

UW West Campus Utility Plant

UWAC DESIGN UPDATE

29 June 2015



An Opportunity to Set a New Standard of Excellence

TODAY'S AGENDA

PREVIOUS UWAC PRESENTATIONS

- 11/6/14 – PROJECT OVERVIEW/GOALS (Joint Online Meeting with ULAC)
- 2/17/15 – INITIAL DESIGN CONCEPTS (Joint Online Meeting with ULAC)
- 3/30/15 – DESIGN DEVELOPMENT APPROVAL (In-Person Meeting at UW Club)

UPDATE ON THE FOLLOWING ITEMS

1. SITE & LANDSCAPE DEVELOPMENT
2. SCREEN/WRAPPER CHARACTER
3. MATERIALS & CHARACTER
4. INTERPRETIVE OPPORTUNITIES

NEXT STEPS

The team has completed work associated with the Phase I Agreement and is now moving forward with Final Design under the Phase 2 Design/Build Agreement

Construction scheduled to begin Fall 2015, with Substantial Completion in Fall 2016.
Final Completion scheduled to coincide with February 2017 ARCF opening.

PROJECT OVERVIEW

PROJECT PARAMETERS

PROJECT PRIORITIES

1. **MAXIMIZE CAPACITY:** Provide Centralized Source for Chilled Water and Emergency Power Serving as much of (future) campus as possible. Phased Equipment Installation.
2. **CREATE ARCHITECTURAL VALUE:** Campus Gateway & Fit with the West Campus Framework Plan
3. **EXPRESS SUSTAINABILITY ETHIC:** Opportunity to communicate UW's Commitment to Sustainability

FUNDING

\$ 30.5 M Initial Budget for Phase I West Campus Utility Plant

\$ 5.7 M Value-Added Enhancements

\$ 36.2 M Total Project Budget

PROGRESSIVE DESIGN/BUILD DELIVERY METHOD

New Method. Two Contracts. Collaborative Design. Integrated Delivery. Successful Story.

SCHEDULE

Phase 2 Design Build Contract Executed in May 2015

Start Construction Fall 2015

Phase I: Substantial Completion - February 2017

Phase 2: Additional Equipment Only - TBD

PROJECT LOCATION / SERVICE AREAS

CURRENT AND FUTURE DEVELOPMENT

- 10,500 T Chiller Capacity (with additional 3,000 T provided by Future Thermal Energy Storage)
- Each 1,000 T serves approximately 350,000-600,000 SF of development
- 6,000 T planned to serve South Campus
- 7,500 T Future Capacity could serve roughly 4,500,000 SF of development on West Campus



West Campus Utility Plant

Existing Campus Utility Plant

NOTES FROM UWAC PRESENTATION – 3/30/15

SUMMARY OF YOUR COMMENTS

- Appreciated the overall simplicity of the design concept and supported the current design direction
- Supported the underlying goal that infrastructure projects should be celebrated rather than hidden
- Site plan and planting works well with the building and is strong and thoughtful, especially given the relatively small landscape area
- Polycarbonate screen wall panels are a strong direction – careful detailing of the system will be key and acoustics are likely to be the biggest challenge going forward
- Consider how the transparency and glow of screen wall will be differ during day/night & seasonal cycles
- **Massing/Materials/Equipment/Color/Plantings** are all thoughtfully composed and the connection to UWPD strengthens the **University Ave** experience
- Study the details and views created by the “Windows into the Process” looking into the chiller room with attention to the different appearances between **Day 1** (limited amount of equipment) and **Full Build-Out** (full equipment capacity)
- Interpretive program needs further development and UW’s ongoing commitment to manage content
- Engage with UW Sustainability – it’s important to the UW’s commitment and is a story worth telling
- Appreciate the use of color but be aware of sensitivity of certain colors (i.e. rival institutions)
- Avoid contradiction between UW’s commitment to sustainability and a glowing box that uses energy to glow

Motion was made for Design Development Approval. Motion passed unanimously.

SITE & LANDSCAPE

SITE PLAN AND LANDSCAPING

- Total Landscape Area: 8393 sf
- Quantity of New Trees: 14

ALLEY PLANTING

UNIVERSITY WAY
PLANTING

BIORETENTION
PLANTER

PERMEABLE PAVING
WITH PLANTING

BURKE GILMAN
TRAIL PLANTING



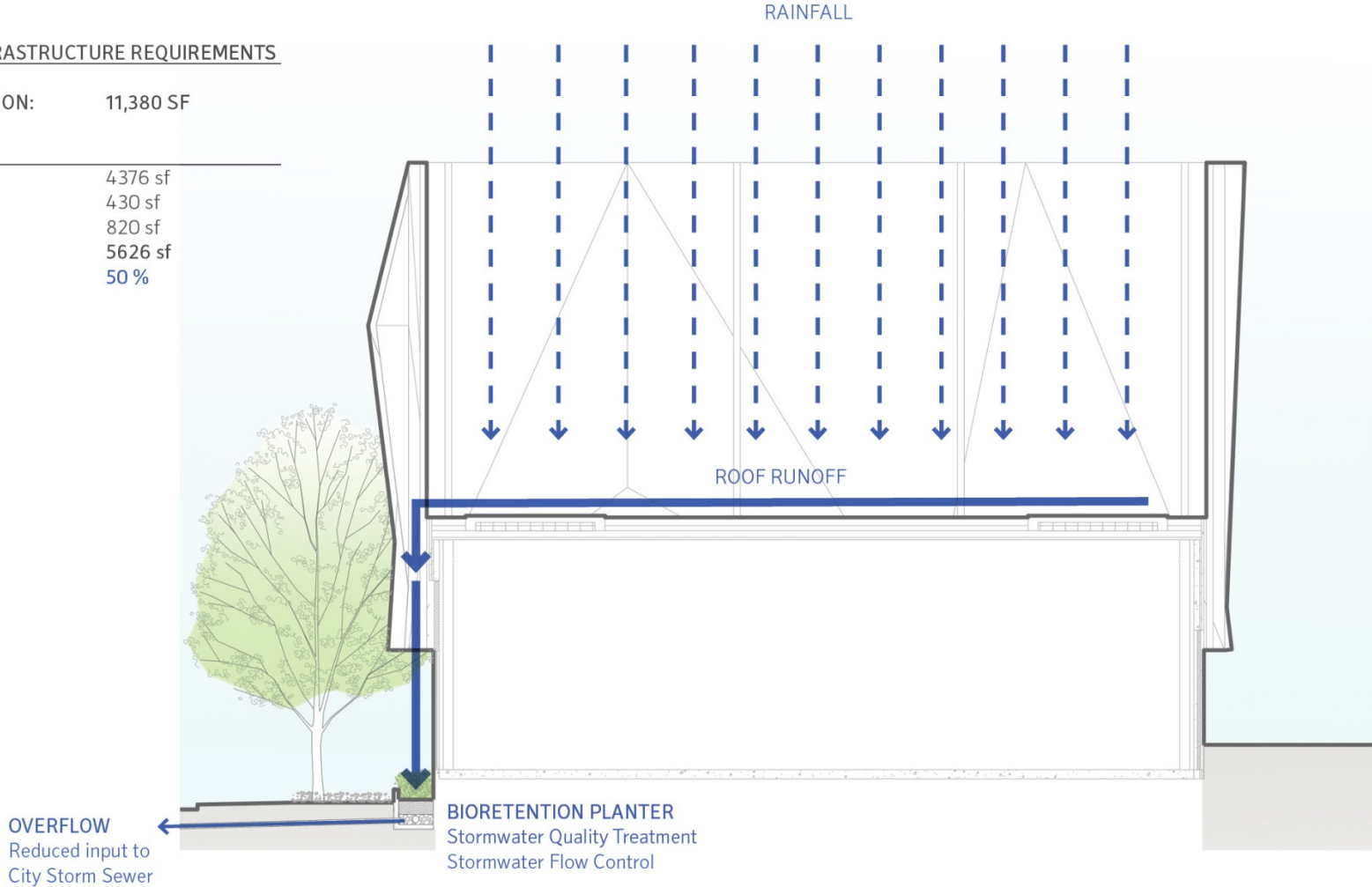
WORKING LANDSCAPE

GREEN STORMWATER INFRASTRUCTURE REQUIREMENTS

AREA REQUIRING MITIGATION: 11,380 SF

MITIGATION MEASURES:

Bioretention:	4376 sf
Trees:	430 sf
Pervious Pavement:	820 sf
Total Area Mitigated:	5626 sf
% MITIGATION ACHIEVED:	50 %



UNIVERSITY WAY CHARACTER



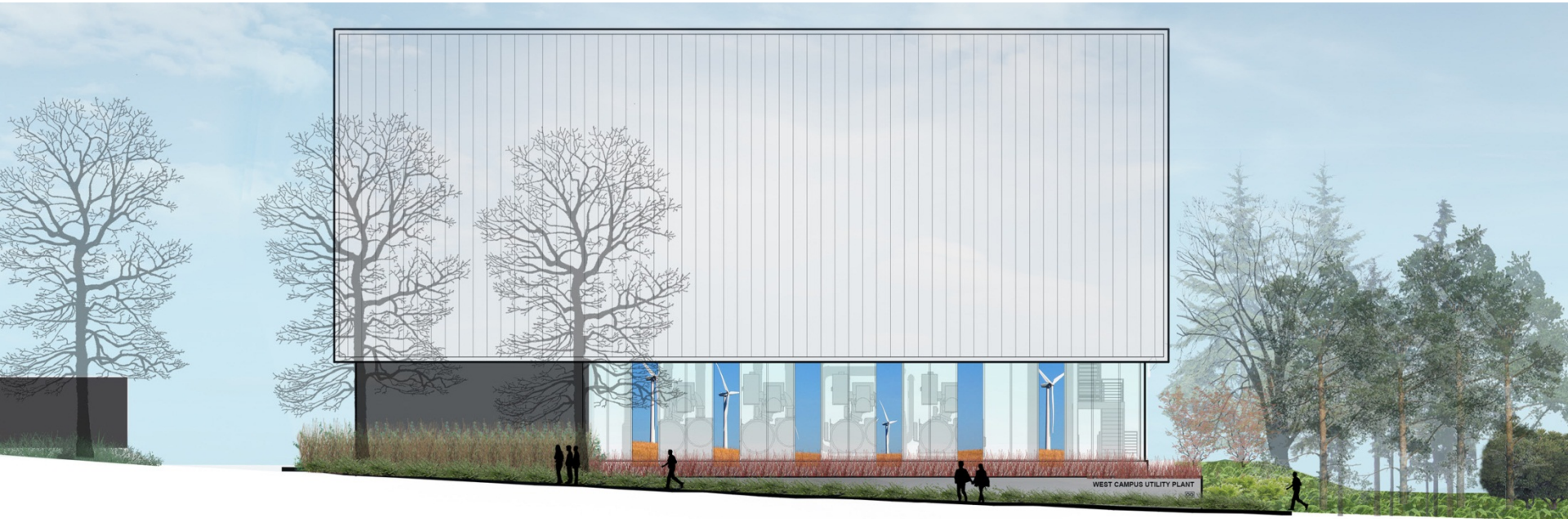
Street Trees:
Gleditsia triacanthos 'sunburst'



Understory:
Lonicera pileata



BIORETENTION CHARACTER



Cornus Sericea 'Arctic Fire', Arctic Fire Red-Twigged Dogwood

Spring



Fall



Winter



BURKE GILMAN TRAIL CHARACTER

Tree Canopy:

Big Leaf Maple, Douglas Fir, Vine Maple



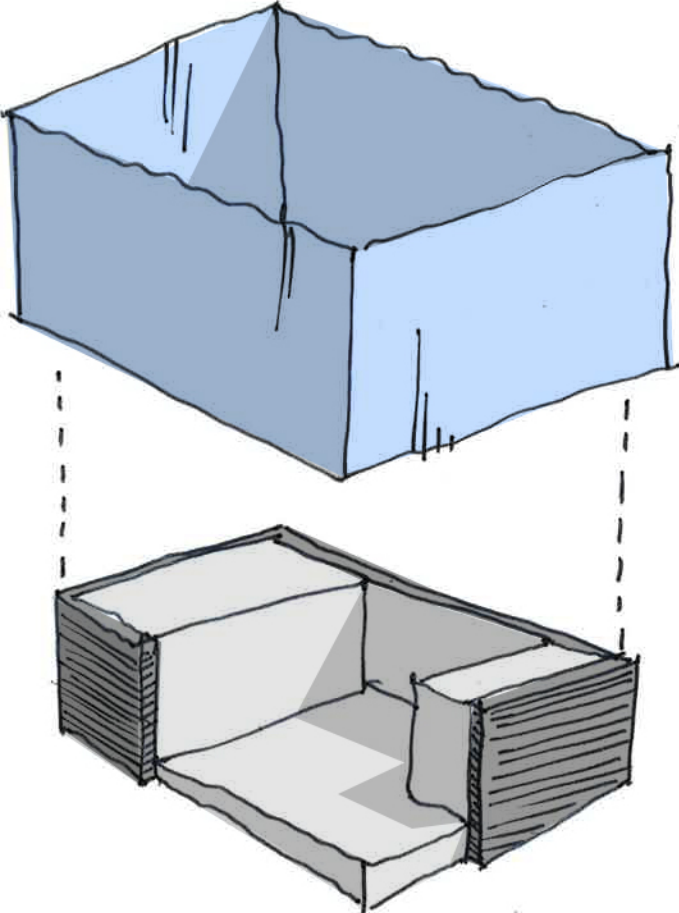
Understory:

Swordfern, Salal, Kinnickinick, Oregon Grape, Snowberry, Beach Strawberry



SCREEN WALL

MASSING CONCEPT



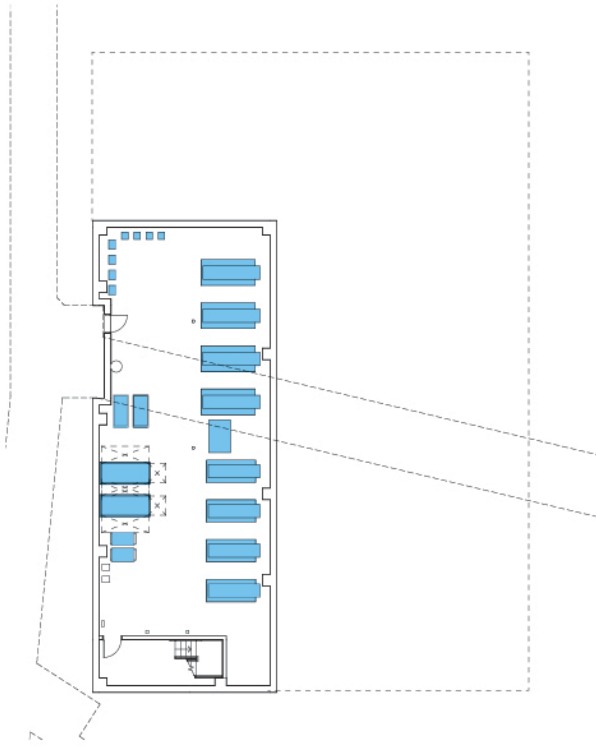
SCREEN

WRAPPER

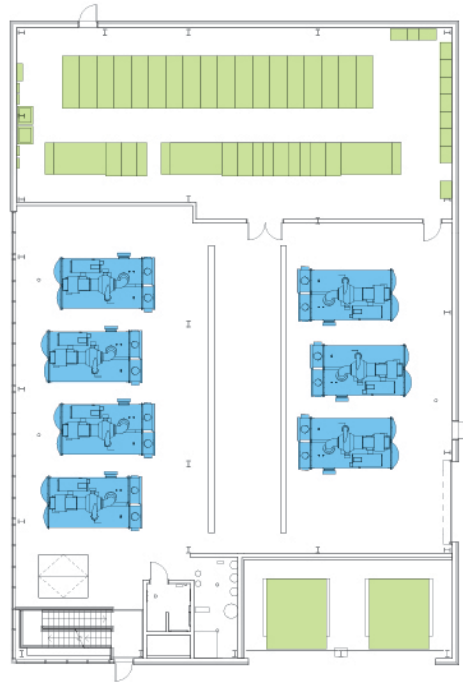
SOLIDS

SLAB

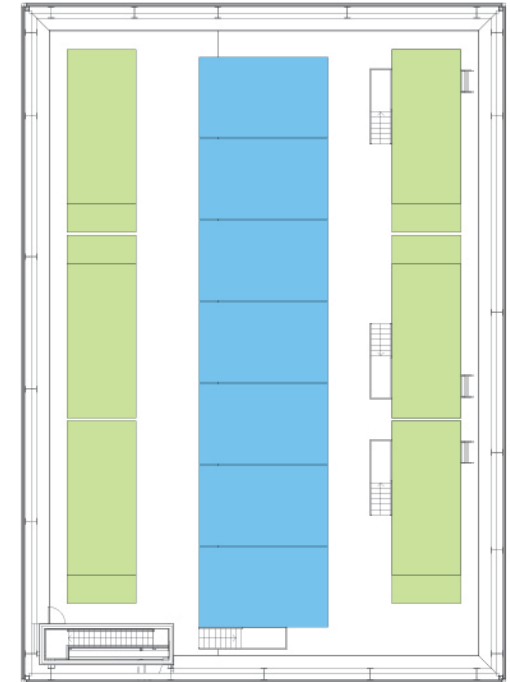
FUTURE BUILD OUT



BASEMENT PLAN



MAIN FLOOR PLAN



ROOF PLAN

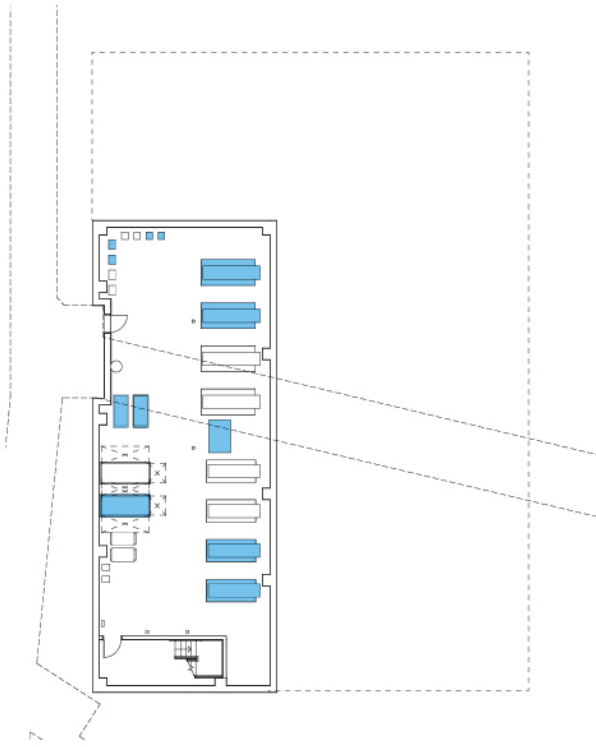
CHILLED WATER

- Chillers to support 10,500 T total future capacity (far exceeding the 6,000 T requirement in the RFP)
- Ability to add Thermal Energy Storage for additional 3,000 T

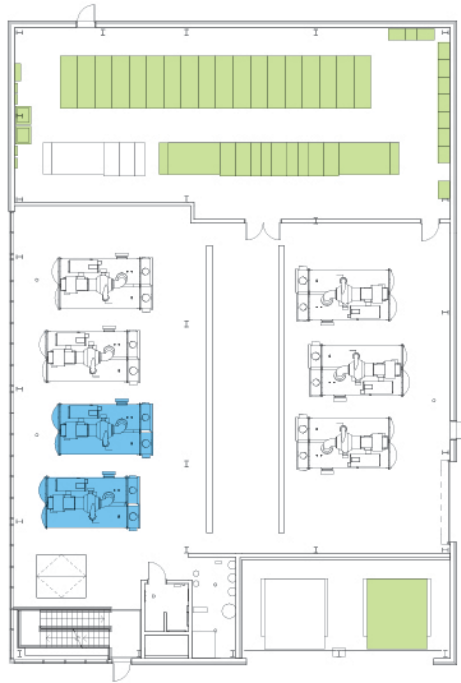
POWER GENERATION

- Future expansion to 12 MW

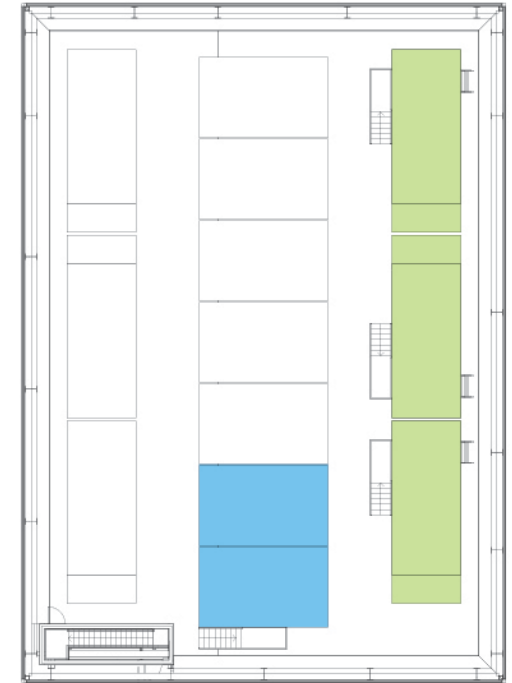
INITIAL INSTALL – DAY 1



BASEMENT PLAN



MAIN FLOOR PLAN



ROOF PLAN

CHILLED WATER

- Chillers to support 3,000 T initial capacity (meeting the 3,000 T requirement in the RFP)

POWER GENERATION

- Generators to support 6 MW initial capacity

SCREEN WALL SYSTEM DESIGN DRIVERS

AESTHETIC/ARCHITECTURAL

- The screen wall contributes significantly to the architectural character of the building at this important gateway site
- Elegant simplicity rather than complex self-conscious expression is desired
- Surface modulation/articulation (3-D) may be more powerful than surface composition (2-D)
- Materials and detailing of screen must meet acoustic and cost requirements noted below

ACOUSTIC MITIGATION

- Project must meet Seattle Noise Ordinance (60dBa max. @ adjacent receiving property line)
- Acoustic mitigation required for (mostly) low frequency sound created by the Cooling Tower exhaust fans and intake louvers
- Emergency Generator noise is exempt from the Seattle Noise Ordinance
- Open screening or perforated panels on their own will not achieve the acoustic isolation required
- Acoustic performance requirements dictates solid panels with an average mass of 5psf

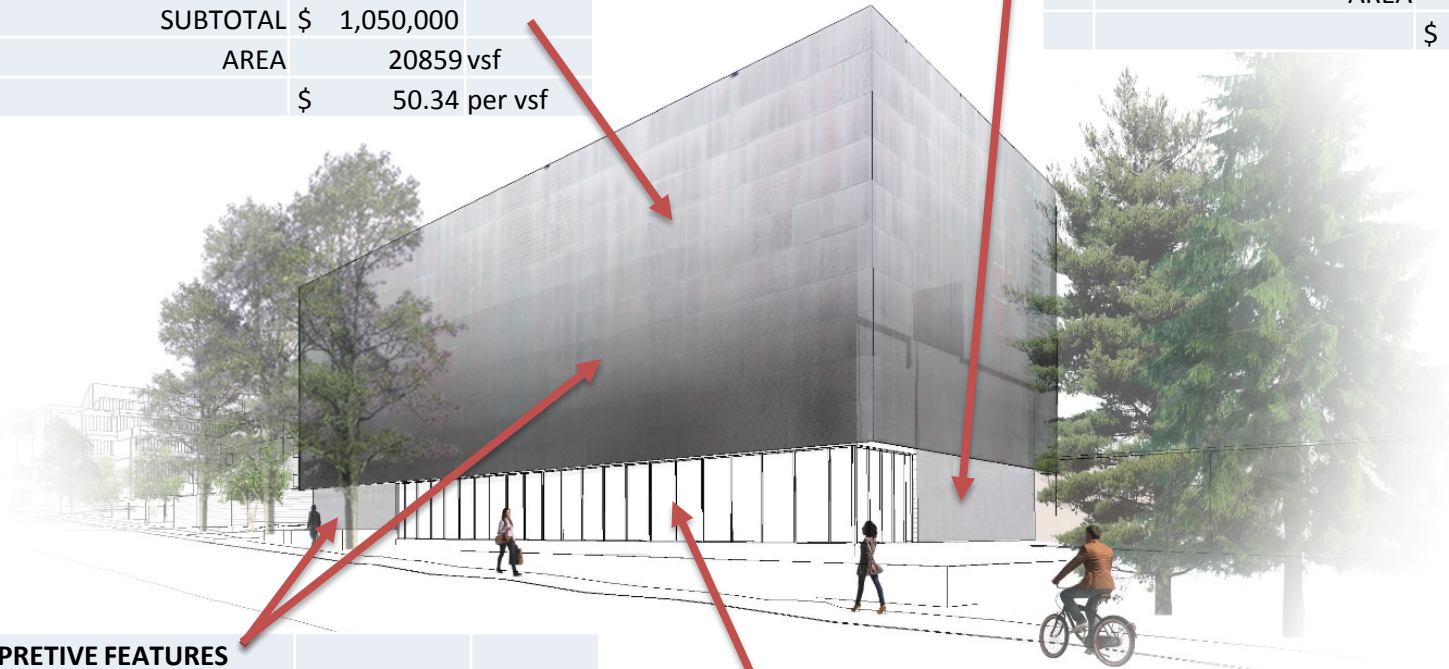
COST EFFECTIVE

- Budget allowance of \$50/sf for screen wall system (structure, panels, interpretive, etc...)
- Budget for screen wall panels/skin is approximately ½ of the total screen wall system budget
- Look for efficiencies – every element addresses multiple requirements simultaneously

DESIGNING TO BUDGET

SCREENWALL		
Structure	\$	260,000
Screen Panels	\$	575,000
Misc Finishes/Coping	\$	15,000
Enhancement Allowance	\$	200,000
SUBTOTAL	\$	1,050,000
AREA		20859 vsf
	\$	50.34 per vsf

PRECAST INSULATED CONCRETE PANELS		
Precast Panels	\$	600,000
Misc Support Steel	\$	32,000
Paint at Interior	\$	7,000
SUBTOTAL	\$	639,000
AREA		9136 vsf
	\$	69.94 per vsf



INTERPRETIVE FEATURES		
IT Backbone	\$	50,000
LED Lighting / Dashboard	\$	138,000
SUBTOTAL	\$	188,000
AREA		1728 vsf
	\$	108.80 per vsf

STOREFRONT		
Storefront System	\$	80,000
SUBTOTAL	\$	80,000
AREA		1250 vsf
	\$	64.00 per vsf

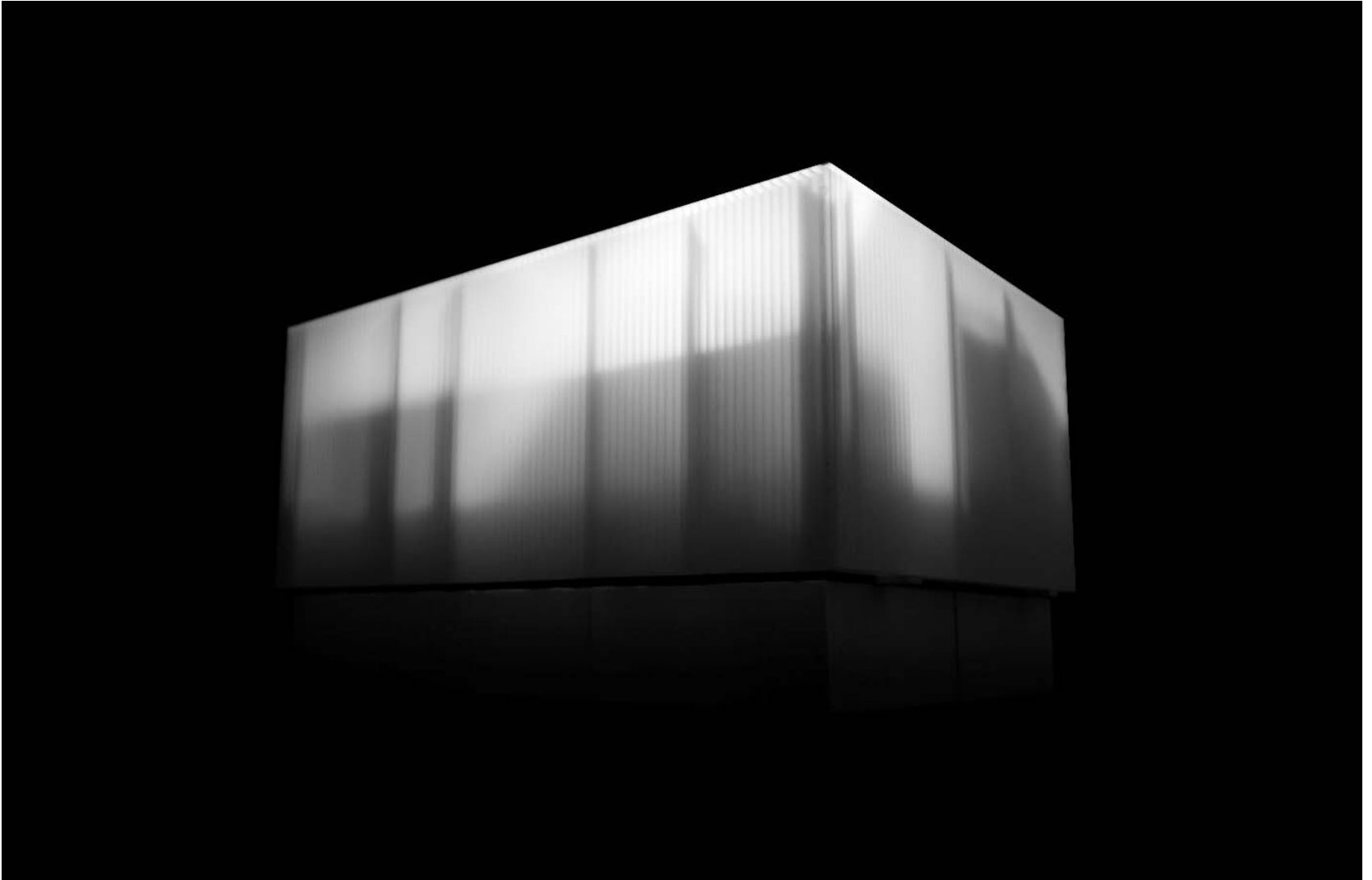
GLOWING BOX - SUMMER



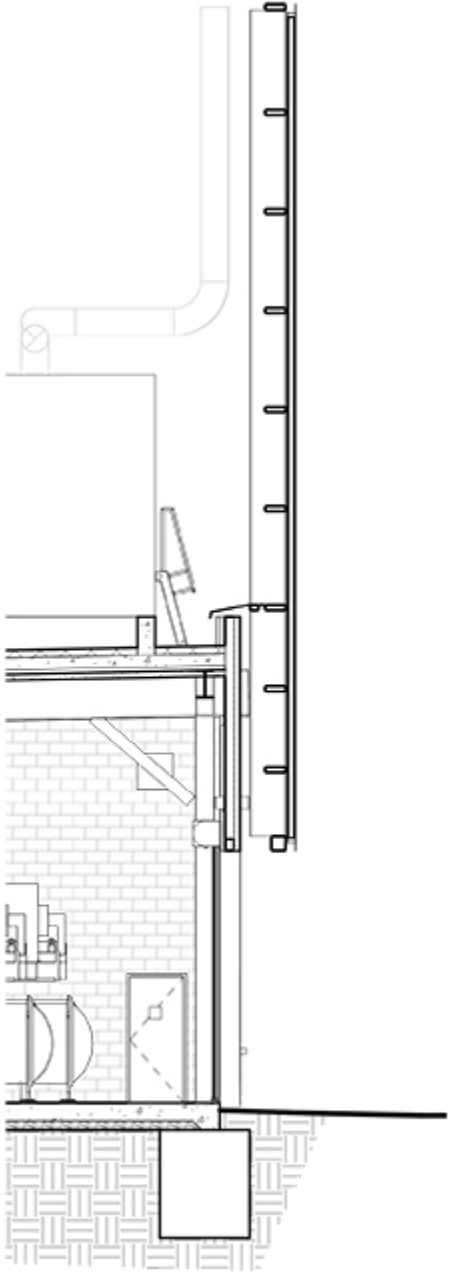
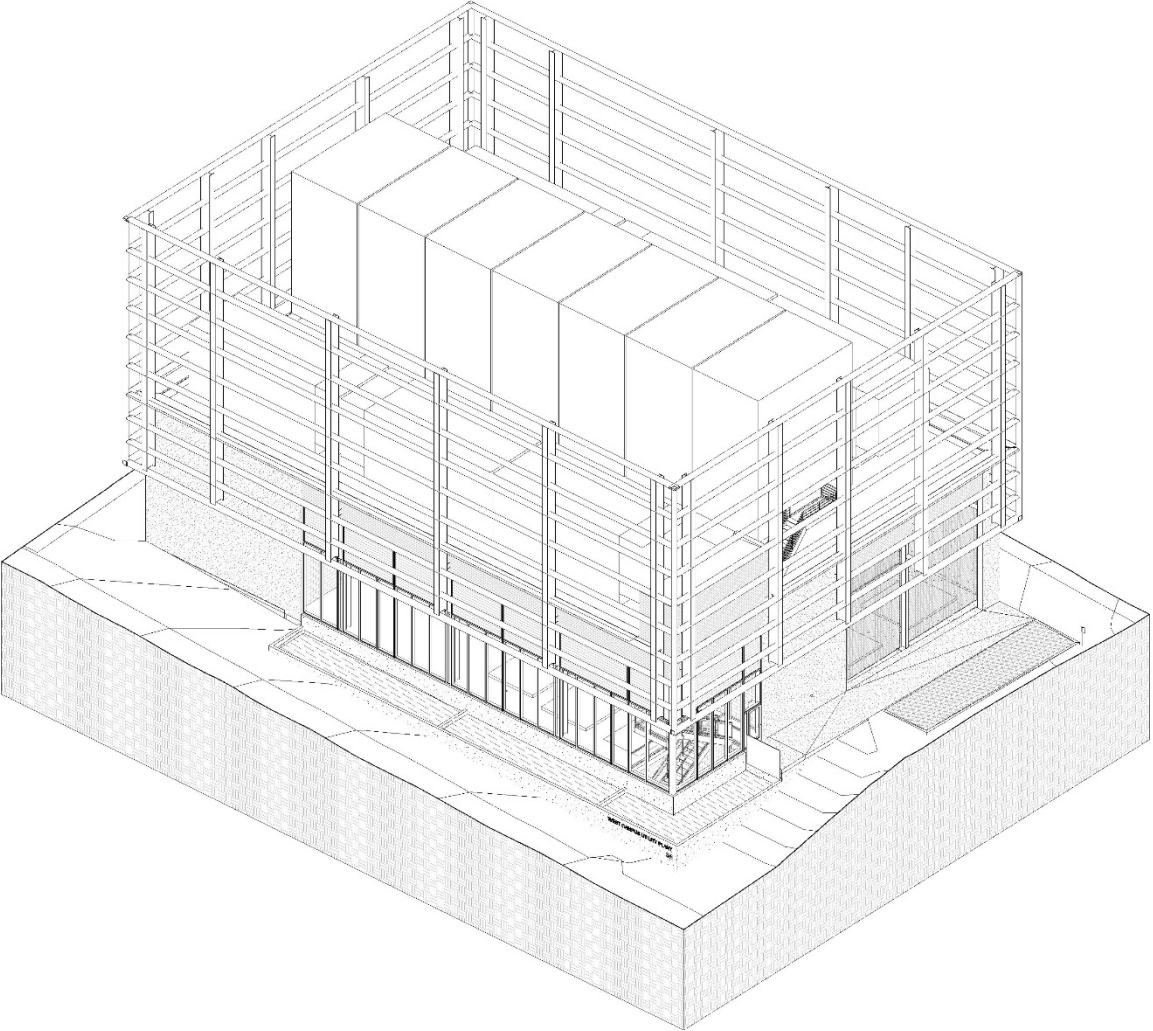
GLOWING BOX - WINTER



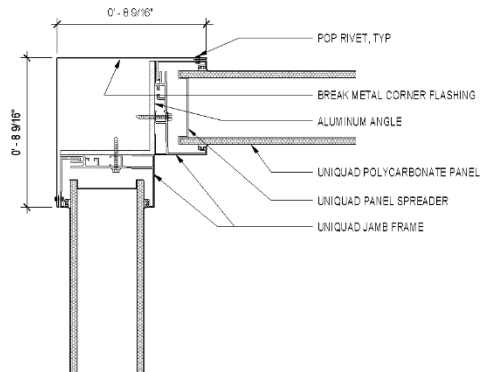
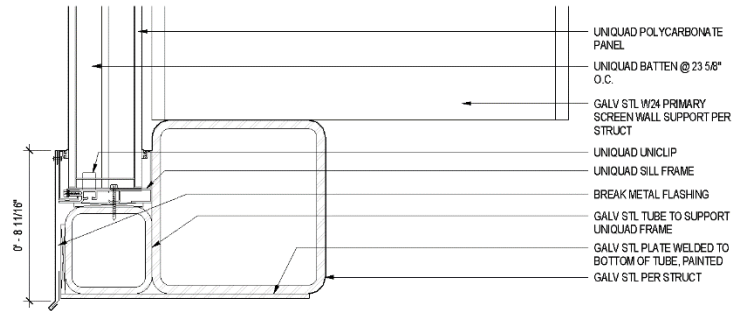
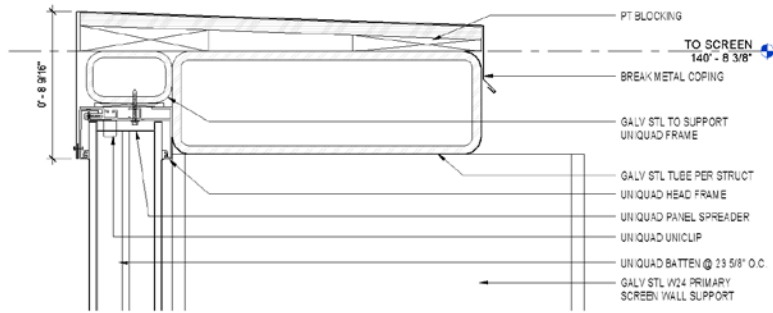
GLOWING BOX – MODEL SHOT



GLOWING BOX – MODEL SHOT



GLOWING BOX – DETAILING



CAMPUS GATEWAY



MATERIALS & CHARACTER

MATERIAL PALETTE

POLYCARBONATE SCREEN WALL



BERNIE MAKERS' STUDIO - TERROIR
DANPALON POLYCARBONATE

MATERIAL PALETTE

POLYCARBONATE SCREEN WALL



NORTH MELBOURNE FOOTBALL CLUB
DANPALON POLYCARBONATE

MATERIAL PALETTE

POLYCARBONATE SCREEN WALL



3RD & PINE PARKING GARAGE
DANPALON POLYCARBONATE



VIRTUA HEALTH AND WELLNESS CENTER
DANPALON POLYCARBONATE - UNIQUAD

MATERIAL PALETTE

CURTAIN WALL



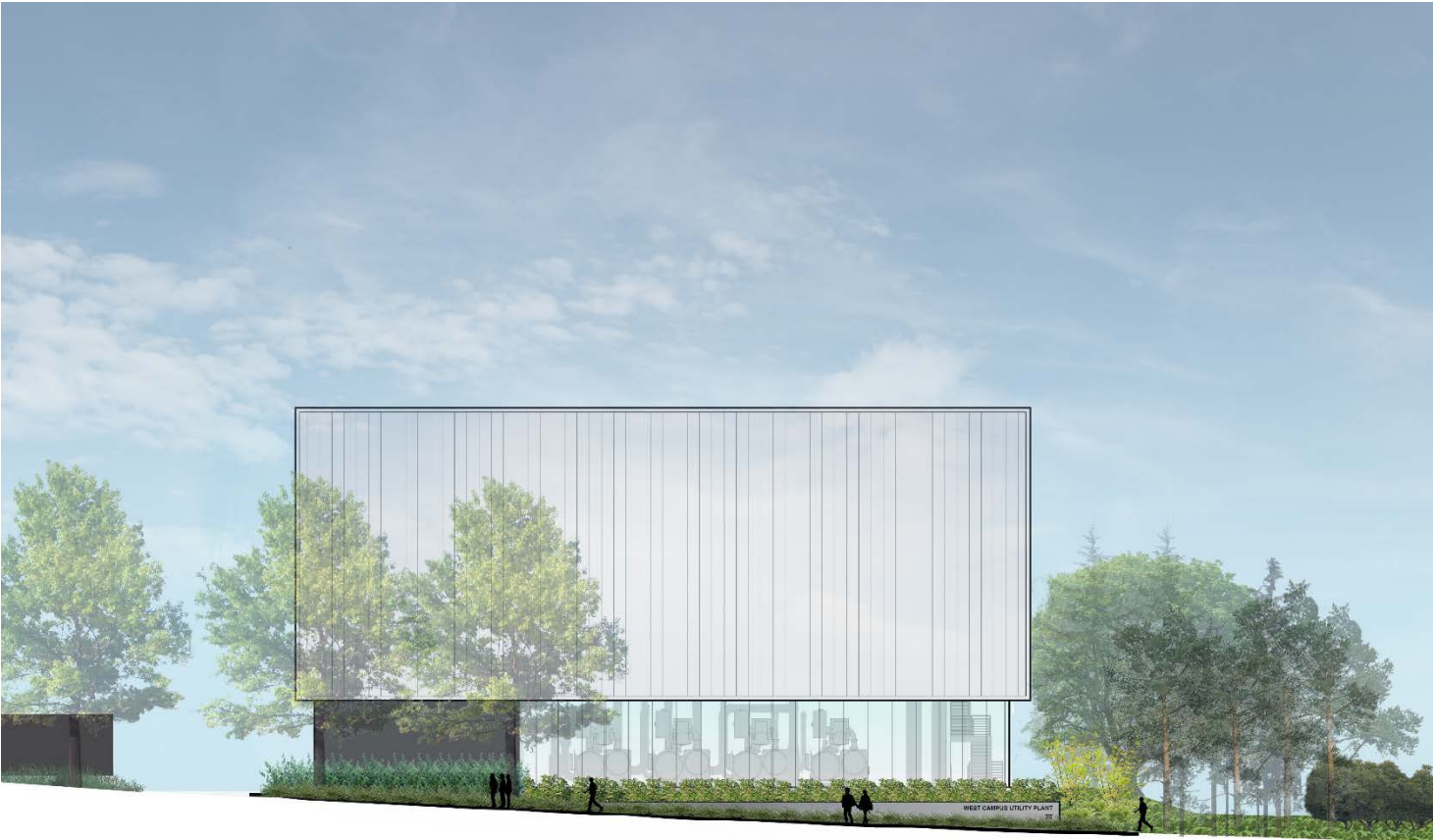
DARK CONCRETE



SANDBLASTED BLACK

ACID ETCHED BLACK

MATERIAL PALETTE



LIGHT @ WINDOW WALL
MULLIONS, LOUVERS, CONCRETE PLANTER

MATERIAL PALETTE



DARK @ CONCRETE PERIMETER WALLS
CONCRETE PANELS, DOORS, LOUVERS



INTERPRETIVE OPPORTUNITIES

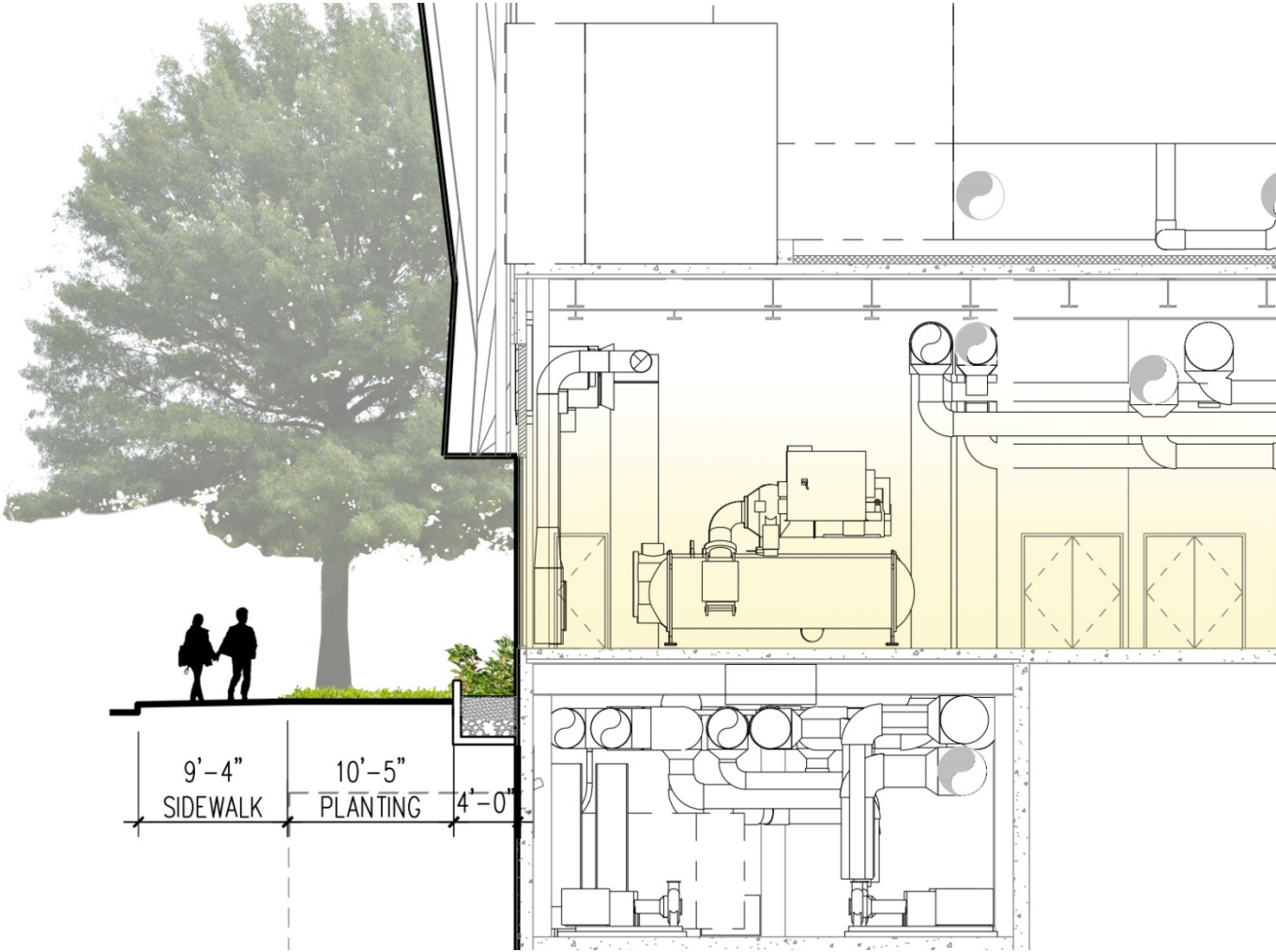
BUILDING/INTERPRETIVE CONCEPT

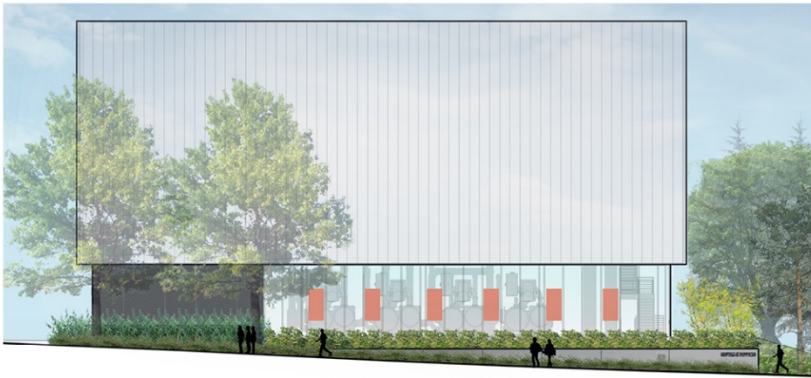
MAGNET & PORTAL

- Facility to Attract Interest & Provide Opportunity for Engagement
- Interpretive Content to be Curated by UW ES&S
- Integrate Building Facades with Interpretive/Display at Multiple Scales
- Connect/Engage with BGT & University Way



WINDOWS INTO THE PROCESS





1 LCD DISPLAYS

Content is displayed on large, vertically oriented 75" LCD displays located behind the street level curtain wall. A video processor can be added to link displays and allow content to span across multiple displays.

PROS

- Flexible in terms of the type of content that could be displayed.
- Proportion of screen architecturalizes the display and makes it less recognizable as a series of monitors.

CONS

- Obscures views of equipment, although not overly obtrusive. Has visual presence when not in use.
- Could be appropriated for communicating non-sustainability-related content.
- Standard aspect ratio of displays recognizable as "off-the-shelf" monitors.

TAKEOFF

6 75" LCD display

OPTIONAL UPGRADES

1 video processor



2 LCD BANNER ARRAYS

Vertically oriented 75" LCD displays located behind the street level curtain wall are stacked two high to create a tall "banner arrays". A single video processor is required to make the banner arrays function as combined display. The processor can be programmed to spread content across all displays if desired.

This option can be reduced to include 3 banner arrays instead of 6.

PROS

- Flexible in terms of the type of content that could be displayed.
- Brighter during daylight hours.
- Proportion of screen architecturalizes the display and makes it less recognizable as a series of monitors.

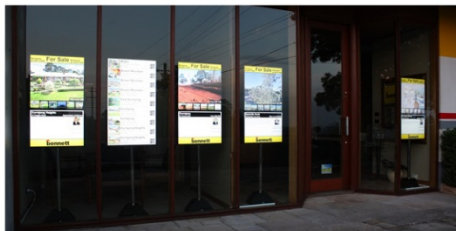
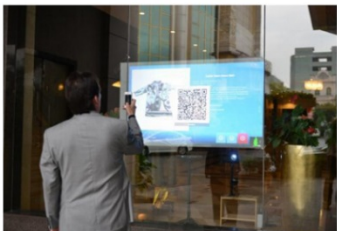
CONS

- Obscures views of equipment, although not overly obtrusive. Has visual presence when not in use.
- Could be appropriated for communicating non-sustainability-related content.
- Non-standard aspect ratios will require custom content.

TAKEOFF

12 75" LCD display

1 video processor (required)





3 AUGMENTED REALITY (MOBILE APP)

Three dimensional, interactive content is communicated via a visitor's smart phone or tablet. After a specially-developed mobile application is downloaded, a visitor can point their device at the building to reveal a virtual view of the equipment inside as though the building's exterior had been peeled away. Tapping different pieces of equipment could call up a curated page of content and educational information with links to other UW resources.

A wifi hotspot could be provided to allow visitors to download the app to a device without cellular connectivity. A monitor could provide instructions and explain the mobile app's functionality. The monitor could be omitted if this technology is paired with another option that provides displays.

PROS

- Doesn't obscure views of equipment when not in use. Minimal visual presence when not in use.
- Interesting new technology that is likely to attract a tech-savvy audience.
- Specificity of the application means it is unlikely to be appropriated for communicating non-sustainability-related content.
- Highly interactive visitor participation.

CONS

- Barrier to entry: camera-equipped phone or tablet required.
- Specificity of application requires content curation to go through app developer.

TAKEOFF

- 1 AR mobile application
- 1 75" LCD display*
- 1 public wifi hotspot

* can be omitted if paired with options 1 or 2



4 AUGMENTED REALITY (BROADCAST)

LCD displays are connected to front- and rear-facing cameras in order to allow for visitor participation in broadcast AR content. Front-facing cameras detect the motion of passers-by and queue imagery on the large monitors. This imagery could be comprised of a live feed of the interior of the plant from the perspective of the rear-facing cameras mounted behind the LCD panel arrays. The effect would be to render the displays transparent so that AR content could be seamlessly inserted into the live video feed, simulating different events within the space of the plant.

Monitors used for broadcast AR could also be used for more conventional content. The broadcast AR option could also be paired with different arrangements of monitors.

PROS

- Interesting new technology that is likely to attract a tech-savvy audience.
- Flexible in terms of the type of content that could be displayed.
- Interactive visitor participation.

CONS

- Obscures views of equipment, although not overly obtrusive. Has visual presence when not in use.
- Could be appropriated for communicating non-sustainability-related content.

TAKEOFF

- 1 AR broadcast
- 4 75" LCD display*
- 1 video processor*

* can be omitted if paired with options 1 or 2





5 LED TICKER

Content is communicated along a long, thin LED display mounted at the top of the curtain wall. Content could be text-based and move laterally like a typical news marquee, or could be programmed as more free-form art/animation.

PROS

- Doesn't obscure views of equipment.
- Well integrated into the architectural expression of the building corner.

CONS

- Likely precludes image-based content.
- Scale of display is small compared to other options.

TAKEOFF

100' LED display

OPTIONAL UPGRADES

high resolution (denser) LEDs





INTERPRETIVE/DISPLAY OPPORTUNITIES

AUGMENTED REALITY

**3-D Virtual Objects are
Integrated into a 3-D Real
Environment in Real Time**

**Connections Can be Made to
Other UW Campus-wide
Information/Data/News:**

- **Sustainability Initiatives**
- **Campus Energy Usage**
- **UW Nobel Laureates**

**Working with UW ES&S who will
be responsible for curating the
information content accessed
through the PORTAL**



PRIMARY SUBSTATION 2012 OLYMPICS - NORD ARCHITECTURE







BURKE

W

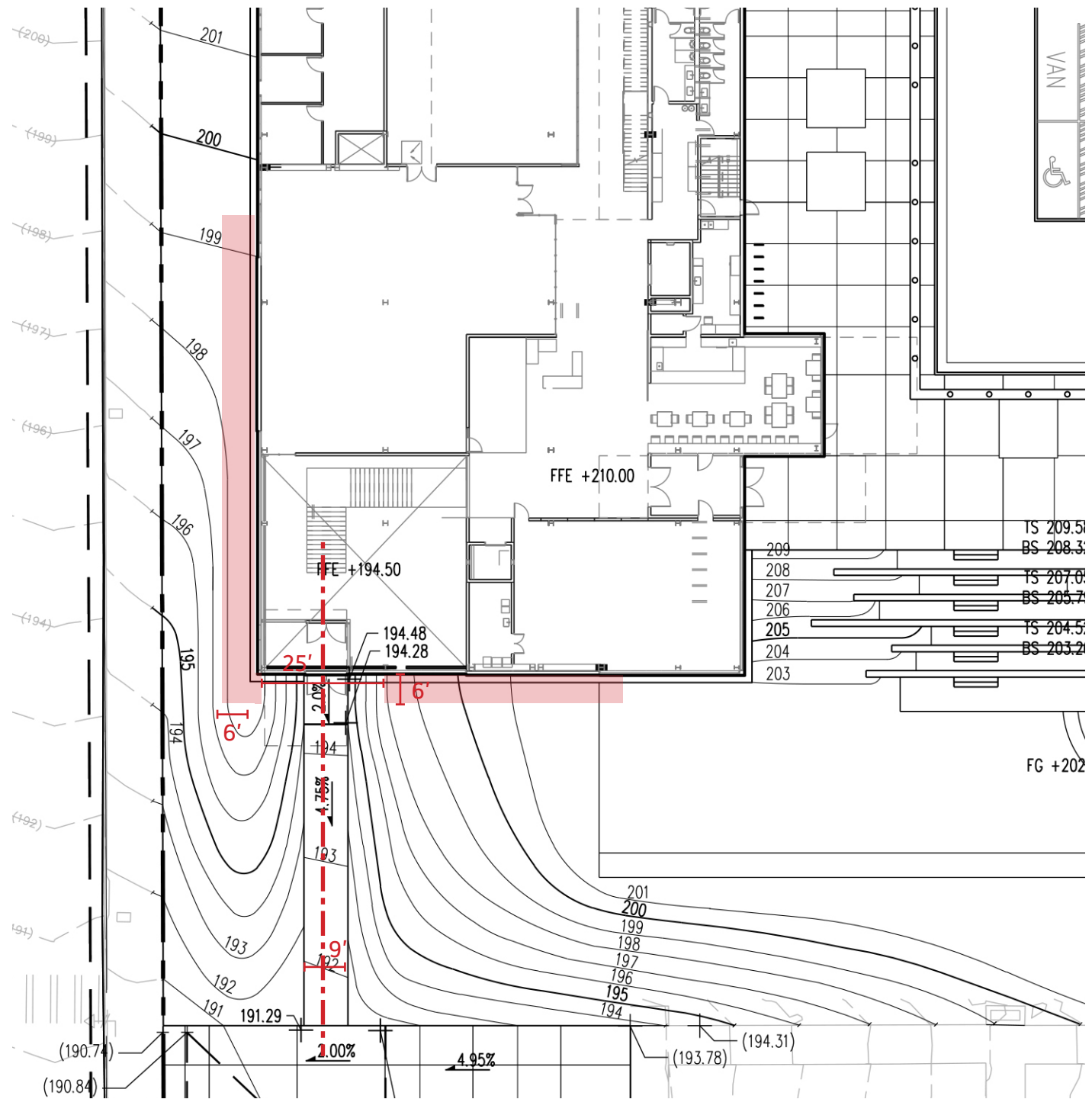
UNIVERSITY of WASHINGTON

Adopt a Street

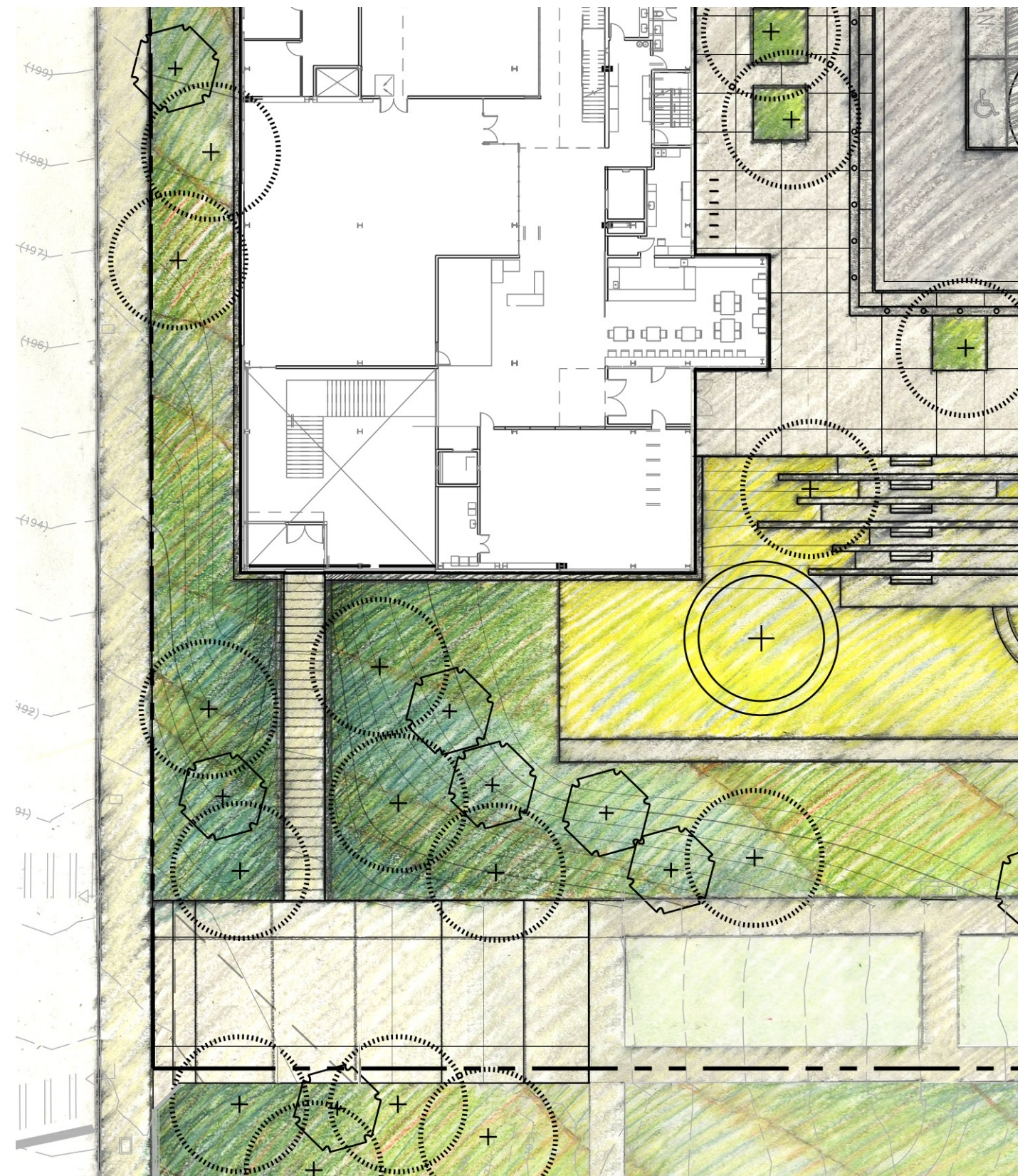
UNIQUE MEMORIES

1 SW Entry - Current

Grading Plan



Site Plan



① SW Entry - View

OPT 3 - depressed



UW TACOMA urban solutions center



Richard Galle, Tacoma

WEST FAÇADE: window replacement



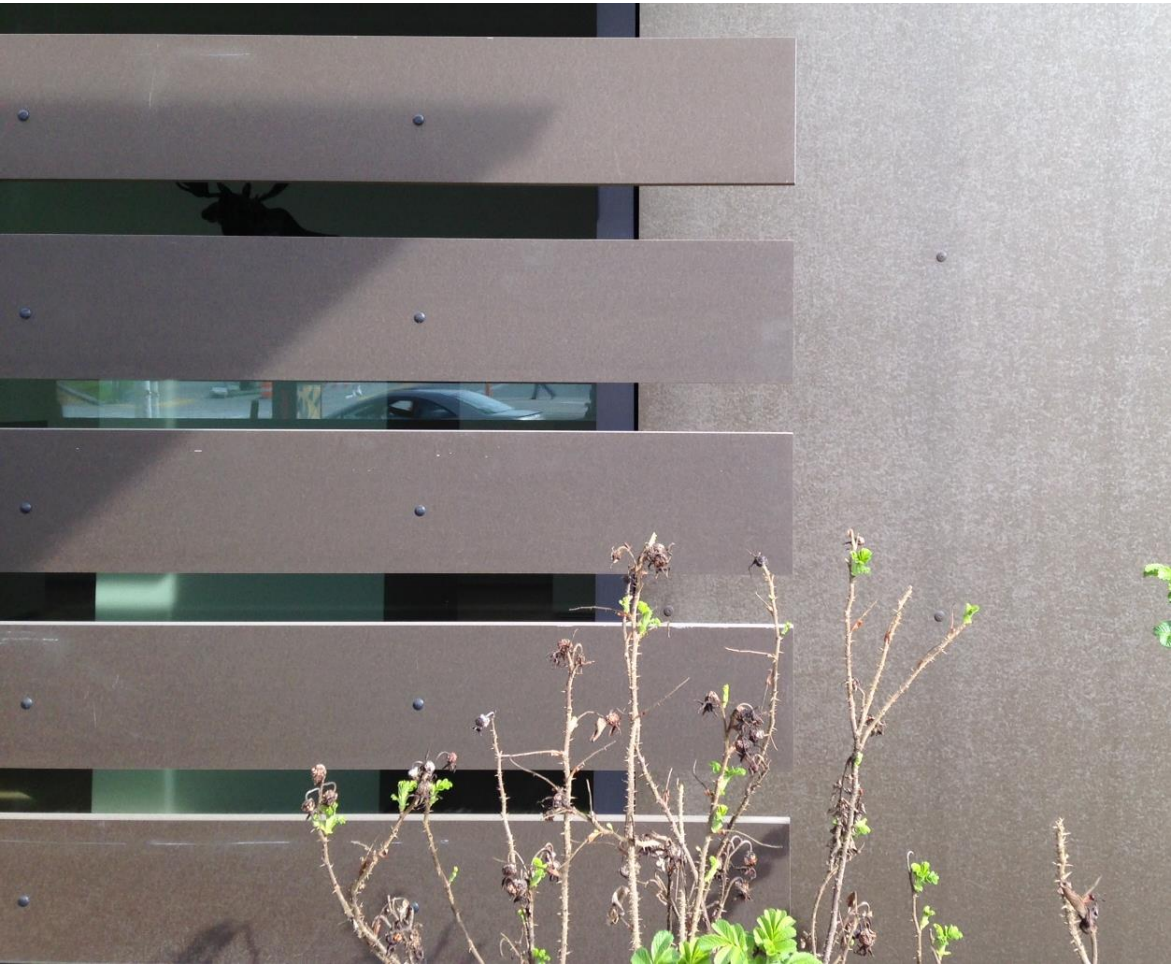
KINETIC DOORS



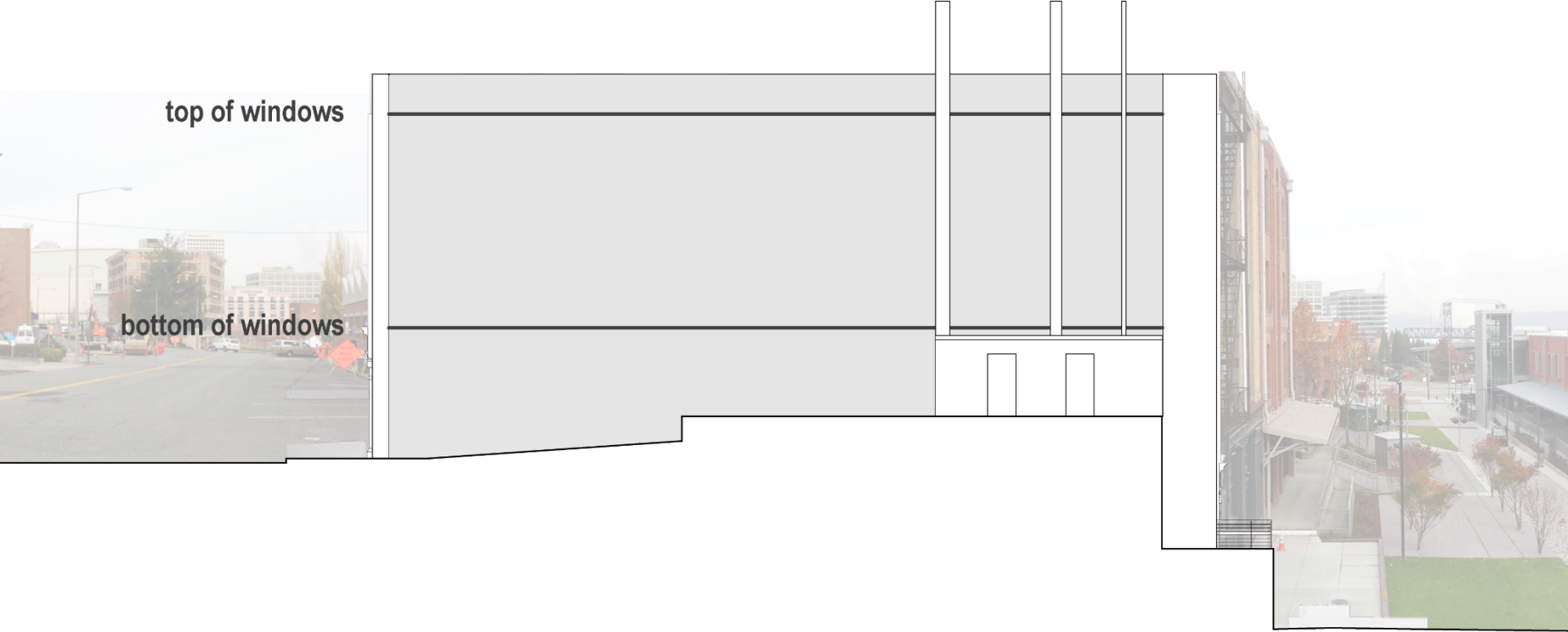
EAST FAÇADE: kinetic doors



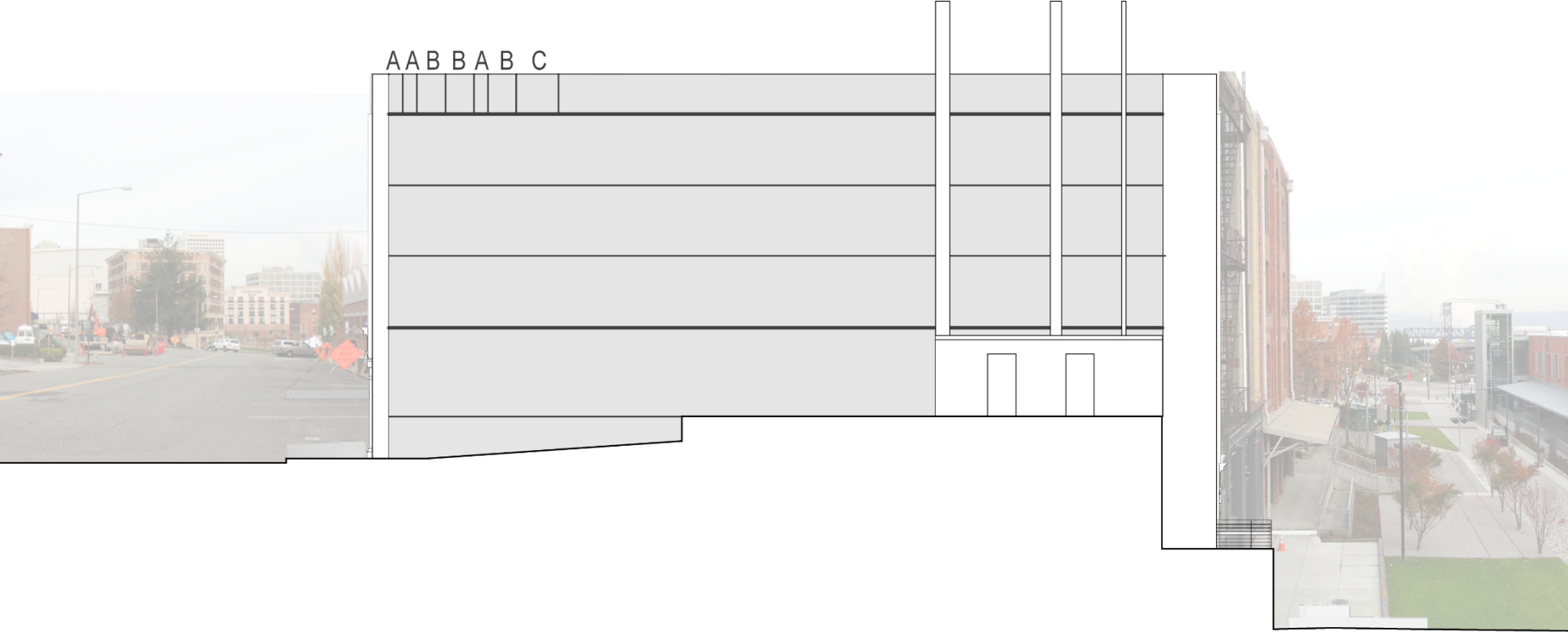
SOUTH WALL CLADDING



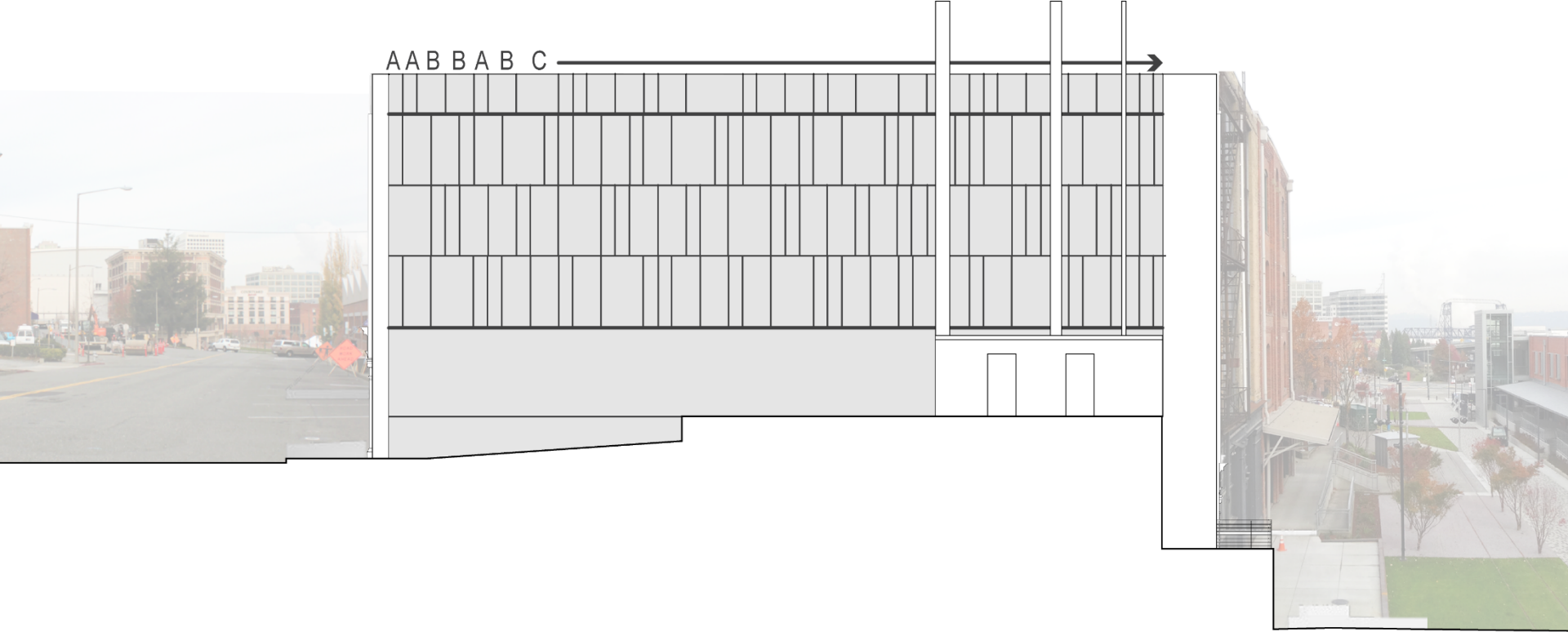
SOUTH WALL CLADDING



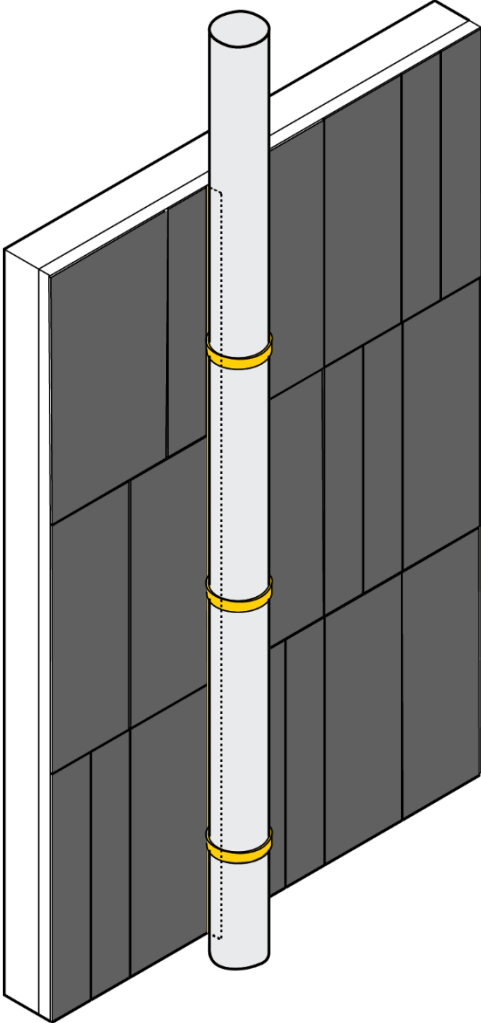
SOUTH WALL CLADDING



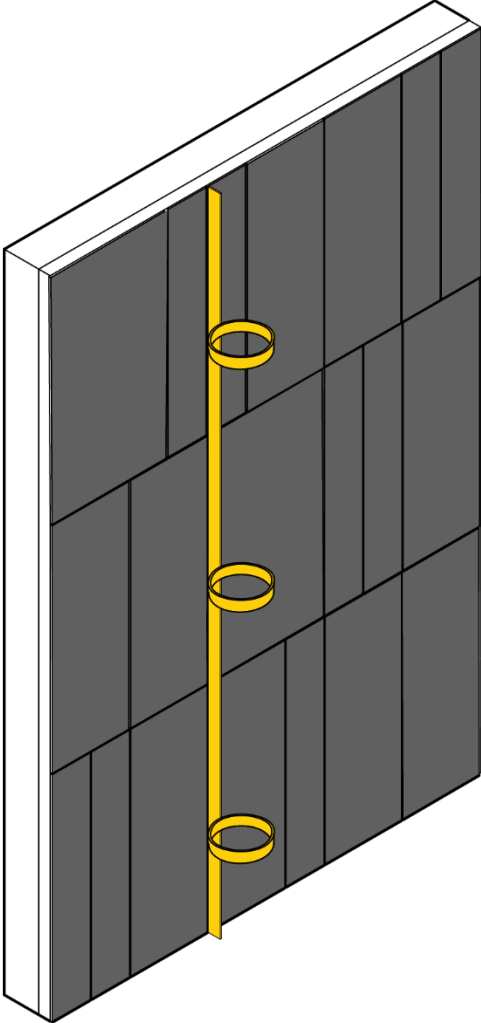
SOUTH WALL CLADDING



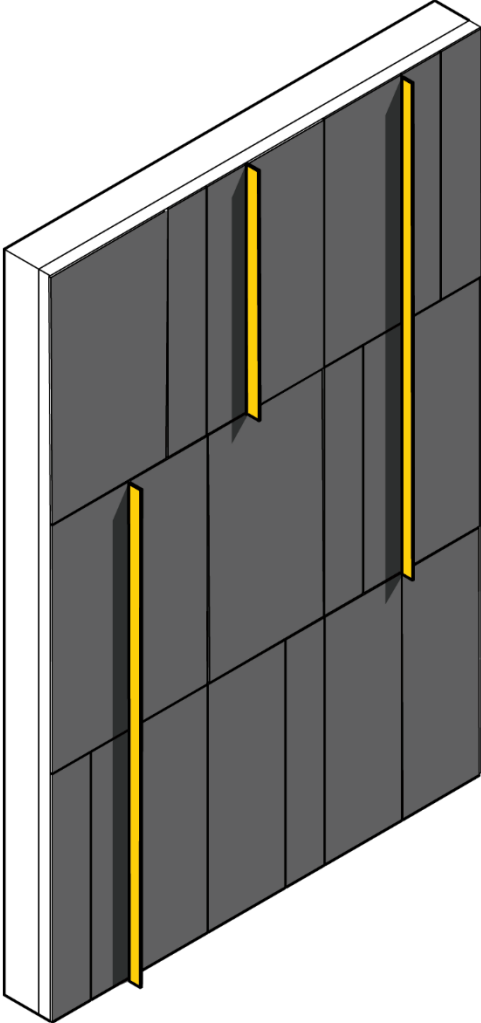
SOUTH WALL CLADDING: fin detail



SOUTH WALL CLADDING: fin detail



SOUTH WALL CLADDING: fin detail



SOUTH WALL CLADDING



SOUTH FACADE

