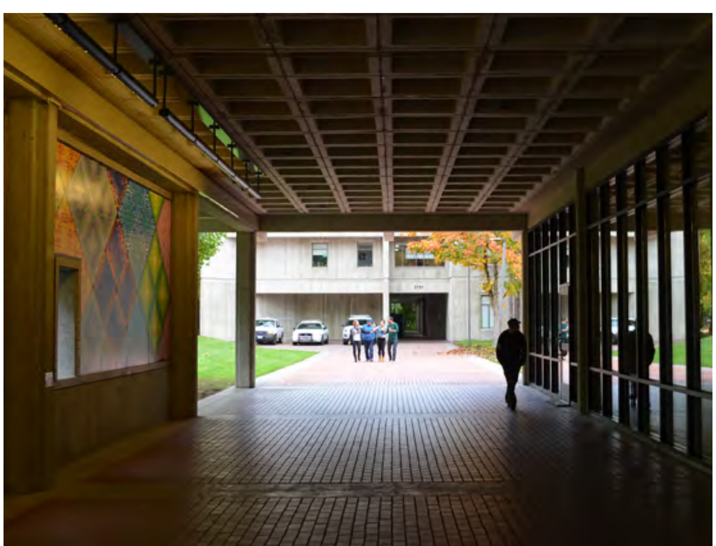
the evergreen state college

# SEMINAR I RENOVATION

AGREEMENT NO. 17-04

**Predesign Study**

June 30, 2016



SSW ARCHITECTS

SCHREIBER
STARLING
WHITEHEAD

# TABLE OF CONTENTS

*Figure 1: TESC campus with Seminar I at lower left*

# SECTION 1 EXECUTIVE SUMMARY

**Project Analysis**

The Evergreen State College's Seminar I was completed in 1974 and anchors the northwest corner of Red Square. Its original uses – small-scale instruction, faculty offices, and campus administrative support – were largely supplanted as Evergreen's interdisciplinary program-based pedagogy took root and created preference for large-scale highly flexible classroom/lab environments. This advancement has directly contributed to the building's loss of purpose and its conversion to a secondary facility despite its prominent location at the ceremonial heart of campus. Seminar I was also intended to be the first phase of a much larger facility and its service spaces and equipment were sized to support the full build-out. As a result, Seminar I suffers from an exceptionally low net-to-gross efficiency (42 percent) and highly inefficient use of its (now obsolete) mechanical and electrical equipment.

The building currently houses the college's Health and Counseling Center, Police Services and affiliated Parking Services, the Advancement Division's call center, and miscellaneous unrelated offices, none of which fit well within the building's constraints. In recent years it has also served as surge space during campus construction projects. As its classroom spaces are too small for practical use, some have been leased to an international language school on a short-term basis. To return Seminar I to prominence and to re-set its support infrastructure to a scale commensurate with actual need we propose a full renovation of, and minor additions to, the facility. Work will include converting oversized mechanical spaces into occupied facilities. The central intent of this project is to return the building to primary use as an instructional facility.

Renovation and expansion of Seminar I is part of a long and deliberate effort to improve Evergreen's earliest campus buildings and is clearly articulated in the college's campus master plan. Beginning in 2007, Evergreen has successfully improved the Daniel J. Evans Library, Labs I and II, Art Science Annex, Communications Laboratory, College Activities Building (CAB), and most recently the Lecture Halls facility. Of the campus core buildings, quite literally, Seminar I is the only building that has not received any substantive improvement since its completion. Today it projects a dated and insular aura well out of step with the dynamic institution that surrounds it.

**Program Analysis**

During the predesign process the planning team met regularly with a core committee representing college leadership, program stakeholders, and Facilities Services. In addition, the team facilitated programming workshops with representatives for all current and prospective occupants and produced detailed functional and space requirements for each

program. By contrast, the focus of core committee meetings was to verify programming conclusions and to determine how the needs of each program could best be distributed and organized within the available volume of Seminar I, and to decide the size and characteristics of each space necessary to meet the project objectives.

The proposed renovation and expansion of Seminar I will house flexible instructional spaces serving arts and science programs (including the Sustainable Design Program), a computer lab, faculty offices and studio/research spaces, an administrative suite for TESC's Reservation-Based Community-Determined Program, a convertible call center for the college's Advancement Division, offices and studio/research spaces in support of Longhouse programs, and operations and administrative facilities for Police Services and Parking Services.

The college is separately proposing design and construction of a stand-alone Health and Counseling Center in the 2017-19 biennium. This capital request derives from the compelling benefit seen in locating the Center in a location more easily accessed by vulnerable students and co-located with the Costantino Recreation Center (CRC), enabling a holistic approach to health and wellness. If this separate proposal is successful, the second floor of Seminar I will house instructional spaces, faculty/administrative offices, and informal learning areas. If not, the Health and Counseling Center will occupy the entire Floor 2 of Seminar I in lieu of the academic uses the college prefers for that location. Plan diagrams for both solutions are found in Section 8.

## Site Analysis

The building occupies a prime location between Red Square and the future Indigenous Arts Campus. A key attribute of Seminar I is its sloped site. This feature should allow for excellent on-grade access to two floors, but today – other than a loading dock and one stairwell – the Lower Ground Floor is subterranean and used solely for mechanical/electrical equipment and storage. Through this project we propose to relocate all mechanical functions to an existing sub-basement and adapt the Lower Ground Floor for use by Police Services. Work associated with the Lower Ground Floor renovation include the addition of ADA-compliant on-grade access into the south wing from the west, development of secure transfer and police vehicle storage areas directly accessible to the campus road network, and construction of light wells to facilitate daylighting of newly occupied spaces.

All required utilities serve the existing facility through the campus tunnel system. Geotechnical and groundwater characteristics of the site are well-understood from its original development and present no known obstacle to the intended development. There are no known hazardous materials on the proposed site and there have been no known past uses with potential to contaminate the site.

At the conclusion of construction, and accommodated in projected construction costs, the staging area north of the building on Geoduck Lane will be restored in the pursuit of LEED project goals and in accordance with planning documents for the adjacent future Indigenous Arts Campus.

## Project Budget Analysis

The cost analysis provided herein details the estimated cost of the project based on concept-level drawings, renderings of intent, and outline specifications. The estimated construction cost is **$18,264,000** – less construction contingency and taxes – escalated to mid-point of construction (June 1, 2020), all of which we request be sourced from state appropriations.

Estimated escalated total project cost is **$26,864,000** including design fees, artwork, commissioning, and FF&E.

Proposed construction type, systems, and quality are appropriate for a 50-year life institutional building. All costs are within the norms for similar projects in Thurston County.

Project costs anticipate a single phase of construction. There is adequate space available on site for construction staging and parking. The budget analysis accounts for requisite utilities improvements, the impact of LEED sustainability goals, and GC/CM project delivery. GC/CM was selected due to the complexity of the project, including a large number of stakeholders with highly varied programmatic needs [RCW 39.10.340 (1-5)]. Temporary relocation of building occupants in existing portable structures adjacent to the site (Police Services and Parking Services) or in campus surge space will be provided by the college using local resources.

**Legislative Intent**

In enacting Second Engrossed House Bill 1115 on June 30, 2015, the state government appropriated $400,000 for this pre-design study.

This bill identifies $23,718,000 for future design and construction of Seminar I. This amount, established from the original Capital Project Request submitted in September, 2014, was based on a renovation-only project with very limited sitework. As a result of this predesign process, the college has become convinced that project goals cannot be satisfactorily reached without modest additions to the facility and significant sitework. This added scope requires a modified budget as summarized above and described in detail in Section 5 and Appendix B. Costs remain reasonable for an academic facility.

**Master Plan and Policy Coordination**

This project is an identified priority in The Evergreen State College's "Campus Master Plan – 2014 Update" and continues the college's commitment to improvement of its earliest campus buildings (a commitment demonstrated by successfully completed improvements to other campus core facilities). The facility proposed herein fully conforms to the policies, goals and objectives established by this long-range planning document.

The project also connects to another master plan priority, the renovation of the Costantino Recreation Center (CRC). This project went to the students for a vote in spring of 2015. Although the vote failed, results of student surveys and focus groups identified a strong desire to have the Health and Counseling Center located closer to residence halls (currently on the opposite side of campus) and co-located with the CRC in order to facilitate a holistic approach to wellness: mind, body, and soul.

Renovation of Seminar I also directly supports all six primary goals identified in the college's "Strategic Plan 2015-2020."

This project has been reviewed by DAHP and declared exempt from further review.

**Facility Operations Analysis**

Minor additions and the conversion to occupied space of the Lower Ground Floor and select covered exterior areas on Floors 1 and 2 will have little effect on TESC's gross building inventory but will increase by 12,300 gross square feet such operational costs as custodial services, maintenance & repair, and technology support. These added costs will be partially offset by savings from considerably more energy efficient mechanical and electrical systems.

A renovated Seminar I will also be a far more capable facility, with more extensive and complex systems requiring operations and maintenance support.

The estimated additional cost to maintain and operate this building is **$16,859** per year (in 2017-2019 biennium dollars) including an additional 0.55 FTE for facilities maintenance and operations staffing. Maintenance and operations costs were estimated based upon TESC historical data and comparable state properties.

## Project Diagrams and Drawings

Our predesign effort included development of concept-level plan and section diagrams. To communicate planning intent to as broad an audience as possible, the planning team also developed renderings depicting possible outcomes of planning decisions. Please see Section 8 for the complete set of concept diagrams and renderings.

## Acknowledgments

The development of this program and predesign included many team meetings and programming sessions with key project stakeholders. This report is the culmination of an intensely interactive and collaborative effort. The planning team wishes to acknowledge the core participants for their dedication, creativity, and interest in this endeavor. The following individuals served on the core committee and played critical roles in developing the needs and goals of the building users, and helped distill those goals and needs into a plan for the renovation of Seminar I that supports each constituency at the expense of none:

The Evergreen State College:

| | |
|---|---|
| Jeanne Rynne | Director of Facility Services |
| Azeem Hoosein | Asst. Director for Planning & Construction, Facility Services |
| David Shellman | Construction Project Manager |
| David McAvity | Academic Dean, Budget & Space – Faculty |
| Susan Keefe | Space Analyst 1 |
| Andy Corn | Executive Associate to the VP for Student Affairs |
| Tony Alfonso | Director, Computing & Communications |
| Pamela Garland | Campus Police Sergeant |
| Elizabeth McHugh | Director, Health & Counseling Center |
| Michelle Pope | Manager, Visual Arts Ops |
| Tina Kuckkahn-Miller | Director, Longhouse |
| Sheryl Dorney | Manager, Conference Services |
| Susan Seip | Supervisor, Parking Services |
| Rob Rensel | Associate Director, Electronic Maintenance |

Planning Team:

| | |
|---|---|
| Ross Whitehead, AIA | Schreiber Starling Whitehead Architects |
| Keith Schreiber, AIA | Schreiber Starling Whitehead Architects |
| Brett Ingham, AIA | Schreiber Starling Whitehead Architects |
| Riley Lacalli | Schreiber Starling Whitehead Architects |
| Roz Estime | The Estime Group – Healthcare Planning |
| Craig Stauffer, SE PE | PCS Structural Solutions – Structural |
| Kevin Rothrock, PE | PCS Structural Solutions – Structural |
| Audra Mackay, PE | Wood Harbinger – Mechanical |
| Charlie Li, PE | Tres West Engineers – Electrical |
| Sharon Kennedy | The Robinson Company – Cost Estimating |

*Figure 2: Seminar I from Red Square*

# SECTION 2 PROJECT ANALYSIS

## 2.1 PROJECT DESCRIPTION

**Agency Name:** The Evergreen State College

**Agency Code:** 376

**Project Number:** 30000125

**Project Title:** **Seminar I Renovation**

**Agency Contact:** Jeanne Rynne, Architect
Director of Facilities
Office of Facilities Services
The Evergreen State College
2700 Evergreen Parkway NW
Lab II Building, Suite 1254
Olympia, WA 98505
Telephone: 360.867.6115
rynnej@evergreen.edu

**Project Mission:** The primary mission for this project is to return Seminar I to a more significant percentage of instructional use. The secondary mission is to improve the facilities of all other building occupants so as to enhance and streamline their operations.

**Project Scope:** This predesign proposes (1) the complete renovation of Seminar I, including reconfiguration of interior and exterior spaces, improvements to the building envelope, and total systems replacements, and (2) selective additions intended to simplify the existing building envelope and to provide large-scale instructional space not otherwise achievable in adequate quantity. Our ability to expand instructional functions while meeting the needs of existing occupants is primarily achieved through adapting the Lower Ground Floor level – now containing mechanical and electrical equipment – to house Police Services.

Work involves renovation of 38,750 gsf, 9,800 gsf of which is captured space not presently occupied, and minor additions totaling 2500 gsf.

## 2.2 OPERATIONAL NEEDS

**Program Requirements:**

TESC envisions a renovated Seminar I as a highly flexible academic facility capable of serving many institutional needs. Program requirements include:

- Classroom instruction spaces serving two instructors and 50 students, with convenient break-out spaces serving 10-12 students.
- Food-safe science labs serving two instructors and 50 students. [This is a sub-set of science lab requiring little in the way of typical lab services (i.e. hoods, utilities, etc.) and which carries no prohibition of eating within the lab.][1]
- Art studio space serving two instructors and 50 students.
- Flexible seminar rooms sized for one instructor and 25 students.
- All instructional spaces must be outfitted with the latest media technology, consistent with TESC classroom standards.
- Faculty offices, and faculty offices with associated studio space. The latter is a specific requirement of the Indigenous Arts programs for its artist residencies and summer camps, but the concept may be expanded to aid the college in recruitment and retention of faculty.
- Administrative offices for the Reservation-Based Community-Determined Program.
- Critique and gallery space for housed art programs.
- Peer-based casual learning space to support out-of-classroom learning.
- A student lounge focused on underserved populations.
- A Police Services facility fully compliant with the needs of a commissioned police force.
- Administrative and cashier functions for Parking Services.
- A call center operated by the college's Advancement Division, for use in fundraising and student recruitment.
- Support services for all stated functions.

Seminar I currently houses the college Health and Counseling Center. It consists both of the student services functions of a health clinic, counselling services, and the Office of Sexual Violence Prevention functions, and the academic function of housing the Medical Assistant Training program. This latter function, a nine-month pre-medical practicum offering students the opportunity to work with health care professionals in a clinical setting, serves a high demand field.[2] TESC is seeking funding for a new stand-alone facility to house the Health and Counseling Center. In the event this effort is unsuccessful, we have fully developed program requirements, space planning, and cost estimates for locating all Health and Counseling Center services on Floor 2 of Seminar I. However, including the Health and Counseling Center in Seminar I would reduce space available for academic use thus compromising the primary mission of this project.

[1] The concept of food safe labs is further addressed in Section 3.
[2] For additional information on the Medical Assistant Training program, see http://evergreen.edu/health/studentmedicalassistant.htm

**Existing Facilities:**

Seminar I is among the early campus buildings, completed in 1974. *It is the only one these building to have not received substantive renovation in the ensuing years.*

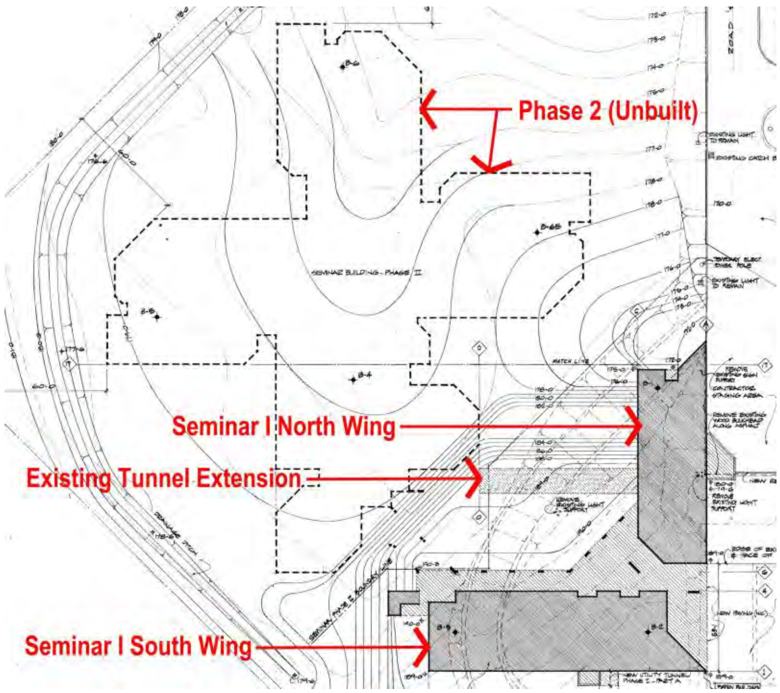



*Figure 3: Original site plan, showing existing and intended development. (Note: Above the ground floor the south and north wings are linked as depicted by the lighter hatch pattern.)*

Its existing enclosed gross area varies floor by floor* as follows:

| | |
|---|---:|
| Sub-Basement:* | 4,495 |
| Lower Ground Floor:* | 10,045 |
| Floor 1 (Primary Entry Level): | 8,160 |
| Floor 2: | 10,300 |
| Floor 3: | 10,500 |
| Service Penthouse: | 630 |
| Total Existing Gross Area: | 44,130 |

**Note: Indicated area includes utility tunnel extension.*

Its general structure consists of concrete bearing walls and columns with a flat-slab elevated floor system. There are wide-shallow concrete beams at several locations around the central core (i.e. the point at which the north and south wings join). Vertical circulation is through interior (two) and exterior (one) stairways, and one passenger elevator.

The design live load of Seminar I is an unusually high 100 psf which should allow for very flexible use and makes it an ideal candidate for labs and studios. However, the interior column network is very restrictive as befits a building that was originally intended for light-duty, small-scale use.


*Figure 4: Exterior of Seminar I from courtyard*

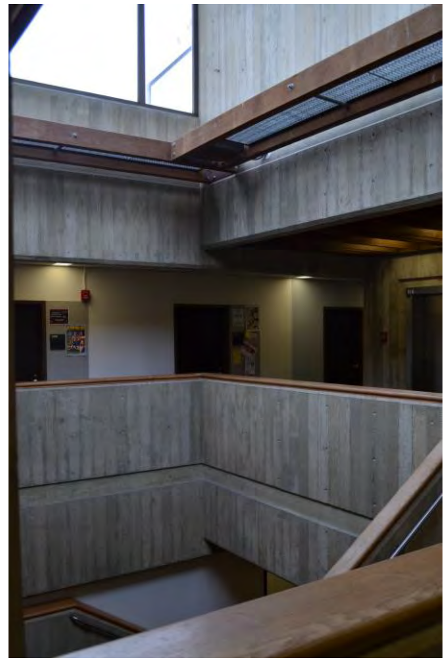


*Figure 5: Interior of Seminar I at core stairwell*


*Figure 6: Primary entrance w/ police vehicles*

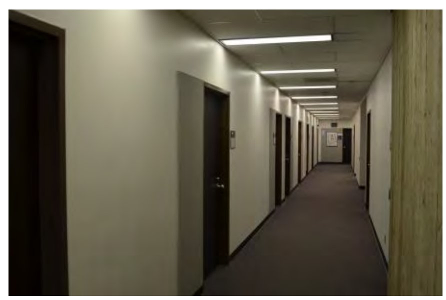


*Figure 7: Typical interior corridor*

**Existing Operational Shortfalls:**

As its name suggests, Seminar I was designed to house small-scale instructional spaces; its largest rooms (of which there are only three) hold one instructor and 25 students in a lecture-style configuration. While this met the institution's need in 1974 when the student-to-faculty ratio was 15:1, the college of today has only limited need for this type of instruction space. Evergreen's current student-to-faculty ratio is 25:1 but a large proportion of classes are conducted by two instructors with 50 students and today's instruction is much less lecture-based.

Central to understanding TESC's facilities needs is its unique curriculum. While students at conventional colleges and universities enroll in discreet courses, most students at Evergreen enroll in single full-time programs focused on in-depth exploration of a central idea or theme. In program-based study, faculty members from different subject areas teach in teams, drawing on several disciplines to develop in students critical tools needed to understand

complex issues from multiple perspectives.[3] This approach is graphically explained in the following diagram:[4]

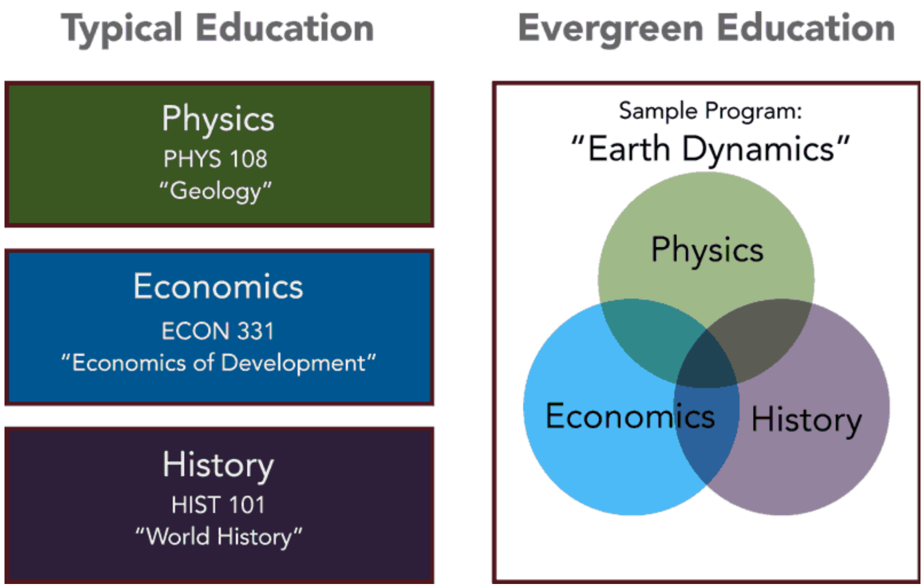



*Figure 8: Venn diagram depicting TESC pedagogy.*

The instructional spaces needed to support this pedagogy must by nature be flexible and large. The college's experience at Seminar II, which has such spaces, proves that 2,500-3,000 nsf is the ideal size.

While Seminar I has always supported non-instructional uses (originally housing the registrar's office and other campus administration, faculty offices, music practice rooms, etc.) the proportion of non-instructional use has steadily increased as the ability for the building to support evolving pedagogy has declined. This project seeks to reverse this trend and restore Seminar I to a primarily instructional facility. That said, the building houses critical support functions – Police and Parking Services, the outreach offices for the Reservation-Based Community-Determined Programs, and the Advancement Division's phone bank – that use small-scale spaces and are thus well-suited to the building and should remain.

In addition, all existing occupants consider their spaces undersized.

Health and Counseling Center: The existing Health and Counseling Center is located on two floors of Seminar I's south wing. As such it is not able to take advantage of space efficiencies possible were the Center housed on a single floor, e.g. shared support facilities, reception and waiting areas, etc. Most critically, Seminar I is not convenient to the center of campus nor to the residence halls to the detriment of its potential in proactive healthcare management.

### Proposed Response (Preferred Alternate)

This predesign proposes three actions, (1) renovation of existing occupied spaces totaling 28,950 gsf, (2) capture and renovation of existing service spaces for active occupancy totaling 9,800 gsf, and (3) minor additions sufficient to improve the building's environmental

[3] TESC website curriculum description, http://evergreen.edu/advising/curriculum.htm
[4] TESC website Programs & Classes description, http://evergreen.edu/academics/programs.htm

closure and providing one ground-floor column-free classroom/lab totaling 2500 gsf, distributed as follows:

| | Existing | Renovation* | Addition |
|---|---|---|---|
| Sub-Basement: | 4,495 | 0 | 0 |
| Lower Ground Floor: | 10,045 | 7,725 | 0 |
| Floor 1 (Primary Entry Level): | 8,160 | 10,035 | 2310 |
| Floor 2: | 10,300 | 10,490 | 0 |
| Floor 3: | 10,500 | 10,500 | 190 |
| Service Penthouse: | 630 | 0 | 0 |
| Total Gross Area: | 44,130 | 38,750 | 2500 |
| **Total Proposed Project Area:** | | **41,250** | |

**Note: Includes captured space.*

The primary driver for renovation comes from Seminar I's antiquated and inadequate interior space layout, its lack of relevance to the college of today's pedagogy, and its exhausted, obsolete, and inefficient systems. The existing structure is robust and requires just minor seismic upgrades to qualify it for Immediate Occupancy in the event of natural disaster, making it an excellent candidate for cost-effective improvement and an exemplar of sustainable thinking.

It also contains far more interior volume than is presently usable, stemming from mechanical/electrical equipment and spaces sized to support a much larger building (Seminar Phase II). It is the capture of these service spaces (primarily at the Lower Ground Floor) that will allow each existing occupant group moderate expansion while returning Seminar I to greater academic use. In the process this project will:

- provide badly needed flexible instruction space, and in the appropriate balance of sizes;
- create a distinct Arts Zone at the west edge of campus, simplifying movement between Seminar I's new classroom/labs arts (when used as flexible studios) and existing dedicated-use studios in Lab II and the Art Science Annex;
- support the Longhouse and Reservation-Based Community-Determined programs by housing functions critical to development of the future Indigenous Arts Campus;
- provide student support and informal gathering spaces utterly lacking on the west side of campus;
- provide Police and Parking Services space to efficiently operate without visual intrusion on the campus core.

Lastly, additions to the building are driven by a desire to enclose a leak-prone exterior walkway accessing the existing southwest stairwell, and by the expressed need for one more large-scale column-free classroom/lab than the existing building can reasonably accommodate. While we propose a single large-scale column-free classroom/lab on Floor 3, creating more such spaces within the confines of the existing building, as demonstrated by a structural assessment undertaken during this predesign, would be prohibitively expensive. By placing the classroom/lab addition on Floor 1 at the southeast corner of the building, it can enhance the building's entrance and – through transparency – introduce a dynamic learning environment to Red Square.

Health and Counseling Center: Should the Health and Counseling Center not be relocated to a new stand-alone facility, the entire Center will be located on Floor 2 of Seminar I. This would allow each Center component to share common support facilities and result in a

more effective facility and operation than presently exists. In addition to the clinic, counseling center, and Office of Sexual Violence Prevention, the Center facility would provide conference and study spaces for the Medical Assistant Training program. However, were the Health and Counseling Center to remain in Seminar I:

- it would continue to operate in a location distant from the center of campus pedestrian movement, thus making access difficult for the genuinely ill, eliminating its visibility to the vulnerable, and compromising its potential for proactive healthcare management;
- the college will lose the opportunity to significantly increase its inventory of flexible classroom/labs, the primary mission of this project.

**Project Origination**

Renovation of Seminar I is part of a long-term effort to modernize the early campus core buildings.

Moving the Health and Counseling Center to a different location – proposed separately – has also been a long-term goal, first considered as part of the CAB renovation and more recently as part of a student initiative to renovate the CRC using student funds. The latter failed to gain student support not because of the Health and Counseling Center concept nor the $30,000,000 total project cost, but rather the funding mechanism which relied on a $10 per credit hour charge. Students considered this amount excessive.

**Mission:** The Board of Trustees approved TESC's mission statement on April 28, 2011:

*"As an innovative public liberal arts college, Evergreen emphasizes collaborative, interdisciplinary learning across significant differences. Our academic community engages students in defining and thinking critically about their learning. Evergreen supports and benefits from local and global commitment to social justice, diversity, environmental stewardship and service in the public interest."*

**Strategic Plan Integration:**

Renovation and expansion of Seminar I directly addresses the six primary goals identified in TESC's Strategic Plan 2015-2020:

<u>Goal 1: Enhance Evergreen's distinct educational experience</u>
This goal directly supports the *Five Foci*, *Six Expectations*, and *Core Themes* also in the Strategic Plan, with attention paid to supporting learning beyond the classroom.[5] The existing Seminar I has few spaces for students and staff to comfortably gather to exchange ideas. A renovated and expanded Seminar I will include a variety of informal spaces (e.g. lounges, break-out rooms, and flows/eddies in circulation pathways) proven to foster peer-to-peer and peer-to-instructor exchanges as well as spaces for quiet contemplation.

<u>Goal 2: Recruit, develop, and retain outstanding faculty and staff</u>
TESC has pursued offering creative benefits other than salary to attract and retain faculty and staff. The predesign team focused on improving the faculty work environment, one aspect of total compensation directly addressed in the Strategic Plan. To provide space for private exploration as well as to provide collaboration opportunities, the team proposes grouping private offices around both shared and single-occupant studios or research spaces. Taking this concept further, with the proviso that this particular aspect has not yet been

[5] For full Strategic Plan see Appendix I.

explored at TESC, the future design team may also consider opportunities for selective student participation in these environments as well.

<u>Goal 3: Effectively employ technology, facilities, and the natural attributes of our campus to enhance teaching, learning, and community</u>
This goal explicitly calls on the college to seek authorization and funding for facilities improvements, including renovations of existing buildings. TESC's campus is a living educational environment. Unlike many campus buildings that embrace the campus' natural setting, Seminar I is very insular. This project seeks to better integrate the building into the broader campus by actively engaging it to its site on both the Lower Ground Floor and Floor 1 levels, by introducing daylight deep into the interior, and providing accessible views from within and without. A new highly transparent classroom/lab addition will anchor the southeast corner of Seminar I, a clear statement of intent by TESC to humanize the Brutalist campus core. Furthermore, the renovated facility will have IT infrastructure far improved over what presently exists, with distribution pathways that are easily accessible and adaptable throughout the building.

<u>Goal 4: Build and strengthen mutually beneficial internal and external partnerships</u>
Seminar I will house the Reservation-Based Community-Determined Program administrative offices as well as faculty offices and studios for the Longhouse, continuing TESC's engagement of tribal governments and commitment to indigenous peoples.

<u>Goal 5: Ensure enrollments and revenues sufficient to achieve the goals and aspirations outlined in the strategic plan</u>
The primary mission of this project is to increase usable instructional space at Evergreen, thus enabling the institution to support higher enrollment. As good stewards of limited resources, this goal is achieved through renovation rather than replacement, and through capture of oversized service spaces. We feel this is a highly cost-effective approach and one which recognizes the essential soundness of the existing facility.

Seminar I also houses the Advancement Division's call center, a facility engaged in targeted outreach. This facility is presently cramped and antiquated. Its capacity for outreach will be greatly enhanced by this project. Advancement views an effective facility capable not just as a tool for fundraising but for student recruitment.

<u>Goal 6: Enhance recognition of Evergreen as an extraordinary institution locally, regionally, nationally, and globally</u>
This goal is focused on visibility and engagement. Renovation of Seminar I will take an insular facility and make it a model of physical transparency, actively engaging Red Square and its occupants in dialogue with campus events and achievements and acting as an effective representative of Evergreen's interdisciplinary model.

**Government Priorities:**

Executive Order 13-04 commits the state government to continuous improvement of services, outcomes, and performance through the "Results Washington" process. Renovation and expansion of Seminar I supports all five goals articulated in "Results Washington" through its focus on performance and accountability:

- <u>Goal 1 – World Class Education</u>
  *Sub-Goal 1.3.a* calls for increasing annual attainment of college degrees. This proposal increases TESC's instructional space capacity and focuses on space types best aligned with the college's unique program-based pedagogy. In so doing it enhances TESC's

ability to attract students and to assure those students' individual objectives – and their probability of success – are met.

*Sub-Goals 1.3.f, h, and i* call for increased enrollment, graduation, and success in STEM programs at public 4-year colleges. Renovation and expansion of Seminar I would give TESC a new class of flexible science lab not dependent on high-cost infrastructure. Such facilities would be particularly effective for multidisciplinary scientific inquiry yet today are wholly lacking at the college. Providing such facilities would significantly increase TESC's capacity for science instruction, and likelihood of successful outcomes, at considerably less cost than typical STEM facilities.

- <u>Goal 2 – Prosperous Economy</u>
  There are several aspects to this goal, from business vitality, quality jobs, expanding opportunities, sustainable and efficient infrastructure, to quality of life. Access to education offers a proven pathway to employment success and as such is an ideal outlet for government support. Through its focus on increasing instructional space, this project will allow Evergreen to increase its enrollment capacity as well assure these spaces are aligned with the college's pedagogy.

- <u>Goal 3 – Sustainable Energy & Clean Environment</u>
  *Sub-Goal 1.3* focuses on efficient buildings. Achieving at minimum LEED Silver, and most dramatically by replacing inefficient mechanical and electrical equipment, this project will reduce TESC's impact on the environment in the near- and long-term and support its "2020 Carbon Neutrality" initiative (see Appendix F). While its building systems are outdated, the building's strong structural shell will be entirely re-used, a strategy that is not only cost-effective but lies at the core of sustainable thinking. New materials will be regionally sourced to the benefit of local businesses, energy use will be reduced, and the indoor working environment will be markedly improved. This project will include extensive use of low-toxicity, renewable, and recycled materials.
  *Sub-Goal 2.1 & 2.2 addresses improved habitat for shellfish and Pacific salmon.* TESC's campus includes frontage on Puget Sound. The college has undertaken improvements to its stormwater system, which discharges into the Sound from salmon-bearing Snyder Cove Creek. TESC also has a successful student-run shellfish club that maintains oyster beds on Eld Inlet. For Seminar I, stormwater quality and quantity will be controlled in furtherance of the college's efforts.

- <u>Goal 4 – Healthy & Safe Communities</u>
  This goal focuses on healthy, safe, and supported people. While for this goal the tie-in to Seminar I is inferential, we stress again that access to education offers a proven pathway away from the health, safety, and support issues plaguing economically challenged state residents. Further, Evergreen's Police Services has been a commissioned police force for 20 years and as such directly interfaces with such public safety issues as identified in Sub-Goals 2.1 and 2.3. Despite this responsibility, Police Services operates out of facilities suitable at best for a small-scale campus security operation. In moving Police Services to the Lower Ground Floor level as proposed in this predesign study, the police will have the professional-grade facilities expected of a commissioned force, enhancing community and officer safety, hiring, and retention.

  Because of the need for Police Services to operate in times of crisis, this project includes structural upgrades necessary to satisfy life safety code standards and assure the building is available for Immediate Occupancy in the event of natural disaster (e.g. earthquake).

- Goal 5 – Efficient, Effective & Accountable Government
  Subgoals 2.1 and 2.2 address aspects of effective government and fiscal responsibility. The capital budget process that applies to Seminar I requires the design team and contractor to provide data on a wide range of topics and at various stages in the project development, which will provide the state demonstrable evidence to support its customer satisfaction efforts. Mandated life cycle cost analyses, Value Engineering, and Constructability Review and their GC/CM equivalents are all tools consistent with Lean thinking and will assure Seminar I represents the best value to Washington taxpayers.

The renovation of Seminar I supports the Governor's vision of an engaged, collaborative, and accountable government, and as a result would constitute a highly effective use of state resources.

## 2.3 ALTERNATIVES CONSIDERED

The proposed solution is an amalgamation of three alternatives studied in detail by the planning team and core committee:

**Alternate 1 – Renovate within the Existing Shell Only:**

This alternative included full renovation of Floors 1 through 3, and conversion of the Lower Ground Floor into an occupied floor housing Police Services with requisite sitework. This alternate comes closest to matching the assumptions of TESC's Capital Project Request submitted in September, 2014, including its proposed budget. All mechanical systems were replaced with new equipment located in the sub-basement. Due to Police Services space requirements this alternate required relocation of the primary electrical service room (containing a transformer, switchgear, and fire alarm panels). This alternative was rejected as it did not satisfy the primary project mission of increasing large-scaled instructional spaces best aligned with TESC's unique pedagogy, specifically column-free interdisciplinary classroom/labs suitable for a wide array of subjects and sized to accommodate two instructors and 50 students.

Health and Counseling Center: This alternative resulted in the least net area considered, making it particularly vulnerable to disruption were the separately proposed stand-alone Health and Counseling Center not funded. In this circumstance the entire Floor 2 of Seminar I would be renovated to house the Center's functions. While fitting on Floor 2 is possible and would provide operational improvements over the existing condition, it would result in significant loss of potential instructional space at Seminar I and thus unacceptably compromised the project's central driver.

**Alternate 2 – Reconfigure the Building Structure to Provide Column-Free Interior Volumes:**

As with the Alternate 1, this alternate also assumed full renovation of four building floors. However, this alternate studied the potential for column-free large-scale classroom/labs, as the core committee had a strong preference that instruction spaces not be interrupted by columns. In this alternate we conceived removing the heavy concrete roof structure and replacing it with a lightweight steel-framed structure spanning if possible from bearing wall to bearing wall, and locating three large-scale classroom/labs on Floor 3 (two in the south wing and one in the north wing) directly below this new structure. Our structural analysis of this alternate concluded that a genuinely column-free space was possible in the north wing under this scenario, but not in the south wing. As a result, the core committee concluded that this alternate did not sufficiently achieve its objective to justify the cost of re-

configuring the entire existing roof structure. However, since the objective was met in the north wing and the cost fell within the available budget, one column-free Floor 3 classroom/lab was incorporated into the proposed solution.

**Alternate 3 – Provide Column-Free Instructional Spaces Through Additions:**

This alternate again explored the core committee's preference for column-free spaces by housing the three large-scale classroom/labs in clear-span additions at the Floor 1 level. This alternative included additional Lower Ground Floor space as well, which allowed for additional occupied functions on that level. The added space totaled 15,000 gsf. This alternate had the secondary benefit of permitting occupancy of Floor 2 by the Health and Counseling Center without creating a loss in programmed academic spaces. Estimates of probable cost developed for use by the core committee identified the maximum allowable construction cost (MACC) for Alternate 2 as $20,557,000 using design-build-build project delivery (as opposed to the preferred GC/CM which would be still higher). While the preferred concept from an issues resolution standpoint, this alternative was ultimately rejected as its cost premium over the Capital Budget Request proposed cost was simply too high, but a scaled down version with just a single column-free instructional space at greatly reduced added cost was incorporated into the proposed solution.

This alternate – in providing space for the Health and Counseling Center without loss in programmed instructional space – also left unresolved the college's conviction that the Health and Counseling Center would be more effective if located at the center of campus pedestrian circulation. Importantly, our analysis concluded that this alternate would also cost more than the combined costs of the Seminar I renovation and the separately proposed stand-alone Health and Counseling Center.

**No Action:** This alternative was rejected as it does not meet TESC's stated objective (as expressed in the Campus Master Plan) of improving its early facilities and increasing the campus inventory of interdisciplinary instructional spaces sufficiently sized to house two instructors and 50 students. Additionally, failure to improve Seminar I would:

- limit TESC's ability to recruit and retain quality faculty;
- eliminate Police Services' assurance that its facility will survive a major disaster.
- continue reliance on oversized, obsolete, and inefficient mechanical and electrical equipment.

## 2.4 SUMMARY OF LCCA RESULTS USING THE LCCT

During development of this predesign, OFM issued new predesign guidelines replacing the predesign-level LCCA/LCCT with a new Life Cycle Cost Model (See Appendix H).[6] This new manual was published after the planning team completed the ELCCA required as part of the LCCA/LCCT process. This ELCCA, developed in compliance with RCW 39.55 and ELCCA guidelines developed by the Washington State Energy Office (and also included in Appendix H), concluded that chilled beams would be the most cost-effective HVAC system for the facility. As a result chilled beams were assumed in the project budget analysis (see Section 5) and outline specifications (see Appendix D).

To provide the broadest amount of information to the planning team, the ELCCA was run using Alternate 3 above, which assumes both full renovation of Seminar I and 15,000 gsf of new construction. The ELCCA remains valid with the preferred smaller project, as the

[6] See OFM Predesign Manual dated June, 2016.

assumed envelope performance between new and existing construction were very similar. In addition to lowest life cycle cost, chilled beams are well suited to the existing building's constraints. Seminar I's limited floor-to-floor heights suggest that overhead ducts be as small as possible, a hallmark of chilled beam systems, and an existing chase network will serve the requisite piping distribution.

## 2.5 ISSUES IDENTIFICATION

Attention to, and resolution of, several issues is key to TESC's definition of project success. In addition to highlighting them herein, the budget (Section 5) includes reasonable costs for their implementation.

**Project Drivers**

The central driver for this project is TESC's need to increase the percentage of Seminar I spaces dedicated to instruction, and to assure that those spaces are appropriate for TESC's interdisciplinary pedagogy. The secondary objective is to maintain and improve the remaining spaces housing critical support functions.

**Life of Proposed Facility and Investments:**

The proposed renovated and expanded facility will be of permanent construction meeting all current codes and standards for Immediate Occupancy facilities. It will have a minimum expected service life of 50 years.

**Security Needs:**

Campus security is handled by TESC's Police Services. Seminar I houses and will continue to house Police Services and its subsidiary Parking Services division. Police Services has been a commissioned police force since the 1990s but is now housed with little modification in a facility originally used by the college registrar. As a result, in many aspects the present Police Services facility fails to meet reasonable expectations, best practices, and government mandates for modern police facilities including:

- separation between the public lobby and dispatch functions;
- support facilities for officers, including decontamination facilities, weapons clearing, custody processing, and secure and ventilated storage;
- holding facilities separated by gender and with toilet facilities;
- secure custody transfer (vehicle to station);
- secure parking for police vehicles.

Commissioned police forces are by code required to be housed in facilities designed to withstand major disasters such as earthquakes. This project includes structural upgrades necessary to meet what is known as "Immediate Occupancy" criteria.

**Facilitation of Use by Others:**

Seminar I is directly adjacent to the Longhouse, which in addition to performing college functions is considered a public service center. It operates an international residency program and summer studios but does not have sufficient facilities to support its broader objectives. It is also the gateway to the future 7.2 acre Indigenous Arts Campus (IAC), which received Board of Trustee approval in 2014. A carving studio associated with the IAC – due west of Seminar I – was completed in 2013. The next IAC facility – a fiber arts studio funded

by a grant from the Ford Foundation – is currently in design with construction scheduled to begin in 2016. Seminar I is intended to play a support function as follows:

- It will house the Reservation-Based Community-Determined Program administrative offices.
- It will house (offices + studios) visiting instructors associated with Longhouse international residencies and summer studios.
- Renovation of Seminar I, coupled with completion of the Lecture Hall renovation currently under construction, will allow demolition of portable buildings located north of the building and site restoration along the eastern edge of the future Indigenous Arts Campus.

**Sustainability:** The proposed facility will be designed to attain LEED Silver certification from the United States Green Building Council. An initial evaluation of likely LEED credits is included in Appendix C. The project's sustainable design goals will be established during the eco-charrette conducted during Schematic Design.

**Information Technology & Telecommunications:**

This project seeks to improve the effectiveness of technology as an instructional tool. Information technology signal distribution will include connections to the campus tunnel network, accessible data pathways throughout the facility, and stacked secure data closets on each floor. Design and construction of IT systems will comply with TESC standards. To assure the quality and distribution of space is adequately reflected in the floor plan diagrams found in Section 8, our predesign effort included participation by representatives of IT services in programming sessions and the preliminary LEED charrette.

## 2.6 PRIOR PLANNING AND HISTORY

**Previous Action and Legislative Intent:**

This project is part of TESC's long-term efforts to rejuvenate its core campus facilities. The legislature appropriated predesign funds through Second Engrossed House Bill 1115 enacted on June 30, 2015.

**Compliance with the Campus Master Plan:**

TESC's Campus Master Plan was last updated in 2014. Within this plan, the intent to renovate and expand Seminar I is clearly identified (see Section 6). This project includes space for all functions identified in the Campus Master Plan including Police and Parking Services, the Health and Counseling Center, classrooms, arts studios, faculty offices, and general campus administrative offices, but excludes other functions (e.g. the fiber art studio) that have been separately resolved.

The Campus Master Plan identifies the following schedule:

| | |
|---|---|
| Predesign: | 2015-17 |
| Design: | 2017-19 |
| Construction: | 2019-21 |

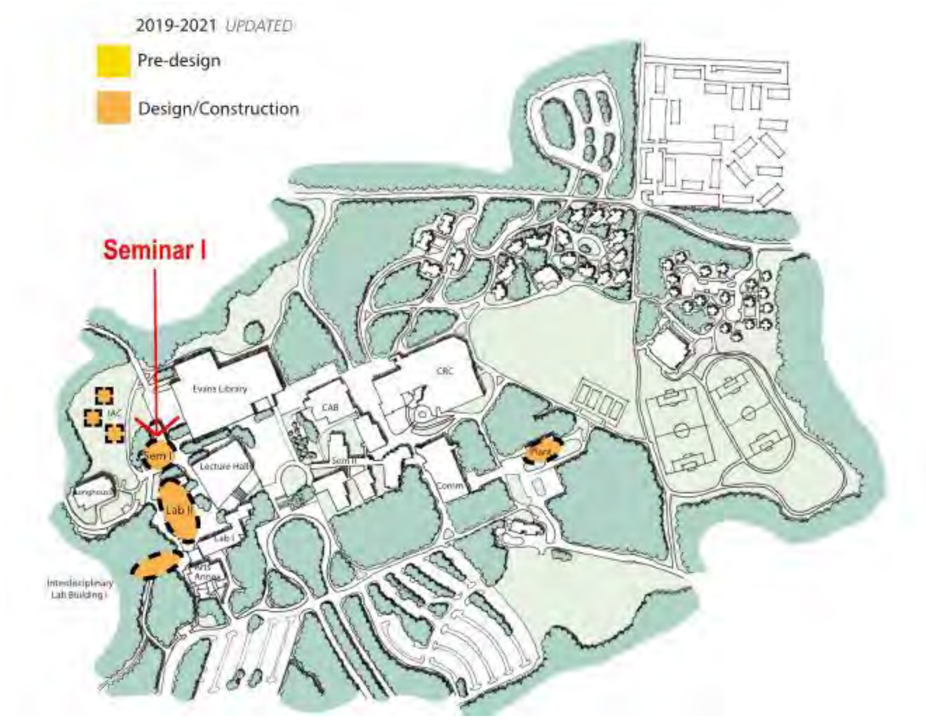



*Figure 9: Excerpt from Campus Master Plan depicting construction timeline*

## 2.7 STAKEHOLDERS

The primary stakeholder of this project is The Evergreen State College and its various programs and departments. Because of its organization, location, and the presence of Police Services in the facility, additional stakeholders include:

- Thurston County (permitting)
- Thurston County Sheriff
- City of Olympia (select utilities)
- Washington State Patrol

## 2.8 IMPLEMENTATION APPROACH

We propose the project be funded by state appropriation.

**Methods of Accomplishment:**

We propose that the GC/CM method of project delivery be used. GC/CM – which allows for incorporation of the contractor during design – has proven effective for complex projects, such as projects incorporating both renovation and new construction. In addition, it is useful on programmatically diverse projects as anticipated at Seminar I [RCW 39.10.340 (1-5)]. It has been effectively employed on Evergreen's current Lecture Halls project.

Design-Build-Build, for years the mainstay project delivery method, would work at Seminar I with the addition of Value Engineering and Constructability Review processes. However, the advantage to the college of contractor participation in the design phases and oversight of cost estimates would be lost. Also lost would be the agency's ability to participate in contractor selection.

Design/Build delivery methodology, still in the earlier stages of adoption by state agencies, appears best suited to new construction projects with limited stakeholders. A project requiring sensitive renovation of a building prominently located on campus appears ill-suited to the relinquishing of control that must happen for Design/Build to be most successful.

To secure LEED credit for enhanced commissioning, we propose an independent commissioning agent be hired during design and construction. We also propose, to protect state interests, that an independent testing agency participate in construction. Costs for both are included in the project estimate.

Programs to be housed in the new facility currently occupy the building and will require temporary housing, the costs of which will be paid by TESC. Police Services and Parking Services will be housed in the two modular buildings temporarily being occupied by the Lecture Hall renovation contractor and the temporary campus Emergency Operations Center.[7] If the college's separate effort to secure funding for a stand-alone Health and Counseling Center are successful, the existing health clinic, counselling center, and Office for Sexual Violence Prevention will move to their new facilities prior to the start of the Seminar 1 renovation. All other current building occupants will move to surge space elsewhere on campus.

## 2.9 PROJECT MANAGEMENT

**Organization:** The Evergreen State College Facilities Services will manage the design and construction of improvements to Seminar I. Facilities Services has successfully provided management and oversight on on-campus projects including the Lecture Halls renovation currently underway.

To assure vigilance over its construction projects Facilities Services assigns a Senior Architect and/or Engineer management responsibilities for overseeing technical aspects and cost management. Together with the assigned Construction Project Manager, and with additional construction phase oversight by the design team, TESC will provide sufficient monitoring, management, and control during the construction phase. The costs of these services have been included in the project budget.

**Strategy:** The following are the primary duties/responsibilities of the primary participants in project management:

Programming: TESC Facilities Project Manager:

- Directs consultant selection
- Manages consultant contracts
- Coordinates stakeholder participation
- Participates in detailed programming
- Reviews and approves detailed programming and budget

Design Consultant:

- Provides programming services per agreement

Design: TESC Facilities Project Manager:

- Coordinates selection of Value Engineering and Constructability consultants
- Manages consultant contracts
- Participates in periodic design meetings

[7] The EOC will be moved to the Lecture Hall building upon completion of construction.

- Provides design decisions including program adjustments to achieve budget
- Approves design and estimates at SD, DD, and CD

Design Consultant:
- Provides design services per agreement

GCCM Selection: TESC Facilities Project Manager:
- Issues RFQ and RFP documents
- Participates in GC/CM selection
- Leads proprietary meetings with GC/CM shortlisted teams
- Manages consultant contracts

Design Consultant:
- Provides GC/CM solicitation services per agreement

Bidding: TESC Facilities Project Manager:
- Participates in pre-bid conferences
- Manages consultant contracts

Design Consultant:
- Provides bid services per agreement

Construction: TESC Facilities Project Manager:
- Manages consultant contracts
- Monitors quality and schedule
- Advises college in all matters related to the construction
- Oversees construction activities
- Participates in periodic construction meetings
- Provides construction decisions including field adjustments and change orders

Design Consultant:
- Provides construction administration services per agreement

Commissioning:

TESC Facilities Project Manager:
- Coordinates selection and contracting of commissioning agent (during design phase as necessary to achieve LEED credits)
- Monitors both commissioning agent and design consultant
- Advises agency in all matters related to acceptance of systems
- Participates in system commissioning
- Attends operating instruction

Design Consultant:
- Provides support to the commissioning agent services per agreement

Warranty: TESC Facilities Project Manager:
- Assists in obtaining warranty repairs
- Identifies warranty issues
- Notifies consultant of needed warranty repairs

Design Consultant:
- Notifies contractor of needed warranty repairs
- Monitors contractor warranty response

## 2.10 SCHEDULE

**Risks:** Initial evaluation of the selected site has not identified unique risks to schedule accomplishment due to environmental or archeological sensitivity. To assure this, a detailed assessment of these factors will occur in the Schematic Design phase.

The existing building structure, and the presence of hazardous materials such as asbestos-containing-materials (ACMs) in common use at the time of its construction, are well understood and the college has complete record documents and recent experience on buildings of a similar age. We consider the probability of latent conditions and unanticipated hazardous materials being encountered during construction to be low, and at worst would require only minor costs to mitigate.

The projected use of the site is in compliance with the regulatory land-use established by Thurston County and there are no permitting or regulatory impediments to the projected development.

Site soils and groundwater characteristics, based on record documents and the understanding that the building footprint and those areas identified to receive additions under this project, appear adequate to support conventional construction without the need for substantive ground improvement.

Health and Counseling Center: The single greatest risk associated with this proposal is the risk of TESC not securing appropriation for a stand-alone Health and Counseling Center. If this separate proposal – intended to be designed and constructed within the 2017-19 biennium – is not successful, the Health and Counseling Center will be located on Floor 2 of Seminar I with the following impacts:

- The existing clinic, counselling center, and Office of Sexual Violence Prevention will require temporary relocation or this portion of the project must be phased. These functions have needs that prevent easy accommodation in generic surge space.
- The Health and Counseling Center will remain outside the pedestrian core of campus, inhibiting the Center's outreach efforts and reducing the potential to positively influence student healthcare decisions.
- The college loses instructional functions planned for Floor 2.

**Schedule:** The project will be developed with the following schedule milestones:

| ***Activity*** | ***Start*** | ***Complete*** | ***Duration*** |
|---|---|---|---|
| **Predesign** | **January 1, 2016** | **June 30, 2016** | **6 months** |
| **Design and Permitting** | **July 1, 2017** | **January 31, 2019** | **19 months** |
| • Consultant Selection | July 1, 2017 | September 30, 2017 | 3 months |
| • Schematic Design | October 1, 2017 | January 31, 2018 | 4 months |
| Owner Review | February 1, 2018 | February 15, 2018 | 2 weeks |
| • Design Development | February 16, 2018 | June 15, 2018 | 4 months |
| Value Engineering | May 16, 2018 | May 31, 2018 | 2 weeks |
| Owner Review | June 16, 2018 | June 30, 2018 | 2 weeks |
| • Contract Documents | July 1, 2018 | December 31, 2018 | 6 months |
| Constructability Review | October 1, 2018 | October 15, 2018 | 2 weeks |
| Owner Review | January 1, 2019 | January 15, 2019 | 2 weeks |
| Incorporate Comments | January 16, 2019 | January 31, 2019 | 2 weeks |
| • Plan Check/Building Permitting | November 1, 2018 | January 31, 2019 | 3 months |
| • Design/Permitting Float | February 1, 2019 | June 30, 2019 | 5 months |
| **Bidding and Construction** | **July 1, 2019** | **April 30, 2018** | **22 months** |
| • Bidding/Award | July 1, 2019 | August 31, 2019 | 2 months |
| • Construction | September 1, 2019 | February 28, 2021 | 18 months |
| *(Mid-point of construction for use in determining cost escalation:* | | *June 1, 2020)* | |
| • Substantial Completion | March 1, 2021 | | |
| • Start-up/Commissioning | March 1, 2021 | April 30, 2021 | 2 months |
| **Occupancy (FF&E Move-In)** | **May 1, 2021** | **June 30, 2021** | **2 months** |

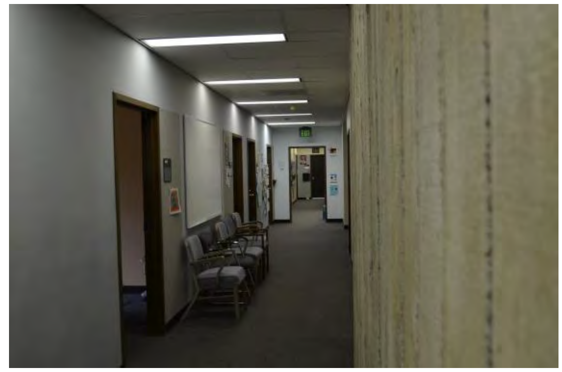


*Figure 10: Counselling Center waiting area in public corridor*

# SECTION 3 PROGRAM ANALYSIS

## 3.1 PLANNING ASSUMPTIONS

Throughout the programming and planning process, the following assumptions have been made that directly impact the project development function, form, schedule, and costs:

- The Evergreen State College's commitment to its interdisciplinary pedagogy is the single greatest influence on facilities planning for instructional spaces.
- The building will be designed to comply with TESC standards.
- Administrative space allocation will be based upon the Washington State Space Standards published by the Department of Enterprise Services.
- To the maximum extent possible, open-plan workstations will be used for administrative space including adjunct faculty offices. Private offices will be limited to faculty positions or staff/support positions requiring acoustic privacy.
- The facility will make flexible provisions for the use of current and future technology.
- The building will have internal security zones to facilitate public use during off hours, including 24/7 access to Police Services.
- The public safety mission of the building arising from the presence of Police Services is an important element in planning and as a result the existing structure will be improved to satisfy current code seismic standards for "Immediate Occupancy."
- Utilities reach the building through the campus utility tunnel system or direct burial. Required utilities include potable water capable of supporting both domestic and fire suppression use (from City of Olympia), steam and condensate return, chilled water, storm sewer, sanitary sewer (from City of Olympia), telecommunications, and three phase power.
- The facility will include an emergency power generator with capacity adequate to support Police Services in the event of a power outage.

## 3.2 EXISTING FACILITIES INVENTORY

Existing uses by floor are:

- Sub-Basement (North Wing Only): Mechanical equipment<br>Phase 2 Tunnel Extension: Storage
- Lower Ground Floor, North Wing: Mechanical equipment<br>Loading dock<br>Phase 2 Tunnel Extension: Caged storage

| | |
|---|---|
| • Lower Ground Floor, South Wing: | Electrical equipment<br>Campus fire alarm head-end panel[1]<br>Access to campus tunnel network |
| • Floor 1, North Wing: | Police Services |
| • Floor 1, South Wing: | Health clinic<br>Primary building entry |
| • Floor 2, North Wing: | Parking Services<br>Faculty offices |
| • Floor 2, South Wing: | Phone Bank<br>Miscellaneous offices<br>Access to campus tunnel network |
| • Floor 3, North Wing: | Language school (temporary use) |
| • Floor 3, South Wing: | Counselling Center<br>Office of Sexual Violence Prevention |
| • Penthouse (South Wing): | Elevator equipment |

## 3.3 SPACE REQUIREMENTS

### Programming – General

To establish space requirements for existing and proposed building occupants, the planning team led individual programming with key tenant stakeholders. The results are published below. The planning team also met with Facilities Services staff (mechanical, electrical, IT) to determine support systems requirements.

To facilitate allocation of administrative office space, the Space Standards published by the state's Department of Enterprise Services were referenced.

### Arts and Science Classrooms and Labs

The driving motivation behind renovation of Seminar I is to create flexible large-scale classrooms and labs suitable for simultaneous use by two instructors and 50 students.

TESC's original campus vision was that its academic buildings not be specialized so as to encourage cross-pollination between disciplines. In practice this has become impractical. As examples of this impracticality:

- Wet science instruction requires highly specialized labs with costly service infrastructure. Distributing this infrastructure throughout the campus is difficult to justify in an era of limited funding.
- There is a limit to how far students can carry heavy in-process projects – sculpture, for instance – to dispersed studio labs.
- A significant quantity of science lab instruction does not require highly specialized labs, but it does require lab prep space for storage and preparation of equipment. Such labs are referred to as "food-safe" labs as they do not require prohibition of eating during lab hours. TESC has no food-safe labs on campus, the result being that such instruction unnecessarily takes place in fully-outfitted (i.e. wet) labs or that lab techs move equipment in carts (often in the rain) across campus.

[1] Monitored by Police Services.

The result of such pressures can be seen in the floor-by-floor renovations TESC has recently completed at Labs I and II: Due to the very presence of costly service infrastructure, it was inevitable that classrooms and art studios within these buildings were converted to wet labs. This decision was made easier by the existence of art studios in Seminar II, but these studios are on the top floor and distant from studios in the Art Science Annex and accessed only from weather-exposed walkways.

Proposed Response: In response, TESC proposes Seminar I contain four large-scale classroom/labs (housing two instructors and 50 students) for use in art and science instruction and for Sustainable Design programs. From the perspective of art instruction, these will replace the two 2D studios in the less easily accessed Floor 4 of Seminar II (which will be re-assigned for general program instruction). Among other benefits, this will establish the west end of campus as an Art Zone and facilitate much easier movement of student artwork between art education facilities in the Art Science Annex, Lab II, Seminar I, and the future Indigenous Arts Campus. The existing critique space in Seminar II will be replaced with an equivalent space on Floor 3 of Seminar I.

For science instruction, each classroom/lab will be equipped with storage and prep rooms to allow easy conversion between art and science without the need to transport instructional materials from storerooms in existing science facilities. These spaces will take pressure off the full wet labs in Labs I and II thus increase TESC's capacity for STEM instruction.

For Sustainable Design, Seminar I gives these various high-demand programs a home, one that in future can be expanded through completion of an outdoor work space in the Seminar I courtyard directly communicating with a Floor 1 classroom/lab.

Due to the need for classroom/lab spaces to be 2500-3000 nsf and as column-free as possible, these spaces will be located on Floors 1 through 3 of the north wing, which has a less confining column layout than found in the south wing, and in a new addition at the southeast corner of Floor 1. This addition space and the Floor 3 classroom/lab will be entirely column-free, the latter being achieved by limited replacement of the heavy concrete roof structure with a lightweight steel structure configured to admit abundant natural light. Each classroom/lab will feature current media integration, electric and daylight controls, and flexible furnishings, making them suitable for many styles of instruction. *Note that if TESC's separate proposal for a stand-alone Health and Counseling Center does not receive state appropriation, the Floor 2 classroom/lab will not be built and art-instruction will continue albeit at reduced scale at Seminar II.*

Also in high demand are technology-rich classrooms scaled for two instructors and 50 students, with associated break-out spaces for use by 5-10 students. We propose break-out spaces directly adjacent to each classroom/lab to meet this need while maximizing flexibility.

Lastly, the six existing small seminar-scaled spaces in Seminar 1 will be replaced with one studio classroom and one computer classroom, each scaled to serve a 25:1 student-to-faculty ratio and with capacity for flexible furnishings.

Instruction space in Seminar I presently occupies **6** percent of the building's total net area. By this propose we seek to dedicate **43** percent of total net area to instructional use. This percentage would drop to **29** if the Health and Counseling Center occupies the building.

### Reservation-Based Community-Determined Program

The Evergreen State College and Grays Harbor College collaborate to provide a Bachelor of Arts degree on various Indian reservations in western Washington.

Designed for place-bound students deeply connected to tribal communities, the program has been "reservation based" from the beginning with classes held on Indian reservations in western Washington. "Community-determined" means that the program is initiated at the tribes' request, that a tribal advisory board provides curricular direction, and that program content addresses significant community issues and utilizes community resources.

Students attend weekly classes at the reservation sites and also attend Saturday classes at the Longhouse where all students come together for classes, workshops and cultural events. Hundreds of students have earned their degrees through the reservation-based programs and gone on to graduate school and various positions in tribal government, social services, education, and other fields.[2]

Proposed Response: The Reservation-Based Community-Determined Program requires on-campus space for program administration. Due to program's tie in with the Longhouse, Seminar I is the ideal location. We propose administrative space be located in the southwest corner Floor 1, directly convenient to the Longhouse entrance.

**Health and Counseling Center**

The Health and Counseling Center consists of three distinct student services elements – the health clinic, the counseling center, and the Office of Sexual Violence Prevention. It also houses TESC's Medical Assistant Training program. The Center serves the medical (including mental health) needs of Evergreen students. The Office of Sexual Violence Prevention (OSVP) offers a confidential starting point for students affected by sexual assault, relationship violence, stalking, and related concerns. OSVP offers a place to discuss experiences and receive support.[3]

The health clinic and counseling center (the OSVP is a newer service) were once housed together, but demand for their services ultimately required they be located on separate floors of Seminar I. For operational efficiencies it is highly desirable that all functions be again located on a single floor.

The Health and Counseling Center is too distant from the residence halls for easy access by the genuinely ill, and too invisible to be able to positively influence student healthcare decisions. Center administration is unanimous that the organization would be more effective if it were located closer to primary student gathering areas. This has been studied in depth, and attempted twice without success – during renovation of the CAB and in the recent CRC renovation initiative.

Proposed Response: The college will submit a capital project proposal requesting funding for design and construction of a stand-alone clinic within a single biennium (2017-19). This represents the college's best effort to support and improve the health of its students. TESC proposes this center be located on the existing raised structure (*"The Bridge to Nowhere"*) between the CAB and CRC. Not only is this area highly accessible, but it offers the opportunity to enclose 8400 gsf without any need for foundations and floor structures.

*If the Health and Counseling Center initiative is unsuccessful, the Center will be occupy the full extent of Seminar I's Floor 2. It will include conference and study spaces for use by Medical Assistant students.*

[2] The text for this section is taken directly from the TESC website, http://evergreen.edu/tribal/home
[3] The description of OSVP services is taken directly from the TESC website, http://evergreen.edu/violenceprevention/

**Police Services**

Police Services performs myriad functions, including (1) safety and security (i.e. enforcement), (2) public relations, (3) campus switchboard, (4) monitoring of alarm systems, and (5) operation of the campus food bank. It is the college's only 24/7 operation. While its public roles require convenient access, Police Services prefers to perform its enforcement duties out of public view.

Police Services is a fully commissioned police force but operates out of facilities intended for the campus registrar's office on Floor 1; the holding room, for instance, occupies the former registrar vault. Other deficiencies include:

- police dispatchers also operate the campus switchboard, act as lobby receptionists, and report fire and DDC alarms. These additional functions are unusual for a commissioned police force and potentially compromise emergency response;
- no secure parking facilities or parking convenient to the station entrance, requiring officers to park police vehicles on the pedestrian plaza directly in front of the primary building entry. This not only exposes police vehicles to vandalism but resembles a state of siege – visible from Red Square – out of keeping with Evergreen's efforts to promulgate an inclusive campus environment;
- no separate circulation or support facilities for those in custody and officers/staff, which potentially compromises officer/staff safety and eliminates any possibility of hiring student staff (for reception, etc.). For instance, officers must escort those in custody to a common toilet since the holding area has no toilet facility of its own;
- no area for custody processing, interviews;
- no properly vented evidence storage room;
- no gender separation to any degree;

Proposed Response: We propose to provide Police Services with facilities expected of a professional, commissioned police force. The ideal solution is to move Police Services into the Lower Ground Floor, which accommodates its expanded footprint and offers direct access to the campus road network. Needs not presently accommodated that would be resolved in this location include:

- patrol locker room (equipment, shower, radio charging stations) separated by gender;
- on-grade secure police vehicle (cars, Segways, and bicycles) parking directly accessed from Geoduck Way;
- service vestibule for weapons clearing, mud room, security;
- secure custody transfer (personal, vehicular);
- interior custody processing;
- separate holding facilities by gender, and a juvenile holding room;
- properly ventilated evidence and secure property storage rooms;
- dispatch center distinct from public lobby, with direct toilet access and coffee bar.

**Parking Services**

Parking Services serves under the Chief of Police Services, but owing to space restrictions and due to the fact it employs students (who cannot interact with victims, suspects, etc.) it operates from separate facilities on Floor 2. Parking Services patrols the parking lots, collects fines, sells day-use parking passes from a remote booth at the main vehicular entry, and sells

long-term parking passes. Owing to the latter function it sees a surge in activity at the beginning of each academic quarter, suggesting the facility be located in an area with overflow capacity.

Proposed Response: We propose that Parking Services be re-located to facilities on Floor 1, where the building lobby and lounge spaces can double for waiting areas during busy times. Parking Services vehicles will share the secure vehicle yard at the Lower Ground Floor level.

**Faculty Offices**

Currently, Seminar I spaces not claimed by any occupant group are used for faculty offices, in particular in the north wing of Floor 2. Campus-wide there is a high demand for faculty and staff offices, as clearly articulated in the Campus Master Plan.[4] Recent trends suggest this will continue – Evening classes have typically been taught by part-time or adjunct faculty. When on campus, instructors in these classifications work from shared offices. TESC has recently converted some of these positions to permanent positions and is considering converting more. From a policy standpoint the provost does not want permanent faculty housed in shared offices. In addition, Evergreen is experimenting with means beyond salary to attract and retain top talent. TESC has no standardized space requirements for faculty offices.

The Longhouse offers artist residencies and popular summer camps, but lacks offices and associated private or semi-private studios to attract and house visitors on campus.

Proposed Response: We propose a variety of spaces be created to serve a variety of faculty and Longhouse needs, with the goal of creating office/research environments with personality and appeal. The Longhouse concept of pairing offices with private studios in particular resonates as a tool to attract not just visiting artists but college-wide faculty in new ways beyond salary; this has the potential to benefit Washington taxpayers. Examples of clustered offices and private/semi-private studio/research rooms appear in the Floor 2 and 3 concept plan diagrams in Section 8. These concepts demonstrate that private work environments need not be silos, and if sensitively implemented could provide more opportunities for collaboration between faculty and between faculty and students. The most desirable approach consists of clustering offices around a central studio/research space, a concept that will be further explored during design.

**Advancement Support**

The Advancement Division operates a small call center from Seminar I. If sufficiently improved during renovation this facility's role may be expanded from fundraising to recruiting new students, etc. Because it is an evening-only operation, with sufficiently secure and/or portable equipment the call center may serve a daytime role as an informal learning space (i.e. study lounge).

Proposed Response: We propose the call center be located on Floor 3, and double as a study lounge during daytime hours. The proposed design assumes that the phone equipment will be secured to support shared use.

**Program Summary**

See Appendix K for a complete space tabulation summary of all functions identified in programming workshops held with each building occupant.

[4] The CMP projects a need for 30 additional faculty offices and 15,000 gsf additional staff offices to support projected student growth of 600 FTE.

**Functional Interrelationships**

The conceptual plans presented in Section 8 came from an iterative process balancing the needs of current occupants and prospective new occupants. Because of the wide range of responsibilities, most occupants have little need to interact with other occupants. That said, the college gains efficiencies by grouping small-scale occupants together in a single facility through the ability to share common services.

**Functional Planning**

Instruction
Instruction is conducted in highly flexible classroom labs of varying scales, with preference given to large-scale spaces with capacity to hold two instructors and 50 students. Dedicated instruction spaces include technology-rich classrooms, flexible classroom/labs capable of serving uses as diverse as art studio, science lab, and Sustainable Design workshop, flexible seminar rooms, and conference rooms (the latter associated with specific programs). Ground-level instructional spaces are intended to be highly transparent so as to visually engage the campus community.

Recognizing that much learning takes place outside the classroom, the building offers a wide range of informal gathering spaces intended for peer-to-peer and peer-to-instructor interactions. These spaces take the form of lounges, widened corridors, breakout spaces (when not dedicated to scheduled instruction), and similar interior spaces.

Storage
Storage is required for all building occupants. In particular, each flexible classroom/lab requires adjacent space to serve both storage and preparation purposes. To gain space at the Lower Ground Floor level for Police and Parking services, storage capacity at that level will be reduced and must be distributed throughout the building

Common Use Space
Common use spaces include the building lobby and circulation, toilets, facilities maintenance, and mechanical/electrical rooms. Toilet spaces will be sized as necessary to meet IBC plumbing fixture requirements and accessibility codes, and will include gender neutral facilities. Space will also be provided adjacent to meditation rooms for those occupants requiring foot washing facilities. Typical of college facilities, common corridors will be sized to permit unimpeded two-way traffic. This establishes a minimum of 7′-0" clear in major corridors and 5′-0" for hallways.

Mechanical and electrical areas will be sized to contain the planned equipment with sufficient area for maintenance and servicing. Adequate clearances to permit removal of large components will also be provided.

Functional Arrangement
The conceptual plans presented in this report were developed in direct response to both the internal functional requirements of the spaces contained in the building and as a response to access opportunities arising from the sloped site. Initial planning included scaled "bubble diagrams" of all the functional areas. These diagrams were reviewed for operational function by building stakeholders. Based on review of the diagrams, a number of plan options addressing functional interrelationships were developed.

Some of the functional considerations necessary to arrive at the optimum functional configuration are:

- Orientation of the main public entry should be towards the adjacent public access in order to maximize the visual presence of the building for cross-pollination and general campus awareness. Building security provisions at this location must be effective yet visually subtle.
- The internal organization of the building should be organized to allow off-hours isolation of sensitive areas while permitting 24/7 public access to Police Services.
- All areas of potential expansion should be located along the perimeter of the building to permit ease of expansion. This is demonstrated on the Floor 1 plan diagram (Section 8) which indicates a future exterior work yard associated with the north wing's classroom/lab. This function would be particularly useful for the Sustainable Design programs, but may not be supportable by the current project budget.
- Service areas such as toilets, mechanical, electrical, IT, etc. should be stacked.
- Mechanical equipment should be located to permit effective zoning of like spaces.
- To reduce energy use, the building should maximize the use of daylight. Internal partitions should be optimized for daylight at the interior and opportunities for clerestory lighting of high volume spaces should be explored. Daylighting should be filtered at the east and west elevations.

**Room Data Sheets**

Room data sheets and diagrams provided in Appendix E provide detailed program requirements for identified spaces.

## 3.4 FUTURE REQUIREMENTS

As the type and composition of occupants in any dynamic and responsive educational institution are subject to change, improvements to Seminar I must be designed to accommodate both evolving needs as well as wholesale changes in occupants. The need for change is historically driven by changes in information technology infrastructure and equipment.

## 3.5 CODES AND REGULATIONS

The following building codes and regulations apply to this project. The code analysis and summary that are presented in this section are based on the latest adopted versions of these codes at the time of publication. Actual code compliance is based on versions of these codes in effect when building permits are obtained, so some modifications will likely by required.

- 2015 International Building Code with Thurston County (TC) Amendments
- 2015 International Fire Code with TC Amendments
- 2015 International Mechanical Code with TC Amendments
- 2015 Uniform Plumbing Code with Washington State Amendments
- 2015 National Electrical Code with TC Amendments
- 2015 International Fuel Gas Code
- ANSI A17.1 - Safety Code for Elevators and Escalators
- ICC/ANSI A117.1-2009 Accessible and Usable Buildings and Facilities
- 2015 Washington State Energy Code (WSEC)

### 3.5a Building Code Analysis

A full and complete code analysis will be required in the design phase of the project; however, an initial code evaluation is critical in pre-design to determine if there are any significant regulatory impediments to the proposed project:

Governing Code
International Building Code, 2015 edition with Thurston County amendments.

Occupancy Type (Chapter 3)
Seminar I will be a mixed occupancy (508) with the primary use being Business Group **B** (304.1). This occupancy applies to education use above the twelfth grade as well as healthcare and police services. Large-scale instructional spaces will be classified Assembly Group **A-3** (303.4) due to their flexible seating potential. Differing occupancies must be separated from adjacent uses per 508.4.4 (see Table 508.4) which requires a 1-hour separation between A-2 or A-3 and B or S-1 occupancies.

Building Construction Type (Chapter 6)
The building is constructed of non-combustible materials and will be classified as Type-II B construction (602.2). There are no specific fire-resistance rating requirements for building elements in this type of construction per Table 601.

Allowable Building Height & Area (Table 503)
Type-II-B construction for the Group B occupancy allows up to 3 stories in height and, 23,000 sf per floor. Assembly A-3 occupancies allow up to 2 stories in height and, 9,500 sf per floor. The occupancies are considered separated (508.4).

The code permits 1 additional story as well as an increase in maximum building height from 55 to 75 feet for buildings equipped with an approved automatic sprinkler system (504.2). An approved sprinkler system also allows increasing the building area 200 percent for buildings higher than one story and 300 percent for one story buildings (506.3). The proposed project includes upgrading building fire protection from the current standpipe system to a full automatic sprinkler system.

### 3.5b Zoning Code Analysis

Seminar I falls under the jurisdiction of Thurston County. As project entails renovation of an existing facility without change in use, we anticipate not issues affecting land use approval.

### 3.5c Sustainable Design and LEED

The Evergreen State College is committed to creating high performance facilities that will ensure the optimal health and productivity of occupants and buildings users. They also support and will comply with all State of Washington LEED compliance mandates.

The renovation of Seminar I will be certified LEED Silver minimum by the United States Green Building Council (USGBC) in accordance with Chapter 39.35d RCW "High Performance Public Buildings." Sustainability was discussed during a preliminary eco-charrette during predesign and the resulting checklist of targeted credits is presented in Appendix C. A detailed eco-charrette will be conducted during Schematic Design to further explore sustainability goals and opportunities. As the building design progresses, additional credits may be identified for possible incorporation into the project, while others are found not to be cost-effective. While not required, targeting LEED Gold certification may benefit Evergreen in the long term provided it can be achieved without added cost; this is worthy of further discussion with the selected design and construction teams.

*This page intentionally left blank*

# SECTION 4 SITE ANALYSIS

## 4.1 EVALUATION OF POTENTIAL SITES

### Site Requirements and Support

As this project involves renovation of an existing facility, there is no need for evaluation of potential sites. That said, the Seminar I site has characteristics – today largely untapped – that are a key to project success and have the potential to greatly increase the efficiency and utility of Seminar I as well as improve housed program operations.

Specific site requirements stem from the needs of building occupants. For example, Police Services and Parking Services require:

- direct access to campus road network;
- secure parking for police vehicles;
- secure transfer of suspects from police vehicles to custody processing area;
- convenient access to Red Square without visual prominence/visibility.

A major negative attribute of Police Service's existing location in the north wing of Floor 1 is that this location offers no convenient secure storage for police vehicles. By default these vehicles are parked adjacent to the Police Services entry, visually blocking the primary building entry used by all other occupants, inviting vandalism, and presenting an overt police presence on Red Square at odds with the campus culture. Furthermore, the vehicle traffic has degraded the brick paving of Red Square.


*Figure 11: Police and Parking Services vehicles parked at primary entrance to Seminar I.*

In addition to Police Services and Parking Services, building occupants associated with the Longhouse (the Reservation-Based Community-Determined Program, and visiting faculty offices and studios) benefit from direct on-grade access to the Longhouse and future

Indigenous Arts Campus and accordingly are located in the southwest corner of the building and convenient to the circulation pathway serving those locations.

**Site Alternatives**

As an existing facility there are no site alternates to be considered.

## 4.2 SITE ANALYSIS

### 4.2a Description/Location

Seminar I lies at the northwesternmost corner of Red Square, adjacent to Lab II to the south and Daniel J. Evans Library to the east. Primary building access is near the southwest corner of Floor 1, on axis with – but not visible from – the pedestrian loggia of the Library. Major site features by cardinal point include:

- to the north, a landscaped courtyard and accessible parking, with the building site demarcated by an extension of Geoduck Road;
- to the east, the space between Seminar I and the Library features a sloped landscaped area and a paved service lot serving building loading docks. This area also includes a generator for powering essential operations at the Library in the event of power loss;
- to the south, a landscaped pedestrian pathway aligned with entry to the Longhouse;
- to the west, the Longhouse and future Indigenous Arts Campus;

*Figure 12: Panoramic view of core campus buildings with Seminar I on far left (Source: TESC Wikipedia page).*

The courtyard formed by Seminar I's L-shaped plan is level with Floor I, then slopes sharply both on its west and north edges. This manmade topography is simply explained by the fact that a two level utility tunnel, oriented east-west, exits from the midpoint of the north wing and travels westward toward what was intended to be a second phase structure but never built.[1] The flat courtyard is cover over this tunnel.

### 4.2b Ownership/Acquisition

The site is owned by the State of Washington and is located within TESC's 1008 acre campus. No acquisition is required to enable this project.

[1] This Phase II ultimately took form in 2004 as Seminar II, but located in a separate area of campus.

### 4.2c Jurisdiction

The site is under the regulatory jurisdiction of Thurston County. Some utilities are provided by the City of Olympia. This project causes no conflict with any of the approved Growth Management plans for either jurisdiction.

Zoning
The college must comply with the Thurston County Zoning Ordinances and Shoreline Master Plan. The college is included in the Thurston County Comprehensive Plan, a requirement of the Growth Management laws of the State of Washington. None of these documents present significant obstacles to the renovation of Seminar I.

### 4.2d Features

All site elements date from the original construction in 1974, including now-mature trees along the primary pedestrian pathway leading to the Longhouse and at sloped landscaped areas to the north and east of the building. Some original site furnishings in the building courtyard were removed in Winter 2016 due to advanced rot.

*Figure 13: Seminar I primary entrance as viewed from the Daniel J. Evans Library loggia. Note that entrance doors are not visible.*

Topography
The site slopes downward to the north and west. The elevation of the paved service area spanning between Seminar I and the Daniel J. Evan's Library allows for raised loading docks at both facilities. The Lower Ground Floor of Seminar I is accessible on-grade from the north end of the north wing. This project aims to improve pedestrian access – including ADA access – to the Lower Ground Floor and Floor 1 levels, a goal achieved through construction of an exterior stair between the Floor 1 primary entrance and the entrance to Police Services at the Lower Ground Floor level. Site development associated with this stair includes retaining walls positioned to enable daylight access to Police Services' administrative spaces.

An existing exhaust well in this location will be replaced with a ducted exhaust stack within the building.

Climate
The site experiences climatic conditions typical to the south Puget Sound. Prevailing winds come from the south. Based on climate and solar access the traditional preferred orientation for classrooms and offices is to the south. However, art-focused classroom labs will benefit from north-facing glazing facing, as seen with incorporation of new overhead glazing at the classroom/lab planned for the north wing of Floor 3.

Soils
Due to its prior development the soil characteristics at Seminar I are well-known and documented. The project site is underlain with Alderwood Gravelly Sandy Loam. Given that this is a renovation project and that new work dependent on soil characteristics is limited to minor additions and site features (e.g. retaining walls and pavement) work, we see foresee no soils issues.

Environmental
- Wetlands: There are no wetlands in the vicinity of the project site.
- Hazardous Materials: There are no known hazardous materials on the project site, and there have been no known past uses which would potentially source hazardous materials on the site.
- Public Wells: Thurston County regulates property use to protect the water quality of its well-based public water systems. Potable water for the campus is sourced from the City of Olympia, so wells and the need for wellhead protection do not exist.
- Protected Species: An visual onsite survey revealed no evidence of Mazama Pocket Gophers, which are protected at both the state and federal levels and are traditionally found in prairie ecosystems in Thurston County. No other threatened or endangered species or habitat were observed onsite or are mapped within 300 feet of the site.

Easements
There are no recorded easements on the site which would impact or otherwise restrict its use.

Historical/Cultural
The state's Department of Archaeology & Historic Preservation has influence over any changes to the Brutalist-style architecture of the early campus buildings (Seminar I included). This proposed project was reviewed by DAHP in accordance with Governor's Order 05-05 and was declared exempt from further review. See Appendix G.

**4.2e Utilities**

Adequate utilities exist at the proposed site for the building as programmed. The existing systems and the proposed modifications are described below, the cost for the modifications have been included in the project cost estimate (see Section 5, Budget Analysis).

Electrical Service:
Electrical power is available from the campus tunnel distribution system. A transformer exists in the Basement level main switchgear room providing 480-volt 3-phase power. This transformer is not original to the building, does not contain PCBs, and does not require replacement.

Water Service:
The City of Olympia provides potable water to TESC. The existing service – both for domestic use and fire protection – is adequate for the projected improvements. Static pressure and fire flow have been tested to verify adequacy.

Water for fire protection is established in the International Building Code (IBC) by reference to National Fire Protection Association (NFPA) and International Fire Code (IFC). Fire flow is based on building size and construction type. The required fire flow rate must be provided for individual buildings. Greater flow for simultaneous fires in more than one building is not required.

Sanitary Sewer System
The City of Olympia provides sanitary sewer service to the campus.

Storm Drainage:
The Evergreen campus within four different drainage basins. The precise nature of the campus' existing storm drainage system was recently mapped and TESC published in 2014 its Stormwater Plan to serve as a policy statement for future development and current mitigation. TESC must follow the Washington State Department of Ecology Non-Point Discharge Elimination System (NPDES) Permit as a secondary MS4 permittee. The planned development includes creation of additional impervious area in excess of 2000 sf, which will require meeting the Department of Ecology 2012 Stormwater Management Manual for Western Washington, as amended in December 2014 (The 2014 SWMMWW).

Furthermore, Thurston County has adopted the 2010 Drainage Design and Erosion Control Manual (DDECM). Development of the site will require that the stormwater be controlled and treated to meet water quality requirements. Flow control may be provided through detention and release to a downstream conveyance system or through infiltration to the site's subsoils.

Natural Gas:
There is no natural gas service to the building, nor will it be required.

Telecommunications:
Telecommunications service – including fiber optic cable – is available from the campus utility tunnel network and already serves the building.

### 4.2f Vehicular Access

The project site is adequately served by a surface campus road network in uniformly good condition and capable of heavy vehicle traffic. Trucks used in staging events at Red Square access the area by way of Geoduck Lane and the pedestrian walkway on axis with the Longhouse. This will impact the extent of the Police Services secure access point proposed at the southwest corner of the building.

### 4.2g Parking Requirements

Parking at Evergreen is available for a modest fee at surface lots distributed throughout the campus. The overall capacity is ample even at peak times, but adequate parking is traditionally essential for such an isolated campus. There are no plans or requirements to expand parking as a result of this project.

### 4.2h Landscaping

Landscape areas untouched by development will be left in native condition. New landscaping will follow best practices for low-maintenance planting. Drought tolerant, native species will be utilized to the greatest extent possible.

## 4.3 SITE DEVELOPMENT

### 4.3a Site Components

Please see Section 8.0 for the project concept site plan and renderings.

# SECTION 5 PROJECT BUDGET ANALYSIS

## 5.1 SCOPE NARRATIVE

### 5.1.1 Basis of Estimate and Assumptions

The renovated and expanded Seminar I will be of permanent construction and meet all codes and standards for Immediate Occupancy facilities. It will allow The Evergreen State College to realize significant energy, maintenance, and operational efficiencies through building envelope improvements and replacement of mechanical, electrical, and conveyance equipment. Construction will be robust and of high quality, but at reasonable cost, with a projected life span exceeding 50 years. To the greatest extent feasible, existing building elements (e.g. cast in place concrete and relatively new EPDM roofing) will remain. The project will be designed and constructed to achieve at minimum a LEED Silver sustainability certification**.** Outline specifications describing the general scope, quality, and character of the project are provided in Appendix D of this report.

The budgeting of the proposed Seminar I project was prepared by measurement of approximate quantities based on site and building program analysis as provided herein (Sections 2 and 3). The following narratives describe the major building components assumed for the project for the basis of costing.

### 5.1.2 Civil/Site Improvements

Project Location:

The building is located at the far northwest corner of Red Square, west of the Daniel J. Evan's Library, north of Lab II, and east of the future Indigenous Arts Campus.

Acquisition:

The site is owned by the State of Washington.

Soils:

The existing structure was built with conventional spread footings and there is no reason to believe anything but conventional footings are appropriate for the proposed addition at the building's southeast corner. There have been no groundwater issues over the 40-year life of the existing facility, including in the sub-basement.

Topography:

Floor 1 of the building is level with Red Square and functions as the primary building entry. The site slopes to the west and north to the degree that the Lower Ground Floor level is accessed on grade to the north and northwest. Site improvements will be graded to direct runoff away from the building and paved areas. Infiltration is the preferred means of stormwater management. All new walkways will be graded to meet accessibility requirements.

Erosion and Sedimentation Control:

Throughout construction, erosion and sedimentation control measures will comply with the 2015 Drainage Design and Erosion Control Manual (DDECM) adopted by Thurston County. Sediment-laden water will be prevented from leaving the site. Currently, Best Management Practices are required for erosion control, perimeter protection, and sedimentation control. A Stormwater Pollution Prevention Plan (SWPPP) is required for the National Pollution

Discharge Elimination System (NPDES) permit. The SWPPP will include a description of the site and construction activities, an explanation of the project's Best Management Practices, and a description of the pollution prevention team. A Notice of Intent (NOI) will be submitted to the Washington State Department of Ecology.

Typical erosion control consists of delineating clearing limits, covering disturbed areas, and controlling surface water. A perimeter filter fabric fence provides perimeter protection. A sedimentation pond or Baker tanks will provide sedimentation control.

Drainage & Wetlands:

There are no known wetlands within the vicinity of the project site.

Stormwater detention and/or infiltration facilities will be required as the project adds impervious surface to the site (through an addition and additional pavement). Water quality facilities are required for flow from vehicle parking/storage areas which are considered pollution generating impervious surfaces. The secure vehicle parking area required by Police Services is identified herein to be gravel-surfaced, but regulatory requirements may ultimately dictate impervious surfacing be used.

Utilities:

Water:
The building is adequately served with potable water from the City of Olympia.

Fire Protection:
The building has adequate fire truck and fire hydrant access.

Sanitary Sewer:
The City of Olympia provides sanitary sewer service to the building.

Gas:
There building is not served by natural gas, nor is any gas-fired equipment proposed.

Primary Power:
12.5kV electrical power is provided by Puget Sound Energy via overhead lines to an electrical vault south of the Central Plant, then distributed through the campus utility tunnel network to the main electrical room at the Lower Ground Floor level. The primary transformer in this room steps down the supply to 480-v 3-phase. This transformer is not original to the building, does not contain PCBs, and is adequate to serve the proposed project.

Signal and Telecommunications:
Telecommunication service, originating from Century Link and including fiber cables, is provided via cable tray in the utility tunnel system to an MDF at the Basement level. IDF rooms will be provided at central locations on alternate floors. Distribution cabling throughout the building will be the performed by the Contractor.

Roads and Parking/Service Access:

For service and police access the building is adequately by an existing extension of Geoduck Lane and the large loading zone spanning between Seminar I and the Daniel J. Evan's Library.

Ample parking is available at surface lots distributed throughout the campus. Other than service and delivery vehicles, only accessible parking is provided at the building. Police vehicles will be stored in an enclosed secure yard adjacent to the Police Services facility along the north side of the building.

An existing loading dock in the north wing at the Basement level will be converted to the main entry for Police Services. Direct on-grade access to the facility will be improved on both the Lower Ground Floor and Floor 1 levels. The existing passenger elevator will be replaced with an elevator sized for freight use.

Waste will be collected in containers located in the existing loading zone.

Sidewalks & Plaza:

The primary building entry is reached by a plaza extension (surfaced in a combination of clay pavers and concrete) from Red Square and the Daniel J. Evan's Library. The Basement level is accessed from ramps and sidewalks at the northeast corner of the north wing. New minimum six-foot-wide concrete sidewalks will be provided to serve secondary entrances. Selected sidewalks may be thickened to support manlifts employed for window cleaning.

### 5.1.3 Landscape Criteria and Considerations

In general, landscape improvements will include native trees, shrubs, and ground cover at disturbed areas of the site. Plantings will be drought tolerant and low-maintenance. Permanent irrigation systems, if employed, will be low-water-use-type and limited in scope to primary public areas. Native planting areas, such as the restored staging area, will receive temporary irrigation with the limited purpose of establishing the plants.

### 5.1.4 Architectural Criteria and Considerations

Codes and Standards:

2015 International Building Code with Washington State Amendments.

Materials and Systems:

As the planned life of the building is 50+ years, proposed building materials and systems have been selected on the basis of durability, ease of maintenance, appropriateness, and initial cost. Materials and equipment will comply with TESC standards and LEED Materials and Resources criteria.

Exterior Walls:

Existing exterior walls will remain the original cast-in-place concrete, furred on the interior to achieve R-20 system insulation rating. Spray foam insulation will be used as a strategy to reduce thermal bridging and control vapor transmission. All single-pane aluminum windows will be replaced. Select window openings may be enlarged in response to interior space needs.

New walls will be of contrasting materials such as brick, wood, or aluminum composite panels to clearly differentiate new work from old, and in addition will feature large expanses of glazing.

Windows, storefront, and/or curtain wall will use thermally broken aluminum frames with Kynar painted finish. Glazing will consist of clear or lightly tinted insulating glazing units with hard coat low emissivity (Low-E) coating. Design intent is for all new glazing to be minimally tinted to emphasize transparency.

Roofing:

The majority of the building has been recently re-roofed with an EPDM single-ply membrane system which will be retained except where noted. New penetrations will be patched using

compatible materials. The roof structure over much of the north wing will be demolished and replaced with a lightweight steel structure spanning from bearing wall to bearing wall to eliminate interior columns and to increase the interior volume of the large classroom/studio planned for that location. This new area will be insulated to achieve R-38. The roof structure shall include north-facing monitors or clerestories for bringing in daylight. Overhead glazing will consist of thermally broken aluminum frames with Kynar painted finish. Glazing will be clear or lightly tinted insulating glazing units with laminated inner lites and hard coat low emissivity (Low-E) coating.

Openings:

Exterior openings will consist of thermally-broken aluminum storefront with glazed aluminum doors.

Interior openings will feature grouted hollow metal frames with sidelights except at service spaces and spaces requiring a high degree of privacy (e.g. exam and counseling rooms). Doors will be solid core wood with wood veneer, Forest Stewardship Council (FSC) sourced. Glazing at office sidelights may feature surface-applied films for privacy. Doors at exam and counseling rooms will be sound rated.

All hardware will follow TESC standards. Building entrances and major interior spaces will receive access control devices.

Interior Walls:

Interior spaces will be configured to admit as much natural light into the building as is practical.

Interior concrete walls with board-formed finish will be retained to the greatest extent possible. Nonbearing interior walls will be universally full height, consisting of gypsum wallboard on 3-5/8-inch metal studs. Walls at instructional spaces, exam rooms, and counseling rooms will be sound-rated (min. STC = 52). Walls at offices will have sound batt insulation, full height, with intent to achieve a minimum STC of 45.

Interior openings will feature hollow metal frames with sidelights except at service spaces and spaces requiring a high degree of privacy (e.g. exam and counseling rooms). Doors will be solid core wood with wood veneer, FSC sourced. Glazing at office sidelights may feature surface-applied films for privacy. Doors at exam and counseling rooms will be sound rated.

Interior Finishes:

All interior finishes will be based on TESC standards and to the greatest extent possible be PVC-free.

Acoustics:

Primary acoustic attenuation in the building will be provided by acoustic ceilings and carpeting. To preserve a sense of interior volume in larger spaces overhead structure will remain exposed, with acoustic control achieved with suspended clouds or panels, fabric-faced wall panels, or similar devices.

To support effective learning environments, the ASHRAE recommendation that general classrooms should have a background noise level of no greater than 35dB will be followed. All mechanical equipment will be isolated on vibration dampening bases and supports. Further, ducts will have isolation connections.

Energy Conservation:

The project will make maximum use of available energy through passive design features, conservation, and low-use fixtures and equipment. Passive energy features include the use of entry vestibules at primary entrances, and orientation of the building to maximize daylight and minimize exposure to prevailing winds.

Conveyance System:

The existing elevator will be replaced with a larger stretcher-compliant elevator (as required by current code) with load capacity to function as a freight elevator. This will require enlarging the elevator shaft by capturing an adjacent mechanical shaft.

### 5.1.5 Structural Criteria and Considerations

Design Parameters:

The proposed modifications to the existing building will trigger a seismic upgrade to the facility. While the existing lateral system is fairly sound, the design of lateral systems has changed significantly since the building's original construction date. Additionally, the college desires to have the building classify as an Essential Facility, as it houses Police Services. This classification dramatically increases (by 50 percent) the lateral design forces.

Existing Building Design Parameters:

- ASCE 41-13 "Seismic Evaluation and Retrofit of Existing Buildings"
- Immediate Occupancy
- BSE-1N: $S_{Ds} = 0.903$; $S_{D1} = 0.485$

New Construction Design Parameters:

- 2015 International Building Code
- Immediate Occupancy
- Floor Live Loads:
  - Corridors: 100 psf
  - Offices: 50 psf + 15 psf for partitions
  - Classrooms: 40 psf

Existing Building:

The primary structural framing elements in the Seminar I Building have remained unchanged since its original construction in 1974. It is a relatively robust concrete system with exterior concrete walls and interior concrete columns supporting reinforced, flat-slab concrete floors. Some areas, primarily around the center core, are framed with wide-shallow concrete beams. The roof system is similar to the floor framing below, and it supports a thick, non-structural concrete topping that provides drainage. The lateral system consists of concrete shears walls. The foundations consist of spread and continuous concrete footings.

Several modifications to the existing building are anticipated, and are described below:

Level 1 Floor Infill: Very large floor openings occur in the Lower Ground Floor north wing. These openings will be infilled with steel beams and a composite steel/concrete floor system.

Roof Modifications: At the north wing, a large portion of the existing concrete roof system will be removed, and interior concrete columns supporting the roof system will be demolished from Level 3 upwards. A new structural steel system will be installed that clear-

spans the space. The exterior concrete walls will be strengthened to support the increase vertical load.

Seismic Force Resisting System Improvements: Improvements to the existing seismic force resisting system is required. Due to the configuration of the building floor plate, and the existing locations of shear walls, a high-level seismic analysis is necessary to develop final solutions. However, it should be anticipated that some strengthening will be required near the core, as well as near the north and west ends of the building. This strengthening may consist of infilling areas with concrete walls, or strengthening existing walls by applying a layer of shotcrete.

New openings will be installed in existing exterior walls at the Lower Ground Floor level to support occupied use.

New Construction:

New construction is expected to be minimal. All new construction will be supported on spread and continuous concrete footings. The exterior envelope of any additional space will be framed with steel perimeter columns, supporting open-web roof joists and 1.5 inch metal roof deck. Walls will have metal stud infill or glazing.

### 5.1.6 Mechanical Criteria and Considerations

Codes and Standards:

- 2015 International Building Code with Washington State Amendments.
- 2015 International Mechanical Code with Washington State Amendments.
- 2015 International Fire Code with Washington State Amendments.
- 2015 Uniform Plumbing Code with Washington State Amendments.
- Washington State Energy Code – 2015.
- National Fire Protection Association (NFPA), Codes, Standards, Recommended Practices, Manuals and Guides. List all that apply 90A, 90B, 13, etc.
- Department of Labor, OSHA, Occupational Safety and Health Standards.
- ASHRAE Standards 90.1-2010; 62.1-2010; 55-2010.

The authority having jurisdiction is Thurston County.

Sustainability Goals and Strategies: LEED Version 4 for New Construction and Major Renovation.

The project shall achieve, at a minimum, LEED Silver certification. The building performance criteria for EA Credit 1, whole building simulation achieving an energy cost savings goal of 25 percent when compared to ASHRAE 90.1-2010 baseline building.

Design Conditions: Environmental Air Conditioning to meet the following criteria:

| Design Temperatures | Heating | Cooling |
|---|---|---|
| Outdoor Conditions Olympia, WA | 17 F | 85 F DB/67 F WB |
| General Occupied Space | 70 F DB | 75 F DB |
| Conference Rooms | 70 F DB | 75 F DB/50% RH |
| Mechanical Spaces | 65 F DB | Ventilate to 97 F DB |
| Electrical Spaces | 65 F DB | 86 F DB |
| Comm Rooms (MDF, IDF, Telecomm) | NA | 85 F DB |
| Classroom | 70 F DB | 75 F DB/50% RH |
| Cells | 70 F DB | 75 F DB/50% RH |
| Office, Conference, Dispatch | 70 F DB | 75 F DB/50% RH |

Air Filtration will be accomplished using the following:

Air Handling Units: Pre-filters will be 2-inch thick pleated media filters with a Minimum Efficiency Reporting Value (MERV) of MERV 8 when evaluated under the guidelines of ASHRAE Standard 52.2. Final filters will be high efficiency 12-inch thick pleated media filter MERV 13 when evaluated under the guidelines of ASHRAE Standard 52.2.

Ventilation: Minimum ventilation rate requirements are as follows:

| Application | Estimated Maximum Occupancy (P/1000 ft2) | People Outdoor Air Requirements (cfm/person) | Area Outdoor Air Requirements (CFM/ft2) | Air Change Rate (AC/Hr) |
|---|---|---|---|---|
| Cells | 25 | 5 | 0.06 | 1 CFM/FT2 exhaust |
| Corridors | - | - | 0.06 | - |
| Classroom | 35 | 10 | 0.12 | 6 |
| Offices | 5 | 5 | 0.06 | 4-6 |
| Conference | 50 | 5 | 0.06 | 6-10 |
| Restrooms | - | - | - | 50/70 (CFM/FT2) |

Equipment Heat Rejection to Environment: Following are the miscellaneous heat gains that will be assumed for use in calculating space cooling loads where specific loads are not known.

| | |
|---|---|
| General Office Space | 1.5 Watts per sq. ft. |
| Restrooms | .5 Watts per sq. ft. |
| Corridors | .5 Watts per sq. ft. |
| (Electrical Room) | To be determined as design progresses. |
| (MDF/IDF Rooms) | To be determined as design progresses. |

Existing and Demolition:

The existing building has 37,015 sq.ft. main areas served by a variable air volume air handling unit and a combination of zone controlled 4-pipe induction units and air terminal units with HW reheat.

The existing mechanical room contains but is not limited to: Chilled water pumps; heating water pumps; waste pumps; drainage pumps; 26,700 CFM air handling unit; 11,500 CFM exhaust fan; 6,000 CFM exhaust; steam to water heat exchangers; ductwork; piping; and appurtenances.

Demolition will include all HVAC equipment, ductwork, and piping in the building.

Exterior Envelope Requirements: Components of the building envelope will be insulated to meet or exceed the Washington State Energy Code.

Existing roofs are assumed to be concrete with insulation entirely above deck.

New roofs are assumed to have insulation entirely above deck in compliance with Washington State Energy Code requirements.

Existing walls are assumed to be concrete mass walls.

Existing windows are to be demolished.

New windows are assumed to have thermally broken aluminum frames in compliance with Washington State Energy Code requirements.

Current Energy Code minimum U-Values as stated for Climate Zone 4C:

| Components | Thermal Performance Criteria |
|---|---|
| Opaque Walls | U=0.104 Mass Wall |
| Roof | U=0.027 Insulation above deck |
| Floor, slab-on-grade | U=0.031 |
| Opaque Doors | U = 0.34 for metal door |
| Glazing | U = 0.38; SHGC = 0.40 |
| Skylight | U = 0.50; SHGC = 0.35 (With Curb) |

Mechanical Systems – General:

The following information describes features and systems which are unique to this project.

A minimum of four feet of clearance will be provided around all mechanical equipment wherever possible. As a bare minimum, clearance will be provided on one side of each air handling unit for maintenance access and coil removal.

Noise, vibration and seismic control will be provided for the appropriate Mechanical Systems. Sound attenuation will be provided as an integral part of the air handling equipment supply and return fan systems described below. Additional noise and vibration controls will be provided as determined by the Acoustical Consultant.

Identification of ductwork, piping, valves and equipment shall be provided.

Insulation of mechanical systems will include domestic hot water/cold water/hot water circulation piping, nonpotable water piping, refrigerant piping, storm drain piping, chilled water piping, secondary chilled water piping, condenser water piping, condensate piping, heating water piping, steam piping, outside air ductwork, and supply ductwork. The insulation will be in accordance with the Washington State Energy Code.

Fiberglass duct liner will be used for thermal insulation and sound control as directed by acoustical. The air handling unit casing will be fiberglass lined with an acoustical perforated metal liner. Sound lining will be used on toilet exhaust ductwork and on short, low velocity transfer ducts to control cross talk between rooms.

Testing and Balancing of the Air and Water Systems will be accomplished by an Agency certified by the Associated Air Balance Council or the National Environmental Balancing Bureau specializing in Air and Water System Balancing. The A-E drawings will state the final design System capacities for reference by the Contractor and use by the maintenance personnel.

Commissioning of the Systems will be accomplished by a third party Agency certified by the Building Commissioning Association (BCA). The mechanical drawings will stipulate the minimum commissioning requirement per the 2015 Washington State Energy Code and as required by the Commissioning Authority. The A-E drawings will state the final design

System capacities for reference by the Contractor and use by the maintenance personnel and Commissioning Authority hired on by the Owner.

Heating, Ventilating and Air Conditioning (HVAC):

The existing building is approximately 44,000 square feet and will be a major renovation. An existing sub-basement mechanical room will remain to be used for the HVAC systems. The existing building will be conditioned with three heat recovery units.

The existing campus utility tunnel runs to the building Lower Ground Floor mechanical room. The existing chilled water, steam, and condensate will be utilized and tied into this building. The main waste line that also feeds this building will be salvaged and reused for the new plumbing connections.

Air Handling Systems:

Three Heat Recovery Air Handling systems are planned to serve the Seminar I Building as follows:

| System | Areas Served | Area (Sq. Ft.) | Approximate Capacity - CFM |
|---|---|---|---|
| HRU-1 | Basement, Police Station | 10,400 | 4,200 |
| HRU-2 | 1st, 2nd, 3rd Floor, North | 19,650 | 7,900 |
| HRU-3 | 1st, 2nd, 3rd Floor, South | 21,500 | 8,600 |

Each system will be variable air volume using heat recovery unit consisting of a supply fan array, hot water heating coil, chilled water cooling coil, filters and mixing box, and reverse flow heat recovery technology. A wrap-around coil may be required to ensure the proper humidity control. Each system will have a return fan array to ensure proper air flow and space pressure control. Air volume will be controlled by variable frequency drives on the supply and return fans. The number of supply and return fans in each heat recovery unit will be determined as design progresses.

The equipment will be manufactured by Haakon Industries/BKM or approved equal including direct drive supply and return fans utilizing fan array technology. The mixing box, filter and coil plenum sections will be of 4-inch thick double wall construction with perforated galvanized steel liner.

Downstream of the HRUs the individual zone spaces will be served by a Chilled Beam system. This type of system is not only highly efficient (see ELCCA in Appendix H), but, due to its low profile, is particularly advantageous for use in buildings with limited floor-to-floor heights such as found at Seminar I. The beams will be equipped with a cooling coil. Upstream of the chilled beams will be Terminal unit boxes with hot water heating coils, serving multiple similar usage chilled beam zones. The hot water heating coil control valve will be used to provide proper supply air temperature to each zone. The individual zoned chilled beam will provide the zone comfort cooling and heating. The terminal unit will vary the volume of outside air to maintain $CO_2$ levels in the classroom and conference room. The average $CO_2$ levels shall maintain below a maximum of 350 PPM above ambient (outdoor) $CO_2$ level which equates to a nominal $CO_2$ level of 700 PPM inside the room.

Supply air to the spaces will be delivered overhead and return air will be relieved into a ceiling return air plenum.

A central exhaust system will be provided to serve all toilet and janitor rooms in the building.

Mechanical and electrical rooms containing heat generating equipment will be ventilated with outside air using wall or roof mounted ventilation fans.

The science and art labs will have dedicated exhaust systems to serve the functions for those rooms.

Heating System:

The basis of design for the heating water system assumes that the central plant will provide steam at 50 psi to the Seminar I building. New steam piping will tie-in to the existing campus steam lines in the utility tunnel and be routed to the mechanical room. A steam to water heat exchanger will be provided. Two dedicated heating water pumps, each sized to handle 100% of the building heating water load, will distribute heating water to the air handling units, heat recovery units, and terminal units. An above grade condensate return pump will be provided and connect to the existing condensate return line located in the utility tunnel.

Heating water piping will be either steel or copper piping.

Heating water system valves will be butterfly type for 2-1/2" and larger and ball type for 2" and smaller. Gate valves will not be used.

Steam BTU meter and condensate flow/conductivity meter will be provided in mechanical room.

Steam piping may be routed through the mechanical space to accommodate a future building. This will be confirmed as design progresses.

Cooling:

The basis of design for the chilled water system assumes that the central plant will provide primary chilled water (44 degrees F) to the Seminar I building. The central plant consists of two High Efficiency R-134a chillers providing between 42 degrees F and 44 degrees F chilled water. The chillers operate at 0.43kw/Ton. There is no water side economizer at the central plant. The campus chillers and chilled water pumps are shut down in the winter. New primary chilled water piping will tie in to the existing campus chilled water lines in the utility tunnel and routed to the mechanical room. Two dedicated chilled water pumps, each sized to handle 100% of the building chilled water load, will distribute chilled water to the air handling units and heat recovery units. No cooling will be provided to the heat recovery units and air handling units when the central plant is turned off.

A de-coupled secondary chilled water loop with 57 degrees F water will be provided to serve the chilled beams using two dedicated chilled water pumps. Each chilled water pump will be sized to handle 100% of the building chilled beam load.

A cooling tower with a plate and frame heat exchanger will be provided off of the secondary chilled water loop to provide a water side economizer. The cooling tower will be located on the roof. Chemical treatment, condensing water pump, and condensing water piping system will be provided. The cooling tower condensing system will also serve the chilled beam system when the central plant is turned off. Cooling during this time will be limited.

Chilled water piping will be steel or copper piping.

Chilled water system valves will be ball type for 2 inches and smaller and butterfly type for 2-1/2 inches and larger. Gate valves will not be used.

Chilled water BTU meter will be provided in the mechanical room.

MDF/Elevator Equipment Room: These rooms will be served by separate split system DX air conditioning units that will operate continuously, independent of the building HVAC systems. Each system will consist of a packaged ductless room air conditioning unit with an associated air cooled condensing unit.

Chilled water piping may be routed through the mechanical space to accommodate a future building. This will be confirmed as design progresses.

HVAC Controls:

Controls for the Seminar I Building mechanical systems will be Tridium Direct Digital Controls (DDC) tied in to the existing campus DDC system, no substitutions. The system will be open protocol with both Lon Works/BACnet interface.

Plumbing:

The existing sewer line shall require a camera analysis of the existing condition of the pipe. If reusable the existing main line shall remain and tied into from all the new fixtures.

New water piping will be connected to the existing cold water main in the utility tunnel to provide new water service to the fixtures and equipment.

Electric water coolers will be provided with bottle filler.

Water closets and urinals will be provided with hard wired sensor operated low flow flush valves. Flush valves for water closets shall be 1.28 gpf and urinals shall be 0.125 gpf.

Lavatories will utilize hard wired sensor operated faucets with a low flow aerator delivering 0.5 gpm.

Two electric water heaters both sized at 100% capacity for redundancy will provide domestic hot water. There is no existing gas provided to the building. The domestic water heaters shall not be tied to the campus steam system as the steam from the central plant is turned off in the summer.

Floor drains will be provided in toilet rooms and in the mechanical rooms and other locations as indicated on the drawings.

Hot water re-circulation will be provided on the domestic hot water system to ensure hot water at all fixtures.

Rainwater on roof will be captured by roof drains and overflow roof drains. The rain leaders will tie to the storm water system 5 feet outside the building.

Separate water sub-metering will be provided for domestic cold water, make-up heating water, make-up condenser water, and irrigation.

Domestic piping for cold, hot, hot water circulating, nonpotable, and service water shall be Type L copper with wrought copper solder fittings and threaded adapters

Sanitary waste piping and sanitary vent piping shall be cast iron pipe. At contractors option, above ground piping can be copper drainage tube with wrought copper drainage fittings.

Acoustical Consultant:

An Acoustical Consultant will be procured to complete a sound and vibration isolation analysis of the mechanical system. They will provide recommendations for the project to meet the requirements of LEED version 4. The Acoustical Consultant will review design

documents and make recommendations during the design phase. A sound and vibration analysis and project specifications will be provided during design.

Commissioning:

Commissioning services will be required per the Washington State Energy Code. A third party Commissioning authority or Owners Representative will be procured to complete the enhanced commissioning requirements for LEED version 4. The Commissioning Authority (or Owners Representative) will review design documents and make recommendations during the program phase, design phase, construction phase, acceptance phase, and post acceptance phase. Installation verification will be performed, functional testing, and performance period of measurement and verification. Commissioning documents will be provided during design, process, verification, and operation and maintenance documents.

Fire Protection:

The existing sprinkler service will be demolished from the utility tunnel to the main mechanical room and a new fire service connection will tie into the existing 6" fire pipe in the utility tunnel.

A new double check valve assembly will be provided in the utility tunnel.

An automatic, wet pipe sprinkler system will be provided to serve the entire building. Sprinkler protection will not be provided in non-accessible, non-combustible concealed spaces per NFPA-13.

An automatic dry-type sprinkler system will be provided to serve building exterior overhangs.

Compliance with 2015 International Fire Code with Washington State Amendments.

Compliance with UFC 3-600-01.

### 5.1.7 Electrical Criteria and Considerations

Codes: Governing Codes, Ordinances, and References:

- NFPA 70, National Electrical Code 2014
- Washington State Electrical Code
- International Building Code 2015
- UFC Unified Facilities Criteria
- NFPA 72 National Fire Alarm Code
- Washington State Energy Code 2015, Chapter 51-11 WAC
- Washington State Building Code, WAC 51-20-3100, Chapter 31, Accessibility
- TIA 568 Commercial Building Telecommunications Wiring Standard

Design Electrical Capacity:

The following is the minimum power density for the building. Actual electrical loads will be applied as the design is developed:

- Lighting 3.0 watts per SF
- Receptacles 3.0 watts per SF
- Appliance Plug Load 2.0 watts per SF
- HVAC 12.0 watts per SF

- Basic Minimum Load Capacity: 22 watts per SF

Electrical Service:

Service will be derived from campus 15 KV distribution system 15KV Feeders F4-1and F4-2. The existing primary service fused disconnect switches and 15 kv to 480 volt transformer will be retained to serve the building electrical load demands.

New 480 volt secondary distribution switchboard will be utilized to serve building lighting, HVAC system, motors and equipment with high power consumption rating. There will be a step down transformer located in the Main Electrical Room rated at 225 KVA, 208/120 volt to serve general purpose receptacles, 120 volt rated equipment and motors smaller than 1/2 horsepower.

Power distribution equipment will be sized for 20 watts per square foot of building area. The actual feeder, panelboard and branch circuit wiring will be sized in accordance with National Electrical Code plus 20% spare capacity. Distribution equipment is to be circuit breaker type consisting of distribution panels and branch circuit panelboards. Energy Metering will be provided on the main switchboards and panelboards connected to building energy management system for the students.to record / identify energy usages.

Grounding System:

A grounding system will be provided to comply with Article 250 of National Electric Code and Washington State Electrical Safety Standards, Chapter 296-46B WAC.

Electrical main service equipment shall be grounded to made electrodes consisting of 5/8 x 8' driven copper-clad ground rods, and connected to the building's structural steel or rebar. Separately derived systems from distribution transformers will be similarly grounded.

All electrical outlets and equipment will be positively grounded by equipment grounding system integral with the power wiring.

Telecommunication Rooms shall be provided with a solid copper grounding bus bar, connected to the building grounding system.

Emergency Power:

Emergency power systems will supply only designated emergency equipment in compliance with Article 700 of the National Electrical Code. Power distribution from the emergency supply source to utilization equipment will be completely separate and independent from other electrical systems.

The emergency system will supply egress lighting, illuminated exit identification signs and the fire alarm system. Additionally, the generator power will also serve the Police Department area lighting and essential equipment as designated by the owner.

An automatic transfer switches will be provided that instantaneously apply emergency and standby power to the equipment upon failure of the normal power source. The automatic transfer switches will be served via a generator distribution panel.

Surge Protection:

Surge Protection Devices (SPD) will be provided to reduce possible damage to sensitive electronic equipment resulting from momentary excessive voltage surges. Electronic SPD equipment is to be provided at the main switchboard and each 120/208-volt panelboard serving receptacle outlets that supply computers and other sensitive equipment.

Wiring Methods:

Wiring systems power and lighting are to be installed in conduit. Electrical Metallic Tubing shall be used for indoor/dry locations. Underground conduit shall be PVC schedule 40 with Galvanized Rigid Steel bends. Exposed exterior conduit shall be Galvanized Intermediate Steel.

Spare conduits are to be installed from each panelboard to the ceiling space for future equipment.

Outlet devices and wiring junctions are to be installed in galvanized steel outlet boxes, sized for equipment and wire-fill.

Wire for power and lighting shall be type THHN/THW, 75°C 600-volt rated, thermoplastic insulation, copper conductor, solid & stranded.

Wiring in finished areas shall be installed concealed. Exposed wiring may be provided in mechanical equipment rooms and utility areas.

Lighting:

General lighting throughout the building will utilize LED lamp/fixtures. LED lamps shall have a correlated color temperature (CCT) of 4000° Kelvin and a lamp life of 60,000 hours. Two-foot and four-foot fixtures shall be provided with Solid State LED lamps and drivers. LED lamps are to be used in down-lights and surface decorative fixtures. Solid State drivers for all LED fixtures will be provided with 7 year warranty.

Emergency/egress and exit lighting will be via generator.

Lighting systems are to be energy efficient and comply with the Washington State Energy Code.

Lighting control will be automatic by central switching equipment, occupancy sensors and light level sensors in areas with daylight contribution.

Illumination levels will be designed to comply with the recommendations of the Illuminating Engineering Society of North America. All stated illumination levels are average maintained levels, calculated at the work surface using an 80% maintenance factor.

The area with exposed open ceilings will be direct LED high bay fixtures, acrylic lenses with tool less swing down lenses. Room spaces with ceilings will be illuminated with recessed direct LED fixtures.

Average illumination levels (foot-candles) will be: offices & classrooms - 40, conference rooms -30.

Conference rooms will be provided with selective lighting control and or dimming.

The Labs/Studio will be illuminated to 50 foot-candles average and high vertical foot-candle levels.

Under counter light fixtures will be provided for performing tasks.

Restrooms will be illuminated to 20 foot-candles with cove mounted, wall wash, continuous row recessed LED fixtures.

Corridors and stairways will be illuminated to an average 15 foot-candles by direct and indirect LED fixtures. Stairwell fixtures will be easily maintained on landings.

Mechanical and electrical rooms and janitor's closets will be illuminated 15 foot-candles with 4-foot industrial LED fixtures with wire guards.

Illuminated exit identification signs will be provided to identify egress pathways in accordance with building codes.

Exterior Lighting will be LED fixtures with 100% cutoff to be “Dark Sky” compliant. Pedestrian pathways will be provided with LED lamp sources, and be 12’-14’ in height which will match the existing pathway lighting fixtures.

Lighting Control:

General lighting throughout the building and exterior will be routed through a Lighting Control Panel (LCP). The LCP will utilize an astronomical clock with a touch screen interface and 20 amp mechanically held relays. Schedules for the lighting will be updated based on date and geographical position, which also automatically updates daylight saving times. Both parking and pathway lighting will be diminished in intensity at 50% at a predetermined time via the LCP. The interior general lighting will also provide after hour sweeps to conserve energy.

Energy Conservation:

Lighting and transformers shall be high efficiency to achieve increasing levels of energy performance above the baseline in the prerequisite standards and reduce environmental and economic impacts associated with excessive energy use. Equipment selection and design performance shall be specified to optimize energy performance and LEED 3.0 credit points to include IEQ Credit 6.1; Lighting Control and SS 8; Light Pollution Deduction.

Security:

Magnetic door contacts will be provided on all exterior doors. Contacts are to be connected to the access control system for continuous monitoring in the security office.

Video surveillance cameras will be located in corridors, building entrances, exterior circulation areas, lobbies and select rooms and parking lot lighting fixtures matching campus standards. Cameras will connect to a digital video multiplex recorder (DVMR) located in the information technology terminal equipment room. DVMR will record video only when motion is sensed by cameras. DVMR will have capacity to save video information from all cameras for a 2-week time period. DVMR will connect to the campus data network for remote access by authorized persons.

Access Control System:

Card reader/access security system will be provided at all exterior doors and selected interior doors. Each location will include provisions for a card reader, electric door strike, request to exit sensor and door position monitoring. Devices shall be connected to a local control panel/s that interconnects to the existing campus access control system. System will interlock with automatic door operators for proper operational sequence.

Fire Alarm, Detection and Communications:

The fire alarm system will match the existing campus standard, which is Edwards. The fire alarm system will consist of manual pull stations, smoke detectors, sprinkler flow switches, exterior bells and audio/visual notification devices will be provided to comply with the National Fire Alarm Code.

Fire alarm devices are to be connected to a fire alarm control panel located in the Police Department Dispatch Station. The system will automatically communicate all alarms and trouble to a 24-hour UL monitoring service.

A remote annunciator shall be installed in a location as required by the Fire Department. Annunciator shall indicate source and location of each alarm.

Voice and Data Communications:

The MDF and IDF rooms will connect to the existing campus underground fiber optic and copper system via the existing tunnel system. Fuse blocking is required for backbone copper. The IDF's throughout the building will be connected to the MDF via 100 pair copper, single-mode and multi-mode fiber.

Outlets for voice and data communications shall be installed throughout the facility. Outlets shall interconnect to a conduit and cable tray wiring system infrastructure. Wireless access points will be located in selected area for wireless connectivity.

In rooms with accessible ceilings, conduits will be provided from the outlets to above ceiling spaces. In rooms without ceilings, conduits shall be installed from the outlets to the cable tray system.

The cable tray system, consisting of basket type cable tray shall be routed throughout the building and terminate in IDF rooms.

Wiring will comply with Cat-6A data standards and will be installed from each data outlet to rack mounted patch panels located IDF rooms. Plenum rated cabling is the campus standard. Telecommunications network equipment is to be provided by the owner.

In classrooms with numerous data outlets located on walls, a divided Wiremold 3000 or approved equal surface metal raceway will be provided for both power and data above counters. This will give the owner the adaptability for adding additional devices as the room changes.

Mass Notification System:

A notification system will be provided throughout the building integrated with building fire alarm system.

Audiovisual System:

Classrooms, laboratories, studio space, and conference rooms will contain electrical power outlets, data outlets and rough-in raceway system to support AV system projector, speaker, input panel, control panel, AV equipment rack, teaching podium and wireless system. AV equipment wiring will contain fiber, copper, and data line connects to the campus Main AV equipment room located in the Library Building. AV system infrastructure will be planned to support intercampus teleconferencing and telepresence.

## 5.2 DETAILED COST ESTIMATE

### 5.2.1 Overall project costs

We estimate that the project will have an overall construction cost of **$18,264,000** – less construction contingency and taxes – escalated to the mid-point of construction. Additional project costs for design, construction services, artwork, commissioning, and FF&E produce total project costs of **$26,864,000**. See Appendix B for a detailed cost description.

Funds totaling $400,000 for this pre-design study were appropriated in the 2015-2017 state budget.

## 5.3 COST BENEFIT ANALYSIS/LIFE CYCLE COSTS

### 5.3.1 Existing Program and Facilities

Keeping the existing programs and facilities unchanged will not resolve TESC's need for more quality flexible instructional space. Nor will it change the fact that each occupant group is housed in spaces not designed for their needs and which they have outgrown over time due to their expanding missions. Lastly, keeping the facilities as-is will mean the building continues to operate at 42 percent space efficiency, derived from the fact that it houses massive service infrastructure for a Phase 2 project that was never constructed.

### 5.3.2 Most Appropriate Solution

The most appropriate solution directly addresses each deficiency:

- It fully renovates the existing building with a variety of space types responsive to immediate needs but flexible enough to be useful to future occupants;
- It responds to additional space needs of the existing tenants by capturing surplus Lower Ground Floor space. No tenants were squeezed from the building even though each group will have more space;
- It includes large-scaled flexible classroom/lab spaces. These spaces are the college's highest need. A Floor 1 addition and structural modifications at Floor 3 assure two of these spaces are entirely column-free and with high roof structures configured to allow abundant natural light.

### 5.3.3 Impact of No Action

Without the proposed project:

- Evergreen will continue to operate Seminar I as a second-tier facility housing a variety of essential but background functions;
- Seminar I will operate at 42 percent space efficiency, and with a massively oversized, obsolete and inefficient mechanical system;
- Police Services will continue to stage its vehicles from the front plaza risking pedestrian-vehicle conflicts and inviting vandalism. Dispatch functions will continue to conflict with public reception duties;
- The Health and Counseling Center, barring construction of a stand-alone facility, will continue to lack visual presence and convenient access, thus losing an opportunity to positively influence students' personal healthcare decisions;
- The ability of TESC to attract and retain top talent will remain compromised;
- Maintenance and operations costs will continue to increase as materials and equipment exceed their useful lives.

## 5.4 AGENCY PROJECT REQUEST FORMS

Please see Appendix B for OFM's C-100 form. Estimated costs were prepared based on the project scope narrative (Section 5.0), concept plan diagrams and sections (Section 8.0), outline specifications (Appendix D).

## 5.5 ANTICIPATED FUNDING SOURCES

We request 100 percent state appropriation ($26,864,000) for this public project.

*This page intentionally left blank*

# SECTION 6 MASTER PLAN COORDINATION

## 6.1 CONFORMANCE WITH AGENCY MASTER PLAN

### Planning History

Development of Evergreen's campus has been controlled by master plan since the 1008 acre site was acquired in 1968. TESC's current "Campus Master Plan – 2014 Update" (CMP) provides a comprehensive long-term framework for development of both buildings and grounds through the 2021-2023 biennium. It is organized in three volumes addressing (1) site specific recommendations, (2) goals and policies for land use, and (3) supporting data. The Campus Master Plan is deliberately consistent with the college's Mission, Strategic Plan (Appendix I), and other initiatives such as the college's ambitious Climate Action Plan (Appendix F), and Stormwater Management Plan.

### Planning Goals/Objectives

This project is part of a long-term process of modernizing all campus core facilities, a process begun with renovation of the Daniel J. Evans Library in 2005-2009. It is also consistent with all five Goals and Objectives of the CMP, abbreviated as follows:

<u>Goal 1: Develop State-of-the-Art Learning Facilities that Advance the Mission of the College</u>
Seminar I is no longer used to any significant degree for instruction because there is very little need for the small-scaled seminar rooms it contains. Through Seminar II, completed in 2004, the college at last created a facility well-aligned with our mission to provide "…*collaborative, interdisciplinary learning across significant differences*…" Seminar II features large-scaled, technology-rich, highly flexible rooms sized for simultaneous use by two instructors and 50 students. This project seeks to create in Seminar I similar facilities in support of Evergreen's interdisciplinary, program-based pedagogy.

<u>Goal 2: Provide an Open and Supportive Environment</u>
The Brutalist architecture style prevalent in many campus core buildings, Seminar I included, is inimical to Evergreen welcoming, inclusive ethos. Our approach to renovation will respect the stylistic integrity of the original construction while introducing new elements that are both visually warmer and more transparent. Further, while the general academic community agrees that learning can no longer be contained with the walls of traditional classrooms or laboratories, Seminar I now contains literally <u>no</u> spaces to support informal learning. Students need a variety of contexts to explore and connect with all forms of learning. These can be a quiet nook for solitary study, a small table for one-on-one mentoring, a flexible lounge for peers to gather and debate issues of the day, or a simple access port for on-line discovery. The renovation of Seminar I includes an appropriate variety of gathering spaces in addition to state-of-the-art learning environments.

<u>Goal 3: Create a Visibly Sustainable Campus</u>
Seminar I – designed at the tail end of an era of abundant and cheap energy – in many ways represents the antithesis of sustainability. With massively oversized mechanical equipment, inefficient lighting, and poor daylighting, to name but a few of its shortcomings, the building is out of step with Evergreen's strong commitment to a sustainable campus as exemplified in our Climate Action Plan. At the same time it is durable and structurally sound, with much embodied energy that can see new productive use. Not only will this project reach LEED Silver certification or beyond, it will aid the college's goal to become carbon neutral.

<u>Goal 4: Provide Educational Opportunities in the Delivery of Campus Planning, Operations and Services</u>

Evergreen's campus is a living laboratory from which is drawn many lessons, from sustainable design to responsible forestry to organic farming. Seminar I by contrast is insular and inflexible, barely meeting the basic needs let alone supporting the aspirations of its occupants. A renovated Seminar I will re-integrate with the educational mission of the college and take on a didactic role through design, construction, and operation. As an example of didactic potential, the building will house the Sustainable Design Program, a studio-centered offering combining art, science, expression, and service in the study of sustainable practices. Seminar I will play an active role in the Sustainable Design pedagogy through such tools as transparency and display to communicate concepts and systems to program participants and to the broader campus community.

<u>Goal 5: Integrate College Educational Activities with Cultural, Social, Civic, and Business Activities of the Surrounding Community</u>

Despite being a very remote campus, the Longhouse facility adjacent to Seminar I functions as a public service center and is thus one of Evergreen's critical connections to the broader world. The southwest corner of a renovated Seminar I, Floors 1 and 3, will house the Longhouse-affiliated Reservation-Based Community-Determined Program and office/studio accommodations for residency programs and summer studios.

### Planning Compliance

Proposed projects identified in the "Campus Master Plan – 2014 Update" include renovation and expansion of Seminar I (CMP "Project F" – See Appendix J for excerpt). The scope of work described in this predesign is consistent with, and requires no modification of, the CMP. The planned timeline for development of this project matches the schedule stated in Section 2 of this predesign report.

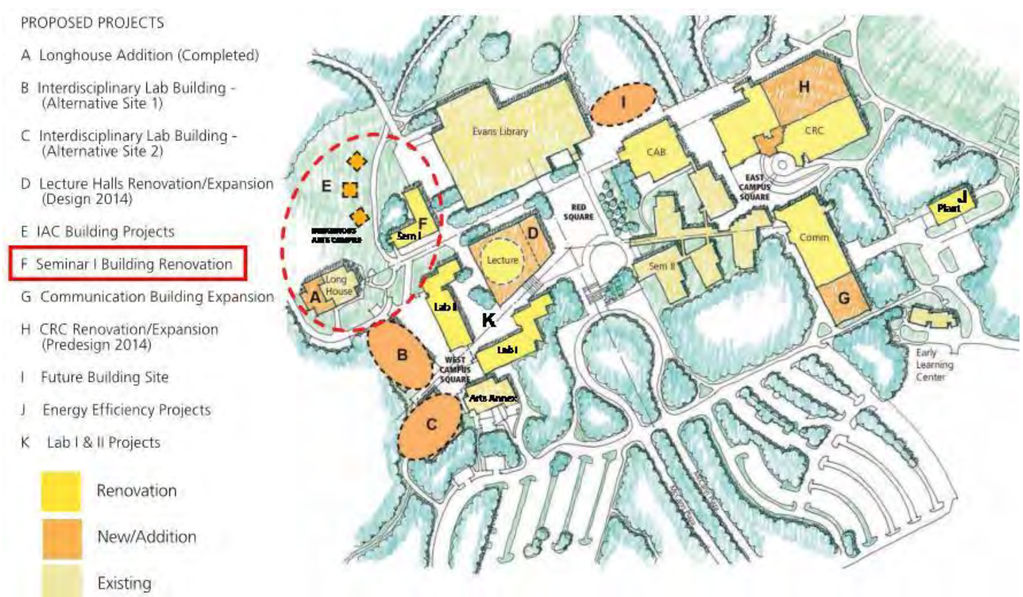



*Figure 14: Core campus projects from Campus Master Plan – 2014 Update, indicating Seminar I project*

Health and Counseling Center: Moving the Health and Counseling Center to a location more convenient to students and supportive of the center's outreach efforts – proposed separately – was studied in detail in the Costantino Recreation Center Predesign Report published in October 2015.


*Figure 15: Excerpt from CRC Predesign Report showing Health & Counseling Center component*

## 6.2 CONFORMANCE WITH STATE REQUIREMENTS

Renovation and expansion of Seminar I will further the following significant state and institutional policies:

Clean Air Act of 1991
Roughly 31 percent of Evergreen's total greenhouse gas emissions are associated with staff, faculty, and student transportation.[1] In part in response to the Clean Air Act of 1991, TESC:

- has convenient Intercity Transit bus service to downtown Olympia free of charge;[2]
- offers a "PASSPORT" parking permit, which allows limited bus use for those days when alternate commuting is impractical;
- encourages carpooling by providing convenient dedicated spaces;
- has an agreement with car-sharing service Zipcar to assure on-demand transportation is available on campus;
- provides Level Two (220-volt) charging stations for plug-in hybrid or electric vehicles;
- provides bicycle lanes, covered racks, lockers, locks, air stations, and as well as a full-service bike shop;
- has dedicated parking spaces for motorcycles and scooters.

[1] From "TESC Campus Master Plan – 2014 Update," Volume 1, p. 42.
[2] Students are charged a transportation fee based on credits taken. Employees receive STAR (State Agency Rider) passes as part of the state's own commute trip reduction program.

None of these college initiatives are negatively impacted by the Seminar I project. Specific to this project, HVAC requirements and material selection will improve indoor air quality and reduce outdoor emissions.

Growth Management Act of 1990
The Growth Strategies legislation of 1991 requires all state agencies to comply with local land use regulations adopted pursuant to the Growth Management Act. This project is subject to the plan review and environmental mitigation process of Thurston County. No significant issues are anticipated, as the development proposed by this predesign document is in full compliance with approved land use documents.

Clean Water Act
Seminar I construction documents will include storm water, drainage and erosion control plan requirements. National Pollutant Discharge Elimination System (NPDES) permit requirements will be implemented through the installation and maintenance of drainage systems.

High Performance Green Buildings
In accordance with RCW 39.35D, all state facilities in excess of 5000 gsf or renovation projects with cost greater than 50 percent of assessed value must be designed, constructed, and certified to at least the U.S. Green Building Council's "Leadership in Energy and Environmental Design" (LEED) Silver standard. This requirement was carefully considered in the development of this predesign. For a detailed description of TESC's commitment to environmental awareness and anticipated strategies for LEED Silver certification see Appendix C.

Hazardous Substances
TESC will engage an approved outside consultant and/or chemical hygiene expert to prepare an inventory of all hazardous substances to be utilized in, or removed from, the project. This consultant will assist in developing a mitigation plan for removal and/or abatement and for adherence to notification requirements.

Indoor Air Quality
ASHRAE 62.1 will be the basis for indoor air quality requirements, now that the Washington State Ventilation and Indoor Air Quality Code has been superseded (effective 2010) by the International Mechanical Code. ASHRAE 62.1 is also the basis of design for LEED projects.

Governor Executive Order 96-04
A key requirement of this project is to reconfigure Seminar I (including all entrances) to comply fully with the Americans with Disabilities Act through adherence to the current edition of ANSI 117.1 and Chapter 11 of the International Building Code with State of Washington amendments.

Governor Executive Order 05-05
This Executive Order requires state agencies to review capital construction projects and land acquisitions with the Department of Archaeology and Historic Preservation (DAHP), to determine potential impacts on cultural resources. DAHP performed its review during this predesign process. As confirmed by letter (Appendix G) DAHP considers this project exempt from further review.

Governor Executive Order 13-03
This Executive Order requires state agencies to consider life cycle and operating costs in public works project at the beginning of the planning process, as a means of reducing energy and other operating costs. This order applies to all new buildings in excess of 5000 sf

and demonstration of compliance must be provided to OFM prior to the start of construction. Benchmarks will be established in the design phases.

<u>Apprenticeship Participation</u>
The proposed project will comply with RCW 39.04.320, which requires a minimum level of apprenticeship participation in construction of state agency projects.

<u>Wage Rates</u>
The proposed project will comply with Prevailing Wage Rates regulations as administered by L & I.

## 6.3 OTHER POLICY COORDINATION

Other policies affecting the Seminar I project include:

- The Evergreen State College Design Guidelines as produced by Facilities Services *(Note: These are expressed in CSI outline spec format. Narrative design guidelines are found in Volume 1 of the CMP)*
- State of Washington Department of Enterprise Services – Facilities Design Guidelines and Construction Standards.
- State of Washington Department of Enterprise Services – Engineering and Architectural Services – Construction Waste Management Plan.
- State of Washington Department of Enterprise Services – Leadership in Energy and Environmental Design (LEED) – Quality Assurance Process Guidelines for State Agency/College and University Facilities.

*This page intentionally left blank*

# SECTION 7 FACILITY OPERATIONS & MAINTENANCE REQUIREMENTS

This project proposes renovation of 38,750 gsf existing space, 9,800 gsf of which is captured from currently unoccupied service rooms and covered exterior paved areas or decks. Additions totaling 2,500 gsf yield total a project area of 41,250 gsf. For purposes of this analysis captured spaces are assumed to have significantly lower current operating expenditures and as such are considered new space.

## 7.1 OPERATING BUDGET IMPACTS

Project impact on TESC's annual operating budgets is as follows:

Utilities
The new building will be designed as an energy efficient facility following the USGBC's "Leadership in Energy & Environmental Design" (LEED) standards and achieving at minimum LEED Silver certification. All major mechanical, electrical, and conveyance systems will be replaced as a result of this project, and the existing building envelope will be upgraded with new windows and enhanced wall insulation. Despite increasing the occupied area of the building by 12,300 gsf through capture and addition, our ELCCA predicts a 27 percent decrease in annual energy costs, or a savings of approximately $20,850 per year expressed in 2017-19 dollars.

Security
Police Services, which by coincidence operates out of Seminar I, is responsible for building security. While the building gross area grows by 2500 gsf, this represents little added effort especially given the high visibility of the new spaces. As such we predict no significant cost increase for building security associated with this project.

Grounds
While the amount of landscaped grounds adjacent to Seminar I will decrease owing to the on-grade building addition and new pavements, this will be offset by restoration (with native plantings) of the staging area north of Geoduck Lane. In total we consider landscape maintenance costs associated with this project to be cost neutral.

Technology / Voice Data Video
These costs are expected to increase due to the larger occupied area (including building additions) coupled with sharply increased instructional media equipment. Based on similar institutions, we estimate annual costs for technology support will total $0.20/year or $8,250/year.

Custodial:
Custodians at TESC are responsible for approximately 30,000 gsf per day. This project will result in larger occupied area and as a result approximately 0.40 FTE increased custodial effort, or $20,000/year.

Capital Maintenance, General Repair
Maintenance staff are responsible for approximately 75,000 gsf per day. Larger occupied area will require an additional 0.15 FTE at the Maintenance Mechanic II level, or $9,000/year.

### 7.1a Operating Budget Impacts:

In tabular form, we project a very modest overall increase in operating costs associated with this project for the next five biennia. Costs assume annual escalation of 2.8 percent. *Note that these costs present the net change over the present condition, and not total maintenance and operating costs.*

| Annual Net Facility Operating Costs Associated with Project | | | | | | |
|---|---|---|---|---|---|---|
| **Cost Source** | **Biennium** | | | | | |
| | Current | 2017-19 | 2019-21 | 2021-23 | 2023-25 | 2025-27 |
| Utilities | $ (20,850) | $ (21,434) | $ (22,034) | $ (22,651) | $ (23,285) | $ (23,937) |
| Security | $ - | $ - | $ - | $ - | $ - | $ - |
| Grounds | $ - | $ - | $ - | $ - | $ - | $ - |
| Technology / Voice Data Video | $ 8,250 | $ 8,481 | $ 8,718 | $ 8,963 | $ 9,214 | $ 9,472 |
| Custodial | $ 20,000 | $ 20,560 | $ 21,136 | $ 21,727 | $ 22,336 | $ 22,961 |
| Capital Maintenance, General Repair | $ 9,000 | $ 9,252 | $ 9,511 | $ 9,777 | $ 10,051 | $ 10,333 |
| **Total Impact:** | **$ 16,400** | **$ 16,859** | **$ 17,331** | **$ 17,817** | **$ 18,315** | **$ 18,828** |
| Impact per GSF: | $ 0.40 | $ 0.41 | $ 0.42 | $ 0.43 | $ 0.44 | $ 0.46 |

# SECTION 8 PROJECT DIAGRAMS AND DRAWINGS

The following diagrams illustrate the conceptual arrangement of the building and programmed spaces on the proposed site. They are not intended to represent building design, but rather a scaled organizational diagram suitable for evaluating development issues and costs.

## 8.1 SITE PLAN

Improvements to the existing site are intended to accomplish several objectives:

- Minimize area of site disturbance and maintain maximum quantity of existing trees.
- Increase visual presence of Seminar I from Red Square.
- Re-contour site or introduce light wells to enable daylight access to occupied spaces in the Lower Ground Floor.
- Provide on-grade access to the Lower Ground Floor including the Police Services public lobby/food bank.
- Take advantage of the existing road network (for Police Services vehicular movement, service access, and accessible parking access).
- Provide accommodation for a future exterior work area dedicated to Sustainable Design programs.
- Maximize future flexibility.

## 8.2 BUILDING PLANS

A renovated and expanded Seminar I will be a flexible, technology-rich academic building. Specific objectives demonstrated on the attached floor plan diagrams include:

- Maximize daylight access to occupied functions.
- Locate large-scale spaces (i.e. classroom labs) in existing north wing, where the structural column grid is least restrictive.
- Provide at minimum two column-free and well-daylighted instructional spaces. This is accomplished through (1) one building addition, and (2) through removal of columns (by replacing the overhead concrete with a free-spanning steel structural featuring monitors/clerestories) on Floor 3 of north wing.
- Provide breakout spaces on each floor serving the classroom/labs, but also available for general use.
- Provide storage and prep rooms at classroom/labs to support “food-safe” science instruction.
- Provide a variety of informal learning spaces, both enclosed and open.
- Provide a variety of faculty office configurations, including offices associated with (shared and/or private) studio/research spaces.
- Locate Longhouse-affiliated functions in spaces close to (and ideally within view of) the Longhouse.
- Configure Police Services facilities to support typical professional (commissioned) force functions, out of view of the academic campus but easily accessed.
- Provide easily-accessed facility for Parking Services, with nearby surge space for overflow waiting at times of peak demand.

- Capture existing unoccupied spaces wherever possible, and minimize additions to only those essential to satisfy project objectives.
- If Health and Counseling Center must be located in Seminar I, assure all functions occupy a single floor (Floor 2).

## 8.3 BUILDING SECTIONS

Conceptual sections are intended to demonstrate:

- Use of site contours and light wells to daylight occupied spaces on the Lower Ground Level.
- Volume potential of Floor 3 north wing classroom/lab.
- Relation of mechanical/service spaces.

## 8.4 RENDERINGS

Renderings were used not to depict design solutions but to express broad project goals to a diverse campus audience. The exterior rendering conveys several preferences of project stakeholders:

- The existing shell should remain largely intact, a specific preference voiced by DAHP on past projects at the Brutalist campus core.
- New construction should contrast with original construction, through warm materials and a high degree of transparency.
- The building entrance needs to be clearly stated and welcoming.

The Floor 3 interior rendering is intended to convey the following:

- Increasing the visual height of interior volumes will create more welcoming large-scale spaces. If not possible to physically modify the structure (such as is proposed at the Floor 3 north wing), existing overhead structure should be left exposed to maximize apparent volume.
- Eliminating interior columns will produce more flexible spaces.
- Attempts should be made to maximize interior daylight and views.
- The didactic role of sustainability elements should be visually enhanced. In the case of this rendering, a photovoltaic array is located to be visible from the building interior.

## 8.5 ATTACHMENTS

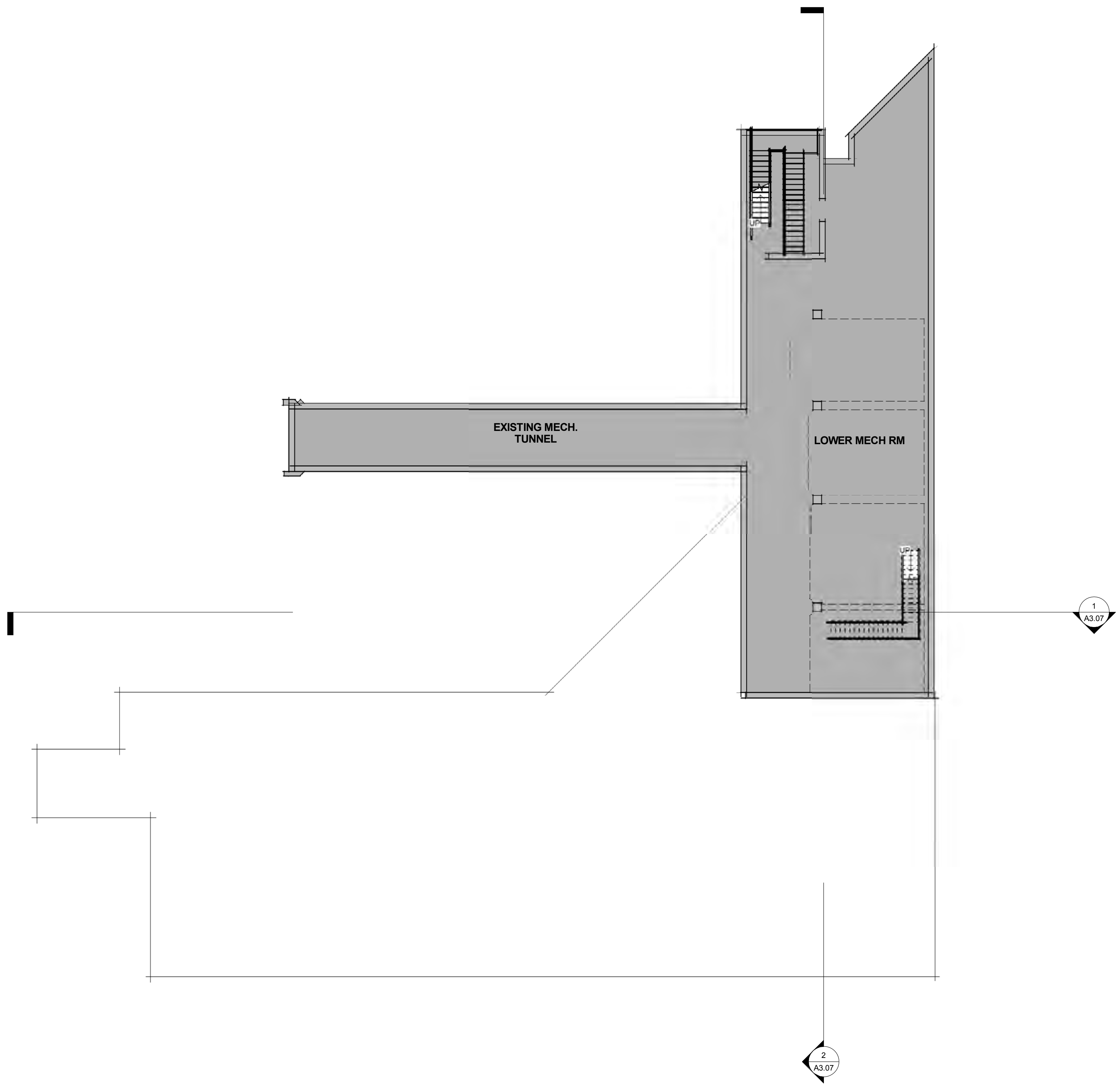
Proposed Site Plan Diagram
Sub Basement Floor Plan
Proposed Lower Ground Floor Plan Diagram
Proposed Floor 1 Plan Diagram
Proposed Floor 2 Plan Diagram
Proposed Floor 2 Plan Diagram - Health & Counseling Center Alternate
Proposed Floor 3 Plan Diagram
Proposed Building Sections Diagram
Rendering: Proposed Main Entrance View (with new additions)
Rendering: Proposed Floor 3 Classroom/Lab (in Art Studio Configuration)


the evergreen state college

# Seminar I - Pre-Design : Proposed Site Plan

June 30, 2016

SSW ARCHITECTS
SCHREIBER STARLING WHITEHEAD




the evergreen state college

# Seminar I - Pre-Design : Sub Basement Floor Plan

June 30, 2016

SSW ARCHITECTS
SCHREIBER
STARLING
WHITEHEAD


the evergreen state college

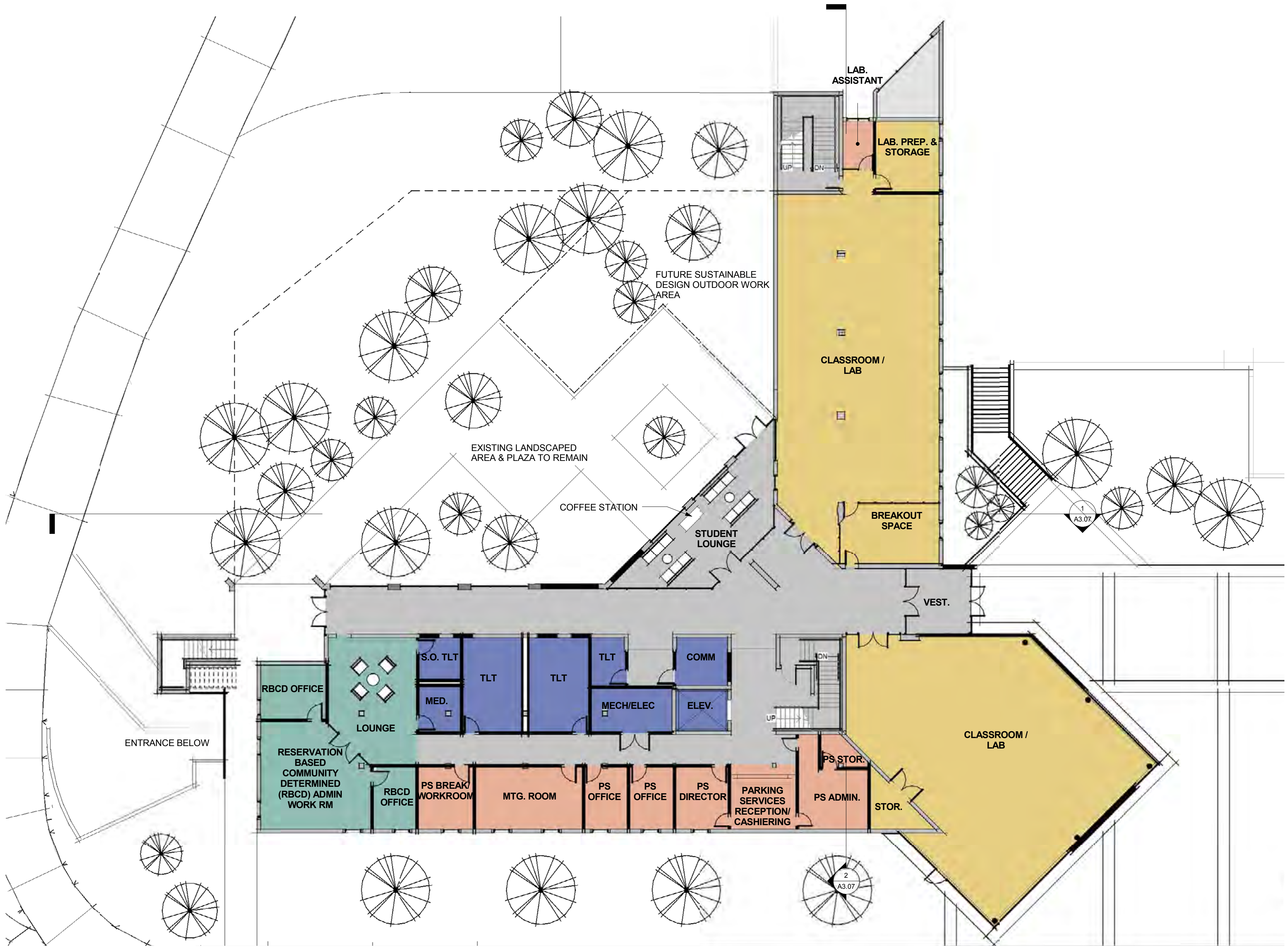
# Seminar I - Pre-Design : Proposed Lower Ground Floor Plan

June 30, 2016

N

Scale: 3/64" = 1'-0"

SSW ARCHITECTS
SCHREIBER STARLING WHITEHEAD




the evergreen state college

# Seminar I - Pre-Design : Proposed Level 1 Floor Plan

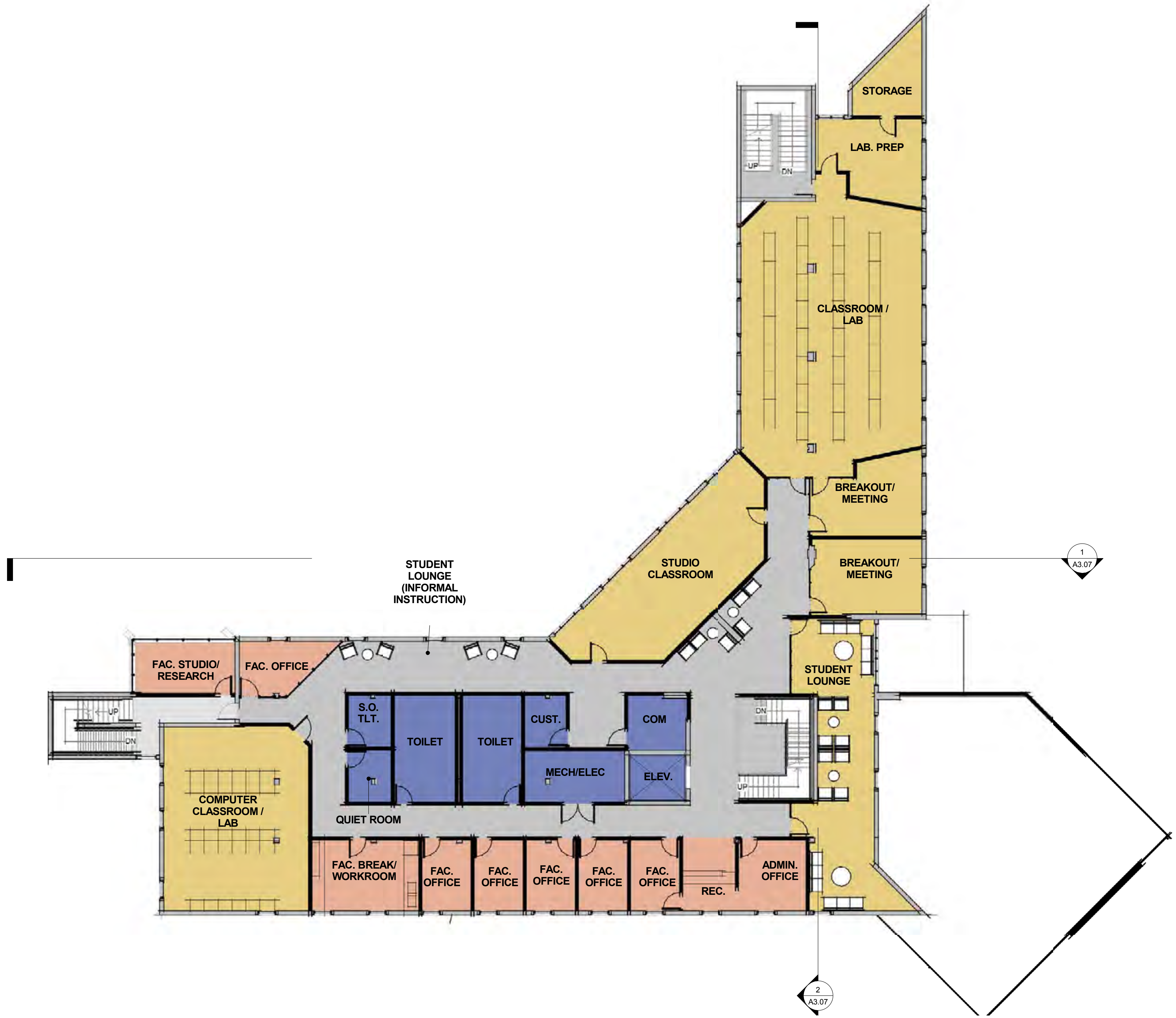
June 30, 2016

N

Scale: 3/64" = 1'-0"

SSW ARCHITECTS

SCHREIBER STARLING WHITEHEAD




the evergreen state college

# Seminar I - Pre-Design : Proposed Level 2 Floor Plan

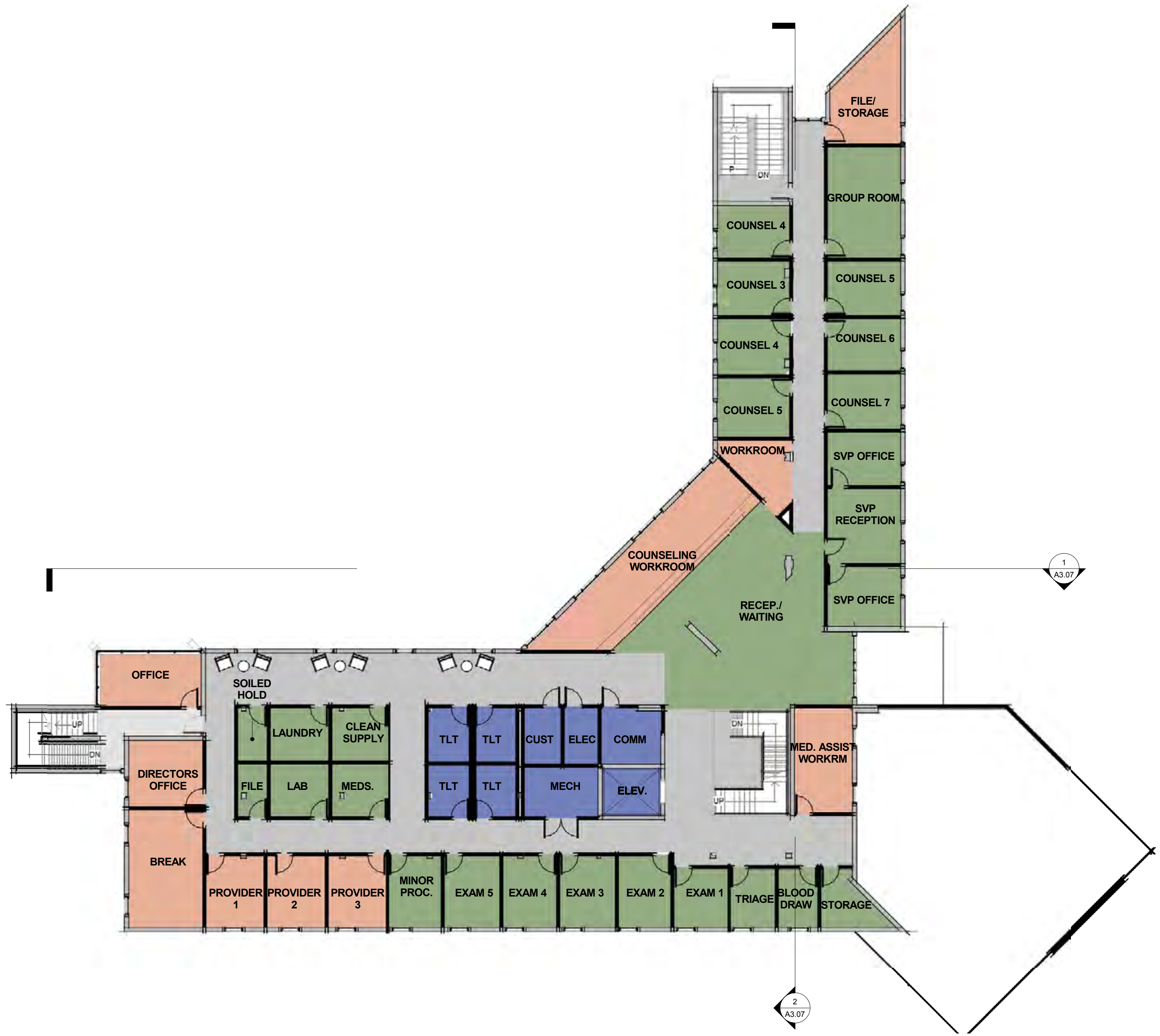
June 30, 2016

N

Scale: 3/64" = 1'-0"

SSW ARCHITECTS

SCHREIBER STARLING WHITEHEAD




the evergreen state college

# Seminar I - Pre-Design : Proposed Level 2 Floor Plan - Health and Counseling Alternate

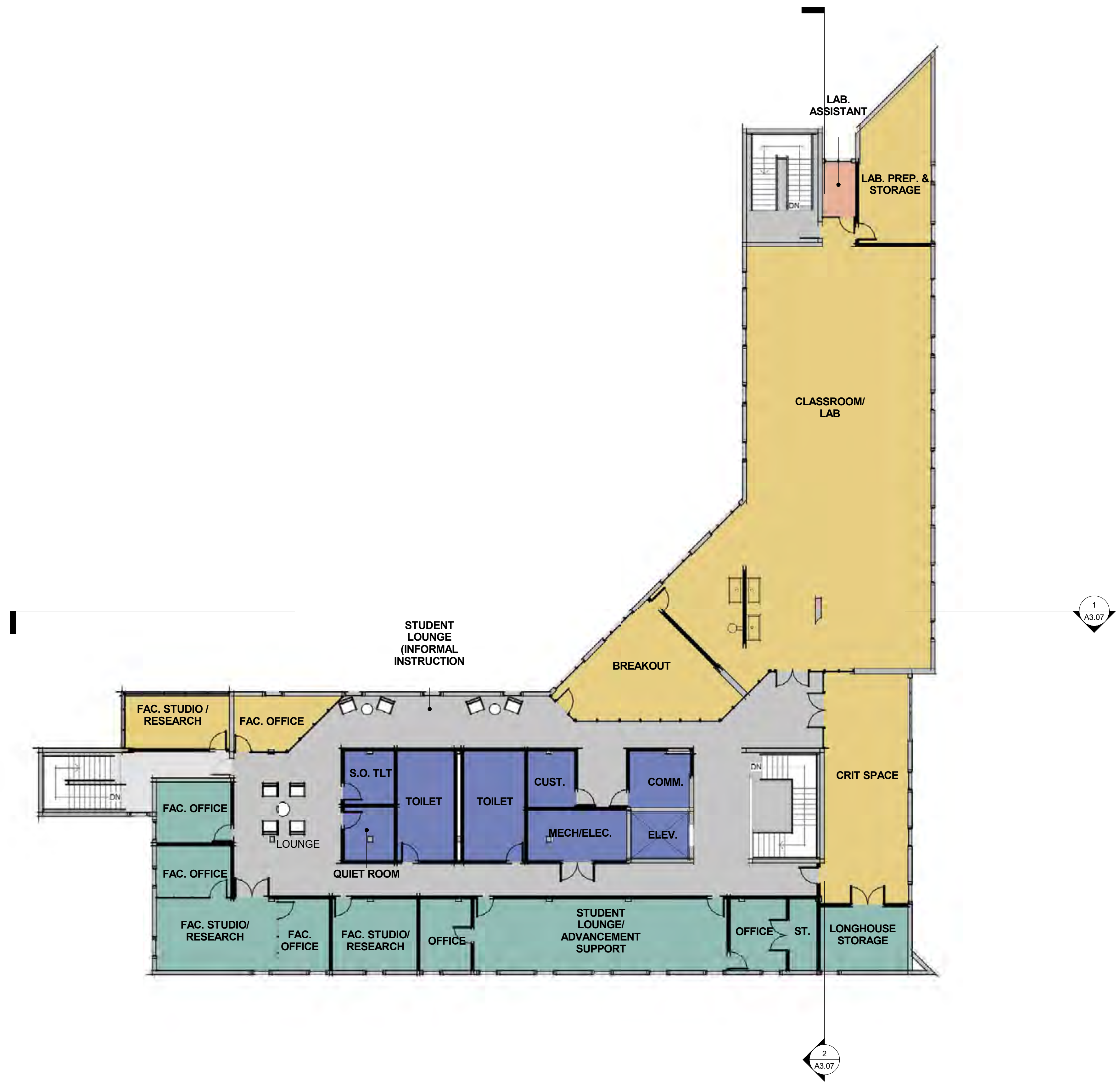
June 30, 2016

N

Scale: 3/64" = 1'-0"

SSW ARCHITECTS

SCHREIBER STARLING WHITEHEAD




the evergreen state college

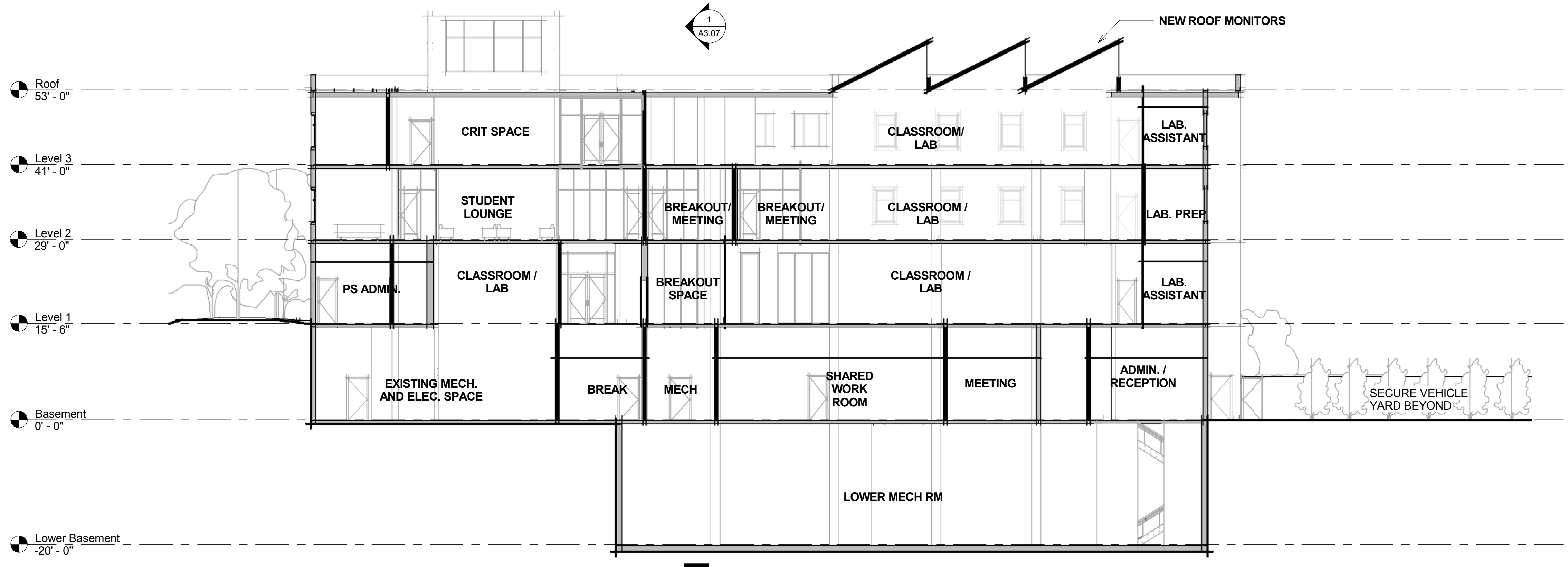
# Seminar I - Pre-Design : Proposed Level 3 Floor Plan

June 30, 2016

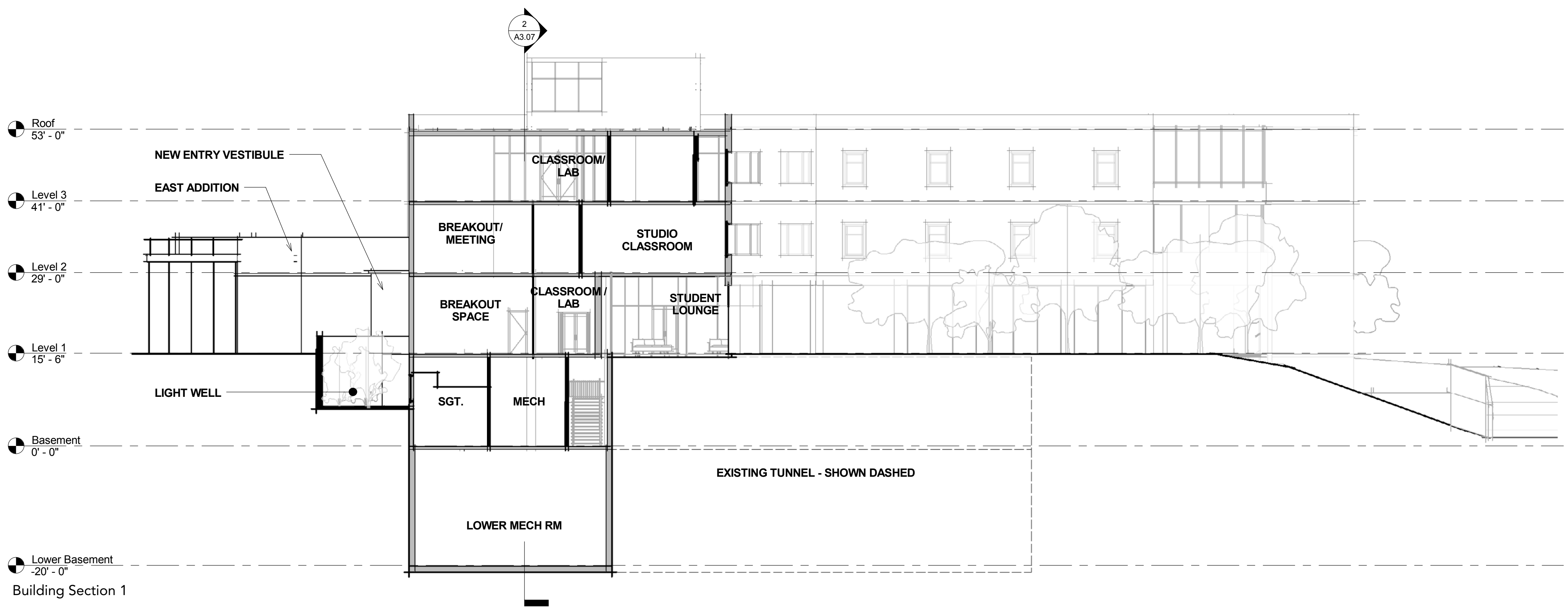
N

Scale: 3/64" = 1'-0"

SSW ARCHITECTS
SCHREIBER
STARLING
WHITEHEAD




Building Section 2




Building Section 1

the evergreen state college

# Seminar I - Pre-Design : Proposed Building Sections

June 30, 2016

Scale: 3/64" = 1'-0"

SSW ARCHITECTS
SCHREIBER
STARLING
WHITEHEAD


the evergreen state college

Seminar I - Pre-Design : Proposed Main Entrance View

June 30, 2016

SSW ARCHITECTS
SCHREIBER
STARLING
WHITEHEAD

the evergreen state college

Seminar I - Pre-Design : Proposed Classroom / Lab (in Art Studio Configuration)

June 30, 2016

SSW ARCHITECTS

SCHREIBER STARLING WHITEHEAD

# APPENDIX A

Predesign Checklist

# APPENDIX A PREDESIGN CHECKLIST

☒ Executive Summary

☒ Project Analysis

- ☑ Discussion of operational needs
- ☑ Discussion of alternatives
- ☑ Summary of LCCA results using the LCCT
- ☑ Discussion of selected alternative
- ☑ Identification of issues
- ☑ Prior planning and history
- ☑ Stakeholders
- ☑ Project description
- ☑ Implementation approach
- ☑ Project management
- ☑ Schedule

☒ Program Analysis

- ☑ Assumptions
- ☑ Functions and FTEs
- ☑ Spatial relationships between facility and site
- ☑ Interrelationships and adjacencies of functions
- ☑ Major equipment
- ☑ Special systems such as environmental, information technology, etc.
- ☑ Future needs and flexibility
- ☑ Sustainability, energy use and greenhouse gas emission reduction
- ☑ Applicable codes and regulations

☒ Site Analysis

- ☑ Potential sites (N/A)
- ☑ Building footprint
- ☑ Site considerations such as physical, regulatory, and access issues
- ☑ Acquisition process (N/A)

☒ Project Budget Analysis

- ☑ Assumptions
- ☑ Detailed estimates
- ☑ Funding sources
- ☑ Project cost estimate
- ☑ Funding methods
- ☑ Sign off by agency

☒ Master Plan and Policy Coordination

- ☑ Impacts to existing plans
- ☑ Adherence to significant state policies

☒ Facility Operations and Maintenance Requirements

- ☑ Assumptions
- ☑ Operating costs in table form *(Expressed in total cost/sf)*
- ☑ Staffing plan (capital and operating)

☒ Project Drawings/Diagrams

- ☑ Site plans
- ☑ Building plans
- ☑ Building volumes
- ☑ Elevations

☒ Appendix

- ☑ Predesign checklist
- ☑ Project budget unit cost detail
- ☑ Sustainable design charette summary
- ☑ Copy of policies adopted in accordance with RCW 70.235.020 on the state's limits on the emissions of greenhouse gases
- ☑ A letter from DAHP on the impact of potential sites on cultural resources
- ☑ Additional information as needed
- ☑ Executive report from the life cycle cost analysis

the evergreen state college

# APPENDIX B

Detailed Cost Estimate

# APPENDIX B DETAILED COST ESTIMATE

This appendix contains estimated costs presented on both the OFM C-100 form and as a detailed concept-level estimate. The scope is based on the information presented in the body of this predesign report. *Note: Gross and net areas identified in the estimate forms represent the full built extent of Seminar I impacted by the project including support spaces (i.e. the sub-basement) supporting programmed improvements but requiring little additional capital investment.*

*This page intentionally left blank*

## STATE OF WASHINGTON

# AGENCY / INSTITUTION PROJECT COST SUMMARY

| | |
|---|---|
| Agency | Evergreen State College |
| Project Name | Seminar 1 Renovation |
| OFM Project Number | |

| Contact Information | |
|---|---|
| Name | Schreiber Starling Whitehead Architects |
| Phone Number | 206 682 8300 |
| Email | whitehead@sswarchitects.com |

| Statistics | | | |
|---|---|---|---|
| Gross Square Feet | 44,987 | MACC per Square Foot | $303 |
| Usable Square Feet | 26,992 | Escalated MACC per Square Foot | $336 |
| Space Efficiency | 60.0% | A/E Fee Class | B |
| Construction Type | College classroom facilit | A/E Fee Percentage | 10.59% |
| Remodel | Yes | Projected Life of Asset (Years) | |
| **Additional Project Details** | | | |
| Alternative Public Works Project | Yes | Art Requirement Applies | Yes |
| Inflation Rate | 2.80% | Higher Ed Institution | Yes |
| Sales Tax Rate % | 8.80% | Location Used for Tax Rate | Olympia |
| Contingency Rate | 10% | | |
| Base Month<br>*(The month and year of the cost estimate)* | June-16 | | |
| Project Administered By | DES | | |

| Schedule | | | |
|---|---|---|---|
| Predesign Start | January-16 | Predesign End | July-16 |
| Design Start | July-17 | Design End | June-19 |
| Construction Start | September-19 | Construction End | November-20 |
| Construction Duration | 14 Months | | |

Green cells must be filled in by user

## Project Cost Estimate

| | | | |
|---|---|---|---|
| Total Project | **$24,281,137** | Total Project Escalated | **$26,863,918** |
| | | Rounded Escalated Total | **$26,864,000** |

**STATE OF WASHINGTON**

## AGENCY / INSTITUTION PROJECT COST SUMMARY

| | |
|---|---|
| Agency | Evergreen State College |
| Project Name | Seminar 1 Renovation |
| OFM Project Number | |

## Cost Estimate Summary

| Acquisition | | | |
|---|---|---|---|
| **Acquisition Subtotal** | **$0** | **Acquisition Subtotal Escalated** | **$0** |

| Consultant Services | | | |
|---|---|---|---|
| Predesign Services | $150,000 | | |
| A/E Basic Design Services | $994,679 | | |
| Extra Services | $704,500 | | |
| Other Services | $626,885 | | |
| Design Services Contingency | $247,606 | | |
| **Consultant Services Subtotal** | **$2,723,670** | **Consultant Services Subtotal Escalated** | **$2,924,537** |

| Construction | | | |
|---|---|---|---|
| GC/CM Risk Contingency | $1,020,937 | | |
| GC/CM or D/B Costs | $1,804,081 | | |
| Construction Contingencies | $1,361,250 | Construction Contingencies Escalated | $1,513,438 |
| Maximum Allowable Construction Cost (MACC) | $13,612,497 | Maximum Allowable Construction Cost (MACC) Escalated | $15,123,154 |
| Sales Tax | $1,566,291 | Sales Tax Escalated | $1,740,416 |
| **Construction Subtotal** | **$19,365,056** | **Construction Subtotal Escalated** | **$21,517,865** |

| Equipment | | | |
|---|---|---|---|
| Equipment | $880,000 | | |
| Sales Tax | $77,440 | | |
| Non-Taxable Items | $0 | | |
| **Equipment Subtotal** | **$957,440** | **Equipment Subtotal Escalated** | **$1,064,482** |

| Artwork | | | |
|---|---|---|---|
| **Artwork Subtotal** | **$75,616** | **Artwork Subtotal Escalated** | **$75,616** |

| Agency Project Administration | | | |
|---|---|---|---|
| Agency Project Administration Subtotal | $0 | | |
| DES Additional Services Subtotal | $0 | | |
| Other Project Admin Costs | $0 | | |
| **Project Administration Subtotal** | **$735,000** | **Project Administation Subtotal Escalated** | **$817,173** |

| Other Costs | | | |
|---|---|---|---|
| **Other Costs Subtotal** | **$424,355** | **Other Costs Subtotal Escalated** | **$464,245** |

| Project Cost Estimate | | | |
|---|---|---|---|
| Total Project | **$24,281,137** | Total Project Escalated | **$26,863,918** |
| | | Rounded Escalated Total | **$26,864,000** |

# Cost Estimate Details

| Acquisition Costs | | | | | |
|---|---|---|---|---|---|
| **Item** | **Base Amount** | | **Escalation Factor** | **Escalated Cost** | **Notes** |
| Purchase/Lease | | | | | |
| Appraisal and Closing | | | | | |
| Right of Way | | | | | |
| Demolition | | | | | |
| Pre-Site Development | | | | | |
| Other | | | | | |
| Insert Row Here | | | | | |
| **ACQUISITION TOTAL** | **$0** | | **NA** | **$0** | |

Green cells must be filled in by user

# Cost Estimate Details

| Consultant Services | | | | | |
|---|---|---|---|---|---|
| Item | Base Amount | | Escalation Factor | Escalated Cost | Notes |
| **1) Pre-Schematic Design Services** | | | | | |
| Programming/Site Analysis | $150,000 | | | | |
| Environmental Analysis | | | | | |
| Predesign Study | $0 | | | | |
| Other | | | | | |
| Insert Row Here | | | | | |
| **Sub TOTAL** | **$150,000** | | **1.0303** | **$154,545** | Escalated to Design Start |
| **2) Construction Documents** | | | | | |
| A/E Basic Design Services | $994,679 | | | | 69% of A/E Basic Services |
| Other | | | | | |
| Insert Row Here | | | | | |
| **Sub TOTAL** | **$994,679** | | **1.0580** | **$1,052,371** | Escalated to Mid-Design |
| **3) Extra Services** | | | | | |
| Civil Design (Above Basic Svcs) | $15,000 | | | | |
| Geotechnical Investigation | $5,000 | | | | |
| Commissioning | $20,000 | | | | |
| Site Survey | $7,500 | | | | |
| Testing | $35,000 | | | | |
| LEED Services | $95,000 | | | | |
| Voice/Data Consultant | $15,000 | | | | |
| Value Engineering | $40,000 | | | | |
| Constructability Review | $40,000 | | | | |
| Environmental Mitigation (EIS) | | | | | |
| Landscape Consultant | $10,000 | | | | |
| Reimburseables/Reprographics prior to bid | $50,000 | | | | |
| Advertising | $2,000 | | | | |
| Interior Design | $85,000 | | | | |
| Cost and Scheduling | $35,000 | | | | |
| Security Consultant | $25,000 | | | | |
| Audio/Visual Consultant | $20,000 | | | | |
| Value Engineering Participation | $20,000 | | | | |
| Detail Building Investigations | $25,000 | | | | |
| Police/Lab/Medical Consultant | $35,000 | | | | |
| Energy Life Cycle Cost Analysis | $50,000 | | | | |
| Life Cycle Cost Analysis (LCCT) | $25,000 | | | | |
| Environmental/Abatement Consultant | $25,000 | | | | |
| As Built Drawings/Verifications | $25,000 | | | | |
| Insert Row Here | | | | | |
| **Sub TOTAL** | **$704,500** | | **1.0580** | **$745,361** | Escalated to Mid-Design |
| **4) Other Services** | | | | | |
| Bid/Construction/Closeout | $446,885 | | | | 31% of A/E Basic Services |
| HVAC Balancing | | | | | |
| Staffing | | | | | |
| Commissioning and Training | $75,000 | | | | |
| LEED Reporting and Monitoring | $65,000 | | | | |

| | | | | |
|---|---|---|---|---|
| Reimburseables/Reprographics for Bid and Construction | $40,000 | | | |
| | | | | |
| Insert Row Here | | | | |
| **Sub TOTAL** | **$626,885** | **1.1118** | **$696,971** | Escalated to Mid-Const. |
| | | | | |
| **5) Design Services Contingency** | | | | |
| Design Services Contingency | $247,606 | | | |
| Other | | | | |
| Insert Row Here | | | | |
| **Sub TOTAL** | **$247,606** | **1.1118** | **$275,289** | Escalated to Mid-Const. |
| | | | | |
| **CONSULTANT SERVICES TOTAL** | **$2,723,670** | | **$2,924,537** | |

Green cells must be filled in by user

# Cost Estimate Details

| Construction Contracts | | | | | |
|---|---|---|---|---|---|
| **Item** | **Base Amount** | | **Escalation Factor** | **Escalated Cost** | **Notes** |
| **1) Site Work** | | | | | |
| G10 - Site Preparation | $93,346 | | | | |
| G20 - Site Improvements | $346,536 | | | | |
| G30 - Site Mechanical Utilities | $55,000 | | | | |
| G40 - Site Electrical Utilities | $135,520 | | | | |
| G60 - Other Site Construction | | | | | |
| Other | | | | | |
| Insert Row Here | | | | | |
| **Sub TOTAL** | **$630,402** | | **1.0940** | **$689,661** | |
| **2) Related Project Costs** | | | | | |
| Offsite Improvements | | | | | |
| City Utilities Relocation | | | | | |
| Parking Mitigation | | | | | |
| Stormwater Retention/Detention | | | | | |
| Other | | | | | |
| Insert Row Here | | | | | |
| **Sub TOTAL** | **$0** | | **1.0940** | **$0** | |
| **3) Facility Construction** | | | | | |
| A10 - Foundations | $174,039 | | | | |
| A20 - Basement Construction | | | | | |
| B10 - Superstructure | $929,910 | | | | |
| B20 - Exterior Closure | $1,672,048 | | | | |
| B30 - Roofing | $124,729 | | | | |
| C10 - Interior Construction | $1,089,155 | | | | |
| C20 - Stairs | $66,000 | | | | |
| C30 - Interior Finishes | $1,306,436 | | | | |
| D10 - Conveying | $165,000 | | | | |
| D20 - Plumbing Systems | $649,252 | | | | |
| D30 - HVAC Systems | $3,106,217 | | | | |
| D40 - Fire Protection Systems | $254,356 | | | | |
| D50 - Electrical Systems | $2,464,523 | | | | |
| F10 - Special Construction | | | | | |
| F20 - Selective Demolition | $540,429 | | | | |
| General Conditions | $0 | | | | |
| Negotiated Support Services | $440,000 | | | | |
| | $0 | | | | |
| Insert Row Here | | | | | |
| **Sub TOTAL** | **$12,982,094** | | **1.1118** | **$14,433,493** | |
| **4) Maximum Allowable Construction Cost** | | | | | |
| **MACC Sub TOTAL** | **$13,612,497** | | | **$15,123,154** | |

| | | | | |
|---|---|---|---|---|
| **5) GCCM Risk Contingency** | | | | |
| GCCM Risk Contingency | $680,625 | | | |
| Bid Package/Self Performed Prem | $340,312 | | | |
| Insert Row Here | | | | |
| **Sub TOTAL** | **$1,020,937** | **1.1118** | **$1,135,079** | |
| **6) GCCM or Design Build Costs** | | | | |
| GCCM Fee | $524,081 | | | |
| Bid General Conditions | $880,000 | | | |
| GCCM Preconstruction Services | $350,000 | | | |
| Post Construction LCCA | $50,000 | | | |
| Insert Row Here | | | | |
| **Sub TOTAL** | **$1,804,081** | **1.1118** | **$2,005,778** | |
| **7) Construction Contingency** | | | | |
| Allowance for Change Orders | $1,361,250 | | | |
| Other | | | | |
| Insert Row Here | | | | |
| **Sub TOTAL** | **$1,361,250** | **1.1118** | **$1,513,438** | |
| **8) Non-Taxable Items** | | | | |
| Other | | | | |
| Insert Row Here | | | | |
| **Sub TOTAL** | **$0** | **1.1118** | **$0** | |
| **Sales Tax** | | | | |
| **Sub TOTAL** | **$1,566,291** | | **$1,740,416** | |
| **CONSTRUCTION CONTRACTS TOTAL** | **$19,365,056** | | **$21,517,865** | |

Green cells must be filled in by user

# Cost Estimate Details

| Equipment | | | | | |
|---|---|---|---|---|---|
| **Item** | **Base Amount** | | **Escalation Factor** | **Escalated Cost** | **Notes** |
| E10 - Equipment | $440,000 | | | | |
| E20 - Furnishings | $440,000 | | | | |
| F10 - Special Construction | | | | | |
| Other | | | | | |
| Insert Row Here | | | | | |
| **Sub TOTAL** | **$880,000** | | **1.1118** | **$978,384** | |
| | | | | | |
| **1) Non Taxable Items** | | | | | |
| Other | | | | | |
| Insert Row Here | | | | | |
| **Sub TOTAL** | **$0** | | **1.1118** | **$0** | |
| | | | | | |
| **Sales Tax** | | | | | |
| **Sub TOTAL** | **$77,440** | | | **$86,098** | |
| | | | | | |
| **EQUIPMENT TOTAL** | **$957,440** | | | **$1,064,482** | |

Green cells must be filled in by user

# Cost Estimate Details

| Artwork | | | | | |
|---|---|---|---|---|---|
| **Item** | **Base Amount** | | **Escalation Factor** | **Escalated Cost** | **Notes** |
| Project Artwork | $0 | | | | 0.5% of Escalated MACC for new construction |
| Higher Ed Artwork | $75,616 | | | | 0.5% of Escalated MACC for new and renewal construction |
| Other | | | | | |
| Insert Row Here | | | | | |
| **ARTWORK TOTAL** | **$75,616** | | **NA** | **$75,616** | |

Green cells must be filled in by user

# Cost Estimate Details

| Project Management | | | | | |
|---|---|---|---|---|---|
| **Item** | **Base Amount** | | **Escalation Factor** | **Escalated Cost** | **Notes** |
| Agency Project Management | $0 | | | | |
| Additional Services | | | | | |
| TESC Management/Administration | $735,000 | | | | |
| Insert Row Here | | | | | |
| **PROJECT MANAGEMENT TOTAL** | **$735,000** | | **1.1118** | **$817,173** | |

Green cells must be filled in by user

# Cost Estimate Details

| Other Costs | | | | | |
|---|---|---|---|---|---|
| Item | Base Amount | | Escalation Factor | Escalated Cost | Notes |
| Mitigation Costs | | | | | |
| Hazardous Material Remediation/Removal | $209,355 | | | | |
| Historic and Archeological Mitigation | | | | | |
| Permit and Plan Check | $210,000 | | | | |
| LEED Registration | $5,000 | | | | |
| Insert Row Here | | | | | |
| **OTHER COSTS TOTAL** | **$424,355** | | **1.0940** | **$464,245** | |

Green cells must be filled in by user

# C-100(2014)
# Additional Notes

| **Tab A. Acquisition** |
|---|
| |
| |
| *Insert Row Here* |

| **Tab B. Consultant Services** |
|---|
| |
| |
| *Insert Row Here* |

| **Tab C. Construction Contracts** |
|---|
| |
| |
| *Insert Row Here* |

| **Tab D. Equipment** |
|---|
| Equipment Based on costs allocated in Capital Project Request |
| Furnishings Based on costs allocated in Capital Project Request |
| *Insert Row Here* |

| **Tab E. Artwork** |
|---|
| |
| |
| *Insert Row Here* |

| **Tab F. Project Management** |
|---|
| |
| |
| *Insert Row Here* |

| **Tab G. Other Costs** |
|---|
| Hazardous/Abatement budget is an allowance - no studies available |
| |
| *Insert Row Here* |

THE ROBINSON COMPANY

# EVERGREEN STATE COLLEGE
# SEMINAR I
# RENOVATION AND ADDITION
# PREDESIGN ESTIMATE
# JUNE 16, 2016 Rev. June 30, 2016

| | | | |
|---|---|---|---|
| **Renovation/Addition Direct Cost** | | **$** | **13,612,626** |
| GC/CM Risk Contingency | 5% | $ | 680,631 |
| Bid Package/Self Performed Mark-ups | 2.5% | $ | 340,316 |
| Specified General Conditions | | $ | 880,000 |
| GC/CM Fee | 3.85% | $ | 524,086 |
| **Total Construction Cost** | | **$** | **16,037,659** |
| Post Construction LCCA | | $ | 50,000 |
| Pre-Construction Services | | $ | 350,000 |
| **TCC Including PreConstruction Costs** | | **$** | **16,437,659** |
| Escalation Per C100 | | $ | 1,826,497 |
| **TCC Before Const Contingency & Tax** | | **$** | **18,264,156** |

**ESTIMATE EXCLUSIONS: (Refer to C100 for Costs)**

Washington State Sales Tax
Architect/Engineer Fees
Construction Contingency
Testing & Inspection
Permits
1/2% for Art
Toxic Soils/Asbestos Abatement
Construction Management/Administration

Builders Risk Insurance
Moving/Relocation Costs
Wetlands Development/Mitigation
Off-Site Work (Streets/Signalizaton)
Legal

THE ROBINSON COMPANY

**PROJECT:** TESC SEMINAR 1 - SEMINAR 1 BUILDING
**LOCATION:** OLYMIPIA, WA
**BLDG SF:** 44,987
**ESTIMATE:** 2016058
**EST TYPE:** PREDESIGN

| DIVISION | DESCRIPTION | | TOTAL | $/SF |
|---|---|---|---|---|
| A10 | FOUNDATIONS | | 158,217 | 3.52 |
| B10 | SUPERSTRUCTURE | | 845,373 | 18.79 |
| B20 | EXTERIOR CLOSURE | | 1,510,044 | 33.57 |
| B30 | ROOFING | | 113,390 | 2.52 |
| C10 | INTERIOR CONSTRUCTION | | 990,141 | 22.01 |
| C20 | STAIRS | | 60,000 | 1.33 |
| C30 | INTERIOR FINISHES | | 816,621 | 18.15 |
| D10 | CONVEYING SYSTEMS | | 150,000 | 3.33 |
| D20 | PLUMBING | | 590,229 | 13.12 |
| D30 | HVAC | | 2,823,834 | 62.77 |
| D40 | FIRE PROTECTION | | 231,233 | 5.14 |
| D50 | ELECTRICAL | | 2,240,475 | 49.80 |
| E10 | EQUIPMENT | | 196,524 | 4.37 |
| E20 | FURNISHINGS | | 174,524 | 3.88 |
| F20 | SELECTIVE BUILDING DEMOLITION | | 491,299 | 10.92 |
| G10 | SITE PREPARATION | | 84,860 | 1.89 |
| G20 | SITE IMPROVEMENTS | | 315,033 | 7.00 |
| G30 | SITE CIVIL / MECHANICAL UTILITIES | | 50,000 | 1.11 |
| G40 | SITE ELECTRICAL UTILITIES | | 123,200 | 2.74 |
| Z10 | GENERAL REQUIREMENTS | | 400,000 | 8.89 |
| | **ESTIMATE SUBTOTAL** | | **12,364,998** | **274.86** |
| | DESIGN CONTINGENCY @ | 9.00% | 1,112,850 | |
| | SUBTOTAL | | 13,477,847 | |
| | SUBCONTRACTOR BONDS @ | 1.00% | 134,778 | |
| | SUBTOTAL | | 13,612,626 | |
| | SPECIFIED GC'S/FEE - SEE C100 @ | | | |
| | SUBTOTAL | | 13,612,626 | |
| | MACC CONTINGENCY - SEE C100 @ | | | |
| | **TOTAL - DIRECT COST - REFER TO C100 FOR GC/CM MARK-UPS** | | **13,612,626** | **302.59** |

**EXCLUSIONS:**
SEE ESTIMATE SUMMARY

**PROJECT:** TESC SEMINAR 1 - SEMINAR 1 BUILDING
**LOCATION:** OLYMIPIA, WA
**BLDG SF:** 44,987
**ESTIMATE:** 2016058
**EST TYPE:** PREDESIGN

| ITEM | DESCRIPTION | QUANTITY | UNIT | UNIT COST | TOTAL | $/SF |
|---|---|---|---|---|---|---|
| **A10** | **FOUNDATIONS** | | | | | |
| 03000 | FOUNDATION AND SLAB WORK FOR SEISMIC | 10,848 | SF | 7.50 | 81,360 | |
| 03000 | NEW SLAB ON GRADE - PAVILLION | 2,500 | SF | 6.35 | 15,875 | |
| 03000 | STANDARD FOUNDATIONS AT ADDITION | 2,500 | SF | 12.50 | 31,250 | |
| 03000 | TOPPING/LEVELING AT FORMER EXTERIOR SLAB | 2,651 | SF | 6.50 | 17,232 | |
| 03300 | ELEVATOR PIT - MODIFY EXISTING | 1 | LS | 12,500 | 12,500 | |
| **A10** | **FOUNDATIONS** | | | **DIVISION TOTAL** | **158,217** | **3.52** |
| **B10** | **SUPERSTRUCTURE** | | | | | |
| 01000 | NEW FLOOR STRUCTURE - BASEMENT MECH WELL | 1,839 | SF | 40.00 | 73,560 | |
| 03000 | SEISMIC UPGRADE AT FLOOR STRUCTURES | 29,326 | SF | 14.00 | 410,564 | |
| 03000 | SEISMIC UPGRADE AT ROOF STRUCTURE | 10,491 | SFA | 14.00 | 146,874 | |
| 03000 | TIE-IN TO EXISTING STRUCTURE | 93 | LF | 125 | 11,625 | |
| 05120 | RE-STRUCTURE 3RD FLOOR LAB-SAWTOOTH STRUCTURE | 2,500 | SF | 45.10 | 112,750 | |
| 05120 | ROOF STRUCTURE AT ADDITION | 2,500 | SF | 36.00 | 90,000 | |
| **B10** | **SUPERSTRUCTURE** | | | **DIVISION TOTAL** | **845,373** | **18.79** |
| **B20** | **EXTERIOR CLOSURE** | | | | | |
| 01000 | EXTERIOR DOORS/FRAMES/HARDWARE | 44,987 | SFA | 0.65 | 29,242 | |
| 01000 | LOADING DOCK DOORS | 1 | EA | 7,500 | 7,500 | |
| 03000 | SEISMIC UPGRADE AT ENVELOPE/WALLS | 41,871 | SFA | 5.00 | 209,355 | |
| 07000 | CLERESTORY/SAWTOOTH POP-UP FRAMING | 1,170 | SF | 52.00 | 60,840 | |
| 07000 | EXTERIOR WALL AT CAPTURED/ENTRY ADDITION | 1,717 | SF | 61.82 | 106,145 | |
| 08500 | CLERESTORY WINDOWS | 594 | SF | 68.00 | 40,392 | |
| 08500 | EXTERIOR CURTAIN WALL-EXCLUDES BLAST/BALLISTIC | 1,577 | SF | 95.00 | 149,815 | |
| 08500 | EXTERIOR WINDOWS - REPLACEMENT | 3,028 | SF | 68.00 | 205,904 | |
| 08500 | EXTERIOR WINDOWS AT CAPTURED/INFILL | 2,094 | SF | 68.00 | 142,392 | |
| 09250 | EXTERIOR FURR/INSULATE EXISTING EXT WALLS | 31,912 | SF | 12.50 | 398,900 | |
| 09250 | EXTERIORCLEAN/SEAL | 31,912 | SF | 5.00 | 159,560 | |
| **B20** | **EXTERIOR CLOSURE** | | | **DIVISION TOTAL** | **1,510,044** | **33.57** |
| **B30** | **ROOFING** | | | | | |
| 07500 | METAL ROOFING/INSUL/SHEETMETAL AT SAWTOOTH ROOF | 2,575 | SF | 22.00 | 56,650 | |
| 07500 | MISC ROOFING TIE-IN/PATCH AT EXISTING | 1 | LS | 10,000 | 10,000 | |
| 07500 | ROOFING/INSULATION/SHEETMETAL | 3,116 | SF | 15.00 | 46,740 | |
| | EXCLUDES REROOF EXISTING | | | | | |
| **B30** | **ROOFING** | | | **DIVISION TOTAL** | **113,390** | **2.52** |
| **C10** | **INTERIOR CONSTRUCTION** | | | | | |
| 01000 | INT DOORS FRAMES/HARDWARE | 41,864 | SFA | 3.85 | 161,176 | |
| 01000 | INTERIOR PARTITIONS AND RELITES | 41,864 | SFA | 12.50 | 523,300 | |
| 01000 | MISC SPECIALTIES/FITTINGS | 41,864 | SFA | 3.75 | 156,990 | |

| ITEM | DESCRIPTION | QUANTITY | UNIT | UNIT COST | TOTAL | $/SF |
|---|---|---|---|---|---|---|
| 01000 | PREMIUM POLICE TI HIGH IMPACT WALLS AND ROOMS | 5,529 | SFA | 7.50 | 41,468 | |
| 01000 | PREMIUM SECURITY HARDWARE/UPGRADES AT POLICE | 5,529 | SFA | 7.50 | 41,468 | |
| 08000 | INT. DR/FRM/HDWRE--PER LEAF - ADDITIONAL AT CLINIC | 14 | EA | 1,500 | 21,000 | |
| 09110 | NEW INTERIOR PARTITIONS - ADDITIONAL AT CLINIC | 3,444 | SF | 11.50 | 39,606 | |
| 10000 | PREM DIV 10 SPECIALTIES @ CLINIC FLOOR | 10,268 | SFA | 0.50 | 5,134 | |
| **C10** | **INTERIOR CONSTRUCTION** | | | **DIVISION TOTAL** | **990,141** | **22.01** |
| | | | | | | |
| **C20** | **STAIRS** | | | | | |
| 01000 | STAIRS - UPGRADE/REFINISH | 8 | FLT | 7,500 | 60,000 | |
| **C20** | **STAIRS** | | | **DIVISION TOTAL** | **60,000** | **1.33** |
| | | | | | | |
| **C30** | **INTERIOR FINISHES** | | | | | |
| 09000 | PAINT ADDITIONAL WALLS @ CLINIC FLOOR | 10,268 | SFA | 0.85 | 8,728 | |
| 09000 | PREM FLOOR FINISH AT CLINIC | 1 | LS | 3,000 | 3,000 | |
| 09500 | CEILINGS | 41,864 | SFA | 6.50 | 272,116 | |
| 09500 | PREMIUM HIGH IMPACT CEILING FINISHES | 5,529 | SFA | 5.50 | 30,410 | |
| 09600 | INTERIOR FLOOR FINISHES | 41,864 | SFA | 5.50 | 230,252 | |
| 09700 | INTERIOR WALL FINISHES | 41,864 | SFA | 6.50 | 272,116 | |
| **C30** | **INTERIOR FINISHES** | | | **DIVISION TOTAL** | **816,621** | **18.15** |
| | | | | | | |
| **D10** | **CONVEYING SYSTEMS** | | | | | |
| 14000 | ELEVATOR 4 STOP | 1 | LS | 150,000 | 150,000 | |
| **D10** | **CONVEYING SYSTEMS** | | | **DIVISION TOTAL** | **150,000** | **3.33** |
| | | | | | | |
| **D20** | **PLUMBING** | | | | | |
| 15400 | PLUMBING | 44,987 | SF | 13.12 | 590,229 | |
| | WOOD HARBINGER | | | | | |
| **D20** | **PLUMBING** | | | **DIVISION TOTAL** | **590,229** | **13.12** |
| | | | | | | |
| **D30** | **HVAC** | | | | | |
| 15500 | HVAC | 44,987 | SF | 62.77 | 2,823,834 | |
| | WOOD HARBINGER | | | | | |
| **D30** | **HVAC** | | | **DIVISION TOTAL** | **2,823,834** | **62.77** |
| | | | | | | |
| **D40** | **FIRE PROTECTION** | | | | | |
| 15300 | FIRE PROTECTION | 44,987 | SF | 5.14 | 231,233 | |
| | WOOD HARBINGER | | | | | |
| **D40** | **FIRE PROTECTION** | | | **DIVISION TOTAL** | **231,233** | **5.14** |
| | | | | | | |
| **D50** | **ELECTRICAL** | | | | | |
| 16000 | ELECTRICAL | 44,987 | SF | 47.06 | 2,117,088 | |
| | TRES WEST | | | | | |
| 16000 | NURSE CALL SYSTEM | 1 | LS | 33,787 | 33,787 | |
| | TRES WEST | | | | | |
| 16000 | PHOTOVOLTAIC 20 KW | 1 | LS | 89,600 | 89,600 | |
| | TRES WEST | | | | | |

| ITEM | DESCRIPTION | QUANTITY | UNIT | UNIT COST | TOTAL | $/SF |
|---|---|---|---|---|---|---|
| **D50** | **ELECTRICAL** | | | **DIVISION TOTAL** | **2,240,475** | **49.80** |
| **E10** | **EQUIPMENT** | | | | | |
| 11000 | MISC EQUIPMENT/APPLIANCES | 41,864 | SFA | 1.25 | 52,330 | |
| 12000 | SPECIALTY CASEWORK/RECEPTION | 1 | LS | 50,000 | 50,000 | |
| 12000 | WINDOW COVERINGS | 41,864 | SFA | 2.25 | 94,194 | |
| **E10** | **EQUIPMENT** | | | **DIVISION TOTAL** | **196,524** | **4.37** |
| **E20** | **FURNISHINGS** | | | | | |
| 12000 | MANUFACTURED CASEWORK | 41,864 | SFA | 3.50 | 146,524 | |
| 12000 | PREM EXAM/CLEAN/BLOOD RM CASEWORK | 8 | EA | 3,500 | 28,000 | |
| **E20** | **FURNISHINGS** | | | **DIVISION TOTAL** | **174,524** | **3.88** |
| **F20** | **SELECTIVE BUILDING DEMOLITION** | | | | | |
| 02000 | DEMO EXTERIOR WINDOWS | 3,028 | SF | 10.00 | 30,280 | |
| 02000 | DEMO PORTION OF EXISTING ROOF STRUCTURE | 2,500 | SF | 10.00 | 25,000 | |
| 02000 | HAZARDOUS MATERIALS REMOVAL<br>EXCLUDED | | | | | |
| 02000 | SAWCUT/DEMO NEW OPENINGS | 1 | LS | 25,000 | 25,000 | |
| 02000 | SELECTIVE DEMOLITION | 41,871 | SFA | 6.00 | 251,226 | |
| 15000 | MECH DEMOLITION<br>WOOD HARBINGER | 1 | LS | 159,793 | 159,793 | |
| **F20** | **SELECTIVE BUILDING DEMOLITION** | | | **DIVISION TOTAL** | **491,299** | **10.92** |
| **G10** | **SITE PREPARATION** | | | | | |
| 02300 | EXCAVATE AND HAUL LIGHTWELLS/SOUTH ENTRY | 1,493 | CY | 20.00 | 29,860 | |
| 02300 | MISC DEMO/EARTHWORK/GRADING | 1 | LS | 50,000 | 50,000 | |
| 02370 | EROSION CONTROL | 1 | LS | 5,000 | 5,000 | |
| **G10** | **SITE PREPARATION** | | | **DIVISION TOTAL** | **84,860** | **1.89** |
| **G20** | **SITE IMPROVEMENTS** | | | | | |
| 02750 | SECURE VEHICLE YARD GRAVEL SURFACING | 7,850 | SF | 1.25 | 9,813 | |
| 02750 | SO ENTRY/SALLY PORT/PEDESRIAN PAVING | 3,663 | SF | 10.00 | 36,630 | |
| 02820 | FENCING AND GATES | 1 | LS | 35,000 | 35,000 | |
| 02830 | EXTERIOR STEPS/RAILINGS | 1 | LS | 50,000 | 50,000 | |
| 02830 | RETAINING/LIGHTWELL WALLS | 362 | LF | 230 | 83,260 | |
| 02830 | RETAINING/SCREEN WALL FOOTINGS | 362 | LF | 75.00 | 27,150 | |
| 02830 | SEATWALLS | 89 | LF | 120 | 10,680 | |
| 02870 | SITE FURNISHINGS ALLOWANCE | 1 | LS | 7,500 | 7,500 | |
| 02875 | BIKE/SEGWAY STORAGE ENCLOSURE | 1 | LS | 5,000 | 5,000 | |
| 02900 | LANDSCAPING/IRRIGATION/RAINGARDENS | 1 | LS | 50,000 | 50,000 | |
| **G20** | **SITE IMPROVEMENTS** | | | **DIVISION TOTAL** | **315,033** | **7.00** |
| **G30** | **SITE CIVIL / MECHANICAL UTILITIES** | | | | | |
| 02630 | STORM DRAINAGE/WATER QUALITY ALLOWANCE<br>ALLOWANCE | 1 | LS | 50,000 | 50,000 | |
| **G30** | **SITE CIVIL / MECHANICAL UTILITIES** | | | **DIVISION TOTAL** | **50,000** | **1.11** |

| ITEM | DESCRIPTION | | QUANTITY | UNIT | UNIT COST | TOTAL | $/SF |
|---|---|---|---|---|---|---|---|
| **G40** | **SITE ELECTRICAL UTILITIES** | | | | | | |
| 16000 | EXTERIOR SITE LIGHTING | | 1 | LS | 22,400 | 22,400 | |
| | | TRES WEST | | | | | |
| 16000 | GENERATOR | | 1 | LS | 100,800 | 100,800 | |
| | | TRES WEST | | | | | |
| **G40** | **SITE ELECTRICAL UTILITIES** | | | | **DIVISION TOTAL** | **123,200** | **2.74** |
| **Z10** | **GENERAL REQUIREMENTS** | | | | | | |
| 14000 | BUILDING AREA - ADDITIONS | | 3,116 | SF | | | |
| 14000 | BUILDING AREA - RENOVATED | | 38,748 | SF | | | |
| 14000 | BUILDING AREA - SEISMIC IMPROVEMENTS | | 41,871 | SF | | | |
| 14000 | NEGOTIATED SUPPORT SERVICES | | 16 | MO | 25,000 | 400,000 | |
| **Z10** | **GENERAL REQUIREMENTS** | | | | **DIVISION TOTAL** | **400,000** | **8.89** |
| | | | | | **ESTIMATE SUBTOTAL** | **12,364,998** | **274.86** |

# APPENDIX C

Sustainable Design Approach / LEED v4 Analysis

# APPENDIX C SUSTAINABLE DESIGN APPROACH

### Sustainable Concepts and LEED

The State of Washington requires use of the United States Green Building Council's LEED (Leadership in Energy & Environmental Design) third-party verification system to assure its facilities achieve sustainability benchmarks. The LEED version applicable to Seminar I is most likely v4 for BD+C (New Construction and Major Renovation). The state's minimum certification threshold is LEED Silver. TESC views this project as a demonstration of its commitment to building sustainably and responsibly, and an opportunity to replace Seminar I's oversized, inefficient, obsolete, and exhausted building systems with new high-efficiency "right-sized" systems. TESC fully commits to achieving LEED Silver at Seminar I, and may pursue a higher level (i.e. LEED Gold) if up-front costs are found during the LCCA/ELCCA process to generate long-term savings.

Intended to house the college's Sustainable Design Program in the its new large-scale classroom/lab spaces, Seminar I will also serve a didactic function promoting sustainable design principles within the broader campus community. While at present the quintessential background building, Seminar I fronts on Red Square, the college's primary outdoor gathering space. Through thoughtful siting of its planned additions, appropriate transparency of instructional spaces and systems, abundant connectedness to the natural world, and robust verification of planning assumptions, a revitalized Seminar I will promote the cross-disciplinary exploration that is at the core of TESC's culture and concomitantly so critical to genuinely sustainable buildings.

A preliminary "eco-charrette" was held on May 16, 2016, and resulted in completion of a LEED v4 scorecard (attached). This scorecard depicts the credits necessary to achieve each level of LEED certification (Certified 40-49, Silver 50-59, Gold 60-79, and Platinum 80-110). We have confidence that at minimum 58 credits are achievable, well above the minimum required for LEED Silver certification. An additional 37 credits are *potentially* achievable but depend on decisions made during the design process. From this, we are confident the project will most likely exceed minimum requirements even though v4 has far more demanding objectives than any previous LEED version. Minutes from the preliminary eco-charrette are attached. The design team will lead a detailed eco-charrette during the design process.

### Sustainable Design Approach

We are driven by the conviction that sustainability is the apotheosis of trendiness. While bleeding-edge technologies and *au-currant* design concepts have their place, it is probably not found in public facilities designed for 50-year lifespans and operated with predictably limited resources. To be genuinely sustainable over such a timeframe requires timeless design principles without secondary distractions, robust construction, and above all inherent flexibility. The natural world is as always the best guide. With Seminar I we will seek opportunities to build the least, select appropriate and durable materials, and create mechanisms for future adaptation. Essential tasks such as integration into the landscape, systems selections, and resource conservation, will be informed and made meaningful by the college's functional needs answered through ecological principles.

*This page intentionally left blank*

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

Project Checklist

Project Name: **TESC Seminar I Renovation**
Date: 5/16/2016

| Y | ? | N | Type | Credit | Points |
|---|---|---|---|---|---|
| 1 | | | Credit | Integrative Process | 1 |

| Y | ? | N | | Location and Transportation | 16 |
|---|---|---|---|---|---|
| 6 | 2 | 22 | | **Location and Transportation** | **16** |
| | | 16 | Credit | LEED for Neighborhood Development Location | 16 |
| | 1 | | Credit | Sensitive Land Protection | 1 |
| | | 2 | Credit | High Priority Site | 2 |
| 2 | | 4 | Credit | Surrounding Density and Diverse Uses | 5 |
| 2 | | | Credit | Access to Quality Transit | 5 |
| 1 | | | Credit | Bicycle Facilities | 1 |
| | 1 | | Credit | Reduced Parking Footprint | 1 |
| 1 | | | Credit | Green Vehicles | 1 |

1

| Y | ? | N | | Sustainable Sites | 10 |
|---|---|---|---|---|---|
| 7 | 3 | 0 | | **Sustainable Sites** | **10** |
| Y | | | Prereq | Construction Activity Pollution Prevention | Required |
| 1 | | | Credit | Site Assessment | 1 |
| 2 | | | Credit | Site Development - Protect or Restore Habitat | 2 |
| 1 | | | Credit | Open Space | 1 |
| 2 | 1 | | Credit | Rainwater Management | 3 |
| | 2 | | Credit | Heat Island Reduction | 2 |
| 1 | | | Credit | Light Pollution Reduction | 1 |

| Y | ? | N | | Water Efficiency | 11 |
|---|---|---|---|---|---|
| 5 | 4 | 2 | | **Water Efficiency** | **11** |
| Y | | | Prereq | Outdoor Water Use Reduction | Required |
| Y | | | Prereq | Indoor Water Use Reduction | Required |
| Y | | | Prereq | Building-Level Water Metering | Required |
| 2 | | | Credit | Outdoor Water Use Reduction | 2 |
| 2 | 2 | 2 | Credit | Indoor Water Use Reduction | 6 |
| | 2 | | Credit | Cooling Tower Water Use | 2 |
| 1 | | | Credit | Water Metering | 1 |

| Y | ? | N | | Energy and Atmosphere | 33 |
|---|---|---|---|---|---|
| 18 | 10 | 4 | | **Energy and Atmosphere** | **33** |
| Y | | | Prereq | Fundamental Commissioning and Verification | Required |
| Y | | | Prereq | Minimum Energy Performance | Required |
| Y | | | Prereq | Building-Level Energy Metering | Required |
| Y | | | Prereq | Fundamental Refrigerant Management | Required |
| 6 | | | Credit | Enhanced Commissioning | 6 |
| 8 | 6 | 4 | Credit | Optimize Energy Performance | 18 |
| 1 | | | Credit | Advanced Energy Metering | 1 |
| 1 | | | Credit | Demand Response | 2 |
| | 3 | | Credit | Renewable Energy Production | 3 |
| | 1 | | Credit | Enhanced Refrigerant Management | 1 |
| 2 | | | Credit | Green Power and Carbon Offsets | 2 |

| Y | ? | N | | Materials and Resources | 13 |
|---|---|---|---|---|---|
| 10 | 3 | 0 | | **Materials and Resources** | **13** |
| Y | | | Prereq | Storage and Collection of Recyclables | Required |
| Y | | | Prereq | Construction and Demolition Waste Management Planning | Required |
| 5 | | | Credit | Building Life-Cycle Impact Reduction | 5 |
| 1 | 1 | | Credit | Building Product Disclosure and Optimization - Environmental Product Declarations | 2 |
| 1 | 1 | | Credit | Building Product Disclosure and Optimization - Sourcing of Raw Materials | 2 |
| 1 | 1 | | Credit | Building Product Disclosure and Optimization - Material Ingredients | 2 |
| 2 | | | Credit | Construction and Demolition Waste Management | 2 |

| Y | ? | N | | Indoor Environmental Quality | 16 |
|---|---|---|---|---|---|
| 10 | 6 | 0 | | **Indoor Environmental Quality** | **16** |
| Y | | | Prereq | Minimum Indoor Air Quality Performance | Required |
| Y | | | Prereq | Environmental Tobacco Smoke Control | Required |
| 2 | | | Credit | Enhanced Indoor Air Quality Strategies | 2 |
| 3 | | | Credit | Low-Emitting Materials | 3 |
| 1 | | | Credit | Construction Indoor Air Quality Management Plan | 1 |
| 2 | | | Credit | Indoor Air Quality Assessment | 2 |
| 1 | | | Credit | Thermal Comfort | 1 |
| | 2 | | Credit | Interior Lighting | 2 |
| | 3 | | Credit | Daylight | 3 |
| | 1 | | Credit | Quality Views | 1 |
| 1 | | | Credit | Acoustic Performance | 1 |

| Y | ? | N | | Innovation | 6 |
|---|---|---|---|---|---|
| 1 | 5 | 0 | | **Innovation** | **6** |
| | 5 | | Credit | Innovation | 5 |
| 1 | | | Credit | LEED Accredited Professional | 1 |

| Y | ? | N | | Regional Priority | 4 |
|---|---|---|---|---|---|
| 0 | 4 | 0 | | **Regional Priority** | **4** |
| | 1 | | Credit | Regional Priority: : Demand Response - 1 pt required threshold | 1 |
| | 1 | | Credit | Regional Priority: : Renewable Energy Production - 2 pt required threshold | 1 |
| | 1 | | Credit | Regional Priority: : Bldg Product Disclosure - EPDs - 1 pt required threshold | 1 |
| | 1 | | Credit | Regional Priority: : Bldg Product Disclosure - Raw Materials - 0 pt required | 1 |

| Y | ? | N | | | |
|---|---|---|---|---|---|
| 58 | 37 | 28 | **TOTALS** | Possible Points: | **110** |

**Certified:** 40 to 49 points, **Silver:** 50 to 59 points, **Gold:** 60 to 79 points, **Platinum:** 80 to 110

Additional Regional Priority Options

Rainwater Management - 3 points required threshold

Indoor Water Use Reduction - 4 points required threshold

Schreiber Starling & Lane

ARCHITECTS

# LEED Charrette – MINUTES

**PROJECT:** **Seminar I Pre-Design**
**OWNER:** The Evergreen State College
**Agreement No.:** 17-04
**LOCATION:** Library, Room 1001
**DATE/TIME:** May 16, 2016 / 1:00 pm

**MEETING ATTENDEES:**

| Name: | Initials: | Role / Representing | email (or phone): |
|---|---|---|---|
| Jeanne Rynne | JR | Director of Facility Services, TESC | rynnej@evergreen.edu 360.867.6700 |
| Azeem Hoosein | AH | Asst. Director for Planning & Construction, Facility Services, TESC | hooseina@evergreen.edu 360.867.6041 |
| David Shellman | DS | Construction Project Manager, TESC | shellmad@evergreen.edu 360.867.6556 |
| Andy Corn | AC | Exec. Associate to the Vice President for Student Affairs, TESC | corna@evergreen.edu 360.867.6291 |
| Mike Drennon | MD | Manager, Mechanical Services, TESC | drennonm@evergreen.com 360.867.6586 |
| Richard Davis | RD | Facilities Engineer, TESC | davisr@evergreen.edu 360.867.6136 |
| Rob Rensel | RR | Associate Director, Electronic Maintenance, TESC | renselr@evergreen.edu 360.867.6050 |
| Richard Schnieder | RS | Information Technology Specialist, TESC | schneidr@evergreen.edu 360.867.6417 |
| Audra Mackey | AM | Mechanical Engineer, Wood Harbinger | amackey@woodharbinger.com 425.628.6136 |
| Jennifer Barnes | JB | Sustainability Consultant, 55-5 Consulting | jennifer@55-5consulting.com 206.898.2210 |
| Ross Whitehead | RW | Principal, Schreiber Starling & Lane Architects | whitehead@sslarchitects.com 206.682.8300 |
| Brett Ingham | BI | Architect, Schreiber Starling & Lane Architects | ingham@sslarchitects.com 206.682.8300 |

| **1.0** | **– Overview** | **Action** |
|---|---|---|
| 1.1 | College sustainability goals and objectives: | Info |

| | | |
|---|---|---|
| | • The College grounds and facilities are managed to minimize adverse impacts to the environment through an emphasis on resource conservation, low-impact cleaning and maintenance, use of native landscaping and stormwater management measures.<br>• New and renovated facilities require minimum LEED Silver Certification with a Gold Certification preferred.<br><br><u>College sustainability initiatives and programs</u>:<br>• The College has targeted being carbon-neutral by 2020.<br>• The College has an extensive alternate transportation plan. The transportation plan creates multiple alternate commuting options to reduce single occupancy vehicle commuting. Available transportation options include: free intercity bus fare, bike paths and trails, a zip car program, a carpool program and charging stations for electric vehicles.<br>• The student Clean Energy Committee uses student fees to purchase green energy. The committee may be willing to contribute funds to the renovation project for sustainable measures.<br><br><u>Project specific sustainability goals and objectives</u>:<br>• It was agreed the renovation should include addressing the existing over-sized HVAC equipment located in the basement.<br>• It was agreed good daylighting is important.<br>• The use of durable and maintainable materials and systems is critical in all new construction and renovation projects at TESC.<br><br><u>LEED Version 4</u>:<br>• The changes to the latest version of LEED have made achieve LEED certification more difficult. Some of the changes include:<br>a. The USGBC is striving to influence the market place by improving material transparency. The goal is to change manufacturing processes and increase the use of healthy material ingredients. The changes result in the requirement for Environmental Product and Healthy Product Declarations from manufacturers. To date, limited products are available that meet the requirement.<br>b. Changes are focused on performance and verification. Additional metering and reporting are required for both energy and water.<br>c. A new credit for Environmental Site Assessment is now available. The credit encourages early analysis of site conditions to inform design decisions.<br>d. There is now a credit available for demand response.<br>e. The thresholds for many categories have been revised, making it more difficult to obtain credits. | |

| **2.0 – LEED Scorecard** | | **Action** |
|---|---|---|
| 2.1 | Rather than reviewing each credit, the charrette was used to discuss credits that pose potential opportunities and challenges for meeting the mandated LEED Silver certification. | Info |
| 2.2 | <u>Location & Transportation</u>:<br>• <u>Alternate Fueling (charging stations)</u>:<br>a. The College has some charging stations but they are not getting a lot of use. It was agreed this may change and this is a reasonable credit to pursue. | Info |
| 2.3 | <u>Sustainable Sites</u>:<br>• <u>Site Development – restoring habitat</u>: | Info |

| | | |
|---|---|---|
| | a. There was some discussion about the possibility of setting the Seminar I project site boundaries to include restoring the area housing the temporary portable structures west of Seminar I. It was noted this idea will need to be coordinated with the Indigenous Arts program site development and utility work.<br><br>• Rainwater Management:<br>a. Recent projects on campus (CAB) have included rainwater harvesting. There have been issues with the systems that require additional ongoing maintenance. It was suggested that life-cycle cost be reviewed when considering these types of systems.<br><br>• Heat Island Reduction:<br>a. The College prefers dark roofs over white as the heat gain from the dark roofs helps with building heating during the academic year.<br>b. The College has several green roofs. The roofs have been problematic and difficult to maintain.<br><br>• Light Pollution Reduction:<br>a. The College has been taking steps to reduce light pollution. This includes replacing the parking lot light fixtures.<br>b. It was agreed this would be a reasonable credit to pursue. | |
| 2.4 | Water Efficiency:<br>• Indoor Water Use Reduction:<br>a. This is a prerequisite that is also a regional priority. This may be an opportunity to gain additional credits.<br>b. The College is going away from waterless fixtures due to odors.<br>c. The College looked into composting toilets but the County still required plumbed fixtures so the idea was not pursued further.<br>d. Duel flush controls are acceptable. Hands-free operation is preferred. Battery powered units are acceptable.<br><br>• Water Metering:<br>a. The College is currently making some upgrades to the existing metering. It was agreed additional metering is a reasonable credit to look into. | Info |
| 2.5 | Energy and Atmosphere:<br>• Energy Management:<br>a. The College uses the Tridium DDC system. This is a non-proprietary system that can interface with lonworks and bacnet control systems.<br>b. The central plant has capacity to continue providing steam and chilled water to Seminar I.<br>c. The central plant chilled water system is shut down over the winter and part of the shoulder months. There is some delay in getting the system up and working. Therefor hot weather must be anticipated.<br>d. The College uses 68 deg. F, as their set point<br>e. The Central Plant chilled water system does not include a water-side economizer. It was agreed it is worth exploring the life-cycle cost associated with adding an economizer.<br>f. The plant provided 180 deg. F. water. It was noted alternate systems for heating may be limited due to this temperature.<br><br>• Demand Response:<br>a. The College has participated in a PSE program. The program is not currently operating but he College is ready to participate. | Info |

| | | |
|---|---|---|
| | b. It was noted this is a regional credit and it was agreed it is a good one to pursue.<br><br>• Green Power:<br>a. The College currently purchases 100% green power.<br>b. There is a preference for renewable energy production but the life-cycle-costs must support the initial costs. | |

| **3.0 – HVAC System Options** | | **Action** |
|---|---|---|
| 3.1 | Audra provided a brief review of the HVAC systems she is investigating for the renovation of Seminar I.<br><br>• <u>Alternative 1 – High Performance VAV System</u>:<br>a. This system utilized VAV AHU's provided with chilled water and heating water coils. Non-fan powered air terminal units will be provided with heating water reheat coils. Steam and chilled water will be provided by the central plant. Steam to water heat exchangers will be included.<br>b. The VAV system will be used as the baseline for the energy life cycle cost analysis.<br><br>• <u>Alternative 2 – Water Source Variable Refrigerant Flow System</u>:<br>a. This system utilizes a 100% outdoor air heat recovery unit to provide ventilation air to each VRF. The system uses water source heat pumps that utilize a closed loop condensing system with heat exchangers on the chilled water and steam provided by the central plant.<br>b. This is not a system currently on campus. There will be a learning curve related to maintenance and operation.<br>c. The College shuts the central plant chillers down for the winter and shoulder seasons. The water source heat pumps will utilize the chilled water loop during this time, discharging heat back into the campus loop. Utilizing the thermal mass of the campus chilled water loop to provide a heatsink for this system was suggested. Further investigation will be needed to determine the appropriateness of this system.<br><br>• <u>Alternate 3 – Chilled Beam System</u>:<br>a. This is a chilled beam system utilizing the chilled water and steam from the central plant. The system will include a steam to water heat exchanger. A cooling tower for the water side economizer will be required at Seminar I. A 100% outdoor heat recovery unit will be provided for ventilation air to the building.<br>b. The College does not have this type of system on campus. Touring a facility with the system in operation was suggested.<br><br>• It was agreed system selection should avoid requiring the operation of the central plant chillers during the summer months.<br><br>• All of the proposed systems utilize electric water heaters for domestic hot water. Further investigation is needed to confirm availability of natural gas at Seminar I.<br><br>• Ceiling – mounted equipment is preferred as it limits the loss of floor area to equipment.<br><br>• It was confirmed the renovation of Seminar I will include replacing the existing single-pane glazing and other improvements to the building envelop. | Info |

| | | |
|---|---|---|
| | • The College has stringent acoustic criteria for instructional spaces. It was noted the proposed systems utilize limited air movement, minimizing fan noise in the rooms.<br><br>• Recent renovation projects on campus have removed the perimeter mechanical units and left the single-pane glazing. The solution has made it difficult to maintain user comfort.<br><br>• The central plant does not have a chilled water economizer. The addition of an economizer at the central plant vs. the addition of a cooling tower at Seminar I will need further investigation. | |

**The foregoing comments represent our understanding of the items discussed and the decisions reached. Attendees are requested to respond in writing within one week of the date of issuance if their understanding of these items differs from those of the author.**

Issued by:

**Brett Tyler Ingham** AIA
Schreiber Starling & Lane Architects

**Issue Date:** May 16, 2016
**Attachments:** None
**Distribution:** **Attendees,** Core Committee

the evergreen state college

# APPENDIX D

Outline Specifications

# APPENDIX D OUTLINE SPECIFICATIONS

The following specification criteria are suggested as the framework for basic design decisions at Seminar I. They establish parameters for the various architectural and engineering systems and are intended to be built upon as further understandings of the facility are determined during the design phases. Additional information is contained in the systems narrative in Section 5 – Project Budget Analysis

**03 30 00 Cast in Place Concrete**

A. Floor Slabs
   1. Strength and thickness: 4000 psi at 28-days.
   2. Reinforcing and Finishing: Grade 60 rebar, 100% recycled content preferred.
   3. Minimum Fly-ash content to be 25%.
   4. All conduit, piping, raceways and related items to be located below the compacted granular fill.

**03 45 00 Precast Concrete**

A. Stair treads and landings to be plant precast concrete units, colored concrete with light abrasive sandblast finish at all exposed surfaces. Deep sandblast edge strip nosing. Minimum 28 day compressive strength, f'c of 7000psi, rebar reinforcing per manufacturer design.

**03 54 17 Cementitious Underlayment**

A. Self-leveling, applied to areas as needed to prepare for tile carpeting, resilient flooring or other floors systems requiring smooth substrate for proper installation.

**04 20 00 Unit Masonry**

A. Unit Masonry Construction
   1. Structural Concrete Masonry Unit walls.
   2. Freestanding site masonry walls.
B. Quality Assurance:
   1. Standards: ACI 530.1, Specifications for Masonry Structures.
C. Products:
   1. Concrete Masonry Units: ASTM C 90, Grade N, 1900 psi compressive strength, normal weight.
D. Mortar and Grout: ASTM C 270, Type S, for reinforced masonry, masonry below grade and masonry in contact with earth.
E. Reinforcing Steel:
   1. Reinforcing Bars: ASTM A 615, Grade 60.
   2. Deformed Reinforcing Wire: ASTM A 496.

**05 12 00 Structural Steel Framing**

A. Column, beams and structural shapes
   1. Non-shrink grout and anchor bolts at column bases.
   2. Wide flange beams shall be ASTM A992 Grade 50 ksi.
   3. Structural steel pipes shall be ASTM A53, Grade B, 35 ksi.
   4. Structural steel tubes shall be ASTM A500, Grade B, 46 ksi.
   5. All other steel shall be ASTM A36, 36 ksi.
   6. All steel shall be shop-primed.

**05 21 00** **Structural Joist Framing**

A. Shop-primed, open web steel roof joists.
B. Shop-primed, wide-flange girders.
C. Shop-primed bar joist purlins.

**05 31 00** **Metal Decking**

A. Roof: SDI type-B 1.5 inch or type-N 3 inch metal decking, 20 gauge, 14 gauge edges, unless noted otherwise.
B. Floor: SDI composite metal decking, 3 inch, 18 gauge, 14 gauge edges and accessories, galvanized. 2.5-inch concrete topping.

**05 40 00** **Cold Formed Metal Framing:**

A. Steel framing, 6" deep, 18 gauge (16 gauge at veneer backup, if required), galvanized, studs at 16" on center, built-up jambs, headers and sills as detailed.
B. 6" steel tube framing for headers and sills at large openings.
C. 5/8"-inch exterior gypsum-fiberglass sheathing, ½-inch joints at building joints.

**05 52 13** **Metal Stairs**

A. Stairs- Steel channel stringers and supports with precast concrete treads on metal tread pans, steel plate and angle supports at precast concrete landings.
B. Galvanized at exterior applications.

**05 52 13** **Pipe & Tube Railings**

A. Painted built-up steel hand rails and railings.
B. Galvanized at exterior applications.

**06 00 00** **Rough Carpentry**

A. Wood furring, grounds, nailers, and blocking.
B. Borate treated when in contact with cementitious materials or used in exterior assemblies.

**06 20 00** **Finish Carpentry**

A. Standing and running wood trim.
B. Wood paneling.

**06 41 00** **Architectural Wood Casework**

A. Fabricated cabinet units including:
   1. Reception desks and countertops
   2. Seating, benches, counters and service casework
   3. Display shelving
   4. Waste and recycle stations

**07 11 13** **Bituminous Dampproofing**

A. Cold-applied water-based emulsion; asphalt with mineral colloid or chemical emulsifying agent; with or without fiber reinforcement; asbestos-free; suitable for applications on vertical and horizontal surfaces.
   1. Applied to footings and below-grade portion of foundation walls.

**07 12 00 Sheet Waterproofing**

A. Self-Adhered Modified Bituminous Sheet Waterproofing.
   1. Applied to exterior walls of elevator pit.

**07 19 00 Water Repellents**

A. Non-glossy, colorless, penetrating, water-vapor-permeable, non-yellowing sealer, that dries invisibly leaving appearance of substrate unchanged.
   1. Applied to vertical surfaces and non-traffic horizontal surfaces.

**07 21 00 Thermal Insulation**

A. Foundation wall insulation:
   1. Extruded-Polystyrene Board Insulation.
B. Exterior rigid wall insulation:
   1. Extruded-Polystyrene Board Insulation.
C. Concealed building insulation:
   1. Glass Fiber Batt Insulation.
   2. Foamed-In-Place Insulation.

**07 41 13 Metal Roof Panels**

A. Architectural Metal Roof panels; factory-formed panels with factory-applied finish:
   1. Factory-finished standing seam metal roof panels; 18 inch coverage; 22 gauge; smooth, no striations.
   2. Manufacturer's standard concealed stainless steel or nylon-coated aluminum concealed anchor clips.
   3. Self-adhered underlayment.
   4. Vapor retarder.
   5. Extruded-Polystyrene Board Insulation.
   6. Closure strips.
   7. Metal flashings and trim.
   8. Joint sealant.

**07 42 64 Metal Composite Material Wall Panels**

A. Wall Panel System: Metal panels, fasteners and anchors designed to be supported by framing or other substrate provided by others.
   1. Panels: one inch deep pans formed of metal composite material sheet by routing back edges of sheet, removing corners and folding edges.
   2. Two sheets of aluminum sandwiching a core of extruded thermoplastic material.
B. Metal Framing Members: Aluminum sub-girts, zee-clips, base and sill angles and channels.
C. Flashing: sheet aluminum color to match wall panels.

**07 53 23 EPDM Thermoset Single-Ply Roofing**

A. EPDM Membrane Roofing; one ply membrane, ballasted, over insulation.

**07 62 00 Sheet Metal Flashing and Trim**

A. Pre-Finished Galvanized Steel; zinc-coated, 24-gauge minimum, shop-coated with finish to match roof panels.

**07 72 00 Roof Accessories**

A. Roof Hatches
   1. Factory-assembled steel frame and cover, complete with operating and release hardware.

2. Insulated.

B. Safety Railing System
   1. Manufacturer's standard safety railing system mounted directly to curb.

**07 84 00 Fire Stopping**

A. System that is listed by FM, ITS (DIR) or UL (FRD) and tested in accordance with ASTM E814 or ASTM E119 with F Rating equal to fire rating of penetrated assembly and minimum T Rating Equal to F Rating.

**07 92 00 Joint Sealants**

A. Exterior Joints: Seal all open joints unless specifically indicated not to be sealed.
   1. Use non-sag, non-staining silicone sealant.

B. Interior Joints: Do not seal interior joints unless specifically indicated.
   1. Seal between door, window and other frames and adjacent construction
   2. In sound-rated assemblies, seal gaps at electrical outlets, wiring devices, piping and other openings. Seal base and top of partitions to floor/roof assemblies.
   3. Use non-sag, Acrylic Emulsion Latex Sealant unless otherwise indicated.

**08 11 13 Hollow Metal Doors and Frames**

A. 1-3/4" inch thick 18-gauge flush hollow metal panted doors in 16-gauge welded solid-grouted painted hollow metal frames.
   1. Frames include transoms and sidelights at classrooms and offices.
   2. Exterior doors shall be zinc-coated and insulated.

**08 14 16 Flush Wood Doors**

A. Premium solid-core doors, Non-Rated and 20 Minute Rated, in 16-gauge welded solid-grouted painted hollow metal frames.

B. Doors shall be veneer faced with transparent finish.

**08 31 00 Access Doors**

A. Standard duty, concealed hinge, stainless steel with No. 4 finish.
   1. Factory painted steel to match adjacent finish (color/sheen) at select locations.

B. Tool-operated spring or cam lock; no handle.

**08 43 13 Aluminum-Framed Storefront**

A. Aluminum exterior storefront doors and glazed openings:
   1. One-inch insulated glass, Low-E coating, Solarban 60 or equal.
   2. Frames: Thermally broken.
      a. Doors: Medium stile type at doors.
      b. Aluminum Finish: Fluoropolymer, Kynar 500, 3-coat.

**08 51 13 Aluminum Windows**

A. Aluminum, both fixed and outward-swinging operable sashes:
   1. One-inch insulated glass, Low-E coating, Solarban 60 or equal.
   2. Frames: Thermally broken.
   3. Aluminum Finish: Fluoropolymer, Kynar 500, 3-coat.

**08 71 00 Door Hardware**

A. Heavy-duty, commercial-grade, lever-handle, cylindrical locksets.
   1. Satin Chrome finish
   2. ADA compliant

3. Removable cores keyed by Owner.
4. Exit devices and surface-mounted closers where required by code.
5. Low-energy automatic operators at high-traffic public entrances.
6. Match TESC standards.

**08 91 00 Louvers**

A. Aluminum, factory fabricated and assembled, complete with frame, mullions and accessories.
   1. Insect screens at intake louvers and bird screens at exhaust louvers.
   2. 50% free area, fixed blades, drainable.
   3. Finish to match aluminum storefront.

**09 21 16 Gypsum Board Assemblies**

A. Non-load-bearing steel framing members for gypsum board wall and ceiling assembles.
B. Gypsum board assembles attached to steel wall and ceiling framing.
C. Glass-mat, water-resistant gypsum board installed as tile backer in interior applications.

**09 30 00 Tiling**

A. Wall Tile: Glazed, thin set over gypsum backer board.
B. Floor Tile: Unglazed mosaic, thin-set.
C. Base: Coved to match flooring. Use at all ceramic tile floors.
D. Thresholds: Marble, ADA compliant.

**09 51 00 Suspended Acoustic Ceilings**

A. 2-foot-square non-rated fine-textured acoustic tile with tegular edge.
B. 9/16 inch suspended bolt-slot-style metal grid - White.
C. Suspended pre-finished acoustic panels at areas with exposed structure.

**09 6500 Resilient Flooring**

A. Linoleum Sheet Flooring: Homogeneous wear layer boded to backing, with color and pattern through wear layer thickness; jute fabric backing
B. Heat-welded seams.
C. Base: 4-inch rubber top set at all non-tile floors. Roll products only.

**09 6813 Tile Carpeting**

A. Carpet tile with recycled-content backing in manufacturer's standard sizes.

**09 8415 Acoustic Stretched-Fabric System**

A. Acoustic Stretched-Fabric Wall and Ceiling System: Field installed, fabric stretched and set into framework and laid over acoustic material anchored to substrate.
B. Noise reduction coefficient (NRC): 0.80 minimum when tested in accordance with ASTM C423, Type A Mounting.

**09 9000 Painting and Coating**

A. Paint all new and existing exposed surface identified as part of the work. Surfaces not specifically identified or scheduled shall receive coatings to match similar work.
   1. Gypsum Board Substrate: Acrylic, eggshell sheen, 2 finish coats over primer.
   2. Steel Substrate: Acrylic Enamel, semi-gloss.
   3. Galvanized Metal Substrate: Acrylic Enamel, semi-gloss.
   4. Concrete substrate: Clear sealer.

**10 11 01 Visual Display Boards**

A. Chalk Boards: Black finish, with tackable linoleum map rail, map hooks, and chalk tray. 4 ft. by 8 ft. modules.
B. Tack Boards: Tackable linoleum surface. 4 ft. by 4 ft. modules.

**10 14 00 Signage**

A. Interior Panel Signs: Unframed, laminated sheet with raised graphics, text and braille.
B. Building Directory and Maps: Removable inserts, room identification and dedication.

**10 21 13 Toilet Compartments**

A. Floor-mounted headrail braced HDPE, with one coat hook per door.
B. Urinal screens: Wall-mounted with continuous stainless steel angle brackets.
C. Pilaster Shoes: 3-inch-high stainless steel with No. 4 finish.

**10 26 01 Wall and Corner Guards**

A. Surface-mounted stainless steel for outside corners. 2 inch legs, height of wall less base.

**10 28 00 Toilet, Bath and Laundry Accessories**

A. Toilet accessories supplied by Contractor:
   1. Double-roll toilet tissue dispensers.
   2. Paper towel dispensers.
   3. Grab bars.
   4. Mirrors.
   5. Seat cover dispenser.
   6. Sanitary napkin dispenser.
   7. Sanitary napkin disposal.
   8. Waste receptacles.
   9. Liquid soap dispensers, deck-mounted.
   10. Folding shower seats.
   11. Coat hooks.
   12. Shower rod, curtain and hooks.
   13. Warm Air Hand Dryers – Mitsubishi Jet Dry or equal fast-acting type.

B. Custodial accessories supplied by Contractor:
   1. Utility shelf with mop and rag holder.

**10 44 00 Fire Protection Specialties**

A. Recessed cabinets with stainless steel finish, glass doors and cast “FIRE” handle.
B. Portable Fire Extinguisher: Dry Chemical Type, UL-rated 2A-10B:C, 5 pound.

**11 31 00 Residential Appliances**

A. Residential Appliances supplied by the Contractor:
   1. Refrigerator.
   2. Countertop microwave.
   3. Dishwasher.
   4. Hot water dispenser.

**11 52 13 Projection Screens**

A. Motorized Front Projection Screens, 8 ft. wide minimum.

**12 24 00 Window Shades**

A. Manual operated, room darkening, fabric roller shades complete with mounting brackets, roller tubes, hembars, hardware and accessories; fully factory assembled.

**12 30 00 Institutional Casework**

A. Modular plastic laminate cabinets as follows:
   1. Base and upper cabinets.
   2. Open shelf cabinets.
   3. Lockers, foot lockers and benches.
   4. Hardware and support brackets for a complete operating casework system.
   5. Plastic laminate, solid surface, and stainless steel countertops with backsplashes.

**12 40 00 Entrance Floor Mats and Frames**

A. Entrance Floor Gratings: Recessed stainless steel bar grating with longitudinal bars running perpendicular to traffic flow and perimeter frame forming sides of recess; grating hinged for maintenance access.
B. Entrance Carpet Mat: Modular cut nylon pile permanently bonded to backing set in recessed stainless steel frame.

**12 93 00 Site Furnishings**

A. Precast Concrete Planters.
B. Metal Benches, Tables and Waste Receptacles.
C. Steel Pipe Bollards.
D. Aluminum Skate Deterrents.
E. Metal Bicycle Racks.

**14 24 00 Passenger Elevators**

A. Hydraulic Passenger Elevator; 3,500 pound capacity, automatic elevator with standard cab finishes and separate equipment room.

**01 91 00 Commissioning**

A. Description: Includes the commissioning process and the relationships of the Owner, Architect, Contractor, and Commissioning Authority.
   1. Commissioning meetings.
   2. Commissioning goals.
   3. Commissioning scope of work.
   4. Commissioning authority responsibilities.
   5. Contractor and subcontractors commissioning responsibility.
   6. Commissioning process.
   7. Commissioning issues log.
   8. Seasonal and occupied functional testing.
   9. Commissioning reports.
   10. Commissioning compliance checklist per the Washington State Energy Code.

**20 02 00 General Provisions for Fire Suppression, Plumbing, and HVAC**

A. Description: This Section includes the following.
   11. Coordination.
   12. Codes, permits, inspections, and fees.
   13. Equipment and materials approvals.
   14. Submittals.

15. Abbreviations, definitions, and reference standards.
16. Operation and maintenance manuals.
17. Record documents.
18. Pressure vessel certificates.
19. Site conditions and methods.
20. Testing and demonstration.
21. Instruction for owner's personnel.
22. Inspection.
23. Final punchlist.

**20 03 00 Basic Materials and Methods for Fire Suppression, Plumbing, and HVAC**

A. Description: Includes motors, anchor bolts, support channels, electric heat tracing, mechanical identification, sleeves, cored openings, prepared openings, seals, prefabricated penetration flashing units, sealing of mechanical penetrations through fire resistive floors, walls, and partitions, sealing of mechanical penetrations through acoustical barriers, earthwork, seismic restraints, wind restraints, and miscellaneous other basic materials.

**20 04 00 Pipe, Valves, and Fittings for Plumbing and HVAC**

A. Description: Includes piping, fittings, valves, supports, hangers, and miscellaneous system accessories.

**20 05 93 Testing, Adjusting, and Balancing for Plumbing and HVAC**

A. Description: Includes testing, adjusting, and balancing by an Agency certified by the Associated Air Balance Council or the National Environmental Balancing Bureau specializing in Air and Water System Balancing and that is not financially connected to the Contractor and subcontractors.
   1. Work by Contractor.
   2. Balancing Agenda.
   3. Testing, adjusting, and balancing for air systems.
   4. Testing, adjusting, and balancing for water systems.
   5. Sound level testing.

**20 07 00 Plumbing and HVAC Insulation**

A. Description: Includes insulation and accessories for piping systems, air distribution systems, and designated equipment.
   1. Pipe Insulation:
      a. Fiberglass: Suitable for pipe temperature from 0 degrees F to plus 800 degrees F; one piece type with only one longitudinal joint; thermal conductivity not greater than 0.24 Btu-inch/hour-square feet-degree F at 75 degrees F mean temperature. Provide factory applied all-service jacket.
      b. Closed Cell Elastomeric: Suitable for pipe temperature from minus 40 degrees F to plus 220 degrees F; one piece type with only one longitudinal joint; thermal conductivity not greater than 0.25 Btu-inch/hour-square feet-degree F at 75 degrees F mean temperature.
   2. Equipment Insulation:
      a. Fiberglass Flexible Insulation: Suitable for temperatures to 1000 degrees F; thermal conductivity not greater than 0.4 Btu-inch/hour-square feet-degree F at 200 degrees F mean temperature.
      b. Rigid Fiber Board: ASTM C612; 450 degrees F temperature limit; 6 pounds per cubic foot density; thermal conductivity not greater than 0.22 Btu-inch/hour-square feet-degree F at a mean temperature of 75 degrees F.

3. Ductwork Insulation:
    a. Exposed Rectangular Ductwork and Plenums: Fiberglass rigid insulation with foil-skrim-kraft facing; density of 3 pounds per cubic foot; thermal conductivity not greater than 0.24 Btu-inch/hour-square feet-degree F at a mean temperature of 75 degrees F.
    b. Concealed Ductwork and Plenums: Flexible blanket with foil-scrim-kraft facing; density of 1.5 pounds per cubic foot; thermal conductivity not greater than 0.25 Btu-inch/hour-square feet-degree F at a mean temperature of 75 degrees F.

**23 08 00 Commissioning For HVAC**

A. Description: Includes the commissioning process requirements for HVAC systems, assemblies, and equipment.
    1. Commissioning documentation.
    2. Testing preparation.
    3. Testing.

**20 09 23 Direct-Digital Control System for Plumbing and HVAC**

A. Description: Includes provision of a complete control system for mechanical equipment including the design and provision of a complete direct digital control system to provide the required sequences of operation. Includes design, programming, graphics creation, materials, and labor for a complete and operable system.
B. Controls for the mechanical systems shall be Tridium Direct Digital Controls tied in to the existing campus DDC system. The system shall be open protocol with both LonWorks/BACnet interface.

**21 10 00 Water-Based Fire-Suppression Systems**

A. Description: Includes the design, provision, and testing of complete wet pipe and dry pipe fire protection systems as required by the Authorities Having Jurisdiction.
B. Aboveground Piping:
    1. Piping Which is Located Aboveground and Upstream of the Double Check Valve Assembly: Cement lined ductile iron as specified for underground piping, except that it shall have flanged joints or grooved joints and “flush seal” type gaskets.
    2. Pipe 2 Inches and Smaller, Unless Specified Otherwise: Schedule 40 black steel pipe and threaded ductile iron, cast iron, or malleable iron fittings.
    3. Pipe Larger than 2 Inches, Unless Specified Otherwise: Schedule 40 black steel pipe with threaded ductile iron, cast iron, or malleable iron fittings or Schedule 10, 20, or 30 roll grooved black steel pipe with ductile iron or steel grooved fittings.
    4. In addition to the above requirements, the dry pipe, fittings, and couplings shall be hot-dip galvanized. Exposed threads and cut grooves on hot-dip galvanized pipe shall be coated with rust inhibitive paint.
C. Underground Pipe: Conform to the requirements in NFPA 24 and Division 33. Ductile iron pipe shall be of the same type of pipe as the pipe at the point of connection to the site fire service piping.
D. Wet pipe and dry pipe system valves.

**22 10 00 Plumbing Piping**

A. Description: Includes domestic cold water piping, domestic hot water piping, domestic hot water circulating piping, nonpotable water piping, service water piping, trap primer piping, sanitary waste piping, sanitary vent piping, indirect drain piping, storm drain piping, storm drain overflow piping, valves, pipe specialties and accessories, drains, and pumps.

B. Pipe, tube, fittings, valves, expansion tanks, thread sealants, solders, and flux used in potable water systems intended to supply drinking water shall be certified to conform to requirements of NSF 61.
C. Domestic Cold Water Piping, Domestic Hot Water Piping, Domestic Hot Water Circulating Piping, Nonpotable Water Piping, Service Water Piping, and Valves (Aboveground):
   1. Pipe: ASTM B88 Type L copper water tube, hard drawn.
   2. Fittings: Wrought copper solder fittings and threaded adapters, ANSI B16.22.
   3. Ball Valves: Two-piece body conforming to requirements of MSS SP-110; full port; solid ball; cast silicon bronze body conforming to requirements of ASTM B584; threaded end connections conforming to requirements of ASME B1.20.1; polytetrafluoroethylene (PTFE) seat. Provide stem extension for use in insulated piping.
D. Trap Primer Piping:
   1. Pipe: Type K copper tubing, soft drawn, ASTM B88.
   2. Fittings: Wrought copper solder joint, ANSI B16.22.
E. Sanitary Waste Piping and Sanitary Vent Piping:
   1. Aboveground:
      a. Standard weight bell and spigot cast iron pipe per ASTM A74, with neoprene compression seal per ASTM C564; long pattern cast iron drainage fittings.
      b. Standard weight hubless cast iron pipe and fittings per CISPI 301; neoprene sleeve gasket with stainless steel shield and band; long pattern cast iron drainage fittings. Coupling shall conform to CISPI 310.
   2. Underground:
      a. Standard weight bell and spigot cast iron pipe per ASTM A74, with neoprene compression seal per ASTM C564; long pattern cast iron drainage fittings.
      b. Standard weight hubless cast iron pipe and fittings per CISPI 301; long pattern cast iron drainage fittings. Coupling shall be Clamp-All "Hi-TORQ 125", no substitutions; 0.024 inch thick Type 304 stainless steel housing with neoprene rubber sleeve gasket and Type 304 stainless steel clamps.
   3. Contractor's Option for Aboveground Sanitary Waste Piping and Sanitary Vent Piping:
      a. Copper Drainage Tube: Type DWV, ASTM B306.
      b. Fittings:
         i. Type DWV wrought copper drainage fittings, ANSI B16.29.
         ii. Type DWV cast copper alloy drainage fittings, ANSI B16.23.
F. Indirect Drain Piping:
   1. Indirect Drain Piping 1-1/4 Inches and Larger:
      a. Copper Drainage Tube: Type DWV, ASTM B306.
      b. Fittings:
         i. Type DWV wrought copper drainage fittings, ANSI B16.29.
         ii. Type DWV cast copper alloy drainage fittings, ANSI B16.23.
   2. Indirect Drain Piping 1 Inches and Smaller: Where 90 degree elbows are required, use long radius elbows.
      a. Copper Tube: ASTM B88 Type L copper water tube, hard drawn.
      b. Fittings:
         i. Wrought copper solder fittings and threaded adapters, ANSI B16.22.
         ii. Cast copper alloy solder joint fittings and threaded adapters, ANSI B16.18.
G. Storm Drain Piping and Storm Drain Overflow Piping:
   1. Aboveground:
      a. Standard weight bell and spigot cast iron pipe per ASTM A74, with neoprene compression seal per ASTM C564; long pattern cast iron drainage fittings.

b. Standard weight hubless cast iron pipe and fittings per CISPI 301; neoprene sleeve gasket with stainless steel shield and band; long pattern cast iron drainage fittings. Coupling shall conform to CISPI 310.

2. Underground:
   a. Standard weight bell and spigot cast iron pipe per ASTM A74, with neoprene compression seal per ASTM C564; long pattern cast iron drainage fittings.
   b. Standard weight hubless cast iron pipe and fittings per CISPI 301; long pattern cast iron drainage fittings. Coupling shall be Clamp-All "Hi-TORQ 125", no substitutions; 0.024 inch thick Type 304 stainless steel housing with neoprene rubber sleeve gasket and Type 304 stainless steel clamps.

**22 30 00 Plumbing Equipment**

A. Description: Includes electric domestic water heater.

B. A.O Smith, Coates, Rheem/Ruud, American Standard, PVI, or Bradford White. Heater shall be listed with UL. Heater shall have 150 psi working pressure and be equipped with extruded high density anode rod. Internal surfaces of the heater exposed to water shall be glass-lined. Electric heating elements shall be medium watt density with zinc plated copper sheath. Each element shall be controlled by an individually mounted thermostat and high cutoff switch. The outer jacket shall have a baked enamel finish and shall be provided with full size control compartment for performance of service and maintenance through hinged front panels and shall enclose the tank with foam insulation that complies with ASHRAE 90.1 efficiency. Heater shall include a temperature and pressure relief valve and drain valve.

**22 30 00 Plumbing Fixtures**

A. Description: Includes plumbing fixture supports, plumbing fixtures, and plumbing fixture trim.

B. Vitreous China Fixtures: American Standard, Kohler Sloan, Zurn, Mansfield, Toto, or Crane.

C. Stainless Steel Sinks: Just, Elkay, or Kindred.

D. Faucets: Chicago Faucets, T&S Brass and Bronze Works, or Zurn Aqua-Spec.

E. Flush Valves: Sloan, Zurn, or Delany.

F. Electric Water Coolers with Bottle Fillers: Elkay, Halsey Taylor, Oasis, or Acorn Aqua.

**23 05 48 Vibration and Seismic Controls for HVAC**

A. Description: Includes vibration isolators, bases, and seismic restraints.

B. Vibration Isolators:
   1. Seismic Spring: Adjustable, freestanding spring contained within a cast iron housing specifically designed to limit equipment motion in all directions without compromising vibration isolation during normal operation.
   2. Spring Hanger: Steel box frame, open on two sides, containing an open steel spring capable of supporting twice the rated load without reaching the yield point. Spring mounted in a molded neoprene isolation bushing.
   3. Sheet Neoprene Pad: Pad mounting consisting of one or two layers approximately 5/16 inch thick ribbed or waffled neoprene pads bonded to a galvanized steel load distribution plate.

C. Bases:
   1. Steel Base: Structural steel rectangular base with cross members to prevent twisting where longest beam dimension exceeds 6 feet. Height-saving brackets for side mounting of isolators.
   2. Inertia Base: Concrete filled base sized to support equipment without overhanging structural members that form perimeter framing. Concrete shall be 3,000 psig concrete to ASTM C94.

D. Seismic Restraints: Seismic cable restraints shall consist of galvanized steel aircraft cables sized to resist seismic loads with a minimum safety factor of 2 and arranged to provide all-directional restraint. Cables shall be pre-stretched to achieve a certified minimum modulus of elasticity. Cable end connections shall be steel assemblies that swivel to final installation angle and shall utilize clamping bolts to provide proper cable engagement. Cables shall be slack during normal operation of equipment and shall not compromise the efficiency of the vibration isolation hangers.

**23 20 00 HVAC Piping and Pumps**

A. Description: Includes heating water piping, chilled water piping, secondary chilled water piping, condenser water piping, pipe specialties and accessories, and pumps.
B. Piping shall be steel or copper.
C. Steel Pipe:
   1. Pipe: Black steel conforming to requirements of ASTM A53/A53M, Type E (electric-resistance-welded) or Type S (seamless), Grade A or Grade B, standard weight.
   2. Fittings:
   a. 2 Inches and Smaller:
      i. Threaded: Class 150 threaded fitting conforming to requirements of ASME B16.3; black malleable iron conforming to requirements of ASTM A197/A197M.
      ii. Welding: Class 3000 socket-welding fitting conforming to requirements of ASME B16.11; carbon steel forging conforming to requirements of ASTM A105/A105M.
   b. 2-1/2 Inches and Larger:
      i. Welding: Buttwelding fitting conforming to requirements of ASME B16.9; standard weight, seamless wrought carbon steel conforming to requirements of ASTM A234/A234M Grade WPB. Fitting wall thickness shall match pipe wall thickness.
      ii. Grooved Joint: UL listed and FM approved couplings and fittings. Victaulic or equivalent of Anvil International or Grinnell Mechanical Products is acceptable.
D. Copper Pipe:
   1. Tubing (Pipe): ASTM B88 Type L copper water tube, hard drawn.
   2. Fittings:
      a. Wrought copper solder fittings and threaded adapters, ANSI B16.22.
      b. Cast copper alloy solder joint fittings and threaded adapters, ANSI B16.18.
E. End Suction Centrifugal Pumps:
   1. Bell & Gossett Series e-1510 or approved equal.
   2. Base mounted, single stage, flexible coupled, end suction design with a foot mounted volute to allow removal and service of the entire rotating assembly without disturbing the pump piping, electrical motor connections, or pump to motor alignment.

**23 22 00 Steam and Condensate Piping and Pumps**

A. Description: Includes steam piping, condensate piping, safety valve discharge piping, receiver vent piping, condensate return unit, steam specialties, steam pressure reducing valves, safety relief valves, and steam and condensate instrumentation.
B. Steam Pipe: Schedule 40, black steel, seamless or electric resistance welded, ASTM A106 or A53, Grade A or B.
C. Condensate Pipe: Schedule 80, black steel, seamless or electric-resistance welded, ASTM A106 or A53, Grade A or B.

**23 23 00 Refrigerant Piping**

A. Description: Includes refrigerant piping and piping specialties and accessories.

B. Pipe: Unless specified otherwise, pipe shall be hard temper Type L copper tubing conforming to requirements of ASTM B88. Pipe shall be cleaned and sealed to requirements of ASTM B280.
   1. In sizes 5/8 inch and smaller, where bending is required, use annealed temper ACR copper tubing conforming to requirements of ASTM B280. Tubing shall be cleaned and sealed to requirements of ASTM B280.

C. Fittings: In sizes 5/8 inch and under, where soft tubing is used, short shank flare fittings are acceptable. All other fittings shall be 150 WFP wrought copper conforming to requirements of ASME B16.22, with depth of socket and annular tolerances suitable for specified filler metal. Cast fittings are not acceptable. Fittings shall be cleaned, purged, and bagged according to CGA G-4.1.

**23 30 00 HVAC Air Distribution**

A. Description: Includes fans, air terminal units, sheet metal work, flexible duct connectors, duct access doors, duct access panels, dampers, flexible ducts, flexible duct clamps, duct lining, diffusers, grilles, and accessories.

B. Centrifugal Roof Exhausters: Greenheck, PennBarry, Cook, JennFan, Carnes, or ILG manufacturers; UL listed; spun aluminum housing with flashing suitable for curb mounting; backward inclined non overloading, aluminum wheels; fresh air for motor cooling shall be drawn into the motor compartment from an area free of discharge contaminants; factory installed and wired disconnect switch suitable for outdoor locations motor mounted on vibration isolators; aluminum bird screen with an 85 percent minimum free area.

C. Air Terminal Units: Titus Model DESV single duct, variable air volume air terminal unit or approved equal of Price, Trane, Kruger, Nailor, or Enviro-Tech manufacturer; system pressure independent constant volume control; velocity pressure sensor and volume damper on inlet; and a heating water coil on unit discharge.

D. Ducts shall be constructed with G-90 galvanized steel meeting functional criteria defined in SMACNA "HVAC Duct Construction Standards Metal and Flexible" manual.

**23 57 00 Heat Exchangers for HVAC**

A. Description: Includes steam converters and plate and frame heat exchangers.

B. Steam Converter:
   1. Manufacturer: Bell & Gossett "Model SU" or equal of Taco, Armstrong, Dunham Bush, Patterson Kelly, Wheatley, or Amtrol.
   2. 150 psi ASME construction with steel shell designed for "U" tube bundle complete with cast iron bonnet, 3/4 inch seamless copper tubing, copper alloy supports, steel tube sheet and furnished with cast iron or steel support cradles.

C. Plate and Frame Heat Exchanger:
   1. Manufacturer and Type: Bell & Gossett "Model GPX" plate and frame heat exchanger or equal of Alfa-Laval, Tranter, Mueller, American Vicarb, or Baltimore Aircoil.
   2. Heat exchanger shall be plate and frame counterflow type heat exchanger; minimum 150 psig working pressure; 225 psig test pressure.

**23 60 00 Central Cooling Equipment**

A. Description: Includes a cooling tower.

B. Manufacturer and Type: Baltimore Aircoil or Evapco; factory assembled cooling tower of counterflow blow through design, with single side air entry. Cooling tower shall have centrifugal fan assemblies built into the pan, with moving parts factory mounted and aligned.

**23 70 00 Central HVAC Equipment**

A. Description: Includes air handling unit and heat recovery units.

B. Air Handling Unit:
   1. Manufacturer: Haakon or Huntair.
   2. Factory assembled packaged indoor air handling unit consisting of supply fan array, return fan array, hot water heating coil, chilled water cooling coil, filters, and automatic control dampers.
   3. Casing:
      a. Wall and Ceiling: Double panel construction; 4 inch thickness; minimum 16 gage galvanized steel outer panel, minimum 22 gage perforated galvanized steel inner panel; with 4 inch thick fiberglass insulation between panels.
      b. Floor: Double panel construction; minimum 12 gage solid checker-plated steel upper panel with seams continuously welded to ensure that the floor is internally watertight; minimum 22 gage solid galvanized steel lower panel; and 4 inches of insulation between upper and lower panels as described for wall and ceiling panels.
   4. Fan Array: The multiple fan array system shall include multiple, direct driven, arrangement 4 plenum fans constructed conforming to requirements of AMCA. The fan array shall consist of multiple fan and motor "cubes" or "cells", spaced in the air way tunnel cross section to provide a uniform air flow and velocity profile across the entire air way tunnel cross section and components contained therein. Each fan/motor cube or cell shall include a minimum 10 gauge, G 90 galvanized steel intake wall, 0.100 aluminum spun fan inlet funnel, and a 10 gauge G90 galvanized steel motor support plate rail and structure.
   5. Heating and Cooling Coils: Provide AHRI 410 coils; counterflow arrangements, with supply and return connections on the same end; maximum fin spacing of 10 fins per inch unless indicated otherwise on Drawings; copper tubes with mechanically bonded aluminum fins; leak tested at 300 psig minimum air pressure under water; suitable for working pressures up to 200 psig; suitable for water temperature up to 250 degrees F for heating coils; galvanized steel casing for heating coil; stainless steel casing for cooling coil.
   6. Filters:
      a. Pre-Filter: 2 inch thick rigid fixed type pleated media supported by galvanized wire grid; media consisting of non-woven cotton and synthetic fabric; rigid, heavy duty, high wet-strength beverage board enclosing frame; ASHRAE Standard 52.2 rating of MERV 8.
      b. Final Filter: 12 inch thick rigid fixed type pleated media supported by galvanized wire grid; media consisting of high density microfine glass fibers; galvanized steel enclosing frame; ASHRAE Standard 52.2 rating of MERV 13.
   7. Automatic Control Dampers: Constructed with extruded aluminum or steel blades with extruded vinyl or rubber blade seals and flexible aluminum or stainless steel compression type jamb seals. The frame shall be aluminum or welded steel with bronze insert or molded synthetic bearings. Damper leakage rate shall not exceed 4 cfm per square foot of damper area at 1.0 iwc when tested to conform to the requirements of AMCA 500.

C. Heat Recovery Units: Same as specified for the air handling unit with the addition of a BKM "Reverse Flow" regeneration type fresh air/exhaust air recovery unit.

**23 80 00 Decentralized HVAC Equipment**

A. Description: Includes chilled beams and air conditioning units and air cooled condensing units.

B. Air Conditioning Units and Air Cooled Condensing Units: Mitsubishi Electric split system series. The system shall consist of an indoor wall mounted evaporator section and a horizontal discharge outdoor unit. Refrigerant piping between the 2 units shall conform to requirements of Section 23 23 00.

C. Chilled Beams: Trox active chilled beams or approved equal of Dadanco. The assembly shall consist of a primary air inlet and upper chamber, a series of high induction nozzles and lower chamber housing with hydronic cooling coil, with intake grille and discharge slots.

**26 05 00 Common Work for Electrical Systems**

A. Description: Project General Requirements for Fire Suppression
   1. Detail Drawings
   2. Codes and References
   3. Coordination
   4. Scheduling
   5. Prior Approvals
   6. Submittals
   7. Record Drawings, Operation and Maintenance Manuals
   8. Testing

**26 05 01 Basic Materials and Methods for Electrical Systems**

A. Description: Basic Materials and Methods
B. Testing Standards:
   1. UL Listing
C. Qualifications:
   1. Manufacturer Qualifications
   2. Product Qualifications:
D. Equipment Requirements:
   1. Shop Drawings
      a. Samples
      b. Approved equal.
E. General Installation Requirements

**26 05 26 Grounding and Bonding for Electrical Systems**

A. Equipment grounding conductors – Stranded Copper
B. Ground Rods:
   1. Copper clad steel ¾" diameter by 10'-0".
   2. Ground Bus for Communications Rooms
   3. Ground Connections:
      a. Below grade exothermic weld connectors.
      b. Above grade:
         i. Compression type connectors.
         ii. Ground Busbars, two hole compression lugs.
      c. Ground terminal blocks:
         i. Screw lug-type terminal blocks.

**26 05 33 Raceways and Boxes for Electrical Systems**

A. Conduit must comply with NFPA 70.
   1. Underground shall be Schedule 40 or 80 PVC.
   2. Dry Locations shall be the following:
      a. Rigid Steel
      b. Rigid Aluminum
      c. EMT
      d. PVC Coated Steel
      e. Liquidtight Flexible
B. Boxes
   1. Outlet Boxes shall be sheet metal, galvanized steel.
   2. Surface mounted cast boxes shall be galvanized cast iron.

3. In-Ground Cast Metal Box shall be NEMA 250, Type 6 outside flanged.

C. Handholes
1. Fiberglass with weatherproof cover, non-skid surface.
2. Concrete Handholes shall be polymer concrete including cover with stainless steel screws.

**26 22 00 Low Voltage Transformers**

A. General Purpose and K-Factor Transformers
1. Self-cooled complying with UL 506 or UL1561
    a. Average temperature rise less than 15kva is 115 degrees C.
    b. Average temperature rise more than 15kva is 150 degrees C.
2. Energy efficiency, standard complying with NEMA TP1.
3. Sound Levels complying with NEMA ST 20.
4. Mounting:
    a. Less than 15kva suitable for wall mount.
    b. 15kva through 75kva suitable for wall or floor mount.
    c. 75kva or larger floor mounted only with concrete housekeeping pad.

**26 24 13 Switchboards**

A. Description: NEMA PB2 switchboard with electrical ratings and configurations to match drawings.
1. Main Section panel mounted.
2. Copper Bus standard size.
3. Bus connection bolted with accessibility from front.
4. Ground bus shall run length of switchboard.
5. Molded case circuit breakers.
6. Mounted on concrete housekeeping pad.

B. Customer metering Compartment

C. Surge protection Device (SPD).

D. Future provisions:
1. Fully equip spaces for future devices with bussing and bus connections.

E. Enclosure type for interior installations NEMA 1.

F. Enclosure type for exterior installations either NEMA 3R or NEMA 4X.

**26 24 16 Panelboards**

A. Description: Panelboards shall be NEMA PB1., circuit breaker type complying with UL 67. Ratings and configurations to match drawings.
1. Conductor terminations:
    a. Main and Neutral Lug Materiel shall be copper
    b. Main Lug type shall be mechanical.
2. Bussing:
    a. Phase and Neutral Bus Materiel shall be copper.
    b. Ground Bus Materiel shall be copper.
3. Circuit Breakers
    a. Provide bolt on type breakers with locking mechanical restraints.
    b. Molded Case circuit breakers with quick make or quick break complying with UL 489.
4. Enclosures:
    a. Provide door in door hinge cover with lockable cover
    b. Enclosure type for interior installations NEMA 1.

**26 43 13 Surge Protection Devices (SPD)**

A. Description: The SPD shall be provided to obtain the lowest let through voltage, the ac surge protection shall be integral into the electrical distribution equipment, such as switchboards, panelboards, busway or motor control centers.
B. Each SPD shall have the following:
   1. Self - Monitoring Diagnostics
   2. Maximum Continuous Operating Voltage (MCOV) shall not be less than 125% of the nominal system operating voltage.
   3. Over Current Protection which includes thermally protected MOV's
   4. Protection Modes for all of the electrical system being utilized including the following:
      a. Line to Neutral
      b. Line to Ground
      c. Line to Line
      d. Neutral to Ground
   5. Each SPD shall have an electrical noise filter which includes a high performance EMI/RFI noise rejection filter.
C. Mounting
   1. All enclosed equipment shall have a NEMA 1 general purpose enclosure.
   2. SPD shall be installed immediately following the load side of the main breaker.
   3. The SPD shall be of the same manufacturer of the panelboard, switchboard or motor control center.

**26 50 00 Lighting**

A. Description: Luminaires shall be provided as indicated on drawings.
B. Luminaires:
   1. Shall comply with requirements of NFPA 70 and labeled as complying with UL 1598.
   2. LED Luminaires shall comply with UL 8750.
C. Emergency Lighting Units
   1. Shall comply with NFPA 101 and all state and local codes and regulations.
   2. Provide 90 minutes of rated emergency illumination and automatically recharges the battery upon restoration of normal power.
   3. Provide power status indicator light
   4. Provide low voltage disconnect to prevent battery from deep discharge.
D. Ballast
   1. Provide ballast with no PCB's.
   2. Minimum efficacy shall comply with all applicable federal and state ballast efficiency/efficacy standards.
E. Lamps
   1. Provide new compatible and operable lamps in each luminaire.
   2. Color temperature shall be consistent in perceived temperature. Replace all lamps that are determined by the owner representative to be inconsistent in color.

**26 51 00 Lighting Control System**

A. Description: Provide all required panels as indicated on drawings. System shall control lighting on-off functions by:
   1. Time
   2. Available daylight
   3. Occupancy sensor
   4. Remote Switch

B. Lighting Control Panel
1. Shall contain relays as indicated on the drawings.
2. Shall have a barrier separating high and low voltage components and wiring.
3. Shall have a single triple rated UL Class 2 transformer capable of either 120V or 277V input.
4. Provide input/output cards to expand capability from 4 to 48 relays in groups of 8.
5. Controllers shall be available in 4, 8, 16, 32 and 48 output sizes.
6. Shall have LED indicating current status.
7. Shall store program data in nonvolatile memory for 20 years without any power.
8. Each panel shall have its own real time clock.
9. Each panel shall have its own astronomical clock.
10. Shall be programmable for a minimum of 99 events.
11. Shall be provided with mechanical and push button overrides.
12. Shall have network card that is compatible with BACNET.

C. 20 amp relays
1. Shall be mechanically latching.
2. Shall have a minimum life cycle of 150,000 on/off cycles at full load.
3. Shall be specifically designed for control of 120, 277 and 247 V lighting loads.
4. Shall provide electrical means of monitoring.
5. Shall have a mechanical visual status indicator.

D. 20 amp 2-pole contactor modules
1. Shall be same design as 20 amp 1-pole relays.
2. Shall be UL and CUL listed.
3. Shall be designed for 208, 240 and 480 V loads.
4. Contacts shall be electrically isolated but mechanically linked.

E. Touch Tablet Graphical User Interface
1. Shall consist of microprocessor based lighting control station specifically design for lighting control.
2. Shall be backlit with wide viewing angle.
3. All programming shall occur through GUI.
4. Shall provide access to the following features
   a. Current status of any device.
   b. Time & Date information and programming
   c. Scheduling
   d. Manual overrides
   e. System programming
   f. Diagnostics
5. All programming shall be stored in non-volatile memory.
6. Shall connect to lighting control system at any point.

F. Networked Switch Stations
1. Shall mount in standard single gang box with decorator-style switch plate opening.
2. Shall have both pilot and non-pilot version buttons.
3. Each button may be programmed to perform the following functions
   a. Control any individual relay in any individual control panel.
   b. Control any group of relays in all control panels.
   c. Control any preset in all control panels.
4. Programmed for active and inactive times.
5. Programming shall be stored in non-volatile memory.

G. Networked Occupancy Sensors
1. Shall connect to a self-powered topology free networked with a single pair of wires.

2. Each sensor may be programmed to perform the following functions
   a. Control any individual relay in any individual control panel.
   b. Control any group of relays in all control panels.
   c. Control any preset in all control panels.
3. Programmed for active and inactive times.
4. Programming shall be stored in non-volatile memory.
5. Shall be dual technology utilizing ultrasonic and passive infrared technologies.

H. Networked Photo Sensor.
1. Shall connect to a self-powered topology free networked with a single pair of wires.
2. Shall transmit real time foot candle levels over network.
3. Shall operate at 0 to 1000 foot candle range.
4. Shall have six programmable on/off set points.
5. Each sensor may be programmed to perform the following functions
   a. Control any individual relay in any individual control panel.
   b. Control any group of relays in all control panels.
   c. Control any preset in all control panels.
6. Shall be LonMark certified.
7. Programmed for active and inactive times.

I. Networked Dry Contact Interface Module
1. Shall support (1) to (6) dry contact inputs
2. Shall connect to a self-powered topology free networked with a single pair of wires.
3. Each dry contact module may be programmed to perform the following functions
   a. Control any individual relay in any individual control panel.
   b. Control any group of relays in all control panels.
   c. Control any preset in all control panels.
4. Programmed for active and inactive times.
5. Programming shall be stored in non-volatile memory.
6. Shall be LonMark certified.

**27 10 00 Structured Cabling**

A. Description: Provide a comprehensive telecommunications infrastructure.

B. Control Wiring
1. Minimum size shall not be less than No. 14 AWG.
2. Multi-Conductor cables shall have color coded conductors

C. Communication and Signal Wiring
1. Shall conform to manufacturers recommendations
2. Multi-Conductor cables shall have color coded conductors

**27 11 00 Communications Equipment Room Fittings**

A. Description: Provides for a complete and operating Voice and Digital Cable Distribution System, ADC, Berk-Tec/Otronics or Lantegra only.
1. Shall be able to support voice and data operations for category 6A certified telecommunications service.

B. Equipment Items
1. Chatsworth Cabinet with Internal Equipment Mounting Rack
   a. Cabinet shall be lockable with fully adjustable internal equipment mounting and access.
   b. Minimum of one cabinet shall be provided with blank rack space.
   c. Shall have 20 amp 120V power outlet strip(s)
   d. Shall have power line surge protector.

C. Cross Connection System

1. Connector panel(s)
    a. Voice (or Telephone) to be industry standard type 110 (minimum) punch blocks in lieu of patch panels.
2. Digital or High Speed Data
    a. Shall be a patch panel with modular female RJ45 jacks and be specifically for Cat 5e telecommunications system.
3. Fiber Optic and Analog Audio
    a. Shall be telewire type PUP-17 with pre-punched holes
4. Mounting Strips and Blocks
    a. Barrier Strips are approved for AC power, data, voice and control cable or wires.
5. Solderless Connectors shall be crimp-on insulated lug.
6. Punch Blocks shall be standard 110 type punch blocks

D. Wire Management Equipment
1. The wire management equipment shall provide a uniform connection media for all system fire retardant wires and cables and other subsystems.

**27 13 00 Communications Backbone Cabling**

A. Description: Provide copper and Fiber optic Backbone Cabling

B. Communications backbone cabling
1. Shall be 23 AWG UL/NEC CMP rated with jacketing.
2. Shall comply with NEC article 800 and NFPA 70 and characterized to 100 MHz.

C. Voice Copper Backbone
1. Shall be Cat 6A UTP telephone riser cable.

D. Telephone Multi-Conductor Riser Cables
1. Shall be 24 AWG cat 6A

E. Outside Plant
1. Indoor/Outdoor rated category 6A multi-conductor cable. Punch down on 110 fields in MDF.

F. Inside Plant
1. Indoor riser or plenum rated category 6A cable and punch down on 110 fields and voice patch panels in IDF(s)

G. Communications Optical Fiber Backbone Cabling
1. Backbone data cable shall be all dielectric and shall consist of 900mm tight-buffered single mode fibers surrounded by aramid strengthening members as indicated on drawings.
2. Backbone data cabling shall be 50/125 mm multi-mode indoor/outdoor rated or indoor rated as required.
3. Shall be installed in orange 1″ or 1 ¼″ inner duct.

H. Outlet Boxes for telecommunications outlets shall be Randl 5″ square, 2.875″ deep box with knockouts for 1″ and 1.25″ conduits and single gang 5/8″ mug ring, mounted at 43″ AFF at the center of the box and 1.25″ conduit to the nearest cable tray.

**27 15 13 Communications Horizontal Cabling**

A. Description: Horizontal cabling for voice and data circuits as shown in drawings.

B. Products
1. Voice and Data cabling shall be U/UTP NEC/NFPA CMP rated.
2. Jacketing shall be white and lead free.
3. Shall be 24 AWG 4-pair UTP category 6A.

**27 30 00 Mass Notification System**

A. Description: Provide a complete addressable Mass Notification System.

B. Products
   1. Advanced Networks IP Clock Speakers with strobes with multi-color display and scrolling text, IEEE 802.3af POE compliant.
   2. Atlas Sound 8" analog speaker with 25v/70.7v transformer.
   3. Advanced Networks Zone Controller providing IP to Analog interface, IEEE AF compliant.

**28 31 00 Fire Detection and Alarm**

A. Description: Provide complete addressable fire alarm system.
B. Locks
   1. Cabinets and enclosures shall be keyed alike.
C. Fire Alarm Control Panel - Notifier
   1. Shall incorporate all power supplies and controls for the system.
   2. Shall be wired for "Class A" operation.
   3. All zone locations to be clearly identified and controls labeled.
   4. Emergency 24V DC power supplies shall meet the following:
      a. Sealed gelled cell type batteries
      b. 24-hour system back-up capability plus five minute of full operation.
      c. Charger shall restore battery charge within 24-hours.
      d. Battery and charging system shall be supervised.
D. Remote Annunciators
   1. Shall consist of 80 character, backlit LCD and display alarm type, point status etc.
E. Alarm Notification Devices
   1. Audio Notification Device
      a. Shall be polarized and operate on 24V DC.
   2. Visual Flashing Lamps
      a. Shall have a xenon flash tube and be entirely solid state.
      b. Lexan lens shall be pyramidal in shape.
   3. Audio/Visual Alarm Notification Appliance
      a. Shall provide a common enclosure for audible and visual alarm devices.
F. Addressable Device Type
   1. Spot Type Smoke Detector
      a. Photoelectric type detector shall be a plug-in unit.
      b. Shall be of the solid-state photoelectric type.
      c. Shall fit into base common with both heat and ionization type detector.
   2. Heat Detectors
      a. Must be UL listed and available in 135 and 190 degree F ratings.
   3. Pull Stations
      a. Shall have two wire communications that updates devices status.
      b. Must be hinged to back plate
      c. Must be capable of field programming of its address
   4. Photoelectric Duct Detector
      a. Shall be non-polarized, 4-wire 24V DC analog addressable type.
      b. Shall be solid-state photoelectric type.
      c. Shall be directly interchangeable with ionization type.
   5. Projection Beam Smoke Detectors
      a. Range shall be 30 to 350 feet.
      b. Adjustment range shall be +/- 10 degrees vertical and +/- 90 degrees horizontal.
      c. Shall have 6 sensitivity settings.
      d. Remote test/display panels shall provide for remote testing.
   6. Addressable Sensor

a. Shall be of the ionization or photoelectric type and shall communicate the actual smoke chamber values to the system control panel.
b. Temperature sensors shall sense within a temperature range of 32 and 158 degrees F.
c. Shall comply with UL 268.

7. Monitor Module
    a. Shall be used for monitoring of water flow and valve tampering
    b. Shall be used for interfacing normally open direct contact devices to an addressable signaling line circuit.
    c. Shall mount in standard electrical outlet box.

G. Combination Smoke Fire Dampers
1. Provide connection to all smoke fire dampers.

H. Graphic Map
1. Shall be mounted adjacent the annunciator and consist of a 1/16″ = 1′ scale graphic floor map.
2. Shall be silk screened on anodized aluminum face with ultra-violet protection paint and shall be enclosed in a polycarbonate viewing pane.
3. Shall be weatherproof in outdoor applications.

**31 0000 Earthwork**

A. Clearing: Removal, clearing, grubbing, and legal disposal of landscape.
B. Control: Provide temporary erosion, sedimentation, silt, and dust control during construction. Provide pollution source control.
C. Grading: Work includes but is not limited to:
    1. Required excavation, shoring, embankment construction, backfilling, compaction, sub-grade preparation, rough and finish grading.
    2. Removing materials from the site which are either not approved for use, or are in excess of that required.
    3. Importing any additional required materials.
    4. Utility trenching.
    5. Stockpiling, protecting and conditioning of native materials for reuse as indicated.
    6. Coordinating of installation of electrical, telephone, communication, and power conduits, water, gas, and sewage lines.
    7. Coordination of sleeving installations for irrigation lines.
D. Cut and Fill: Remove and export top soil under building pad and adjacent plaza and secure vehicle parking areas and import select fill. Excavate all footings, slabs-on-grade, and pavement to 24 inches below finish grade and backfill with select fill. Fill to have no more than 5 percent passing 200 sieve and no material over 6 inches in diameter. Compact to 95 percent proctor.
E. Pipe Bedding: Gravel per Section 9-03.12(3) of WSDOT standards.
F. Topsoil*:* Import 8-12 inches topsoil for planting or stockpile and amend existing soil to be reused on site.

**32 00 00 Exterior Improvements**

A. Asphalt Paving: Base course consisting of crushed surfacing top course per Section 9-03.9(3) of WSDOT standards, 4 inches thick in parking areas and 6 inches Class B asphalt in driveways and truck traffic areas.
    1. Pavement and parking striping to be white with blue/white international symbol of access.
    2. Precast wheel stops 1 per space.
B. Concrete Paving: 6 inches, 3,000 psi with WWF over 8 inch aggregate base, light broom finish, and tooled joints and edges.

**32 80 00 Exterior Improvements**

A. Automatic irrigation system, zoned based on water needs and microclimate conditions to allow system to be turned off where drought-tolerant planting is used and remain active long-term for all lawn areas.
B. Establishment-only (i.e. temporary) for all native plantings.

**32 90 00 Planting**

A. Trees, shrubs, ground cover, and seeding over all unpaved surfaces disturbed by construction. Plant selection shall be native or adaptive to the Puget Sound region, drought-tolerant and low-maintenance varieties to the greatest extent possible.
Provide 3-inch depth of recycled organic mulch at all planting beds.
B. Provide maintenance and replacement during one year establishment period.

**33 00 00 Utilities**

A. Water Supply: Pipe 4 inches or larger to be cement mortar lined ductile iron. Pipe 2 inches or smaller to be copper Type K or high density polyethylene (HDPE). Fittings to be same material as pipe. Valves, valve boxes, and hydrants shall be in accordance with Thurston County standards. Provide complete with 14 gauge neoprene-coated copper locating wire and poured in place concrete thrust blocks.
B. Fire Hydrants: Fire hydrants shall conform to the Thurston County standards.
C. Foundation Drains: 4-inch perimeter foundation drains to be perforated Schedule 40 PVC (DWV) surrounded by 6 inches gravel backfill for drains per Section 9-03.12(4) of WSDOT standards. Gravel backfill for drains to be wrapped in filter fabric, Mirafi 140N or approved equal.
D. Storm Drains, Culverts, and Outfalls: 10-inch pipe or smaller to be PVC. Provide 3 feet minimum cover over PVC. Pipes 12 inches diameter or larger to be HDPE or PVC.
E. Ductile Iron Pipe: Ductile iron pipe shall be per ANSI A21.51 Class 50 with push-on joints. Connections to structures shall be by an AC or GPK manhole adapter.
F. Catch Basins, Manholes, and Control Structures: Concrete conforming to WSDOT-APWA, Section 9-05. Catch basins to have a minimum 24-inch sump. Flow control structure riser assemblies shall consist of PVC pipe or shop-fabricated aluminum pipe.
G. Detention Vault: Underground detention vaults shall be precast concrete. Utility Vault or approved equal.
H. Sanitary Sewer: Pipe to be PVC (SDR 35) with rubber gasket joints or ductile iron (Class 50). Connect to existing combined sewer on-site.
J. Electrical and Communications: Route through existing campus utility tunnel system.

# APPENDIX E

Room Data Sheets

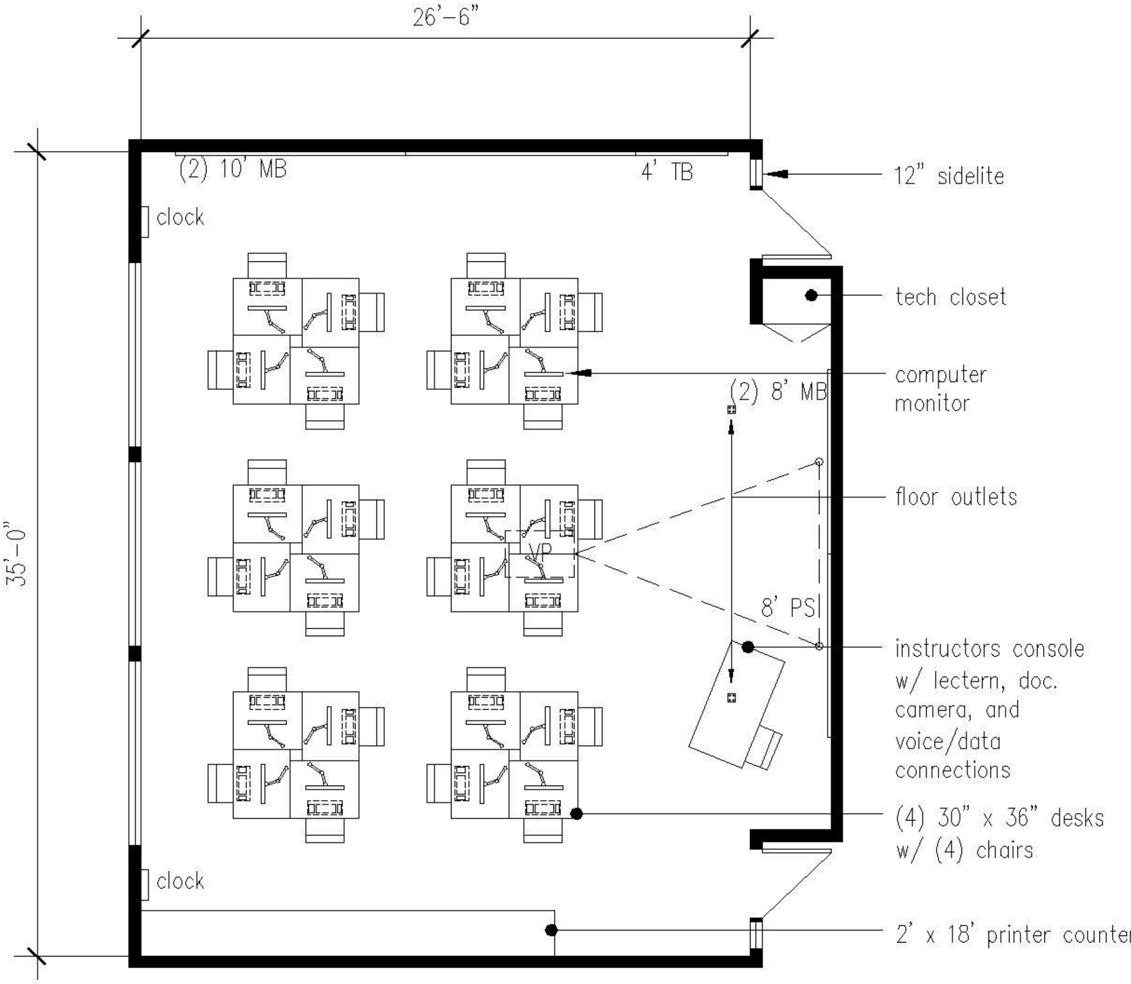
## APPENDIX E ROOM DATA SHEETS

The attached data sheets summarize physical requirements for the unique rooms identified in the Program Area Tabulations. The diagrams associated with each data sheet represent idealized conditions and are not intended to reflect the final room.

**COMPUTER CLASSROOM**

| | |
|---|---|
| **Approximate Size:** | 900 NSF |
| **Capacity:** | 18 |
| **Functional Relationships:** | |
| Primary Function: | Instruction |
| Directly adjacent to: | N.A. |
| In close proximity to: | N.A. |
| Totally separate from: | N.A. |
| **Finishes:** | |
| Flooring: | Carpet tile |
| Walls: | GWB on metal framing |
| Ceiling: | Acoustic tile |
| **Doors:** | Wood door with sidelight |
| **Fenestration:** | Indirect natural light preferred |
| **Plumbing:** | None |
| **HVAC:** | Heating and cooling per Code; single zone |
| **Fire Protection:** | Wet-pipe sprinkler system with semi-recessed ceiling-mounted heads |
| **Lighting Systems:** | Direct/indirect general LED fixtures; daylight dimming; marker board fixtures |
| **Electrical:** | Duplex convenience receptacles per Code. Floor boxes at computer desks. |
| **Communications Systems:** | Jacks for wall telephone/data, AV projector receptacle. Jacks in floor boxes at computer desks. |
| **Special Systems:** | None |
| **Casework:** | None |
| **Moveable Equipment:** | None |
| **Fixed Equipment:** | Marker boards, projection screen, coat hooks, clock |
| **Furnishings:** | Fixed tables with wire management and chairs for 18 |
| **Acoustics:** | Walls; STC 45 minimum |
| **Remarks/Comments:** | N.A. |

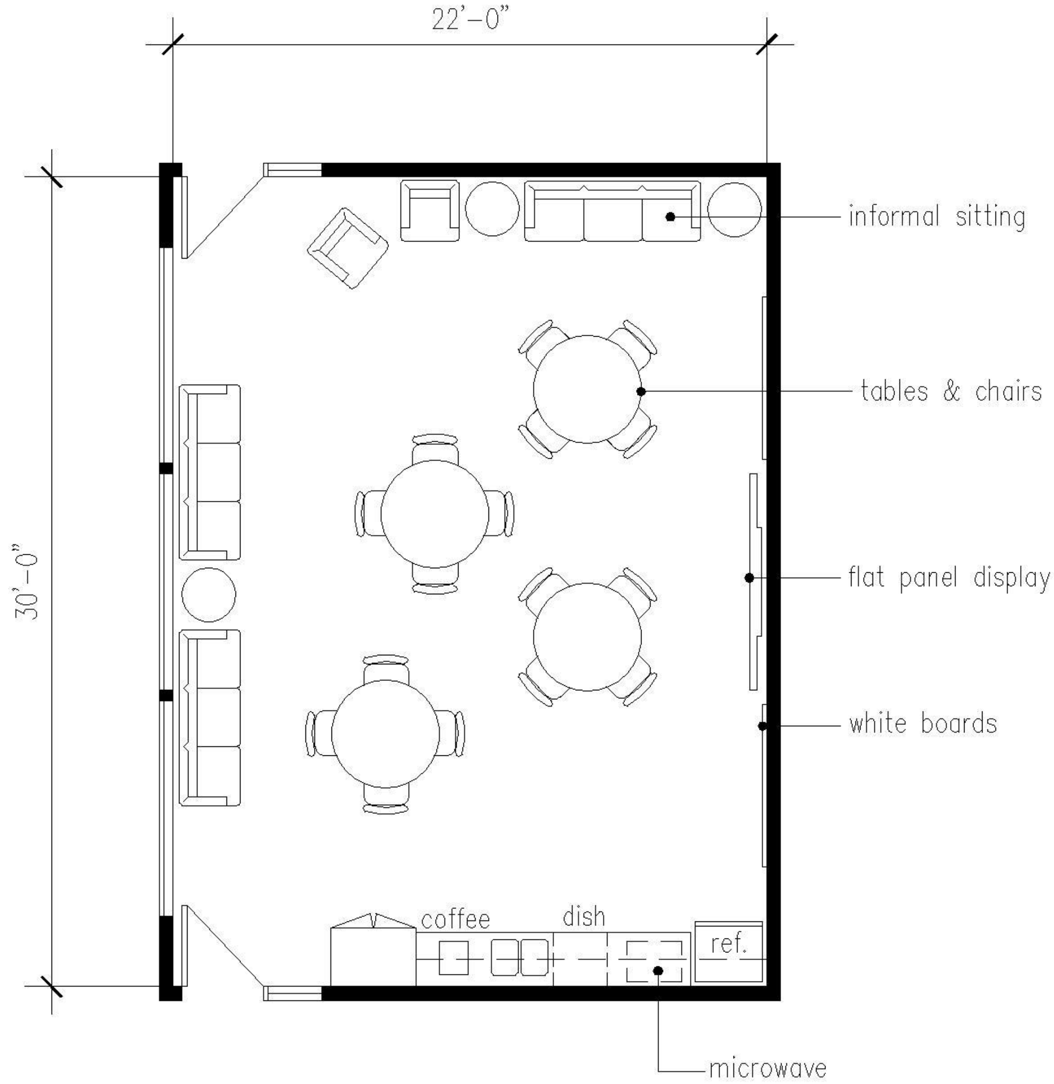
**COMPUTER CLASSROOM**
**Scale: NTS**



**STUDIO CLASSROOM**

| | |
|---|---|
| **Approximate Size:** | 900 NSF |
| **Capacity:** | 18 - 24 |
| **Functional Relationships:** | |
| Primary Function: | Instruction |
| Directly adjacent to: | N.A. |
| In close proximity to: | N.A. |
| Totally separate from: | N.A. |
| **Finishes:** | |
| Flooring: | Carpet tile |
| Walls: | GWB on metal framing |
| Ceiling: | Acoustic tile |
| **Doors:** | (2) wood doors with vision panel |
| **Fenestration:** | Natural light preferred |
| **Plumbing:** | Sink and hot water dispenser |
| **HVAC:** | Heating and cooling per Code; single zone |
| **Fire Protection:** | Wet-pipe sprinkler system with semi-recessed ceiling-mounted heads |
| **Lighting Systems:** | Direct/indirect general LED fixtures; daylight dimming; marker board fixtures |
| **Electrical:** | Duplex convenience receptacles per Code |
| **Communications Systems:** | Jacks for wall telephone/data, AV projector receptacle |
| **Special Systems:** | None |
| **Casework:** | Kitchen cabinets |
| **Moveable Equipment:** | None |
| **Fixed Equipment:** | Refrigerator, microwave, marker boards, flat panel display(s), coat hooks, clock, AV equipment |
| **Furnishings:** | Lounge seating, tables and chairs |
| **Acoustics:** | Walls; STC 45 minimum |
| **Remarks/Comments:** | N.A. |

**STUDIO CLASSROOM**
**Scale: NTS**

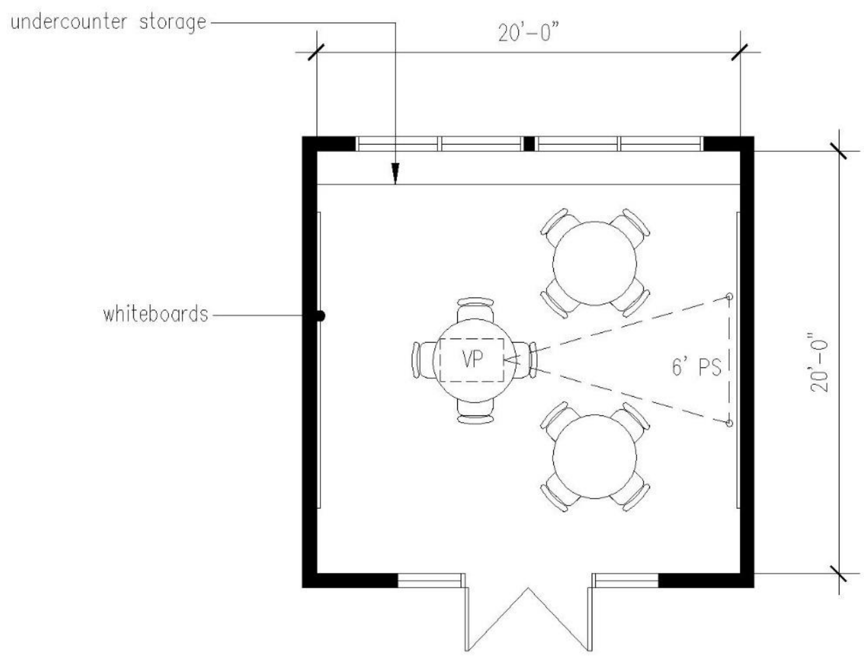


**BREAKOUT SPACE**

| | |
|---|---|
| **Approximate Size:** | 200 - 400 NSF |
| **Capacity:** | 8-12 |
| **Functional Relationships:** | |
| Primary Function: | Instruction |
| Directly adjacent to: | N.A. |
| In close proximity to: | Studios and Classrooms |
| Totally separate from: | N.A. |
| **Finishes:** | |
| Flooring: | Linoleum |
| Walls: | GWB on metal framing |
| Ceiling: | Acoustic tile |
| **Doors:** | (1) wood door with vision panel |
| **Fenestration:** | Natural light preferred |
| **Plumbing:** | Kitchen sink, dishwasher service and hot water dispenser |
| **HVAC:** | Heating and cooling per Code; single zone |
| **Fire Protection:** | Wet-pipe sprinkler system with semi-recessed ceiling-mounted heads |
| **Lighting Systems:** | Direct/indirect LED fixtures; daylight dimming |
| **Electrical:** | Duplex convenience receptacles per Code |
| **Communications Systems:** | Jacks for wall telephone/data; wall receptacles for general use; floor receptacles for connection to seminar tables. |
| **Special Systems:** | None |
| **Casework:** | None |
| **Moveable Equipment:** | None |
| **Fixed Equipment:** | Tack and marker boards, flat panel display & AV equipment |
| **Furnishings:** | None |
| **Acoustics:** | Walls; STC 45 minimum |

**Remarks/Comments:** N.A.

**BREAKOUT SPACE**
**Scale: NTS**



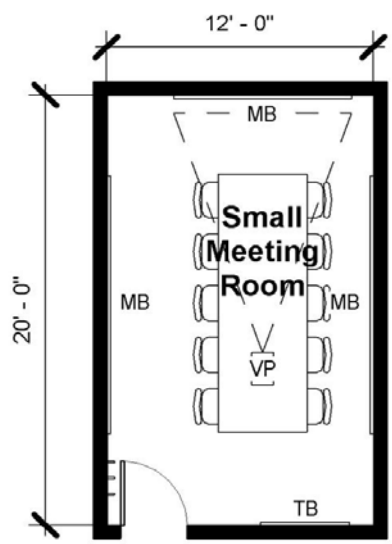
**SMALL MEETING ROOM**

| | |
|---|---|
| **Approximate Size:** | (2) 240 NSF |
| **Capacity:** | 8 - 12 |
| **Functional Relationships:** | |
| Primary Function: | Staff Meetings |
| Directly adjacent to: | N.A. |
| In close proximity to: | N.A. |
| Totally separate from: | N.A. |
| **Finishes:** | |
| Flooring: | Carpet tile |
| Walls: | GWB on metal framing |
| Ceiling: | Acoustic tile |
| **Doors:** | (1) wood door with vision panel |
| **Fenestration:** | Natural light preferred |
| **Plumbing:** | None |
| **HVAC:** | Heating and cooling per Code; single zone |
| **Fire Protection:** | Wet-pipe sprinkler system with semi-recessed ceiling-mounted heads |
| **Lighting Systems:** | Direct/indirect LED fixtures; daylight dimming |
| **Electrical:** | Duplex convenience receptacles per Code |
| **Communications Systems:** | Jacks for wall telephone/data; wall receptacles for general use; ceiling-mounted receptacle for projector |
| **Special Systems:** | None |
| **Casework:** | Base cabinet and countertop |
| **Moveable Equipment:** | None |
| **Fixed Equipment:** | Tack and marker boards, projector and screen & AV equipment. |
| **Furnishings:** | Moveable tables and chairs |

**Acoustics:** Walls; STC 45 minimum

**Remarks/Comments:** N.A.

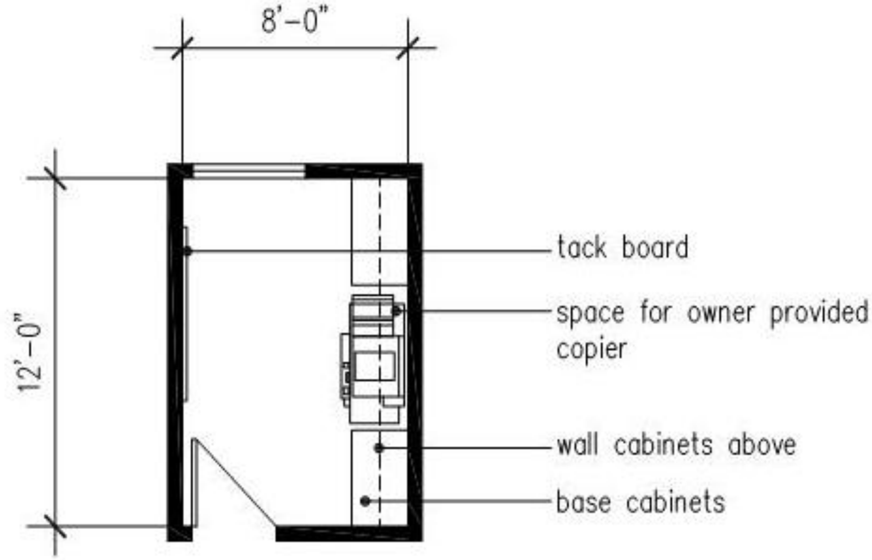
**SMALL MEETING ROOM**
**Scale: NTS**



**WORKROOM**

| | |
|---|---|
| **Approximate Size:** | 96 NSF |
| **Capacity:** | 2-3 |
| **Functional Relationships:** | |
| Primary Function: | Office Support |
| Directly adjacent to: | N.A. |
| In close proximity to: | N.A. |
| Totally separate from: | N.A. |
| **Finishes:** | |
| Flooring: | Carpet tile |
| Walls: | GWB on metal framing |
| Ceiling: | Acoustic tile |
| **Doors:** | (1) wood door with vision panel |
| **Fenestration:** | Natural light preferred |
| **Plumbing:** | None |
| **HVAC:** | Heating and cooling per Code; single zone |
| **Fire Protection:** | Wet-pipe sprinkler system with semi-recessed ceiling-mounted heads |
| **Lighting Systems:** | Direct/indirect general LED fixtures; daylight dimming |
| **Electrical:** | Duplex convenience receptacles on wall per Code; GFCI receptacles at counter; power to copier & above counter |
| **Communications Systems:** | Jack for wall telephone. Data at copier. |
| **Special Systems:** | None |
| **Casework:** | Wall and Base cabinets |
| **Moveable Equipment:** | Copier |
| **Fixed Equipment:** | (1) 4' tack board |
| **Furnishings:** | None |
| **Acoustics:** | Walls; STC 45 minimum |
| **Remarks/Comments:** | N.A. |

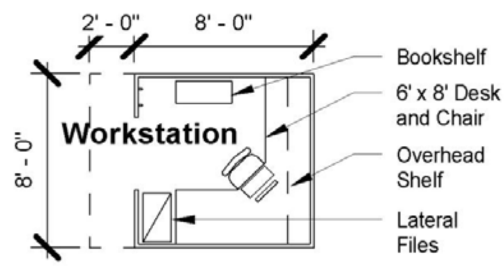
**WORKROOM**
**Scale: NTS**

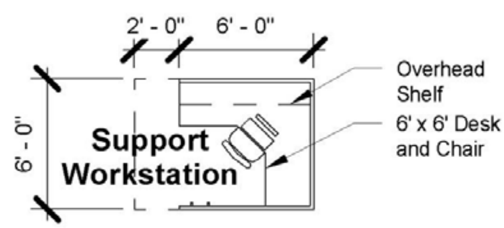


**WORKSTATIONS**

| | |
|---|---|
| **Approximate Size:** | Staff Workstation 80 NSF; Support Workstation 48 NSF |
| **Capacity:** | 1 |
| **Functional Relationships:** | |
| Primary Function: | Office |
| Directly adjacent to: | N.A. |
| In close proximity to: | N.A. |
| Totally separate from: | N.A. |
| **Finishes:** | |
| Flooring: | Carpet tile |
| Walls: | N.A. |
| Ceiling: | N.A. |
| **Doors:** | None |
| **Fenestration:** | Natural light preferred |
| **Plumbing:** | None |
| **HVAC:** | Heating and cooling per Code |
| **Fire Protection:** | Wet-pipe sprinkler system with semi-recessed ceiling-mounted heads |
| **Lighting Systems:** | Direct/indirect general LED fixtures; daylight dimming |
| **Electrical:** | Duplex convenience receptacles on wall per Code |
| **Communications Systems:** | Jack for wall telephone/data |
| **Special Systems:** | Workstations |
| **Casework:** | None |
| **Moveable Equipment:** | Lateral files, Computer, Bookshelf |
| **Fixed Equipment:** | Overhead shelves |
| **Furnishings:** | Workstations with accompanying desks, chairs, and equipment |
| **Acoustics:** | Manufacturer's standard fabric-covered wall panels integral to workstation |
| **Remarks/Comments:** | N.A. |

**WORKSTATIONS**
**Scale: NTS**

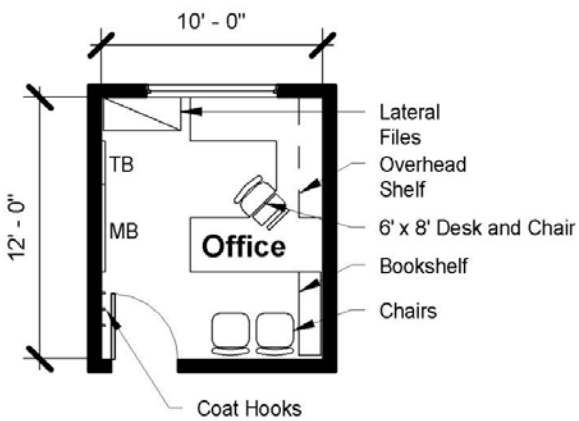


**TYPICAL OFFICE**

| | |
|---|---|
| **Approximate Size:** | 120 NSF |
| **Capacity:** | 1 |
| **Functional Relationships:** | |
| Primary Function: | Office |
| Directly adjacent to: | N.A. |
| In close proximity to: | N.A. |
| Totally separate from: | N.A. |
| **Finishes:** | |
| Flooring: | Carpet tile |
| Walls: | GWB on metal framing |
| Ceiling: | Acoustic tile |
| **Doors:** | (1) wood door with vision panel |
| **Fenestration:** | Natural light preferred |
| **Plumbing:** | None |
| **HVAC:** | Heating and cooling per Code; single zone |
| **Fire Protection:** | Wet-pipe sprinkler system with semi-recessed ceiling-mounted heads |
| **Lighting Systems:** | Direct/indirect general LED fixtures; daylight dimming |
| **Electrical:** | Duplex convenience receptacles on wall per Code |
| **Communications Systems:** | Jack for wall telephone/data |
| **Special Systems:** | None |
| **Casework:** | None |
| **Moveable Equipment:** | Computer, Lateral files |
| **Fixed Equipment:** | marker board, tack board, overhead shelving |
| **Furnishings:** | Desk, Chairs, Bookshelf, file cabinet |
| **Acoustics:** | Walls; STC 45 minimum |
| **Remarks/Comments:** | N.A. |

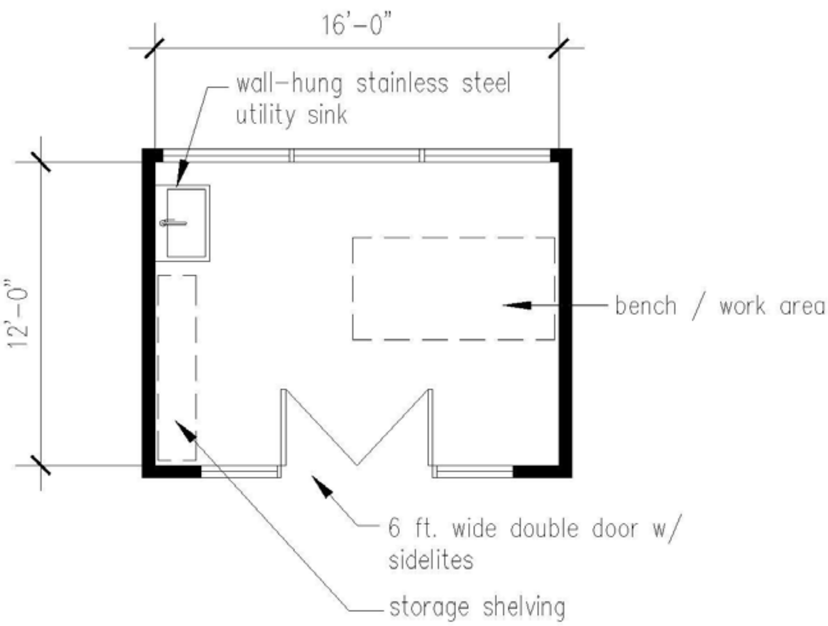
**TYPICAL OFFICE**
**Scale: NTS**



**PRIVATE STUDIO / RESEARCH**

| | |
|---|---|
| **Approximate Size:** | 200 NSF |
| **Capacity:** | 2-4 |
| **Functional Relationships:** | |
| Primary Function: | Instruction |
| Directly adjacent to: | N.A. |
| In close proximity to: | Faculty offices |
| Totally separate from: | N.A. |
| **Finishes:** | |
| Flooring: | Sealed concrete |
| Walls: | GWB on metal framing |
| Ceiling: | Acoustic tile |
| **Doors:** | (1) wood door with vision panel |
| **Fenestration:** | Natural light preferred |
| **Plumbing:** | Service sink |
| **HVAC:** | Heating and cooling per Code; single zone |
| **Fire Protection:** | Wet-pipe sprinkler system with semi-recessed ceiling-mounted heads |
| **Lighting Systems:** | Direct/indirect LED fixtures; daylight dimming |
| **Electrical:** | Duplex convenience receptacles per Code |
| **Communications Systems:** | Jacks for wall telephone/data; wall receptacles for general use |
| **Special Systems:** | None |
| **Casework:** | None |
| **Moveable Equipment:** | None |
| **Fixed Equipment:** | Tack board; marker boards |
| **Furnishings:** | Shelving, bench and stools |
| **Acoustics:** | Walls; STC 45 minimum |
| **Remarks/Comments:** | N.A. |

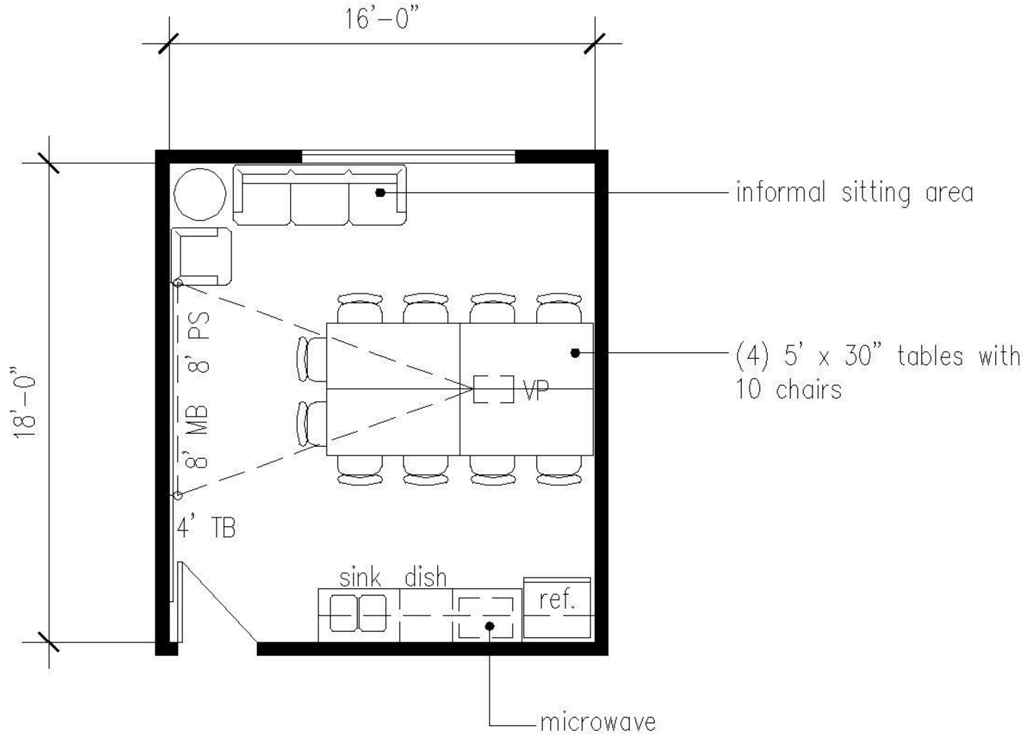
**PRIVATE STUDIO / RESEARCH**
**Scale: NTS**



**BREAK ROOM**

| | |
|---|---|
| **Approximate Size:** | 200 NSF |
| **Capacity:** | 5-10 |
| **Functional Relationships:** | |
| Primary Function: | Office Support |
| Directly adjacent to: | N.A. |
| In close proximity to: | N.A. |
| Totally separate from: | N.A. |
| **Finishes:** | |
| Flooring: | Carpet tile & Linoleum |
| Walls: | GWB on metal framing |
| Ceiling: | Acoustic tile |
| **Doors:** | (1) wood door with vision panel |
| **Fenestration:** | Natural light preferred |
| **Plumbing:** | Kitchen sink, hot water dispenser |
| **HVAC:** | Heating and cooling per Code; single zone |
| **Fire Protection:** | Wet-pipe sprinkler system with semi-recessed ceiling-mounted heads |
| **Lighting Systems:** | Direct/indirect general LED fixtures; daylight dimming |
| **Electrical:** | Duplex convenience receptacles on wall per Code; GFCI receptacles at counter |
| **Communications Systems:** | Jack for wall telephone. Data at copier. |
| **Special Systems:** | None |
| **Casework:** | Wall and Base cabinets |
| **Moveable Equipment:** | None |
| **Fixed Equipment:** | Dishwasher, refrigerator, microwave, tack board |
| **Furnishings:** | Table and chairs. Lounge seating |
| **Acoustics:** | Walls; STC 45 minimum |
| **Remarks/Comments:** | N.A. |

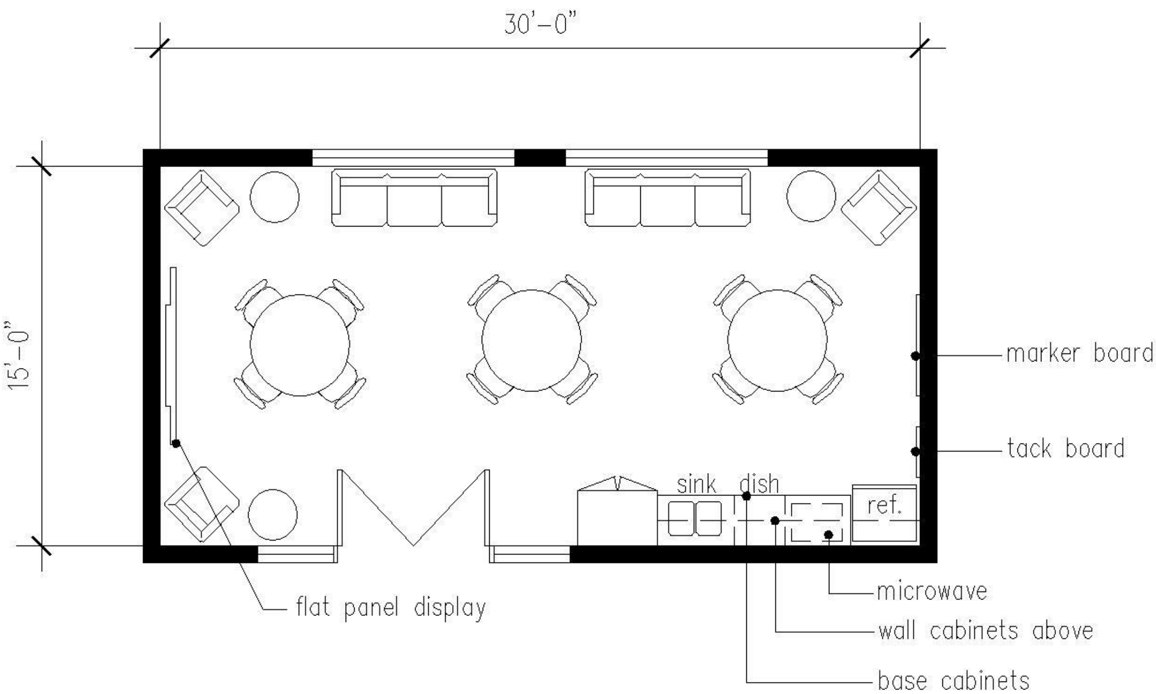
**BREAK ROOM**
**Scale: NTS**



**LOUNGE**

| | |
|---|---|
| **Approximate Size:** | 450 NSF |
| **Capacity:** | 18-22 |
| **Functional Relationships:** | |
| Primary Function: | Office Support |
| Directly adjacent to: | N.A. |
| In close proximity to: | N.A. |
| Totally separate from: | N.A. |
| **Finishes:** | |
| Flooring: | Carpet tile & Linoleum |
| Walls: | GWB on metal framing |
| Ceiling: | Acoustic tile |
| **Doors:** | (1) wood door with sidelight |
| **Fenestration:** | Natural light preferred |
| **Plumbing:** | Kitchen sink, dishwasher service and hot water dispenser |
| **HVAC:** | Heating and cooling per Code; single zone |
| **Fire Protection:** | Wet-pipe sprinkler system with semi-recessed ceiling-mounted heads |
| **Lighting Systems:** | Direct/indirect general LED fixtures; daylight dimming |
| **Electrical:** | Duplex convenience receptacles on wall per Code; GFCI receptacles at counter. Receptacle at flat panel display & AV equipment |
| **Communications Systems:** | Jack for wall telephone. Data at flat panel display. |
| **Special Systems:** | None |
| **Casework:** | Wall and Base cabinets |
| **Moveable Equipment:** | None |
| **Fixed Equipment:** | Dishwasher, refrigerator, microwave, tack & marker boards, projector & screen |
| **Furnishings:** | Table and chairs, lounge seating and side tables |
| **Acoustics:** | Walls; STC 45 minimum |

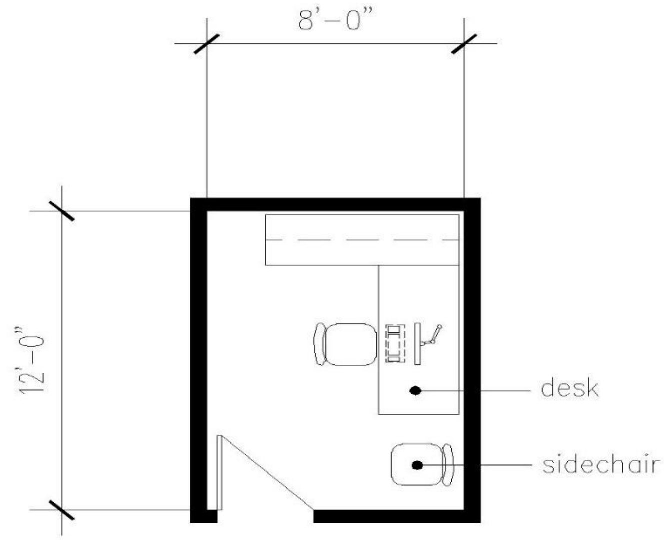
**LOUNGE**
**Scale: NTS**



**HEALTH CLINIC TRIAGE ROOM**

| | |
|---|---|
| **Approximate Size:** | 80 NSF |
| **Capacity:** | 2 |
| **Functional Relationships:** | |
| Primary Function: | Health Clinic |
| Directly adjacent to: | N.A. |
| In close proximity to: | N.A. |
| Totally separate from: | N.A. |
| **Finishes:** | |
| Flooring: | Linoleum |
| Walls: | GWB on metal framing |
| Ceiling: | Acoustic tile |
| **Doors:** | (1) double wood door with sidelights |
| **Fenestration:** | Natural light preferred |
| **Plumbing:** | Kitchen sink, dishwasher service and hot water dispenser. |
| **HVAC:** | Heating and cooling per Code; single zone |
| **Fire Protection:** | Wet-pipe sprinkler system with semi-recessed ceiling-mounted heads |
| **Lighting Systems:** | Direct/indirect general LED fixtures. Daylight dimming. |
| **Electrical:** | Duplex convenience receptacles on wall per Code |
| **Communications Systems:** | Jack for wall telephone. Data at computer. |
| **Special Systems:** | None |
| **Casework:** | None |
| **Moveable Equipment:** | None |
| **Fixed Equipment:** | None |
| **Furnishings:** | Desk & Chairs |
| **Acoustics:** | Walls; STC 45 minimum |
| **Remarks/Comments:** | N.A. |

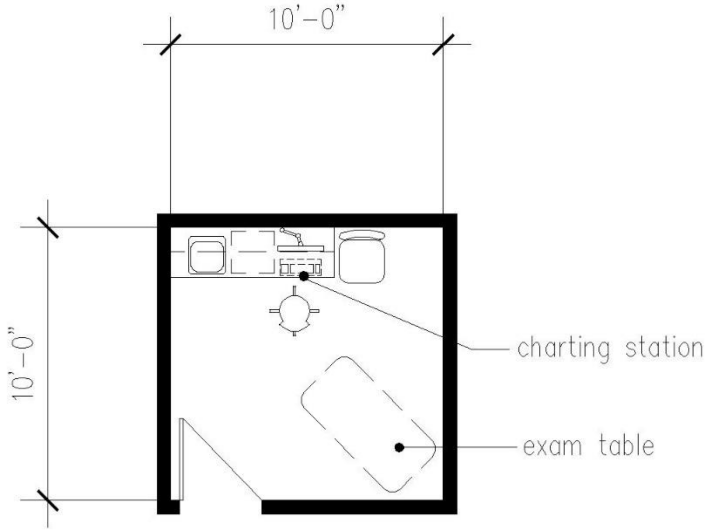
**HEALTH CLINIC TRIAGE ROOM**
**Scale: NTS**



**HEALTH CLINIC MINOR PROCEDURE ROOM**

| | |
|---|---|
| **Approximate Size:** | 100 NSF |
| **Capacity:** | 2 |
| **Functional Relationships:** | |
| Primary Function: | Health Clinic |
| Directly adjacent to: | N.A. |
| In close proximity to: | N.A. |
| Totally separate from: | N.A. |
| **Finishes:** | |
| Flooring: | Linoleum |
| Walls: | GWB on metal framing |
| Ceiling: | Acoustic tile |
| **Doors:** | (1) wood door |
| **Fenestration:** | Natural light preferred. Privacy required. |
| **Plumbing:** | None |
| **HVAC:** | Heating and cooling per Code; single zone |
| **Fire Protection:** | Wet-pipe sprinkler system with semi-recessed ceiling-mounted heads |
| **Lighting Systems:** | Direct/indirect general LED fixtures. Daylight dimming. |
| **Electrical:** | Duplex convenience receptacles on wall per Code. |
| **Communications Systems:** | Jack for wall telephone. Data at computer. |
| **Special Systems:** | None |
| **Casework:** | Base and upper cabinets |
| **Moveable Equipment:** | Exam table, doctors stool & chair, computer |
| **Fixed Equipment:** | Sharps container, glove dispenser, hand sanitizer |
| **Furnishings:** | None |
| **Acoustics:** | Walls; STC 45 minimum |
| **Remarks/Comments:** | N.A. |

**HEALTH CLINIC MINOR PROCEDURE ROOM**
**Scale 1/8" = 1'-0"**



**HEALTH CLINIC EXAM ROOM**

**Approximate Size:** 120 NSF

**Capacity:** 3

**Functional Relationships:**
Primary Function: Health Clinic
Directly adjacent to: N.A.
In close proximity to: N.A.
Totally separate from: N.A.

**Finishes:**
Flooring: Linoleum
Walls: GWB on metal framing
Ceiling: Acoustic tile

**Doors:** (1) wood door

**Fenestration:** Natural light preferred, privacy required

**Plumbing:** Hand wash sink with hands free faucet

**HVAC:** Heating and cooling per Code; single zone

**Fire Protection:** Wet-pipe sprinkler system with semi-recessed ceiling-mounted heads

**Lighting Systems:** Direct/indirect general LED fixtures

**Electrical:** Duplex convenience receptacles on wall per Code. GFCI receptacles at counter

**Communications Systems:** Jack for wall telephone. Data at computer.

**Special Systems:** None

**Casework:** Base and upper cabinets; wardrobe

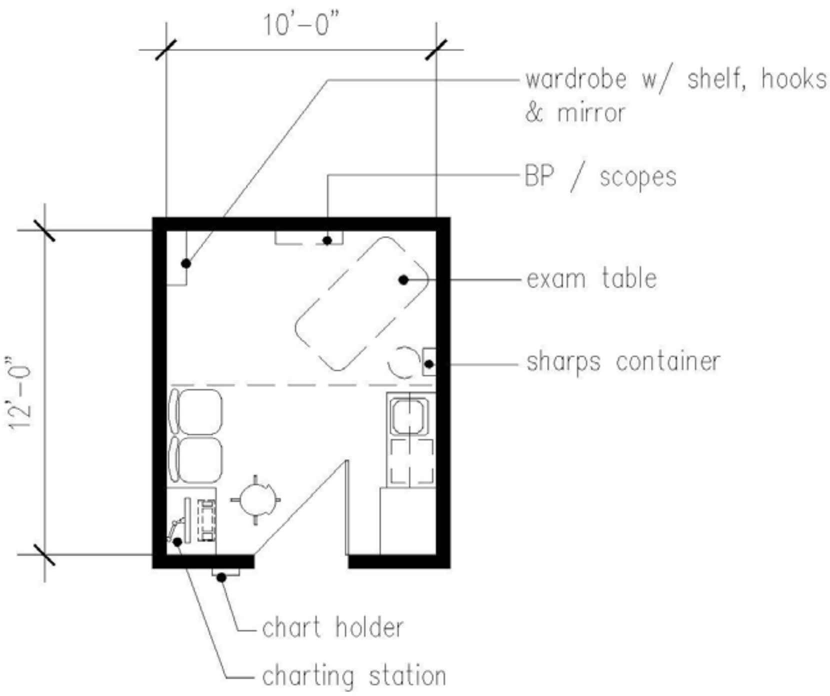
**Moveable Equipment:** Exam table, doctors stool & chair, computer

**Fixed Equipment:** Sharps container, glove dispenser, hand sanitizer, blood pressure & scopes storage

**Furnishings:** None

**Acoustics:** Walls; STC 45 minimum

**Remarks/Comments:** N.A.
**HEALTH CLINIC EXAM ROOM**
**Scale: NTS**

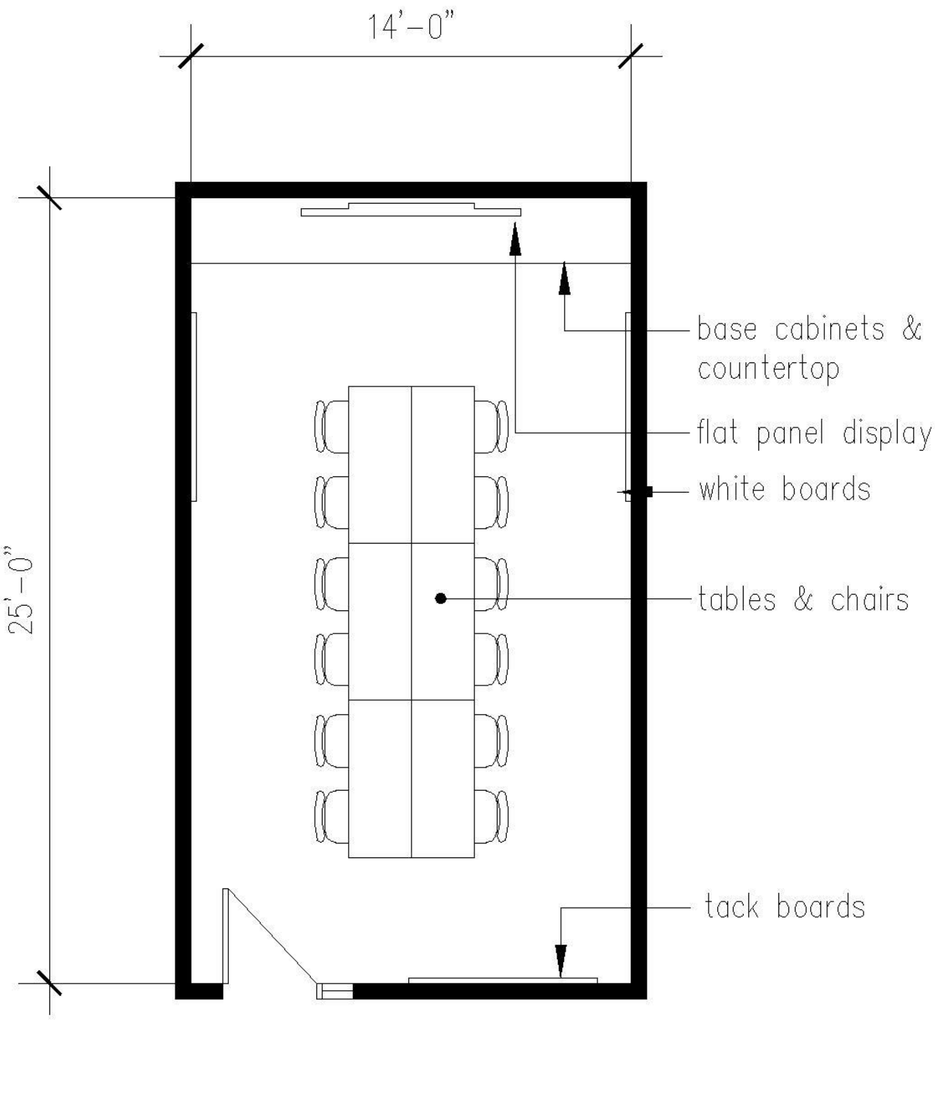


## COUNSELING CENTER GROUP ROOM

| | |
|---|---|
| **Approximate Size:** | 280 NSF |
| **Capacity:** | 12 |
| **Functional Relationships:** | |
| Primary Function: | Counseling Center |
| Directly adjacent to: | N.A. |
| In close proximity to: | N.A. |
| Totally separate from: | N.A. |
| **Finishes:** | |
| Flooring: | Carpet tile |
| Walls: | GWB on metal framing |
| Ceiling: | Acoustic tile |
| **Doors:** | (1) wood door with vision panel |
| **Fenestration:** | Natural light preferred, privacy required |
| **Plumbing:** | None |
| **HVAC:** | Heating and cooling per Code; single zone |
| **Fire Protection:** | Wet-pipe sprinkler system with semi-recessed ceiling-mounted heads |
| **Lighting Systems:** | Direct/indirect general LED fixtures |
| **Electrical:** | Duplex convenience receptacles on wall per Code. Receptacle at flat panel display and AV equipment |
| **Communications Systems:** | Jack for wall telephone. Data at flat panel display and AV equipment. |
| **Special Systems:** | None |
| **Casework:** | Base cabinet and countertop |
| **Moveable Equipment:** | None |
| **Fixed Equipment:** | Computer & AV equipment; flat panel display |
| **Furnishings:** | Table and chairs |
| **Acoustics:** | Walls; STC 45 minimum |

**Remarks/Comments:** N.A.

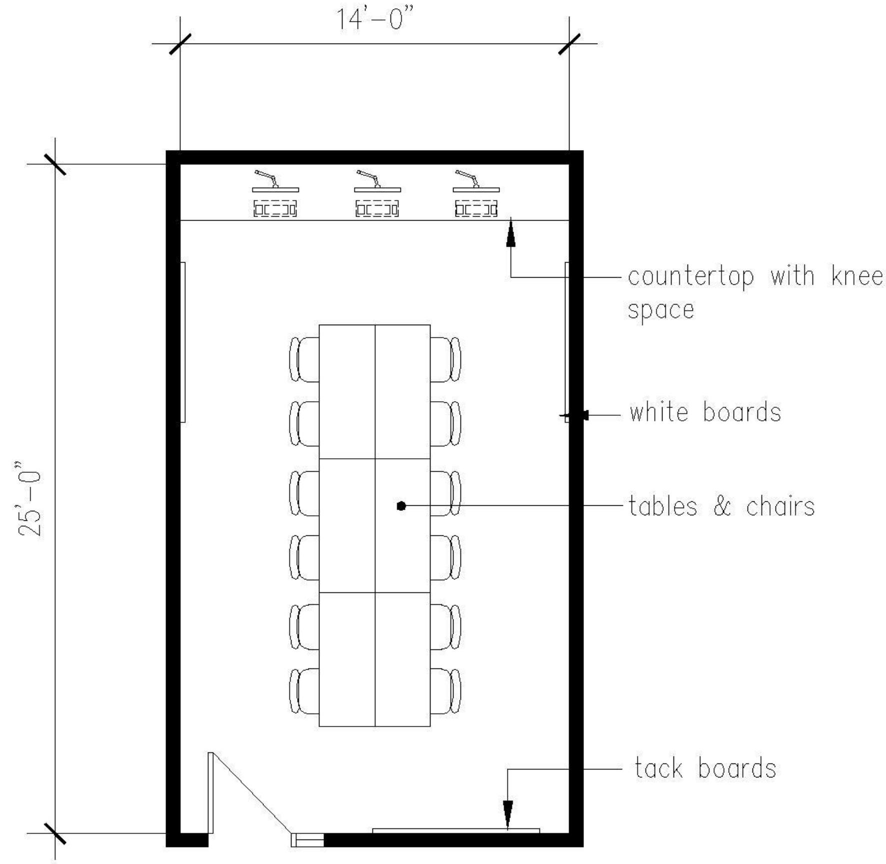
**COUNSELING CENTER GROUP ROOM**
**Scale: NTS**



**COUNSELING CENTER PROJECT ROOM**

| | |
|---|---|
| **Approximate Size:** | 900 NSF |
| **Capacity:** | 18 |
| **Functional Relationships:** | |
| Primary Function: | Counseling Center |
| Directly adjacent to: | N.A. |
| In close proximity to: | N.A. |
| Totally separate from: | N.A. |
| **Finishes:** | |
| Flooring: | Linoleum or sealed concrete |
| Walls: | GWB on metal framing |
| Ceiling: | Acoustic tile |
| **Doors:** | (2) wood doors with vision panel |
| **Fenestration:** | Natural light preferred, privacy required |
| **Plumbing:** | None |
| **HVAC:** | Heating and cooling per Code; single zone |
| **Fire Protection:** | Wet-pipe sprinkler system with semi-recessed ceiling-mounted heads |
| **Lighting Systems:** | Direct/indirect general LED fixtures; daylight dimming |
| **Electrical:** | Duplex convenience receptacles per Code. Above counter receptacles for computers |
| **Communications Systems:** | Jacks for wall telephone/data. Above counter receptacles for computers |
| **Special Systems:** | None |
| **Casework:** | Countertop for computer stations |
| **Moveable Equipment:** | computer stations |
| **Fixed Equipment:** | marker boards, tack board, coat hooks, clock |
| **Furnishings:** | tables and chairs |
| **Acoustics:** | Walls; STC 45 minimum |
| **Remarks/Comments:** | N.A. |

**COUNSELING CENTER PROJECT ROOM**
**Scale: NTS**



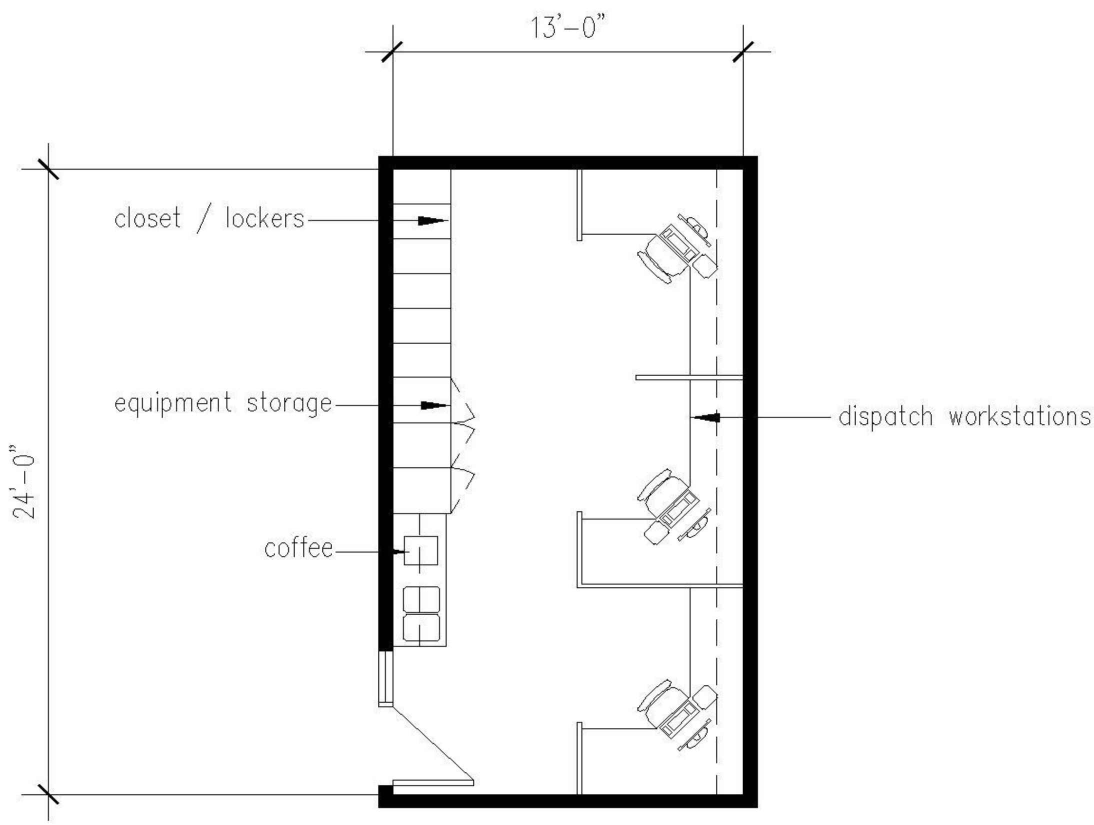
**POLICE SERVICES SHARED WORKROOM**

| | |
|---|---|
| **Approximate Size:** | 400 |
| **Capacity:** | N.A. |
| **Functional Relationships:** | |
| Primary Function: | Police Services Dispatch |
| Directly adjacent to: | N.A. |
| In close proximity to: | Restrooms |
| Totally separate from: | N.A. |
| **Finishes:** | |
| Flooring: | Carpet tile |
| Walls: | GWB on metal framing |
| Ceiling: | Acoustic tile |
| **Doors:** | (1) wood door with vision panel |
| **Fenestration:** | Natural light preferred |
| **Plumbing:** | Sink and hot water dispenser |
| **HVAC:** | Heating and cooling per Code; single zone |
| **Fire Protection:** | Wet-pipe sprinkler system with semi-recessed ceiling-mounted heads |
| **Lighting Systems:** | Direct/indirect general LED fixtures with daylight dimming |
| **Electrical:** | Duplex convenience receptacles on wall per Code; GFCI at counter<br>Emergency generator power |
| **Communications Systems:** | N.A. |
| **Special Systems:** | Radio and dispatch equipment |
| **Casework:** | Base and upper cabinets |
| **Moveable Equipment:** | None |
| **Fixed Equipment:** | Refrigerator, microwave and coffee |
| **Furnishings:** | Desks and chairs |
| **Acoustics:** | Walls; STC 45 minimum |

**Remarks/Comments:** N.A.

**POLICE SERVICES SHARED WORKROOM (DISPATCH)**

**Scale: NTS**

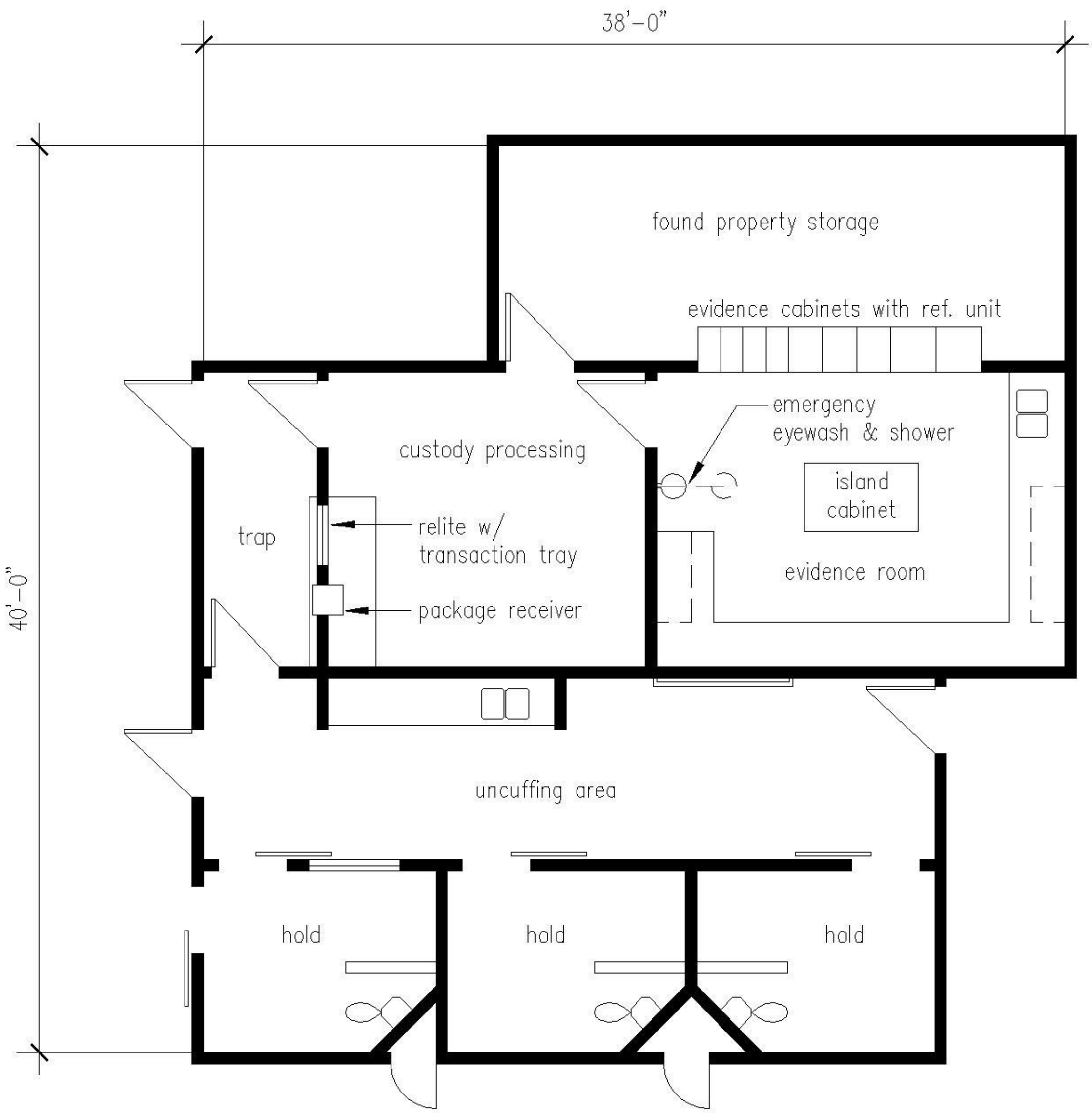


**POLICE SERVICES MEETING ROOM**

| | |
|---|---|
| **Approximate Size:** | 250 |
| **Capacity:** | N.A. |
| **Functional Relationships:** | |
| Primary Function: | Police Services Custody Processing |
| Directly adjacent to: | Sally Port |
| In close proximity to: | Secure Vehicle Storage |
| Totally separate from: | N.A. |
| **Finishes:** | |
| Flooring: | Polished & sealed concrete |
| Walls: | GWB on metal framing |
| Ceiling: | Acoustic tile |
| **Doors:** | (1) wood door |
| **Fenestration:** | None |
| **Plumbing:** | Service sinks, emergency eyewash & shower, stainless steel combination water closet and lavatory units. |
| **HVAC:** | Heating and cooling per Code; single zone |
| **Fire Protection:** | Wet-pipe sprinkler system with semi-recessed ceiling-mounted heads |
| **Lighting Systems:** | Direct/indirect general LED fixtures. Surface mounted vandal resistant |
| **Electrical:** | Duplex convenience receptacles on wall per Code<br>Emergency generator power |
| **Communications Systems:** | N.A. |
| **Special Systems:** | Package receiver, evidence lockers |
| **Casework:** | Base and upper cabinets |
| **Moveable Equipment:** | None |
| **Fixed Equipment:** | None |
| **Furnishings:** | stools |
| **Acoustics:** | Walls; STC 45 minimum |

**POLICE SERVICES MEETING ROOM**
**(CUSTODY PROCESSING)**

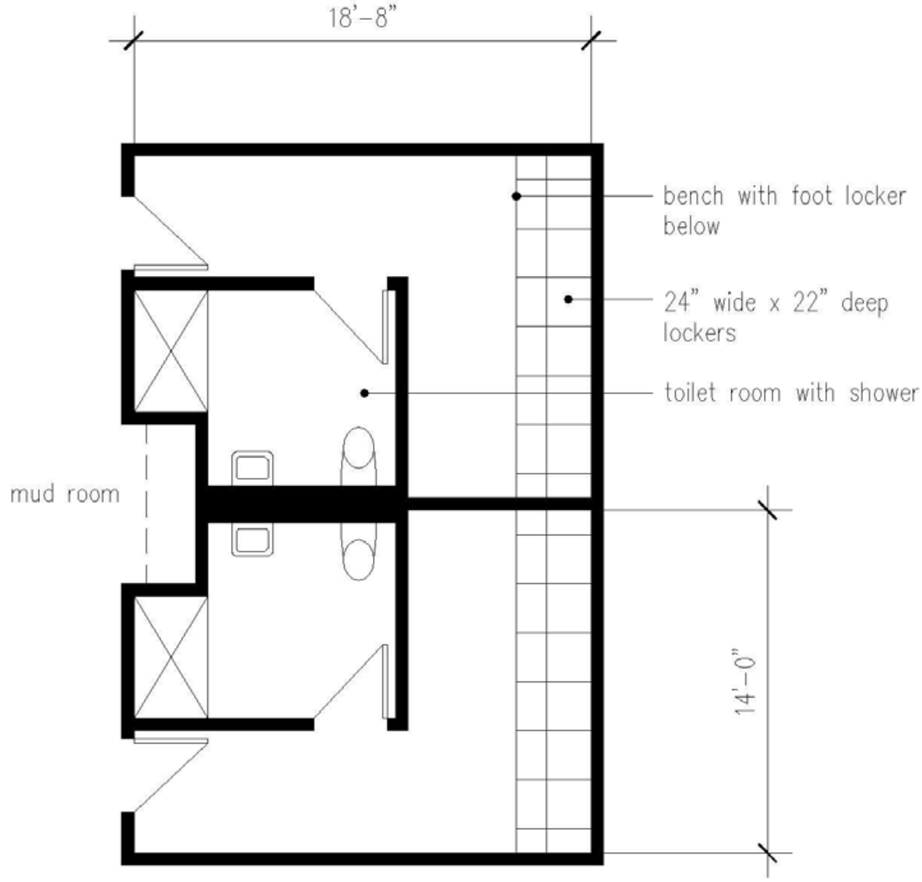
**Scale: NTS**



**POLICE SERVICES PATROL LOCKER ROOM**

| | |
|---|---|
| **Approximate Size:** | (2) 480 NSF |
| **Capacity:** | N.A. |
| **Functional Relationships:** | |
| Primary Function: | Police Services Support |
| Directly adjacent to: | Secure Vehicle Yard |
| In close proximity to: | Near Custody Processing |
| Totally separate from: | N.A. |
| **Finishes:** | |
| Flooring: | Ceramic Tile |
| Walls: | GWB on metal framing; ceramic tile at showers |
| Ceiling: | Acoustic tile |
| **Doors:** | (2) wood doors |
| **Fenestration:** | N.A. |
| **Plumbing:** | lavatories, showers and water closets |
| **HVAC:** | Heating and cooling per Code; single zone |
| **Fire Protection:** | Wet-pipe sprinkler system with semi-recessed ceiling-mounted heads |
| **Lighting Systems:** | Direct/indirect general LED fixtures for wet locations |
| **Electrical:** | Duplex convenience receptacles on wall per Code. GFCI as required<br>Emergency generator power |
| **Communications Systems:** | N.A. |
| **Special Systems:** | None |
| **Casework:** | Lockers, bench and foot lockers |
| **Moveable Equipment:** | N.A. |
| **Fixed Equipment:** | N.A. |
| **Furnishings:** | N.A. |
| **Acoustics:** | Walls; STC 45 minimum |
| **Remarks/Comments:** | Men & Women rooms each with showers, lockers, toilets, lavatories |

**POLICE SERVICES PATROL LOCKER ROOM**
**Scale: NTS**



the evergreen state college

# APPENDIX F

Greenhouse Gas Emissions (TESC Climate Action Plan)

# APPENDIX F GREENHOUSE GAS EMISSIONS

Renovation and expansion of Seminar I will support the college's responsibilities not just toward implementation of RCW 70.235.020 but toward our considerably more ambitious goal of being carbon and waste neutral by the year 2020. The attached Carbon Neutrality by 2020 Climate Action Plan describes this goal and the steps needed to achieve it in detail. While the implementation timetable has been slower than anticipated when the plan was enacted in September 2009 (a likelihood even addressed in the Plan's executive summary), achievement nonetheless remains a college goal and one requiring positive contributions from every element in the campus ecosphere. Renovation of a building constructed prior to the 1970s energy crises, and specifically one with mechanical and electrical equipment sized to accommodate a large expansion that never occurred, must be considered a high priority.

*This page intentionally left blank*

# The Evergreen State College

## Carbon Neutrality by 2020

### Climate Action Plan

THE EVERGREEN STATE COLLEGE
OLYMPIA, WASHINGTON

# Carbon Neutrality by 2020

## Greenhouse Gas Emissions Reduction and Mitigation Strategic Plan

Report to the American College & University Presidents Climate Commitment

September 2009

## Table of Contents

## Executive Summary

Carbon neutrality is accessible in a variety of ways, but there are at least two fundamental strategic paths. The first path assumes that carbon neutrality is a cost of doing business and approaches the goal by purchasing carbon offsets to zero out normal operational emissions. This strategy places the responsibility for carbon neutrality solely upon the operational side of an institution. The second path assumes responsibility uniformly throughout the institution. This strategy is possibly more difficult, as it requires an active engagement with and exploration of the goal as part of the process. It requires a process of engaging and including key stakeholders, of complementing educational goals, of reaching for widespread campus participation and strategic community partnerships, as well as exploring innovative technical solutions. The second strategy focuses upon reducing overall emissions, throughout the organization, and only then considering offsets for unavoidable greenhouse gas emissions.

Institutions with sufficient budget or endowment may choose to pursue the first path, and legitimately claim impressive reductions in net carbon emissions. Yet, this solution lacks a large part of the learning and local engagement of the second (longer, more challenging, and arguably more substantive) path. Through this Climate Action Plan, Evergreen is committing to the latter course. We are choosing to be active and engaged.

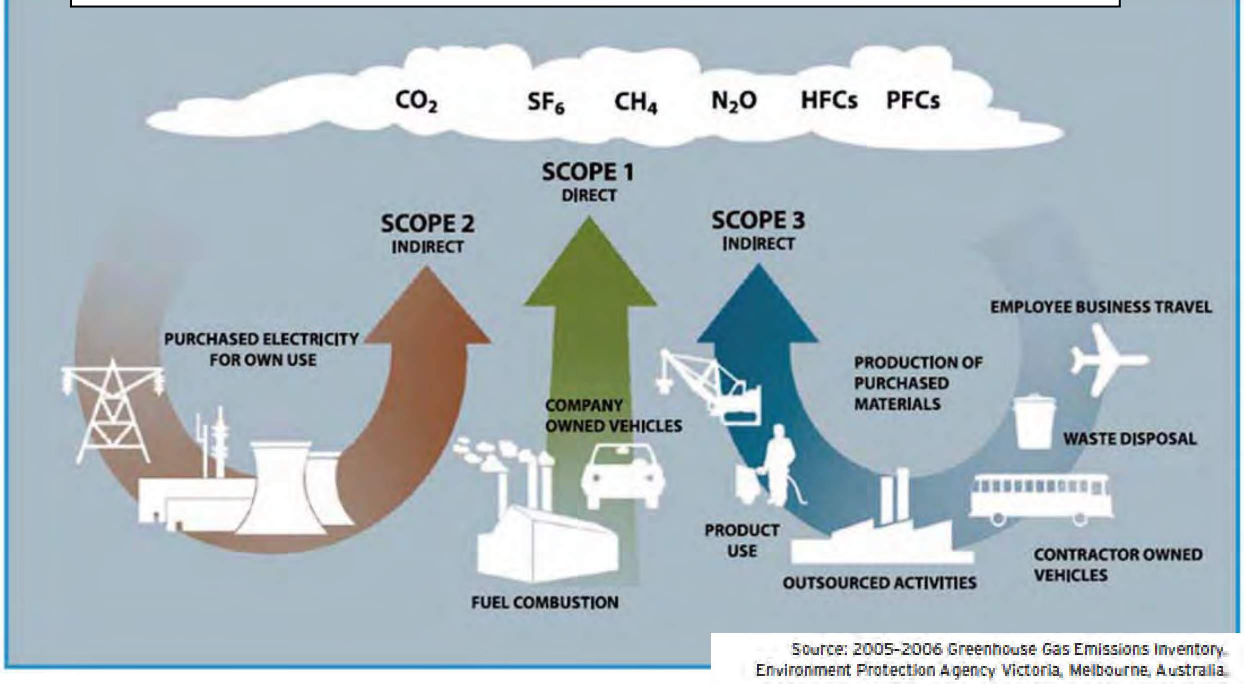
This plan represents a commitment to an overall approach. It is an articulation of the strategies, tactics, and resources required to succeed on this more complex path as envisioned at this particular point in time. This plan is not an absolute commitment to every tactic or investment noted. There are too many variables in play to fully predict every nuance of the course ahead as we begin the journey. It is, however, a good faith attempt to describe the types and magnitude of changes needed in the coming months and years. The early plan steps are likely to occur as described. Actions scheduled for later years, however, are likely to evolve with changing circumstances and the lessons we learn along the way.

While the goal of carbon neutrality by 2020 will remain constant, the means to that end will be developed and refined, relying in large part on the creative input and collective energy of a broadening base of participants and supporters. This plan is the point of departure for that work.

Evergreen had already embarked on the road to carbon neutrality before it completed its first carbon emissions inventory or signed on to the American College and University Presidents Climate Commitment. Among other actions, Evergreen students voted in 2005 for a continuing clean energy fee per credit that allows the college to purchase 100% of its electricity from renewable sources, thereby eliminating our single greatest source of greenhouse gases. Student supported fees also fund free transit passes, late night transit runs, and the extra renovation steps necessary to take our Campus Activities Building (CAB) from LEED Silver to LEED Gold. Student initiative and engagement have been substantial drivers of our institutional commitment to carbon neutrality and this plan includes multiple processes to include student energy, values, and ideas.

Greenhouse gases are produced in the greatest quantities from combustion of fossil fuels, with additional low-level contributions from industrial chemicals, farmed animals, waste decomposition, and fertilizer use. The standard schema for measuring GHG emissions (also referred to as a carbon footprint) is the Scope 1, 2, & 3 schema indicated below. The nature of scopes 1 & 2 should be immediately apparent. Scope 3 emissions come from activities that occur because of college operations or activities (shipping landfill waste from the Hawks Prairie waste collection center to the Roosevelt landfill over 200 miles away is an example of a scope 3 emissions source). Evergreen's emissions have been measured as thoroughly as possible to include scope 3 emissions directly attributable to college operations and activities.

Fig. 1 - Adapted from the New Zealand Business Council on Sustainable Development; 2002




Evergreen's 2005 baseline profile for Greenhouse Gas (GHG) emissions (see below) makes it clear where our focus should be in terms of proportional sources: electricity, space heating, and commuting are our greatest GHG emissions sources, air travel, food, waste, and the rest are substantially less significant. As a result, this plan focuses primarily upon heating and electricity conservation and efficiencies, renewable energy production, and transportation efficiencies.

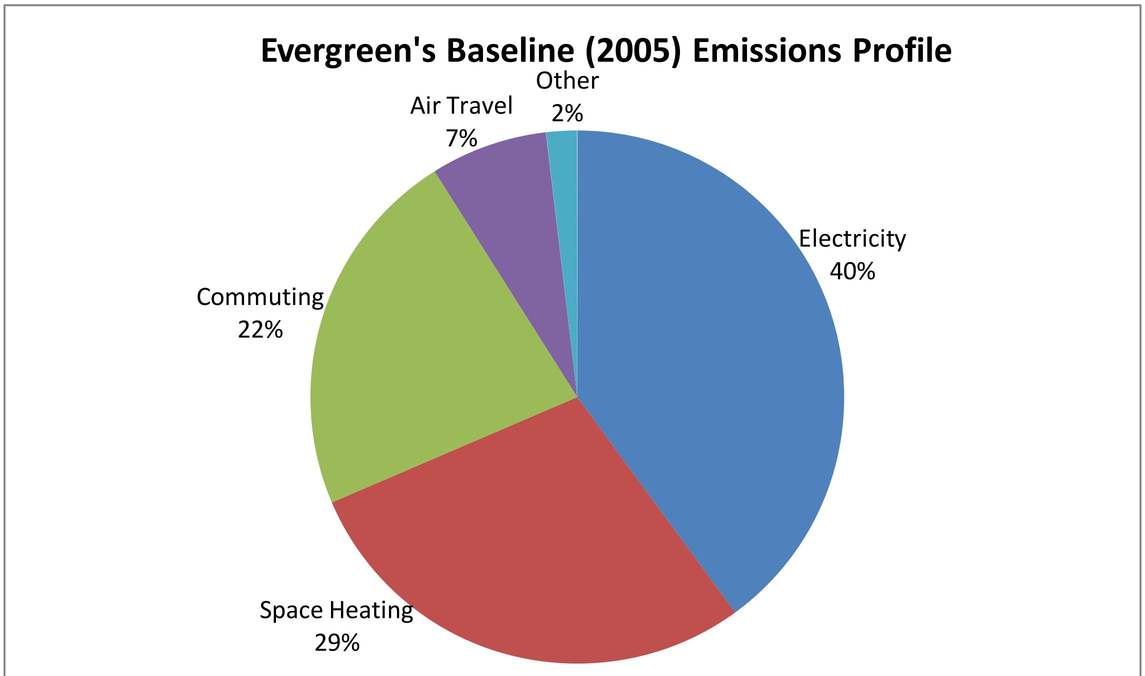



Chart 1 – Baseline GHG Emissions Profile

*Student funded renewable energy certificates guarantee that Evergreen has purchased electricity generated from renewable, non-GHG emitting sources since FY 2005-06. The impact of the students' clean energy fee has been to zero out the GHG emissions associated with a substantial proportion of our campus energy use.*

The following charts (2 and 3) demonstrate that our electrical energy use remains substantial even though our GHG emissions have been reduced. This comparison between energy use and GHG emissions is necessary to remind us that the 'carbon' costs of purchased electricity have been transformed into economic costs through the Renewable Energy Certificate market (roughly $100,000 per year at 2008 rates). Whether or not this student fee should continue as a long-term strategy for reduction of scope 2 emissions must be discussed and addressed, as indicated later in this climate action plan (FY 2012 – 13).

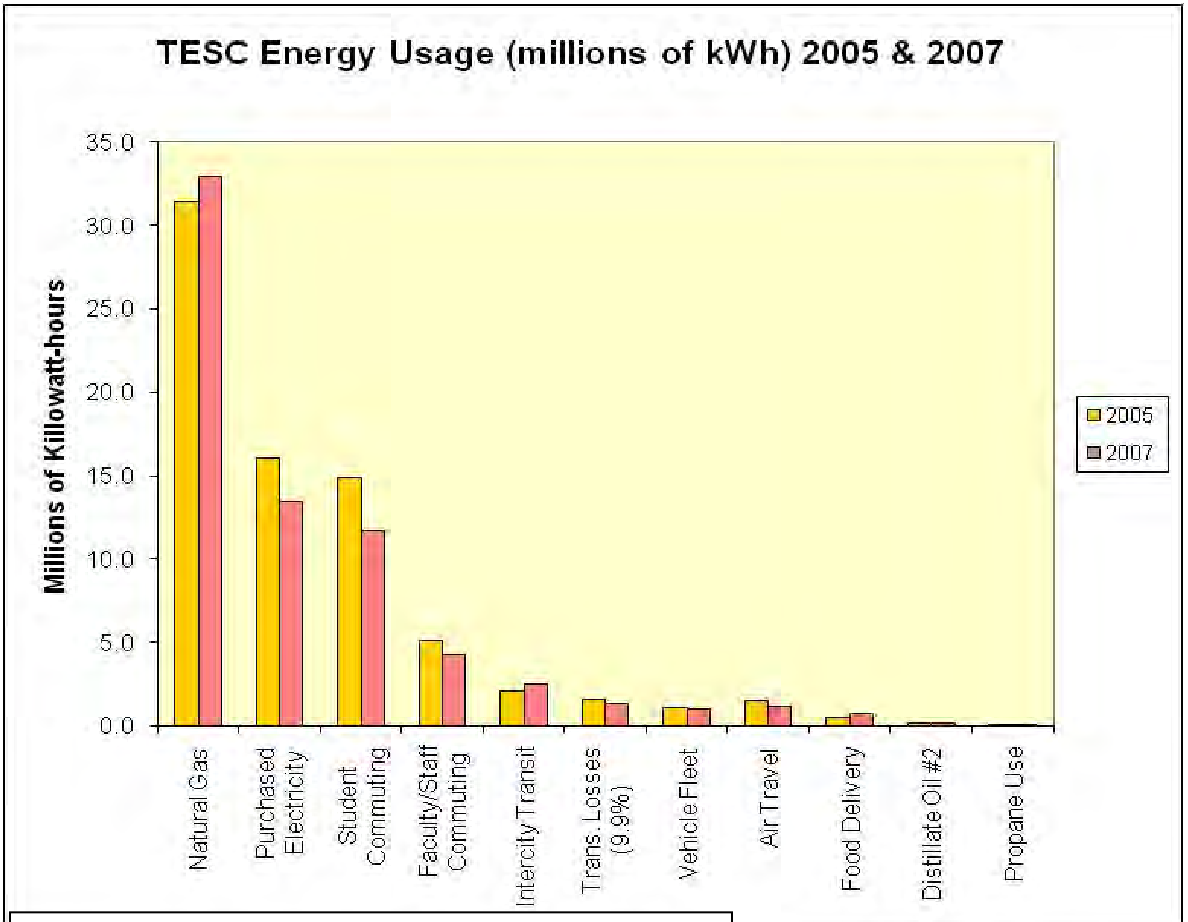



Chart 2 – Comparative Energy Usage; 2005 v. 2007

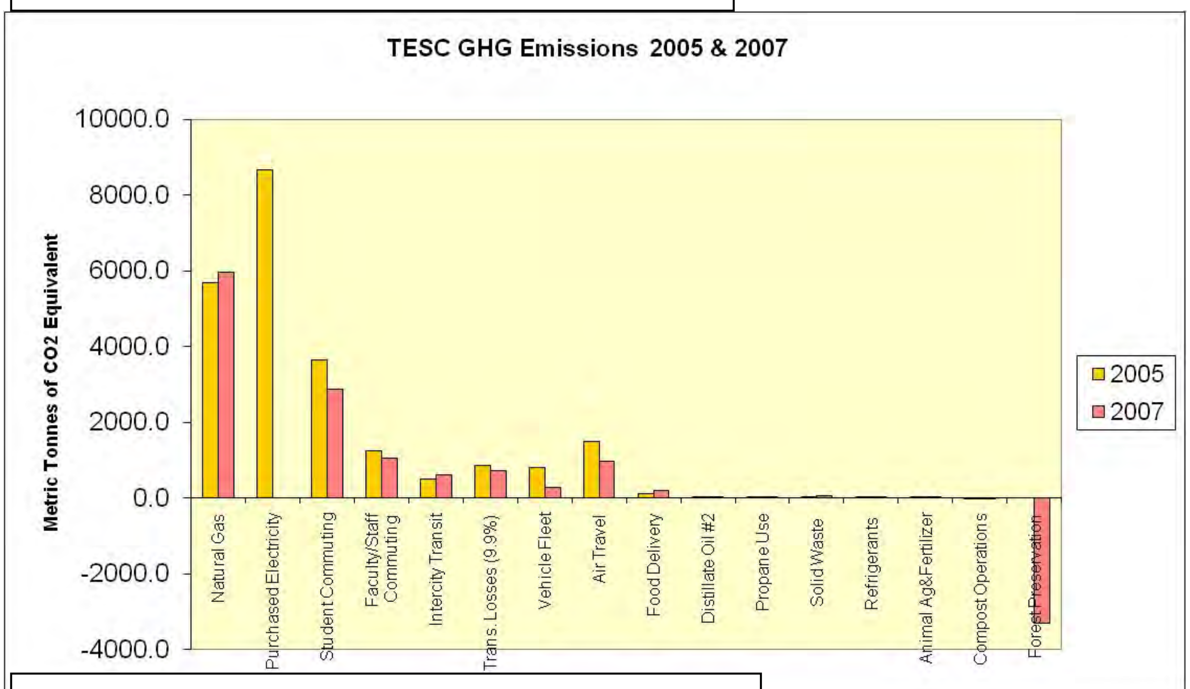



Chart 3 – Comparative GHG Emissions; 2005 v. 2007

It is not enough to transform ‘carbon’ costs into economic costs, nor is that a feasible strategy considering the current state of the national economy. The first step to reducing greenhouse gas emissions is to reduce total emissions overall through energy conservation and efficiency strategies, then replace non-renewable energy sources with renewable sources that do not contribute to atmospheric accumulation of greenhouse gases, and then finally to seek out market-based Renewable Energy Credits, carbon sequestration strategies, and ‘carbon offsets’.

This Climate Action plan proposes a wide range of strategies to reach carbon neutrality, which were selected based upon the following criteria:

- An action must be consistent with the mission and values of the college
- It should demonstrate financial efficiencies
- It should have a reasonable ease of implementation
- It should be achievable
- It should advance social, ecological, and economic sustainability
- Our plan should demonstrate flexibility and resilience to future changes

The recommended strategies within this plan focus on:

- Energy efficiency and conservation
- On-site renewable energy production
- Commuting efficiencies and transportation alternatives
- Waste stream management, including purchasing and food management processes
- Building and grounds infrastructure and practices

Our strategic approaches include:

- Technical innovations
- Increasing individual mindfulness and engagement with carbon neutral habits
- Institutional policy and procedural changes

The Climate Action plan sets annual targets for progress in specific GHG categories and spells out specific mitigation strategies within those categories. The plan outlines benefits, barriers, measurements, and tracking for each proposal. It also estimates timelines, costs and simple payback for specific strategies.

It was critical that this climate action plan support the mission and values of the college. Activities such as out-of-state recruiting, study abroad, and paper use, among other key components of higher educational processes, will necessarily continue as a part of normal operations. In the absence of any substantially new transportation and/or communication alternatives it is unreasonable to anticipate a 100% reduction of greenhouse gas emissions from all of our core activities. Therefore, the overall strategy of this plan is to minimize or eliminate as many emissions as possible, and then offset the emissions that remain. Our targeted emissions profile calls for a reduction of approximately eighty-one (81%) percent of our baseline, and offsetting the remainder.

Chart 4 illustrates our planned reductions in GHG emissions by activity of origin. ‘Business as usual’ is projected as a 1% per year increase in emissions.

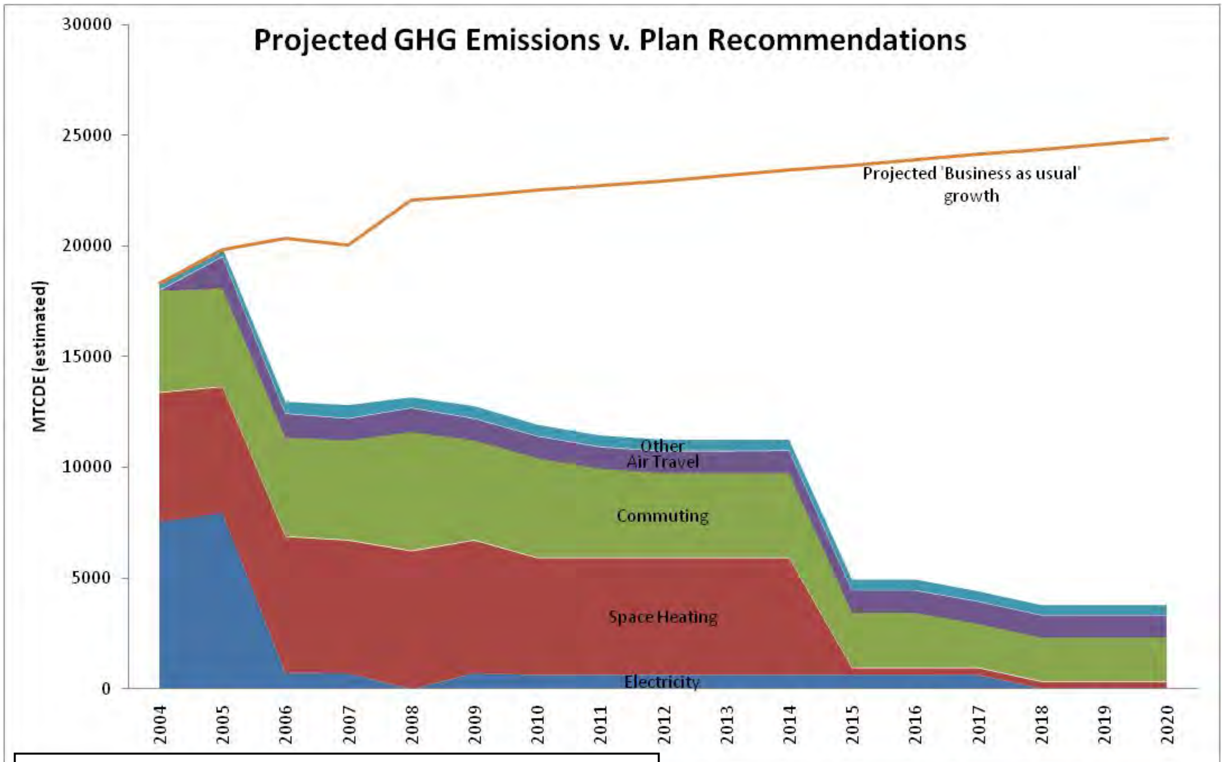



Chart 4 – Planned GHG Reductions by Origin

It is important to note that this plan is a living document that depends on both people and financing for success. While the current draft is comprehensive and has involved dozens of stakeholders, it has not yet been widely shared with the broader campus community at this level of detail. Subsequently, it is subject to modification as we work to engage the community more deeply in the endeavor. In many instances, this will simply be a matter of bringing together many separate groups of individuals passionate about specific aspects of sustainability and the pursuit of carbon neutrality. In other instances, it will require that we broaden the base of participation to ensure success (e.g. in modifying commuting habits).

As with any project, the elements with the highest price tags and/or those that require the biggest changes in personal choices or institutional habits can be the most difficult to implement. These more challenging initiatives may also yield the greatest returns. Bio-mass gasification, for example, (with potential co-generation) is among the most promising large-scale initiative, but it also has the highest initial level of investment ($12.5 million). On the positive side, the pay-back for this project can be achieved in a relatively short time frame (10 - 15 years). The tables below include summaries of the strategies proposed in this plan, along with estimated implementation costs, payback, and greenhouse gas reductions (Metric Tons of Carbon Dioxide Equivalents).

Table 1 – Strategy Summaries, 2009 - 10

| Action | Fiscal Year | Initial Capital Cost (est. $) | Simple Payback (Years) | Carbon Reduction (MTCDE) |
|---|---|---|---|---|
| Sustainable Practices Fellow | 2009 – 10 | 0 | 0 | 204 |
| Lab II Heat Recovery | 2009 – 10 | 220,000 | 12 | 118 |
| Steam Pipe Insulation | 2009 – 10 | 200,000 | 3 | 450 |
| Energy Conservation Suite | 2009 – 10 | 50,000 | 1 | 590 |
| Demand based Lighting | 2009 – 10 | 20,000 | 11 | 20 |
| Solar Photo-voltaic | 2009 – 10 | N/A | N/A | 7 |
| Eco-rep Volunteer Program | 2009 – 10 | 0 | 0 | 5 |
| E-procurement System | 2009 – 10 | 40,000 | 1 | undefined |
| Increase Composting | 2009 – 10 | To be determined by process | --- | --- |
| Improve Waste Diversion | 2009 – 10 | 500 | 1 | 31 |
| CAB Renovation to LEED Gold | 2009 – 10 | 13,700,000 | N/A* | 153 |
| Fleet Upgrade; Phase 1 | 2009 – 10 | 3,000 | 3 | 6 |
| Re-purpose Lawns; Phase 1 | 2009 – 10 | 5,000 | 6 | 3 |

* Building renovation costs are the result of far more extensive requirements than simply energy conservation and efficiency, so calculation of simple payback based upon energy conservation is inappropriate and misleading.

Table 2 – Strategy Summaries, 2010 – 17

| Action | Fiscal Year | Initial Capital Cost (est. $) | Simple Payback (Years) | Carbon Reduction (MTCDE) |
|---|---|---|---|---|
| Residential Electrical meters | 2010 – 11 | 21,000 | 4 | 43 |
| Update Boiler Controls; Ph. 1 | 2010 – 11 | 70,000 | 20 | 485 |
| Dedicated Housing Boiler | 2010 – 11 | 1,000,000 | 7 | 945 |
| Window Weatherization | 2010 – 11 | 4,000 | 1 | 174 |
| Commuting Incentives | 2010 – 11 | To be determined by process | --- | --- |
| Door Weatherization; Ph. 1 | 2011 - 12 | 7,000 | 3 | 22 |
| Update Boiler Controls; Ph. 2 | 2011 – 12 | 30,000 | 20 | 400 |
| Bike Rental Program | 2011 – 12 | 1,000 | 1 | 3 |
| Student Passport | 2011 – 12 | 0 | N/A | 190 |
| COM Renovation to LEED Silver | 2011 - 12 | 10,600,000 | N/A | 165 |
| CRC Lighting | 2012 - 13 | 265,000 | 25 | 77 |
| Bio-mass Gasification | 2013 - 14 | 7,000,000 | 10 | 5,000 |
| Offset Air Travel | 2013 – 14 | TBD | --- | --- |
| Local Food Purchasing | 2013 – 14 | 0 | N/A | 12 |
| Fleet Upgrade; Ph. 2 | 2013 – 14 | 1,500 | 3 | 10 |
| Re-purpose Lawns; Ph. 2 | 2013 - 14 | 5,000 | 10 | 2 |
| Door Weatherization; Ph. 2 | 2014 - 15 | 7,000 | 3 | 22 |
| Community Car Share | 2014 - 15 | TBD | --- | Undefined |
| Fleet Upgrade; Ph. 3 | 2016 – 17 | 1,500 | 1 | 10 |
| Re-purpose Lawns; Ph. 3 | 2016 – 17 | 5,000 | 10 | 2 |
| Parking Code Exemption | 2016 – 17 | 0 | N/A | 0 |

Table 3 – Strategy Summaries, 2017 – 19

| Action | Fiscal Year | Initial Capital Cost (est. $) | Simple Payback (Years) | Carbon Reduction (MTCDE) |
|---|---|---|---|---|
| Bio-mass Co-generation | 2017 - 18 | 6,000,000 | 7 | 7,000 |
| Explore Restricting Student Vehicles | 2017 - 18 | 0 | N/A | Undefined |
| Acquire Carbon Offsets | 2017 - 18 | TBD | N/A | N/A |
| Modify Parking Infrastructure | 2017 - 18 | TBD | --- | --- |

Goal oriented planning necessarily requires a narrow focus upon the specific activities and procedures pertinent to success. Achieving our goal of carbon neutrality requires a dominant focus upon altering our use and reliance upon fossil fuels. Climate change, however, is an issue that affects all aspects of our world, and true sustainability requires a wide and holistic thought process inclusive of far more than merely energy use.

The Evergreen State College is first and foremost a higher education institution and there are long-term values, priorities, and practices that must be emphasized, in parallel with this plan, as equally critical to our larger perspective sustainability goals. One such practice clearly pertinent to this plan is the preservation and management of our campus woodlands. The woodlands are actively sequestering carbon and, while this sequestration is not a new mitigation or offset within the scope of this plan, long term preservation of the woodlands is critical to preserving the college's carbon neutral footprint.

It is important to recognize that Evergreen's woodlands *do* help alleviate GHG production. This role of campus woodlands is acknowledged on page 43 of the ACUPCC Guidelines. The campus woodlands are sequestering carbon each year, and while such sequestration cannot be considered a saleable offset, it does contribute to Evergreen's overall carbon budget. Growing and maintaining woodlands *does* help reduce carbon dioxide in the atmosphere, and should be counted in Evergreen's carbon budget. Because of the woodlands we have on campus that are sequestering carbon each year, Evergreen should become, in sum total, a carbon *negative*, rather than merely a carbon neutral, campus. Our most recent estimate of carbon uptake in the woodlands suggests that 3300 MTCDE are sequestered per year.

The most effective *carbon sequestration strategy* for the college reserve, based upon recent research performed at Evergreen (http://academic.evergreen.edu/projects/EEON/) should be either 1) leaving the forest alone (no active management or timber removal) or 2) no timber removal coupled with active planting of trees in the forest reserve. While these strategies are not directly addressed in this plan, forest management practices do have the potential to significantly alter the college's total carbon footprint.

This plan also includes provisions for educational engagement through academic programs and student projects that will become integral to plan development, implementation, and follow-up.

While the strategic directions outlined in this plan come from the president and vice presidents, the leadership for plan implementation rests with the Sustainability Council (which includes a representative of each vice president and the president) and the Office of Sustainability. Sustainability Council work groups will continue to drive various elements (clean energy, sustainable food practices, alternative transportation, waste reduction and sustainable purchasing, communications). The ultimate success of this plan, however, depends most on widespread engagement throughout the college community and support from beyond the college.

## Introduction

> *Evergreen will become a laboratory for sustainability—as demonstrated in our operations, our curriculum, and in the quality of life for our employees and students—and commit to becoming a carbon neutral college by the year 2020...*
>
> *A cross-divisional task force for campus sustainability will steward our work and make Evergreen's sustainability commitments, practices, and achievements visible to the campus and wider community. Annual sustainability indicators will be monitored each year to benchmark our progress against other campuses.*
>
> The Evergreen State College Strategic Plan - 2007

Evergreen has a firm commitment to a sustainable way of life for our environment, our community, and our people. The college is also committed to leading by example, through our values and our actions, and to facilitating positive change in our world. Evergreen's updated Strategic Plan includes our goal of carbon neutrality by the year 2020, and this climate action plan was developed by students, staff, and faculty as a roadmap to that goal. While our vision of sustainability is much broader than carbon neutrality the goal and this plan are a part of our commitment to action.

This plan provides a series of strategies and actions designed to reduce and otherwise mitigate the college's greenhouse gas emissions. It is built on Evergreen's longstanding and widespread environmental initiatives, on foundational work done over the past year by Evergreen's Sustainability Council and work groups from that council, and on graduate program research involving students from both environmental studies and public administration. The planning process included campus-wide interviews with Evergreen State college students, faculty, and staff, as well as extensive research into greenhouse gas reduction practices.

Response to climate change is not something to be delegated to a single department, for it falls within the purview of all departments. It took a multi-departmental, multi-disciplinary team to create this plan, and it will require a similar team and broad community engagement to implement it. It will take a far greater team to address the global nature of climate change, and we hope that our plan will assist in that process. The Evergreen State College has acknowledged and accepted its responsibility to be an active leader in climate change solutions. We will lead by example through our own actions and processes. We will educate our students on the values and actions that can make a positive difference. We will engage our community to create collaborative local and regional climate action teams. We will seed and encourage hundreds, perhaps even thousands of new teams as our graduates spread out around the world.

As with any process, the plan is just the beginning and it is likely to evolve. This plan calls for 10 years of substantial and dedicated work to achieve our goal. The Office of Sustainability, the Sustainability Council, and council workgroups will be actively involved in this process, but our success will be determined by our engagement with our greater community. It is our goal, therefore, to lead, but also to involve our community in positive solutions to climate change.

Everyone contributes to global warming and climate change, and everyone working together can create the solutions we need.

> *"Sustainability isn't just a bandwagon we're hopping onto. It's woven into the very fabric of our identity, and history, as an institution."*
>
> Thomas “Les” Purce, President, The Evergreen State College – 2007

## About the College

The Evergreen State College has been a leader in environmental education since its founding. In 1972, the college started an organic farm and agriculture program. Over 70% of the college's 1,000 acres has been maintained as undeveloped forest to serve as a learning and research resource, and the college has community and teaching gardens that date back to the early 1980's. Evergreen also completed construction of Washington State's first publicly funded LEED Gold building in 2004.

Evergreen is a progressive, public liberal arts and sciences college founded in 1967 in Olympia, Washington. Evergreen has established a national reputation for leadership in developing innovative interdisciplinary, collaborative and team-taught academic programs. We have a vibrant undergraduate program, a graduate program, and seven public service centers that constitute a unique academic setting. Evergreen values a student-centered learning environment, a link between theory and practice, and a multicultural community of diverse faculty, students, and staff working together. Current enrollment is approximately 4,400.

The college formed a Sustainability Task Force in 2005, which spent the next two years evaluating our status and creating plans for an institutional infrastructure to support long term sustainability. Also in 2005, Evergreen students created a self-imposed fee per credit to purchase Renewable Energy Credits, guaranteeing that the college is powered by 'green' energy. Funds raised by the fee also support other clean energy initiatives through a student administered grant program. Recently, we have extended our commitment to sustainability beyond the classroom and the campus through educational programs and symposia to engage our regional community with responses to climate change. Evergreen's current greenhouse gas emissions total about 5 metric tons (of carbon dioxide equivalence) per student per year, which is less than half the national average for colleges and universities.

The college has also taken a number of other steps towards carbon neutrality:

- All campus appliances are Energy Star certified
- Lighting has been changed over to energy-efficient compact fluorescents
- Campus heating and cooling systems have been upgraded for higher efficiencies
- 5 gasoline-powered vehicles have been replaced with 100% electric vehicles
- We purchase 100% post-consumer waste recycled, chlorine free paper for all campus printing
- We have local and organic food purchasing priorities with our food-service vendor
- Waste collection includes single-stream recycling
- All food service areas use compostable plates, cups, napkins, and utensils
- Campus catering provides waste free events
- Campus residences have a student-centered Greener Living Program
- We have volunteer driven collection stations for office composting

Evergreen's commitment to a sustainable environment and way of life for ourselves and for generations to come is reflected in our values, our actions, and our engagement with our regional, national, and inter-national community.

## Emissions Inventory

Evergreen's baseline greenhouse gas emissions (FY 2005) are characterized below in Chart 5. Emission quantities are normalized as Metric Tons of Carbon Dioxide Equivalents (MTCDE).

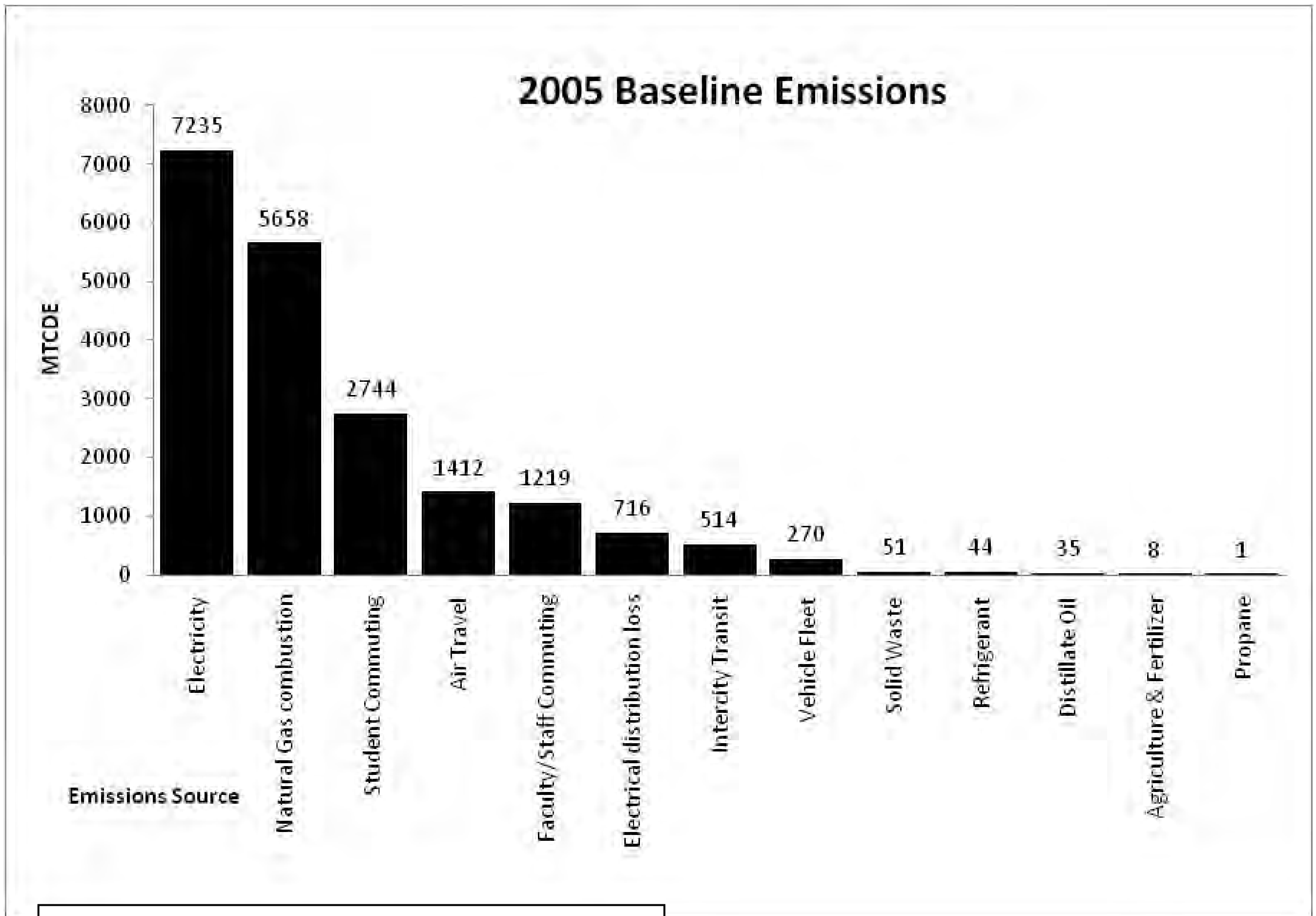



Chart 5 – Baseline GHG Emissions by Source

Sixty-nine (69%) percent of the college's baseline emissions originate from campus heating (natural gas, distillate oil, and propane) and purchased electricity; twenty-nine (29%) percent are attributable to commuting and transportation (see Chart 6). As a result, the reduction and mitigation strategies in this plan focus predominantly upon heating and electrical conservation and efficiencies, renewable energy production, and transportation efficiencies.

It was critical that this climate action plan support the mission and values of the college, recognizing that activities such as out-of-state recruiting, study abroad, printing and paper use, among other key components of the educational process, will necessarily continue. In the absence of any substantially new transportation and communication alternatives it is unreasonable to anticipate a 100% reduction of greenhouse gas emissions. The overall strategy of this plan is to minimize or eliminate as many emissions as possible, and then offset the emissions

that remain. The college's targeted emissions profile calls for a reduction of approximately eighty-one (81%) percent of our baseline (Chart 7), and offsetting the remainder.

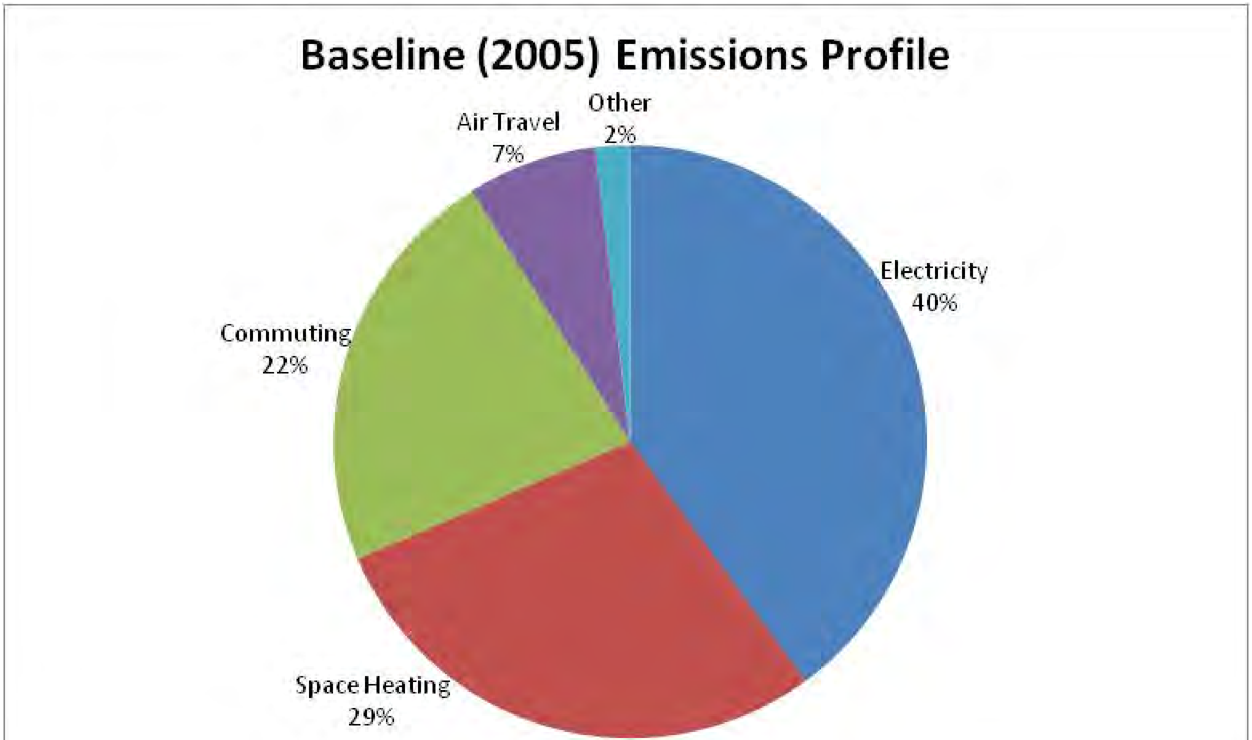



Chart 6 – Baseline GHG Emissions Profile

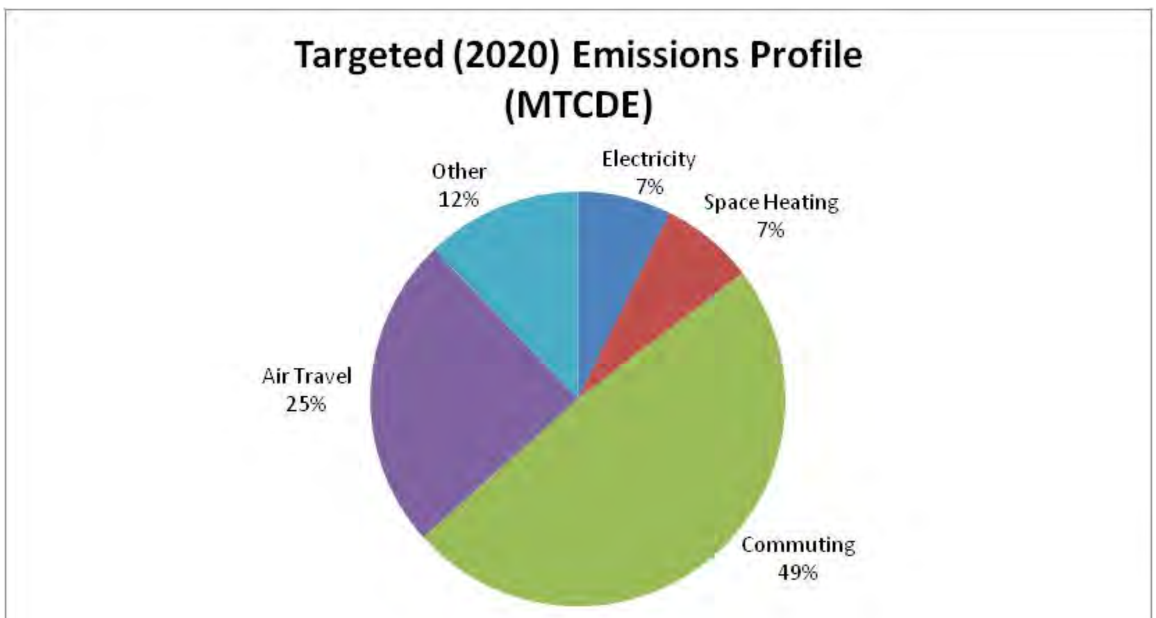



Chart 7 – Target GHG Emissions Profile

Chart 8 shows the college's anticipated reduction in emissions (values for years 2005 through 2008 are actual, all others are estimated projections).

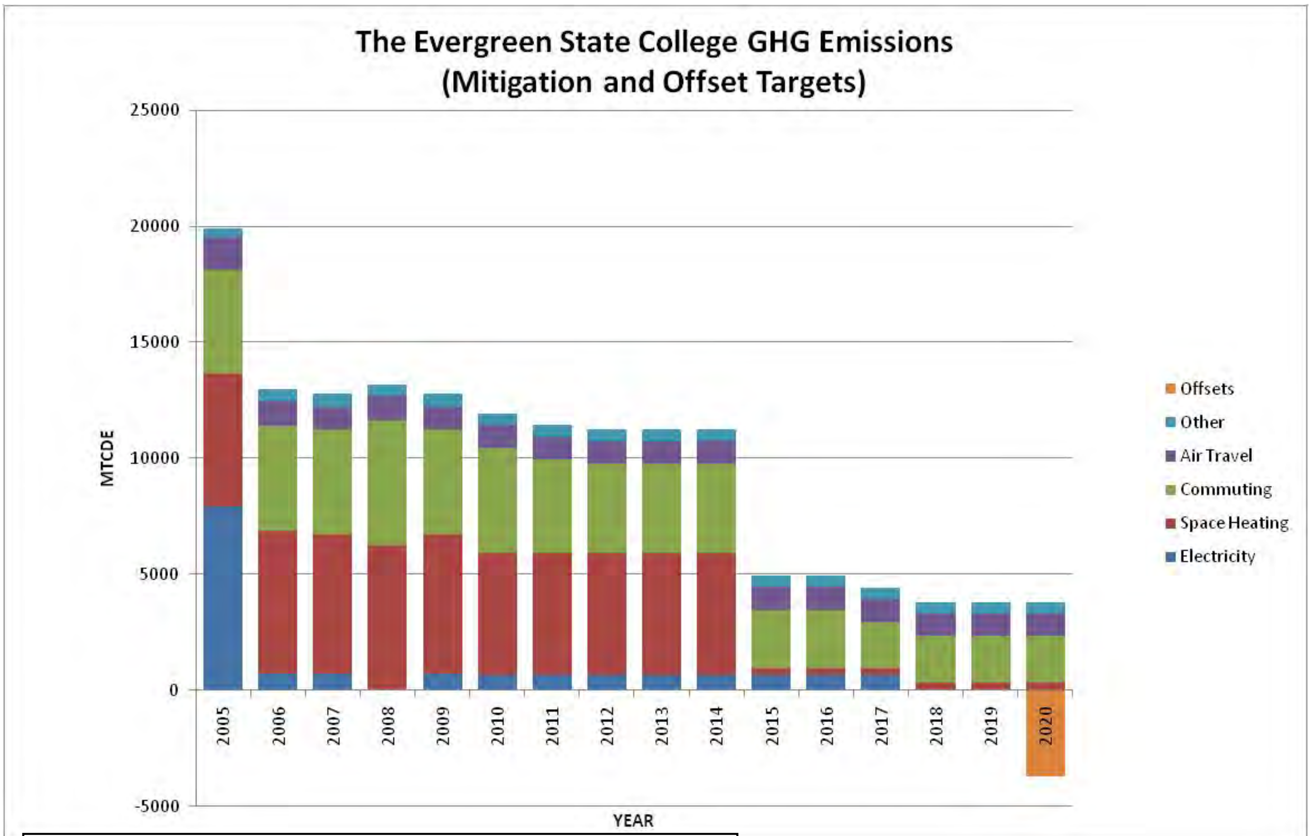



Chart 8 – Anticipated GHG Emissions Reductions

2006 – Purchase of Renewable Energy Credits ensures no GHG emissions from purchased electricity (excepting electrical transmission/distribution losses).

2009 – 2017 – Implementation of multiple energy conservation and efficiency strategies, along with commute trip reduction incentives and strategies create small reductions in energy use and associated GHG emissions.

2015 – Activation of Bio-mass gasification, a carbon-neutral renewable energy system, reduces our dependence upon natural gas for space heating. Some emissions remain as a result of periodic maintenance on the system (natural gas remains our back up for space heating) and transportation of bio-mass fuel from the source to the college.

2018 – Activation of Bio-mass co-generation, on-site electrical generation, reduces our dependence upon purchased electricity. (Alternatively, investment in a long-term renewable energy strategy through Puget Sound Energy similarly reduces GHG emissions.)

2020 – Irreducible GHG emissions are neutralized by acquisition of carbon offsets, or possibly through the establishment of new on-site carbon sequestration strategies.

The following sections detail our strategic plan for achieving carbon neutrality by 2020.

## Mitigation and Remediation of Greenhouse Gas Emissions

Evergreen's mitigation strategies were selected based upon the following criteria:

- An action must be consistent with the mission and values of the college
- It should demonstrate financial efficiencies
- It should have a reasonable ease of implementation
- It should be achievable
- It should advance social, ecological, and economic sustainability
- Our plan should demonstrate flexibility and resilience to future changes

The specific strategies are focused on:

- Energy efficiency and conservation
- On-site renewable energy production
- Commuting and transportation alternatives
- Waste stream management, including purchasing and food management processes
- Building and grounds infrastructure and practices

Our strategic approaches include:

- Technical innovations
- Individual behavioral changes
- Institutional policy and procedural changes

The college has already implemented many energy conservation and efficiency measures, including:

- Heat recovery from boiler exhausts and some lab exhausts
- Upgrading to high efficiency motors and variable frequency drives
- Converting from constant to variable volume reheat systems
- Upgrading nearly all campus lighting to higher efficiency bulbs
- Removal of nearly all water cooled appliances
- Installation of R134A, variable speed drive chillers
- Installation of reflective roofs and green roofs during construction and renovations
- Reduced irrigation coverage, and addition of a weather station to irrigation control
- Participation in a demand reduction program with our Electrical utility that has enabled real-time monitoring and assessment of energy use
- Replacing some campus fleet vehicles with 100% electric vehicles
- Office occupancy sensors for lighting control in renovated buildings
- Renovating, Building, and Maintaining to LEED standards

The college took an early adaptation step in the fall of 2005 when Evergreen students voted, with over 90% in favor, for a self-imposed clean energy fee ($1.00 per credit per quarter) to purchase Renewable Energy Certificates (REC's) annually from Evergreen's energy providers (Puget Sound Energy in Olympia and Tacoma Public Utilities for the Tacoma campus). Because of the Clean Energy Initiative, Evergreen can currently claim that 100% of our purchased electricity has come from green, renewable sources since October, 2005.

Other early adopted strategies at Evergreen include:

- The college has been using 100% post-consumer recycled paper campus wide since July of 2008
- All disposable food service items, with the exception of coffee cup lids, are compostable
- We have established a waste diversion stream for compostable items
- Faculty are experimenting with paperless classrooms

Our long-term plan does rely upon carbon offsets to mitigate those emissions that may not be reduced without significant impact to the mission and values of the college. Offsets (the purchase of carbon credits) shall only be applied to those emissions that cannot be otherwise reduced or replaced while meeting the college's core mission. Because of the relative newness of carbon offsets and the offset market, we can expect multiple changes between today's products and those that will be available 5 to 10 years from now, particularly in terms of availability and cost. It is for this reason that offsets are currently undefined in terms of cost or type, and we will rely upon a disappearing task force to study the current market and make recommendations when it is time to make those decisions.

The following table summarizes all of the mitigation strategies called for within this plan. Specific details by strategy are then available in this section, sorted by biennium and fiscal year.

| 2009 - 10 | 2010 - 11 | 2011 - 12 | 2012 - 13 | 2013 - 14 | 2014 - 15 | 2015 - 16 | 2016 - 17 | 2017 - 18 | 2018 - 19 |
|---|---|---|---|---|---|---|---|---|---|
| Sustainable Practices Fellowship | Site specific Electrical Metering | Door Weatherization (1) | CRC Lighting | Bio-mass Gasification | Door Weatherization (2) | | Fleet Upgrade (3) | Bio-mass Co-gen | Modify Parking Infra-structure |
| Lab II Heat Recovery | Update Boiler Controls (1) | Boiler Controls (2) | | Offset Air Travel Emissions | Community Car Share Program | | Re-purpose Lawns (3) | Restrict Student Vehicles | |
| Steam Pipe Insulation | Dedicated Housing Boiler | Student Bike Rental Program | | Local Food Purchasing | | | Parking Code Exemption | Acquire Carbon Offsets | |
| Energy Conservation Suite | Window Weatherization | Student Passport | | Fleet Upgrade (2) | | | | | |
| Demand Based Lighting | Commuting Incentives | COM Renovation to LEED Silver | | Re-purpose Lawns (2) | | | | | |
| Solar PV Array | | | | | | | | | |
| Eco-Rep Volunteers | | | | | | | | | |
| E-procurement | | | | | | | | | |
| More Composting | | | | | | | | | |
| Reduce Waste | | | | | | | | | |
| CAB Renovation to LEED Gold | | | | | | | | | |
| Fleet Upgrade (1) | | | | | | | | | |
| Re-purpose Lawns (1) | | | | | | | | | |
| **COMMUNITY** | **ENGAGEMENT:** | | | | | | | | |
| Parking Review Board - CTR Incentives | | Renewable Energy DTF | Lawn Planning | Car Share DTF | Parking Infrastructure DTF | Bio-mass Co-gen Planning | Carbon Offsets Study DTF | | |
| Composting Practices DTF | | | Carbon Offsets DTF | | | | | | |
| Lawn re-purposing DTF | | | | | | | | | |

Table 2: Mitigation Strategies and Community Engagement Processes by Fiscal Year.

## Strategies and Process

### 2009 – 2011 Biennium

| | Strategy | Year |
|---|---|---|
| Energy Efficiency | Sustainable Practices Fellow | 2009-10 |
| | Lab II Heat Recovery | 2009-10 |
| | Steam Pipe Insulation | 2009-10 |
| | Energy Conservation Suite | 2009-10 |
| | Demand based Lighting | 2009-10 |
| | Electrical Metering | 2010-11 |
| | Update Boiler Controls; Ph. 1 | 2010-11 |
| | Dedicated Housing Boiler | 2010-11 |
| | Window Weatherization | 2010-11 |
| Renewable Energy | Solar Photo-voltaic Array | 2009-10 |
| Alternative Transportation | Commute Trip Reduction Financial Incentives | 2010-11 |
| Food and Waste | Eco-rep Volunteer Program | 2009-10 |
| | Green Purchasing | 2009-10 |
| | Increase Composting | 2009-10 |
| | Improve Waste Diversion | 2009-10 |
| Buildings and Grounds | CAB Renovation | 2009-10 |
| | Fleet Upgrade; Phase 1 | 2009-10 |
| | Re-purpose Lawns; Phase 1 | 2009-10 |

| Campus Community Engagement | Year |
|---|---|
| Commuting efficiency incentive strategies | 2009-10 |
| Composting practices | 2009-10 |
| Lawn re-purposing planning | 2009-10 |

## Solar Photo-voltaic renewable energy generation – 2009-10

9 kWh array mounted on Library

| Benefits | Barriers | Measurement & Tracking |
|---|---|---|
| Renewable energy source, very low maintenance, very low operating cost installation. | Low solar radiation levels during most of the year. | Electrical output across the year for future solar feasibility studies. |

**Action Steps:** This installation was completed as part of the Library remodel in early 2009.

Solar is not currently an economically feasible or reliable source of renewable energy on campus. This pilot project, however, will enable long term study of power output over time to inform future solar power feasibility studies as the technology costs and efficiencies improve.

The panels are producing power, and we expect to have the ability to easily monitor their output by September, 2009.

## Sustainable Practices Fellowship – 2009-10

A graduate fellowship position charged with the implementation of targeted efforts to promote sustainable practices among faculty, staff, students, and visitors that result in decreased energy usage. This position would collaborate with and support the Resource Conservation Manager.

| Benefits | Barriers | Measurement & Tracking |
|---|---|---|
| Communication, engagement, and educational outreach about technical actions taken to improve energy conservation and renewable energy use on campus.<br><br>The Resource Conservation Manager would benefit greatly from collaborative support to create behavioral changes in faculty, staff, students, and visitors that result in decreased energy usage. | Salary contingent upon PSE grant and energy cost savings. | Energy savings.<br><br>Behavioral changes. |

**Action Steps:**

1. Identify funding source
2. Define job description
3. Hire student for academic year fellowship
4. Review impacts and savings annually

This position is dedicated to bridging the gap between technical and behavioral energy conservation strategies. It could come in the form of a graduate fellowship, a work-study position, or an Independent Learning Contract with a dedicated faculty sponsor (following the model of Paul Butler's "geology for travelers" course offering). The position could be funded through additional PSE RCM program grant funds, or through a Clean Energy Fund grant to create a student position. Position duties would primarily consist of creation and implementation of campaigns aimed at modification of individual habits, as pertains to energy use habits, as well as gathering data to determine the effectiveness of their efforts.

The Sustainable Practices position is intended to work alongside the college engineer to complement the technical conservation work in Facilities with targeted efforts to change practices in faculty, staff, students, and visitors that result in decreased energy usage.

## Lab II Heat Recovery – 2009-10

Add heat recovery coils to Lab II exhaust air.

| Benefits | Barriers | Measurement & Tracking |
|---|---|---|
| Recovers heat that would otherwise be exhausted, thereby improving energy efficiency and reducing heat production costs. | Installation expense. | Installation completion.<br><br>Heat return from recovery coils. |

**Action Steps:**

1. Secure ESCO or capital budget funding
2. Complete installation
3. Monitor and review after first year of operation

This project calls for installing heat recovery coils in the exhaust air systems. The Lab buildings are served by 100% outside air supply fans, and two 100% exhaust air fans. Because of the danger of recovering the exhaust air from the Labs, all of the heat is ejected to the outside when it is exhausted. The heat recovery coil would allow for this heat to be captured by the coil and transferred to another coil located in the air intake system, requiring less heat production up front from the boilers. This project has been recommended by our ESCO (McKinstry) as an economic conservation measure.

## Steam Pipe Insulation – 2009-10

Add or upgrade steam pipe insulation to reduce transit loss in the heating system.

| Benefits | Barriers | Measurement & Tracking |
|---|---|---|
| Improved energy efficiency in campus heating system, reduced heat demand and associated reductions in GHG emissions and generation costs. | Cost; materials and labor. | Project completion. |

**Action Steps:**

1. Secure ESCO or capital budget funding
2. Survey insulation status of all steam pipes
3. Install necessary insulation

The heat delivered from a boiler via steam pipes is often lost in transit and reduces overall heating efficiency. Losses from un-insulated pipes can amount to 10 – 20% of the total heating load. Insulation of these pipes will cut these losses by up to half (5 – 10%).

## Energy Conservation Suite – 2009-10

Adjust facilities heating and cooling practices to improve energy efficiency.

| Benefits | Barriers | Measurement & Tracking |
|---|---|---|
| Reduced heating and cooling demand resulting in reduced GHG emissions and long term costs. | Implementation costs.<br><br>Community expectations of constantly conditioned building air. | Facilities practices and policies.<br><br>Feedback from users of building space. |

**Action Steps:**

1. Reduce baseline building temperatures
2. Slow return air fans to 50% during low occupancy periods
3. Shut down inflow fans when unneeded
4. Economize winter discharge air temperature settings
5. Reduce operating steam pressure
6. Manage steam flow and condensate to ensure full return

These combined incremental measures can result in a cost and energy savings of approximately 10%. Each of these measures saves money and energy by consuming less natural gas to heat water in the utilities plant. These projects have the potential to cause some discomfort for building occupants, though the moderate capital cost, quick simple payback, and reduction in scope II emissions make them very feasible. Because of a need for user feedback, this project is scheduled as a behavior project, meaning work should begin immediately, but full results may take a few years.

## Need and Demand Based Control of Grounds and Stairwell Lighting – 2009-10

Install demand and programmable lighting controls for need-based efficiencies.

| Benefits | Barriers | Measurement & Tracking |
|---|---|---|
| Eliminate lighting power demands when stairwells are not used, and during late night/early morning on the grounds. | Capitol cost. | Installation progress. |

**Action Steps:**

1. Secure utility rebate and funding
2. Install bi-level stairwell lights and on-demand control sensors
3. Install centralized grounds lighting controller and adjustable lights
4. Establish lighting schedule adjusted to need

A survey of three buildings - the Library, LAB I, and the CRC revealed the potential for savings through the use of bi-level stairwell lights, which partially illuminate unoccupied stairwells. A student performed stairwell survey revealed that they are not heavily used. Some of the stairwells had limited access, including an emergency exit stairwell in the library (north end of the computer lab). These stairwells are fully lit but seldom occupied. The stairwells surveyed were illuminated by T8 fluorescent fixtures (64 watts each) without bi-level controls. Replacing these fixtures with a bi-level T8 system would reduce greenhouse gases by over 12 MTCDE per year and save over $1800 in annual avoided electricity purchases[1].

Over-illumination at night has been identified as an unnecessary use of energy. A central control system can be used to control grounds lighting and reduce the energy use. A survey of the upper campus and southern parking area revealed 140 metal halide ground lights (100 watt each) and 33 large metal halide aerial highway lights (est. to be 400 watts each). This project presumes a lighting regime that reduces overall lighting use by 45%: turn on illuminating lights 100% from dusk to 11pm, dim to 50% of full brightness between 11pm and 12am, dim to 10% of full brightness between 1am and 4am, and return to 80% brightness between 4am and dawn. These upgrades would reduce greenhouse gas emissions by over 32 MTCDE per year and save over $4700 in avoided electricity purchases[2].

[1] Calculations made by Seattle City Light's lighting retrofit spreadsheet

[2] Calculations made by Seattle City Light's lighting retrofit spreadsheet

## Eco-reps Volunteer Program – 2009-10

Recruit faculty, staff, & students (with an emphasis upon first-year students) to organize and promote sustainable habits in their class, office, or residence. The Eco-reps would help spread information on energy saving and waste reduction strategies appropriate for Evergreen. Eco-reps would promote resource conservation of all kinds - reduce waste generation, encourage energy reduction strategies, and help build a sustainable community on campus.

| Benefits | Barriers | Measurement & Tracking |
|---|---|---|
| Inter-personal level emphasis upon behavior changes to impact energy usage, resource sharing, and waste diversion.<br><br>An improved sense of community on campus among faculty, staff, and students.<br><br>Valuable user-level feedback to the Sustainability and Facilities Offices on how waste and energy reduction strategies are, or are not working.<br><br>A campus support and information dissemination network capable of giving a personal voice to sustainability initiatives. | Training and facilitation support required of Facilities and Sustainability Office staff.<br><br>Staff time to create web based resources for the Eco-reps.<br><br>Inability of faculty and staff to accept any additional responsibilities. | Number and placement of volunteers.<br><br>Waste diversion, energy use, transportation habits, resource sharing, and other sustainable behaviors within Eco-rep territories.<br><br>Efficacy of education, training, and behavior change practices. |

**Action Steps:**

1. Define formal practices, training, and goals
2. Start a best practices and resource repository
3. Recruit Volunteers (use existing volunteers as a base)
4. Establish training schedule
5. Establish measurement criteria and goal oriented competitions
6. Establish regularly scheduled review meetings and celebrations
7. Establish on-going recruitment process
8. Review progress annually

Program training meetings should be scheduled quarterly, and program introductions should be included in all new student, faculty, and staff orientations. Scheduled monthly meetings or events provide a means for Sustainability Office staff to disseminate new information and recognize

accomplishments. Eco-reps will also have an opportunity to raise questions and share solutions and ideas with each other.

It would be advantageous for the eco-reps to meet regularly to share problem-solving techniques and to meet with the Director of Sustainability for continuing education on the full range of sustainability programs offered on campus. The meetings could be catered lunch events, in reward for these volunteers' efforts. Tufts University has produced an Eco-representatives Manual that may be used as a model and starting point for the Evergreen program (http://www.tufts.edu/tuftsrecycles/staffandstudentresources.html).

## Environmentally Preferable (Green) Purchasing Program – 2009-10

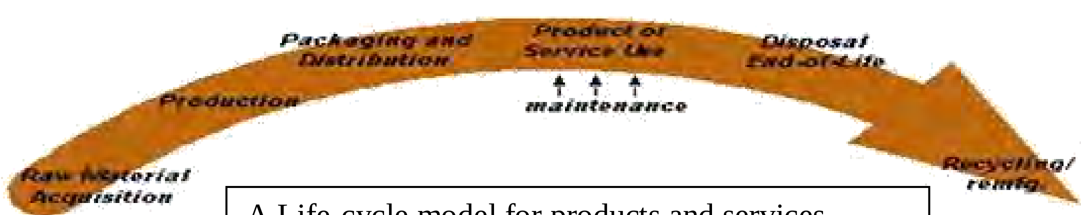
Procurement of products and services that have a lesser or reduced effect on human health and the environment when compared with competing products or services that serve the same purpose. Reducing the distance goods are shipped as well as reducing the number of daily incoming deliveries and outgoing shopping trips will contribute to the reduction of the college's carbon footprint. E-procurement will play a big part in identifying vendors within our own region from whom we can purchase goods and services, thus eliminating unnecessarily long distance shipping from around the country.

| Benefits | Barriers | Measurement & Tracking |
|---|---|---|
| Participating and contributing to a greater regional and national emphasis upon sustainable manufacturing, shipping, and lifecycle design of products.<br><br>Reducing our contribution to manufacturers who don't follow environmentally preferred practices. | Acquisition cost.<br><br>User learning curve. | Lifecycle analyses of college purchases. |

**Action Steps:**

1. Choose and acquire an E-procurement system
2. Implement
3. Review progress and impacts annually
4. Involve Environmental Health and Safety in product approval for capital projects

Environmentally Preferable Purchasing (EPP) or Green Purchasing may consider raw materials acquisition, production, manufacturing, packaging, distribution, reuse, operation, maintenance or disposal of the product or service. Green Purchasing is making an educated and conscious decision to buy products with considerations for environmental, social, and economic impacts.




A Life-cycle model for products and services.

## Increase on-Campus composting – 2009-10

Increase campus compostable waste diversion.

***COMMUNITY ENGAGEMENT*** – form student, staff, faculty Disappearing Task Force to study waste stream to compost diversion and assist the college with adopting a best-fit solution.

The options detailed below were developed by an engaged group of students and staff from Aramark, Residence and Dining, and the Organic Farm. A final choice of strategy must also include custodial and facilities staff who may be involved in long-term implementation.

### *Option A: Increase on-Campus composting – 2010 - 11*

Upgrade on-campus composting facility at the Organic Farm to manage expanding residential compost program and develop institutional capacity to expand our partnership with Silver Springs Organics, or a similar commercial composting facility for compostable products and food waste from Dining Services locations.

| Benefits | Barriers | Measurement & Tracking |
|---|---|---|
| All campus produced compostable product can be diverted to a local facility to be made into certified organic compost.<br><br>Most cost effective method for managing both food and compostable waste.<br><br>Continued support for our education-based on-campus compost facility at the Organic Farm. | Identifying who is in charge of management of compostable product in-building (both food and wares).<br><br>Space allocation for Silver Springs Organics dumpsters.<br><br>Continued staff support, either student or otherwise, for the Organic Farm Compost Facility. | Quantity of waste diverted to Organic Farm and Silver Springs.<br><br>Cost savings through diverting compostable waste from landfill.<br><br>Success of Residential Compost Program. |

**Action Steps:**

1. Continue education campaign to increase composting with in-coming residents
2. Create internal ownership of compost collection and management, develop procedures, and train staff
3. Develop waste sorting and disposal practices through community engagement processes
4. Develop compostable waste collection practices and procedures through community engagement process
5. Divert waste stream and use savings for student or temporary staff employment
6. Address and adopt effective compost waste shipping practices
7. Acquire equipment and worms to update Organic Farm Compost Facility
8. Review cost savings and compostable material allocation annually

Evergreen currently composts food waste from residential campus at the Organic Farm through the Greener Living Program amounting to an estimated 480 gallons (1,440 – 2,160 pounds) per week. The Organic Farm Compost Facility was designed for educational purposes and is scaled to manage only a portion of the food scraps from campus. The Organic Farm facility cannot manage compostable wares due to the process required to decompose them. Silver Springs is the closest commercial facility, and our current partner, capable of composting these items. Thus, there are two distinct compost streams on campus.

Student volunteers, the RAD sustainability coordinator, and RAD student facilities manage the residential compost program. Responsibilities include development and implementation of educational campaigns to ensure proper disposal and separation of compostable products, regular collection, evaluation, and record keeping. The Organic Farm compost staff collects compostable materials from residential campus and transports it to the Organic Farm where it is converted into compost for use by the Organic Farm and community gardens. Recent budget cuts, however, have reduced the farm staff and their ability to maintain regular collections and composting practices.

Dining Services and upper campus have been composting food scraps and compostable products (corn straws, paper plates, PLA cups and coffee cups) through Silver Springs Organics commercial composting facility since September 2008. The volume produced exceeded our 700 gallon (6,000 pound) allotment per week during AY 08-09, illustrating that there is a high potential for more landfill waste diversion. It is estimated, by reviewing weights, volumes, and cost of disposal from AY 08-09 that the college saved over $9,000 by diverting food scraps and compostable wastes to Silver Springs instead of the landfill.

Silver Springs Organics uses a technically advanced and high-heat system to manage various compostable products to make certified organic compost for sale to the public. Their facility requires constant monitoring and has the capacity to manage waste from over 5 counties in the South Sound Area. In order to be successful the Silver Springs compost collection program on upper campus needs regular attention and management, though by who remains in question. ARAMARK has agreed to manage the food waste bins in the kitchen and cafeteria to ensure proper composting practices.

### *Option B: Create On-Campus Composting Facility – 2013 - 14*

Build Campus Vermicompost Facility to manage 100% of campus food waste at a location off-farm, as part of a closed-cycle campus waste diversion efforts.

| Benefits | Barriers | Measurement & Tracking |
|---|---|---|
| All campus compost can be diverted a short distance for treatment, without excess transportation emissions or costs.<br><br>A dedicated composter would ensure program continuity and provide additional student learning opportunities in vermicompost and expanded composting practices. | Start up costs for facility construction, and a facility operating cost of $30,000/year.<br><br>Identifying space to construct the facility off of the Organic Farm and near Dining Services Facilities.<br><br>Vermicompost not likely to decompose compostable bio-ware. May need to continue partnership with a commercial composting facility. | Quantity of waste diverted to compost and subsequent cost savings.<br><br>Quantity of compost produced and quantity sold to the community.<br><br>Quality of compost for sterility and organic certification. |

**Action Steps:**

1. Hire a professional consultant (possibly Dan Holcombe of Oregon Soil Corporation) to assist with design and planning of on campus facility
2. Address and adopt sorting/waste disposal practices
3. Address and adopt compost waste collection practices and procedures
4. Construct composting facility
5. Divert waste stream and use savings for dedicated staff
6. Acquire equipment and hire full-time staff member
7. Create market for compost and re-invest earnings in infrastructure
8. Review annually

In order to manage 100% of campus compostable waste, a new facility managed by full-time staff would need to be constructed. Through previous examination by students, staff and faculty a vermicompost facility would best suit the needs of the new facility. Managing campus generated, compostable waste on campus will cut transportation emissions and disposal costs. After four years the facility could be self-sustaining, start-up costs aside. The vermicompost facility would need to be staff managed and could include opportunities for student workers and part-time volunteers, can be incorporated into academic programs, and will help further Evergreen's goal to become a Zero Waste campus by 2020.

## Improve waste management and diversion – 2009-10

Reduce landfill bound waste stream by 10%, annually, to an ultimate goal of 70% reduction over fiscal year 2008 quantities.

| Benefits | Barriers | Measurement & Tracking |
|---|---|---|
| Less landfill waste will reduce associated GHG emissions from transportation and landfill decomposition.<br><br>Reduced waste stream will result in fewer waste handling (trucking and tipping) costs and fees. | Requires individual habitual behavior changes as well as institutional waste collection and handling process changes. | Landfill waste quantity measurements.<br><br>Recycled material and compostable waste quantities. |

**Action Steps:**

1. ***Coordinate with Composting DTF.***
2. Improve collection/disposal station signage and appearance (standardized, descriptive, pictorial)
3. Incorporate new student, faculty, and staff waste diversion training into orientations
4. Involve Eco-Reps in localized training, monitoring, and institutional feedback
5. Adjust collection processes to include sorted compostable waste
6. Expand compostable collection stations across the entire campus
7. Eco-Reps manage local station competitions for most effective sorting and waste diversion
8. Research and develop relationships with more local/regional recycling processors to reduce recycling stream that is shipped overseas
9. Audit and review annually

Waste reduction is a vital focus in order to reduce Evergreen's overall carbon emissions. Any solid waste disposed of in a landfill will eventually emit methane gas. Although smaller amounts are emitted than from other activities, methane is a more potent greenhouse gas than carbon dioxide (about 23 times as strong). Also, by providing students, faculty, and staff hands-on opportunities of decreasing their carbon footprint, (for example, by recycling or composting) there is an increased chance of creating environmentally friendly habits. Those who become engaged with environmentally friendly habits will be more likely to become supporters for a sustainable campus culture.

A part of this strategy is to increase individual awareness of the amount of waste being produced. There is currently no effective means to track how much each area of the college is contributing to the waste stream. Because of that, it would be difficult to begin offering incentives to get staff and students to reduce waste production at Evergreen. This strategy will make it possible to implement incentives for waste reduction and disincentives for waste generation. Several times a year staff estimate the volume of waste collected from each site. Then, using conversion factors located on the Recyclemania website an estimate of the weight of the waste could be generated.

Generating an estimate of the weight of waste collected would be useful for converting waste to dollars consumed to dispose of that waste and for finding the amount of carbon released by that amount of waste.

The amount of waste and recycling collected would then be posted at the site. The community would then be aware of whether the amount of waste/recycling produced is affected by education campaigns or waste reduction competitions. This tool would be useful during RecycleMania and during resource-reducing competitions that could be held throughout the year.

## Campus Activities Building Renovation to LEED Gold – 2009-10

Renovate Campus Activities Building to LEED Gold during capital improvement project.

| Benefits | Barriers | Measurement & Tracking |
|---|---|---|
| Improved energy efficiency and associated cost savings.<br><br>Reduced carbon emissions associated with the construction, operation, and maintenance of the building. | Costs and inherent limitations may prevent achievement of LEED Gold certification.<br><br>LEED Silver is our minimum expectation. | Attention to planning and construction process.<br><br>Follow up analysis of building performance and efficiencies. |

**Action Steps:**

1. This project began in June, 2009
2. Facilities follow and report on progress
3. Project completion report or story to the community
4. Annual analysis and review of performance

The Campus Activities Building (CAB) was originally built in 1972 and is currently 122,238 square feet. The renovation includes modifying 94,000 square feet of existing building and adding approximating 14,500 square feet of new construction on to the building. The renovation of the Campus Activities Building will need to be aggressive in reducing its carbon limits to offset the added square footage and the energy required for the additional square footage. The CAB is due for renovation, so ensuring that the building is built to LEED gold will help reduce the carbon for the renovation and addition.

The CAB remodel will increase activities and areas for students to hang out on campus. Student participation on this project has pushed for the new CAB to be built to a LEED Gold standard, which will significantly reduce carbon emissions from the building. The renovated CAB will be a source of pride for The Evergreen State College.

## College Fleet Replacement; Phase 1 – 2009-10

As equipment ages repair or replace with purchase of more efficient models, electric models, or conversion to Bio-diesel.

| Benefits | Barriers | Measurement & Tracking |
|---|---|---|
| Older energy intensive, high emissions vehicles are replaced with new alternative fuel vehicles when decommissioned.<br><br>Lower fuel/operational costs and reduced GHG emissions.<br><br>Potentially expensive fleet replacement is aligned with necessary replacement and an opportunity to take advantage of the newest alternative fuel options. | Greater initial costs at moment of purchase. | Product research for best possible replacements at time of need. |

**Action Steps:**

1. Schedule replacement of vehicles in need of replacement with electric vehicles
2. Change one tractor to biodiesel fuel
3. Replace miscellaneous older lawn equipment with higher efficiency equipment

This strategy (in three phases) can reduce the ground maintenance vehicle and equipment fleet's carbon footprint by 2/3, which is 26 tons of GHG annually, or roughly 0.1% of The Evergreen State Colleges' total emissions. This is the first of a three-phase strategy requiring utilization of electric vehicles, a gradual introduction of Bio-diesel, and an increasing efficiency standard in lawn maintenance equipment.

## Re-purpose Lawns; Phase 1 – 2009-10

Reduce maintenance requirements of existing lawns, with native plants or re-forestation.

| Benefits | Barriers | Measurement & Tracking |
|---|---|---|
| Re-purposed landscape can require little to no fertilizer and maintenance with gasoline powered equipment.<br><br>Tree and plant growth enhances carbon sequestration. | Initial costs of acquiring and planting native plants and trees.<br><br>Loss of useable lawn space for events and community activities.<br><br>Will require more maintenance labor during initial planting and growth seasons until new plantings are firmly established. | Carbon sequestration studies of new growth and changes, year to year.<br><br>Potential for student salvage of local plants from new development around the county and relocation into re-forested lawn plots. |

**Action Steps:**

1. ***COMMUNITY ENGAGEMENT*** **–** Solicit community input and participation in design of re-purposing plan and schedule for lawns north of Library, adjacent to Longhouse, and around the renovated CAB, in conjunction with an educational program (this process should include reference to expertise in and discussion of efficient carbon sequestration, as well as environmental and maintenance impacts)
2. Acquire native stock plants per plan in conjunction with an educational program; possibilities include edible perennials.
3. Plant and begin plan implementation in conjunction with an educational program
4. Maintain and monitor until established in conjunction with an educational program

Lawns can be traced back to aristocratic estates from the middle ages, and are labor intensive by nature. We currently utilize GHG intensive equipment to facilitate lawn management on campus. Lawns comprise at least 10 percent of the grounds and built environment but account for roughly 30 percent of ground maintenance emissions. This phased in strategy proposes to remove and replace 12 acres or 30% of lawn area over the next 11 years. Incorporating additional native plantings, gardens, storm water ponds, and gathering places into the campus landscape will not only reduce carbon, but strengthen the campus community. Replacing lawns with properly designed native landscaping, hardscapes, and/or gardens can decrease carbon intensive maintenance, create learning opportunities, increase on campus carbon sequestration and eco-system services, and more accurately reflect the character and history of The Evergreen State College.

## On Campus Dorm Metering – 2010-11

Install metering technology for campus housing and other new or remodeled buildings.

| Benefits | Barriers | Measurement & Tracking |
|---|---|---|
| Discrete monitoring allows for direct feedback of energy usage and enables behavioral education , awareness, and adjustment among energy users. | Cost and technology. | Installation completion.<br><br>Regular monitoring of energy usage, correlations with activities, user feedback to develop energy efficient behaviors. |

**Action Steps:**

1. Secure Clean Energy committee or other source grant
2. Identify best fit monitoring technology
3. Install
4. Include Eco-Rep volunteers, Sustainable Behavior Fellow, and educational programs in monitoring, user feedback, and energy use/behavioral correlations

Providing energy consumption metrics by building will help create positive connections between user actions and energy demand, along with the associated GHG emissions.

Research shows that occupant decisions can account for 50% of a building's energy use.[3] While residents living on campus do not pay for their energy use directly, and thus no financial incentive exists for the practice of energy saving behaviors, research has shown that individuals who report a connectedness with nature are very likely to make environmentally beneficial decisions (Mayer and Frantz, 2004).

Peterson, et al. (2007) report that, at Oberlin College, dorms that exhibited the highest reduction rates were freshman dorms for which high-resolution (real-time) energy data was available (55% during the two week competition period). This makes the A, B, C, and D dorms prime candidates for installation of this technology.

[3] Schipper,1989 from Peterson et al: Dormitory residents reduce electricity consumption when exposed to realtime visual feedbacks and incentives. International Journal of Sustainability in Higher Education. Vol. 8 No. 1, 2007 pp. 16-33

## Upgrade Boiler Controls; Phase 1 – 2010-11

Replace manual boiler controls with programmable controls.

| Benefits | Barriers | Measurement & Tracking |
|---|---|---|
| Enhanced heating efficiency and reduced fuel costs.<br><br>Enhanced operational safety.<br><br>Improved operability and monitoring. | Cost of implementation. | Completed installation. |

**Action Steps:**

1. Secure capital budget financing
2. Select and install control system
3. Dedicate housing boiler, steam runs, and controls during upgrade
4. Review and report

The Evergreen State College has two primary boilers. One is used full-time for the school's heating needs, while the second is used as a backup. When the primary boiler suffers a mechanical failure, or is shutdown for routine maintenance, the second is fired up and brought online to fulfill the existing heating demand. The current boiler controls are more than 40 years old. These controls are critical for a HVAC system of this magnitude to heat and cool buildings efficiently, both in terms of time, duration, and temperature. The steam availability is also critical to the operation of power plants and a reliable, powerful boiler control system can only ensure an adequate supply.

The *2009-2011 Preservation Reduction Plan* has allocated $1,050,000 for upgrading the controls on Evergreen's heating system, Boiler #1 and Boiler #2. A new control system uses sophisticated control schemes integrate boiler and turbine controls and allows efficient management of load, furnace pressure, drum level, and the combustion process. The fully automated boiler control process enables access to more data, lowers costs, and enhances the safety of the plant. Safety is improved through greater accessibility to essential information, such as alarms and diagnostics.

## Dedicate a Boiler for Housing Service – 2010-11

Establish a dedicated boiler/heating system for campus housing.

| Benefits | Barriers | Measurement & Tracking |
|---|---|---|
| Enhanced heating efficiency and reduced fuel costs. | Cost of implementation. | Completed installation. |

**Action Steps:**

1. Dedicate housing boiler, steam runs, and controls during installation of new controls
2. Review and report

The boilers in Evergreen's Central Utility Plant supply heat and hot water for the entire campus, including heat for hot water and dryers to housing in the summer months. In addition, in the winter the steam is provided to heat housing and there is significant line loss through the steam line. Installation of a dedicated boiler for housing will significantly reduce the demand on the larger Utility Plant boilers and supply efficiency for housing.

## Window weatherization – 2010-11

Sealing dorm and housing windows to reduce loss of conditioned air from inside to out.

| Benefits | Barriers | Measurement & Tracking |
|---|---|---|
| Reduce loss of energy used for heating/cooling and associated cost savings.<br><br>Create more comfortable housing environment. | Material and installation costs. | Percent of exterior windows sealed. |

**Action Steps:**

1. Secure ESCO or energy efficiency grant funding
2. Implement weatherization
3. Replace and upgrade windows as appropriate

Weatherizing the windows on lower campus will reduce the loss of conditioned air from inside environments. Most occupants living in the dorms have at least one window at their control, plus common areas. There is currently no weather stripping on these windows. In lieu of completely replacing these mostly single-pane windows, an effective interim strategy will be to weather-strip them to reduce air leaks. This, coupled with a cost effective replacement strategy involving double or triple paned, argon filled, reinforced windows would greatly boost the efficiency of space heating, as well as occupant comfort on lower campus. Occupants have direct control of the heat in their rooms, so this would likely have the effect of a decrease in heating demand.

## Commute Trip Reduction Financial Incentive Strategies – 2009-11

Use parking fee structure and/or procedures to incentivize alternatives to single occupancy vehicle use.

| Benefits | Barriers | Measurement & Tracking |
|---|---|---|
| Financial incentive to carpool and disincentive for single occupancy vehicles.<br><br>May increase parking revenue available for transportation related programs. | May adversely affect low-income staff and students unable to live close to campus.<br><br>Requires public comment and involvement as part of the decision making process. | Commuting behavior surveys and observational measurements.<br><br>Total permit and pass sales. |

**Action Steps:**

1. ***COMMUNITY ENGAGEMENT*** – Begin public opinion and information process through Parking Review Board to redefine rate structure
2. Alter parking permit rates or processes as determined in review process
3. Monitor and Review resulting behavior quarterly

Changing the parking fee rate structure may affect commuting behavior, as well as generate revenue that can be applied to Commute Trip Reduction Programs. The cost of a yearly transit pass is $360 ($30 dollars a month) while the price of a yearly parking pass is $120 (2008 prices). The Campus Master Plan calls for an equivalence between the price of a college parking pass and an Intercity Transit pass to strengthen the benefits associated with using mass transit. All parking rates should be reviewed, including daily and two-hour passes. Research on the parking prices of other Washington State educational institutions has revealed that Evergreen's rates are lower than all others. Adjusting our rate structure accordingly may also generate revenue necessary to enable parking services to efficiently track our transportation associated statistics. Accurate data will allow us to adjust our alternative transportation strategies effectively, as needed, and involve the operational aspect of Parking Services in our learning laboratory.

Along with the increase in parking passes we would like to reward the community with a decreased price in car pool parking. Car pooling/rideshare is an effective way to reduce single occupancy trips to campus. Carpools are currently rewarded with preferential parking, but adjusting the rate structure will demonstrate that Evergreen financially rewards community members who carpool. Additional discount incentives may be possible for alternative fuel vehicles.

An increase in parking prices can drive demand for carpooling and reinforce beneficial commuting behavior. If our restructured rates are effective in reducing single occupancy vehicle trips to campus, we could have significant impact on our emissions due to commuting.

# Strategies and Process

## 2011 – 2013 Biennium

| | Strategy | Year |
|---|---|---|
| Energy Efficiency | Door Weatherization; Ph. 1 | 2011-12 |
| | Boiler Controls; Ph. 2 | 2011-12 |
| | CRC Lighting | 2012-13 |
| Alternative Transportation | Bike Rental Program | 2011-12 |
| | Student Passport Program | 2011-12 |
| Buildings and Grounds | COM Renovation | 2011-12 |

| Campus Community Engagement | Year |
|---|---|
| Renewable Energy Strategy(s) | 2011-12 |
| Lawn Re-purposing Planning | 2012-13 |
| Carbon Offsets Study Group | 2012-13 |

## Door weatherization; Phase 1 – 2011-12

Add and/or repair insulating gaskets on doors around campus.

| Benefits | Barriers | Measurement & Tracking |
|---|---|---|
| Reduced heat or cooling loss through air leaks around exterior doors, resulting in energy savings. | Expense for materials and installation. | Percent of exterior doors sealed.<br><br>Heating/cooling energy requirements. |

**Action Steps:**

1. Line up PSE or ESCO funding
2. Implement weatherization
3. Inspect and maintain annually

We estimate that campus buildings lose about 10% of their heating energy through building envelopes. Leaky exterior door seals are a significant factor in that loss. This project includes sealing up and fixing doors that perform inefficiently and the installation of insulating gaskets on outlet plates throughout campus.

## Upgrade Boiler Controls; Phase 2 – 2011-12

Replace manual boiler controls with programmable controls.

| Benefits | Barriers | Measurement & Tracking |
|---|---|---|
| Enhanced heating efficiency and reduced fuel costs.<br><br>Enhanced operational safety and monitoring. | Cost of implementation. | Completed installation. |

**Action Steps:**

1. Secure capital budget financing
2. Select and install control system
3. Review and report

## Bike rental program; including bikes and a paid mechanic – 2011-12

Provide bicycles for rent and mechanical support.

| Benefits | Barriers | Measurement & Tracking |
|---|---|---|
| Provides a simple transportation alternative to driving for students living on-campus. | Implementation, maintenance, and staffing costs. | Actual use, including distances travelled, when and why in order to maximize program fit with actual needs. |

**Action Steps:**

1. Use parking pass fee excess to fund start up bikes and bike staff hours
2. Start pilot project at campus residence halls, with on-campus residential students
3. Monitor and review (involve educational programs)
4. Increase program, as appropriate, as parking fee funds become available
5. Monitor and review (involve education programs)

The Bike rental program through the bike shop would ensure availability of bikes and enable more students to commute by bike. If 50 students that drive alone shift to bike commuting, it will reduce $CO_2$ emissions by 1% compared to 2005 levels. This bike share program can be introduced incrementally, introducing 5 bikes a year, for example, over the next two years as a pilot program.

Bicycles and parts are procured through the impoundment of abandoned bicycles on campus. If a bicycle remains unclaimed after the designated notice and waiting period, it is turned over to the bike shop to be used for the bike rental program.

Representatives from the student run bike shop, parking services, and residence and dining, along with the student alternative transportation coordinator should all be involved in this collaborative program.

## Expand 'Passport' Program to include Students – 2011-12

Provide students with an opportunity to gain free occasional parking through regular use of transportation alternatives.

| Benefits | Barriers | Measurement & Tracking |
|---|---|---|
| Encourages and rewards habitual use of alternative transportation when commuting. | Lost parking fee revenue. | Student awareness and use of program. |

**Action Steps:**

1. Ensure parking budget excess and ability to absorb costs, or seek a grant for start up
2. Research feasibility of using existing student ID cards for tracking purposes (in conjunction with a computerized tracking program)
3. Offer Passport program to students
4. Monitor and review usage
5. Audit and review annually

The Passport Program was established to provide incentives to campus community members who utilize alternative transporting options. Presently, it is only available to staff and faculty and it offers them 36 days of free parking a year, 12 days per quarter, for using an alternative daily commute. If expanded to students, the program would reward students with free parking for using alternative transportation for their commute. This can be the first program sponsored by the institution that rewards alternative commuters among the students. Establishing stronger incentive programs has been targeted by the Climate Action Planning graduate students as a much needed step in building effective alternative transportation habits in the future.

## Communications Building Renovation to LEED Silver – 2011-12

Renovate Communications Building to minimum LEED Silver certification

| Benefits | Barriers | Measurement & Tracking |
| --- | --- | --- |
| Improve energy efficiency and reduce environmental impact of construction and maintenance. | Capital project cost. | Attention to planning and construction process.<br><br>Follow up analysis of building performance and efficiencies. |

**Action Steps:**

1. Begin planning and design (2009)
2. Secure capital budget (2010)
3. Begin construction (2011)
4. Monitor and review annually

The Communication Building was erected in 1977 and is approximately 121,513 square feet. In conjunction with the college's goal for carbon neutrality the Communication Building is due for a renovation. Projected uses for the building will be for performance and lecture spaces, conference programs and receptions, interdisciplinary labs, and faculty offices. Since building remodels and renovations is something that needs to take place as the college ages, ensuring that the new designs are built to LEED Silver versus conventional building standards will be an easy source of carbon reductions for the college as buildings are updated.

Currently, the Communications building is estimated to use 1,227,281 kWh of electricity and 8,506 MMBTU of Natural Gas annually. This causes 546.7 tons of carbon greenhouse gas emissions to be emitted from the Communications Building alone. In the remodel design, 90,000 square feet of the building will be up for remodel. Major components for this project will include the heating and ventilation, plumbing and pipe fixtures, fire protection, lighting and electrical power, floor, wall, and ceiling finishes, doors and door hardware, and security for the building. If the building is renovated to LEED Silver standards, it could reduce the greenhouse gas emissions by up to 30 percent. This would shrink the carbon footprint of the building by 165.8 tons to a total of to 380.9 tons of carbon.

## Campus Recreation Center Lighting – 2012-13

Replace current, always on, lighting with on-demand lighting.

| Benefits | Barriers | Measurement & Tracking |
|---|---|---|
| Reduce unnecessary power demand from lighting unused space.<br><br>Improves lighting efficiency. | Cost of changeover to new light fixtures and on-demand sensors. | Project completion. |

**Action Steps:**

1. Secure funding or combine project with other CRC renovations
2. Replace lights, install on-demand sensors
3. Review and report

Gymnasium lights (currently 126 400 watt metal halide lamps) run constantly while the College Recreation Center (CRC) is open. The lights are on 15 hours a day during the week, 10 hours on Saturday, and 5 hours on Sunday (current CRC operating hours), regardless of user occupation. It takes five minutes for the existing metal halide lights to strike and illuminate the space – an unacceptable cost to occupant time and safety. Replacing the 400 watt metal halide fixtures with lower wattage, high output T5 fluorescent fixtures and adding occupancy sensors to the fixtures will significantly reduce the power demand from those lights.

## Renewable Energy Disappearing Task Force – 2011-12

***COMMUNITY ENGAGEMENT:***

The Renewable Energy disappearing task force is required to study current renewable energy options and best practices, effect community engagement, acquire community opinions, and recommend future action steps pertaining to on-site energy generation, renewable energy credits, and the student clean energy fee.

The task force should include representatives from the Clean Energy Committee, the Geoduck Student Union, Facilities, faculty, and others as determined by the Sustainability Council.

The task force recommendations will be due to the Sustainability Council by April, 2012.

## Re-Purposing Lawns Plan Review – 2011-12

***COMMUNITY ENGAGEMENT:***

The Sustainability Council, along with the Campus Land Use Committee (CLUC), must engage the campus community in a review of Phase 2 plans for re-purposing lawns to reduce maintenance and improve natural function of the space.

This review should inform and, if necessary, adjust re-purposing plans scheduled for FY 2013-14.

Final recommendations are due to the Council in April, 2012.

## Carbon Offsets Study Group – 2012-13

***COMMUNITY ENGAGEMENT:***

Form a disappearing task force to study carbon offsets and the offset market, engage the campus community in a value-based discussion of offsets, and make recommendations for the college's acquisition and use of carbon offsets to compensate for non-reducible GHG emissions.

This task force may be associated with, or even result from the re-definition of, the Renewable Energy DTF.

The study group's recommendations are due to the Sustainability Council by April, 2013.

# Strategies and Process

## 2013 – 2015 Biennium

| | Strategy | Year |
|---|---|---|
| Energy Efficiency | Door Weatherization; Ph. 2 | 2014-15 |
| Renewable Energy | Bio-mass Gasification | 2013-14 |
| Alternative Transportation | Offset Air Travel | 2013-14 |
| Food and Waste | Increase Local Food Purchases | 2013-14 |
| | Fleet Upgrade; Phase 2 | 2013-14 |
| | Re-purpose Lawns; Phase 2 | 2013-14 |
| Buildings and Grounds | Community Car Share | 2014-15 |

| Campus Community Engagement | Year |
|---|---|
| Parking Infrastructure Study | 2014-15 |

## Bio-mass Gasification – 2013-14

Install on-site biomass gasification reactor system to replace dependence upon natural gas.

| Benefits | Barriers | Measurement & Tracking |
|---|---|---|
| Substantial renewable energy heating system.<br><br>A carbon neutral process, with substantial impact on reduction of GHG emissions.<br><br>Reliance upon local energy resources; keeps energy $ within the local/regional economy.<br><br>Fuel and operating costs are expected to be substantially less than the cost of natural gas.<br><br>Potential, as a large customer, to create local jobs and have a positive impact on local forest management practices. | Large initial infrastructure investment.<br><br>Local fuel sources and suppliers must be developed.<br><br>New facilities staff and procedures must be developed. | Actual energy production and costs vs. actual natural gas costs.<br><br>Fuel sourcing and forest management practices.<br><br>Carbon cycle analysis: from sequestration during tree growth to emissions and retention in ash.<br><br>Economic study of fuel supply market and regional impacts. |

**Action Steps:**

1. Secure capital budget funding through stimulus funding, partnership with the State, ESCO funding, and/or grants
2. Plan installation (incorporate educational programs)
3. Develop fuel supply source(s) through DNR, Correctional Industries, and local forest product companies (incorporate educational programs)
4. Install Plant
5. Revise Utility Plant procedures and add bio-mass staff
6. Bring plant on line
7. Review and revise procedures
8. Incorporate education programs in plant operations and fuel supply sourcing

The most mature and feasible on-campus energy generation strategy available at this time is biomass gasification. This process involves high temperature gasification of chipped plant material, which feeds into a combustion process. Biomass gasification systems are currently available in the market and can replace natural gas.

The gasification process heats the biomass to extremely high temperatures to create syngas, which can then be burned to heat our campus boilers. Biomass gasification is considered to be carbon neutral because the amount of carbon released during harvest, transportation and gasification of the fuel crop is sequestered by the crop itself, creating a discrete carbon cycle.

## Offset Air Travel – 2013-14

Create a carbon mitigation fund to offset GHG emissions originating from air travel.

| Benefits | Barriers | Measurement & Tracking |
| --- | --- | --- |
| Does not adversely restrict or inhibit normal college operations and programs. Travel to distant locations will remain a necessity, and air travel remains the most effective means. | Financial resources to purchase offsets. | Annual air miles travelled. |

**Action Steps:**

1. ***COMMUNITY ENGAGEMENT*** **–** Establish a funding model through an engaged stakeholder process; fees on travel programs, clean energy grants, and other means should be explored
2. Select an offset provider through reference to the Carbon Offsets study group report
3. Create an air travel education report including full cost disclosure (GHG emissions, travel costs, offset costs, fees, etc.) for feedback to regular users in conjunction with an educational program
4. Review and publish report annually

Carbon offsets through a carbon mitigation fund are the most realistic means to offset $CO_2$ emissions when a significant reduction cannot be made without significantly impacting the mission and function of the college.

Some reductions in actual travel may be possible, but substituting or significantly reducing emissions from air travel is very challenging. We believe that we can encourage changes in behavior, but should not mandate them. We recommend an emphasis on education and full disclosure of all travel costs (including carbon and offset costs), inviting faculty, students, and staff to adjust their travel needs appropriately.

## Increase Local and Organic Food Purchasing – 2013-14

Increase local and organic food purchases by 10% of total food purchases.

| Benefits | Barriers | Measurement & Tracking |
|---|---|---|
| Reduced GHG emissions associated with transportation, cooling, and storage of non-local food.<br><br>Increase support and stimulation of local food economy. | Must be negotiated into ARAMARK contract.<br><br>Costs may be greater, and supply stability may be less.<br><br>Food service and consumers must adapt to a more regional and seasonal food supply. | Actual purchases, sources, and types.<br><br>Food preparation and consumption impacts and responses. |

**Action Steps:**

1. Define ‘local’ and ‘organic’ criteria satisfactory to our specific circumstances
2. Prepare purchasing case, including sources and availability
3. Negotiate requirements into Aramark contract
4. Monitor and review (involve educational programs)

Evergreen’s Sustainability Task Force set a goal in 2007 for Dining Services to be purchasing 40% of their food from local, organic, or local organic sources by 2010, a goal that ARAMARK, our food service provider, gladly accepted. ARAMARK, purchases 32% of its food from local, organic, or local organic sources. As of academic year 2008-09, ‘local’ is defined as within the Pacific Northwest with emphasis upon purchasing as locally as possible. Organic food is raised with more sustainable, less fossil-fuel intensive methods. The Greenery (campus dining hall) serves about 1000 people per day, so changes in food operations will have a positive impact on many people - raising their awareness to multiple sustainability issues while educating about seasonality, organic and local food, and the importance of developing a sustainable food system. ARAMARK has the final say on purchasing decisions, but they have shown significant interest in working to increase local and organic purchasing throughout their contract.

> *Transporting food consumes a vast amount of fossil fuels. Domestic agricultural products total 566 billion tonmiles, or 20 percent of the commodity transport with the United States. A rough estimate predicts that 120 million tons of $CO_2$ emissions are directly attributable to domestic food transport each year, and U.S. imports and exports likely account for an additional 120 million tons.* (Food and Water Watch Fact Sheet)

Food transport is a part of our Scope 3 greenhouse gas emissions that Evergreen feels can be impacted. Purchasing Certified Organic foods ensures reduced use and ingestion of chemical fertilizers for both farm workers and guests in dining services. Developing local food partnerships enhances local food security and develops strong relationships between The Evergreen State College and the local community. We have yet to exhaust purchasing opportunities from the on-campus Organic Farm or other local organic farms within our ‘local’ range.

## College Fleet Replacement; Phase 2 – 2013-14

As equipment ages repair or replace with purchase of more efficient models, electric models, or conversion to Bio-diesel.

| Benefits | Barriers | Measurement & Tracking |
|---|---|---|
| Older energy intensive, high emissions vehicles are replaced with new alternative fuel vehicles when decommissioned.<br><br>Lower fuel/operational costs and reduced GHG emissions.<br><br>Potentially expensive fleet replacement is aligned with necessary replacement and an opportunity to take advantage of the newest alternative fuel options. | Greater initial costs at moment of purchase. | Product research for best possible replacements at time of need. |

**Action Steps:**
1. Evaluate and schedule vehicles in need of replacement or conversion
2. Evaluate and select best market alternative fuel options
3. Replace miscellaneous older lawn equipment with higher efficiency equipment

This strategy (in three phases) can reduce the ground maintenance vehicle and equipment fleet's carbon footprint by 2/3, which is 26 tons of GHG annually, or roughly 0.1% of The Evergreen State Colleges' total emissions. This is the second in a three-phase strategy requiring utilization of electric vehicles, a gradual introduction of Bio-diesel, and an increasing efficiency standard in lawn maintenance equipment.

## Re-Purpose Lawns; Phase 2 – 2013-14

Reduce existing lawn with native plants to begin re-purposed landscaping.

| Benefits | Barriers | Measurement & Tracking |
|---|---|---|
| Re-purposed landscape can require little to no fertilizer and maintenance with gasoline powered equipment.<br><br>Tree and plant growth enhances carbon sequestration. | Initial costs of acquiring and planting native plants and trees.<br><br>Loss of useable lawn space for events and community activities.<br><br>Will require more maintenance labor during initial planting and growth seasons until new plantings are firmly established. | Carbon sequestration studies of new growth and changes, year to year.<br><br>Potential for student salvage of local plants from new development around the county and relocation into re-forested lawn plots. |

**Action Steps:**

1. Design re-purposing plan and schedule in conjunction with an educational program
2. Acquire native stock plants/trees per plan in conjunction with an educational program
3. Plant and begin re-forestation in conjunction with an educational program
4. Maintain and monitor (in conjunction with an educational program) until established

This phased-in strategy proposes to remove and replace 12 acres of lawn. Re-purposing should decrease carbon intensive maintenance, create learning opportunities, increase on campus carbon sequestration and eco-system services, and reflect the character and history of The Evergreen State College.

## Community Car Share Disappearing Task Force – 2013-14

Form a disappearing task force to study, make recommendations, and plan a car share program for the campus with consideration of possible collaboration(s) with local community partners, or other state agencies.

Items of study include:

- Users – who are they, how often, what are they willing to pay?
- Partners – who else has this need and is willing to participate?
- Maintenance/ownership responsibilities
- Liability – insurance costs and legal responsibilities
- Program structure; including fees, registration, rules and restrictions
- Marketing and promotions – how to register and engage users?
- Implementation plans

DTF members should include, at minimum:

- Students
- Motor Pool staff
- Residence staff
- Faculty
- Community members
- (optionally) Local transit or transportation authority representatives

The task force recommendations are due to the Sustainability Council by April, 2014.

## Door weatherization; Phase 2 – 2014-15

Add and/or repair insulating gaskets on doors around campus.

| Benefits | Barriers | Measurement & Tracking |
|---|---|---|
| Reduced heat or cooling loss through air leaks around exterior doors, resulting in energy savings. | Expense for materials and installation. | Percent of exterior doors sealed.<br><br>Heating/cooling energy requirements. |

**Action Steps:**

1. Line up PSE or ESCO funding
2. Implement weatherization
3. Inspect and maintain annually

We estimate that campus buildings lose about 10% of their heating energy through building envelopes. Leaky exterior door seals are a significant factor in that loss. This project includes sealing up and fixing doors that perform inefficiently and the installation of insulating gaskets on outlet plates throughout campus.

## Community Car Sharing Program – 2014-15

Partner with other public and private entities to establish a car share system based in Olympia and easily accessible from campus.

| Benefits | Barriers | Measurement & Tracking |
|---|---|---|
| Provides cost effective, short term use rental vehicles for students and the community with infrequent travel needs. | Liabilities and vehicle maintenance. | Monitor usage levels. |

**Action Steps:**

1. ***COMMUNITY ENGAGEMENT*** - Establish a DTF to study feasibility, define interested users, scope out partners, make recommendations, and establish implementation plan
2. Establish liabilities
3. Market and promote
4. Establish program
5. Monitor and review

A community car share allows users to rent vehicles at a low rate for hourly or daily use. Similar to FlexCar, a community car share allows more local control of rates and systems. A FlexCar system cost the providers (such as a University) about $1000 a month per vehicle on average. Conversely, community car share systems, such as in Bellingham, cost significantly less per vehicle.

## Parking Infrastructure Study Group – 2014-15

Form a group to study parking infrastructure changes, engage the campus community in a value-based discussion of changes, and make recommendations for changes in parking infrastructure.

Items of study include:

- Current and projected usage
- Infrastructure economic, environmental, and GHG costs
- Total parking capacity and desired capacity
- Local code requirements driving built capacity
- Alternative transportation infrastructure, such as charging stations
- Implementation plans

DTF members should include, at minimum:

- Students, Faculty, and Staff commuters
- Parking Services staff
- Facilities and Residence staff
- Community members
- Local transit or transportation authority representatives

The task force recommendations are due to the Sustainability Council by April, 2015.

# Strategies and Process

## 2015 – 2017 Biennium

| | Strategy | Year |
|---|---|---|
| Buildings and Grounds | Re-purpose Lawns; Phase 3 | 2016-17 |
| | Fleet Upgrade; Phase 3 | 2016-17 |
| | Parking Code Exemption | 2016-17 |

| Campus Community Engagement | Year |
|---|---|
| Bio-mass Co-generation Planning | 2015-16 |
| Carbon Offsets Study Group | 2016-17 |

## Re-purpose Lawns; Phase 3 – 2016-17

Reduce existing lawn according to plans.

| Benefits | Barriers | Measurement & Tracking |
|---|---|---|
| Re-purposed landscape will require little to no fertilizer and maintenance with gasoline powered equipment.<br><br>Tree and plant growth enhances carbon sequestration. | Initial costs of acquiring and planting native plants and trees.<br><br>Loss of useable lawn space for events and community activities.<br><br>Will require more maintenance labor during initial planting and growth seasons until new plantings are firmly established. | Carbon sequestration studies of new growth and changes, year to year.<br><br>Potential for student salvage of local plants from new development around the county and relocation into re-forested lawn plots. |

**Action Steps:**

1. Follow re-purposing plan developed in 2013 and schedule in conjunction with an educational program
2. Acquire native stock plants/trees per plan in conjunction with an educational program
3. Plant and begin implementation in conjunction with an educational program
4. Maintain and monitor (in conjunction with educational programs) until established

This phased-in strategy proposes to remove and replace 12 acres of lawn. Re-purposing should decrease carbon intensive maintenance, create learning opportunities, increase on campus carbon sequestration and eco-system services, and reflect the character and history of The Evergreen State College.

## College Fleet Replacement; Phase 3 – 2016-17

As equipment ages repair or replace with purchase of more efficient models, electric models, or conversion to Bio-diesel.

| Benefits | Barriers | Measurement & Tracking |
|---|---|---|
| Older energy intensive, high emissions vehicles are replaced with new alternative fuel vehicles when decommissioned.<br><br>Lower fuel/operational costs and reduced GHG emissions.<br><br>Potentially expensive fleet replacement is aligned with necessary replacement and an opportunity to take advantage of the newest alternative fuel options. | Greater initial costs at moment of purchase. | Product research for best possible replacements at time of need. |

**Action Steps:**

1. Evaluate and schedule vehicles in need of replacement or conversion
2. Evaluate and select best market alternative fuel options
3. Replace miscellaneous older lawn equipment with higher efficiency equipment

This is the third in a three-phase strategy requiring utilization of electric vehicles, a gradual introduction of Bio-diesel, and an increasing efficiency standard in lawn maintenance equipment.

## Exempt Campus from Thurston County Parking Requirements – 2016-17

Apply for and acquire variance from code requirements to add parking in conjunction with renovations or new construction.

| Benefits | Barriers | Measurement & Tracking |
|---|---|---|
| Supports the shift of emphasis upon an alternative transportation paradigm.<br><br>Reduces parking lot maintenance costs and storm water runoff.<br><br>Increases carbon sequestration on campus. | Thurston County zoning code requirements for parking availability; will need to plea to County Commissioners. | Parking lot capacity; transit and carpool usage. |

**Action Steps:**

1. Create transportation master plan to accommodate new community mobility needs through 2030
2. Work with County to receive 100 year variance/exemption on parking requirements
3. Create monitoring plan to mitigate possible overflow parking impacts on roads

Exemption from County parking requirements is an important step in reducing our impact on the regional environment, and in shifting the way we accommodate the car. Currently, we must add several hundred spaces when new buildings are erected. Similarly, when buildings are renovated we also must add spaces or apply for a one-time variance from the County.

Currently Evergreen's parking lot encompasses 1,965 spaces. During peak demand only 1,420 spaces are utilized and 545 spaces remain vacant (2006 Master Plan). Despite Evergreen's objective of reducing the number of SOV's commuting to campus Evergreen provides an abundance of spaces for student commuters. Currently 4,500 students attend Evergreen and around 80% commute to campus (2006 Master Plan).

Continued accommodation for the car is obviously not the best choice, both financially and environmentally. Exemption from future parking requirements will allow us to handle vehicles as we see fit and as our needs change.

## Bio-mass Co-Generation Study and Planning Group – 2015-16

Form a group to study the feasibility of bio-mass co-generation for renewable production of electricity on-site, engage the campus community in a discussion of renewable energy production, and make recommendations for implementation of a renewable energy plan for purchased electricity.

Task force recommendations are due to the Sustainability Council by April, 2016.

## Carbon Offsets Study Group – 2016-17

Re-form a group to review and study carbon offset strategies, to engage the campus community in a value-based discussion of offsets, and to make recommendations for the college's acquisition and use of offsets.

Recommendations are due to the Sustainability Council by April, 2017.

# Strategies and Process

## 2017 – 2019 Biennium

| | Strategy | Year |
|---|---|---|
| Renewable Energy | Bio-mass co-generation | 2017-18 |
| Alternative Transportation | Restrict student vehicles | 2017-18 |
| Buildings and Grounds | Modify parking infrastructure | 2018-19 |
| OFFSETS | Acquire carbon offsets | 2017-18 |

## Bio-mass Co-generation – 2017-18

Install bio-mass gasification co-generation system to replace dependence on purchased electricity.

| Benefits | Barriers | Measurement & Tracking |
|---|---|---|
| Substantial renewable energy electrical generation system.<br><br>A carbon neutral process, with substantial impact on reduction of GHG emissions.<br><br>Reliance upon local energy resources; keeps energy dollars within the local/regional economy.<br><br>Fuel and operating costs are expected to be substantially less than the cost of purchased electricity. | Large initial infrastructure investment.<br><br>May need new facilities staff and procedures. | Actual energy production and costs vs. actual electric costs.<br><br>Economic study of fuel supply market and regional impacts. |

**Action Steps:**

1. Secure capital budget funding through stimulus funding, partnership with the State, ESCO funding, and/or grants
2. Plan installation (incorporate educational programs)
3. Install Co-generation Plant
4. Review Utility Plant procedures and revise if neccessary
5. Bring plant on line
6. Review and revise procedures
7. Incorporate education programs in plant operations and fuel supply sourcing

## Restrict Student Cars – 2017-18

Restrict car use and type on campus and provide alternative transportation training and support for students living on campus.

| Benefits | Barriers | Measurement & Tracking |
|---|---|---|
| Restricts automobile usage and encourages development of alternative transportation commuting habits. | Student expectations, special needs, and emergency needs. | Monitor usage of transportation alternatives. |

**Action Steps:**

1. ***COMMUNITY ENGAGEMENT*** **–** Ensure sufficient transportation alternatives, access, and training are available
2. Develop freshman orientation training in alternatives in conjunction with educational program
3. Establish stakeholder input and review process to inform decision-making
4. Implement vehicle policy
5. Monitor and evaluate transportation habits in conjunction with educational program
6. Review

## Modify Parking Infrastructure - 2019

Reduce non-permeable parking surface area by removing and/or planting over unneeded spaces and/or otherwise modify parking infrastructure based upon DTF recommendations.

| Benefits | Barriers | Measurement & Tracking |
|---|---|---|
| Supports the shift of emphasis upon an alternative transportation paradigm.<br><br>Reduces parking lot maintenance costs and storm water runoff.<br><br>Increases carbon sequestration on campus. | Initial costs of space removal.<br><br>Thurston County zoning code requirements for parking availability. | Plant growth and sequestration. |

**Action Steps:**

1. Refer to Parking Infrastructure DTF recommendations for determination of actual strategy; potentially plant over or dig out parking surfaces
2. Plan distribution of space removal
3. Implement removal

## Academic Involvement

Approximately 32% of The Evergreen State College coursework, at both undergraduate and graduate levels, have a sustainability focus, and another 12% include sustainability as a related subject. Thirteen (13%) percent of student organizations and a student run business on campus are focused upon sustainability and climate change issues. The Sustainability Council and workgroups all contain student representatives, and at least one student group, the Clean Energy Committee, is responsible for supporting campus activities through a grants program.

This climate action plan will be incorporated into the academic experience at Evergreen through three distinct contexts:

<u>1) Inclusion into curriculum and course work.</u>

All curriculum planning at Evergreen begins with the Faculty, who have the freedom to create and design the academic content of their courses. Faculty collaborate to develop team-taught, interdisciplinary programs, using Summer Institutes to plan future courses as well as finalize their integrated curricula. The Summer Institutes are the best time to inform faculty of emerging study interests and learning opportunities that they may choose to focus upon, or include in future courses.

**Representatives from the Sustainability Office and Council will regularly attend Summer Institutes and present faculty with an update on the climate action plan strategies, progress, and upcoming actions so that the faculty will be aware of upcoming opportunities for experiential learning and involvement. They will also promote sustainability themes at Planning Unit meetings.**

<u>2) Individual Learning Contracts</u>

An Individual Learning Contract (ILC) is negotiated between a student and faculty/staff sponsor who has knowledge in the area to be studied. In consultation with the sponsor, the student initiates the agreement to undertake work at an advanced level, develop specific learning goals, and identify and complete learning activities. The sponsor agrees to provide appropriate oversight, support, and advice. Individual Learning Contracts are an ideal mechanism for students to engage with the climate action plan, with either staff or faculty sponsors.

**The Office of Sustainability is a highly visible point of contact for most students interested in the study of climate change and climate action initiatives. This office will maintain a database of faculty and staff interested and able to accept an ILC, along with the currently active plan strategies. This database will be publicly available for students seeking the focused learning opportunities offered through the learning contracts. This information will also be shared and coordinated with the Community Opportunities Database (CODa), the Center for Community Based Learning and Action (CCBLA), and the Graduate program Directors.**

3) New Student Orientation

**Representatives from the Sustainability Office and Council will regularly attend new student orientations (undergraduate and graduate levels) and other events as appropriate to present an overview of the college's climate action plan strategies, progress, and upcoming actions so that incoming students will be aware of ongoing opportunities for experiential learning and institutional involvement.**

The following thematic areas are recommended as bases from which to explore specific experiential learning opportunities within this plan:

- **Sustainable Habits and Practices Strategies**
  - Eco-reps volunteer program
  - Environmentally sustainable purchasing program
  - Sustainable practices fellowship position
  - Increasing on-campus composting
  - Improving waste management and diversion
  - Commuting Trip Reduction incentives

- **Applied Technology Strategies**
  - Lab II heat recovery
  - Steam pipe insulation
  - Energy conservation suite
  - Door and window weatherization
  - Demand based grounds and stairwell lighting
  - CRC lighting upgrade
  - Bio-mass gasification
  - On campus dorms electrical metering
  - Dedicated housing boiler and new boiler controls
  - Bio-mass co-generation

- **Capital/Infrastructure Changes**
  - CAB renovation
  - Fleet upgrades; all phases
  - Lawn re-purposing; all phases
  - Bike rental program
  - COM renovation
  - Offset air travel
  - Modify parking infrastructure
  - Community car share

- **Policies and Processes**
  - Altering parking permit policies
  - Increase local and organic food purchasing
  - Restricting student vehicles
  - Thurston County planning and parking exemptions

- **Annual Measurements and Assessments**
  - Annual carbon (GHG emissions) inventory
  - Track and review implementation effects
  - Research new technology, innovations, and adaptations available in the market pertinent to the college's work with Renewable Energy, Alternative Transportation, Purchasing, Food, Waste Diversion, etc.
  - Telling the story; journalistic, documentary, and media presentations on what is being accomplished and learned

## Community Outreach

The Evergreen State College currently has a high level of involvement with our local community through training institutes for college level faculty (Curriculum for the Bioregion), student volunteers and interns working with local organizations through the CCBLA (Center for Community Based Learning and Action), and our South Sound Climate Action Series symposia, as well as many individually organized collaborations between faculty, staff, and students and our local communities. These existing structures and relationships can be utilized to engage our greater community with the process and progress of our climate action steps.

Community outreach for the purposes of this climate action plan will focus on the following steps:

- Dedicated pages for progress reports on our Sustainability web site, including listings on our events calendar and blog announcements, also posted pages containing our annual carbon inventories, and a 'sustainability dashboard' of key indicators.

- Training and progress reports provided by Office of Sustainability staff covering climate action steps and accomplishments for the Curriculum for the Bioregion, the CCBLA, and appropriate academic programs focused on community engagement.

- Continuing the Climate Action Series symposia which engage with elected officials and staff from Thurston County, our local cities, local organizations, state agencies, and many other cities around Puget Sound.

- Maintaining a catalog of work completed in the local community, in conjunction with CCBLA and the Graduate programs. This catalog, of project reports, papers, and Masters Theses to be available as a reference for students and local communities pursuing climate action goals.

## Financing

Financing strategies and options may necessarily change over the course of this plan. The various financing strategies, however, fall into the following general categories:

<u>Low to no start-up costs, activities supported by savings in energy or waste disposal $:</u>

- Sustainable practices fellow
- Eco-representatives volunteer program
- Increase composting
- Improve waste diversion
- Re-purpose lawns; all phases
- Commuting incentives
- Bike rental program
- Student passport
- Local food purchasing priorities
- Restrict student vehicles

<u>Initial costs covered by verifiably consistent energy savings; ESCO or energy rebate financing</u>

- Lab II heat recovery
- Steam pipe insulation
- Energy conservation suite
- Demand based lighting
- Fleet upgrade; all phases
- Update boiler controls; all phases
- Dedicated housing boiler
- Window weatherization
- Door weatherization
- CRC lighting

<u>Capital budget items included in Master Plan</u>

- CAB renovation to LEED Gold
- COM renovation to LEED Silver

<u>Other:</u>

- Residential Electrical metering – clean energy or energy conservation grant
- E-procurement ‘Green’ Purchasing – operations budget request
- Bio-mass gasification – to be determined
- Offset air travel emissions – to be determined by DTF
- Community car share – to be determined by DTF
- Parking code exemption – potentially a student contract or academic project
- Bio-mass co-generation – to be determined
- Acquire carbon offsets – to be determined by DTF
- Modify parking infrastructure – to be determined by DTF and the Sustainability Council

## Measurement and Tracking

The Office of Sustainability, including the Sustainability Council and council workgroups will provide the structure for regular review, planning, implementation or monitoring, and reporting on progress. The Office and Council will also provide the primary avenue for engagement with faculty (for curriculum planning), students, and our local community.

The Plan review process will proceed on a quarterly basis, as follows:

**July –** Review final progress reports on prior FY progress; prepare an annual report (by September) to be delivered to the Board of Trustees and senior staff, and to be posted on the Sustainability web site for access by the entire college community.

**October –** Quarterly review of progress reports on implementation, community engagement, and disappearing Task Forces; analyze, plan, and adjust (where appropriate) current implementation strategies.

**January –** Quarterly review of progress reports on implementation, community engagement, and disappearing Task Forces; analyze, plan, and adjust (where appropriate) current implementation strategies.

**April –** Review Climate Action Plan and progress to date, begin planning for the impending new Fiscal Year and issue a planning report by June.

Individual progress reports, Council reports, and updates to the Climate Action Plan will be published on the web each quarter for community access.

## Acknowledgements:

This plan was researched, compiled, planned, and written through the contributions of a large number of students, staff, and faculty.

Initial research and recommendations on mitigation strategies was performed by a graduate level Masters in Environmental Studies class led by our Director of Sustainability, John Pumilio.

Climate Action Planning class students included:

Jeremy Stewart, Sarah Clarke, Jeremy Epstein, Todd Gross, Stephanie Sparks, Kathy Weed, Taj Schade, Matt Trokan, Aaron Litwak, Johnny Druelinger, Scott Morgan, Jessica Bateman, Kuri Murakami, Debbie Peters, Sherri Sawyer, Travis Skinner, Stephanie Gowing, Bonnie Guyer Graham, Colleen Minion-Pierce, and Sarah Betcher.

Assistance was provided to the class by:

Don Bantz, Paul Smith, Rich Davis, Azeem Hoosein, John Dodge, Victor Sanders, Alex Bertolucci, John MacLean, Kathleen Haskett, Halli Winstead, Natalie Pyrooz, Rob Cole, and Dylan Fischer.

Final structure, content, and organization of the plan were developed through multiple collaborations by Sustainability Council members, workgroup members, and interested students and faculty including (in no particular order, and not limited to):

Lindsay Raab, Travis Skinner, Victor Sanders, Halli Winstead, Ken Tabbutt, Nancy Parkes, Todd Sprague, Paul Smith, Sharon Goodman, Scott Morgan, John McLain, Rob Cole, Rich Davis, Tyrus Smith, Rob Knapp, Mike Drennon, Giselle Garcia, Steve Trotter, Karen Gaul, Susie Seip, Sherry Parsons, Alex Bertolucci, Kathleen Haskett, Mark Kormondy, Aaron Powell, Steve Scheuerell, Natalie Pyrooz, Robyn Herring, Sherry Walton, Peter Impara, David Shaw, Martha Rosemeyer, Jason Wettstein, Rick Riechert, Dani Phelan, Mike Schumacher, Andrew York, Marty Beagle, Alex Moro, and Ryan (the Farm Composter)

the evergreen state college

# APPENDIX G

Cultural Resources

# APPENDIX G CULTURAL RESOURCES

As part of its due diligence process, and in accordance with Governor's Executive Order 05-05, The Evergreen State College presented the pre-design level Seminar I renovation project to the Department of Archaeology & Historic Preservation for review. The following letter in response demonstrates that DAHP considers the project exempt from further review.

*This page intentionally left blank*

dahp
protect the past, shape the future

Allyson Brooks Ph.D., Director
State Historic Preservation Officer

June 29, 2016

Ms. Jeanne Rynne
Director of Facilities
Evergreen State College
2700 Evergreen Parkway
Olympia, WA 98505

In future correspondence please refer to:
Project Tracking Code: 2016-06-04586
Property: Evergreen College Exemptions under GEO 05-05 for 2017-19 Biennium
Re: Request for Exemptions

Dear Ms. Rynne:

Thank you for contacting the Washington State Historic Preservation Officer (SHPO) and Department of Archaeology and Historic Preservation (DAHP) regarding the above referenced proposal. Your communication on this action has been reviewed on behalf of the SHPO under provisions of Governor's Executive Order 05-05. Our review is based upon documentation provided in your submittal.

The following activities in the Capital Programs Projects 2017-19 Biennium for Evergreen State College should be considered exempted from further review by DAHP:

- Critical Power, Safety, and Security Systems upgrades
- Seminar 1 Building Renovation Predesign

We look forward to working with you on the remaining obligated Capital Programs Projects that either have impacts to historic structures or ground altering activities in the coming biennium.

These Capital Programs Projects have been reviewed on behalf of the SHPO under Governor's Executive Order 05-05. Thank you for the opportunity to review and comment. Should you have any questions, please feel free to contact me.

Sincerely,

Russell Holter

Russell Holter
Project Compliance Reviewer
(360) 586-3533
russell.holter@dahp.wa.gov

the evergreen state college

# APPENDIX H

Life Cycle Cost Model / ELCCA Report

## APPENDIX H LIFE CYCLE COST MODEL / ELCCA

We have provided the Life Cycle Cost Model as a separate digital file as it does not lend itself to print format. Please note that the operating costs we included in the LCCM represent the *net* change over the present condition as this is a renovation project. The ELCCA, which is attached, was run using Alternate 3 (See Section 2). While the preferred solution is a smaller facility, the conclusions of the ELCCA remain valid as the assumed envelope performance is similar.

*This page intentionally left blank*

Wood Harbinger

3009 112th Ave NE, Suite 100
Bellevue, WA 98004
425.628.6000
woodharbinger.com

# Energy Life Cycle Cost Analysis

The Evergreen State College

Seminar I Building

6/30/16

SUBMITTED TO:

ELCCA Reviewer

Project Number 16008

# TABLE OF CONTENTS

**LIST OF PARTICIPANTS**

| | |
|---|---|
| Project Title | Seminar I Building |
| Owner | The Evergreen State College |
| Owner's Project Manager | David Shellman<br>The Evergreen State College<br>Facility Services<br>2700 Evergreen Parkway NW<br>Olympia, WA 98505<br>360-867-6556<br>shellmad@evergreen.ecu |
| Project Architect | Ross Whitehead, AIA<br>Schreiber Starling Whitehead Architects<br>901 Fifth Avenue, No. 3100<br>Seattle, WA 98164<br>206-682-8300<br>whitehead@sswarchitects.com |
| Mechanical Engineer | Audra Mackey, P.E.<br>Wood Harbinger, Inc.<br>3009 112th Avenue N.E., Suite 100<br>Bellevue, WA 98004<br>425-628-6136<br>amackey@woodharbinger.com |
| Electrical Engineer | Charles Li, P.E.<br>Tres West Engineers, Inc.<br>2702 South 42nd Street, Suite 301<br>Tacoma, WA 98409<br>253-472-3300, x105<br>chl@treswest.com |

Statement of Compliance with RCW 39.35 and ELCCA Guidelines

The undersigned certifies that this Energy Conservation Report has been developed in compliance with RCW 39.35 and the ELCCA guidelines developed by the Washington State Energy Office.

AUDRA A. MACKEY
STATE OF WASHINGTON
47065
REGISTERED
PROFESSIONAL ENGINEER
6-30-16

Audra Mackey, P.E.
Wood Harbinger Inc.
Consulting Engineers

This Report has been reviewed by:

Ross Whitehead
Schreiber Starling Whitehead Architects

**EXECUTIVE SUMMARY**

The purpose of this report is to determine the total owning and operating costs of various design strategies for the Seminar I Building at The Evergreen State College. Results are presented as a "net present worth" determined from a 30 year life cycle cost analysis. The net present worth provides a basis for comparing owning and operating costs of various designs over the life of the facility.

A. FINAL DESIGN RECOMMENDATIONS

The Public Facilities Energy Characteristics (PFEC) Form, in the next section, summarizes the recommended building design.

**Heating, Ventilating and Air Conditioning (HVAC) Systems:** On a cost basis, a chilled beam system utilizing chilled water and steam from the central plant, combined with a ventilation air system with heat recovery is more cost effective over a 30-year time span compared to other system options reviewed. The cost effective savings is due to the lower energy costs. This system is recommended for The Evergreen State College Seminar I Building based on lower energy costs and existing building constraints.

A Direct Digital Control (DDC) Energy Management System (EMS) will be provided to automatically control and monitor all HVAC units. Control features include 365 day scheduling and optimum start. $CO^2$ sensors will be provided to regulate the required ventilation needed in each classroom, conference room, and space where the design occupant density is greater than or equal to 25 people per 1,000 square feet. The DDC will monitor the occupancy and daylighting sensors in each classroom, conference room, and office. The building HVAC systems will revert to unoccupied mode when the spaces are vacant.

2. **Domestic Hot Water System**: Electric, storage type water heaters with circulation pumps are recommended as the primary domestic hot water heating.

3. **Lighting System**: Lighting consisting of high-efficiency LED light fixtures is recommended.

4. **Building Envelope Systems**: The proposed envelope systems are as follows:

   a. **Roof/Ceiling:** The recommended roof construction is the same as the proposed with rigid R-38 insulation.

   b. **Walls:** Wall Type 1 construction consists of existing concrete, 3-inch spray foam insulation equivalent to R-20 Rigid, metal studs, and gypsum board. This wall construction exceeds the prescriptive requirements and is recommended.

   c. **Glazing:** The proposed glazing system is double glazed with aluminum frames exceeds the prescriptive requirements and is recommended.

   d. **Floors:** The proposed slab-on-grade foundation with R-10 perimeter insulation meets the prescriptive requirements and is recommended. Interior floors are not required to be insulated.

   e. **Doors:** The proposed insulated metal doors exceed the prescriptive requirements and are recommended.

B. ANNUAL OPERATING BUDGETS

The calculated annual energy cost of the recommended design is $76,000/yr. or $1.40/sf/yr. The predicted maintenance cost is $1,400/yr. for the mechanical equipment in the recommended design.

C. BUILDING ENERGY USAGE

The following two pie charts illustrate the building's energy usage by end use and annual expenditure of energy dollars.

D. ELCCA SUMMARY TABLE

The following is a summary of the life cycle costs for all alternatives analyzed.

E. PROJECT TIMELINE

The following is an updated project timeline, which includes schematic design, design development, and value engineering.

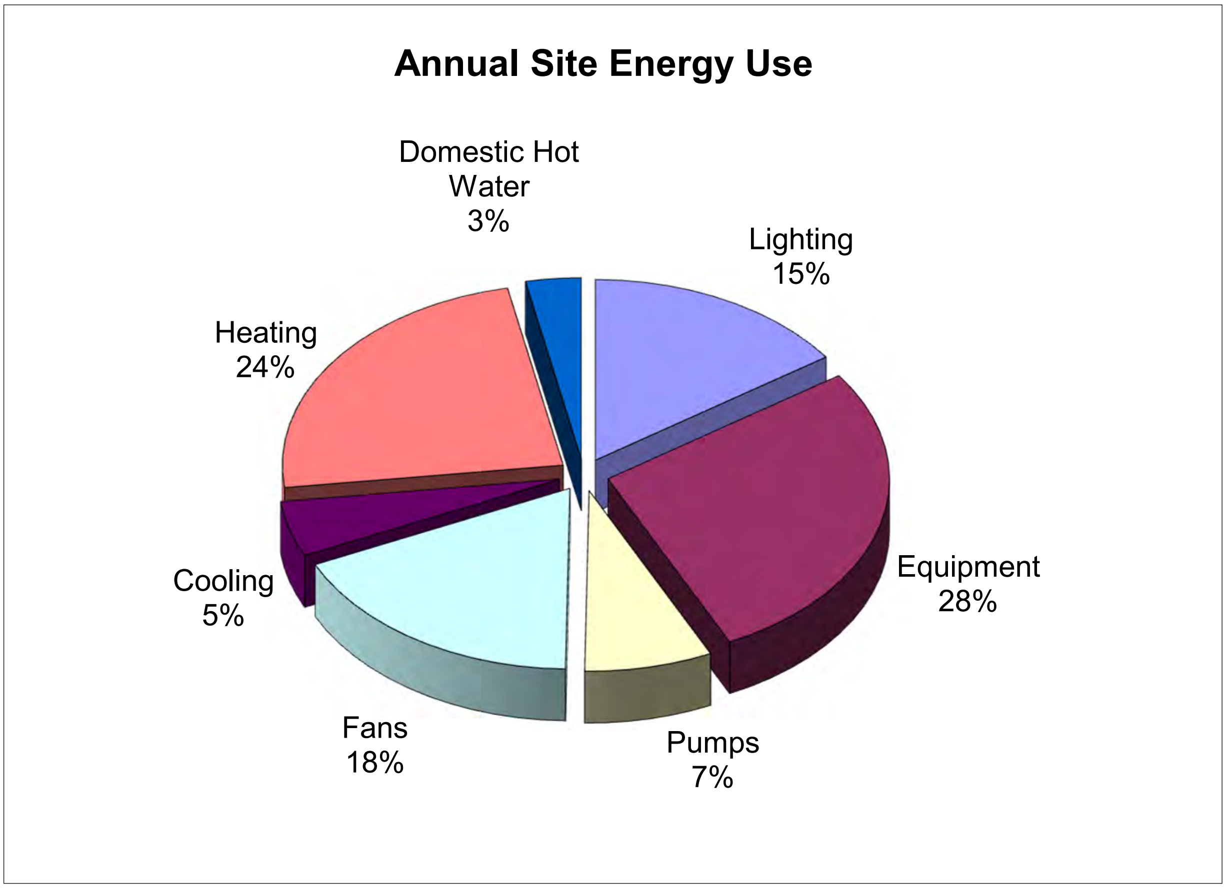
F. SUMMARY OF LCCA RESULTS USING THE LCCT

During development of this predesign, OFM issued new predesign guidelines replacing the predesign-level LCCA/LCCT with a new Life Cycle Cost Model. This new manual was published after the planning team completed the ELCCA required as part of the LCCA/LCCT process. This ELCCA, developed in compliance with RCW 39.55 and ELCCA guidelines developed by the Washington State Energy Office, concluded that chilled beams would be the most cost-effective HVAC system for the facility. As a result chilled beams were assumed in the project budget analysis and outline specifications.

To provide the broadest amount of information to the planning team, the ELCCA was run using Alternate 2 (from pre-design report), which assumes both full renovation of Seminar I and new construction. The ELCCA remains valid with the preferred renovation-only project, as the assumed envelope performance between new and existing construction were very similar. In addition to lowest life cycle cost, chilled beams are well suited to the existing building's constraints. Seminar I's limited floor-to-floor heights suggest that overhead ducts be as small as possible, a hallmark of chilled beam systems, and an existing chase network will serve the requisite piping distribution.

Seminar I Building
Building Energy Usage by End Use
Alternative 4. 100% Outside air heat recovery unit serving VAV Boxes with HW reheat and chilled beams.

| | Energy Btu x10^6 |
|---|---|
| Lighting | 422.0 |
| Equipment | 758.8 |
| Pumps | 202.8 |
| Fans | 490.7 |
| Cooling | 136.4 |
| Heating | 655.2 |
| Domestic Hot Water | 87.6 |



| *Summary of Life Cycle Costs*<br>Seminar I Building | | | | | Wood Harbinger Inc., Consulting Engineers<br>Olympia, WA |
|---|---|---|---|---|---|
| Description of System | Initial Cost<br>$ | Annual Energy<br>Cost, $ | Energy Use Index<br>kBtu/SF-YR | Annual Maint.<br>Cost $ | Total Life Cycle<br>Cost $ |
| **Baseline:** | | | | | |
| *Mechanical Systems:*<br>*ASHRAE 90.1 Baseline System 7. VAV AHU, CW Cooling, HW Heat, and VAV Boxes with HW Reheat.* | $1,538,345 | $113,603 | 84.60 | $1,286 | $5,387,960 |
| **Alternative 1:** | | | | | |
| *Mechanical Systems:*<br>*Alternative 1. High Performance VAV AHU, CW Cooling, HW Heat, and VAV Boxes with HW Reheat.* | $1,538,345 | $100,849 | 75.35 | $1,286 | $5,417,695 |
| **Alternative 2:** | | | | | |
| *Mechanical Systems:*<br>*Alternative 2. Water Source VRF System with Cooling Tower. CW cooling and Steam heating from central plant.* | $1,932,704 | $88,655 | 73.70 | $2,851 | $5,334,626 |
| **Alternative 3:** | | | | | |
| *Mechanical Systems:*<br>*Alternative 3. 100% Outside air heat recovery unit serving VAV Boxes with HW reheat and chilled beams. Photovoltaic cells provided on roof.* | $2,164,672 | $73,381 | 47.50 | $1,694 | $5,026,617 |
| **Alternative 4*:** | | | | | |
| *Mechanical Systems:*<br>*Alternative 4. 100% Outside air heat recovery unit serving VAV Boxes with HW reheat and chilled beams.* | $1,977,172 | $75,977 | 50.40 | $1,396 | $4,907,975 |

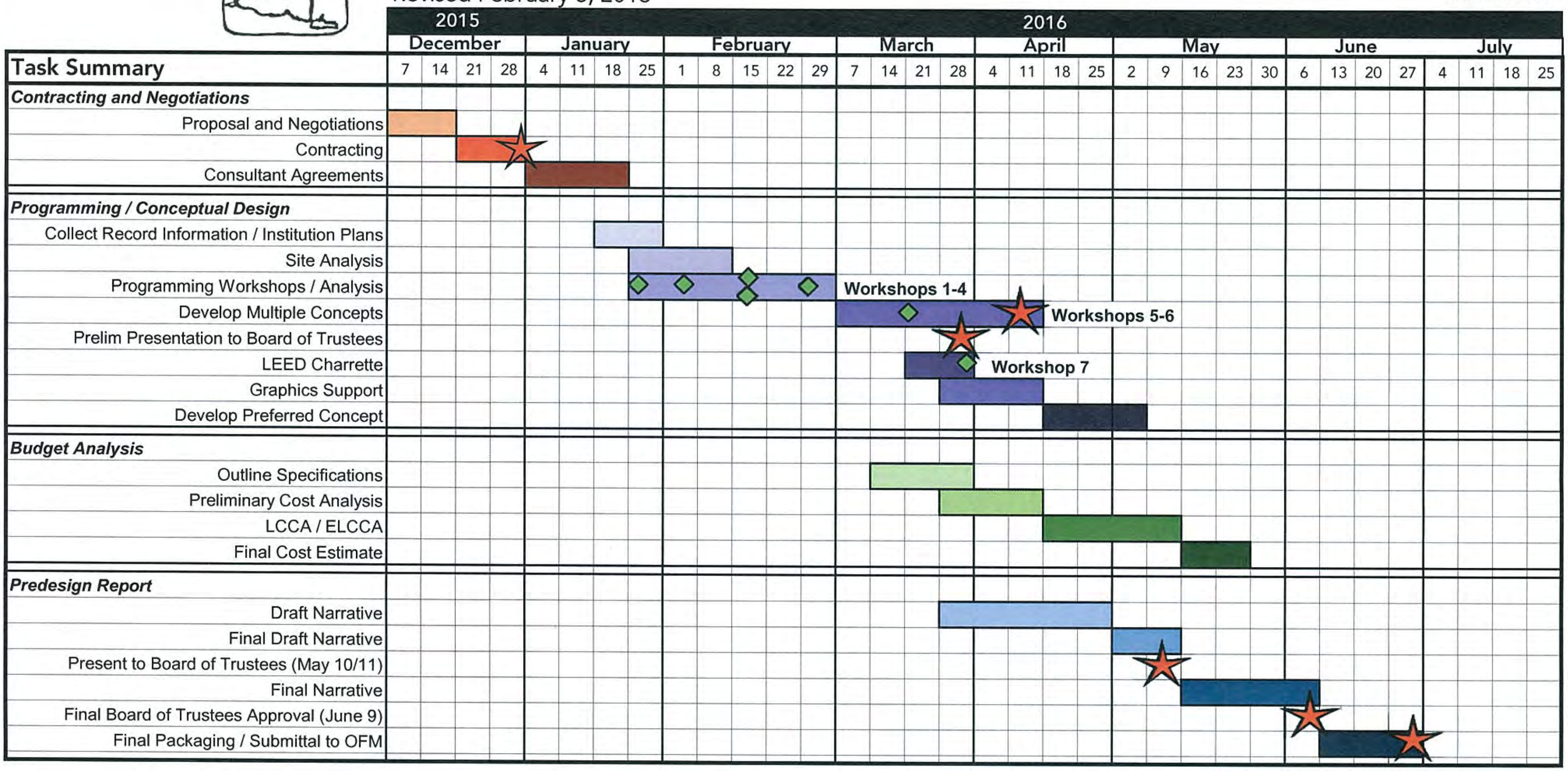
* = Recommended

# TESC Seminar I Pre-Design

## Work Plan / Schedule

Revised February 8, 2016

Schreiber Starling & Lane
ARCHITECTS



## Figure 6.4 Public Facilities Energy Characteristics

| | | |
|---|---|---|
| **Agency Name**<br>The Evergreen State College | **City**<br>Olympia | **Reporting Date**<br>6/9/2016 |
| **Project Title/Occupancy Type**<br>Classroom, Offices, Conference, Dispatch | **Project Number**<br>30000125 | **No. of Occupants**<br>800 |
| **Building Name**<br>Seminar I | **Gross sf**<br>54623 | **Net Usable sf**<br>54623 |

| **Envelope Component* Description** | | | **U** | **x A =** | **UA** | **% Total** |
|---|---|---|---|---|---|---|
| **Roof Type 1** | Built-roof | | 0.024 | 10279 | 246.696 | 6% |
| **Roof Type 2** | | | | | 0 | 0% |
| **Wall Type 1** | Concrete with Spray Insulation | | 0.044 | 21542 | 947.848 | 23% |
| **Wall Type 2** | | | | | 0 | 0% |
| **Wall Type 3** | | | | | 0 | 0% |
| **Door Type 1** | Insulated Steel | | 0.34 | 368 | 125.12 | 3% |
| **Door Type 2** | | | | | 0 | 0% |
| **Window Type 1** | High Performance | Frame Type Al. | 0.29 | 8105 | 2350.45 | 57% |
| **Window Type 2** | | Frame Type | | | 0 | 0% |
| **Floor Type 1** | | | | | 0 | 0% |
| **Floor Type 2** | | | | | 0 | 0% |
| **Perimeter Insulation** | | | **F-Factor** | **Length** | | |
| **Thickness/Type** | | **R-Value** | 0.54 | 813 | 439.02 | 11% |
| 2"/Rigid | | R-10 | | | | |
| Gross Wall U Factor<br>0.15 | UA max Code<br>5896.061 | UAmax - UA Total/UAmax x 100%<br>30.31% | | | **UA Total**<br>**4109.134** | **100%** |

### Mechanical

| | | | | |
|---|---|---|---|---|
| **Heating Fuel**<br>NA | **Cooling Plant**<br>DX plant | **Heat Recovery** | | |
| | | **CFM** | **Type** | **Area Served** |
| **AFUE** | **COP**<br>8.17 | 28,800 | Reverse Flow | Building |
| **HVAC System Type(s)**<br>100% OSA HRU with HW Reheat and Chilled Beams | | **Minimum OSA**<br>28,800 | | **EUI (Btu/sf-yr)**<br>52,300 |

### Lighting

| | | | | |
|---|---|---|---|---|
| **Building** | **Wattage Outdoor**<br>0 kW | **Wattage Indoor**<br>123.6 kW | **Ltg. Power Density**<br>3.09 W/sf | **Submitted by:**<br>(Affix professional stamp and sign) |
| **Area 1**<br>Classroom | **Fixture, Lamp, Ballast type:**<br>Pendant Electronic LED | | **Ltg. Power Density**<br>0.57 W/sf | |
| **Area 2**<br>Office | **Fixture, Lamp, Ballast type:**<br>Pendant Electronic LED | | **Ltg. Power Density**<br>0.65 W/sf | |
| **Area 3**<br>Conference | **Fixture, Lamp, Ballast type:**<br>Pendant Electronic LED | | **Ltg. Power Density**<br>0.78 W/sf | |
| **Area 4**<br>Dispatch | **Fixture, Lamp, Ballast type:**<br>Pendant Electronic LED | | **Ltg. Power Density**<br>0.57 W/sf | |
| **Firm Name/ELCCA Analyst**<br>Wood Harbinger/Audra Mackey | | | | |

**PROJECT DESCRIPTION**

The existing Seminar I Building at The Evergreen State College, located in Olympia, Washington, will consist of a major renovation to 38,948 square feet and a new 15,675 square foot addition. The type of spaces included in this renovation are: Classrooms, offices, a police dispatch station, and conference rooms.

**Scheduling and Control Set points**

A typical educational facility schedule was assumed. Hours of operations would be between 7:00 a.m. to 9:00 p.m., Monday through Friday, and closed weekends and holidays. The building occupancy, lighting, HVAC, and service hot water schedules were developed using guidance from Table B 103(9) of the 2015 Washington State Energy Code. The schedules along with the computer input and output data are provided on the enclosed USB Thumb Drive.

**BASELINE BUILDING DESCRIPTION AND ECONOMIC ASSUMPTIONS**

The following is the baseline design for the Seminar I building envelope based from the existing structure and ASHRAE 90.1-2010.

**Physical Description**

The 54,623 square foot Seminar I Building will be located in Olympia, Washington and will consist of classrooms, offices, a police dispatch station, and conference rooms.

**Baseline Building Thermal Characteristics**

- **Roof/Ceiling:** The existing roof has insulation entirely above deck with a U-value of 0.0436.
- **Walls**: The existing walls are a concrete mass wall with an existing U-value of 0.078. The new building addition walls will have a U-value of 0.064.
- **Floors:** Floors are unheated slab on grade with a F-value of 0.54.
- **Windows:** The baseline windows have an existing assembly U-value of 0.55. The new windows have a U-value of 0.40.
- **Doors:** All exterior doors have glazing with an overall U-value of 0.7.

**Lighting**

The baseline lighting design for the building is three lamp direct/indirect pendant mounted fixtures with T8 (32 watt) lamps and electronic ballast for general lighting.

**Heating, Ventilating and Air Conditioning (HVAC)**

The baseline design consists of a variable air volume system CW cooling, HW heating, and VAV boxes with HW reheat. The campus plant provides chilled water and steam to the building.

A Direct Digital Control (DDC) Energy Management System (EMS) will be provided to automatically control and monitor all VAV units, fans, VAV boxes, and domestic hot water system. Control features include 365 day scheduling and optimum start. The building HVAC systems will revert to unoccupied mode when the classrooms are vacant.

**Energy Simulation (Model)**

The objective of Trane Trace, the modeling program used, is to compare and analyze the operating efficiencies and costs of alternative air systems.

**Scheduling and Control Setpoints**

A typical educational facility schedule was assumed. Hours of operation would be between 7:00 a.m. to 9:00 p.m., Monday through Friday, and closed weekends and holidays. The building occupancy, lighting, HVAC, and service hot water schedules were developed using guidance from Table B 103(9) of the 2015 Washington State Energy Code. The schedules are enclosed with the computer input and output data provided on a separate USB Thumb Drive.

The building heating temperature was set to 70 degrees F during occupancy with a setback of 65 degrees F while unoccupied. The building cooling temperature was set to 75 degrees F during occupancy with a setback of 80 degrees F while unoccupied.

**Economic Assumptions**

A 30-year life cycle cost analysis conforming to the current Washington State Guidelines for Preparation of Life Cycle Cost Reports was performed to evaluate the cost effectiveness of all design alternatives. The life cycle cost analysis includes periodic replacement, operations, and routine maintenance. The analysis identified the following assumptions:

| | | | |
|---|---|---|---|
| • | General Inflation Rate | 2005 - 2040 | = 3.0% |
| • | Real Discount Rate | 2005 - 2040 | = 2.0% |
| • | Electricity Inflation Rate | 2005 - 2015 | = 1.0% |
| | | 2016 - 2025 | = 2.0% |
| | | 2026 - 2040 | = 2.0% |
| • | ~~Natural Gas Inflation Rate~~ | 2005 - 2015 | = 1.0% |
| | | 2016 - 2025 | = 1.0% |
| | | 2026 - 2040 | = 1.0% |
| • | Maintenance Inflation Rate | 2005 - 2040 | = 2.0% |

Life cycle cost work sheets for each strategy analyzed are provided in the tabled sections of this report.

**Utility Rates**

The Seminar I Building at The Evergreen State College will be subject to the electric service charges of Puget Sound Energy (PSE). The following is a current copy of the PSE rate schedule.

**SCHEDULE 26**

**LARGE DEMAND GENERAL SERVICE**

(Secondary Voltage or at available Primary distribution Voltage)
(Single phase or three phase where available)(Demand Greater than 350 kW)

1. **AVAILABILITY:**
   1. This schedule is available to any Customer for general electric energy requirements other than Residential Service (as defined in Paragraph 1 of Schedule 7) and whose estimated or actual Demand is greater than 350 kW.
   2. Customers taking service at Secondary Voltage and whose Billing Demand is 350 kW or below for eleven (11) of the most recent 12 consecutive months are not eligible for service under this schedule.
   3. Deliveries at Secondary voltage at more than one point will be separately metered and billed. Deliveries at Primary voltage to a Customer will be at one Point of Delivery for all service to that Customer on contiguous property.
   4. Single-phase motors rated greater than 7-1/2 HP shall not be served under this schedule except by the express written approval of the Company.
   5. Highly intermittent loads, such as welders, X-ray machines, elevators, and similar loads that may cause undue lighting fluctuation, shall not be served under this schedule unless approved by the Company.
   6. For service at Primary voltage, all necessary wiring, transformers, switches, cut-outs and protection equipment beyond the Point of Delivery shall be provided, installed and maintained by the Customer, and such service facilities shall be of types and characteristics acceptable to the Company. The entire service installation, protection coordination, and the balance of the load between phases shall be approved by Company engineers.

2. **MONTHLY RATE – SECONDARY VOLTAGE:**

| | | | | |
|---|---|---|---|---|
| Basic Charge: | $104.46 | | | |
| Demand Charge: | <u>OCT-MAR</u> | <u>APR-SEP</u> | | |
| | $11.65 | $7.76 | per kW of Billing Demand | (I) (I) |
| Energy Charge: | $0.056733 per kWh | | | (R) |
| Reactive Power Charge: | $0.00124 per reactive kilovolt ampere-hour (kvarh) | | | |

3. **ADJUSTMENTS TO SECONDARY VOLTAGE RATES FOR DELIVERY AT PRIMARY VOLTAGE:**

| | | |
|---|---|---|
| Basic Charge: | $235.05 in addition to Secondary voltage rate | |
| Demand Charge: | $0.35 credit per kW to all Demand rates | (I) |
| Energy Charge: | 3.45% reduction to all Energy and Reactive Power Charges | |

4. **ADJUSTMENTS:** Rates in this schedule are subject to adjustment by such other schedules in this tariff as may apply.

**Issued:** December 19, 2013 **Effective:** January 1, 2014
**Advice No.:** 2013-42

By Authority of the Washington Utilities and Transportation Commission by Orders 09 & 08 in Docket No. UE-121697 et al
**Issued By Puget Sound Energy, Inc.**

By: Ken Johnson **Title:** Director, State Regulatory Affairs

**ENVELOPE ANALYSIS**

The following is the proposed design for the building envelope for the Seminar I Building. Building U-Value calculations, wall/roof sections, and component descriptions are included in this section.

**Proposed Building Component Descriptions**

- **Roof/Ceiling:** The roof construction exceeds the prescriptive requirement with one layer of continuous R-38 insulation, giving a U-value of 0.024.

- **Walls**: Wall Type 1 construction consists of existing concrete, 3 inch spray foam insulation equivalent to R-20 Rigid, metal studs, and gypsum board, giving a U-Value of 0.044. This wall construction exceeds the prescriptive requirements and is recommended.

- **Floors:** The floors in the proposed design have an F-value of 0.54 and are slab-on-grade foundation with R-10 perimeter insulation in all areas of new foundation.

- **Windows:** The proposed glazing system is double glazed with an assembly U-value of 0.29, meets the prescriptive requirement.

- **Doors:** The proposed insulated metal doors with a U-value of 0.37 exceed the prescriptive requirements and are recommended.

Wood Harbinger
3009 112th Ave NE, Suite 100
Bellevue, WA 98004
425.628.6000
woodharbinger.com

Project U-Value Analysis
Project Name: Seminar I
WH Project #: 16008
Date: 6-3-2016

***DESIGN CONDITIONS:***

**Design Data Station:**
**Reference: ASHRAE Fundamentals Appendix**

| Season | Indoor DB °F | Outdoor DB °F | Outdoor WB °F | % RH |
|---|---|---|---|---|
| Winter (Recirculating Systems) | 70 | 17 | -- | -- |
| Winter (100% OSA Systems) | 70 | 17 | -- | -- |
| Summer | 75 | 85 | 67 | |

***U-VALUE CALCS FOR WALLS:***

**Wall Type:** Outside Wall
**Description:** Concrete wall with 3" spray insulation

| Layer | Material | Reference/Table/ Page | R-Value |
|---|---|---|---|
| 1) | 8" Concrete/Inside Air Film/Outside Air Film | WSEC 2012 Table A103.3.7.1(2) | 1.72 |
| 2) | Proposed R-20 Spray Foam Insulation | | 20.000 |
| 3) | Air Space | ASHRAE Fundamentals/Table 3/26.3 | 0.600 |
| 4) | 5/8" Gypsum Board | ASHRAE Fundamentals/Table 18/18.27 | 0.560 |
| 5) | | | |
| 6) | | | |
| 7) | | | |

| | |
|---|---|
| R-Total: | 22.884 |
| **Overall U-Value (Btu/Hr F Sq Ft):** | **0.044** |

***U-VALUE CALCS FOR WINDOWS:***

**Window Type:**
**Glazing/Framing Desc**ı Highest Values From 403X Cut Sheet To Start

| Window | Reference | Value |
|---|---|---|
| Assembly U-Value | Product Data | 0.290 |
| Visible Light Transmittance | Product Data | 0.800 |
| Shading Coefficient | Product Data | 0.400 |

***U-VALUE CALCS FOR ROOF:***

**Roof Type:** Proposed 1953 Roof
**Description:** Outside Air Film / Built-Up Roofing / 5/8" Plywood / 3.5" Air Space / Propsed R-38 Rigid Insulation / Inside Air Film

| Layer | Material | Reference/Table/ Page | R-Value |
|---|---|---|---|
| 1) | Outside Air Film | ASHRAE Fundamentals/Table 18/18.27 | 0.250 |
| 2) | Built-Up Roofing | ASHRAE Fundamentals/Table 4/26.7 | 0.330 |
| 3) | 5/8" Plywood | ASHRAE Fundamentals/Table 18/18.27 | 0.780 |
| 4) | 3.5" Air Space | ASHRAE Fundamentals/Table 3/26.3 | 0.850 |
| 5) | Propsed R-38 Rigid Insulation | WSEC Table A101.4 (2x12) | 37.000 |
| 6) | Inside Air Film | ASHRAE Fundamentals/Table 18/18.27 | 0.920 |
| 7) | | | |
| | | | |

| | |
|---|---|
| R-Total: | 40.130 |
| **Overall U-Value (Btu/Hr F Sq Ft):** | **0.025** |

***U-VALUE CALCS FOR FLOOR:***

**Floor Type:** Concrete Slab
**Description:**

| Layer | Material | Reference/Table/ Page | R-Value |
|---|---|---|---|
| 1) | R-10 Rigid Insulation | Work Plan Excel | 10.000 |
| 2) | 4" Concrete | Ashrae Fundamentals 2009/ Table 4/ 26.8 | 2.275 |

| | |
|---|---|
| R-Total: | 12.275 |
| **Overall U-Value (Btu/Hr F Sq Ft):** | **0.08147** |

***U-VALUE CALCS FOR DOORS:***

| Door Type | Door Description | Reference/Table/Page | U-Value |
|---|---|---|---|
| 1) | Door Type: | Work Plan Excel | 0.34 |
| 2) | Door Type: | | |

Schreiber Starling & Lane

ARCHITECTS

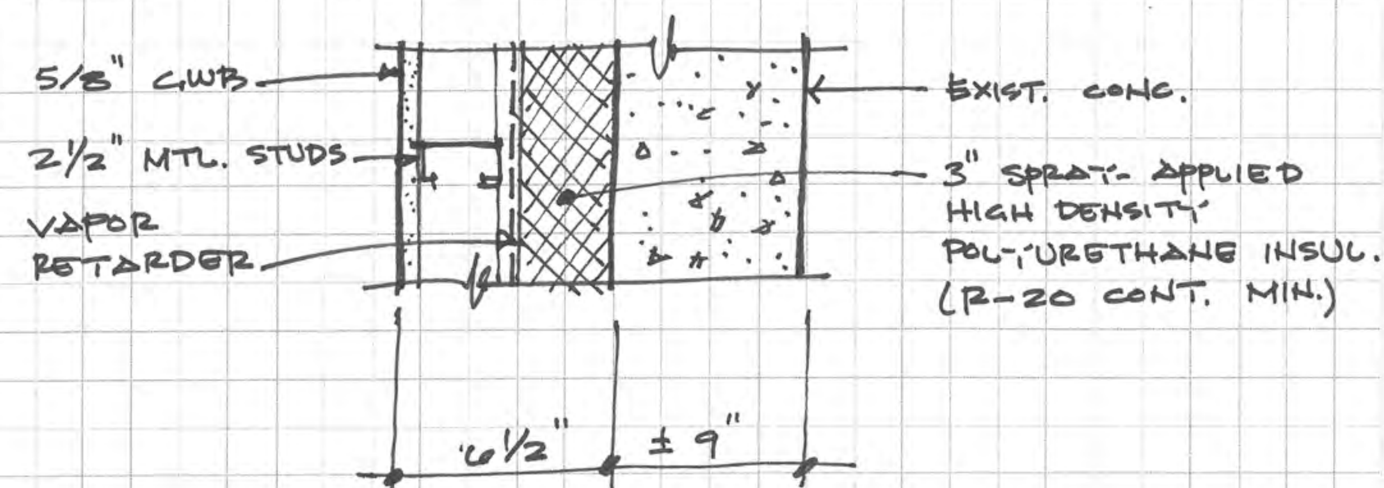
PROJECT: TESC SEM. I Predesign

DATE: 5.12.16 BY: BTI

# EXTERIOR ASSEMBLIES / THERMAL VALUES:

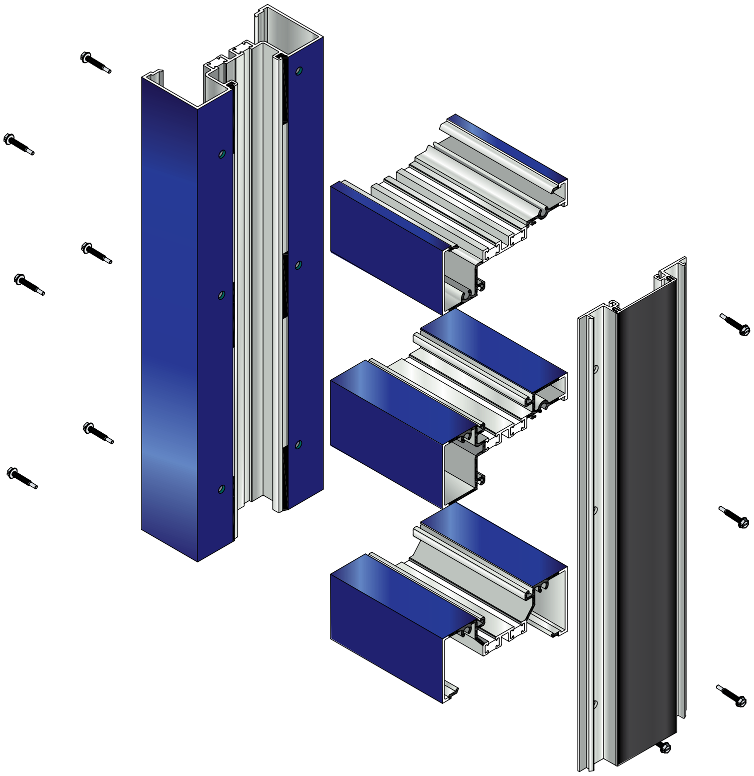
# ROOFS: R-38 INSUL. OVER 7" CONC. SLAB (EXIST.)

# WALLS (ABOVE & BELOW GRADE):




185 University St.
Seattle, WA 98101
T: 206 / 682-8300
F: 206 / 682-8375
www.sslarchitects.com

# Series 403X
## 2" x 4 1/2" Thermal Storefront Framing




## PERFORMANCE DATA

**SYSTEM 403X STOREFRONT SHEAR BLOCK FRAMING**

AIR INFILTRATION.......................................<.06 CFM/SF @ 6.24 PSF
WATER.......................................................NO LEAKAGE @ 10.0 PSF
STRUCTURAL .......................visit MyEFCO at www.efcocorp.com
CRF FRAME..................................................................................62
CRF-GLASS.................................................................................63

*Note: All performance value data is based on laboratory testing per AAMA 101/I.S.2/A440 for Air/Water/Structural, ASTM E90 and or E413 for Acoustical, AAMA 507 and or NFRC 100/200/500 for UFactors and AAMA 1503 for Condensation Resistance Factor (CRF). Printed values are subject to change pending the frequency of recertification testing. Field results will vary depending on size, the field test method, the addition of sub-frames, panning, mullions, accessories and installation into the surrounding condition.*

| 403X THERMAL U-FACTORS* | | |
|---|---|---|
| CENTER OF GLASS U-FACTOR | CONFIGURATION AND SIZE | |
| | FIXED** 78 3/4" X 78 3/4" | FIXED 120" X 120" |
| 0.46 | 0.50 | 0.48 |
| 0.34 | 0.40 | 0.38 |
| 0.30 | 0.36 | 0.34 |
| 0.24 | 0.31 | 0.29 |
| 0.20 | 0.28 | 0.26 |

* Based on NFRC 100
**NFRC Gateway size

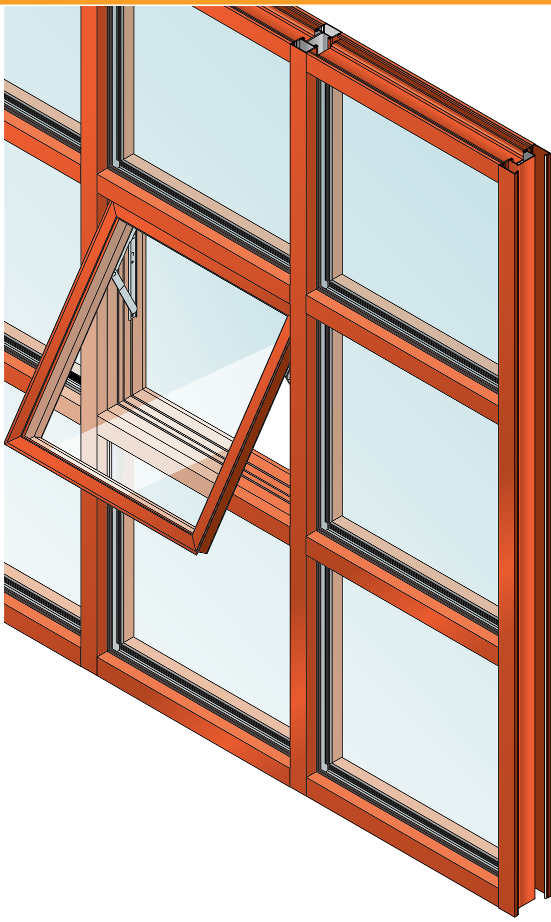
**GLAZING**

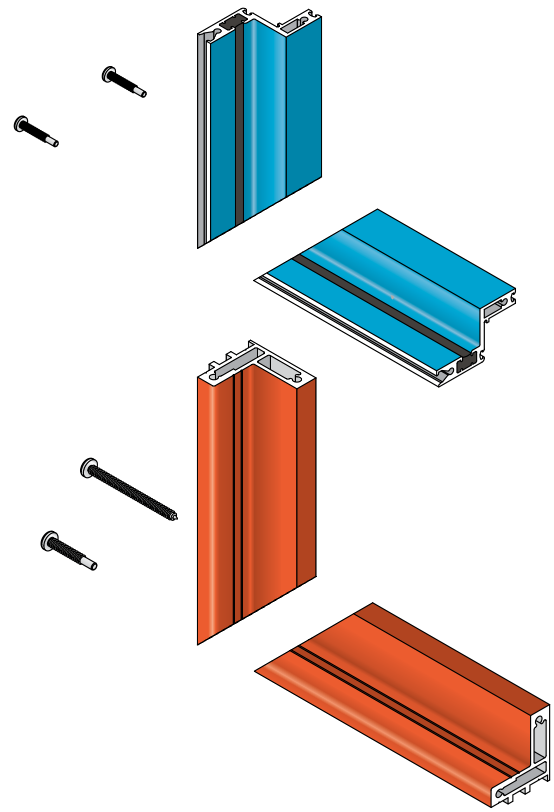
SYSTEM 403X CAN BE INSIDE OR OUTSIDE GLAZED WITH EXTRUDED ALUMINUM, SNAP-IN GLAZING BEAD. GLASS IS "DRY GLAZED" WITH TOP LOAD GASKET. GLAZINGS OF 3/16" TO 1-1/16" INFILL PANELS ARE ACCOMMODATED. SEE GLAZING CHART BELOW FOR EXACT SIZE.

| SYSTEM 403X GLAZING CHART | GLAZING INFILL THICKNESS | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 3/16" | 1/4" | 5/16" | 7/16" | 1/2" | 9/16" | 3/4" | 1" | 1-1/16" |
| | C | B | C | C | B | C | C | A | C |

**A**-Utilizes standard glazing gaskets
**B**-Utilizes standard glazing gaskets and adaptor
**C** -Utilizes non-standard gaskets and/ or gasket/adaptor combinations

# System WV410
# Storefront Window System





## PERFORMANCE DATA

**WV410**

AIR INFILTRATION........................................<.10 CFM/FT @ 6.24 PSF
WATER.........................................................NO LEAKAGE @ 12.0 PSF
STRUCTURAL.......................visit MyEFCO at www.efcocorp.com
CRF FRAME..........................................................................59
CRF-GLASS..........................................................................64

*Note: All performance value data is based on laboratory testing per AAMA 101/I.S.2/A440 for Air/Water/Structural, ASTM E90 and or E413 for Acoustical, AAMA 507 and or NFRC 100/200/500 for UFactors and AAMA 1503 for Condensation Resistance Factor (CRF). Printed values are subject to change pending the frequency of recertification testing. Field results will vary depending on size, the field test method, the addition of sub-frames, panning, mullions, accessories and installation into the surrounding condition.*

| WV410 THERMAL U-FACTORS* | | |
|---|---|---|
| CENTER OF GLASS U-FACTOR | CONFIGURATION AND SIZE | |
| | PO** 59" X 24" | PO 60" X 36" |
| 0.48 | 0.54 | 0.52 |
| 0.34 | 0.43 | 0.40 |
| 0.28 | 0.38 | 0.35 |
| 0.24 | 0.35 | 0.32 |
| 0.20 | 0.31 | 0.28 |

* Based on NFRC 100
**NFRC Gateway size

| SYSTEM WV410 STOREFRONT VENT | POLYCARBONATE | | | GLASS OR PANEL | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 3/16" | 1/4" | 5/16" | 3/16" | 1/4" | 1/4"** | 5/16" | 7/16" | 1/2" | 9/16" | 5/8" | 3/4" | 7/8" | 15/16" | 1" | 1-1/16" |
| MONOLITHIC GLASS | | O | | | O | O | | | | | | | | | | |
| INSULATED GLASS | | | | | | | | | | | | | | | S | |

*****-Obscure glass thickness
******-Laminated glass thickness

**O** -Optional
**S** -Standard
**Blank** - N/A



1000 COUNTY RD • MONETT, MO 65708 • 800.221.4169 • efcocorp.com

SOLARBAN® 60

Solar Control Low-E Glass

## Fabrication and Availability

*Solarban*® 60 glass is available exclusively through the ***PPG Certified Fabricator*® *Network***. PPG Certified Fabricators can meet tight construction deadlines and accelerate the delivery of replacement glass before, during and after construction. ***Solarban*®** 60 glass is manufactured using the sputter-coating process and is available for annealed, heat-strengthened and tempered applications.

PPG Certified Fabricator® Network

***Solarban*®** 60 glass is just one of many ***Ecological Solutions from PPG™***. For more information, or to obtain samples of this product, call 888-PPG-IDEA (774-4332), or visit www.ppgideascapes.com.

PPG is the first U.S. float glass manufacturer to have its products recognized by the ***Cradle to Cradle Certified*℠** program, and it offers more C2C-certified architectural glasses than any other float glass manufacturer.

**PPG *IdeaScapes*® Integrated products, people and services to inspire your design and color vision.**

## Additional Resources

### *Solarban*® 60 Glass Performance — Commercial Insulating Glass Unit Comparisons Using 1/4" (6mm) Glass

Insulating Vision Unit Performance Comparisons — 1-inch (25mm) units with 1/2-inch (13mm) airspace and two 1/4-inch (6mm) lites; as shown below

| Glass Type | Transmittance | | | Reflectance | | U-Value (Imperial) | | European U-Value | Shading Coefficient | Solar Heat Gain Coefficient | Light to Solar Gain (LSG) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Ultra-violet % | Visible % | Total Solar Energy % | Visible Light % | Total Solar Energy % | Winter Night-time | Summer Day-time | | | | |
| ***SOLARBAN*® 60 Solar Control Low-E Glass** | | | | | | | | | | | |
| *SOLARBAN* 60 (2) Clear + Clear | 18 | 70 | 34 | 11 | 28 | 0.29 | 0.27 | 1.6 | 0.45 | 0.39 | 1.79 |
| *SOLARBAN* 60 (2) *STARPHIRE** | 24 | 74 | 39 | 11 | 41 | 0.29 | 0.27 | 1.6 | 0.48 | 0.41 | 1.80 |
| *SOLARBAN* 60 (2) *ATLANTICA* + Clear | 5 | 53 | 20 | 8 | 7 | 0.29 | 0.27 | 1.6 | 0.32 | 0.27 | 1.96 |
| *SOLARBAN* 60 (2) *AZURIA* + Clear | 13 | 54 | 21 | 8 | 6 | 0.29 | 0.27 | 1.6 | 0.32 | 0.28 | 1.93 |
| *SOLARBAN* 60 (2) *OPTIGRAY* + Clear | 10 | 50 | 23 | 8 | 14 | 0.29 | 0.27 | 1.5 | 0.35 | 0.30 | 1.67 |
| *SOLARBAN* 60 (2) *PACIFICA* + Clear | 5 | 34 | 15 | 6 | 6 | 0.29 | 0.27 | 1.6 | 0.26 | 0.22 | 1.55 |
| *SOLARBAN* 60 (2) *SOLARBLUE* + Clear | 10 | 45 | 21 | 7 | 12 | 0.29 | 0.27 | 1.6 | 0.33 | 0.28 | 1.61 |
| *SOLARBAN* 60 (2) *SOLARBRONZE* + Clear | 8 | 42 | 21 | 7 | 15 | 0.29 | 0.27 | 1.6 | 0.32 | 0.28 | 1.50 |
| *SOLARBAN* 60 (2) *SOLARGRAY* + Clear | 8 | 35 | 18 | 6 | 12 | 0.29 | 0.27 | 1.6 | 0.29 | 0.25 | 1.40 |
| *SOLARBAN* 60 (2) *SOLEXIA* + Clear | 10 | 61 | 25 | 9 | 10 | 0.29 | 0.27 | 1.6 | 0.37 | 0.32 | 1.91 |
| *ATLANTICA*® + *SOLARBAN* 60 (3) Clear | 5 | 53 | 20 | 9 | 7 | 0.29 | 0.27 | 1.6 | 0.36 | 0.31 | 1.71 |
| *AZURIA*® + *SOLARBAN* 60 (3) Clear | 13 | 54 | 21 | 9 | 7 | 0.29 | 0.27 | 1.6 | 0.36 | 0.31 | 1.74 |
| *GRAYLITE*® II + *SOLARBAN* 60 (3) Clear | 1 | 7 | 4 | 4 | 5 | 0.29 | 0.27 | 1.6 | 0.14 | 0.13 | 0.54 |
| *OPTIGRAY*® + *SOLARBAN* 60 (3) Clear | 10 | 50 | 23 | 8 | 15 | 0.29 | 0.27 | 1.5 | 0.40 | 0.35 | 1.43 |
| *PACIFICA*® + *SOLARBAN* 60 (3) Clear | 5 | 34 | 15 | 6 | 7 | 0.29 | 0.27 | 1.6 | 0.29 | 0.25 | 1.36 |
| *SOLARBLUE*® + *SOLARBAN* 60 (3) Clear | 10 | 45 | 21 | 7 | 13 | 0.29 | 0.27 | 1.6 | 0.38 | 0.33 | 1.36 |
| *SOLARBRONZE*® + *SOLARBAN* 60 (3) Clear | 8 | 42 | 21 | 7 | 16 | 0.29 | 0.27 | 1.6 | 0.37 | 0.32 | 1.31 |
| *SOLARGRAY*® + *SOLARBAN* 60 (3) Clear | 8 | 35 | 18 | 7 | 13 | 0.29 | 0.27 | 1.6 | 0.33 | 0.29 | 1.21 |
| *SOLEXIA*® + *SOLARBAN* 60 (3) Clear | 10 | 61 | 25 | 10 | 10 | 0.29 | 0.27 | 1.6 | 0.42 | 0.37 | 1.65 |
| ***VISTACOOL*® Glass with *SOLARBAN*® 60 Solar Control Low-E (3)** | | | | | | | | | | | |
| *VISTACOOL* (2) *AZURIA* + Low-E | 11 | 42 | 16 | 20 | 11 | 0.29 | 0.27 | 1.6 | 0.30 | 0.26 | 1.62 |
| *VISTACOOL* (2) *PACIFICA* + Low-E | 4 | 26 | 12 | 11 | 9 | 0.29 | 0.27 | 1.6 | 0.25 | 0.21 | 1.24 |
| ***SOLARCOOL*® Glass (Reflective) with *SOLARBAN*® 60 Solar Control Low-E (3)** | | | | | | | | | | | |
| *SOLARCOOL* (2) *AZURIA* + Low-E | 4 | 21 | 8 | 19 | 10 | 0.29 | 0.27 | 1.6 | 0.19 | 0.17 | 1.24 |
| *SOLARCOOL* (2) *PACIFICA* + Low-E | 2 | 13 | 6 | 10 | 8 | 0.29 | 0.27 | 1.6 | 0.17 | 0.15 | 0.87 |
| *SOLARCOOL* (2) *SOLARBLUE* + Low-E | 3 | 17 | 9 | 14 | 15 | 0.29 | 0.27 | 1.6 | 0.21 | 0.18 | 0.94 |
| *SOLARCOOL* (2) *SOLARBRONZE* + Low-E | 2 | 17 | 9 | 14 | 18 | 0.29 | 0.27 | 1.6 | 0.21 | 0.18 | 0.94 |
| *SOLARCOOL* (2) *SOLARGRAY* + Low-E | 2 | 14 | 8 | 11 | 14 | 0.29 | 0.27 | 1.6 | 0.20 | 0.17 | 0.82 |
| *SOLARCOOL* (2) *SOLEXIA* + Low-E | 3 | 24 | 10 | 24 | 15 | 0.29 | 0.27 | 1.6 | 0.22 | 0.19 | 1.26 |

* Data based on using ***STARPHIRE*®** glass for both interior and exterior lites.

All performance data calculated using LBNL Window 6.3 software, except European U-value, which is calculated using WinDat version 3.0.1 software. For detailed information on the methodologies used to calculate the aesthetic and performance values in this table, please visit www.ppgideascapes.com or request our Architectural Glass Catalog.



CERTIFIED cradletocradle SILVER

PPG IdeaScapes® Glass • Coatings • Paint

Printed in U.S.A.
7071 09/14 10M

## LIGHTING ANALYSIS

The proposed lighting design for the Seminar I Building exceeds the prescriptive design in the classrooms, offices, conference rooms, and the police dispatch area. Pendant electronic LED light fixtures will serve the classrooms and dispatch rooms. High performance recessed LED fixtures with a driver ballast will serve the offices and conference rooms. These lights meet the prescriptive requirements and are recommended. Occupancy and daylighting sensors are located in all classrooms, storage, conference rooms, and offices.

### **LED Exit Lights**

The payback period for LED exit lights is always short compared to incandescent exit lights and is recommended.

TRES WEST ENGINEERS, INC.
2702 South 42nd Street, Suite 301
Tacoma, WA 98409-7315
253.472.3300
www.treswest.com

# Room Estimator - Layout 1 - Classroom

## Luminaire

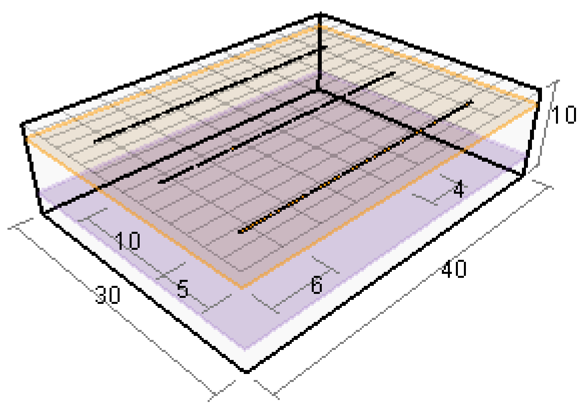
IES Filename: S16-LED-ID-DCO-4ft-2E-H-8-35-FTO-ITL85121_003
Description: FINELITE
S16-LED-ID-DCO-4ft-2E-H-8-35-FTO

| | | |
|---|---|---|
| Lumens Per Lamp: | N.A. | lms |
| Number of Lamps: | 160 | |
| Luminaire Lumens: | 3455 | lms |
| Luminaire Efficiency: | N.A. | % |
| Luminaire Watts: | 29 | W |

**Total Light Loss Factor (LLF): 1.000**

## Room Dimensions

| | | |
|---|---|---|
| Length (X): | 40 | ft |
| Width (Y): | 30 | ft |
| Height (Z): | 10 | ft |
| Workplane Height: | 2.5 | ft |
| Suspension Length: | 1.5 | ft |
| Room Cavity Ratio (RCR): | 1.750 | |




## Room Reflectance

| | |
|---|---|
| Ceiling: | 0.80 |
| Walls: | 0.50 |
| Floor: | 0.20 |
| Effective Ceiling Cavity: | 0.735 |
| Effective Floor Cavity: | 0.194 |

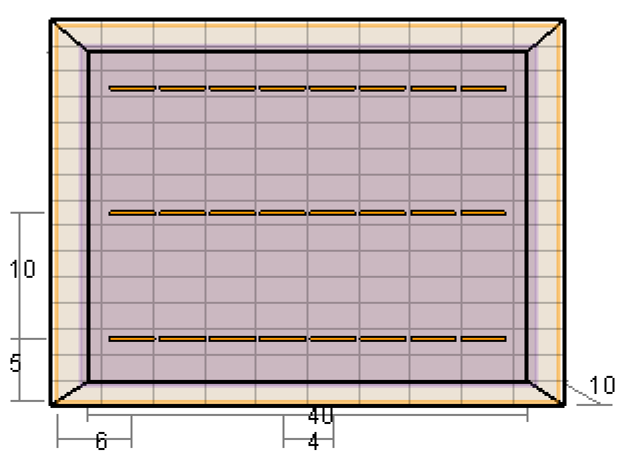
**Coeffecient of Utilization (CU): 0.763**

## Results

| | | |
|---|---|---|
| **Estimated Average Illuminance:** | **53** | **fc** |
| **Number of Luminaires:** | **24** | |
| **Lighting Power Density (LPD):** | **0.572** | **W/ft^2** |

## Layout

| | Rows (Width, Y) | | Columns (Length, X) | |
|---|---|---|---|---|
| Grid Layout (Size): | 3 | × | 8 | luminaires |
| Grid Spacing: | 10 | × | 4 | ft |
| Wall (Start) Spacing: | 5 | × | 6 | ft |
| Ceiling Grid Spacing: | 2 | × | 4 | ft |
| Spacing Criteria: | N.A. | × | N.A. | ft |



TRES WEST ENGINEERS, INC.
2702 South 42nd Street, Suite 301
Tacoma, WA 98409-7315
253.472.3300
www.treswest.com

# Room Estimator - Layout 1 - Conference

## Luminaire

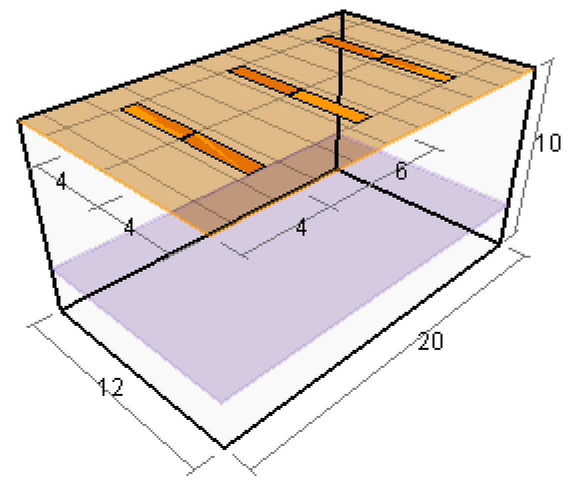
IES Filename: FEQ214AC3000L35K
Description: FEQ2-14-AC-3000L-35K-1C-UNV-LD1

| | | |
|---|---|---|
| Lumens Per Lamp: | N.A. | lms |
| Number of Lamps: | 1 | |
| Luminaire Lumens: | 3038 | lms |
| Luminaire Efficiency: | N.A. | % |
| Luminaire Watts: | 31 | W |

**Total Light Loss Factor (LLF): 1.000**

## Room Dimensions

| | | |
|---|---|---|
| Length (X): | 20 | ft |
| Width (Y): | 12 | ft |
| Height (Z): | 10 | ft |
| Workplane Height: | 2.5 | ft |
| Suspension Length: | 0 | ft |
| Room Cavity Ratio (RCR): | 5.000 | |




## Room Reflectance

| | |
|---|---|
| Ceiling: | 0.80 |
| Walls: | 0.50 |
| Floor: | 0.20 |
| Effective Ceiling Cavity: | 0.800 |
| Effective Floor Cavity: | 0.187 |

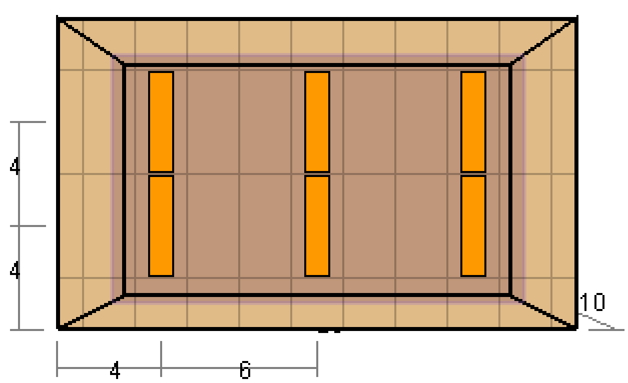
**Coeffecient of Utilization (CU): 0.639**

## Results

| | | |
|---|---|---|
| **Estimated Average Illuminance:** | **49** | **fc** |
| **Number of Luminaires:** | **6** | |
| **Lighting Power Density (LPD):** | **0.775** | **W/ft^2** |

## Layout

| | Rows (Width, Y) | | Columns (Length, X) | |
|---|---|---|---|---|
| Grid Layout (Size): | 2 | × | 3 | luminaires |
| Grid Spacing: | 4 | × | 6 | ft |
| Wall (Start) Spacing: | 4 | × | 4 | ft |
| Ceiling Grid Spacing: | 4 | × | 2 | ft |
| Spacing Criteria: | 1.3 | × | 1.26 | ft |



TRES WEST ENGINEERS, INC.
2702 South 42nd Street, Suite 301
Tacoma, WA 98409-7315
253.472.3300
www.treswest.com

# Room Estimator - Layout 1 - Dispatch

## Luminaire

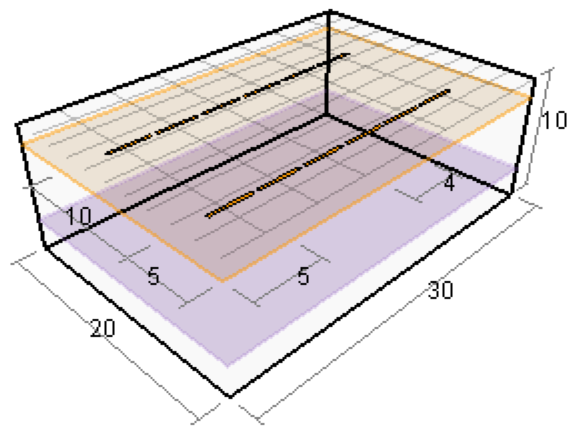
IES Filename: S16-LED-ID-DCO-4ft-2E-H-8-35-FTO-ITL85121_003
Description: FINELITE
S16-LED-ID-DCO-4ft-2E-H-8-35-FTO

| | | |
|---|---|---|
| Lumens Per Lamp: | N.A. | lms |
| Number of Lamps: | 160 | |
| Luminaire Lumens: | 3455 | lms |
| Luminaire Efficiency: | N.A. | % |
| Luminaire Watts: | 29 | W |

**Total Light Loss Factor (LLF): 1.000**

## Room Dimensions

| | | |
|---|---|---|
| Length (X): | 30 | ft |
| Width (Y): | 20 | ft |
| Height (Z): | 10 | ft |
| Workplane Height: | 2.5 | ft |
| Suspension Length: | 1.5 | ft |
| Room Cavity Ratio (RCR): | 2.500 | |



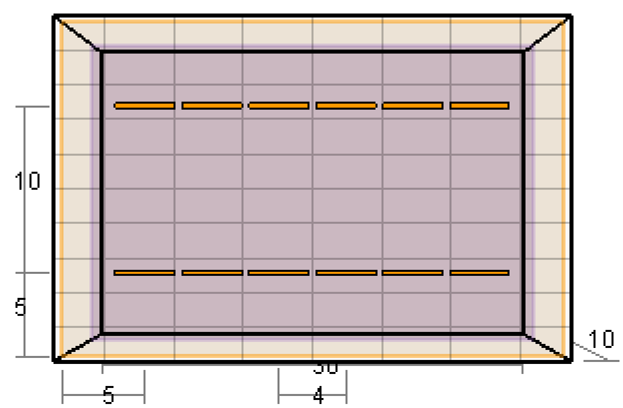

## Room Reflectance

| | |
|---|---|
| Ceiling: | 0.80 |
| Walls: | 0.50 |
| Floor: | 0.20 |
| Effective Ceiling Cavity: | 0.710 |
| Effective Floor Cavity: | 0.191 |

**Coeffecient of Utilization (CU): 0.673**

## Results

| | | |
|---|---|---|
| **Estimated Average Illuminance:** | **46** | **fc** |
| **Number of Luminaires:** | **12** | |
| **Lighting Power Density (LPD):** | **0.572** | **W/ft^2** |




## Layout

| | Rows (Width, Y) | | Columns (Length, X) | |
|---|---|---|---|---|
| Grid Layout (Size): | 2 | × | 6 | luminaires |
| Grid Spacing: | 10 | × | 4 | ft |
| Wall (Start) Spacing: | 5 | × | 5 | ft |
| Ceiling Grid Spacing: | 2 | × | 4 | ft |
| Spacing Criteria: | N.A. | × | N.A. | ft |

TRES WEST ENGINEERS, INC.
2702 South 42nd Street, Suite 301
Tacoma, WA 98409-7315
253.472.3300
www.treswest.com

# Room Estimator - Layout 1 - Office

## Luminaire

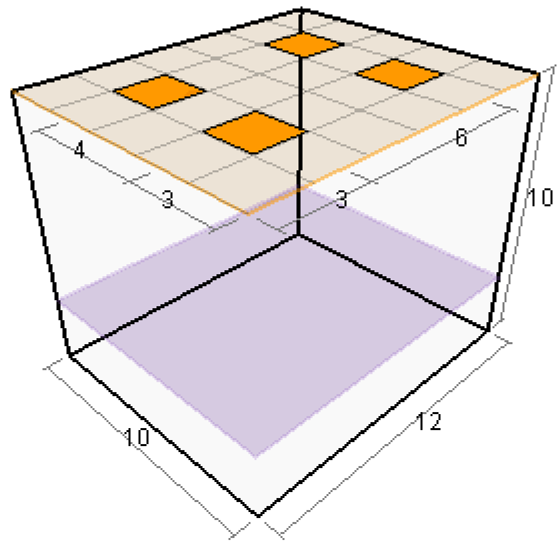
IES Filename: FEQ222AC2000L35K
Description: FEQ2-22-AC-2000L-35K-1C-UNV-LD1

| | | |
|---|---|---|
| Lumens Per Lamp: | N.A. | lms |
| Number of Lamps: | 1 | |
| Luminaire Lumens: | 2131 | lms |
| Luminaire Efficiency: | N.A. | % |
| Luminaire Watts: | 20 | W |

**Total Light Loss Factor (LLF): 1.000**

## Room Dimensions

| | | |
|---|---|---|
| Length (X): | 12 | ft |
| Width (Y): | 10 | ft |
| Height (Z): | 10 | ft |
| Workplane Height: | 2.5 | ft |
| Suspension Length: | 0 | ft |
| Room Cavity Ratio (RCR): | 6.875 | |




## Room Reflectance

| | |
|---|---|
| Ceiling: | 0.80 |
| Walls: | 0.50 |
| Floor: | 0.20 |
| Effective Ceiling Cavity: | 0.800 |
| Effective Floor Cavity: | 0.182 |

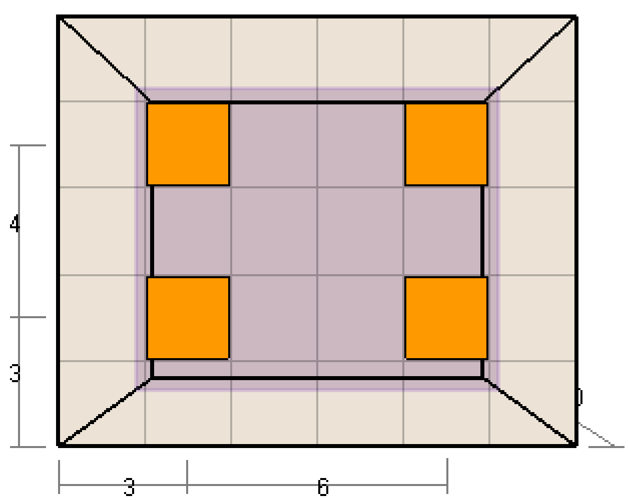
**Coeffecient of Utilization (CU): 0.521**

## Results

| | | |
|---|---|---|
| **Estimated Average Illuminance:** | **37** | **fc** |
| **Number of Luminaires:** | **4** | |
| **Lighting Power Density (LPD):** | **0.654** | **W/ft^2** |

## Layout

| | Rows (Width, Y) | | Columns (Length, X) | |
|---|---|---|---|---|
| Grid Layout (Size): | 2 | × | 2 | luminaires |
| Grid Spacing: | 4 | × | 6 | ft |
| Wall (Start) Spacing: | 3 | × | 3 | ft |
| Ceiling Grid Spacing: | 2 | × | 2 | ft |
| Spacing Criteria: | 1.24 | × | 1.4 | ft |



**HVAC ANALYSIS**

The following is a description of the HVAC designs and alternatives analyzed for the Seminar I Building. Alternative 4 is recommended for The Evergreen State College. Installation and maintenance cost data and life cycle cost spreadsheets are included at the end of this section. The computer simulation input and output is included with this report on a thumb drive.

**ASHRAE 90.1 Baseline:** VAV AHU with heating water and chilled water coils. Non-fan powered VAV boxes with heating water reheat. VAV AHU is provided for each floor. Campus steam and chilled water is provided to the building. Gas fired condensing water heater is provided for domestic hot water. The chiller plant provides 0.43 kw/ton.

**Alternative No. 1:** High Performance VAV system per WSEC C403.7. VAV AHUs provided with chilled water and heating water coils. Non-fan powered air terminal units provided with heating water reheat coils. Steam and chilled water provided from central plant. Steam to water heat exchanger provided. Electric water heater provided for domestic hot water.

**Alternative No. 2:** Water Source Variable Refrigerant Flow System. A 100 percent heat recovery unit is provided for ventilation air to each VRF unit. Electric water heater provided for domestic hot water. Chilled water and steam will be provided from the central plant to a condenser water closed loop system. A cooling tower on roof for heat sink in shoulder season. $CO^2$ control provided for high-density areas.

**Alternative No. 3:** Chilled Beam System utilizing chilled water and steam from the central plant. Steam to water heat exchanger provided. Cooling tower provided for water-side economizer at the building. A 100 percent heat recovery unit will be provided for ventilation air to the building. Electric water heater provided for domestic hot water. $CO^2$ control provided for high-density areas. Photovoltaic cells provided on the roof.

**Alternative No. 4*:** Chilled Beam System utilizing chilled water and steam from central plant. Steam to water heat exchanger provided. Cooling tower provided for waterside economizer at the building. A 100 percent heat recovery unit will be provided for ventilation air to the building. Electric water heater provided for domestic hot water. $CO^2$ control provided for high-density areas.

* = Recommended system

# Energy Cost Budget / PRM Summary

By WOOD HARBINGER INC

| Project Name: | | Date: June 10, 2016 |
|---|---|---|
| City: | Weather Data: Olympia, Washington | |

Note: The percentage displayed for the "Proposed/ Base %" column of the base case is actually the percentage of the total energy consumption.

* Denotes the base alternative for the ECB study.

| | | * Alt-3 ASHRAE Baseline 90.1-1 | | | Alt-1 Prop1 - HP VAV | | | Alt-2 Prop3-Chilled Beam Pv | | | Alt-4 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Energy 10^6 Btu/yr | Proposed / Base % | Peak kBtuh | Energy 10^6 Btu/yr | Proposed / Base % | Peak kBtuh | Energy 10^6 Btu/yr | Proposed / Base % | Peak kBtuh | Energy 10^6 Btu/yr | Proposed / Base % | Peak kBtuh |
| **Lighting - Conditioned** | Electricity | 602.9 | 13 | 159 | 422.0 | 70 | 111 | 422.0 | 70 | 111 | 422.0 | 70 | 111 |
| **Space Heating** | Electricity | 2,180.8 | 47 | 1,010 | 2,011.1 | 92 | 912 | 655.2 | 30 | 902 | 655.2 | 30 | 902 |
| **Space Cooling** | Electricity | 39.4 | 1 | 159 | 46.1 | 117 | 175 | 136.4 | 346 | 121 | 136.4 | 346 | 121 |
| **Pumps** | Electricity | 216.5 | 5 | 42 | 149.6 | 69 | 31 | 202.8 | 94 | 34 | 202.8 | 94 | 34 |
| **Fans - Conditioned** | Electricity | 735.6 | 16 | 211 | 641.1 | 87 | 211 | 490.7 | 67 | 76 | 490.7 | 67 | 76 |
| **Receptacles - Conditioned** | Electricity | 758.8 | 16 | 206 | 758.8 | 100 | 206 | 758.8 | 100 | 206 | 758.8 | 100 | 206 |
| **Stand-alone Base Utilities** | Electricity | 87.6 | 2 | 10 | 87.6 | 100 | 10 | -65.5 | -75 | -48 | 87.6 | 100 | 10 |
| **Total Building Consumption** | | **4,621.7** | | | **4,116.4** | | | **2,600.4** | | | **2,753.5** | | |

| | | * Alt-3 ASHRAE Baseline 90.1-1 | Alt-1 Prop1 - HP VAV | Alt-2 Prop3-Chilled Beam Pv | Alt-4 |
|---|---|---|---|---|---|
| **Total** | **Number of hours heating load not met** | 5 | 124 | 41 | 41 |
| | **Number of hours cooling load not met** | 0 | 0 | 0 | 0 |

| | * Alt-3 ASHRAE Baseline 90.1-1 | | Alt-1 Prop1 - HP VAV | | Alt-2 Prop3-Chilled Beam Pv | | Alt-4 | |
|---|---|---|---|---|---|---|---|---|
| | Energy 10^6 Btu/yr | Cost/yr $/yr | Energy 10^6 Btu/yr | Cost/yr $/yr | Energy 10^6 Btu/yr | Cost/yr $/yr | Energy 10^6 Btu/yr | Cost/yr $/yr |
| **Electricity** | 4,621.7 | 113,603 | 4,116.4 | 100,849 | 2,600.4 | 73,381 | 2,753.5 | 75,977 |
| **Total** | **4,622** | **113,603** | **4,116** | **100,849** | **2,600** | **73,381** | **2,753** | **75,977** |

# Energy Cost Budget / PRM Summary

By WOOD HARBINGER INC

| | | |
|---|---|---|
| Project Name: | | Date: June 10, 2016 |
| City: | Weather Data: Olympia, Washington | |

Note: The percentage displayed for the "Proposed/ Base %" column of the base case is actually the percentage of the total energy consumption.

* Denotes the base alternative for the ECB study.

| | | Alt-1 Alt2 - WS VRF Energy 10^6 Btu/yr | Proposed / Base % | Peak kBtuh |
|---|---|---|---|---|
| **Lighting - Conditioned** | Electricity | 422.0 | 70 | 111 |
| **Space Heating** | Electricity | 1,727.8 | 76 | 798 |
| **Space Cooling** | Electricity | 264.6 | 123 | 928 |
| **Pumps** | Electricity | 117.0 | 53 | 26 |
| **Fans - Conditioned** | Electricity | 647.8 | 86 | 213 |
| **Receptacles - Conditioned** | Electricity | 758.8 | 100 | 206 |
| **Stand-alone Base Utilities** | Electricity | 87.6 | 100 | 10 |
| **Total Building Consumption** | | **4,025.7** | | |

| | | Alt-1 Alt2 - WS VRF |
|---|---|---|
| **Total** | **Number of hours heating load not met** | 124 |
| | **Number of hours cooling load not met** | 0 |

| | Alt-1 Alt2 - WS VRF Energy 10^6 Btu/yr | Cost/yr $/yr |
|---|---|---|
| **Electricity** | 4,025.7 | 88,655 |
| **Total** | **4,026** | **88,655** |

| WOOD HARBINGER, INC. | Consulting Engineers - Bellevue, Washington | | | | | | | COST ESTIMATE | |
|---|---|---|---|---|---|---|---|---|---|
| Job Name<br>**Seminar I Building** | Basis for Estimate<br>[ ] No Design Completed | | Estimated by<br>**AAM** | | | | | Job Number<br>**16008** | |
| Description<br>**Energy Life Cycle Cost Analysis**<br>**Mechanical Cost Estimate** | **[X] Preliminary Design**<br>[ ] Final Design<br>[ ] Other (Specify) | | Checked by | | | | | Date Jun 8, '16 | |
| | QUANTITY | | MATERIAL COST | | LABOR COST | | ENGINEERING ESTIMATE | | |
| DESCRIPTION | NUMBER | UNIT | UNIT COST | TOTAL | UNIT COST | TOTAL | UNIT COST | TOTAL | |

**ASHRAE 90.1 Baseline System 7. VAV AHU, CW Cooling, HW Heat, and VAV Boxes with HW Reheat.**

| DESCRIPTION | NUMBER | UNIT | MATERIAL UNIT COST | MATERIAL TOTAL | LABOR UNIT COST | LABOR TOTAL | ENG. UNIT COST | ENG. TOTAL |
|---|---|---|---|---|---|---|---|---|
| **23 20 00 HVAC Piping and Pumps / 23 50 00 Central Heating Equipment** | | | | | | | | |
| Steam to Water Heat Exchanger | 1 | EA | 17,900.00 | 17,900.00 | 5,850.00 | 5,850.00 | 23,750 | $23,750 |
| Expansion tank, air separator & misc. equipment | 1 | LS | | | | | 10,000 | $10,000 |
| Condensate pump (7.5 HP) | 1 | EA | 5,670.00 | 5,670.00 | 1,000.00 | 1,000.00 | 6,670 | $6,670 |
| HW pump (7.5 HP) | 2 | EA | 5,670.00 | 11,340.00 | 1,000.00 | 2,000.00 | 6,670 | $13,340 |
| HW piping | 54,623 | SF | | | | | 2.35 | $128,364 |
| CW pump (7.5 HP) | 2 | EA | 5,670.00 | 11,340.00 | 1,000.00 | 2,000.00 | 6,670 | $13,340 |
| CW piping | 15,000 | SF | | | | | 3.00 | $45,000 |
| Terminal coil hook-ups / balancing valves | 62 | EA | | | | | 400 | $24,800 |
| **Sub-Total Section 23 20 00 / 23 50 00** | | | | | | | | **$265,264** |
| **23 70 00 Central HVAC Equipment / 23 80 00 Decentralized HVAC Equipment** | | | | | | | | |
| VAV AHU, HW Heat and CW Cooling | | | | | | | | |
| 20,000 CFM Basement | 1 | EA | 140,000.00 | 140,000.00 | 4,525.00 | 4,525.00 | 144,525 | $144,525 |
| 18,000 CFM First Floor | 1 | EA | 126,000.00 | 126,000.00 | 4,525.00 | 4,525.00 | 130,525 | $130,525 |
| 12,000 CFM Second/Third Floor | 2 | EA | 84,000.00 | 168,000.00 | 4,525.00 | 9,050.00 | 88,525 | $177,050 |
| VAV Boxes with HW Reheat Coils (1000 CFM) | 62 | EA | 1,050.00 | 65,100.00 | 93.00 | 5,766.00 | 1,143 | $70,866 |
| **Sub-Total Section 23 70 00 / 23 80 00** | | | | | | | | **$522,966** |
| **23 30 00 AIR DISTRIBUTION SYSTEMS** | | | | | | | | |
| Ductwork | 54623 | SF | | | | | 8.10 | $442,446 |
| **Sub-Total Section 23 30 00** | | | | | | | | **$442,446** |

**Summary**

| | |
|---|---|
| 23 20 00 HVAC Piping and Pumps / 23 50 00 Central Heating Equipment | $265,264 |
| 23 70 00 Central HVAC Equipment / 23 80 00 Decentralized HVAC Equipment | $522,966 |
| 23 30 00 AIR DISTRIBUTION SYSTEMS | $442,446 |
| SUB-TOTAL | $1,230,676 |
| SUBCONTRACTOR MARK-UP @ 25% | $307,669 |
| **TOTAL COST** | **$1,538,345** |

| WOOD HARBINGER, INC. | Consulting Engineers - Bellevue, Washington | | COST ESTIMATE |
|---|---|---|---|
| Job Name<br>**Seminar I Building** | Basis for Estimate<br>[ ] No Design Completed | Estimated by<br>**AAM** | Job Number<br>**16008** |
| Description<br>**Energy Life Cycle Cost Analysis**<br>**Mechanical Cost Estimate** | **[X] Preliminary Design**<br>[ ] Final Design<br>[ ] Other (Specify) | Checked by | Date Jun 8, '16 |

| DESCRIPTION | QUANTITY | | MATERIAL COST | | LABOR COST | | ENGINEERING ESTIMATE | |
|---|---|---|---|---|---|---|---|---|
| | NUMBER | UNIT | UNIT COST | TOTAL | UNIT COST | TOTAL | UNIT COST | TOTAL |
| **Alternative 1. High Performance VAV AHU, CW Cooling, HW Heat, and VAV Boxes with HW Reheat.** | | | | | | | | |
| **23 20 00 HVAC Piping and Pumps / 23 50 00 Central Heating Equipment** | | | | | | | | |
| Steam to Water Heat Exchanger | 1 | EA | 17,900.00 | 17,900.00 | 5,850.00 | 5,850.00 | 23,750 | $23,750 |
| Expansion tank, air separator & misc. equipment | 1 | LS | | | | | 10,000 | $10,000 |
| Condensate pump (7.5 HP) | 1 | EA | 5,670.00 | 5,670.00 | 1,000.00 | 1,000.00 | 6,670 | $6,670 |
| HW pump (7.5 HP) | 2 | EA | 5,670.00 | 11,340.00 | 1,000.00 | 2,000.00 | 6,670 | $13,340 |
| HW piping | 54,623 | SF | | | | | 2.35 | $128,364 |
| CW pump (7.5 HP) | 2 | EA | 5,670.00 | 11,340.00 | 1,000.00 | 2,000.00 | 6,670 | $13,340 |
| CW piping | 15,000 | SF | | | | | 3.00 | $45,000 |
| Terminal coil hook-ups / balancing valves | 62 | EA | | | | | 400 | $24,800 |
| **Sub-Total Section 23 20 00 / 23 50 00** | | | | | | | | **$265,264** |
| **23 70 00 Central HVAC Equipment / 23 80 00 Decentralized HVAC Equipment** | | | | | | | | |
| VAV AHU, HW Heat and CW Cooling | | | | | | | | |
| 20,000 CFM Basement | 1 | EA | 140,000.00 | 140,000.00 | 4,525.00 | 4,525.00 | 144,525 | $144,525 |
| 18,000 CFM First Floor | 1 | EA | 126,000.00 | 126,000.00 | 4,525.00 | 4,525.00 | 130,525 | $130,525 |
| 12,000 CFM Second/Third Floor | 2 | EA | 84,000.00 | 168,000.00 | 4,525.00 | 9,050.00 | 88,525 | $177,050 |
| VAV Boxes with HW Reheat Coils (1000 CFM) | 62 | EA | 1,050.00 | 65,100.00 | 93.00 | 5,766.00 | 1,143 | $70,866 |
| **Sub-Total Section 23 70 00 / 23 80 00** | | | | | | | | **$522,966** |
| **23 30 00 AIR DISTRIBUTION SYSTEMS** | | | | | | | | |
| Ductwork | 54623 | SF | | | | | 8.10 | $442,446 |
| **Sub-Total Section 23 30 00** | | | | | | | | **$442,446** |

**Summary**

| | |
|---|---|
| 23 20 00 HVAC Piping and Pumps / 23 50 00 Central Heating Equipment | $265,264 |
| 23 70 00 Central HVAC Equipment / 23 80 00 Decentralized HVAC Equipment | $522,966 |
| 23 30 00 AIR DISTRIBUTION SYSTEMS | $442,446 |
| SUB-TOTAL | $1,230,676 |
| SUBCONTRACTOR MARK-UP @ 25% | $307,669 |
| **TOTAL COST** | **$1,538,345** |

| WOOD HARBINGER, INC. | Consulting Engineers - Bellevue, Washington | | COST ESTIMATE |
|---|---|---|---|
| Job Name<br>**Seminar I Building** | Basis for Estimate<br>[ ] No Design Completed | Estimated by<br>**AAM** | Job Number<br>**16008** |
| Description<br>**Energy Life Cycle Cost Analysis**<br>**Mechanical Cost Estimate** | **[X] Preliminary Design**<br>[ ] Final Design<br>[ ] Other (Specify) | Checked by | Date Jun 8, '16 |

| | QUANTITY | | MATERIAL COST | | LABOR COST | | ENGINEERING ESTIMATE | |
|---|---|---|---|---|---|---|---|---|
| DESCRIPTION | NUMBER | UNIT | UNIT COST | TOTAL | UNIT COST | TOTAL | UNIT COST | TOTAL |
| **Alternative 2. Water Source VRF System with Cooling Tower. CW cooling and Steam heating from central plant.** | | | | | | | | |
| **23 20 00 HVAC Piping and Pumps / 23 50 00 Central Heating Equipment / 23 60 00 Central Cooling Equipment** | | | | | | | | |
| 180 ton cooling tower | 1 | EA | 27,400.00 | 27,400.00 | 2,175.00 | 2,175.00 | 29,575 | $29,575 |
| Water-side Economizer (Heat Sink) | 1 | EA | 17,000.00 | 17,000.00 | 2,000.00 | 2,000.00 | 19,000 | $19,000 |
| Steam to Water Heat Exchanger | 1 | EA | 17,900.00 | 17,900.00 | 5,850.00 | 5,850.00 | 23,750 | $23,750 |
| Expansion tank, air separator & misc. equipment | 1 | LS | | | | | 10,000 | $10,000 |
| Condensate pump (7.5 HP) | 1 | EA | 5,670.00 | 5,670.00 | 1,000.00 | 1,000.00 | 6,670 | $6,670 |
| HW pump | 1 | EA | 5,670.00 | 5,670.00 | 1,000.00 | 1,000.00 | 6,670 | $6,670 |
| CW pump | 1 | EA | 5,670.00 | 5,670.00 | 1,000.00 | 1,000.00 | 6,670 | $6,670 |
| Condenser Water pump | 1 | EA | 5,670.00 | 5,670.00 | 1,000.00 | 1,000.00 | 6,670 | $6,670 |
| Condenser Water piping | 5,000 | SF | | | | | 2.35 | $11,750 |
| HW piping | 5,000 | SF | | | | | 2.35 | $11,750 |
| CW piping | 5,000 | SF | | | | | 3.00 | $15,000 |
| **Sub-Total Section 23 20 00 / 23 50 00 / 23 60 00** | | | | | | | | **$147,505** |
| **23 23 00 Refrigerant Piping** | | | | | | | | |
| Refrigerant piping | 54,623 | SF | | | | | 3.00 | $163,869 |
| Terminal coil hook-ups / balancing valves | 62 | EA | | | | | 400 | $24,800 |
| **Sub-Total Section 23 20 00 / 23 50 00** | | | | | | | | **$188,669** |
| **23 70 00 Central HVAC Equipment / 23 80 00 Decentralized HVAC Equipment** | | | | | | | | |
| HRU (min. OSA only) with Heat Recovery. | | | | | | | | |
| 8000 CFM w/ heat recovery (Basement) | 1 | LS | 104,000.00 | 104,000.00 | 4,525.00 | 4,525.00 | 108,525 | $108,525 |
| 7200 CFM w/ heat recovery (First Fl) | 1 | LS | 93,600.00 | 93,600.00 | 4,525.00 | 4,525.00 | 98,125 | $98,125 |
| 4800 CFM w/ heat recovery (First and Second Flrs) | 2 | LS | 62,400.00 | 124,800.00 | 4,525.00 | 9,050.00 | 66,925 | $133,850 |
| Variable Refrigerant Flow Water Source Units | 7 | LS | 25,403 | 177,821.00 | 3,123.00 | 21,861.00 | 28,526 | $199,682 |
| Main Branch Circuit Controllers | 7 | EA | 6,366 | 44,562.00 | 1,748.00 | 12,236.00 | 8,114 | $56,798 |
| Variable Refrigerant Flow Indoor Units | 62 | EA | $2,387.00 | 147,994.00 | 936.00 | 58,032.00 | 3,323 | $206,026 |
| VAV Boxes for CO2 control | 25 | EA | 897.00 | 22,425.00 | 87.90 | 2,197.50 | 985 | $24,623 |
| **Sub-Total Section 23 70 00 / 23 80 00** | | | | | | | | **$827,629** |
| **23 30 00 HVAC Air Distribution** | | | | | | | | |
| Ductwork | 54623 | SF | | | | | 7.00 | $382,361 |
| **Sub-Total Section 23 30 00** | | | | | | | | **$382,361** |

**Summary**

| | |
|---|---|
| 23 20 00 HVAC Piping and Pumps / 23 50 00 Central Heating Equipment / 23 60 00 Central Cooling Equipment | $147,505 |
| 23 23 00 Refrigerant Piping | $188,669 |
| 23 70 00 Central HVAC Equipment / 23 80 00 Decentralized HVAC Equipment | $827,629 |
| 23 30 00 HVAC Air Distribution | $382,361 |
| SUB-TOTAL | $1,546,164 |
| SUBCONTRACTOR MARK-UP @ 25% | $386,541 |
| **TOTAL COST** | **$1,932,704** |

| WOOD HARBINGER, INC. | Consulting Engineers - Bellevue, Washington | | | COST ESTIMATE | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Job Name<br>**Seminar I Building** | Basis for Estimate<br>[ ] No Design Completed | | Estimated by<br>**AAM** | | | | Job Number<br>**16008** | | |
| Description<br>**Energy Life Cycle Cost Analysis**<br>**Initial Mechanical Cost Estimate** | **[X] Preliminary Design**<br>[ ] Final Design<br>[ ] Other (Specify) | | Checked by | | | | Date Jun 8, '16 | | |
| | QUANTITY | | MATERIAL COST | | LABOR COST | | ENGINEERING ESTIMATE | | |
| DESCRIPTION | NUMBER | UNIT | UNIT COST | TOTAL | UNIT COST | TOTAL | UNIT COST | TOTAL | |

**Alternative 3. 100% Outside air heat recovery unit serving VAV Boxes with HW reheat and chilled beams. Photovoltaic cells provided on roof.**

| DESCRIPTION | NUMBER | UNIT | MATERIAL UNIT COST | MATERIAL TOTAL | LABOR UNIT COST | LABOR TOTAL | ENGINEERING UNIT COST | ENGINEERING TOTAL |
|---|---|---|---|---|---|---|---|---|
| **23 20 00 HVAC Piping and Pumps / 23 50 00 Central Heating Equipment / 23 60 00 Central Cooling Equipment** | | | | | | | | |
| 180 ton cooling tower | 1 | EA | 27,400.00 | 27,400.00 | 2,175.00 | 2,175.00 | 29,575 | $29,575 |
| Water-side Economizer | 1 | EA | 17,000.00 | 17,000.00 | 2,000.00 | 2,000.00 | 19,000 | $19,000 |
| Steam to Water Heat Exchanger | 1 | EA | 17,900.00 | 17,900.00 | 5,850.00 | 5,850.00 | 23,750 | $23,750 |
| Expansion tank, air separator & misc. equipment | 1 | LS | | | | | 10,000 | $10,000 |
| Condensate pump (7.5 HP) | 1 | EA | 5,670.00 | 5,670.00 | 1,000.00 | 1,000.00 | 6,670 | $6,670 |
| HW pump | 2 | EA | 5,670.00 | 11,340.00 | 1,000.00 | 2,000.00 | 6,670 | $13,340 |
| CW pump | 2 | EA | 5,670.00 | 11,340.00 | 1,000.00 | 2,000.00 | 6,670 | $13,340 |
| HW piping | 54,623 | SF | | | | | 2.35 | $128,364 |
| CW piping | 54,623 | SF | | | | | 3.00 | $163,869 |
| Terminal coil hook-ups / balancing valves (CB's)) | 150 | EA | | | | | 400 | $60,000 |
| Terminal coil hook-ups / balancing valves (TU's) | 62 | EA | | | | | 400 | $24,800 |
| **Sub-Total Section 23 20 00 / 23 50 00 / 23 60 00** | | | | | | | | **$492,708** |
| **23 70 00 Central HVAC Equipment / 23 80 00 Decentralized HVAC Equipment** | | | | | | | | |
| HRU (min. OSA only) with Heat Recovery. | | | | | | | | |
| 9000 CFM w/ heat recovery (Basement) | 1 | LS | 117,000.00 | 117,000.00 | 4,525.00 | 4,525.00 | 121,525 | $121,525 |
| 8200 CFM w/ heat recovery (First Fl) | 1 | LS | 106,600.00 | 106,600.00 | 4,525.00 | 4,525.00 | 111,125 | $111,125 |
| 5800 CFM w/ heat recovery (First and Second Flrs) | 2 | LS | 75,400.00 | 150,800.00 | 4,525.00 | 9,050.00 | 79,925 | $159,850 |
| Active Chilled Beams | 150 | EA | 1,399.00 | 209,850.00 | 660.00 | 99,000.00 | 2,059 | $308,850 |
| VAV Boxes with HW Reheat Coils | 62 | EA | 1,050.00 | 65,100.00 | 93.00 | 5,766.00 | 1,143 | $70,866 |
| **Sub-Total Section 23 70 00 / 23 80 00** | | | | | | | | **772,216** |
| **23 30 00 HVAC Air Distribution** | | | | | | | | |
| Ductwork | 54,623 | SF | | | | | 5.8 | 316,813 |
| **Sub-Total Section 23 30 00** | | | | | | | | **316,813** |
| **263100 Photovoltaic Cells** | | | | | | | | |
| **Photovoltaic Cell** | 50000 | WATT | | | | | 3 | $150,000 |

**Summary**

| | |
|---|---|
| 23 20 00 HVAC Piping and Pumps / 23 50 00 Central Heating Equipment / 23 60 00 Central Cooling Equipment | 492,708 |
| 23 70 00 Central HVAC Equipment / 23 80 00 Decentralized HVAC Equipment | 772,216 |
| 23 30 00 HVAC Air Distribution | 316,813 |
| 263100 Photovoltaic Cells | 150,000 |
| SUB-TOTAL | 1,731,737 |
| SUBCONTRACTOR MARK-UP @ 25% | 432,934 |
| **TOTAL COST** | **2,164,672** |

| WOOD HARBINGER, INC. | Consulting Engineers - Bellevue, Washington | | | | | | | | COST ESTIMATE |
|---|---|---|---|---|---|---|---|---|---|
| Job Name<br>**Seminar I Building** | Basis for Estimate<br>[ ] No Design Completed | | | Estimated by<br>**AAM** | | | | Job Number<br>**16008** | |
| Description<br>**Energy Life Cycle Cost Analysis**<br>**Initial Mechanical Cost Estimate** | **[X] Preliminary Design**<br>[ ] Final Design<br>[ ] Other (Specify) | | | Checked by | | | | Date | Jun 8, '16 |
| | QUANTITY | | MATERIAL COST | | LABOR COST | | ENGINEERING ESTIMATE | | |
| DESCRIPTION | NUMBER | UNIT | UNIT COST | TOTAL | UNIT COST | TOTAL | UNIT COST | TOTAL | |

**Alternative 4. 100% Outside air heat recovery unit serving VAV Boxes with HW reheat and chilled beams.**

| DESCRIPTION | NUMBER | UNIT | MATERIAL UNIT COST | MATERIAL TOTAL | LABOR UNIT COST | LABOR TOTAL | ENG. UNIT COST | ENG. TOTAL |
|---|---|---|---|---|---|---|---|---|
| **23 20 00 HVAC Piping and Pumps / 23 50 00 Central Heating Equipment / 23 60 00 Central Cooling Equipment** | | | | | | | | |
| 180 ton cooling tower | 1 | EA | 27,400.00 | 27,400.00 | 2,175.00 | 2,175.00 | 29,575 | $29,575 |
| Water-side Economizer | 1 | EA | 17,000.00 | 17,000.00 | 2,000.00 | 2,000.00 | 19,000 | $19,000 |
| Steam to Water Heat Exchanger | 1 | EA | 17,900.00 | 17,900.00 | 5,850.00 | 5,850.00 | 23,750 | $23,750 |
| Expansion tank, air separator & misc. equipment | 1 | LS | | | | | 10,000 | $10,000 |
| Condensate pump (7.5 HP) | 1 | EA | 5,670.00 | 5,670.00 | 1,000.00 | 1,000.00 | 6,670 | $6,670 |
| HW pump | 2 | EA | 5,670.00 | 11,340.00 | 1,000.00 | 2,000.00 | 6,670 | $13,340 |
| CW pump | 2 | EA | 5,670.00 | 11,340.00 | 1,000.00 | 2,000.00 | 6,670 | $13,340 |
| HW piping | 54,623 | SF | | | | | 2.35 | $128,364 |
| CW piping | 54,623 | SF | | | | | 3.00 | $163,869 |
| Terminal coil hook-ups / balancing valves (CB's)) | 150 | EA | | | | | 400 | $60,000 |
| Terminal coil hook-ups / balancing valves (TU's) | 62 | EA | | | | | 400 | $24,800 |
| **Sub-Total Section 23 20 00 / 23 50 00 / 23 60 00** | | | | | | | | **$492,708** |
| **23 70 00 Central HVAC Equipment / 23 80 00 Decentralized HVAC Equipment** | | | | | | | | |
| HRU (min. OSA only) with Heat Recovery. | | | | | | | | |
| 9000 CFM w/ heat recovery (Basement) | 1 | LS | 117,000.00 | 117,000.00 | 4,525.00 | 4,525.00 | 121,525 | $121,525 |
| 8200 CFM w/ heat recovery (First Fl) | 1 | LS | 106,600.00 | 106,600.00 | 4,525.00 | 4,525.00 | 111,125 | $111,125 |
| 5800 CFM w/ heat recovery (First and Second Flrs) | 2 | LS | 75,400.00 | 150,800.00 | 4,525.00 | 9,050.00 | 79,925 | $159,850 |
| Active Chilled Beams | 150 | EA | 1,399.00 | 209,850.00 | 660.00 | 99,000.00 | 2,059 | $308,850 |
| VAV Boxes with HW Reheat Coils | 62 | EA | 1,050.00 | 65,100.00 | 93.00 | 5,766.00 | 1,143 | $70,866 |
| **Sub-Total Section 23 70 00 / 23 80 00** | | | | | | | | **772,216** |
| **23 30 00 HVAC Air Distribution** | | | | | | | | |
| Ductwork | 54,623 | SF | | | | | 5.8 | 316,813 |
| **Sub-Total Section 23 30 00** | | | | | | | | **316,813** |

**Summary**

| | |
|---|---|
| 23 20 00 HVAC Piping and Pumps / 23 50 00 Central Heating Equipment / 23 60 00 Central Cooling Equipment | 492,708 |
| 23 70 00 Central HVAC Equipment / 23 80 00 Decentralized HVAC Equipment | 772,216 |
| 23 30 00 HVAC Air Distribution | 316,813 |
| SUB-TOTAL | 1,581,737 |
| SUBCONTRACTOR MARK-UP @ 25% | 395,434 |
| **TOTAL COST** | **1,977,172** |

## Maintenance Cost Spreadsheet

By: AAM 6/10/2016

**Project Name** Seminar I Building

**Summary**

ASHRAE 90.1 Baseline System 7. VAV AHU, CW Cooling, HW Heat, and VAV Boxes with HW Reheat.

| | | | |
|---|---|---|---|
| Building Gross Square Feet | | | 54,623 |
| Systems First Cost | | | $1,538,345 |
| HVAC System Type | **ASHRAE 90.1 Baseline System 7. VAV AHU, CW Cooling, HW Heat, and VAV Boxes with HW Reheat.** | | |
| Fuel Type | **NA** | | |
| Control System Type | **Direct Digital Control** | | |
| Basic Maint.Cost/sf-yr | | $ | 0.03 |
| Adjusted Maint.Cost/sf-yr | | $ | 0.02 |
| **TOTAL ANNUAL MAINTENANCE** | | $ | 1,286 |

| **Basic Maintenance Cost Estimate** | **Units** | **Maint. $/Unit** | **Number Units** | **Annual Maint $** |
|---|---|---|---|---|
| **HVAC System** | | | | |
| *HEATING GENERATION EQUIPMENT* | | | | |
| STEAM CONVERTER, <300,000 | CT | 30.36 | 1 | 30.36 |
| FLASH TANK, 24 GAL. | CT | 24.23 | 1 | 24.23 |
| COND. METER,<300 #/HR. | CT | 49.69 | 1 | 49.69 |
| STEAM TRAP, F & T, <1" | CT | 12.97 | 1 | 12.97 |
| COND. RCVR., 10 - 15 GAL. | CT | 64.75 | 1 | 64.75 |
| *DISTRIBUTION SYSTEM* | | | | 0.00 |
| CIRCULATION PUMP 5 HP | CT | 12.75 | 5 | 63.75 |
| PIPE/FITTINGS, COPPER | TF | 0.35 | 51 | 17.85 |
| *HEAT/COOL GENERATION* | | | | 0.00 |
| *EQUIPMENT* | | | | 0.00 |
| VARIABLE VOLUME 25000 CFM | CT | 364.47 | 4 | 1457.88 |
| VAV REHEAT | CT | 14.74 | 6 | 88.44 |
| **Total Basic Cost** | | | $ | **1,809.92** |

| **Cost Adjustment Factors** | **Annual Dollars** | **Difficulty Factor** | **Location Factor** | **Experience Factor** | **Annual Estimate** |
|---|---|---|---|---|---|
| Replace/Service filters, belts | 452.48 | 0.9 | 1.05 | 0.9 | 384.83 |
| Lubrication | 90.50 | 0.9 | 1.05 | 0.9 | 76.97 |
| General housekeeping | 452.48 | 0.9 | 1.05 | 0.9 | 384.83 |
| Periodic System TAB | 180.99 | 0.9 | 1.05 | 0.9 | 153.93 |
| Controls Maintenance | 180.99 | 1 | 1.05 | 1 | 190.04 |
| Troubleshooting | 90.50 | 1 | 1.05 | 1 | 95.02 |
| Contract Maint. If Applicable | | | | | 0.00 |
| **TOTAL Adjusted Annual Maintenance** | | | | $ | **1,285.63** |

**Maintenance Cost Spreadsheet** By: AAM 6/10/2016

**Project Name** Seminar I Building

| | |
|---|---|
| **Summary** | Alternative 1. High Performance VAV AHU, CW Cooling, HW Heat, and VAV Boxes with HW Reheat. |
| Building Gross Square Feet | 54,623 |
| Systems First Cost | $1,538,345 |
| HVAC System Type | **Alternative 1. High Performance VAV AHU, CW Cooling, HW Heat, and VAV Boxes with HW Reheat.** |
| Fuel Type | **Natural Gas** |
| Control System Type | **Direct Digital Control** |
| Basic Maint.Cost/sf-yr | $ 0.03 |
| Adjusted Maint.Cost/sf-yr | $ 0.02 |
| **TOTAL ANNUAL MAINTENANCE** | $ 1,286 |

| **Basic Maintenance Cost Estimate** | **Units** | **Maint. $/Unit** | **Number Units** | **Annual Maint $** |
|---|---|---|---|---|
| **HVAC System** | | | | |
| **HVAC System** | | | | |
| *HEATING GENERATION EQUIPMENT* | | | | |
| STEAM CONVERTER, <300,000 | CT | 30.36 | 1 | 30.36 |
| FLASH TANK, 24 GAL. | CT | 24.23 | 1 | 24.23 |
| COND. METER,<300 #/HR. | CT | 49.69 | 1 | 49.69 |
| STEAM TRAP, F & T, <1" | CT | 12.97 | 1 | 12.97 |
| COND. RCVR., 10 - 15 GAL. | CT | 64.75 | 1 | 64.75 |
| *DISTRIBUTION SYSTEM* | | | | 0.00 |
| CIRCULATION PUMP 5 HP | CT | 12.75 | 5 | 63.75 |
| PIPE/FITTINGS, COPPER | TF | 0.35 | 51 | 17.85 |
| *HEAT/COOL GENERATION* | | | | 0.00 |
| *EQUIPMENT* | | | | 0.00 |
| VARIABLE VOLUME 25000 CFM | CT | 364.47 | 4 | 1457.88 |
| VAV REHEAT | CT | 14.74 | 6 | 88.44 |
| **Total Basic Cost** | | | | **$ 1,809.92** |

| **Cost Adjustment Factors** | **Annual Dollars** | **Difficulty Factor** | **Location Factor** | **Experience Factor** | **Annual Estimate** |
|---|---|---|---|---|---|
| Replace/Service filters, belts | 452.48 | 0.9 | 1.05 | 0.9 | 384.83 |
| Lubrication | 90.50 | 0.9 | 1.05 | 0.9 | 76.97 |
| General housekeeping | 452.48 | 0.9 | 1.05 | 0.9 | 384.83 |
| Periodic System TAB | 180.99 | 0.9 | 1.05 | 0.9 | 153.93 |
| Controls Maintenance | 180.99 | 1 | 1.05 | 1 | 190.04 |
| Troubleshooting | 90.50 | 1 | 1.05 | 1 | 95.02 |
| Contract Maint. If Applicable | | | | | 0.00 |
| **TOTAL Adjusted Annual Maintenance** | | | | | **$ 1,285.63** |

## Maintenance Cost Spreadsheet

By: AAM    6/10/2016

**Project Name** Seminar I Building

**Summary**

Alternative 2. Water Source VRF System with Cooling Tower. CW cooling and Steam heating from central plant.

| | | | |
|---|---|---|---|
| Building Gross Square Feet | | | 54,623 |
| Systems First Cost | | | $1,932,704 |
| HVAC System Type | **Alternative 2. Water Source VRF System with Cooling Tower. CW cooling and Steam heating from central plant.** | | |
| Fuel Type | **Natural Gas** | | |
| Control System Type | **Direct Digital Control** | | |
| Basic Maint.Cost/sf-yr | | $ | 0.07 |
| Adjusted Maint.Cost/sf-yr | | $ | 0.05 |
| **TOTAL ANNUAL MAINTENANCE** | | $ | 2,851 |

| **Basic Maintenance Cost Estimate** | **Units** | **Maint. $/Unit** | **Number Units** | **Annual Maint $** |
|---|---|---|---|---|
| **HVAC System** | | | | |
| *HEATING GENERATION EQUIPMENT* | | | | |
| STEAM CONVERTER, <300,000 | CT | 30.36 | 1 | 30.36 |
| FLASH TANK, 24 GAL. | CT | 24.23 | 1 | 24.23 |
| COND. METER,<300 #/HR. | CT | 49.69 | 1 | 49.69 |
| STEAM TRAP, F & T, <1" | CT | 12.97 | 1 | 12.97 |
| COND. RCVR., 10 - 15 GAL. | CT | 64.75 | 1 | 64.75 |
| *DISTRIBUTION SYSTEM* | | | | 0.00 |
| CIRCULATION PUMP 5 HP | CT | 12.75 | 3 | 38.25 |
| PIPE/FITTINGS, COPPER | TF | 0.35 | 51 | 17.85 |
| *HEAT/COOL GENERATION* | | | | 0.00 |
| *EQUIPMENT* | | | | 0.00 |
| COOLING TOWER 180T | CT | 348.03 | 1 | 348.03 |
| PIPE/FITTINGS, COPPER | TF | 0.32 | 51 | 16.32 |
| MULTI-ZONE 10,000 CFM | CT | 263.26 | 4 | 1053.04 |
| WAT.COOL VRF | CT | 49.33 | 7 | 345.31 |
| 4 PIPE FAN COIL 1200 CFM | CT | 32.35 | 62 | 2005.70 |
| CIRC. PUMP > 1 HP | CT | 7.61 | 1 | 7.61 |
| **Total Basic Cost** | | | | **$ 4,014.11** |

| **Cost Adjustment Factors** | **Annual Dollars** | **Difficulty Factor** | **Location Factor** | **Experience Factor** | **Annual Estimate** |
|---|---|---|---|---|---|
| Replace/Service filters, belts | 1003.53 | 0.9 | 1.05 | 0.9 | 853.50 |
| Lubrication | 200.71 | 0.9 | 1.05 | 0.9 | 170.70 |
| General housekeeping | 1003.53 | 0.9 | 1.05 | 0.9 | 853.50 |
| Periodic System TAB | 401.41 | 0.9 | 1.05 | 0.9 | 341.40 |
| Controls Maintenance | 401.41 | 1 | 1.05 | 1 | 421.48 |
| Troubleshooting | 200.71 | 1 | 1.05 | 1 | 210.74 |
| Contract Maint. If Applicable | | | | | 0.00 |
| **TOTAL Adjusted Annual Maintenance** | | | | | **$ 2,851.32** |

# Maintenance Cost Spreadsheet

By: AAM 6/10/2016

**Project Name** Seminar I Building

**Summary** Alternative 3. 100% Outside air heat recovery unit serving VAV Boxes with HW reheat and chilled beams. Photovoltaic cells provided on roof.

| | | |
|---|---|---|
| Building Gross Square Feet | | 54,623 |
| Systems First Cost | | $2,164,672 |
| HVAC System Type | **Alternative 3. 100% Outside air heat recovery unit serving VAV Boxes with HW reheat and chilled beams. Photovoltaic cells provided on roof.** | |
| Fuel Type | **N/A** | |
| Control System Type | **Direct Digital Control** | |
| Basic Maint.Cost/sf-yr | $ | 0.04 |
| Adjusted Maint.Cost/sf-yr | $ | 0.03 |
| **TOTAL ANNUAL MAINTENANCE** | $ | 1,694 |

| **Basic Maintenance Cost Estimate** | **Units** | **Maint. $/Unit** | **Number Units** | **Annual Maint $** |
|---|---|---|---|---|
| **HVAC System** | | | | |
| STEAM CONVERTER, <300,000 | CT | 30.36 | 1 | 30.36 |
| FLASH TANK, 24 GAL. | CT | 24.23 | 1 | 24.23 |
| COND. METER,<300 #/HR. | CT | 49.69 | 1 | 49.69 |
| STEAM TRAP, F & T, <1" | CT | 12.97 | 1 | 12.97 |
| COND. RCVR., 10 - 15 GAL. | CT | 64.75 | 1 | 64.75 |
| *DISTRIBUTION SYSTEM* | | | | 0.00 |
| CIRCULATION PUMP 5 HP | CT | 12.75 | 3 | 38.25 |
| PIPE/FITTINGS, COPPER | TF | 0.35 | 51 | 17.85 |
| *HEAT/COOL GENERATION* | | | | 0.00 |
| *EQUIPMENT* | | | | 0.00 |
| COOLING TOWER 180T | CT | 348.03 | 1 | 348.03 |
| PIPE/FITTINGS, COPPER | TF | 0.32 | 51 | 16.32 |
| MULTI-ZONE 10,000 CFM | CT | 263.26 | 4 | 1053.04 |
| 2 PIPE COOL COIL 1200 CFM | CT | 14.74 | 15 | 221.10 |
| VAV REHEAT | CT | 14.74 | 6 | 88.44 |
| PHOTOVOLTAIC CELL | CT | 2.66 | 158 | 420.28 |
| **Total Basic Cost** | | | | **$ 2,385.31** |

| **Cost Adjustment Factors** | **Annual Dollars** | **Difficulty Factor** | **Location Factor** | **Experience Factor** | **Annual Estimate** |
|---|---|---|---|---|---|
| Replace/Service filters, belts | 596.33 | 0.9 | 1.05 | 0.9 | 507.18 |
| Lubrication | 119.27 | 0.9 | 1.05 | 0.9 | 101.44 |
| General housekeeping | 596.33 | 0.9 | 1.05 | 0.9 | 507.18 |
| Periodic System TAB | 238.53 | 0.9 | 1.05 | 0.9 | 202.87 |
| Controls Maintenance | 238.53 | 1 | 1.05 | 1 | 250.46 |
| Troubleshooting | 119.27 | 1 | 1.05 | 1 | 125.23 |
| Contract Maint. If Applicable | | | | | 0.00 |
| **TOTAL Adjusted Annual Maintenance** | | | | | **$ 1,694.35** |

## Maintenance Cost Spreadsheet

By: AAM 6/10/2016

**Project Name** Seminar I Building

**Summary** Alternative 4. 100% Outside air heat recovery unit serving VAV Boxes with HW reheat and chilled beams.

| | | | |
|---|---|---|---|
| Building Gross Square Feet | | | 54,623 |
| Systems First Cost | | | $1,977,172 |
| HVAC System Type | **Alternative 4. 100% Outside air heat recovery unit serving VAV Boxes with HW reheat and chilled beams.** | | |
| Fuel Type | **N/A** | | |
| Control System Type | **Direct Digital Control** | | |
| Basic Maint.Cost/sf-yr | | $ | 0.04 |
| Adjusted Maint.Cost/sf-yr | | $ | 0.03 |
| **TOTAL ANNUAL MAINTENANCE** | | $ | 1,396 |

| **Basic Maintenance Cost Estimate** | **Units** | **Maint. $/Unit** | **Number Units** | **Annual Maint $** |
|---|---|---|---|---|
| **HVAC System** | | | | |
| STEAM CONVERTER, <300,000 | CT | 30.36 | 1 | 30.36 |
| FLASH TANK, 24 GAL. | CT | 24.23 | 1 | 24.23 |
| COND. METER,<300 #/HR. | CT | 49.69 | 1 | 49.69 |
| STEAM TRAP, F & T, <1" | CT | 12.97 | 1 | 12.97 |
| COND. RCVR., 10 - 15 GAL. | CT | 64.75 | 1 | 64.75 |
| *DISTRIBUTION SYSTEM* | | | | 0.00 |
| CIRCULATION PUMP 5 HP | CT | 12.75 | 3 | 38.25 |
| PIPE/FITTINGS, COPPER | TF | 0.35 | 51 | 17.85 |
| *HEAT/COOL GENERATION* | | | | 0.00 |
| *EQUIPMENT* | | | | 0.00 |
| COOLING TOWER 180T | CT | 348.03 | 1 | 348.03 |
| PIPE/FITTINGS, COPPER | TF | 0.32 | 51 | 16.32 |
| MULTI-ZONE 10,000 CFM | CT | 263.26 | 4 | 1053.04 |
| 2 PIPE COOL COIL 1200 CFM | CT | 14.74 | 15 | 221.10 |
| VAV REHEAT | CT | 14.74 | 6 | 88.44 |
| **Total Basic Cost** | | | | **$ 1,965.03** |

| **Cost Adjustment Factors** | **Annual Dollars** | **Difficulty Factor** | **Location Factor** | **Experience Factor** | **Annual Estimate** |
|---|---|---|---|---|---|
| Replace/Service filters, belts | 491.26 | 0.9 | 1.05 | 0.9 | 417.81 |
| Lubrication | 98.25 | 0.9 | 1.05 | 0.9 | 83.56 |
| General housekeeping | 491.26 | 0.9 | 1.05 | 0.9 | 417.81 |
| Periodic System TAB | 196.50 | 0.9 | 1.05 | 0.9 | 167.13 |
| Controls Maintenance | 196.50 | 1 | 1.05 | 1 | 206.33 |
| Troubleshooting | 98.25 | 1 | 1.05 | 1 | 103.16 |
| Contract Maint. If Applicable | | | | | 0.00 |
| **TOTAL Adjusted Annual Maintenance** | | | | | **$ 1,395.81** |

| WOOD HARBINGER, INC. | Consulting Engineers - Bellevue, Washington | | COST ESTIMATE |
|---|---|---|---|
| Job Name<br>**Seminar I Building** | Basis for Estimate<br>[ ] No Design Completed | Estimated by<br>**AAM** | Job Number<br>**16008** |
| Description<br>**Energy Life Cycle Cost Analysis**<br>**Replacement Cost Estimate** | **[X] Preliminary Design**<br>[ ] Final Design<br>[ ] Other (Specify) | Checked by | Date Jun 10, '16 |

| DESCRIPTION | QUANTITY | | MATERIAL COST | | LABOR COST | | ENGINEERING ESTIMATE | |
|---|---|---|---|---|---|---|---|---|
| | NUMBER | UNIT | UNIT COST | TOTAL | UNIT COST | TOTAL | UNIT COST | TOTAL |
| **ASHRAE 90.1 Baseline System 7. VAV AHU, CW Cooling, HW Heat, and VAV Boxes with HW Reheat.** | | | | | | | | |
| 1. Replace VAV Air Handling Unit (Basement) end of 15th year | 1 | EA | | | | | 144,525 | $144,525 |
| 2. Replace VAV Air Handling Unit, First Floor end of 15th year | 1 | EA | | | | | 130,525 | $130,525 |
| 3. Replace VAV Air Handling Unit, 2nd & 3rd Flr end of 15th year | 2 | EA | | | | | 88,525 | $177,050 |
| 4. Replace VAV Terminal Boxes end of 15th year | 62 | EA | | | | | 1,143 | $70,866 |
| 5. Replace HW Pumps end of 20th year | 2 | EA | | | | | 6,670 | $13,340 |
| 6. Replace CW Pumps end of 20th year | 2 | EA | | | | | 6,670 | $13,340 |
| 7. Replace Condensate Pump end of 20th year | 1 | EA | | | | | 6,670 | $6,670 |
| **Alternative 1. High Performance VAV AHU, CW Cooling, HW Heat, and VAV Boxes with HW Reheat.** | | | | | | | | |
| 1. Replace VAV Air Handling Unit (Basement) end of 15th year | 1 | EA | | | | | 144,525 | $144,525 |
| 2. Replace VAV Air Handling Unit, First Floor end of 15th year | 1 | EA | | | | | 130,525 | $130,525 |
| 3. Replace VAV Air Handling Unit, 2nd & 3rd Flr end of 15th year | 2 | EA | | | | | 88,525 | $177,050 |
| 4. Replace VAV Terminal Boxes end of 15th year | 62 | EA | | | | | 1,143 | $70,866 |
| 5. Replace HW Pumps end of 20th year | 2 | EA | | | | | 6,670 | $13,340 |
| 6. Replace CW Pumps end of 20th year | 2 | EA | | | | | 6,670 | $13,340 |
| 7. Replace Condensate Pump end of 20th year | 1 | EA | | | | | 6,670 | $6,670 |
| **Alternative 2. Water Source VRF System with Cooling Tower. CW cooling and Steam heating from central plant.** | | | | | | | | |
| 1. Replace Cooling Tower end of 20th year | 1 | EA | | | | | 29,575 | $29,575 |
| 2. Replace Water-side economizer end of 11th year | 1 | EA | | | | | 19,000 | $19,000 |
| 3. Replace VAV Terminal Boxes end of 15th year | 30 | EA | | | | | 985 | $29,547 |
| 4. Replace HW Pumps | 2 | EA | | | | | 6,670 | $13,340 |

| **WOOD HARBINGER, INC.** | Consulting Engineers - Bellevue, Washington | | **COST ESTIMATE** |
|---|---|---|---|
| Job Name<br>**Seminar I Building** | Basis for Estimate<br>[ ] No Design Completed | Estimated by<br>**AAM** | Job Number<br>**16008** |
| Description<br>**Energy Life Cycle Cost Analysis**<br>**Replacement Cost Estimate** | **[X] Preliminary Design**<br>[ ] Final Design<br>[ ] Other (Specify) | Checked by | Date Jun 10, '16 |

| DESCRIPTION | QUANTITY NUMBER | QUANTITY UNIT | MATERIAL COST UNIT COST | MATERIAL COST TOTAL | LABOR COST UNIT COST | LABOR COST TOTAL | ENGINEERING ESTIMATE UNIT COST | ENGINEERING ESTIMATE TOTAL |
|---|---|---|---|---|---|---|---|---|
| end of 20th year | | | | | | | | |
| 5. Replace CW Pumps end of 20th year | 2 | EA | | | | | 6,670 | $13,340 |
| 6. Replace Condensate Pump end of 20th year | 1 | EA | | | | | 6,670 | $6,670 |
| 7. Replace HRU, 8,000 CFM end of 15th year | 1 | EA | | | | | 108,525 | $108,525 |
| 8. Replace HRU, 7,200 CFM end of 15th year | 1 | EA | | | | | 98,125 | $98,125 |
| 9. Replace HRU, 4,800 CFM end of 15th year | 2 | EA | | | | | 66,925 | $133,850 |
| 10. Replace Indoor VRF Units end of 20th year | 62 | EA | | | | | 3,323 | $206,026 |
| 11. Replace Water Source VRF Units end of 15th year | 7 | EA | | | | | 28,526 | $199,682 |
| 12. Replace BC Main Branch Controllers end of 20th year | 7 | EA | | | | | 8,114 | $56,798 |
| **Alternative 3. 100% Outside air heat recovery unit serving VAV Boxes with HW reheat and chilled beams. Photovoltaic cells provided on roof.** | | | | | | | | |
| 1. Replace Cooling Tower end of 20th year | 1 | EA | | | | | 29,575 | $29,575 |
| 2. Replace Water-side economizer end of 11th year | 1 | EA | | | | | 19,000 | $19,000 |
| 3. Replace HW Pumps end of 20th year | 2 | EA | | | | | 6,670 | $13,340 |
| 4. Replace CW Pumps end of 20th year | 2 | EA | | | | | 6,670 | $13,340 |
| 5. Replace Condensate Pump end of 20th year | 1 | EA | | | | | 6,670 | $6,670 |
| 6. Replace HRU, 9,000 CFM end of 15th year | 1 | EA | | | | | 121,525 | $121,525 |
| 7. Replace HRU, 8,200 CFM end of 15th year | 1 | EA | | | | | 111,125 | $111,125 |
| 8. Replace HRU, 5,800 CFM end of 15th year | 2 | EA | | | | | 79,925 | $159,850 |
| 9. Replace VAV Terminal Boxes end of 15th year | 62 | EA | | | | | 1,143 | $70,866 |
| 10. Replace Chilled Beams end of 20th year | 150 | EA | | | | | 2,059 | $308,850 |
| 11. Replace Photovoltaic Cells end of 15th year | 30 | EA | | | | | 3 | $90 |

| WOOD HARBINGER, INC. | Consulting Engineers - Bellevue, Washington | | COST ESTIMATE |
|---|---|---|---|
| Job Name<br>**Seminar I Building** | Basis for Estimate<br>[ ] No Design Completed | Estimated by<br>**AAM** | Job Number<br>**16008** |
| Description<br>**Energy Life Cycle Cost Analysis**<br>**Replacement Cost Estimate** | **[X] Preliminary Design**<br>[ ] Final Design<br>[ ] Other (Specify) | Checked by | Date Jun 10, '16 |

| DESCRIPTION | QUANTITY | | MATERIAL COST | | LABOR COST | | ENGINEERING ESTIMATE | |
|---|---|---|---|---|---|---|---|---|
| | NUMBER | UNIT | UNIT COST | TOTAL | UNIT COST | TOTAL | UNIT COST | TOTAL |
| **Alternative 4. 100% Outside air heat recovery unit serving VAV Boxes with HW reheat and chilled beams.** | | | | | | | | |
| 1. Replace Cooling Tower end of 20th year | 1 | EA | | | | | 29,575 | $29,575 |
| 2. Replace Water-side economizer end of 11th year | 1 | EA | | | | | 19,000 | $19,000 |
| 3. Replace HW Pumps end of 20th year | 2 | EA | | | | | 6,670 | $13,340 |
| 4. Replace CW Pumps end of 20th year | 2 | EA | | | | | 6,670 | $13,340 |
| 5. Replace Condensate Pump end of 20th year | 1 | EA | | | | | 6,670 | $6,670 |
| 6. Replace HRU, 9,000 CFM end of 15th year | 1 | EA | | | | | 121,525 | $121,525 |
| 7. Replace HRU, 8,200 CFM end of 15th year | 1 | EA | | | | | 111,125 | $111,125 |
| 8. Replace HRU, 5,800 CFM end of 15th year | 2 | EA | | | | | 79,925 | $159,850 |
| 9. Replace VAV Terminal Boxes end of 15th year | 62 | EA | | | | | 1,143 | $70,866 |
| 10. Replace Chilled Beams end of 20th year | 150 | EA | | | | | 2,059 | $308,850 |

## Figure 5.1 ENERGY LIFE CYCLE COST SPREADSHEET

ELCCA2005.xls 10-Jun-16

------------------------------------P R O J E C T D A T A------------------------------------

PROJECT: Seminar I Building By: Audra Mackey, Wood Harbinger

ASHRAE 90.1 Baseline System 7. VAV AHU, CW Cooling, HW Heat, and VAV Boxes with HW Reheat.

-------------------D I S C O U N T & E S C A L A T I O N Real Rates as of November 2004-----------------------------

| Enter 1 or 0 for each fuel type: | | | Years: | Rate: |
|---|---|---|---|---|
| | 1 = Yes | Real Discount Rate (i) . . . . . . . . . . . | 2005 - 2,040 . . . . . . . . | 2.0% |
| | 0 = No | Electricity. . . . . . . . . . . . . . . . . . . . . | 2005 - 2,015 . . . | 1.0% |
| IOU Electricity Source* | 1 | (Investor Owned Utility) | 2,016 - 2,025 . . . | 2.0% |
| POU Electricity Source** | 0 | | 2,026 - 2,040 . . . | 2.0% |
| Natural Gas Fuel? | 0 | None . . . . . . . . . . . | 2005 - 2,015 . . . | 0.0% |
| Propane Fuel? | 0 | And other fossil fuels | 2,016 - 2,025 . . . | 0.0% |
| Oil Fuel? | 0 | | 2,026 - 2,040 . . . | 0.0% |
| | | Maintenance . . . . . . . . . . . . . . . . . . | 2005 - 2,040 . . . . . . . . | 2.0% |
| | | Inflation (Nominal , not used) . . . . . . . | 2005 - 2,040 . . . . . . . . | 3.0% |

* IOU = Invester Owned Utility

** POU = Publicly Owned Utility

**$5,387,960** **=30-year LCC**

---------------------A N N U A L R E A L C A S H F L O W S---------------------------------------------------------

| (Begin) Year | First & Replace. Costs | Annual Maint. Costs | Annual None Costs | Annual Electric Costs | Total Annual Costs | Present Worth Factor | Present Worth of Annual Costs | Present Worth of Cumulative Costs |
|---|---|---|---|---|---|---|---|---|
| 2,017 | $1,538,345 | $ 1,285.63 | $0 | $113,603 | $114,889 | (1+i)^-n | | |
| 2,017 | $1,538,345 | -- | -- | -- | $1,538,345 | 1.00 | $1,538,345 | $1,538,345 |
| 2,018 | 0 | 1,311 | 0 | 115,875 | 117,186 | 0.98 | 114,889 | 1,653,234 |
| 2,019 | 0 | 1,338 | 0 | 118,193 | 119,530 | 0.96 | 114,889 | 1,768,123 |
| 2,020 | 0 | 1,364 | 0 | 120,556 | 121,921 | 0.94 | 114,889 | 1,883,011 |
| 2,021 | 0 | 1,392 | 0 | 122,968 | 124,359 | 0.92 | 114,889 | 1,997,900 |
| 2,022 | 0 | 1,419 | 0 | 125,427 | 126,846 | 0.91 | 114,889 | 2,112,789 |
| 2,023 | 0 | 1,448 | 0 | 127,935 | 129,383 | 0.89 | 114,889 | 2,227,677 |
| 2,024 | 0 | 1,477 | 0 | 130,494 | 131,971 | 0.87 | 114,889 | 2,342,566 |
| 2,025 | 0 | 1,506 | 0 | 133,104 | 134,610 | 0.85 | 114,889 | 2,457,454 |
| 2,026 | 0 | 1,536 | 0 | 135,766 | 137,303 | 0.84 | 114,889 | 2,572,343 |
| 2,027 | 0 | 1,567 | 0 | 138,481 | 140,049 | 0.82 | 114,889 | 2,687,232 |
| 2,028 | 0 | 1,599 | 0 | 141,251 | 142,850 | 0.80 | 114,889 | 2,802,120 |
| 2,029 | 0 | 1,630 | 0 | 144,076 | 145,707 | 0.79 | 114,889 | 2,917,009 |
| 2,030 | 0 | 1,663 | 0 | 146,958 | 148,621 | 0.77 | 114,889 | 3,031,898 |
| 2,031 | 0 | 1,696 | 0 | 149,897 | 151,593 | 0.76 | 114,889 | 3,146,786 |
| 2,032 | 0 | 1,730 | 0 | 152,895 | 154,625 | 0.74 | 114,889 | 3,261,675 |
| 2,033 | 522,966 | 1,765 | 0 | 155,953 | 680,683 | 0.73 | 495,841 | 3,757,516 |
| 2,034 | 0 | 1,800 | 0 | 159,072 | 160,872 | 0.71 | 114,889 | 3,872,405 |
| 2,035 | 0 | 1,836 | 0 | 162,253 | 164,089 | 0.70 | 114,889 | 3,987,293 |
| 2,036 | 0 | 1,873 | 0 | 165,498 | 167,371 | 0.69 | 114,889 | 4,102,182 |
| 2,037 | 0 | 1,910 | 0 | 168,808 | 170,718 | 0.67 | 114,889 | 4,217,070 |
| 2,038 | 33,350 | 1,949 | 0 | 172,184 | 207,483 | 0.66 | 136,892 | 4,353,963 |
| 2,039 | 0 | 1,988 | 0 | 175,628 | 177,615 | 0.65 | 114,889 | 4,468,851 |
| 2,040 | 0 | 2,027 | 0 | 179,140 | 181,168 | 0.63 | 114,889 | 4,583,740 |
| 2,041 | 0 | 2,068 | 0 | 182,723 | 184,791 | 0.62 | 114,889 | 4,698,629 |
| 2,042 | 0 | 2,109 | 0 | 186,378 | 188,487 | 0.61 | 114,889 | 4,813,517 |
| 2,043 | 0 | 2,151 | 0 | 190,105 | 192,257 | 0.60 | 114,889 | 4,928,406 |
| 2,044 | 0 | 2,194 | 0 | 193,907 | 196,102 | 0.59 | 114,889 | 5,043,294 |
| 2,045 | 0 | 2,238 | 0 | 197,786 | 200,024 | 0.57 | 114,889 | 5,158,183 |
| 2,046 | 0 | 2,283 | 0 | 201,741 | 204,024 | 0.56 | 114,889 | 5,273,072 |
| 2,047 | 0 | 2,329 | 0 | 205,776 | 208,105 | 0.55 | 114,889 | 5,387,960 |
| Totals: | $2,094,661 | $53,199 | $0 | $4,700,829 | $6,848,689 | | **$5,387,960** | **=30-year LCC** |
| | 1st+Repl | Maint | Fuel | Elec | Total Annual | | | |

# Figure 5.1 ENERGY LIFE CYCLE COST SPREADSHEET

ELCCA2005.xls 10-Jun-16

------------------------------------P R O J E C T D A T A------------------------------------

PROJECT: Seminar I Building By: Audra Mackey, Wood Harbinger

Alternative 1. High Performance VAV AHU, CW Cooling, HW Heat, and VAV Boxes with HW Reheat.

-------------------D I S C O U N T & E S C A L A T I O N Real Rates as of November 2004-------------------------

| Enter 1 or 0 for each fuel type: | | | Years: | Rate: |
|---|---|---|---|---|
| | 1 = Yes | Real Discount Rate (i) . . . . . . . . . . . | 2005 - 2,040 . . . . . . . . | 2.0% |
| | 0 = No | Electricity. . . . . . . . . . . . . . . . . . . . . | 2005 - 2,015 . . . | 1.0% |
| IOU Electricity Source* | 1 | (Investor Owned Utility) | 2,016 - 2,025 . . . | 2.0% |
| POU Electricity Source** | 0 | | 2,026 - 2,040 . . . | 2.0% |
| Natural Gas Fuel? | 0 | None . . . . . . . . . . . | 2005 - 2,015 . . . | 0.0% |
| Propane Fuel? | 0 | And other fossil fuels | 2,016 - 2,025 . . . | 0.0% |
| Oil Fuel? | 0 | | 2,026 - 2,040 . . . | 0.0% |
| | | Maintenance . . . . . . . . . . . . . . . . . . | 2005 - 2,040 . . . . . . . . | 2.0% |
| | | Inflation (Nominal , not used) . . . . . | 2005 - 2,040 . . . . . . . . | 3.0% |

* IOU = Invester Owned Utility

** POU = Publicly Owned Utility

**$5,417,695** **=30-year LCC**

---------------------A N N U A L R E A L C A S H F L O W S---------------------

| (Begin) Year | First & Replace. Costs | Annual Maint. Costs | Annual None Costs | Annual Electric Costs | Total Annual Costs | Present Worth Factor (1+i)^-n | Present Worth of Annual Costs | Present Worth of Cumulative Costs |
|---|---|---|---|---|---|---|---|---|
| 2,017 | $1,538,345 | $ 1,285.63 | $0 | $100,849 | $102,135 | | | |
| 2,017 | $1,538,345 | -- | -- | -- | $1,538,345 | 1.00 | $1,538,345 | $1,538,345 |
| 2,018 | 0 | 1,311 | 0 | 102,866 | 104,177 | 0.98 | 102,135 | 1,640,480 |
| 2,019 | 0 | 1,338 | 0 | 104,923 | 106,261 | 0.96 | 102,135 | 1,742,615 |
| 2,020 | 0 | 1,364 | 0 | 107,022 | 108,386 | 0.94 | 102,135 | 1,844,749 |
| 2,021 | 0 | 1,392 | 0 | 109,162 | 110,554 | 0.92 | 102,135 | 1,946,884 |
| 2,022 | 0 | 1,419 | 0 | 111,345 | 112,765 | 0.91 | 102,135 | 2,049,019 |
| 2,023 | 0 | 1,448 | 0 | 113,572 | 115,020 | 0.89 | 102,135 | 2,151,153 |
| 2,024 | 0 | 1,477 | 0 | 115,844 | 117,321 | 0.87 | 102,135 | 2,253,288 |
| 2,025 | 0 | 1,506 | 0 | 118,161 | 119,667 | 0.85 | 102,135 | 2,355,422 |
| 2,026 | 0 | 1,536 | 0 | 120,524 | 122,060 | 0.84 | 102,135 | 2,457,557 |
| 2,027 | 0 | 1,567 | 0 | 122,934 | 124,502 | 0.82 | 102,135 | 2,559,692 |
| 2,028 | 0 | 1,599 | 0 | 125,393 | 126,992 | 0.80 | 102,135 | 2,661,826 |
| 2,029 | 0 | 1,630 | 0 | 127,901 | 652,497 | 0.79 | 514,490 | 3,176,316 |
| 2,030 | 0 | 1,663 | 0 | 130,459 | 132,122 | 0.77 | 102,135 | 3,278,451 |
| 2,031 | 0 | 1,696 | 0 | 133,068 | 134,764 | 0.76 | 102,135 | 3,380,585 |
| 2,032 | 0 | 1,730 | 0 | 135,729 | 137,460 | 0.74 | 102,135 | 3,482,720 |
| 2,033 | 522,966 | 1,765 | 0 | 138,444 | 663,175 | 0.73 | 483,087 | 3,965,807 |
| 2,034 | 0 | 1,800 | 0 | 141,213 | 143,013 | 0.71 | 102,135 | 4,067,942 |
| 2,035 | 0 | 1,836 | 0 | 144,037 | 145,873 | 0.70 | 102,135 | 4,170,076 |
| 2,036 | 0 | 1,873 | 0 | 146,918 | 148,791 | 0.69 | 102,135 | 4,272,211 |
| 2,037 | 0 | 1,910 | 0 | 149,856 | 151,767 | 0.67 | 102,135 | 4,374,346 |
| 2,038 | 33,350 | 1,949 | 0 | 152,853 | 188,152 | 0.66 | 124,138 | 4,498,484 |
| 2,039 | 0 | 1,988 | 0 | 155,911 | 157,898 | 0.65 | 102,135 | 4,600,618 |
| 2,040 | 0 | 2,027 | 0 | 159,029 | 161,056 | 0.63 | 102,135 | 4,702,753 |
| 2,041 | 0 | 2,068 | 0 | 162,209 | 164,277 | 0.62 | 102,135 | 4,804,888 |
| 2,042 | 0 | 2,109 | 0 | 165,453 | 167,563 | 0.61 | 102,135 | 4,907,022 |
| 2,043 | 0 | 2,151 | 0 | 168,763 | 170,914 | 0.60 | 102,135 | 5,009,157 |
| 2,044 | 0 | 2,194 | 0 | 172,138 | 174,332 | 0.59 | 102,135 | 5,111,292 |
| 2,045 | 0 | 2,238 | 0 | 175,581 | 177,819 | 0.57 | 102,135 | 5,213,426 |
| 2,046 | 0 | 2,283 | 0 | 179,092 | 181,375 | 0.56 | 102,135 | 5,315,561 |
| 2,047 | 0 | 2,329 | 0 | 182,674 | 185,003 | 0.55 | 102,135 | 5,417,695 |
| Totals: | $2,094,661 | $53,199 | $0 | $4,173,075 | $6,843,901 | | **$5,417,695** | **=30-year LCC** |
| | 1st+Repl | Maint | Fuel | Elec | Total Annual | | | |

# Figure 5.1 ENERGY LIFE CYCLE COST SPREADSHEET

ELCCA2005.xls 10-Jun-16

------------------------------------P R O J E C T D A T A--------------------------------------------------------------------

PROJECT: Seminar I Building By: Audra Mackey, Wood Harbinger

Alternative 2. Water Source VRF System with Cooling Tower. CW cooling and Steam heating from central plant.

------------------D I S C O U N T & E S C A L A T I O N Real Rates as of November 2004-------------------------

| Enter 1 or 0 for each fuel type: | | | Years: | Rate: |
|---|---|---|---|---|
| | 1 = Yes | Real Discount Rate (i) . . . . . . . . . . | 2005 - 2,040 . . . . . . . . | 2.0% |
| | 0 = No | Electricity. . . . . . . . . . . . . . . . . . . . | 2005 - 2,015 . . . | 1.0% |
| IOU Electricity Source* | 1 | (Investor Owned Utility) | 2,016 - 2,025 . . . | 2.0% |
| POU Electricity Source** | 0 | | 2,026 - 2,040 . . . | 2.0% |
| Natural Gas Fuel? | 0 | None . . . . . . . . . . . | 2005 - 2,015 . . . | 0.0% |
| Propane Fuel? | 0 | And other fossil fuels | 2,016 - 2,025 . . . | 0.0% |
| Oil Fuel? | 0 | | 2,026 - 2,040 . . . | 0.0% |
| | | Maintenance . . . . . . . . . . . . . . . . . . | 2005 - 2,040 . . . . . . . . | 2.0% |
| | | Inflation (Nominal , not used) . . . . . | 2005 - 2,040 . . . . . . . . | 3.0% |

* IOU = Invester Owned Utility

** POU = Publicly Owned Utility

**$5,334,626** **=30-year LCC**

---------------------A N N U A L R E A L C A S H F L O W S-----------------------------------------------------------

| (Begin) Year | First & Replace. Costs | Annual Maint. Costs | Annual None Costs | Annual Electric Costs | Total Annual Costs | Present Worth Factor | Present Worth of Annual Costs | Present Worth of Cumulative Costs |
|---|---|---|---|---|---|---|---|---|
| 2,017 | $1,932,704 | $ 2,851.32 | $0 | $88,655 | $91,506 | (1+i)^-n | | |
| 2,017 | $1,932,704 | -- | -- | -- | $1,932,704 | 1.00 | $1,932,704 | $1,932,704 |
| 2,018 | 0 | 2,908 | 0 | 90,428 | 93,336 | 0.98 | 91,506 | 2,024,211 |
| 2,019 | 0 | 2,967 | 0 | 92,237 | 95,203 | 0.96 | 91,506 | 2,115,717 |
| 2,020 | 0 | 3,026 | 0 | 94,081 | 97,107 | 0.94 | 91,506 | 2,207,223 |
| 2,021 | 0 | 3,086 | 0 | 95,963 | 99,049 | 0.92 | 91,506 | 2,298,730 |
| 2,022 | 0 | 3,148 | 0 | 97,882 | 101,030 | 0.91 | 91,506 | 2,390,236 |
| 2,023 | 0 | 3,211 | 0 | 99,840 | 103,051 | 0.89 | 91,506 | 2,481,742 |
| 2,024 | 0 | 3,275 | 0 | 101,837 | 105,112 | 0.87 | 91,506 | 2,573,249 |
| 2,025 | 0 | 3,341 | 0 | 103,873 | 107,214 | 0.85 | 91,506 | 2,664,755 |
| 2,026 | 0 | 3,408 | 0 | 105,951 | 109,359 | 0.84 | 91,506 | 2,756,261 |
| 2,027 | 0 | 3,476 | 0 | 108,070 | 111,546 | 0.82 | 91,506 | 2,847,768 |
| 2,028 | 0 | 3,545 | 0 | 110,231 | 113,777 | 0.80 | 91,506 | 2,939,274 |
| 2,029 | 19,000 | 3,616 | 0 | 112,436 | 135,052 | 0.79 | 106,488 | 3,045,762 |
| 2,030 | 0 | 3,688 | 0 | 114,685 | 118,373 | 0.77 | 91,506 | 3,137,268 |
| 2,031 | 0 | 3,762 | 0 | 116,978 | 120,741 | 0.76 | 91,506 | 3,228,774 |
| 2,032 | 0 | 3,838 | 0 | 119,318 | 123,155 | 0.74 | 91,506 | 3,320,281 |
| 2,033 | 569,729 | 3,914 | 0 | 121,704 | 695,348 | 0.73 | 506,523 | 3,826,804 |
| 2,034 | 0 | 3,993 | 0 | 124,138 | 128,131 | 0.71 | 91,506 | 3,918,310 |
| 2,035 | 0 | 4,072 | 0 | 126,621 | 130,694 | 0.70 | 91,506 | 4,009,816 |
| 2,036 | 0 | 4,154 | 0 | 129,154 | 133,307 | 0.69 | 91,506 | 4,101,323 |
| 2,037 | 0 | 4,237 | 0 | 131,737 | 135,974 | 0.67 | 91,506 | 4,192,829 |
| 2,038 | 325,749 | 4,322 | 0 | 134,371 | 464,442 | 0.66 | 306,428 | 4,499,257 |
| 2,039 | 0 | 4,408 | 0 | 137,059 | 141,467 | 0.65 | 91,506 | 4,590,763 |
| 2,040 | 0 | 4,496 | 0 | 139,800 | 144,296 | 0.63 | 91,506 | 4,682,269 |
| 2,041 | 19,000 | 4,586 | 0 | 142,596 | 166,182 | 0.62 | 103,319 | 4,785,588 |
| 2,042 | 0 | 4,678 | 0 | 145,448 | 150,126 | 0.61 | 91,506 | 4,877,095 |
| 2,043 | 0 | 4,771 | 0 | 148,357 | 153,128 | 0.60 | 91,506 | 4,968,601 |
| 2,044 | 0 | 4,867 | 0 | 151,324 | 156,191 | 0.59 | 91,506 | 5,060,107 |
| 2,045 | 0 | 4,964 | 0 | 154,351 | 159,315 | 0.57 | 91,506 | 5,151,614 |
| 2,046 | 0 | 5,064 | 0 | 157,438 | 162,501 | 0.56 | 91,506 | 5,243,120 |
| 2,047 | 0 | 5,165 | 0 | 160,586 | 165,751 | 0.55 | 91,506 | 5,334,626 |
| Totals: | $2,866,182 | $117,986 | $0 | $3,668,494 | $6,652,663 | | **$5,334,626** | **=30-year LCC** |
| | 1st+Repl | Maint | Fuel | Elec | Total Annual | | | |

# Figure 5.1 ENERGY LIFE CYCLE COST SPREADSHEET

ELCCA2005.xls 10-Jun-16

------------------------------------P R O J E C T D A T A-------------------------------------------------------------------

PROJECT: Seminar I Building By: Audra Mackey, Wood Harbinger

Alternative 3. 100% Outside air heat recovery unit serving VAV Boxes with HW reheat and chilled beams. Photovoltaic cells provided on roof.

------------------D I S C O U N T & E S C A L A T I O N Real Rates as of November 2004-------------------------

| Enter 1 or 0 for each fuel type: | | | Years: | Rate: |
|---|---|---|---|---|
| | 1 = Yes | Real Discount Rate (i) . . . . . . . . . . | 2005 - 2,040 . . . . . . . . | 2.0% |
| | 0 = No | Electricity. . . . . . . . . . . . . . . . . . . . | 2005 - 2,015 . . . | 1.0% |
| IOU Electricity Source* | 1 | (Investor Owned Utility) | 2,016 - 2,025 . . . | 2.0% |
| POU Electricity Source** | 0 | | 2,026 - 2,040 . . . | 2.0% |
| Natural Gas Fuel? | 0 | None . . . . . . . . . . . | 2005 - 2,015 . . . | 0.0% |
| Propane Fuel? | 0 | And other fossil fuels | 2,016 - 2,025 . . . | 0.0% |
| Oil Fuel? | 0 | | 2,026 - 2,040 . . . | 0.0% |
| | | Maintenance . . . . . . . . . . . . . . . . . . | 2005 - 2,040 . . . . . . . . | 2.0% |
| | | Inflation (Nominal , not used) . . . . . | 2005 - 2,040 . . . . . . . . | 3.0% |

* IOU = Invester Owned Utility

** POU = Publicly Owned Utility

**$5,026,617** **=30-year LCC**

--------------------A N N U A L R E A L C A S H F L O W S---------------------------------------------------------

| (Begin) Year | First & Replace. Costs | Annual Maint. Costs | Annual None Costs | Annual Electric Costs | Total Annual Costs | Present Worth Factor (1+i)^-n | Present Worth of Annual Costs | Present Worth of Cumulative Costs |
|---|---|---|---|---|---|---|---|---|
| 2,017 | $2,164,672 | $ 1,694.35 | $0 | $73,381 | $75,075 | | | |
| 2,017 | $2,164,672 | -- | -- | -- | $2,164,672 | 1.00 | $2,164,672 | $2,164,672 |
| 2,018 | 0 | 1,728 | 0 | 74,849 | 76,577 | 0.98 | 75,075 | 2,239,747 |
| 2,019 | 0 | 1,763 | 0 | 76,346 | 78,108 | 0.96 | 75,075 | 2,314,823 |
| 2,020 | 0 | 1,798 | 0 | 77,873 | 79,671 | 0.94 | 75,075 | 2,389,898 |
| 2,021 | 0 | 1,834 | 0 | 79,430 | 81,264 | 0.92 | 75,075 | 2,464,973 |
| 2,022 | 0 | 1,871 | 0 | 81,019 | 82,889 | 0.91 | 75,075 | 2,540,049 |
| 2,023 | 0 | 1,908 | 0 | 82,639 | 84,547 | 0.89 | 75,075 | 2,615,124 |
| 2,024 | 0 | 1,946 | 0 | 84,292 | 86,238 | 0.87 | 75,075 | 2,690,199 |
| 2,025 | 0 | 1,985 | 0 | 85,978 | 87,963 | 0.85 | 75,075 | 2,765,275 |
| 2,026 | 0 | 2,025 | 0 | 87,697 | 89,722 | 0.84 | 75,075 | 2,840,350 |
| 2,027 | 0 | 2,065 | 0 | 89,451 | 91,516 | 0.82 | 75,075 | 2,915,425 |
| 2,028 | 0 | 2,107 | 0 | 91,240 | 93,347 | 0.80 | 75,075 | 2,990,501 |
| 2,029 | 19,000 | 2,149 | 0 | 93,065 | 114,214 | 0.79 | 90,057 | 3,080,557 |
| 2,030 | 0 | 2,192 | 0 | 94,926 | 97,118 | 0.77 | 75,075 | 3,155,633 |
| 2,031 | 0 | 2,236 | 0 | 96,825 | 99,060 | 0.76 | 75,075 | 3,230,708 |
| 2,032 | 0 | 2,280 | 0 | 98,761 | 101,042 | 0.74 | 75,075 | 3,305,783 |
| 2,033 | 463,456 | 2,326 | 0 | 100,736 | 566,518 | 0.73 | 412,678 | 3,718,461 |
| 2,034 | 0 | 2,372 | 0 | 102,751 | 105,124 | 0.71 | 75,075 | 3,793,537 |
| 2,035 | 0 | 2,420 | 0 | 104,806 | 107,226 | 0.70 | 75,075 | 3,868,612 |
| 2,036 | 0 | 2,468 | 0 | 106,902 | 109,371 | 0.69 | 75,075 | 3,943,687 |
| 2,037 | 0 | 2,518 | 0 | 109,040 | 111,558 | 0.67 | 75,075 | 4,018,763 |
| 2,038 | 371,775 | 2,568 | 0 | 111,221 | 485,564 | 0.66 | 320,363 | 4,339,126 |
| 2,039 | 0 | 2,619 | 0 | 113,446 | 116,065 | 0.65 | 75,075 | 4,414,202 |
| 2,040 | 0 | 2,672 | 0 | 115,714 | 118,386 | 0.63 | 75,075 | 4,489,277 |
| 2,041 | 19,000 | 2,725 | 0 | 118,029 | 139,754 | 0.62 | 86,888 | 4,576,165 |
| 2,042 | 0 | 2,780 | 0 | 120,389 | 123,169 | 0.61 | 75,075 | 4,651,240 |
| 2,043 | 0 | 2,835 | 0 | 122,797 | 125,632 | 0.60 | 75,075 | 4,726,316 |
| 2,044 | 0 | 2,892 | 0 | 125,253 | 128,145 | 0.59 | 75,075 | 4,801,391 |
| 2,045 | 0 | 2,950 | 0 | 127,758 | 130,708 | 0.57 | 75,075 | 4,876,466 |
| 2,046 | 0 | 3,009 | 0 | 130,313 | 133,322 | 0.56 | 75,075 | 4,951,542 |
| 2,047 | 0 | 3,069 | 0 | 132,920 | 135,989 | 0.55 | 75,075 | 5,026,617 |
| Totals: | $3,037,903 | $70,111 | $0 | $3,036,465 | $6,144,479 | | **$5,026,617** | **=30-year LCC** |
| | 1st+Repl | Maint | Fuel | Elec | Total Annual | | | |

# Figure 5.1 ENERGY LIFE CYCLE COST SPREADSHEET

ELCCA2005.xls 10-Jun-16

------------------------------------P R O J E C T D A T A------------------------------------

PROJECT: Seminar I Building — By: Audra Mackey, Wood Harbinger

Alternative 4. 100% Outside air heat recovery unit serving VAV Boxes with HW reheat and chilled beams.

-------------------D I S C O U N T & E S C A L A T I O N Real Rates as of November 2004-------------------------

| Enter 1 or 0 for each fuel type: | | | Years: | Rate: |
|---|---|---|---|---|
| | 1 = Yes | Real Discount Rate (i) . . . . . . . . . . . | 2005 - 2,040 . . . . . . . . | 2.0% |
| | 0 = No | Electricity. . . . . . . . . . . . . . . . . . . . | 2005 - 2,015 . . . | 1.0% |
| IOU Electricity Source* | 1 | (Investor Owned Utility) | 2,016 - 2,025 . . . | 2.0% |
| POU Electricity Source** | 0 | | 2,026 - 2,040 . . . | 2.0% |
| Natural Gas Fuel? | 0 | None . . . . . . . . . . . | 2005 - 2,015 . . . | 0.0% |
| Propane Fuel? | 0 | And other fossil fuels | 2,016 - 2,025 . . . | 0.0% |
| Oil Fuel? | 0 | | 2,026 - 2,040 . . . | 0.0% |
| | | Maintenance . . . . . . . . . . . . . . . . . . | 2005 - 2,040 . . . . . . . . | 2.0% |
| | | Inflation (Nominal , not used) . . . . . | 2005 - 2,040 . . . . . . . . | 3.0% |

* IOU = Invester Owned Utility

** POU = Publicly Owned Utility

**$4,907,975** **=30-year LCC**

---------------------A N N U A L R E A L C A S H F L O W S---------------------

| (Begin) Year | First & Replace. Costs | Annual Maint. Costs | Annual None Costs | Annual Electric Costs | Total Annual Costs | Present Worth Factor (1+i)^-n | Present Worth of Annual Costs | Present Worth of Cumulative Costs |
|---|---|---|---|---|---|---|---|---|
| 2,017 | $1,977,172 | $ 1,395.81 | $0 | $75,977 | $77,373 | | | |
| 2,017 | $1,977,172 | -- | -- | -- | $1,977,172 | 1.00 | $1,977,172 | $1,977,172 |
| 2,018 | 0 | 1,424 | 0 | 77,497 | 78,920 | 0.98 | 77,373 | 2,054,545 |
| 2,019 | 0 | 1,452 | 0 | 79,046 | 80,499 | 0.96 | 77,373 | 2,131,917 |
| 2,020 | 0 | 1,481 | 0 | 80,627 | 82,109 | 0.94 | 77,373 | 2,209,290 |
| 2,021 | 0 | 1,511 | 0 | 82,240 | 83,751 | 0.92 | 77,373 | 2,286,663 |
| 2,022 | 0 | 1,541 | 0 | 83,885 | 85,426 | 0.91 | 77,373 | 2,364,036 |
| 2,023 | 0 | 1,572 | 0 | 85,562 | 87,134 | 0.89 | 77,373 | 2,441,409 |
| 2,024 | 0 | 1,603 | 0 | 87,274 | 88,877 | 0.87 | 77,373 | 2,518,781 |
| 2,025 | 0 | 1,635 | 0 | 89,019 | 90,655 | 0.85 | 77,373 | 2,596,154 |
| 2,026 | 0 | 1,668 | 0 | 90,800 | 92,468 | 0.84 | 77,373 | 2,673,527 |
| 2,027 | 0 | 1,701 | 0 | 92,616 | 94,317 | 0.82 | 77,373 | 2,750,900 |
| 2,028 | 0 | 1,736 | 0 | 94,468 | 96,203 | 0.80 | 77,373 | 2,828,273 |
| 2,029 | 19,000 | 1,770 | 0 | 96,357 | 117,127 | 0.79 | 92,354 | 2,920,627 |
| 2,030 | 0 | 1,806 | 0 | 98,284 | 100,090 | 0.77 | 77,373 | 2,998,000 |
| 2,031 | 0 | 1,842 | 0 | 100,250 | 102,092 | 0.76 | 77,373 | 3,075,373 |
| 2,032 | 0 | 1,879 | 0 | 102,255 | 104,134 | 0.74 | 77,373 | 3,152,745 |
| 2,033 | 463,366 | 1,916 | 0 | 104,300 | 569,582 | 0.73 | 414,910 | 3,567,655 |
| 2,034 | 0 | 1,954 | 0 | 106,386 | 108,341 | 0.71 | 77,373 | 3,645,028 |
| 2,035 | 0 | 1,994 | 0 | 108,514 | 110,507 | 0.70 | 77,373 | 3,722,401 |
| 2,036 | 0 | 2,033 | 0 | 110,684 | 112,718 | 0.69 | 77,373 | 3,799,774 |
| 2,037 | 0 | 2,074 | 0 | 112,898 | 114,972 | 0.67 | 77,373 | 3,877,146 |
| 2,038 | 371,775 | 2,116 | 0 | 115,156 | 489,046 | 0.66 | 322,661 | 4,199,807 |
| 2,039 | 0 | 2,158 | 0 | 117,459 | 119,617 | 0.65 | 77,373 | 4,277,180 |
| 2,040 | 0 | 2,201 | 0 | 119,808 | 122,009 | 0.63 | 77,373 | 4,354,553 |
| 2,041 | 19,000 | 2,245 | 0 | 122,204 | 143,449 | 0.62 | 89,186 | 4,443,739 |
| 2,042 | 0 | 2,290 | 0 | 124,648 | 126,938 | 0.61 | 77,373 | 4,521,111 |
| 2,043 | 0 | 2,336 | 0 | 127,141 | 129,477 | 0.60 | 77,373 | 4,598,484 |
| 2,044 | 0 | 2,382 | 0 | 129,684 | 132,067 | 0.59 | 77,373 | 4,675,857 |
| 2,045 | 0 | 2,430 | 0 | 132,278 | 134,708 | 0.57 | 77,373 | 4,753,230 |
| 2,046 | 0 | 2,479 | 0 | 134,923 | 137,402 | 0.56 | 77,373 | 4,830,603 |
| 2,047 | 0 | 2,528 | 0 | 137,622 | 140,150 | 0.55 | 77,373 | 4,907,975 |
| Totals: | $2,850,313 | $57,758 | $0 | $3,143,886 | $6,051,956 | | **$4,907,975** | **=30-year LCC** |
| | 1st+Repl | Maint | Fuel | Elec | Total Annual | | | |

**CONTROL SYSTEMS**

A Direct Digital Control (DDC) Energy Management System (EMS) will be provided to automatically control and monitor all HVAC units and the domestic hot water system. Control features include 365-day scheduling, optimum start, variable volume control, and demand control ventilation. $CO^2$ sensors will be provided to regulate the required ventilation needed in each classroom, conference room, and space where the design occupant density is greater than or equal to 25 people per 1,000 square feet. The DDC will monitor the occupancy and daylighting sensors in each classroom, multi-purpose area, lecture, retail, and office. The building HVAC systems will revert to unoccupied mode when the spaces are vacant.

**Download form at http://www.ga.wa.gov/eas/elcca/6.5-Controls-Checklist.xls**

# Figure 6.5 Controls Checklist

**Agency:** **Project Title:** TESC Seminar I Building

**Proposed Control Systems (describe):**

A Direct Digital Control (DDC) Energy Management System (MMS) will be provided to automatically control and monitor all HVAC units and domestic hot water system. Control features include 365 day scheduling, optimum start, and water side economizer. CO2 sensors will be provided to regulate the required ventilation needed in the classrooms and multi-occupant spaces. The DDC will monitor the occupancy and dayligting sensors in the classrooms, offices, and multi-occupant rooms. The building HVAC systems will revert to unoccupied mode when the spaces are unoccupied.

## Interior Lighting control

- [ ] Switched
- [x] Occupancy Sensors
- [x] Other (describe): Photocell & Dimming Ballastas for Classrooms, Offices, and Multi-Purpose
- [ ] Energy Management Control System (EMCS)
- [ ] Time Clocks

## Exterior Lighting control

- [ ] Switched
- [ ] Photocell Control
- [ ] Other (describe):
- [ ] Energy Management Control System (EMCS)
- [x] Time Clocks

## Domestic Hot Water

**Heater Control:** [ ] Time Clock [x] EMCS [ ] No Control

**Circulation Pump:** [x] Yes [ ] No

**Circ. Pump Control:** [ ] Time Clock [x] EMCS [ ] No Control

## HVAC

**Operating Schedules**

| | Typical Weekday | Typical Weekend |
|---|---|---|
| **Start Times:** | 7:00 AM | Unocc. |
| **Stop times:** | 9:00 PM | Unocc. |

**Control System:** [ ] Time Clock [ ] EMCS

**Control Type:** [x] DDC [ ] Pneumatic

**Features:** [x] Night Setback [x] Override [x] Morning Warm-Up Cycle

**Thermostat Setpoints:**

| Heating | Cooling | Night Setback |
|---|---|---|
| 70 Deg F | 75 Deg F | 65 Deg F |

**Ventilation Air Controls:** [x] CO2 Sensor [ ] VOC Sensor [x] Occupancy Sensor Control of Outside Air Dampers

**Economizer Controls:** [x] Dry Bulb Temperature Control [ ] Enthalpy Controls [ ] Integrated Control

**Power Monitoring :** [x] Whole Building [ ] System Level [ ] Utility Meter Derived

## Central Systems

**Supply Air Temperature Heating/Cooling**

**Heating Reset Capabilities:** [x] Yes [ ] No Describe: ______

**Cooling Reset Capabilities:** [x] Yes [ ] No Describe: ______

**Water -Loop Temperatures**

**Heating Reset Capabilities:** [x] Yes [ ] No Describe: ______

**Cooling Reset Capabilities:** X Yes [ ] No Describe: ______

**Fan Control**

**Inlet Vane:** [ ] Yes [ ] No Describe: ______

**Variable-Speed Controller:** [x] Yes [ ] No Describe:

**DOMESTIC HOT WATER**

Electric storage type water heaters with circulation pumps will serve as the primary domestic hot water heating.

**Energy Analysis for Domestic Hot Water Consumption**

**Data**

- Maximum Occupancy = 800 people
- Maximum Consumption Rate = 215 BTUH/person
  (Provided from Table B102 of the Washington State Energy Code 2015)
- Average Supply Water Temperature = 50 degrees F.
- Delivery Temperature = 110 degrees F (assumed)

**Calculation:**

- 800 people x 215 BTUH/person = 172,000 BTUH
- 172,000 BTUH x 1,746 hours = 300,312 kBtu/year
- Gas boiler cost = 300,312 kBtu x 1/.86 (efficiency) x $0.8968/therm x 1/100 therm/kBtu = $3,131/yr.
- Electric cost = 172,000 kBtu x $0.056/kWh x 0.2931 kWh/kBtu = $2,848/yr.
- Demand cost = 172 kBTUH x $11.65/kW x 0.2931 kW/kBTUH = $587/yr.
- Electric boiler cost = Electric cost + Demand cost = $3,435/yr.

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

Project Checklist

Project Name: **TESC Seminar I Renovation**

Date: 5/16/2016

| Y | ? | N | | | |
|---|---|---|---|---|---|
| 1 | | | Credit | Integrative Process | 1 |

| 6 | 2 | 22 | **Location and Transportation** | | **16** |
|---|---|---|---|---|---|
| | | 16 | Credit | LEED for Neighborhood Development Location | 16 |
| | 1 | | Credit | Sensitive Land Protection | 1 |
| | | 2 | Credit | High Priority Site | 2 |
| 2 | | 4 | Credit | Surrounding Density and Diverse Uses | 5 |
| 2 | | | Credit | Access to Quality Transit | 5 |
| 1 | | | Credit | Bicycle Facilities | 1 |
| | 1 | | Credit | Reduced Parking Footprint | 1 |
| 1 | | | Credit | Green Vehicles | 1 |

1

| 7 | 3 | 0 | **Sustainable Sites** | | **10** |
|---|---|---|---|---|---|
| Y | | | Prereq | Construction Activity Pollution Prevention | Required |
| 1 | | | Credit | Site Assessment | 1 |
| 2 | | | Credit | Site Development - Protect or Restore Habitat | 2 |
| 1 | | | Credit | Open Space | 1 |
| 2 | 1 | | Credit | Rainwater Management | 3 |
| | 2 | | Credit | Heat Island Reduction | 2 |
| 1 | | | Credit | Light Pollution Reduction | 1 |

| 5 | 4 | 2 | **Water Efficiency** | | **11** |
|---|---|---|---|---|---|
| Y | | | Prereq | Outdoor Water Use Reduction | Required |
| Y | | | Prereq | Indoor Water Use Reduction | Required |
| Y | | | Prereq | Building-Level Water Metering | Required |
| 2 | | | Credit | Outdoor Water Use Reduction | 2 |
| 2 | 2 | 2 | Credit | Indoor Water Use Reduction | 6 |
| | 2 | | Credit | Cooling Tower Water Use | 2 |
| 1 | | | Credit | Water Metering | 1 |

| 18 | 10 | 4 | **Energy and Atmosphere** | | **33** |
|---|---|---|---|---|---|
| Y | | | Prereq | Fundamental Commissioning and Verification | Required |
| Y | | | Prereq | Minimum Energy Performance | Required |
| Y | | | Prereq | Building-Level Energy Metering | Required |
| Y | | | Prereq | Fundamental Refrigerant Management | Required |
| 6 | | | Credit | Enhanced Commissioning | 6 |
| 8 | 6 | 4 | Credit | Optimize Energy Performance | 18 |
| 1 | | | Credit | Advanced Energy Metering | 1 |
| 1 | | | Credit | Demand Response | 2 |
| | 3 | | Credit | Renewable Energy Production | 3 |
| | 1 | | Credit | Enhanced Refrigerant Management | 1 |
| 2 | | | Credit | Green Power and Carbon Offsets | 2 |

| 10 | 3 | 0 | **Materials and Resources** | | **13** |
|---|---|---|---|---|---|
| Y | | | Prereq | Storage and Collection of Recyclables | Required |
| Y | | | Prereq | Construction and Demolition Waste Management Planning | Required |
| 5 | | | Credit | Building Life-Cycle Impact Reduction | 5 |
| 1 | 1 | | Credit | Building Product Disclosure and Optimization - Environmental Product Declarations | 2 |
| 1 | 1 | | Credit | Building Product Disclosure and Optimization - Sourcing of Raw Materials | 2 |
| 1 | 1 | | Credit | Building Product Disclosure and Optimization - Material Ingredients | 2 |
| 2 | | | Credit | Construction and Demolition Waste Management | 2 |

| 10 | 6 | 0 | **Indoor Environmental Quality** | | **16** |
|---|---|---|---|---|---|
| Y | | | Prereq | Minimum Indoor Air Quality Performance | Required |
| Y | | | Prereq | Environmental Tobacco Smoke Control | Required |
| 2 | | | Credit | Enhanced Indoor Air Quality Strategies | 2 |
| 3 | | | Credit | Low-Emitting Materials | 3 |
| 1 | | | Credit | Construction Indoor Air Quality Management Plan | 1 |
| 2 | | | Credit | Indoor Air Quality Assessment | 2 |
| 1 | | | Credit | Thermal Comfort | 1 |
| | 2 | | Credit | Interior Lighting | 2 |
| | 3 | | Credit | Daylight | 3 |
| | 1 | | Credit | Quality Views | 1 |
| 1 | | | Credit | Acoustic Performance | 1 |

| 1 | 5 | 0 | **Innovation** | | **6** |
|---|---|---|---|---|---|
| | 5 | | Credit | Innovation | 5 |
| 1 | | | Credit | LEED Accredited Professional | 1 |

| 0 | 4 | 0 | **Regional Priority** | | **4** |
|---|---|---|---|---|---|
| | 1 | | Credit | Regional Priority: Demand Response - 1 pt required threshold | 1 |
| | 1 | | Credit | Regional Priority: Renewable Energy Production - 2 pt required threshold | 1 |
| | 1 | | Credit | Regional Priority: Bldg Product Disclosure - EPDs - 1 pt required threshold | 1 |
| | 1 | | Credit | Regional Priority: Bldg Product Disclosure - Raw Materials - 0 pt required | 1 |

| 58 | 37 | 28 | **TOTALS** | Possible Points: | **110** |
|---|---|---|---|---|---|

**Certified:** 40 to 49 points, **Silver:** 50 to 59 points, **Gold:** 60 to 79 points, **Platinum:** 80 to 110

Additional Regional Priority Options

Rainwater Management - 3 points required threshold

Indoor Water Use Reduction - 4 points required threshold

# Figure 4.1 ELCCA Work Plan



## 1. Project Description

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project Title:** | TESC Seminar I | | | | | **Date:** | 6/9/2016 |
| **Owner: The Evergreen State College** | | | **Owner's Proj. #:** | 30000125 | | **Location :** | Olympia |
| **Building Size:** | **54623** | **SF** | **New:** | 15675 | **SF** | **Remodel:** | **38948** |
| **Building Only Cost Estimate:** | | | **$23,718,000** | **Site Cost Est.:** | **$492,400** | | |
| **Useful Life:** | **30 Years** | **Functional Areas:** | | Classrooms, Offices, Conference, Dispatch | | | |
| **Areas (Cont.)** | | | | | | | |
| **Electric Utility:** | PSE | | | **Gas Utility:** | **NA** | | |
| **Design Phase:** | **June 2016-2019** | | **VE Date:** | **2019** | | **Est. Bid Date:** | 2019 |
| **Energy Software:** | **Trace** | **Energy Savings Goal** | | **23%** | | **Weather Station:** | Olympia |
| **Report Format:** | ☐ | **Detailed Analysis** | | ☑ | | **Prototypical Design** | |

## 2. Work Plan Contacts

| Contact | Name | Organization | Email Address | Phone | Fax: |
|---|---|---|---|---|---|
| **Analyst:** | **Audra Mackey** | **Wood Harbinger** | amackey@woodharbinger.com | **425-628-6136** | |
| **Owner's PM:** | **Dave Shellman** | **TESC Facility Services** | shellmad@evergreen.ecu | **360-867-6556** | |
| **Architect:** | **Ross Whitehead** | **Schreiber Starling & Lane Architects** | whitehead@ssiarchitects.com | **206-682-8300** | |
| **Other:** | | | | | |

## 3. Building Envelope

| | | Framing Type | Insulation Type | R-Value | Area (sf) |
|---|---|---|---|---|---|
| **Roof/Ceiling 1** | **Prescriptive:** | Existing Above Deck | Rigid | R-20 (4" thick) | 10279 |
| | **Proposed:** | Existing Concrete | Rigid | R-38 | 10279 |
| **Roof/Ceiling 2** | **Prescriptive:** | | | | |
| | **Proposed:** | | | | |
| | | **Framing*** | **Insulation Type**** | **U Factor** | **Area (sf)** |
| **Wall 1** | **Prescriptive:** | Existing Concrete | Rigid | R-7.5 (1.5" thick) | 21542 |
| | **Proposed:** | Existing Concrete | Rigid | R-20 (4" thick) | 21542 |
| **Wall 2** | **Prescriptive:** | | | | |
| | **Proposed:** | | | | |
| | | **Frame Type** | **U Factor** | **SHGC ***** | **Area (% wall)** |
| **Window 1** | **Prescriptive:** | Metal Frame | **0.55** | **N/A** | **27** |
| | **Proposed:** | Metal Frame | 0.29 | 0.4 | **27** |
| **Window 2** | **Prescriptive:** | | | | |
| | **Proposed:** | | | | |
| **Skylight** | **Prescriptive:** | N/A | N/A | **N/A** | 0 |
| | **Proposed:** | | | | |
| | | **Type** | **Insulation** | **U factor** | **Area (sf)** |
| **Doors** | **Proposed:** | Nonswinging | Rigid | 0.34 | 368 |
| | | **Framing** | **Insulation** | **R-Value** | **Area (sf)** |
| **Floor** | **Proposed:** | NA | NA | NA | NA |
| | | **Type** | **Insulation** | **R-Value** | **F Factor** |
| **Slab Perimeter** | **Proposed:** | Unheated | Rigid | R-10 | 0.54 |

*** Framing for walls show as for example: 2" x 6" wood studs 16" o.c.**

**** Insulation for walls show as for example: "R-19 between studs"**

*****Solar Heat Gain Coefficient**

# Figure 4.1 ELCCA Work Plan



## 3. Building Envelope (Cont.)

**Envelope Alternatives**

If Envelope prescriptives are not met, analyze 2 alternatives

**Envelope Alternative 1:**

**Envelope Alternative 2:**

## 4. Lighting Systems

| Proposed Lighting | Space 1 | Space 2 | Space 3 | Space 4 |
|---|---|---|---|---|
| **Space Name:** | **Classroom** | **Office** | **Conference** | **Dispatch** |
| **Area Function*:** | **Classroom** | **Office** | **Conference** | **Dispatch** |
| **Fixture Type:** | Pendent | Recess | Recess | Pendent |
| **Ballast Type:** | Electronic | Electronic | Electronic | Electronic |
| **Lamp Type:** | LED | LED | LED | LED |
| **# Lamps/Fixture:** | N/A | N/A | N/A | N/A |
| **Proposed LPD (w/sf)** | 0.57 | 0.65 | 0.78 | 0.57 |
| **Prescriptive LPD (w/sf)*** | **1** | **0.89** | **0.98** | ***1.37*** |
| **Check box below when space is likely to include feature indicated at left** | | | | |
| **LED Exit Signs?** | ☑ | ☑ | ☑ | ☑ |
| **Occupancy Controls ?** | ☑ | ☑ | ☑ | ☑ |
| **Active Daylighting?** | ☑ | ☑ | ☑ | ☑ |
| **Lumen Maint. Controls?** | ☑ | ☑ | ☑ | ☑ |
| **Area Sweep Controls?** | ☑ | ☑ | ☑ | ☑ |

*** Use "Area Function" and prescriptive LPDs listed in T4.2, If not listed use local energy code target values**

**Lighting Alternatives**

If Lighting prescriptives are not met, analyze 2 alternatives

**Lighting Alternative 1:**

**Lighting Alternative 2:**

## 5. Mechanical, Renewable , and High Performance Alternatives

Describe System Types, use areas, fuels, efficiencies, modeled energy saving features, etc.

| | |
|---|---|
| **Mechanical Alternative:** | High Performance VAV system per WSEC C403.7. VAV AHU's provided with chilled water and heating water coils. Non-fan powered air terminal units provided with heating water reheat coils. Steam and chilled water provided from central plant. Steam to water heat exchanger provided. Electric water heater provided for domestic hot water. |
| **Mechanical Alternative:** | Water Source Variable Refrigerant Flow System. 100% heat recovery unit provided for ventilation air to each VRF unit. Electric water heater provided for domestic hot water. Chilled water and steam will be provided from the central plant to a condenser water closed loop system. Cooling Tower on roof for heat sink in shoulder season. CO2 control provided for high density areas. |
| **Renewable Alternative:** | Chilled Beam System utilizing chilled water and steam from central plant. Steam to water heat exchanger provided. Cooling tower provided for water side economizer at the building. 100% heat recovery unit provided for ventilation air to the building. Electric water heater provided for domestic hot water. CO2 control provided for high density areas. Photovoltaic cells provided on roof. |
| **High Performance Building Alternative:** | Chilled Beam System utilizing chilled water and steam from central plant. Steam to water heat exchanger provided. Cooling tower provided for water side economizer at the building. 100% heat recovery unit provided for ventilation air to the building. Electric water heater provided for domestic hot water. CO2 control provided for high density areas. |

## 6. Control System Features

| | Description | | Description |
|---|---|---|---|
| ☑ | Optimized Start/Stop | ☑ | Ventilation Rate Monitor |
| ☑ | Economizer Cooling | ☑ | Commissioning Diagnostics |
| ☑ | Trending Capability | ☑ | Demand Controlled Ventilation |
| ☐ | Evening Purge Cycle | ☑ | CO2 Monitoring |
| ☑ | Morning Warm-up | ☐ | Other |

## 7. Domestic Hot Water (DHW) System

| | | Space 1 | Space 2 | Space 3 |
|---|---|---|---|---|
| **Space Name** | | Building | | |
| **Number of Units:** | | 2 | | |
| **Energy Source:** | | Electric | | |
| **Unit Capacity KBTU/ hour:** | | 160 | | |
| **Tank Gallons/unit:** | | 120 | | |
| **Check if Point of Use Type:** | | ☐ | ☐ | ☐ |
| **Check if Circulation pump used:** | | ☑ | ☐ | ☐ |
| **Time Clock or EMCS:** | **For Heater or Burner** | ☑ | ☐ | ☐ |
| | **For Circulation Pump** | ☑ | ☐ | ☐ |

**DHW Alternatives** If DHW Sys. energy use is 10% or more of total bldg.use, Analyze 2 alternatives

**DHW System Alternative 1**

**DHW System Alternative 2**

## 8. Other Energy Systems (Describe) :

ASHRAE Baseline System: VAV AHU with heating water and chilled water coils. Non-fan powered VAV boxes with heating water reheat. VAV AHU provided for each floor. Campus steam and chilled water provided to the building. Gas fired condensing water heater provided for domestic hot water. The chiller plant provides 0.43 kw/ton.

## 9. Reviewer's Comments:

**Mail Work Plan Package to:**
ELCCA Reviewer
1500 Jefferson Street SE, 2 North
P.o. Box 41476
Olympia, WA 98504-1476

**or Email to:** ELCCA@DES.WA.GOV

## Figure 3.1 Environmental Design Considerations

Version 1.0 October 2005

| | | | |
|---|---|---|---|
| Project Title: | Seminar I Building | Date: | 6/9/2016 |
| Owner: | The Evergreen State College | Owner's Rep: | Dave Shellman |
| Owner's Project No: | 30000125 | Owner's Phone No: | 360-867-6556 |
| Owner's E-mail: | shellmad@evergreen.ecu | Owner's Fax No: | |
| Completed by: | Audra Mackey | Phone No: | 425-628-6136 |
| Firm: | Wood Harbinger | E-mail: | amackey@woodharbinger.com |
| Bldg Type: | College/Academic | | |
| Approx. sq. ft: | 15,675 ☑ New | 38,948 ☑ Remodel | ☐ Addition |

**The following are elements of an energy efficient design and can contribute to LEED™ points. Check 'Yes' to indicate items that will be considered in the High Performance Alternative of the Energy Life Cycle Cost Analysis**

| | **Site Considerations** | **Yes** | **No** | **N/A** |
|---|---|---|---|---|
| 1) | Building orientated to optimize energy efficiency | ☐ | ☐ | ☑ |
| 2) | Landscaping to provide solar shading | ☐ | ☑ | ☐ |
| | **Envelope** | ☐ | ☐ | ☐ |
| 3) | Energy Star™ compliant roof | ☑ | ☐ | ☐ |
| 4) | Roof insulation to meet or exceed R-30 rigid or R-38 batt | ☑ | ☐ | ☐ |
| 5) | Wall insulation with | ☐ | ☐ | ☐ |
| | a) wood studs, R-19 batt insulation* | ☐ | ☐ | ☑ |
| | b) metal studs, R-19 and rigid insulation on the exterior* | ☐ | ☐ | ☑ |
| | c) mass wall, R-10 rigid insulation* | ☑ | ☐ | ☐ |
| 6) | Windows: | ☐ | ☐ | ☐ |
| | a) U=0.45 or lower* | ☑ | ☐ | ☐ |
| | b) SHGC=0.45 (reduced cooling load) or lower* | ☑ | ☐ | ☐ |
| | c) Exceed 50% Visual Light Transmittance (increased daylighting)* | ☑ | ☐ | ☐ |
| 7) | Skylights U=0.60 or lower* | ☑ | ☐ | ☐ |
| 8) | Doors U=0.50 or lower* | ☑ | ☐ | ☐ |
| | **Lighting** | | | |
| 9) | Incorporate dalighting in over 50% of occupied critical visual task areas | ☑ | ☐ | ☐ |
| 10) | Automated daylighting controls | ☑ | ☐ | ☐ |
| 11) | Lumen maintenance controls (metal halide with electronic balast) | ☑ | ☐ | ☐ |
| 12) | Flourescent lighting for the gym, multipurpose, commons or other High Bay application | ☐ | ☑ | ☐ |
| 13) | Lighting power densities to meet or be lower than the following* | ☐ | ☐ | ☐ |
| | a) Classroom: 1.15 watts per square foot (w/sf) | ☑ | ☐ | ☐ |
| | b) Gym: 1.00 w/sf (1.8 w/sf over competitive area) | ☐ | ☐ | ☑ |
| | c) Office: 1.10 w/sf | ☑ | ☐ | ☐ |
| | d) Library: 1.30 w/sf | ☐ | ☐ | ☑ |
| | e) Corridor: 0.70 w/sf | ☑ | ☐ | ☐ |

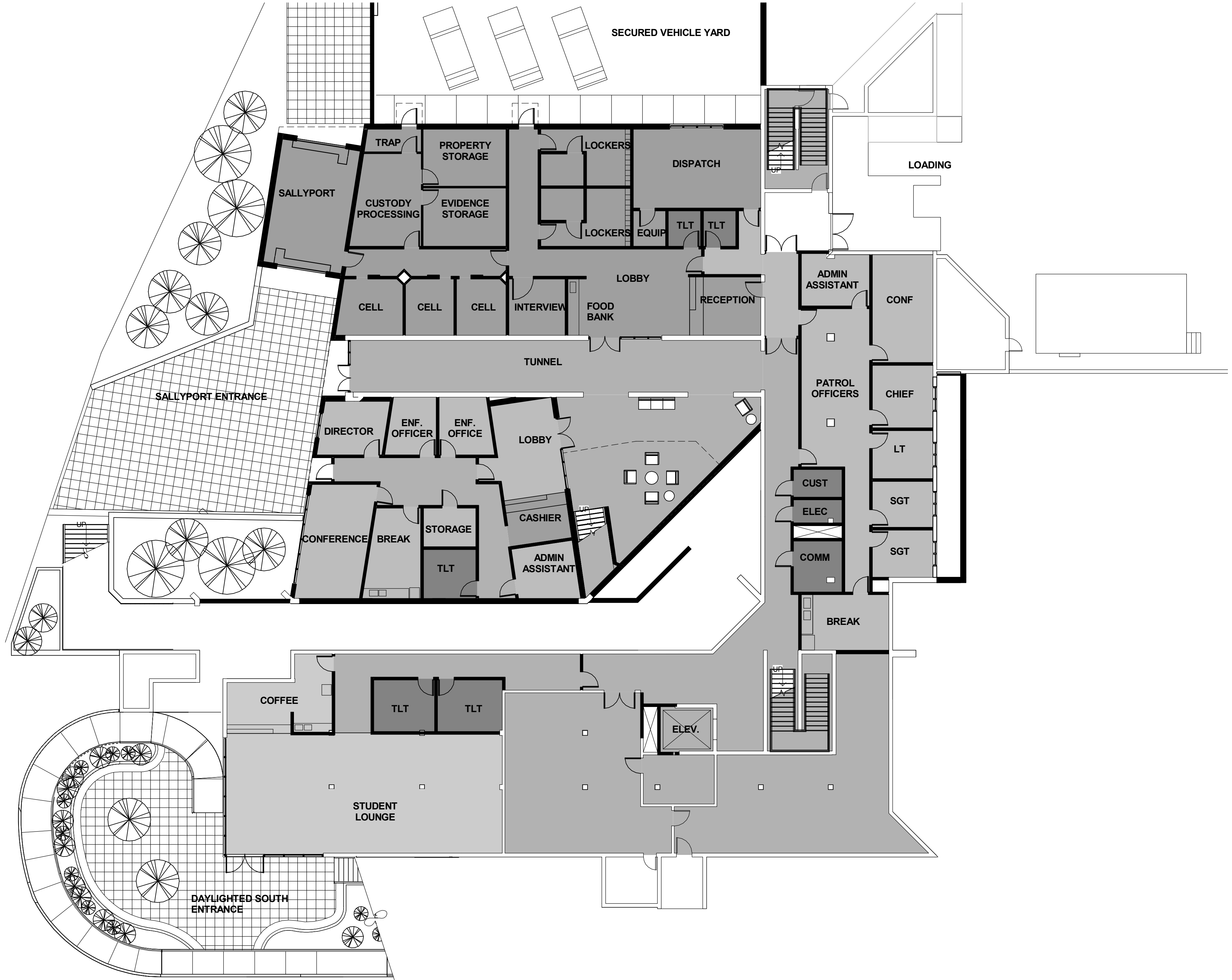
* Represents ELCCA prescriptive elements

| | **Renewable Energy** | **Yes** | **No** | **N/A** |
|---|---|---|---|---|
| 14) | Incorporate solar photovoltaic (PV) technology: | ☑ | ☐ | ☐ |
| | a) for general building power | ☑ | ☐ | ☐ |
| | b) for isolated loads in remote locations (e.g. crosswalks) | ☐ | ☐ | ☐ |

| | | | | |
|---|---|---|---|---|
| 15) | Solar water heater | ☐ | ☑ | ☐ |
| 16) | Wind power | ☐ | ☑ | ☐ |
| 17) | Heat recovery systems | ☑ | ☐ | ☐ |
| 18) | Geothermal | ☐ | ☑ | ☐ |
| | **Water Conservation** | | | |
| 19) | Waterless Urinals | ☐ | ☑ | ☐ |
| 20) | Rain water/gray water collection systems | ☐ | ☑ | ☐ |
| 21) | Water efficient landscaping | ☑ | ☐ | ☐ |
| 22) | Water efficient fixtures | ☑ | ☐ | ☐ |
| 23) | Rep. w "sensor activated" | ☑ | ☐ | ☐ |
| | **HVAC & Electrical** | | | |
| 24) | Natural ventilation | ☐ | ☑ | ☐ |
| 25) | Displacement ventilation | ☐ | ☑ | ☐ |
| 26) | Thermal Storage | ☐ | ☑ | ☐ |
| 27) | Premium efficiency motors | ☑ | ☐ | ☐ |
| 28) | Independent Building Commissioning Agent hired by owner | ☑ | ☐ | ☐ |
| 29) | Variable flow fans and pumping systems | ☑ | ☐ | ☐ |
| 30) | Heat recovery systems (between supply and exhaust) | ☑ | ☐ | ☐ |
| 31) | Evaporative cooling to augment or replace mechanical cooling | ☐ | ☑ | ☐ |
| 32) | High efficiency boilers (exceed code requirements) | ☐ | ☐ | ☑ |
| 33) | High efficiency chillers (exceed code requirements) | ☐ | ☐ | ☑ |
| | **Controls** | | | |
| 34) | Building automation system | ☑ | ☐ | ☐ |
| 35) | Carbon Dioxide monitoring (gym/multipurpose/commons, etc.) | ☑ | ☐ | ☐ |
| 36) | Demand control ventilation | ☑ | ☐ | ☐ |
| | **Uninterruptible Power** | | | |
| 37) | Fuel cells for uninterruptible power systems | ☐ | ☑ | ☐ |

**List other energy efficient items or strategies that will be considered:**

**Submit to DES:**
**by E-Mail: ELCCA@ga.wa.gov**




1 Option Plan - Basement
3/32" = 1'-0"

Schreiber Starling & Lane
ARCHITECTS
185 University St.
Seattle, WA 98101

**TESC Seminar 1**

**Project Status**

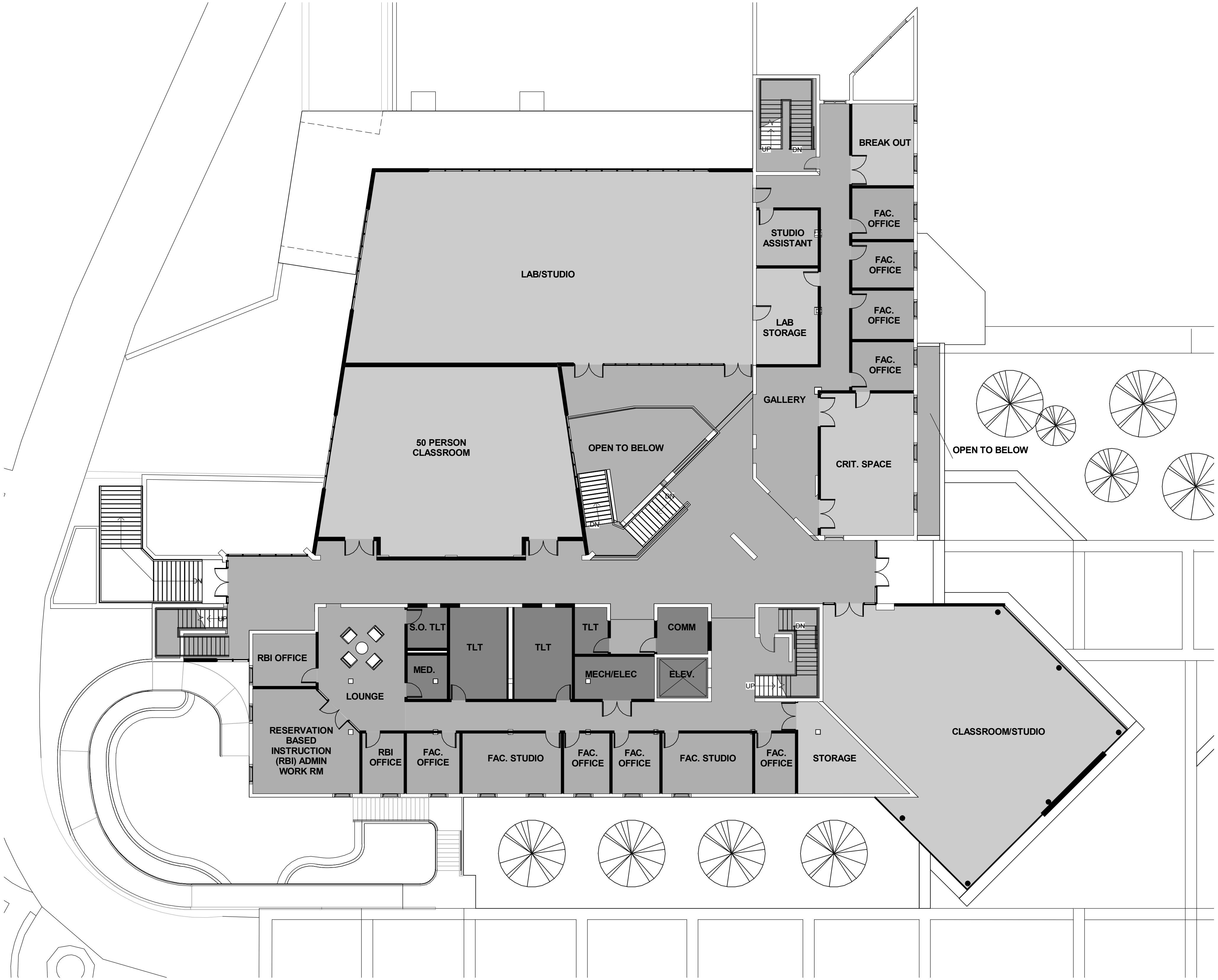
Option Floor Plan - Basement

Project Number

Issue Date

SHEET: OF:

**A3.01**




1 Option Plan - Level 1
3/32" = 1'-0"

Schreiber Starling & Lane
ARCHITECTS
185 University St.
Seattle, WA 98101

**TESC Seminar 1**

**Project Status**

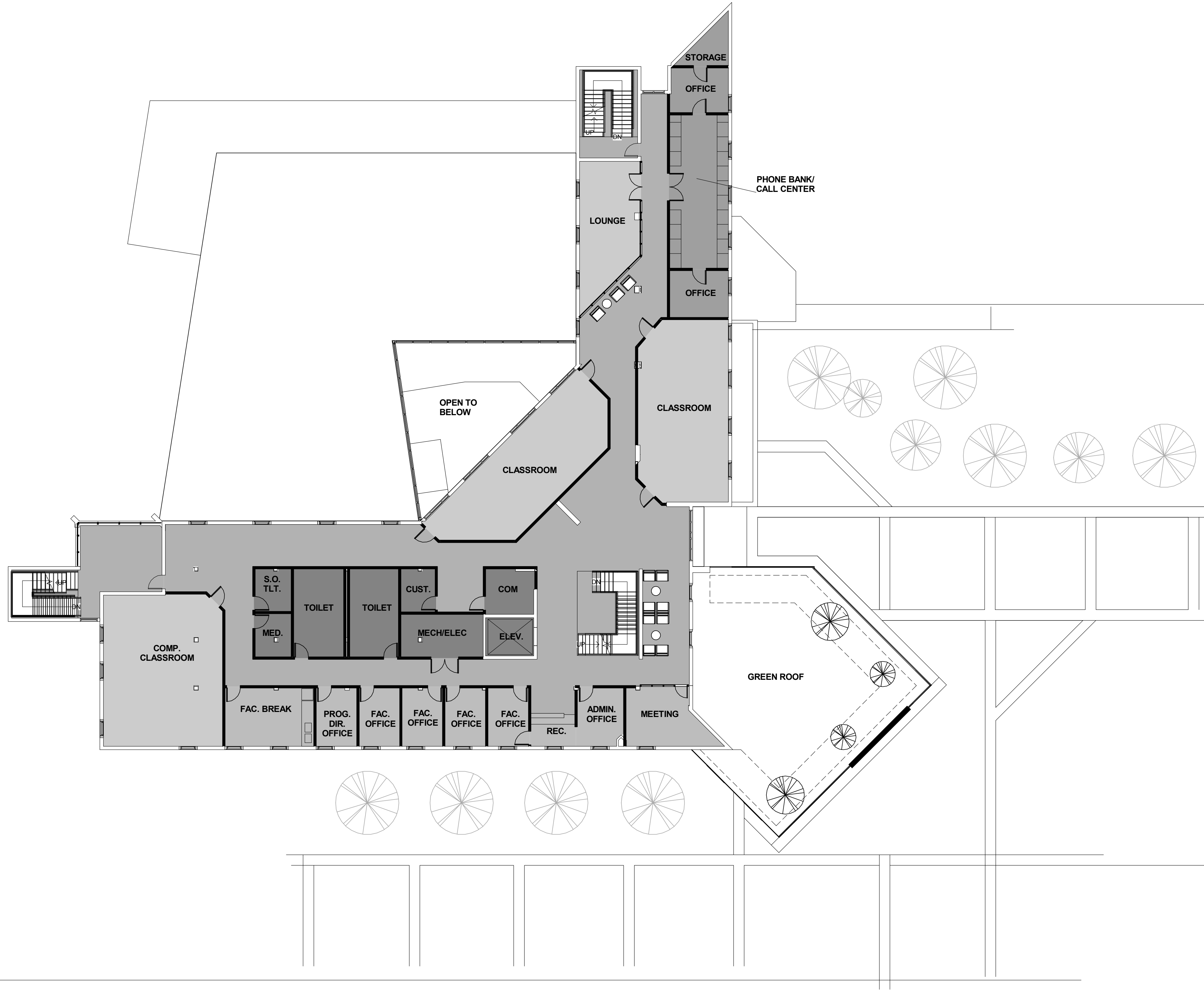
Option Floor Plan - Level 1

Project Number

Issue Date

SHEET: OF:

**A3.02**




1 Option Plan - Level 2
3/32" = 1'-0"

Schreiber
Starling
& Lane
ARCHITECTS
185 University St.
Seattle, WA 98101

**TESC Seminar 1**

**Project Status**

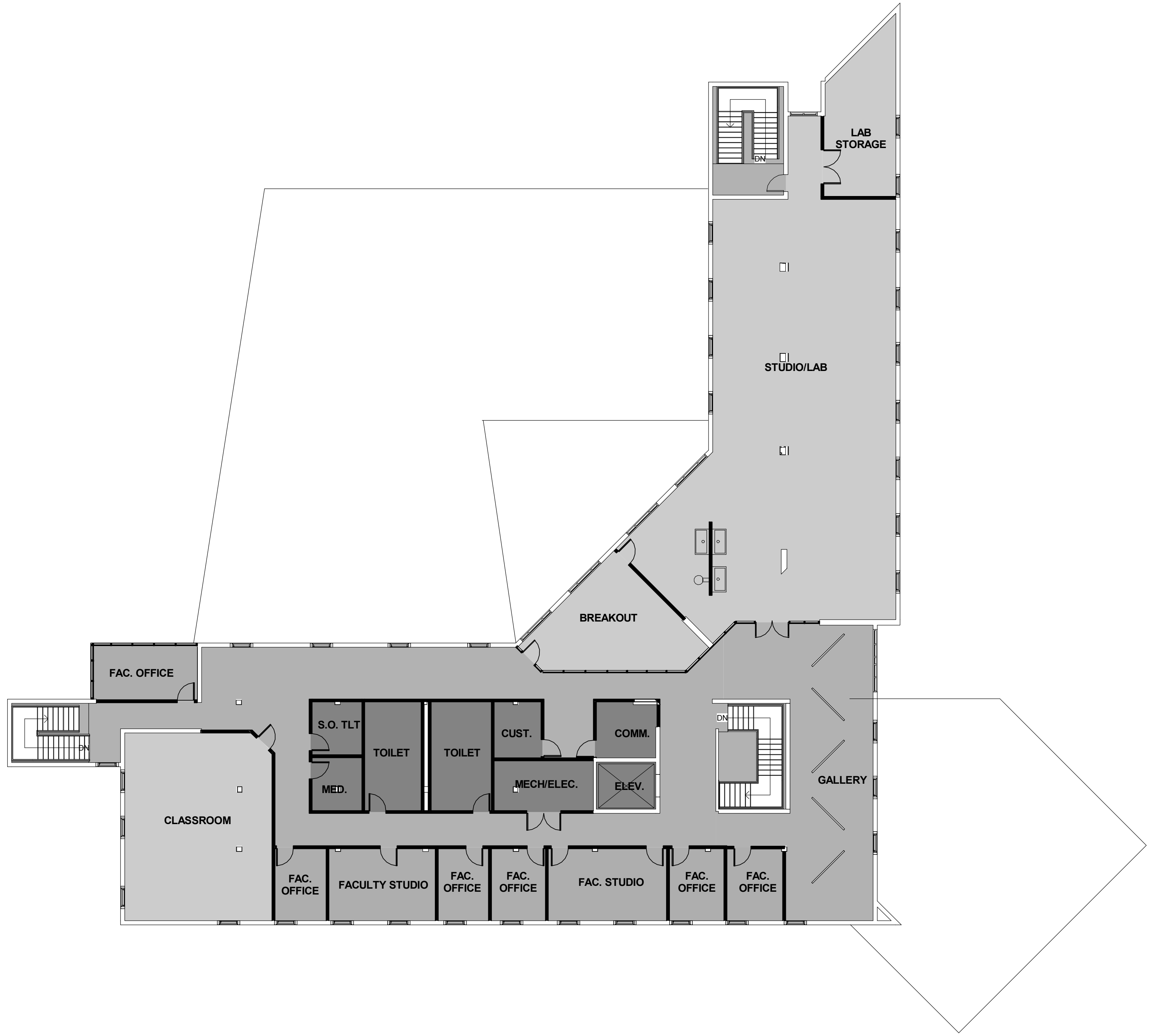
Option Floor Plan - Level 2

Project Number

Issue Date

SHEET: OF:

**A3.03**




1 Option Plan - Level 3.1
3/32" = 1'-0"

Schreiber Starling & Lane
ARCHITECTS
185 University St.
Seattle, WA 98101

**TESC Seminar 1**

**Project Status**

Option Floor Plan - Level 3.1

Project Number

Issue Date

SHEET: OF:

**A3.04**

**COMPUTER MODEL INPUT**

In an attempt to reduce wasted paper, the Trane Trace input and output files have been included digitally. If you would prefer paper copies, please e-mail: amackey@woodharbinger.com

the evergreen state college

# APPENDIX I

TESC Strategic Plan

# Shaping Our Future: Building on Our Past

## Strategic Plan 2015-2020

the evergreen state college

## About This Plan

*This plan outlines six overarching goals intended to help the College achieve its mission, aspirations, and Core Themes. Each is described with related objectives and strategies. Much of the detail for these aspirations and their measures of success is contained within our Year-Three Accreditation Report. Additional assessment intentions are described at the end of this plan.*

*The work required to achieve these goals will be pursued across the College, largely through existing teams and structures accountable for specific areas of work. Success will depend on the engagement and contributions of the entire Evergreen community.*

*Winter 2015*

# The Evergreen State College: Innovation in Action

**The Evergreen State College, one of six public baccalaureate institutions in Washington, was created with a mandate for innovation.**

*In helping to found the College, Governor Daniel Evans declared the need for a "flexible and sophisticated educational instrument," that could "unshackle our educational thinking from traditional patterns."*

**That spirit of innovation continues today**.

## Introduction: A Plan to Build on Our Strengths

While The Evergreen State College has helped create new possibilities for teaching and learning since its inception, it builds upon many of the foundations of a traditional liberal arts education:

- A curriculum that encompasses the social sciences, natural sciences, humanities, arts, and mathematics;
- Exceptional teaching and one-on-one engagement with students;
- An emphasis on developing writing, speaking, collaboration, and critical thinking skills;
- An emphasis on breadth and depth of knowledge; and
- A focus on civic engagement, social justice, service, and preparation for work and career.

## Our Mission

As an innovative public liberal arts college, Evergreen emphasizes collaborative, interdisciplinary learning across significant differences. Evergreen's academic community engages students in defining and thinking critically about their learning. Evergreen supports and benefits from local and global commitment to social justice, diversity, environmental stewardship and service in the public interest.

In a spirit of innovation, Evergreen reaches beyond the traditional to serve students in ways that distinguish it from other liberal arts institutions.

Critically, Evergreen is public: one of just a handful of such liberal arts institutions in the country, providing access to a much broader range of students than its private counterparts and focused on serving the public good.

Our greatest distinction, however, is that **Evergreen approaches teaching and learning in a fundamentally different way than most colleges and universities**, offering students:

- Interdisciplinary, multi-quarter and team-taught programs;
- Engaging  classroom and hands-on learning opportunities, anchored in a deep trust in the talents and creativity of faculty;
- Substantive narrative evaluations of their learning; and
- Freedom, and responsibility, to choose and help create academic work tailored to their personal, academic, and career goals.

These characteristics set Evergreen apart and provide students with learning opportunities not available elsewhere.

## Five Foci

- **Interdisciplinary study** - Students learn to pull together ideas and concepts from many subject areas, which enables them to tackle real-world issues in all their complexity.
- **Collaborative learning** - Students develop knowledge and skills through shared learning, rather than learning in isolation and in competition with others.
- **Learning across significant differences** - Students learn to recognize, respect and bridge differences - critical skills in an increasingly diverse world.
- **Personal engagement** - Students develop their capacities to judge, speak and act on the basis of their own reasoned beliefs.
- **Linking theory to practice** - Students understand abstract theories by applying them to projects and activities and by putting them into practice in real-world situations.

## Our Aspirations for 2020

### In 2020, we envision an Evergreen that:

- Serves a student body of Washington residents that reflects the changing diversity of our state, in all its forms, enhanced by students from beyond the state and nation;
- Is a destination college of choice for students, faculty, and staff seeking a liberal arts experience;
- Has a vibrant sense of shared community, mutual respect, and common purpose with a continued commitment to social justice and sustainability;
- Provides a distinctive, innovative, and relevant educational experience—strongly grounded in the Five Foci and Six Expectations—that helps students graduate, achieve their personal, academic and careers goals, and become engaged global citizens;
- Is actively and strategically engaged with the community in mutually beneficial ways;
- Is an institution in which the community takes great pride;
- Is known locally, regionally, nationally, and globally as a model for teaching and learning and an example of the strengths and benefits of a liberal arts education; and
- Continues to transform student lives so that those students can transform the world.

## Six Expectations of an Evergreen Graduate

- **Articulate and assume responsibility for your own work**. A successful Evergreen graduate will know how to work well with others, not only in the workplace or social contexts, but as an active participant in the struggle for a more just world. You will assume responsibility for your actions as an individual and exercise power responsibly and effectively.
- **Participate collaboratively and responsibly in our diverse society.** A successful Evergreen graduate will understand that by giving of yourself you make the success of others possible. A thriving community is crucial to your own well-being. The study of diverse worldviews and experiences will help you to develop the skills to act effectively as a local citizen within a complex global framework.
- **Communicate creatively and effectively**. A successful Evergreen graduate will know how to listen objectively to others so as to understand and accept a wide variety of viewpoints. By developing a genuine interest in the experiences of others, you will learn to ask thoughtful questions, to communicate persuasively, and express yourself creatively.
- **Demonstrate integrative, independent, critical thinking.** A successful Evergreen graduate will have the ability to appreciate and critically evaluate a range of topics, across academic disciplines. As you explore these disciplines, you will develop a greater curiosity toward the world around you, and its interconnections, that will enhance your skills as an independent, critical thinker.
- **Apply qualitative, quantitative, and creative modes of inquiry appropriately to practical and theoretical problems across disciplines.** A successful Evergreen graduate will understand the importance of the relationship between analysis and synthesis. Through being exposed to the arts, sciences and humanities, and coming to your own critical understanding of their interconnectedness, you will learn to apply appropriate skills and creative ways of thinking to the major questions that confront you in your life.
- **Demonstrate depth, breadth, and synthesis of learning and the ability to reflect on the personal and social significance of that learning.** A successful Evergreen graduate will be able to apply the personal frame of reference you develop as a result of this unique education in order to make sense of the world. This understanding will allow you to act in a way that is both easily understood by and compassionate toward other individuals across personal differences.

## Core Themes

Evergreen's four Core Themes, intended to encompass the essential elements of the mission, were developed in the College's ongoing accreditation work and can be reviewed in detail in the Year-Three Accreditation Report. **The Core Themes are:**

- **Integrated, interdisciplinary learning;**
- **Individuals engaged in community;**
- **Environmental stewardship and social justice; and**
- **Diversity and equity.**

These themes are deeply woven into this strategic plan. The plan also includes institutional aspirations, goals, objectives, and strategies to help focus our resources and achieve the outcomes articulated in the mission and Core Themes.

## Who We Serve

As a public institution, Evergreen serves both students and society.

### How We Serve Students

Evergreen provides an academic experience—characterized by the Five Foci and demonstrated in the Six Expectations of an Evergreen Graduate—that prepares students to successfully pursue their personal, academic, and career goals.

Evergreen aims to serve a student body comprised primarily of Washington residents representative of state demographics, enhanced by students from beyond the state and nation who contribute diversity of background and experience to our academic endeavors, and financial resources to support our mission as a public institution.

### How We Serve Society

Evergreen produces graduates who possess the knowledge, skills, and abilities to engage in graduate studies and/or lifelong learning and contribute economically and socially to their communities. The College identifies, prioritizes, and pursues current and new strategic partnerships—across the spectrum of non-profit, government, tribal governments, and private enterprise on the local, national and global level—that are mutually beneficial and based on an exchange of knowledge, talent, and resources. In doing these things, Evergreen demonstrates the value of a liberal arts education.

## Our Commitments

**The Evergreen State College is committed to:**

- Strengthening and enhancing rigorous, well-taught undergraduate and graduate education, founded on the Five Foci, the Six Expectations of an Evergreen Graduate, and the acknowledgement of student goals and aspirations, including preparation for work and service.
- Hiring, developing, promoting, and retaining faculty members who are excellent teachers—as well as leaders in scholarship, the arts, and professional accomplishment—and actively contribute to the vitality and aspirations of Evergreen.
- Hiring, developing, promoting, and retaining staff members who excel in their areas of work and actively contribute to the vitality and aspirations of Evergreen.
- Working with student populations and communities—as we do with our Tacoma and tribal programs—to enhance educational opportunities aligned with Evergreen's mission, aspirations, and goals.
- Promoting teaching, scholarship, and artistic opportunities within and across traditional disciplinary boundaries.

- Strengthening and expanding the College's local, regional, national, and global connections through academics and public service.
- Enhancing our residential campus and co-curricular experiences for our students.
- Working across divisions, disciplines, roles, and other boundaries to innovate and address challenges.
- Aligning our policies, processes, services, operations, and the development of our physical campus with our values as expressed in our mission, aspirations, and Core Themes.
- Supporting financially sustainable operating and capital budgets aligned with the values expressed in this strategic plan and built on a foundation of enrollment-based revenue, legislative funding, and fundraising.

## Goals, Objectives and Strategies

### Goals in Brief

1. Enhance Evergreen's distinctive educational experience.
2. Recruit, develop, and retain outstanding faculty and staff.
3. Effectively employ technology, facilities, and the natural attributes of our campus to enhance teaching, learning, and community.
4. Build and strengthen mutually beneficial internal and external partnerships.
5. Ensure enrollments and revenues sufficient to achieve the goals and aspirations outlined in the strategic plan.
6. Enhance recognition of Evergreen as an extraordinary institution locally, regionally, nationally, and globally.

## Goal 1

## Enhance Evergreen’s distinctive educational experience to support learning, student success, and enrollment

***Objective 1: Using the expertise of the faculty and staff, and building upon academic strengths, cultivate improvement s and innovations in curriculum, teaching, and support beyond the classroom to further promote student success and enrollment***

**Strategies**

1. Use the Five Foci, Six Expectations, and Core Themes as primary lenses for individual and collective academic planning.
2. Prioritize and implement initiatives to enhance first-year experiences and provide meaningful capstone experiences for all students.
3. Provide clearer and consistently available academic opportunities at the beginning, intermediate, and advanced levels in fields of study prominently promoted to prospective students to facilitate student agency and help students achieve their personal and career goals.
4. Take advantage of Evergreen’s curricular flexibility to provide programs and classes that attract and engage students to deepen their learning, support strong enrollment and retention, and support their success after graduation.
5. Increase theory to practice opportunities.
6. Assess and address student preparation for college-level academic work by enhancing faculty knowledge in this area and recognizing the skills and talents students bring to their studies.
7. Increase opportunities for Evergreen faculty and staff to share exemplary practices with each other to further promote the development of high quality programs, contracts and educational experiences.
8. Strengthen programs and resources beyond the classroom that contribute to teaching, learning, and student retention.

***Objective 2: Enhance faculty and staff capacity for mentoring students and involving them in scholarly and artistic activities***

**Strategies**

1. Encourage and support collaborative/team teaching—especially across academic divisions.
2. Provide faculty and staff with regular and ongoing opportunities to hone their skills in working with a diverse student body.
3. Stimulate opportunities for collaborative faculty-student scholarship and artistic work.
4. Facilitate opportunities for faculty and staff to engage in discussions with peers and each other to share successful pedagogical and professional practices.
5. Provide additional support for faculty mentoring to facilitate student success inside and outside the classroom.

## Goal 2

## Recruit, develop, and retain outstanding faculty and staff to support student success and achieve the College's aspirations for diversity

***Objective 1: Improve the College's competitive position in terms of total compensation, working environment, development opportunities, and visibility***

**Strategies**

1. Develop and implement competitive, equitable, and sustainable compensation and employee development plans.
2. Develop and implement efforts to attract and retain faculty and staff who reflect, and are capable of supporting, Evergreen's diverse and changing student body.
3. Enhance hiring practices to more clearly articulate expectations and skills required for teaching in Evergreen's distinctive model.
4. Cultivate a welcoming and supportive campus environment.

## Goal 3

## Effectively employ technology, facilities, and the natural attributes of our campus to create and sustain an inclusive, accessible, and safe environment that will attract and serve students, inspire and support teaching and learning, build community, and improve the efficiency and effectiveness of College operations.

***Objective 1: Develop, renovate, and maintain campus facilities***

**Strategies**

1. Pursue and secure legislative authorization and funding for projects and facilities included in the 2015 to 2020 elements of the Campus Master Plan, including renovation and maintenance of existing buildings and infrastructure.
2. Collaborate with students to explore, promote, fund, and implement improvements to facilities that support student life and well-being—as well as recruitment and retention—including improvements and/or expansion of campus housing and student service facilities using traditional and innovative funding options (including exploration of public/private partnerships).

***Objective 2: Provide technology and support to promote learning and improve efficiency and effectiveness of campus operations***

**Strategies**

1. Identify and implement solutions that enhance access to information and functionality for students, faculty, and staff, regardless of location or device.
2. Continue efforts to maintain and improve data security.
3. Identify, prioritize, and address barriers to access, and opportunities to enhance learning, for students, faculty, and staff (e.g. technology, training, support, organization, physical access, and ease of use).

***Objective 3: Develop and implement an improved plan, grounded in environmental stewardship and social justice, to help the College clarify and achieve its sustainability goals***

**Strategies**

1. Actively engage students, faculty, and staff in an update of the Climate Action Plan, including review and recommendations related to carbon and waste reduction goals and timelines.
2. Review and, as necessary revise, roles and structures to achieve the goals of an updated Climate Action Plan.
3. Emphasize the continued integration of social justice and sustainability into the curriculum.
4. Provide additional theory to practice opportunities for students and a model for sustainability that contributes to student recruitment, learning, and retention.

## Goal 4

## Build and strengthen mutually beneficial internal and external partnerships

***Objective 1: Build, strengthen, and maintain strategic internal and external partnerships that enhance student success and contribute to the long term ability of the College to fulfill its mission***

**Strategies**

1. Identify and support current and new partnerships—across the spectrum of non-profit, government, tribal governments, and private enterprise on the local, national and global level, including our current Public Services Centers—that align with College goals and priorities and are mutually beneficial, based on an exchange of knowledge, talent, and resources. These may include opportunities to expand experiential, theory to practice opportunities that enhance student engagement, learning, career readiness, and connections to campus and community; and/or opportunities to contribute to sustainability, social justice, and quality of life in the community and beyond.

2. Identify and implement clear and effective means for external stakeholders to connect with Evergreen to explore opportunities for strategic partnerships.

3. Develop methods to build internal awareness of existing partnerships, opportunities, and needs, improve coordination, and increase synergy.

## Goal 5

## Ensure enrollments and revenue sufficient to achieve the goals and aspirations outlined in the strategic plan

***Objective 1: Attract students who will benefit from and contribute to the Evergreen learning community***

**Strategies**

1. Increase the size of the undergraduate applicant pool through: additional targeted outreach that reflects the demographics of the state, enhanced by students from beyond the state and nation; technology updates to optimize recruitment and admissions processes; and improved communication and collaboration between Admissions and Academics to inform curricular development.
2. Refine marketing messages to increase the continuity and effectiveness of communication.
3. Bolster promotional efforts to further showcase Evergreen's distinctions and successes.
4. Sustain support for graduate programs and explore opportunities for growth and/or diversification of graduate offerings in alignment with the mission, aspirations and goals.
5. Enlist students, faculty, staff, and alumni in supporting recruitment and messaging efforts.
6. Expand financial aid to increase affordability and support student recruitment.

***Objective 2: Retain and graduate a higher percentage of students***

**Strategies**

1. Engage with students and focus institutional energy to assess, prioritize and, as necessary, enhance academic, social, recreational, wellness, and health-related services, activities and facilities that support student well-being and success.
2. Identify, prioritize, fund, and spread effective retention practices already in use at Evergreen to additional student populations and implement best practices not yet in use at the college as well.
3. Critically review practices currently funded based on assumed retention benefits to confirm that linkage and modify, enhance, discontinue, or revisit rationale for these investments based on their results.

***Objective 3: Generate a sustainable balance of tuition-based, legislative, and private funding to support current programming, financial aid, and aspirations for new initiatives articulated in the aspirations and Core Themes***

**Strategies**

1. Clarify institutional fundraising priorities and expand fundraising activities to support student access and success.
2. Enhance legislative outreach and advocacy activities, engaging a wider range of stakeholders in these efforts.

3. Increase enrollment-related revenue while maintaining our commitments to serving a resident student population representative of Washington's changing diversity as well as students from beyond the state and nation.

## Goal 6

## Enhance recognition of Evergreen as an extraordinary institution locally, regionally, nationally, and globally

***Objective 1: Make accomplishments of students, faculty, staff, and alumni more widely known***

**Strategies**

1. Showcase more student, faculty, staff, institutional, and alumni accomplishments for internal and external audiences.
2. Support publication efforts, conference presentations, and other opportunities to help shape national and international conversations about educational practices by highlighting Evergreen's unique pedagogy, faculty innovations, and student successes.
3. Provide more support for student presentations and posters at professional meetings.
4. Enhance the visibility of the public service centers and their work and integrate them more with academic programs and courses.
5. Develop ways for students, faculty and staff to better understand, fully articulate, and broadly share the goals, values and benefits of our innovative liberal arts education.

***Objective 2: Strengthen lifelong alumni engagement***

**Strategies**

1. Bring alumni back to campus by creating engaging special events and nurturing their ties to faculty.
2. Develop in-person activities and digital tools to promote continued social interaction and ongoing learning.
3. Expand connections between students and alumni for mutual benefit.
4. Expand opportunities for alumni engagement and advocacy on behalf of the college.
5. Increase participation in alumni giving.

***Objective 3: Demonstrate the value of a liberal arts education***

**Strategies**

1. Refine and demonstrate the strengths of Evergreen's interdisciplinary model in supporting student success.
2. Widely communicate Evergreen's successes (through student, faculty, staff, and alumni stories) and their linkage to the College's distinctive liberal arts model.
3. Lead and/or actively participate in regional and national engagements with key stakeholders on the value and relevance of a liberal arts education.

## Assessment

Most of the goals and objectives included in this plan reflect and/or integrate the Core Themes articulated in Evergreen's Year-Three Accreditation Report. That report includes specific indicators and targets for a wide range of activities, initiatives, and outcomes. The College will use those indicators and targets to assess progress toward goals related directly to the Core Themes.

For goals and/or objectives in this plan that are not specifically included in the accreditation framework, the College will document current status, compare that status to our future aspirations, set specific targets and milestones, and monitor over time to assess progress and/or determine changes necessary to achieve those goals.

## Process

In winter 2014, the Board of Trustees charged a Strategic Planning Steering Committee to conduct a process that would yield an updated strategic plan for 2015-2020. As it gathered information and began drafting language, the Committee sought input and feedback from students, staff, faculty, alumni, and community members in spring, summer, and fall 2014. Grounding its work in the College's mission and the Core Themes developed in Evergreen's ongoing accreditation process, drawing on insights and recommendations from additional past work (including the Curricular Visions DTF, Re-modeling Teaching and Learning at Evergreen DTF, the Long Range Curriculum DTF, and the Campus Master Plan, among others), and responding to the wide range of feedback, the Committee developed aspirations and a strategic plan to guide the institution over the next five years.

the evergreen state college

# APPENDIX J

TESC Campus Master Plan (Excerpts)

# APPENDIX J TESC CAMPUS MASTER PLAN (EXCERPTS)

As described in Section 6, TESC's "Campus Master Plan – 2014 Update" identifies renovation and expansion of Seminar I as a near-term college priority. While the three volume master plan is too large to include in total, attached are multiple references to the project found in Volume I of the document.

*This page intentionally left blank*

# THE EVERGREEN STATE COLLEGE

## Campus Master Plan - 2014 Update

VOLUME I - Site Specific Recommendations

ZIMMER GUNSUL FRASCA ARCHITECTS LLP | 2014 Update

Printed on FSC Alternative Fiber

02

# EXECUTIVE SUMMARY

PROPOSED PROJECTS

L Quad Dorm Expansion

M Driftwood Suites Housing

N Modular Replacement Housing

O Fieldhouse Pavilion Expansion

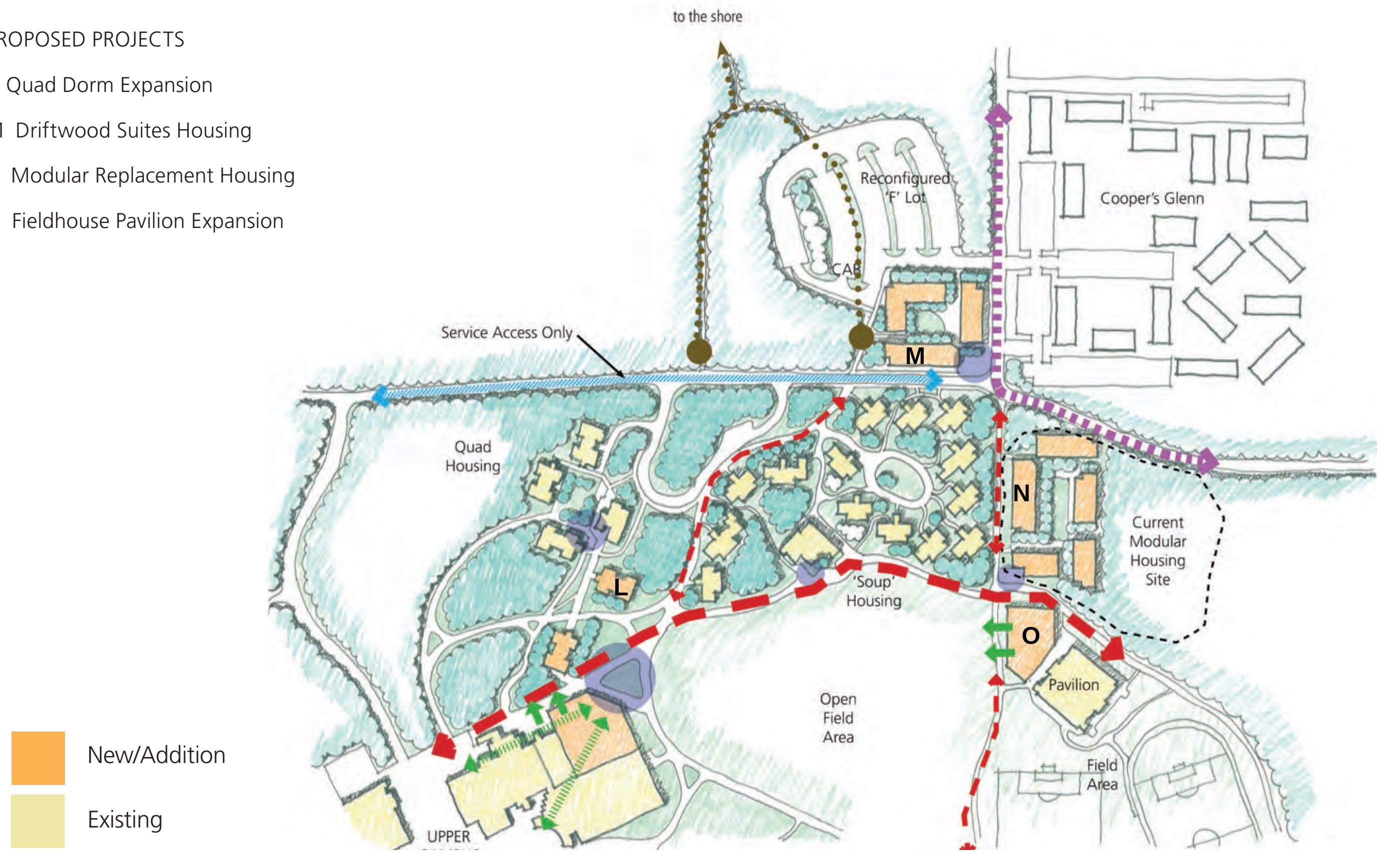



*Figure 2.12. One of the proposed housing alternatives. UPDATED*

## PROPOSED NEW BUILDINGS, RENOVATIONS AND ADDITIONS

*Figure 2.13. Additional Quad-style buildings enclosing courtyards.*

***Longhouse Expansion (Project A)***
***Completed***

**Interdisciplinary Lab Building – Alternative Site 1 (Project B)**
Floor Plate: 16,500 gsf
Total Square Footage: 2.5 floors = 41,250 gsf
Projected Uses:

- Studios/Labs/Dirty Labs
- Flexible Interdisciplinary Labs
- Faculty Offices
- Informal Learning/Meeting Spaces

**Interdisciplinary Lab Building – Alternative Site 2 (Project C)**
Floor Plate: 16,500 gsf
Total Square Footage: 2.5 floors = 41,250 gsf
Projected Uses:

- Studios/Labs/Dirty Labs
- Flexible Interdisciplinary Labs
- Faculty Offices
- Informal Learning/Meeting Spaces

***2014 Update text is bold and italicized.***

***Lecture Halls Renovation/Expansion (Project D)***
***Design 2014***

***IAC Building Projects (Project E)***
*Floor Plate: varies*
*Total Square Footage: varies*
*Projected Uses:*

- *Fiber arts studio*
- *Carving arts studio*
- *Painting arts studio*
- *Glass arts studio*

**The program identified in this predesign reflects changes in TESC needs, e.g. a stand-alone Fiber Arts Studio was recently funded by a grant from the Ford Foundation**

***Seminar I Building Renovation/Addition (Project F)***
*Floor Plate: 11,227 gsf*
*Total Square Footage: 4 floors = Approximately 44,909 gsf (5,000-7,000 gsf addition)*
*Projected Uses:*

- *Campus Police Services Offices*
- *Campus Health Services Offices*
- *Renovated Classrooms*
- *Fiber arts studio*
- *Fiber arts studio*
- *Faculty Offices*
- *General Campus Administrative Offices*
- *International Student Education First Center for International Education and Exchange*

**Communication Building Expansion *(Project G)***
Total Square Footage: 60,000 gsf (addition only)
Projected Uses:

- Performance/Lecture Space
- Conference Programs and Receptions
- Flexible Interdisciplinary Labs
- Faculty Offices

**CRC Renovation/Expansion *(Project H)***
*Predesign 2014*

***Future Building Site (Project I)***
*Identified site for possible new facility TBD*

- *Alternate site for projects B or C*

***Energy Efficiency Projects (Project J)***

***Lab I & II Projects (Project K)***
*Continues updating cycle for the Lab facilities*
*Projected Uses:*

- *renovated lab and lab support*

***2014 Update text is bold and italicized.***

**Quad Dorm Expansion (Project L)**
Total Square Footage: varies
Projected Uses:
- First and Second Year Housing

**Driftwood Suites Housing (Project M)**
Total Square Footage: varies
Projected Uses:
- Local retail space
- Student/Married Student Housing
- Potential Faculty Housing
- Visiting Scholar Housing

**Modular Replacement Housing (Project N)**
Total Square Footage: varies
Projected Uses:
- Replaces Modular Housing
- Higher Density Housing
- Eco Village Location

**Fieldhouse Pavilion Expansion (Project O)**
Total Square Footage: 13,000 gsf
Projected Uses:
- Field House activities – lockers and team rooms
- Sport Camp and Conference Services
- Light catering and flexible meeting spaces

**Goeduck House Renovation (Project P)**
Total Square Footage: 5,000 gsf
- Renovation/Updating of existing facility for small retreats
- Limit uses to minimize environmental impact

**Organic Farm Lab Facility (Project Q)**
Total Square Footage: 12,000 gsf
- Food Grade Teaching Lab
- Greenhouse
- Equipment Storage

**Terrascope Interdisciplinary Education Center (Project R)**
Total Square Footage: 12,000 gsf
- Flexible Interdisciplinary Labs
- Forest Canopy Studies Lab
- Marine Studies Lab
- Equipment Storage
- Community Education Resource Center

**Combined Housing and Campus Facilities Maintenance Building (Project S)**
Total Square Footage: 12,000 gsf
- Housing Maintenance Offices
- Campus Maintenance Offices
- Maintenance Vehicle Parking
- Maintenance Shop Space
- Maintenance Material Storage

***2014 Update text is bold and italicized.***

Funding for the various proposed projects may occur through various possible funding sources. In a time when receiving capital funding dollars from the State continues to be challenging, understanding alternative strategies for funding projects and initiatives is critical. Several various funding groupings are listed below with appropriate project types indicated to provide a sense for how many of the ideas embodied in the plan could be realized and include:

***Funding from the State continues to be limited. alternative funding approaches are encouraged and include exploring public/private partnerships and leveraging grant opportunities.***

## CAPITAL PROJECTS

Funding in this category typically supports additions, renovations and new facility projects and may include the proposed:

- Science Buildings/Renovations
- Interdisciplinary Lab Buildings
- Communications Building Renovations/Expansion
- Lecture Halls Renovation/Expansion
- Seminar I Renovations
- CAB Renovations/Additions
- CRC Renovations/Additions
- Arts Annex Renovations/Additions
- Maintenance Facilities

## MAINTENANCE PROJECTS

Funding in this category typically supports smaller projects that are targeted at supporting and maintaining existing campus facilities and grounds and may include the proposed:

### Trails

- Accessibility Improvements
- Signage/Gateway Marking
- Red Square Pavement Replacement
- Road Removals/Changes
- Reforestation Projects
- Transit Waiting Areas

***2014 Update text is bold and italicized.***

04

# EXISTING CONDITIONS

The forested areas of campus are vegetated with species representative of the Western Hemlock zones of Washington and Oregon. This land is mostly unmanaged by the College with the exception of the campus Core areas and the Organic Farm to the east. The entire campus was logged at one time along with much of the surrounding area. Today, there are regions of second growth Douglas Fir found in the eastern and southeastern Reserves between the campus Core and the Organic Farm, as well as in the northern ravine areas of the campus. The Reserve also contains a mix of other conifers such as Western Red Cedar and hardwood species such as Big Leaf Maple and Red Alder.

Wetland areas are located in all quadrants of the Reserve with extensive areas in the southeastern parts of the campus, along streams on the property, north of the meadow area next to Driftwood Road and along Evergreen Parkway. The eastern half of the Reserve is considered by many to be the least disturbed and most pristine on campus. This consists of contiguous patches of Douglas Fir and other conifers. Beach areas in the northern half of the Reserve are dominated by tidal marine plants. Campus Core landscapes are managed and consist of lawn areas, gardens along pathways, recreational field areas and identified teaching garden.

More detailed information regarding vegetation can be found in the 1998 and 2005 Campus Master Plans and in the 2006 Floristic Study located in the Appendix (Volume III).

**Seminar I's "other" designation indicates its secondary role and lack of use for instruction**

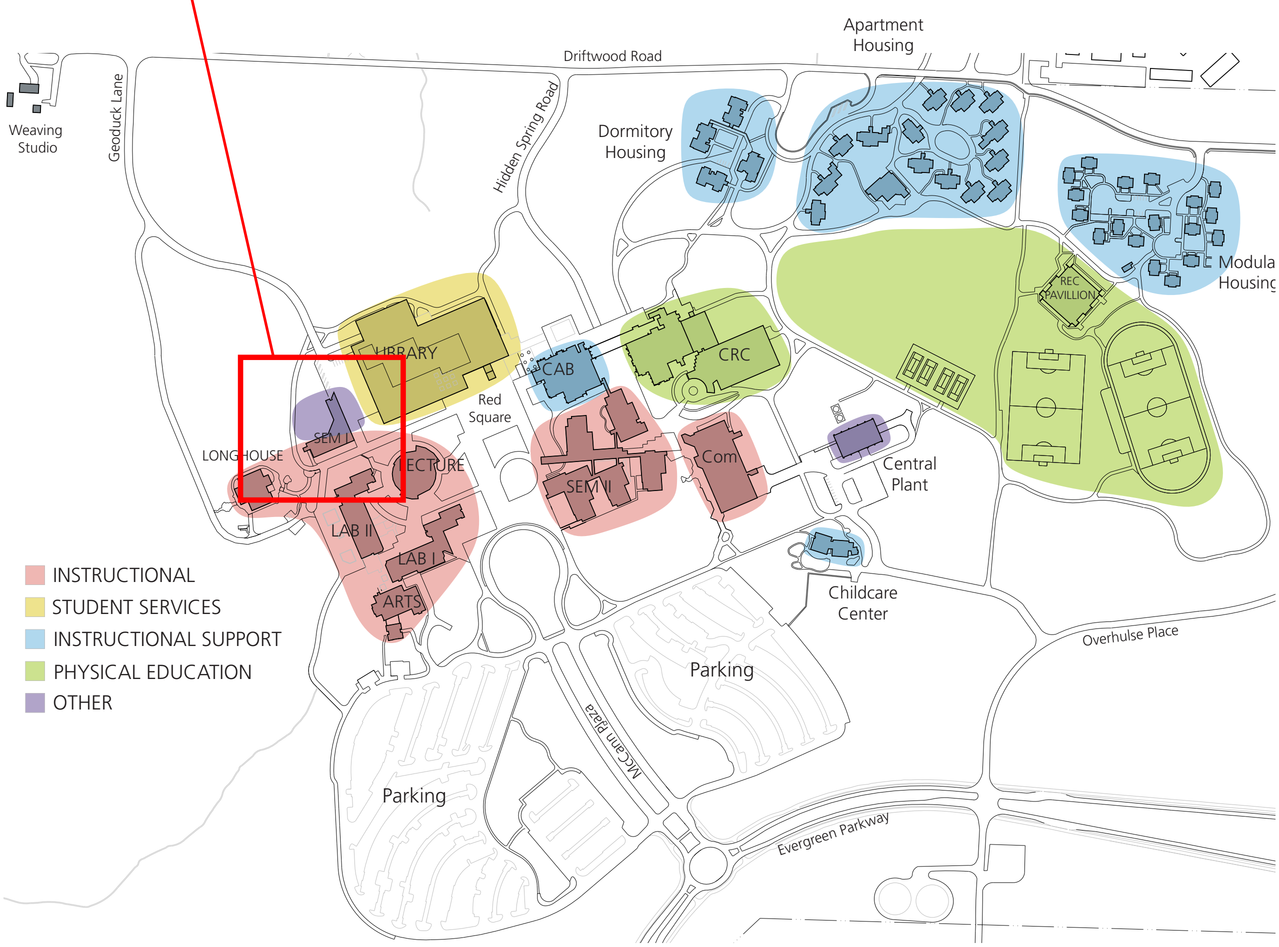



*Figure 4.2. Space and Building uses.*

***2014 Update text is bold and italicized.***

# 05

# GOALS AND OBJECTIVES

# 05 GOALS AND OBJECTIVES

*'The Evergreen State College will be a laboratory for sustainability as demonstrated in its operations, curriculum, and quality of life for employees and students. We will nurture values and practical skills that motivate a lifetime commitment to a sustainable, inter-generational, just way of living on a healthy planet.'*

*- The Evergreen State College Sustainability Task Force*


*Figure 5.1. Community.*

*Figure 5.2. Learning.*

*Figure 5.3. Sustainability.*

From the beginning of this Campus Master Plan process, the Planning Committee and consultant team understood that past master planning in 1998 and again in 2005 developed very strong foundations from which to build. Both the mission for this Master Plan and the goals listed below represent direct developments and refinements from these earlier processes. To avoid repeating much of the very thorough and descriptive documentation of both campus features and ambitions, the intent of this document and plan is to work in conjunction with the previous documents.

## MISSION

The mission of this Master Plan is to build on past efforts and focus on developing diagrams, programs and descriptive statements of ideas and projects that represent physical manifestations of the evolving vision for the campus.

Specifically, this document aims to develop a comprehensive long term capital plan for College facilities and grounds both on and off campus, establish priorities consistent with the College's mission and strategic plan, ensure that the plan reflects the unique qualities of the College and campus and builds upon the philosophical basis of past planning efforts.

The plan will help provide support for future capital budget requests, a particular focus has been placed on identifying:

- Renovations and additions
- Infrastructure improvements
- Sites for potential new facilities
- Land use/landscape policies

**Renovation of Seminar I supports all Campus Master Plan goals**

## GOALS

The following five goals represent a refinement of previously stated goals from prior master planning efforts:

- Develop state-of-the-art learning facilities and housing options that advance the mission of the College.
- Provide an open and supportive environment for those who study, work and live on campus.
- Create a visibly sustainable campus through educationally rich, proactive design, planning and goal-setting.
- Provide educational opportunities in the delivery of campus planning, operations and services.
- Integrate College educational activities with cultural, social, civic and business activities of the surrounding community.

***2014 Update text is bold and italicized.***

06

# RECOMMENDATIONS

***Sustainable Design Programs***

***Sustainable Design, as a responsive and responsible process of addressing constructed environments, has been central to the implementation of planning for sustainability at Evergreen. It's also been a prominent focus for teaching and learning. Sustainable Design programs have been a regular, and very popular part of the Evergreen Curriculum since 1999-2000. These full time, studio-based, design/build programs of 50-75 students always fill, and have waiting lists that equal or exceed the number of available seats. The numbers attest to the popularity of Sustainable Design as a regular full-time offering at Evergreen, and its importance to the recruiting and retention of students, as well as to the Curriculum as a whole. Other sustainable design-related offerings across the full time curriculum and in Evening and Weekend Studies attest to the depth of interest in sustainable design and construction across campus.***

***The design and construction of a Sustainable Building Lab – a space where students could learn different construction processes, experiment with different construction types, and build and assemble components for projects on and off campus, would provide a center for sustainable design/build construction on campus, and relieve demands on the existing wood and metals shops and studio spaces, and their staff. In their current review of the Campus Master Plan, the Campus Land Use Committee discussed several options for accommodating the development of a Sustainable Building Lab identified. Ideally, the site for this facility, with access, electrical service, and other amenities and within easy walking distance of other facilities and existing shops and studios in the Arts Annex. The new facility could serve other programs that wish to build larger-scaled 3D work – agriculture-related projects, sculpture and installation projects, etc.***

***The appendix section of the Master Plan contains additional text that represents early thinking about the location, staff needs and additional supporting elements that would help support the program development.***

**A renovated Seminar I would house the Sustainable Design programs. Provision has been made in the planning of this project for a future outdoor workyard specifically to meet Sustainable Design programs needs.**

***2014 Update text is bold and italicized.***

## STEWARDSHIP

*Figure 6.12. Trails provide recreational and educational amenities to the College and the community.*

Engendering a sense of stewardship by the students, faculty, staff and surrounding community is seen as a powerful way to ensure that the unique environmental assets of the campus are preserved, managed, maintained and treasured for future generations. Currently, the large contiguous land area that makes up the Reserve areas of the campus represents a forest system that is being surrounded by suburban development as the City of Olympia and Thurston County populations grow. Through partnerships with state, county, community, and environmental organizations there may be opportunities to address regional trail, wildlife and environmental initiatives that leverage campus assets and connect the College to a larger set of regional goals.

Connecting to or creating initiatives that link the College and community allows the campus to play a greater community role and allows the creation of programs that encourage participation in the development and preservation of the ecological resources of the campus. Trail and wildlife corridor development and maintenance could be achieved through community volunteer programs not unlike the continuing and successful evolution of the neighboring McLane Trail.

The Reserve trail system and teaching gardens within the Core of the campus are utilized as educational and recreational resources by the College and community. Currently, the College's Grounds Crew manages all campus landscapes including the Reserve. Opportunities for the use of student and community volunteers to supplement campus crews encourages participation in the active management of the campus and establishes partnerships to outside organizations and non-profits interested in restoration, native planting and other related projects. A designated Reserve outreach role could be created to coordinate community involvement and help establish opportunities for desirable partnerships.

Research and evaluation are needed to compile data on regional biodiversity and regional planning goals to identify the College's potential conservation goals. Partnerships and collaboration with regional planning efforts, land trusts and existing corridors could help to develop ways to connect these potential corridor areas to the campus ecologies. Connections to the campus loop trail system and the McLane Trail would open a valuable community corridor that would facilitate alternate modes of transportation. Partnerships with existing land trusts, land conservation easements and preserves located near the College could forge educational opportunities for students and develop environmental solutions to increased development in the area.

Specific Master Plan concepts and recommendations are described below and are grouped based upon generalized campus locations. A prioritized list of the projects is included at the end of this section.

## PROJECTED NEEDS AND RATIONALE

The recent addition of the Seminar II Building in the campus Core was originally envisioned to accommodate the current and projected classroom needs in conjunction with a series of renovations to existing facilities. The subsequent renovations have not yielded all of the projected spaces and specific needs remain unfulfilled. This section documents spaces and features that have emerged as stated needs during the initial phase of the Master Plan process. The following generalized space categories briefly describe the understanding of stated needs.

***2014 Update text is bold and italicized.***

**Renovation of Seminar I directly addresses these projected needs**

### Faculty Offices

All existing faculty office space on campus is occupied. To support projected student growth of approximately 600 FTE and maintain a 1:20 faculty to student ratio, the College will need to plan for approximately 30 additional faculty offices to meet the need of the increased faculty. Faculty offices are currently distributed around the campus often with a purposeful mixing of disciplines. Due to the distributed nature of the offices on campus, additional offices could be accommodated as existing buildings are renovated, modernized and expanded. Additionally, new facilities should be programmed to include faculty office space.

### Administrative Support Spaces

Additional administrative space will also be required to support the growth in both students and faculty. To maintain the current 1:2 faculty to staff ratio, 60 additional staff will be required. At 250 gross square feet per person, 15,000 additional gross square feet will be required. Not unlike the faculty offices, staff space is anticipated to be distributed in both new and renovated spaces.

### Faculty/Student Research Space

A shift towards more research by faculty and students is creating a need for additional research focused space. Confirming effective use of existing research space will continue to be critical. Research space needs should be evaluated on a project by project basis.

### Science Labs

Science programs anticipate a continued growth in a 'field oriented and hands-on future'. This emerging focus requires more storage and set-up space specifically designed to provide easy access for the loading and unloading of field equipment and instruments. Existing labs are in high demand and expansion will be needed as related programs grow to meet demand. Facilities at the farm do not adequately support program needs. Addressing and improving the variety and flexibility of the lab types provided on campus has been a primary focus of the planning process and facilities to support these program needs are described later in the document.

### Theater and Media Storage

Focused on needs related to the Communications Building and anticipated to be addressed as the facility is renovated, the needs include provisions for adequate equipment storage and infrastructure improvements to accommodate increasing technology, performance lighting, and power demands. Performance continues to be a vital part of many programs on campus and is seen as a continued strength of Evergreen programs. Improving and providing adequate space for performance emerged as a top priority during the planning process and is reflected in the prioritization of the Communications Building Renovation project.

***2014 Update text is bold and italicized.***

### Design Labs (Homerooms)

The number of large multipurpose, interdisciplinary, flexible spaces that provide students with project space is limited. With an increasing number of programs occurring over multiple quarters and that require 24 hour student access, the campus has struggled to find appropriate spaces to support this important need. These project focused classroom lab spaces include:

- Painting studios – current number not adequate to meet demand
- Interdisciplinary studio labs providing project and lecture support space – 'homeroom classrooms' like the one added to the top of the Communications Building
- 3D studios for visual arts, environmental studies

**Renovation of Seminar I directly addresses these projected needs**

### Student Hang-out Spaces

Creating attractive places for students to gather and meet is critical. Renovation of the CAB is anticipated to address some of this need at upper campus. Every effort should be make to ensure that student lounge spaces are included in all newly renovated or expanded facilities. This is an important element of creating an overall campus atmosphere that encourages students and faculty to interact and remain on campus beyond the set class times. Comfortable, technology connected and dispersed informal gathering spaces will contribute to the sense that the campus is an active, learning community setting. Essential to the improvements to hangout spaces will be a focus on improvements to Red Square and the creation of additional outdoor gathering spaces.

### Causal Learning Spaces

Opportunities on campus for quiet, solitary study are limited. Likewise, spaces for small group work sessions represent a growing need that is not accommodated as class assignments focus on team oriented projects and assignments. Both sorts of spaces should be included in the programming of all new buildings, renovations or additions. Emphasis should be placed on ensuring that there is adequate access to technology to create useful and highly functional spaces for study and interaction.

*Figure 6.13. The Longhouse and the adjacent ethno-cultural garden are campus landmarks and focal points for Reservation-based programs.*

***2014 Update text is bold and italicized.***

## PROPOSED ACTIONS, NEW BUILDINGS AND ADDITIONS

### Red Square

As defined in the original master plan, Red Square is the central gathering place for the College. In this role Red Square functions as a 'great stage' for campus activities and major graduation venue. However, Red Square was scaled for an institution expected to reach 12,000 students, rather than a 5,000 student liberal arts college. Red Square should be scaled down, made more accessible and integrated with surrounding land uses. Uses surrounding Red Square should reflect the Mission and Strategic Plan of the College and interact with the public open space. Flexible, indoor/outdoor space should front on the square. Library and CAB activities should be encouraged to have greater transparency - visual connection - from and to Red Square.

#### PROPOSED PROJECTS

A Longhouse Addition (Completed)

B Interdisciplinary Lab Building -Alternate Site 1

C Interdisciplinary Lab Building -Alternate Site 2

D Lecture Halls Renovation/Expansion (Design 2014)

E IAC Building Projects

F Seminar I Building Renovation

G Communication Building Expansion

H CRC Renovation/Expansion (Predesign 2014)

I Future Building Site

J Energy Efficiency Projects

K Lab I & II Projects

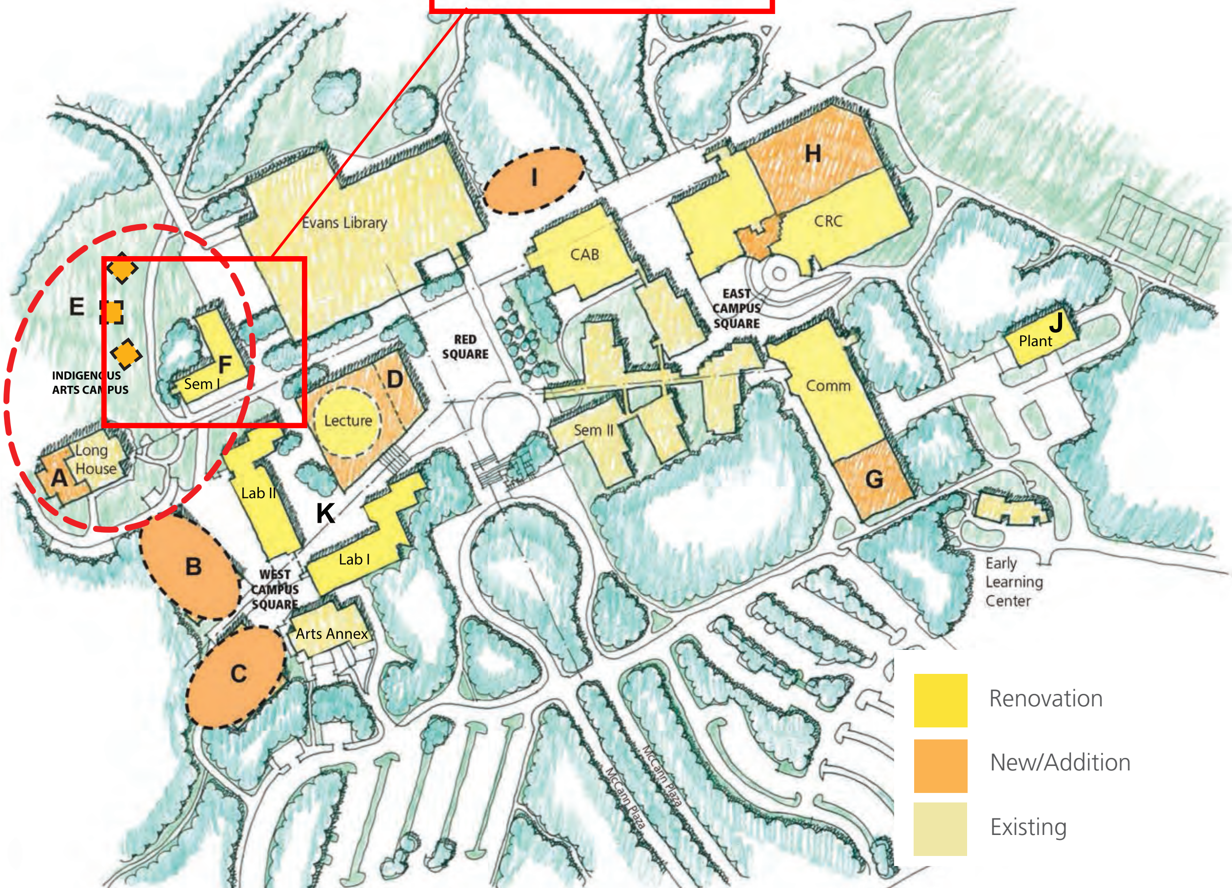



*Figure 6.15. Upper campus proposed projects. UPDATED*

***2014 Update text is bold and italicized.***

## PROJECTS AND RENOVATIONS

| BIENNIA | Proposed Capital Projects | Maintenance Projects | Special Projects |
|---|---|---|---|
| 2013-2015 | **Lecture Hall (Design)**<br>*Currently in Design* | **Minor Works Program Projects**<br>*Various Small Projects* | **Fiber Arts Studio (Design)**<br>*IAC - Grant Funded* |
| | **Lab II Renovation (Design and Construction)**<br>*2nd floor* | **Preservation/Infrastructure Projects**<br>*Various Small Projects* | **CRC Renovation (Predesign)**<br>*Student Fee Funded* |
| | **Lab I Renovation (Design)**<br>*Basement* | | **Longhouse MP (Planning)**<br>*Indigenous Arts Campus (IAC)* |
| | | | **Playing Fields Upgrades** |
| | | | **Residence Halls Renovation/Expansion** |
| 2015-2017 | **Lecture Hall (Construction)**<br>*Currently in design* | **Minor Works Program Projects**<br>*Various Small Projects* | **Student Life Enhancements**<br>*Projects TBD* |
| | **Seminar I Renovation (Predesign)**<br>*Provides space or MFA in Indigenous Arts* | **Preservation/Infrastructure Projects**<br>*Various Small Projects* | **CRC Renovation (Design and Construction)**<br>*Student Fee Funded* |
| | **Lab I Renovation (Construction)**<br>*Basement* | **Safety and Security - Phase I** | **Fiber Arts Studio (Construction)**<br>*IAC - Grant Funded* |
| | | | **Purchase of Tacoma Campus Facility** |
| | | | **Residence Halls Renovation/Expansion** |
| 2017-2019 | **Seminar I Renovation (Design)** | **Minor Works Program Projects**<br>*Various Small Projects* | **Student Life Enhancements**<br>*Projects TBD* |
| | **Interdisciplinary Lab Building (Predesign)**<br>*Studio Lab Spaces* | **Preservation/Infrastructure Projects**<br>*Various Small Projects* | **Visiting Faculty Housing** |
| | **Central Plant/Alt. Energy System (Design)** | **Safety and Security - Phase II** | **Glass Arts Studio (Design)**<br>*IAC* |
| | **Lab I Upgrade Phase I (Design and Construction)**<br>**Seismic and HVAC** | **Sustainable Building Sciences Lab** | **Geoduck House** |
| | | | **Residence Halls Renovation/Expansion** |
| 2019-2021 | **Seminar I Renovation (Construction)** | **Minor Works Program Projects**<br>*Various Small Projects* | **Student Life Enhancements**<br>*Projects TBD* |
| | **Interdisciplinary Lab Building (Design)**<br>*Studio Lab Spaces* | **Preservation/Infrastructure Projects**<br>*Various Small Projects* | **Glass Arts Studio (Construction)**<br>*IAC* |
| | **Central Plant/Alt. Energy System (Construction)** | **Safety and Security - Phase III** | **Athletic Fields Pavilion Renovation** |
| | **Lab II Upgrade Phase I (Design and Construction)**<br>*Seismic and HVAC* | **Consolidated Maintenance Facility**<br>*Design* | **Residence Halls Renovation/Expansion** |
| | | | |
| 2021-2023 | **Communications Building Expansion (Predesign)**<br>*Provides Theater Space* | **Minor Works Program Projects**<br>*Various Small Projects* | **Student Life Enhancements**<br>*Projects TBD* |
| | **Interdisciplinary Lab Building (Construction)**<br>*Studio Lab Spaces* | **Preservation/Infrastructure Projects**<br>*Various Small Projects* | **Residence Halls Renovation/Expansion** |
| | **Lab I Upgrade Phase II (Design and Construction)**<br>*Seismic and HVAC* | **Consolidated Maintenance Facility**<br>*Construction* | |
| | | | |
| | | | |
| 2023-2025 | **Communications Building Expansion (Design)**<br>*Provides Theater Space* | **Minor Works Program Projects**<br>*Various Small Projects* | **Student Life Enhancements**<br>*Projects TBD* |
| | **Lab II Upgrade Phase II (Design and Construction)**<br>*Seismic and HVAC* | **Preservation/Infrastructure Projects**<br>*Various Small Projects* | **Residence Halls Renovation/Expansion** |
| | **Seminar II Renovation**<br>*Predesign* | | **Campus Children's Center Renovation** |
| | | | |
| | | | |

**This proposal supports the timeline identified in this Campus Master Plan**

***Indicates added projects as part of the Campus Master Plan - 2014 Update***

*Table 6.3 Capital Budget Plan Vision UPDATED*

***2014 Update text is bold and italicized.***

## OFF-CAMPUS FACILITIES RECOMMENDATIONS

### Tacoma Campus

*Figure 6.29. Murals by African artists reflect ethnic and cultural diversity at the Tacoma campus.*

The Tacoma program is committed to providing an interdisciplinary, reality-based, community-responsive liberal arts education. It is preparatory for careers and future studies in community development, organizational development, law and public policy, education, social and human services, public administration, communication and media arts, environmental studies and public health.

Current enrollment is 225 students. Enrollment is exclusively third and fourth year students who have completed two years at community college (Tacoma Community College Bridge Program) or vocational schools, such as Bates and Clover Park Technical Colleges. Currently, three quarters of the students are women. The faculty has grown from four to seven plus two adjunct faculty.

The College is actively seeking faculty of color. Minority students make up a significant percentage of the demographics. The décor of the Tacoma campus reflects its cultural diversity. A mural by African artists graces the main entry. The College at its current location is contributing to the revitalization of the Hilltop neighborhood, a predominantly Afro-American neighborhood.

The existing Tacoma program is located on a full block site in a two story brick and stucco building of recent construction. The facility is accessible and contains the following facilities: lobby, four seminar rooms, wet lab, a large multi-purpose room with four adjacent faculty offices, central administration offices and conference room, work room and storage space. Parking and public transit facilities are adequate.

The existing facility has been designed to allow for the addition of a third floor. Given current enrollment levels, expansion of the facility is not anticipated at this time. Currently the College is negotiating an extension to the current 10 year lease.

***The Tacoma Campus building is anticipatedto be acquired by the College in near future.***

### Reservation Based/Community Determined Program

The Reservation Based/Community Determined Program began in 1989. Classes are only for third and fourth year students with the Grays Harbor Community College Bridge program preparing the majority of the students.

Currently six tribes participate in the program (Makah, Muckleshoot, Nisqually, Port Gamble S'Kallam, Quinault and Skokomish). Classes are taught at the following locations: Quinault, Muckleshoot, Nisqually, Lower Elway, Port Gamble and Skokomish. Four Saturdays per quarter all the students in the program (TESC/Grays Harbor interface) attend classes in the Longhouse on The Evergreen State College main campus. Four classrooms (20 students each) are used in the Longhouse at this time. The kitchen at the Longhouse is used extensively during Saturday classes and traditional tribal meals are served to students and faculty.

***2014 Update text is bold and italicized.***

The Tribal Councils are actively involved in overseeing the program and classes taught and have a 'government to government' agreement with Evergreen on the respective responsibilities of the program.

The Longhouse and adjacent Ethnobotanical Garden on Evergreen main campus are central to the program. The design and construction timbers used in the Longhouse were donated by the tribes. There is a cleansing ceremony at the Longhouse at the beginning of each Saturday program. A separate graduation ceremony for the program with active participation of alumni of the program occurs each year at the Longhouse.

Currently there are 80 students in the program (35 Evergreen and 45 Grays Harbor). The program is expected to double in size, at which point, the Longhouse might be used eight Saturdays per quarter.

An expansion is currently planned for the Longhouse to provide additional classrooms, offices, storage and student display space.

***The Longhouse programs continue to experience growth and are evolving into a campus created through the gathering of new buildings adjacent to the Longhouse and Seminar I facilities. The programs are now part of the Indigenous Arts Campus (IAC) and the updated Master Plan includes several anticipated projects that are being supported through grant funding opportunities.***

***Continued development and support of the programs related to the IAC are anticipated to occur as part of the re-envisioned Seminar I Renovation project. The renovation of Seminar I offers the opportunity to leverage the existing building to develop IAC supporting spaces adjacent to the studio structures currently being added. Additionally, the new program activities provide an added use to the Seminar I building offering enhanced activity in this area of campus.***

**This project directly aligns with Longhouse goals.**

***2014 Update text is bold and italicized.***

# APPENDIX K

Space Tabulation Summary

# APPENDIX K SPACE TABULATION SUMMARY

The attached spreadsheet, developed during programming sessions held with each building occupant, demonstrates that the proposed scope of work (totaling 41,250 gsf) is aligned with stated need.

*This page intentionally left blank*

the evergreen state college

SCHREIBER STARLING WHITEHEAD ARCHITECTS

# Seminar I Pre-Design

June 30, 2016

| Space Name | (ASF) | Quantity | Total ASF | Comments |
|---|---|---|---|---|
| **Arts & Science Classrooms & Labs** | | | | |
| Classroom Lab. | 2,500 | 4 | 10,000 | 50 Student Capacity |
| Break-out Room | 275 | 4 | 1,100 | 5-10 Students with instructor |
| Lab. Storage & Prep. | 200 | 4 | 800 | |
| Lab. Assistant Office | 100 | 3 | 300 | |
| Art Critique Space | 1,000 | 1 | 1,000 | |
| Computer Lab. | 900 | 1 | 900 | |
| Studio Classroom | 900 | 1 | 900 | |
| Longhouse Storage | 250 | 1 | 250 | |
| | | subtotal nsf | 15,250 | |
| Circulation, Walls & Support Allowance | | 40% | 6,100 | |
| Program Subtotal (gsf) | | | 21,350 | |
| **Reservation Based Instruction** | | | | |
| Reception, waiting and administration | 400 | 1 | 400 | |
| Faculty Office | 120 | 2 | 240 | |
| | | subtotal nsf | 640 | |
| Circulation, Walls & Support Allowance | | 40% | 256 | |
| Program Subtotal (gsf) | | | 896 | |
| **Police Services** | | | | |
| Lobby | 400 | 1 | 400 | 24/7 access, transaction counter, storage for electronic keys |
| Reception | 150 | 1 | 150 | |
| Food Bank | 64 | 1 | 64 | |
| Adminstration Support | 120 | 1 | 120 | Copier, shredder, office supplies and files |
| Conference / Training Room | 300 | 1 | 300 | |
| Chief Office | 150 | 1 | 150 | |
| Lieutenant Office | 120 | 1 | 120 | Future need |
| Sargeant Office | 120 | 2 | 240 | |
| Administrative Assistant | 120 | 1 | 120 | |
| Dispatch | 380 | 1 | 380 | (3) 80 sf. workstations with dedicated equipment room, coat closet, and coffee bar. |
| Staff Toilet | 64 | 1 | 64 | |
| Visitor Toilet | 64 | 1 | 64 | |
| Patrol Locker Room | 400 | 2 | 800 | With lockers, equipment storage, charging stations, shower/toilet |
| Patrol Officer Workstations | 480 | 1 | 480 | 6 workstations |
| Service Vestibule | 120 | 1 | 120 | Weapons clearing, mudroom |
| Custody Processing | 225 | 1 | 225 | Interview room and victim support |
| Evidence Room | 150 | 1 | 150 | |
| Found Property Storage | 150 | 1 | 150 | |
| Break Room / Kitchen | 200 | 1 | 200 | Counter, sink, refrigerator, range and microwave required |
| Trap | 60 | 1 | 60 | |
| Holding | 100 | 3 | 300 | |
| Uncuffing | 160 | 1 | 160 | |
| Interview Room | 120 | 1 | 120 | |
| Sally Port | 350 | 1 | 350 | |
| Secure Bicycle and Segway Storage | 150 | 1 | 150 | Not included in area calculations for renovation |
| Secure Vehicle Yard | 1,500 | 1 | 1,500 | Not included in area calculations for renovation |
| | | subtotal nsf | 5,437 | |
| Circulation, Walls & Support Allowance | | 40% | 2,175 | |
| Program Subtotal (gsf) | | | 7,612 | |

## Parking Services

| | | | | |
|---|---|---|---|---|
| Lobby & Waiting | 300 | 1 | 300 | |
| Service Counter | 150 | 1 | 150 | Secure counter required |
| Director's Office | 150 | 1 | 150 | |
| Adminstrative Assistant Office | 120 | 1 | 120 | |
| Enforcement Officer Offices | 120 | 2 | 240 | |
| Small Meeting Room | 200 | 1 | 200 | |
| Break Room | 200 | 1 | 200 | Counter, sink, refrigerator, range and microwave required |
| Staff Toilet Room | 64 | 1 | 64 | |
| Storage | 100 | 1 | 100 | |
| Secure Storage | 50 | 1 | 50 | |
| Commuter Lockers | 100 | 1 | 100 | |
| Vehicle Storage | 250 | 1 | 250 | Not included in area calculations for renovation |
| | | subtotal nsf | 1,674 | |
| Circulation, Walls & Support Allowance | | 40% | 670 | |
| Program Subtotal (gsf) | | | 2,344 | |

## Faculty Offices & Support

| | | | | |
|---|---|---|---|---|
| Faculty Offices | 120 | 12 | 1,440 | |
| Faculty Studio / Research | 200 | 4 | 800 | |
| Small Meeting Room | 240 | 1 | 240 | |
| Administration Assistant Office | 120 | 1 | 120 | |
| Break Room | 200 | 1 | 200 | |
| Work Room | 100 | 1 | 100 | |
| Storage | 150 | 1 | 150 | |
| Student Lounge | 800 | 3 | 2,400 | |
| | | subtotal nsf | 5,450 | |
| Circulation, Walls & Support Allowance | | 40% | 2,180 | |
| Program Subtotal (gsf) | | | 7,630 | |

## Study Lounge / Advancement Support

| | | | | |
|---|---|---|---|---|
| Study Lounge / Advancement Support | 550 | 1 | 550 | |
| Supervisor Office | 120 | 2 | 240 | |
| Lounge / Break Room | 300 | 1 | 300 | |
| Storage | 50 | 1 | 50 | |
| | | subtotal nsf | 1,140 | |
| Circulation, Walls & Support Allowance | | 40% | 456 | |
| Program Subtotal (gsf) | | | 1,596 | |

| | |
|---|---|
| TOTAL NSF | 29,591 |
| TOTAL GSF | 41,427 |

## Health Clinic

| | | | | |
|---|---|---|---|---|
| Waiting | 180 | 1 | 180 | 12 seat capacity; separate seating for sick patients |
| Reception / Registration | 120 | 1 | 120 | 2 workstations |
| Triage Room | 80 | 1 | 80 | |
| Exam Room | 120 | 6 | 720 | |
| Minor Procedure / Injection Room | 100 | 1 | 100 | |
| Patient Toilet Room | 64 | 1 | 64 | |
| Blood Draw | 80 | 1 | 80 | |
| Medication Room | 80 | 1 | 80 | |
| Laboratory | 100 | 1 | 100 | Includes instrument processing |
| File Storage | 80 | 1 | 80 | |
| Medical Asst. Workstation | 48 | 4 | 192 | |
| Provider Office | 100 | 2 | 200 | |
| Director Office | 120 | 1 | 120 | |
| Meditation / Reflections Room | 120 | 1 | 120 | |

| | | | | |
|---|---|---|---|---|
| Clean Supply Storage Room | 120 | 1 | 120 | |
| Soiled Utility Room | 80 | 1 | 80 | |
| Laundry Room | 120 | 1 | 120 | |
| Staff Break Room | 180 | 1 | 180 | |
| Staff Toilet Room | 64 | 1 | 64 | |
| | | subtotal nsf | 2,800 | |
| Circulation, Walls & Support Allowance | | 40% | 1,120 | |
| Program Subtotal (gsf) | | | 3,920 | |

Counseling Center

| | | | | |
|---|---|---|---|---|
| Waiting | 120 | 1 | 120 | Seating for 10 |
| Reception | 100 | 1 | 100 | 2 workstations |
| Triage Room | 80 | 1 | 80 | |
| Counselor Office | 120 | 7 | 840 | |
| Group Room | 350 | 1 | 350 | 12 seat capacity |
| Patient Toilet Room | 64 | 1 | 64 | |
| Intern & Student Workstation | 48 | 8 | 384 | |
| File Room | 96 | 1 | 96 | |
| Supplies Storage Room | 80 | 1 | 80 | |
| Project Room | 350 | 1 | 350 | |
| Staff Toilet Room | 64 | 1 | 64 | |
| | | subtotal nsf | 2,528 | |
| Circulation, Walls & Support Allowance | | 40% | 1,011 | |
| Program Subtotal (gsf) | | | 3,539 | |

Office of Sexual Violence Prevention

| | | | | |
|---|---|---|---|---|
| Waiting | 96 | 1 | 96 | Seating for 4 |
| Counselor Office | 120 | 2 | 240 | |
| Work Room | 240 | 1 | 240 | Includes student workstations & reception |
| | | subtotal nsf | 576 | |
| Circulation, Walls & Support Allowance | | 40% | 230 | |
| Program Subtotal (gsf) | | | 806 | |

| | |
|---|---|
| TOTAL NSF | 5,904 |
| TOTAL GSF | 8,266 |

SSW ARCHITECTS

SCHREIBER
STARLING
WHITEHEAD

901 FIFTH AVE Nº 3100
SEATTLE, WA 98164
206-682-8300
SSWARCHITECTS.COM