



FACILITIES PLAN TECHNICAL REPORTS
Capital Projects

Portland Community College

Facilities Master Plan - Phase 1

01 – Health Professions / IPT Building and IT Office Location

Capital Improvements Cost Estimate

December 15, 2016

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Introduction

Portland Community College (PCC) will be looking to expand its continuing education program with the addition of the Health Professions / IPT Building at the CLIMB Center. The first three floors of this four-story building will include state-of-the-art simulation labs that allow students to focus on Crew Resource Management. This will teach students to optimize crew performance by reducing human error by preparing students to collaborate more effectively. The expectation is PCC's various healthcare programs will be able to simulate several real-life scenarios in which the student will be asked to respond to. These simulation labs will contain AV equipment that will document the simulations and will be reviewable with both the instructor and the student.

The fourth floor will be reserved for the IT department and will include open office space, private offices, meeting rooms and required support spaces. This floor has been programmed for roughly fifty staff members and the parking lot will include reserved spaces for PCC owned vehicles.

Zoning

General Employment 2 with the scenic overlay (EG2s). College Use is allowed by right. Office Use is limited. The net square footage of the office use cannot exceed the square footage of the site (33.140.100.B(3)). The large site size in this case makes the limitation irrelevant.

The site is located in Central Eastside subdistrict (Parking Sector 4) and Employment Opportunity Subarea of the Central City Plan District.

SE Water is a City Bikeway and a Major Transit Priority Street. The site is not in a Pedestrian Zone.

Scenic overlay: This overlay is only present on a small portion of the site at the south end of the property, away from proposed development. This is to preserve a view from SE 3rd Avenue towards the river.

Maximum Height: None

FAR: 3:1

Setbacks: 25 feet from street lot line (subject to setback averaging with existing structure)

Transit Street Maximum Setback: None

Parking. At this site, the Central City Plan District parking regulations supersede those of 33.266. These are extremely complicated and cumbersome as they divide the Central City into a number of parking districts and sectors, and then classify parking into 7 categories with different rules that apply in each case. Because the development on the site is fairly new, the existing parking on the site is likely classified as Growth Parking and will be subject to maximums per 33.510.265. There is no minimum parking per 33.510.265.F(1).

Parking Lot Landscaping requirements will need to be met and if possible, manage stormwater on-site.

Bicycle Parking will be required per Table 266-6, and for an education building this size, the minimum would be 4 long-term and 4 short-term spaces.

Future Zoning: Central Employment (EX) will take effect in 2nd Quarter 2018 and eliminates the limitation on office and retail uses but decreases the base FAR to 2:1 and restricts the height to 100'. However, bonuses for both height and FAR may be available.

Transportation

The new Health Professions / IPT Building will be located on the CLIMB campus which is conveniently located near light rail, street car, bus stops, and multi-use paths. The following components need to be discussed and/or evaluated related to transportation:

- Inventory of parking loss due to new building
- Details regarding use of Portland Department Commissions (PDC's) planned parking structure
- Access to light rail, street car, and bus
- Incorporating high use of alternate modes such as walking and biking

Access to infrastructure for biking, walking, and transit is great near the CLIMB center. However, the parking is already limited for the current usages. Due to the building's location, some students use the parking lot to leave their cars and ride transit to downtown areas resulting in more constraints on the already constrained parking lot.

There are currently discussions with PDC to utilize their proposed new parking structure. This may provide adequate parking, but an appropriate agreement needs to be set-up to minimize the likelihood of PCC losing the parking spaces to other PDC's needs, similar to the worries currently occurring with the church parking at the Southeast Campus not renewing their lease.

The additional building to the current CLIMB center may require a traffic impact study, if not required it is still recommended to conduct a study to evaluate the potential transportation issues associated with the new building. A traffic study would include evaluation to verify that the number of parking spots meet Portland Bureau of Transportation's (PBOT) guidelines. It will also include evaluation of operations on the surrounding street network. It is anticipated that due to the location of the building and PBOT's goals for mode splits, that PBOT will not require major street network improvements.

Currently there is good access between all three transit services near the building site: light rail, street car, and bus. It may be valuable to consider more subsidized options or better communication at this site to encourage a higher than typical percentage of transit use due to its location.

Similar to transit, biking and walking infrastructure in the surrounding area is better than average. However, with more structure and more people attending this site, additional on-site infrastructure to support biking and walking should be provided. This may include but is not limited to additional showers, additional bike storage, and additional lockers for personal belongings to be stored.

As for the standard transportation-related concern of congestion, it is not anticipated that PBOT will require any improvements to surrounding street networks to minimize congestion issues. However, on-site circulation and connection between the PDC parking garage and the current parking lot should be evaluated to help minimize congestion issues exiting and entering the site. This is anticipated to also improve the performance of the IT ambulances.

The overall evaluation work for this site would include coordination between PBOT and TriMet and is anticipated to less than \$50k worth of effort. It is assumed some of the work occurring with this overlaps with the current PCC Master Plan work being conducted separate from this. The overall construction work is anticipated to include:

- Additional bike lockers
- Bike storage
- Shower/locker room areas
- Sidewalks/multi-use paths on and off-site

Site

On-site landscape improvements at the existing CLIMB Center site are defined by the public r.o.w. of SE Clay St. to the west, the public r.o.w. of SE Water Ave to the south, the western property line of the existing OMSI property to the east, and the existing railroad track r.o.w. to the north. Site improvements anticipate continued use of the service drive entry off SE Clay as well as the two entry drives off SE Water Ave. Site improvements will be largely sited in the western half of the campus but impacts from construction staging in the eastern half of the existing landscape should be anticipated with possible impacts on existing vegetation, hardscape and storm water facilities.

General site improvements associated with building expansion will include modification of existing parking and vehicular circulation, addition of an enhanced entry courtyard accommodating multiple building entries and providing space for student and staff respite, an outdoor simulation area incorporating diverse ground plane materials and a covered pedestrian walkway facilitating pedestrian circulation between buildings. Landscape areas will include r.o.w. streetscape planting, perimeter landscape, interior parking lot landscape, bioswale planting and ornamental planting at entry plazas and building perimeters.

Parking Lot and Site Access

- Portland Development Commission (PDC) will be constructing a parking structure nearby. PCC has expressed interest in a partnership with PDC to utilize this additional structure.
- New building structure/addition, covered walkway, SIM area/plaza, and loading dock will require sawcut and removal of existing asphalt pavement.
 - o New building structure/addition, covered walkway, SIM area/plaza, and loading dock will require sawcut and removal of existing asphalt pavement.
- Existing driveways and access points to the site appear to be sufficient.
- ADA accessibility will need to be evaluated and may require additional removal of pavement and re-grading.
- Install bike parking facilities to meet LEED requirements.

Utilities

- Stormwater:
 - o The proposed re-development will require compliance with City of Portland's 2016 Stormwater Management Manual (SWMM).
 - o It is our understanding/assumption that the existing parking lot has water quality treatment provided through existing vegetated swale facilities.
 - o New vegetated water quality and water quantity facilities will be required to handle the new building roof, covered walkway, or any other impervious surfaces that cannot be conveyed to the existing water quality swales.
 - o There are existing public storm mainlines in both Clay St and Water Ave. At this point, no new connections to these systems are anticipated.
- Sanitary Sewer:
 - o The proposed building/addition may connect internally to the existing building's sanitary sewer (per MEP). Otherwise, a new connection to the public sanitary sewer in Water Ave may be required.

- Water and Fire Service:
 - o The proposed building/addition may connect internally to the existing building's domestic water and fire service (per MEP). Otherwise, new service lines for both domestic water and fire service will need to be provided to the new building. There is an existing fire hydrant at the intersection of Clay St and Water Ave, and midblock on Water Ave to the south that may satisfy fire hydrant coverage.
 - o The existing water meter for the CLIMB building may not be adequate for the proposed development. This meter may need to be upsized, requiring additional System Development Charges (SDC) to be paid.
- Power, Gas and Telecom:
 - o It is assumed that the existing site has adequate power, gas and telecom services to supply the proposed development. MEP to confirm as design progresses.

Entry Courtyard

The Entry Courtyard will incorporate high quality materials such as unit pavers or other specialty surfacing, custom seating, raised concrete planter beds, specimen trees (3+ inch caliper) and ornamental planting. This courtyard will serve as both a gateway to the buildings and a multi-functional space for both relaxation and outdoor events.

The Entry Courtyard will also incorporate a lightweight metal and glass canopy along the new building's southern exposure, creating an inviting covered walkway facilitating pedestrian circulation from the parking lot to the building entries.

Outdoor Simulation Area

The intent of the Outdoor Simulation Area is to provide an area where students can practice techniques on a variety of ground surfaces. This area will include surfaces such as gravel, turf, tactile pavers and wood or composite decking to allow students to practice moving gurneys and transferring patients in a variety of conditions. This area will be an outdoor teaching environment with concrete seatwalls and easy access from classroom settings.

IT Fleet Parking, Ambulance Bay, Service (trash/recycling)

Parking and vehicular circulation for the Ambulance Bay, IT fleet and trash service will be located north of the building expansion site, taking advantage of the service drive off SE Clay and limiting potential conflicts with campus pedestrians. Enhancement of existing perimeter tree and shrub planting for screening, as well as possible enclosure of trash facilities, is likely.

Hardscape Areas

Pedestrian circulation will be promoted by maintaining both primary r.o.w. sidewalks and secondary pedestrian sidewalks connecting the Entry Plaza, Outdoor Simulation Area, parking areas and streetscape along both SE Clay St. and SE Water Ave.

Tree Preservation and Protection

Existing site trees, including those in adjacent r.o.w., greater than 2 inch caliper will be reviewed by a certified Arborist to assess state of trees affected by project development prior to design of the project.

Arborist report will form the basis for generation of a Tree Root Protection Zone (TRPZ) document per PCC Capital Project Standards. All trees to remain will be protected during construction per City of Portland standards.

Soil Preparation

Native top soil and base soil analysis to be completed by a certified soil laboratory prior to design of the project. Associated soil report, including both chemical and physical properties of the soil, to serve as the basis for subsequent soil amendment requirements as needed. Soil preparation to meet the following PCC Capital Project Standards:

- Where imported topsoil is needed, chemical and textural analysis of topsoil and organic amendments is mandatory.
 - o Testing is to be performed by a PCC pre-approved testing agency. Owner's Representative to provide contact information.
 - o Soil Report and adjustment recommendations must be reviewed and approved by Owner's Representative prior to final Bid Document preparation.
- Subgrade is to be aerated prior to final soil placement and planting.
- Mechanical tillage under existing tree canopies is not accepted. Use approved hand methods only.
- Existing native soil and imported soils are to be free of noxious weeds: horse tail; oxalis; morning glory; thistle; etc.
- Amended Topsoil Depths:
 - o Lawns: Provide 12" depth minimum
 - o Shrub and ground cover areas: Provide 18" depth minimum
 - o Tree pits: Provide shallow area of compacted backfill below rootball to reduce settlement.
- Planting beds and lawn areas to be filled with pre-mixed amended topsoil in lifts not to exceed 8" unless approved otherwise by Owner's Representative.
- All amended topsoil areas to be rolled to achieve compaction of maximum 85% proctor.
- Top Soil Suppliers:
 - o S+H Logging
 - o ProGrow
 - o Mt. Scott Fuel
- Bioswale and retention ponds are excluded from these provisions.

Planting

Planting in the public r.o.w. will adhere to City of Portland standards, with plantings selected from approved City of Portland Plant Lists. All campus planting shall be per PCC Capital Project Standards including:

General

- Materials likely to require excessive maintenance shall be avoided.
- Wherever possible, and appropriate, plant materials are to be used to screen uses such as parking lots and service areas to soften the visual impact.

- Avoid using monoculture plantings as formal hedges.
- Natural plantings are to be used as much as possible for sun shading.
- Choose plantings that do not shed onto the building surface or into building systems.
- Coordinate site planting with site lighting.

Vegetation on campus is to be planted and managed in a way that does the following:

- Avoids damage to buildings.
- Eliminates conditions which contribute to personal safety hazards.
- Reduces susceptibility to pest infestation.
- Minimizes reliance upon the use of pesticides.
- Contributes to the aesthetic quality and enjoyment of the campus as a whole.
- Allow for maintenance of building exterior.

Tree Locations:

- To avoid debris falling into air intakes tree species and locations require special consideration, avoiding deciduous or excessively messy tree varieties.
- Tree placement should be considered as energy conservation measures on SW exposures from sun and wind.
- Trees with fruiting bodies shall not be planted at hardscapes or entries; such as crab apples or hawthorns.
- Trees shall not be planted so close to buildings that maintenance issues such as the following become an ongoing issue; clogged gutters, discolored exterior walls and walking surfaces, plugged air intakes.
- Use large basalt gravel at tree pits.
- Avoid use of metal tree grates at individual tree pits in paved areas.

On-site planting will consist of a palette largely adapted to Pacific Northwest growing conditions. Tree plantings in paved areas will use large basalt gravel at the tree pits. Silva Cells to be provided for specimen trees in formal hardscape plazas. All specimen trees will be field tagged.

Woody shrub material intended for perimeter screening and ornamental planting at the Entry Plaza will be installed as 5 gallon containers. Plant material for interior parking areas and storm water facility perimeter planting to be 2 to 5 gallon containers. Storm water basin plantings and groundcover plantings to be 1 gallon containers.

All planting areas will receive 2” depth organic mulch and will be fully irrigated.

Irrigation

All site irrigation will integrate a high efficiency delivery system and meet the following PCC Capital Project Standards:

- Provide separate water meter including all required backflow prevention devices, flow meters, master valves, etc. for irrigation system.
- Where code allows, provide below grade double check valve in lieu of above grade reduced pressure backflow devices.

- All expanded campus systems are to be contiguous with existing Maxicom controlled system and complete with remote controls, flow sensors, rain gauges and master valve controls.
- Independent Irrigation Audit is required at the completion of all projects.
- All mainline runs are to be laid straight without arc.

Site Furnishings

Site furnishings should meet or exceed requirements per the PCC Capital Project Standards including the following:

- Benches to be of sturdy construction with materials that integrate with the surrounding site elements.
- Benches, chairs and tables to allow for maximum flexibility of user including seating for ADA accessibility both in placement and in bench design.
- New benches to match existing where appropriate.
- Paint color for all metal components of site furnishings is to be:
- Paints: Black, Powder coat

Site furnishings should be assumed to be high quality, commercial grade products supplied by the following manufacturers or approved equal:

- Landscape Forms; www.landscapeforms.com
- Forms + Surfaces; www.forms-surfaces.com
- Victor Stanley; www.victorstanley.com

Provide an allowance for custom wood/concrete benches and/or sculptural manufactured site furnishings at Entry Plaza. Seatwalls and site benches to provide permanent opportunities for year-round seating at all primary gathering spaces. Provide allowance for moveable café style furnishings, such as tables and chairs, at areas with contiguous interior/exterior space and suitable program function.

Bike racks to be provided per City of Portland standard where included in r.o.w.. Provide bicycle parking near, but not directly adjacent to primary building entries. Bike fixtures shall be stainless steel with brushed finish, imbedded, and installed at recommended spacing according to the Association of Pedestrian and Bicycle Professionals (APBP). Bicycle racks should be assumed to be high quality, commercial grade products supplied by the following manufacturers or approved equal:

- Landscape Forms; www.landscapeforms.com
- Huntco; www.huntco.com

Provide allowance for combination trash/recycling receptacles to be located adjacent to building entries and at primary gathering spaces. Color to be matt black powder coat. All receptacles must be covered. Receptacles should be assumed to be high quality, commercial grade products supplied by the following manufacturers or approved equal:

- Rendezvous Recycling; www.interface.com
- Victor Stanley; www.victorstanley.com

Site handrails to be stainless steel. Imbed or bolt-down with tamper-proof hardware attachment.

Walls

All site walls and raised concrete planters shall be formed in accordance with PCC Capital Project Standards including:

- Cast-in-place concrete retaining walls/seat walls must be chamfered with grooves, for sufficient depth installed on all edges, to deter skateboards.
- Continuous surface/edge of walls under 5' in height without skate deterrent must not exceed 4 lineal feet.
- All stained concrete is to be sealed.
- Custom concrete mixes are to be avoided. Standard mix designs that are industry tested are preferred.
- Graffiti sealing is required on all exposed surfaces of landscape walls (over 24 inches height). Application method of sealant must not come into contact with the ground or waste water systems.
- Vertical extrusion or interruption (joint) strategies must be included in design of concrete walls and curbs to minimize need for additive skate deterrents.

If additive skate deterrents are included, skate deterrents should be stainless steel, imbedded, commercial grade deterrents such as:

- Skate Stoppers; www.skatestoppers.com or approved equal.

Paved Areas – Pedestrian Concrete

All horizontal exterior pedestrian concrete flatwork to be finished medium broom texture or exposed aggregate dependent on final project design requirements and meet PCC Capital Project Standards as follows:

- Minimum thickness for sidewalks should be 6" of 4000psi reinforced concrete over 4" compacted gravel over compacted subgrade.

Paved Areas – Unit Pavers

All pedestrian areas with unit pavers should comply with the following PCC Capital Projects Standards:

- Design of Unit Pavers should assume occasional maintenance vehicle traffic.
- Preferred edge restraint for unit pavers is concrete or metal.
- Paver at edge should be no less than half of the paver width, or minimum 3", whichever is larger.
- Unit Pavers systems should be surfaced sealed to prevent weeds.
- Typical unit paver section; set paver on compacted ¼"-0 crushed rock with fines. Minimal use of sand over rock for leveling.

Green Roofs

No eco-roofs or occupied green roof terraces are planned for the project at this time.

Site mitigation

Current project assumptions do not assume or account for any environmental or hazardous site conditions requiring mitigation.

For coordination with other disciplines

Site Lighting.

Pedestrian Ways should meet the following PCC Capital Projects Standards:

- Lighting fixtures should have appropriate BUG rating to address glare and light trespass.
- Lighting near the building should employ LED or fluorescent technology to minimize problems with emergency lighting.
- Lighting systems should be designed to an average of
 - o 0.6 fc at ground level, with ave : min uniformity of 6:1, unless in conflict with egress requirements.

Specialty lighting will be limited to the Entry Courtyard and will likely be expressed by stand alone pedestrian scale fixtures, linear strip lighting integrated into custom furnishings or seatwalls, tree uplights, and/or lighting associated with the canopy at the covered walkway.

Stormwater management

Bioswale soils will be per BES specification (see civil)

Vehicular/pedestrian interface – consider tactile warning pavers, bollards, etc?

Structural Systems

The Health Professions / IPT Building is a 37,000-square foot facility located at Portland Community College's CLIMB Center in Southeast Portland. The proposed building is four stories and sited next to the Climb Center for Advancement. The building structures are separated.

The building structure consists of the following:

Roof and Floor Framing

- 3 ½" reinforced concrete topping slabs supported by 3" metal deck.
- Wide flange beams and girders
- Wide flange, HSS, or pipe columns

Foundation/First Floor (pending geotechnical information – assuming soils are suitable for shallow foundations and the site is not liquefiable)

- 5" reinforced concrete slab-on-grade
- Spread and strip reinforced concrete footings

Lateral Force Resisting System

Buckling Restrained Braced Frames or reinforced concrete shear walls.

Building Overview

Materials and components discussed, both interior and exterior, shall meet the requirements as set forth in PCC's Capital Project Standards. Any materials that are not discussed in the PCC standards shall be assumed to meet current industry standards.

Building Envelope

The Health Professions / IPT Building will be constructed using materials that are complimentary to the adjacent CLIMB Center which include the following as the basis for the building envelope design:

- Brick veneer, 60% of envelope
- Aluminum Composite Panel, 20% of envelope
- Non-operable store front systems, 20% of envelope.
- Low slope Roof – 3-ply cold pressed
- Light gauge metal framing

Any exposed metal fabrications shall be protected against changes in appearance for a minimum of 5 years and will be hot dipped galvanized per standards outlined in the Capital Project Standards.

Components anticipated to be exposed metal fabrications include:

- Canopies
- Railings
- Ladders
- Exposed structural components (outriggers, columns, etc.)

Provide one machine roomless (MRL) traction elevator large enough to accommodate a gurney for student training purposes and general circulation.

- Minimum cab size 5'-8" x 7'-10"
- Capacity: 4,500 lbs

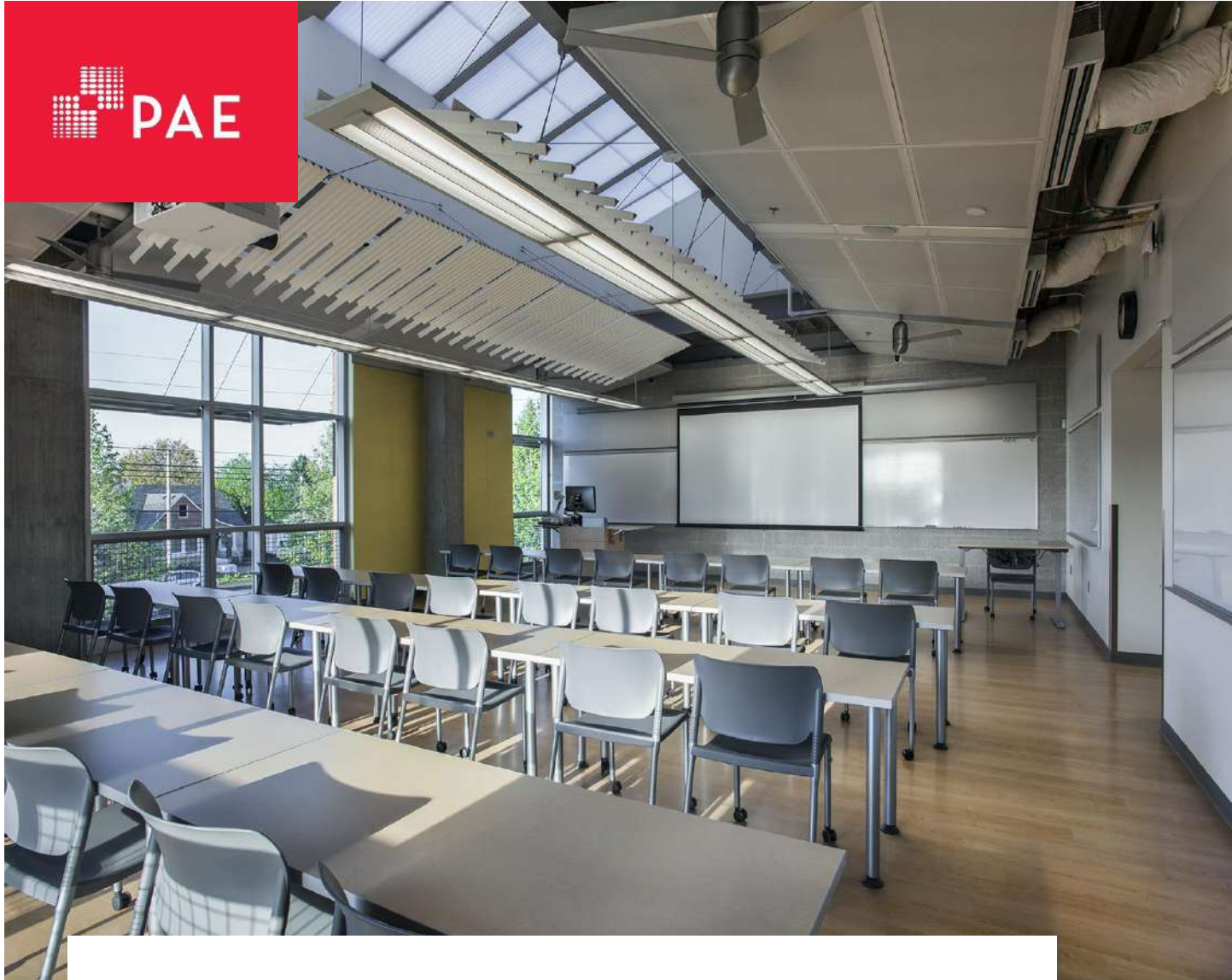
A simulated ambulance bay that will double as a loading dock will be located near the east end of the building. Dock levelers will not be required.

Interior Finishes

For classrooms, meeting rooms, laboratories, offices and toilet rooms, refer to the Room Criteria Sheets located in PCC's District Standards and Guidelines. This document outlines the requirements for room finishes, casework, controls, HVAC, electrical and any applicable specialties for each room type. General circulation areas including reception and waiting areas, study spaces and hallways will receive the following:

- Painted gypsum board partitions
- Polished concrete floors
- Exposed ceilings
- Standard doors and hardware per PCC Capital Project Standards

For additional requirements on the various simulation pods, see SRG's Preliminary Programming document.



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PCC Campus-Wide Master Plan

ITP/IT Climbs

December 14, 2016

pae-engineers.com



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1.0 Mechanical Basis of Design

1.1 HVAC Systems

Two mechanical system options will be considered depending on the final building location.

Option 1 – Stand Alone Building

Building will be heated and cooled by Variable Refrigerant Flow system consisting of air cooled heat pumps located on the roof and ducted fan coil units dedicated to each thermal zone. Refrigerant piping will be routed from heat pumps to four branch circuit controllers and extended to individual fan coil units. VRF system will have total capacity of 100 tons and the system will be zoned in a way to maximize energy recovery potential of the building. Basis of design: Mitsubishi VRF.

Ventilation for the building will be provided by 15,000 CFM heat recovery ventilation located on the roof. HRV will consist of supply fan, exhaust fan, sensible heat recovery wheel and air filters installed in supply and exhaust air streams. Two variable frequency drives will be provided for supply and return fan control. Basis of design: AAON.

Ventilation air will be ducted from HRV to individual thermal zones and connected to ductwork distribution served by fan coil units. Automatic dampers will be installed in each outside air branch duct to automatically control flow of ventilation air to each zone. Relief air from the building will be ducted back to HRV to allow energy to be recovered from relief air stream. All ductwork will be low pressure galvanized duct. Supply duct will be externally insulated.

Constant volume toilet exhaust fans will be installed in each restroom. Low pressure exhaust duct will be routed from exhaust fans to main relief duct served by HRV. Toilet exhaust fans will operate during times building is occupied.

IT area will be air conditioned with the cooling only heat pump system similar to mechanical systems installed during last VOIP project. 20 ton VRF heat pump will be located on the roof and refrigerant piping extended down to indoor units located within IT area.

Mechanical Equipment ITC Area:

- 100 ton VRF heat pumps
- 4 branch circuit controllers
- 40 VRF fan coil units
- 15,000 CFM VAV heat recovery ventilator
- ¼ HP restroom exhaust fans (one fan per restroom)

Mechanical Equipment IT Area:

- 20 ton VRF heat pump (cooling only)
- 4 VRF fan coil units

VRF system will be controlled by proprietary controller provided by the equipment manufacturer. Wall mounted programmable thermostats will be installed in each thermal zone and hard wired to fan coil units. HRV and exhaust fans controls will be integrated into central VRF controls. Damper actuation will be electric type. Public spaces will be provided with Demand Control Ventilation (DCV). The VRF control system will perform all required control functions, including optimization of equipment and system performance, building pressurization, reliability, equipment life and energy consumption and it will have option for sub-metering of individual thermal zones. Gateway will be provided to allow PCC BAS to monitor this building.

Option 2 – Addition to the Existing Building

4 story addition to the existing building will be heated, cooled and ventilated by the central 50,000 CFM VAV air handling unit. Unit will have supply fan, return fan, hydronic heating coil DX cooling coil, pre and final filters and mixing plenum. The unit will be sized to condition part of the existing building in order to relieve the demand on the existing air distribution. Basis of design: Trane

Medium pressure galvanized ductwork will be routed from the unit to individual thermal zones within new building addition. Final thermal zoning will be determined during design. Dedicated VAV terminal units with hot water heating coils will be provided for each thermal zones. Fan powered boxes will be installed in larger exterior zones. Galvanized low pressure ductwork will be routed from terminal units to ceiling mounted supply diffusers. Return air will be ducted from return grilles back to rooftop unit. All medium pressure ductwork will be externally insulated. All low pressure ductwork will be internally lined. Return duct will not be insulated.

New air distribution will be partially extended into the existing building to relieve existing HVAC system and accommodate limited rezoning within the existing building. Existing system will be rebalanced based on the new load.

7 foot silencers with fiberglass media will be installed in supply and return at the connection to rooftop unit.

Exhaust duct will be routed from the restrooms up to the roof mounted exhaust fan. Exhaust fan will be mounted on a curb with integral acoustical baffles. All exhaust duct will be low pressure galvanized duct.

One 120-ton air cooled condensing unit with VSD compressors will be located on the new roof. Existing boilers in mechanical penthouse will be replaced with two 1000 MBH condensing boilers. Two new 10 HP pumps will replace existing heating water pumps. New variable speed drives will be provided. Existing heating water distribution will be extended from mechanical penthouse into the new building. All heating water piping 3 inches and smaller will be copper Type L. All larger pipes will be steel.

IT area will be air conditioned with the cooling only heat pump system similar to mechanical systems installed during last VOIP project. 20 ton VRF heat pump will be located on the roof and refrigerant piping extended down to indoor units located within IT area.

Mechanical Equipment ITC Area:

- (1) 50,000 cfm air handling unit
- (1) Air-cooled condensing unit – 120 tons
- (2) Condensing boilers – 1000 Mbh
- (2) Pumps – 10 HP
- (1) Pumps – 1 HP coil circulators
- (1) Exhaust fan – 1 HP

Mechanical Equipment IT Area:

- 20 ton VRF heat pump (cooling only)
- 4 VRF fan coil units

A direct digital control (DDC) system, by Honeywell, will be provided to control and monitor new mechanical system. The control system will be integrated into the existing BAS. Damper actuation will be electric type. Public spaces will be provided with Demand Control Ventilation (DCV). The control system will perform all required control functions, including optimization of equipment and system performance, building pressurization, reliability, equipment life and energy consumption.

VRF system will be controlled by proprietary controller provided by the equipment manufacturer. Gateway will be provided to allow monitoring of this system through BAS.

Both existing and new HVAC system will be balanced and commissioned.



1.2 Plumbing Systems

Plumbing system option will depend on the decision made regarding building location.

Option 1 – Stand Alone Building

New main service, including water meter will be provided for the building and cold water will be extended into water room. A utility vault located within the site will house the backflow device on the incoming domestic water supply. The domestic water system will be provided with positive means to control backflow, with appropriate backflow preventers at sources of possible contamination within the building. All plumbing fixtures will be commercial grade low flow fixtures. L-type copper piping will be used for domestic water distribution. Piping will be insulated up to fixture connection. Cast iron pipe will be provided for sanitary waste and vent.

Irrigation: A backflow device will be provided for the irrigation system within the water service room. Irrigation piping will be stubbed out of the building for the landscape use.

A roof and overflow drain system will be provided as required by code. Overflow storm drain system will daylight utilizing downspout nozzles at the first floor level above grade. The storm water piping shall be collected and routed underground to an existing storm water main.

All storm and overflow drain piping shall be cast iron with no-hub couplings.

Master mixing valve and ½ HP recirculating hot water pump will be installed in the water service room.

Two 100 gallon electric heat pump water heater will be installed in water room. Water heater and recirculation hot water pump will be monitored by BAS. Basis of design AO Smith.

Option 2 – Addition to the Existing Building

Building addition will require less plumbing fixtures than stand-alone building. Existing water distribution will be extended to new plumbing fixtures. All plumbing fixtures will be commercial grade low flow fixtures. L-type copper piping will be used for domestic water distribution. Piping will be insulated up to fixture connection. Cast iron pipe will be provided for sanitary waste and vent.

A roof and overflow drain system will be provided as required by code. Overflow storm drain system will daylight utilizing downspout nozzles at the first floor level above grade. The storm water piping shall be collected and routed underground to an existing storm water main.

All storm and overflow drain piping shall be cast iron with no-hub couplings.

New 100 gallon condensing gas fired water heater, master mixing valve and new ¾ HP recirculating hot water pump will be provided.

1.3 Fire Protection Systems

Wet Pipe Sprinkler System – Stand Alone Building

Building will be protected with new wet sprinkler system in accordance with NFPA 13 and local Fire Marshal requirements. A detector double check assembly will be provided. The fire department connection (FDC) will be located adjacent to the backflow device vault.

In general, the fire sprinkler system will consist of connection to new water service, including main flow alarm station, zone control valves and flow indicators, alarm bell, fire sprinkler piping and heads. All related fire protection accessories as required will be provided. Location and type of tamper, flow, and pressure switches will be coordinated with the fire alarm system. All fire sprinkler piping will be concealed.

All required system isolation valves will be provided with tamper switches. Each floor will be provided with a zone isolation valves with tamper switches, flow switches, fire department test stations, and hose valves (as required). The fire department test drain will terminate outside of the building. Side

wall dry head sprinkler heads will be mounted on the building exterior where fire protection is required under canopies and overhangs. All fire protection system materials to be of a domestic manufacture to the existing fire protection system. Relocate sprinkler heads as required to meet current codes.

Pre-action system will be installed throughout IT area.

Wet Pipe Sprinkler System – Addition to Existing Building

The existing fire protection mains will be upsized and new detector double check assembly will be provided to accommodate additional flow requirements in building addition. Existing system will be extended into new addition and new sprinkler distribution system will be similar to wet pipe system described for stand-alone building.

Pre-action system will be installed throughout IT area.



2.0 Electrical Basis of Design (Option 1 and 2)

2.1 Service and Distribution

This document describes the overall intent as it pertains to the power distribution expected for use on the project.

Table 1: Design Criteria

Area	Lighting Systems (VA/SF)	Power Systems (VA/SF)
Offices	0.7 - 1.0	2-3
Classrooms	0.7 - 1.0	2-3
Lab	0.7 - 1.0	10-20
Circulation/Transition	0.5 - 0.6	1.0
Service Areas	0.5 - 0.6	0.5
Stairs	0.5 - 0.6	0.5

Distribution (Option 1 and 2)

The main service will be approximately 1200 amps at a voltage 480Y/277V will be used to feed lighting, large mechanical and equipment loads. Secondary voltages of 208Y/120V will be derived using energy efficient dry type transformers providing a level of isolation from other loads and deriving new a grounded neutral point. The electrical power system will incorporate metering and system performance tracking at the main distribution and sub-distribution panels. The metering will provide information on system loading and power quality.

Flexibility: The power distribution system will be developed to provide flexibility for reconfiguring the lab and classroom spaces. Separate panels will be provided in each area to provide flexibility for future modifications.

Power Quality: Quality of power supply is affected by noise sources within a facility as well as outside (utility transferred). Surge protections devices are provided at the service entrance and at sub-distribution panel level. A third level of surge protection device is available using the portable plug strips at equipment as required.

Branch Circuit Wiring: Copper conductors in EMT raceway for feeders and homeruns and where exposed to view. Metal Clad (MC) is allowed downstream from homerun where above accessible ceilings. Lab spaces will use surface metal raceway and overhead distribution system to route power and data cables for flexibility to work areas. Classrooms will follow PCC standard for wall and floor power and data.

Equipment Connections: Electrical power connections will be made to all mechanical equipment, to include providing all electrically associated devices such as disconnect switches, contactors, magnetic or manual starters, lock-out switches, etc., not furnished under Division 23. VFD's furnished under Division 23 and installed under Division 26.

Electrical power connections will be made to support miscellaneous equipment. Connections include disconnect safety switches and wiring to support interlocks to remote devices.

Electromechanical Interference (EMI): Provisions in layout of the electrical power system will be made to minimize the impact of electric fields on sensitive lab spaces. Equipment producing fields (transformers and motors) are to be located remote from sensitive labs and equipment. Large ampere feeds will be routed around sensitive areas or contained within rigid steel conduits.

Grounding System

Two grounding criteria will be addressed, safety and performance. A safe grounded power system will be provided in compliance with the 2014 NEC. This ground system consists of the building service ground (multiple ground rods and concrete encased UFER). The safe grounding system will be extended thru out all electrical systems in facility. All metallic systems will be grounded to the building grid.

Performance grounding includes a system of grounding conductors and busses to be used for labs and telecom rooms. The performance ground system will tie into the code required safety grounding system at the main distribution panel ground bus.

2.2 On-Site Power Systems

Emergency Generator

A 40KW 480/277 3-phase diesel generator located on-site to serve the emergency and optional standby loads for the building. Fuel tank will be skid mounted below generator.

Uninterruptible Power Supply (UPS)

A 5KW rack mounted UPS will be located in each telecom room to provide conditioned power and provide continuity while generator starting sequence is complete. Generator will provided power to UPS.

Renewable Power System (PV)

A renewable power source using PV (Photovoltaic) may be recommended for the project pending site selection and available roof area.

2.3 Signal Systems

Fire Alarm

The Fire Alarm system will consist of a supervised addressable supervised, Class B hard wired system. Manufacturer to match PCC standard manufacturer for fire alarm and mass notification systems.

Table 2: Fire Alarm Device Coverage

Device	Coverage
Manual pull stations	Locate as required by PCC or AHJ
Smoke Detectors	Corridors, Air handlers (>2,000CFM), Elevators lobbies, Elevator machine rooms, Elevator hoistways.
Fire Sprinkler	Tamper and Flow
Annunciation	Remote Annunciation at entry
Building Annunciation	Combination fire alarm/mass notification speaker and strobe annunciation for throughout the facility.
System output	Relay interface for mechanical system shut down and elevator recall.
Monitoring	Central Station Monitoring



Telephone/Data

Not in scope.

Security

Not in scope.

Audio/Visual

Not in scope.

3.0 Lighting (Option 1 and 2)

3.1 Lighting Equipment

Design Criteria

Table 3: Interior Lighting Design Criteria

Area	Source	Light Level Ambient (ave FC)	Light Level Task (ave FC)	Light Level Emergency (ave FC*)
Offices	LED	25-30	35-45	1.0
Classrooms	LED	25-30	35-45	1.0
Lab	LED	35-40	40-50	1.0
Circulation/Transition	LED	15 - 25		1.0
Service Areas	LED	15 - 25		1.0
Stairs	LED	15 - 25		1.0
Restrooms	LED	30 - 40		1.0

(* Emergency Lighting: Emergency lighting system and panel capacity will be designed on the basis of 0.25 volt-amperes/SF. of gross space)

Interior Lighting

The electrical lighting systems will be designed in compliance with the State of Oregon Structural Specialty Code. Energy efficient sources and automatic control technologies will be implemented to provide the most efficient and effective electric lighting system for the facility occupants and task. Controls will provide switching and dimming of the lighting to permit maximum use of the available natural light.

Daylighting will provide the first level of illuminations for the majority of the interior spaces. Many spaces will have access to daylight from two sides. The next step will be to use energy efficient local task lighting where appropriate. When additional electrical lighting is required for building interior illumination, high efficient LED luminaires will be used. Illumination issues to be addressed include lighting levels, photo-sensitive areas, uniformity and glare.

Site Lighting

Building lighting will be integrated with the building exterior features. Illumination will be provided for passage and security/safety, and to provide highlights to the exterior elements. Site illumination will use the campus standard ornamental luminaire. The source type used will be depended on the luminaire location and distance from the lit task. All exterior luminaires will be LED and use cutoff optics to address light trespass issues.



Lighting Controls

Control of lighting will be provided by the following methods for the respective tasks/areas:

Table 4: Lighting control Methods by Area

Task/Area	Control Method
Offices	Occupancy Sensor (with manual override)
Classrooms	Occupancy Sensor (with manual override)
Circulation/Transition	Time Clock
Service Areas	Occupancy Sensor (with manual override)
Stairs	Occupancy Sensor (with manual override)
Restrooms	Occupancy Sensor
Offices	Occupancy Sensor (with manual override)
Lab	Occupancy Sensor (with manual override)
Building Exterior	Time Clock

PROJECT NAME:
**Portland Community College
 Facilities Master Plan
 Capital Projects**

PREPARED BY:
 NP

DATE:
 11/8/2016

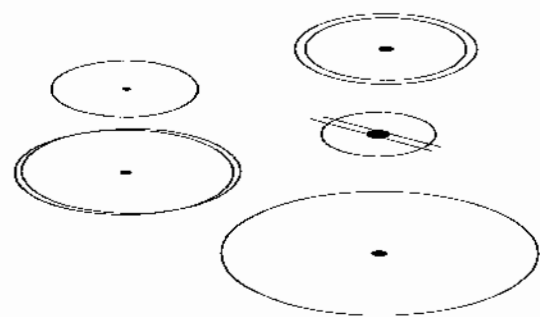
SRG PROJECT NO.:
 216012

**01
 Interprofessional Training Center / Health Professions Building**
 Jen Piper, John Saito, Sheila Meserschmidt

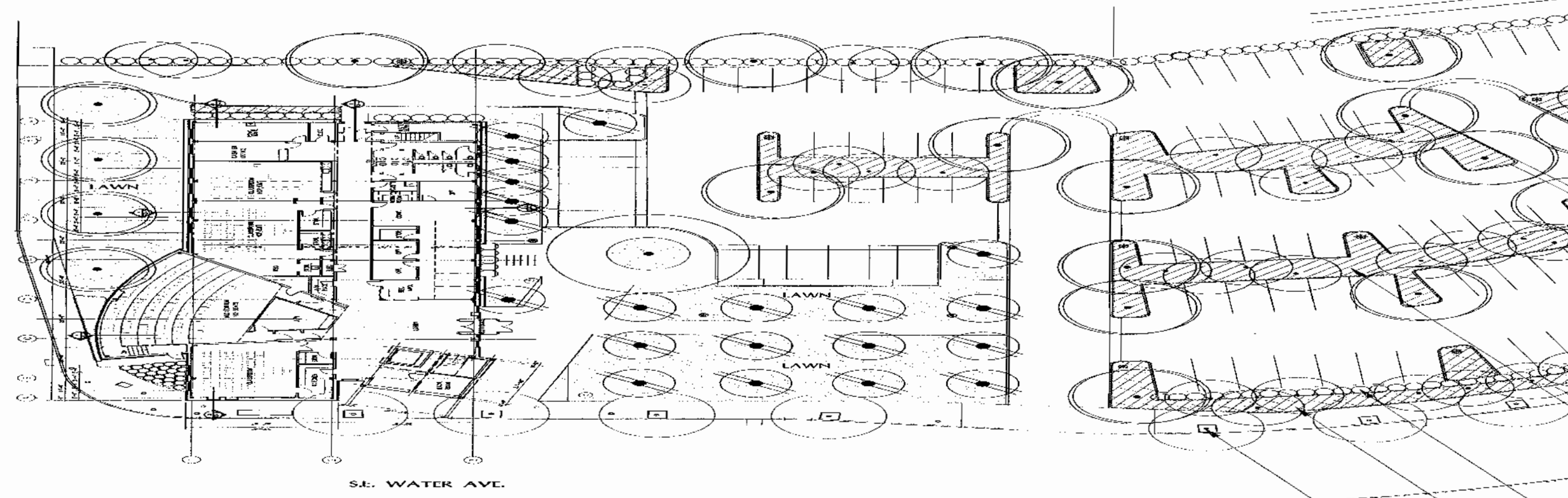
	Seats	Qty	SF/Each	NSF	Comments
Program					
Simulation Clinic					
Simulation Pod - Standard	10-12	5	960	4,800	
Control Room	1	1	80		Acoustically separate
Treatment Room/Sim lab	-	1	400		With manequin storage in wall.
Debrief Room	16	1	480		
Simulation Pod - Standard w/ bathroom	10-12	3	1,040	3,120	
Control Room	1	1	80		Acoustically separate
Treatment Room/Sim lab	-	1	400		With manequin storage in wall.
Toilet + Shower Room	-	1	80		Unplumbed toilet. Working shower. Tub. 2 Transparent walls
Debrief Room	16	1	480		
Simulation Pod - Home Environment	10-12	1	1,040	1,040	flexible,moveable partitions to simulate different home environments
Control Room	1	1	80		Acoustically separate
Treatment Room/Sim lab	-	1	400		With manequin storage in wall.
Toilet + Shower Room	-	1	80		Unplumbed toilet. Working shower. Tub. 2 Transparent walls
Debrief Room	16	1	480		
Simulation Pod - Bariatric	10	1	1,140	1,140	
Control Room	1	1	80		Acoustically separate
Treatment Room/Sim lab	-	1	460		With manequin storage in wall.
Toilet + Shower Room	-	1	120		Unplumbed toilet. Working shower. Tub. 2 Transparent walls. Bariatric
Debrief Room	16	1	480		
Central Spaces					
Clinic Reception	-	1	200	200	
Technology Checkout + Storage	-	1	200	200	
Break/Locker/Kitchen	-	1	450	450	
Central Storage	-	1	1,000	1,000	w/ compact shelving
Office - Sim Tech	-	1	100	100	proximity to repair shop
Sim Repair Shop	-	1	600	600	w/ storage
Sim Tech Workroom	-	1	160	160	central location between control rooms
Pharmacy	-	-	-	-	pyxis only? In central space or within treatment rooms? Sheila to verify space needs
Teaching Spaces					
Computer Lab	20	0	800	0	Computer lab not required
Classroom	32	2	960	1,920	
Multipurpose Classroom/Lab	-	1	4500	4,500	A/V throughout. Dividable. Storage for equipment.
Study/Meeting Room - Small	2-4	4	80	320	
Study Room - Medium	6-8	6	160	960	
Open Collaboration Spaces	-	-	-	1,200	SF Distributed throughout
VR Simulation Studio + Support	-	1	500	500	
Outdoor simulation area	-	1	400	400	Include variety of ground conditions for training
Physical performance assesment lab	-	1	400	400	Potentially with public face
Treatment Room	-	2	180	360	Simulate physician's office - Potentially with public face
Telemedicine Training Area	-	-	-	300	Program/function TBD
Workspace					
Office - IHP Director	1	1	120	120	
Admin Workstation	1	2	64	128	
Support					
Building storage	-	1	1000	1,000	Distributed. Compact shelving if possible
BDF	-	1	300	300	
IDF	-	2	150	300	
Additional server capacity	-	1	300	300	
Ambulance bay/loading dock	-	1	300	300	Receiving space
Kitchen/Break/Locker	-	1	300	300	
Building lobby/reception	-	1	300	300	
Locker/Showers	-	1	300	300	
Laundry Room	-	1	300	300	
				27,318	NSF
				x 1.5	Grossing Factor
				40,977	TOTAL BGSF

NOTES:

- Programs Included in Building:
 - Nursing
 - CNA 1
 - CNA 2
 - Medical Imaging
 - Medical Assisting
 - Emergency Medical Services (EMS/EMT)
 - Health Information Management
 - Alcohol & Drug Counseling / Mental Health
 - Pharmacy Tech
 - Phlebotomy
 - Patient Access Specialist (Reception)
- All spaces should have built in capability/infrastructure for cameras (including stairwells) Every space is a learning space.
- Incorporate outdoor gathering space between buildings



PLANT LIST	BOTANICAL NAME	COMMON NAME
Trees		
	<i>Tilia cordata</i> "Rancho	Rancho Linden (street tree)
	<i>Fraxinus latifolia</i>	Oregon Ash
	<i>Pyrus calleryana</i>	Flowering Pear
	<i>Nyssa sylvatica</i>	Black Tupelo
	<i>Fagus sylvatica</i> "RiversII"	Copper Beech
Perimeter Shrubs		
	<i>Ilex meserveae</i> "Blue Girl"	Holly



BIO-SWALE	PLANT LIST	BOTANICAL NAME	COMMON NAME
		<i>Scirpus acutus</i>	Hardstem Bulrush
		<i>Cornus stolonifera</i>	Redtwig Dogwood
		<i>Juncus species</i>	Scouring Rush
		<i>Scirpus validus</i>	Softstem Bulrush
		<i>Deschampsia caespitosa</i>	Tufted Hairgrass
		<i>Sagittaria latifolia</i>	Wapato
		<i>Carex species</i>	Sedge
		<i>Scirpus species</i>	Bull Rush
		<i>Typha latifolia</i>	Cattail
		<i>Sparganium</i>	Burreed
		<i>Lysichiton americanum</i>	Skunk Cabbage
		<i>Iris pseudacorus</i>	Yellow Iris
		<i>Sisyrinchium species</i>	Blue-Eyed Grass
		<i>Equisetum species</i>	Horsetail Mix

FILE NAME: LE-1000
 PLOT NO: 06-07
 PLOT DATE: 6 JULY, 1994

Portland Community College

Facilities Plan - Phase 1

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02 – Metropolitan Workforce Training Center

Capital Improvements Cost Estimate

December 15, 2016



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Project Overview

The Metropolitan Workforce Training Center is located in Northeast Portland at the intersection of NE 42nd Avenue and NE Killingsworth Street on a relatively flat site. The two existing buildings on the site were built in 1957 and 1989 and were purchased by PCC in 1998 and converted into offices and classrooms. As the Workforce Training Program has grown, PCC has found that these buildings are no longer suitable for their current needs and will be demolished. A proposed two story 34,000 square foot structure will be constructed on the Southeast corner of the site. This new structure will include classrooms and faculty offices that will be designed to PCC's current standards. The entire parking lot will be redesigned and upgraded to include storm water improvements. In addition, PCC has expressed an interest in possible partnerships with food cart vendors on site. Providing infrastructure such as waste, water and electricity will be required to support this use.

Zoning

General Commercial (CG) with the "h" aircraft land overlay (limits heights). Most educational, institutional, and commercial uses allowed.

Maximum Height: 45'

FAR: 3:1

Setbacks: The site is not in a pedestrian district. There is not a minimum setback except on the north side where the site abuts residentially-zoned properties. Both streets are transit streets with NE Killingsworth having the higher classification.

Ground Floor Windows:

The CG zone has a ground floor window requirement in combination with a maximum transit setback. 100% of the ground floor facade must be within 10' of NE Killingsworth and 50% of the facade length must be windows (and 25% of facade area) and allow viewing into "working areas or lobbies, pedestrian entrances, or display windows". On 42nd, 50% of the ground floor facade must be within 10' of the property line, but it does not need to meet the ground floor requirement.

Parking. Should not be a problem, but landscape buffering (5-feet wide) is required at the perimeter based on the adjacent zoning (L3 for the r-zoned area to the north, L2 for the C-zone and street perimeters). The existing vegetation will not be sufficient unless it meets the sight-obscuring and plant density requirements of 33.248.

Bicycle Parking will be required per Table 266-6, and for a retail/college building this size, the minimum would be approximately 4 long-term and 4 short-term spaces. If a residential use is included, additional long-term bike parking would be required on a per unit basis.

Future Zoning: The new CM2 zoning won't take effect until 2nd Qtr 2018, but will encourage a medium density mix of commercial, office, and residential uses while reducing or eliminating parking requirements. The FAR will reduce to 2.5:1, ground floor active use requirements will increase and there may be a minimum FAR for development.

Transportation

The METRO center currently does not use all their parking and the site location is positive for encouraging alternative modes of travel such as transit, biking, and walking. With the demolition of the old building and reconfiguration of the parking and circulation for the new building, the site should be reevaluated for the number of ideal parking spots.

Because parking is not fully utilized and alternate modes are popular for this location, more consideration into resources for the alternative modes be considered in place of additional parking spots. It is recommended that the new site include the following resources at minimum:

- Bike lockers
- Bike storage
- Shower/locker room areas

The current circulation on the site is adequate, however, there are multiple access point near the intersection of NE 42nd Avenue at NE Killingsworth Street that should be re-evaluated to minimize the number of full access driveways close to this intersection to provide safer access points. The access points on NE Killingsworth are currently right next to on-street parking spaces. This results in limited site distance when cars are parked next to the driveways. The adjusted parking and circulation on the site should have space between the driveway and locations where cars can park to provide adequate site distance for cars entering the roadway.

Transportation evaluations for this site to provide recommendations on parking, circulation, and site access are anticipated to be less than \$20k. This includes coordination with PBOT on potential parking adjustments.

Site

On-site landscape improvements at the existing Metropolitan Workforce Training campus are defined by the public r.o.w. of NE 42nd Ave. to the west, the public r.o.w. of NE Killingsworth Street to the south, commercial property to the east, and existing high density housing to the north. The site is currently home to two building, a large surface parking lot and anterior service area. Site improvements anticipate continued use of the r.o.w. entry off NE 42nd as well as the entry off NE Killingsworth Street. New building configurations will place the building more directly adjacent to street frontage. Site improvements will therefore encompass the majority of the campus including demolition of both buildings and construction staging throughout with possible impacts to existing vegetation and hardscape.

General site improvements associated with new building efforts will include improved streetscape planting and furnishings along both NE 42nd and NE Killingsworth to help activate the street frontage, modification of the existing parking and vehicular circulation as needed to meet building changes and surface storm water facilities to accommodate site run-off. Additional site improvements will include an entry plaza located at the primary building entry and a secondary smaller plaza area located at a secondary building entry (to draw people in from a reconfigured parking area) or adjacent to retail at NE 42nd and Killingsworth to further engage the street frontage. Enhanced pedestrian walkways within large surface parking areas will increase pedestrian safety and additional pedestrian walkways may be needed within the greater campus site if multiple buildings or adjacent compatible uses are developed. Landscape areas will include r.o.w. streetscape planting, perimeter landscape, interior parking lot landscape, bioswale planting and ornamental planting at entry plazas and building perimeters.

Entry Plaza

The Entry Plaza will incorporate high quality materials such as unit pavers or other specialty surfacing, custom seating, and/or raised concrete planters that can serve as seatwalls, specimen trees (3+ inch caliper) and ornamental planting. This courtyard will serve as the primary building entry as well as a calling card ideally seen from the street frontage.

Secondary Plaza

A secondary plaza should be anticipated, either drawing pedestrians into the building from large parking areas, or integrated at the retail at NE 42nd and NE Killingsworth. Seating (walls or high quality furnishings) as well as pedestrian scale lighting will enhance the space.

Perimeter Screening and Streetscape

Perimeter planting will be required per City of Portland standards to screen new site development from the residential development to the north. This planting will include either trees and evergreen shrubs or a 6-foot-high masonry wall, as required to meet a L3, high screen, standards per City of Portland code Chapter 33.248. Street trees will meet the standards of City of Portland, Title 11 including spacing and size.

Hardscape Areas

Pedestrian circulation will be promoted by maintaining primary r.o.w. sidewalks and adding secondary pedestrian sidewalks as needed to connect new building, parking and adjacent uses.

Tree Preservation and Protection

Existing site trees, including those in adjacent r.o.w., greater than 2 inch caliper will be reviewed by a certified Arborist to assess state of trees affected by project development prior to design of the project. Arborist report will form the basis for generation of a Tree Root Protection Zone (TRPZ) document per PCC Capital Project Standards. All trees to remain will be protected throughout construction per City of Portland standards.

Soil Preparation

Given the urban nature of the project site, this project should assume importing of all topsoil. Soil preparation to meet the following PCC Capital Project Standards:

- Where imported topsoil is needed, chemical and textural analysis of topsoil and organic amendments is mandatory and will follow the same testing evaluation as described for native soils.
 - o Testing is to be performed by a PCC pre-approved testing agency. Owner's Representative to provide contact information.
 - o Soil Report and adjustment recommendations must be reviewed and approved by Owner's Representative prior to final Bid Document preparation.
- Subgrade is to be aerated prior to final soil placement and planting.
- Mechanical tillage under existing tree canopies is not accepted. Use approved hand methods only.
- Existing native soil and imported soils are to be free of noxious weeds: horse tail; oxalis; morning glory; thistle; etc.
- Amended Topsoil Depths:
 - o Lawns: Provide 12" depth minimum
 - o Shrub and ground cover areas: Provide 18" depth minimum
 - o Tree pits: Provide shallow area of compacted backfill below rootball to reduce settlement.
- Planting beds and lawn areas to be filled with pre-mixed amended topsoil in lifts not to exceed 8" unless approved otherwise by Owner's Representative.
- All amended topsoil areas to be rolled to achieve compaction of maximum 85% proctor.
- Top Soil Suppliers:
 - o S+H Logging
 - o ProGrow
 - o Mt. Scott Fuel
- Bioswale and retention ponds are excluded from these provisions.

Planting

Planting in the public r.o.w. will adhere to City of Portland standards, Title 11, including spacing and size, with all plantings selected from approved City of Portland Plant Lists. All campus planting shall also be per PCC Capital Project Standards including:

- Use large basalt gravel at tree pits.
- Avoid use of metal tree grates at individual tree pits in paved areas.

On-site planting will consist of a palette largely adapted to Pacific Northwest growing conditions. Tree plantings in paved areas will use large basalt gravel at the tree pits. Silva Cells to be provided for specimen trees in formal hardscape plazas. All specimen trees will be field tagged.

Woody shrub material intended for perimeter screening and ornamental planting at the Entry Plaza will be installed as 5 gallon containers. Plant material for interior parking areas and storm water facility perimeters to be 2-5 gallon. Storm water basin plantings and groundcover plantings to be 1 gallon containers.

In addition, parking lot interior landscaping will require trees, shrubs and ground cover to meet the P1 standard per City of Portland code, Section 33.248, and overall site tree density will meet requirements of Chapter 11, 11.50.050.

All planting areas will receive 2" depth organic mulch and will be fully irrigated.

Irrigation

All site irrigation will integrate a high efficiency delivery system and meet the following PCC Capital Project Standards:

- Provide separate water meter including all required backflow prevention devices, flow meters, master valves, etc. for irrigation system.
- Where code allows, provide below grade double check valve in lieu of above grade reduced pressure backflow devices.
- All expanded campus systems are to be contiguous with existing Maxicom controlled system and complete with remote controls, flow sensors, rain gauges and master valve controls.
- Independent Irrigation Audit is required at the completion of all projects.
- All mainline runs are to be laid straight without arc

Site Furnishings

Site furnishings should meet or exceed requirements per the PCC Capital Project Standards including the following:

- Benches to be of sturdy construction with materials that integrate with the surrounding site elements.
- Benches, chairs and tables to allow for maximum flexibility of user including seating for ADA accessibility both in placement and in bench design.
- New benches to match existing where appropriate.
- Paint color for all metal components of site furnishings is to be:
- Paints: Black, Powder coat

Site furnishings should be assumed to be high quality, commercial grade products supplied by the following manufacturers or approved equal:

- Landscape Forms; www.landscapeforms.com
- Forms + Surfaces; www.forms-surfaces.com
- Victor Stanley; www.victorstanley.com

Provide an allowance for custom wood/concrete benches and/or sculptural manufactured site furnishings at Entry Plaza. Seatwalls and site benches to provide permanent opportunities for year-round seating at all primary gathering spaces. Provide allowance for moveable café style furnishings, such as tables and chairs, at areas with contiguous interior/exterior space and suitable program function.

Bike racks to be provided per City of Portland standard where included in r.o.w.. Provide bicycle parking near, but not directly adjacent to primary building entries. Bike fixtures shall be stainless steel with brushed finish, imbedded, and installed at recommended spacing according to the Association of Pedestrian and Bicycle Professionals (APBP). Bicycle racks should be assumed to be high quality, commercial grade products supplied by the following manufacturers or approved equal:

- Landscape Forms; www.landscapeforms.com
- Huntco; www.huntco.com

Provide allowance for combination trash/recycling receptacles to be located adjacent to building entries and at primary gathering spaces. Color to be matt black powder coat. All receptacles must be covered. Receptacles should be assumed to be high quality, commercial grade products supplied by the following manufacturers or approved equal:

- Rendezvous Recycling; www.interface.com
- Victor Stanley; www.victorstanley.com

Site handrails to be stainless steel. Imbed or bolt-down with tamper-proof hardware attachment.

Walls

All site walls and raised concrete planters shall be formed in accordance with PCC Capital Project Standards including:

- Cast-in-place concrete retaining walls/seat walls must be chamfered with grooves, for sufficient depth installed on all edges, to deter skateboards.
- Continuous surface/edge of walls under 5' in height without skate deterrent must not exceed 4 lineal feet.
- All stained concrete is to be sealed.
- Custom concrete mixes are to be avoided. Standard mix designs that are industry tested are preferred.

- Graffiti sealing is required on all exposed surfaces of landscape walls (over 24 inches height). Application method of sealant must not come into contact with the ground or waste water systems.
- Vertical extrusion or interruption (joint) strategies must be included in design of concrete walls and curbs to minimize need for additive skate deterrents.

If additive skate deterrents are included, skate deterrents should be stainless steel, imbedded, commercial grade deterrents such as:

- Skate Stoppers; www.skatestoppers.com or approved equal.

Paved Areas – Pedestrian Concrete

All horizontal exterior pedestrian concrete flatwork to be finished medium broom texture or exposed aggregate dependent on final project design requirements and meet PCC Capital Project Standards as follows:

- Minimum thickness for sidewalks should be 6” of 4000psi reinforced concrete over 4” compacted gravel over compacted subgrade.

Paved Areas – Unit Pavers

All pedestrian areas with unit pavers should comply with the following PCC Capital Projects Standards:

- Design of Unit Pavers should assume occasional maintenance vehicle traffic.
- Preferred edge restraint for unit pavers is concrete or metal.
- Paver at edge should be no less than half of the paver width, or minimum 3”, whichever is larger.
- Unit Pavers systems should be surfaced sealed to prevent weeds.
- Typical unit paver section; set paver on compacted ¾”-0 crushed rock with fines. Minimal use of sand over rock for leveling.

Green Roofs

No eco-roofs or occupied green roof terraces are planned for the project at this time.

Site mitigation

Current project assumptions do not assume or account for any environmental or hazardous site conditions requiring mitigation.

For coordination with other disciplines

Site Lighting.

Pedestrian Ways should meet the following PCC Capital Projects Standards:

- Lighting fixtures should have appropriate BUG rating to address glare and light trespass.
- Lighting near the building should employ LED or fluorescent technology to minimize problems with emergency lighting.
- Lighting systems should be designed to an average of
 - o 0.6 fc at ground level, with ave : min uniformity of 6:1, unless in conflict with egress requirements.

Specialty lighting will be limited to the Entry Plaza and secondary plaza and will likely be expressed by stand alone pedestrian scale fixtures, lighting integrated into custom furnishings or seatwalls, and tree uprights.

Stormwater management

Bioswale soils will be per BES specification (see civil)

Vehicular/pedestrian interface – consider tactile warning pavers, bollards, etc.

Structural Systems

The Metro Center Building is a 34,000-square foot facility located at Portland Community College's Metropolitan Workforce Training Center in Northeast Portland. The proposed building is two stories and sited on the existing Center site.

The building program consists of the following:

- Classroom teaching spaces
- Central gathering and meeting space
- General Office
- Ground Floor retail

The building structure consists of the following:

- Roof and Floor Framing
- 3 ½" reinforced concrete topping slabs supported by 3" metal deck.
- Wide flange beams and girders
- Wide flange, HSS, or pipe columns
- 12'-0" floor to floor height

Foundation/First Floor (pending geotechnical information – assuming soils are suitable for shallow foundations and the site is not liquefiable)

- 5" reinforced concrete slab-on-grade
- Spread and strip reinforced concrete footings

Lateral Force Resisting System

- Bucking Restrained Braced Frames or reinforced concrete shear walls

Building Overview

Materials and components discussed, both interior and exterior, shall meet the requirements as set forth in PCC's Capital Project Standards. Any materials that are not discussed in the PCC standards shall be assumed to meet current industry standards.

Building Envelope

The envelope will be constructed using the following:

- Brick veneer, 60% of envelope
- Aluminum Composite Panel, 20% of envelope
- Non-operable store front systems, 20% of envelope.
- Low slope Roof – 3-ply cold pressed
- Light gauge metal framing

Any exposed metal fabrications shall be protected against changes in appearance for a minimum of 5 years and will be hot dipped galvanized per standards outlined in the Capital Project Standards.

Components anticipated to be exposed metal fabrications include:

- Canopies
- Railings
- Ladders
- Exposed structural components (outriggers, columns, etc.)

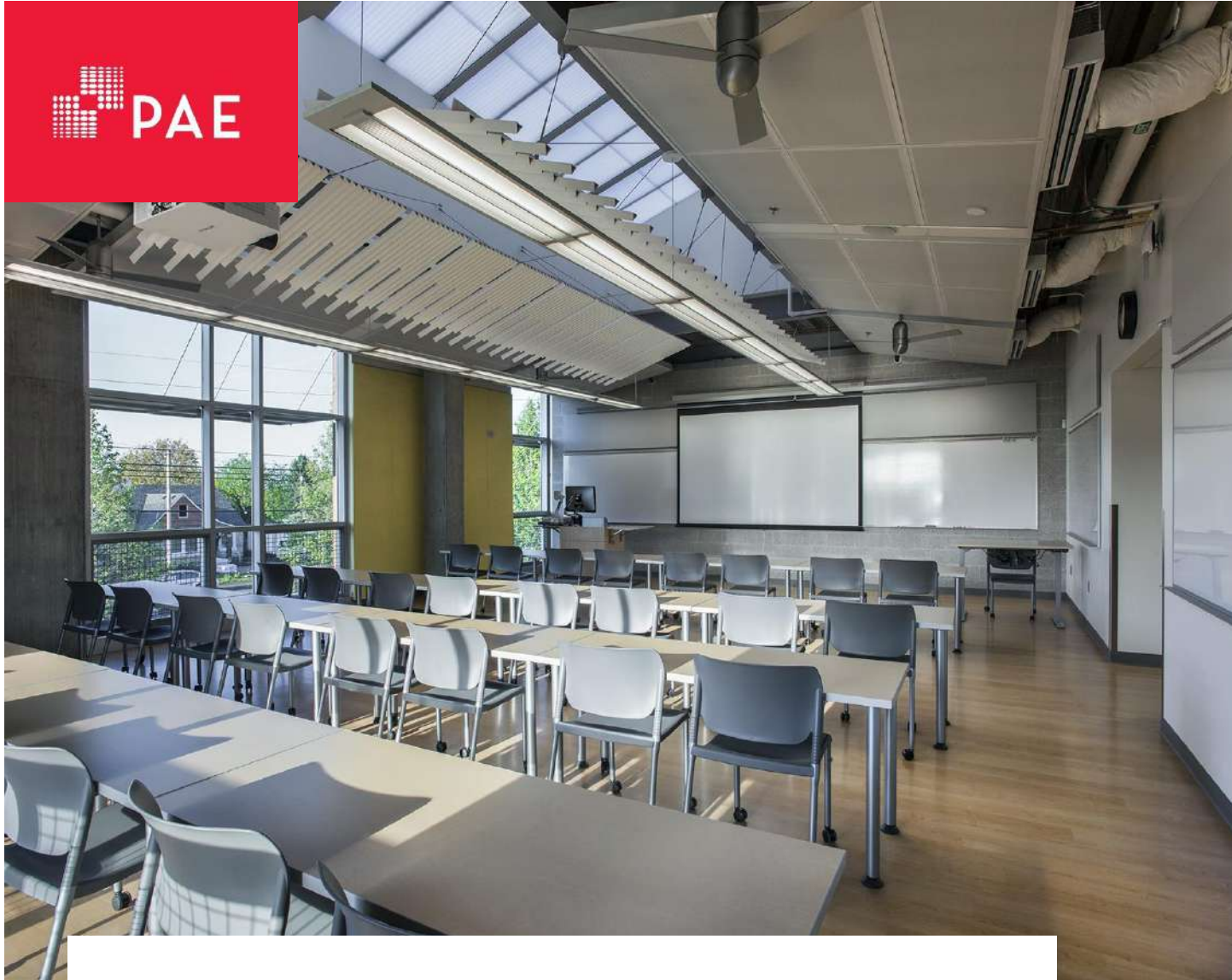
Provide one machine roomless (MRL) traction elevator for general circulation.

- Minimum cab size 5'-8" x 6'-8"
- Capacity: 3,500 lbs

Interior Finishes

For classrooms, meeting rooms, laboratories, offices and toilet rooms, refer to the Room Criteria Sheets located in PCC's District Standards and Guidelines. This document outlines the requirements for room finishes, casework, controls, HVAC, electrical and any applicable specialties for each room type. General circulation areas including reception and waiting areas, study spaces and hallways will receive the following:

- Painted gypsum board partitions, light gauge metal framed
- Polished concrete floors
- Exposed ceilings
- Standard doors and hardware per PCC Capital Project Standards



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PCC Campus-Wide Master Plan

Metro Center

December 14, 2016

pae-engineers.com



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1.0 Mechanical Basis of Design

1.1 HVAC Systems

Existing mechanical system will be demolished.

Two mechanical system options will be considered for new building:

Baseline HVAC Systems

New 75 ton VAV packaged roof top unit with supply fans, return fans, indirect gas fired heat exchanger, DX cooling coil, 4 VSD compressors, mixing plenum, pre and final filters will be installed on the roof and provide heating, ventilation and air conditioning for the building. Unit will be mounted on vibration isolation curb. Basis of design: Trane.

Medium pressure galvanized ductwork will be routed from the unit to individual thermal zones. Final thermal zoning will be determined during design. Dedicated VAV terminal units with electric heating coils will be provided for each thermal zones. Fan powered boxes will be installed in larger exterior zones. Galvanized low pressure ductwork will be routed from terminal units to ceiling mounted supply diffusers. Return air will be ducted from return grilles back to rooftop unit. All medium pressure ductwork will be externally insulated. All low pressure ductwork will be internally lined. Return duct will not be insulated.

7 foot silencers with fiberglass media will be installed in supply and return at the connection to rooftop unit.

Exhaust duct will be routed from the restrooms up to the roof mounted exhaust fan. Exhaust fan will be mounted on a curb with integral acoustical baffles. All exhaust duct will be low pressure galvanized duct.

Mechanical Equipment:

- 75 ton package rooftop unit
- 2 HP roof exhauster
- 20 VAV terminal units with electric heating coils and SCR controllers
- 10 VAV fan powered boxes

A direct digital control (DDC) system, by Honeywell, will be provided to control and monitor new roof top unit. The control system will be integrated into the existing PCC BAS. Damper actuation will be electric type. Public spaces will be provided with Demand Control Ventilation (DCV). The control system will perform all required control functions, including optimization of equipment and system performance, building pressurization, reliability, equipment life and energy consumption.

Alternate HVAC System

Building will be heated and cooled by Variable Refrigerant Flow system consisting of air cooled heat pumps located on the roof and ducted fan coil units dedicated to each thermal zone. Refrigerant piping will be routed from heat pumps to four branch circuit controllers and extended to individual fan coil units. VRF system will have total capacity of 80 tons and the system will be zoned in a way to maximize energy recovery potential of the building. Basis of design: Mitsubishi VRF.

Ventilation for the building will be provided by 12,000 CFM heat recovery ventilation located on the roof. HRV will consist of supply fan, exhaust fan, sensible heat recovery wheel and air filters installed in supply and exhaust air streams. Two variable frequency drives will be provided for supply and return fan control. Basis of design: AAON.

Ventilation air will be ducted from HRV to individual thermal zones and connected to ductwork distribution served by fan coil units. Automatic dampers will be installed in each outside air branch duct to automatically control flow of ventilation air to each zone. Relief air from the building will be

ducted back to HRV to allow energy to be recovered from relief air stream. All ductwork will be low pressure galvanized duct. Supply duct will be externally insulated.

Constant volume toilet exhaust fans will be installed in each restroom. Low pressure exhaust duct will be routed from exhaust fans to main relief duct served by HRV. Toilet exhaust fans will operate during times building is occupied.

Mechanical Equipment:

- 80 ton VRF heat pumps
- 4 branch circuit controllers
- 30 VRF fan coil units
- 12,000 CFM VAV heat recovery ventilator
- ¼ HP restroom exhaust fans (one fan per restroom)

VRF system will be controlled by proprietary controller provided by the equipment manufacturer. Wall mounted programmable thermostats will be installed in each thermal zone and hard wired to fan coil units. HRV and exhaust fans controls will be integrated into central VRF controls. Damper actuation will be electric type. Public spaces will be provided with Demand Control Ventilation (DCV). The VRF control system will perform all required control functions, including optimization of equipment and system performance, building pressurization, reliability, equipment life and energy consumption and it will have option for sub-metering of individual thermal zones. Gateway will be provided to allow PCC BAS to monitor this building.

1.2 Plumbing Systems

Existing plumbing fixtures, water distribution and sanitary piping within the building will be removed.

New main service, including water meter will be provided for the building and cold water will be extended into water room. A utility vault located within the site will house the backflow device on the incoming domestic water supply. The domestic water system will be provided with positive means to control backflow, with appropriate backflow preventers at sources of possible contamination within the building.

All plumbing fixtures will be commercial grade low flow fixtures. L-type copper piping will be used for domestic water distribution. Piping will be insulated up to fixture connection. Cast iron pipe will be provided for sanitary waste and vent.

Irrigation: A backflow device will be provided for the irrigation system within the water service room. Irrigation piping will be stubbed out of the building for the landscape use.

A roof and overflow drain system will be provided as required by code. Overflow storm drain system will daylight utilizing downspout nozzles at the first floor level above grade. The storm water piping shall be collected and routed underground to an existing storm water main.

All storm and overflow drain piping shall be cast iron with no-hub couplings.

Master mixing valve and ½ HP recirculating hot water pump will be installed in the water service room.

Two options will be considered for domestic hot water heater depending on the selected HVAC option:

Baseline Domestic Hot Water Heater

100 gallon condensing gas fired water heater will be installed in water room. Combustion air and gas flue will be ducted from the water heater up to the roof. Termination of gas flue will be coordinated with outside air intakes and opening into the building. Water heater and recirculation hot water pump will be monitored by BAS. Basis of design: AO Smith

Alternate Domestic Hot Water Heater

Two 100 gallon electric heat pump water heater will be installed in water room. Water heater and recirculation hot water pump will be monitored by BAS. Basis of design AO Smith.



Natural Gas

If baseline HVAC and domestic hot water system are selected, new natural gas service to the building will be required.

A new natural gas service will be provided from an existing gas main. Gas piping up to, and including the gas meters will be by NW Natural.

Natural gas will be extended to serve the new boilers, water heaters, gas ranges and kitchen equipment. Connection to the gas meter and installation of the house gas piping shall be per local gas company and OSSC requirements.

All natural gas piping shall be schedule 40 black steel with screwed or welded fittings.

1.3 Fire Protection Systems

Wet Pipe Sprinkler System

Building will be protected with new wet sprinkler system in accordance with NFPA 13 and local Fire Marshal requirements. A detector double check assembly will be provided. The fire department connection (FDC) will be located adjacent to the backflow device vault.

In general, the fire sprinkler system will consist of connection to new water service, including main flow alarm station, zone control valves and flow indicators, alarm bell, fire sprinkler piping and heads. All related fire protection accessories as required will be provided. Location and type of tamper, flow, and pressure switches will be coordinated with the fire alarm system. All fire sprinkler piping will be concealed.

All required system isolation valves will be provided with tamper switches. Each floor will be provided with a zone isolation valves with tamper switches, flow switches, fire department test stations, and hose valves (as required). The fire department test drain will terminate outside of the building. Side wall dry head sprinkler heads will be mounted on the building exterior where fire protection is required under canopies and overhangs. All fire protection system materials to be of a domestic manufacture.

2.0 Electrical Basis of Design

2.1 Service and Distribution

This document describes the overall intent as it pertains to the power distribution expected for use on the project.

Table 1: Design Criteria

Area	Lighting Systems (VA/SF)	Power Systems (VA/SF)
Offices	0.7 – 1.0	2-3
Classrooms	0.7 – 1.0	2-3
Circulation/Transition	0.5 – 0.6	1.0
Service Areas	0.5 – 0.6	0.5
Stairs	0.5 – 0.6	0.5

Distribution

The main service will be approximately 1200 amps at a voltage 480Y/277V will be used to feed lighting, large mechanical and equipment loads. Secondary voltages of 208Y/120V and will be derived using energy efficient dry type transformers providing a level of isolation from other loads and deriving new a grounded neutral point. The electrical power system will incorporate metering and system performance tracking at the main distribution and sub-distribution and retail tenant panels. The metering will provide information on system loading and power quality.

Flexibility: The power distribution system will be developed to provide flexibility for reconfiguring the lab and classroom spaces. Separate panels will be provided in each area to provide flexibility for future modifications.

Power Quality: Quality of power supply is affected by noise sources within a facility as well as outside (utility transferred). Surge protections devices are provided at the service entrance and at sub-distribution panel level. A third level of surge suppression is available using the portable plug strips at equipment as required.

Branch Circuit Wiring: Copper conductors in EMT raceway for feeders and homeruns and where exposed to view. Metal Clad (MC) is allowed downstream from homerun where above accessible ceilings. Classrooms will follow PCC standard for wall and floor power and data.

Equipment Connections: Electrical power connections will be made to all mechanical equipment, to include providing all electrically associated devices such as disconnect switches, contactors, magnetic or manual starters, lock-out switches, etc., not furnished under Division 23. VFD's furnished under Division 23 and installed under Division 26.

Electrical power connections will be made to support miscellaneous equipment. Connections include disconnect safety switches and wiring to support interlocks to remote devices.

Electromechanical Interference (EMI): Provisions in layout of the electrical power system will be made to minimize the impact of electric fields on sensitive lab spaces. Equipment producing fields (transformers and motors) are to be located remote from sensitive areas and equipment. Large ampere feeds will be routed around sensitive areas or contained within rigid steel conduits.

Grounding System

Two grounding criteria will be addressed, safety and performance. A safe grounded power system will be provided in compliance with the 2014 NEC. This ground system consists of the building service ground (multiple ground rods and concrete encased UFER). The safe grounding system will be extended thru out all electrical systems in facility. All metallic systems will be grounded to the building grid.



Performance grounding includes a system of grounding conductors and busses to be used for labs and telecom rooms. The performance ground system will tie into the code required safety grounding system at the main distribution panel ground bus.

2.2 On-Site Power Systems

Emergency Generator

A 60KW 480/277 3-phase diesel generator located on-site to serve the emergency and optional standby loads for the building. Fuel tank will be skid mounted below generator.

Uninterruptible Power Supply (UPS)

A 5KW rack mounted UPS will be located in each telecom room to provide conditioned power and provide continuity while generator starting sequence is complete. Generator will provided power to UPS.

Renewable Power System (PV)

A renewable power source using PV (Photovoltaic) may be recommended for the project pending site selection and available roof area.

2.3 Signal Systems

Fire Alarm

The Fire Alarm system will consist of a supervised addressable supervised, Class B hard wired system. Manufacturer to match PCC standard manufacturer for fire alarm and mass notification systems.

Table 2: Fire Alarm Device Coverage

Device	Coverage
Manual pull stations	Locate as required by PCC or AHJ
Smoke Detectors	Corridors, Air handlers (>2,000CFM), Elevators lobbies, Elevator machine rooms, Elevator hoistways.
Fire Sprinkler	Tamper and Flow
Annunciation	Remote Annunciation at entry
Building Annunciation	Combination fire alarm/mass notification speaker and strobe annunciation for throughout the facility.
System output	Relay interface for mechanical system shut down and elevator recall.
Monitoring	Central Station Monitoring

Telephone/Data

Not in scope.

Security

Not in scope.

Audio/Visual

Not in scope.

3.0 Lighting

3.1 Lighting Equipment

Design Criteria

Table 3: Interior Lighting Design Criteria

Area	Source	Light Level Ambient (ave FC)	Light Level Task (ave FC)	Light Level Emergency (ave FC*)
Offices	LED	25-30	35-45	1.0
Classrooms	LED	25-30	35-45	1.0
Circulation/Transition	LED	15 - 25		1.0
Service Areas	LED	15 - 25		1.0
Stairs	LED	15 - 25		1.0
Restrooms	LED	30 - 40		1.0

(* Emergency Lighting: Emergency lighting system and panel capacity will be designed on the basis of 0.25 volt-amperes/SF. of gross space)

Interior Lighting

The electrical lighting systems will be designed in compliance with the State of Oregon Structural Specialty Code. Energy efficient sources and automatic control technologies will be implemented to provide the most efficient and effective electric lighting system for the facility occupants and task. Controls will provide switching and dimming of the lighting to permit maximum use of the available natural light.

Daylighting will provide the first level of illuminations for the majority of the interior spaces. Many spaces will have access to daylight from two sides. The next step will be to use energy efficient local task lighting were appropriate. When additional electrical lighting is required for building interior illumination, high efficient LED luminaires will be used. Illumination issues to be addressed include lighting levels, photo-sensitive areas, uniformity and glare.

Site Lighting

Building lighting will be integrated with the building exterior features. Illumination will be provided for passage and security/safety, and to provide highlights to the exterior elements. Site illumination will use the campus standard ornamental luminaire. The source type used will be depended on the luminaire location and distance from the lit task. All exterior luminaires will be LED and use cutoff optics to address light trespass issues.



Lighting Controls

Control of lighting will be provided by the following methods for the respective tasks/areas:

Table 4: Lighting control Methods by Area

Task/Area	Control Method
Classrooms	Occupancy Sensor (with manual override)
Circulation/Transition	Time Clock
Service Areas	Occupancy Sensor (with manual override)
Stairs	Occupancy Sensor (with manual override)
Restrooms	Occupancy Sensor
Offices	Occupancy Sensor (with manual override)
Building Exterior and Site	Time Clock

PRELIMINARY PROGRAM

PROJECT NAME: Portland Community College Facilities Plan Capital Projects	PREPARED BY: NP/JK	DATE: 11/7/2016	SRG PROJECT NO.: 216012
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	Seats	Qty	SF/Each	NSF	Comments
02					
Metro Center					
Marc Goldberg, Abdul Majid, Tonya Booker					
Program - Existing					
Teaching Space					
Classroom	32	6	1080	6,480	
Classroom - Standard	-	1	960		
Storage	-	1	120		
Multi-purpose Room	64	2	2160	4,320	Room divider, ability to break into (2) 32 student classrooms
Classroom - Standard	32	2	960		
Storage	-	2	120		
Speciality Lab	32	1	3200	3,200	Upholstery lab w/ project storage area. Adjacent loading dock w/ coiling OHD
Computer Lab	50	2	2000	4000	
Resource Lab	32	1	960	960	Physical reference materials (books/ brochures) and computer stations
Meeting Room - Small	4	6	65	390	
Meeting Room - Medium	10	2	200	400	
Meeting Room - Large	18	1	360	360	
Work Space					
Office	1	7	120	840	
Open Office	-	1	4500	4,500	Based off of a staff of 53 people
Central Spaces					
Reception / Lobby	-	1	150	150	
Open Collaboration Spaces	-	1	800	800	Distributed throughout building
Support					
IT - BDF	-	1	300	300	
IT - IDF	-	1	150	150	
Kitchen / Break / Mail Area	-	1	800	800	
Storage	-	1	500	500	Distributed throughout building
Sick Room	-	1	120	120	Includes bed
				28,270	NSF
				x 1.5	Grossing Factor
				42,405	TOTAL BGSF

E

D

C

B

A



Landscape area #1
 370 SF
 Berberis thunbergii 'Crimson Pygmy'
 quantity: 10
 Helictotrichon sempervirens
 quantity: 70
 Protect existing tree

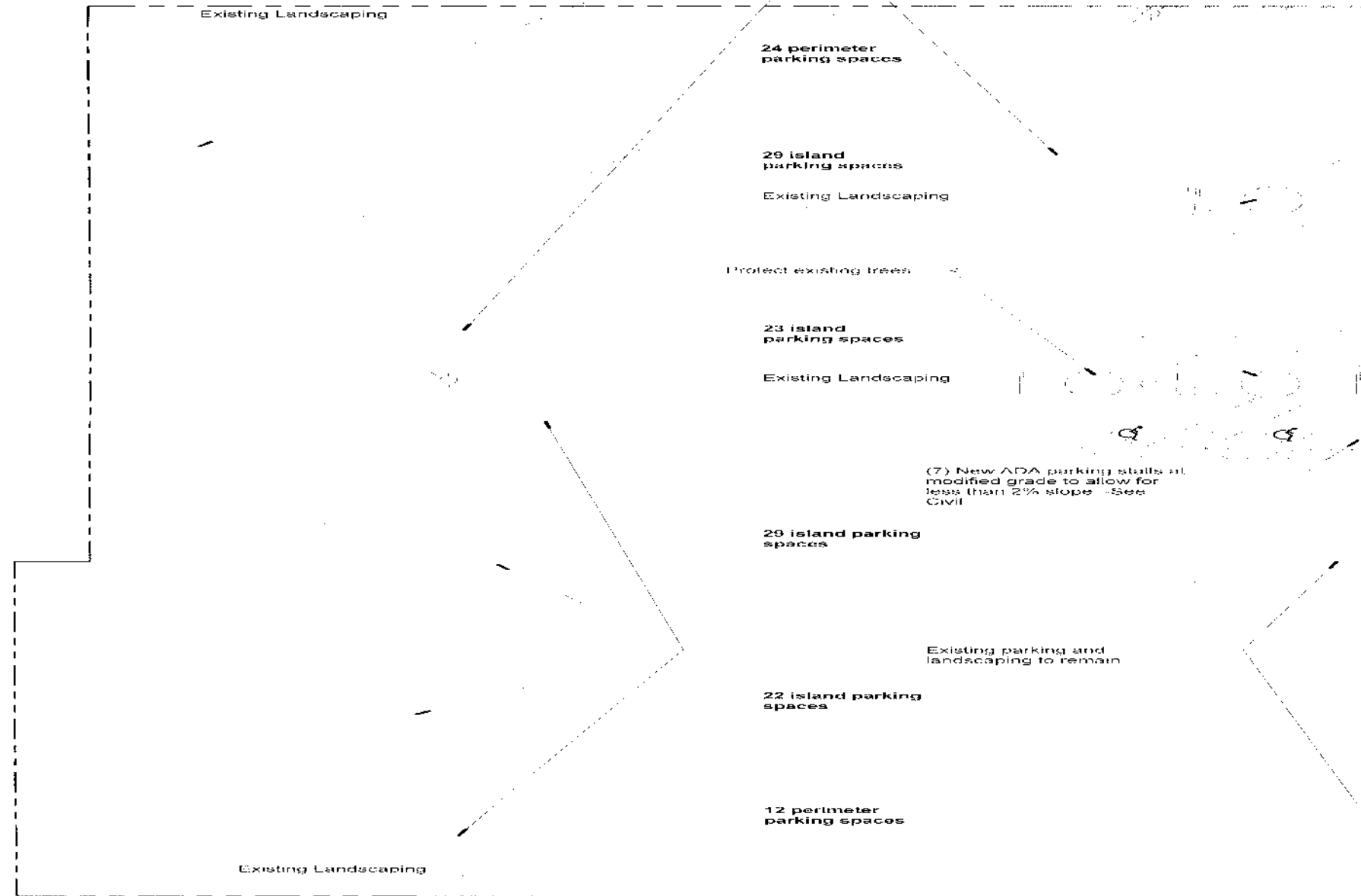
Landscape area #3
 263 SF
 Berberis verruculosa
 quantity: 10
 Nandina domestica 'Compacta'
 quantity: 20
 Protect existing tree

Landscape area #2
 670 SF
 Berberis thunbergii 'Crimson Pygmy'
 quantity: 30
 Helictotrichon sempervirens
 quantity: 135

3 ft Incense Cedar. Provide deep root barrier at 3' depth for new trees - typical.

B1 Landscape Planting Plan
 A100 1/16" = 1'-0"

42nd Avenue



B2 Site Plan
 A100 1/16" = 1'-0"

General Notes

1. See Civil plans for Existing conditions, Demolition plan, site plan, Grading, Drainage, and Erosion Control.
2. All parking lot striping, aiseways, and stalls to be compliant with City of Portland Standards.
3. New trees to be installed with 4 inch of organic yard mulch [from Pro-Gro] over all the bed area. Plants need to be pest and disease free at planting time and if B & B then all burlap and metal cage to be completely removed. No staking required.
4. All new landscaping soil should be Pro-Gro's Landscape Blend #2 installed to a minimum depth of 2ft [for all areas] with the lowest 6in being tilled in to the native soil. At planting the trees should be installed with a soil-humectant, mycorrhizal tabs, plants should be coated in anti-transpirant and each tree to have 4 qt size containers of Dri-Water by the rootball, all installed per manufacturer's directions.
5. For all automatic door opening. Coordinate new Beasam automatic door activator and Von Duprin panic door hardware with Dave at Advanced Entry 503-462-5230. FCC Locksmith to key door after installation.

Work by Others not in Contract

1. All landscape work including planting and growing medium.
2. All parking lot striping and signage.

7/14/2010 12:45:33 PM

Portland Community College

Facilities Plan - Phase 1

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05 – Cascade Public Safety Building

Capital Improvements Cost Estimate

December 15, 2016



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The Bookin Group

Project Overview

The existing Cascade Public Safety Building is located on southeast corner of the Cascade Campus off of North Killingsworth St in between North Kerby Ave and North Commercial Avenue. The existing structure can no longer meet the needs of Public Safety department and will be demolished and the basement will be infilled. A new 2,500 square foot, one story wood framed, slab on grade structure will be constructed in its place. This new facility will allow the department to provide a better layout and become more efficient. The entrance to the facility will be located on the west side of the building and will be more approachable for anyone coming from campus. Parking along North Kerby will be re-assessed and will include an accessible stall and storm water improvements.

Zoning

(CS) Storefront Commercial. The site is in the Piedmont Conservation District. Development is reviewed against the *Portland Community College (PCC)/Cascade Campus Impact Mitigation Plan (IMP) (LU 01-490 IMP)*. The plan provides design guidelines developed by the college that apply at the campus margins to buffer the campus' institutional character and scale from surrounding non-college properties. Located at far southeast corner of the campus, the PSB site lies within 50-foot Pedestrian and 150-foot Transition Zones. Development within these zones is required to demonstrate compliance with either objective Design Standards or discretionary Design Guidelines first described in the IMP and then formally approved in LU 01-751 DZ. Additionally, compatibility with the Piedmont Conservation District requirements must be discussed.

Maximum Height: 45'

FAR: 3:1

Setbacks: The site is in a pedestrian district. There is not a minimum setback except on the north side where the site abuts r-zoned properties, in which case the minimum setback is dictated by the new building's height (increasing from 5' to 11'). N Killingsworth is a transit street.

Ground Floor Windows:

The CS zone has a ground floor window requirement in combination with a maximum transit setback. 100% of the ground floor facade must be within 10' of N Killingsworth and 50% of the facade length must be windows (and 25% of facade area) and allow viewing into "working areas or lobbies, pedestrian entrances, or display windows". On N Commercial Avenue, 50% of the ground floor facade must be within 10' of the property line, but it does not need to meet the ground floor requirement.

Parking. Parking along the alley will need to be considered within the overall parking plan for the campus as a whole, but should be a negligible change given the total supply.

Landscape buffering is required at the property line to buffer adjacent residential uses. The existing vegetation will not be sufficient unless it meets the sight-obscuring and plant density requirements of 33.248.

Future Zoning: The new institutional zoning (CI2) won't take effect until 2nd Qtr 2018, but should provide a great deal of flexibility in terms of development standards and review. Preliminary indications for the CI2 zone are for a maximum height of 150' and an FAR of 3:1, but these will be reduced at the edge of the campus to that of the surrounding, in this case residential zoning. It is not yet clear how the conservation district will affect the development capacity of the site.

Transportation

The current Cascade Public Safety Building is being relocated across the alley. As part of this relocation the access for Police and public safety vehicles. As part of this relocation the access to and from the parking location for the emergency vehicles should be evaluated to minimize conflict points with the surrounding major roadways and minimize delays.

The current site plans show improved sidewalks, locker rooms, and bike parking. All site improvements appear adequate except for bicycle parking which shows four bike parking spots. It is recommended that more bike parking be provided as this location is in an area that is easy to access via alternative modes.

There is a TriMet transit stop in front of the proposed location of the new building. Coordination with TriMet to maintain this stop and potentially improve this stop is recommended as part of the new building and surrounding infrastructure improvements.

Transportation evaluations for this site to provide recommendations on access evaluation is anticipated to be less than \$10k. This includes coordination with TriMet.

Site

On-site landscape improvements at the existing Cascade campus Public Safety Building are defined by the public r.o.w. of N. Killingsworth Street to the south, the public r.o.w. of N. Commercial Ave. to the east, an existing small business to the north and an existing public alley to the west. Site improvements anticipate continued use of the existing alley off N. Killingsworth for vehicular access to the site. Site improvements will encompass the majority of the small site with impacts to existing vegetation and hardscape.

General site improvements associated with the new building will include new pedestrian walkways connecting the building, parking and adjacent r.o.w. walks. A modest building entry court with enhanced planting will highlight the building's main entry. Relocation and renovation of existing parking spaces, including ADA, will be integrated with the new building layout. The new building will be adjusted to match surrounding finished grades so no entry stairs or ramps are anticipated. Bike racks and seating will be incorporated adjacent to the building entry and storm water will be addressed in vegetated bioswales as possible given the restricted site area. Mechanical treatment options should be included as an option. Perimeter screening will be required along the property's northern edge, adjacent to the existing small business.

Parking Lot / Access

- Demolition of existing structure, construction of new building structure, and redeveloped parking for public safety vehicles will require sawcut and removal of existing pavement.
 - o ADA accessibility will need to be evaluated and may require additional removal of pavement and re-grading.
- Existing driveways and access points to the site appear to be sufficient.
- Install new secure bike parking facilities for public safety officer bicycles.

Utilities

Stormwater:

- The proposed re-development will require compliance with City of Portland's 2016 Stormwater Management Manual (SWMM).
- It is our understanding/assumption that the existing site does not currently have water quality or water quantity treatment facilities.
- New vegetated water quality and water quantity facilities will be required to handle the new building roof and any other impervious surfaces. These may be able to be constructed in-place of the existing landscape planting areas on the site.
- Any required bioswales will be per BES specification.

Sanitary Sewer:

- There is an existing public combined sewer system in the alley to the west of the building. A new connection may be required to this public system if the existing building's sanitary system connection does not have sufficient capacity or is not accessible to the new facility.

Water & Fire Service:

- Both domestic water and fire service will need to be provided to the new building.

- The existing water meter for the existing building may not be adequate for the proposed development. This meter may need to be upsized, requiring additional System Development Charges (SDC) to be paid.

Power, Gas, Telecom:

- It is assumed that the existing site has adequate power, gas and telecom services to supply the proposed development. MEP to confirm as design progresses.

Building Entry Court

The Entry Court will incorporate seating, specimen trees (3+ inch caliper) and ornamental planting. This court will serve as an inviting connection to the greater campus.

Car and Bicycle Parking

Site improvements will retain the existing parking count and incorporate bicycle racks per specifications below.

Tree Preservation and Protection

Existing site trees, including those in adjacent r.o.w., greater than 2 inch caliper will be reviewed by a certified Arborist to assess state of trees affected by project development prior to design of the project. Arborist report will form the basis for generation of a Tree Root Protection Zone (TRPZ) document per PCC Capital Project Standards. All trees to remain will be protected throughout construction per City of Portland standards.

Soil Preparation

Given the small urban project site, this project should assume importing of all topsoil. Soil preparation to meet the following PCC Capital Project Standards:

- Where imported topsoil is needed, chemical and textural analysis of topsoil and organic amendments is mandatory and will follow the same testing evaluation as described for native soils.
 - o Testing is to be performed by a PCC pre-approved testing agency. Owner's Representative to provide contact information.
 - o Soil Report and adjustment recommendations must be reviewed and approved by Owner's Representative prior to final Bid Document preparation.
- Subgrade is to be aerated prior to final soil placement and planting.
- Mechanical tillage under existing tree canopies is not accepted. Use approved hand methods only.
- Existing native soil and imported soils are to be free of noxious weeds: horse tail; oxalis; morning glory; thistle; etc.
- Amended Topsoil Depths:
 - o Lawns: Provide 12" depth minimum
 - o Shrub and ground cover areas: Provide 18" depth minimum
 - o Tree pits: Provide shallow area of compacted backfill below rootball to reduce settlement.

- Planting beds and lawn areas to be filled with pre-mixed amended topsoil in lifts not to exceed 8” unless approved otherwise by Owner’s Representative.
- All amended topsoil areas to be rolled to achieve compaction of maximum 85% proctor.
- Top Soil Suppliers:
 - o S+H Logging
 - o ProGrow
 - o Mt. Scott Fuel
- Bioswale and retention ponds are excluded from these provisions.

Planting

Planting in the public r.o.w. will adhere to City of Portland standards, Title 11, including spacing and size, with all plantings selected from approved City of Portland Plant Lists. All campus planting shall be per PCC Capital Project Standards including:

- Use large basalt gravel at tree pits.
- Avoid use of metal tree grates at individual tree pits in paved areas.

On-site planting will consist of a palette largely adapted to Pacific Northwest growing conditions. Tree plantings in paved areas will use large basalt gravel at the tree pits. All specimen trees will be field tagged.

Woody shrub material intended for perimeter screening and ornamental planting at the Entry Court will be installed as 5 gallon containers. Plant material for storm water facility perimeters to be 2-5 gallon. Storm water basin plantings and groundcover plantings to be 1 gallon containers.

All planting areas will receive 2” depth organic mulch and will be fully irrigated.

Irrigation

All site irrigation will integrate a high efficiency delivery system and meet the following PCC Capital Project Standards:

- Provide separate water meter including all required backflow prevention devices, flow meters, master valves, etc. for irrigation system.
- Where code allows, provide below grade double check valve in lieu of above grade reduced pressure backflow devices.
- All expanded campus systems are to be contiguous with existing Maxicom controlled system and complete with remote controls, flow sensors, rain gauges and master valve controls.
- Independent Irrigation Audit is required at the completion of all projects.
- All mainline runs are to be laid straight without arc

Site Furnishings

Site furnishings should meet or exceed requirements per the PCC Capital Project Standards including the following:

- Benches to be of sturdy construction with materials that integrate with the surrounding site elements.

- Benches, chairs and tables to allow for maximum flexibility of user including seating for ADA accessibility both in placement and in bench design.
- New benches to match existing where appropriate.
- Paint color for all metal components of site furnishings is to be:
- Paints: Black, Powder coat

Site furnishings should be assumed to be high quality, commercial grade products supplied by the following manufacturers or approved equal:

- Landscape Forms; www.landscapeforms.com
- Forms + Surfaces; www.forms-surfaces.com
- Victor Stanley; www.victorstanley.com

Provide an allowance for seatwalls or site benches to provide permanent opportunities for year-round seating at all primary building entry.

Bike racks to be provided per City of Portland standard where included in r.o.w. Bike fixtures shall be stainless steel with brushed finish, imbedded, and installed at recommended spacing per the Association of Pedestrian and Bicycle Professionals (APBP). Bicycle racks should be assumed to be high quality, commercial grade products supplied by the following manufacturers or approved equal:

- Landscape Forms; www.landscapeforms.com
- Huntco; www.huntco.com

Provide allowance for combination trash/recycling receptacles to be located adjacent to building entries and at primary gathering spaces. Color to be matt black powder coat. All receptacles must be covered. Receptacles should be assumed to be high quality, commercial grade products supplied by the following manufacturers or approved equal:

- Rendezvous Recycling; www.interface.com
- Victor Stanley; www.victorstanley.com

Walls

All site walls and raised concrete planters shall be formed in accordance with PCC Capital Project Standards including:

- Cast-in-place concrete retaining walls/seat walls must be chamfered with grooves, for sufficient depth installed on all edges, to deter skateboards.
- Continuous surface/edge of walls under 5' in height without skate deterrent must not exceed 4 lineal feet.
- All stained concrete is to be sealed.
- Custom concrete mixes are to be avoided. Standard mix designs that are industry tested are preferred.
- Graffiti sealing is required on all exposed surfaces of landscape walls (over 24 inches height). Application method of sealant must not come into contact with the ground or waste water systems.
- Vertical extrusion or interruption (joint) strategies must be included in design of concrete walls and curbs to minimize need for additive skate deterrents.

If additive skate deterrents are included, skate deterrents should be stainless steel, imbedded, commercial grade deterrents such as:

- Skate Stoppers; www.skatestoppers.com or approved equal.

Paved Areas – Pedestrian Concrete

All horizontal exterior pedestrian concrete flatwork to be finished medium broom texture or exposed aggregate dependent on final project design requirements and meet PCC Capital Project Standards as follows:

- Minimum thickness for sidewalks should be 6" of 4000psi reinforced concrete over 4" compacted gravel over compacted subgrade.

Paved Areas – Unit Pavers

All pedestrian areas with unit pavers should comply with the following PCC Capital Projects Standards:

- Design of Unit Pavers should assume occasional maintenance vehicle traffic.
- Preferred edge restraint for unit pavers is concrete or metal.
- Paver at edge should be no less than half of the paver width, or minimum 3", whichever is larger.
- Unit Pavers systems should be surfaced sealed to prevent weeds.
- Typical unit paver section; set paver on compacted ¼"-0 crushed rock with fines. Minimal use of sand over rock for leveling.

Green Roofs

No eco-roofs or occupied green roof terraces are planned for the project at this time.

Site mitigation

Current project assumptions do not assume or account for any environmental or hazardous site conditions requiring mitigation.

For coordination with other disciplines

Site Lighting

Pedestrian Ways should meet the following PCC Capital Projects Standards:

- Lighting fixtures should have appropriate BUG rating to address glare and light trespass.
- Lighting near the building should employ LED or fluorescent technology to minimize problems with emergency lighting.
- Lighting systems should be designed to an average of
 - o 0.6 fc at ground level, with ave : min uniformity of 6:1, unless in conflict with egress requirements.

Specialty lighting will be limited to the Entry Court and will likely be expressed by stand alone pedestrian scale fixtures, linear strip lighting integrated into seatwalls, and tree uplights.

Vehicular/pedestrian interface

- consider tactile warning pavers, bollards, etc.

Parking Lot / Access

- Demolition of existing structure, construction of new building structure, and redeveloped parking (or parking garages) for public safety vehicles will require sawcut and removal of existing pavement.
 - o ADA accessibility will need to be evaluated and may require additional removal of pavement and re-grading.
- Existing driveways and access points to the site appear to be sufficient.
- Install new bike parking facilities.

Utilities

Stormwater:

- The proposed re-development will require compliance with City of Portland's 2016 Stormwater Management Manual (SWMM).
- It is our understanding/assumption that the existing site does not currently have water quality or water quantity treatment facilities.
- New vegetated water quality and water quantity facilities will be required to handle the new building roof and any other impervious surfaces. These may be able to be constructed in-place of the existing landscape planting areas on the site.
- There is an existing public combined sewer system in the alley to the west of the building. A new connection may be required to this public system if the existing building's storm system connection does not have sufficient capacity or is not accessible to the new facilities.

Sanitary Sewer:

- There is an existing public combined sewer system in the alley to the west of the building. A new connection may be required to this public system if the existing building's sanitary system connection does not have sufficient capacity or is not accessible to the new facility.

Water & Fire Service:

- Both domestic water and fire service will need to be provided to the new building.
 - o The existing water meter for the existing building may not be adequate for the proposed development. This meter may need to be upsized, requiring additional System Development Charges (SDC) to be paid.

Power, Gas, Telecom:

- It is assumed that the existing site has adequate power, gas and telecom services to supply the proposed development. MEP to confirm as design progresses.

Structural Systems

The Cascade Campus Public Safety Building is a 2,500-square foot replacement for the existing building. The building is located on the Cascade Campus of Portland Community College. The building is a single-story structure located in the same location as the current campus safety building.

The building program consists of the following:

- Public Safety Office
- Covered Vehicle Parking
- Storage
- Meeting space

The building structure consists of the following:

Gravity Framing

- Pre-manufactured wood roof trusses
- Timber beams
- Plywood roof sheathing
- Wood stud bearing walls with plywood sheathing

Foundation/First Floor (pending geotechnical information – assuming soils are suitable for shallow foundations and the site is not liquefiable)

- 5” reinforced concrete slab-on-grade
- Spread and strip reinforced concrete footings

Lateral Force Resisting System

- Plywood sheathed wood stud shear walls with sill anchors and holdowns

Building Overview

Materials and components discussed, both interior and exterior, shall meet the requirements as set forth in PCC’s Capital Project Standards. Any materials that are not discussed in the PCC standards shall be assumed to meet current industry standards.

Building Envelope

The envelope will be constructed using the following:

- Brick veneer, 60% of envelope
- Aluminum Composite Panel, 20% of envelope
- Non-operable store front systems with bulletproof glazing, 20% of envelope.
- Low slope Roof – 3-ply cold pressed
- Wood framed construction

Any exposed metal fabrications shall be protected against changes in appearance for a minimum of 5 years and will be hot dipped galvanized per standards outlined in the Capital Project Standards.

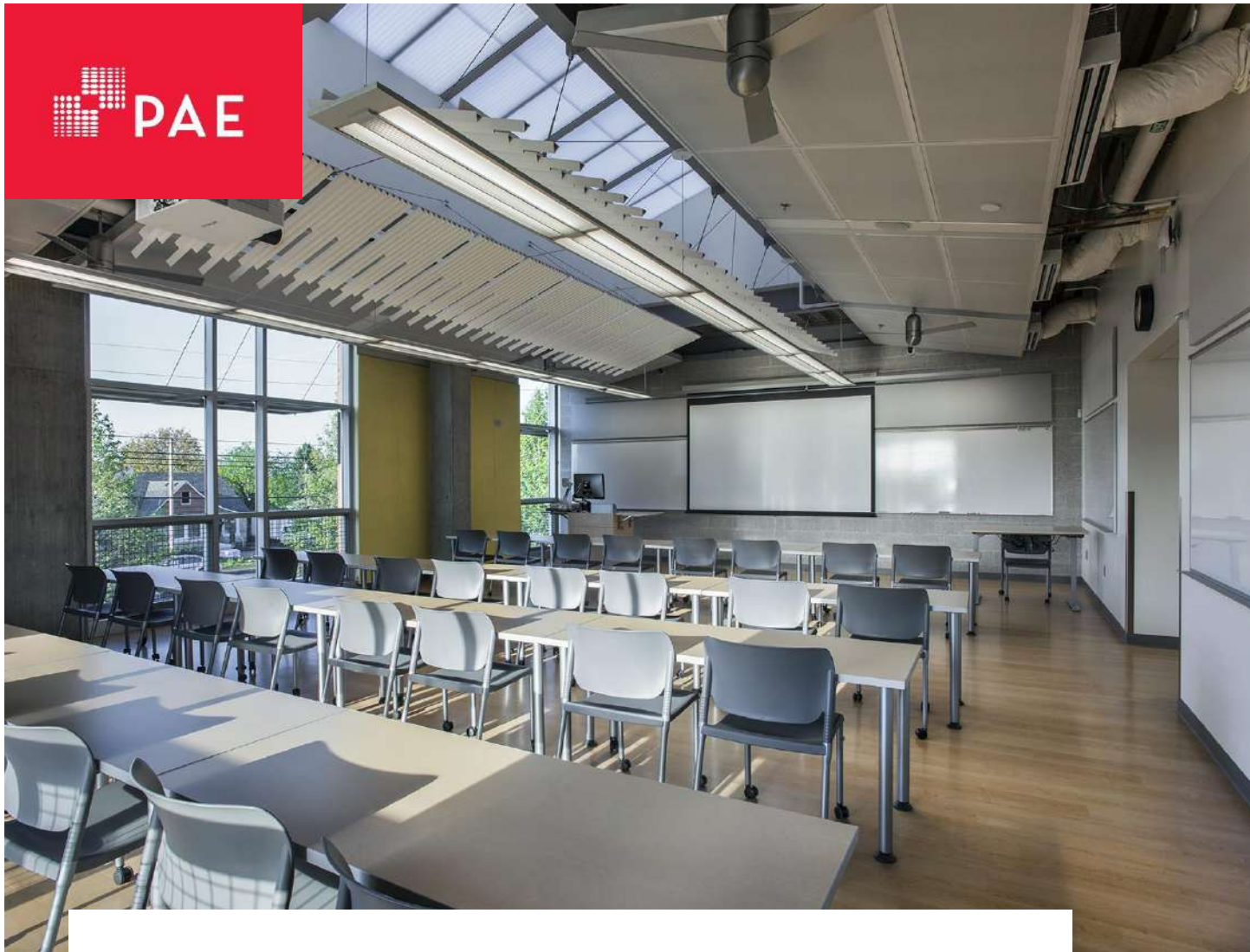
Components anticipated to be exposed metal fabrications include:

- Canopies
- Railings
- Ladders
- Exposed structural components (outriggers, columns, etc.)

Interior Finishes

For Meeting rooms, offices and toilet rooms, refer to the Room Criteria Sheets located in PCC’s District Standards and Guidelines. This document outlines the requirements for room finishes, casework, controls, HVAC, electrical and any applicable specialties for each room type. General circulation areas including reception and waiting areas, study spaces and hallways will receive the following:

- Painted gypsum board partitions, wood framed
- Polished concrete floors
- Painted gypsum board ceilings
- Standard doors and hardware per PCC Capital Project Standards



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PCC Campus-Wide Master Plan

Cascade Public Safety Building

December 14, 2016

pae-engineers.com



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1.0 Mechanical Basis of Design

1.1 HVAC Systems

The existing HVAC system will be demolished.

New 2,500 sf public safety building will be served by 5 ton packaged roof top unit consisting of supply fan, relief fan, DX cooling coil, VSD compressor, indirect gas fired heat exchanger, pre-filter, final filter and mixing box with automatic dampers capable of modulating outside airflow from minimum to full airside economizer. The unit will be located on the roof and installed on vibration isolation curb. Basis of design: Trane

Low pressure galvanized ductwork will be routed from the unit through the ceiling area to supply diffusers. Return air will be ducted from return grilles back to the unit. Approximately one supply diffusers will be provided per 200 sf of floor area and one return grille will be provided per 500 sf of floor area.

Restrooms exhaust fans will be installed in each restroom and ducted to exhaust louvers in outside wall. Basis of design: Greenheck.

A direct digital control (DDC) system, by Honeywell, will be provided to control and monitor new roof top unit. The control system will be integrated into the existing campus control system. Damper actuation will be electric type. Public spaces will be provided with Demand Control Ventilation (DCV). The control system will perform all required control functions, including optimization of equipment and system performance, building pressurization, reliability, equipment life and energy consumption. Restroom exhaust fans will be controlled by occupancy sensors.

1.2 Plumbing Systems

Existing plumbing fixtures and piping will be removed. New cold water pipe will be connected to existing main outside the building and routed to new plumbing fixtures. All plumbing fixtures will be low flow fixtures. L-type copper piping will be used for domestic water distribution. Piping will be insulated up to fixture connection. Cast iron pipe will be provided for sanitary waste and vent.

Low pressure natural gas piping will be routed up roof top unit. All natural gas piping will be schedule 40 black steel with screwed or welded fittings.

15 gallon electric water heater will be used for domestic hot water.

A roof and overflow drain system will be provided as required by code routed underground to the existing storm water main. All storm and overflow drain piping shall be cast iron with no-hub couplings.

1.3 Fire Protection Systems

Public Safety Building will be protected with new wet sprinkler system. Quick response sprinkler heads will be installed. Full area coverage will be provided in accordance with NFPA13.



2.0 Electrical Basis of Design

2.1 Service and Distribution

This document describes the overall intent as it pertains to the power distribution expected for use on the project.

Table 1: Design Criteria

Area	Lighting Systems (VA/SF)	Power Systems (VA/SF)
Offices	0.7 – 1.0	2-3
Service Areas	0.5 – 0.6	0.5

Distribution

The main service will be approximately 400 amps at a voltage 208/120V. The electrical power system will incorporate metering and system performance tracking at the main distribution and sub-distribution panels. The metering will provide information on system loading and power quality.

Power Quality: Quality of power supply is affected by noise sources within a facility as well as outside (utility transferred). Surge protections devices are provided at the service entrance and at sub-distribution panel level. A third level surge protection device is available using the portable plug strips at equipment as required.

Branch Circuit Wiring: Copper conductors in EMT raceway for feeders and homeruns and where exposed to view. Metal Clad (MC) is allowed downstream from homerun where above accessible ceilings.

Equipment Connections: Electrical power connections will be made to all mechanical equipment, to include providing all electrically associated devices such as disconnect switches, contactors, magnetic or manual starters, lock-out switches, etc., not furnished under Division 23. VFD's furnished under Division 23 and installed under Division 26.

Electrical power connections will be made to support miscellaneous equipment. Connections include disconnect safety switches and wiring to support interlocks to remote devices.

Electromechanical Interference (EMI): Provisions in layout of the electrical power system will be made to minimize the impact of electric fields on sensitive lab spaces. Equipment producing fields (motors) are to be located remote from sensitive labs and equipment.

Grounding System

Two grounding criteria will be addressed, safety and performance. A safe grounded power system will be provided in compliance with the 2014 NEC. This ground system consists of the building service ground (multiple ground rods and concrete encased UFER). The safe grounding system will be extended thru out all electrical systems in facility. All metallic systems will be grounded to the building grid.

Performance grounding includes a system of grounding conductors and busses to be used for labs and telecom rooms. The performance ground system will tie into the code required safety grounding system at the main distribution panel ground bus.



2.2 On-Site Power Systems

Uninterruptible Power Supply (UPS)

A 5KW rack mounted UPS will be located in each telecom room to provide conditioned power and provide continuity while generator starting sequence is complete. Generator will provide power to UPS.

2.3 Signal Systems

Fire Alarm

The Fire Alarm system will consist of a supervised addressable supervised, Class B hard wired system. Manufacturer to match PCC standard manufacturer for fire alarm and mass notification systems.

Table 2: Fire Alarm Device Coverage

Device	Coverage
Manual pull stations	Locate as required by PCC or AHJ
Smoke Detectors	Corridors, Air handlers (>2,000CFM), Elevators lobbies, Elevator machine rooms, Elevator hoistways.
Fire Sprinkler Annunciation	Tamper and Flow
Building Annunciation	Remote Annunciation at entry
System output	Combination fire alarm/mass notification speaker and strobe annunciation throughout.
Monitoring	Relay interface for mechanical system shut down and elevator recall.
	Central Station Monitoring

Telephone/Data

Not in scope.

Security

Not in scope.

Audio/Visual

Not in scope.

3.0 Lighting

3.1 Lighting Equipment

Design Criteria

Table 3: Interior Lighting Design Criteria

Area	Source	Light Level Ambient (ave FC)	Light Level Task (ave FC)	Light Level Emergency (ave FC*)
Offices	LED	25-30	35-45	1.0

(* Emergency Lighting: Emergency lighting system and panel capacity will be designed on the basis of 0.25 volt-amperes/SF. of gross space)

Interior Lighting

The electrical lighting systems will be designed in compliance with the State of Oregon Structural Specialty Code. Energy efficient sources and automatic control technologies will be implemented to provide the most efficient and effective electric lighting system for the facility occupants and task. Controls will provide switching and dimming of the lighting to permit maximum use of the available natural light.

Daylighting will provide the first level of illuminations for the majority of the interior spaces. Many spaces will have access to daylight from two sides. The next step will be to use energy efficient local task lighting where appropriate. When additional electrical lighting is required for building interior illumination, high efficient LED luminaires will be used. Illumination issues to be addressed include lighting levels, photo-sensitive areas, uniformity and glare.

Emergency lighting will be provided with integral battery back-up.

Site Lighting

Building lighting will be integrated with the building exterior features. Illumination will be provided for passage and security/safety, and to provide highlights to the exterior elements. All exterior luminaires will be LED and use cutoff optics to address light trespass issues.

Lighting Controls

Control of lighting will be provided by the following methods for the respective tasks/areas:

Table 4: Lighting control Methods by Area

Task/Area	Control Method
Offices	Occupancy Sensor (with manual override)
Building Exterior	Time Clock



PRELIMINARY PROGRAM

PROJECT NAME: Portland Community College Facilities Master Plan Capital Projects	PREPARED BY: NP/SG	DATE: 10/28/2016	SRG PROJECT NO.: 216012
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**05
Cascade Public Safety**

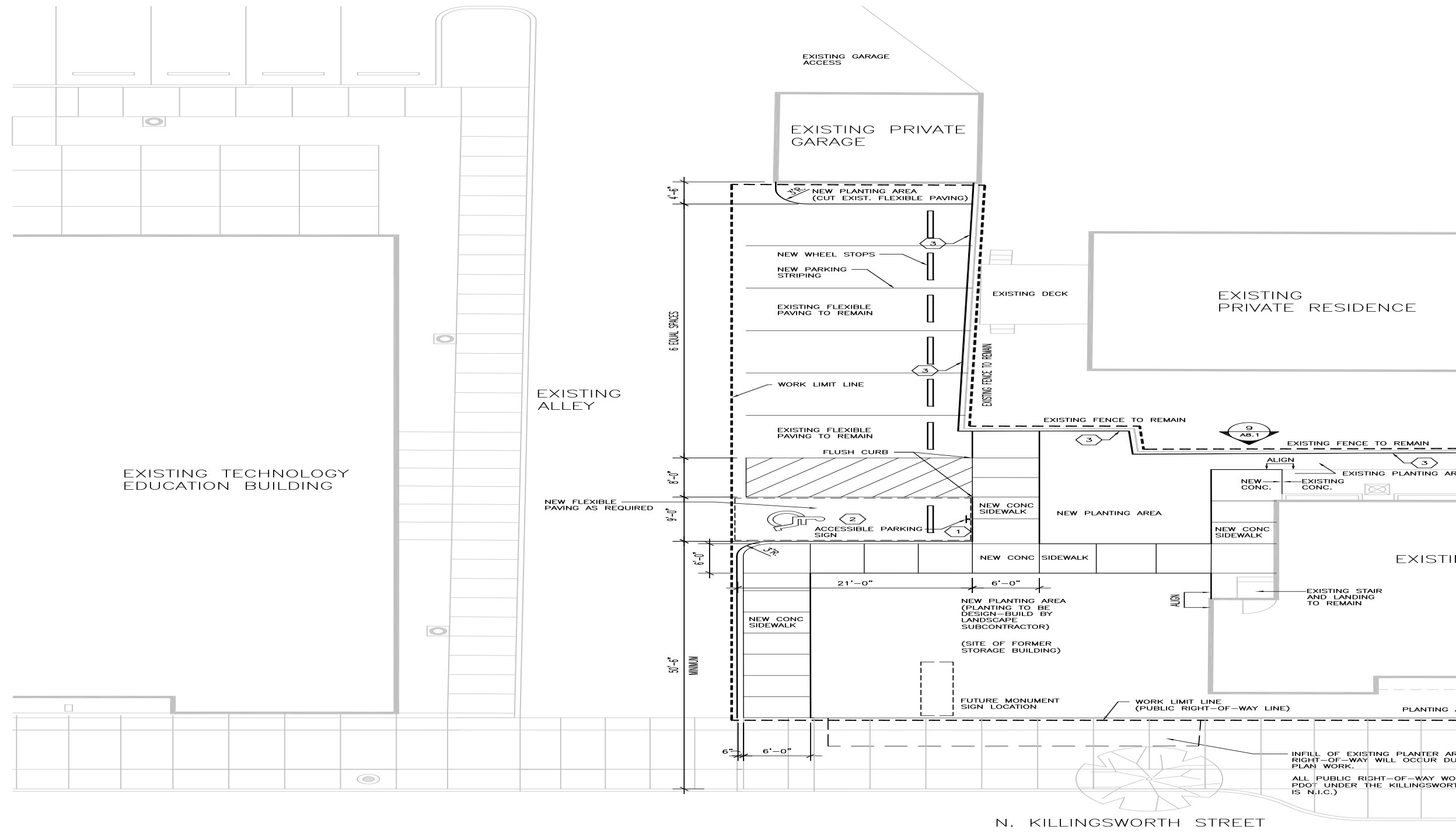
Derrick Foxworth. Erik Hargrove. Rebecca Ocken

	Seats	Qty	SF/Each	NSF	Comments
Program					
INTERIOR:					
Office - Portland Police Bureau		1	120	120	
Office - Sergeant		1	120	120	1 FTE
Office - Manager		1	120	120	Future
Workstation - Officer		5	64	320	8 FTE - Share workstations between shifts
Meeting Room	10-12	1	360	360	include technology, power, data, phone, cable. Also functions as lunchroom + disj
Locker Room - Men		1	100	100	
Locker Room - Women		1	100	100	
Kitchen		1	120	120	Full kitchen w/all appliances (Public safety will buy/maintain appliances)
Storage		1	100	100	Emergency supplies. Tool bench
Technology Closet		1	150	150	Server, electrical, mass notification, monitors/DVR
Lobby/Reception		1	100	100	
Medical room		1	80	80	low priority
				1,790	NSF
				1.4	Grossing Factor
				<u>2,506</u>	TOTAL BGSF

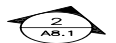
EXTERIOR:					
Bike Parking					
4 bikes	-	-	-		
Vehicle Parking					
3 Campus Safety vehicles	-	-	-		
3 Portland Police patrol cars	-	-	-		
2 Public Safety overflow spots					

NOTES:

Incorporate minimum of two entries/exits to the building
All windows should be bulletproof and have the ability to be opaque



1 SITE PLAN
1/8" = 1'-0"



Portland Community College

Facilities Plan - Phase 1

06 – Sylvania Site Work

Capital Improvements Cost Estimate

December 15, 2016



Portland Community College
Facilities Plan – Phase 1

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Brady Berry, Project Manager
WH Pacific

Estimating

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Rider Levett Bucknall

Transportation

Todd Mobley, Principal
Lancaster Engineering

Land Use Planning

Beverly Bookin, Principal
The Bookin Group

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Site	5

Project Overview

The Sylvania campus is currently in need of a wide variety of improvements including ADA upgrades, storm water enhancements, addition of electric vehicle charging stations, etc. SRG Partnership (SRG) met with Portland Community College (PCC) and reviewed GBD Architects “PCC Sylvania Campus Site Master Plan Concepts” which was completed on April 8th, 2011. This document took a comprehensive look at the site and proposed many improvements. Over the past 5 years, some of these improvements have been implemented, but many more are still slated to be completed which are covered in this report. SRG also received a parking study from Kittelson & Associates, Inc. that was completed on September 20th, 2016. This report provided a complete campus parking assessment and recommendations on both addition of ADA stalls as well as modifications to existing stalls to bring them into compliance.

Zoning

Proposed parking lot improvements that lead to an increase or decrease in the parking count would need to be considered against existing land use approvals. The 1993 Master Plan remains in effect with some building capacity remaining, however, if changes to the number of parking spaces are significant it could trigger a Type II review with the City of Portland.

Transportation

The Sylvania site work includes the following transportation related improvements:

- Roundabout at entrance from 49th Avenue
- New kiosk locations
- New bus stop location
- ADA upgrades
- Pedestrian path near the campus perimeter
- Additional pedestrian path improvements

Each of these improvements will need traffic evaluation to maximize the efficiency of each improvement. The roundabout will need to be evaluated for number of lanes and optimal configuration to minimize delay and queuing issues. The kiosk and bus stop locations will need to be evaluated to ensure placement does not result in queues that impact traffic flow.

For ADA improvements, the usage of the spaces is recommended. This should take into consideration the utilization and location of spots. Pedestrian path additions should not take into consideration usage, but should be installed at all possible locations on the campus adjacent to the roadways. Where possible a buffer between the roadway and the sidewalk should be provided. Potential crossing locations should be identified and traffic calming and roadway lighting should be installed near the crossings to minimize the potential for conflicts between modes.

The overall evaluation work for these improvements is anticipated to be less than \$30k worth of effort.

Site

On-site landscape improvements at the existing Sylvania campus include a variety of predominately site based improvements not associated with new buildings. Projects are as follows:

- Entry roundabout
- Demolition of existing pay station / renovation of ticket kiosks
- Reconfiguration of bus drop-off location
- Storm water Improvements at N and NW parking areas
- Site improvements at Learning Garden
- Campus pedestrian perimeter path
- Electric car charging stations
- Pedestrian neighborhood connection

Entry Roundabout

Creation of a new vehicular round-about at the entrance from 49th Avenue will include roadway re-design, associated grading and storm water routing. Landscape at roundabout will include specimen trees greater than 3" caliper, field selected, as well as high-quality ornamental plant material. Imported topsoil and full coverage irrigation is assumed. An allowance for signage is also anticipated. Adjustment and addition of pedestrian walkways may be needed to accommodate re-alignment and enhance pedestrian circulation. See GBD's MP which estimated this improvement at \$994,496.

Demolition of existing pay station area / renovation of ticket kiosks

Demolition of the existing pay station structures and relocation/renovation of ticket kiosks will include demolition and replacement of entry road landscaping including adjacent trees, shrubs and groundcover plantings. Re-use of stockpiled topsoil, if available and meeting PCC standards, is acceptable for this project. Existing curb cuts and pull out drive will be removed per new design.

Reconfiguration of Bus Drop-off Location

Relocation and reconfiguration of the existing bus drop-off location will include roadway re-design, associated grading and storm water routing; see civil. Associated landscape improvements will include pedestrian sidewalks and plaza hardscape improvements at new drop-off zone and pedestrian sidewalk improvements along modified bus exiting route as needed. The drive aisle would have special paving (pavers or concrete) along the main drop of zone. The drop off walkway/plaza will be enhanced with extra wide concrete (or pavers). High quality seating and trash receptacles will be included at drop-off location. Pedestrian scale lighting enhancement will also be included to ensure passenger safety. An allowance should be included for signage or campus directory adjacent to new drop-off zone.

Storm water Improvements at N and NW Parking Areas

Storm water improvements at the N and NW parking areas will incorporate bioswale specific planting including trees and shrubs at swale perimeters and bioswale adaptive edges and rushes at swale basin. Associated slotted curbs will allow surface run-off to enter storm water areas. Imported topsoil assumed at surrounding ornamental planting beds. Soils in bioswales to be per City of Portland BES standards. Adjustment of parking layout, vehicular circulation and striping as needed to accommodate storm water improvements. The facilities are planned in areas between parking stall bays but will

require asphalt removal and construction of end planter areas. The facilities will have curbs with curb cuts. See GBD MP Sketch. GBD's MP has approximately 13,050 sf of new vegetated stormwater planters.

Site Improvements at Learning Garden

Site improvements at the Learning Garden will be related to facilitating ADA access including new curbs, pedestrian sidewalk and ramp, tactile warning pavers, striping and signage. Minor associated landscape planting will be included.

Campus Pedestrian Perimeter Path

An eight foot wide pedestrian asphalt path will be constructed around the campus perimeter. Asphalt section including depth of lifts and base course suitable to accommodate light campus maintenance vehicles. Improvements will include wayfinding signage at six points along the path. No path lighting is assumed. GBD's MP has estimated the new asphalt path at approximately \$378,671.

Electric Car Charging Stations

Improvements as needed to account for landscape planting damaged during modification of curbs, parking area and installation of (10) electric car charging stations and service for additional stations in the future.

Pedestrian Neighborhood Connection

Site improvements will include an 8 foot wide pedestrian concrete pathway connecting campus property to surrounding neighborhood pedestrian sidewalks. Concrete section including depth and base course suitable to accommodate light campus maintenance vehicles. Improvements will include wayfinding signage at two points along the walkway. No path lighting is assumed.

All site improvement projects noted above will take into account complexities of staging on an active campus, possible modification of associated parking and vehicular circulation patterns and impacts on general existing campus landscape. Site improvements will also meet all City of Portland and PCC Capital Project Standards requirements including those stated below.

Tree Preservation and Protection

Existing site trees, including those in adjacent r.o.w., greater than 2 inch caliper will be reviewed by a certified Arborist to assess state of trees affected by project development prior to design of the project. Arborist report will form the basis for generation of a Tree Root Protection Zone (TRPZ) document per PCC Capital Project Standards. All trees to remain will be protected throughout construction per City of Portland standards.

Soil Preparation

Native top soil and base soil analysis to be completed by a certified soil laboratory prior to design of the project. Associated soil report, including both chemical and physical properties of the soil, to serve as the basis for subsequent soil amendment requirements as needed. Soil preparation to meet the following PCC Capital Project Standards:

- Where imported topsoil is needed, chemical and textural analysis of topsoil and organic amendments is mandatory and will follow the same testing evaluation as described for native soils.
 - o Testing is to be performed by a PCC pre-approved testing agency. Owner's Representative to provide contact information.
 - o Soil Report and adjustment recommendations must be reviewed and approved by Owner's Representative prior to final Bid Document preparation.
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 - o Lawns: Provide 12" depth minimum
 - o Shrub and ground cover areas: Provide 18" depth minimum
 - o Tree pits: Provide shallow area of compacted backfill below rootball to reduce settlement.
- Planting beds and lawn areas to be filled with pre-mixed amended topsoil in lifts not to exceed 8" unless approved otherwise by Owner's Representative.
- All amended topsoil areas to be rolled to achieve compaction of maximum 85% proctor.
- Top Soil Suppliers:
 - o S+H Logging
 - o ProGrow
 - o Mt. Scott Fuel
- Bioswale and retention ponds are excluded from these provisions.

Planting

Any planting in the public r.o.w. will adhere to City of Portland standards, with plantings selected from approved City of Portland Plant Lists. All campus planting shall be per PCC Capital Project Standards.

On-site planting will consist of a palette largely adapted to Pacific Northwest growing conditions. Tree plantings in paved areas will use large basalt gravel at the tree pits. Silva Cells to be provided for specimen trees in formal hardscape plazas. All specimen trees will be field tagged.

Woody shrub material intended for perimeter screening and ornamental planting at the Entry Plaza will be installed as 5 gallon containers. Plant material for interior parking areas and storm water facility perimeters to be 2-5 gallon. Storm water basin plantings and groundcover plantings to be 1 gallon containers.

All planting areas will receive 2" depth organic mulch and will be fully irrigated.

Irrigation

All site irrigation will integrate a high efficiency delivery system and meet the following PCC Capital Project Standards:

- Provide separate water meter including all required backflow prevention devices, flow meters, master valves, etc. for irrigation system.
- Where code allows, provide below grade double check valve in lieu of above grade reduced pressure backflow devices.
- All expanded campus systems are to be contiguous with existing Maxicom controlled system and complete with remote controls, flow sensors, rain gauges and master valve controls.
- Independent Irrigation Audit is required at the completion of all projects.
- All mainline runs are to be laid straight without arc

Site Furnishings

Site furnishings should meet or exceed requirements per the PCC Capital Project Standards including the following:

- Benches to be of sturdy construction with materials that integrate with the surrounding site elements.
- Benches, chairs and tables to allow for maximum flexibility of user including seating for ADA accessibility both in placement and in bench design.
- New benches to match existing where appropriate.
- Paint color for all metal components of site furnishings is to be:
- Paints: Black, Powder coat

Site furnishings should be assumed to be high quality, commercial grade products supplied by the following manufacturers or approved equal:

- Landscape Forms; www.landscapeforms.com
- Forms + Surfaces; www.forms-surfaces.com
- Victor Stanley; www.victorstanley.com

Seatwalls and site benches to provide permanent opportunities for year-round seating at primary gathering spaces.

Bike racks to be provided per City of Portland standard where included in r.o.w.. Provide bicycle parking near, but not directly adjacent to primary building entries. Bike fixtures shall be stainless steel with brushed finish, imbedded, and installed at recommended spacing according to the Association of Pedestrian and Bicycle Professionals (APBP). Bicycle racks should be assumed to be high quality, commercial grade products supplied by the following manufacturers or approved equal:

- Landscape Forms; www.landscapeforms.com
- Huntco; www.huntco.com

Provide allowance for combination trash/recycling receptacles to be located adjacent to building entries and at primary gathering spaces. Color to be matt black powder coat. All receptacles must be covered.

Receptacles should be assumed to be high quality, commercial grade products supplied by the following manufacturers or approved equal:

- Rendezvous Recycling; www.interface.com
- Victor Stanley; www.victorstanley.com

Site handrails to be stainless steel. Imbed or bolt-down with tamper-proof hardware attachment.

Walls

All site walls and raised concrete planters shall be formed in accordance with PCC Capital Project Standards including:

- Cast-in-place concrete retaining walls/seat walls must be chamfered with grooves, for sufficient depth installed on all edges, to deter skateboards.
- Continuous surface/edge of walls under 5' in height without skate deterrent must not exceed 4 lineal feet.
- All stained concrete is to be sealed.
- Custom concrete mixes are to be avoided. Standard mix designs that are industry tested are preferred.
- Graffiti sealing is required on all exposed surfaces of landscape walls (over 24 inches height). Application method of sealant must not come into contact with the ground or waste water systems.
- Vertical extrusion or interruption (joint) strategies must be included in design of concrete walls and curbs to minimize need for additive skate deterrents.

If additive skate deterrents are included, skate deterrents should be stainless steel, imbedded, commercial grade deterrents such as:

- Skate Stoppers; www.skatestoppers.com or approved equal.

Paved Areas – Pedestrian Concrete

All horizontal exterior pedestrian concrete flatwork to be finished medium broom texture or exposed aggregate dependent on final project design requirements and meet PCC Capital Project Standards as follows:

- Minimum thickness for sidewalks should be 6" of 4000psi reinforced concrete over 4" compacted gravel over compacted subgrade.

Paved Areas – Unit Pavers

All pedestrian areas with unit pavers should comply with the following PCC Capital Projects Standards:

- Design of Unit Pavers should assume occasional maintenance vehicle traffic.
- Preferred edge restraint for unit pavers is concrete or metal.
- Paver at edge should be no less than half of the paver width, or minimum 3", whichever is larger.
- Unit Pavers systems should be surfaced sealed to prevent weeds.

- Typical unit paver section; set paver on compacted ¼”-0 crushed rock with fines. Minimal use of sand over rock for leveling.

Site mitigation

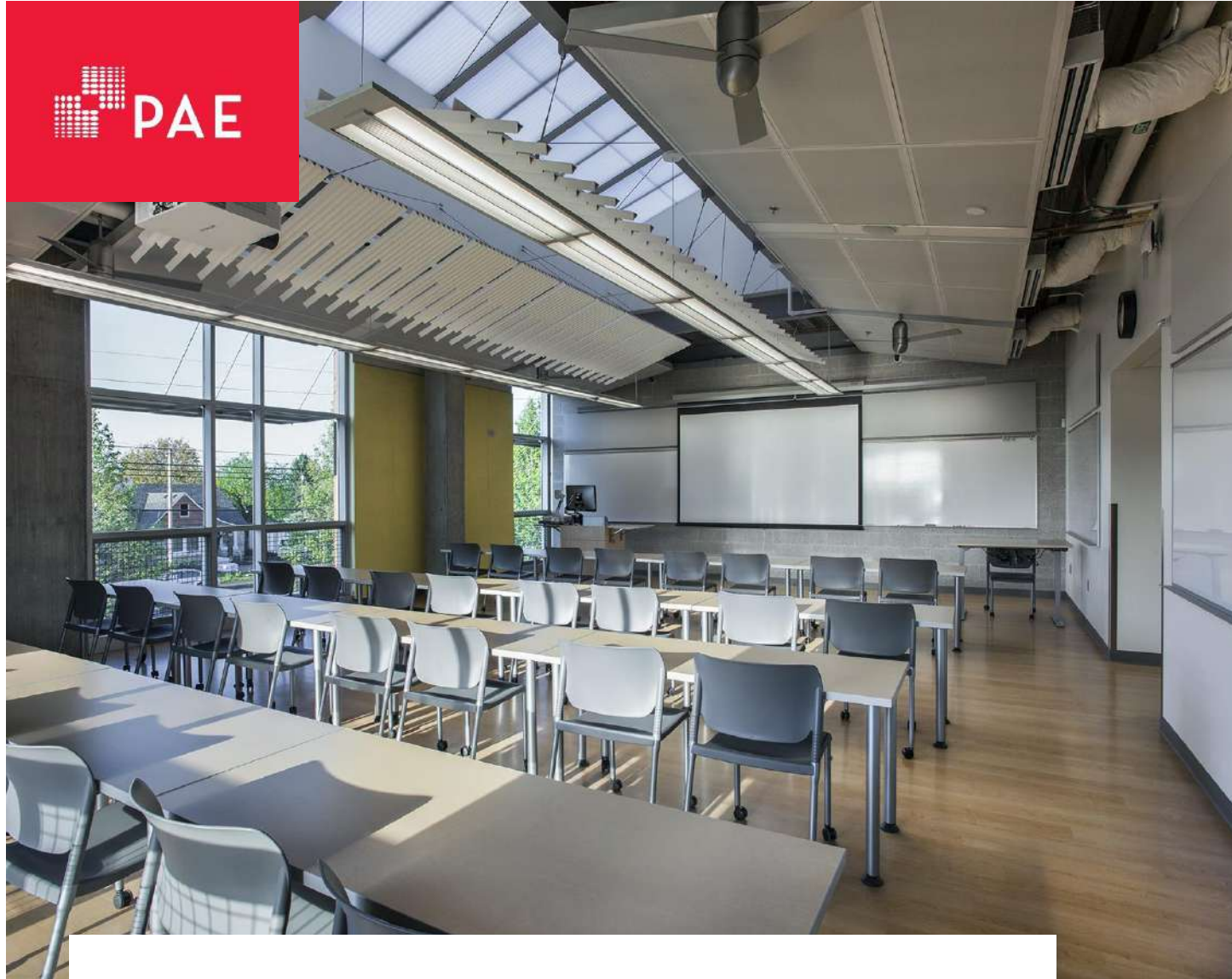
Current project assumptions do not assume or account for any environmental or hazardous site conditions requiring mitigation.

For coordination with other disciplines

Site Lighting

Pedestrian Ways should meet the following PCC Capital Projects Standards:

- Lighting fixtures should have appropriate BUG rating to address glare and light trespass.
- Lighting near the building should employ LED or fluorescent technology to minimize problems with emergency lighting.
- Lighting systems should be designed to an average of
 - o 0.6 fc at ground level, with ave : min uniformity of 6:1, unless in conflict with egress requirements.



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PCC Campus-Wide Master Plan

Downtown Center

December 14, 2016

pae-engineers.com



Contents

1.0	Electrical Basis of Design	1
1.1	Service and Distribution	1
1.2	Signal Systems	1
2.0	Lighting.....	2
2.1	Lighting Equipment.....	2

Project Directory

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Portland Community College

Architect

SRG Partnership

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503-222-1917

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Senior Associate
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Mechanical and Electrical Engineer

PAE

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Mike Streb, PE, LEED AP

Electrical Engineer of Record
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Chelsea Cassidy

Project Coordinator
chelsea.cassady@pae-engineers.com



1.0 Electrical Basis of Design

1.1 Service and Distribution

This document describes the overall intent as it pertains to the power distribution expected for use on the project.

Distribution

Provide (1) 75KVA 240/120V transformer and 225A distribution board in nearest building electrical room for EV charging stations.

Provide 30A, 240V connection from each charging station to distribution board. Assume 100 linear feet for each connection.

(10) Level 2 EV charging station pedestal and connection. Basis of design: Eaton EV.

Branch Circuit Wiring: 30 amp, 240V connection from each pedestal to distribution panel.

1.2 Signal Systems

Fire Alarm

Not applicable.

Telephone/Data

Not in scope.

Security

Not in scope.

Audio/Visual

Not in scope.



2.0 Lighting

2.1 Lighting Equipment

Site Lighting

Add new site lighting matching existing luminaire and spacing.

Lighting Controls

Provide new programmable lighting control relay panel to control site lighting. Integrate into existing campus scheduling.

An aerial photograph of the Portland Community College Sylvania Campus. The image shows several large, white, rectangular buildings with flat roofs, interspersed with parking lots filled with cars. A prominent red running track is visible in the lower-left quadrant. The campus is surrounded by dense green trees and residential neighborhoods with houses and streets. The text is overlaid in a clean, black, sans-serif font.

Portland Community College Sylvania Campus

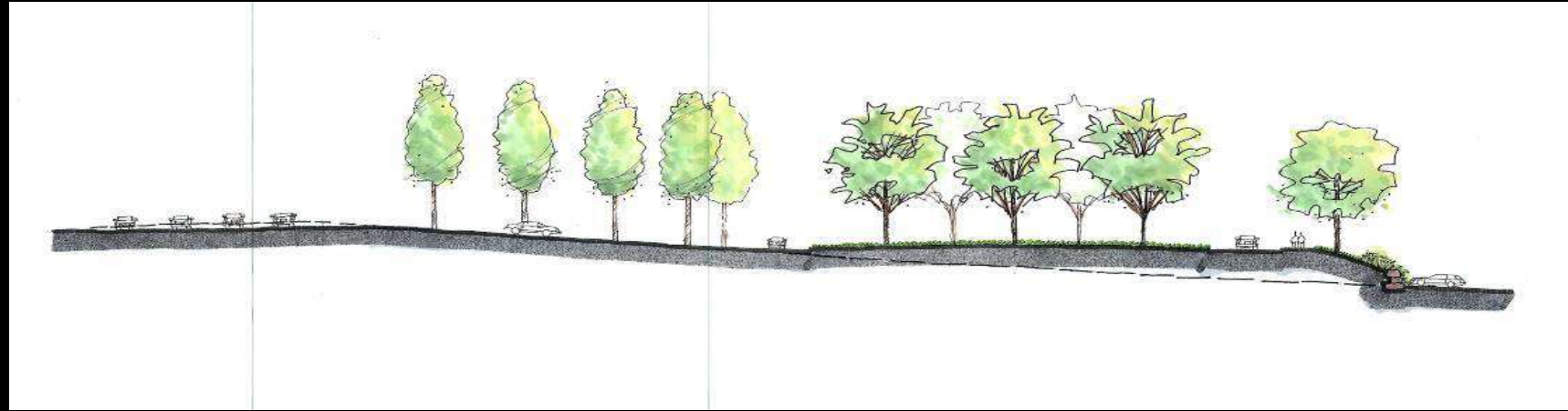
Site Master Plan Concepts

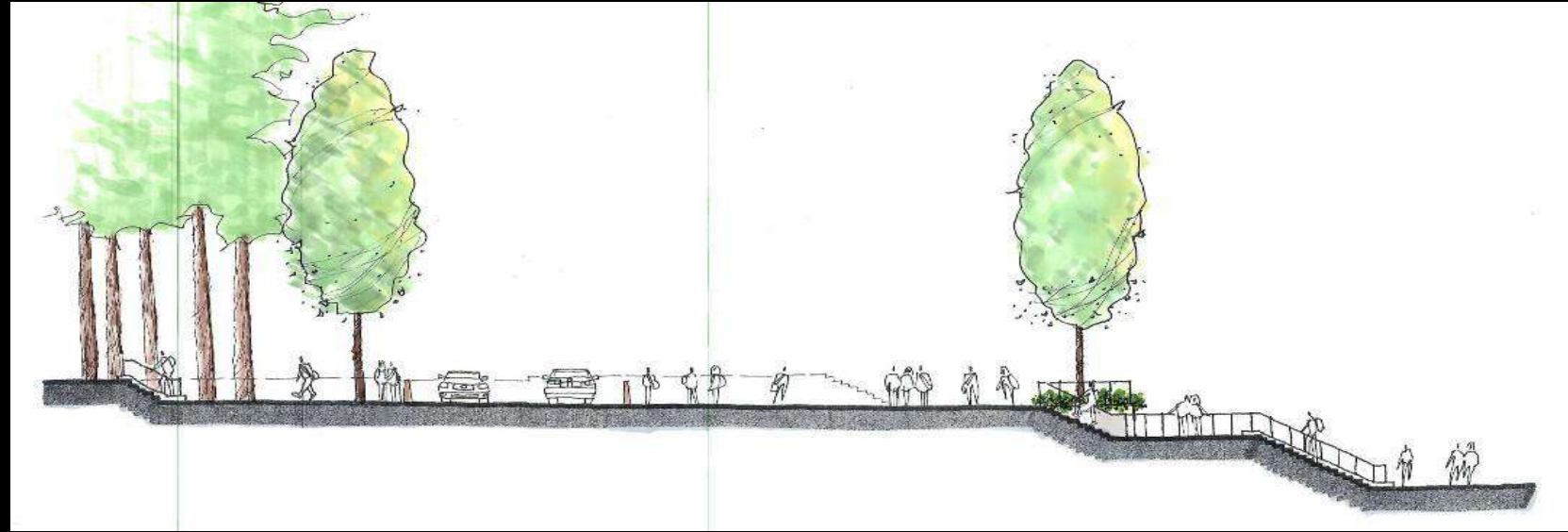
GBD Architects
Mayer/Reed

April 8, 2011



**Landscape Concept
Tree Planting Opportunities**





entry walk with special paving

speed table crossings on loop road

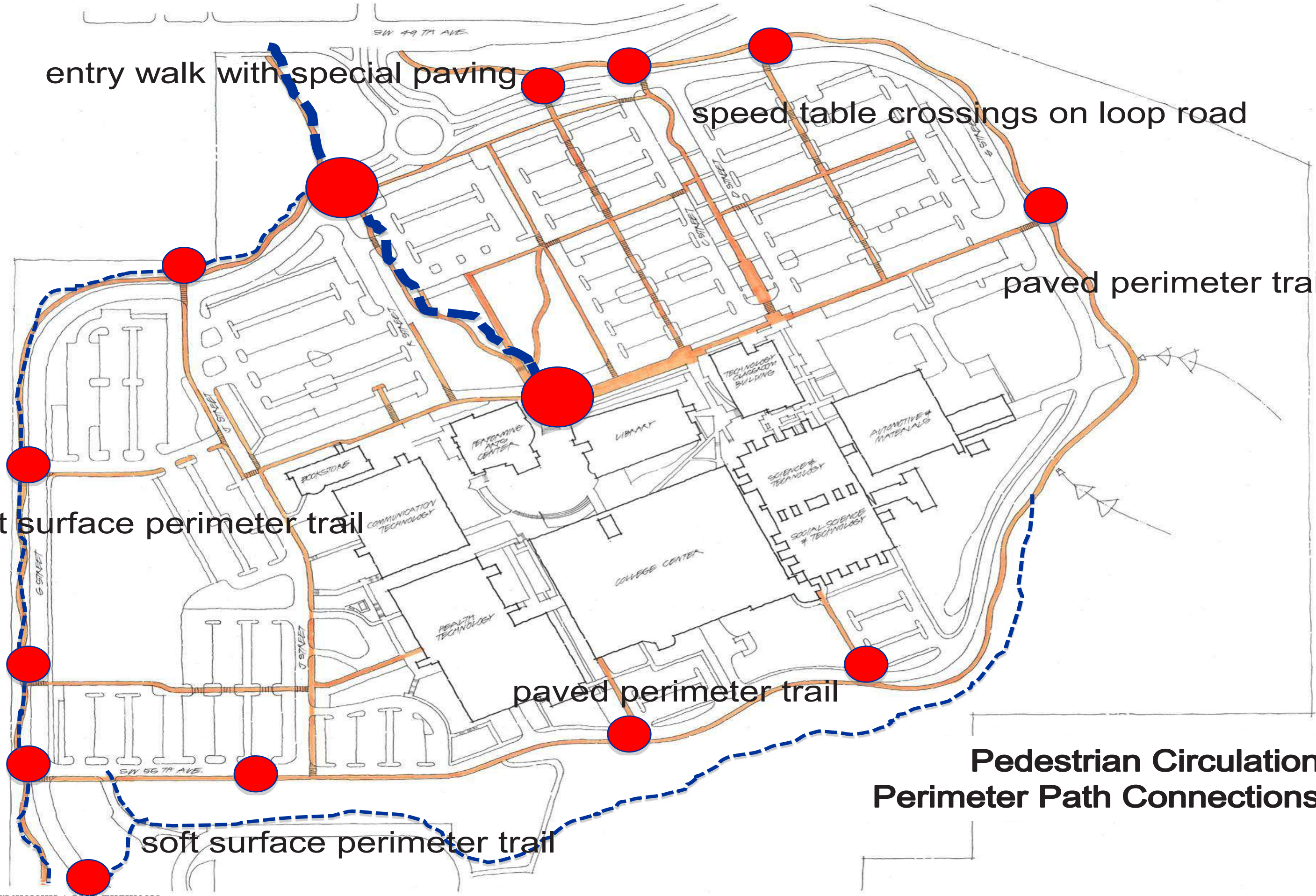
paved perimeter trail

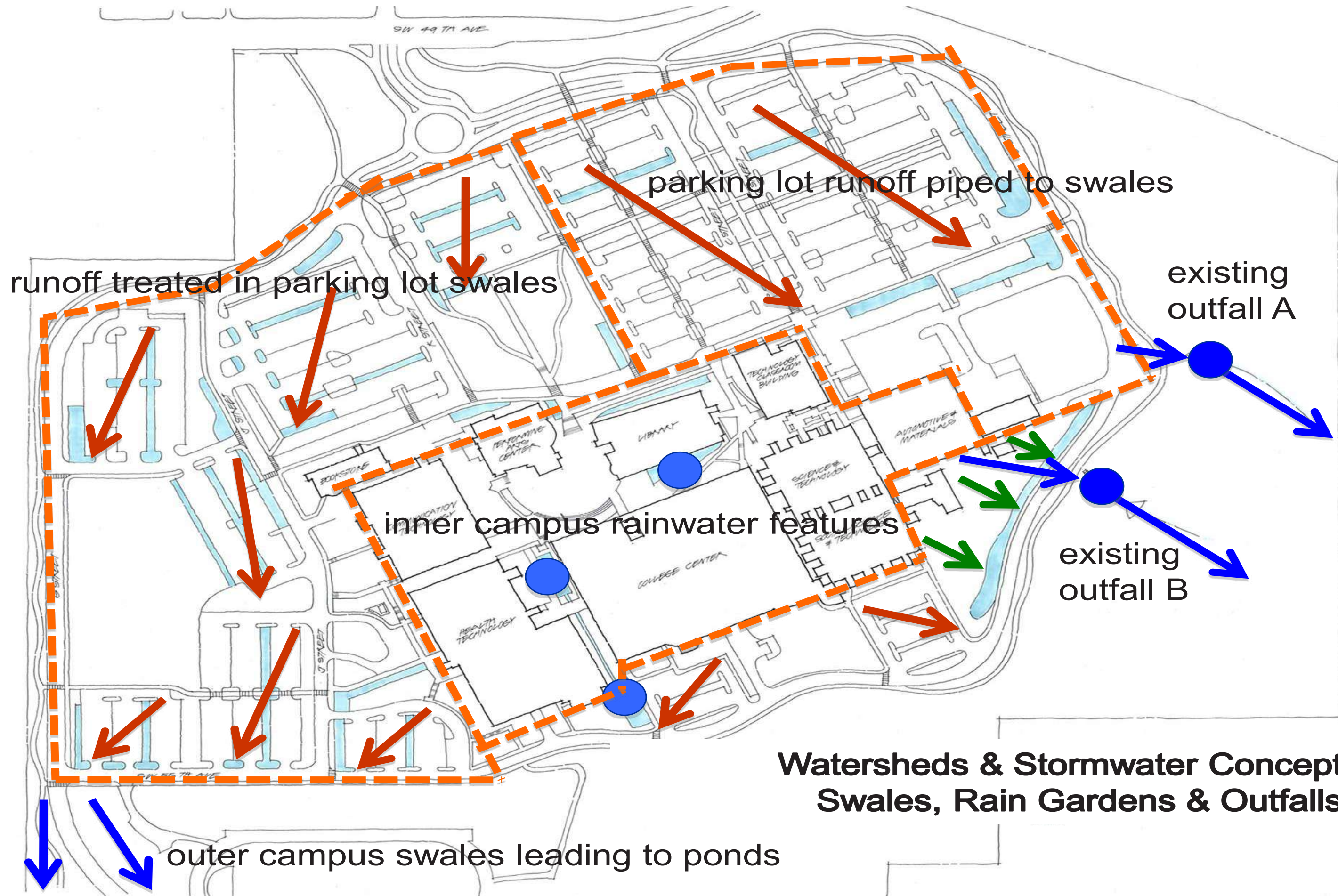
soft surface perimeter trail

paved perimeter trail

soft surface perimeter trail

Pedestrian Circulation Perimeter Path Connections





runoff treated in parking lot swales

parking lot runoff piped to swales

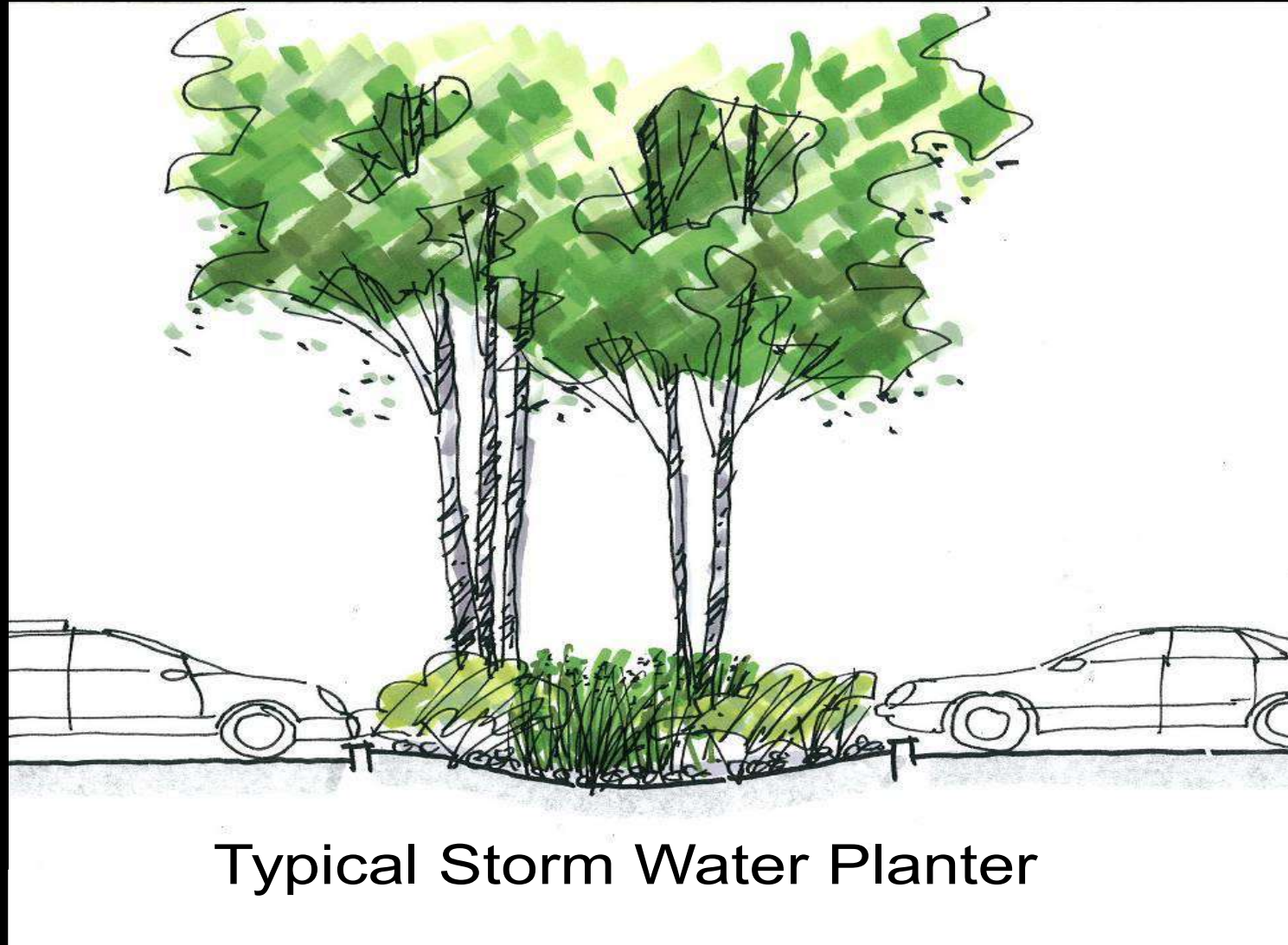
existing outfall A

inner campus rainwater features

existing outfall B

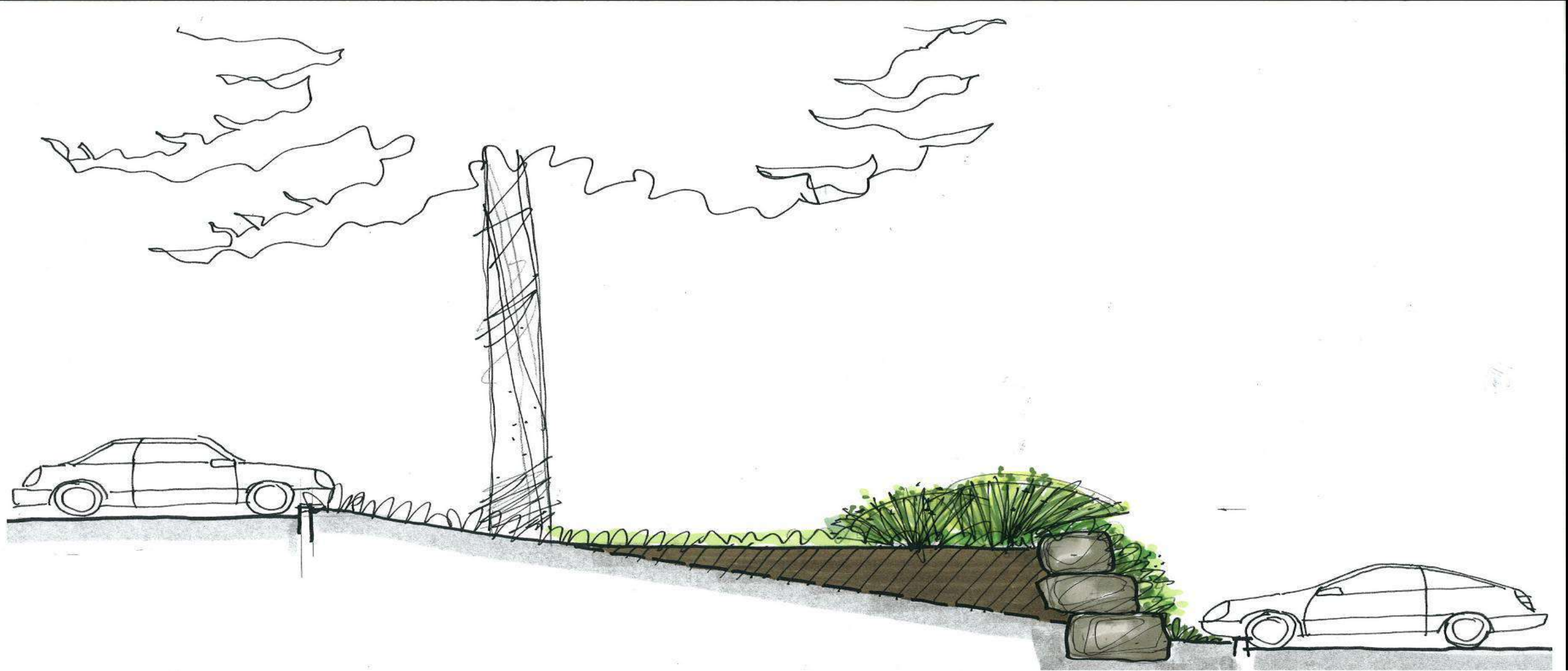
Watersheds & Stormwater Concept Swales, Rain Gardens & Outfalls

outer campus swales leading to ponds



Typical Storm Water Planter



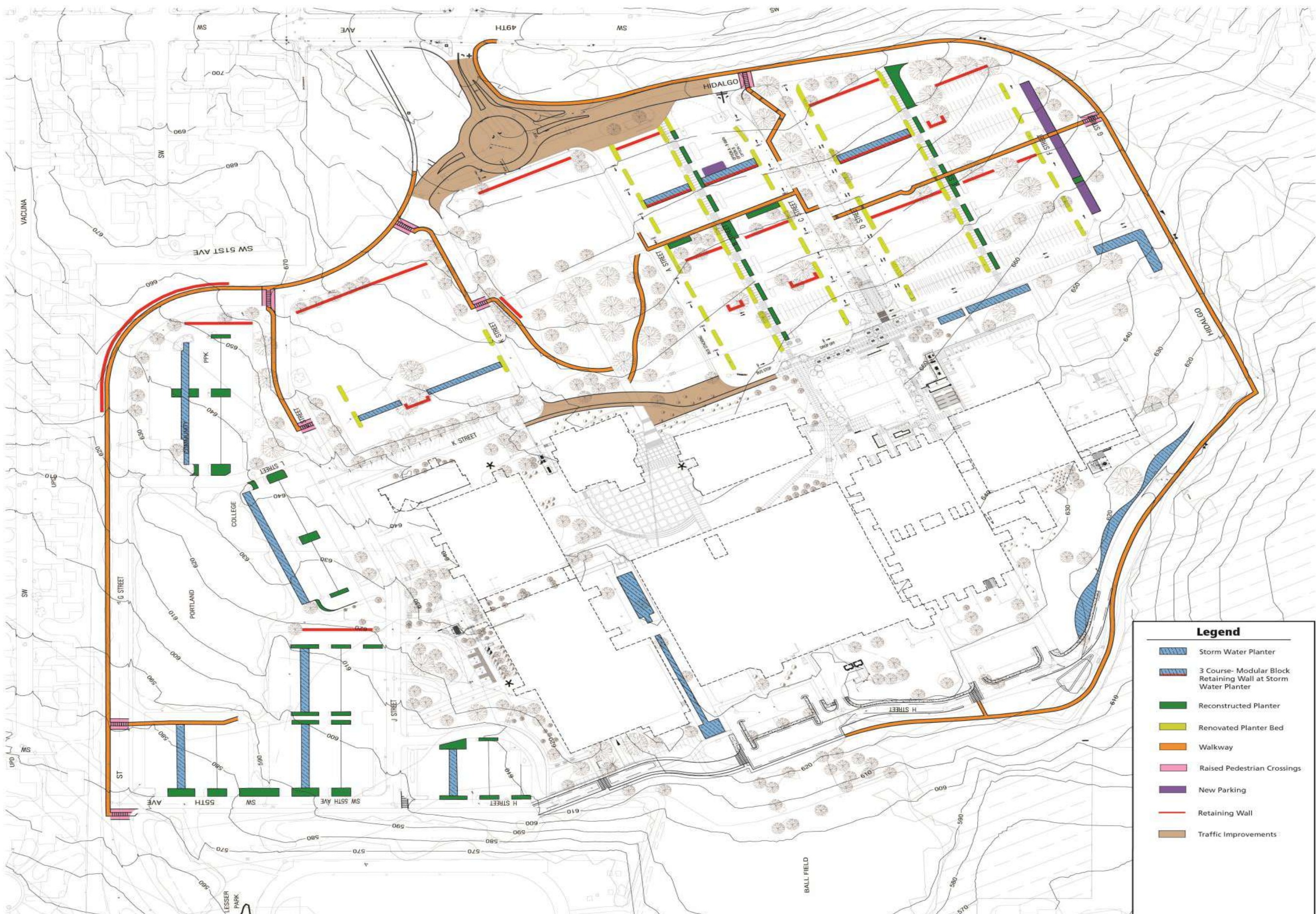


Planter Section



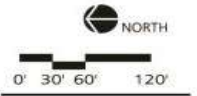
**Landscape Concept
Tree Planting Opportunities**

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Legend

- Storm Water Planter
- 3 Course- Modular Block Retaining Wall at Storm Water Planter
- Reconstructed Planter
- Renovated Planter Bed
- Walkway
- Raised Pedestrian Crossings
- New Parking
- Retaining Wall
- Traffic Improvements



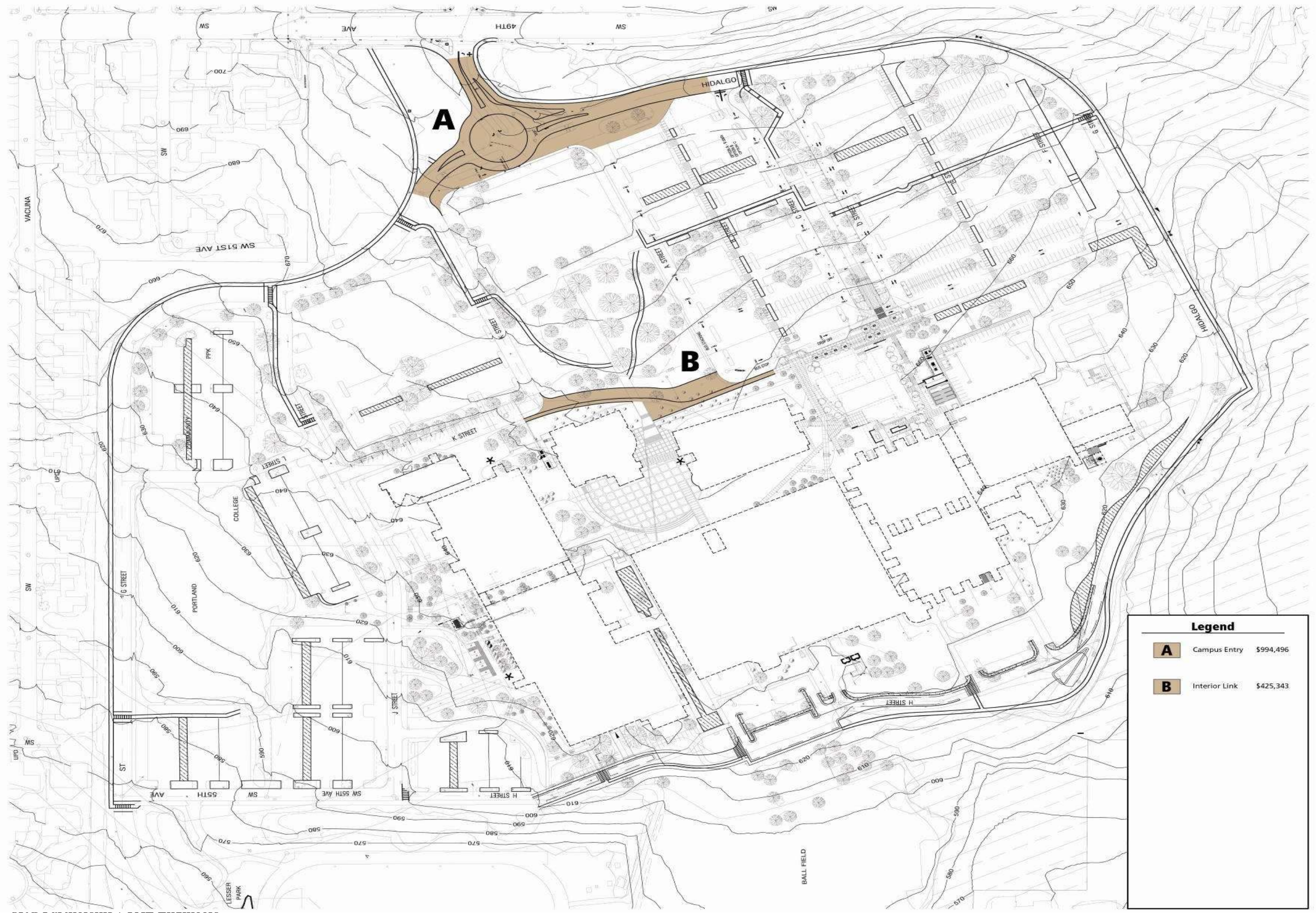
Revisions

Submittal / Date
 MASTER PLAN
 02/02/11

Project
 PCC SYLVANIA
 MASTER PLAN
 Portland, Oregon

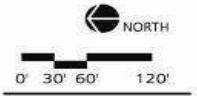
Sheet Title
 SITE MASTER PLAN

Sheet No.
1



Legend

A	Campus Entry	\$994,496
B	Interior Link	\$425,343



Revisions

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Sheet Title
 TRAFFIC IMPROVEMENTS

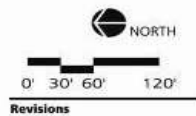
Sheet No. **2**



Legend

- New Parking Areas
6431sf x \$12.81/sf = \$82,382
- Removed Parking Areas

Total Spaces Gained:	37
Total Spaces Lost:	21
Net Gain:	16



Revisions

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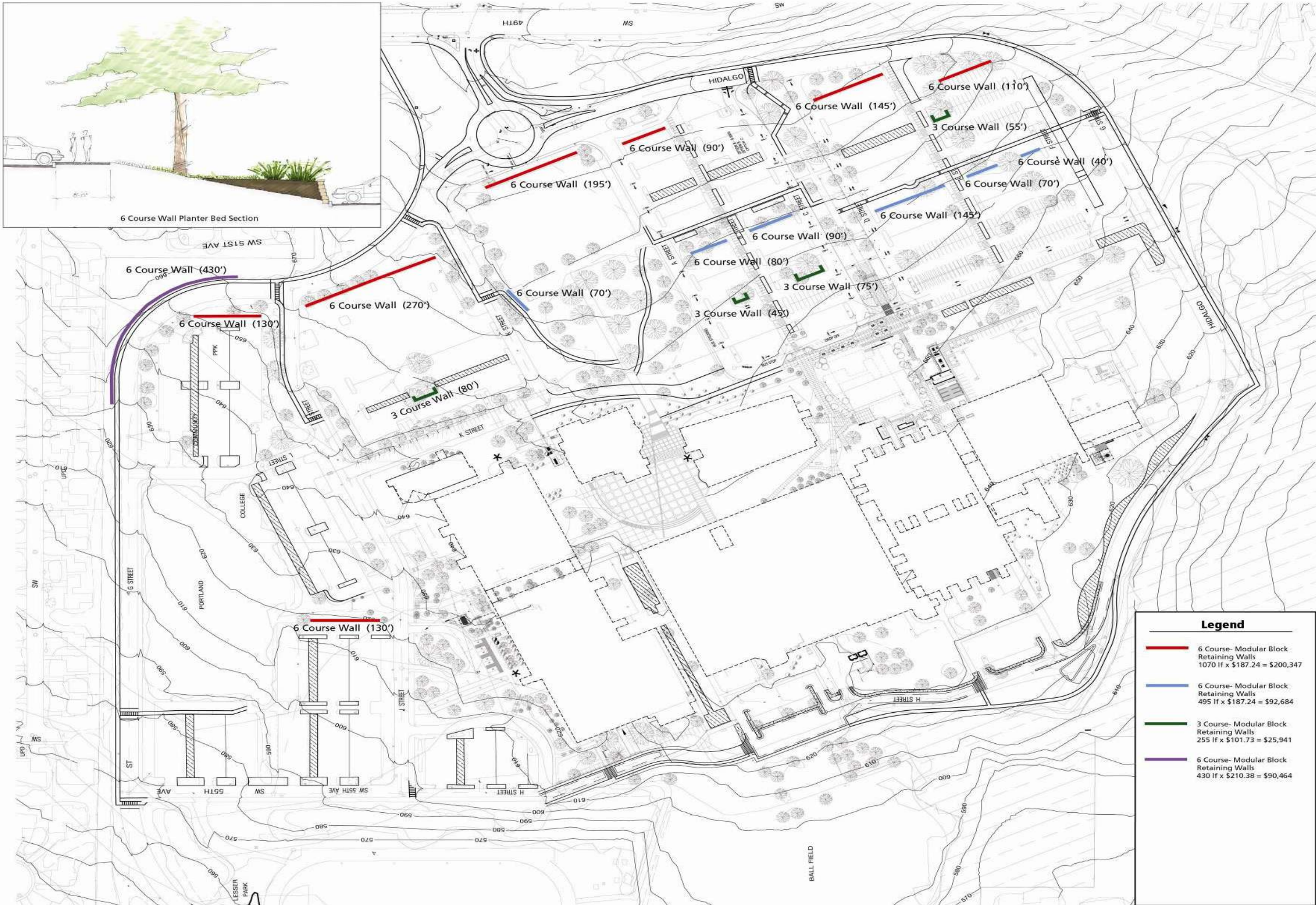
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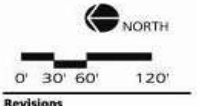
Sheet Title
 NEW PARKING PLAN



6 Course Wall Planter Bed Section



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Revisions

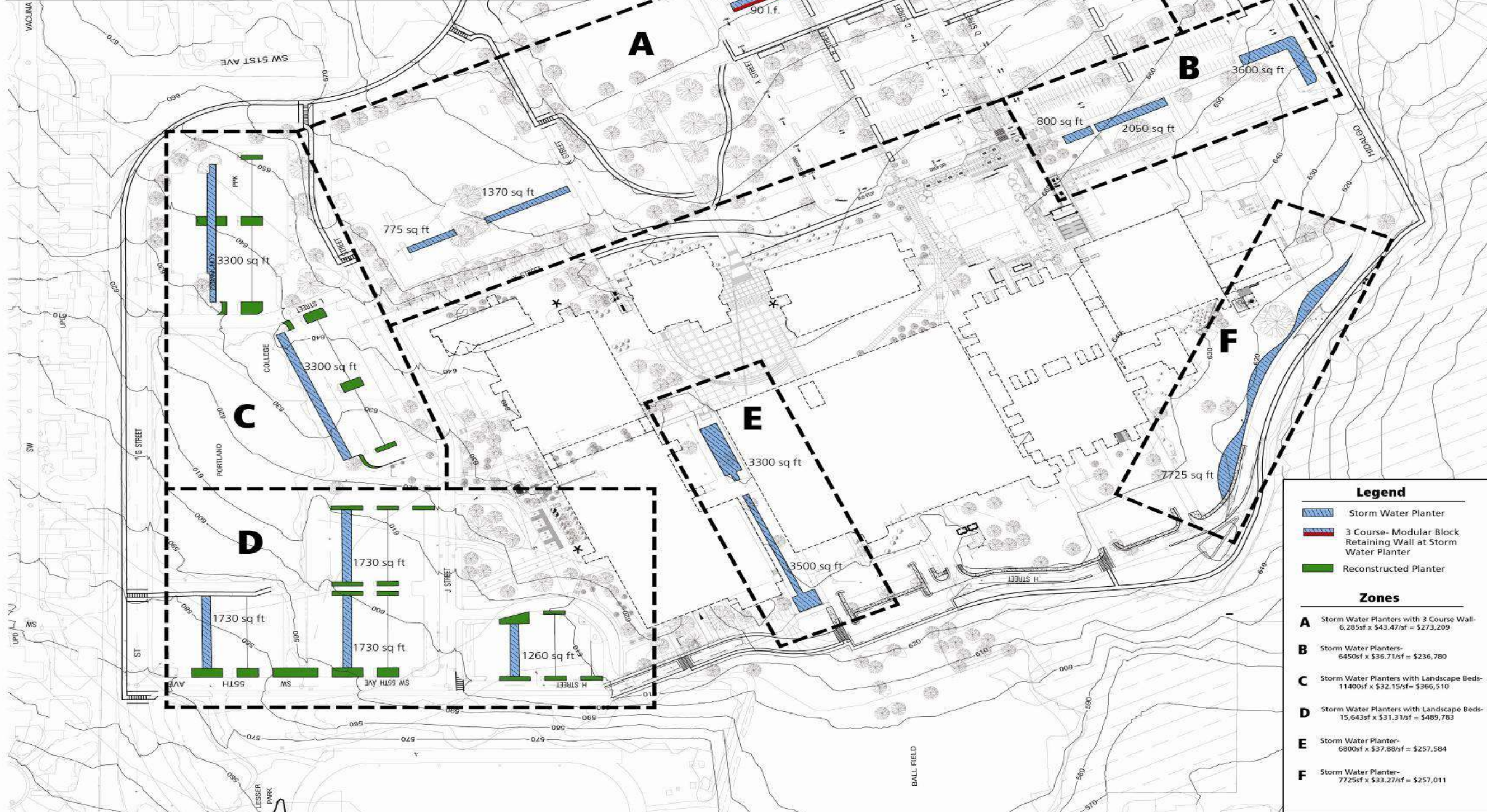
Submission / Date
 MASTER PLAN
 02/02/11

Project
 PCC SYLVANIA
 MASTER PLAN
 Portland, Oregon

Sheet Title
 EROSION CONTROL PLAN

Sheet No.
4

Legend	
	6 Course- Modular Block Retaining Walls 1070 lf x \$187.24 = \$200,347
	6 Course- Modular Block Retaining Walls 495 lf x \$187.24 = \$92,684
	3 Course- Modular Block Retaining Walls 255 lf x \$101.73 = \$25,941
	6 Course- Modular Block Retaining Walls 430 lf x \$210.38 = \$90,464



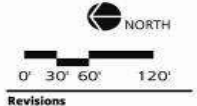
Legend

- Storm Water Planter
- 3 Course- Modular Block Retaining Wall at Storm Water Planter
- Reconstructed Planter

Zones

- A** Storm Water Planters with 3 Course Wall- 6,285sf x \$43.47/sf = \$273,209
- B** Storm Water Planters- 6450sf x \$36.71/sf = \$236,780
- C** Storm Water Planters with Landscape Beds- 11400sf x \$32.15/sf = \$366,510
- D** Storm Water Planters with Landscape Beds- 15,643sf x \$31.31/sf = \$489,783
- E** Storm Water Planter- 6800sf x \$37.88/sf = \$257,584
- F** Storm Water Planter- 7725sf x \$33.27/sf = \$257,011

Landscape Architecture
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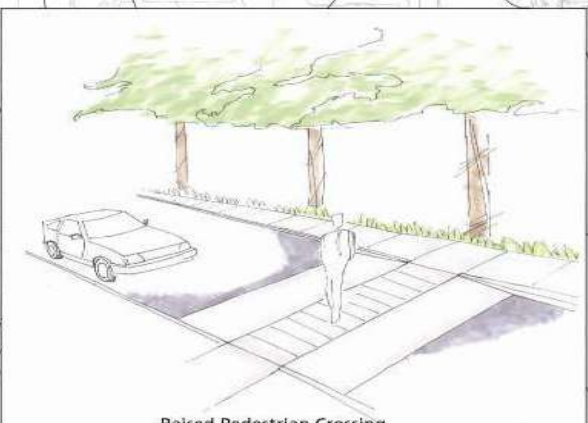


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 PCC SYLVANIA
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Sheet Title
 STORM WATER PLANTER

Sheet No.
5



Raised Pedestrian Crossing



Legend

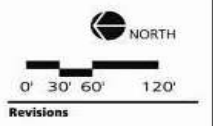
Raised Pedestrian Crossing
 8' Wide Concrete Sidewalk
 8' Wide Asphalt Pathway

Option A
 Concrete: 2221sf x \$10.6/sf = \$23,543
 Asphalt: 26,662sf x \$9.2/sf = \$245,290
 Crossing: 1621sf x \$27.78/sf = \$45,031
 Total: \$313,864

Option B
 Concrete: 9006sf x \$10.6/sf = \$95,464
 Total: \$95,464

Option C
 Concrete: 6627sf x \$10.6/sf = \$70,246
 Asphalt: 3386sf x \$9.2/sf = \$31,151
 Crossing: 3183sf x \$27.78/sf = \$88,424
 Total: \$189,821

Option D
 Concrete: 1659sf x \$10.6/sf = \$17,585
 Asphalt: 11,112sf x \$9.2/sf = \$102,230
 Crossing: 1784sf x \$27.78/sf = \$49,560
 Total: \$169,375



Revisions

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Project

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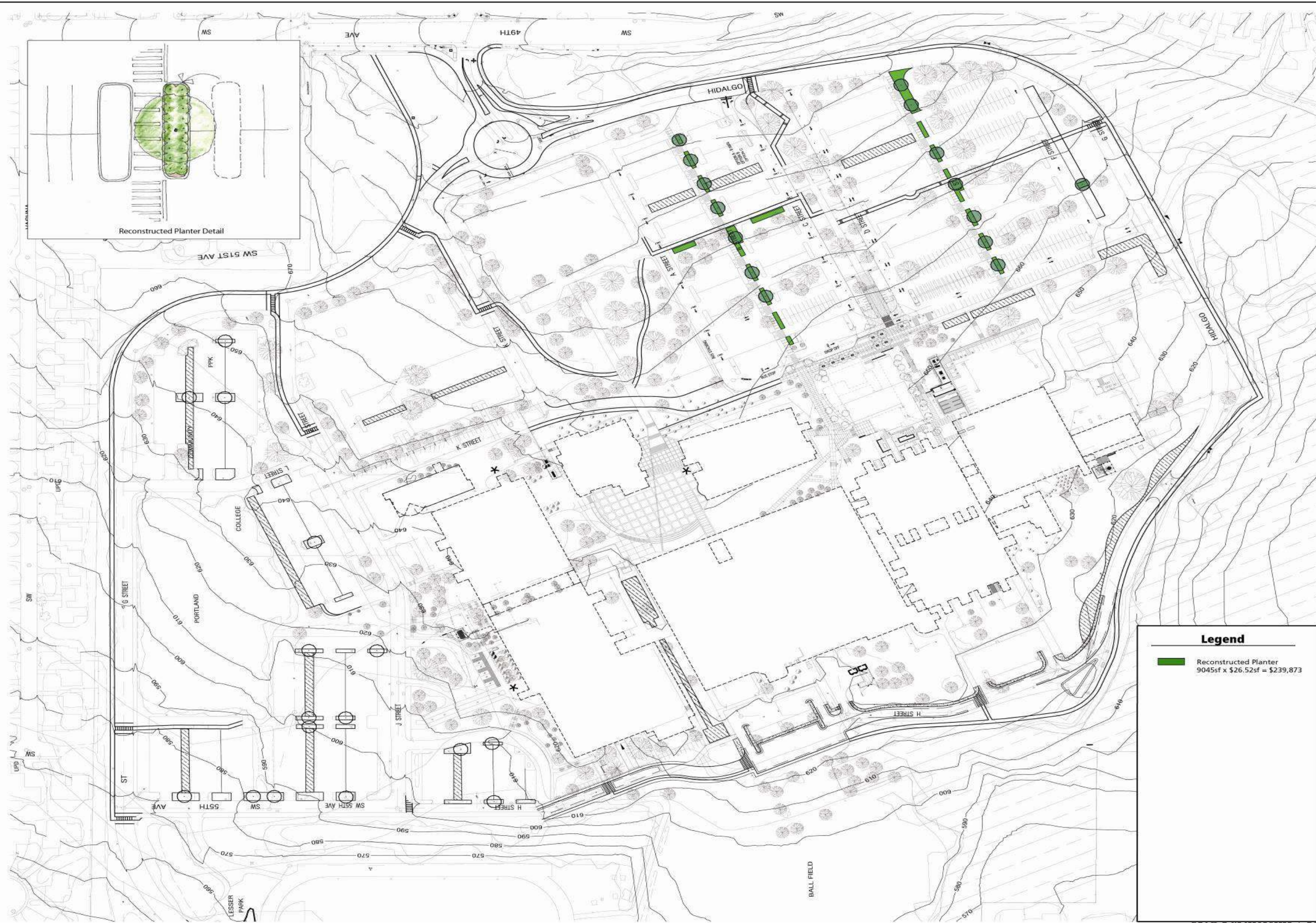
Sheet Title

SIDEWALK AND
PEDESTRIAN CROSSING PLAN

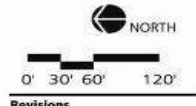
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6

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Legend
 Reconstructed Planter
 9045sf x \$26.52sf = \$239,873



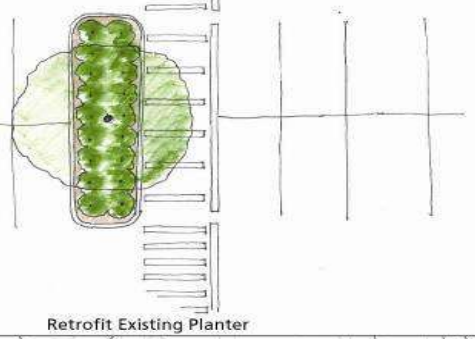
Revisions

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Sheet Title
 RECONSTRUCTED PLANTERS

Sheet No.
7

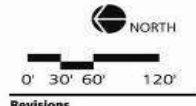


Retrofit Existing Planter

Legend

Retrofit Existing Planter Bed
 19961sf x \$10.67 = \$212,984

Blount/Bond
 Landscape Architecture
 319 SW Washington St.
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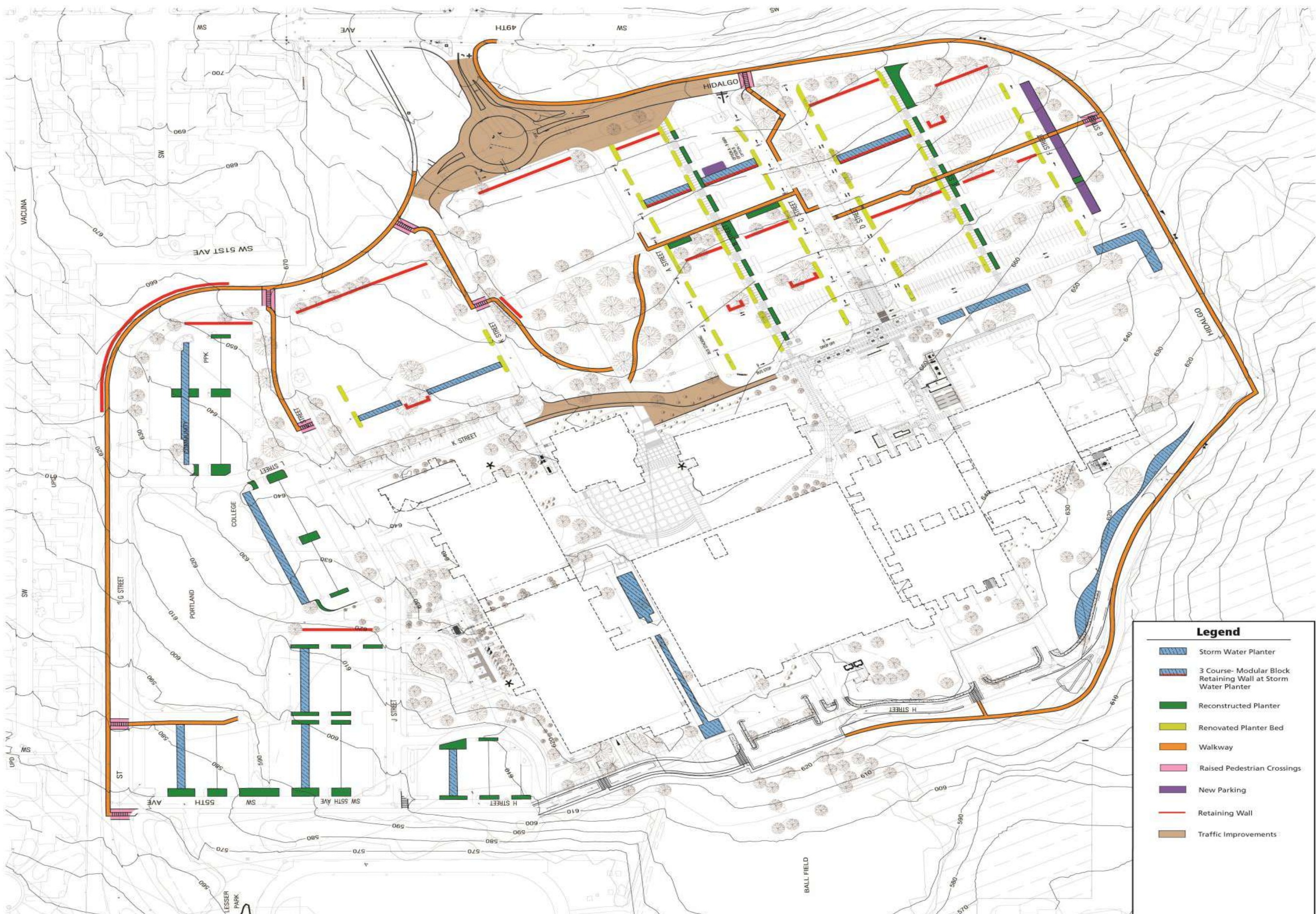
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Project
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Sheet Title
 RETROFIT PLANTER PLAN

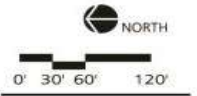
Sheet No.
 8

Landscape Architecture
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Legend

- Storm Water Planter
- 3 Course- Modular Block Retaining Wall at Storm Water Planter
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- Raised Pedestrian Crossings
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- Retaining Wall
- Traffic Improvements



Revisions

Submittal / Date
 MASTER PLAN
 02/02/11

Project
 PCC SYLVANIA
 MASTER PLAN
 Portland, Oregon

Sheet Title
 SITE MASTER PLAN

Sheet No.
1

TECHNICAL MEMORANDUM

Date: September 20, 2016 Project #: 20178

To: Kathleen McMullen
 Portland Community College
 PO Box 19000
 Portland, OR 97280-0990

From: Fred Wismer, P.E. & Marc Butorac, P.E., P.T.O.E

Project: PCC Sylvania Campus ADA Parking Assessment

Subject: ADA Parking Space Assessment Results & Alternatives

ADA CODE AND INTERPRETATIONS

Required Parking Spaces:

2010 ADA Code, Section 208: Parking Spaces

208.1 General. Where parking spaces are provided, parking spaces shall be provided in accordance with 208.

EXCEPTION: Parking spaces used exclusively for buses, trucks, other delivery vehicles, law enforcement vehicles, or vehicular impound shall not be required to comply with 208 provided that lots accessed by the public are provided with a passenger loading zone complying with 503.

208.2 Minimum Number. Parking spaces complying with 502 shall be provided in accordance with Table 208.2 except as required by 208.2.1, 208.2.2, and 208.2.3. Where more than one parking facility is provided on a site, the number of accessible spaces provided on the site shall be calculated according to the number of spaces required for each parking facility.

2014 Oregon Structural Specialty Code, Section 1106: Parking and Passenger Loading Facilities

1106.1 Required. Where parking is provided, accessible parking spaces shall be provided in compliance with Table 1106.1, except as required by Sections 1106.2 through 1106.4. Where more than one parking facility is provided on a site, the number of parking spaces required to be accessible shall be calculated separately for each parking facility.

Exception: This section does not apply to parking spaces used exclusively for buses, trucks, other delivery vehicles, law enforcement vehicles or vehicular impound and motor pools where lots accessed by the public are provided with an accessible passenger loading zone.

Interpretation

Based on the guidance provide by the Access Board (<https://www.access-board.gov/guidelines-and-standards/buildings-and-sites/about-the-ada-standards/guide-to-the-ada-standards/chapter-5-parking>) and its definition of parking facilities states:

Multiple Parking Facilities on a Site

Scoping and dispersion requirements ensure access to all parking facilities on a site, including large sites with many lots and garages, such as airports, shopping malls, and campuses. The term "parking facility" encompasses parking lots, as well as garages, decks, and other parking structures. The minimum number of accessible parking spaces must be determined separately for each parking facility.

THIS DOCUMENT OR PORTIONS THEREOF IS PROTECTED UNDER THE PROVISIONS OF TITLE 23 UNITED STATES CODE SECTION 409 AS FOLLOWS:

Title 23 U.S.C. §409

Discovery and admission as evidence of certain reports and surveys

Notwithstanding any other provision of law, reports, surveys, schedules, lists, or data compiled or collected for the purpose of identifying, evaluating, or planning the safety enhancement of potential accident sites, hazardous roadway conditions, or railway-highway crossings, pursuant to sections 130, 144, and 148 of this title or for the purpose of developing any highway safety construction improvement project which may be implemented utilizing Federal-aid highway funds shall not be subject to discovery or admitted into evidence in a Federal or State court proceeding or considered for other purposes in any action for damages arising from any occurrence at a location mentioned or addressed in such reports, surveys, schedules, lists, or data.

PROJECT DESCRIPTION & PURPOSE

Portland Community College (PCC) retained Kittelson & Associates, Inc. (KAI) to provide an assessment of the Sylvania Campus' American Disability Act (ADA) parking accommodations. This assessment was initiated by the realization of PCC that the campus may not meet the current ADA or Oregon Structural Specialty Code (OSSC) code for ADA parking spaces, and the opportunity to address potential deficiencies through the upcoming asphalt parking lot seal project in the summer of 2017. Therefore, a campus parking supply and ADA assessment was completed on June 29, 2016. In addition to the parking supply assessment, pavement slopes were measured throughout the campus using a smart

Parking facilities are to be treated separately for scoping purposes if they are either:

- structurally different (e.g., surface lot versus parking garage or deck);
- dedicated to, and separately serve, different facilities on a site;
- segmented and separated by guard rails, fencing, or barriers, particularly where they serve different users; or
- separated by streets or roadways (as opposed to drive aisles on a site).

Surface lots that are contiguous or that are segmented by landscaping or drive aisles (i.e., vehicular passageways located within parking areas), but not streets or roadways, typically can be treated as a single parking facility.

Based on the above guidance the Sylvania Campus can be treated as a single parking facility. This is due to the fact that there are no public roadways or streets within the limits of the campus. The access ways provided around campus are all technically drive aisles and not streets, even though they have street names.

ADA Parking Location:

2010 ADA Code, Section 208: Parking Spaces

208.3 Location. Parking facilities shall comply with 208.3

208.3.1 General. Parking spaces complying with 502 that serve a particular building or facility shall be located on the shortest accessible route from parking to an entrance complying with 206.4. Where parking serves more than one accessible entrance, parking spaces complying with 502 shall be dispersed and located on the shortest accessible route to the accessible entrances. In parking facilities that do not serve a particular building or facility, parking spaces complying with 502 shall be located on the shortest accessible route to an accessible pedestrian entrance of the parking facility.

2014 Oregon Structural Specialty Code, Section 1106: Parking and Passenger Loading Facilities

1106.6 Location. Accessible parking spaces shall be located on the shortest practical accessible route of travel from adjacent parking to an accessible building entrance. In parking facilities that do not serve a particular building, accessible parking spaces shall be located on the shortest route to an accessible pedestrian entrance to the parking facility. Where buildings have multiple accessible entrances with adjacent parking, accessible parking spaces shall be dispersed and located near the accessible entrances.

Exceptions:

1. In multilevel parking structures, van-accessible parking spaces are permitted on one level.
2. Accessible parking spaces shall be permitted to be located in different parking facilities if substantially equivalent or greater accessibility is provided in terms of distance from an accessible entrance or entrances, parking fee and user convenience.

Interpretation

Since the campus is a single parking facility, ADA parking spaces are not required in the outlying parking lots. The layouts proposed provide ADA parking spaces evenly spaced around all PCC buildings to provide the greatest user convenience, where possible.

EXISTING CONDITIONS ASSESSMENT

The existing PCC Sylvania campus was assessed in three ways:

- 1) A parking supply count throughout all parking areas & roadside parking.
- 2) A count of current ADA parking spaces versus required ADA parking spaces.
- 3) An assessment of slopes within the existing ADA parking spaces as well as potential new ADA parking spaces.

Parking Supply Count

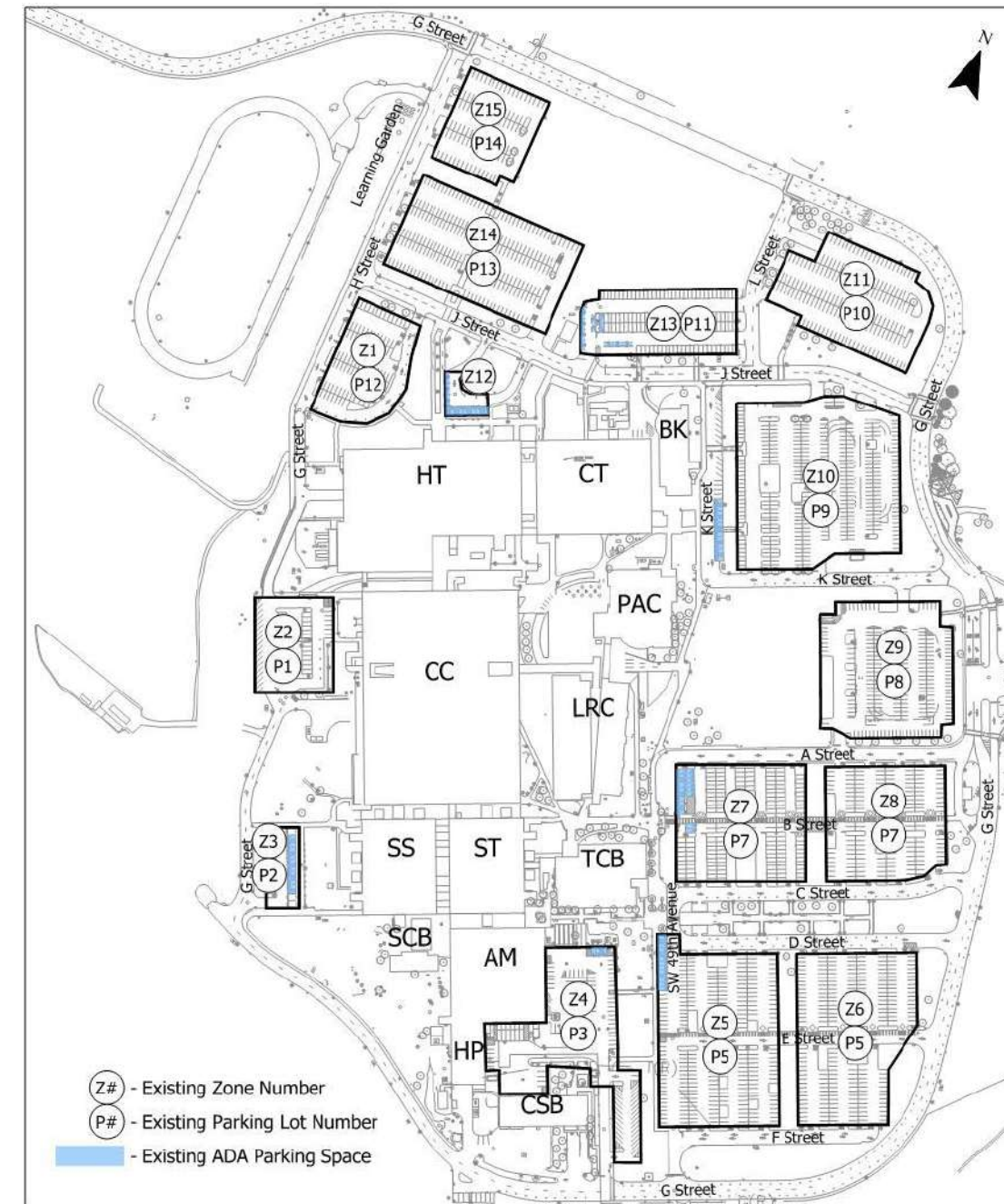
Table 1 provides a complete breakdown of the existing parking supply count by zone designation. Figure 1 shows the zone designations, as provided by PCC, as well as the current ADA parking spaces allocations in relationship to the existing campus buildings.

Table 1 – Existing Parking Supply Count

Zone/Parking Subarea Designation	# of Spaces by Type		Total # of Spaces
	Standard	ADA	
Zone 1 / Parking Lot 12	105	0	105
Zone 2 / Parking Lot 1	52	0	52
Zone 3 / Parking Lot 2	16	9	25
Zone 4 / Parking Lot 3	104	3	107
Zone 5 / Parking Lot 5	255	10	265
Zone 6 / Parking Lot 5	234	0	234
Zone 7 / Parking Lot 7	160	15	175
Zone 8 / Parking Lot 7	156	0	156
Zone 9 / Parking Lot 8	224	0	224
Zone 10 / Parking Lot 9	346	0	346
Zone 11 / Parking Lot 10	164	0	164
Zone 12	3	9	12
Zone 13 / Parking Lot 11	119	11	130
Zone 14 / Parking Lot 13	214	0	214
Zone 15 / Parking Lot 14	99	0	99
G St (Lesser Rd to H St)	79	0	79
G St (H St to L St)	61	0	61
G St (L St to J St)	53	0	53
G St (J St to K St)	14	0	14
G St (K St to 49th Ave)	100	0	100
G St (49th Ave to J St)	16	0	16
D St (G St to 49th Ave)	22	0	22
C St (49th Ave to G St)	19	0	19
A St (G St to 49th Ave)	0	0	0
L St (G St to J St)	9	0	9
J St (H St to G St)	0	0	0
K St (J St to G St)	45	10	55
Total	2,669	67	2,736

As shown in Table 1, the existing campus parking facilities and owned private streets maintain 2,669 standard spaces and 67 ADA delineated spaces. Refer to attached Campus Maps for zone numbers and parking lot numbers as provided by PCC.

Figure 1 – Zone Designation & ADA Parking Space Map



ADA Parking Supply Requirements

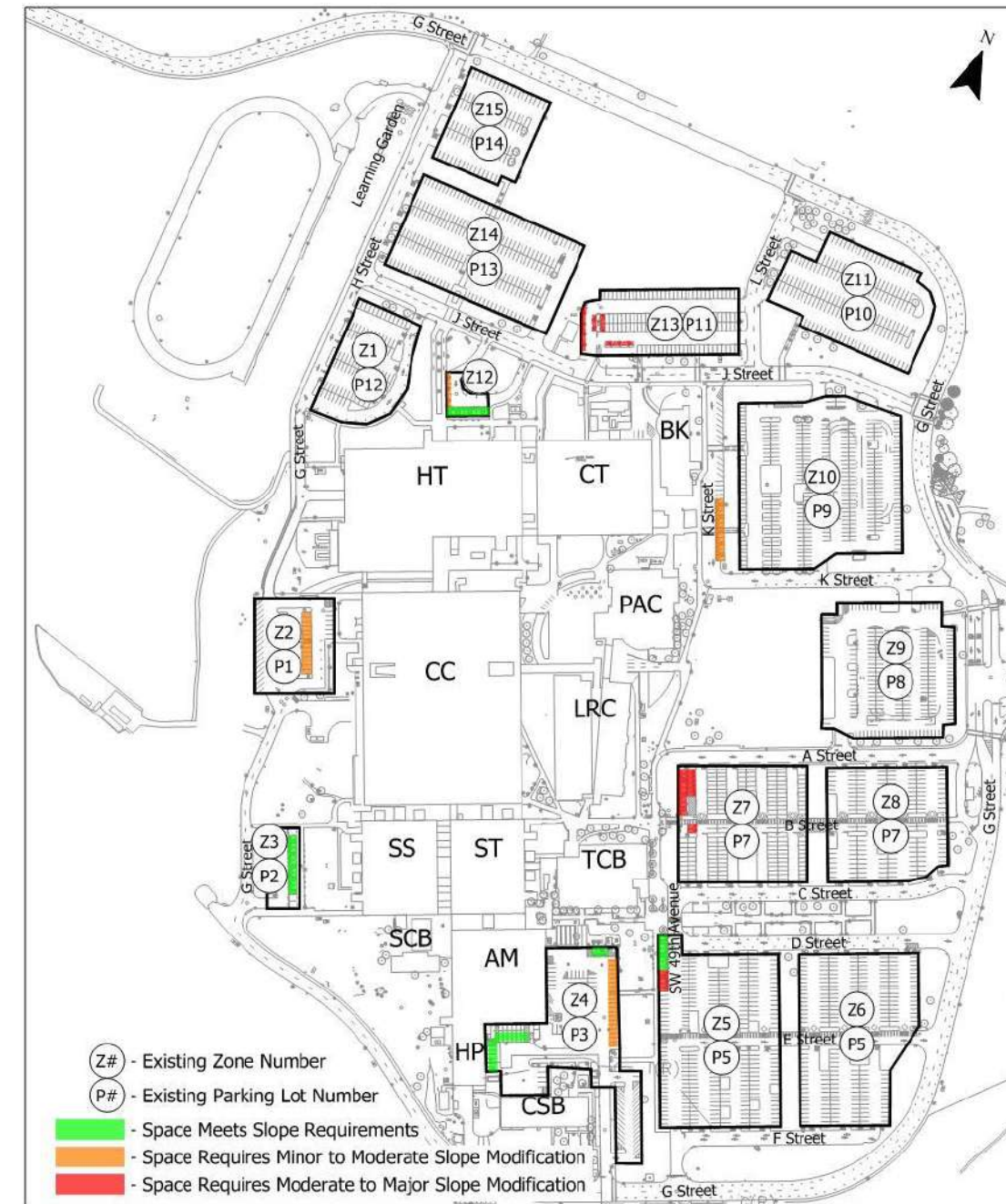
Currently, there are 67 ADA parking spaces provided on the PCC Sylvania campus. Based on *Table 208.2 Parking Spaces* of the 2010 ADA Code and the 2,669 standard parking stalls on campus, the minimum required number of ADA parking spaces is **27** with **5** of those spaces designated as wheelchair users only. According to the 2014 Oregon Structural Specialty Code (OSSC) parking spaces are required to be 9' wide with a minimum 6' access aisle for the standard space and an 8' access aisle for van accessible spaces. These details from the 2014 OSSC are attached at end of this document for your reference and

use. Additionally per ADA Code section 502.4, slopes steeper than 1:48 shall not be permitted within ADA parking stalls and access aisles.

ADA Slope Assessment

Based on the site assessment many of the existing ADA stalls were found to have issues of compliance with the current code due to the existing slopes of the parking lot. Figure 2 indicates spaces with code compliance, spaces that require minimal to moderate slope modification/correction, and spaces requiring moderate to major slope modification/correction.

Figure 2 – ADA Slope Assessment Map

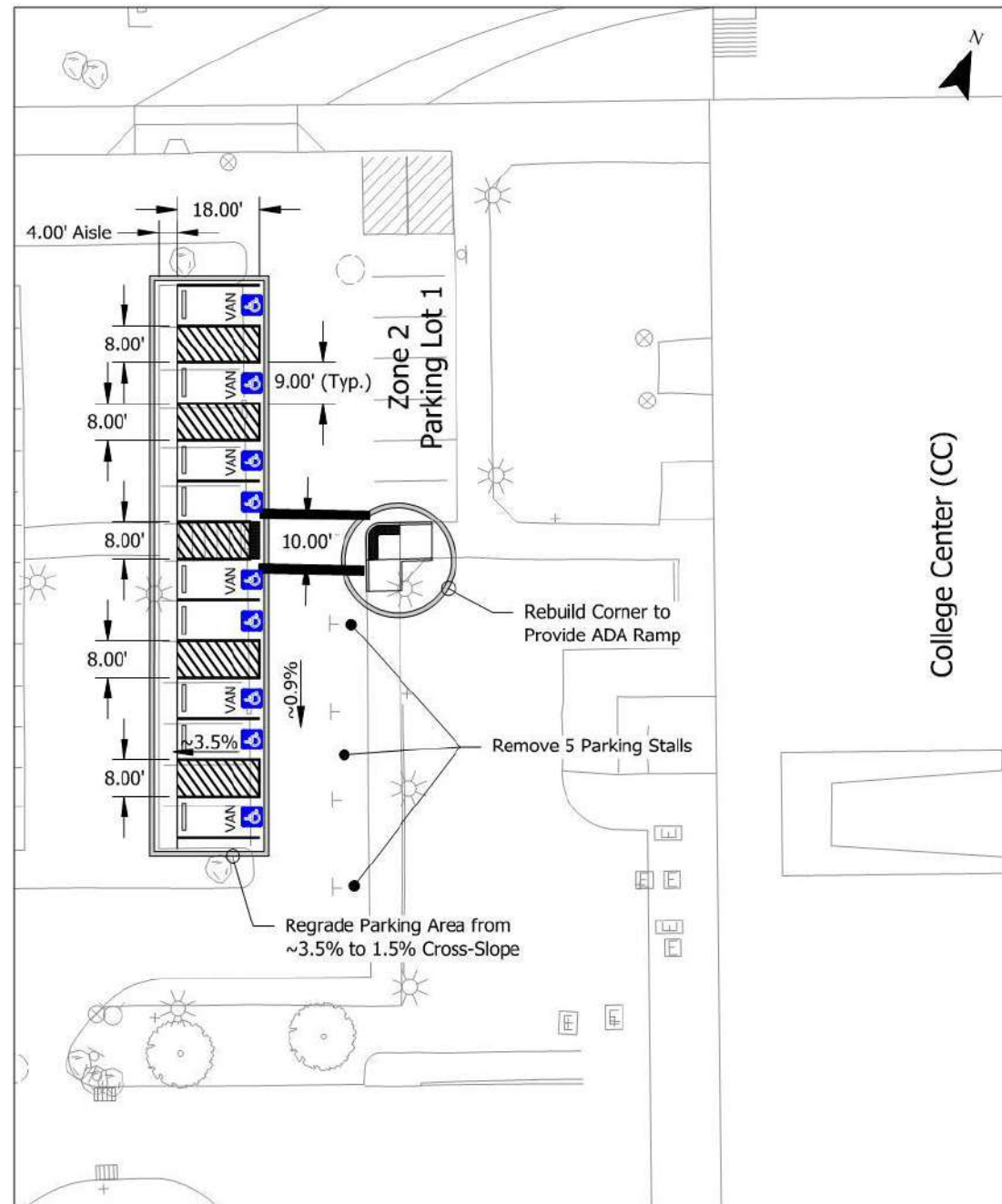


ADA Parking Space Layout Opportunities

To provide the required ADA parking space supply and meet the slope requirements, Figures 3–11 identify the following:

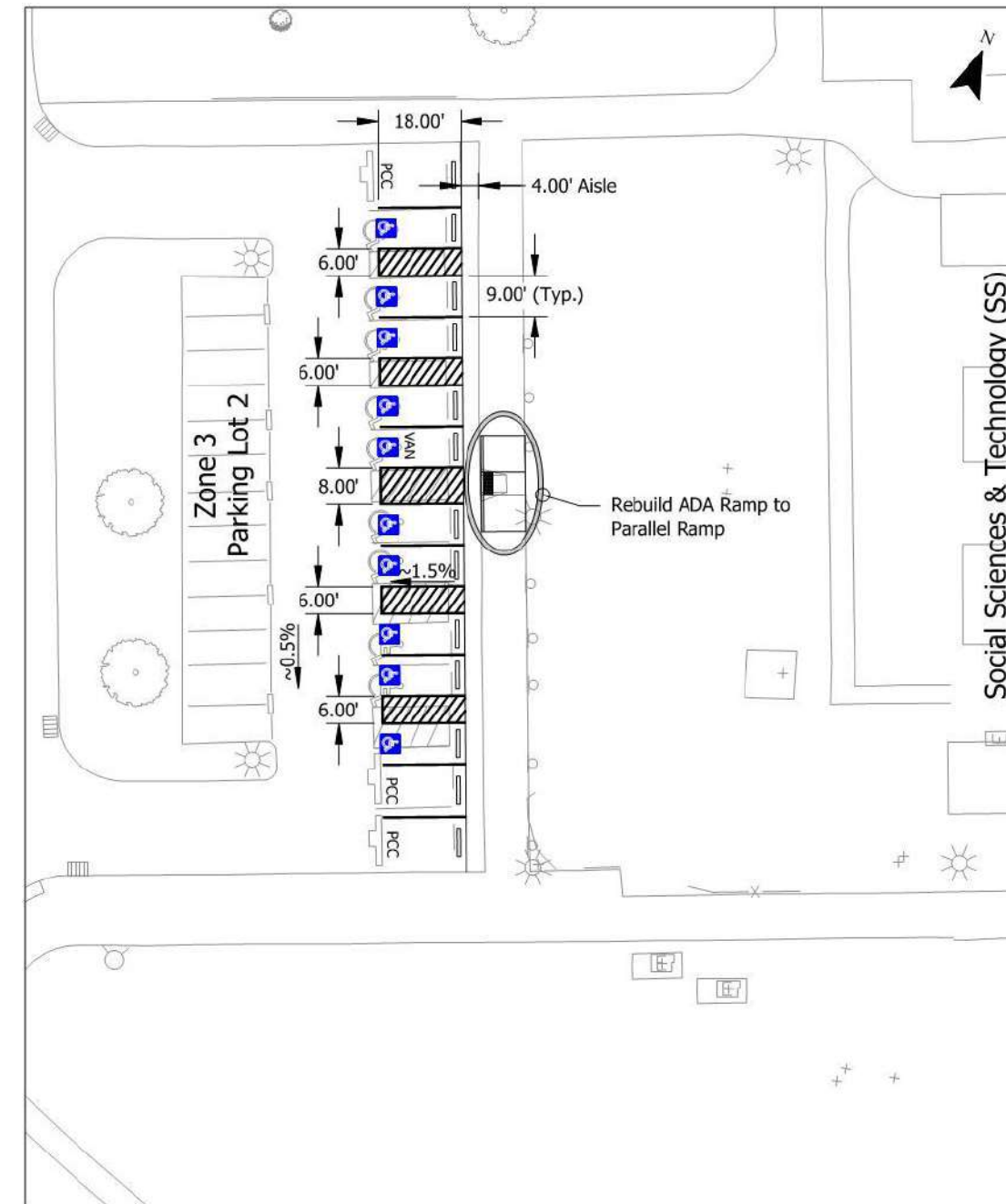
- Existing slopes of the parking space areas.
- Accessible route obstructions.
- Layout modifications to meet ADA dimension requirements.
- Proposed opportunities to provide ADA compliance.

Figure 3 –Zone 2



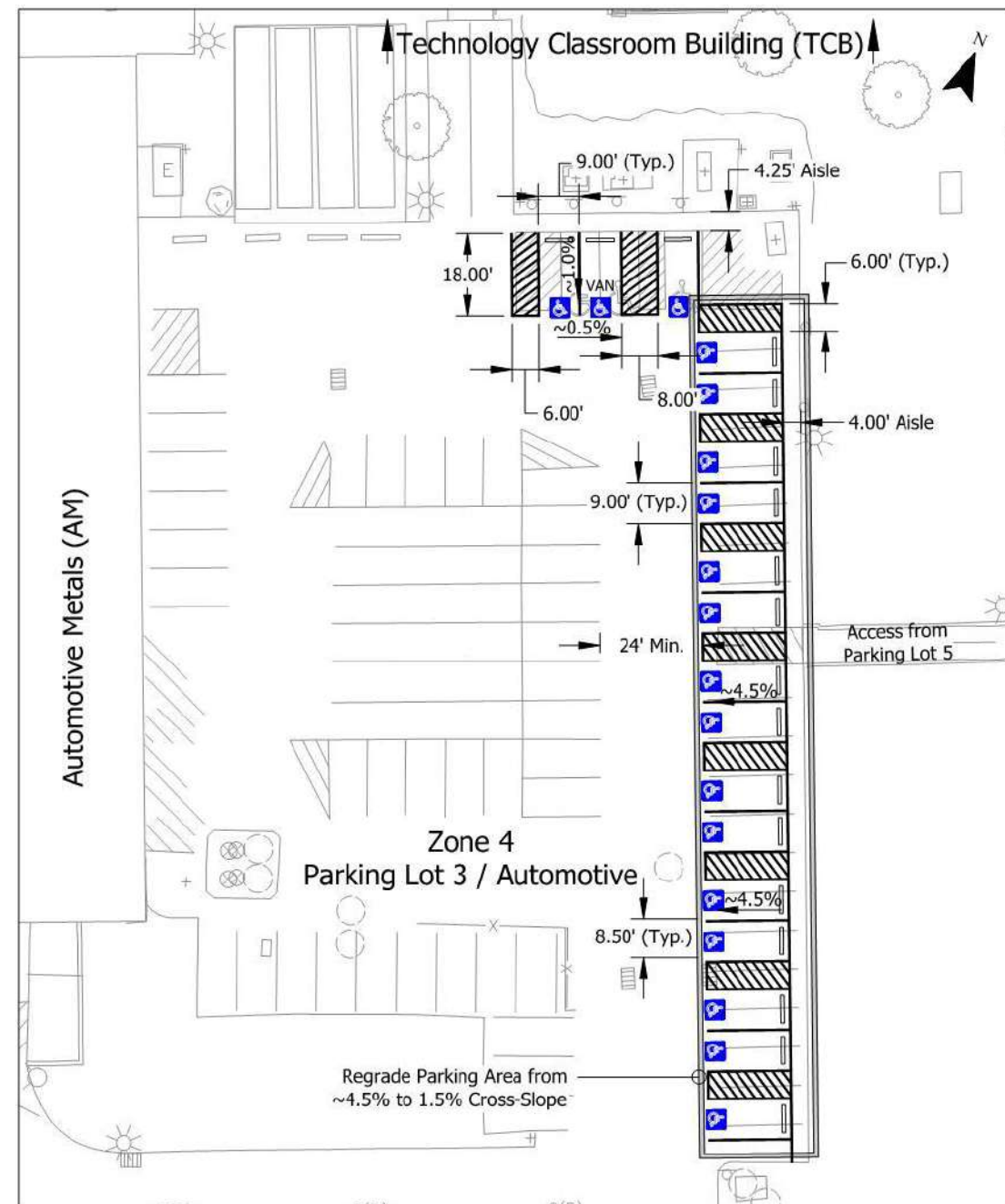
Assessment	Opportunities for compliance:	
Slopes	⊖	The slopes in this area exceed 1:48 which will require the parking spaces and access aisle to be regraded with a pavement overlay.
Layout	⊖	The layout can be modified as shown to provide the required parking spaces and accessible aisles.
Accessible Route	⊖	To provide an accessible route to the buildings an ADA curb ramp needs to be constructed at the corner.
Estimated Cost	\$13,070 includes regrading through the asphalt overlay, curb ramp, new parking bumper stops, and signs.	

Figure 4 –Zone 3



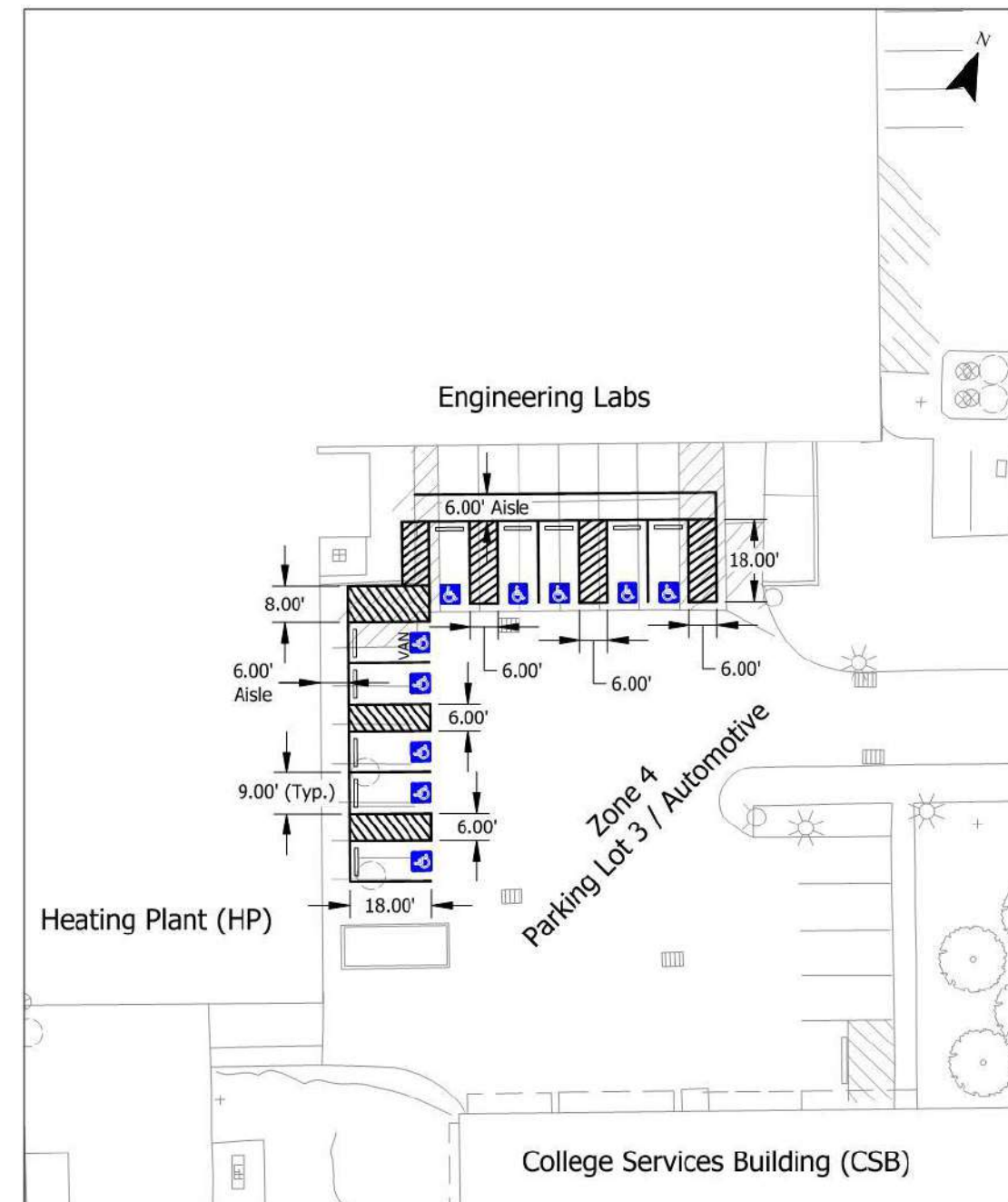
Assessment	Opportunities for compliance:	
Slopes	✓	No action required slopes are less than 1:48
Layout	⊖	The layout can be modified as shown to provide 1 additional parking space and provide the required accessible aisles.
Accessible Route	⊖	The existing ADA ramp slope exceeds the maximum 1:12 slope, therefore we recommend the ramp should be reconstructed to meet requirements.
Estimated Cost	\$8,158, includes new parking bumper stops, signs, and ADA ramp reconstruction.	

Figure 5 –Zone 4 Upper



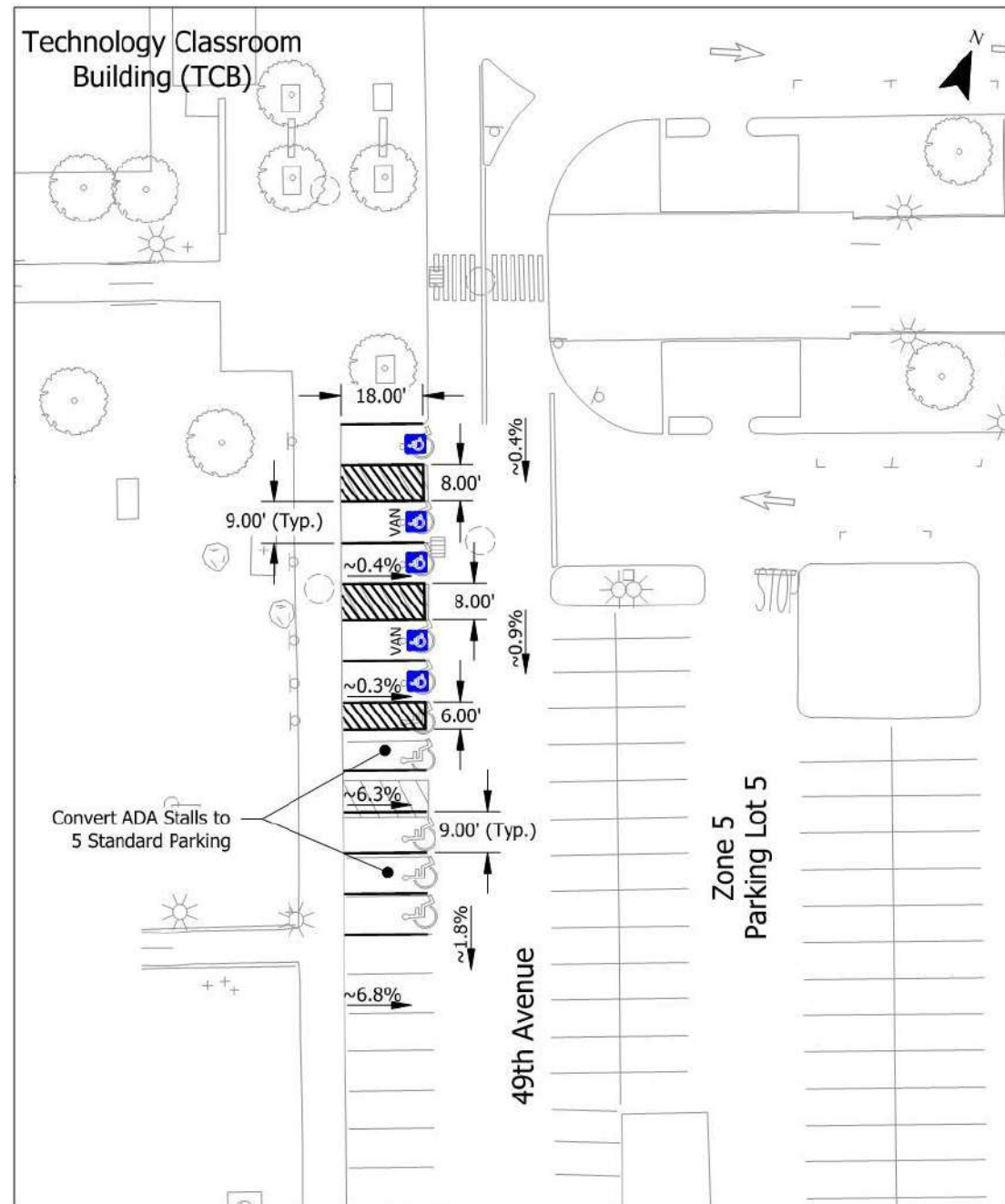
Assessment	Opportunities for compliance:	
Slopes	⊖	No action required within the north stalls but slope correction is required within the eastern stalls.
Layout	⊖	The layout can be modified as shown above to provide a van loading parking space on the north row and additional stalls on the eastern row.
Accessible Route	⊖	The PCC van that currently parks in this area should be relocated as it obstructs the ADA access aisle.
Estimated Cost	See below for total zone costs.	

Figure 6 –Zone 4 Lower



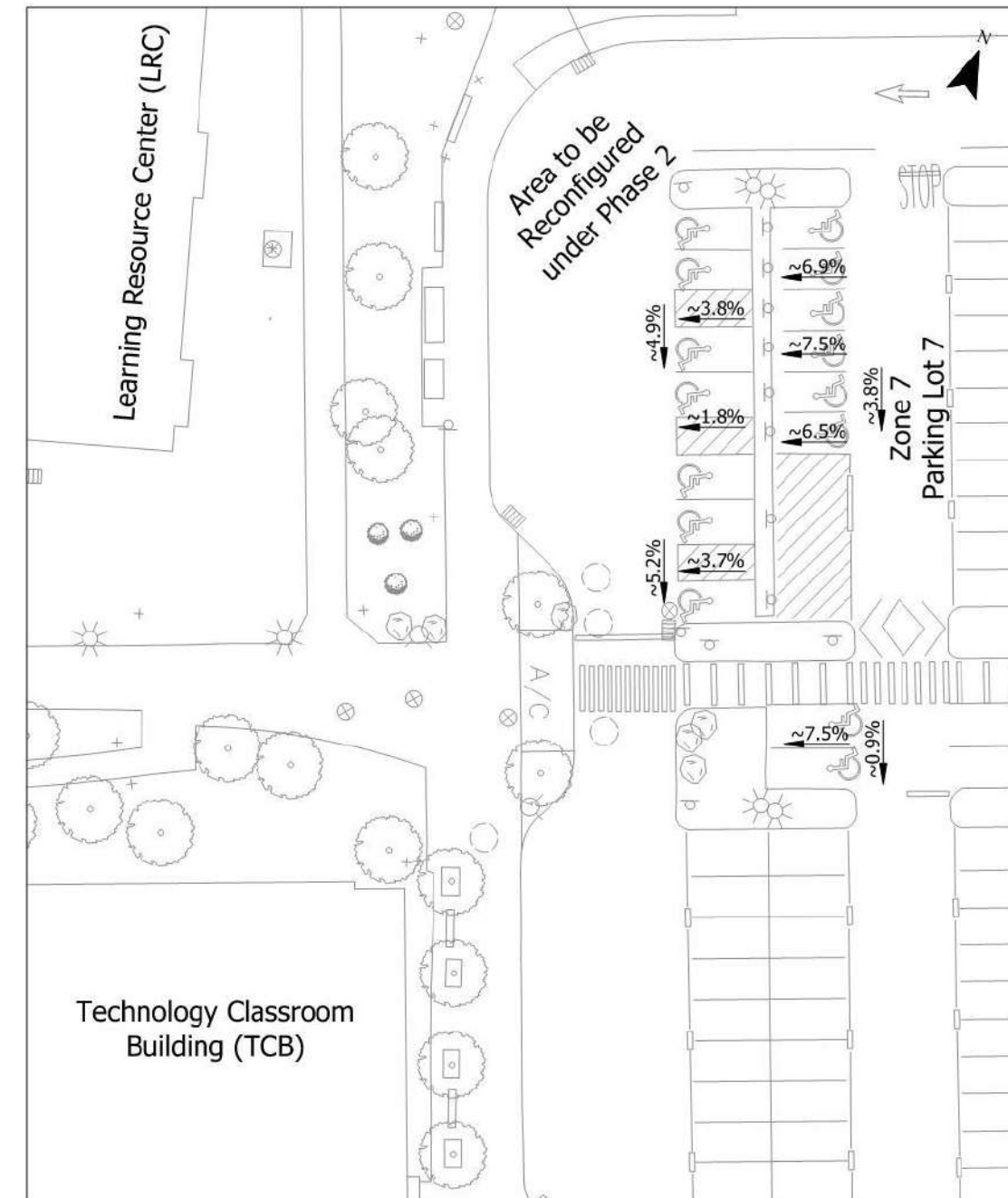
Assessment	Opportunities for compliance:	
Slopes	✓	No action required within this lower zone to meet the slope requirements.
Layout	⊖	The existing layout can be modified as shown above to provide the requested ADA parking spaces.
Accessible Route	✓	The accessible route can easily be provided with the layout above.
Estimated Cost	\$24,960, includes new parking bumper stops, signs, & variable depth overlay.	

Figure 7 – Zone 5



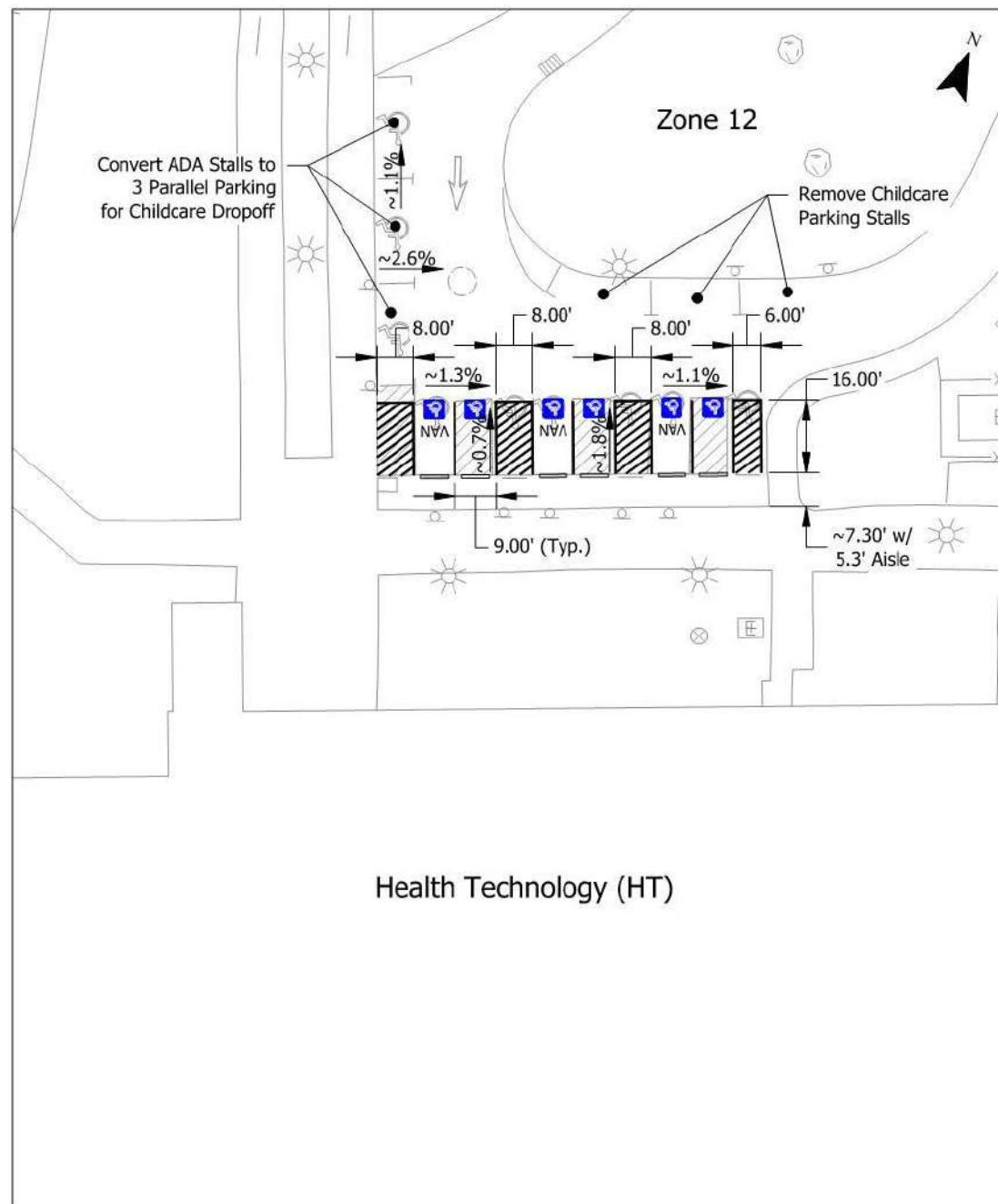
Assessment	Opportunities for compliance:	
Slopes	⊖	The slopes within the retained ADA parking spaces are less than 1:48. Where the slopes exceed 1:48, it is recommended that these spaces be changed to standard parking spaces.
Layout	⊖	The layout can be modified as shown to provide the required accessible aisles.
Accessible Route	✓	No action required route appears to meet all code requirements.
Estimated Cost		\$2,520, includes new parking bumper stops and signs.

Figure 8 – Zone 7



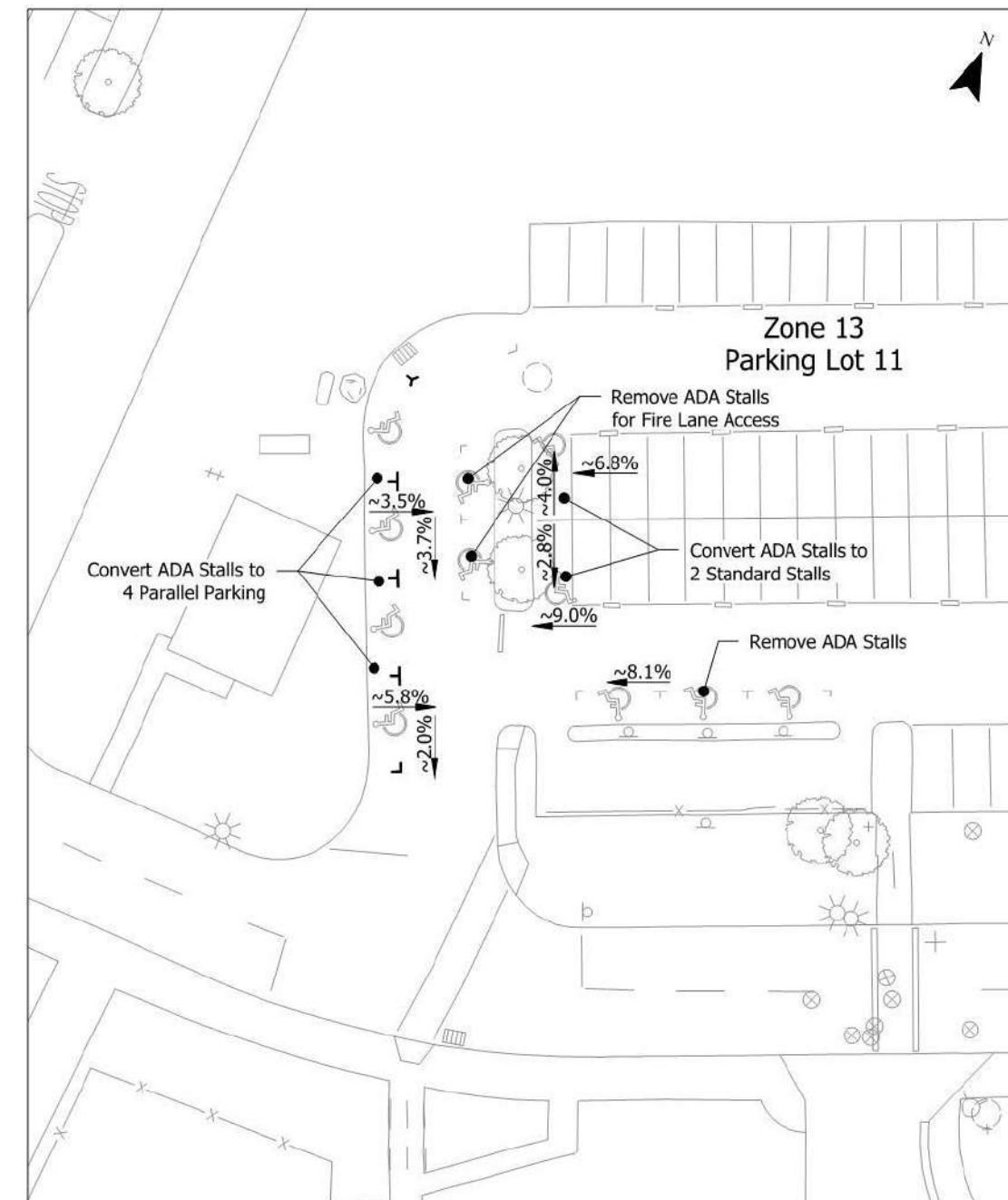
Assessment	Opportunities for compliance:	
Slopes	⊖	The slopes in this area exceed 1:48.
Layout	⊖	Due to the excessive slopes in this area it is recommended to include the required modifications within TriMet / Transit reconfiguration (Phase 2).
Accessible Route	⊖	Not required.
Estimated Cost		No additional project cost to this current project.

Figure 9 – Zone 12



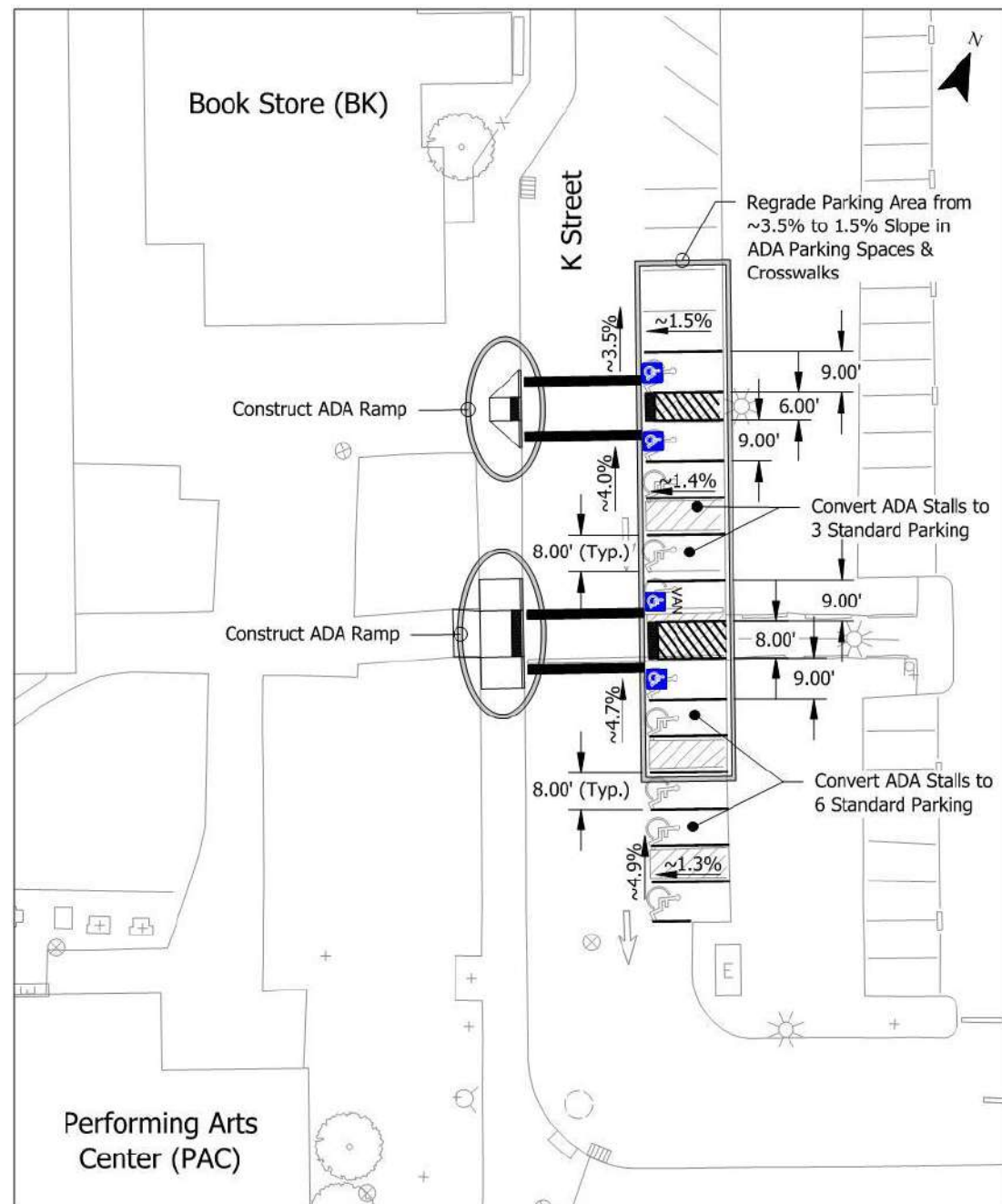
Assessment		Opportunities for compliance:
Slopes	✓	The slopes within the retained ADA parking spaces are less than 1:48.
Layout	⊖	The layout can be modified as shown to provide the required accessible aisles. Additionally, it is recommended that the Childcare drop-off spaces be relocated to the curb to provide full-time access to the ADA parking spaces.
Accessible Route	✓	No action required route appears to meet all code requirements.
Estimated Cost		\$3,000, includes new parking bumper stops and signs.

Figure 10 – Zone 13



Assessment		Opportunities for compliance:
Slopes	⊖	The slopes in this area exceed 1:48.
Layout	⊖	Due to the excessive slopes and lack of landing areas required for parallel stalls in this area, it is recommended to change these stalls back to standard parking stalls. The 3 ADA parallel spaces are recommended to be removed in order to provide full access to standard parking spaces.
Accessible Route	✓	Not required.
Estimated Cost		No additional project cost.

Figure 11 – K Street Zone



FINDINGS & RECOMMENDATIONS

Parking Supply Recommendations

The opportunities shown in Figures 3-11 provide Portland Community College the most efficient possibilities to meet ADA parking requirements for the Sylvania Campus with a total of 79 ADA parking spaces thus far exceeding the minimum requirement of 27 with a minimum of 5 van spaces. Table 2 provides a complete breakdown of the recommended parking supply count with the count changes noted by zone designation. Figure 13 shows the recommended ADA parking spaces in relationship to the existing campus buildings. Below are the final ADA parking recommendations, other than the minor layout changes shown in Figures 3-11 above:

- *Zone 2* – These ADA parking spaces are recommended to provide PCC with the appropriate building coverage to provide the shortest route possible to accessible buildings per the ADA code. Additionally, by adding these spaces now PCC can capitalize on the economy of scale of the planned project and then have ADA parking spaces available for future expansions.
- *Zone 4* – It is recommended that the PCC van truck that parks near the ADA parking spaces be relocated as it obstructs the accessible aisle and pathway. Additionally, 28 ADA parking spaces are provided in this zone and 33 automotive reserved parking spaces have been removed at the request of PCC between the upper and lower parking areas.
- *Zone 7* – The ADA parking spaces within this zone should be reconfigured within the upcoming Trimet / Transit redesign project. Additionally, the zone should not be included within the upcoming parking lot seal project.
- *Zone 13* – The ADA parking spaces within this zone should be removed due to the excessive slopes through the drive aisle and parking spaces.
- *Learning Garden* – Two ADA parking spaces have been requested near the Learning Garden along the existing access road. Based on the existing topography and the final location of the stalls an ADA ramp will need to be constructed to gain access to the gardens. Due the variable nature of this design, the option was not drawn up in detail but rather just shown in Figure 11.

Assessment	Opportunities for compliance:	
Slopes	⊖	The slopes in this area exceed 1:48 but with regrading the area through the pavement overlay the slope requirement can be met.
Layout	⊖	The layout can be modified as shown to provide 4 ADA parking spaces with the other spaces changed to standard parking stalls.
Accessible Route	⊖	ADA ramps need to be provided at the two crossings.
Estimated Cost		\$15,986 includes regrading through the asphalt overlay, curb ramps, new parking bumper stops, and signs.

Table 2 – Final Parking Supply Count

Zone/Parking Subarea Designation	# of Spaces by Type					Total # of Spaces	Approximate Additional Cost**
	Standard	Δ from Current	Standard ADA	Van ADA	Δ from Current		
Zone 1 / Parking Lot 13	105	0	0	0	0	105	--
Zone 2 / Parking Lot 1*	34	-18	3	6	+9	43	\$13,070
Zone 3 / Parking Lot 2*	16	0	9	1	+1	26	\$8,158
Zone 4 / Parking Lot 3*	71	-33	26	2	+25	99	\$24,960
Zone 5 / Parking Lot 5*	260	+5	3	2	-5	265	\$2,520
Zone 6 / Parking Lot 5	234	0	0	0	0	234	--
Zone 7 / Parking Lot 7*	160	0	15	0	0	175	--
Zone 8 / Parking Lot 7	156	0	0	0	0	156	--
Zone 9 / Parking Lot 8	224	0	0	0	0	224	--
Zone 10 / Parking Lot 9	346	0	0	0	0	346	--
Zone 11 / Parking Lot 10	164	0	0	0	0	164	--
Zone 12*	3	0	3	3	-3	9	\$3,000
Zone 13 / Parking Lot 11*	127	+8	0	0	-11	127	--
Zone 14 / Parking Lot 13	214	0	0	0	0	214	--
Zone 15 / Parking Lot 14	99	0	0	0	0	99	--
G St (Lesser Rd to H St)	79	0	0	0	0	79	--
G St (H St to L St)	61	0	0	0	0	61	--
G St (L St to J St)	53	0	0	0	0	53	--
G St (J St to K St)	14	0	0	0	0	14	--
G St (K St to 49th Ave)	100	0	0	0	0	100	--
G St (49th Ave to J St)	16	0	0	0	0	16	--
D St (G St to 49th Ave)	22	0	0	0	0	22	--
C St (49th Ave to G St)	19	0	0	0	0	19	--
A St (G St to 49th Ave)	0	0	0	0	0	0	--
L St (G St to J St)	9	0	0	0	0	9	--
J St (H St to G St)	0	0	0	0	0	0	--
K St (J St to G St)*	54	+9	3	1	-6	58	\$15,986
Learning Garden	0	0	1	1	+2	2	TBD
Totals	2,640	-29	63	16	+12	2,719	\$67,694
			ADA Total = 79				

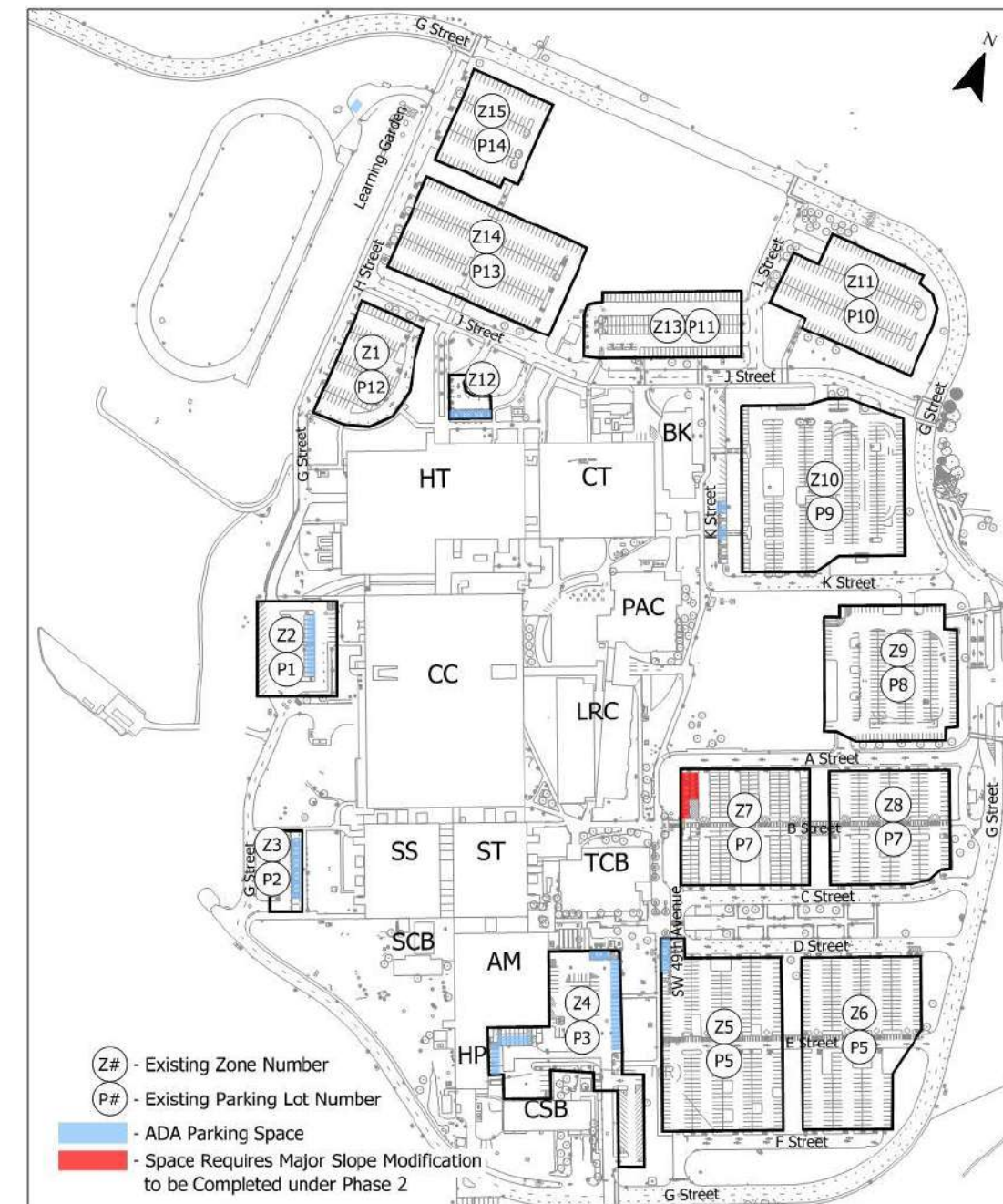
* Indicates parking layout modifications, refer to Figures 3-11.

** Proposed costs are the cost required to modify the parking area above and beyond the planned asphalt seal and restriping effort. Refer to attached cost estimates for the itemized breakdowns.

As shown in Table 2, the recommended campus parking facility can provide up to 2,652 standard spaces and 79 ADA delineated spaces. This results in an overall reduction of 29 total parking spaces, but

an increase of 4 standard parking spaces within the student parking areas due to the reduction of the reserved automotive & facilities parking.

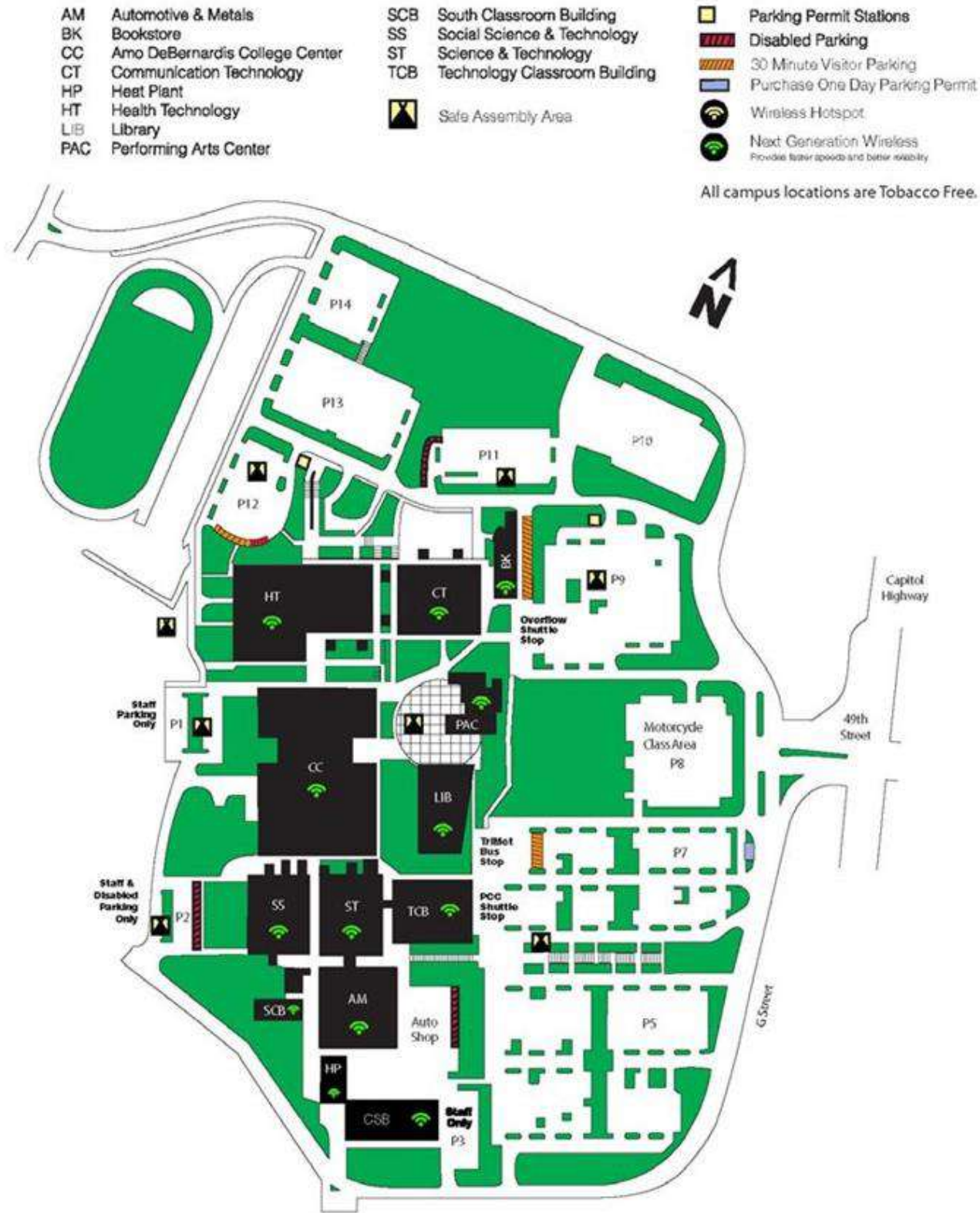
Figure 12 - Zone Designation & Updated ADA Parking Space Map



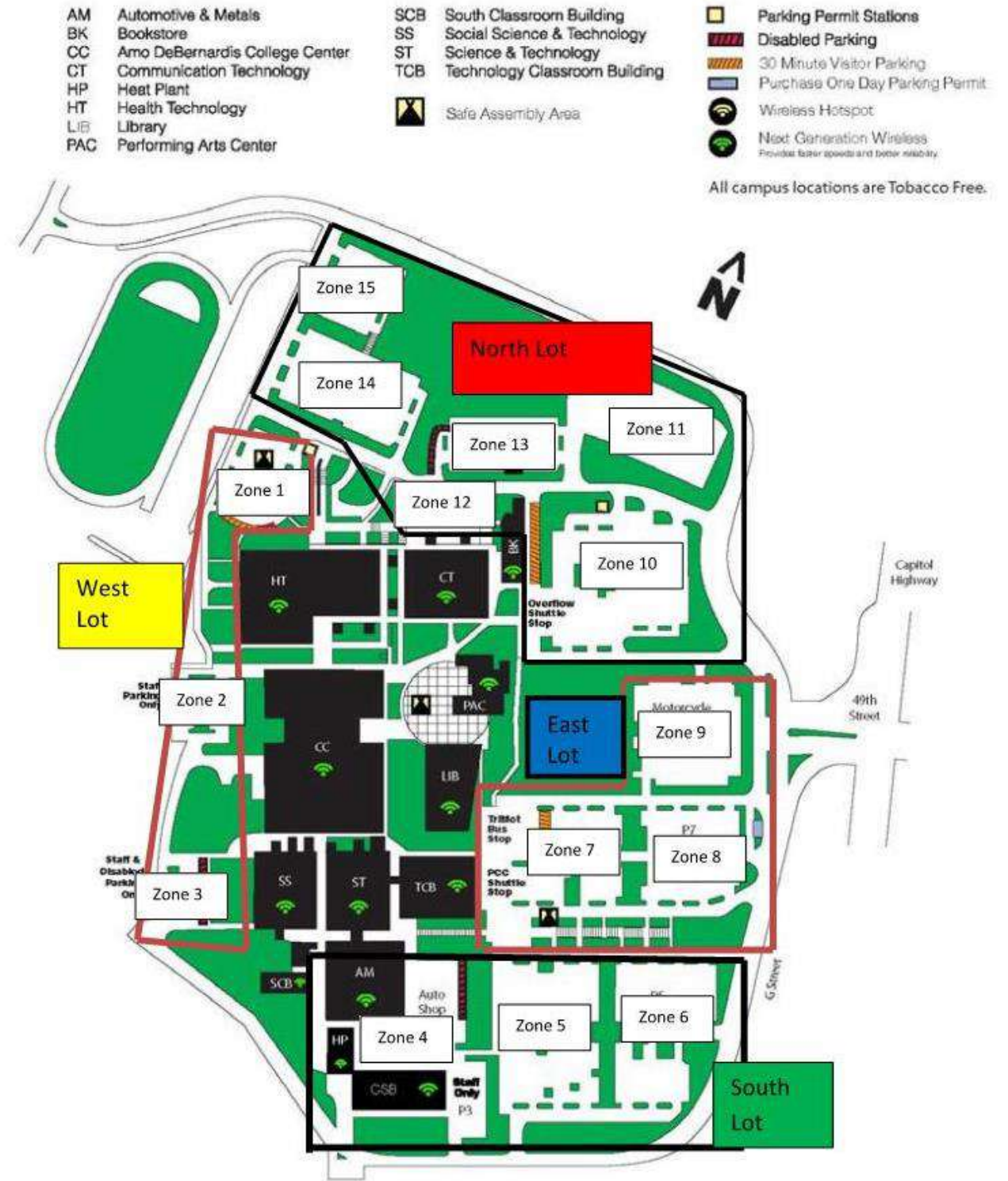
Attachments

1. Campus zone identification and parking lot maps.
2. Itemized Cost Estimates for Zones 2, 3, 4, 5, 12, and K Street.
3. 2014 Oregon Structural Specialty Code Figures 1 thru 10

Sylvania Campus - Parking Lot Identification Map



Sylvania Campus - Zone Identification Map



PCC Sylvania Campus ADA Assessment
Parking Zone 2 Improvements
 Portland Community College



Engineer's Conceptual Estimate

Prepared By: Fred Wismer, PE		Date: September 20, 2016		
This Estimate has a Rating of:		B2 (See rating scale guide below.)		
ITEM	UNIT	TOTAL QUANTITY	UNIT PRICE	TOTAL COST
Removal of Structures and Obstructions	LS	ALL	\$300.00	\$300.00
Variable Depth Asphalt Overlay	SF	3,000	\$1.30	\$3,900.00
Concrete Curbs - Standard Curb	LF	45	\$18.00	\$810.00
Concrete Walks	SF	155	\$6.00	\$930.00
Truncated Domes	EA	3	\$450.00	\$1,350.00
Precast Concrete Bumper Stops	EA	9	\$200.00	\$1,800.00
ADA Parking Signs	EA	9	\$200.00	\$1,800.00
TOTAL CONSTRUCTION COST \$				10,890
20% Contingency \$				2,180
TOTAL ESTIMATED PROJECT COST \$				13,070

Scope Accuracy:

Level 1: Project scope well understood and well defined.

Level 2: Project scope conceptual. Scope lacks detail due to potential permit requirements; Unknown project conditions; limited knowledge of external impacts.

Level 3: Project scope is a "vision" with limited detail.

Engineering Effort:

Level A: Preliminary engineering performed. Technical information is available, engineering calculations have been performed; clear understanding of the materials size and quantities needed to execute job. Schedule understood; staff and permitting is fairly clear, (however this element may still need refining). Project Development & Construction Contingencies ranges between 10%-20%.

Level B: Conceptual engineering performed. Technical information is available, rough engineering calculations may have been performed, or similar information from previous similar work is compared and used. Project Development Contingencies ranges between 15% to 25% and Construction Contingencies ranges between 20% to 30%.

Level C: No engineering performed. Educated guesstimating. Limited technical information available and/or analysis performed. Project Development and Construction Contingencies should be selected appropriately by Project Manager. Contingency may range up to 50%.

PCC Sylvania Campus ADA Assessment
Parking Zone 3 Improvements
 Portland Community College



Engineer's Conceptual Estimate

Prepared By: Fred Wismer, PE		Date: September 20, 2016		
This Estimate has a Rating of:		B2 (See rating scale guide below.)		
ITEM	UNIT	TOTAL QUANTITY	UNIT PRICE	TOTAL COST
Removal of Structures and Obstructions	LS	ALL	\$200.00	\$200.00
Concrete Curbs - Standard Curb	LF	21	\$18.00	\$378.00
Concrete Walks	SF	195	\$6.00	\$1,170.00
Truncated Domes	EA	1	\$450.00	\$450.00
Precast Concrete Bumper Stops	EA	13	\$200.00	\$2,600.00
ADA Parking Signs	EA	10	\$200.00	\$2,000.00
TOTAL CONSTRUCTION COST \$				6,798
20% Contingency \$				1,360
TOTAL ESTIMATED PROJECT COST \$				8,158

Scope Accuracy:

Level 1: Project scope well understood and well defined.

Level 2: Project scope conceptual. Scope lacks detail due to potential permit requirements; Unknown project conditions; limited knowledge of external impacts.

Level 3: Project scope is a "vision" with limited detail.

Engineering Effort:

Level A: Preliminary engineering performed. Technical information is available, engineering calculations have been performed; clear understanding of the materials size and quantities needed to execute job. Schedule understood; staff and permitting is fairly clear, (however this element may still need refining). Project Development & Construction Contingencies ranges between 10%-20%.

Level B: Conceptual engineering performed. Technical information is available, rough engineering calculations may have been performed, or similar information from previous similar work is compared and used. Project Development Contingencies ranges between 15% to 25% and Construction Contingencies ranges between 20% to 30%.

Level C: No engineering performed. Educated guesstimating. Limited technical information available and/or analysis performed. Project Development and Construction Contingencies should be selected appropriately by Project Manager. Contingency may range up to 50%.

PCC Sylvania Campus ADA Assessment
Parking Zone 4 Improvements
 Portland Community College



Engineer's Conceptual Estimate

Prepared By: Fred Wismer, PE		Date: September 20, 2016		
This Estimate has a Rating of:		B2 (See rating scale guide below.)		
ITEM	UNIT	TOTAL QUANTITY	UNIT PRICE	TOTAL COST
Removal of Structures and Obstructions	LS	ALL	\$500.00	\$500.00
Variable Depth Asphalt Overlay	SF	7,000	\$1.30	\$9,100.00
Precast Concrete Bumper Stops	EA	28	\$200.00	\$5,600.00
ADA Parking Signs	EA	28	\$200.00	\$5,600.00
TOTAL CONSTRUCTION COST \$				20,800
20% Contingency \$				4,160
TOTAL ESTIMATED PROJECT COST \$				24,960

Scope Accuracy:

Level 1: Project scope well understood and well defined.

Level 2: Project scope conceptual. Scope lacks detail due to potential permit requirements; Unknown project conditions; limited knowledge of external impacts.

Level 3: Project scope is a "vision" with limited detail.

Engineering Effort:

Level A: Preliminary engineering performed. Technical information is available, engineering calculations have been performed; clear understanding of the materials size and quantities needed to execute job. Schedule understood; staff and permitting is fairly clear, (however this element may still need refining). Project Development & Construction Contingencies ranges between 10%-20%.

Level B: Conceptual engineering performed. Technical information is available, rough engineering calculations may have been performed, or similar information from previous similar work is compared and used. Project Development Contingencies ranges between 15% to 25% and Construction Contingencies ranges between 20% to 30%.

Level C: No engineering performed. Educated guesstimating. Limited technical information available and/or analysis performed. Project Development and Construction Contingencies should be selected appropriately by Project Manager. Contingency may range up to 50%.

PCC Sylvania Campus ADA Assessment
Parking Zone 5 Improvements
 Portland Community College



Engineer's Conceptual Estimate

Prepared By: Fred Wismer, PE		Date: September 20, 2016		
This Estimate has a Rating of:		B2 (See rating scale guide below.)		
ITEM	UNIT	TOTAL QUANTITY	UNIT PRICE	TOTAL COST
Removal of Structures and Obstructions	LS	ALL	\$100.00	\$100.00
Precast Concrete Bumper Stops	EA	5	\$200.00	\$1,000.00
ADA Parking Signs	EA	5	\$200.00	\$1,000.00
TOTAL CONSTRUCTION COST \$				2,100
20% Contingency \$				420
TOTAL ESTIMATED PROJECT COST \$				2,520

Scope Accuracy:

Level 1: Project scope well understood and well defined.

Level 2: Project scope conceptual. Scope lacks detail due to potential permit requirements; Unknown project conditions; limited knowledge of external impacts.

Level 3: Project scope is a "vision" with limited detail.

Engineering Effort:

Level A: Preliminary engineering performed. Technical information is available, engineering calculations have been performed; clear understanding of the materials size and quantities needed to execute job. Schedule understood; staff and permitting is fairly clear, (however this element may still need refining). Project Development & Construction Contingencies ranges between 10%-20%.

Level B: Conceptual engineering performed. Technical information is available, rough engineering calculations may have been performed, or similar information from previous similar work is compared and used. Project Development Contingencies ranges between 15% to 25% and Construction Contingencies ranges between 20% to 30%.

Level C: No engineering performed. Educated guesstimating. Limited technical information available and/or analysis performed. Project Development and Construction Contingencies should be selected appropriately by Project Manager. Contingency may range up to 50%.

PCC Sylvania Campus ADA Assessment
Parking Zone 12 Improvements
 Portland Community College



Engineer's Conceptual Estimate

Prepared By: Fred Wismer, PE		Date: September 20, 2016		
This Estimate has a Rating of:		B2 (See rating scale guide below.)		
ITEM	UNIT	TOTAL QUANTITY	UNIT PRICE	TOTAL COST
Removal of Structures and Obstructions	LS	ALL	\$100.00	\$100.00
Precast Concrete Bumper Stops	EA	6	\$200.00	\$1,200.00
ADA Parking Signs	EA	6	\$200.00	\$1,200.00
TOTAL CONSTRUCTION COST \$				2,500
20% Contingency \$				500
TOTAL ESTIMATED PROJECT COST \$				3,000

Scope Accuracy:

Level 1: Project scope well understood and well defined.

Level 2: Project scope conceptual. Scope lacks detail due to potential permit requirements; Unknown project conditions; limited knowledge of external impacts.

Level 3: Project scope is a "vision" with limited detail.

Engineering Effort:

Level A: Preliminary engineering performed. Technical information is available, engineering calculations have been performed; clear understanding of the materials size and quantities needed to execute job. Schedule understood; staff and permitting is fairly clear, (however this element may still need refining). Project Development & Construction Contingencies ranges between 10%-20%.

Level B: Conceptual engineering performed. Technical information is available, rough engineering calculations may have been performed, or similar information from previous similar work is compared and used. Project Development Contingencies ranges between 15% to 25% and Construction Contingencies ranges between 20% to 30%.

Level C: No engineering performed. Educated guesstimating. Limited technical information available and/or analysis performed. Project Development and Construction Contingencies should be selected appropriately by Project Manager. Contingency may range up to 50%.

PCC Sylvania Campus ADA Assessment
Parking Zone K St. Improvements
 Portland Community College



Engineer's Conceptual Estimate

Prepared By: Fred Wismer, PE		Date: September 20, 2016		
This Estimate has a Rating of:		B2 (See rating scale guide below.)		
ITEM	UNIT	TOTAL QUANTITY	UNIT PRICE	TOTAL COST
Removal of Structures and Obstructions	LS	ALL	\$300.00	\$300.00
Variable Depth Asphalt Overlay	SF	5,200	\$1.30	\$6,760.00
Concrete Curbs - Standard Curb	LF	42	\$18.00	\$756.00
Concrete Walks	SF	350	\$6.00	\$2,100.00
Truncated Domes	EA	4	\$450.00	\$1,800.00
Precast Concrete Bumper Stops	EA	4	\$200.00	\$800.00
ADA Parking Signs	EA	4	\$200.00	\$800.00
TOTAL CONSTRUCTION COST \$				13,316
20% Contingency \$				2,670
TOTAL ESTIMATED PROJECT COST \$				15,986

Scope Accuracy:

Level 1: Project scope well understood and well defined.

Level 2: Project scope conceptual. Scope lacks detail due to potential permit requirements; Unknown project conditions; limited knowledge of external impacts.

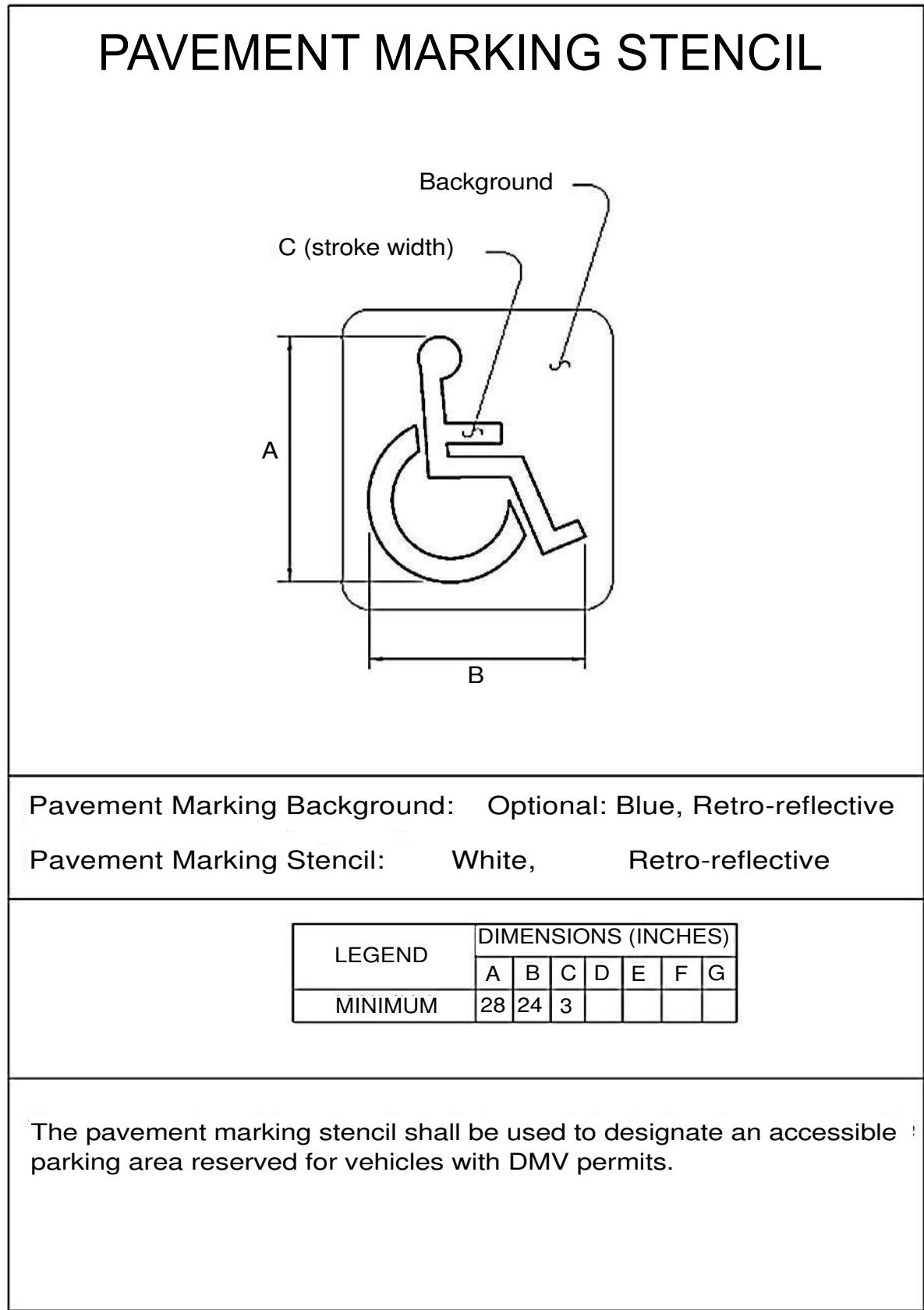
Level 3: Project scope is a "vision" with limited detail.

Engineering Effort:

Level A: Preliminary engineering performed. Technical information is available, engineering calculations have been performed; clear understanding of the materials size and quantities needed to execute job. Schedule understood; staff and permitting is fairly clear, (however this element may still need refining). Project Development & Construction Contingencies ranges between 10%-20%.

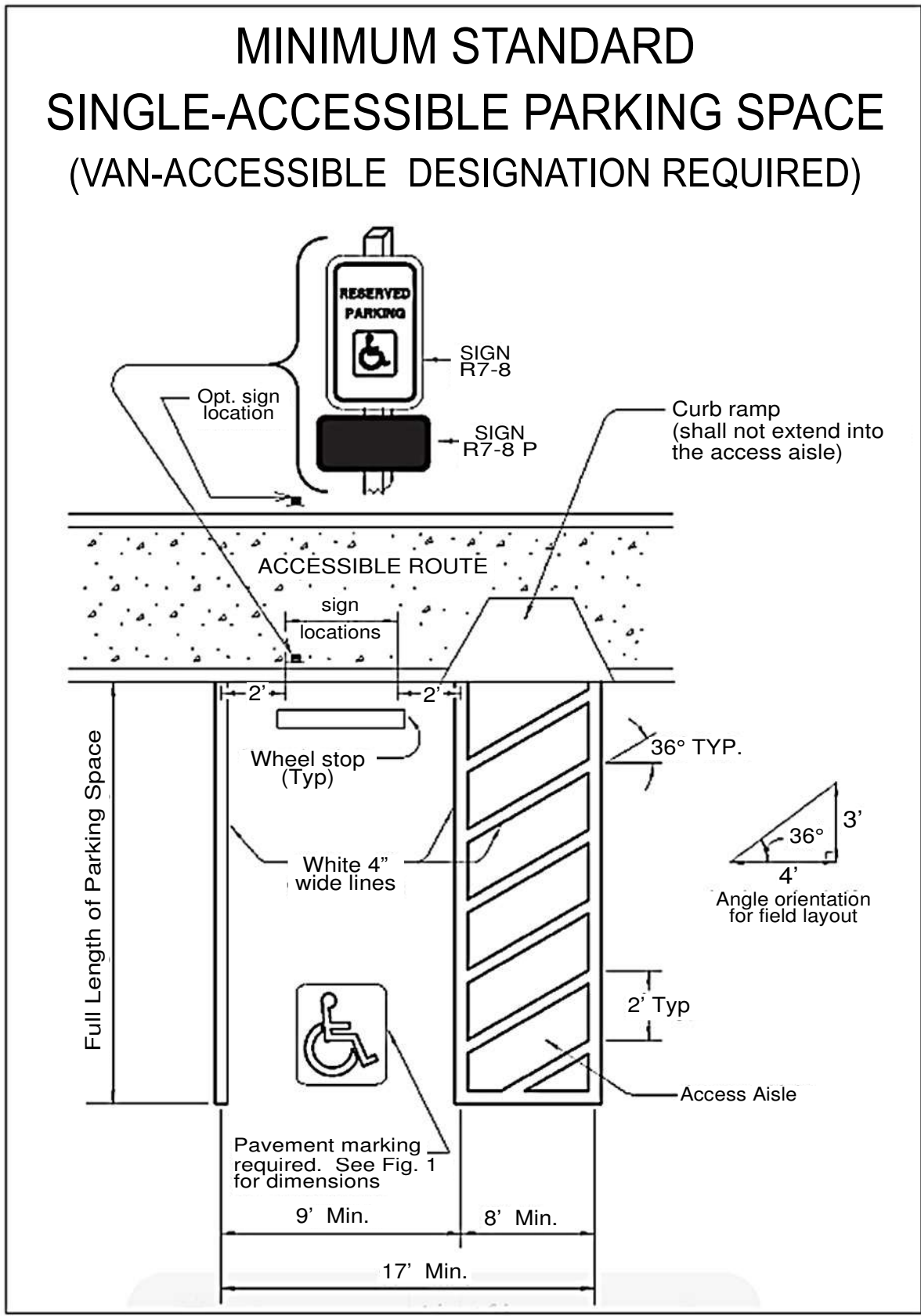
Level B: Conceptual engineering performed. Technical information is available, rough engineering calculations may have been performed, or similar information from previous similar work is compared and used. Project Development Contingencies ranges between 15% to 25% and Construction Contingencies ranges between 20% to 30%.

Level C: No engineering performed. Educated guesstimating. Limited technical information available and/or analysis performed. Project Development and Construction Contingencies should be selected appropriately by Project Manager. Contingency may range up to 50%.



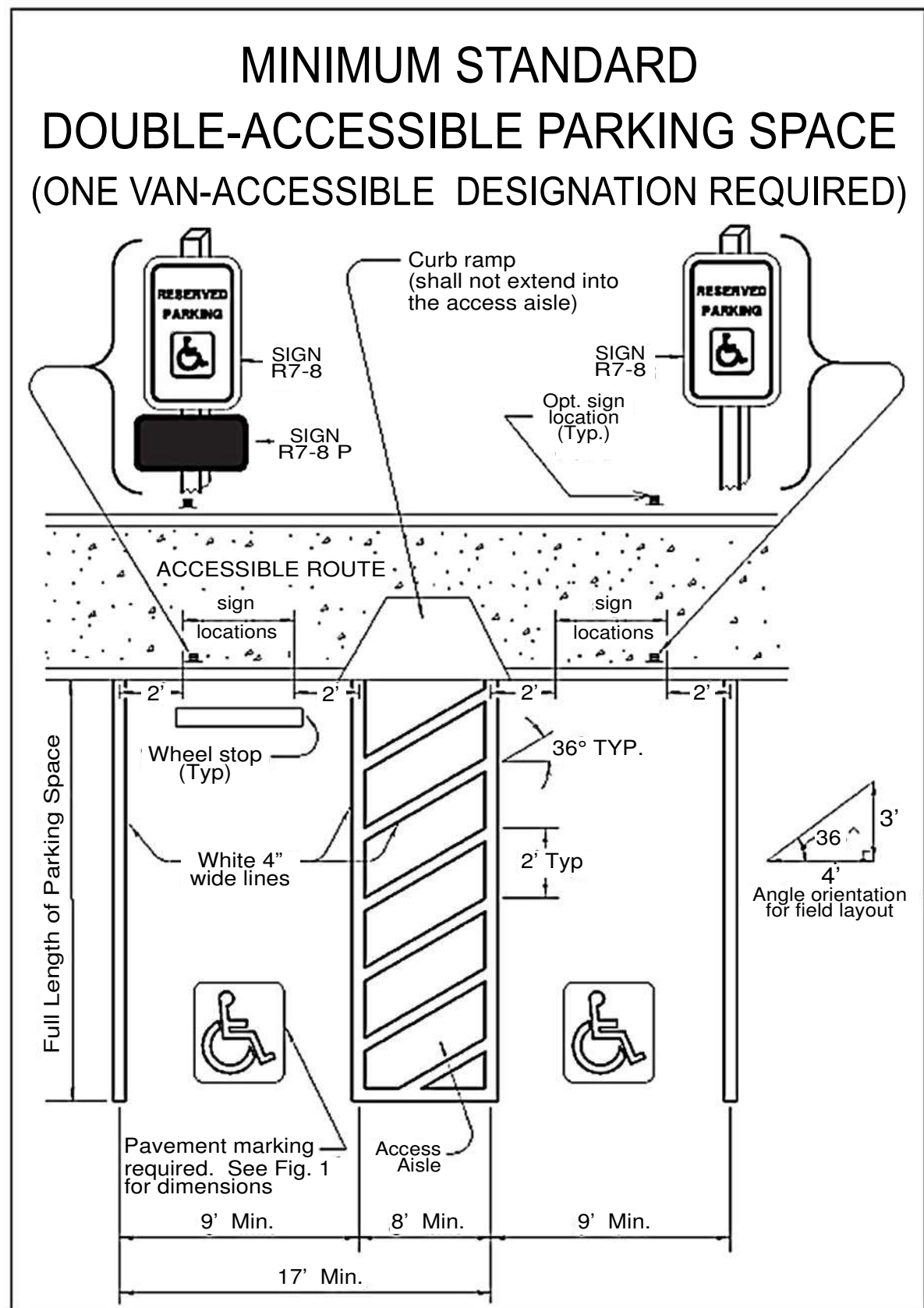
For SI: 1 inch = 25.4 mm.

FIGURE 1



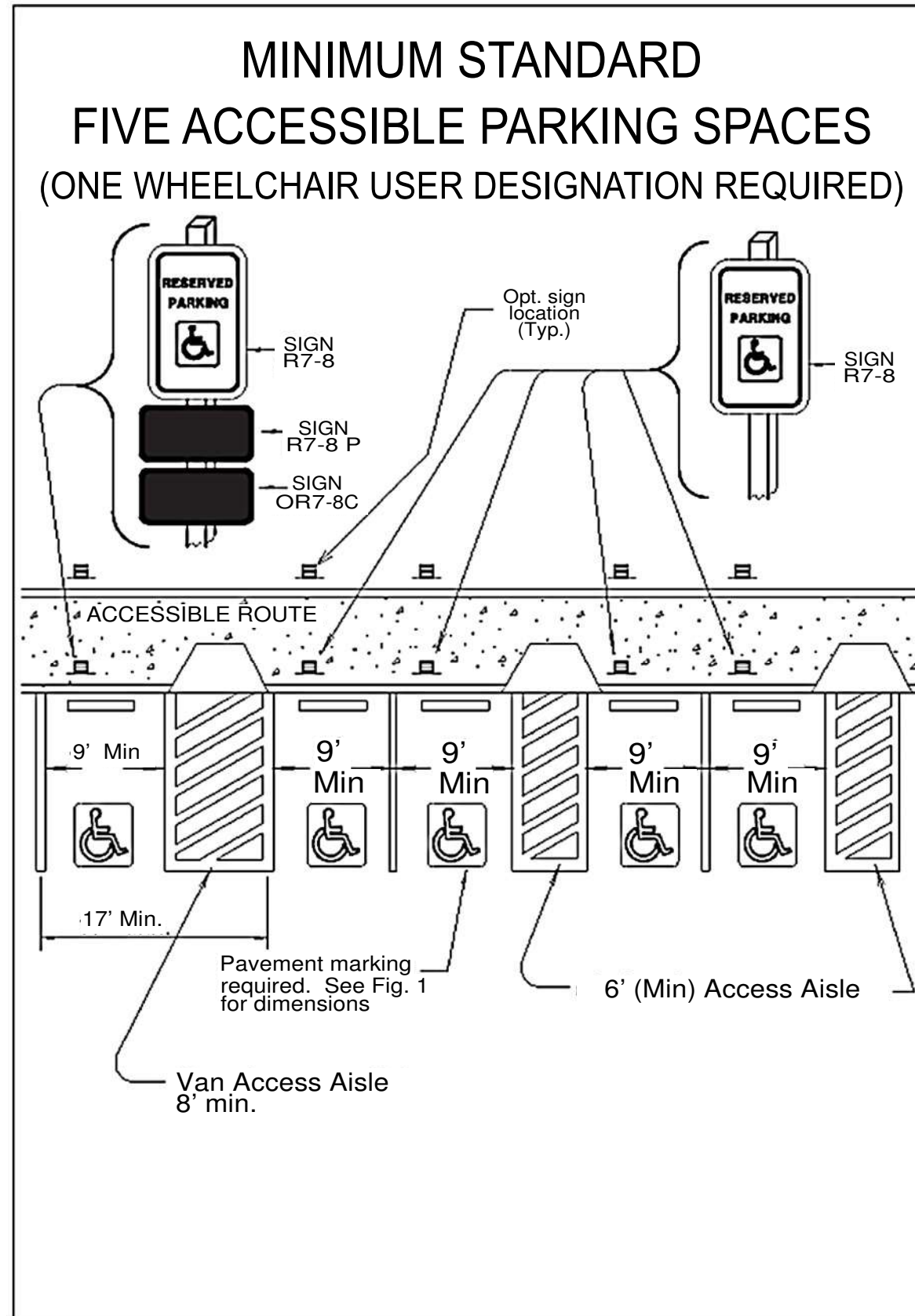
For SI: 1 foot = 304.8 mm. 1 degree = 0.01745 rad.

FIGURE 2



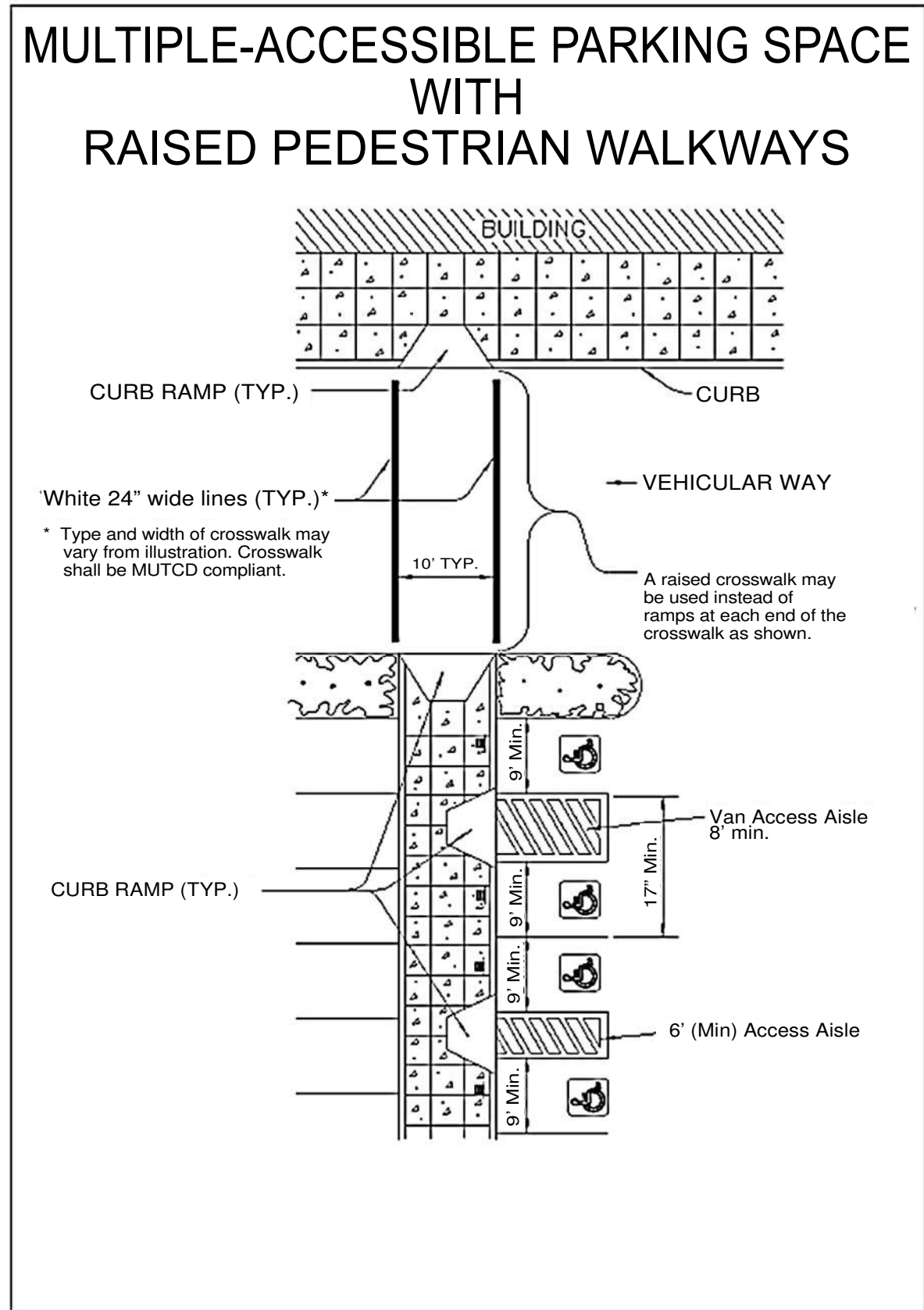
For SI: 1 foot = 304.8 mm, 1 degree = 0.01745.

FIGURE 3



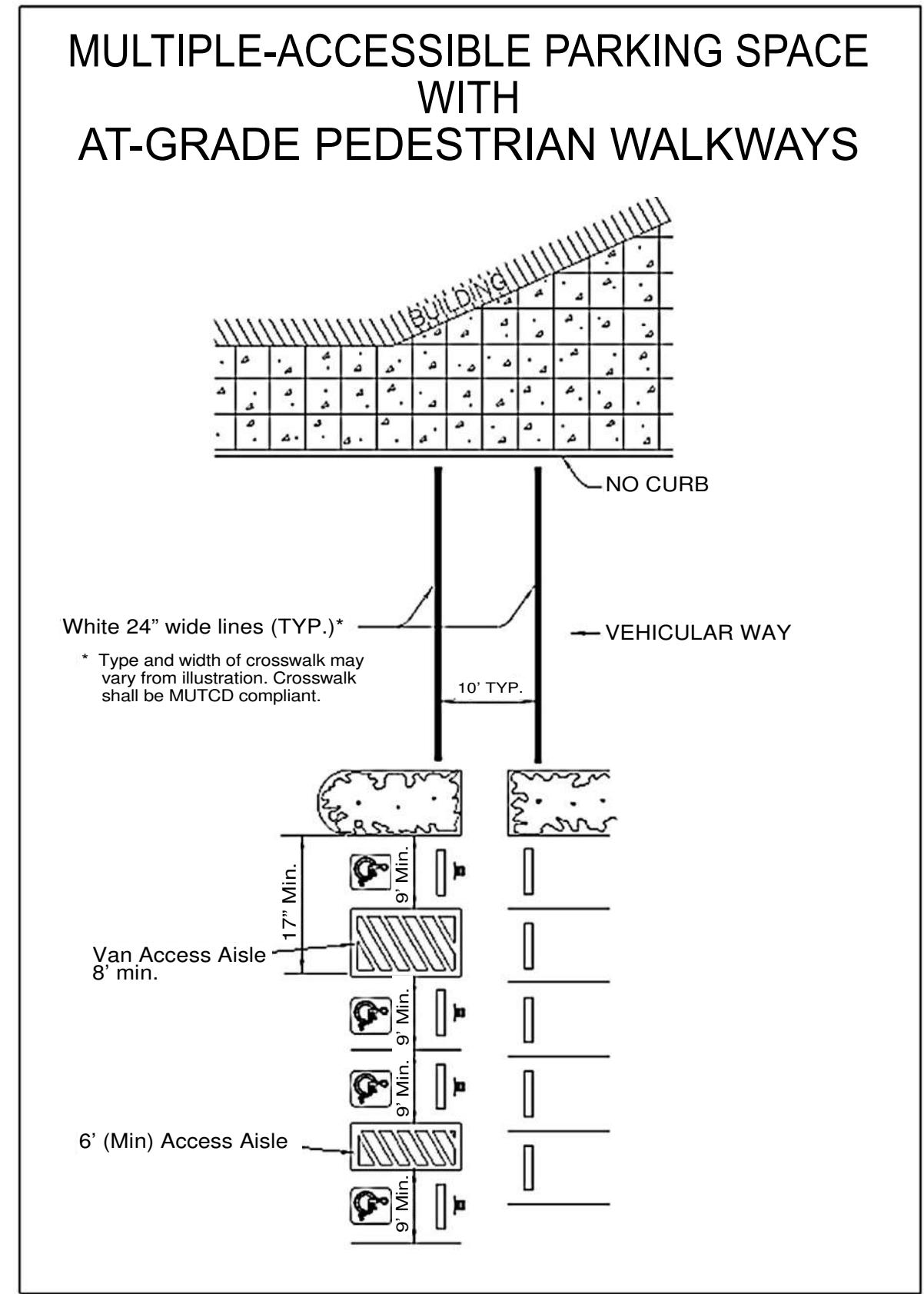
For SI: 1 foot = 304.8 mm.

FIGURE 4



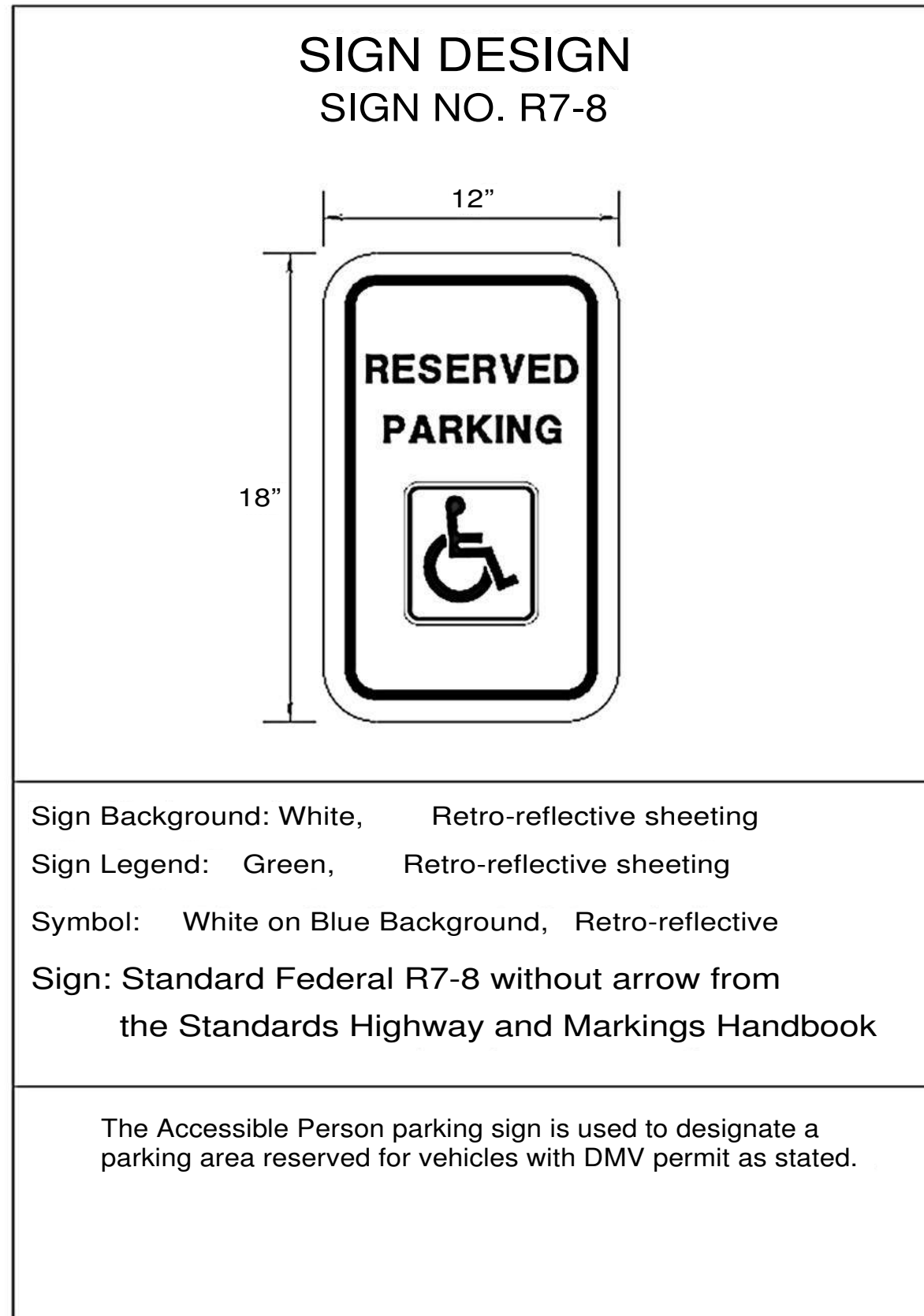
For SI: 1 inch = 25.4 mm., 1 foot = 308.4 mm.

FIGURE 5



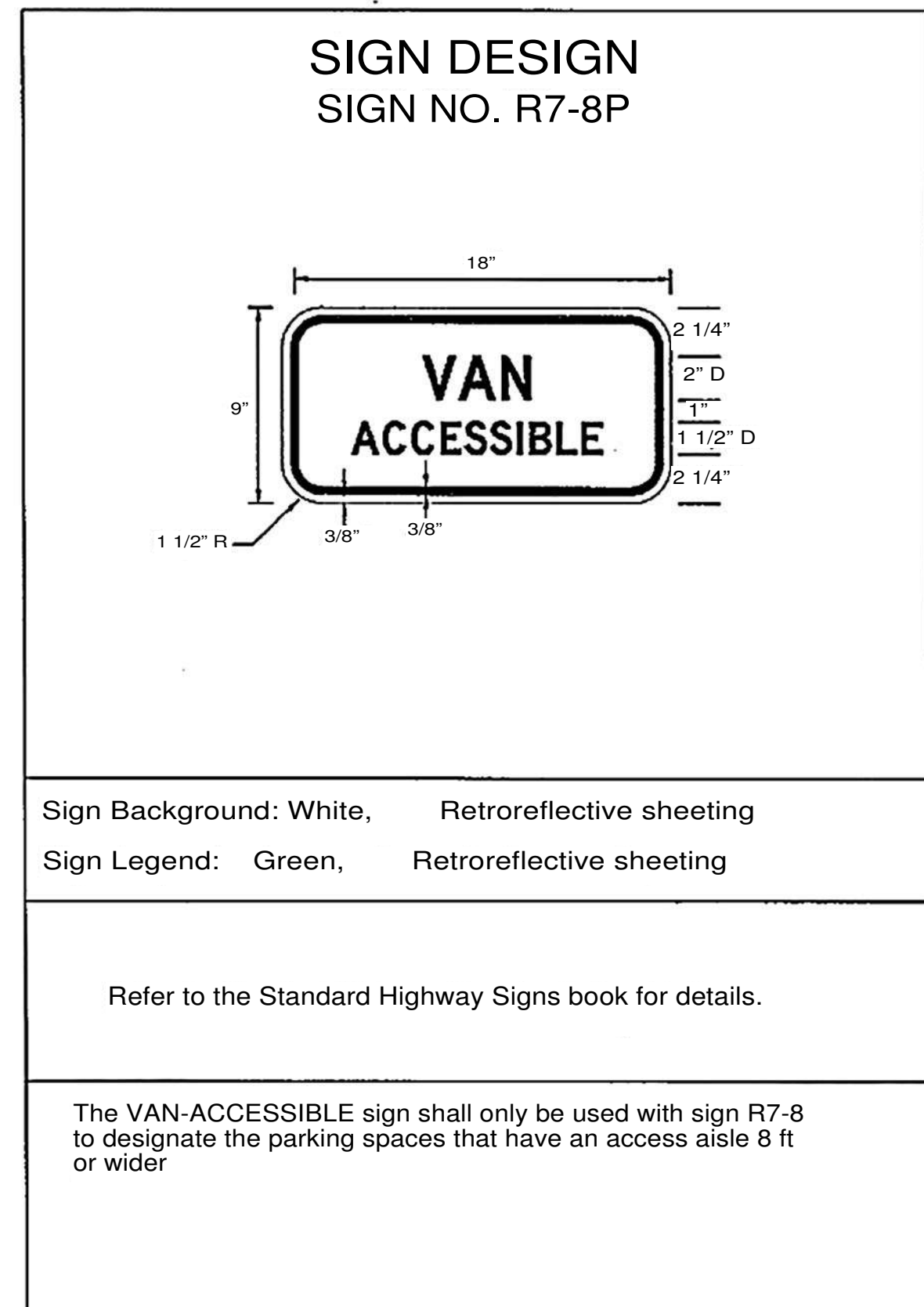
For SI: 1 inch = 25.4 mm., 1 foot = 304.8 mm.

FIGURE 6



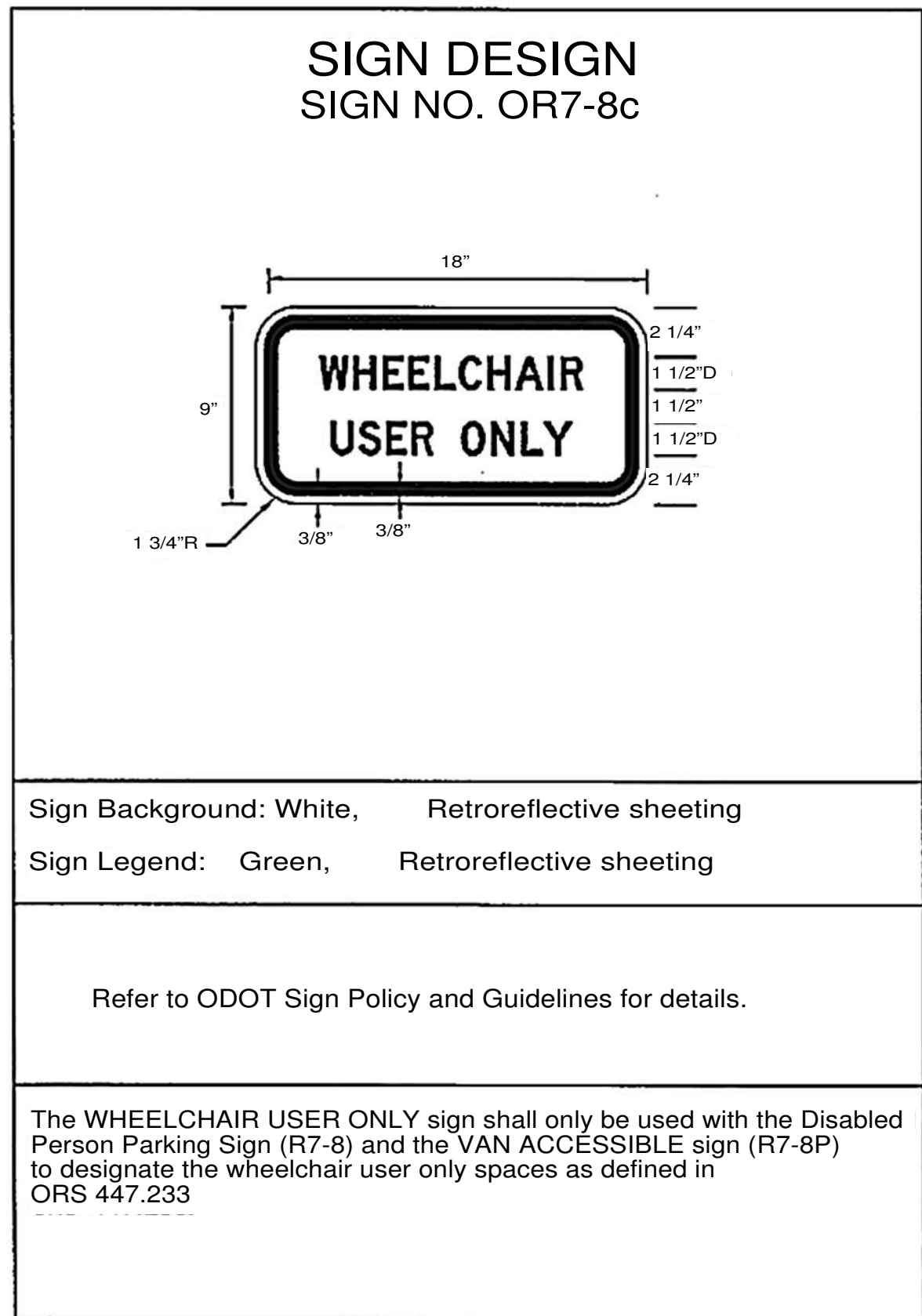
For SI: 1 inch = 25.4 mm.

FIGURE 7



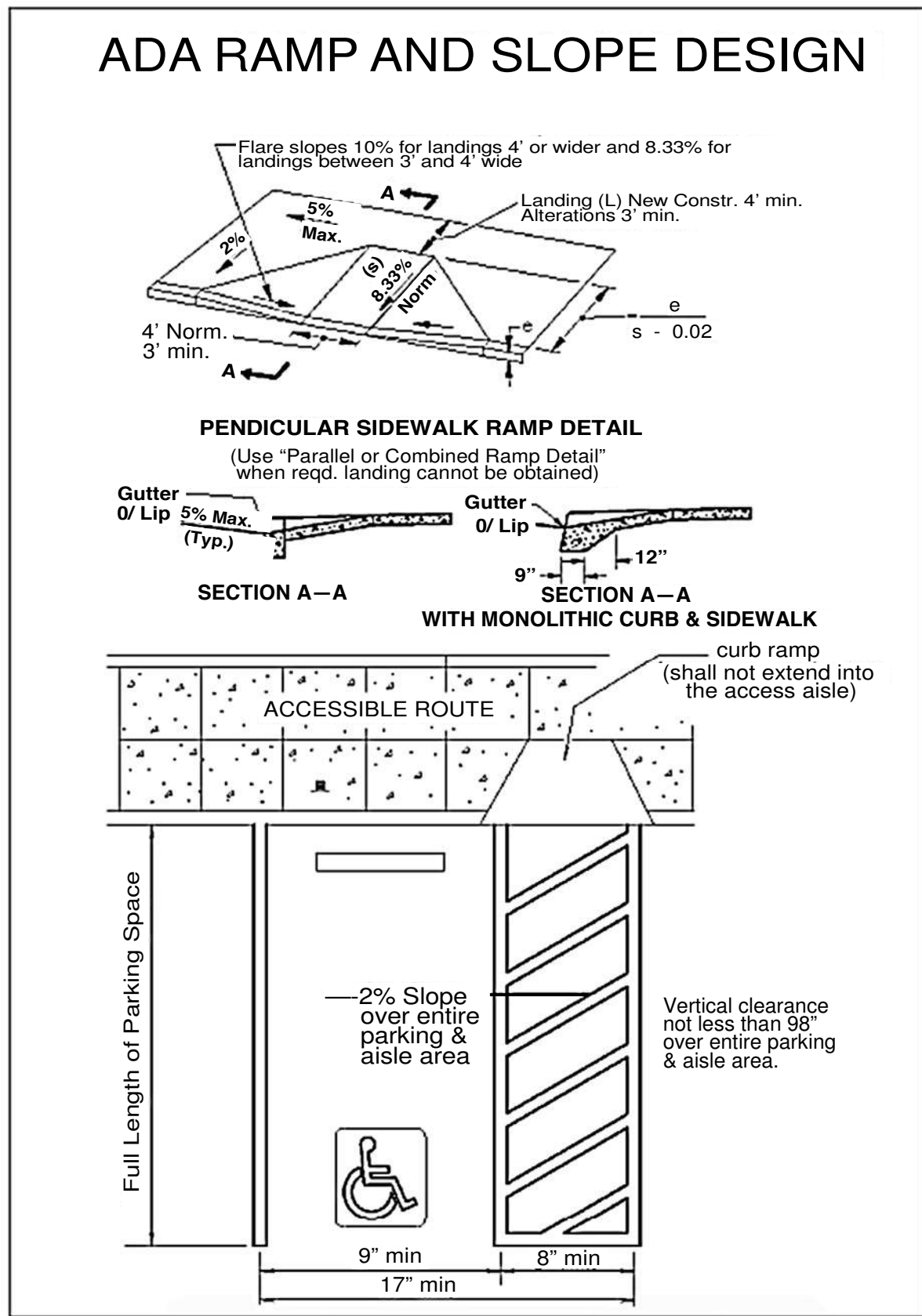
For SI: 1 inch = 25.4 mm., 1 foot = 304.8 mm.

FIGURE 8



For SI: 1 inch = 25.4 mm., 1 foot = 304.8 mm.

FIGURE 9



For SI: 1 inch = 25.4 mm., 1 foot = 304.8 mm.

FIGURE 10

Project: **PCC Sylvania - Site Packages** PRELIMINARY BUDGET 1.0
 Location: Portland Date: 6-Apr-11
 Owner: PCC Estimator: Pham
 Architect: GBD

	Description	Qty	UM	Unit Price	Total	Comments
2	DEMO LANDSCAPE FOR NEW PARKING AREAS	14,810	SF	\$ 12.81	\$ 189,642	Included GC & Mark-ups
3	REPLACE SOIL AND PLANTS IN EXISTING PLANTERS	19,961	SF	\$ 10.67	\$ 213,062	Included GC & Mark-ups
4	NEW LANDSCAPE PLANTERS	10,073	SF	\$ 26.52	\$ 267,099	Included GC & Mark-ups
5	NEW STORM WATER PLANTER WITH 3 COURSE MOD WALL - AREA A	6,285	SF	\$ 43.47	\$ 273,182	Included GC & Mark-ups
6	NEW STORM WATER PLANTER - AREA B	6,450	SF	\$ 36.71	\$ 236,783	Included GC & Mark-ups
7	NEW STORM WATER PLANTER WITH LANDSCAPE PLANTER- AREA C	11,110	SF	\$ 32.15	\$ 357,176	Included GC & Mark-ups
8	NEW STORM WATER PLANTER WITH LANDSCAPE PLANTER- AREA D	15,930	SF	\$ 31.31	\$ 498,828	Included GC & Mark-ups
9	NEW STORM WATER PLANTER - AREA E	6,800	SF	\$ 37.88	\$ 257,600	Included GC & Mark-ups
10	NEW STORM WATER PLANTER - AREA F	7,725	SF	\$ 33.27	\$ 257,010	Included GC & Mark-ups
11	NEW RAISED PEDESTRIAN CROSSWALK	6,589	SF	\$ 27.78	\$ 183,049	Included GC & Mark-ups
12	NEW 8' WIDE CONCRETE SIDEWALK	62,551	SF	\$ 10.60	\$ 662,728	Included GC & Mark-ups
13	6 COURSE MODULAR BLOCK RETAINING WALL WITH LANDSCAPE (RED)	1,070	LF	\$ 187.24	\$ 200,351	Included GC & Mark-ups
14	6 COURSE MODULAR BLOCK RETAINING WALL WITH LANDSCAPE (BLUE)	495	LF	\$ 187.24	\$ 92,686	Included GC & Mark-ups
15	6 COURSE MODULAR BLOCK RETAINING WALL WITH LANDSCAPE (PURPLE)	430	LF	\$ 210.38	\$ 90,465	Included GC & Mark-ups
16	3 COURSE MODULAR BLOCK RETAINING WALL WITH LANDSCAPE	255	SF	\$ 101.73	\$ 25,940	Included GC & Mark-ups
17	NEW 8' ASPHALT PERIMETER PATH	41,312	SF	\$ 9.17	\$ 378,624	Included GC & Mark-ups
18	K STREET COMPLETION	1	LS	\$ 425,342.43	\$ 425,342	Included GC & Mark-ups
19	MAIN CAMPUS ENTRY (TURN-ABOUT)	1	LS	\$ 994,495.7	\$ 994,496	Included GC & Mark-ups
20	SUB-TOTAL				\$ 5,604,064	Included GC & Mark-ups
21	OWNER CONTINGENCY	8.00%			\$ 448,325	
22	TOTAL				\$ 6,052,389	

Clarifications BASED ON MASTER PLAN 2/2/11 BY MAYER / REED

Exclusions

1. Utility connection fees
2. Power company charges
3. Testing & inspection costs
4. Architect & Engineer costs
5. Soils Report
6. Environmental Assessment Survey
7. Hazardous & toxic waste removal
8. Removal of soil contaminated by hazardous or toxic wastes
9. LESSER PONDS - PRICE PENDING
10. G STREET COMPLETION - PRICED SEPARATELY

Project: **PCC Sylvania - Site Packages** PRELIMINARY BUDGET 1.0
 Location: Portland Date: 6-Apr-11
 Owner: PCC Estimator: Pham
 Architect: GBD

	Description	Qty	UM	Unit Price	Total	Comments
1	SITE REQUIREMENTS	1	LS	\$ 250,560.00	\$ 250,560	
2	DEMO LANDSCAPE FOR NEW PARKING AREAS	14,810	SF	\$ 9.85	\$ 145,879	
3	REPLACE SOIL AND PLANTS IN EXISTING PLANTERS	19,961	SF	\$ 8.21	\$ 163,894	
4	NEW LANDSCAPE PLANTERS	10,073	SF	\$ 20.40	\$ 205,460	
5	NEW STORM WATER PLANTER WITH 3 COURSE MOD WALL - AREA A	6,285	SF	\$ 33.44	\$ 210,140	
6	NEW STORM WATER PLANTER - AREA B	6,450	SF	\$ 28.24	\$ 182,141	
7	NEW STORM WATER PLANTER WITH LANDSCAPE PLANTER- AREA C	11,110	SF	\$ 24.73	\$ 274,751	
8	NEW STORM WATER PLANTER WITH LANDSCAPE PLANTER- AREA D	15,930	SF	\$ 24.09	\$ 383,714	
9	NEW STORM WATER PLANTER - AREA E	6,800	SF	\$ 29.14	\$ 198,154	
10	NEW STORM WATER PLANTER - AREA F	7,725	SF	\$ 25.59	\$ 197,700	
11	NEW RAISED PEDESTRIAN CROSSWALK	6,589	SF	\$ 21.37	\$ 140,807	
12	NEW 8' WIDE CONCRETE SIDEWALK	62,551	SF	\$ 8.15	\$ 509,791	
13	6 COURSE MODULAR BLOCK RETAINING WALL WITH LANDSCAPE (RED)	1,070	LF	\$ 144.03	\$ 154,116	
14	6 COURSE MODULAR BLOCK RETAINING WALL WITH LANDSCAPE (BLUE)	495	LF	\$ 144.03	\$ 71,297	
15	6 COURSE MODULAR BLOCK RETAINING WALL WITH LANDSCAPE (PURPL	430	LF	\$ 161.83	\$ 69,589	
16	3 COURSE MODULAR BLOCK RETAINING WALL WITH LANDSCAPE	255	SF	\$ 78.25	\$ 19,954	
17	NEW 8' ASPHALT PERIMETER PATH	41,312	SF	\$ 7.05	\$ 291,250	
18	K STREET COMPLETION	1	LS	\$ 312,751.78	\$ 312,752	
19	MAIN CAMPUS ENTRY (TURN-ABOUT)	1	LS	\$ 808,533.11	\$ 808,533	
20	SUB-TOTAL				\$ 4,590,480	
21	GENERAL CONDITIONS FOR 6 MONTHS				\$ 340,888	
22	PAYMENT AND PERFORMANCE BOND	0.67%			\$ 45,445	
23	SUBGUARD	1.05%			\$ 48,200	
24	LIABILITY INSURANCE	1.00%			\$ 50,250	
25	PROFIT	2.25%			\$ 114,193	
26	CONTRACTOR CONTINGENCY	8.00%			\$ 414,608	
27	SUB-TOTAL				\$ 5,604,064	
28	OWNER CONTINGENCY	8.00%			\$ 448,325	
29	TOTAL				\$ 6,052,390	

Clarifications BASED ON MASTER PLAN 2/2/11 BY MAYER / REED

Exclusions

1. Utility connection fees
2. Power company charges
3. Testing & inspection costs
4. Architect & Engineer costs
5. Soils Report
6. Environmental Assessment Survey
7. Hazardous & toxic waste removal
8. Removal of soil contaminated by hazardous or toxic wastes
9. LESSER PONDS
10. G STREET COMPLETION

Project: PCC Sylvania - Site Packages
 Location: Portland
 Owner: PCC
 Architect: GBD

PRELIMINARY BUDGET 1.0
 Date: 5-Apr-11
 Estimator: Pham

Description	Quantity	Unit Price	Price	Comments	MWES
Remove existing soil	800	af	\$ 1.80	\$ 1,440	
Prep for Subgrade	800	af	\$ 1.75	\$ 1,400	
Install 8" asphalt (3" thick)	800	af	\$ 3.00	\$ 2,400	
Retain existing landscape	800	af	\$ 0.60	\$ 480	
	Unit Price		\$7.05	\$ 5,640	
SUB-TOTAL	41512	af	\$7.05	\$ 291,250	
18 K STREET COMPLETION					
Mob & Erosion Control	1	ls	\$ 3,000.00	\$ 3,000	
Demo AC	2488	af	\$ 0.40	\$ 995	
Demo Landscape	7200	af	\$ 1.10	\$ 7,920	
Demo sidewalk & curb	9411	af	\$ 0.75	\$ 7,058	
Mass Excavation - 10600sf x 3.6ft deep	14000	af	\$ 3.60	\$ 50,400	
Structural Fill with fabric	14000	af	\$ 2.40	\$ 33,600	
Site Prep for Curb - 16" curb	300	lf	\$ 6.70	\$ 2,010	
Site Prep for Sidewalk 4" x 8ft wide	2400	af	\$ 1.75	\$ 4,200	
Concrete curb 16" tall	650	lf	\$ 17.50	\$ 11,375	
Concrete sidewalk 4" (8ft wide)	4093	af	\$ 4.50	\$ 18,419	
6" Asphalt Paving	14000	af	\$ 3.60	\$ 50,400	
Striping & Signage	1	ls	\$ 6,000.00	\$ 6,000	
Landscaping					
2" Cal. Tree	40	ea	\$ 180.00	\$ 7,200	
5 gal. shrubs	300	ea	\$ 50.00	\$ 15,000	
Irrigation	7200	af	\$ 1.00	\$ 7,200	
Site Prep for Landscape	7200	af	\$ 1.20	\$ 8,640	
Install Prepared Soil Mix	287	cy	\$ 47.00	\$ 13,500	
Hydro-seed and Mulching	7200	af	\$ 1.20	\$ 8,640	
Prep for wall Subgrade (600' x 3' x 2')	1800	af	\$ 8.60	\$ 15,480	
Install 6 course modular wall @ upper level	300	lf	\$ 36.00	\$ 10,800	
Install drain rock and fabric (6ft tall)	1200	af	\$ 4.10	\$ 4,920	
Install 3 course modular wall @ lower level	300	lf	\$ 28.00	\$ 8,400	
Install drain rock and fabric (2ft tall)	600	af	\$ 4.10	\$ 2,460	
Relocate misc. utilities & light fixtures	1	ls	\$ 23,000.00	\$ 23,000	
SUB-TOTAL	14000	af	\$22.34	\$ 312,762	
19 MAIN CAMPUS ENTRY (TURN-ABOUT)					
Mob & Erosion Control	1	ls	\$ 10,000.00	\$ 10,000	
Demo AC & Concrete	48376	af	\$ 0.60	\$ 29,026	
Demo Landscape	5000	af	\$ 1.10	\$ 5,500	
Demo ticket booth	1	ls	\$ 10,000.00	\$ 10,000	
Mass Excavation - 1.5ft deep	48376	af	\$ 1.50	\$ 72,564	
Structural Fill	2198	cy	\$ 47.00	\$ 103,306	
Site Prep for Curb - 16" curb	1750	lf	\$ 5.70	\$ 9,975	
Site Prep curb @ turn-about - 16" x 16"	382	lf	\$ 7.70	\$ 2,941	
Site Prep for tear drop	5072	af	\$ 3.70	\$ 18,768	
Site Prep for CIP Retaining Wall	200	lf	\$ 30.00	\$ 6,000	
Site Prep for Asphalt - 12" with fabric	38456	af	\$ 1.75	\$ 67,298	
Concrete curb 16" tall	1750	lf	\$ 17.60	\$ 30,800	
Concrete curb @ turn-about	352	lf	\$ 30.60	\$ 10,771	
Concrete tear drops	6072	af	\$ 7.50	\$ 45,540	
Concrete Radius CIP Retaining Wall - 8' tall	1600	af	\$ 45.00	\$ 72,000	
6" Asphalt Paving	38456	af	\$ 3.60	\$ 138,696	
Striping & Signage	1	ls	\$ 5,000.00	\$ 5,000	
Landscaping					
2" Cal. Tree (3 rows @ 20' o.c)	113.75	ea	\$ 180.00	\$ 20,475	
5 gal. shrubs (3 rows @ 6' o.c)	432	ea	\$ 50.00	\$ 21,600	
Irrigation	1	ls	\$ 10,000.00	\$ 10,000	
Site Prep for Landscape	40000	af	\$ 0.50	\$ 20,000	
Install Prepared Soil Mix	1481	cy	\$ 47.00	\$ 69,630	
Install drain rock and fabric (6ft tall)	200	af	\$ 8.20	\$ 1,640	
Install 3 course modular wall @ lower level	300	lf	\$ 26.00	\$ 7,800	
Install drain rock and fabric (2ft tall)	300	af	\$ 4.10	\$ 1,230	
Relocate misc. utilities & light fixtures	1	ls	\$ 30,000.00	\$ 30,000	
SUB-TOTAL	48376	af	\$16.71	\$ 808,633	

\$4,590,480

Project: PCC Sylvania - Site Packages
 Location: Portland
 Owner: PCC
 Architect: GBD

PRELIMINARY BUDGET 1.0
 Date: 6-Apr-11
 Estimator: Pham

Description	Quantity	UM	Unit Price	Burden	Price	Comments
GENERAL CONDITIONS	26	Wks				
Supervision						
Noel Project Superintendent	1,039	mh	\$ 70.71	\$ 73,482		Full Time
Ted PX	416	mh	\$ 120.90	\$ 50,256		16 hrs/week
Jeff Project Manager	520	mh	\$ 75.05	\$ 38,996		20 hrs/week
Kevin Project Engineer	1,039	mh	\$ 60.83	\$ 63,215		Full Time
Niki Project Engineer	1,039	mh	\$ 43.97	\$ 45,694		Full Time
Natalia Admin	1,039	mh	\$ 29.97	\$ 31,145		Full Time
PCC Intern	300	mh	\$ 15.00	\$ 4,500		
				\$ 307,288		
Office Expense	6	mo	\$5,600.00	\$ 33,600		
				\$ 340,888		

Portland Community College

Facilities Plan - Phase 1

09 – Sylvania Maker Space

Capital Improvements Cost Estimate

December 15, 2016

Contacts

Portland Community College

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Director, Bond Program

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PCC Bond Project Manager

Architect

Kent Duffy, Principal
SRG Partnership

Bryan Higgins, Project Manager
SRG Partnership

Estimating

Graham Roy, Principal
Rider Levett Bucknall



Project Overview

Portland Community College's (PCC) Makerspace has been very successful and has grown in scope over the past few years. The college has begun to take a holistic look at what is required in terms of equipment and square footage for the Makerspaces to continue to be effective and enrich education at all campuses and centers.

An early cost exercise was completed by PCC this past year which looks primarily at equipment and general space requirements for the addition of a Makerspace in the Health Technologies Building at the Sylvania Campus. SRG then met with PCC to assist in preparing a programming document to begin to identify the square footage necessary. The preliminary estimate came back between \$289,000 - \$486,000. This would be a general assumption for computers, equipment and general renovations. Considering unforeseen costs such as electrical upgrades, ventilation requirements and potential needs for additional acoustical treatments, it should be assumed that the higher estimate is more accurate.



PRELIMINARY PROGRAM

PROJECT NAME:
**Portland Community College
 Facilities Master Plan
 Capital Projects**

PREPARED BY:
JK

DATE:
11/21/2016

SRG PROJECT NO.:
216012

**09
 Maker Space**

Dietrich Steinmetz, Dorina Cornea-Hasegan

	Seats	Qty	SF/Each	NSF	Comments
Ventilated Equipment Room	-	6		2,500	
Print Screen Station		1			Sinks required
Laser cutter		6			Wood, leather, plastic, etc.
Large format 3D Printer		6			
3D Scanner		6			
Textile/ Sewing Station		6			
CNC Mini Station		6-12			
Soldering Station		6			
Open Computer Lab	24	1	960	960	
Open Work Area	24	1	1320	1,320	
Storage - Tools	-			300	Small wood working tool storage
Storage - Supplies	-			300	Large format wood, leather, plastic sheeting, textile storage
Storage - Projects	-			300	Large lockers for student project storage
Open Lounge	10-12			300	
				3,480	NSF
				<u>x 1.25</u>	Grossing Factor
				4350	TOTAL BGSF

NOTES:

Estimated cost for renovation and equipment \$289,000 - \$468,000 based on estimate from Deterich on 11/21/16.
 For HVAC and electrical requirements, assume higher end of estimate

Portland Community College

Facilities Plan - Phase 1

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10 – Rock Creek CTE Building

Capital Improvements Cost Estimate

December 15, 2016



Contacts

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Transportation

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Lancaster Engineering

Land Use Planning

Beverly Bookin, Principal
The Bookin Group

Project Overview

Building 2 on the Rock Creek campus currently houses both the Diesel and Think Big CTE programs. Currently the program runs between 80-100% enrollment and has exhausted all facility expansion opportunities. Portland Community College (PCC) is currently exploring the option of constructing a new facility for the Think Big program, while allowing the Diesel program to solely occupy Building 2. PCC is unsure of the physical location of this new facility, but is expecting the building to be an industrial in nature and roughly 20,000 square feet. Backfilling the Diesel program into Building 2 should not require substantial renovation and only minor electrical upgrades should be expected.

Zoning

The repurposing of the Diesel building can be accomplished without reference to the Master Plan, but the new building for the Think Big program will likely trigger a Washington County Master Plan Update to accommodate the growth in building space and to calculate the need for new parking.

Transportation

During the last PCC Bond cycle, improvements to Building 9 and Building 5 necessitated a land-use review process with Washington County. As part of that review, Washington County advocated for requiring PCC to move the main campus access to the west, to align with the intersection of NW 178th Avenue at Springville Road. The justification was that the campus access is a private driveway that does not meet the access spacing standard with the nearby public streets.

PCC and the consultant team strongly resisted this position for a number of reasons, including the fact that the access was in place long before the surrounding residential side streets were ever constructed. In essence, the County allowed the surrounding street system to develop in this manner, despite the fact the large majority of traffic in the area is to and from the campus. Ultimately, PCC gained approval without being required to relocate the access.

The County is currently in the final design stages of a capital improvement project to widen and realign Springville Road, including reconstruction of the intersection with 185th Avenue. This project extends east from 185th Avenue, but does not reach 178th Avenue. The County maintains that this is as far as they could extend the improvement within their current budget, but it does conveniently set up the campus access relocation discussion for either A) the next phase of the County's Springville Road improvements, or B) more development on the Rock Creek Campus.

The County is of the opinion that PCC has expanded the campus incrementally and in doing so has avoided contributing to transportation system improvements. However, each building project has been consistent with Washington County development code. As incremental improvements are made on the campus, including a recent application for a child care center, this sentiment from the County is likely to continue and the access issue will arise again.

Site

On-site landscape improvements at the existing Rock Creek campus for accommodation of the CTE Building will take into account integration of the new facility into existing vehicular, pedestrian and service patterns on the campus. While a specific site has not yet been selected for the building the following assumptions will apply.

Given the integration into an existing campus, an allowance should be maintained for demolition of existing pedestrian walkways, parking areas and site vegetation as needed to establish a construction staging area as well as a final building site.

General site improvements associated with new building efforts will include an entry plaza located at the primary building entry and a secondary smaller terrace located at a secondary building entry or adjacent to gathering or meeting room functions. Enhanced pedestrian walkways connecting the new facility to existing campus circulation patterns will ensure pedestrian safety and connection to adjacent compatible uses as developed. Landscape areas will include perimeter landscape screening from non-compatible uses, interior parking lot landscape improvements associated with modification of existing parking as needed, bioswale planting to accommodate storm water and ornamental planting at entry plaza, terrace, and building perimeters.

Entry Plaza

The Entry Plaza will incorporate high quality materials such as unit pavers or other specialty surfacing, custom seating, and/or raised concrete planters that can serve as seatwalls, specimen trees (3+ inch caliper) and ornamental planting.

Secondary Plaza

A secondary plaza should be anticipated, provide an area for students and staff respite and minor outdoor meeting space. Seating (walls or high quality furnishings) and ornamental planting will enhance the space.

Hardscape Areas

Pedestrian circulation will be promoted by maintaining primary sidewalk connections and adding secondary pedestrian sidewalks as needed to connect new building, parking and adjacent uses.

Tree Preservation and Protection

Existing site trees greater than 2 inch caliper will be reviewed by a certified Arborist to assess state of trees affected by project development prior to design of the project. Arborist report will form the basis for generation of a Tree Root Protection Zone (TRPZ) document per PCC Capital Project Standards. All trees to remain will be protected per PCC Capital Project Standards.

Soil Preparation

Native top soil and base soil analysis to be completed by a certified soil laboratory prior to design of the project. Associated soil report, including both chemical and physical properties of the soil, to serve as the basis for subsequent soil amendment requirements as needed. Soil preparation to meet the following PCC Capital Project Standards:

- Where imported topsoil is needed, chemical and textural analysis of topsoil and organic amendments is mandatory and will follow the same testing evaluation as described for native soils.
 - o Testing is to be performed by a PCC pre-approved testing agency. Owner's Representative to provide contact information.
 - o Soil Report and adjustment recommendations must be reviewed and approved by Owner's Representative prior to final Bid Document preparation.
- Subgrade is to be aerated prior to final soil placement and planting.
- Mechanical tillage under existing tree canopies is not accepted. Use approved hand methods only.
- Existing native soil and imported soils are to be free of noxious weeds: horse tail; oxalis; morning glory; thistle; etc.
- Amended Topsoil Depths:
 - o Lawns: Provide 12" depth minimum
 - o Shrub and ground cover areas: Provide 18" depth minimum
 - o Tree pits: Provide shallow area of compacted backfill below rootball to reduce settlement.
- Planting beds and lawn areas to be filled with pre-mixed amended topsoil in lifts not to exceed 8" unless approved otherwise by Owner's Representative.
- All amended topsoil areas to be rolled to achieve compaction of maximum 85% proctor.
- Top Soil Suppliers:
 - o S+H Logging
 - o ProGrow
 - o Mt. Scott Fuel
- Bioswale and retention ponds are excluded from these provisions.

Planting

All campus planting shall also be per PCC Capital Project Standards including:

- Use large basalt gravel at tree pits.
- Avoid use of metal tree grates at individual tree pits in paved areas.

On-site planting will consist of a palette largely adapted to Pacific Northwest growing conditions. Tree plantings in paved areas will use large basalt gravel at the tree pits. Silva Cells to be provided for specimen trees in formal hardscape plazas. All specimen trees will be field tagged.

Woody shrub material intended for perimeter screening and ornamental planting at the Entry Plaza will be installed as 5 gallon containers. Plant material for interior parking areas and storm water facility perimeters to be 2-5 gallon. Storm water basin plantings and groundcover plantings to be 1 gallon containers.

In addition, parking lot interior landscaping will require trees, shrubs and ground cover to meet the P1 standard per City of Portland code, Section 33.248, and overall site tree density will meet requirements of Chapter 11, 11.50.050.

All planting areas will receive 2" depth organic mulch and will be fully irrigated.

Irrigation

All site irrigation will integrate a high efficiency delivery system and meet the following PCC Capital Project Standards:

- Provide separate water meter including all required backflow prevention devices, flow meters, master valves, etc. for irrigation system.
- Where code allows, provide below grade double check valve in lieu of above grade reduced pressure backflow devices.
- All expanded campus systems are to be contiguous with existing Maxicom controlled system and complete with remote controls, flow sensors, rain gauges and master valve controls.
- Independent Irrigation Audit is required at the completion of all projects.
- All mainline runs are to be laid straight without arc

Site Furnishings

Site furnishings should meet or exceed requirements per the PCC Capital Project Standards including the following:

- Benches to be of sturdy construction with materials that integrate with the surrounding site elements.
- Benches, chairs and tables to allow for maximum flexibility of user including seating for ADA accessibility both in placement and in bench design.
- New benches to match existing where appropriate.
- Paint color for all metal components of site furnishings is to be:
- Paints: Black, Powder coat

Site furnishings should be assumed to be high quality, commercial grade products supplied by the following manufacturers or approved equal:

- Landscape Forms; www.landscapeforms.com
- Forms + Surfaces; www.forms-surfaces.com
- Victor Stanley; www.victorstanley.com

Provide an allowance for custom wood/concrete benches and/or sculptural manufactured site furnishings at Entry Plaza. Seatwalls and site benches to provide permanent opportunities for year-round seating at all primary gathering spaces. Provide allowance for moveable café style furnishings, such as tables and chairs, at areas with contiguous interior/exterior space and suitable program function.

Bike racks to be provided per City of Portland standard where included in r.o.w.. Provide bicycle parking near, but not directly adjacent to primary building entries. Bike fixtures shall be stainless steel with brushed finish, imbedded, and installed at recommended spacing according to the Association of Pedestrian and Bicycle Professionals (APBP). Bicycle racks should be assumed to be high quality, commercial grade products supplied by the following manufacturers or approved equal:

- Landscape Forms; www.landscapeforms.com
- Huntco; www.huntco.com

Provide allowance for combination trash/recycling receptacles to be located adjacent to building entries and at primary gathering spaces. Color to be matt black powder coat. All receptacles must be covered. Receptacles should be assumed to be high quality, commercial grade products supplied by the following manufacturers or approved equal:

- Rendezvous Recycling; www.interface.com
- Victor Stanley; www.victorstanley.com

Site handrails to be stainless steel. Imbed or bolt-down with tamper-proof hardware attachment.

Walls

All site walls and raised concrete planters shall be formed in accordance with PCC Capital Project Standards including:

- Cast-in-place concrete retaining walls/seat walls must be chamfered with grooves, for sufficient depth installed on all edges, to deter skateboards.
- Continuous surface/edge of walls under 5' in height without skate deterrent must not exceed 4 lineal feet.
- All stained concrete is to be sealed.
- Custom concrete mixes are to be avoided. Standard mix designs that are industry tested are preferred.
- Graffiti sealing is required on all exposed surfaces of landscape walls (over 24 inches height). Application method of sealant must not come into contact with the ground or waste water systems.
- Vertical extrusion or interruption (joint) strategies must be included in design of concrete walls and curbs to minimize need for additive skate deterrents.

If additive skate deterrents are included, skate deterrents should be stainless steel, imbedded, commercial grade deterrents such as:

- Skate Stoppers; www.skatestoppers.com or approved equal.

Paved Areas – Pedestrian Concrete

All horizontal exterior pedestrian concrete flatwork to be finished medium broom texture or exposed aggregate dependent on final project design requirements and meet PCC Capital Project Standards as follows:

- Minimum thickness for sidewalks should be 6" of 4000psi reinforced concrete over 4" compacted gravel over compacted subgrade.

Paved Areas – Unit Pavers

All pedestrian areas with unit pavers should comply with the following PCC Capital Projects Standards:

- Design of Unit Pavers should assume occasional maintenance vehicle traffic.
- Preferred edge restraint for unit pavers is concrete or metal.
- Paver at edge should be no less than half of the paver width, or minimum 3", whichever is larger.
- Unit Pavers systems should be surfaced sealed to prevent weeds.
- Typical unit paver section; set paver on compacted ¼"-0 crushed rock with fines. Minimal use of sand over rock for leveling.

Green Roofs

No eco-roofs or occupied green roof terraces are planned for the project at this time.

Site mitigation

Current project assumptions do not assume or account for any environmental or hazardous site conditions requiring mitigation.

For coordination with other disciplines

Site Lighting.

Pedestrian Ways should meet the following PCC Capital Projects Standards:

- Lighting fixtures should have appropriate BUG rating to address glare and light trespass.
- Lighting near the building should employ LED or fluorescent technology to minimize problems with emergency lighting.
- Lighting systems should be designed to an average of
 - o 0.6 fc at ground level, with ave : min uniformity of 6:1, unless in conflict with egress requirements.

Specialty lighting will be limited to the Entry Plaza and secondary plaza and will likely be expressed by stand alone pedestrian scale fixtures, lighting integrated into custom furnishings or seatwalls, and tree uplights.

Stormwater management

Bioswale soils will be per BES specification (see civil)

Building / Parking Lot / Access

- New structure with approximately 54,760 gross sf somewhere in Hillsboro. A location for the new building has not been identified yet however we assume it will be in an urban setting. The site will likely require demo of an existing building and existing parking lot.

- Assume the site is 4 acres with approximately 110,000sf of pavement removal and replacement.
- Assume new sidewalk / ramps – 2000sf
- Install new curbs, wheel stops, striping and ADA sign
- New monument sign
- Install new bike parking.
- Assume no work in public ROW.
-

Utilities

- Stormwater:
 - o The proposed re-development will require compliance with Clean Water Services standards.
 - o Assume new vegetated water quality facilities will be required to handle the new building roof and all other impervious areas. The WQ facilities will need to be approximately 4000sf in total.
 - o Assume new storm drainage catch basins and laterals in parking lot, 8 catch basins and 500lf of 10" storm pipe.
- Sanitary Sewer:
 - o Assume 300lf of new 6" pvc line from building to public main in street.
- Water & Fire Service:
 - o Assume new 2" water meter and 300lf of 2" domestic water line. Assume new 6" fire vault and 150lf of 6" water line.
- Power, Gas, Telecom:
 - o It is assumed that the existing site has adequate power, gas and telecom services to supply the proposed development.

Structural Systems

Overview of structural systems (steel, wood or concrete) and information on the foundation.

The Rock Creek Career and Technical Education (CTE) Building is a 38,000-square foot building located on the Rock Creek campus of Portland Community College. The proposed building is two stories and sited on the existing Center site.

The building program consists of the following:

- ThinkBIG Program
- Industrial technology teaching and classroom space
- Central gathering and meeting space
- General Office
- Study Rooms
- Observation balconies

The building structure consists of the following:

Roof and Floor Framing

- 3 ½" reinforced concrete topping slabs supported by 3" metal deck.
- Wide flange beams and girders
- Wide flange, HSS, or pipe columns
- 20'-0" clearance from floor to bottom of structure

Foundation/First Floor (pending geotechnical information – assuming soils are suitable for shallow foundations and the site is not liquefiable)

- 5" reinforced concrete slab-on-grade
- Spread and strip reinforced concrete footings

Lateral Force Resisting System

- Bucking Restrained Braced Frames or reinforced concrete shear walls

Building Overview

Materials and components discussed, both interior and exterior, shall meet the requirements as set forth in PCC's Capital Project Standards. Any materials that are not discussed in the PCC standards shall be assumed to meet current industry standards.

Building Envelope

The envelope will be constructed using the following:

- Brick veneer, 60% of envelope
- Aluminum Composite Panel, 20% of envelope
- Non-operable store front systems
- Low slope Roof – 3-ply cold pressed
- Light gauge framing

Any exposed metal fabrications shall be protected against changes in appearance for a minimum of 5 years and will be hot dipped galvanized per standards outlined in the Capital Project Standards.

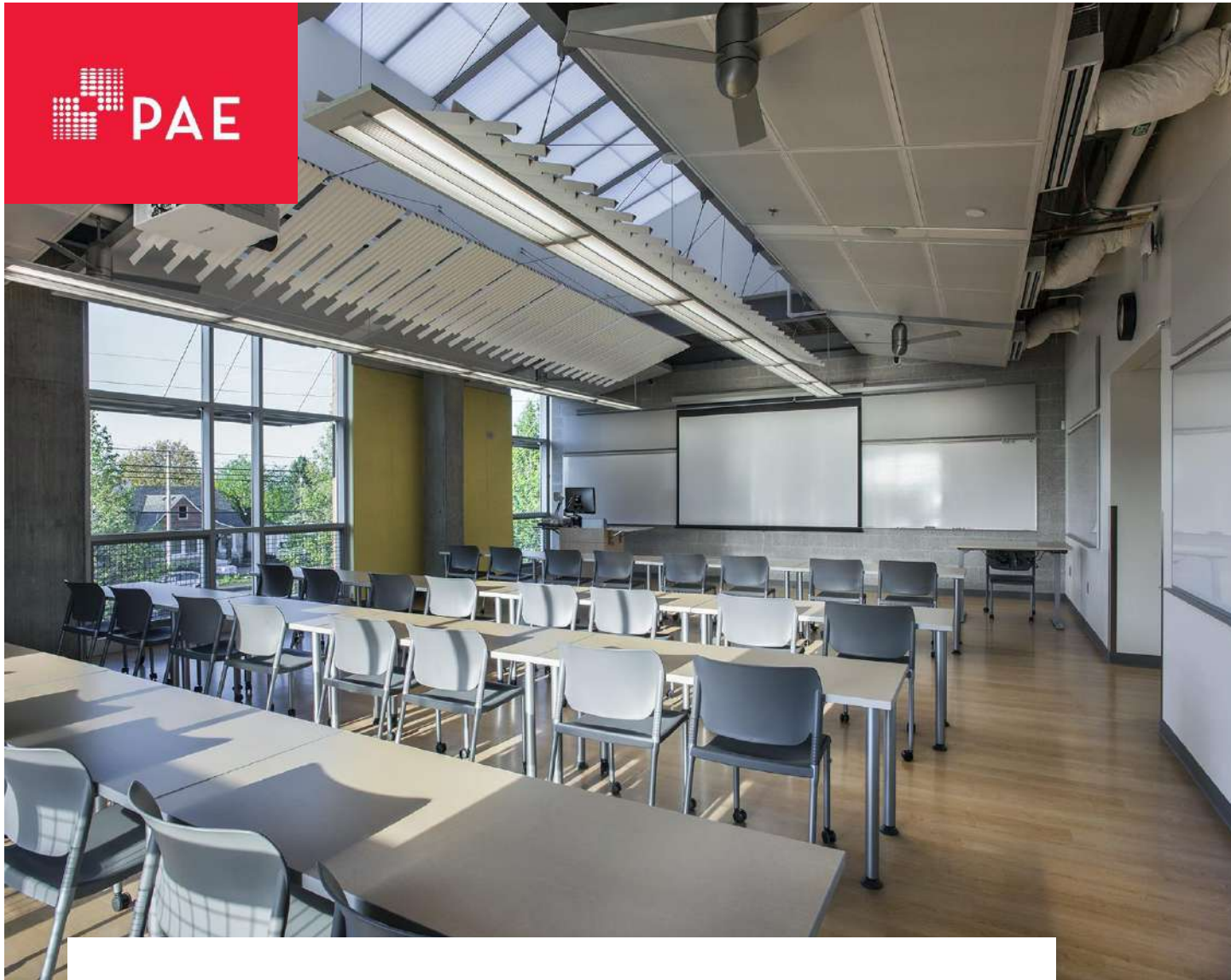
Components anticipated to be exposed metal fabrications include:

- Canopies
- Railings
- Ladders
- Exposed structural components (outriggers, columns, etc.)

Interior Finishes

For Meeting rooms, offices and toilet rooms, refer to the Room Criteria Sheets located in PCC's District Standards and Guidelines. This document outlines the requirements for room finishes, casework, controls, HVAC, electrical and any applicable specialties for each room type. General circulation areas including reception and waiting areas, study spaces and hallways will receive the following:

- Painted gypsum board partitions, wood framed
- Polished concrete floors
- Painted gypsum board ceilings
- Standard doors and hardware per PCC Capital Project Standards



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PCC Campus-Wide Master Plan

10 – Rock Creek CTE

December 14, 2016

pae-engineers.com



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1.0 Mechanical Basis of Design

1.1 HVAC Systems

Rebalancing of the existing mechanical systems in Building 2 will be require in order to accommodate expansion of Diesel program into Think Big area.

New building housing Think Big will be served by 40,000 CFM packaged roof top unit consisting of supply fans, return fans, gas fired heat exchanger, DX cooling coil, mixing plenum, pre filter and final filter section. Unit will be installed on vibration isolation curb and mounted on the roof. Basis of design: Trane.

Medium pressure galvanized ductwork will be routed from the unit to individual thermal zones. Dedicated VAV terminal units with electric heating coils will be provided for each thermal zones. Fan powered boxes will be installed in larger exterior zones. Galvanized low pressure ductwork will be routed from terminal units to ceiling mounted supply diffusers. Return air will be ducted from return grilles back to rooftop unit. All medium and low pressure ductwork will be externally insulated.

Gas fired unit heaters will be installed in shop area. The heaters will be suspended off the structure.

Two exhaust system will be provided in the building. General exhaust system will consist of exhaust fan mounted on the roof and low pressure exhaust ductwork routed from the fan down to restrooms and storage area requiring exhaust. Second exhaust system will be vehicle exhaust extraction and removal exhaust system dedicated for the shop area only. Redundant exhaust fans will be installed on the roof and ductwork extended to shop area where retractable exhaust hoses would be manifold into common exhaust duct.

Dedicated 2 ton split system will be provided for IDF and MDF rooms.

Mechanical System

- (1) 40,000 cfm packaged roof top unit
- (20) Terminal units with electric heating coils (SCR controllers)
- (10) Gas fired unit heaters
- (2) 10,000 CFM exhaust fans (Shop exhaust)
- (1) Exhaust fan - 1 HP
- (2) Split system - 2 tons

A direct digital control (DDC) system, by Honeywell, will be provided to control and monitor new mechanical system. The control system will be integrated into the PCC BAS. Damper actuation will be electric type. Public spaces will be provided with Demand Control Ventilation (DCV). The control system will perform all required control functions, including optimization of equipment and system performance, building pressurization, reliability, equipment life and energy consumption.

1.2 Plumbing Systems

No modification of the existing plumbing systems in Building 2 is anticipated.

New main service, including water meter will be provided for the new building and cold water will be extended into water room. A utility vault located within the site will house the backflow device on the incoming domestic water supply. The domestic water system will be provided with positive means to control backflow, with appropriate backflow preventers at sources of possible contamination within the building, such as mechanical equipment.

All plumbing fixtures will be commercial grade low flow fixtures. L-type copper piping will be used for domestic water distribution. Piping will be insulated up to fixture connection. Cast iron pipe will be provided for sanitary waste and vent.

Irrigation: A backflow device will be provided for the irrigation system within the water service room. Irrigation piping will be stubbed out of the building for the landscape use.

A roof and overflow drain system will be provided as required by code. Overflow storm drain system will daylight utilizing downspout nozzles at the first floor level above grade. The storm water piping shall be collected and routed underground to an existing storm water main.

All storm and overflow drain piping shall be cast iron with no-hub couplings.

Master mixing valve and 1/2 HP recirculating hot water pump will be installed in the water service room.

100 gallon condensing gas fired water heater, master mixing valve and new 3/4 HP recirculating hot water pump will be provided to serve main building.

Emergency shower, eyewash station and mixing valves will be installed in shop area.

Drain piping from shop area would be manifold and routed to oil/water separator located outside the building.

A new natural gas service will be provided. Gas piping up to, and including the gas meters will be by NW Natural.

Natural gas will be extended to serve the new air handling units and unit heaters. Connection to the gas meter and installation of the house gas piping will be per local gas company and OSSC requirements. All natural gas piping will be schedule 40 black steel with screwed or welded fittings

1.3 Fire Protection Systems

Wet Pipe Sprinkler System

New building will be protected with new wet sprinkler system in accordance with NFPA 13 and local Fire Marshal requirements. A detector double check assembly will be provided. The fire department connection (FDC) will be located adjacent to the backflow device vault.

In general, the fire sprinkler system will consist of connection to new water service, including main flow alarm station, zone control valves and flow indicators, alarm bell, fire sprinkler piping and heads. All related fire protection accessories as required will be provided. Location and type of tamper, flow, and pressure switches will be coordinated with the fire alarm system. All fire sprinkler piping will be concealed.

All required system isolation valves will be provided with tamper switches. Each floor will be provided with a zone isolation valves with tamper switches, flow switches, fire department test stations, and hose valves (as required). The fire department test drain will terminate outside of the building. Side wall dry head sprinkler heads will be mounted on the building exterior where fire protection is required under canopies and overhangs. All fire protection system materials to be of a domestic manufacture to the existing fire protection system.



2.0 Electrical Basis of Design

2.1 Electrical (Diesel)

Expand diesel shop space into vacated Think Big area. Provide power, lighting and fire alarm devices similar to existing.

2.2 Service and Distribution (Think Big)

This document describes the overall intent as it pertains to the power distribution expected for use on the project.

Table 1: Design Criteria

Area	Lighting Systems (VA/SF)	Power Systems (VA/SF)
Offices	0.7 - 1.0	2-3
Classrooms	0.7 - 1.0	2-3
Lab	0.7 - 1.0	10-20
Circulation/Transition	0.5 - 0.6	1.0
Service Areas	0.5 - 0.6	0.5
Stairs	0.5 - 0.6	0.5

Distribution

The main service will be approximately 1600 amps at a voltage 480Y/277V will be used to feed lighting, large mechanical and equipment loads. Secondary voltages of 208Y/120V and 240Y/120V will be derived using energy efficient dry type transformers providing a level of isolation from other loads and deriving new a grounded neutral point. The electrical power system will incorporate metering and system performance tracking at the main distribution and sub-distribution panels. The metering will provide information on system loading and power quality.

Flexibility: The power distribution system will be developed to provide flexibility for reconfiguring the lab and classroom spaces. Separate panels will be provided in each area to provide flexibility for future modifications.

Power Quality: Quality of power supply is affected by noise sources within a facility as well as outside (utility transferred). Surge protections devices are provided at the service entrance and at sub-distribution panel level. A third level TVSS is available using the portable plug strips at equipment as required.

Branch Circuit Wiring: Copper conductors in EMT raceway for feeders and homeruns and where exposed to view. Metal Clad (MC) is allowed downstream from homerun where above accessible ceilings. Lab spaces will use surface metal raceway and overhead distribution system to route power and data cables for flexibility to work areas. Classrooms will follow PCC standard for wall and floor power and data.

Equipment Connections: Electrical power connections will be made to all mechanical equipment, to include providing all electrically associated devices such as disconnect switches, contactors, magnetic or manual starters, lock-out switches, etc., not furnished under Division 23. VFD's furnished under Division 23 and installed under Division 26.

Electrical power connections will be made to support miscellaneous equipment. Connections include disconnect safety switches and wiring to support interlocks to remote devices.

Electromechanical Interference (EMI): Provisions in layout of the electrical power system will be made to minimize the impact of electric fields on sensitive lab spaces. Equipment producing fields

(transformers and motors) are to be located remote from sensitive labs and equipment. Large ampere feeds will be routed around sensitive areas or contained within rigid steel conduits.

Grounding System

Two grounding criteria will be addressed, safety and performance. A safe grounded power system will be provided in compliance with the 2014 NEC. This ground system consists of the building service ground (multiple ground rods and concrete encased UFER). The safe grounding system will be extended thru out all electrical systems in facility. All metallic systems will be grounded to the building grid.

Performance grounding includes a system of grounding conductors and busses to be used for labs and telecom rooms. The performance ground system will tie into the code required safety grounding system at the main distribution panel ground bus.



2.3 On-Site Power Systems (Think Big)

Emergency Generator

A 60KW 480/277 3-phase diesel generator located on-site to serve the emergency and optional standby loads for the building. Fuel tank will be skid mounted below generator.

Uninterruptible Power Supply (UPS)

A 5KW rack mounted UPS will be located in each telecom room to provide conditioned power and provide continuity while generator starting sequence is complete. Generator will provided power to UPS.

Renewable Power System (PV)

A renewable power source using PV (Photovoltaic) may be recommended for the project pending site selection and available roof area.

2.4 Signal Systems (Think Big)

Fire Alarm

The Fire Alarm system will consist of a supervised addressable supervised, Class B hard wired system. Manufacturer to match PCC standard manufacturer for fire alarm and mass notification systems.

Table 2: Fire Alarm Device Coverage

Device	Coverage
Manual pull stations	Locate as required by PCC or AHJ
Smoke Detectors	Corridors, Air handlers (>2,000CFM), Elevators lobbies, Elevator machine rooms, Elevator hoistways.
Fire Sprinkler	Tamper and Flow
Annunciation	Remote Annunciation at entry
Building Annunciation	Combination fire alarm/mass notification speaker and strobe annunciation for throughout the facility.
System output	Relay interface for mechanical system shut down and elevator recall.
Monitoring	Central Station Monitoring

Telephone/Data

Not in scope.

Security

Not in scope.

Audio/Visual

Not in scope.

3.0 Lighting (Think Big)

3.1 Lighting Equipment

Design Criteria

Table 3: Interior Lighting Design Criteria

Area	Source	Light Level Ambient (ave FC)	Light Level Task (ave FC)	Light Level Emergency (ave FC*)
Offices	LED	25-30	35-45	1.0
Classrooms	LED	25-30	35-45	1.0
Lab	LED	35-40	40-50	1.0
Circulation/Transition	LED	15 - 25		1.0
Service Areas	LED	15 - 25		1.0
Stairs	LED	15 - 25		1.0
Restrooms	LED	30 - 40		1.0

(* Emergency Lighting: Emergency lighting system and panel capacity will be designed on the basis of 0.25 volt-amperes/SF. of gross space)

Interior Lighting

The electrical lighting systems will be designed in compliance with the State of Oregon Structural Specialty Code. Energy efficient sources and automatic control technologies will be implemented to provide the most efficient and effective electric lighting system for the facility occupants and task. Controls will provide switching and dimming of the lighting to permit maximum use of the available natural light.

Daylighting will provide the first level of illuminations for the majority of the interior spaces. Many spaces will have access to daylight from two sides. The next step will be to use energy efficient local task lighting were appropriate. When additional electrical lighting is required for building interior illumination, high efficient LED luminaires will be used. Illumination issues to be addressed include lighting levels, photo-sensitive areas, uniformity and glare.

Site Lighting

Building lighting will be integrated with the building exterior features. Illumination will be provided for passage and security/safety, and to provide highlights to the exterior elements. Site illumination will use the campus standard ornamental luminaire. The source type used will be depended on the luminaire location and distance from the lit task. All exterior luminaires will be LED and use cutoff optics to address light trespass issues.

Lighting Controls

Control of lighting will be provided by the following methods for the respective tasks/areas:



Table 4: Lighting control Methods by Area

Task/Area	Control Method
Offices	Occupancy Sensor (with manual override)
Classrooms	Occupancy Sensor (with manual override)
Circulation/Transition	Time Clock
Service Areas	Occupancy Sensor (with manual override)
Stairs	Occupancy Sensor (with manual override)
Restrooms	Occupancy Sensor
Offices	Occupancy Sensor (with manual override)
Building Exterior	Time Clock

PROJECT NAME:
**Portland Community College
 Facilities Plan
 Capital Projects**

PREPARED BY:
 JK/NP

DATE:
 11/29/2016

SRG PROJECT NO.:
 216012

**10
 CTE Building**

Ish Rivas, Russ Dunington

	Seats	Qty	SF/Each	NSF	Comments
Program - Diesel + Think Big					
Laboratories		1	30,000	30,000	150 Students @ 200 SF
Other functions		1	7800	7800	Based on 26% BGF
Classrooms		7	960	6,720	
				44,520	NSF
				<u>x 1.23</u>	Grossing Factor
				54,760	TOTAL BGSF
Program - NEW BUILDING - Diesel					
Laboratories		1	20,000	20,000	100 students
Other functions		1	5400	5,400	
Classrooms		5	960	4,800	
				30,200	NSF
				<u>x 1.23</u>	Grossing Factor
				37,146	TOTAL BGSF
Program - NEW BUILDING - Think Big					
Laboratories		1	10,000	10,000	50 students
Other functions		1	3500	3,500	
Classrooms		3	960	2,880	
				16,380	NSF
				<u>x 1.23</u>	Grossing Factor
				20,147	TOTAL BGSF

NOTES:

ThinkBIG and Diesel program currently situated in 17,000 SF
 ThinkBIG: 4,000 SF
 Diesel: 13,000 SF
 *TB will move out, Diesel will take over all existing 17,000 SF
 Translucent OH Doors Required

Portland Community College

Facilities Plan - Phase 1

12 – Hillsboro Center

Capital Improvements Cost Estimate

December 15, 2016

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WH Pacific

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Lancaster Engineering

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Beverly Bookin, Principal
The Bookin Group

Project Overview

Portland Community College (PCC) has identified a need to expand its facilities in the Hillsboro area. PCC will need to grow from its current four classroom facility to a larger potentially standalone facility that will have more classrooms, science labs, computer labs and proper support spaces. A proposed structure of roughly 27,000 square feet is required. A site has not yet been identified, but would be assumed to be located near downtown Hillsboro.

Zoning

It is difficult to predict the land use issues in the center of Hillsboro without a site, however, most of the zoning designations in the center of the city will accommodate an education building of 30,000 sf in a medium-density building. Maximum height in the downtown is 75'. Setbacks will be minimal except on sites that transition to the surrounding lower-density, residential areas. College uses must be approved at the concept level through a Planned Unit Development review and then a more detailed Development Review at the time of construction.

Transportation

The Hillsboro Center is anticipated to be in Downtown Hillsboro. This area offers light rail access, bus access, and sidewalk infrastructure to encourage walking. While this area offers lots of opportunities for alternative modes of travel, this is still a highly car dependent City and is on one edge of the Portland Metro Region so it is anticipated that there will still be a large portion of students and staff that will be accessing the center via motor vehicles.

Because this is a new building, it is anticipated that the City of Hillsboro will require a Traffic Impact Analysis (TIA) and depending on the location and what roadways will be affected by traffic this may include Washington County and ODOT coordination as well. The TIA will follow City guidelines but should also provide additional detail focus on the following aspects to help PCC build an adequate transportation network for this center:

- Resources for biking and walking (i.e., locker rooms and showers)
- Adequate connections between transit stops and the center
- Evaluation of required parking spots in relation to mode split goals
- ADA needs and accessibility

The overall evaluation work for this site would include coordination between City of Hillsboro, Washington County, ODOT, and TriMet and is anticipated to less than \$40k worth of effort. The cost estimate should include, at minimum, the following infrastructure components to support transportation and parking at this site:

- Bike storage
- Locker rooms and showers
- Sidewalk and/or multi-use improvements off site
- Parking lot with ADA resources

Site

On-site landscape improvements at the existing Hillsboro Center campus for accommodation of a new building will take into account integration of the new facility into existing vehicular, pedestrian and service patterns on the campus including impacts on the surrounding public r.o.w. While a specific site has not yet been selected for the building the following assumptions will apply.

Given the integration into an existing urban campus, an allowance should be maintained for demolition of existing r.o.w. facilities, pedestrian walkways, parking areas and site vegetation as needed to establish a construction staging area as well as a final building site.

General site improvements associated with new building efforts will include an entry plaza located at the primary building entry and a secondary smaller terrace located at a secondary building entry or adjacent to gathering or meeting room functions. Enhanced pedestrian walkways connecting the new facility to existing campus circulation patterns will ensure pedestrian safety and connection to adjacent compatible uses as developed. Landscape areas will include perimeter landscape screening from non-compatible uses, interior parking lot landscape improvements associated with modification of existing parking as needed, bioswale planting to accommodate storm water and ornamental planting at entry plaza, terrace, and building perimeters.

Entry Plaza

The Entry Plaza will incorporate high quality materials such as unit pavers or other specialty surfacing, custom seating, and/or raised concrete planters that can serve as seatwalls, specimen trees (3+ inch caliper) and ornamental planting.

Secondary Plaza

A secondary plaza should be anticipated, provide an area for students and staff respite and minor outdoor meeting space. Seating (walls or high quality furnishings) and ornamental planting will enhance the space.

Perimeter Screening and Streetscape

Perimeter planting will be required per City of Hillsboro standards to screen new site development from the adjacent development. This planting will include either trees and evergreen shrubs or a 6-foot-high masonry wall, as needed to meet city standards.

Hardscape Areas

Pedestrian circulation will be promoted by maintaining primary sidewalk connections and adding secondary pedestrian sidewalks as needed to connect new building, parking and adjacent uses.

Tree Preservation and Protection

Existing site trees, including those in adjacent r.o.w., greater than 2 inch caliper will be reviewed by a certified Arborist to assess state of trees affected by project development prior to design of the project. Arborist report will form the basis for generation of a Tree Root Protection Zone (TRPZ) document per PCC Capital Project Standards. All trees to remain will be protected throughout construction per City of Hillsboro standards.

Soil Preparation

Given the urban nature of the project site, this project should assume importing of all topsoil. Soil preparation to meet the following PCC Capital Project Standards:

- Where imported topsoil is needed, chemical and textural analysis of topsoil and organic amendments is mandatory and will follow the same testing evaluation as described for native soils.
 - Testing is to be performed by a PCC pre-approved testing agency. Owner’s Representative to provide contact information.
 - Soil Report and adjustment recommendations must be reviewed and approved by Owner’s Representative prior to final Bid Document preparation.
- Subgrade is to be aerated prior to final soil placement and planting.
- Mechanical tillage under existing tree canopies is not accepted. Use approved hand methods only.
- Existing native soil and imported soils are to be free of noxious weeds: horse tail; oxalis; morning glory; thistle; etc.
- Amended Topsoil Depths:
 - Lawns: Provide 12” depth minimum
 - Shrub and ground cover areas: Provide 18” depth minimum
 - Tree pits: Provide shallow area of compacted backfill below rootball to reduce settlement.
- Planting beds and lawn areas to be filled with pre-mixed amended topsoil in lifts not to exceed 8” unless approved otherwise by Owner’s Representative.
- All amended topsoil areas to be rolled to achieve compaction of maximum 85% proctor.
- Top Soil Suppliers:
 - S+H Logging
 - ProGrow
 - Mt. Scott Fuel
- Bioswale and retention ponds are excluded from these provisions.

Planting

Planting in the public r.o.w. will adhere to City of Hillsboro standards, including spacing and size. All campus planting shall also be per PCC Capital Project Standards including:

- Use large basalt gravel at tree pits.
- Avoid use of metal tree grates at individual tree pits in paved areas.

On-site planting will consist of a palette largely adapted to Pacific Northwest growing conditions. Tree plantings in paved areas will use large basalt gravel at the tree pits. Silva Cells to be provided for specimen trees in formal hardscape plazas. All specimen trees will be field tagged.

Woody shrub material intended for perimeter screening and ornamental planting at the Entry Plaza will be installed as 5 gallon containers. Plant material for interior parking areas and storm water facility

perimeters to be 2-5 gallon. Storm water basin plantings and groundcover plantings to be 1 gallon containers.

In addition, parking lot interior landscaping will require trees, shrubs and ground cover to meet City of Hillsboro code.

All planting areas will receive 2” depth organic mulch and will be fully irrigated.

Irrigation

All site irrigation will integrate a high efficiency delivery system and meet the following PCC Capital Project Standards:

- Provide separate water meter including all required backflow prevention devices, flow meters, master valves, etc. for irrigation system.
- Where code allows, provide below grade double check valve in lieu of above grade reduced pressure backflow devices.
- All expanded campus systems are to be contiguous with existing Maxicom controlled system and complete with remote controls, flow sensors, rain gauges and master valve controls.
- Independent Irrigation Audit is required at the completion of all projects.
- All mainline runs are to be laid straight without arc

Site Furnishings

Site furnishings should meet or exceed requirements per the PCC Capital Project Standards including the following:

- Benches to be of sturdy construction with materials that integrate with the surrounding site elements.
- Benches, chairs and tables to allow for maximum flexibility of user including seating for ADA accessibility both in placement and in bench design.
- New benches to match existing where appropriate.
- Paint color for all metal components of site furnishings is to be:
 1. Paints: Black, Powder coat

Site furnishings should be assumed to be high quality, commercial grade products supplied by the following manufacturers or approved equal:

- Landscape Forms; www.landscapeforms.com
- Forms + Surfaces; www.forms-surfaces.com
- Victor Stanley; www.victorstanley.com

Provide an allowance for custom wood/concrete benches and/or sculptural manufactured site furnishings at Entry Plaza. Seatwalls and site benches to provide permanent opportunities for year-round seating at all primary gathering spaces. Provide allowance for moveable café style furnishings,

such as tables and chairs, at areas with contiguous interior/exterior space and suitable program function.

Bike racks to be provided per City of Hillsboro standard where included in r.o.w.. Provide bicycle parking near, but not directly adjacent to primary building entries. Bike fixtures shall be stainless steel with brushed finish, imbedded, and installed at recommended spacing according to the Association of Pedestrian and Bicycle Professionals (APBP). Bicycle racks should be assumed to be high quality, commercial grade products supplied by the following manufacturers or approved equal:

- Landscape Forms; www.landscapeforms.com
- Huntco; www.huntco.com

Provide allowance for combination trash/recycling receptacles to be located adjacent to building entries and at primary gathering spaces. Color to be matt black powder coat. All receptacles must be covered. Receptacles should be assumed to be high quality, commercial grade products supplied by the following manufacturers or approved equal:

- Rendezvous Recycling; www.interface.com
- Victor Stanley; www.victorstanley.com

Site handrails to be stainless steel. Imbed or bolt-down with tamper-proof hardware attachment.

Walls

All site walls and raised concrete planters shall be formed in accordance with PCC Capital Project Standards including:

- Cast-in-place concrete retaining walls/seat walls must be chamfered with grooves, for sufficient depth installed on all edges, to deter skateboards.
- Continuous surface/edge of walls under 5' in height without skate deterrent must not exceed 4 lineal feet.
- All stained concrete is to be sealed.
- Custom concrete mixes are to be avoided. Standard mix designs that are industry tested are preferred.
- Graffiti sealing is required on all exposed surfaces of landscape walls (over 24 inches height). Application method of sealant must not come into contact with the ground or waste water systems.
- Vertical extrusion or interruption (joint) strategies must be included in design of concrete walls and curbs to minimize need for additive skate deterrents.

If additive skate deterrents are included, skate deterrents should be stainless steel, imbedded, commercial grade deterrents such as:

- Skate Stoppers; www.skatestoppers.com or approved equal.

Paved Areas – Pedestrian Concrete

All horizontal exterior pedestrian concrete flatwork to be finished medium broom texture or exposed aggregate dependent on final project design requirements and meet PCC Capital Project Standards as follows:

- Minimum thickness for sidewalks should be 6" of 4000psi reinforced concrete over 4" compacted gravel over compacted subgrade.

Paved Areas – Unit Pavers

All pedestrian areas with unit pavers should comply with the following PCC Capital Projects Standards:

- Design of Unit Pavers should assume occasional maintenance vehicle traffic.
- Preferred edge restraint for unit pavers is concrete or metal.
- Paver at edge should be no less than half of the paver width, or minimum 3", whichever is larger.
- Unit Pavers systems should be surfaced sealed to prevent weeds.
- Typical unit paver section; set paver on compacted ¾"-0 crushed rock with fines. Minimal use of sand over rock for leveling.

Green Roofs

No eco-roofs or occupied green roof terraces are planned for the project at this time.

Site mitigation

Current project assumptions do not assume or account for any environmental or hazardous site conditions requiring mitigation.

For coordination with other disciplines

Site Lighting.

Pedestrian Ways should meet the following PCC Capital Projects Standards:

- Lighting fixtures should have appropriate BUG rating to address glare and light trespass.
- Lighting near the building should employ LED or fluorescent technology to minimize problems with emergency lighting.
- Lighting systems should be designed to an average of
 - o 0.6 fc at ground level, with ave : min uniformity of 6:1, unless in conflict with egress requirements.

Specialty lighting will be limited to the Entry Plaza and secondary plaza and will likely be expressed by stand alone pedestrian scale fixtures, lighting integrated into custom furnishings or seatwalls, and tree uplights.

Stormwater management

Bioswale soils will be per BES specification (see civil)

Structural Systems

The Hillsboro Center Building is envisioned as a 27,000-square foot building located somewhere in the city of Hillsboro, Oregon. The site is not currently selected. The proposed building is two stories and sited on the existing Center site.

The building program consists of the following:

- Classroom teaching spaces
- Science Lab Space
- Central gathering and meeting space
- General Office
- Study Rooms

The building structure consists of the following:

Roof and Floor Framing

- 3 ½" reinforced concrete topping slabs supported by 3" metal deck.
- Wide flange beams and girders
- Wide flange, HSS, or pipe columns

Foundation/First Floor (pending geotechnical information – assuming soils are suitable for shallow foundations and the site is not liquefiable)

- 5" reinforced concrete slab-on-grade
- Spread and strip reinforced concrete footings

Lateral Force Resisting System

- Bucking Restrained Braced Frames or reinforced concrete shear walls

Building Requirements

Materials and components discussed, both interior and exterior, shall meet the requirements as set forth in PCC's Capital Project Standards. Any materials that are not discussed in the PCC standards shall be assumed to meet current industry standards.

Building Envelope

The envelope will be constructed using the following:

- Brick veneer, 60% of envelope
- Aluminum Composite Panel, 20% of envelope
- Non-operable store front systems with bulletproof glazing, 20% of envelope.
- Low slope Roof – 3-ply cold pressed
- Light gauge metal framed

Any exposed metal fabrications shall be protected against changes in appearance for a minimum of 5 years and will be hot dipped galvanized per standards outlined in the Capital Project Standards.

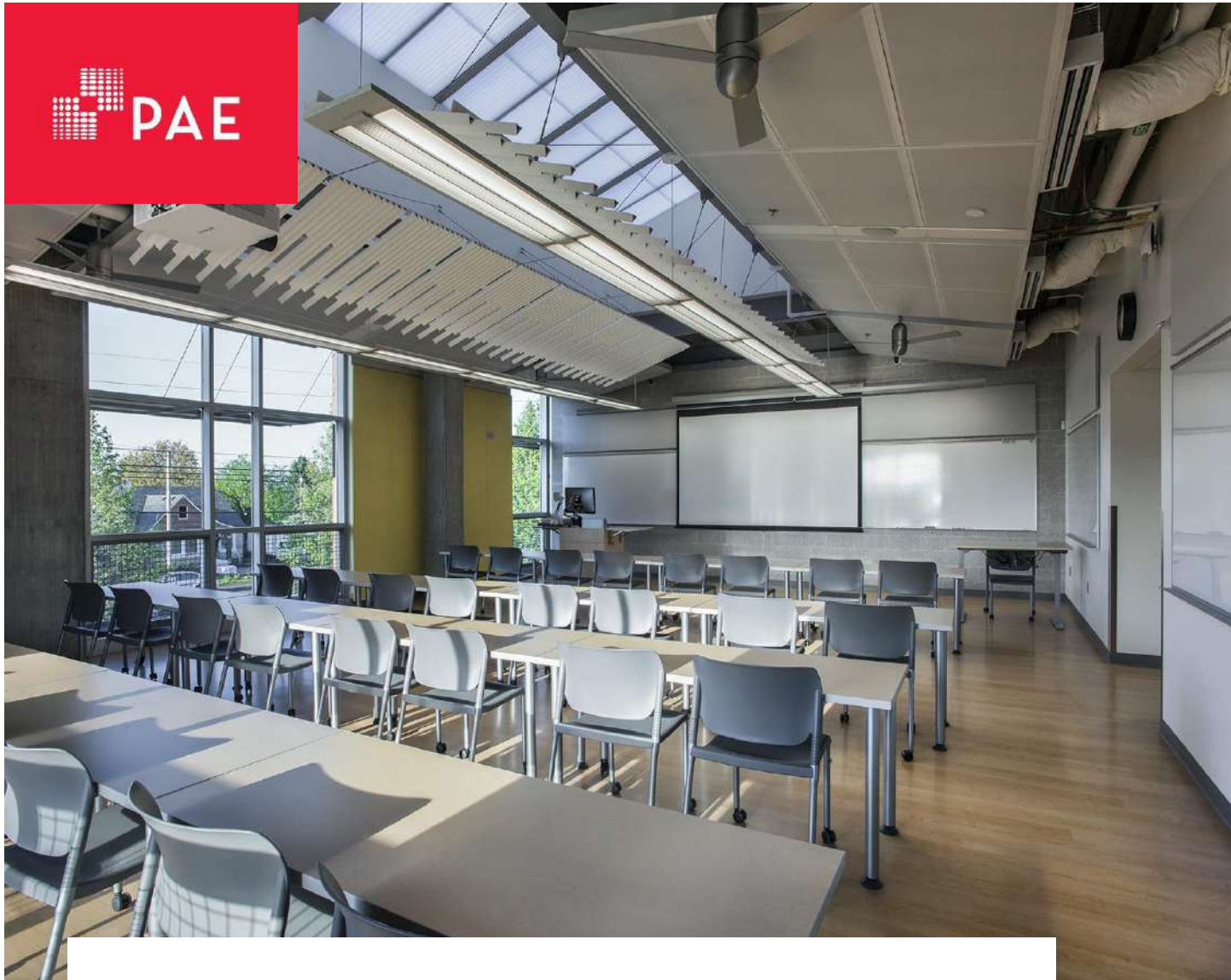
Components anticipated to be exposed metal fabrications include:

- Canopies
- Railings
- Ladders
- Exposed structural components (outriggers, columns, etc.)

Interior Finishes

For Meeting rooms, offices and toilet rooms, refer to the Room Criteria Sheets located in PCC's District Standards and Guidelines. This document outlines the requirements for room finishes, casework, controls, HVAC, electrical and any applicable specialties for each room type. General circulation areas including reception and waiting areas, study spaces and hallways will receive the following:

- Painted gypsum board partitions, wood framed
- Polished concrete floors
- Painted gypsum board ceilings
- Standard doors and hardware per PCC Capital Project Standards



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PCC Campus-Wide Master Plan

Hillsboro Center

December 14, 2016

pae-engineers.com



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Project Directory

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1.0 Mechanical Basis of Design

1.1 HVAC Systems

Two mechanical system will be provided; one system will serve approximately 7,000 sf of laboratory area and the second system will provide heating, cooling and ventilation to the remaining 20,000 sf of general building area.

Laboratory HVAC System:

15,000 CFM outdoor VAV air handling unit consisting of supply fan, return fan, hydronic heating coil DX cooling coil, pre and final filters and mixing plenum will be installed on vibration isolation curb and located on the roof. Basis of design: Trane

Medium pressure galvanized ductwork will be routed from the unit to individual laboratory areas. Dedicated VAV terminal units with hot water heating coils will be provided for each thermal zones. Fan powered boxes will be installed in larger exterior zones. Galvanized low pressure ductwork will be routed from terminal units to ceiling mounted supply diffusers. With exception of Wet Lab and chemical storage area, return air will be ducted from return grilles back to rooftop unit. All medium pressure ductwork will be externally insulated. All low pressure ductwork will be internally lined. Return duct will not be insulated.

5 foot packless silencers will be installed in supply and return at the connection to rooftop unit.

Exhaust duct will be routed from the wet lab up to the roof mounted 3,500 CFM lab exhaust fan. Exhaust fan will have integral air by-pass with motorized control damper to allow for pressure control in the lab. Fan discharge will terminate minimum 10 feet above the roof surface. All exhaust duct will be low pressure stainless steel duct.

One 40-ton air cooled condensing unit with multiple VSD compressors will be located on the roof. Refrigerant piping will be extended from air cooled condensing unit and connected to DX cooling coil in the air handling unit.

Building's Central HVAC System:

25,000 CFM outdoor VAV air handling unit consisting of supply fan, return fan, hydronic heating coil DX cooling coil, pre and final filters and mixing plenum will be installed on vibration isolation curb and located on the roof. Basis of design: Trane

Medium pressure galvanized ductwork will be routed from the unit to individual thermal zones. Dedicated VAV terminal units with hot water heating coils will be provided for each thermal zones. Fan powered boxes will be installed in larger exterior zones. Galvanized low pressure ductwork will be routed from terminal units to ceiling mounted supply diffusers. Return air will be ducted from return grilles back to rooftop unit. All medium pressure ductwork will be externally insulated. All low pressure ductwork will be internally lined. Return duct will not be insulated.

7 foot silencers with fiberglass media will be installed in supply and return at the connection to rooftop unit.

Exhaust duct will be routed from the restrooms up to the roof mounted exhaust fan. Exhaust fan will be mounted on a curb with integral acoustical baffles. All exhaust duct within this system will be low pressure galvanized duct.

One 50-ton air cooled condensing unit with multiple VSD compressors will be located on the roof. Refrigerant piping will be extended from air cooled condensing unit and connected to DX cooling coil in the air handling unit.

Dedicated 2 ton split system will be provided for IDF and MDF rooms.

Two 1000 MBH condensing boilers and two 10 HP pumps will be installed in interior mechanical room. Individual combustion air and gas flue will be routed from the mechanical room up to the roof. Variable speed drives will be provided for each pump. Heating water distribution will be extended from mechanical room to rooftop units and VAV terminal units. All heating water piping 3 inches and smaller will be copper Type L. All larger pipes will be steel.

Mechanical Equipment Lab Area:

- (1) 15,000 cfm air handling unit
- (1) Air-cooled condensing unit – 40 tons
- (1) Pumps – 1 HP coil circulators
- (1) 3,500 CFM Lab exhaust fan

Building's Central Systems (including heating hot water system):

- (1) 25,000 cfm air handling unit
- (1) Air-cooled condensing unit – 50 tons
- (2) Condensing boilers – 1000 Mbh
- (2) Pumps – 10 HP
- (1) Pumps – 1 HP coil circulators
- (1) Exhaust fan – 1 HP
- (2) Split system – 2 tons

A direct digital control (DDC) system, by Honeywell, will be provided to control and monitor new mechanical system. The control system will be integrated into the PCC BAS. Damper actuation will be electric type. Public spaces will be provided with Demand Control Ventilation (DCV). The control system will perform all required control functions, including optimization of equipment and system performance, building pressurization, reliability, equipment life and energy consumption.

Additional airflow controls will be provided in wet lab area in order to control airflow from fume hoods, snorkels and other lab equipment, as well as to maintain laboratory at negative pressure with respect to surrounding spaces.

New HVAC system will be balanced and commissioned.

1.2 Plumbing Systems

New main service, including water meter will be provided for the building and cold water will be extended into water room. A utility vault located within the site will house the backflow device on the incoming domestic water supply. The domestic water system will be provided with positive means to control backflow, with appropriate backflow preventers at sources of possible contamination within the building, such as mechanical equipment.

All plumbing fixtures will be commercial grade low flow fixtures. L-type copper piping will be used for domestic water distribution. Piping will be insulated up to fixture connection. Cast iron pipe will be provided for sanitary waste and vent.

Irrigation: A backflow device will be provided for the irrigation system within the water service room. Irrigation piping will be stubbed out of the building for the landscape use.

A roof and overflow drain system will be provided as required by code. Overflow storm drain system will daylight utilizing downspout nozzles at the first floor level above grade. The storm water piping shall be collected and routed underground to an existing storm water main.

All storm and overflow drain piping shall be cast iron with no-hub couplings.

Master mixing valve and ½ HP recirculating hot water pump will be installed in the water service room.

100 gallon condensing gas fired water heater, master mixing valve and new ¾ HP recirculating hot water pump will be provided to serve main building. Tankless water heater will be dedicated for industrial hot water that will be piped to plumbing fixtures in wet lab area.



Emergency shower, eyewash station and mixing valves will be installed in wet lab. Point of use chemical neutralizers will be installed in the cabinet below each sink located in wet lab.

A new natural gas service will be provided. Gas piping up to, and including the gas meters will be by NW Natural.

Natural gas will be extended to serve the new boilers, water heaters, gas turrets and other gas appliances in the building. Connection to the gas meter and installation of the house gas piping will be per local gas company and OSSC requirements. All natural gas piping will be schedule 40 black steel with screwed or welded fittings

1.3 Fire Protection Systems

Wet Pipe Sprinkler System

Building will be protected with new wet sprinkler system in accordance with NFPA 13 and local Fire Marshal requirements. A detector double check assembly will be provided. The fire department connection (FDC) will be located adjacent to the backflow device vault.

In general, the fire sprinkler system will consist of connection to new water service, including main flow alarm station, zone control valves and flow indicators, alarm bell, fire sprinkler piping and heads. All related fire protection accessories as required will be provided. Location and type of tamper, flow, and pressure switches will be coordinated with the fire alarm system. All fire sprinkler piping will be concealed.

All required system isolation valves will be provided with tamper switches. Each floor will be provided with a zone isolation valves with tamper switches, flow switches, fire department test stations, and hose valves (as required). The fire department test drain will terminate outside of the building. Side wall dry head sprinkler heads will be mounted on the building exterior where fire protection is required under canopies and overhangs. All fire protection system materials to be of a domestic manufacture to the existing fire protection system.

2.0 Electrical Basis of Design

2.1 Service and Distribution

This document describes the overall intent as it pertains to the power distribution expected for use on the project.

Table 1: Design Criteria

Area	Lighting Systems (VA/SF)	Power Systems (VA/SF)
Offices	0.7 – 1.0	2-3
Classrooms	0.7 – 1.0	2-3
Lab	0.7 – 1.0	10-20
Circulation/Transition	0.5 – 0.6	1.0
Service Areas	0.5 – 0.6	0.5
Stairs	0.5 – 0.6	0.5

Distribution

The main service will be approximately 1600 amps at a voltage 480Y/277V will be used to feed lighting, large mechanical and equipment loads. Secondary voltages of 208Y/120V will be derived using energy efficient dry type transformers providing a level of isolation from other loads and deriving new a grounded neutral point. The electrical power system will incorporate metering and system performance tracking at the main distribution and sub-distribution panels. The metering will provide information on system loading and power quality.

Flexibility: The power distribution system will be developed to provide flexibility for reconfiguring the lab and classroom spaces. Separate panels will be provided in each area to provide flexibility for future modifications.

Power Quality: Quality of power supply is affected by noise sources within a facility as well as outside (utility transferred). Surge protections devices are provided at the service entrance and at sub-distribution panel level. A third level of surge protection is available using the portable plug strips at equipment as required.

Branch Circuit Wiring: Copper conductors in EMT raceway for feeders and homeruns and where exposed to view. Metal Clad (MC) is allowed downstream from homerun where above accessible ceilings. Lab spaces will use surface metal raceway and overhead distribution system to route power and data cables for flexibility to work areas. Classrooms will follow PCC standard for wall and floor power and data.

Equipment Connections: Electrical power connections will be made to all mechanical equipment, to include providing all electrically associated devices such as disconnect switches, contactors, magnetic or manual starters, lock-out switches, etc., not furnished under Division 23. VFD's furnished under Division 23 and installed under Division 26.

Electrical power connections will be made to support miscellaneous equipment. Connections include disconnect safety switches and wiring to support interlocks to remote devices.

Electromechanical Interference (EMI): Provisions in layout of the electrical power system will be made to minimize the impact of electric fields on sensitive lab spaces. Equipment producing fields (transformers and motors) are to be located remote from sensitive labs and equipment. Large ampere feeds will be routed around sensitive areas or contained within rigid steel conduits.



Grounding System

Two grounding criteria will be addressed, safety and performance. A safe grounded power system will be provided in compliance with the 2014 NEC. This ground system consists of the building service ground (multiple ground rods and concrete encased UFER). The safe grounding system will be extended thru out all electrical systems in facility. All metallic systems will be grounded to the building grid.

Performance grounding includes a system of grounding conductors and busses to be used for labs and telecom rooms. The performance ground system will tie into the code required safety grounding system at the main distribution panel ground bus.

2.2 On-Site Power Systems

Emergency Generator

A 60KW 480/277 3-phase diesel generator located on-site to serve the emergency and optional standby loads for the building. Fuel tank will be skid mounted below generator.

Uninterruptible Power Supply (UPS)

A 5KW rack mounted UPS will be located in each telecom room to provide conditioned power and provide continuity while generator starting sequence is complete. Generator will provide power to UPS.

Renewable Power System (PV)

A renewable power source using PV (Photovoltaic) may be recommended for the project pending site selection and available roof area.

2.3 Signal Systems

Fire Alarm

The Fire Alarm system will consist of a supervised addressable supervised, Class B hard wired system. Manufacturer to match PCC standard manufacturer for fire alarm and mass notification systems.

Table 2: Fire Alarm Device Coverage

Device	Coverage
Manual pull stations	Locate as required by PCC or AHJ
Smoke Detectors	Corridors, Air handlers (>2,000CFM), Elevators lobbies, Elevator machine rooms, Elevator hoistways.
Fire Sprinkler	Tamper and Flow
Annunciation	Remote Annunciation at entry
Building Annunciation	Combination fire alarm/mass notification speaker and strobe annunciation for throughout the facility.
System output	Relay interface for mechanical system shut down and elevator recall.
Monitoring	Central Station Monitoring

Telephone/Data

Not in scope.

Security

Not in scope.

Audio/Visual

Not in scope.



3.0 Lighting

3.1 Lighting Equipment

Design Criteria

Table 3: Interior Lighting Design Criteria

Area	Source	Light Level Ambient (ave FC)	Light Level Task (ave FC)	Light Level Emergency (ave FC*)
Offices	LED	25-30	35-45	1.0
Classrooms	LED	25-30	35-45	1.0
Lab	LED	35-40	40-50	1.0
Circulation/Transition	LED	15 - 25		1.0
Service Areas	LED	15 - 25		1.0
Stairs	LED	15 - 25		1.0
Restrooms	LED	30 - 40		1.0

(* Emergency Lighting: Emergency lighting system and panel capacity will be designed on the basis of 0.25 volt-amperes/SF. of gross space)

Interior Lighting

The electrical lighting systems will be designed in compliance with the State of Oregon Structural Specialty Code. Energy efficient sources and automatic control technologies will be implemented to provide the most efficient and effective electric lighting system for the facility occupants and task. Controls will provide switching and dimming of the lighting to permit maximum use of the available natural light.

Daylighting will provide the first level of illuminations for the majority of the interior spaces. Many spaces will have access to daylight from two sides. The next step will be to use energy efficient local task lighting where appropriate. When additional electrical lighting is required for building interior illumination, high efficient LED luminaires will be used. Illumination issues to be addressed include lighting levels, photo-sensitive areas, uniformity and glare.

Site Lighting

Building lighting will be integrated with the building exterior features. Illumination will be provided for passage and security/safety, and to provide highlights to the exterior elements. Site illumination will use the campus standard ornamental luminaire. The source type used will be depended on the luminaire location and distance from the lit task. All exterior luminaires will be LED and use cutoff optics to address light trespass issues.

Lighting Controls

Control of lighting will be provided by the following methods for the respective tasks/areas:

Table 4: Lighting control Methods by Area

Task/Area	Control Method
Offices	Occupancy Sensor (with manual override)
Classrooms	Occupancy Sensor (with manual override)
Circulation/Transition	Time Clock
Service Areas	Occupancy Sensor (with manual override)
Stairs	Occupancy Sensor (with manual override)
Restrooms	Occupancy Sensor
Offices	Occupancy Sensor (with manual override)
Building Exterior	Time Clock



PROJECT NAME:
**Portland Community College
 Facilities Plan
 Capital Projects**

PREPARED BY:
 NP

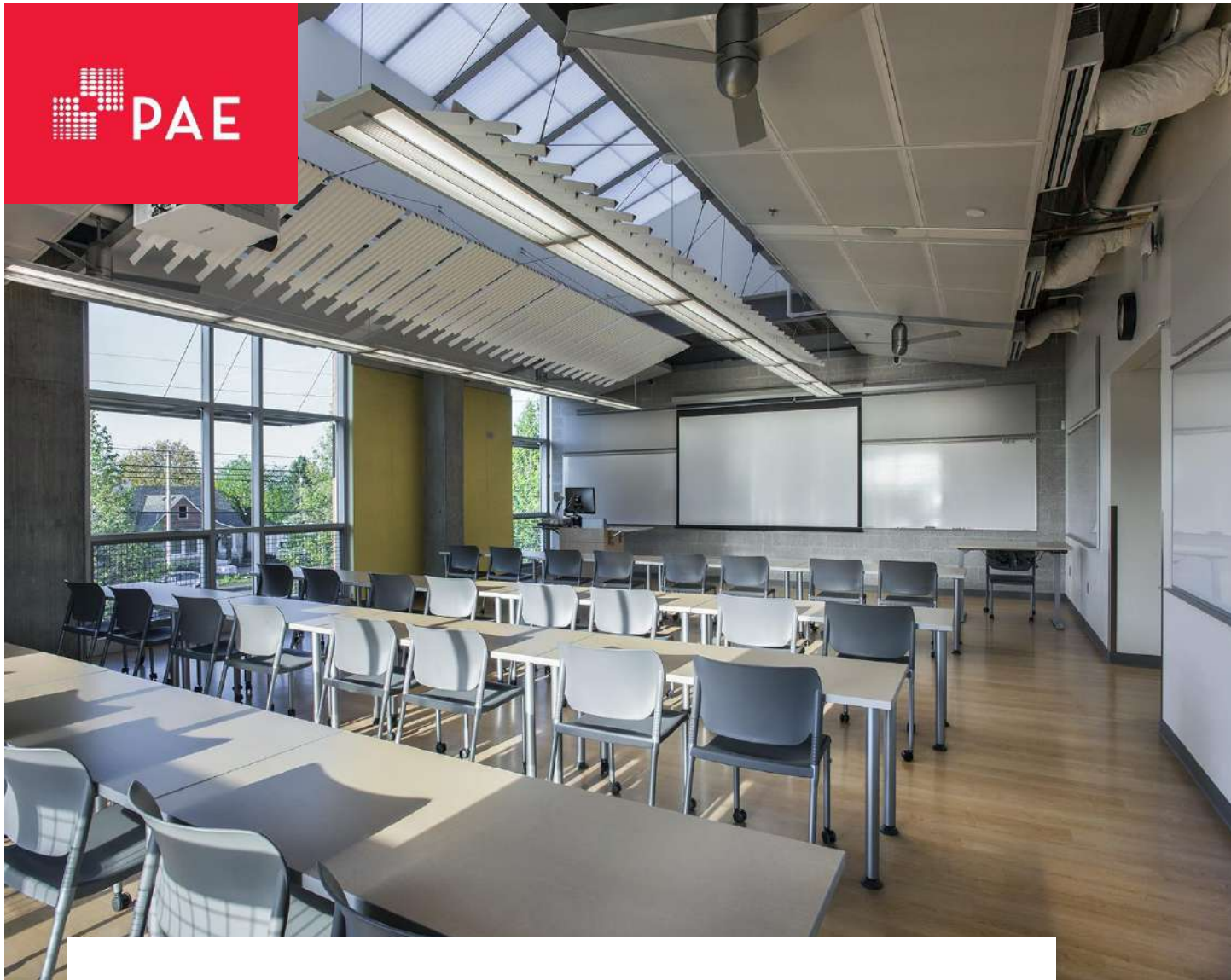
DATE:
 11/22/2016

SRG PROJECT NO.:
 216012

**12
 Hillsboro Center**
 Sandra, Cheryl, Tony, Rebecca

Program	Seats	Qty	SF/Each	NSF	Comments
Classrooms					
General Purpose Classroom	32	6	960	5,760	
Art Classroom	32	1	1320	1,320	Includes built in perimeter storage
Labs					
General Purpose Wet Lab	24	2	1320	2,640	
Multipurpose Health Lab	24	1	1320	1,320	Open flexible. w/ sink and storage throughout
Lab Support + Storage	-	-	1000	1,000	Multiple spaces. Includes tech workspace
General Purpose Computer Lab	24	1	960	960	
Open Computing Lab/Library/Resource Center	24	1	1320	1,320	
Workspace					
Private Office		4	120	480	
Workstation		10	64	640	
Other					
Study/Meeting Room - Small	2-4	2	80	160	
Study Room - Medium	6-8	4	160	640	
Open Collaboration Space	-	-	600	600	
Kitchen/Break/Locker/Copy		1	300	300	
Building Support					
Building storage	-	1	600	600	Distributed throughout
BDF	-	1	300	300	
IDF	-	2	150	300	
Vending Alcove	-	1	80	80	
				18,420	NSF
				1.5	Grossing Factor
				<u>27,630</u>	TOTAL BGSF

NOTES:
 Programs Included in Building:



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PCC Campus-Wide Master Plan

Downtown Center

December 14, 2016

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1.0 Mechanical Basis of Design

1.1 HVAC Systems – Existing Conditions

Minor modification to the existing airflow distribution and rebalancing of the existing system are anticipated in order to accommodate new furniture layout.

1.2 Plumbing Systems

There is not anticipated plumbing scope for the project.

1.3 Fire Protection Systems

Modify existing sprinkler system if required to accommodate new location of interior walls.



2.0 Electrical Basis of Design

2.1 Service and Distribution

This document describes the overall intent as it pertains to the power distribution expected for use on the project.

Distribution

Provide new furniture feed connections from existing panels in area.

Branch Circuit Wiring

Copper conductors in EMT raceway for feeders and homeruns and where exposed to view. Metal Clad (MC) is allowed downstream from homerun where above accessible ceilings.

2.2 Signal Systems

Fire Alarm

Extend existing system to additional devices fire alarm and mass notification devices as required by programming.

Telephone/Data

Not in scope.

Security

Not in scope.

Audio/Visual

Not in scope.



3.0 Lighting

3.1 Lighting Equipment

Interior Lighting

Modify existing lighting in area as required to accommodate new programming.

Portland Community College

Facilities Plan - Phase 1

HT – Health Technology Building

Capital Improvements Cost Estimate

December 15, 2016



SRG

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Estimating

Graham Roy, Principal
Rider Levett Bucknall

Project Overview

As outlined in the March 23, 2016 Capitol Project Request to HECC, the renovation of the Health Technology (HT) building on the Sylvania campus “will provide state-of-the-art built environment to address training for more than 10,000 health care job openings in Multnomah and Washington Counties over the next decade... In addition to being critical for (PCC’s) program and pedagogical needs for student success, the renovated and modernized facility will also be essential for service to the general community.”

Project areas of focus include:

- Total reconfiguration of upper levels to bring all labs, classrooms, and workspaces up to college standards for teaching and technology.
- Modernization of locker room and toilet room facilities to increase efficiency and integrate all-gender functions.
- Seismic/structural upgrades + reinforcement
- Accessibility upgrades
- Upgrade of mechanical, electrical, and plumbing systems.
- Integration of sustainable building strategies

Project Summary

- Location: Sylvania Campus
- Estimated Direct Construction Cost: *TBD*
- Program: Science, Nursing, Radiology, PE, Makerspace, GP Classrooms, Student space, workspace
- Assumptions / Unknowns
 - o Soft costs not included in cost estimate

Structural Systems

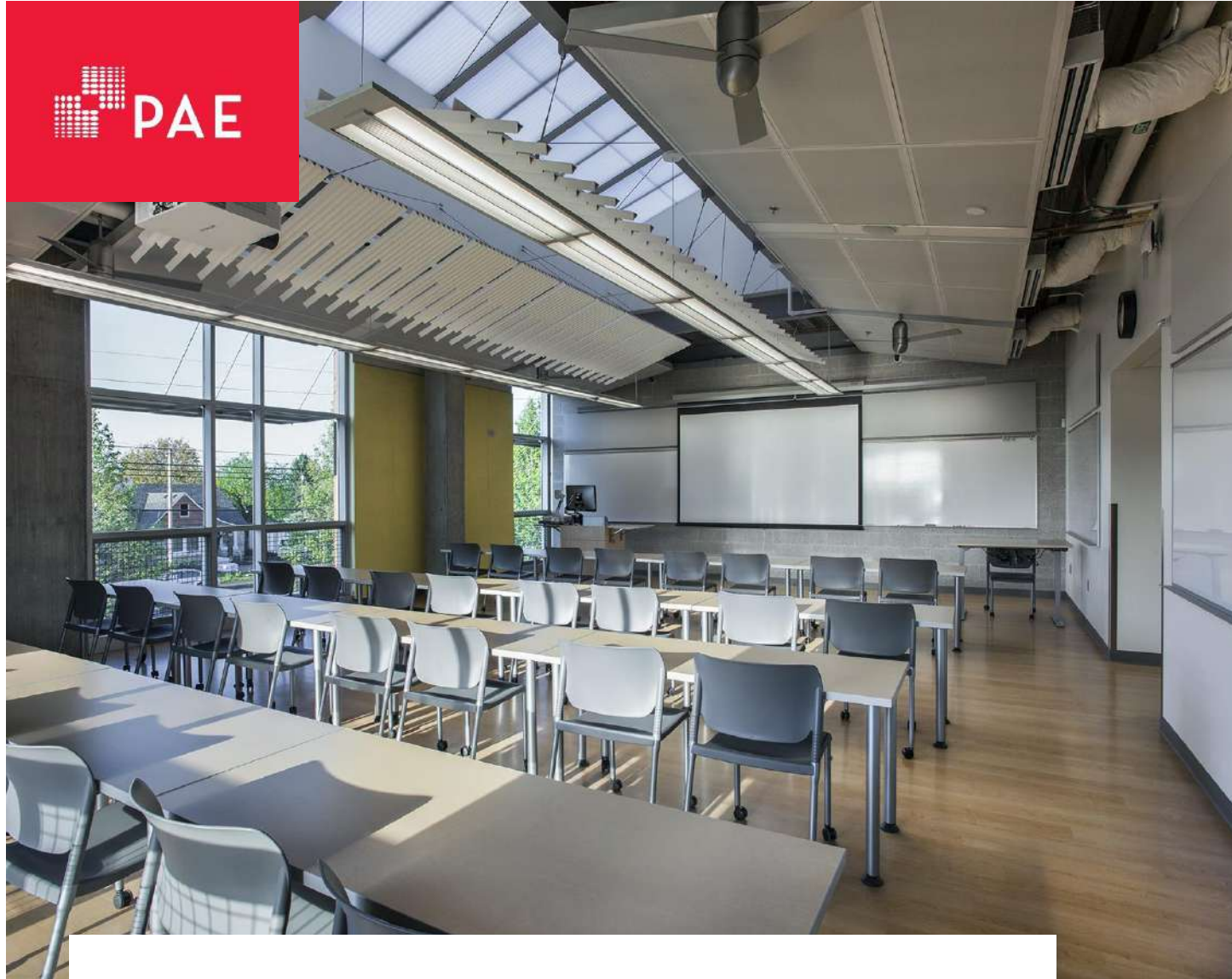
The Sylvania Health Technology Building (HTB) is an existing 200,000-square foot reinforced concrete building located on the Sylvania campus of Portland Community College. The building is four stories tall. Portland Community College plans to renovate the majority of the building.

The building program consists of the following:

- General Science and Biology Labs
- Nursing teaching suites
- General classroom
- Gymnasium
- Locker Rooms
- Fitness studios
- Pool
- Mechanical space

Structural renovations consist of the following:

- Slab infill using wide flange framing and 3 ½” reinforced concrete infill slab over 3” metal deck
- New non-structural non-bearing solid grouted CMU walls within the renovated locker room
- Renovations do not include structural strengthening of existing gravity or lateral systems



PCC Campus-Wide Master Plan

Health Technology Building

December 14, 2016
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1.0 Mechanical Basis of Design

1.1 HVAC Systems

Existing System

HVAC system in Health Technology building is separated into Sector A (east side of the building) and Sector B (west side of the building). Each area is served by a dedicated 100,000 CFM air handling unit located in first floor mechanical rooms. The units have supply and return fans, filter section, chilled water coils located in cold deck and heating hot water coils located in hot deck. Cooling and heating air is routed separately to mixing boxes serving each thermal zone where air is supplied to the rooms through overhead air distribution. Return air is ducted back to air handling units. There is a combination of ceiling and floor mounted return grilles.

The exhaust system consist of central exhaust serving restrooms and general storage areas. Exhaust fans are mounted on the roof and galvanized duct extended down to individual spaces. Few dedicated roof exhausters serve hoods and storage cabinets. Dental laboratory on the first floor has a dedicated dental molding plaster dust collector located in first floor mechanical room. Exhaust duct has been recently extended to the roof.

Cooling tower is located north of the building and condenser water piping is routed to the water cooled chiller that provides cooling for the building. Heating and chilled water distribution appears to be in good condition and system appears to be adequately sized for the building.

Most of the HVAC is original to the building and it has undergone many upgrades. HVAC controls upgrade was partially completed approximately 5 years ago. However, the PCC Facilities are aware of numerous system deficiencies and building occupants are frequently complaining about thermal comfort and stalled air in the building. HVAC controls are not properly functioning and maintaining required pressurization in laboratory area proofs to be challenging. Additionally, laboratory air returned back to central system rather than being exhausted directly to the outside.

The existing system operates beyond its life expectancy, it is not in compliance with current codes and industry standards, there are multiple system deficiencies and system has high operating cost. Additionally, the existing system would require major upgrade in central equipment and air distribution in order to support anticipated changes in building's programs. It is recommended that existing HVAC system is replaced.

New HVAC System

New HVAC system will consist of two custom air handling units. One unit would be dedicated to serve laboratory area and second unit would serve classroom, offices and other common spaces.

Laboratory HVAC:

New laboratory area will occupy east side of the third floor. The air handling unit would be mounted on vibration isolation curb and located in new mechanical penthouse directly above the lab area. 45,000 CFM VAV air handling unit would consist of supply fan wall, heating hot water coil, chilled water coil, heat recovery coil, pre-filter, final filter and humidification section. Basis of design: HuntAir.

Medium pressure galvanized ductwork will be routed from the unit to individual laboratory areas. Dedicated VAV terminal units with fast acting actuators and hot water heating coils will be provided for each laboratory and lab support space. Galvanized low pressure ductwork will be routed from terminal units to ceiling mounted supply diffusers. All supply ductwork will be externally insulated.

7 foot packless silencers will be installed in supply duct at the connection to air handling unit.

Exhaust duct from laboratory spaces would be manifold and routed to two redundant 45,000 CFM spark B resistant, laboratory exhaust fans located on the roof outside new mechanical penthouse. Air filter and heat recovery coil will be installed in the exhaust duct. Piping will be routed between coils in

the exhaust duct and heat recovery coil in air handling unit to create run-around-heat-recovery loop. Dedicate pump, expansion tank and controls will be provided for this loop. Glycol will be used. Fan discharge will terminate minimum 10 feet above the roof surface. All exhaust duct will be low pressure stainless steel duct and leak tested prior to final balancing. Basis of design for exhaust fan: Greenheck.

Additional exhaust fan will be provided for the flammable storage cabinets. Fan will be utility type and mounted on the roof above chemical storage area.

Building's Central HVAC System:

120,000 CFM custom VAV air handling unit consisting of supply fan wall, return fan wall, hydronic heating coil, chilled water cooling coil, pre and final filters and mixing plenum will be installed on vibration isolation curb and located in new mechanical penthouse on the roof. Basis of design: HuntAir

Medium pressure galvanized ductwork will be routed from the unit to individual thermal zones. Dedicated VAV terminal units with hot water heating coils will be provided for each thermal zones. Fan powered boxes will be installed in larger exterior zones. Galvanized low pressure ductwork will be routed from terminal units to ceiling mounted supply diffusers. Return air will be ducted from return grilles back to air handling unit. All medium pressure ductwork will be externally insulated. All low pressure ductwork will be internally lined. Return duct will not be insulated.

7 foot silencers with fiberglass media will be installed in supply and return at the connection to air handling unit.

Exhaust duct will be routed from the restrooms and other general storage (non-laboratory areas) up to the roof mounted exhaust fans. Two 10,000 CFM fans will be installed on the roof. Exhaust fans will be mounted on a common curb. 7 foot silencer would be installed in main exhaust duct upstream of fan connection. All exhaust duct will be low pressure galvanized duct.

Dedicated 2 ton split system will be provided for IDF, MDF and elevator machine rooms.

Heating water distribution will be upgraded. Piping will be extended to new air handling units and terminal units. Chilled water distribution will be re-routed from existing mechanical rooms up to new mechanical penthouse. All heating and chilled water piping 3 inches and smaller will be copper Type L. All larger pipes will be steel.

Mechanical Equipment Lab Area:

- (1) 45,000 cfm custom air handling unit
- (1) Pump – 3 HP coil circulators
- (2) 45,000 CFM Lab exhaust fan
- (1) Exhaust fan – 1 HP (flammable cabinets)
- (1) Pump – 5 HP heat recovery loop

Building's Central Systems:

- (1) 120,000 cfm air handling unit
- (1) Pump – 5 HP coil circulators
- (2) 10,000 cfm exhaust fan
- (4) Split system – 2 tons

A direct digital control (DDC) system, by Honeywell, will be provided to control and monitor new mechanical system. The control system will be integrated into the campus BAS. Damper actuation will be electric type. Public spaces will be provided with Demand Control Ventilation (DCV). The control system will perform all required control functions, including optimization of equipment and system performance, building pressurization, reliability, equipment life and energy consumption.

Additional airflow controls will be provided in all third floor wet lab area in order to control airflow from fume hoods, snorkels and other lab equipment, as well as to maintain laboratory at negative pressure with respect to surrounding spaces.

New HVAC system will be balanced and commissioned.



1.2 Plumbing Systems

Most of the existing plumbing systems are original to the building. System condition ranges from poor (lab waste piping) to good (plumbing fixtures in public restrooms).

With the change in building program, most of the plumbing distribution will need to be reworked and new plumbing fixtures will be required. Central vacuum system that serves dental laboratories will no longer be required and equipment and distribution piping will be removed.

All plumbing fixtures will be commercial grade low flow fixtures. L-type copper piping will be used for domestic water distribution. Piping will be insulated up to fixture connection. Cast iron pipe will be provided for sanitary waste and vent.

Separate industrial hot and cold water system will be installed to serve third floor laboratory area. Dedicated master mixing valve and 1/2 HP recirculating hot water pump will be provided for this system. Emergency shower, eyewash station and new plumbing fixtures will be installed in wet labs. Laboratory waste and vent piping will be acid resistant pipes. Waste pipes will be routed to common acid neutralization tank located outside the building.

Natural gas piping will be routed to laboratory areas and connected to gas turrets. New air compressor and DI water equipment will be installed in mechanical penthouse. Compressed air and DI water will be distributed to air outlets and faucets in third floor laboratories. All natural gas piping will be schedule 40 black steel with screwed or welded fittings. All compressed air piping will be copper type K.

1.3 Fire Protection Systems

Wet Pipe Sprinkler System

Existing fire protection system will be upgraded. The fire sprinkler system will be connected to existing water service, and it will include main flow alarm station, zone control valves and flow indicators, alarm bell, fire sprinkler piping and heads. All related fire protection accessories as required will be provided. Location and type of tamper, flow, and pressure switches will be coordinated with the fire alarm system. All fire sprinkler piping will be concealed.

All required system isolation valves will be provided with tamper switches. Each floor will be provided with a zone isolation valves with tamper switches, flow switches, fire department test stations, and hose valves (as required). The fire department test drain will terminate outside of the building. Side wall dry head sprinkler heads will be mounted on the building exterior where fire protection is required under canopies and overhangs. All fire protection system materials to be of a domestic manufacture to the existing fire protection system.

2.0 Electrical Basis of Design

2.1 Service and Distribution

This document describes the overall intent as it pertains to the power distribution expected for use on the project.

Table 1: Design Criteria

Area	Lighting Systems (VA/SF)	Power Systems (VA/SF)
Nursing Lab	1.1	2-3
Circulation/Transition	0.5 – 0.6	1.0
Classroom	0.7-1.0	2-3
Office	0.7-1.0	2-3

Distribution

The main service will be approximately 1600 amps at a voltage 480Y/277V will be used to feed lighting, large mechanical, pool and equipment loads. Secondary voltages of 208Y/120V will be derived using energy efficient dry type transformers providing a level of isolation from other loads and deriving new a grounded neutral point. The electrical power system will incorporate metering and system performance tracking at the main distribution and sub-distribution panels. The metering will provide information on system loading and power quality.

Flexibility: The power distribution system will be developed to provide flexibility for reconfiguring the lab and classroom spaces. Separate panels will be provided in each area to provide flexibility for future modifications.

Branch Circuit Wiring: Copper conductors in EMT raceway for feeders and homeruns and where exposed to view. Metal ad (MC) is allowed downstream from homerun where above accessible ceilings. Lab spaces will use surface metal raceway and overhead distribution system to route power and data cables for flexibility to work areas. Classrooms will follow PCC standard for wall and floor power and data.

Equipment Connections: Electrical power connections will be made to all mechanical equipment, to include providing all electrically associated devices such as disconnect switches, contactors, magnetic or manual starters, lock-out switches, etc., not furnished under Division 23. VFD's furnished under Division 23 and installed under Division 26.

Electrical power connections will be made to support miscellaneous equipment. Connections include disconnect safety switches and wiring to support interlocks to remote devices.

Electromechanical Interference (EMI): Provisions in layout of the electrical power system will be made to minimize the impact of electric fields on sensitive lab spaces. Equipment producing fields (transformers and motors) are to be located remote from sensitive labs and equipment. Large ampere feeds will be routed around sensitive areas or contained within rigid steel conduits.



2.2 Signal Systems

Fire Alarm

Extend existing system to additional devices fire alarm and mass notification devices as required by programming.

Telephone/Data

Not in scope.

Security

Not in scope.

Audio/Visual

Not in scope.



3.0 Lighting

3.1 Lighting Equipment

Design Criteria

Table 2: Interior Lighting Design Criteria

Area	Source	Light Level Ambient (ave FC)	Light Level Task (ave FC)	Light Level Emergency (ave FC*)
Nursing Lab	LED	35-40	40-50	1.0
Circulation/Transition	LED	15 - 25		1.0
Classroom	LED	25-30	35-45	1.0
Office	LED	25-30	35-45	1.0

(* Emergency Lighting: Emergency lighting system and panel capacity will be designed on the basis of 0.25 volt-amperes/SF. of gross space)

Interior Lighting

The electrical lighting systems will be designed in compliance with the State of Oregon Structural Specialty Code. Energy efficient sources and automatic control technologies will be implemented to provide the most efficient and effective electric lighting system for the facility occupants and task. Controls will provide switching and dimming of the lighting to permit maximum use of the available natural light.

Daylighting will provide the first level of illuminations for the majority of the interior spaces. Many spaces will have access to daylight from two sides. The next step will be to use energy efficient local task lighting where appropriate. When additional electrical lighting is required for building interior illumination, high efficient LED luminaires will be used. Illumination issues to be addressed include lighting levels, photo-sensitive areas, uniformity and glare.

Site Lighting

Building lighting will be integrated with the building exterior features. Illumination will be provided for passage and security/safety, and to provide highlights to the exterior elements. Site illumination will use the campus standard ornamental luminaire. The source type used will be depended on the luminaire location and distance from the lit task. All exterior luminaires will be LED and use cutoff optics to address light trespass issues.

Lighting Controls

Control of lighting will be provided by the following methods for the respective tasks/areas



Lighting Controls

Control of lighting will be provided by the following methods for the respective tasks/areas:

Table 3: Lighting control Methods by Area

Task/Area	Control Method
Nursing Lab	Occupancy Sensor (with manual override)
Circulation/Transition	Time Clock
Classroom	Occupancy Sensor (with manual override)
Office	Occupancy Sensor (with manual override)
Building Exterior and Site	Time Clock



Room Types

- 110 Classroom
- 155 Music Practice
- 310 Office
- 315 Office Service
- 520 Phys Ed.
- 525 Phys. Ed Service
- 730 Central Storage
- 750 Central Service
- WWW Circulation Area
- YYY Mechanical Area

scale:
1" = 30'-0"

date:
2-17-15

revised date:

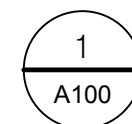
sheet name:
Level 0 - Room Types

sheet number:
A100



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Level 0-Room Types

1" = 30'-0"



- Room Types**
- 110 Classroom
 - 150 Music Classroom
 - 160 Testing
 - 310 Office
 - 350 Conference Room
 - 520 Phys Ed.
 - 525 Phys. Ed Service
 - WWW Circulation Area
 - XXX Building Service Area
 - YYY Mechanical Area

scale:
1" = 30'-0"
 date:
2-17-15
 revised date:
 sheet name:
Level 1 - Room Types
 sheet number:
A101

N

1
A101

Level 1-Room Types
 1" = 30'-0"





Room Types

- 110 Classroom
- 160 Testing
- 210 Class Laboratory
- 215 Class Laboratory Service
- 310 Office
- 315 Office Service
- 520 Phys Ed.
- 525 Phys. Ed Service
- 640 Day Care
- 645 Day Care Service
- 730 Central Storage
- 850 Treatment/Examination
- 855 Treatment/Examination Service
- WWW Circulation Area
- XXX Building Service Area

scale:
1" = 30'-0"

date:
2-17-15

revised date:

sheet name:
Level 2 - Room Types

sheet number:
A102



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1
A102

Level 2-Room Types

1" = 30'-0"



- Room Types**
- 110 Classroom
 - 115 Classroom Service
 - 210 Class Laboratory
 - 215 Class Laboratory Service
 - 310 Office
 - 315 Office Service
 - 350 Conference Room
 - 525 Phys. Ed Service
 - WWW Circulation Area
 - XXX Building Service Area

scale:
1" = 30'-0"
 date:
2-17-15
 revised date:

sheet name:
Level 3 - Room Types
 sheet number:
A103



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N

 1
 A103
Level 3-Room Types
 1" = 30'-0"

PAE - HT Building

PCC Facilities Plan - Capital Projects
 SRG Partnership / PAE Engineers