-nature relationships

Materials and Resources

Red List

The following Red List materials or chemicals will be prohibited from use to the degree practical:

- Asbestos
- Cadmium
- Chlorinated Polyethylene and Chlorosulfonated Polyethlene
- Chlorofluorocarbons (CFCs)
- Chloroprene (Neoprene)
- Formaldehyde (added)
- Halogenated Flame Retardants
- Hydrochlorofluorocarbons (HCFCs)
- Lead (added)
- Mercury
- Petrochemical Fertilizers and Pesticides
- Phthalates
- Polyvinyl Chloride (PVC)
- Wood treatments containing Creosote, Arsenic or Pentachlorophenol

Appropriate Sourcing

Incorporate place-based solutions and contribute to the expansion of a regional economy rooted in sustainable practices, products and services.

Conservation + Reuse

Create Material Conservation Management Plan that explains how each building or improvements can

1 https://new.usgbc.org/glossary/term/4648

APPENDIX G / Sustainability

optimize material and product usage at each of the design phases.

Continuous Commissioning
Campus operations will maintain green cleaning, procurement of supplies, furnishings, and food, materials reuse and recycling and appropriate disposal,

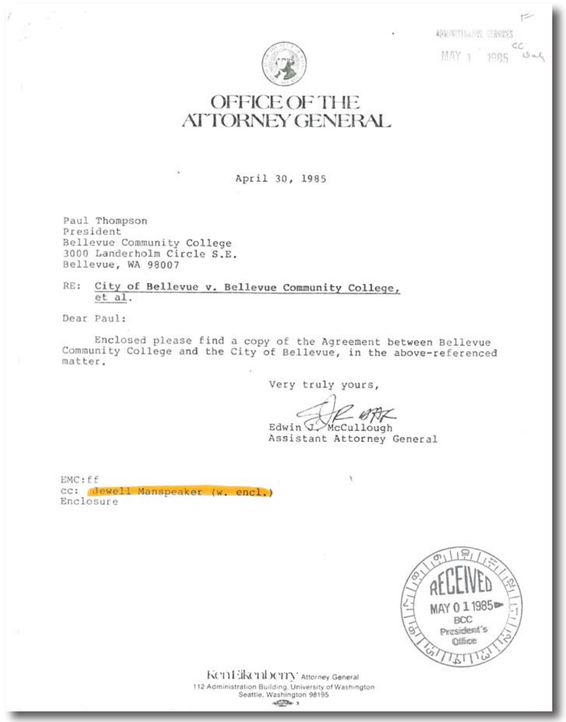
Education and Inspiration
Inspiration + Education
Educational materials about the operation and performance of the project will be provided to the public to share successful solutions and to motivate others to make change.

Outdoor Learning and Gathering
Campus spaces will promote social interaction and appreciation of the environment.

Operations and Maintenance
Building systems must have operating and maintenance plans that include continuous commissioning with clear delineation of responsibilities (staff of contractors), specific timelines, and reporting as outlined in the section above.

Occupants will be educated and engaged in the intended operation, maintenance of their workspaces and area of service and protocol for reporting issues.

APPENDIX H
1985 CITY OF BELLEVUE AGREEMENT



OFFICE OF THE
ATTORNEY GENERAL

ADMINISTRATIVE SERVICES
MAY 1 1985

April 30, 1985

Paul Thompson
President
Bellevue Community College
3000 Landerholm Circle S.E.
Bellevue, WA 98007

RE: City of Bellevue v. Bellevue Community College, et al.

Dear Paul:

Enclosed please find a copy of the Agreement between Bellevue Community College and the City of Bellevue, in the above-referenced matter.

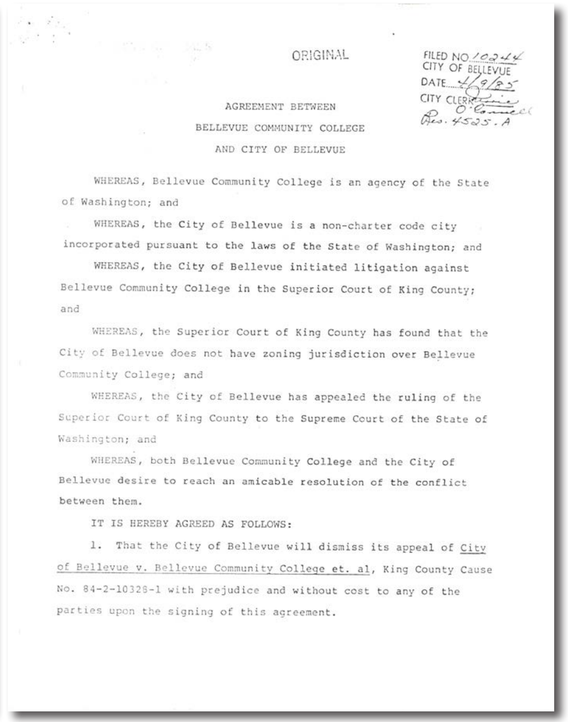
Very truly yours,

Edwin L. McCullough
Assistant Attorney General

EMC:ff
cc: Jewell Manspeaker (w. encl.)
Enclosure

RECEIVED
MAY 0 1 1985
BCC
President's
Office

Kenneth O. Eikenberry Attorney General
112 Administration Building, University of Washington
Seattle, Washington 98195



ORIGINAL

FILED NO. 10244
CITY OF BELLEVUE
DATE 4/9/85
CITY CLERK
Res. 4505-A

AGREEMENT BETWEEN
BELLEVUE COMMUNITY COLLEGE
AND CITY OF BELLEVUE

WHEREAS, Bellevue Community College is an agency of the State of Washington; and

WHEREAS, the City of Bellevue is a non-charter code city incorporated pursuant to the laws of the State of Washington; and

WHEREAS, the City of Bellevue initiated litigation against Bellevue Community College in the Superior Court of King County; and

WHEREAS, the Superior Court of King County has found that the City of Bellevue does not have zoning jurisdiction over Bellevue Community College; and

WHEREAS, the City of Bellevue has appealed the ruling of the Superior Court of King County to the Supreme Court of the State of Washington; and

WHEREAS, both Bellevue Community College and the City of Bellevue desire to reach an amicable resolution of the conflict between them.

IT IS HEREBY AGREED AS FOLLOWS:

1. That the City of Bellevue will dismiss its appeal of City of Bellevue v. Bellevue Community College et. al, King County Cause No. 84-2-10328-1 with prejudice and without cost to any of the parties upon the signing of this agreement.

2. That Bellevue Community College is not required to conform to the zoning requirements of the City of Bellevue.

3. That Bellevue Community College is subject to all relevant building codes and will obtain building permits whenever required by State law.

4. That the City of Bellevue agrees that Bellevue Community College may locate and build its facilities wherever Bellevue Community College designates, irrespective of existing land use and/or zoning requirements, even if the Bellevue Land Use Code would otherwise or normally require a Conditional Use Permit or other permit process and even if the use of property for educational purposes and/or community college related activities would otherwise or normally be prohibited or not permitted under existing land use and/or zoning or other codes, SUBJECT TO THE FOLLOWING CONDITIONS:

a. Bellevue Community College agrees to notify the City of Bellevue and all surrounding property owners of its intent to locate facilities in a particular location if use of that property by Bellevue Community College would not be permitted under the City of Bellevue's zoning code. Bellevue Community College shall submit its plans to the City of Bellevue for consideration, and Bellevue Community College shall attempt to meet with affected property owners to discuss the proposal.

b. Bellevue Community College agrees that where the City of Bellevue notifies Bellevue Community College within 45 days of receipt of its plans as to what the City of Bellevue perceives as a potential significant adverse environmental impact(s) caused by a Bellevue Community College project, then Bellevue Community College will review and consider these potential impacts in good faith and will work with the City to take reasonable steps to mitigate them. If the City of Bellevue does not notify Bellevue Community College of potential environmental impacts within 45 days after plans have been submitted by the College to the City of Bellevue, then the City of Bellevue will be deemed to have found that there are no adverse environmental impacts.

c. The City of Bellevue agrees to process building permits, land use/zoning matters, and other review in an expedited fashion and that in any event such review/processing shall not take more than 45 days. However, the building permit shall not issue until SEPA review, if required, and any appeals therefrom are complete. All review/processing shall be by the administrative staff of the City of Bellevue. Any requirements for public hearings and/or comment shall be waived unless specifically required by SEPA.

5. In making an environmental review under SEPA, if required, the parties shall work together and shall consider the standards required by Bellevue's then current codes related to parking, landscaping, screening, lighting, height, bulk, set back requirements and public works development standards in a good faith attempt to mitigate any adverse environmental impact caused by the project.

6. However, if Bellevue Community College or the City of Bellevue cannot reach agreement on any matter contained herein, then either party may seek review in the Superior Court of King County or any other competent forum.

7. Either party may terminate this agreement upon 60 days notice to the other party.

BELLEVUE COMMUNITY COLLEGE

By _____
Paul Thompson, President

CITY OF BELLEVUE

By _____
Philip Kushlan, City Manager

Approved as to form:

_____
Richard L. Andrews
City Attorney

APPENDIX H / 1985 City of Bellevue Agreement

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APPENDIX J
RECOMMENDED HOUSING STRATEGIES MEMO

PERKINS+WILL

Memo

To:	Bellevue College
From:	Master Plan Consultant Team
Date:	February 12, 2016
Subject:	Bellevue College Master Plan Initial Projects Recommendations

During discussions with the team developing Schematic Designs for Phase 1 of student housing projects currently in design, it was clear that the direction of campus sustainability, connectivity, systems, networks and general planning needed to be incorporated into the project. The list of recommended strategies below is meant to guide the college in developing a direction for the initial projects to engage in and promote the planning efforts of the campus master plan. These strategies will need to be evaluated for feasibility of both cost and implementation over the long term as well as initial placement.

Site / Landscape

- The quadrangles, courtyards and axes are a critical campus organizational and identity tool for this campus and any campus. They are of particular importance on the Bellevue College campus in providing a clear and legible campus experience.
    - Use quads and axes as ways to physically and visually connect open space. Axes and other pedestrian circulation should vary in scale to create clear hierarchy and aid in wayfinding.
    - Size and spatial organization should consider the critical dimensions that support user engagement and use.
    - Strengthening east-west connections is of particular importance given the location of the new student housing and the future potential expansion to the east.
- Create gathering spaces that enhance social activity and interaction on a variety of scales to address the needs of the new 24/7 students.
    - Leverage indoor public/gathering spaces by co-locating exterior spaces that are comfortable and provide space for spill-out and gathering.
- Maintain existing intact groves and tree canopy; as it relates to the housing specifically, the current ropes course is an intact treed area that is one of a number of iconic campus grove landscapes for campus users.
    - Build upon the existing groves to enhance this as part of campus identity and wayfinding.
    - Minimize damage and disturbance to the tree canopy in the housing project site. The mature tree canopy and forest are critical to the identity of Bellevue College and the housing site is located in and adjacent to one of the important northern forested areas.
- Take advantage of natural topography to enhance local and regional views and connect the campus with the larger context.
- Enhancement of pedestrian connections between new student housing and designated parking areas (i.e. parking garage); such as pedestrian scale lighting, sidewalk widths, and/or separated paths.

PERKINS+WILL

February 12, 2016
Re: **Bellevue College Master Plan Initial Projects Recommendations**

- Increase safety and access to all areas of campus through the following strategies:
  - Well-lit walkways and pedestrian paths
  - Remove existing visual barriers that impede wayfinding and replace with clearly defined signage and pathways that provide visual access to mixing zones and thresholds.
  - Refrain from creating blind corners for circulation

Civil

- Storm Water management strategies to consider:
  - Surfaces of existing and new construction.
    - Building Rooftop (ie Green Roof, Blue Roof, Blue Plaza)
    - Raingardens and Bioretention Planters
    - Distributed subsurface storage (ie Athletic Fields, Roadways, Plaza's & Courtyards)
    - Porous Paving
    - Expressions and Natural Harvest thru landscape absorption.
  - Refresh existing Campus Stormwater assets. (ie Swales, Ponds, and Vegetated Open Space)
  - Consider Injection wells
  - Make stormwater capture and management visible. Strategies should be a mix of structured and more natural in appearance depending on location.
  - Co-locate stormwater conveyance & capture with pedestrian circulation; use as a wayfinding and identity-creating technique.

Architecture

- Provide open and equitable access for all users.
- Design to take advantage of regional views and natural daylight/shade.
- Provide shared use spaces with maximized flexibility of use and efficiency of space. Consider providing adequate storage for furniture to allow for increased flexibility.
- Develop hierarchy of open space and entries.
- Steward sustainability where possible:
  - Coordinate enhanced building envelope, including triple pane glazing system, where possible such as the "Hub" referenced with Phase 1 of the planned Student Housing project.
  - Consider enhanced building envelope including triple pane glazing system for the building housing units and common areas.
  - Include infiltration testing and thermal imaging in the building commissioning of the envelope system.

Mechanical Systems

- Provide cap and valve extension of heating water serving building heating system. Provide space for future heat exchanger or heat pump from campus energy reclaim system.
- Provide heating of the housing units with radiator/fan coils connected to the building central heating water system. Heating system shall be designed utilizing a low heating water temperature.
- Consider central dedicated outside air system (DOAS) for housing units in lieu of trickle vents. System to include central exhaust heat recovery in the air handling system.
- Provide heat recovery dedicated outside air unit (DOAS) with two pipe heating/cooling coil for future connection to the campus energy reclaim system for the building "Hub" area.
- Consider radiant floor system (coordinate no carpet with Architect) for supplemental heating and cooling of the building "Hub" area.

PERKINS+WILL

February 12, 2016
Re: **Bellevue College Master Plan Initial Projects Recommendations**

- Consider heating and cooling "Hub" area with a ground source or hydronic heat pump system that can be easily connected to the campus energy reclaim system. Provide cap and valve to connect easily to campus system.
- Consider utilizing the sports field renovation for "slinky" ground source loop.
- Geoexchange systems to consider where possible:
  - Shallow Loop Field
  - Shallow Drilled Field
  - Deep Wells

Electrical Systems

- Provide the following to be included in the emergency generation system for future connection to the campus emergency fire/life safety power system.
  - Paralleling hardware and software within the generator package equipment
  - Conduits for future power and control wiring to outside the building
- Provide connection to the power infrastructure for building mounted renewable energy (PV).
- Consider LED based lighting source lamps for all areas.

Plumbing Systems

- Consider separating the domestic water piping to all toilet fixtures for future use of campus non potable water system. Provide ability to convert to non-potable in the future when the system is ready. If all residential toilet fixtures are not financially feasible, consider separating the "HUB" area only.
- Provide piping extension for future diversion of building sanitary sewer piping to site based black water treatment system.
- Recommendation to capture full wastewater within the buildings or direct sewer mining from the campus sewer network. Treatment process thru visible constructed wetland in the landscape.
- Provide cap and valve extension of domestic cold water serving domestic water heating system. Provide space for future heat exchanger or heat pump from campus energy reclaim system.
- Coordinate appropriate materials and onsite storage of rainwater for future site non potable water system connection.
- Do not use waterless urinals.
- Upon initial investigation grey water systems require separation within buildings and capture less usable water than black water and make less of a reduction in the KC Development Charge. Not recommended.
- Reclaimed water distribution should include water storage and pressurized distribution.
  - For student housing project specifically: Water controls room preferably indoors incorporated into Phase 1 buildings.

IT infrastructure System

- Consider Fuel Cell based power for building IT MDF & IDF room and associated HVAC equipment in lieu of emergency power generation back-up. Waste heat is to be connected to the future campus energy reclaim system and/or domestic water heating system with heat exchanger.

Transit

- Consider allocation of dedicated parking in existing parking garage or other suitable location.
  - Parking displaced by housing project to be accommodated in current supply, no new parking proposed as part of student housing project.
- Provide loading accommodations for move-in/move out near student housing.

PERKINS+WILL

February 12, 2016

Re: **Bellevue College Master Plan Initial Projects Recommendations**

- Enable potential closure of Kelsey Creek Road to general purpose traffic and construction of new roadway east of student housing project.
- Consider closing garage access to Kelsey Creek Road to reduce multi-modal conflicts at the garage access.
- Consider relocation of bus stops (assuming future transit reroute to Snoqualmie River Road) near Building G to service campus and student housing project.
- Promote/encourage pedestrian connectivity south of the campus, connecting to redevelopment areas.
- Consider improved pedestrian amenities along Snoqualmie River Road.
- Consider realignment of transit routes through campus to improve transit connectivity to the Eastgate Park and Ride lot and facilitate the City of Bellevue's transit master plan implementation.

cc:

Bellevue College	Vidya Ramachandran Ray White
Perkins+Will	Brodie Bain
Swift Co	Barbara Swift, Anna O'Connell, Nathan Brightbill
MKA	Brook Jacksha, Sonya Gabrielson
PAE	Steve Reidy, Tony Marino
Transpo	Mike Swenson, Stephanie Herzstein

APPENDIX K
MASTER PLAN ALTERNATIVES

The planning team identified specific objectives for a new campus master plan. Those objectives inform aspects of the physical form of campus, and served to evaluate design alternatives:

- Make Pedestrians the Primary And Priority Focus
- Provide Bike Access and Infrastructure
- Maximize Views
- Create Internal and External Connections
- Enhance Natural Systems Within and Surrounding Campus
- Maximize a Sense of Community
- Create Memorable and Legible Spaces
- Organize Uses and Infrastructure
- Utilize Existing Positive Attributes
- Create a Connected Open Space
- Support the Case For Sustainability
- Support Social Equity

As part of the campus master planning process, early concept alternatives were studied and refined with college input. An assessment of strengths and weaknesses resulted in the final plan (see Section 05). The early concepts are described as **"Extending the Legacy"** and **"Maximizing Identity."**

TYPOLOGY

EXTENDING THE LEGACY

There are a number of features or typologies that, together, create a holistic-feeling campus. A unique edge condition indicates that there is something on the other side which, in the case of Bellevue College, is a wooded buffer around most of the campus. Entry zones are processional spaces that lets visitors know they are entering an academic campus, whether by walking, car, or transit. Once in the campus, a 'landing' or threshold is reached where core campus buildings and activities become visible. Road corridors provide vehicular-focused circulation whereas pedestrian axes provide walking and bicycle circulation. These axes also provide visual connection with primary interior campus spaces, the active/student cores.

The typologies can be aggregated in different ways to create an integrated campus. This diagram shows these elements as applied to the Legacy concept, in which the existing campus form is applied as the campus grows, creating a series of internally-focused courtyard connected by visual and circulation axes.

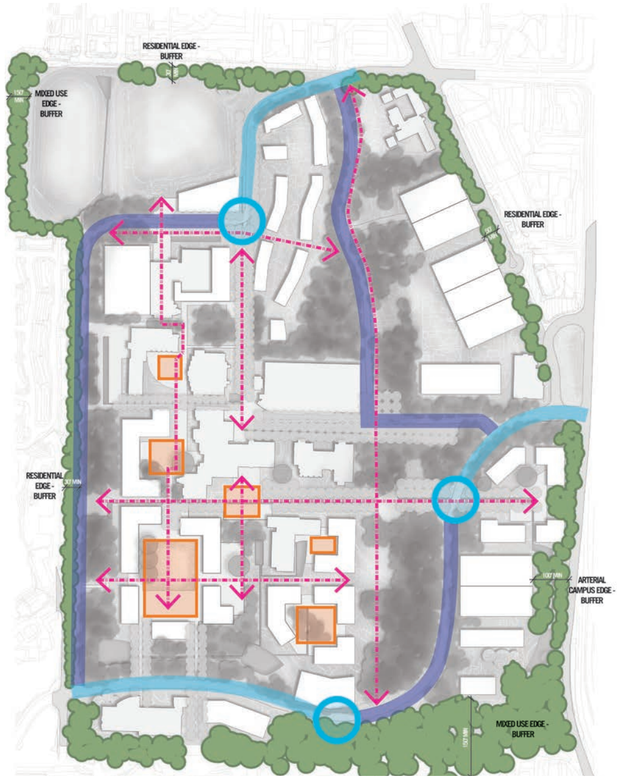

Figure K-01: Campus Typology

TYPOLOGY

MAXIMIZING IDENTITY

Applying these typologies to the Identity scheme, we see largely the same pattern. However in this scheme, the primary in-campus landing occurs at the campus high point where it is highly visible from within and outside the campus. Additionally, buildings and therefore their accompanying courtyards respond more to topography.

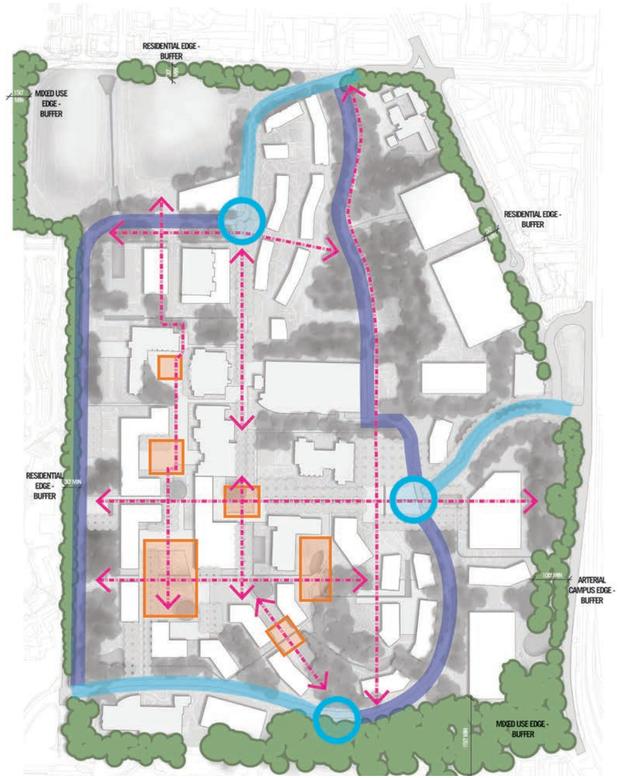

Figure K-02: Campus Typology

FRAMEWORK

EXTENDING THE LEGACY

Connecting the campus through a cohesive open space network, the “Legacy” of the existing physical campus is expanded with new development to the east and the addition of residence halls to the north. The internally focused typology supports the existing campus organization with new major axes and hierarchical quadrangles framed by adjacent buildings to formalize the open spaces.

The major east to west axis, stretching from Buildings C and D to a new eastern quadrangle, is the primary organizing element. The new quadrangle creates a connection to the major commercial corridor at 148th Ave, and provides a “peak-a-boo” look into the campus from this edge.

Figure K-03: Campus Space Planning

FRAMEWORK

MAXIMIZING IDENTITY

Enhancing the sense of internal and external identity for the college, this contiguous open space network is built on natural topographic advantages. At the highest point, along the natural ridge, exists an opportunity for developing porosity around the perimeter that fosters a sense of “the college on the hill” by opening views from the major thoroughfares of Interstate 5 and 148th Ave. With this increased visibility, the college can create physical presence for the region with new buildings that promote the mission and vision.

Open space near the primary east entry is formed by buildings with public interface, providing increased accessibility for the community. Wayfinding and arrival are also enhanced with building forms embracing the entry portal.

Figure K-04: Campus Space Planning

PHASED DEVELOPMENT

EXTENDING THE LEGACY

Near term development generally occurs where the highest need for immediate space was indicated by the College, including gym expansion, on-campus student residence halls, cafeteria and student affairs building. Other near term needs where identified as performance hall replacement and both replacement and new parking capacity to support growth.

Development follows the long-term master plan, with initial phases. This option identifies buildings nearest the existing Building T for near term development. Future expansion.

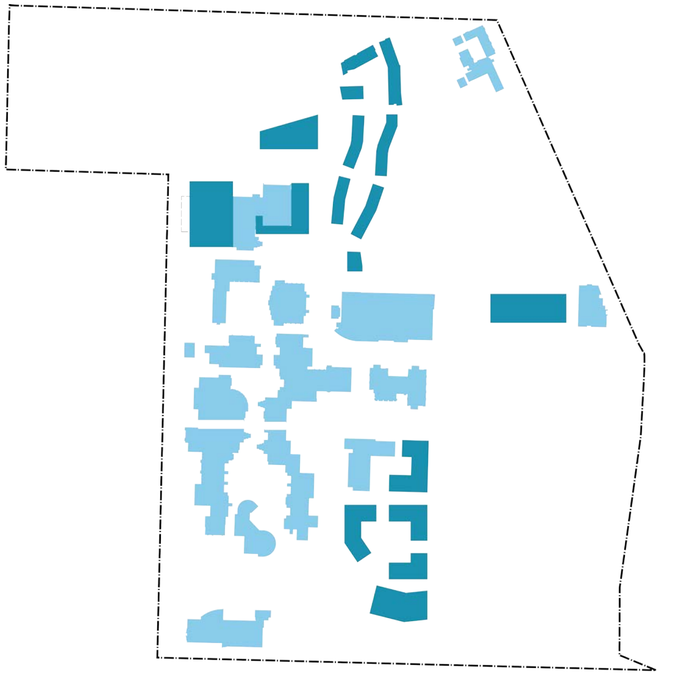

Figure K-05: Near-Term Development

PHASED DEVELOPMENT

MAXIMIZING IDENTITY

Selected areas for expansion and near-term phases in this option are similar to Extending the Legacy, however it also follows the framework outlined per the long-term plan following the topographic features of the natural land form shown in Figure K-08. This option identifies buildings nearest existing Buildings T and A for near term development.

Parking is distributed further across campus to the southeast, to provide for future long term academic buildings near the interior of campus.

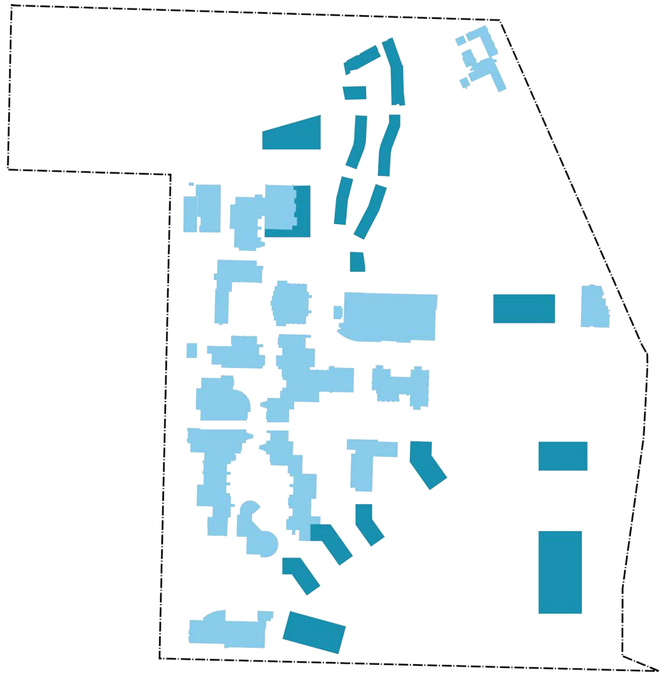

Figure K-06: Near-Term Development

OPEN SPACE

EXTENDING THE LEGACY

This scheme cues from the existing campus structure and systems. Buildings are placed primarily at low points and the campus is internally focused. This form creates a system of smaller precincts, each with its own identity, social life, and heart. Surrounding these buildings are naturalized or more wildland landscapes; this is where circulation within campus is focused. Additionally, the ridge and campus high points are maintained as a places where natural features are most prominent. In this scheme, the regional character and connections are more passive in character and give the campus a regional park-like quality. Features that are most prominently legible and visible from outside the campus are intact wooded areas and trail connections.

Figure K-07: Open Space Design

Legend

OPEN SPACE

MAXIMIZING IDENTITY

This scheme focuses on maximizing existing and creating new views in and out of campus, including views of region. Prominent built elements are concentrated at the edges and high points. Campus systems of open spaces are more interlocked and are features that help with wayfinding and campus legibility. Site circulation is part of overlapping courtyards, quadrangles, paths, and view corridors. This network also contributes to a less precinct-focused social life, with campus hearts being distributed. Campus edges are porous, open to the community. Regional character and connection has an active character with the most prominent and legible features from the outside being active public venues such as the theater, library, radio station, etc.

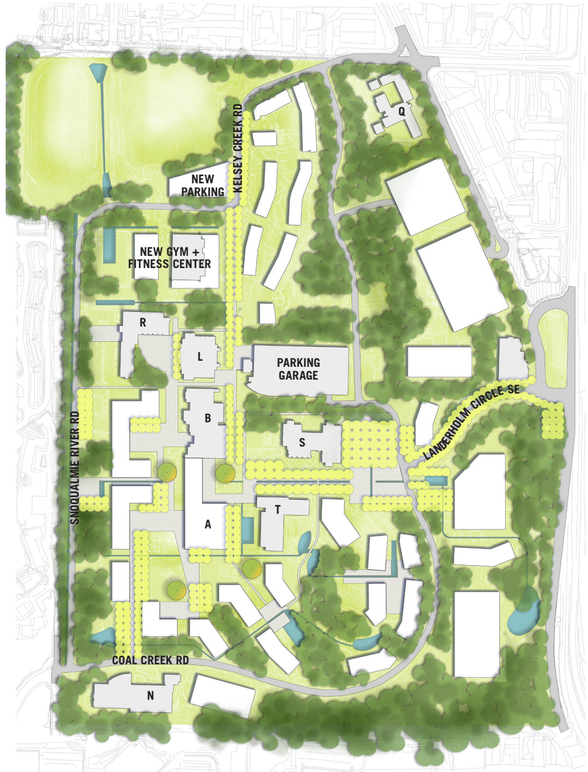

Figure K-08: Open Space Design

Legend

CIRCULATION

EXTENDING THE LEGACY

The site circulation would be similar to existing conditions but with some reconfiguration for vehicular access and internal connections. The major change would be closing Kelsey Creek Road to vehicle use and providing a new connection north-south, 145th Avenue SE between Landerholm Circle and SE 24th Street. This new connection would shift vehicular traffic away from the campus core and reduce pedestrian-vehicle conflict points near the existing parking garage. Landerholm Circle would continue to serve as a main entrance to campus; however, due to the proposal of a large parking facility along 145th Place SE, traffic would be expected to increase along SE 24th Street. The existing parking garage would remain, with access primarily continuing via Landerholm Circle and secondary access though the new 145th Avenue SE connection. The realignment of Landerholm Circle with Tyee River Road would create a new T-intersection, which would likely increase delays for general vehicles and transit depending on the routing. Consideration of a roundabout at this location would improves delays and travel times. No changes are proposed to the southern campus access at Snoqualmie River Road and Coal Creek Road.

The Legacy plan allows for a future potential transit along Snoqualmie River Road consistent with the City of Bellevue's Transit Master Plan. There would likely be 2 to 3 transit stops serving the campus. Parking would need to be removed or reconfiguration to accommodate transit facilities along this road. The location of transit along Snoqualmie River Road would result in longer walking distances to some of the new Buildings proposed with the Legacy plan; however, it would reduce transit and pedestrian conflicts as well as transit conflicts with driveways. In addition, the connection between the Campus and the Eastgate Transit Center would be more direct.

Note: This circulation diagram was developed prior to review with the City of Bellevue, see Section 05 for recommended interim and long term routes.

Figure K-09: Campus Circulation Design

CIRCULATION

MAXIMIZING IDENTITY

From a vehicle and pedestrian circulation perspective, the Identity plan is very similar to the Legacy plan with the exception of the main access at Landerholm Circle. The Identity plan would keep the circulation via Landerholm Circle and Coal Creek Road the same as existing conditions.

Note: This circulation diagram was developed prior to review with the City of Bellevue, see Section 05 for recommended interim and long term routes.

Figure K-11: Campus Circulation Design

SPACE PLANNING

EXTENDING THE LEGACY

New development, in accordance with the space needs reviewed in Section 6, is distributed around campus where functional uses and academic needs align. Structured parking is consolidated and moved to the periphery of the campus to maximize flexibility within the internal campus and support academic functions.

Near term projects include an expansion of fitness facilities, and limited development adjacent to the most recent Building T. Campus operational functions move to the southeast with access to the entire campus, allowing for parking expansion near Building G and the recreation fields.

Potential replacement or major renovation of Buildings A through E are shown in Figure K-12, and demonstrating the desire to provide additional circulation through and around the academic buildings surrounding the south courtyard. Residence halls are incorporated as part of the 2016 Student Housing[1] study.

Figure K-12: Campus Program Design

1 Reference 2016 Student Housing PreDesign, NAC

LEGEND

- Academic (Near-Term)
- Academic (Long-Term)
- Parking (Near-Term)
- Parking (Long-Term)
- Student Housing (Near-Term)

SPACE PLANNING

MAXIMIZING IDENTITY

Redistributing the similar future space needs to support a new physical campus concept, the design team proposed similar program placement to maximize the identity of the college. Focusing public-realm functions at the front door, near a new student welcome-center.

Page K22 and *Appendix A* explore further potential replacement or major renovation of Buildings A through E as shown in Figures K-11 and K-12, demonstrating the desire to provide additional circulation through and around the academic buildings surrounding the south courtyard. Residence halls are incorporated as part of the 2016 Student Housing[1] study.

Fitness and recreational expansion near Building G provide connectivity from central campus to the recreation fields. Visible and active uses on the ground floor of the new addition to Building G enhance a sense of community for students on campus.

Figure K-13: Campus Program Design

1 Reference 2016 Student Housing PreDesign, NAC

LEGEND

- Academic (Near-Term)
- Academic (Long-Term)
- Parking (Near-Term)
- Parking (Long-Term)
- Student Housing (Near-Term)

PARKING

EXTENDING THE LEGACY

Under the Legacy plan, several areas of surface parking would be removed, including most of the surface lots north of Coal Creek Road. The surface parking removed would be relocated to parking structures. As mentioned previously, a new underground parking garage would be built along 145th Place SE. Other new parking areas are planned along both Coal Creek Road and near the gym along Snoqualmie River Road. With campus population growth, parking demand is anticipated to increase.

LEGEND

- Parking (Near-Term)
- Parking (Long-Term)

Figure K-14: Parking Development

PARKING

MAXIMIZING IDENTITY

Parking supply and demands for the Identity plan are consistent with the Legacy plan.

LEGEND

- Parking (Near-Term)
- Parking (Long-Term)

Figure K-15: Parking Development

EVALUATION

Both alternative concepts support the space needs, natural systems and social justice aspects of Bellevue College determined in the project goals and guiding objectives. Overlapping elements of each concept emerge as desirable for a future plan:

- **Move public transit** to Snoqualmie River Road, **away from central campus** to **enhance the pedestrian realm** and consolidate **structured parking** in order to decrease **conflicts between vehicular and pedestrian** modes.
- Utilize **campus circulation** as a major **organizing framework** element, **ensuring safety** for pedestrians and bicyclists.
- To **maximize natural systems**, such as the ridge line, is important and will contribute to successful **wayfinding and campus identity**.
- **Entry sequence** at the **campus edge** is an important design challenge, to **establish a campus threshold** that can support students, visitors and community members.

These elements informed and are incorporated into the new campus master plan, explored in *Section 05*.

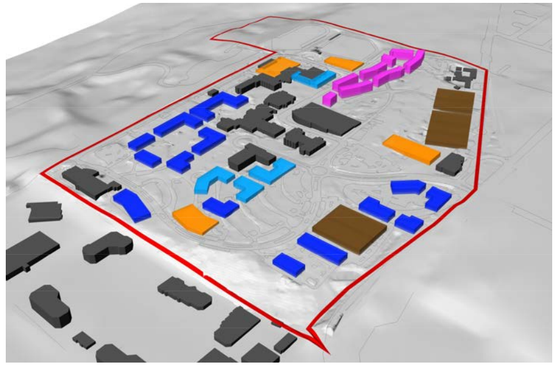

Figure K-16: Extending the Legacy in 3D

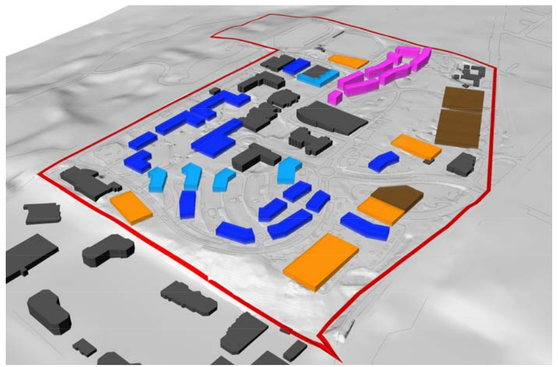

Figure K-17: Maximizing Identity in 3D

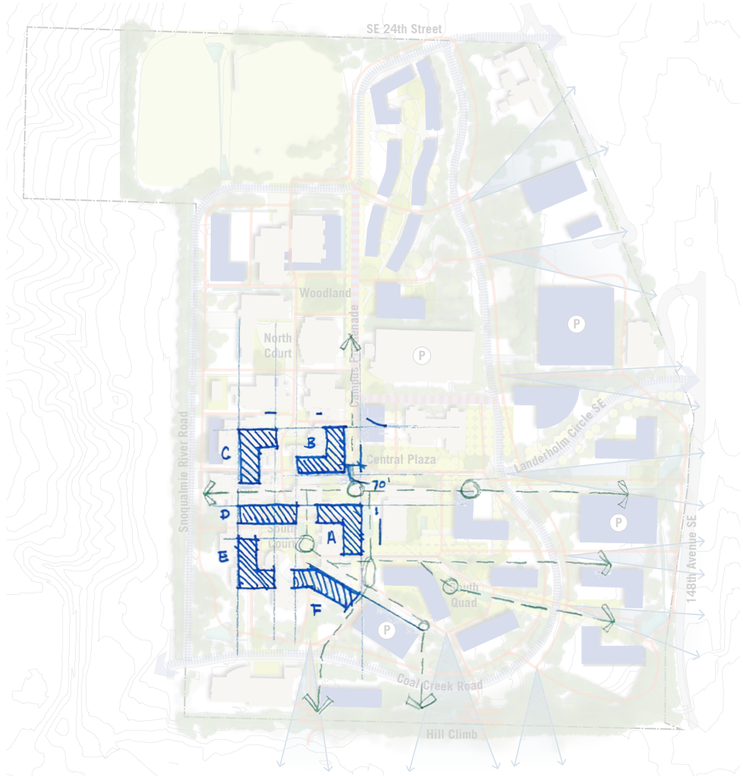

Figure K-18: New Development Alternative

LONG TERM FRAMEWORK

In addition to analyzing new development driven by existing conditions, Bellevue College is also interested in exploring how the new development could shape phased replacement of existing buildings. This figure is an demonstration of carrying through the master plan guidelines to replacement buildings for Buildings A - E.

Long Term Alternative

NEW DEVELOPMENT

SITE	USE	ESTIMATED DEVELOPMENT CAPACITY (GSF)	LEVELS
A	Academic	73,500	3
B	Academic	71,400	3
C	Academic	73,500	3
D	Academic	52,500	3
E	Academic	73,500	3
F	Academic	63,000	3


1 STORY/PREMISE
CAMPUS TIED TO PLACE
VIBRANCY OF CAMPUS LIFE SHOULD BE ENHANCED/SUPPORTED/FRAMED BY BUILT ENVIRONMENT
3 THIS IS YOUR NATURAL INFRASTRUCTURE
TOPO
SLOPES
CLIMATE
VEGETATION
VEG HEALTH
VIEWS
5 THIS IS YOUR BUILT INFRASTRUCTURE
BUILDING CHARACTER
VISTAS
QUADS + NODES + PATHS + TRAIL SYSTEM
GREEN INFRASTRUCTURE
GATEWAYS/ PLACES
PLACES OF TRANSITION
2 ENERGY
THIS IS WHERE YOUR ENERGY IS
BELLEVUE COLLEGE
BUILDING ASSESSMENT / SBCTC 2013 Facility condition survey
NATURAL INFRASTRUCTURE

APPENDIX L
CAMPUS INPUT

PROCESS/METHODS

Throughout the course of the project, Bellevue College community members were invited to provide input on current conditions, goals and visioning, and planning outcomes. The results proved essential in understanding areas about the current campus that people like, don't like and see as having potential for improvement, as well as the alignment between the college community participants and college leadership for campus aspirations. Methods of input ranged from student, staff and faculty symposiums and focus groups to event booths to online social media outlets and web pages.

Figure L-01: Bellevue College Student Housing Staff Study
Source: NAC Architecture

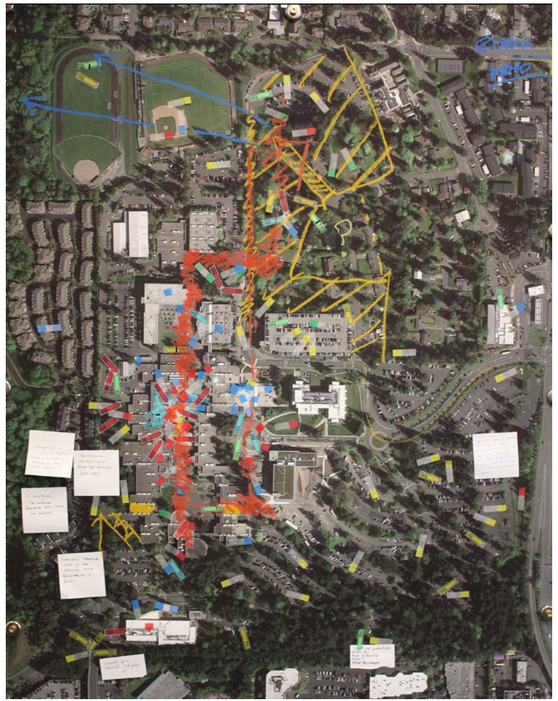

Figure L-02: Campus Aerial with Stickers Indicating Important Places on Campus
Source: NAC Architecture

PLANNING PRIORITIES

A summary of input across campus through various methods highlighted two major priorities on campus:

1. NATURAL SYSTEMS
2. SOCIAL EQUITY

The campus community was invited to provide input on the priorities and strategies presented during four on-campus Bellevue College events. These priorities were explored during the college's Student Elections Event with explanatory boards and opportunity for input by recording responses to the following two statements:

- My idea for a campus that supports Natural Systems includes....
- My idea for a campus that supports Social Equity includes...

These themes were selected by Bellevue College as significant to the student body, and were necessary to explore opportunities for physical manifestations on campus. The results are summarized in the following pages.

Figure L-03: Photos

SOCIAL JUSTICE

CAMPUS INPUT

Per Figure L-06, a significant number of responses related to Social Justice included food service and academic/learning concepts. Additional detail regarding responses is provided in the following pages.

A summary of responses from Bellevue College community members during Spring 2016 event indicates several general categories of potential strategies. Categories for social justice include improvements related to the availability and quality of food on campus, academic space quality, and social gathering opportunities. The food service category includes items such as "fresh fruit", "bigger cafeteria", "healthy food", etc. The academic/Learning category includes items such as "outdoor learning", "bigger library", "more study areas", etc. Social/gathering categories include "transparent spaces", "more lounging areas", etc.

Figure L-04: Student Fair

Figure L-05: Student Fair

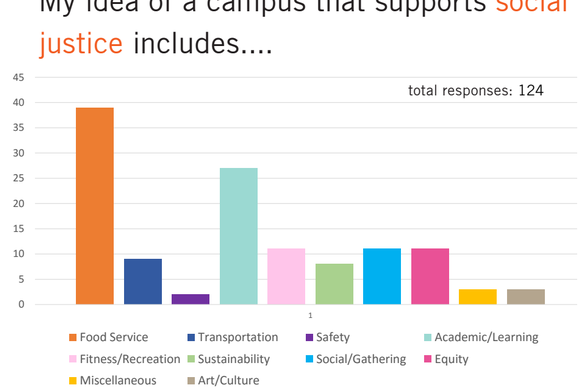

Figure L-06: Student Input for Social Justice

Category	Total Mentioned	Campus Input	Mentioned Times
Food Service	39	More high-protein food options for vegans/vegetarians	1
		Fresh Fruits	1
		Better Food	3
		Bigger Cafeteria	2
		Local Grown Produce	2
		Junk Food	2
		Good Coffee	2
		Soda Fountain	1
		Ice Cream Machine	3
		More Food Choices	1
		Healthy Food	4
		Cheaper Food	4
		Fruit & Vegetable Market	1
		Quality Food	5
		Food Access All Hours	1
		Late Open Cafeteria (8-10pm)	1
		Free Refills	1
		More Diverse Food	1
		On-Campus Farmer Market Spring/Summer	1
		BA+Graduate Programs	1
		Microwave Oven in All Buildings	1
Transportation	9	Safe Bike Connections to/from Campus	1
		Enhanced Accessibility/Navigation Aides	1
		Light Rail to Campus	1
		More Parking	4
		Convenient Bike Parking	1
		Better & More Sidewalks	1
Safety	2	Rape Prevention/Survivor Support	1
		Safety Lighting	1
Academic/Learning	27	New Learning Environment	1
		Flexible Writing Surfaces	1
		Outdoor Learning/Study Environment	1
		Bigger Library	5
		More Study Areas	1
		White Board on Glass Walls	1
		Nontraditional Classrooms	1
		Better Computer	1
		Cheap Textbooks	1
		Outdoor Classrooms	1
		Free Tuition	3
		Cheap Tuition	1
		Multi-Functional Open Space	1
		More Soaces & Whiteboards for Collaborative Study	1
		Interdiscipline	1
		Math Lab	2
		More Table to Study	1
		No Mold in Library/Any Building	1
		More Access to Lab	1
		Higher Level Math/Physics/Engineer Classes	1
Fitness/Recreation	11	Tennis Club	1
		Running Trail	1
		Soccer Club	1
		More Area to Work Out	1
		Free Area for Exercise between Classes	1
		Open Gym	1
		Weight Room	1
		Living Building Challenge	1
Fitness/Recreation	11	Tennis Club	1
		Running Trail	1
		Soccer Club	1
		More Area to Work Out	1
		Free Area for Exercise between Classes	1
		Open Gym	1
		Weight Room	1
		Living Building Challenge	1
		Outdoor Pool	1
		Club Awareness/Events	1
		Football Field	1
Sustainability	8	Nature+ Buildings	1
		Green Roofs	1
		Green Wall/Vegetation	1
		Native Plants	1
		Greenhouse Access	1
		Organics	1
		Renovation Rather than Rebuilding	1
		Less Concrete	1
Social/Gathering	11	Nicer Space for Gathering	1
		Connection Between Students/Faculty	1
		More Community Dialog	1
		Central Gathering Indoor Area	1
		Transparent Spaces	1
		More Lounging Areas	1
		No School Holiday	1
		Social Life for Everyone	1
		Communal Refrigerator for Students Who Bring Food	1
		Communication between Student and Management	1
		Student-Led Modern School Movement	1
Equity	11	Charging Station for Wheelchairs/Electronics	1
		Gender-Neutral Bathrooms	2
		Big Glass Areas for Activities	1
		Affordable Housing	1
		Childcare	1
		Budget Quarterly Dorms	1
		LGBTQ	1
		Fair Pay+Respect+Faculty	1
		Scholarship Rather Than Loans	1
		Equity	1
Miscellaneous	3	More Electric Outlets	2
		More Girls	1
Art/Culture	3	More Cultural Artwork around Campus	1
		More Statues	1
		Fountain Operation	1

Table L-07: Survey Data

NATURAL SYSTEMS

CAMPUS INPUT

Per Figure L-09, a significant number of responses related to Natural Systems included ecological functions. Additional detail regarding responses is provided in the following pages.

Categories for natural systems include ecological function items, such as “green belts”, “native plants”, “walkways incorporated in nature”, “indoor planters”, etc. The categories also include other items, such as “ventilated classrooms”, “mixing places”, etc.

Figure L-08: Student Fair

Figure I-09: Booth at Student Fair

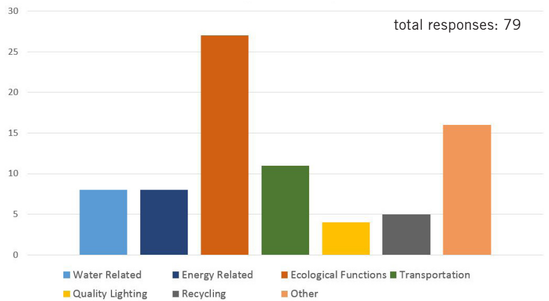

Figure L-10: Student Input for Natural System

Category	Total Mentioned	Campus Input	Mentioned Times
Water Related	8	More Water Features	2
		Better Water Usage	1
		Filtration Plants	1
		More Bridge over Ponds	1
		Bioswales	1
		A Pond with Fish	1
		Water Management	1
Energy Related	8	Green Buildings	1
		Double Door	1
		Zero-Energy Buildings	1
		Solar Panels	2
		Green Glass	1
		Energy Producing REC Center	1
		Solar-Powered Lighting at Night	1
Ecological Functions	27	Study Garden	1
		More Foliage	1
		More Open Green Common Area	1
		Walkways Incorporated in Nature	1
		Natural Canopys(Ivy or so)	1
		Indoor Planters	1
		Outdoor Lecture Space	1
		Wild Plants	1
		Wild Animals	1
		Tree House	1
		Native Plants	1
		Planet Tracker	1
		Integrated Planter	1
		Green Belts	1
		Petting Zoo	1
		More Trees	1
		Community Garden	1
		Green Roofs	1
		Bigger Green House	1
		More Green Space	1
		Garden	1
		Produce Green Wall	1
		Free Gardening Classes	1
		Floral Gardens	1
		Local Plant Gardens	1
		Natural Study Place	1
		No Chemical Herbicides	1
Transportation	11	Better Parking Lots	1
		Pedestrian Skybridge	3
		More Parking	3
		More Public Transportation	1
		Less Parking	1
		Bikes	1
		Autonomous Vehicles	1
Quality Lighting	4	More Lights at Night	1
		More Natural Light	2
		Buildings with Big Windows	1
Recycling	5	Recyclables	1
		Composting	3
		More Recycling Bins	1
Other	16	Ventilated Classrooms(Operable Window, More Space)	1
		Steam Feature	1
		Vegan Menu	1
		Bigger Library	1
		24/7 Library	2
		More Library Study Rooms	1
		Better Gym	1
		E-Sport	1
		Dorm for All	1
		More Clubs	1
		Better Food	1
		More Girls	1
		Open Free Space(Activity+Social)	1
		Mixing Places	1
		Multi-Functional Space	1

Table L-11: Survey Data

PERKINS + WILL

PAE

SWIFT COMPANY LLC

MAGNUSSON KLEMENCIC ASSOCIATES

transpoGROUP

BELLEVUE COLLEGE