

A 21st CENTURY

HEADQUARTERS

**AGU
100**

ADVANCING EARTH
AND SPACE SCIENCE



A FEW WORDS

ABOUT THE TEAM



Holly Lennihan

Director of Sustainable Design, Senior Associate

Hickok Cole Architects



Roger Frechette

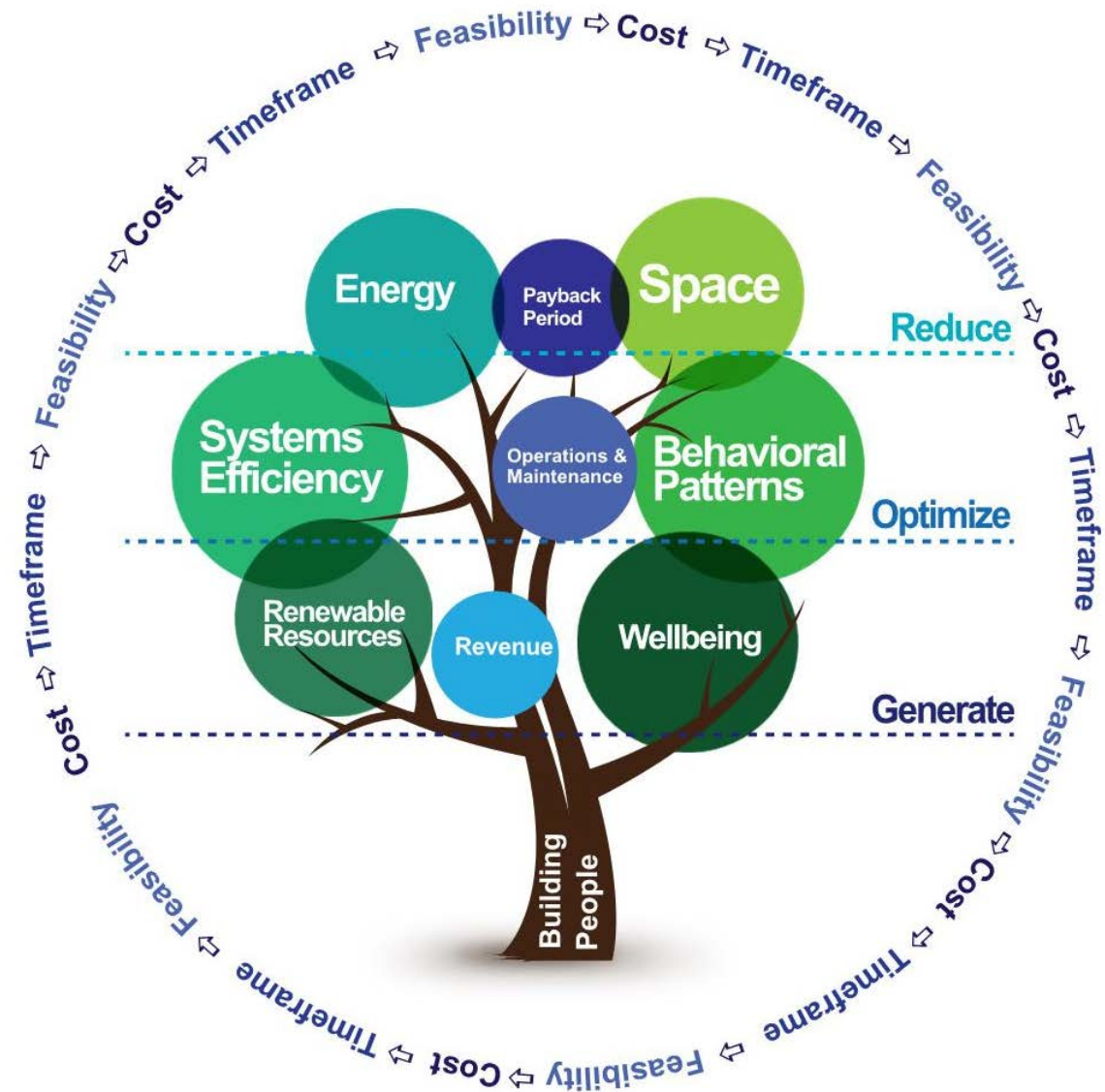
Managing Principal

Interface Engineering



PROJECT GOALS

- Develop a workplace environment that is state of the art
- Consistent, flexible and adaptable 21st century work environment
- Work environment that makes it easy to collaborate with our members and other partners/ vendors
- Showcase the contributions of Earth and space science
- Push the limits of the building performance in terms of energy, water, the work environment; Net Zero
- Raise the visibility of AGU through this project



THE EXISTING BUILDING



LOOKING WEST ON FLORIDA AVENUE



CORNER OF 20TH STREET AND FLORIDA AVENUE



LOOKING NORTH UP 20TH STREET



LOOKING EAST ON FLORIDA AVENUE

CURRENT

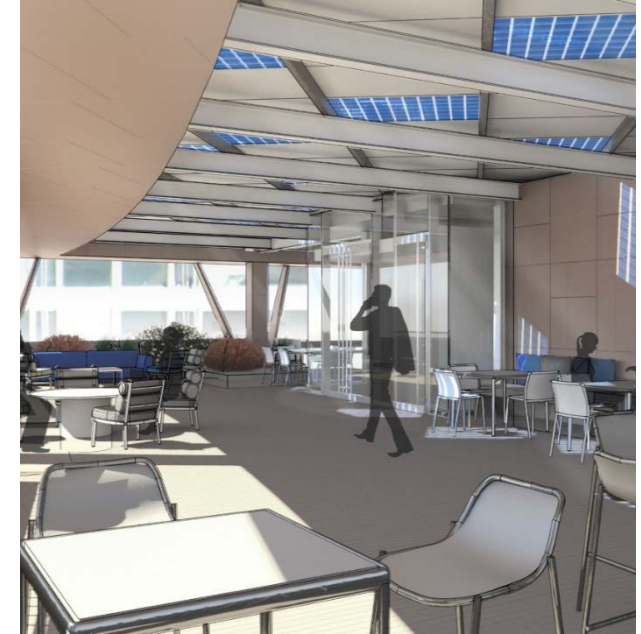


PROPOSED



THE A & E

1. Radiant Ceiling Grid & DC lights
2. The Hy-Phy Wall and Biophilia
3. PV Array as Amenity on the Roof
4. Transparency and Openness



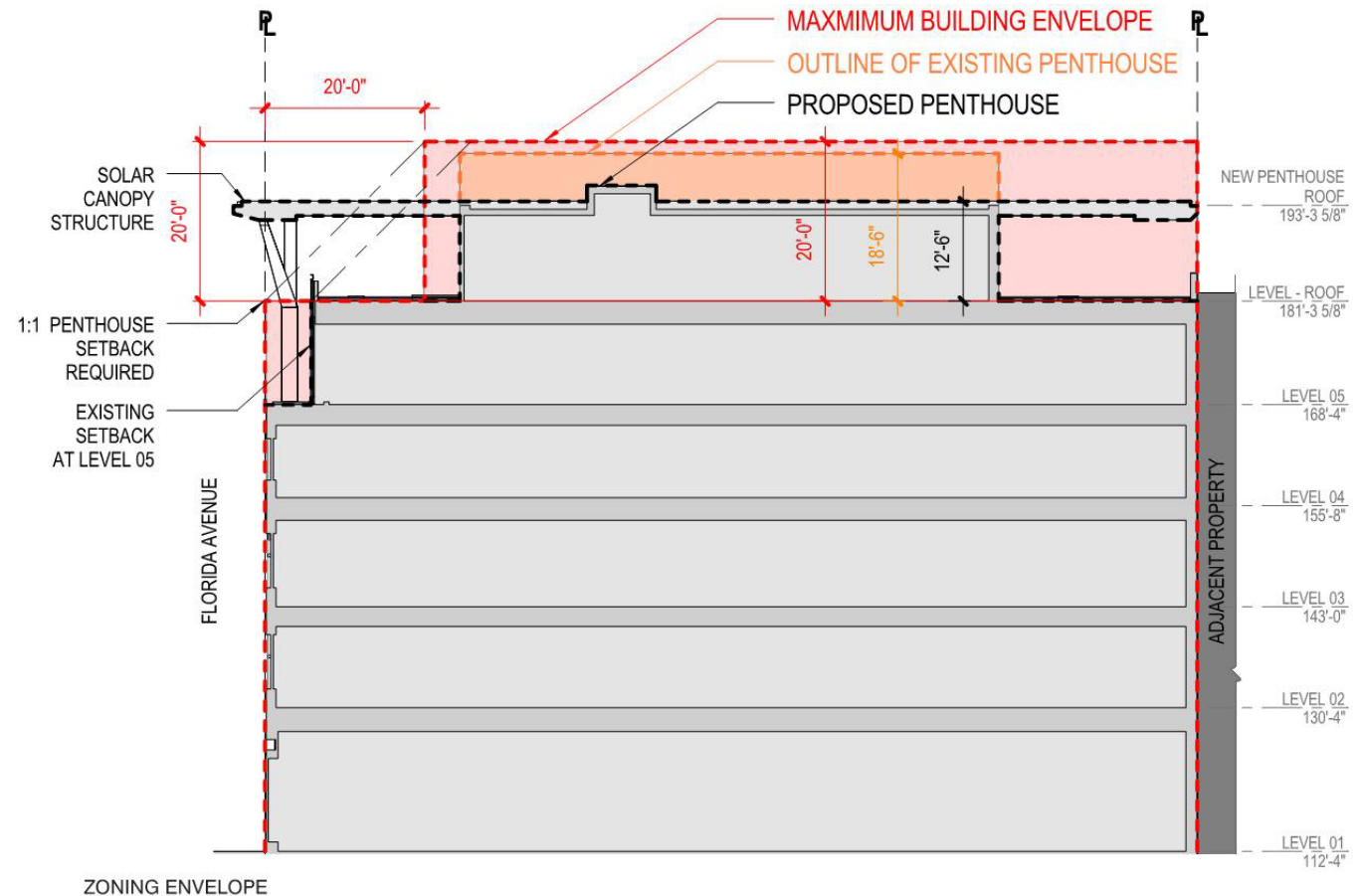
JURISDICTIONAL

CHALLENGES & APPROVALS

COMMUNITY ENGAGEMENT

- ZP&D COMMITTEE OF THE ANC (2/25)
- DUPONT CIRCLE CONSERVANCY (3/08)
- DUPONT CIRCLE CITIZENS ASSOCIATION (3/16)
- COMMUNITY MEETING AT AGU (3/16)
- HISTORIC PRESERVATION REVIEW BOARD HEARING
- ZP&D COMMITTEE OF THE ANC (4/06)
- DUPONT CIRCLE CONSERVANCY (4/12)
- ANC 2B APRIL MEETING (4/13)
- DUPONT CIRCLE CITIZENS ASSOCIATION (5/20)

RENOVATION@AGU.ORG



OPENING UP THE NEW BUILDING



A NEW WAY OF WORKING

EMBODY THE MISSION

SHARED SPACES
PRE-FUNCTION SPACE AT
EXECUTIVE CONFERENCING

SHARED SPACES
SEMI-PRIVATE MEETING
SPACES FOR OPEN TEAMING

QUIET SPACES
FOR FOCUSED WORK OR
PRIVATE MEETINGS

IMPROVED CIRCULATION
PERIMETER & VERTICAL
CONNECTION AT ALL AGU
WORK FLOORS



**FORMAL
CONFERENCING**
AT PROW

ARRIVAL LOBBY
FEATURING “CROSS
SECTION THROUGH
MEMBER SCIENCE”
WALL

OPEN OFFICE
PERSONAL WORKSPACE
FOR INCREASED
COLLABORATION

A NEW WAY OF WORKING

EMBODY THE MISSION

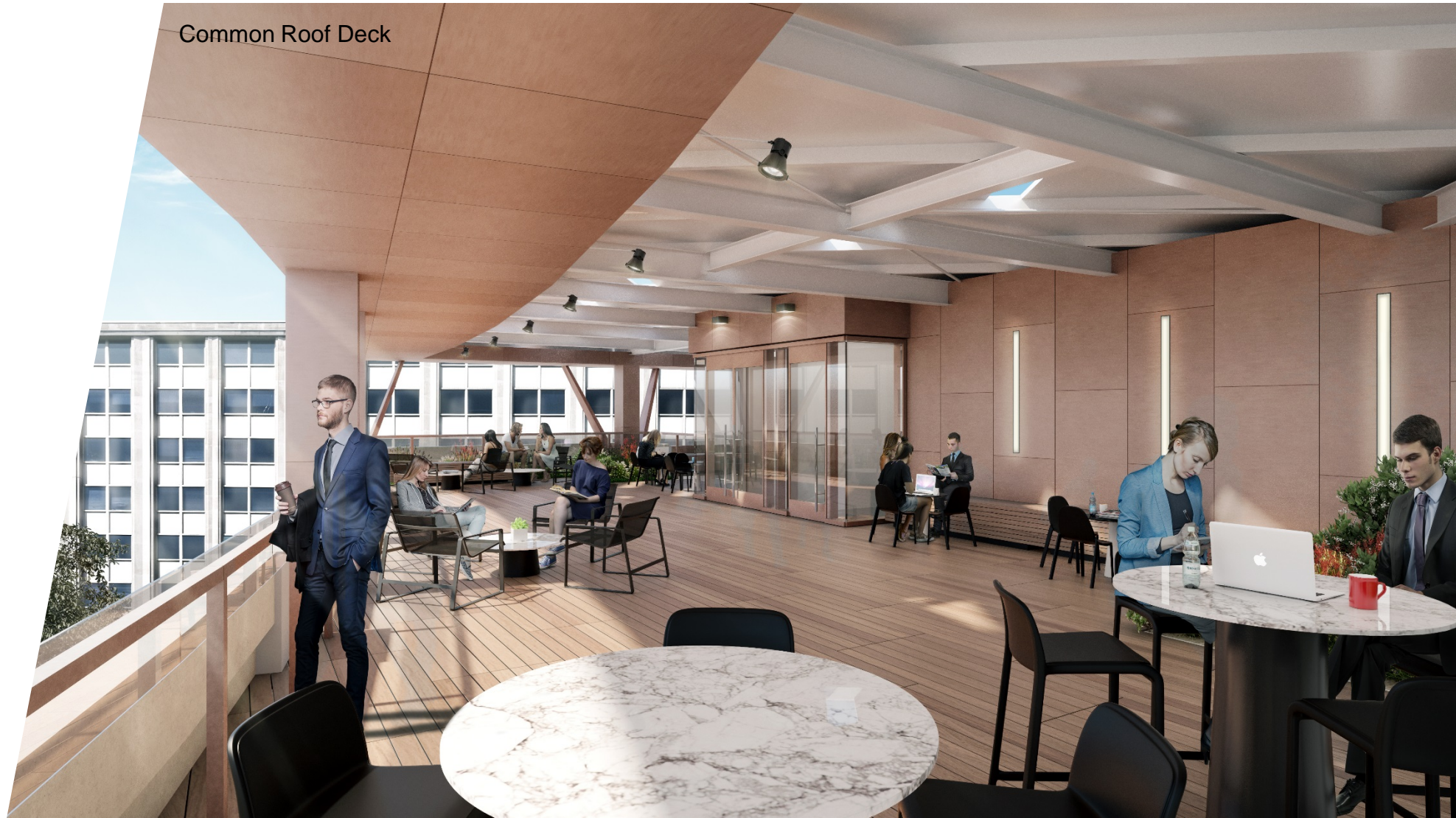
Typical Open Office



A NEW WAY OF WORKING

EMBODY THE MISSION

Common Roof Deck

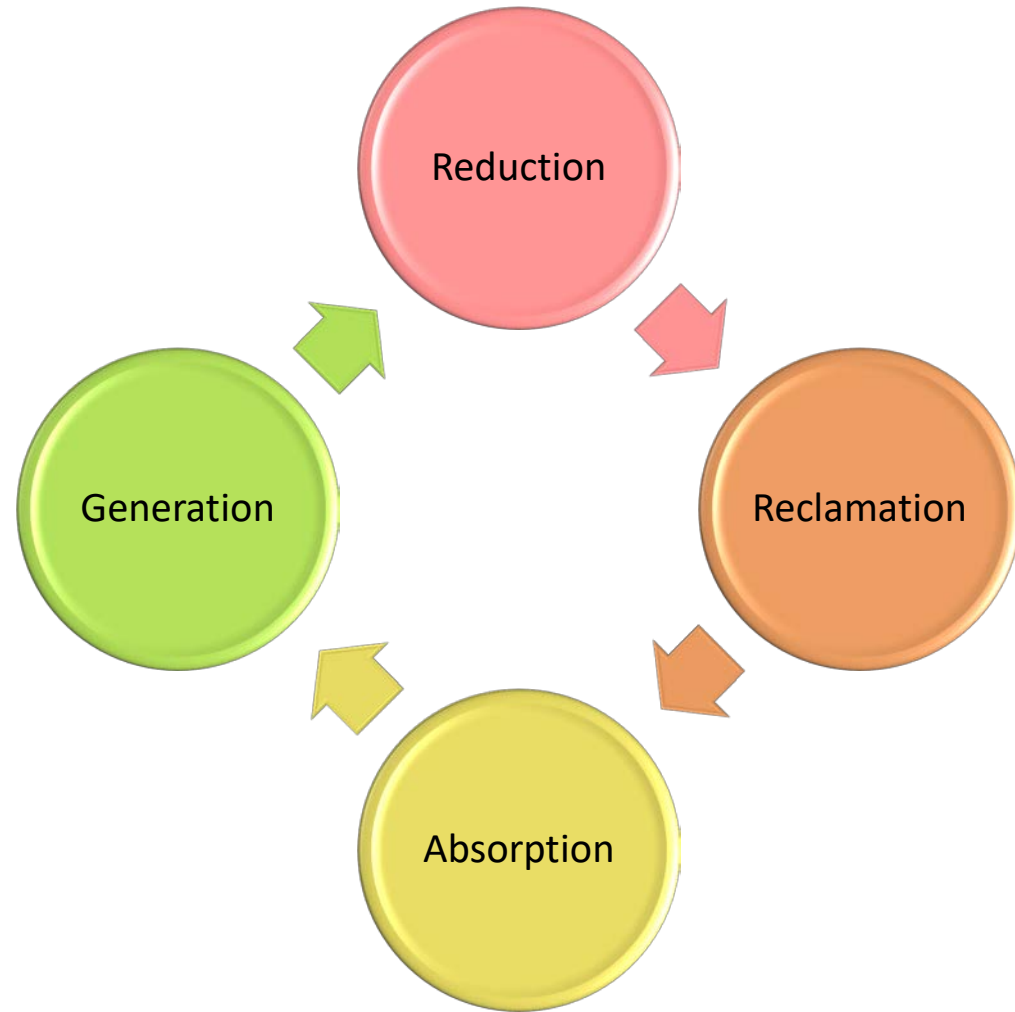


THINKING ABOUT THE OCCUPANTS
WELLNESS



HIGH PERFORMANCE DESIGN

METHODOLOGY



EXPLORING ALL OF THE OPTIONS

PROCESS

B4-a	Building Energy Dashboard
B2-d	Cloud-based Computing
C6-b	Daylight Optimization
C3-e	DOAS System
F3	Eco-District Designation
F2-b	Electric Vehicle/Battery Storage
C7	ENERGY STAR Appliances
C5	Enhanced Glazing
C3-f	Geothermal System
C1-c	Grey Water Reclamation
C3-h	Heat Recovery Wheel
C3-i	High Efficiency Motors
B5-c	Hydroponic Phytoremediation
C2-f	Integrated Wind Turbines
C6-a	High Efficiency Lighting
C5-f	Phase Change Material Walls
C3-c	Radiant Ceiling
A2-b	Roof Garden
C3-b	Municipal Heat Extraction
C4-a	Solar Hot Water System
C2-a	Solar PV Array
C1-a	Storm/Condensate Water Capture
C3-k	Variable Refrigerant Flow (VRF)
C3-j	VFD's on 3-phase Motors

Sustainable Strategies
American Geophysical Union
2015-0338

Prepared for:
American Geophysical Union

Prepared by:
Roger Frechette, PE, LEED AP - Managing Principal
Kevin Cahill, PE, LEED AP - Mechanical

Percent EUI Contribution
Radiant Ceiling
12.3%

First Draft
August 26, 2015

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INTERFACE ENGINEERING

Sustainable Strategies
American Geophysical Union
2015-0338

Prepared for:
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Kevin Cahill, PE, LEED AP - Mechanical

Percent EUI Contribution
Hydroponic Phytoremediation
N/A

First Draft
August 26, 2015

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INTERFACE ENGINEERING

Sustainable Strategies
American Geophysical Union
2015-0338

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Prepared by:
Roger Frechette, PE, LEED AP - Managing Principal
Kevin Cahill, PE, LEED AP - Mechanical

Percent EUI Contribution
Solarium Concentrators
19.9%

First Draft
August 26, 2015

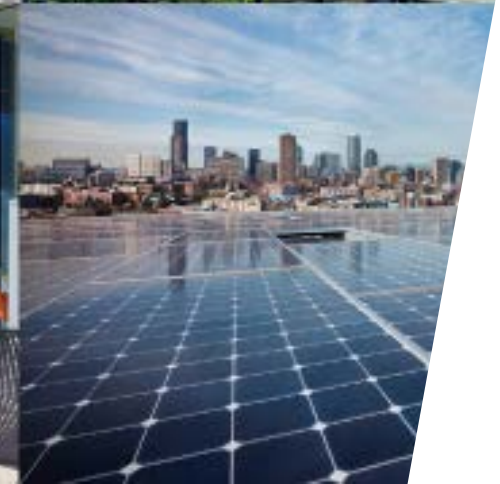
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INTERFACE ENGINEERING

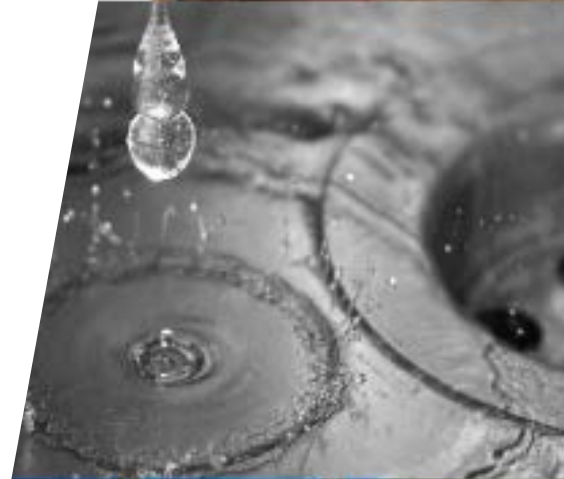
HIGH PERFORMANCE DESIGN STRATEGIES

- Solar Photovoltaics (PV)
- Enhanced Envelope Insulation
- Free Cooling Condenser Operation
- DC Powered Workspace
- Direct Current LED Lighting
- Hydroponic Phytoremediation (Hy-Phy)
- Heat Recovery Water Chiller
- Dynamic Glass Shading
- Triple-Pane Glazing
- Dedicated Outside Air System (DOAS)
- Exhaust Air Heat Recovery
- Rain Water Collection & Reuse
- Daylight Responsive Controls (DRC)
- Dynamic Toilet Room Exhausting
- Variable Frequency Drives
- Radiant Ceiling Cooling System
- Occupancy Sensors & Controls
- Condensate Water Collection & Reuse
- Sewer Heat Exchange System
- Low-Flow Plumbing Fixtures
- Recycled Water Flushing
- Access Control – Power Management
- Energy Usage Display Monitors



HIGH PERFORMANCE DESIGN STRATEGIES

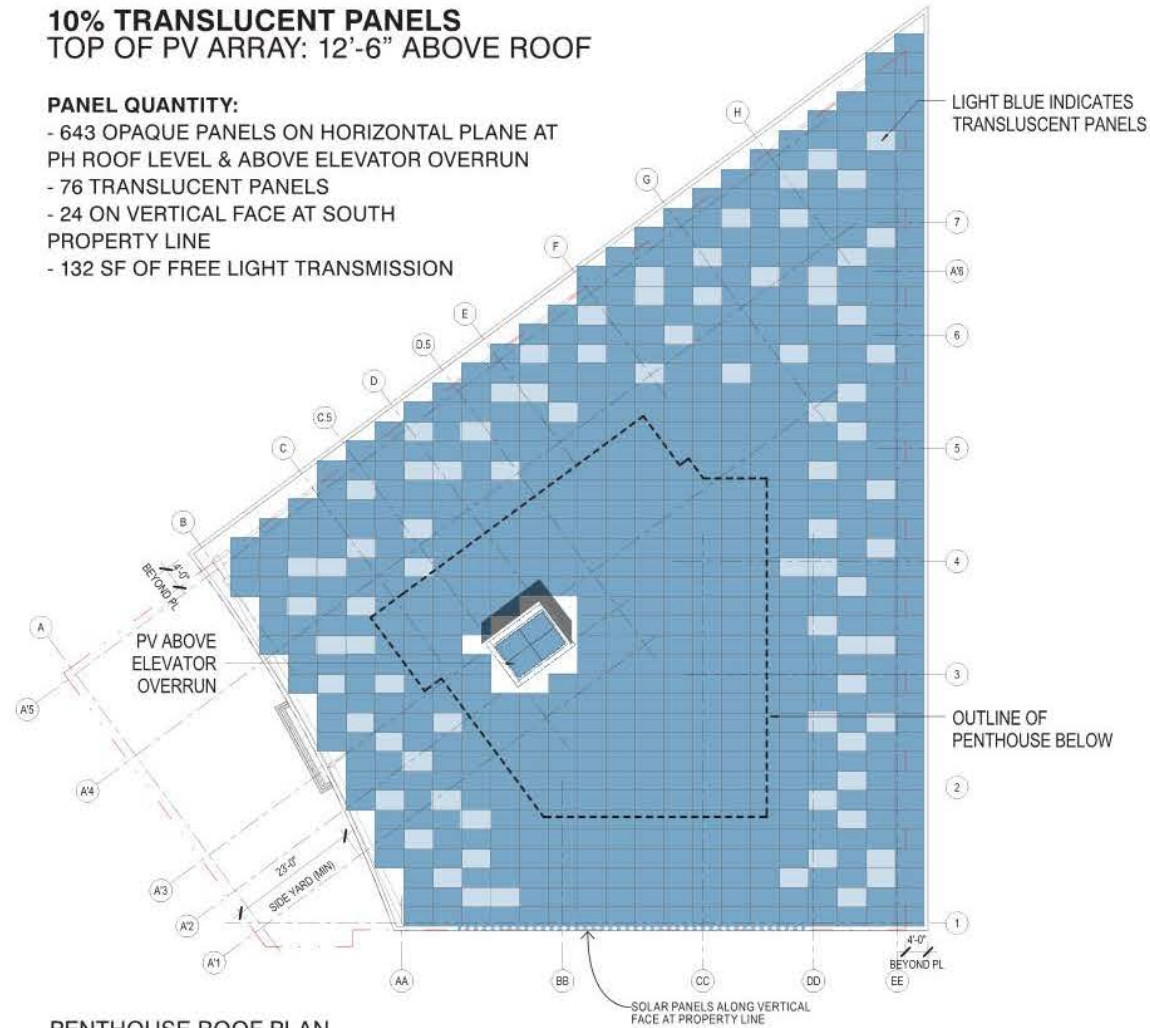
- **Solar Photovoltaics (PV)**
- Enhanced Envelope Insulation
- Free Cooling Condenser Operation
- **DC Powered Workspace**
- Direct Current LED Lighting
- **Hydroponic Phytoremediation (Hy-Phy)**
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- **Rain Water Collection & Reuse**
- Daylight Responsive Controls (DRC)
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- Low-Flow Plumbing Fixtures
- Recycled Water Flushing
- Access Control – Power Management
- **Energy Usage Display Monitors**



10% TRANSLUCENT PANELS
 TOP OF PV ARRAY: 12'-6" ABOVE ROOF

PANEL QUANTITY:

- 643 OPAQUE PANELS ON HORIZONTAL PLANE AT PH ROOF LEVEL & ABOVE ELEVATOR OVERRUN
- 76 TRANSLUCENT PANELS
- 24 ON VERTICAL FACE AT SOUTH PROPERTY LINE
- 132 SF OF FREE LIGHT TRANSMISSION

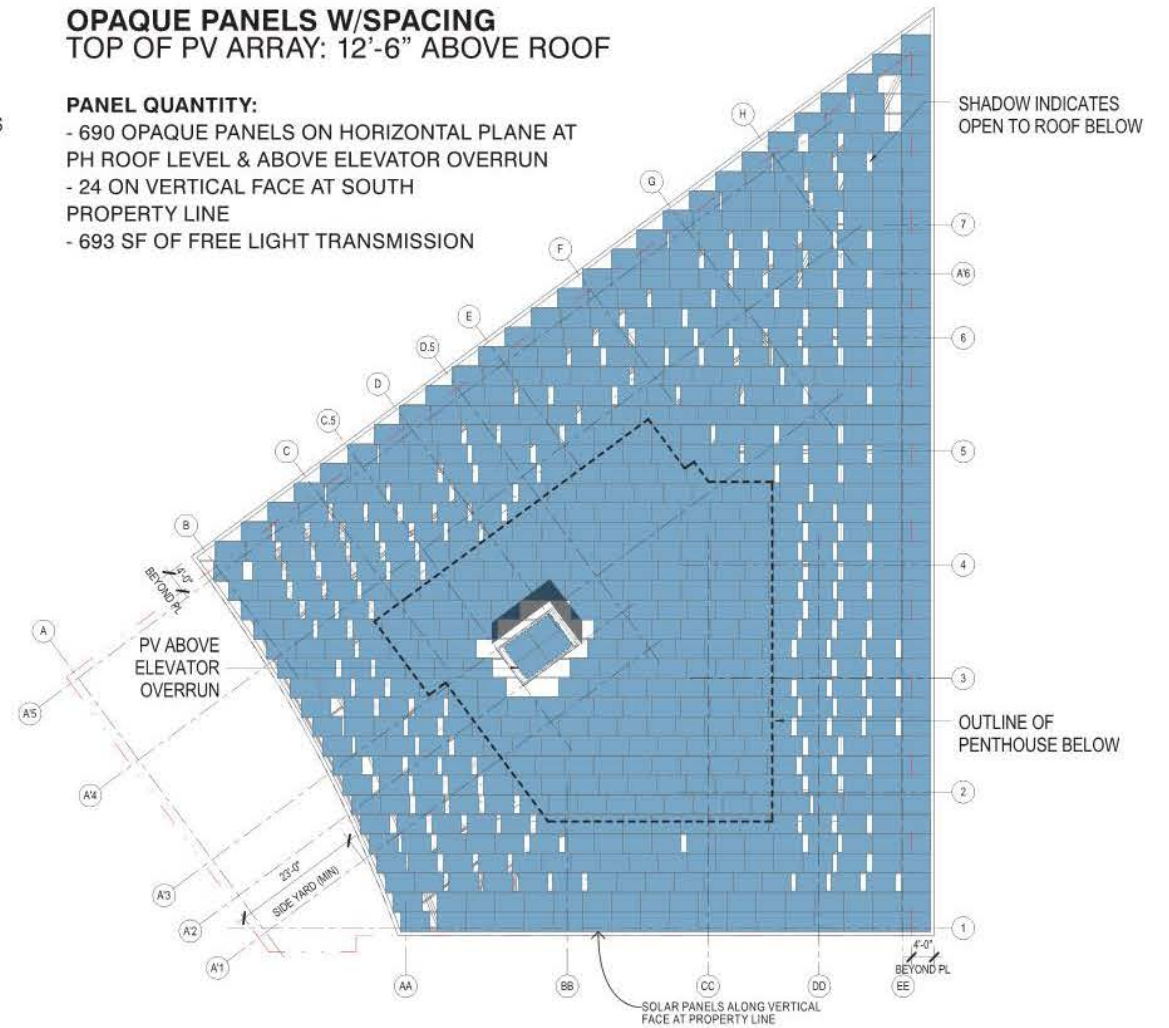


PENTHOUSE ROOF PLAN
 5/26 - HPRB SUBMISSION

OPAQUE PANELS W/SPACING
 TOP OF PV ARRAY: 12'-6" ABOVE ROOF

PANEL QUANTITY:

- 690 OPAQUE PANELS ON HORIZONTAL PLANE AT PH ROOF LEVEL & ABOVE ELEVATOR OVERRUN
- 24 ON VERTICAL FACE AT SOUTH PROPERTY LINE
- 693 SF OF FREE LIGHT TRANSMISSION



7/15 REVISED - PV PANEL LAYOUT

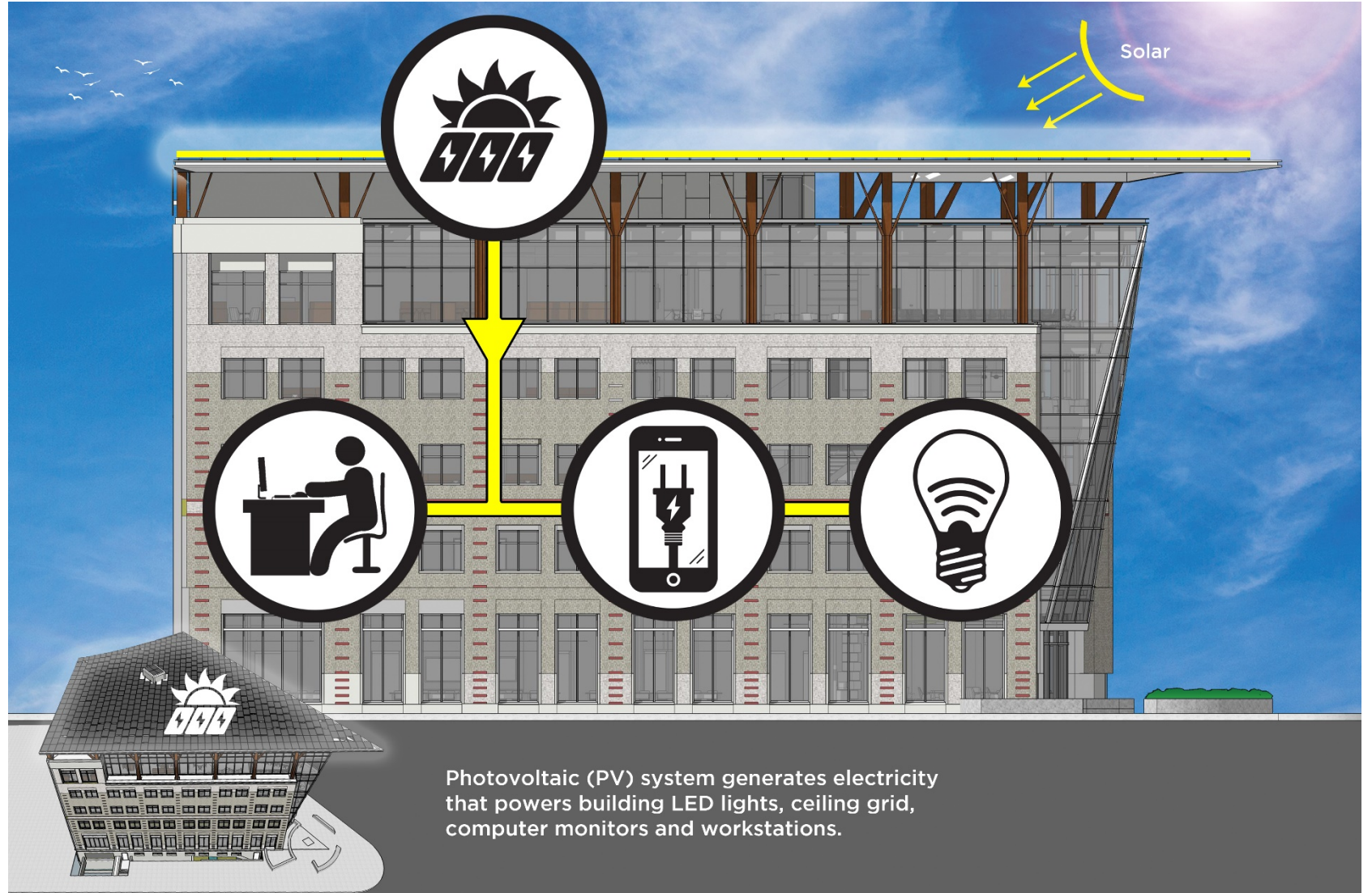
PHOTOVOLTAIC ARRAY AND THE DC GRID



16-Port DC Power Module

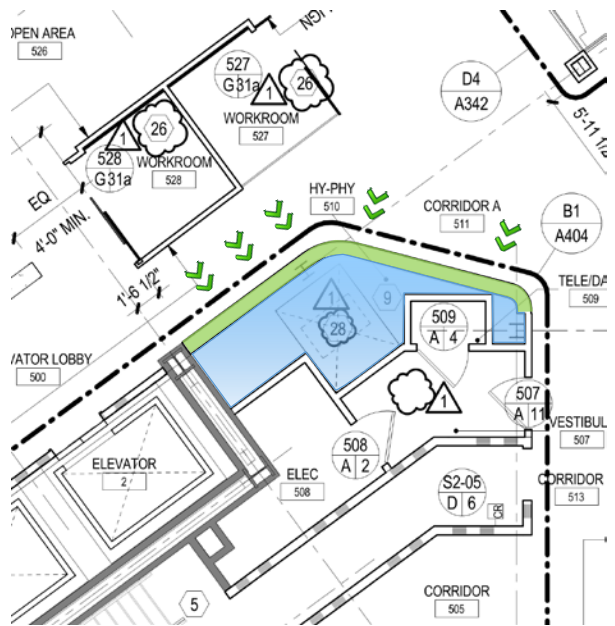


Electrified Ceiling Grid

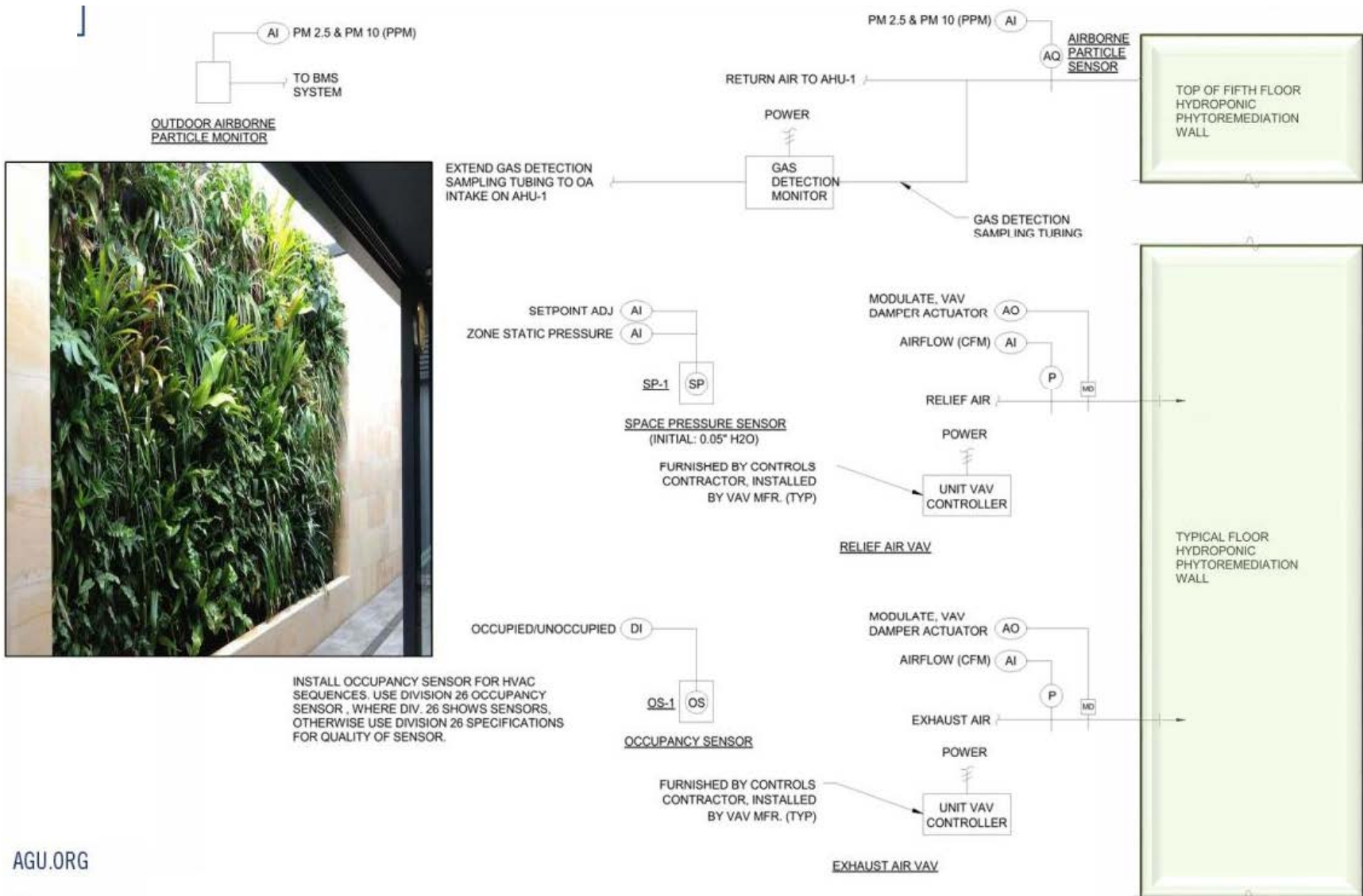


Photovoltaic (PV) system generates electricity that powers building LED lights, ceiling grid, computer monitors and workstations.

PHOTOVOLTAIC ARRAY AND THE DC GRID



HYDROPONIC PHYTOREMEDIATION 'HY-PHY' WALL

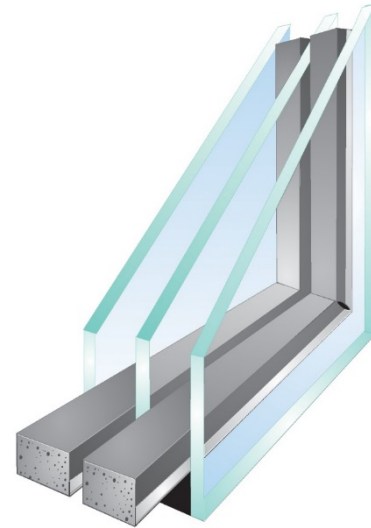
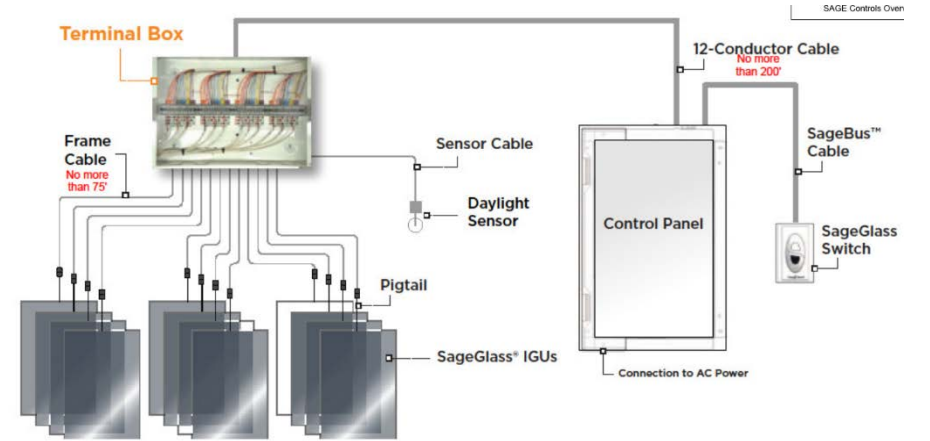


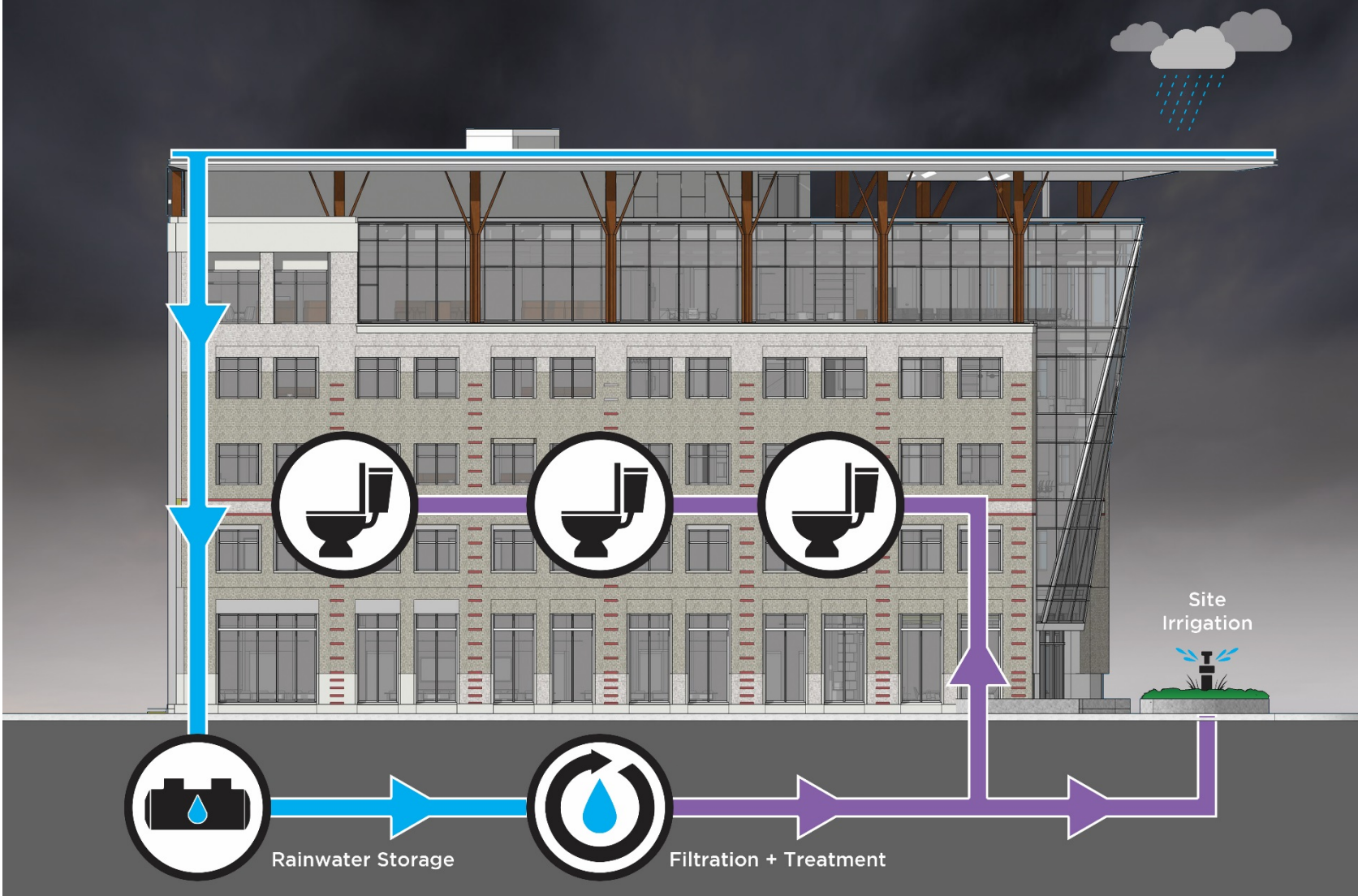
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HYDROPONIC PHYTOREMEDIATION 'HY-PHY' WALL

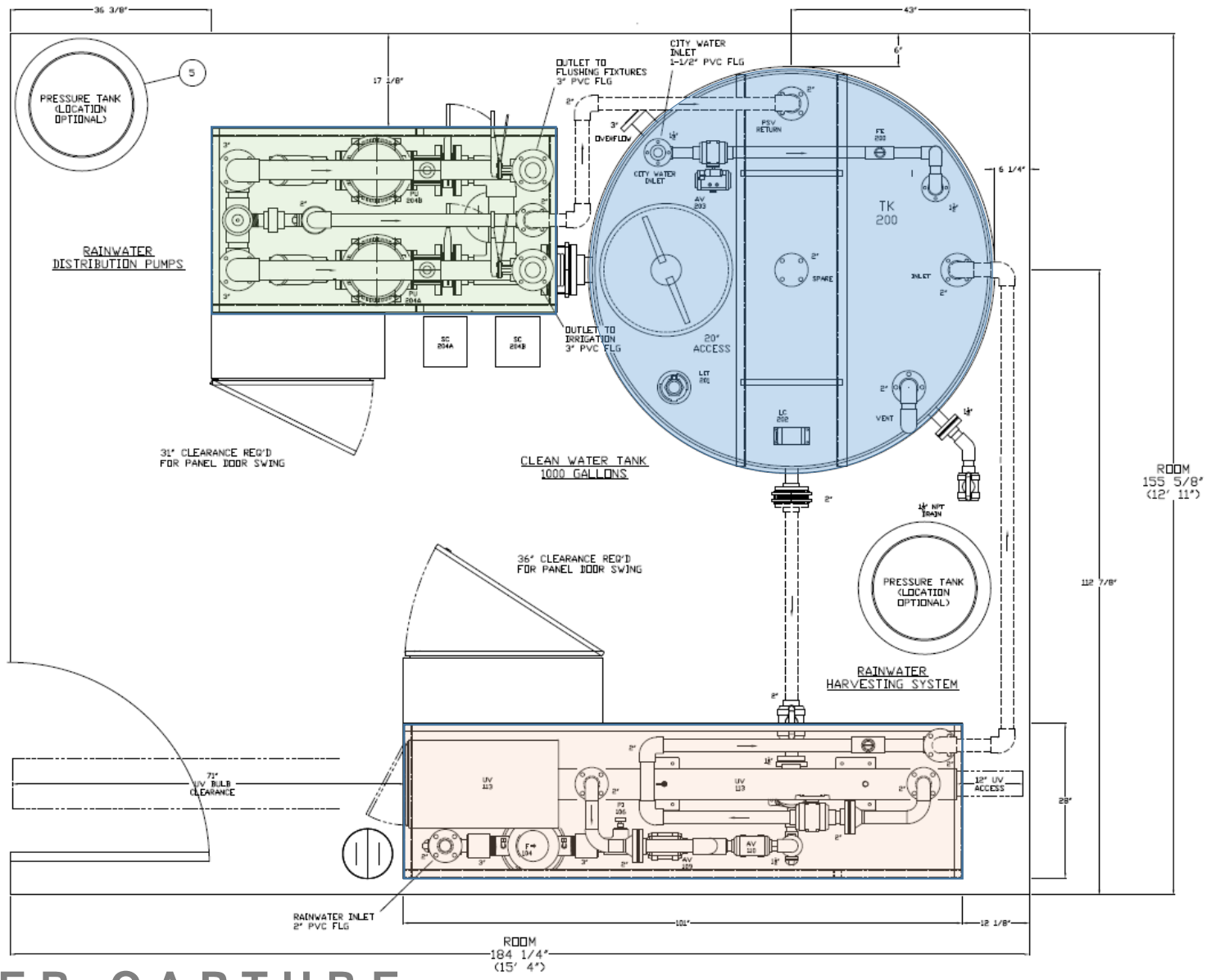


DYNAMIC GLAZING

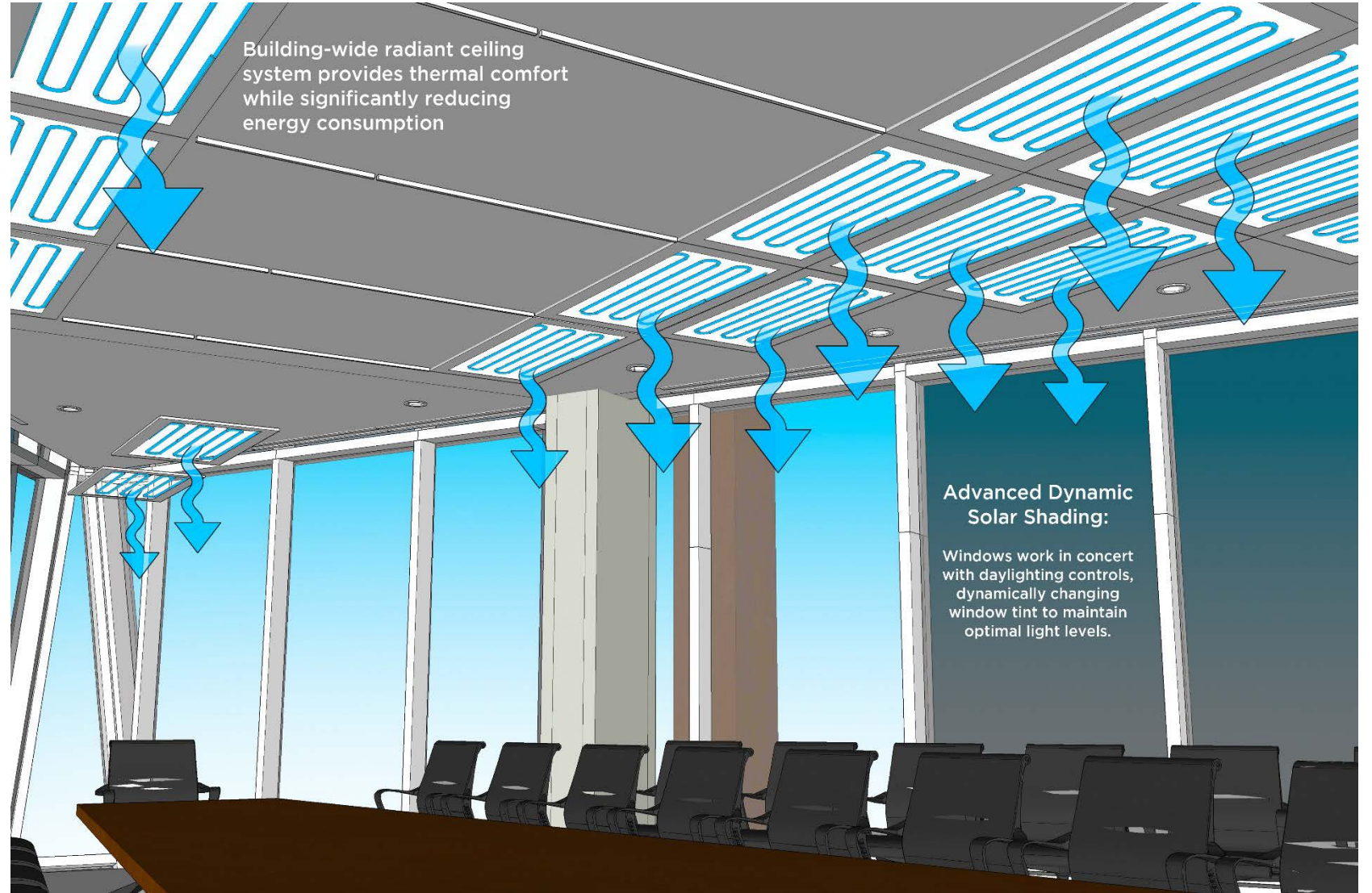




RAIN WATER CAPTURE AND REUSE



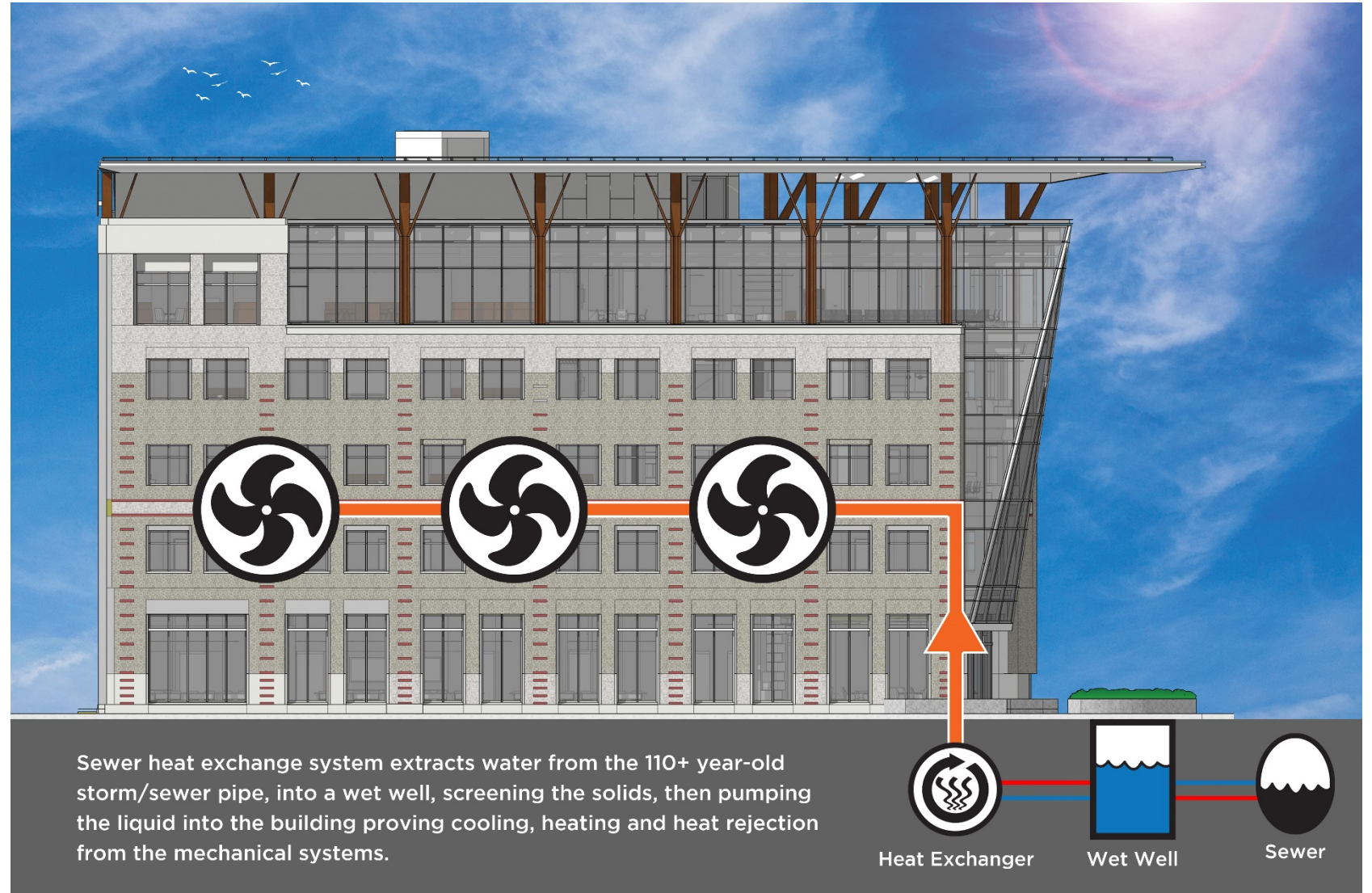
RAIN WATER CAPTURE AND REUSE



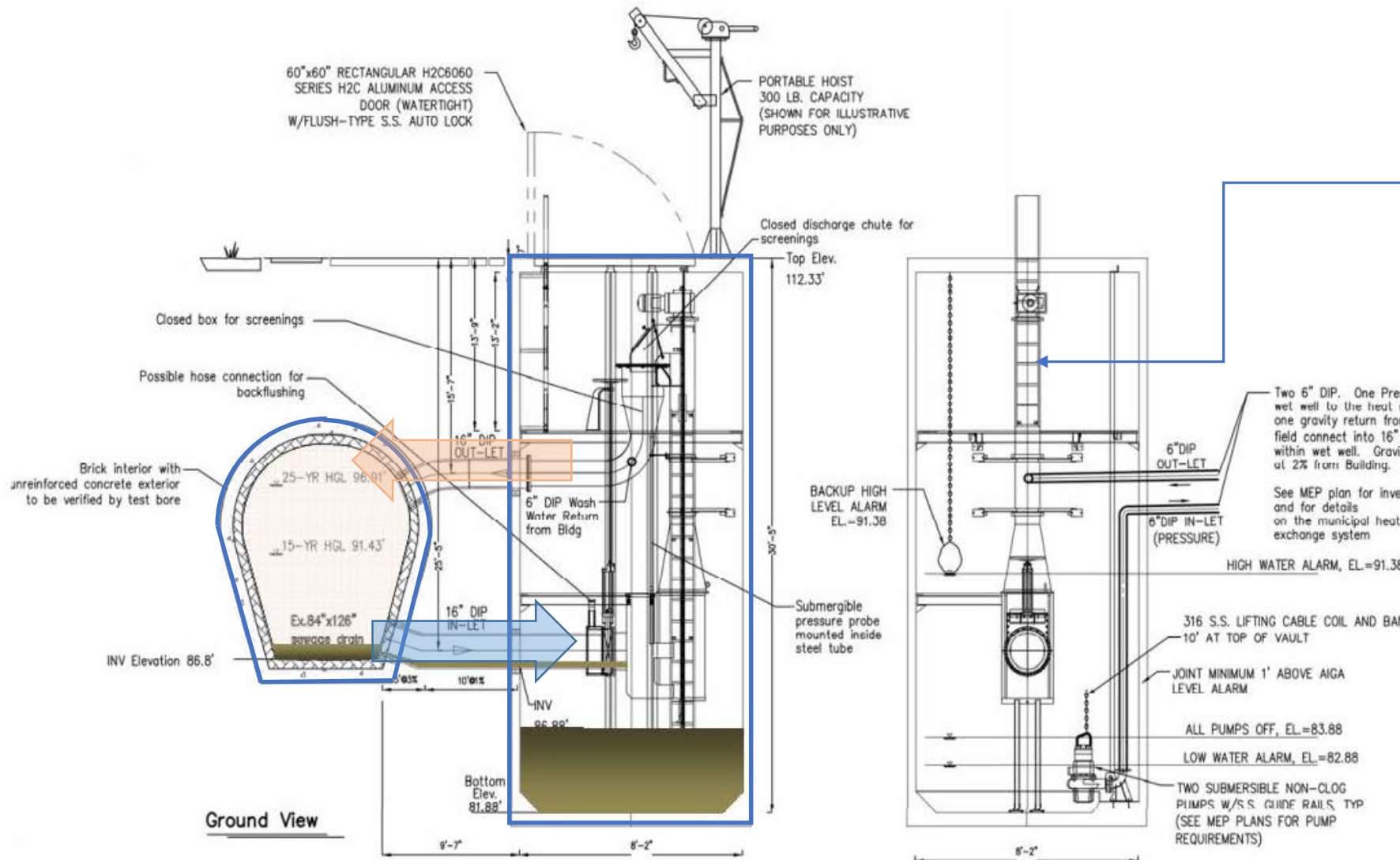
RADIANT CEILING SYSTEM



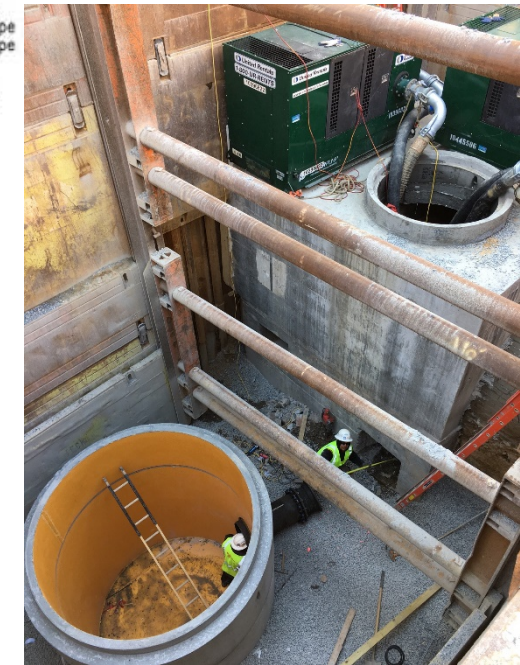
8' x 8' – 150 year old sewer



MUNICIPAL HEAT EXCHANGE



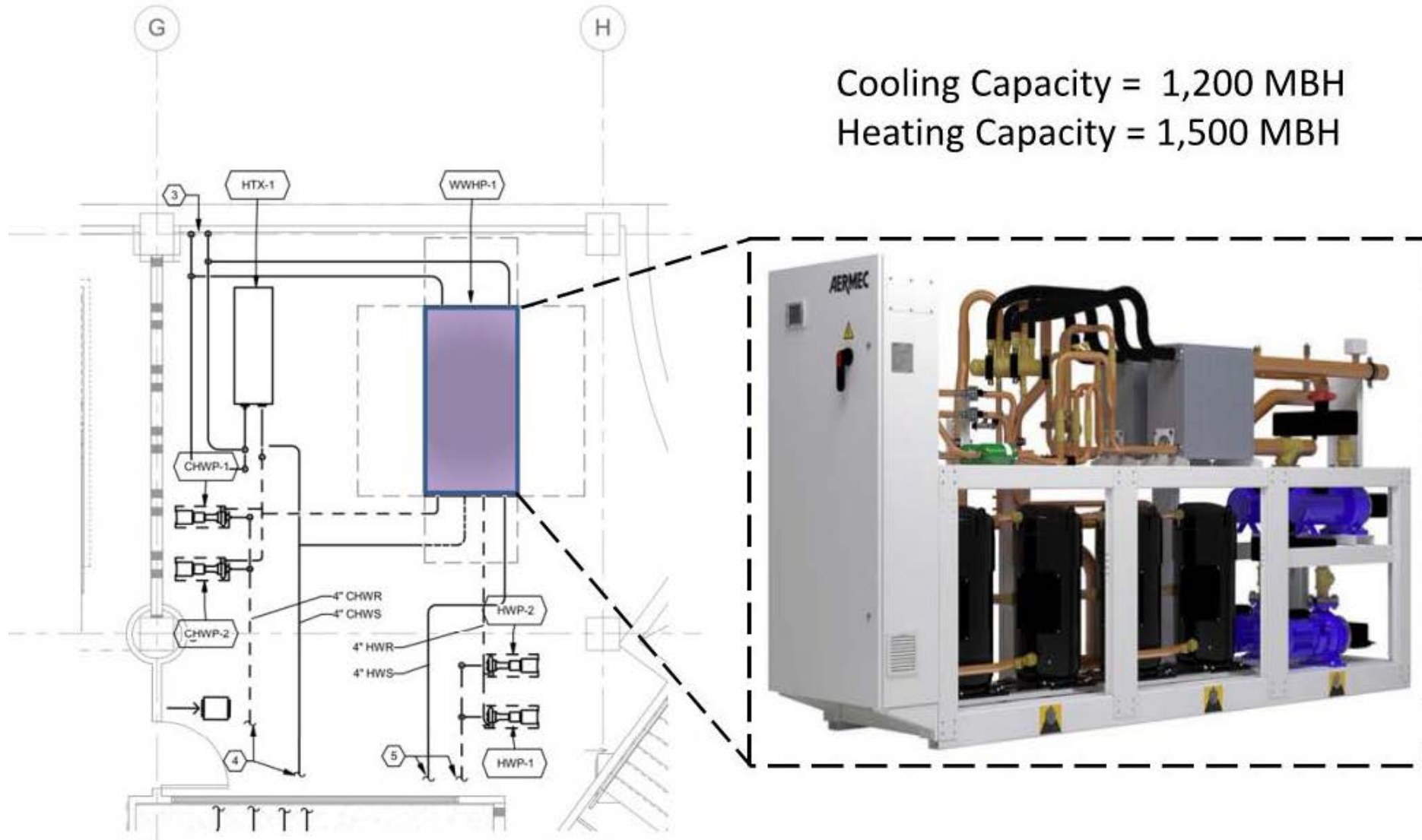
Screening Pump



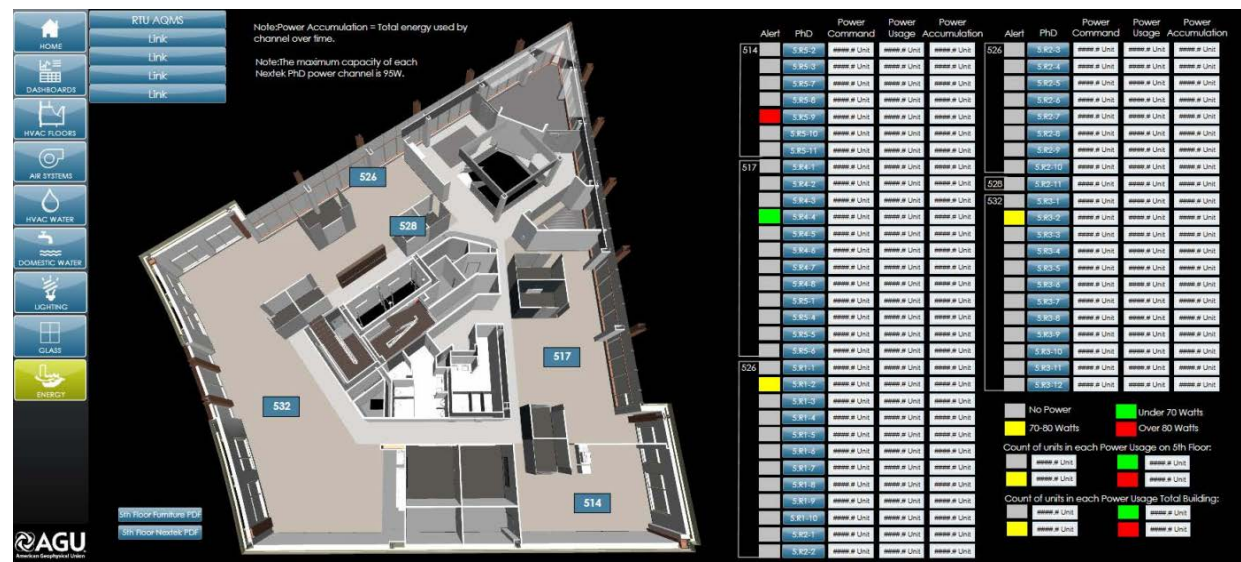
Wet Well & Sewer Connection

MUNICIPAL HEAT EXCHANGE

Cooling Capacity = 1,200 MBH
Heating Capacity = 1,500 MBH



MUNICIPAL HEAT EXCHANGE



INTEGRATED BUILDING TECHNOLOGIES

A 21st CENTURY

HEADQUARTERS



Q&A

