

# FIRE STATION 31

## Design Commission Predesign Review

May 20<sup>th</sup>, 2020

MILLER HULL



# AGENDA

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1. Introduction
2. Context
3. Design Concepts
4. Sustainability
5. Community
6. Coordination
7. Equity

# 1. Introduction

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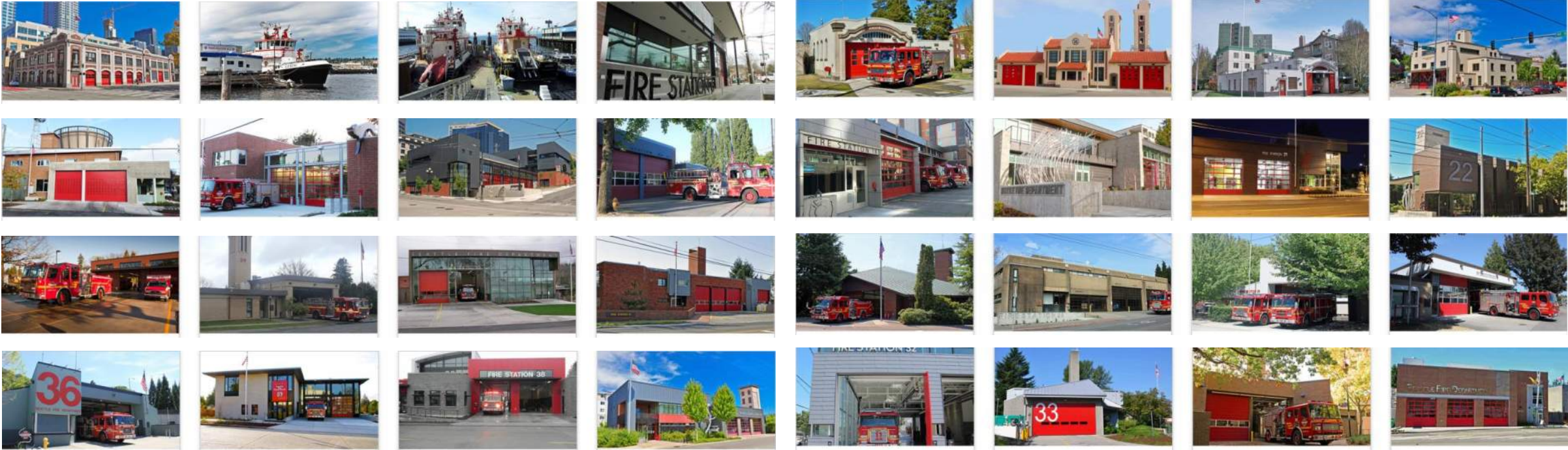
Levy Program, project scope, budget, schedule.

**OPERATIONS & PERFORMANCE**

**HEALTH & SAFETY**

**CIVIC PRESENCE**

# SEATTLE FIRE LEVY PROGRAM



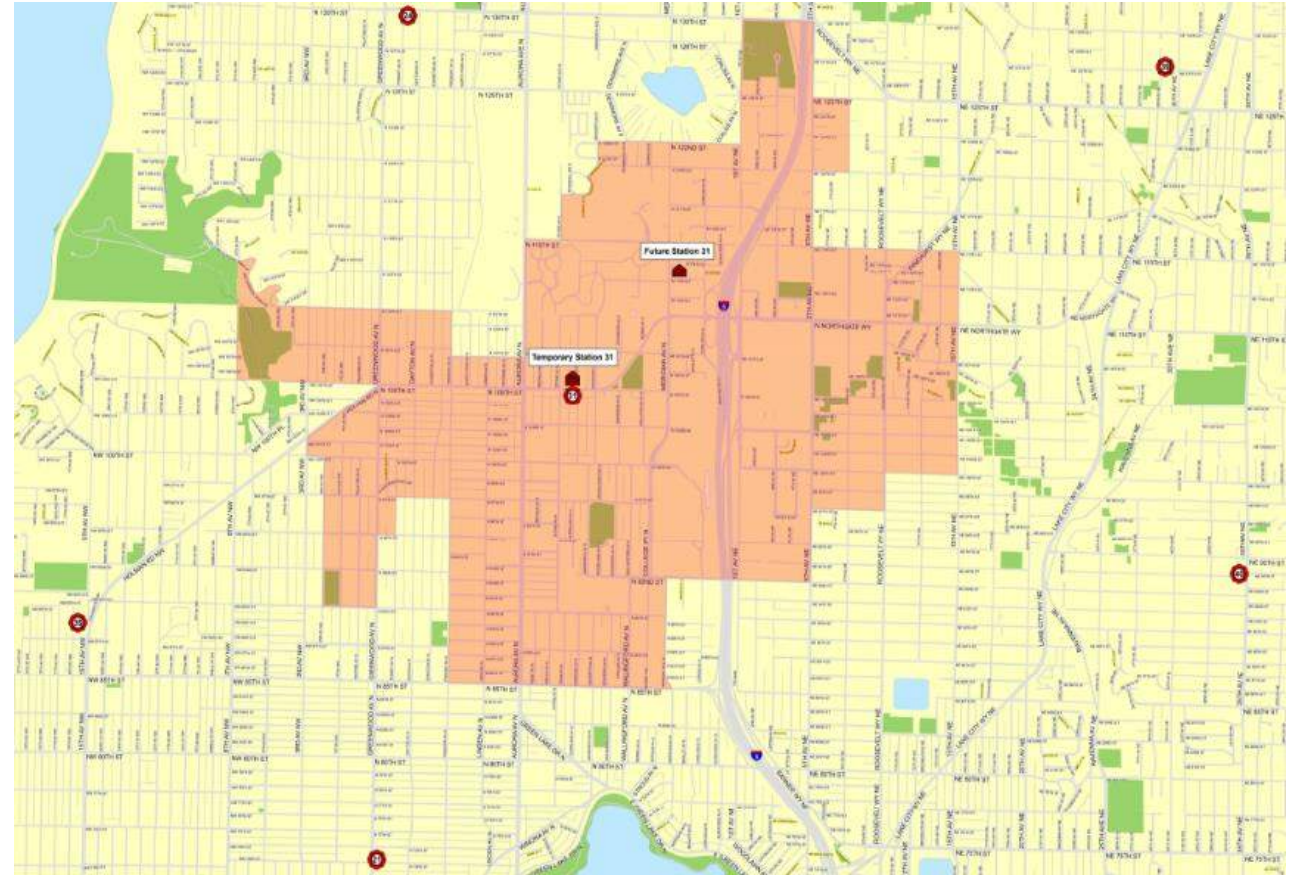






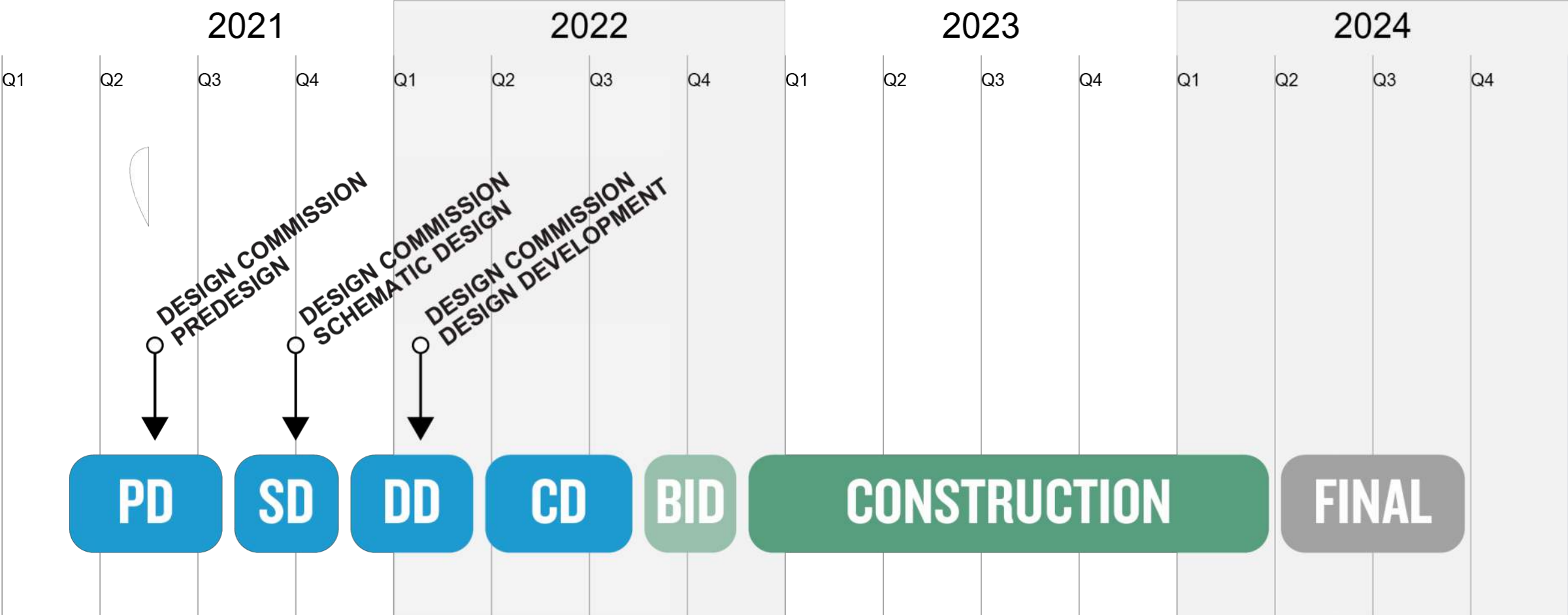
# PROJECT INFO

- All New Fire Station 31 Facility
- Busy Northgate Service Area
- (4) Apparatus Bays
  - Ladder / Engine / Aid / Medic
  - Reserve Aid / Reserve Engine
- (13) On-Duty Crew
- (3) Mobile Health Unit Staff
  - Carport or garage for unit SUV
- ~ 20,000 sf of Program Area
- ~ 30,000 sf of Site Area
- Budget Overview

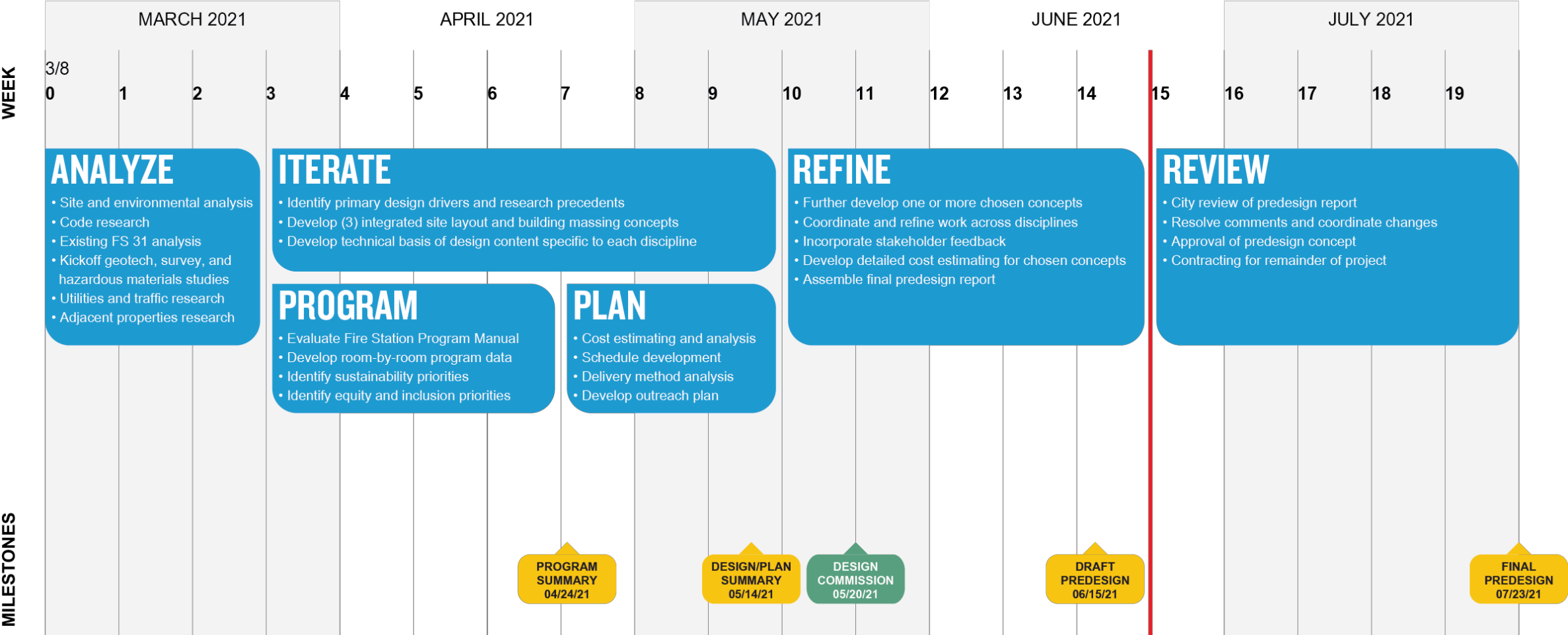


FS 31 Response Area

# PROJECT SCHEDULE



# PREDESIGN SCHEDULE



MILESTONES

## 2. **Context**

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Site and neighborhood opportunities and constraints.



## NEIGHBORHOOD CONTEXT



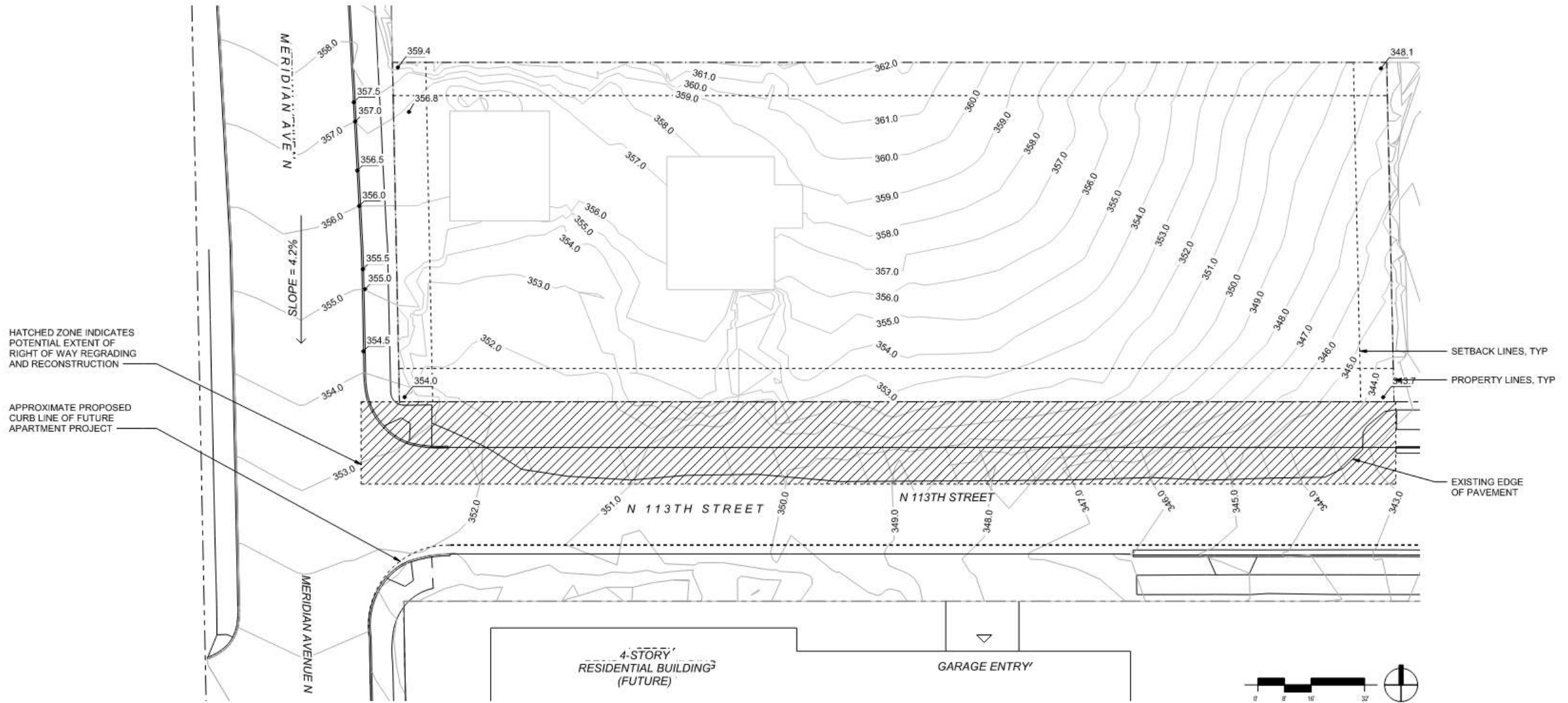
**NEIGHBORHOOD CONTEXT**



**SITE PHOTOS**



**AERIAL AND MINIMUM SETBACKS**



# SITE TOPOGRAPHY

# 3. **Site Organization and Massing**

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Functional planning for site building elements.

# DESIGN DRIVERS

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## Firefighter Health

- Effective contaminant control
- Thermal comfort and adjustability
- Daylit spaces for work
- Maximize quality of sleep through thoughtful lighting, alerting and acoustical design
- Reduce chemicals of concern in building materials to greatest extent feasible
- Design site and building for maximum physical and operational safety

## Sustainability

- Low energy use
- Low embodied carbon
- Water reuse

## Functionality

- Every aspect of design serves to minimize response time
- Maximize apparatus maneuverability and minimize conflicts with other vehicles and pedestrians
- Specify low maintenance materials, systems, and landscaping
- Prioritize lifecycle cost over first cost
- Ensure appropriate facility security

## Equity

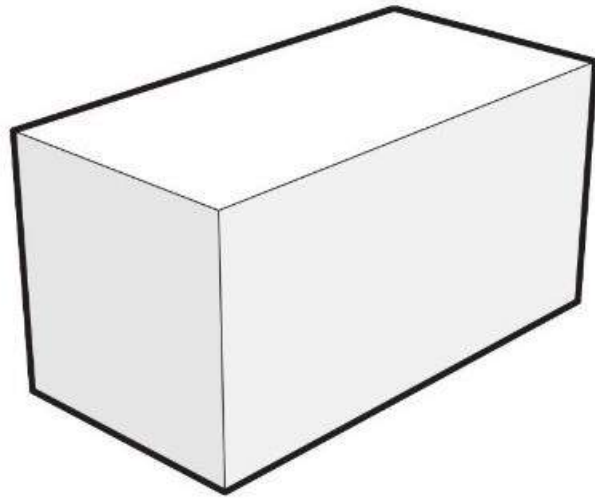
- Diverse stakeholder engagement
- Community engagement

# FUTURE OF FIRE STATIONS

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- Healthy In, Healthy Out practices advancing
- Increasing diversity in the fire service
- Greater density in service areas
- Electrification of fleet
- Drones and robots
- Increased demand for medical over fire response
- Future unexpected events like Covid-19
- Community education

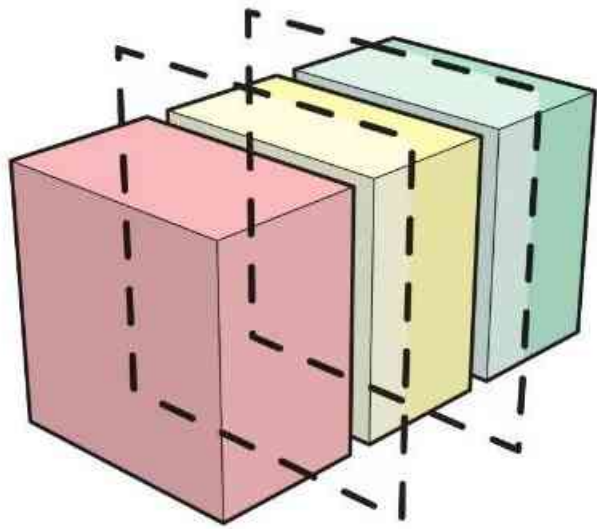




# 01 SIMPLIFIED FORM

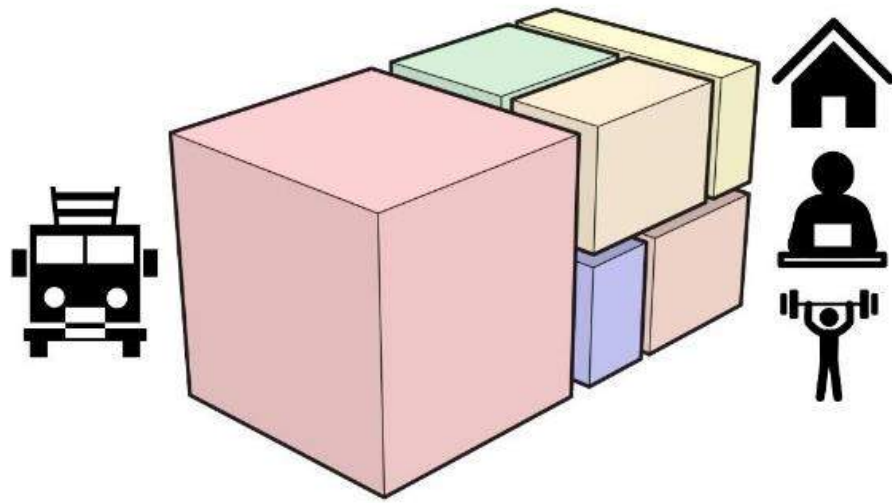
Function drives form, begin with a simple box that creates both an efficient use of space and an economical form.

Establishes a foundation to develop an architecture with efficiency and design clarity in mind.



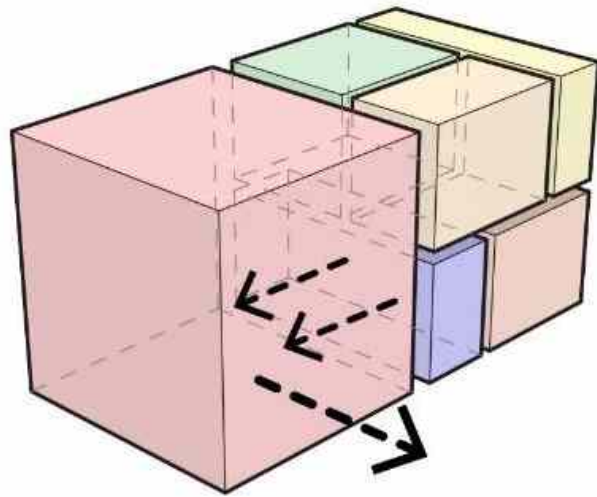
## 02 SEPARATE CLEAN & UNCLEAN

Develop clear separation between decontamination (red), apparatus and apparatus support areas (yellow), and living quarters and admin spaces (green) in order to create a high functioning, safe, and healthy building for the firefighters that call the station home.



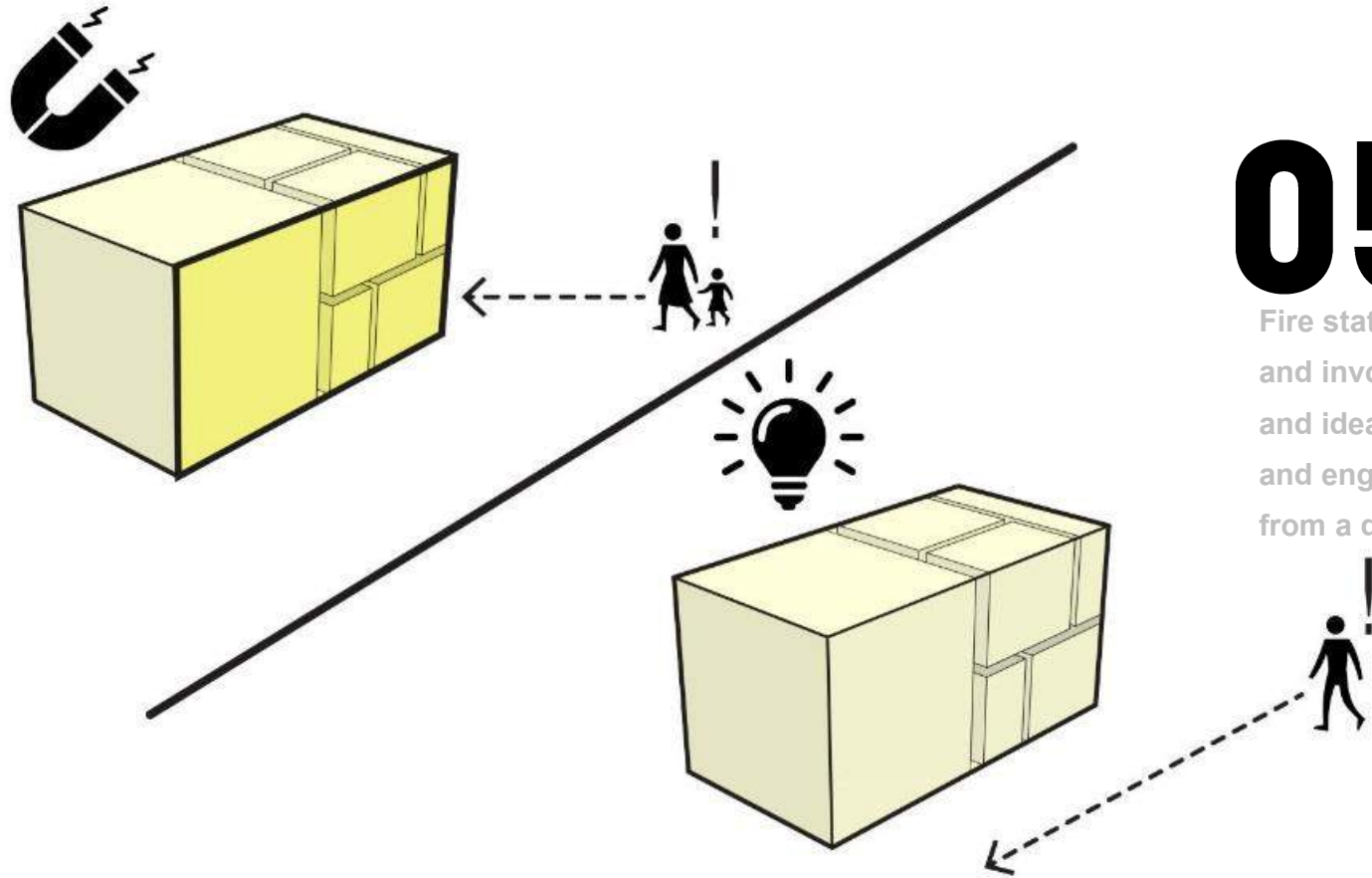
## 03 PROJECT COMPONENTS

Balance and organize program components to create a critical use facility and a comfortable space for the firefighters. Using careful planning and detailing to develop a building that serves both the public and the firefighters.



## 04 EFFICIENT CIRCULATION

Consciously organize program components to minimize number of stairs and circulation corridors within the building to reduce overall building costs and internal response times within the facility. Simple circulation structure and improved site lines create a safer response as well.



## 05 CIVIC IDENTITY MAGNET VS LIGHT BULB

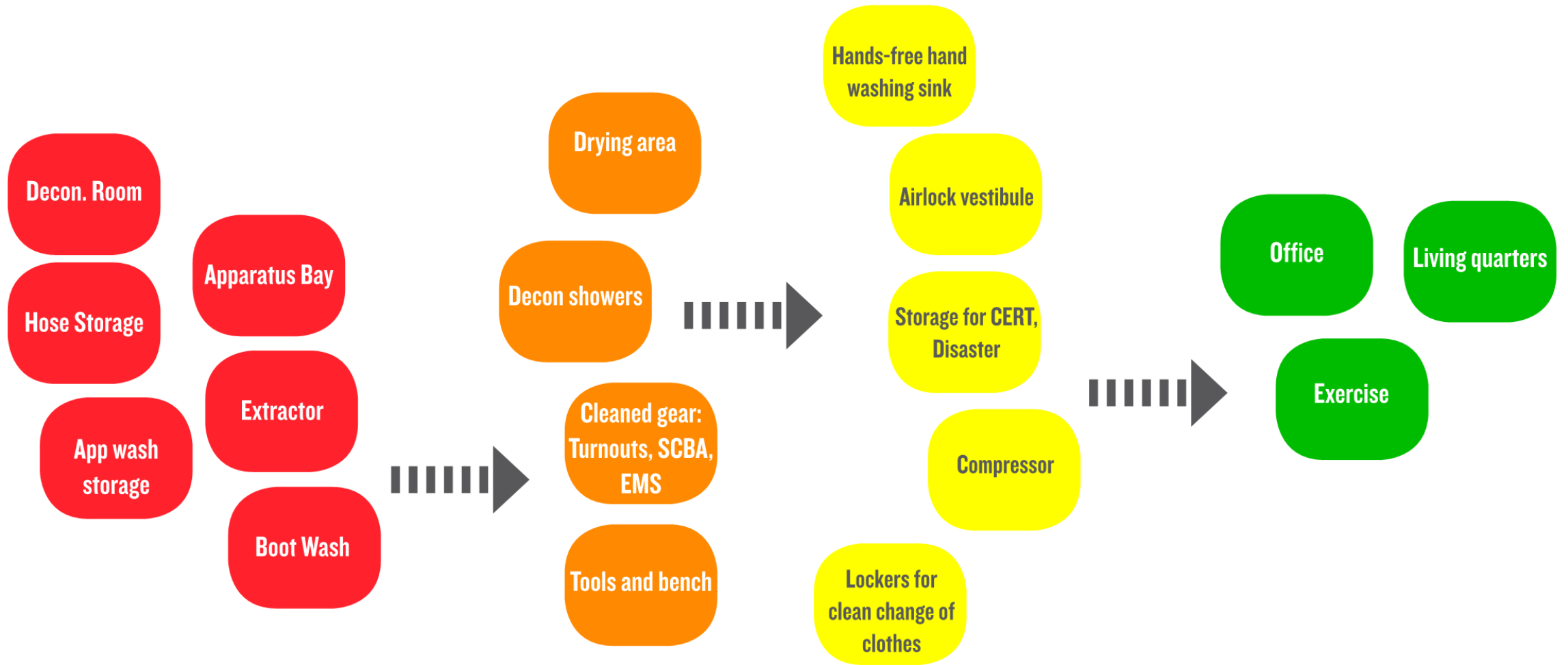
Fire stations are civic icons that become symbols for the City's values and invoke community pride. Depending on the context, station program, and ideals, fire stations can create "magnets" where the public is invited and engaged into the facility or "light bulbs" where the public is engaged from a distance - providing both safe function and a visible civic beacon.

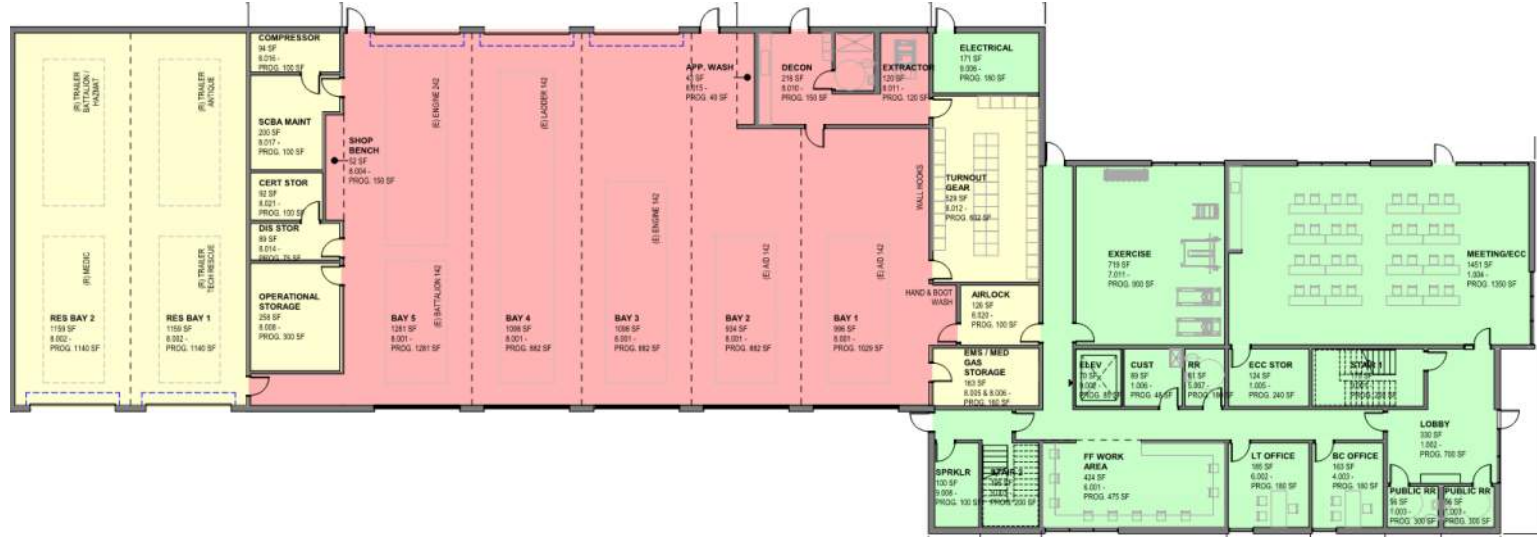
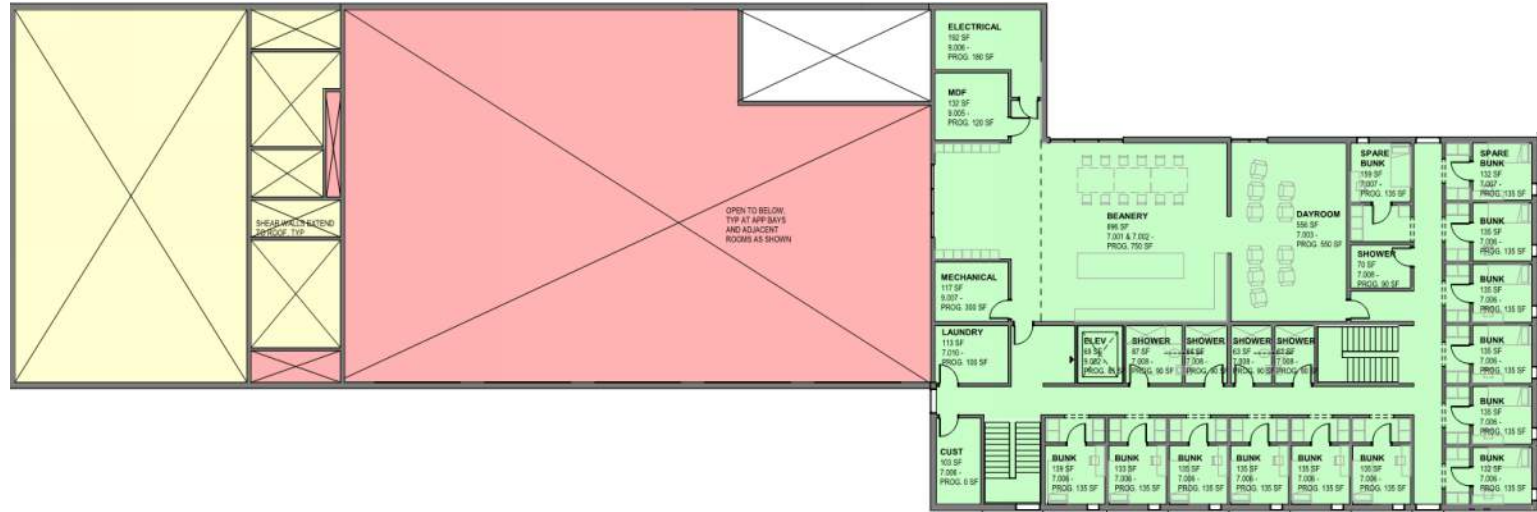


# HEALTHY IN, HEALTHY OUT

Best Practices for Reducing Fire Fighter  
Risk of Exposures to Carcinogens







# LIFE AS A FIREFIGHTER

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- Rhythm of a typical shift
- Daily station activities
- Sequence of actions during a call
- Stresses and dangers of the job
- Need for recovery
- Fire stations are a second home

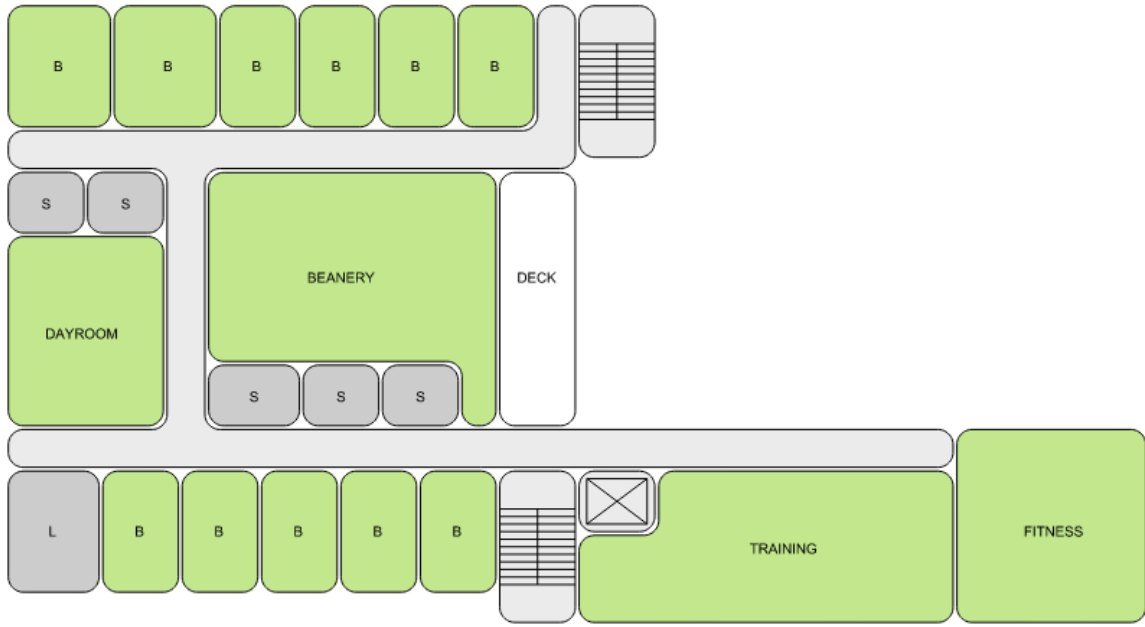




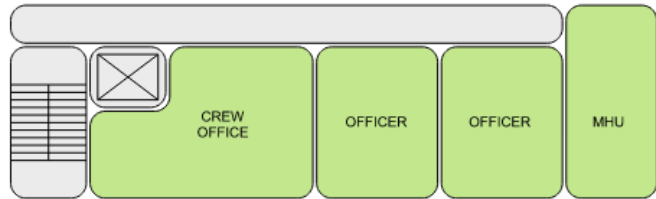




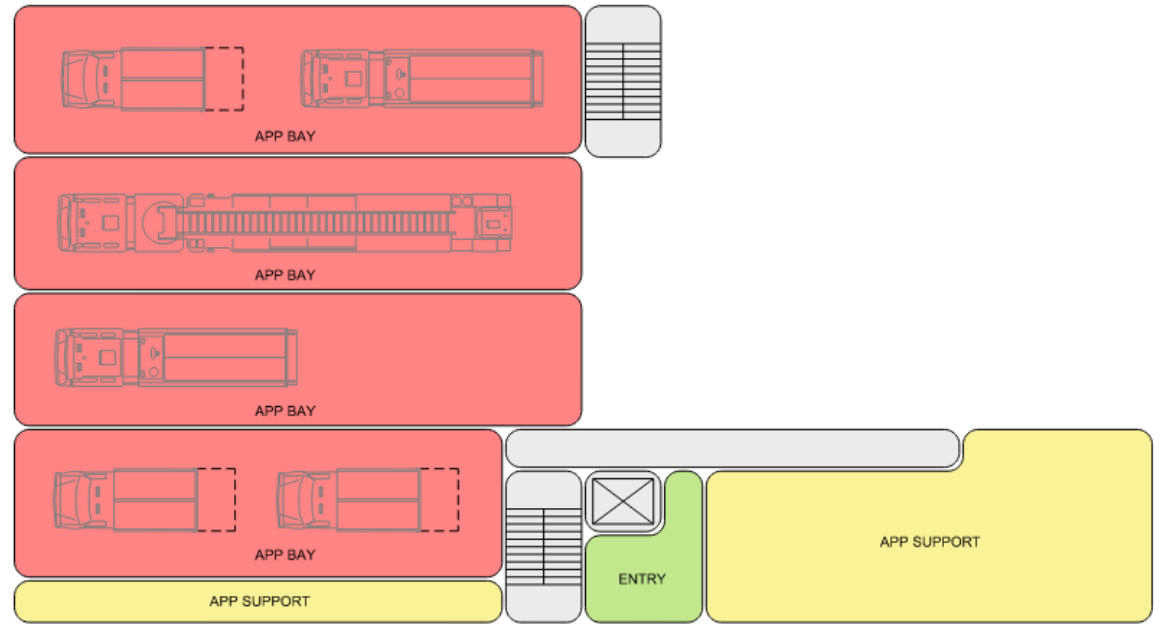




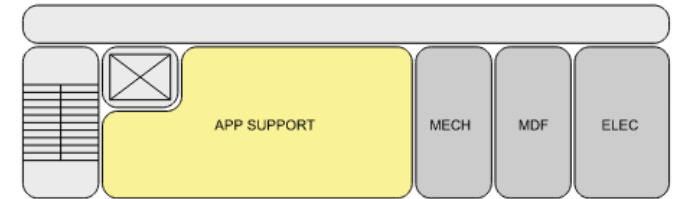
LEVEL 3



LEVEL 2

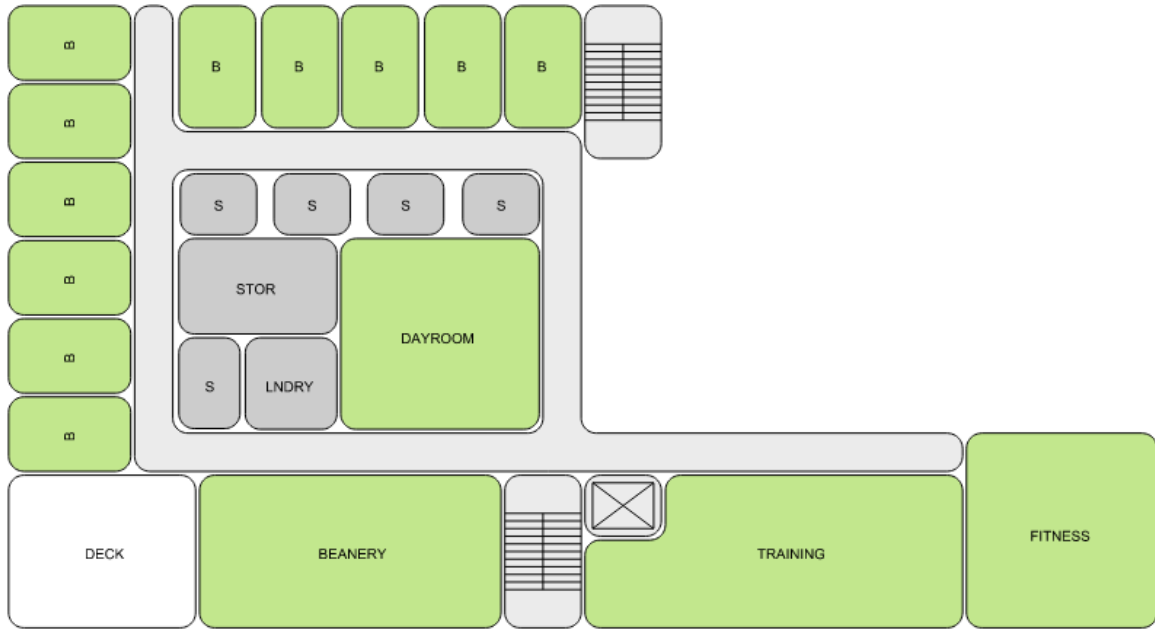


LEVEL 1

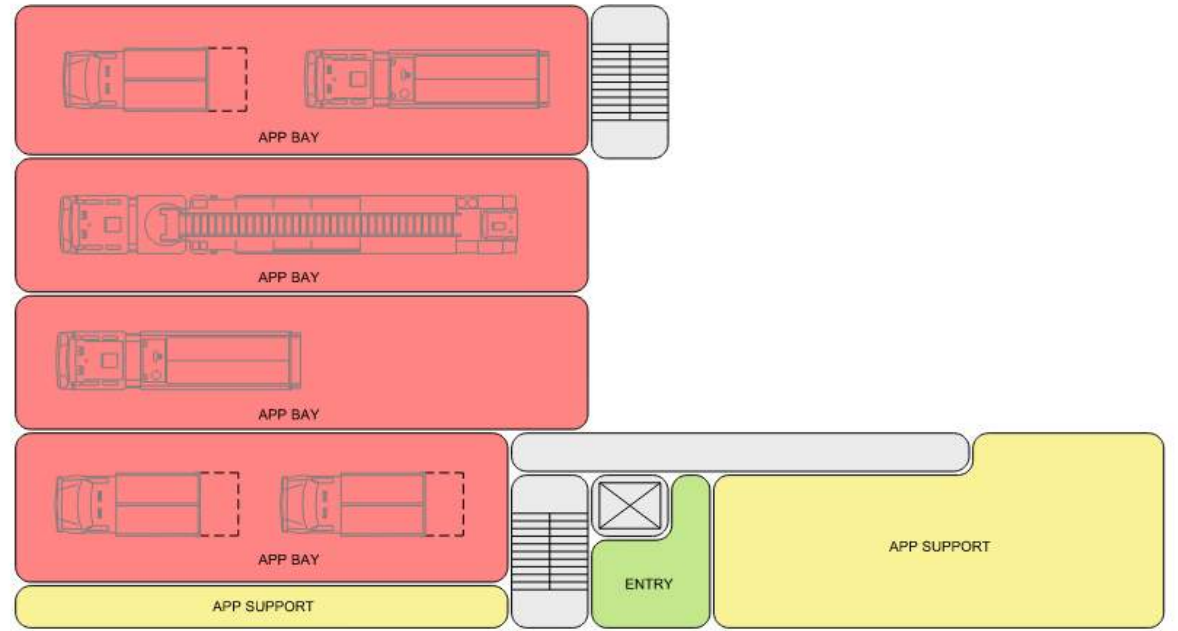


BASEMENT LEVEL

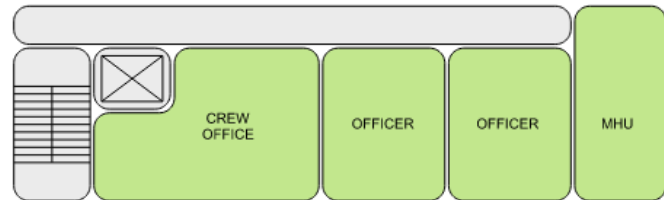
# 4 STORY CONCEPT - "H" BUNK LAYOUT



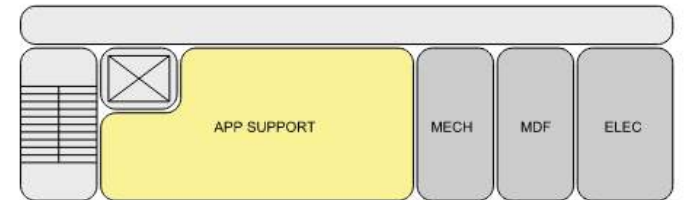
LEVEL 3



LEVEL 1



LEVEL 2

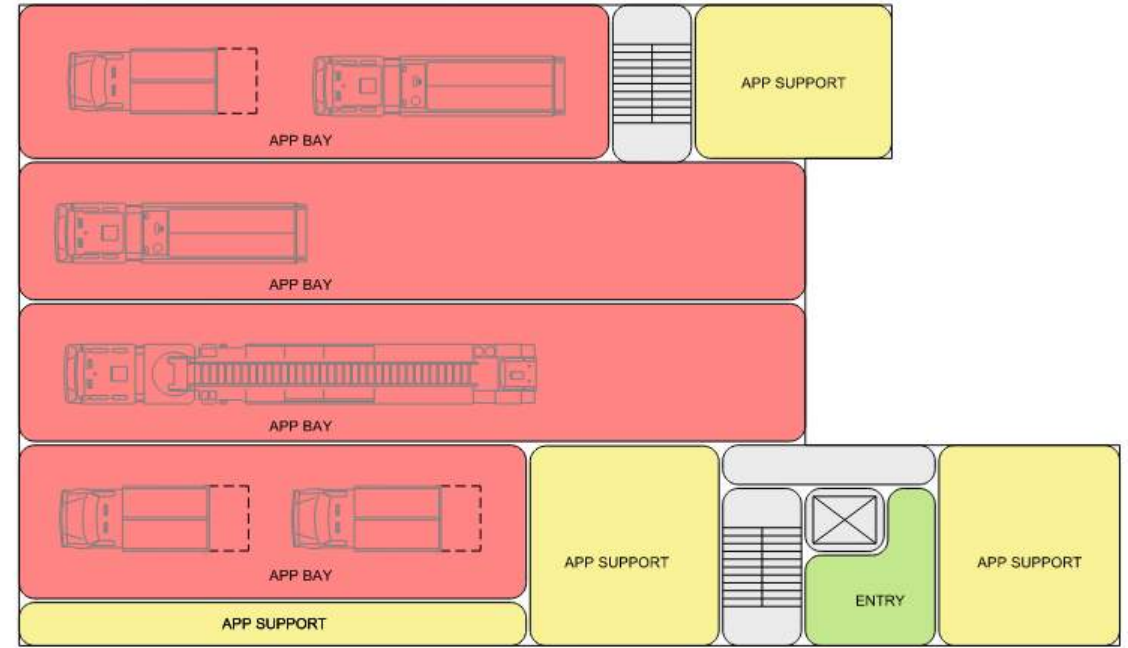


BASEMENT LEVEL

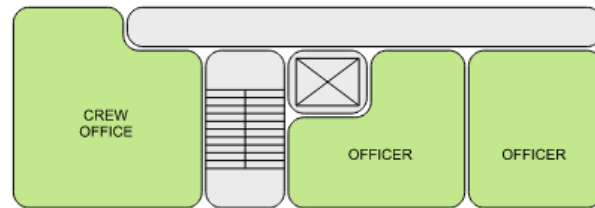
# 4 STORY CONCEPT - "L" BUNK LAYOUT



LEVEL 3



LEVEL 1



LEVEL 2

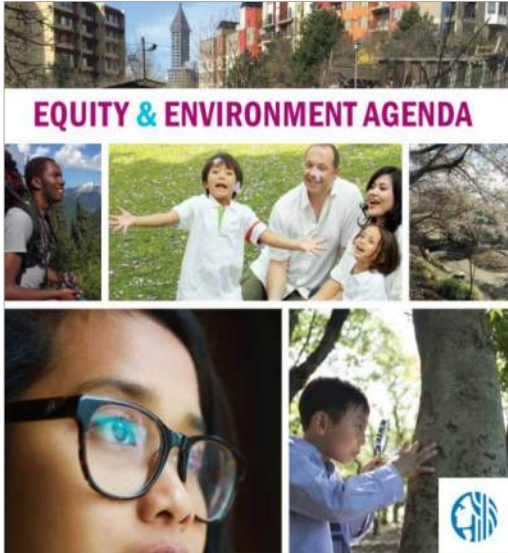
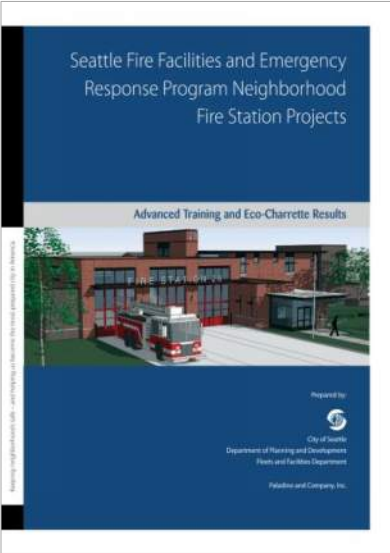
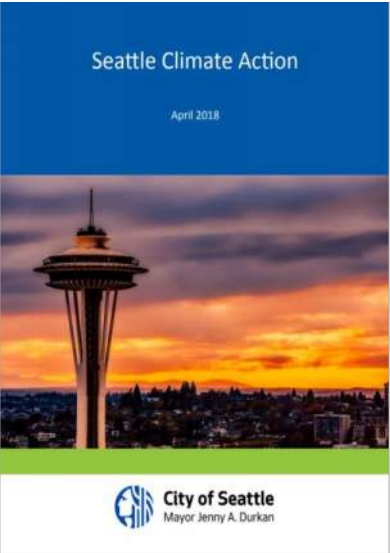
**3 STORY CONCEPT**

# 4. **Sustainability**

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Requirements, explorations, and project opportunities.

# SEATTLE POLICIES & RESOURCES



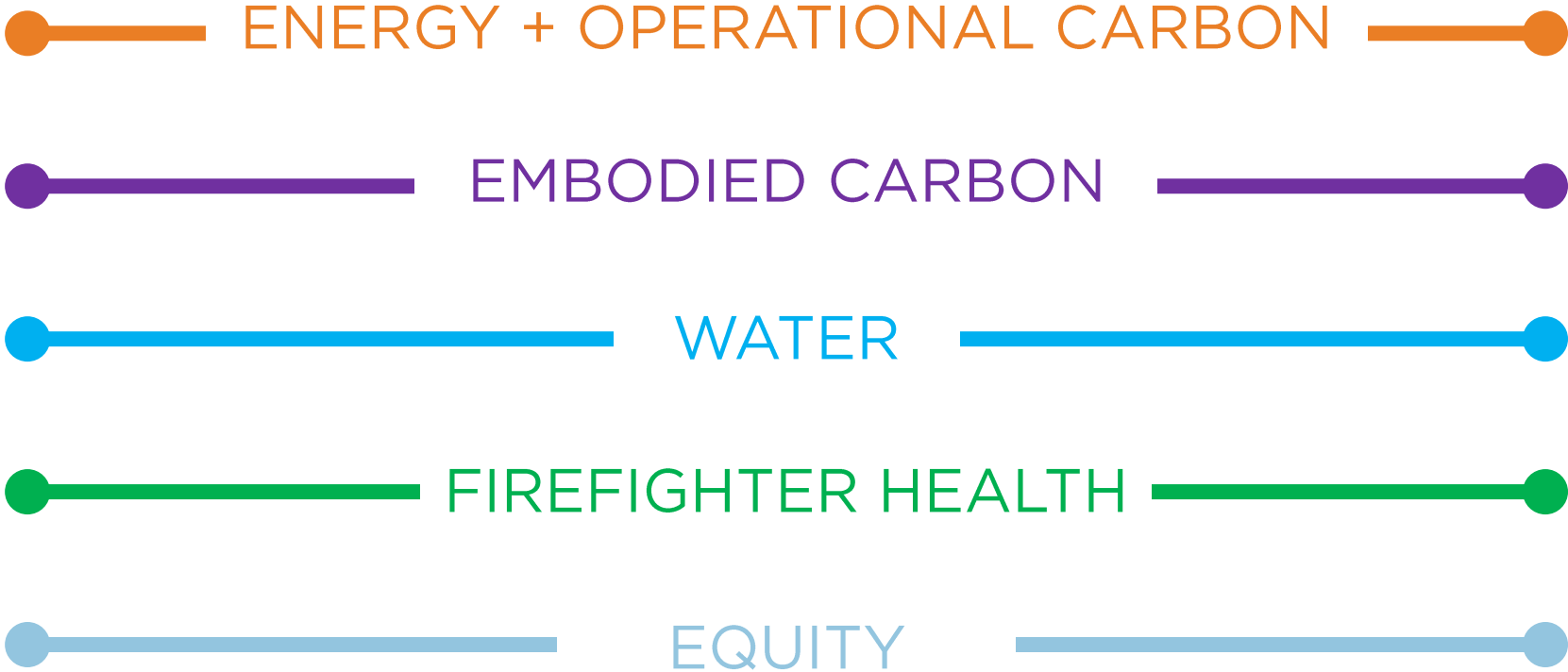
# SEATTLE POLICIES & RESOURCE HIGHLIGHT

Document	Date	Stated goals
<a href="#">SDCI Director's Rule 4-2021</a>	March 15, 2021	<ul style="list-style-type: none"><li>• <b>Deconstruction</b> &amp; material retention</li><li>• <b>Electrification</b> (no fossil fuel-fired equipment or appliances)</li><li>• <b>LEED Gold (v4.1)</b> minimum</li></ul>
<a href="#">Seattle Climate Action Strategy</a>	2018	<ul style="list-style-type: none"><li>• Become <b>carbon neutral by 2050</b>.<ul style="list-style-type: none"><li>• Reduce building energy emissions 38% from 2008 levels by 2030.</li></ul></li></ul>
<a href="#">Seattle Equity &amp; Environment Initiative</a>	2015	<ul style="list-style-type: none"><li>• All people and communities benefit from Seattle's environmental progress.</li><li>• Communities <b>most impacted by environmental injustice are engaged</b> in setting environmental priorities.</li><li>• People of color, immigrants and refugees, indigenous peoples, people with low incomes, and English language learners have opportunities to be part of and leaders in the mainstream environmental movement.</li></ul>

# ECO-CHARETTE #1 - VISIONING

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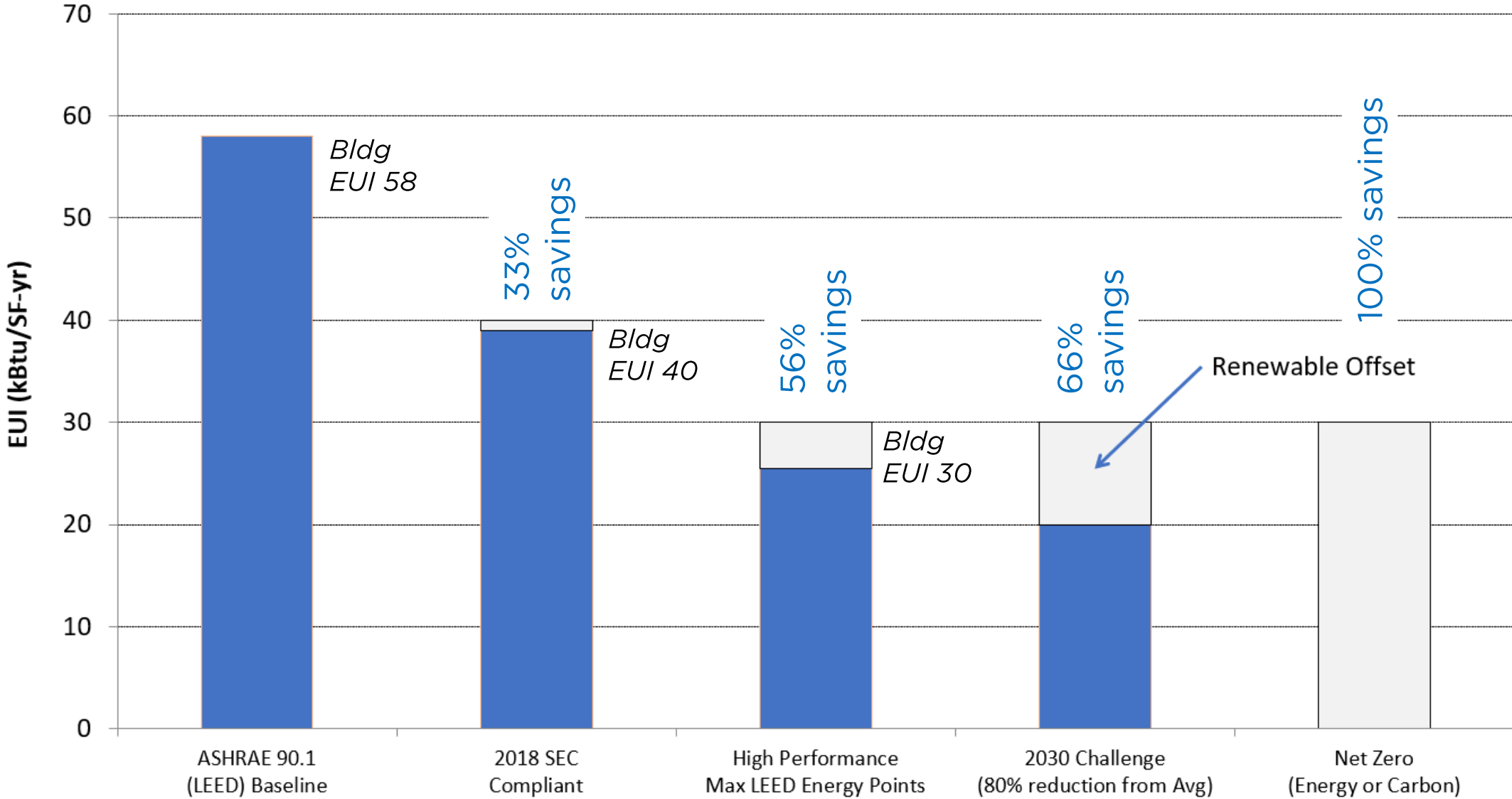
MOST ACHIEVABLE



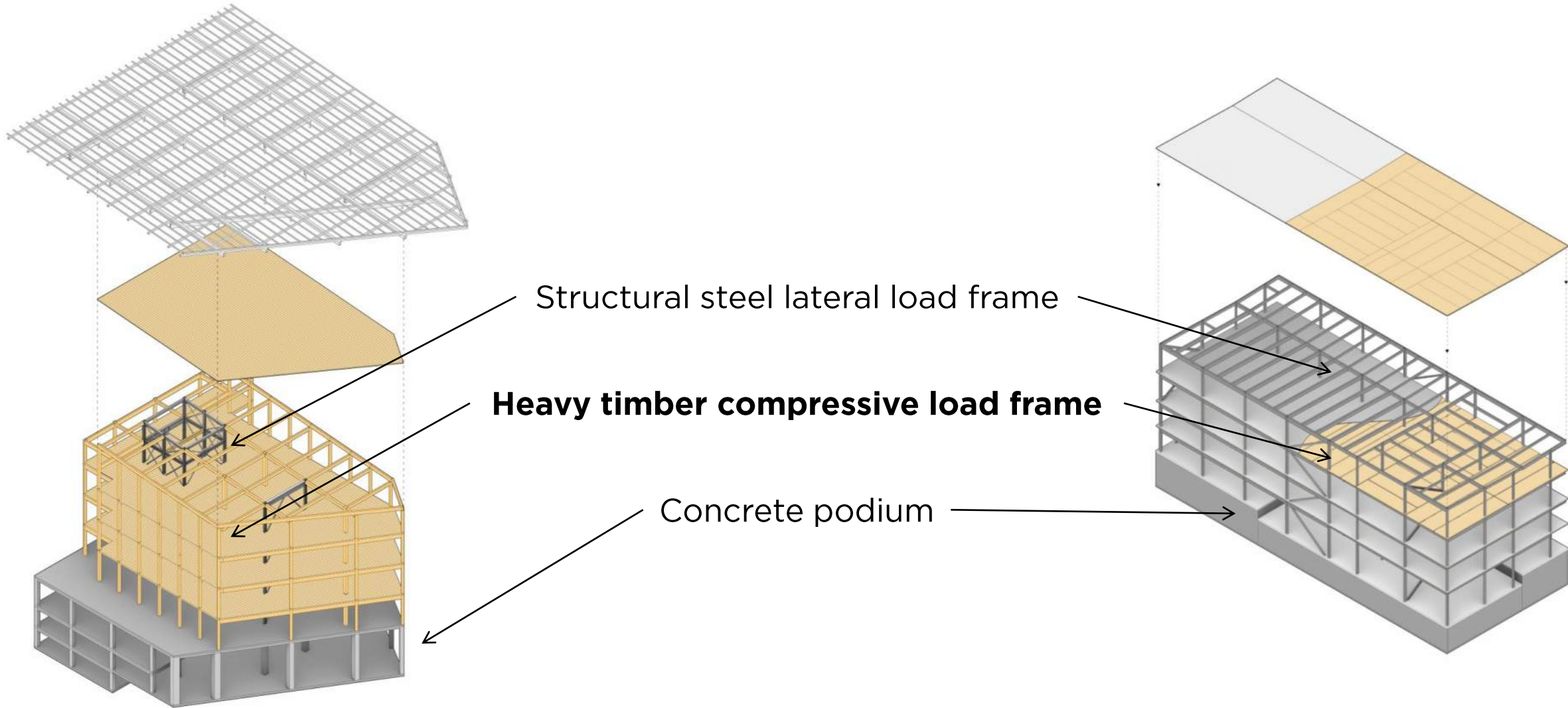
MOST AMBITIOUS



# FIRE STATION 3I ENERGY BENCHMARKING SUMMARY



# MASS TIMBER OPPORTUNITIES



*Bullitt Center*

*Health Sciences Education Building*



*Hennebery Eddy Architects  
Fire Station 76*



# WATER RE-USE OPPORTUNITIES



- Rainwater for flush fixtures
- Graywater for irrigation
- Graywater for flush fixtures
- Rainwater for potable uses
- Rigs / process water (no water LEED credits, but could be an innovation credit)?

# REDUCED MATERIALS TOXICITY – THE MILLER HULL 9

PVC



Asbestos



Lead



Mercury



Flame Retardants



Chromium 6



Phthalates



Formaldehyde



BPA



# REDUCED MATERIALS TOXICITY – LBC RED LIST



- Antimicrobials (marketed with a health claim)
- Alkylphenols and related compounds
- Asbestos compounds
- Bisphenol A (BPA) and structural analogues
- California-banned solvents
- Chlorinated Polymers, including:
  - Chlorinated polyethylene (CPE)
  - Chlorinated polyvinyl chloride (CPVC)
  - Chloroprene (neoprene monomer)
  - Chlorosulfonated polyethylene (CSPE)
  - Polyvinylidene chloride (PVDC)
- Polyvinyl chloride (PVC)
- Chlorobenzenes
- Chlorofluorocarbons (CFC) and hydrochlorofluorocarbons (HCFC)
- Formaldehyde (added)
- Monomeric, polymeric and organophosphate halogenated flame retardants (HFRs)
- Organotin Compounds
- Perfluorinated compounds (PFCs)
- Phthalates (orthophthalates)
- Polychlorinated biphenyls (PCBs)
- Polycyclic aromatic hydrocarbons (PAHs)
- Short-chain and medium-chain chlorinated paraffins
- Toxic heavy metals
  - Arsenic
  - Cadmium
  - Chromium
  - Lead (added)
  - Mercury
- Volatile organic compounds (VOC) (wet-applied products)\*
- Wood Treatments containing creosote or pentachlorophenol

\*VOCs are limited, not banned. Refer to the v4.0 Materials Petal Handbook for specific reference standard + thresholds.

# 5. **Community**

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Strategies for community engagement.

# COMMUNITY OUTREACH

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- Typical Fire Levy projects have included community open houses at 30% and 60% design
- Project team currently working to understand if additional community outreach is desired for this project
- Project does not currently include any direct community accessible program elements
- Virtual open houses have generally attracted greater participation and should be considered regardless of any easing of pandemic restrictions



## 6. **Coordination**

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Interdepartmental coordination and collaboration.

# INTERDEPARTMENTAL COORDINATION

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- Engaged with Office Sustainability & Environment (Sandra Mallory) on existing body of knowledge on Fire Station energy use
- Have just received Preliminary Assessment Report and will be meeting with SDOT to understand right-of-way improvements and traffic signal opportunities
- Will coordinate with Office for Civil rights and Fire Department (Helen Fitzpatrick) on RSJI toolkit and equity and community outreach strategies
- Will coordinate with Seattle Public Utilities on stormwater management and design
- Will coordinate with Seattle City Light on service and equipment locations for all-electric facility

# 7. **Equity**

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RSJI toolkit and opportunities in fire station design.

# EQUITABLE ENGAGEMENT

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1. Gender neutrality, including private bathrooms and bunks, already standard practice for Seattle Fire Department.
2. Project will ensure diverse stakeholder groups are assembled for workshops throughout the design process.
3. Project will seek to understand and support RSJI efforts already underway at Seattle Fire Department.
4. Through community engagement, project will seek to understand if there are ways it can function as a community asset beyond its core operational mission.
5. Project team will seek to understand how design choices affect the health of communities both near and far to the site and prioritize sustainability strategize that positively impact equity and social justice issues.

