



PRESERVATION
OF AFFORDABLE
HOUSING

Woulda, Coulda, Shoulda

Clarendon Hills, Somerville, MA

Why Modular?

**Avoid or Minimize Relocation:
expensive and disruptive**

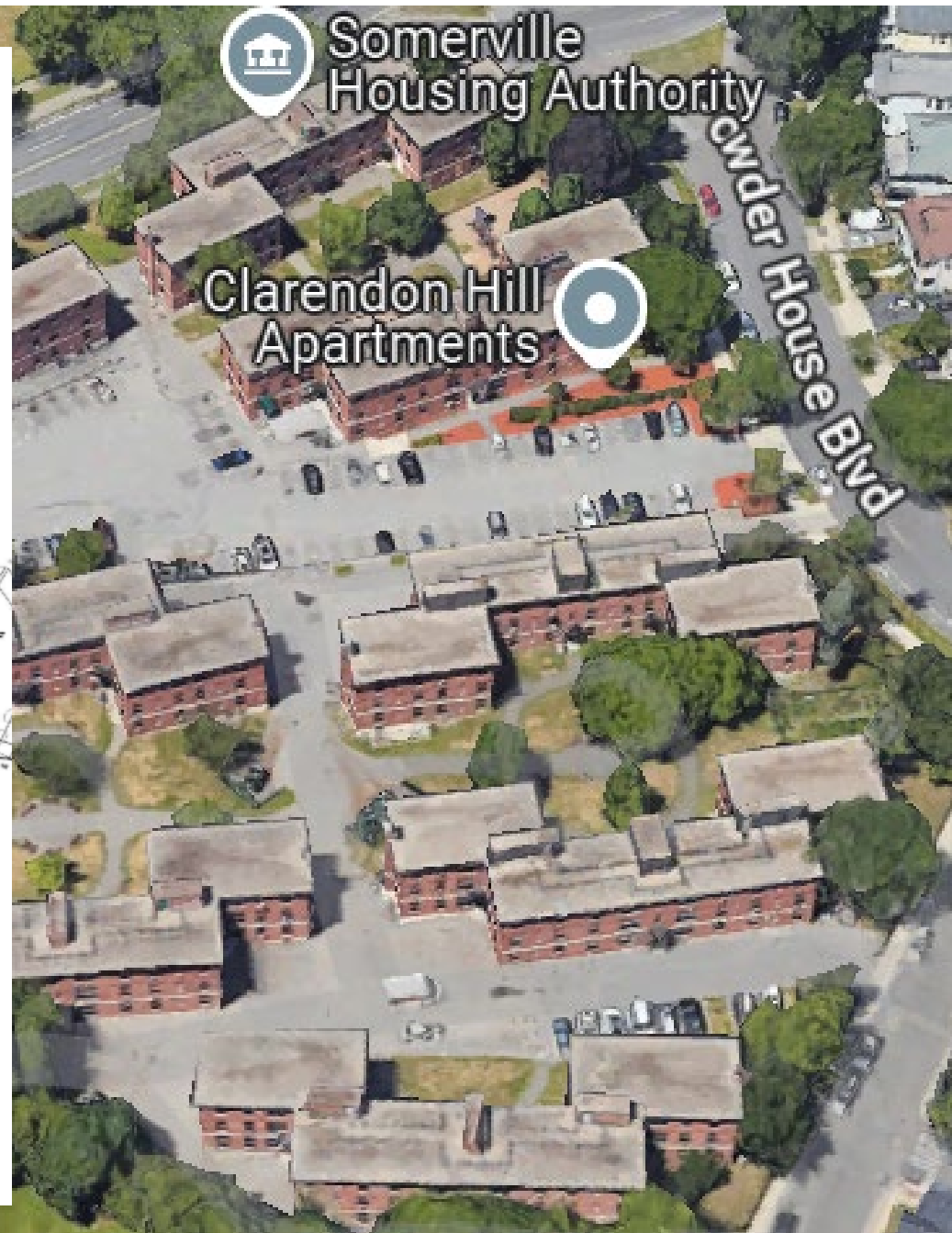


Why Modular?

Avoid Prevailing Wage on Off Site

Construction – up to 40% premium







Clarendon Hills Current Building Type



Building E

Building D

**Buildings A and B
(Market Rate)**

Townhomes

**Main Entrance
Grade ~30'**

Clarendon Hills Future Site Plan

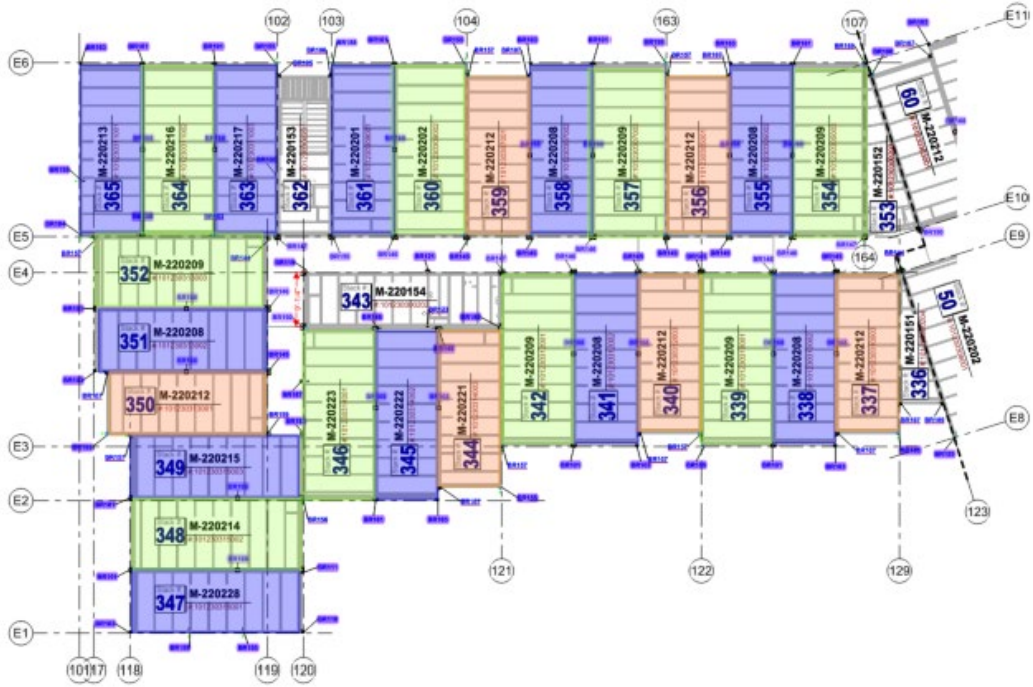


**Main Entrance
Grade ~30'**

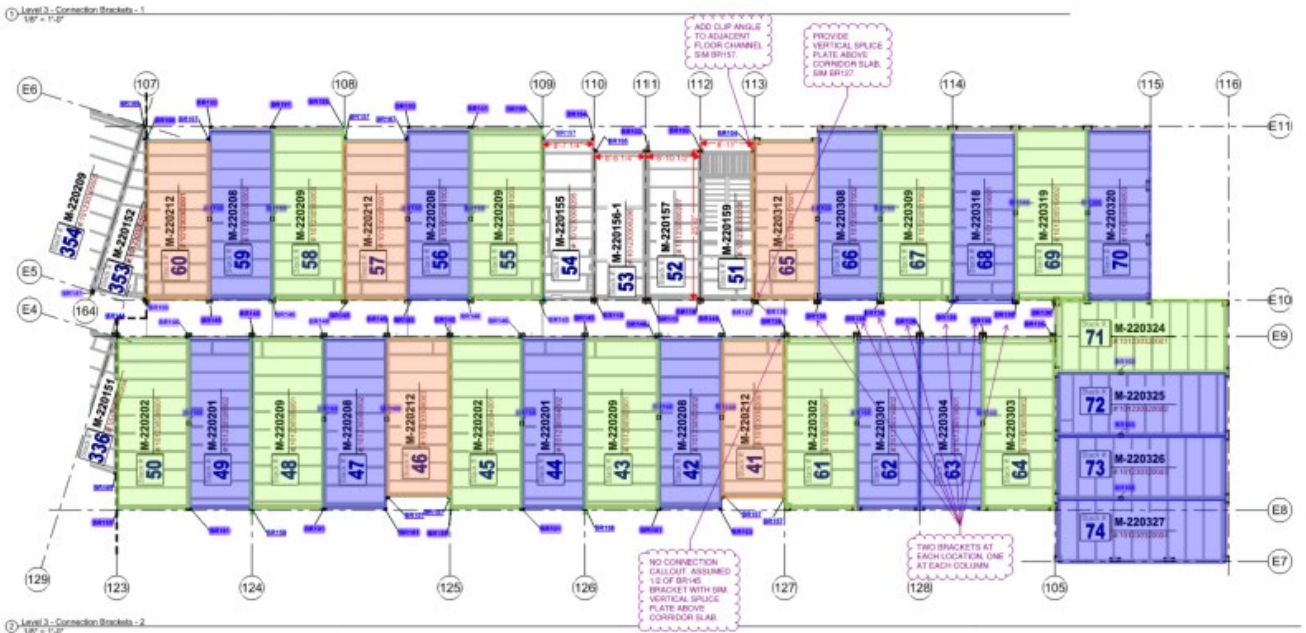


**Garage Entrance
Grade ~16'**

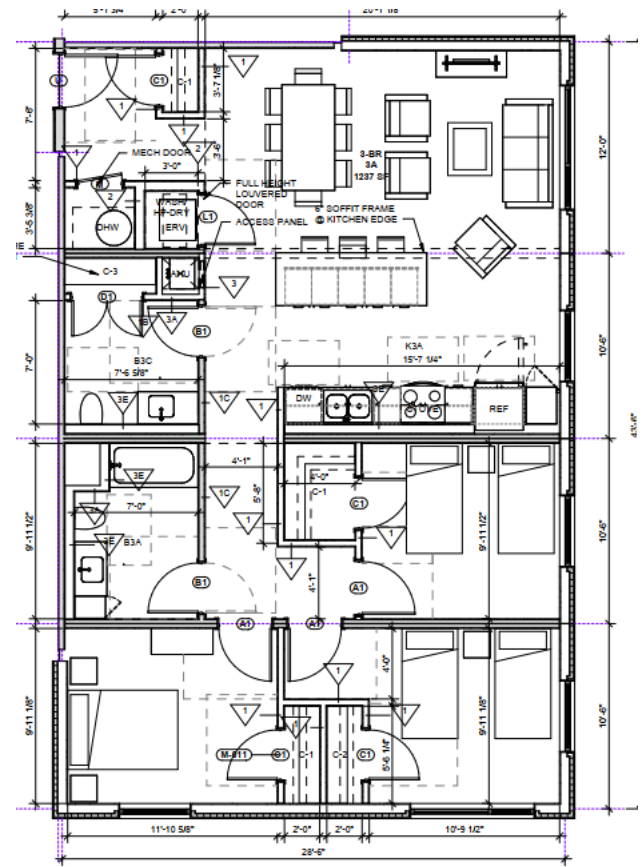
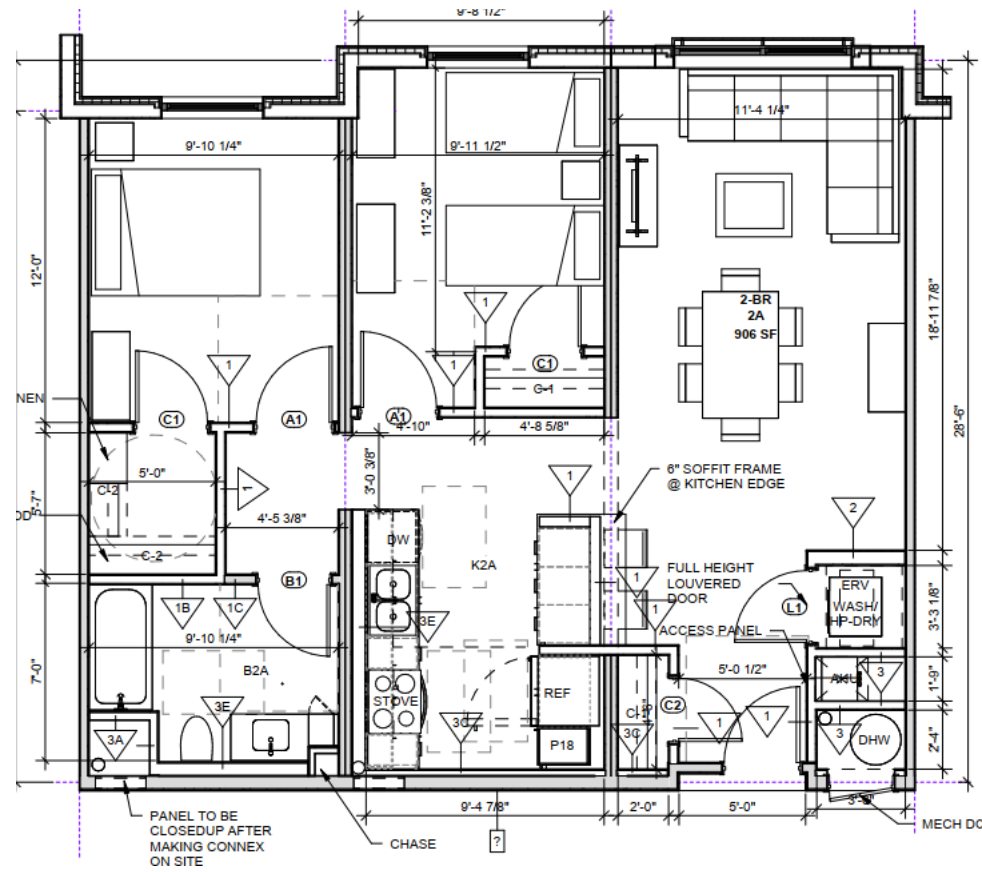
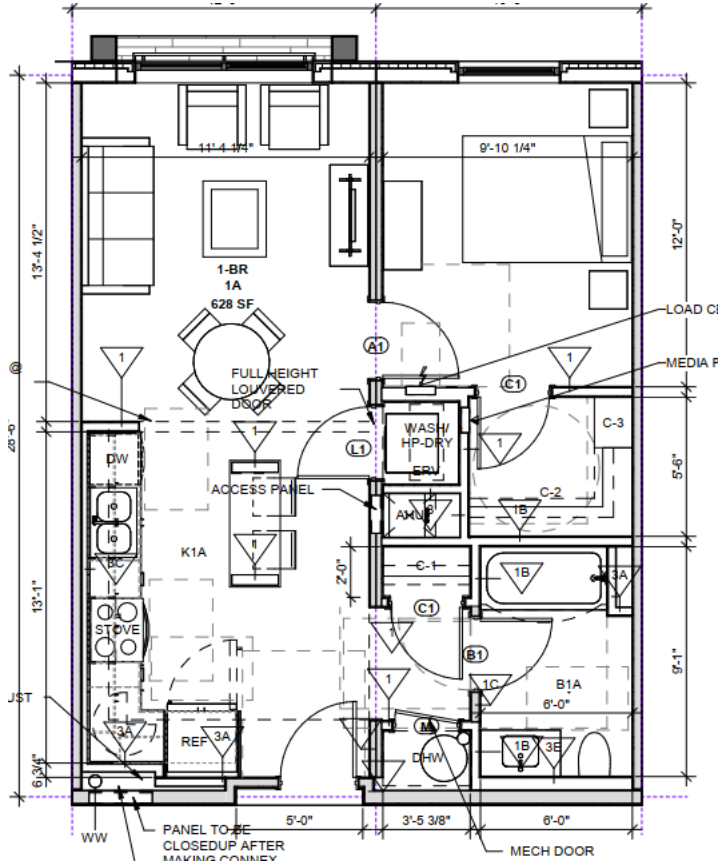




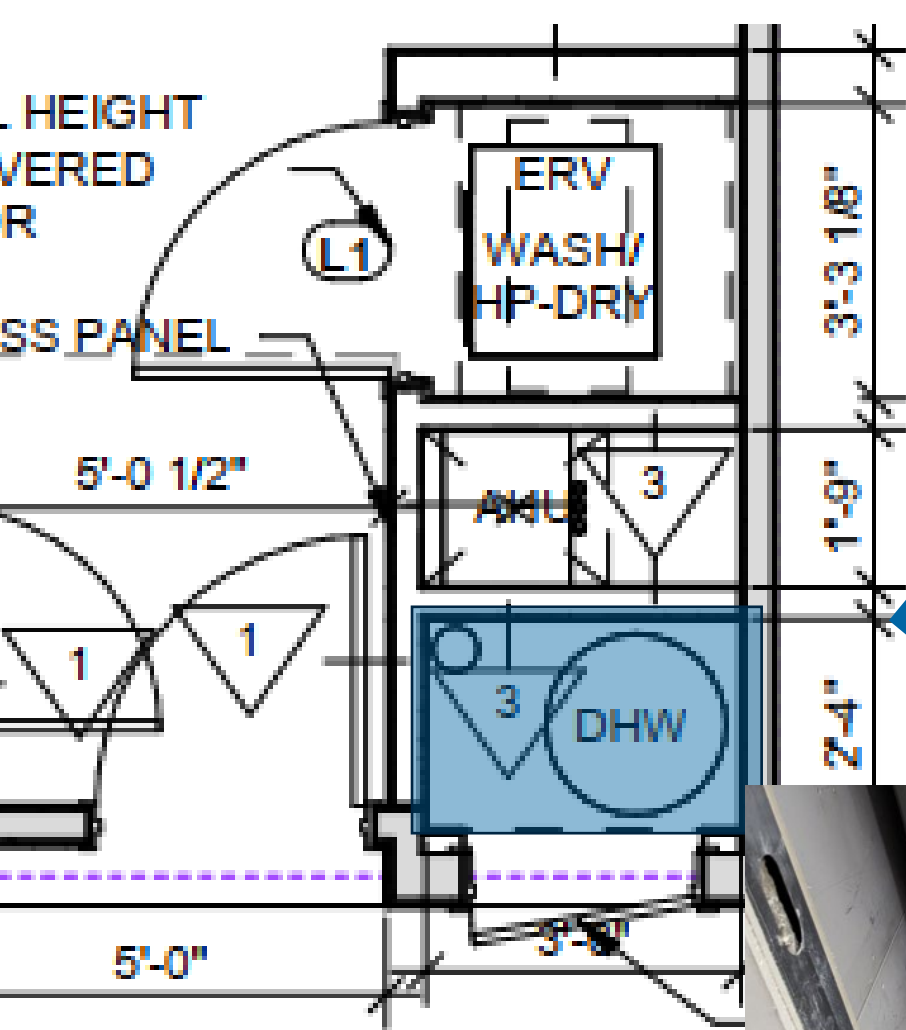
Bedrooms	Number
One	41
Two	121
Three	6
Total	168



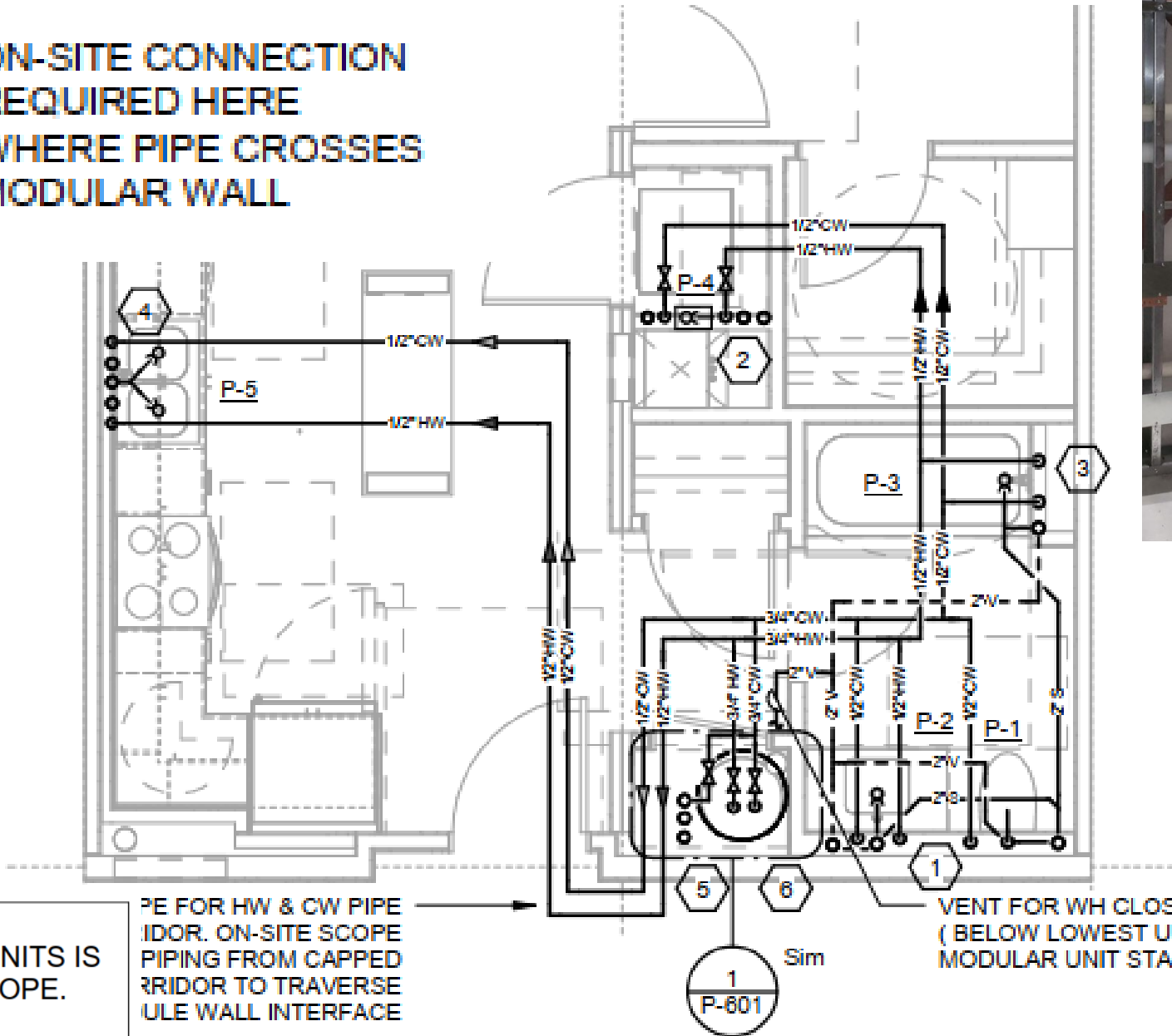
Modules	Number
10 x 26	200
10 x 28	250
12 x 28	110
Total	560



Floor Plans



— ON-SITE CONNECTION
REQUIRED HERE
WHERE PIPE CROSSES
MODULAR WALL



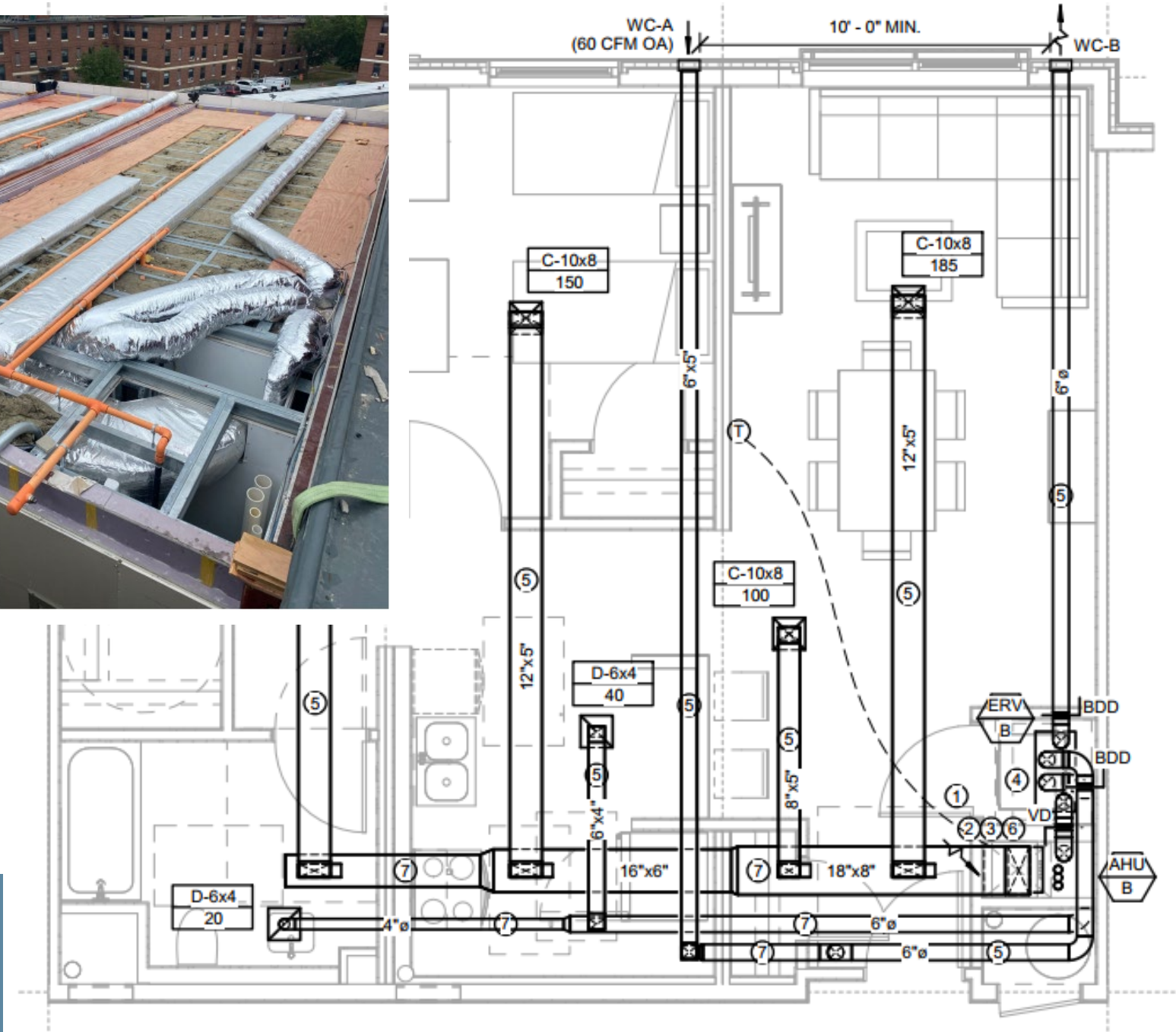
Wall
Hung Toilet

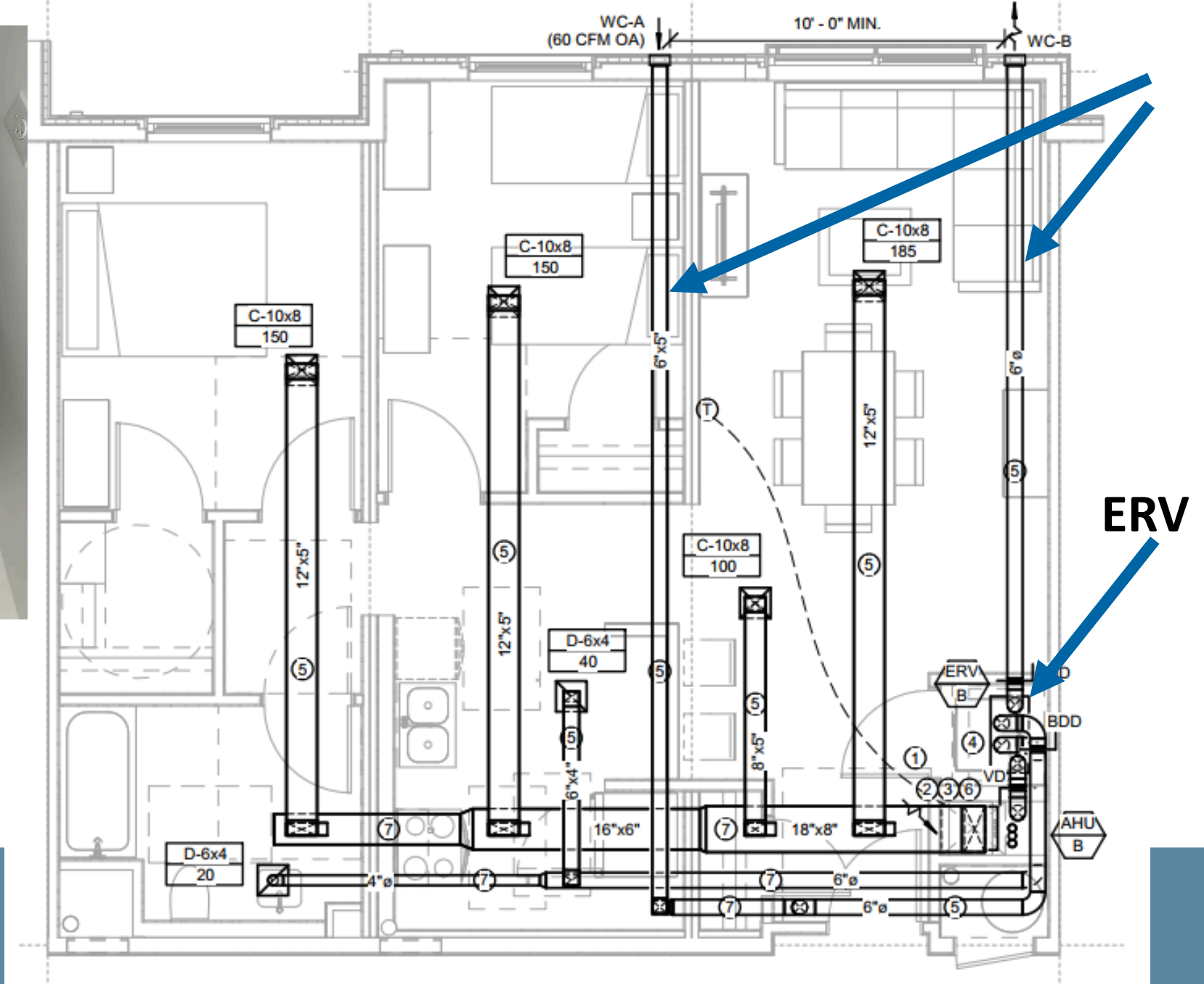
NOTE:
ALL WORK WITHIN UNITS IS
TO BE MODULAR SCOPE.

ALL PIPING IN CORRIDORS
IS TO BE ON-SITE SCOPE.

PE FOR HW & CW PIPE
IDOR. ON-SITE SCOPE
PIPING FROM CAPPED
RIDOR TO TRAVERSE
ULE WALL INTERFACE

VENT FOR WH CLOSET FD
(BELOW LOWEST UNIT IN
MODULAR UNIT STACK ONLY)





Passive House Feasibility

Clarendon Hill –

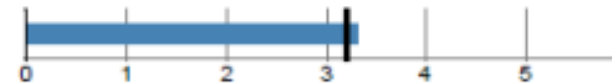
Heating demand

specific: 4 kBtu/ft²yr
target: 3.8 kBtu/ft²yr
total: 242,306.05 kBtu/yr



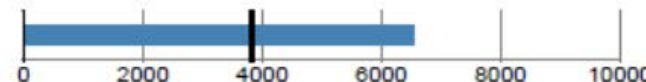
Cooling load

specific: 3.3 Btu/hr ft²
target: 3.2 Btu/hr ft²
total: 200,330.44 Btu/hr



Source energy

total: 1,023,562.87 kWh/yr
specific: 6,561 kWh/Person yr
target: 3,840 kWh/Person yr
total: 3,492,196.77 kBtu/yr
specific: 57.59 kBtu/ft²yr



Certification Pathway	Units	PH Target	PH Model	Estimated Renewable Offset Needed
PHIUS+ Core	kWh/person/yr	5,500	6,500	45 kW
PHIUS+ 2018	kWh/person/yr	3,840		125 kW

Initial Proposal for Roof Top Solar is **165 kw**

Performance Criteria	Units	PH Threshold	0	1	2	3	4
			PH Benchmark	2" c.i. no z-girt	4" c.i. w z-girt	Low SHGC	All Scenarios
Annual Heating Demand	kBtu/ft ² yr	3.8	4	3.21	3.68	4.19	2.99
Annual Cooling Demand	kBtu/ft ² yr	6.6	3.63	4.12	3.85	3.4	3.62
Peak Heating Load	Btu/hr ft ²	3.9	3.87	3.53	3.72	3.86	3.36
Peak Cooling Load	Btu/hr ft ²	3.3	3.3	3.26	3.18	2.99	2.93

We got SIS but not 4" of CI



What IF:

- 1. Carbon Cure Concrete**
- 2. Steel made and recycled in the US**
- 3. Better Windows**
- 4. Better Sequencing and detailing;
what goes on at the factory and
what happens in the field.**
- 5. Quality Control; so many parts...**

.... maybe next phase

