FIRE STATION 31

Design Commission Predesign Review

May 20th, 2021

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AGENDA

1. Introduction
2. Context
3. Site Organization & Massing
4. Sustainability
5. Community
6. Coordination
7. Equity

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1. Introduction

Levy Program, project scope, budget, schedule.

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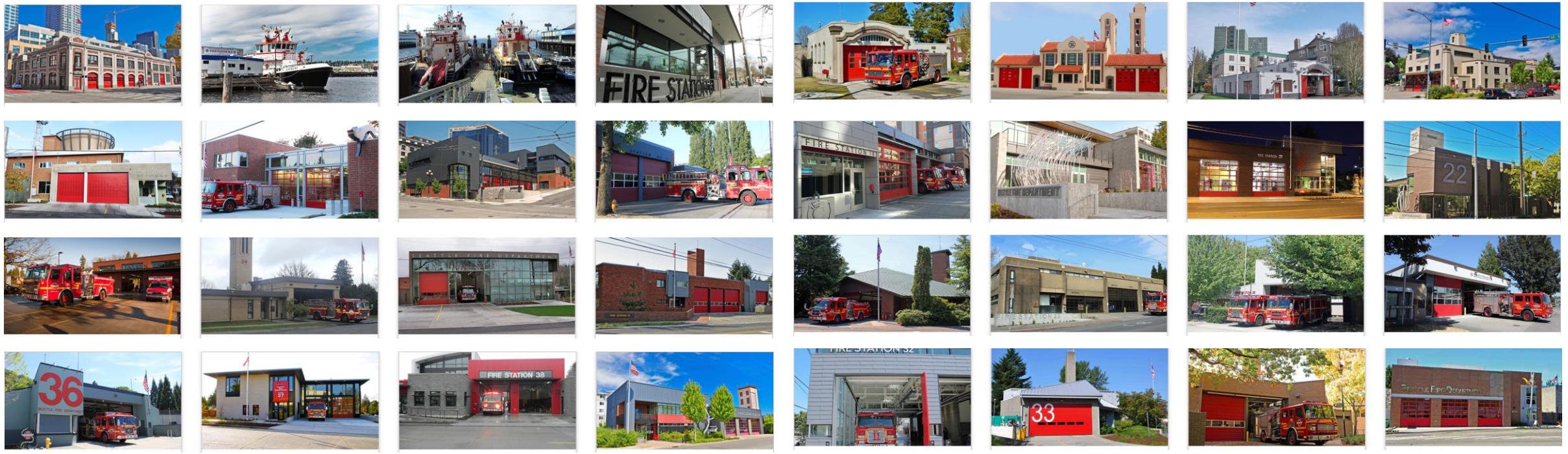
OPERATIONS & PERFORMANCE
HEALTH & SAFETY
CIVIC PRESENCE
8473

SEATTLE FIRE LEVY PROGRAM



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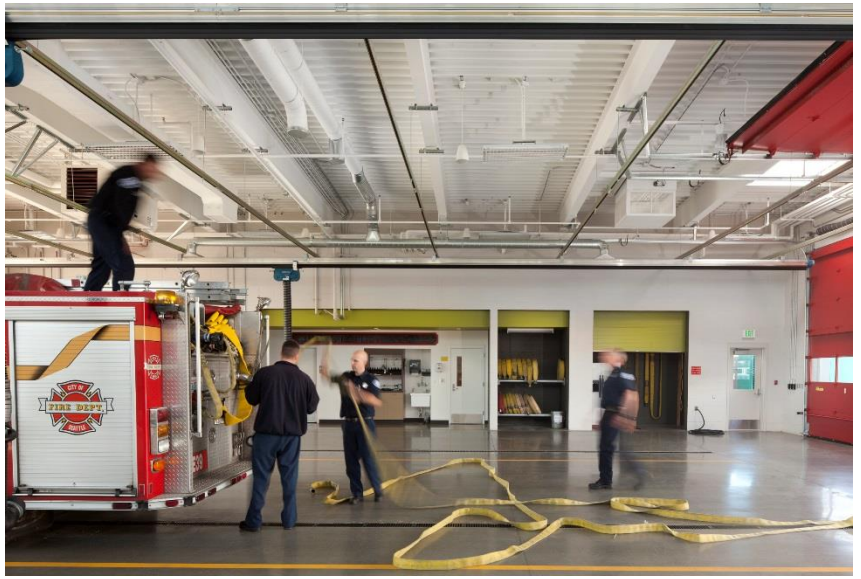
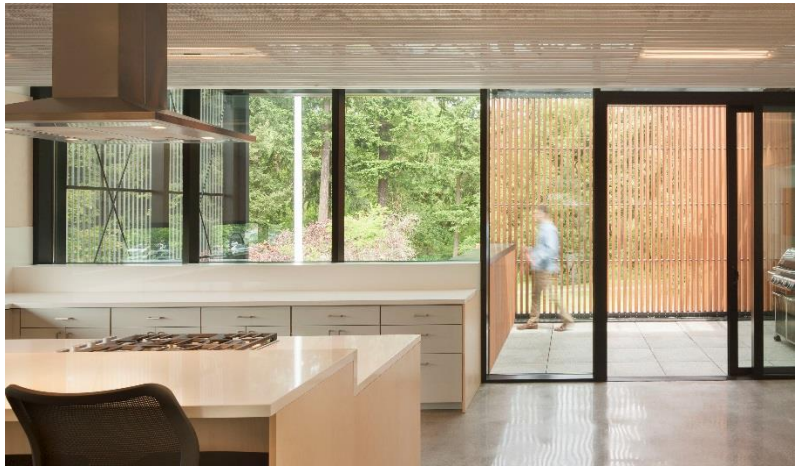
FIRE STATION 39




FIRE STATION 21
7304


MERCER ISLAND FIRE STATION
8473


MERCER ISLAND FIRE STATION
8473




52

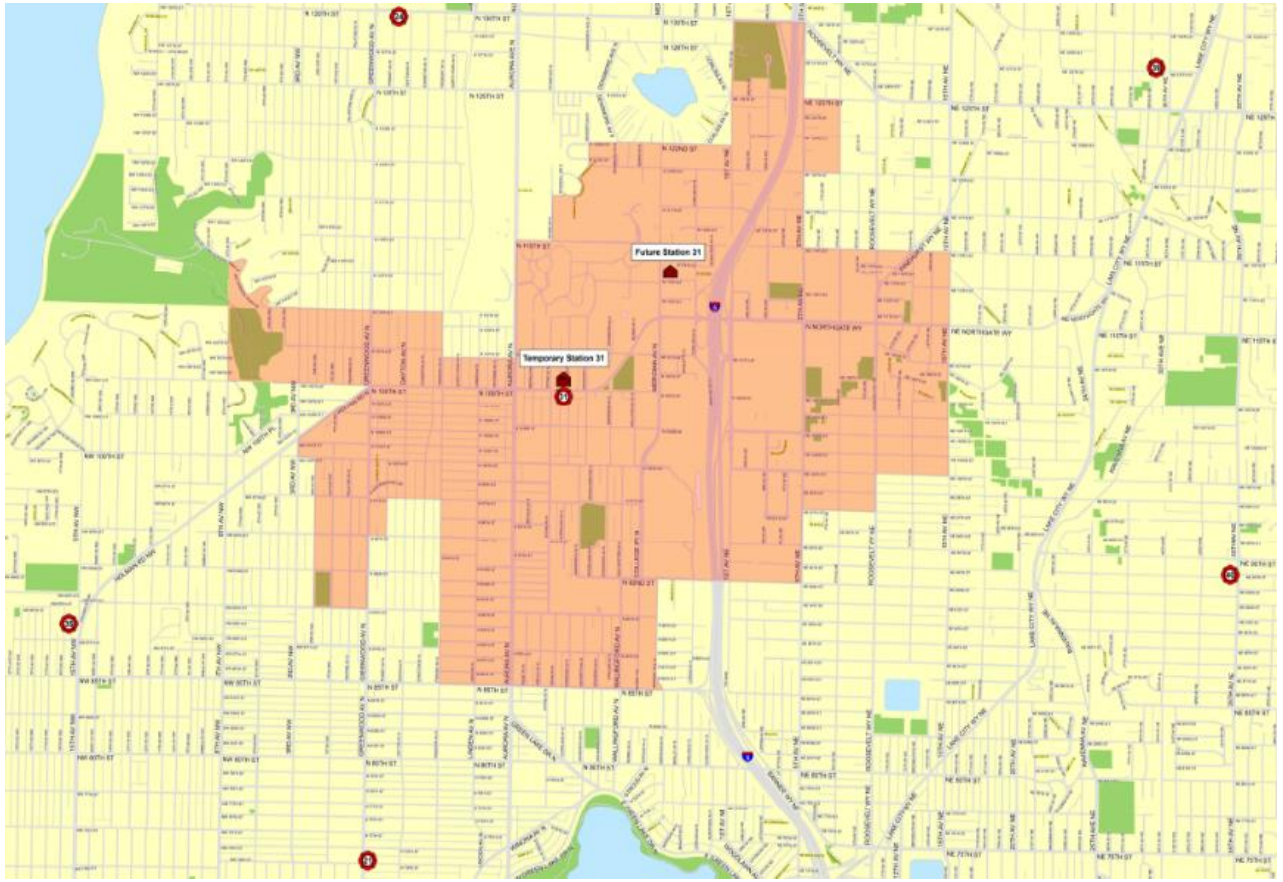

FIRE
SAN DIEGO


42


42

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

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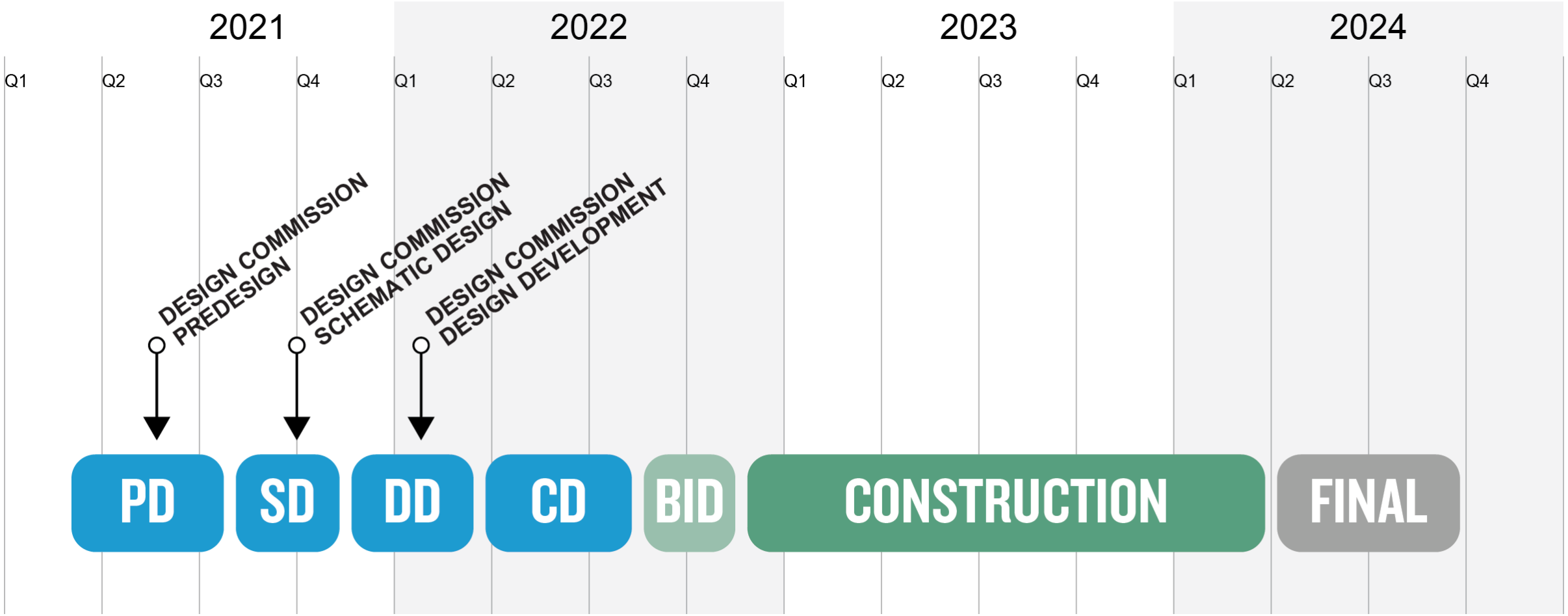
PROJECT SCHEDULE



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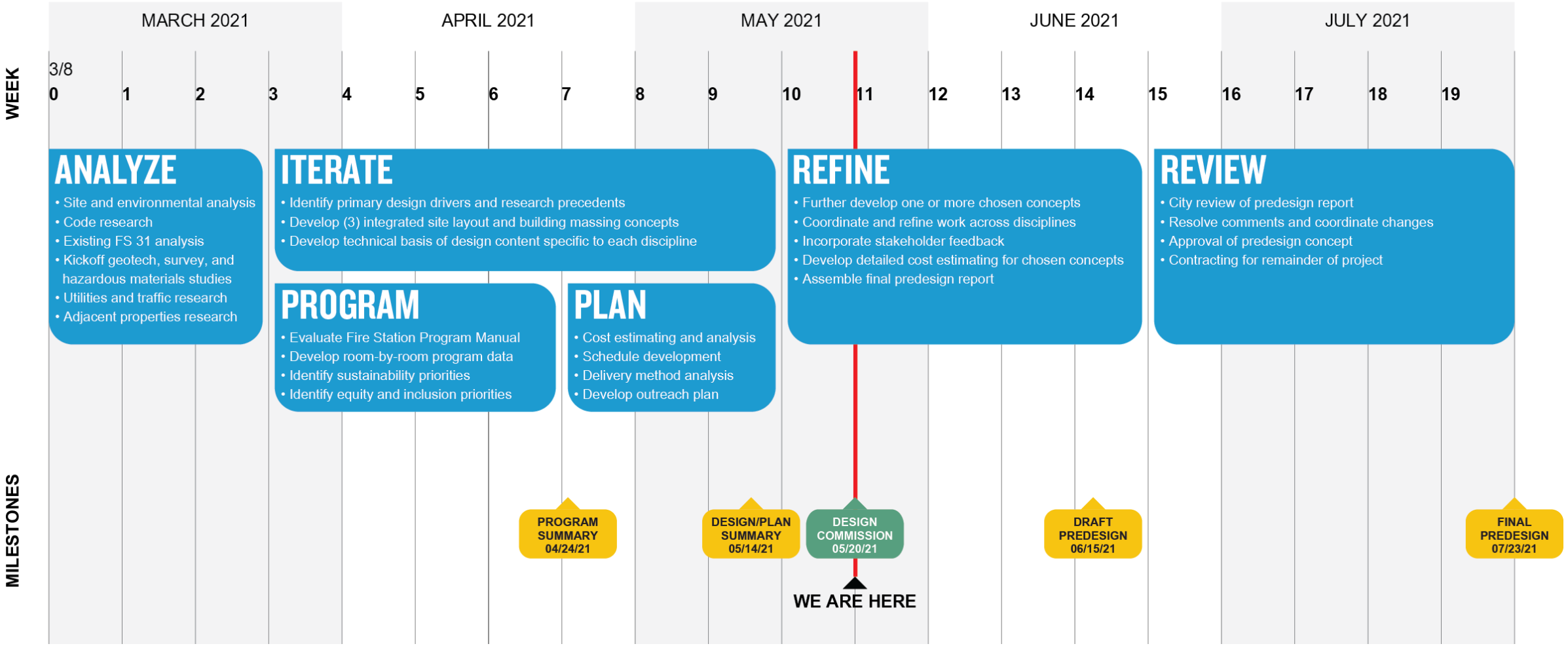
PREDESIGN SCHEDULE



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2. Context

Site and neighborhood opportunities and constraints.

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NEIGHBORHOOD CONTEXT

NEIGHBORHOOD CONTEXT






SITE PHOTOS

3. Site Organization and Massing

Functional planning for site and building elements.

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DESIGN DRIVERS

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

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FUTURE OF FIRE STATIONS

- 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

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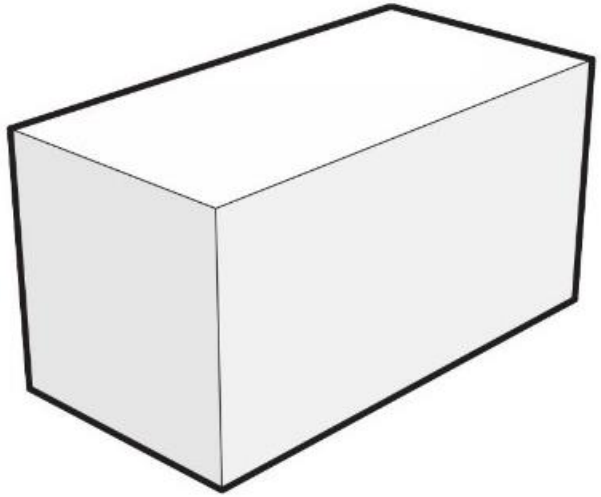
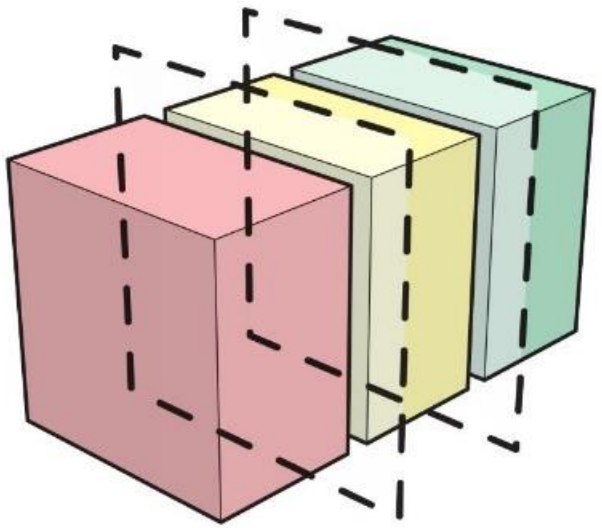


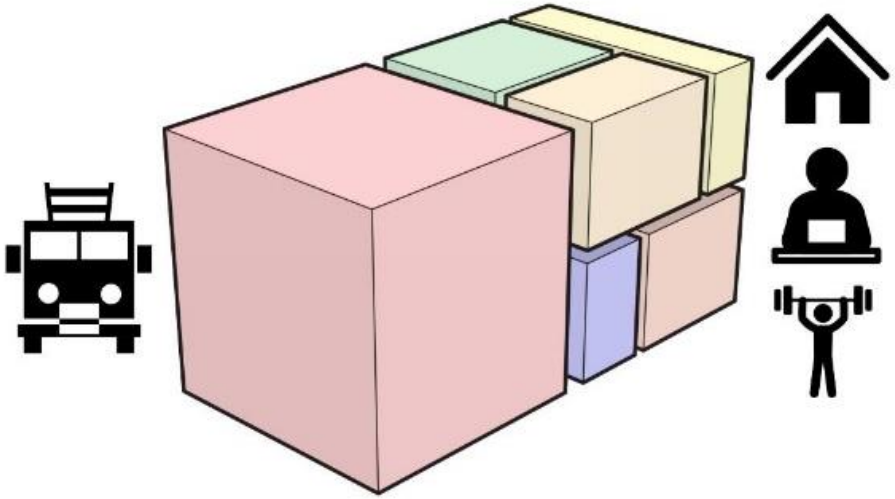
01 SIMPLIFIED FORM

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.



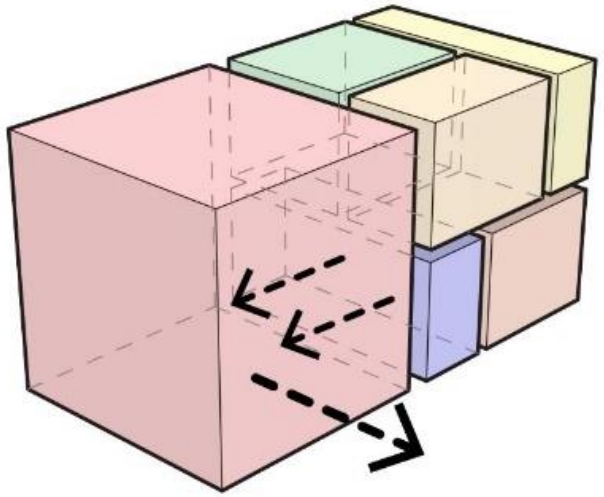
02 SEPARATE CLEAN & UNCLEAN

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.



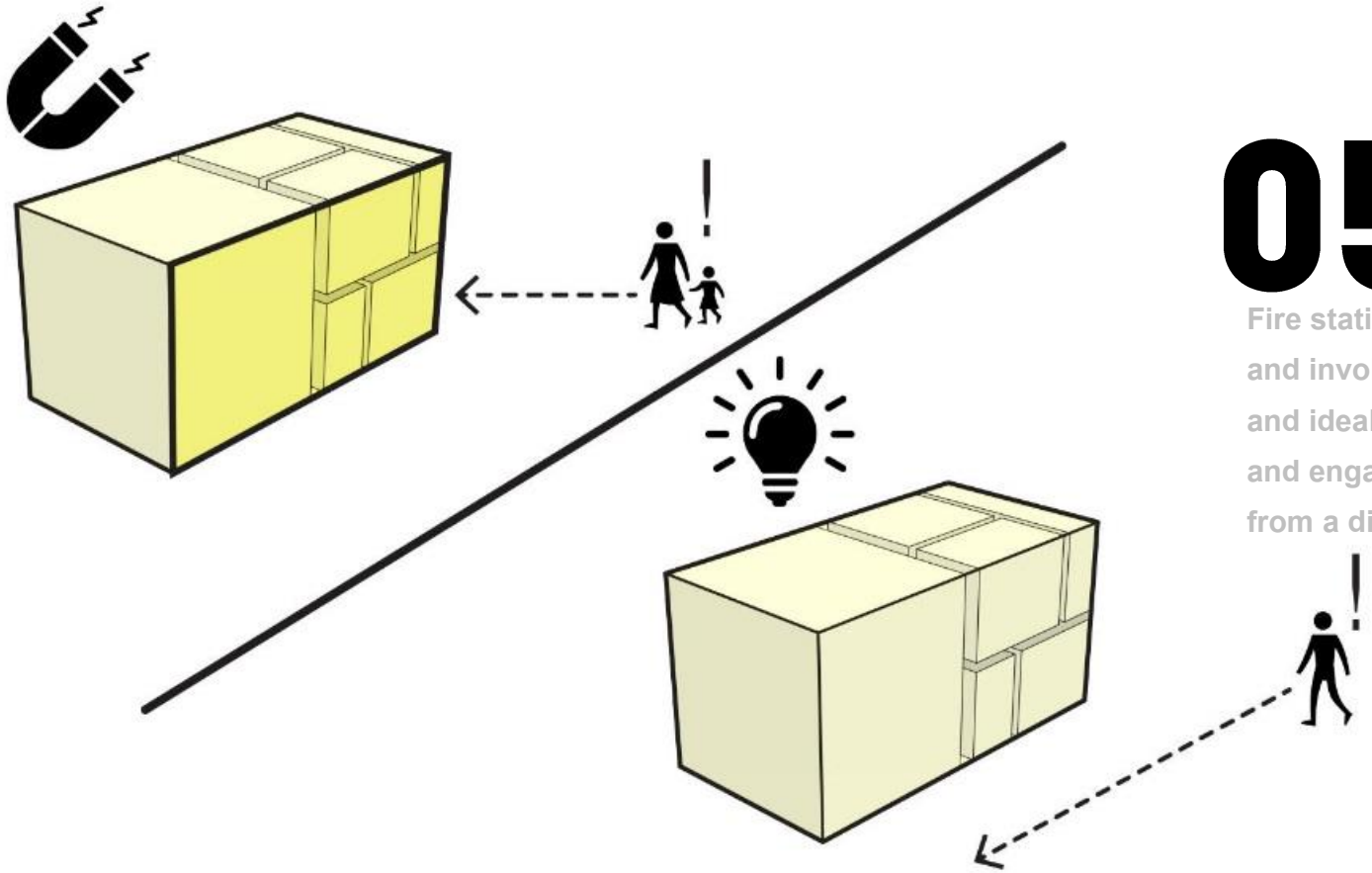
03 PROJECT COMPONENTS

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.



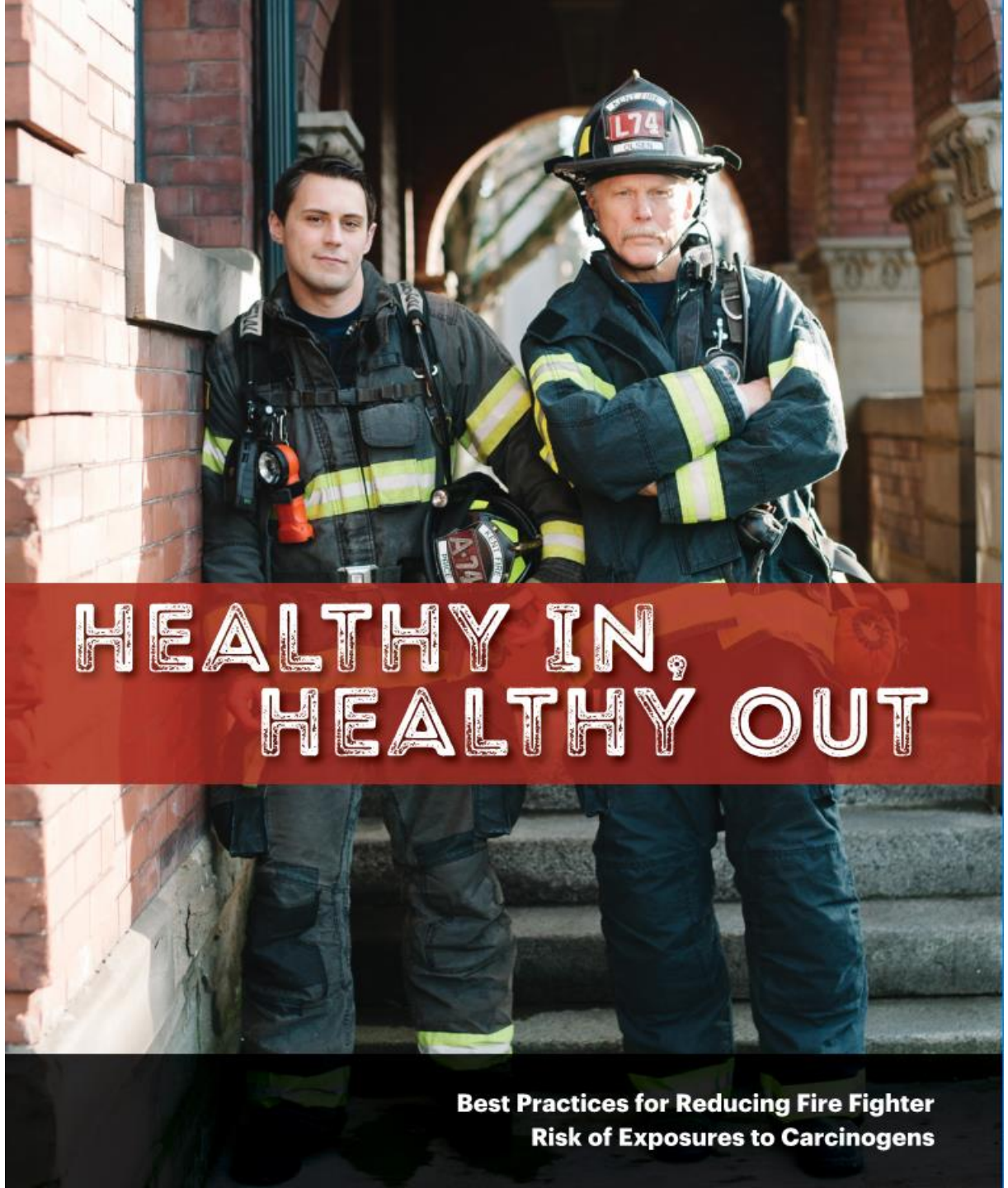
04 EFFICIENT CIRCULATION

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.



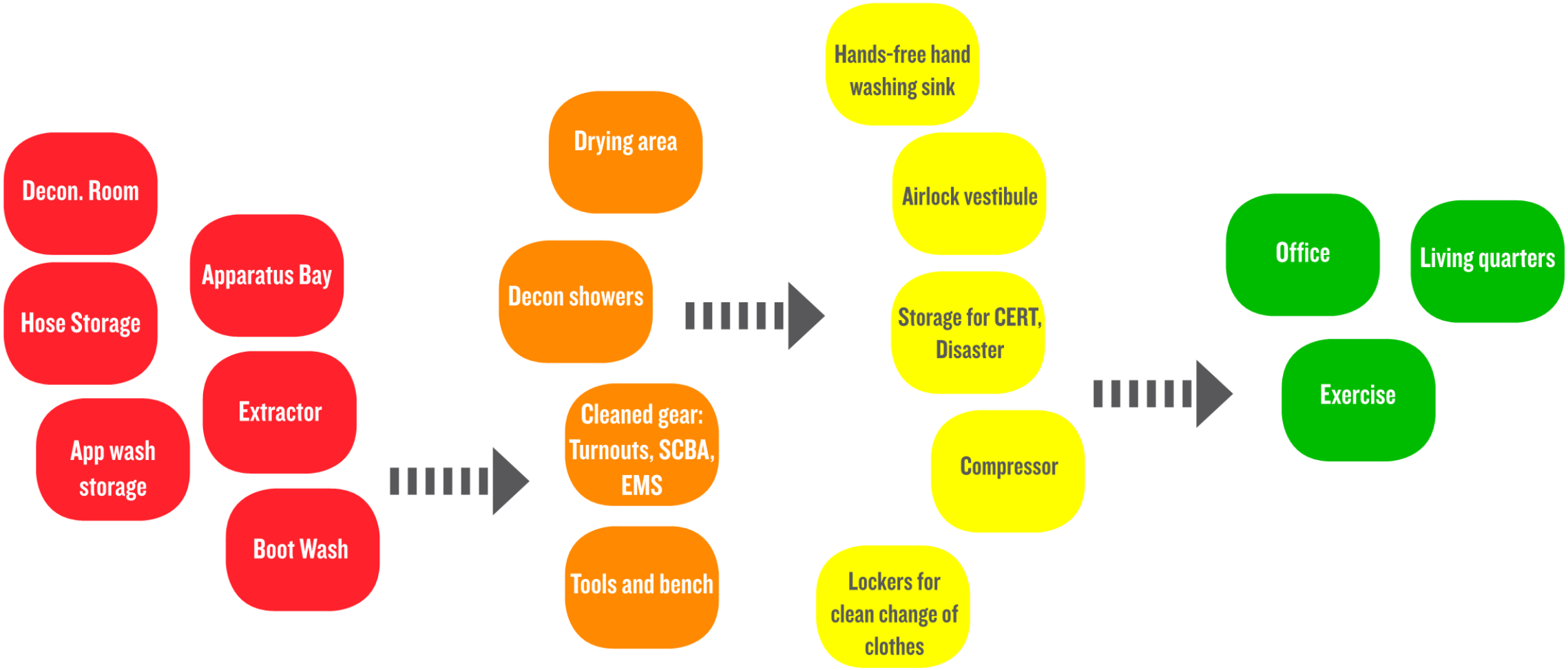
05 CIVIC IDENTITY
MAGNET VS LIGHT BULB

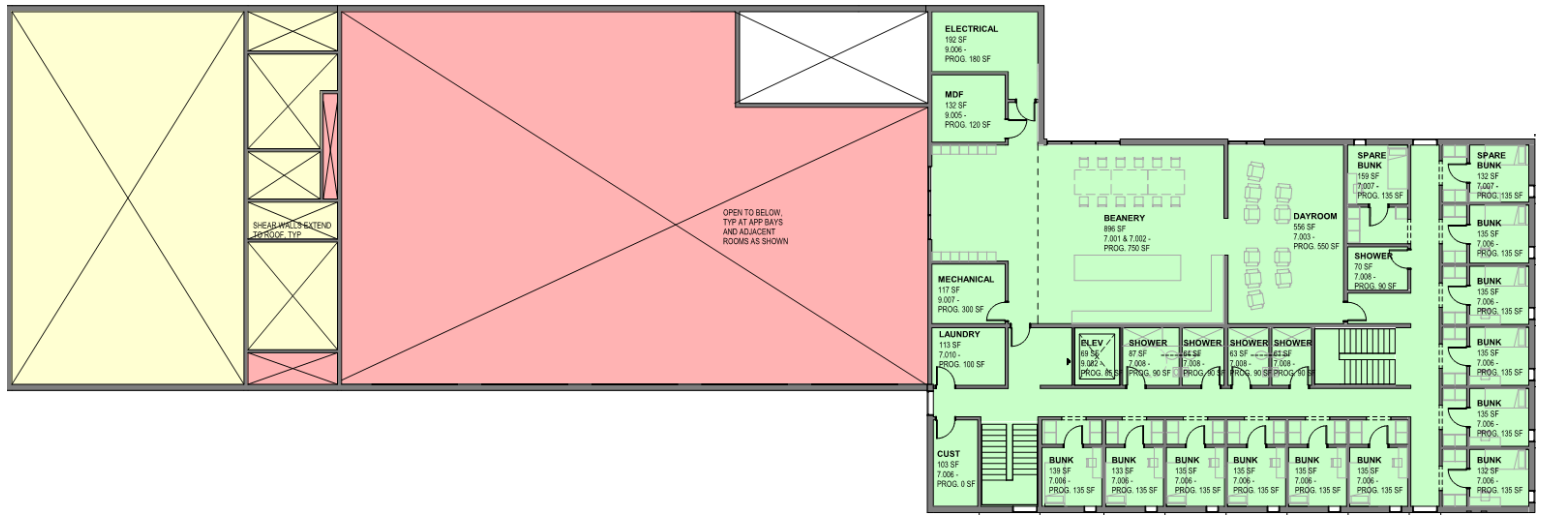
Fire stations are civic icons that become symbols for the City's values and invoke community pride. Depending on the context, station program, and ideals, fire stations can create "magnets" where the public is invited and engaged into the facility or "light bulbs" where the public is engaged from a distance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



HEALTHY IN, HEALTHY OUT

Best Practices for Reducing Fire Fighter Risk of Exposures to Carcinogens


Decon. Room
Hose Storage
App wash storage
Apparatus Bay
Extractor
Boot Wash
Drying area
Decon showers
Cleaned gear: Turnouts, SCBA, EMS
Tools and bench
Hands-free hand washing sink
Airlock vestibule
Storage for CERT, Disaster
Compressor
Lockers for clean change of clothes
Office
Living quarters
Exercise


SHEAR WALLS EXTEND TO ROOF, TYP
OPEN TO BELOW, TYP AT APP BAYS AND ADJACENT ROOMS AS SHOWN
ELECTRICAL
192 SF
9.006 -
PROG. 180 SF
MDF
132 SF
9.005 -
PROG. 120 SF
MECHANICAL
117 SF
9.007 -
PROG. 300 SF
LAUNDRY
113 SF
7.010 -
PROG. 100 SF
CUST
103 SF
7.006 -
PROG. 0 SF
BEANERY
896 SF
7.001 & 7.002 -
PROG. 750 SF
DAYROOM
556 SF
7.003 -
PROG. 550 SF
SPARE BUNK
159 SF
7.007 -
PROG. 135 SF
SHOWER
70 SF
7.006 -
PROG. 90 SF
ELEV
69 SF
9.002 -
PROG. 85 SF
SHOWER
87 SF
7.008 -
PROG. 90 SF
SHOWER
84 SF
7.008 -
PROG. 90 SF
SHOWER
63 SF
7.008 -
PROG. 90 SF
SHOWER
87 SF
7.008 -
PROG. 90 SF
SPARE BUNK
132 SF
7.007 -
PROG. 135 SF
BUNK
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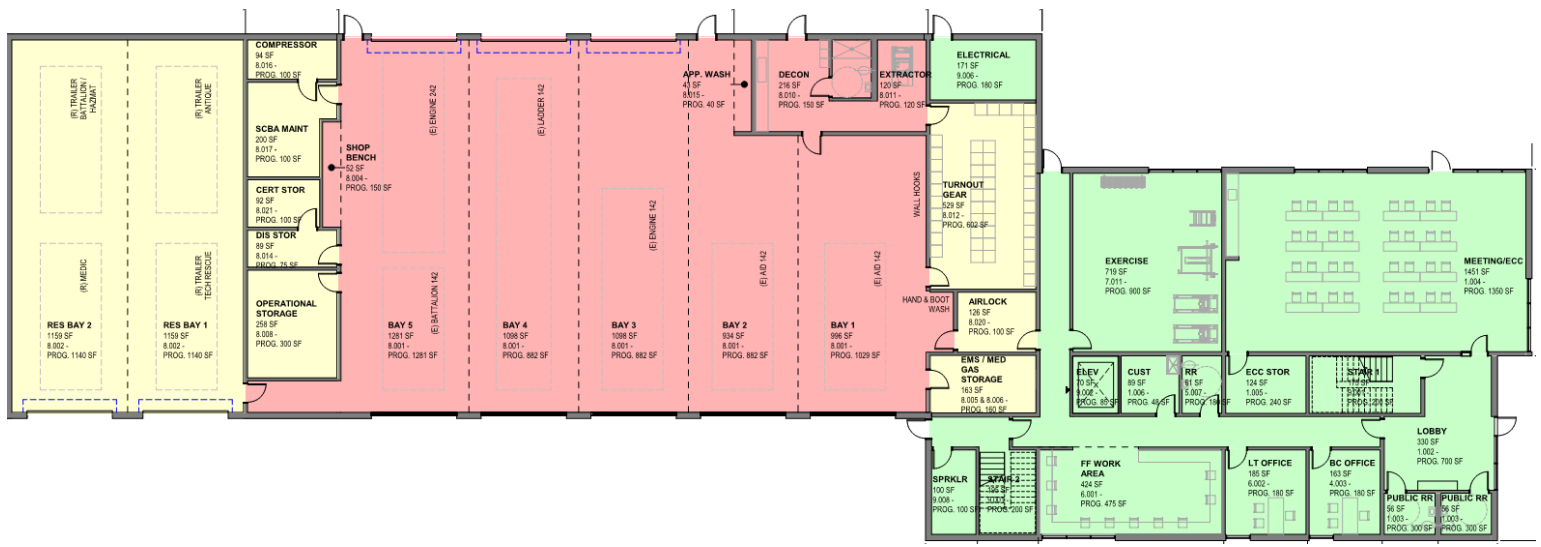
(R) TRAILER BATTALION / HAZMAT
(R) TRAILER ANTIQUE
(R) MEDIC
(R) TRAILER TECH RESCUE
RES BAY 2
1159 SF
8.002 -
PROG. 1140 SF
RES BAY 1
1159 SF
8.002 -
PROG. 1140 SF
COMPRESSOR
94 SF
8.016 -
PROG. 100 SF
SCBA MAINT
200 SF
8.017 -
PROG. 100 SF
SHOP BENCH
52 SF
8.004 -
PROG. 150 SF
CERT STOR
92 SF
8.021 -
PROG. 100 SF
DIS STOR
89 SF
8.014 -
PROG. 75 SF
OPERATIONAL STORAGE
258 SF
8.008 -
PROG. 300 SF
(E) ENGINE 242
(E) BATTALION 142
BAY 5
1251 SF
8.001 -
PROG. 1281 SF
(E) LADDER 142
BAY 4
1098 SF
8.001 -
PROG. 882 SF
(E) ENGINE 142
BAY 3
1098 SF
8.001 -
PROG. 882 SF
(E) A/D 142
BAY 2
934 SF
8.001 -
PROG. 882 SF
(E) A/D 142
BAY 1
996 SF
8.001 -
PROG. 1029 SF
APP. WASH
41 SF
8.015 -
PROG. 40 SF
DECON
216 SF
8.010 -
PROG. 150 SF
EXTRACTOR
120 SF
8.011 -
PROG. 120 SF
WALL HOOKS
ELECTRICAL
171 SF
9.006 -
PROG. 180 SF
TURNOUT GEAR
529 SF
8.012 -
PROG. 602 SF
HAND & BOOT WASH
AIRLOCK
126 SF
8.020 -
PROG. 100 SF
EMS / MED GAS STORAGE
163 SF
8.005 & 8.006 -
PROG. 180 SF
SPRKLR
100 SF
9.008 -
PROG. 100 SF
STAIR 1
106 SF
3.001 -
PROG. 200 SF
FF WORK AREA
424 SF
6.001 -
PROG. 475 SF
EXERCISE
719 SF
7.011 -
PROG. 900 SF
ELEV
70 SF
9.002 -
PROG. 85 SF
CUST
89 SF
1.006 -
PROG. 45 SF
RR
91 SF
5.007 -
PROG. 144 SF
ECC STOR
124 SF
1.005 -
PROG. 240 SF
STAIR 2
106 SF
3.001 -
PROG. 200 SF
LT OFFICE
185 SF
6.002 -
PROG. 180 SF
BC OFFICE
163 SF
4.003 -
PROG. 180 SF
MEETING/ECC
1451 SF
1.004 -
PROG. 1350 SF
LOBBY
330 SF
1.002 -
PROG. 700 SF
PUBLIC RR
96 SF
1.003 -
PROG. 300 SF
PUBLIC RR
96 SF
1.003 -
PROG. 300 SF

LIFE AS A FIREFIGHTER

- 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

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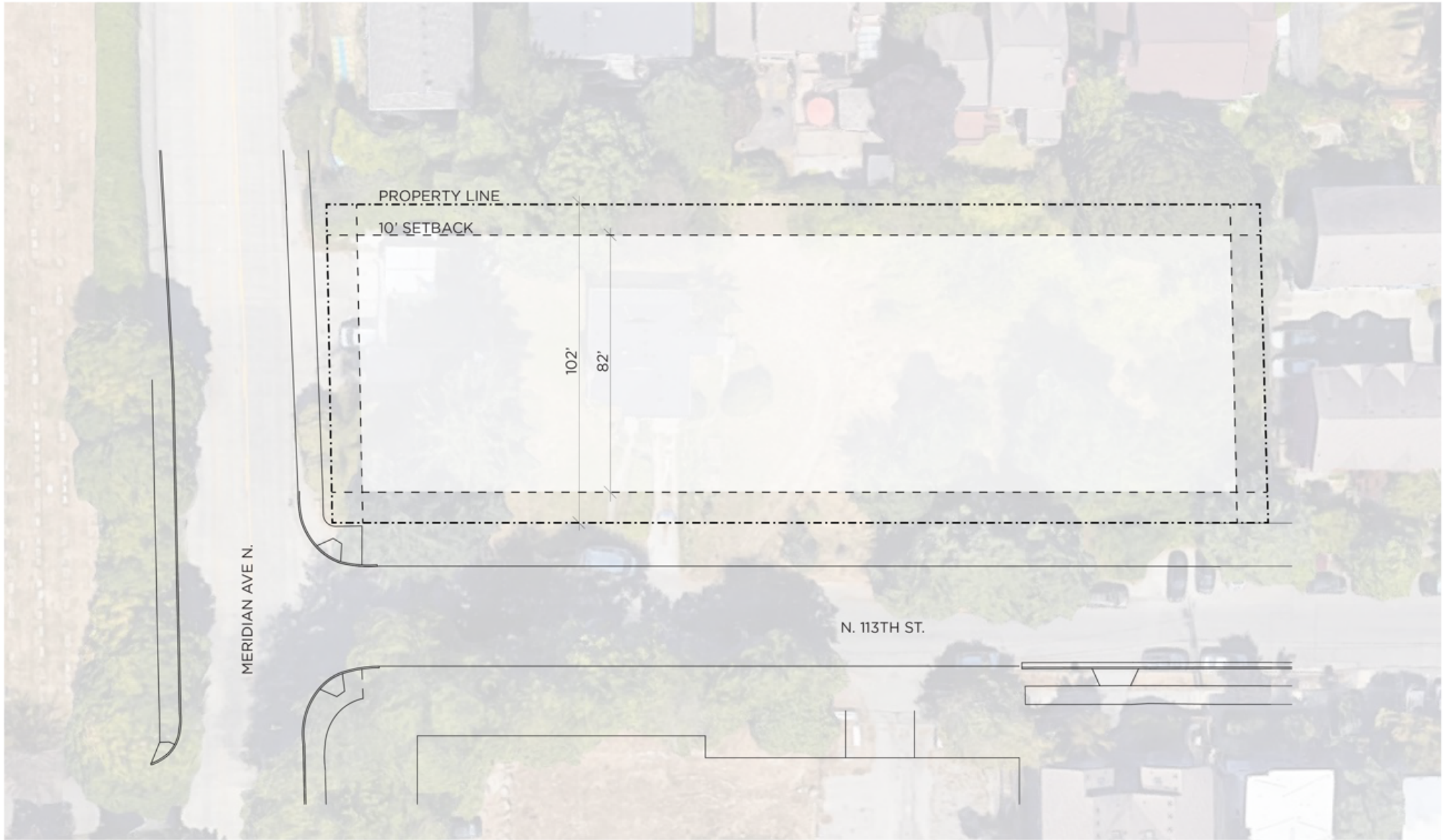
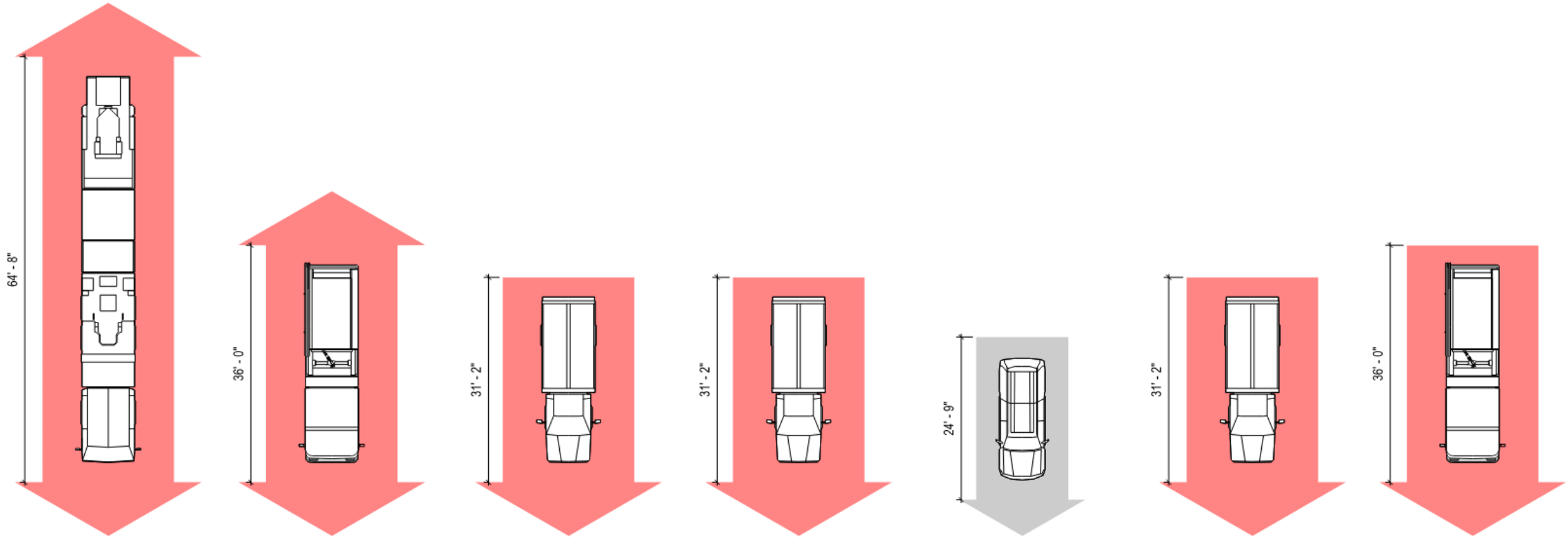
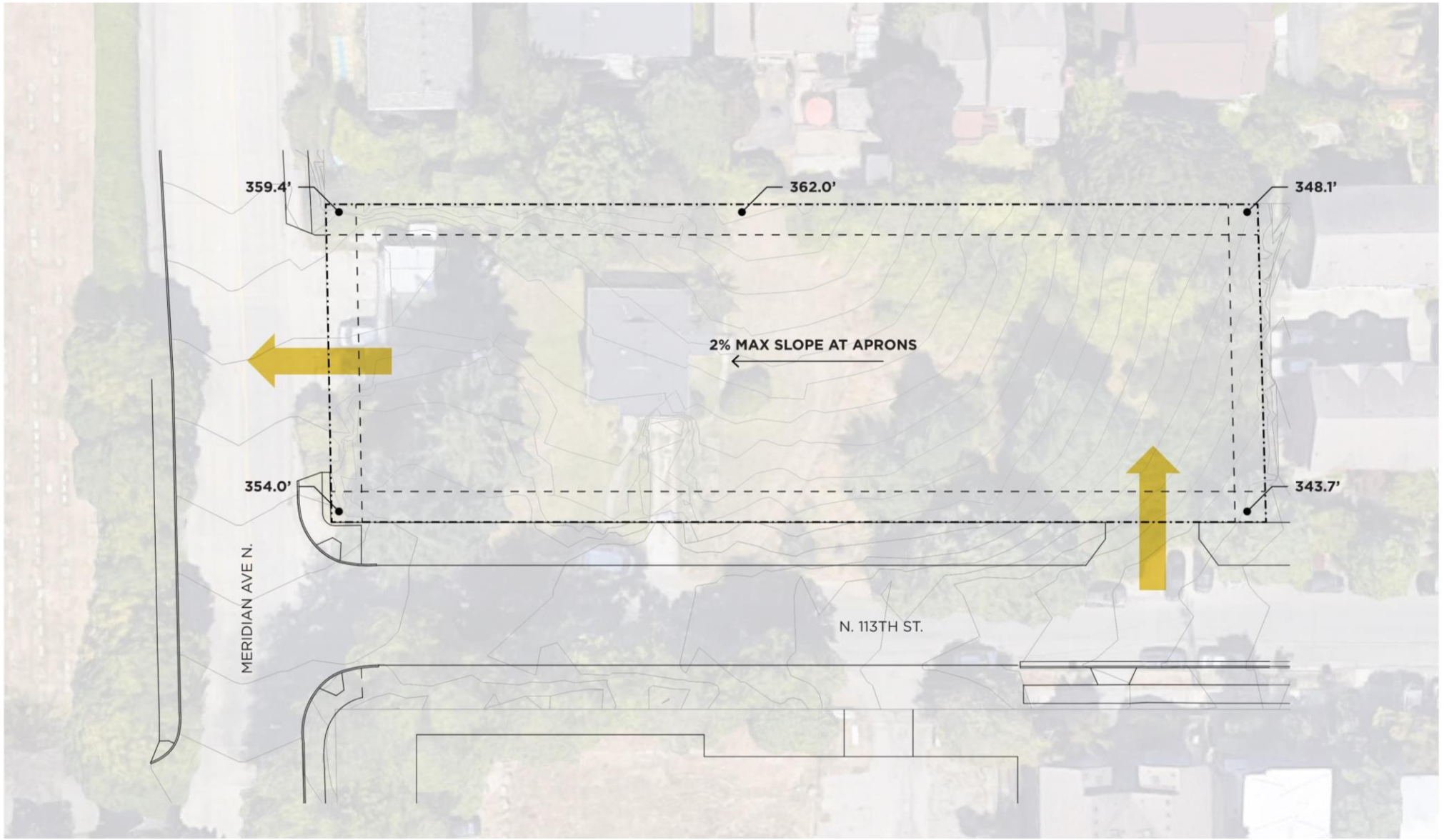
AERIAL PHOTO AND PROPERTY LINES



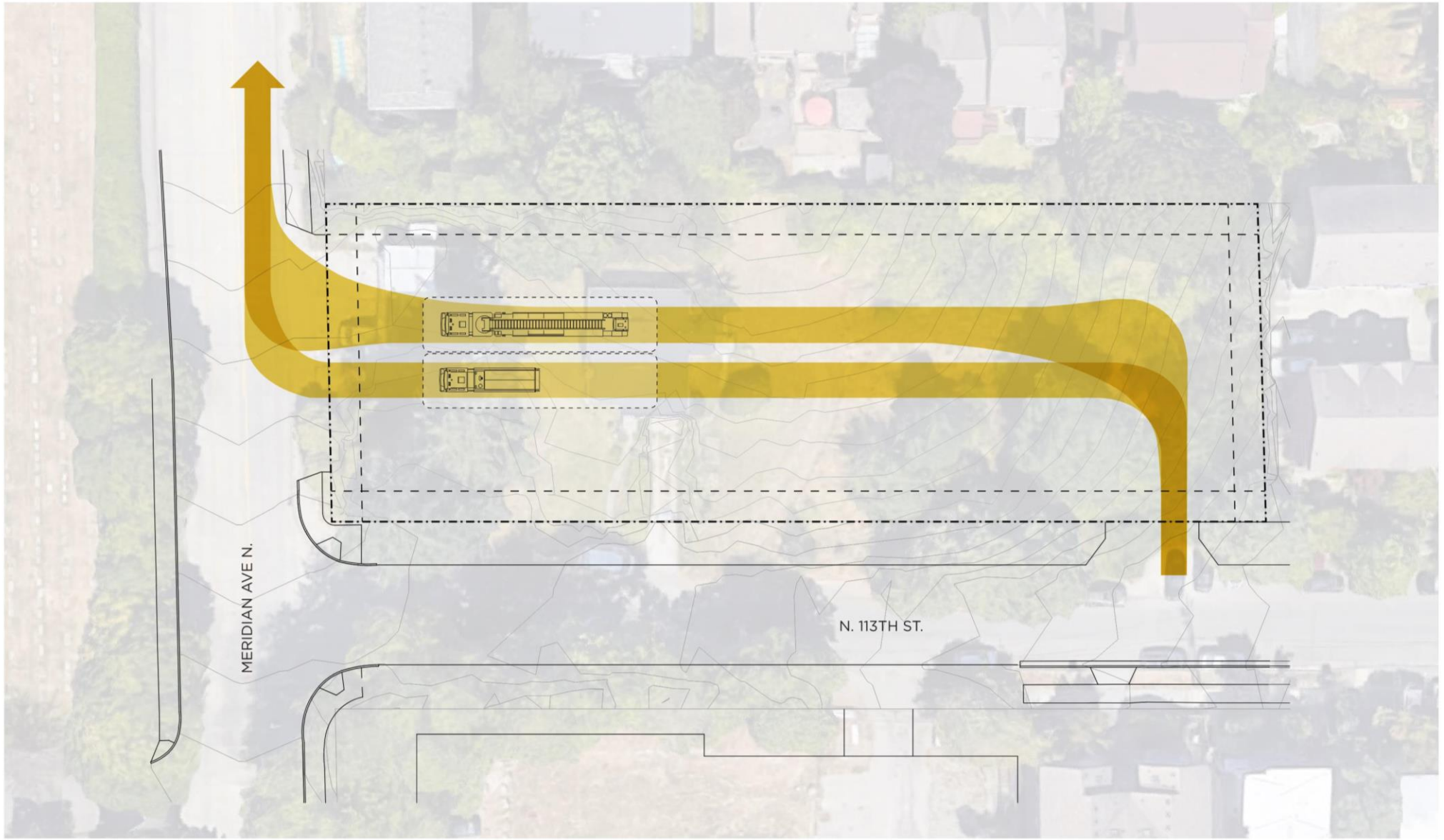
MINIMUM SETBACKS



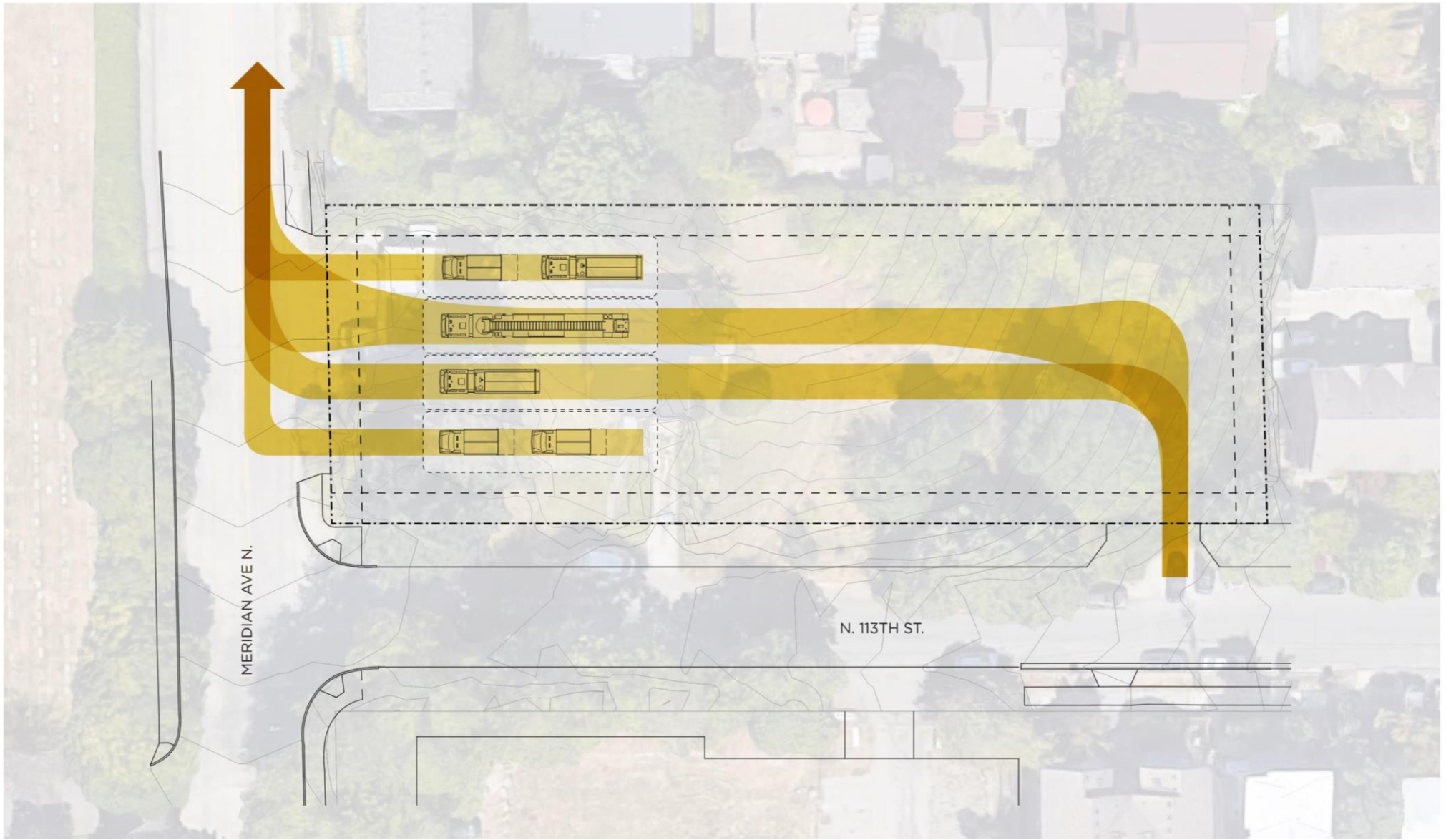
FIRE STATION 31 APPARATUS



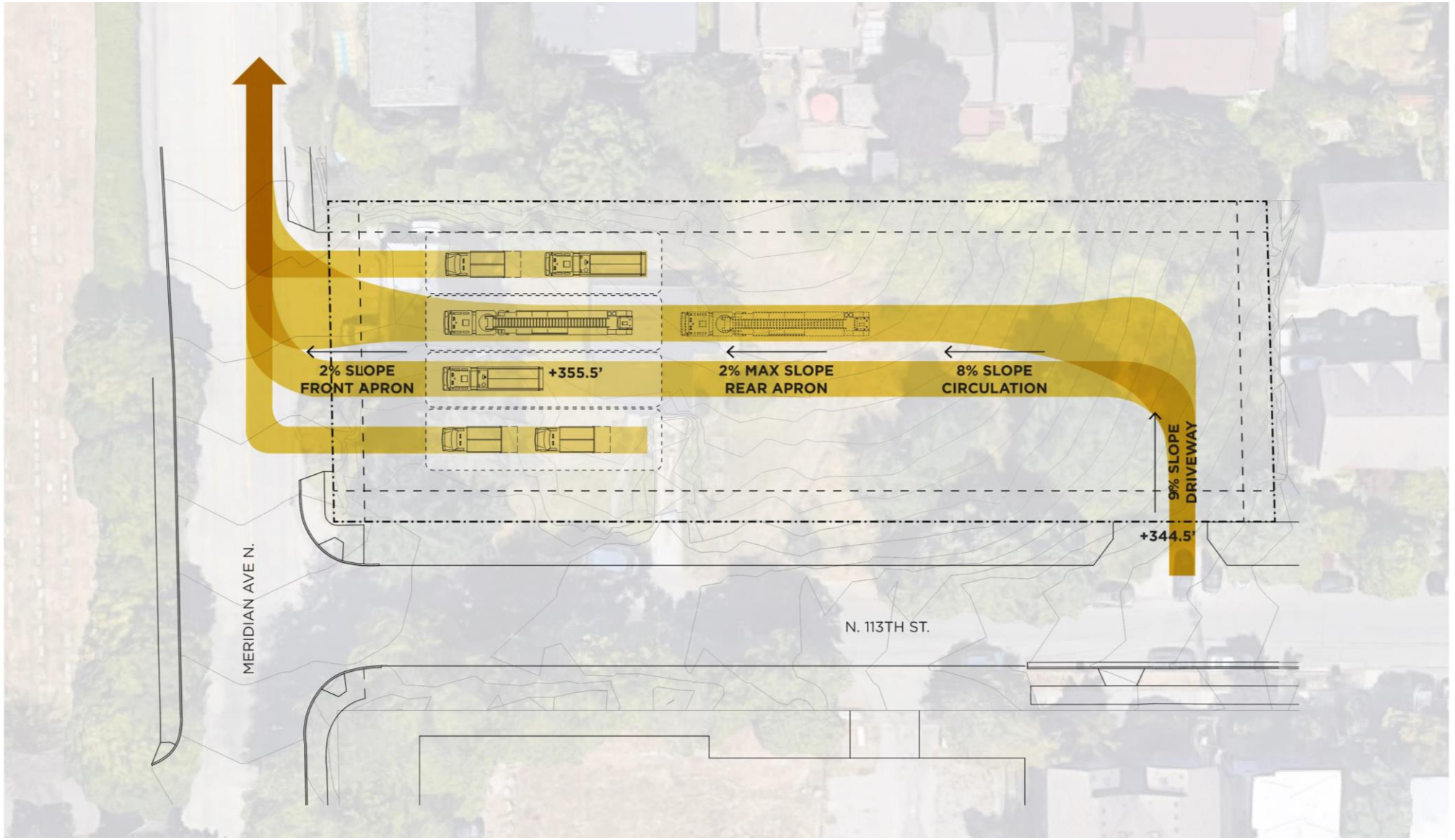
GRADING & APPARATUS ACCESS



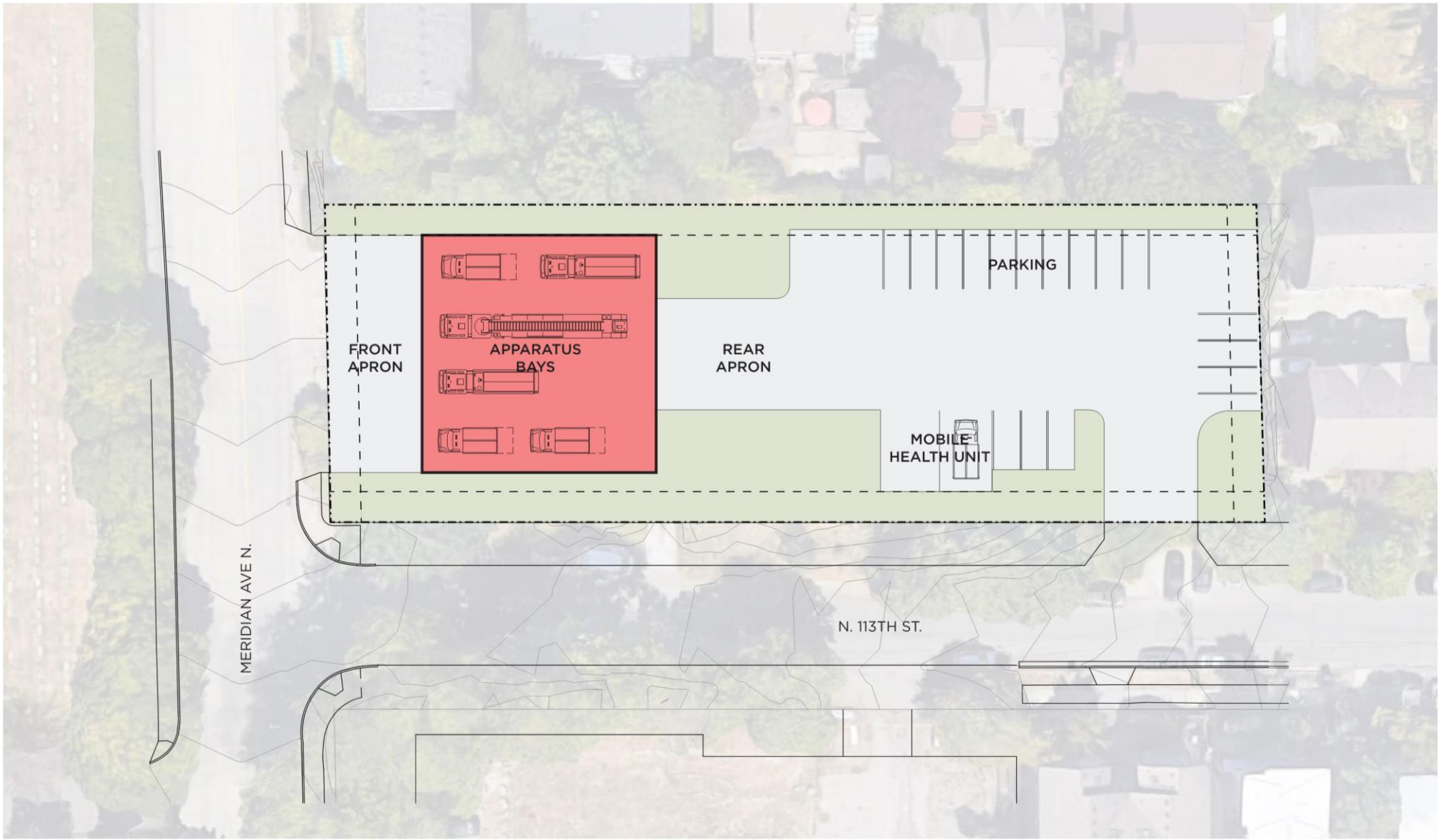
DRIVE-THROUGH APPARATUS IN MIDDLE



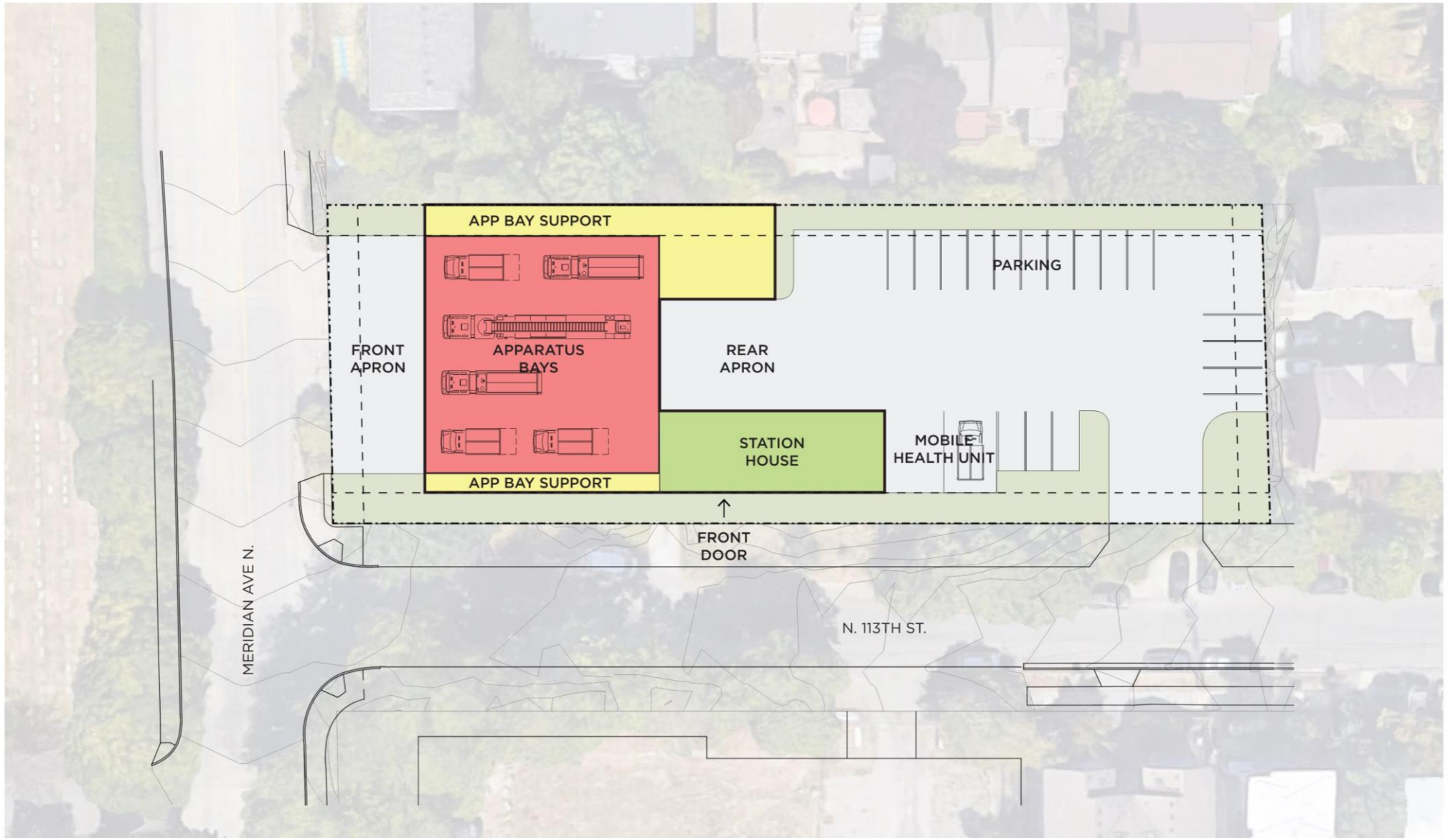
BACK-IN APPARATUS ON ENDS



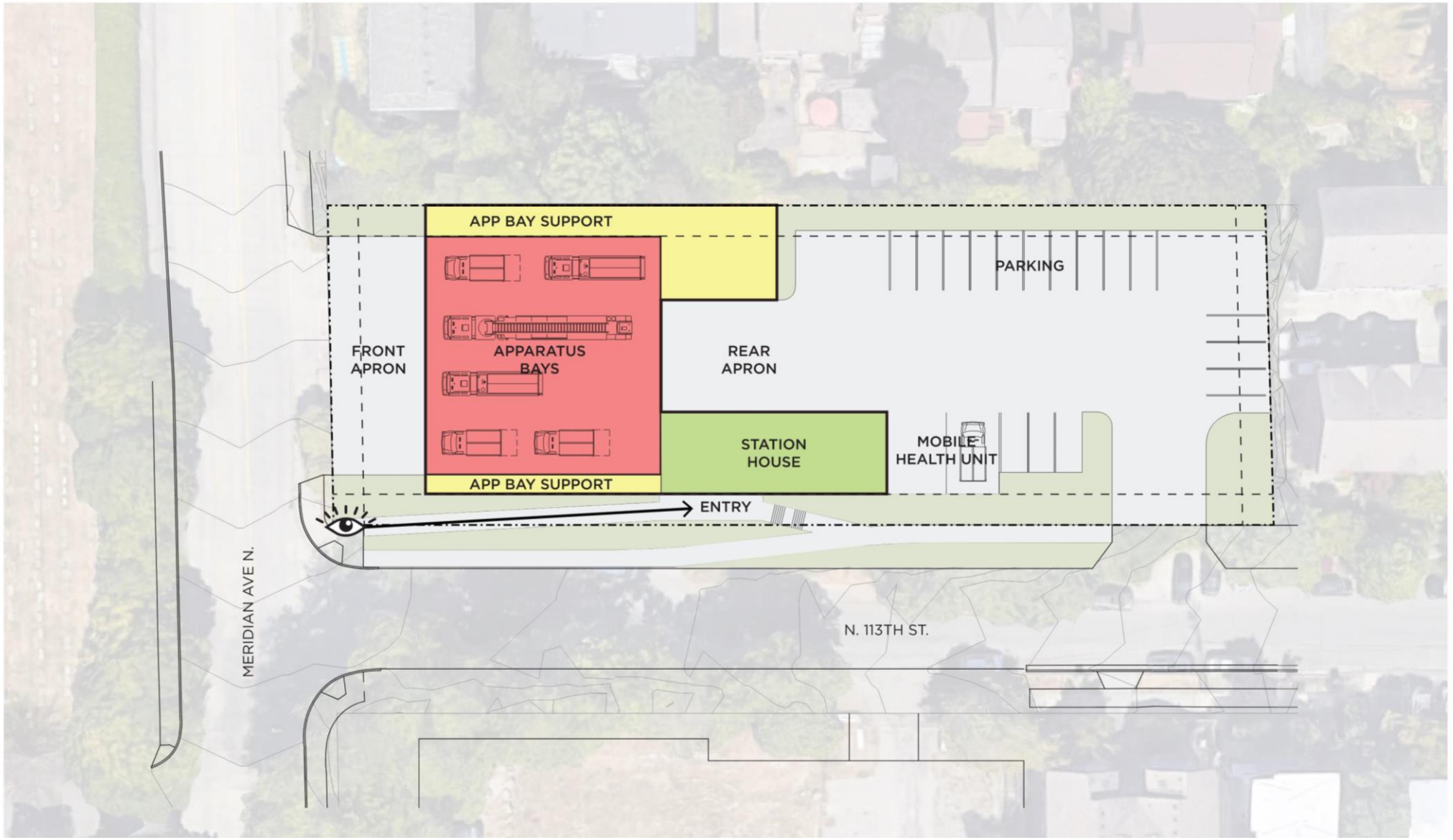
DRIVE PATH SLOPES



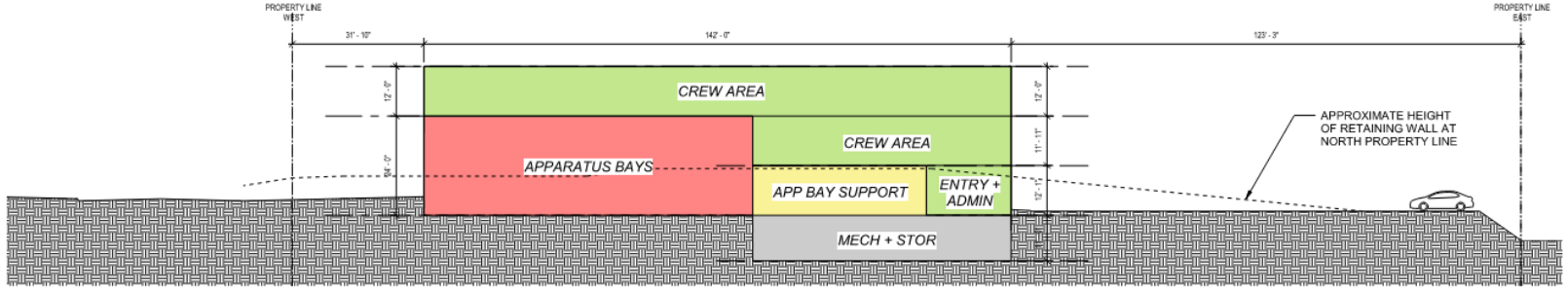
APPARATUS BAYS POSITION & SITE PROGRAM

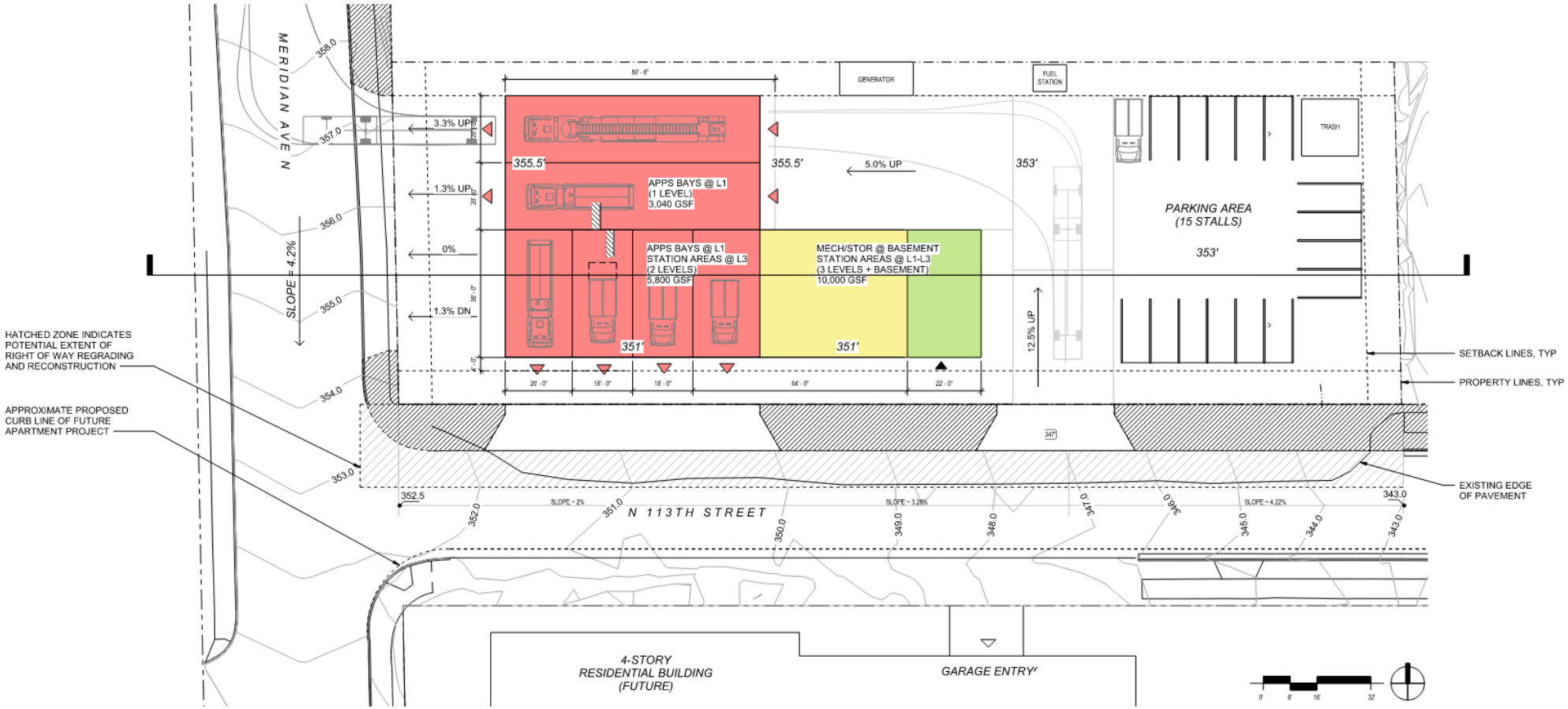


BAY SUPPORT STATION HOUSE

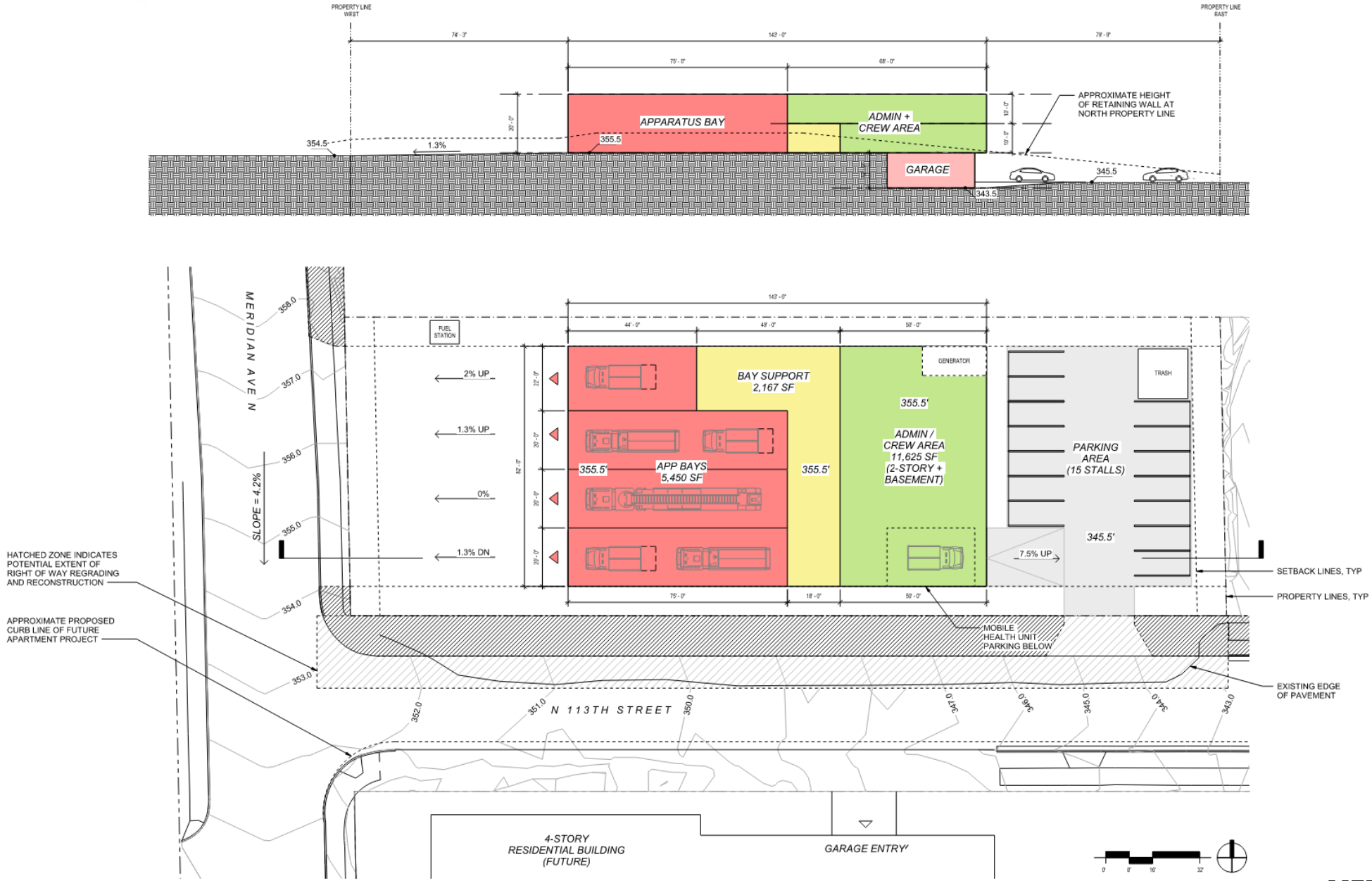


ENTRY EXPRESSION

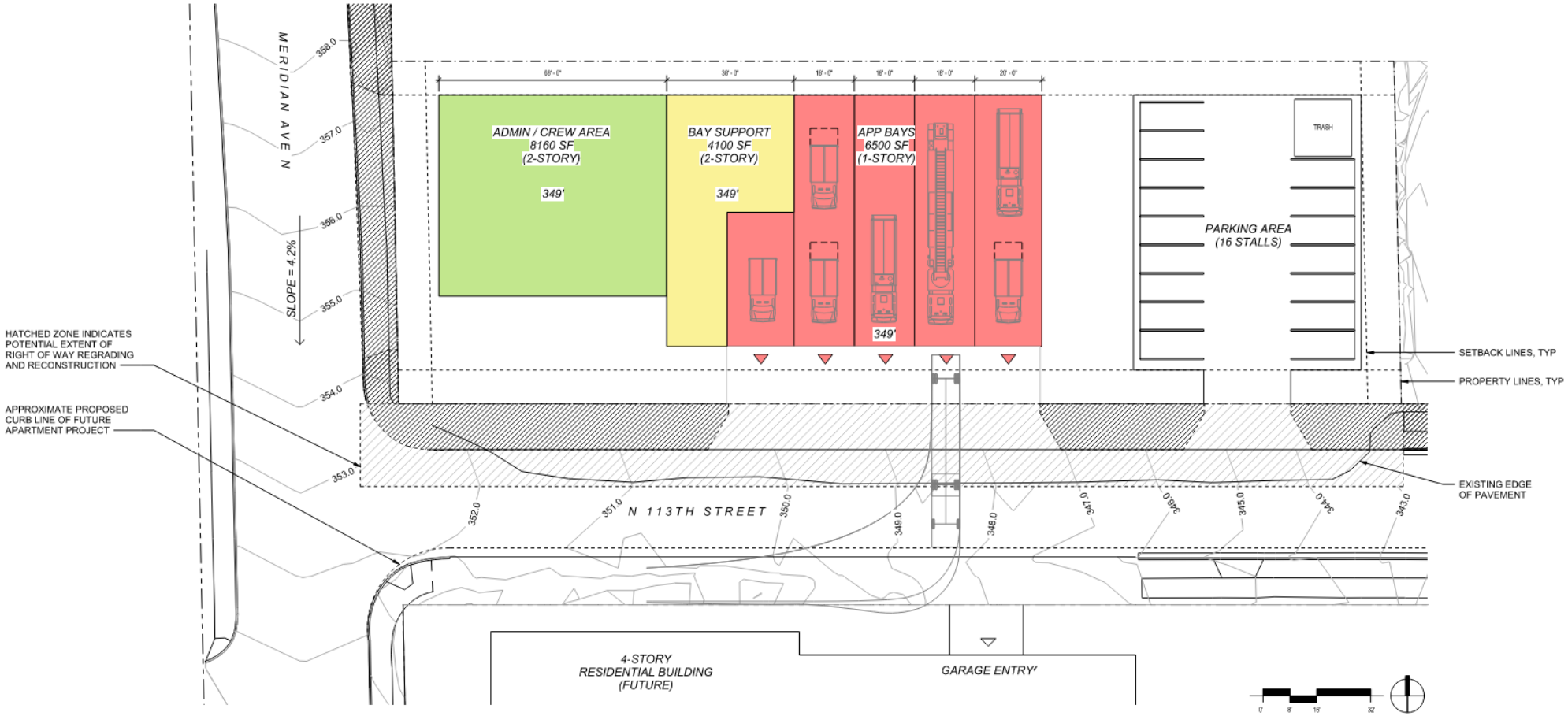




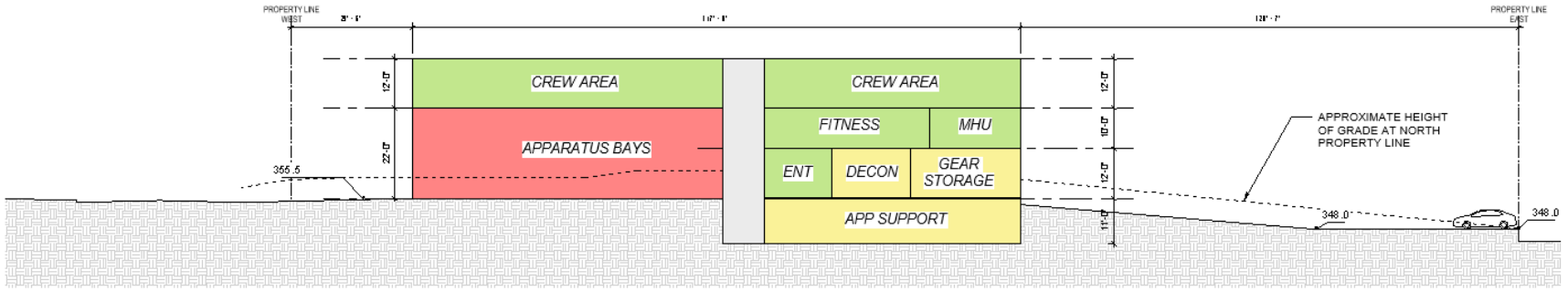
SPLIT BAYS CONCEPT

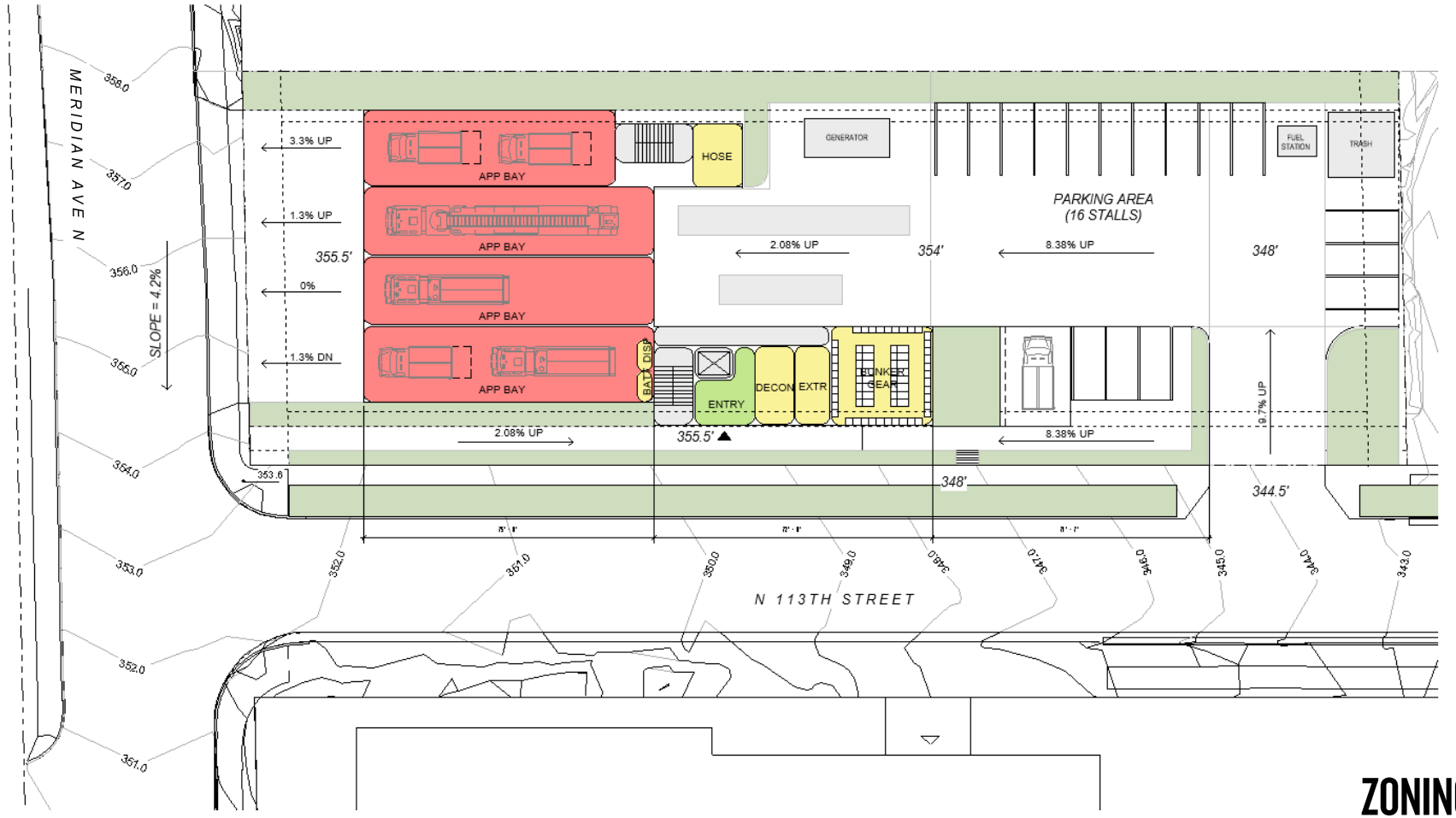


MERIDIAN BACK-IN CONCEPT

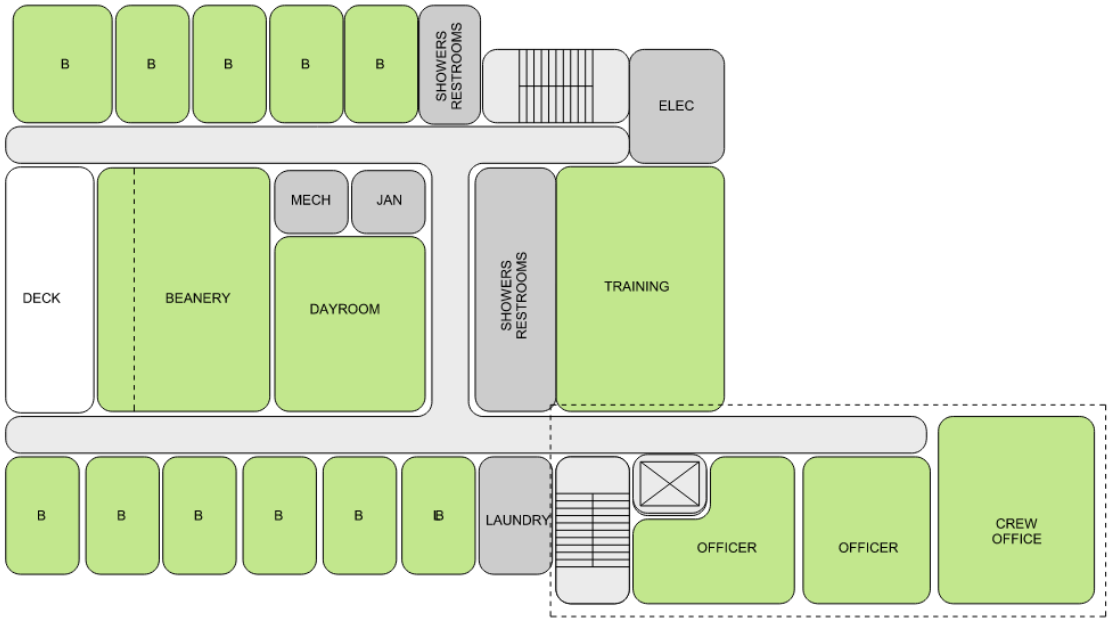


113TH BACK-IN CONCEPT

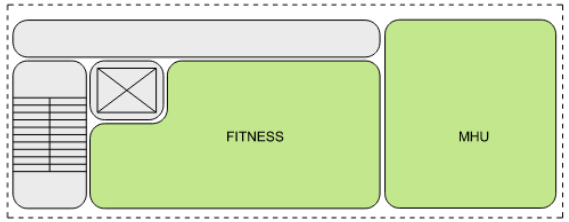




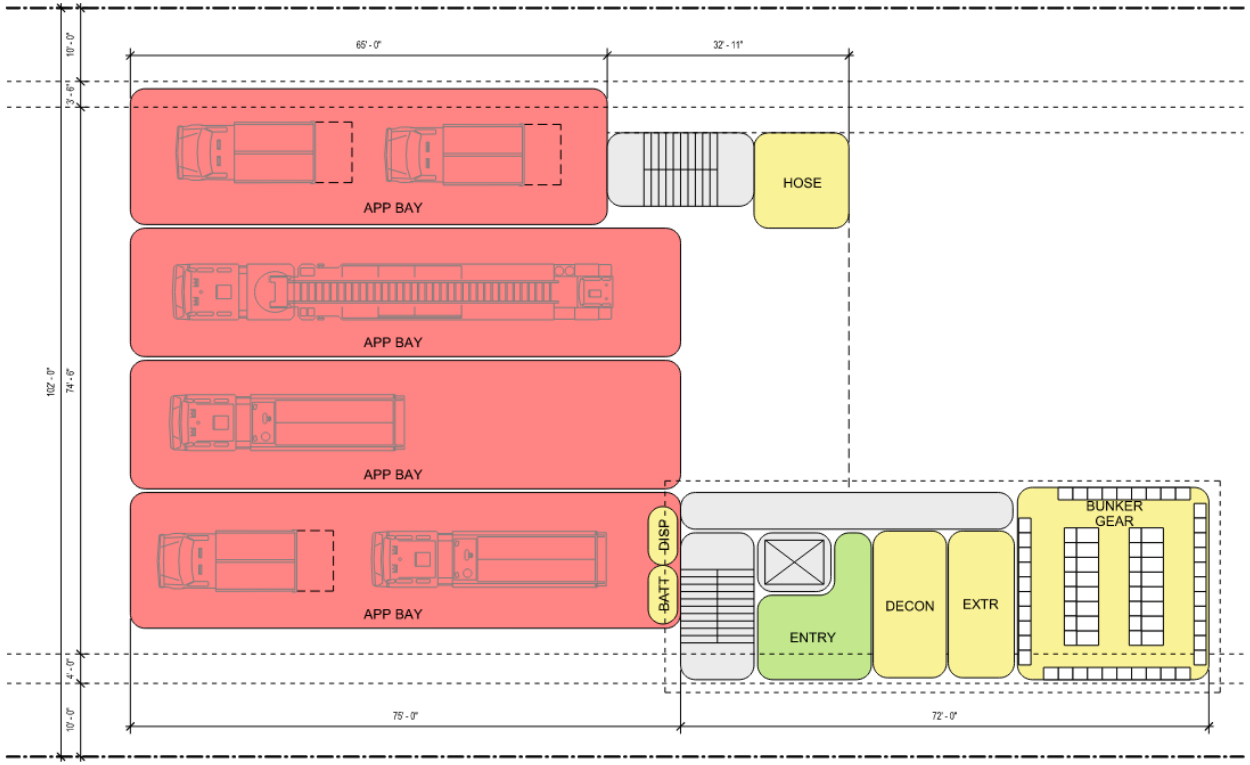
ZONING CONFORMING CONCEPT



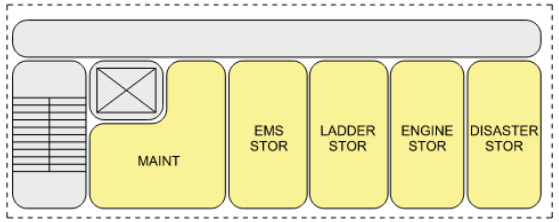
LEVEL 3



LEVEL 2

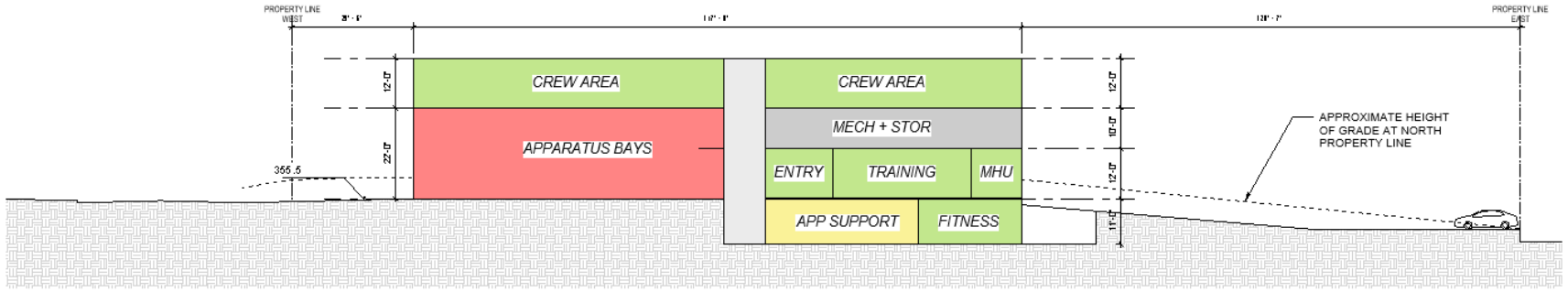


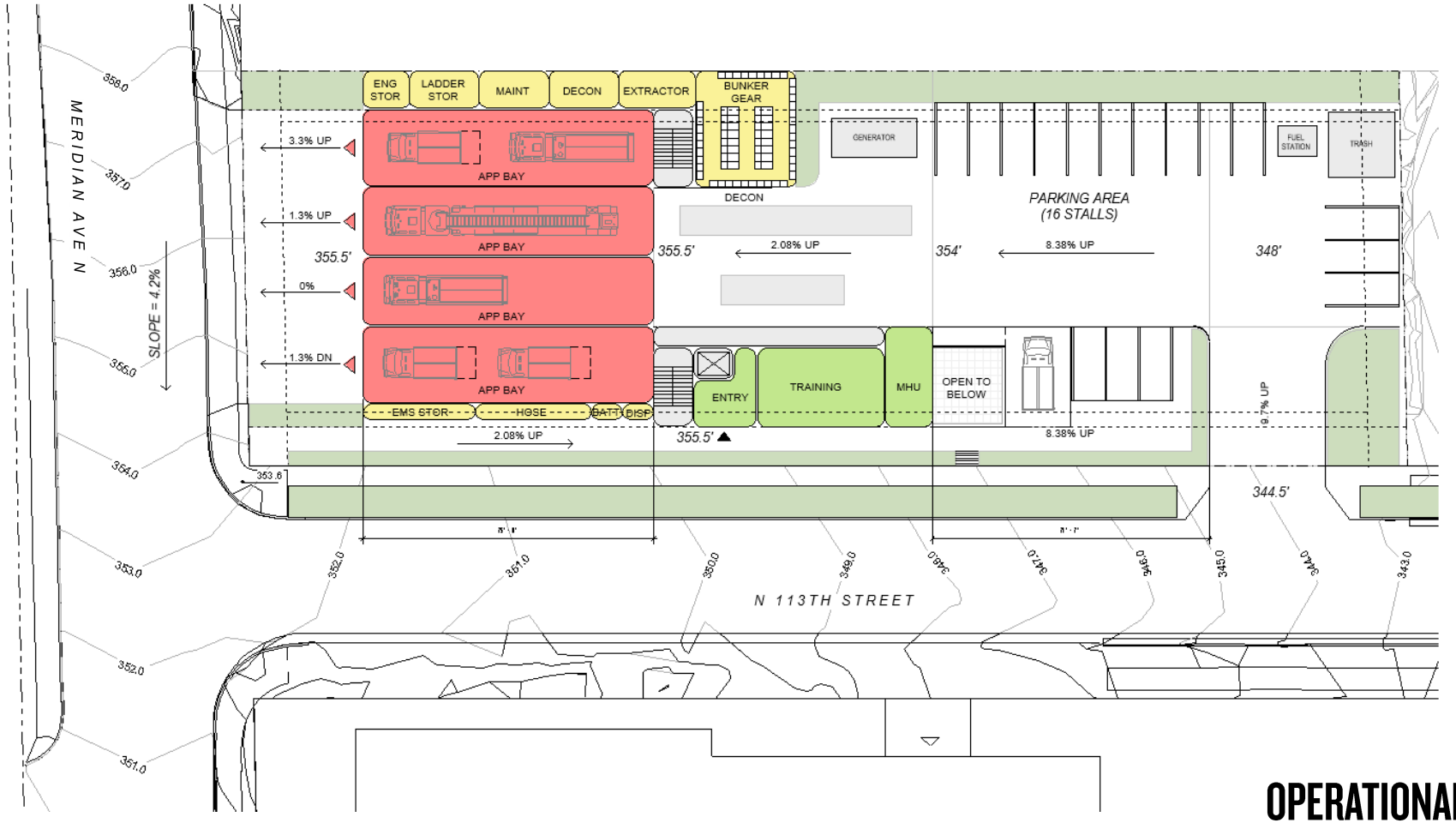
LEVEL 1



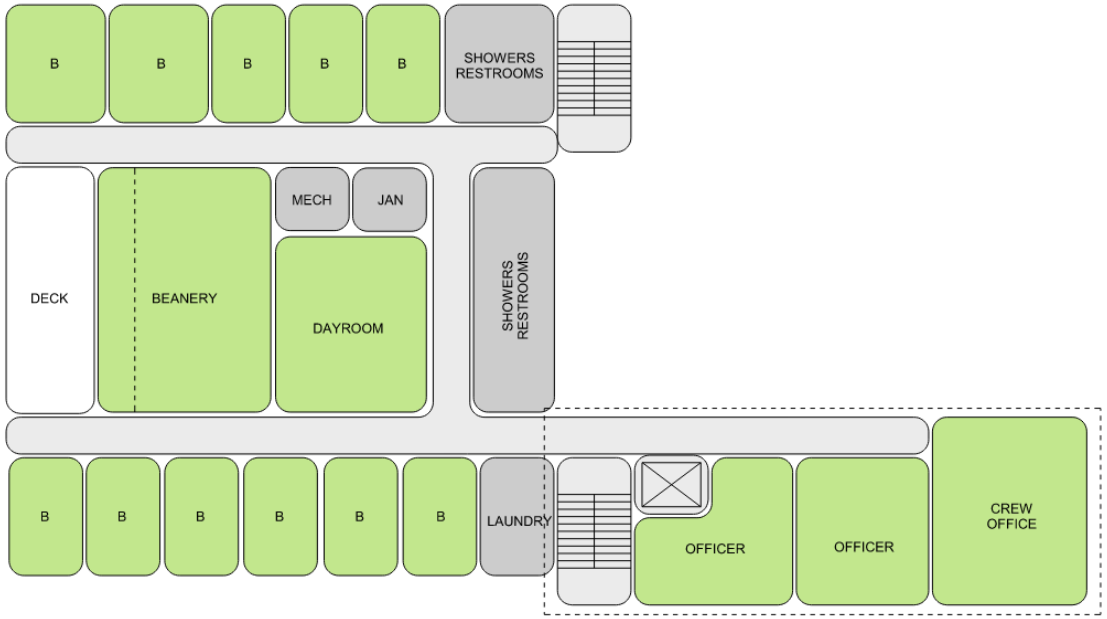
BASEMENT LEVEL

ZONING CONFORMING CONCEPT





OPERATIONALLY PREFERRED CONCEPT



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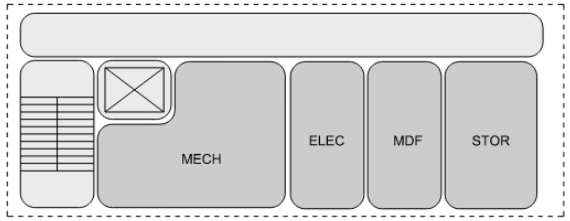

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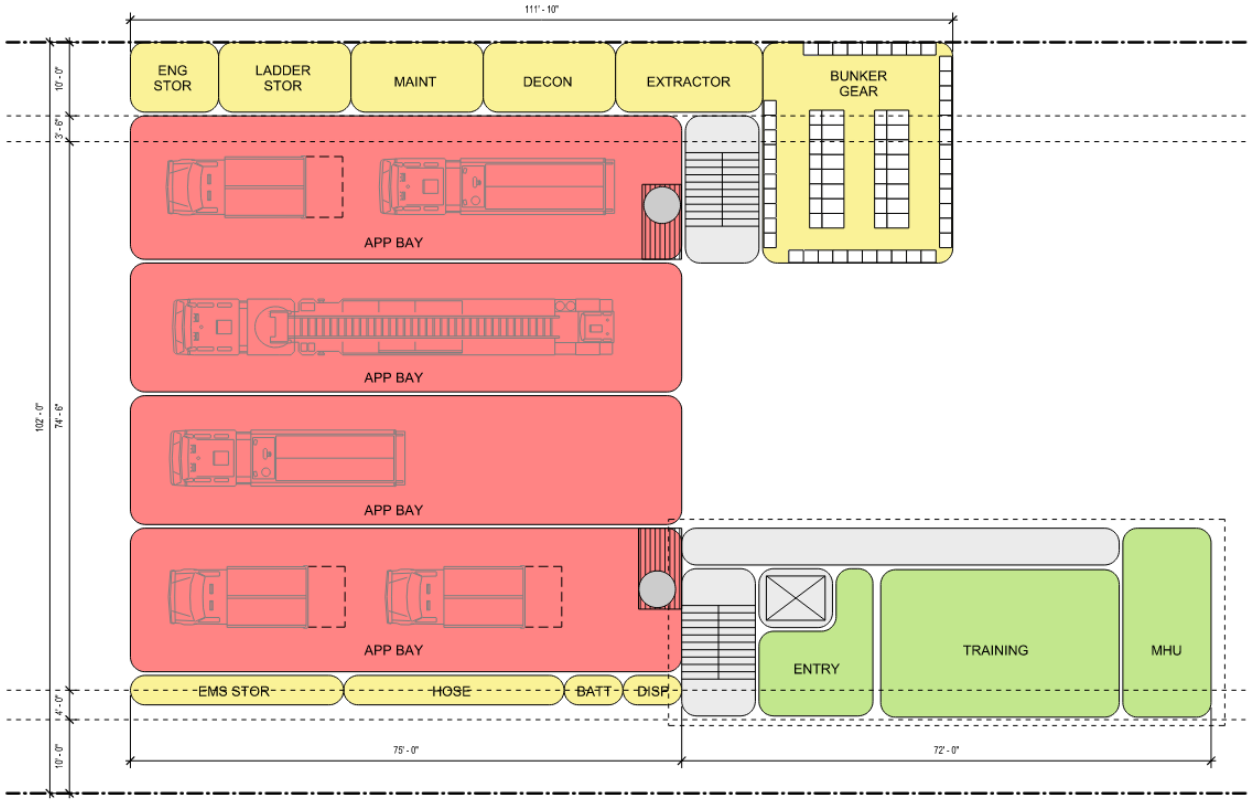

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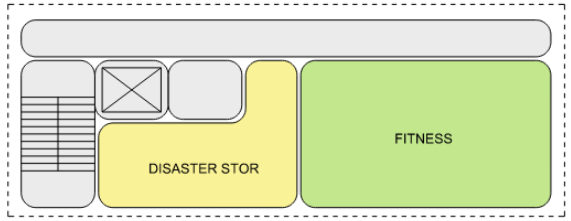
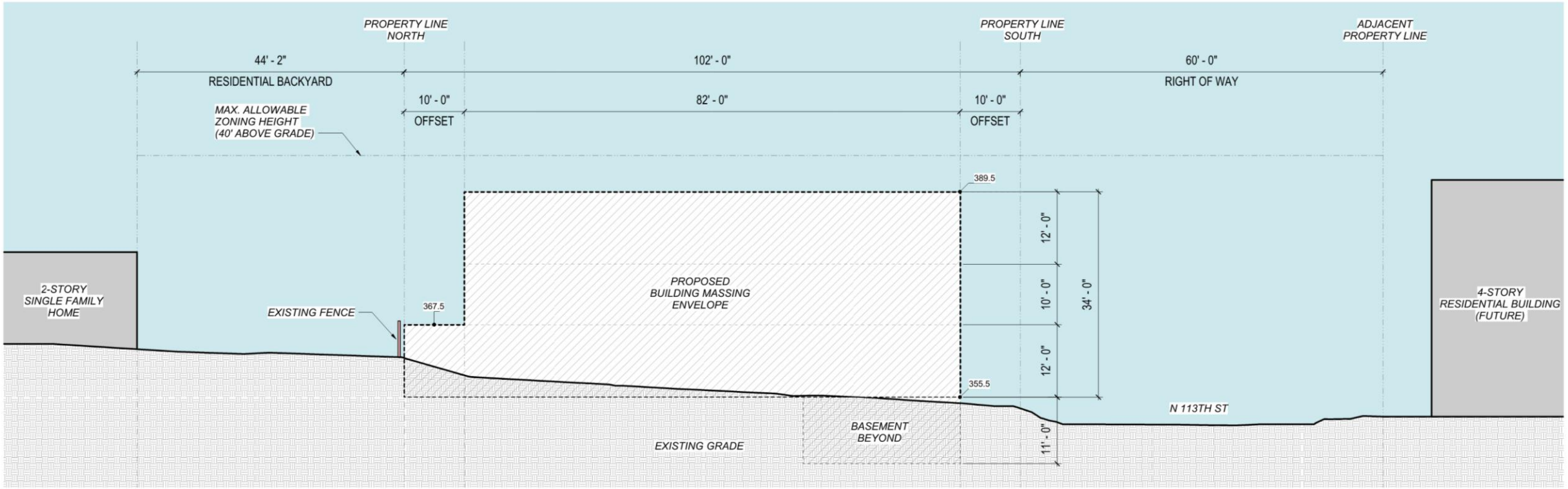
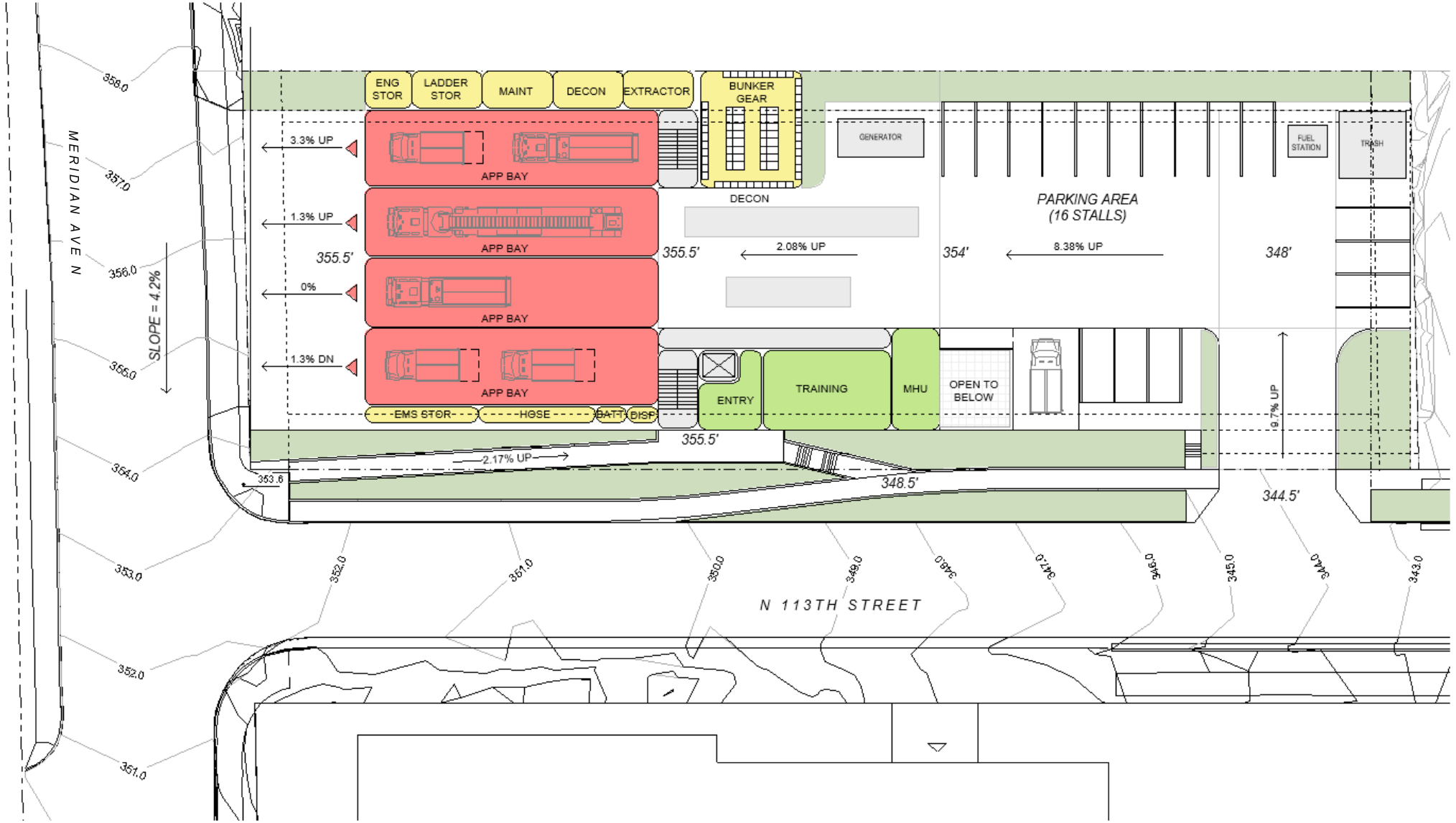


BASEMENT LEVEL

OPERATIONALLY PREFERED CONCEPT



N/S SECTION PREFERRED CONCEPT



UNIFIED ENTRY & RIGHT-OF-WAY

4. Sustainability

Requirements, explorations, and project opportunities.

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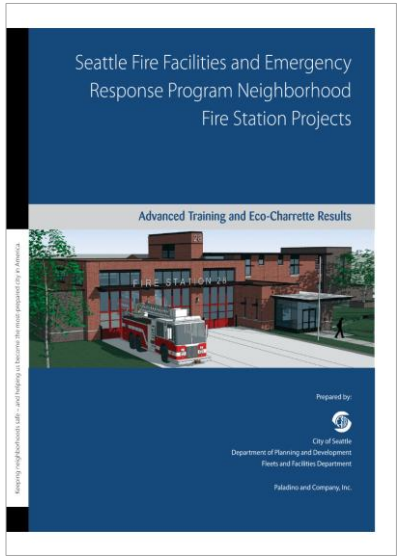
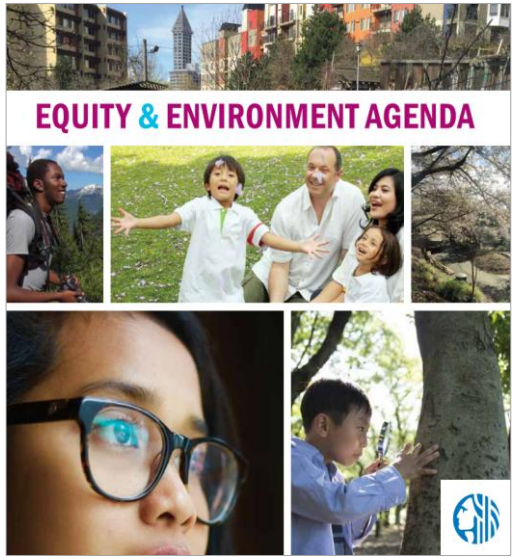
SEATTLE POLICIES & RESOURCES





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SEATTLE POLICIES & RESOURCE HIGHLIGHT

Document	Date	Stated goals
Sustainable Buildings and Sites Policy	2011	• LEED Gold (v4.1) Minimum Requirement
Executive Order 2020-01: Green New Deal for Seattle	2020	• Fossil Fuel-Free Municipal Buildings
Seattle Climate Action Strategy	2018	• Become carbon neutral by 2050. • Reduce building energy emissions 38% from 2008 levels by 2030.
Seattle Equity & Environment Initiative	2015	• All people and communities benefit from Seattle's environmental progress. • Communities most impacted by environmental injustice are engaged in setting environmental priorities. • 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.

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5/11/2021 23:39

FS31

LEED-NC v4 Scorecard

Yes	?	No	Max Pts.	
60	26	24	110	**Project Totals (pre-certification estimates)**

Certified 40-49 points **Silver** 50-59 points **Gold** 60-79 points **Platinum** 80 or more points

Yes	?	No	Max		
1			1	Credit	Integrative Process

7	3	6	16	Location and Transportation	
		n/a	16	Credit	LEED for Neighborhood Development Location
					OR
1			1	Credit	Sensitive Land Protection
2			2	Credit	High Priority Site
3	2		5	Credit	Surrounding Density and Diverse Uses
		5	5	Credit	Access to Quality Transit
		1	1	Credit	Bicycle Facilities
	1		1	Credit	Reduced Parking Footprint
1			1	Credit	Green Vehicles

5	2	3	10	Sustainable Sites	
Y				Prereq.	Construction Activity Pollution Prevention
1			1	Credit	Site Assessment
	2		2	Credit	Site Development, Protect or Restore Habitat
1			1	Credit	Open Space
		3	3	Credit	Rainwater Management
2			2	Credit	Heat Island Reduction
1			1	Credit	Light Pollution Reduction

5	4	2	11	Water Efficiency	
Y				Prereq.	Outdoor Water Use Reduction
Y				Prereq.	Indoor Water Use Reduction
Y				Prereq.	Building-Level Water Metering
1	1		2	Credit	Outdoor Water Use Reduction
3	3		6	Credit	Indoor Water Use Reduction
		2	2	Credit	Cooling Tower Water Use
1			1	Credit	Water Metering

6			6	Innovation in Design	
1			1	Credit	Innovation in Design:
1			1	Credit	Innovation in Design:
1			1	Credit	Innovation in Design:
1			1	Credit	Innovation in Design:
1			1	Credit	Innovation in Design:
1			1	Credit	LEED® Accredited Professional

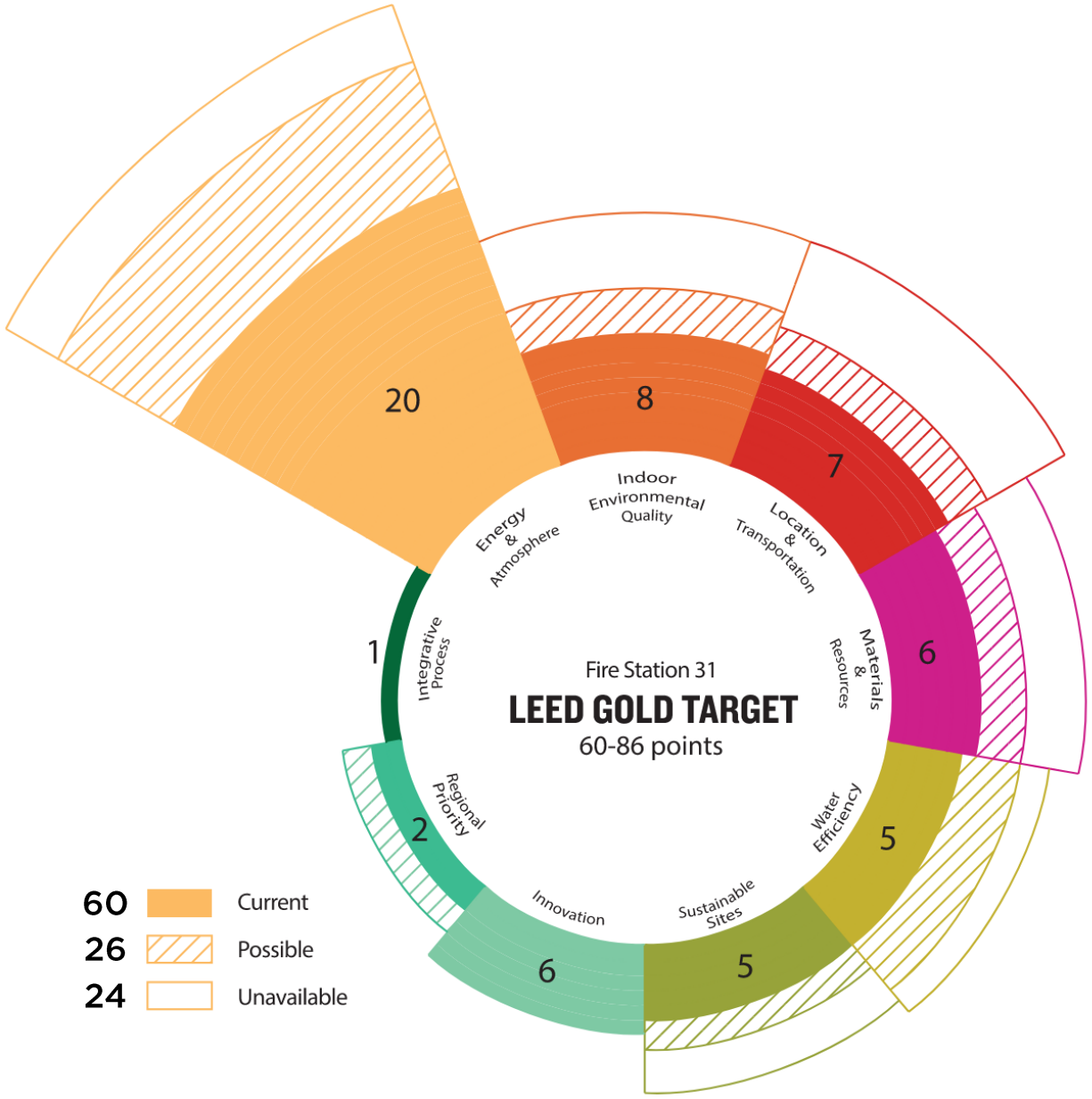
20	9	4	33	Energy & Atmosphere	
Y				Prereq.	Fundamental Commissioning and Verification
Y				Prereq.	Minimum Energy Performance
Y				Prereq.	Building-Level Energy Metering
Y				Prereq.	Fundamental Refrigerant Management
5	1		6	Credit	Enhanced Commissioning
12	6		18	Credit	Optimize Energy Performance
1			1	Credit	Advanced Energy Metering
		2	2	Credit	Demand Response
1	2		3	Credit	Renewable Energy Production
1			1	Credit	Enhanced Refrigerant Management
		2	2	Credit	Green Power and Carbon Offsets

6	3	4	13	Materials & Resources	
Y				Prereq.	Storage and Collection of Recyclables
Y				Prereq.	Construction and Demolition Waste Management Planning
1	2	2	5	Credit	Building Life-Cycle Impact Reduction
1		1	2	Credit	Building Product Disclosure & Optimization - EPDs
1		1	2	Credit	Building Product Disclosure & Optimization - Sourcing
1	1		2	Credit	Building Product Disclosure & Optimization - Material Ingredients
2			2	Credit	Construction and Demolition Waste Management

8	3	5	16	Indoor Environmental Quality	
Y				Prereq.	Minimum IAQ Performance
Y				Prereq.	Environmental Tobacco Smoke (ETS) Control
2			2	Credit	Enhanced Indoor Air Quality Strategies
3			3	Credit	Low-Emitting Materials
1			1	Credit	Construction Indoor Air Quality Management Plan
	2		2	Credit	Indoor Air Quality Assessment
1			1	Credit	Thermal Comfort
1		1	2	Credit	Interior Lighting
		3	3	Credit	Daylight
	1		1	Credit	Quality Views
		1	1	Credit	Acoustic Performance

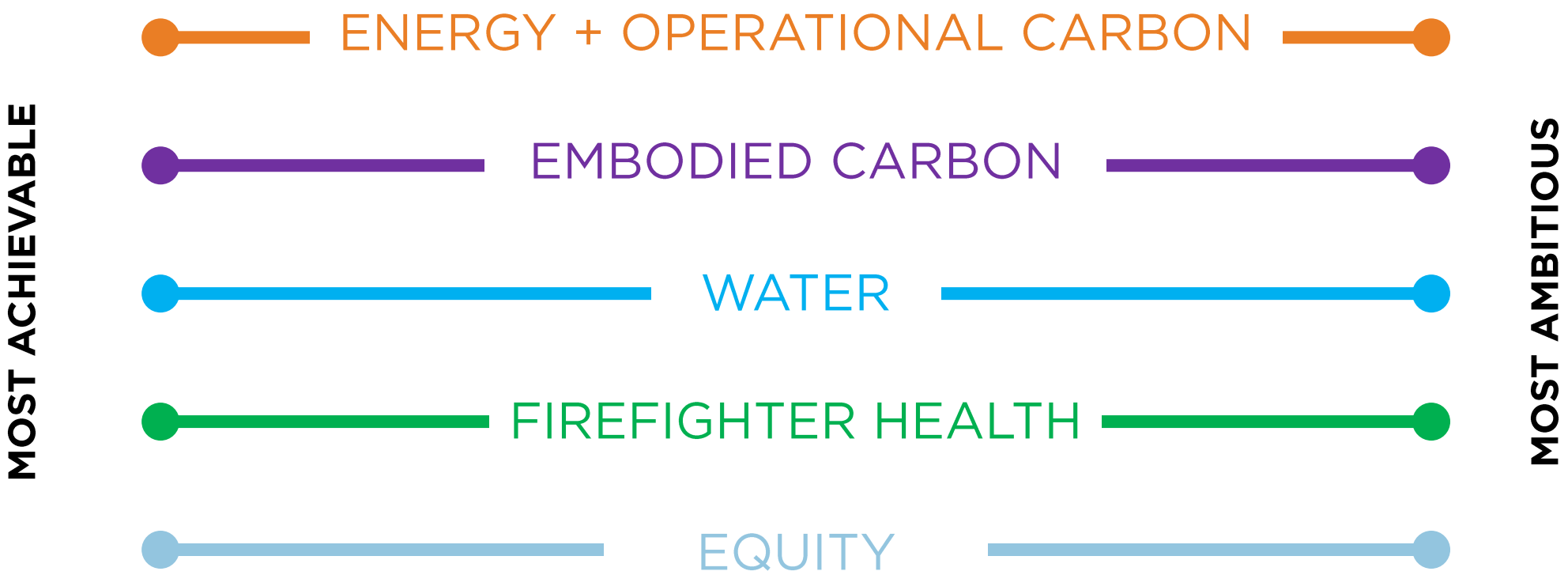
2	2		4	Regional Priority	
2	2		4	Credit	Regional Priority

LEED v4 PROJECT SCORECARD



LEED v4 PROJECT PINWHEEL

ECO-CHARETTE VISIONING



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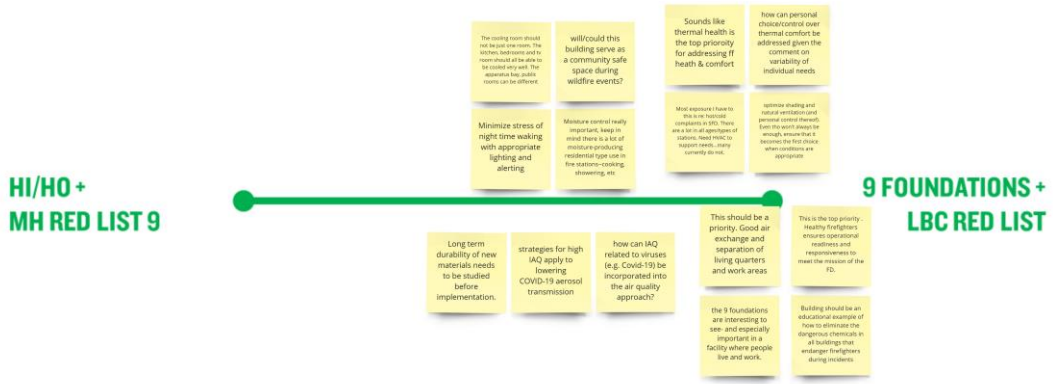
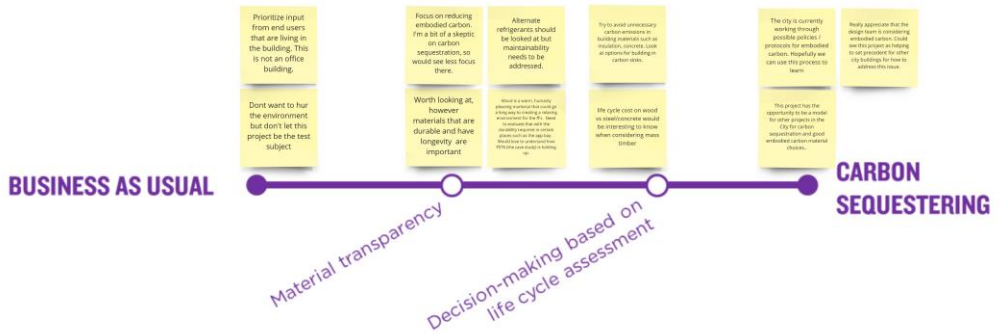
ECO-CHARETTE VISIONING

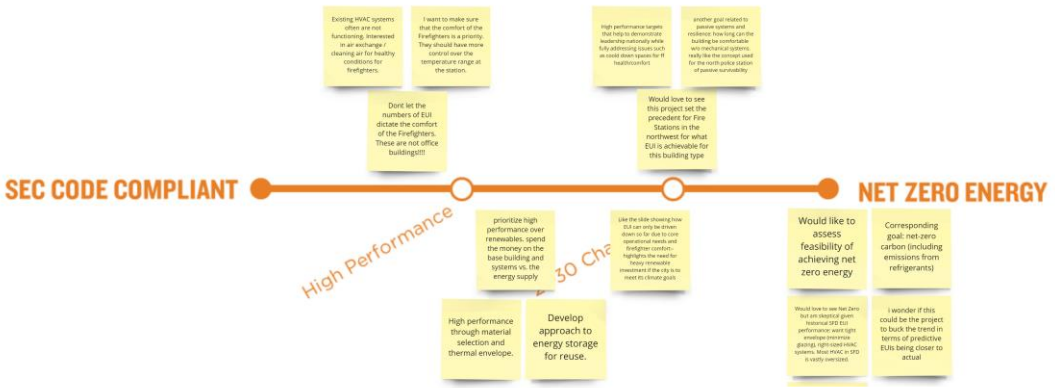
FIREFIGHTER HEALTH DISCUSSION: WHERE DO WE LAND? 5 MIN



EMBODIED CARBON DISCUSSION: WHERE DO WE LAND? 5 MIN

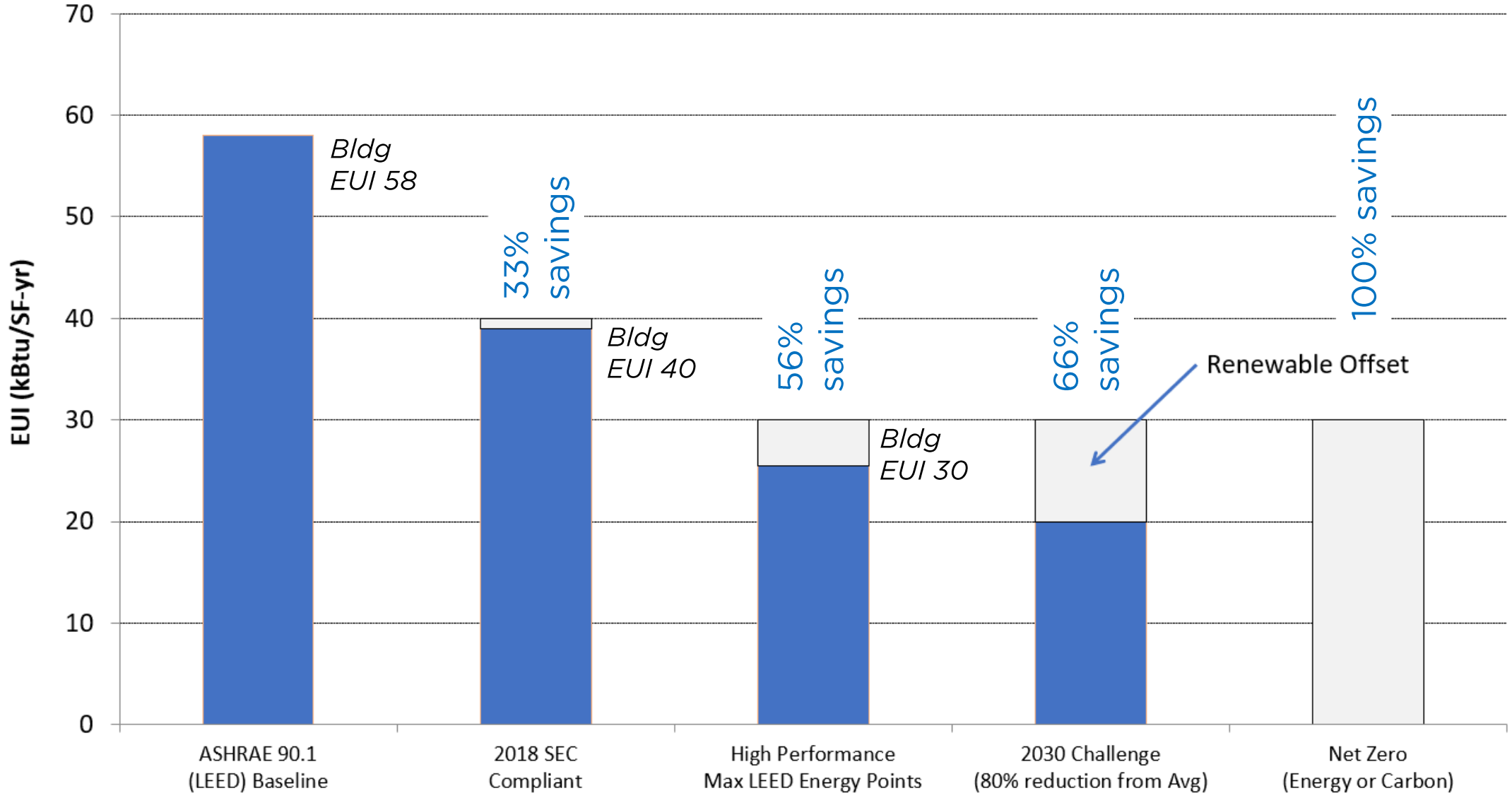


ENERGY DISCUSSION: WHERE DO WE LAND ON THE SLIDER? 5 MIN

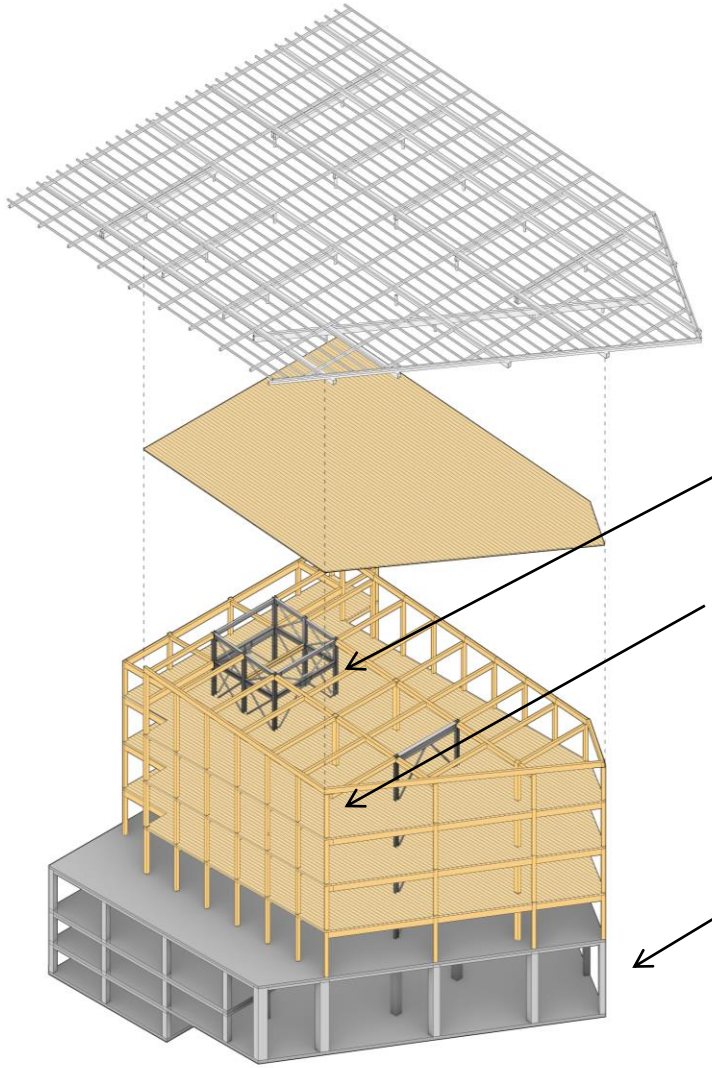


WATER DISCUSSION: WHERE DO WE LAND? 5 MIN

FIRE STATION 31 ENERGY BENCHMARKING SUMMARY



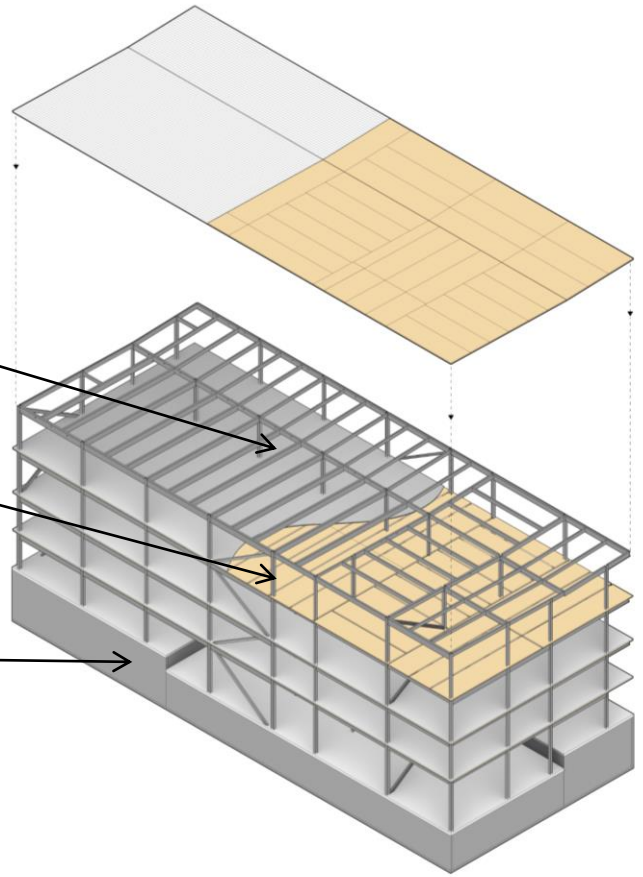
MASS TIMBER OPPORTUNITIES



Structural steel lateral load frame

Heavy timber compressive load frame

Concrete podium



Bullitt Center

Health Sciences Education Building

Fire Station 76
Multnomah County, Oregon
Courtesy Hennebery Eddy Architects

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

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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 poly-ethylene (CPE)
  - Chloroinated poly-vinyl chloride (CPVC)
  - Chloroprene (neo-prene monomer)
  - Chlorosulfonated poly-ethylene (CSPE)
  - Polyvinylidene chlo-ride (PVDC)
- Polyvinyl chloride (PVC)
- Chlorobenzenes
- Chlorofluorocarbons (CFC) and hydrochloro-fluorocarbons (HCFC)
- Formaldehyde (added)
- Monomeric, polymeric and organo-phosphate 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.

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5. Community

Strategies for community engagement.

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COMMUNITY OUTREACH

- Typical Fire Levy projects have included community open houses at 30% and 60% design
- Capital Development will be working to identify community groups for targeted outreach
- Project does not currently include any direct community accessible program elements
- Virtual open houses have generally attracted greater participation and will be implemented regardless of any easing of pandemic restrictions

Fire Station 37 Open House
Courtesy Westside Seattle

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6. Coordination

Interdepartmental coordination and collaboration.

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INTERDEPARTMENTAL COORDINATION

- 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 Racial Equity Toolkits 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

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7. Equity

Opportunities in fire station design.

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EQUITABLE ENGAGEMENT

- Gender neutrality, including private bathrooms and bunks, already standard practice for Seattle Fire Department.
- Project will ensure diverse stakeholder groups are assembled for workshops throughout the design process. Currently reaching out to affinity groups including the Women's Alliance.
- Design team will review existing Racial Equity Toolkit initiatives underway at Seattle Fire Department and determine what the project can do to support them.
- Through community engagement, project will seek to understand if there are ways it can function as a community asset beyond its core operational mission.
- Project team will seek to understand how design choices affect the health of communities both proximal and remote to the site and prioritize sustainability strategies that positively impact equity and social justice.

Members of SFD Recruit Class 109
Courtesy FireDogPhotos

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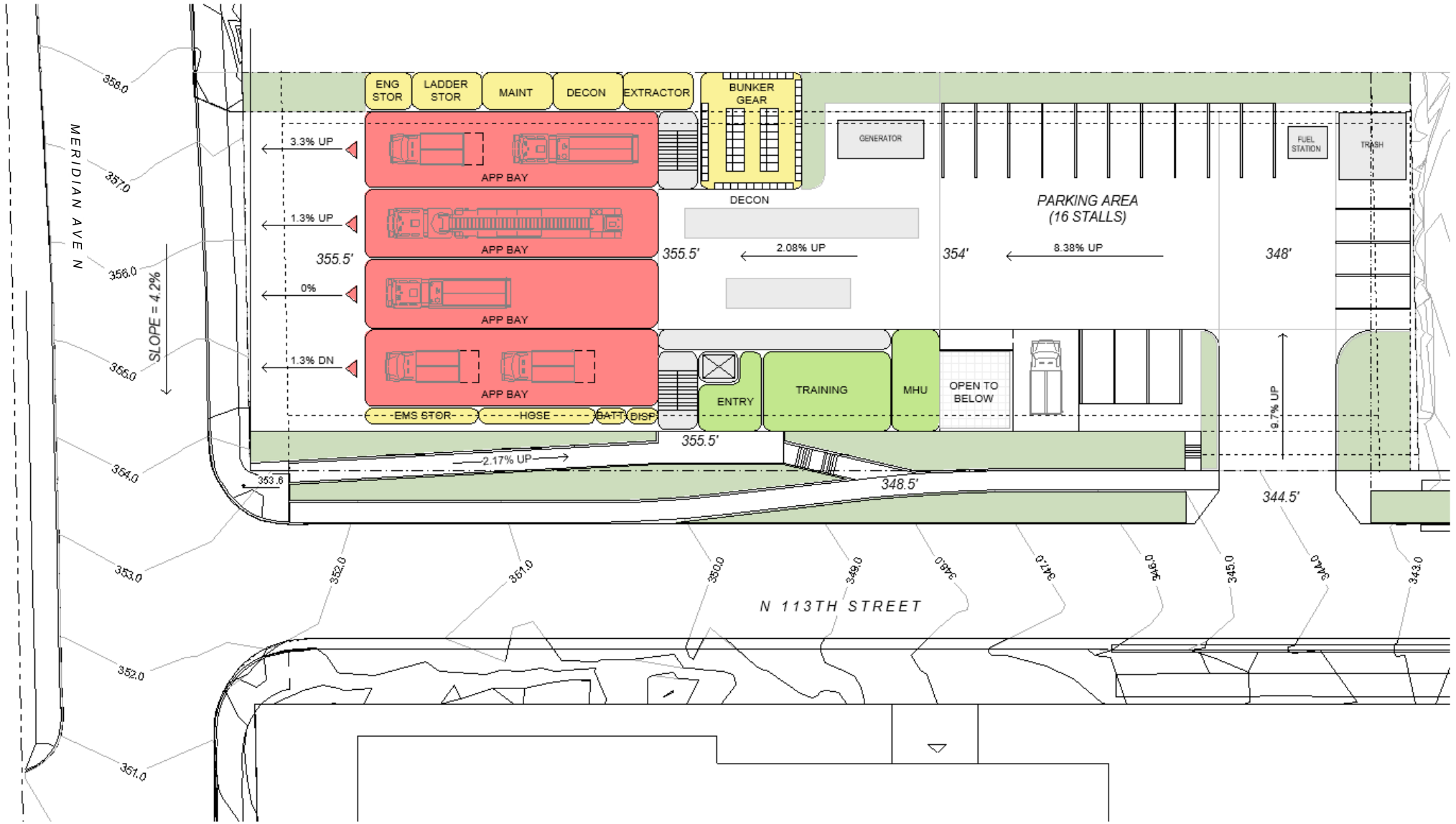

PREFFERED CONCEPT SITE PLAN