



KRAUS-FITCH ARCHITECTS, INC.

Environmentally inspired design

DRAFT: Eco Design Program

Prepared for Mosaic Commons Cohousing by Kraus-Fitch Architects, Inc.
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*Note: All items in the program listed below represent “directions” strongly preferred, but made in the absence of full budget information. They may need to be revisited. **Items highlighted in yellow** are likely directions taken from collated homework assignment; non-highlighted items were discussed in the Eco Programming Workshop.*

Building Envelope - Energy Performance:

- Adequate and continuous insulation:
 - Walls: the base case should be 2x6 construction with cavity fill cellulose (NOT fiberglass batt) insulation. Headers and corners insulated.
 - **Ceiling: blown in cellulose: R-30 min.**
 - **Slab insulation: 1” EPS rigid, R-5**
- “Tight” construction – “better than “Energy Star”, blower door testing
- Good quality windows (low U-value) – increasing windows from standard R-3 to R-4.5 actually has more impact on overall energy conservation than increasing wall and roof insulation. As a minimum, a good quality American double glazed, low-e window.
- Controlled ventilation: method not determined at this time
- First recommended upgrade would be to a Canadian fiberglass double glazed window. This double glazed window could be easily upgraded by individual option to triple glaze because of the “commercial” construction.
- Second recommended envelope upgrade – increased insulation (strapped interior).

Building Envelope – framing and construction materials, exterior finishes

- 8” roof overhangs at eave and rake.
- **Concrete: standard specifications, or use fly ash in mixture if cost-effective**
- **Wood framing: standard specifications; use advanced framing techniques if no added cost**
- **Exterior Siding: not discussed, no direction**
- **Rain Screen Detail: not discussed, no direction**
- **Roofing: Asphalt-fiberglass shingles, 30 year warranty**
- **Exterior trim: not discussed, no direction**
- **Exterior decking: recycled plastic / wood fiber composite lumber**
- **Interior trim: gypsum board returns, no trim, no extension jambs on windows**

Basic Design Features

- **Sun tempering: orient units to receive some solar gain from south**
- **Passive Cooling: Minimize western exposure, design for cross ventilation**
- **Energy Conservation: interior mudroom space, not necessarily separated, Enclosed mudrooms might be available as an option, or future upgrade.**
- **Greenhouses: might be available as an option, or future upgrade.**

Healthy Interior Materials and Finishes (for indoor Air Quality)

- **Kitchen & Bathroom Cabinetry – no decisions at this time**
- **Countertops – no decisions at this time**
- **Flooring: Living & Bathrooms: White pine, locally sourced if possible**

- Flooring: Kitchens: white pine (KFA comment: if kitchen floor matches adjacent floor, small kitchens can be enlarged more easily)
- Flooring: Bathrooms: natural linoleum or cork
- Stairs: southern yellow pine
- Interior doors: hollow core birch
- Radon Pre-mitigation: sub slab prep for future radon mitigation

Mechanical: Heating, Cooling, Domestic Hot Water

1. Cooling: AC as unducted "upgrade" only through either ductless mini-splits or window units.
2. Ducted forced hot air heat strongly preferred over hydronic heat; final decision to come after comparative pricing.
3. Ventilation: no decision on strategy until ducted vs. hydronic heating determined
4. District heating
5. Fuel type: Biomass (wood pellet) system. Back up system not determined at this time. It might be fossil fuel or some electric baseboard in the units.
6. Programmable thermostats
7. Domestic Hot Water: individual, indirect storage tanks heated by boiler
8. Waste water heat recovery: there was group interest, architect to gather pricing info.
9. Active solar DHW available as option or future upgrade.

Water / waste:

- Use readily available good water conservation devices (toilets, showers, washers, etc).
- No rainwater catchment system for toilet flushing. Simple solutions to collect water for agricultural use may be added in the future (gutters and barrels).
- No grey water system.
- No composting toilets.
- Research De-nitrification systems between septic tank and septic field. Examples: constructed wetlands or re-circulating sand filters.
- Water Quality: no filtration added in base package, whole house filter could be an individual option or future upgrade.

Electrical Lighting

- all "hard-wired" fixtures to be fluorescent
- motion sensors in some Common House spaces
- Appliances: "Energy Star"
- Exterior Pedestrian Walkway lighting
 - Cut-off fixture head (min. light pollution)
 - Timer controlled

Miscellaneous Items

- Recycling: design for storage of recycling at units and common house
- Design for convenient storage of bicycles
- Dishwashers: Include dishwashers - can this be done as an upgrade?
- Laundry: individual hook-ups in addition to commitment to Common House laundry, horizontal axis machines.

Cost Reductions to be Considered:

- Increase cost of units: At his point there is no group support for this option.
- Include large multiplexes: up to four units is very strongly supported, up to 8 units may be considered, no current opposition
- Decrease SF of units by 5%: Perhaps one of more units types to be reduced by 10%.
- Reduce number of bathrooms by ½ bath in applicable unit types.
- Reduce size of kitchens (from approx. 15 LF to approx. 12 LF – 20%).
- Standardized kitchen for all units.
- No upper cabinets in kitchen.

- Standardized bathrooms to the extent possible accounting for accessibility, adaptability issues.
- No paving of roads and parking.
- No landscaping.
- No basements in all or some unit types if attic space expansion is possible.
- Polyethelene piping (PEX vs. copper) might be researched more.