10x10x10-2009

CAST architecture in-fremont talk

10 speakers

10 slides

10 minutes

SLIDE 1 - Intro:

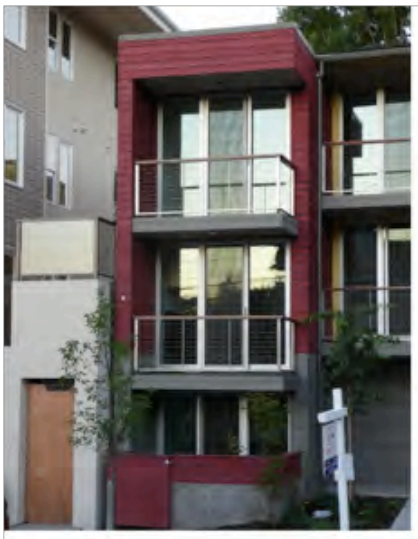
• In-fremont is a set of 5 town homes finished in the spring this year – which was not exactly great timing!

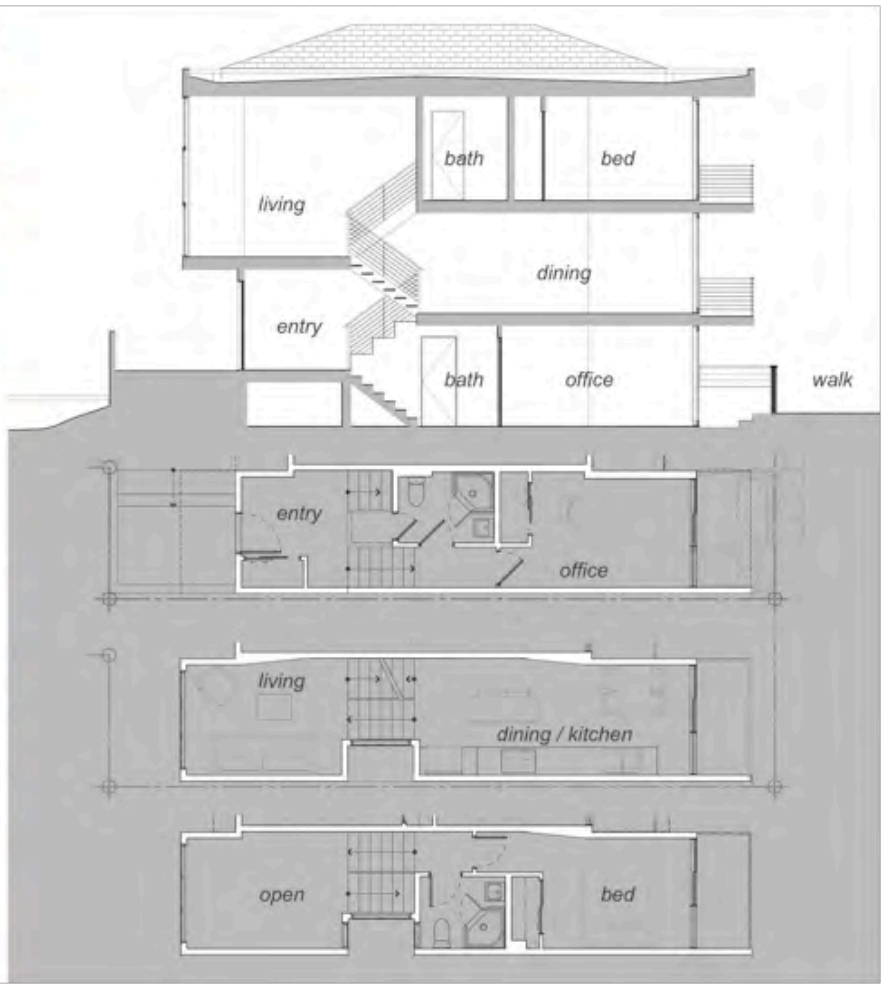
• But we had a client who was excited to explore what we could do in terms of a high quality sustainably minded project

• In 2007 we received a Built Green grant in their multifamily category, which was a great help in trying to push a project like this forward.

SLIDE 2 - Quick orientation:

• Location: just north of 36th in Fremont on phinney – extremely pedestrian oriented location.
• 5 units counterclockwise. Goal was to Break out of the typical 4 pack plan you see all over.
• This is a bit of an atypical site having a 10’ wide x 40’ deep slice of commercial zoned C1-40 in an otherwise typical L-2 lot.
• Since we could not span across the zoning line with this unit, it provided a unique constraint as well as a great tie in to the 10x10x10 …
• So in addition to the 10 presenters and 10 slides and 10 minutes, i‘m going to add 10 feet. That is the outside to outside dimension of unit 5 and good segway for talking about sustainability and scale.





SLIDE 3 - unit 5

• Unit 5 ended up being a 950 sqft 2br 2 bath

• Quantity is intrinsically linked to sustainability - you can do as much advanced framing, and responsible specifications as possible, in the end the way to leverage all that is to reduce size – that cuts across all the materials and finishes.

• Key to selling people on smaller is making sure they are extremely desirable, and functional spaces

• Staggered section helps break down the length of the building.

• Central light well 3’ setback brings natural light to the core of the building.

• This was envisioned as a live work scenario – having an office with sidewalk access for clients.

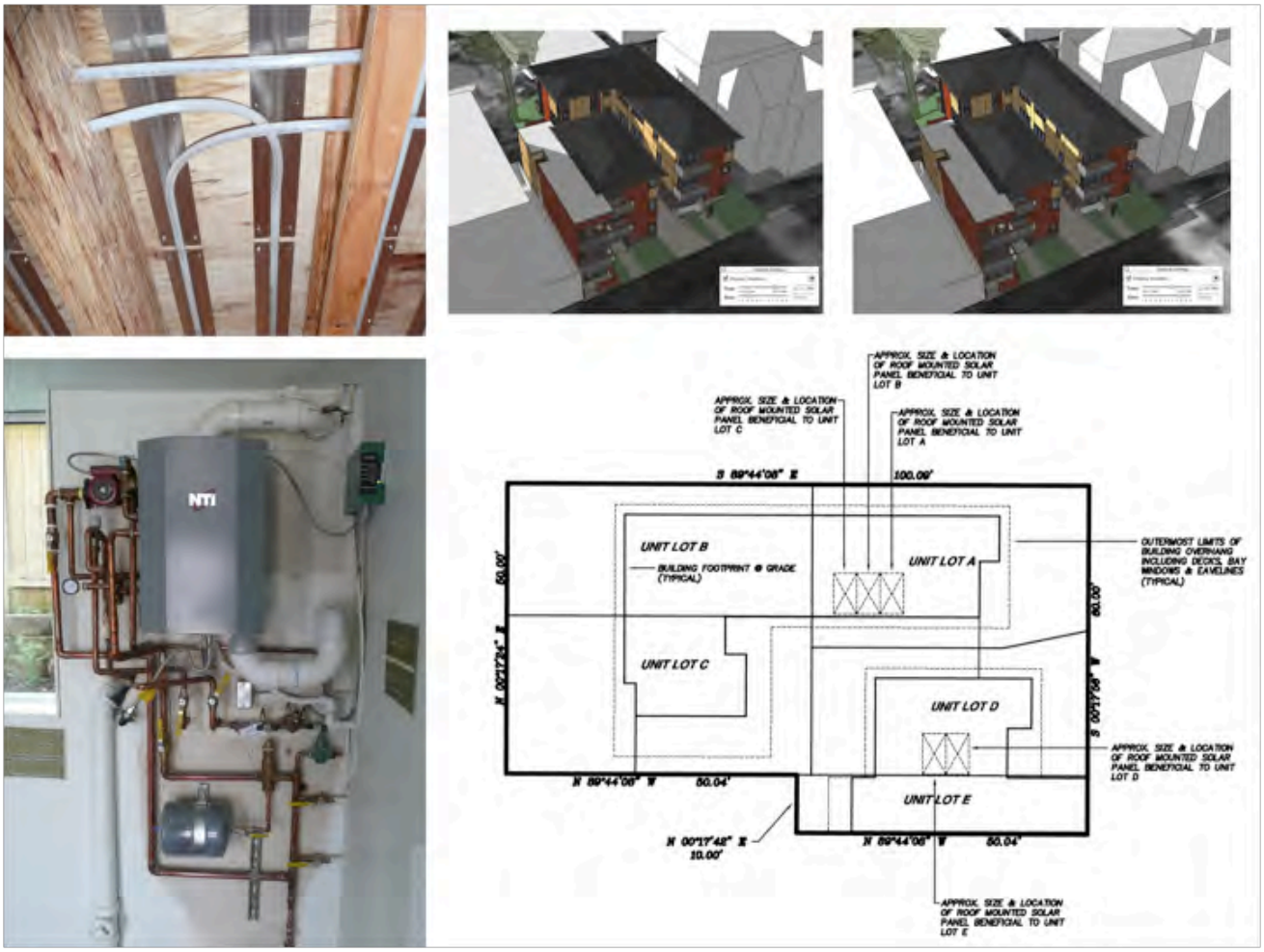
SLIDE 4 - unit 5 pictures:

• To put it into context this is 400 sqft lot – that is an order of magnitude smaller than the typical Seattle single family lot – this means fewer materials, higher density, smaller footprint & lower impact.

• Despite the size this is a very dynamic space - It wont be sustainable if no one wants to live in it.

• The stairs act as a transparent screen which reveal adjacent spaces and light, while breaking down the overall length and volume.

• Dramatic 12’ high living room and glass walls, gives the space sense of volume, variety and levity which would have been lacking without the split level.



SLIDE 5 - power plant:

• Ended up settling on a gas boiler to drive the radiant floors and domestic hot water.

• This single piece of equipment runs both systems with instant on heat and no standby losses and a 93% efficiency rating.

• All the units are plumbed in for solar hot water, which would preheat the domestic hot water loop for the boiler.

• In terms of panel placement, we realized that we had two sites with better solar access, and so we created a solar easement as part of the unit lot subdivision to allow all the units to place and maintain the panels relative to solar access rather than property lines.

• According to the city this was the first time in Seattle this was done for solar access in a short plat.

SLIDE 6 – details:

• On the exterior we used a rain screen throughout - simply holding the siding off the building with a vented air space, allows for the walls to dry out, reducing the chances of rot and mold, and allows the finishes to last substantially longer.

• Bamboo & concrete radiant floors aid in air quality - no carpet or ducting for mold or dust to gather.

• Site built casework such as screen frames and treads made of bamboo plywood.

• Trim all finger joined poplar - no mdf.

• Low voc paint – waterborne clear coats – compact florescent energy star lights throughout.

SLIDE 7 – air sealing:

• Since most heat loss in a reasonably insulated home occurs thru infiltration rather than radiant loss, a composite system of spray foam & fiberglass batts was used to create the air seal.

• This creates an R-24 wall and allows the air barrier to be achieved more easily in a production environment – only one trade is then responsible for the bulk of the work.

• With the decreased infiltration, comes the need for increased ventilation.

• Heat recovery ventilators brings in fresh air while recovering aprox 80% of the embodied energy, which keeps a tight home healthy and energy efficient.

• Garage included an exhaust fan equipped with a motion sensor.

• Also tied into an ev charging station so the fan can be activated when charging to take care of any off gassing.

SLIDE 8 - garage as flex space:

• While parking is required by code, cars are basically what ruins the ground level of most town homes.

• Given the pedestrian oriented location of the site we wanted to plan for the possibility that they might be used as a studio, shop or bedroom

• Natural light / aluminum doors with sidelights, help make drive court a more human space, matching the detailing of the rest of the windows on site.

• The garage is fully insulated both from the outside and the rest of the house so they could be used as garage or habitable space.

SLIDE 9 – framing:

• Floor to ceiling glass - No headers or cripples - typical rim joist was adequate for all but a handful of openings.

• 24”oc studs on 75% of walls to reduce thermal bridging.

• Insulation heal on truss, allowed for r-50 in the roof all the way out to the edge of the building, and maintain clearance for eave vents.

SLIDE 10 – wrap-up:

• in some of these images you can really get a sense of the affect of the floor to ceiling glass on the quantity of natural light and the way it washes the ceiling & floor.

• This project was really rewarding working on compact plans and trying to wring the most out of the smallest amount.

• Quality over quantity ended up to be one of the main ways that we were able maximize the affect of specking responsible materials and systems.