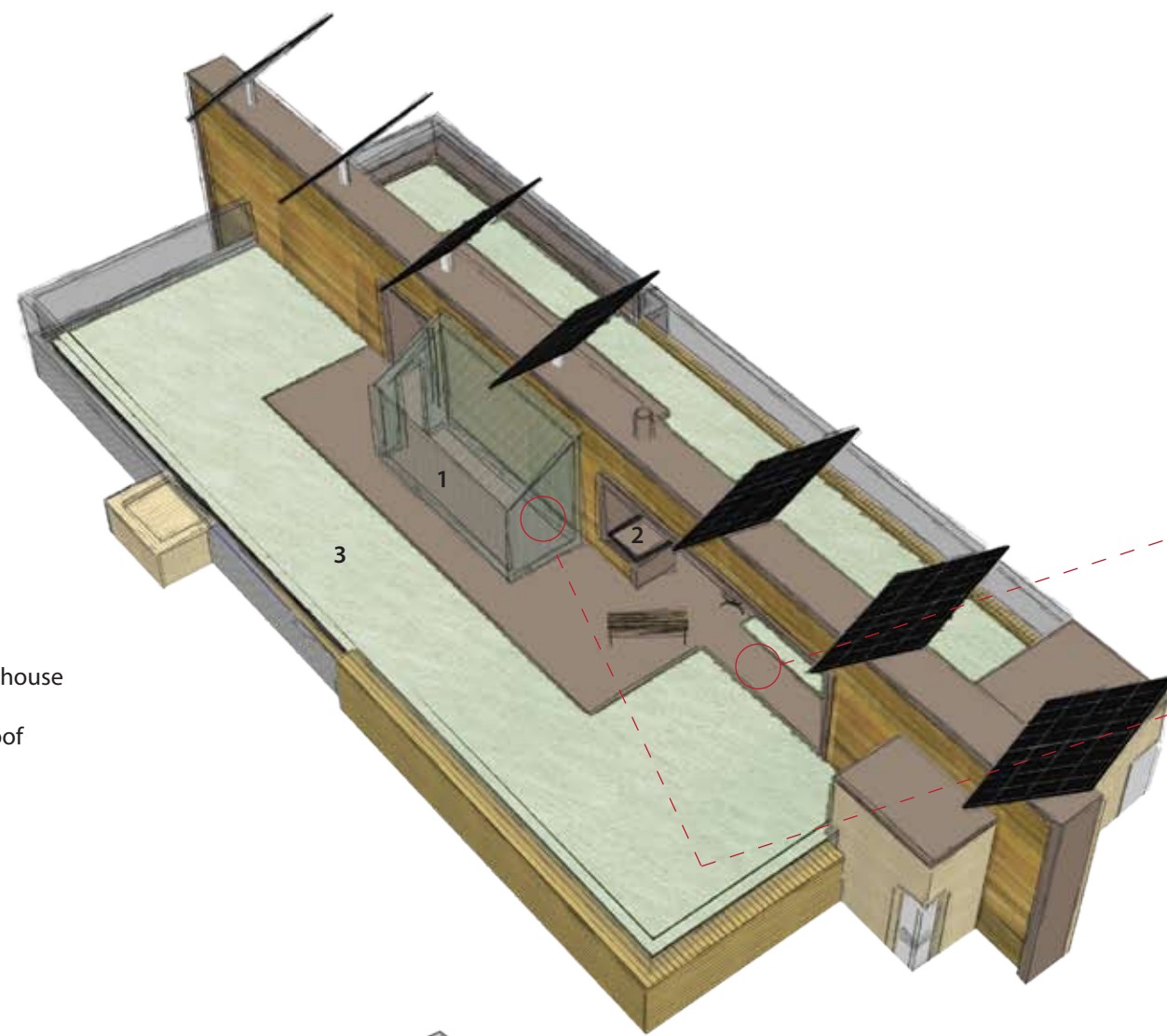


HEALING ELEMENT

ROOF LEVEL

1. Year-round Rooftop Greenhouse
2. Rooftop Fireplace
3. Low Maintenance Greenroof

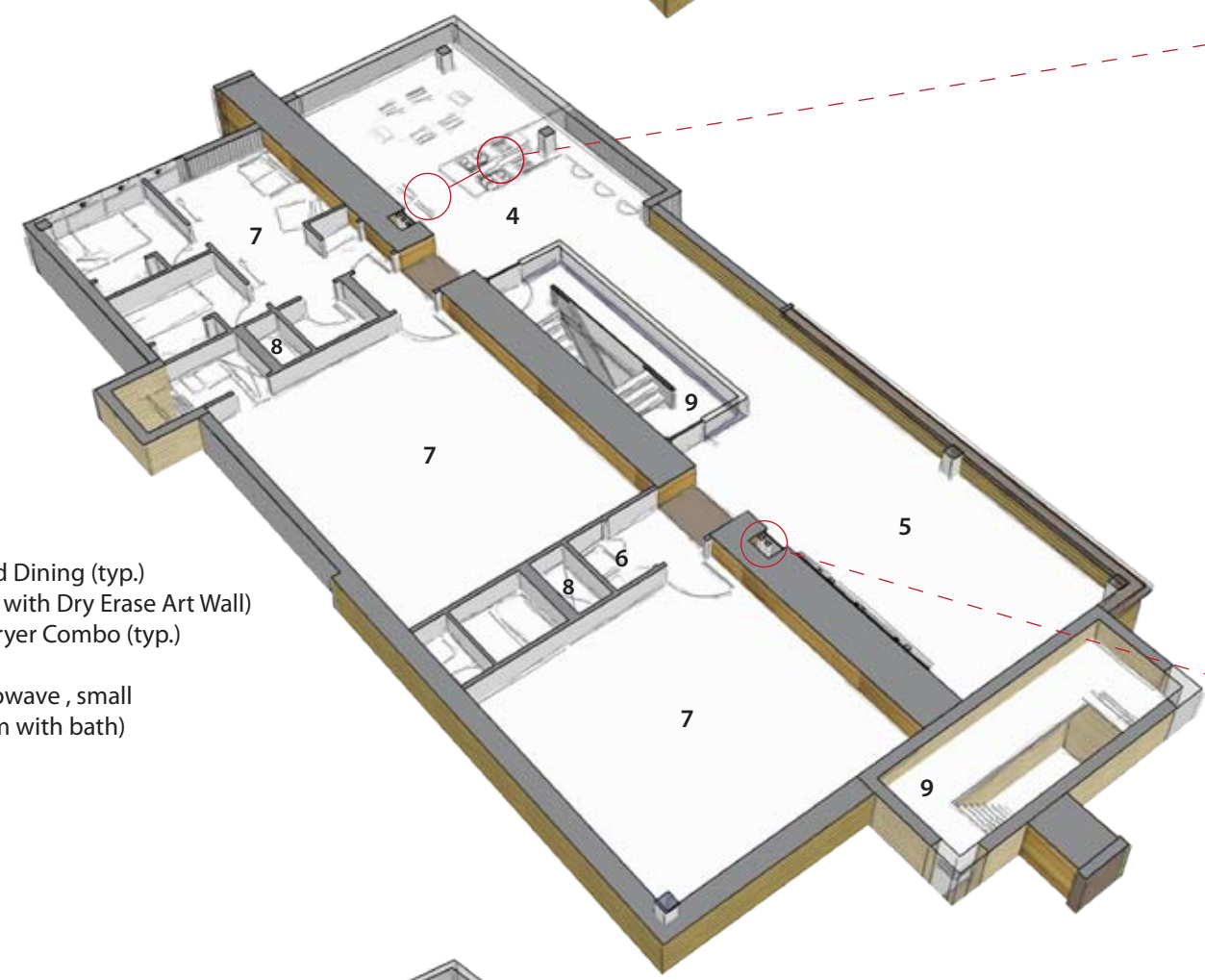


Concrete Tiles with High Fly Ash Content

Rooftop Greenhouse
Benefits: Educating residents to grow vegetables and herbs all year.

FOURTH LEVEL

4. Common Area Kitchen and Dining (typ.)
5. Common Living Area (typ. with Dry Erase Art Wall)
6. Common Area Washer / Dryer Combo (typ.)
7. Two Bedroom Residence (including individual microwave, small refrigerator and washroom with bath)
8. Mechanical Shaft (typ.)
9. Fire Exit

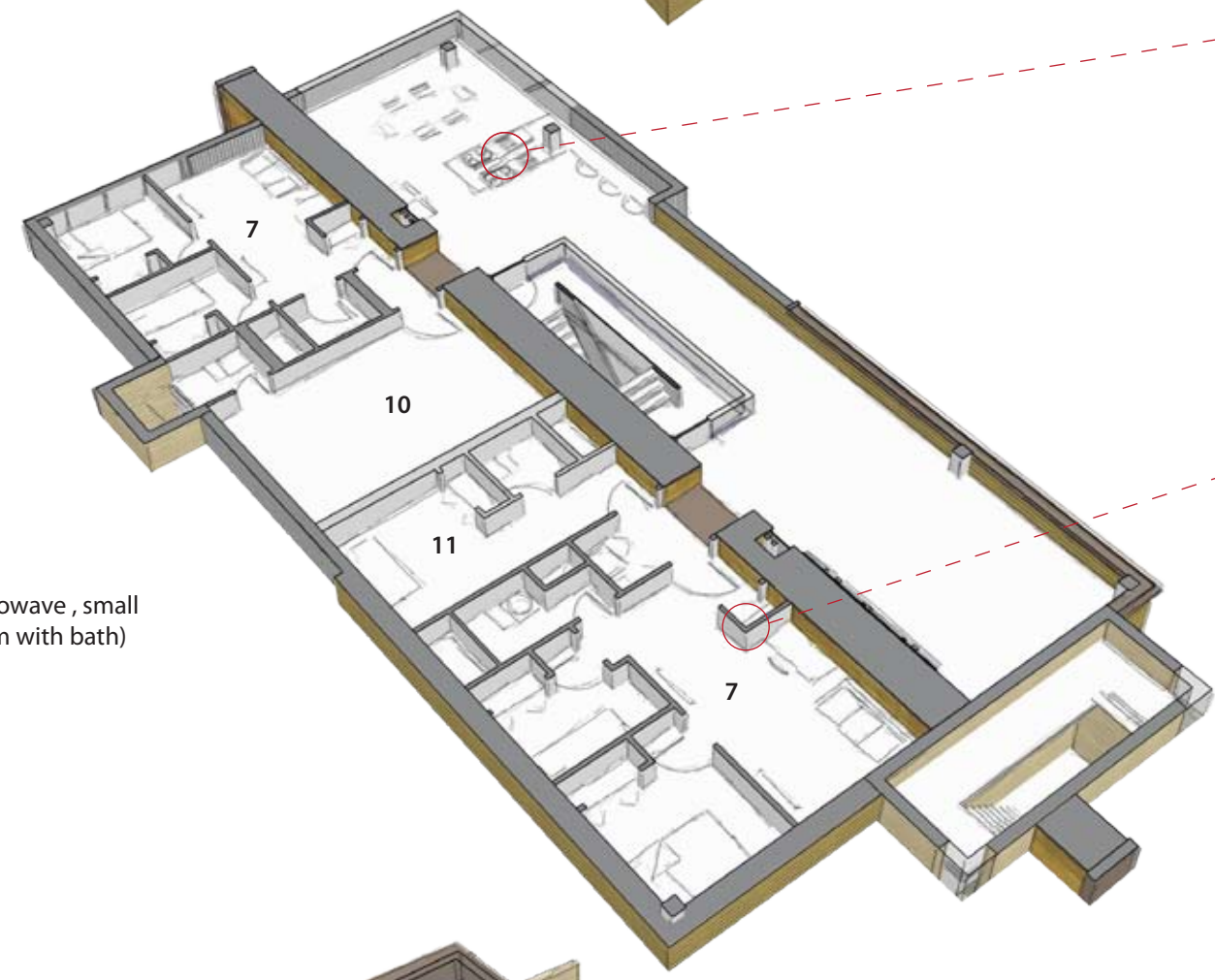


Kitchen Appliances:
Sunfrost Refrigerator
Location: California
Benefits: 50% Less Electricity
Natural Gas Stove & Ovens
Location: Mississauga, Ontario
Benefits: Reduced Energy Consumption
Energy Star Appliances:
Common Area Refrigerator / Freezer
Common Area Dishwashers
Common Area Washer / Dryer Combo
Common Area Television

Mechanical Pipes behind Semi-Transparent Corrugated Panels

THIRD LEVEL

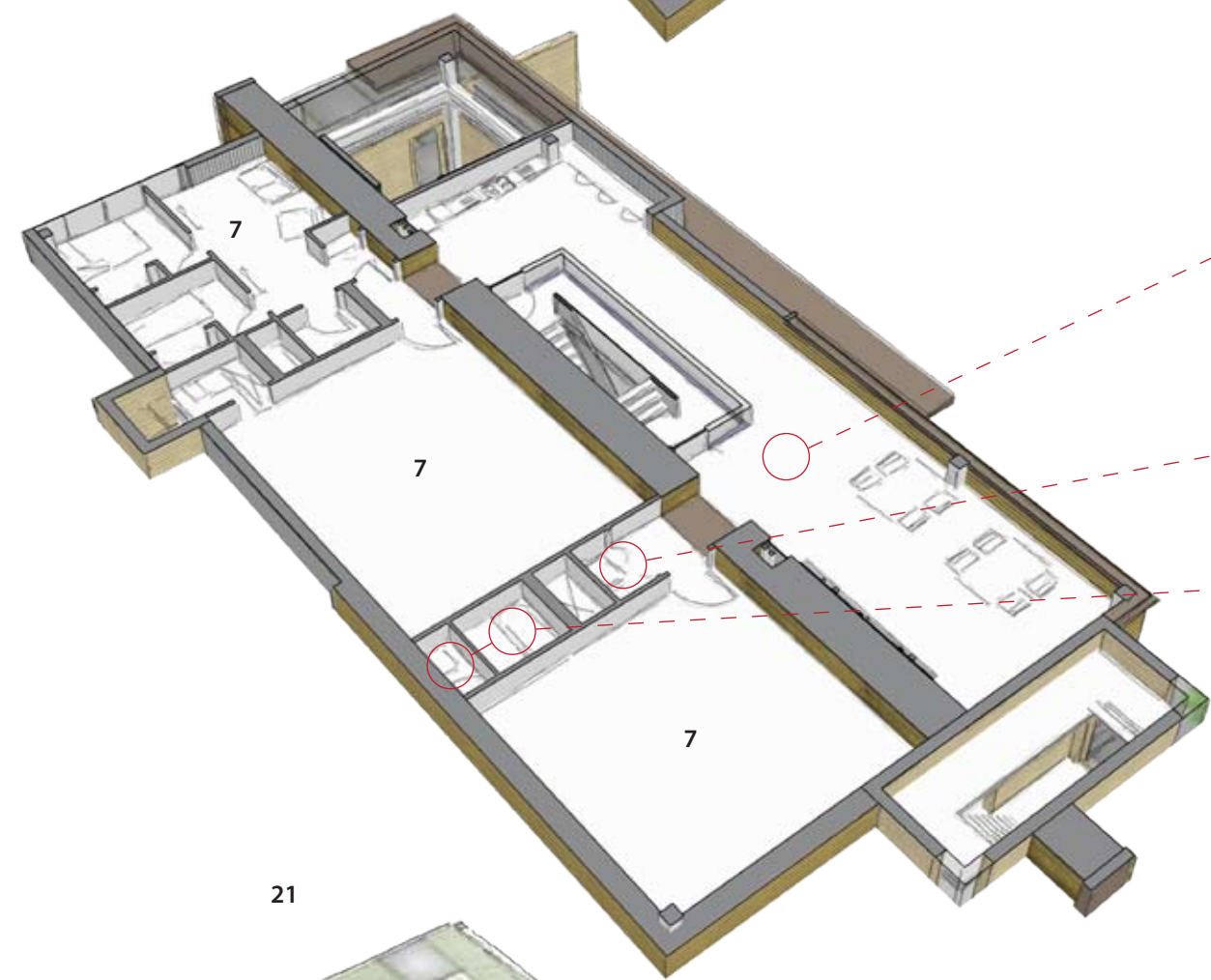
10. One Bedroom Residence (including individual microwave, small refrigerator and washroom with bath)
11. On-site Staff Residence



Concrete Counter Top with High Fly Ash Content

100% Recycled EcoCoat Paint
Location: Calgary, Alberta
Manufacturer: Calibre Environmental

SECOND LEVEL



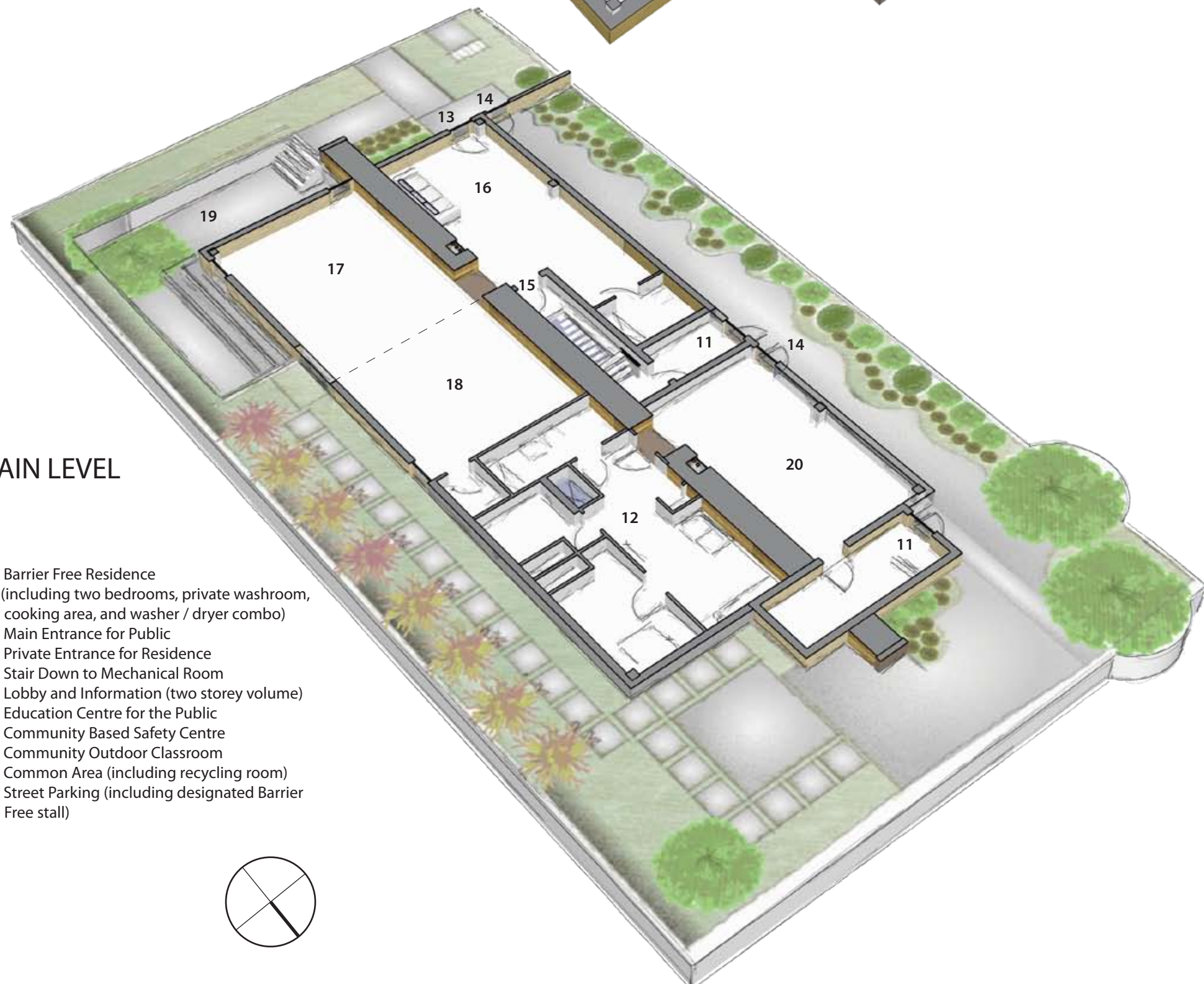
AFFA Certified Recycled Wood Flooring
Manufacturer: AFFA
Location: Hinton
Life Span: 50+ Years

Cold Water Only Washing Machine

Shower with Heat Recovery Coil
Sensor Faucet with Temperature Selection
Dual Flush Toilets (6.0/3.0 LPF)

MAIN LEVEL

12. Barrier Free Residence (including two bedrooms, private washroom, cooking area, and washer / dryer combo)
13. Main Entrance for Public
14. Private Entrance for Residence
15. Stair Down to Mechanical Room
16. Lobby and Information (two storey volume)
17. Education Centre for the Public
18. Community Based Safety Centre
19. Community Outdoor Classroom
20. Common Area (including recycling room)
21. Street Parking (including designated Barrier Free stall)

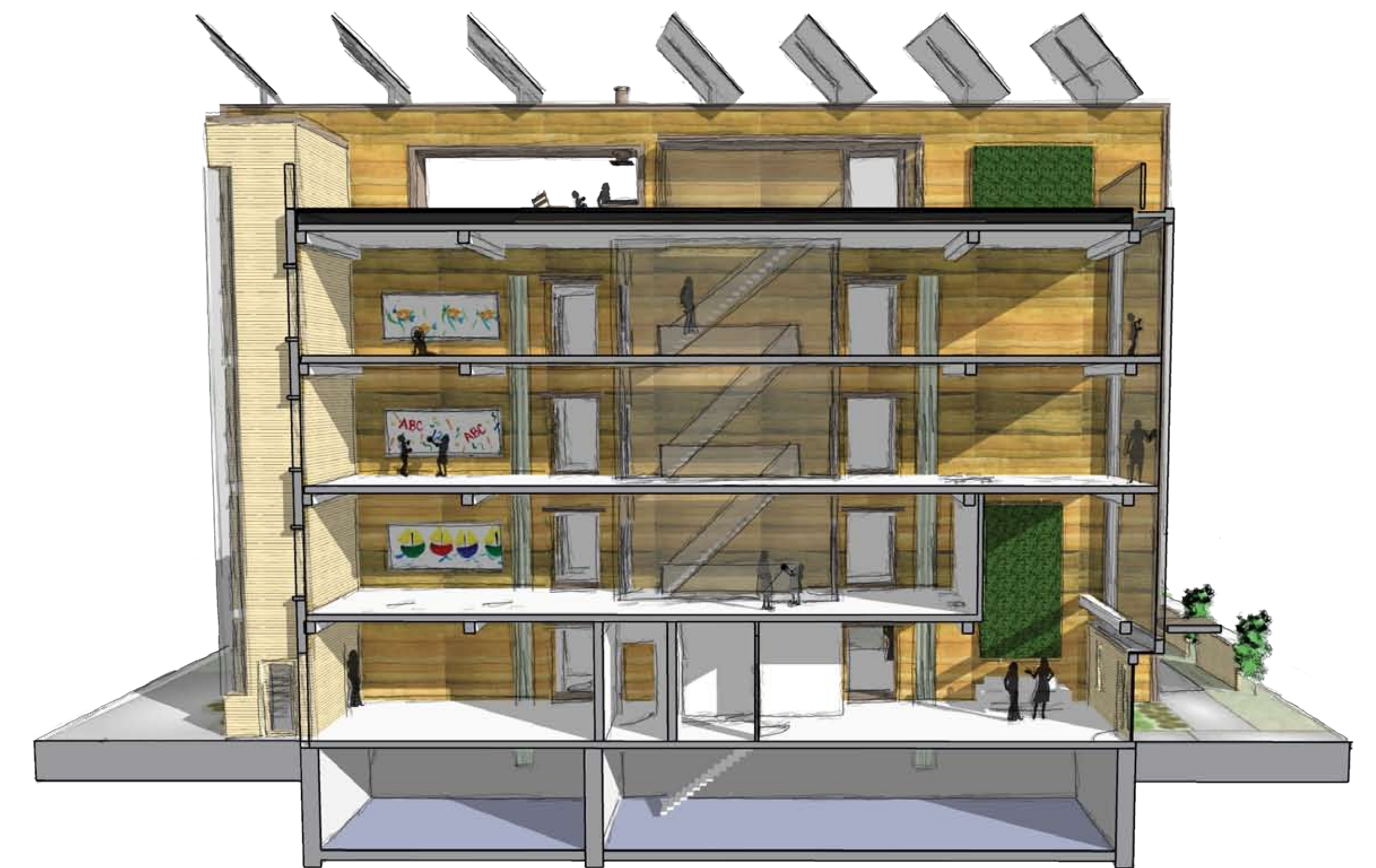


Healing Element is a holistic concept based on the most primitive elements in life: earth - water - fire - and wind. These four elements define the project concept and influence the architectural design, creating a fifth element - space, which functions to integrate and harmonize the four elements. Ancient cultures believed that disharmony among the four elements in the human body was said to cause illness. The project therefore integrates these four elements in an attempt to help the healing process of the women and children living within the building.

The building is divided into three major spaces: public, private, and common residential space. The public space integrates a community safety centre with an educational centre that focuses on teaching the public about the construction, building systems, and materials used within the project. The residential space combines private units that accommodate various sizes of single mother families, while shared common areas offer the support for women to develop skills necessary for the next phase of their lives.

The residential units are separated from the common shared areas by a Healing Element: a one meter thick rammed earth wall that also integrates various building systems. Rammed earth construction has been used for centuries, and is a forward step into a sustainable future, when buildings will combine pleasing aesthetics and intense practicality with a powerful sense of place. Rammed earth structures are built entirely on-site, using basic elements - earth, and water. The many benefits of rammed earth include: high thermal mass, noise reduction, fire resistance, and reduced CO2 emission. In addition, rammed earth is also highly durable, requires low maintenance, involves an efficient method of construction, and is also cost effective. Some of the qualitative benefits include a feeling of wellness and a close connection to the earth.

An energy consumption computer analysis revealed that the building will require 90% less energy to heat the space than the same building made of standard construction materials. The combination of low-flow fixtures and grey water reuse will reduce potable water consumption by 75%. Using photovoltaic panels and incorporating energy efficient appliances will further reduce the building overall electricity demand. These integrated building strategies, material selection and siting contribute to a building expected to achieve an environmental rating of LEED Platinum rating under LEED Canada NC.



Photovoltaic Panels
Manufacturer: Centennial Solar
Location: St. Laurent, Quebec
Life Span: 25 Years

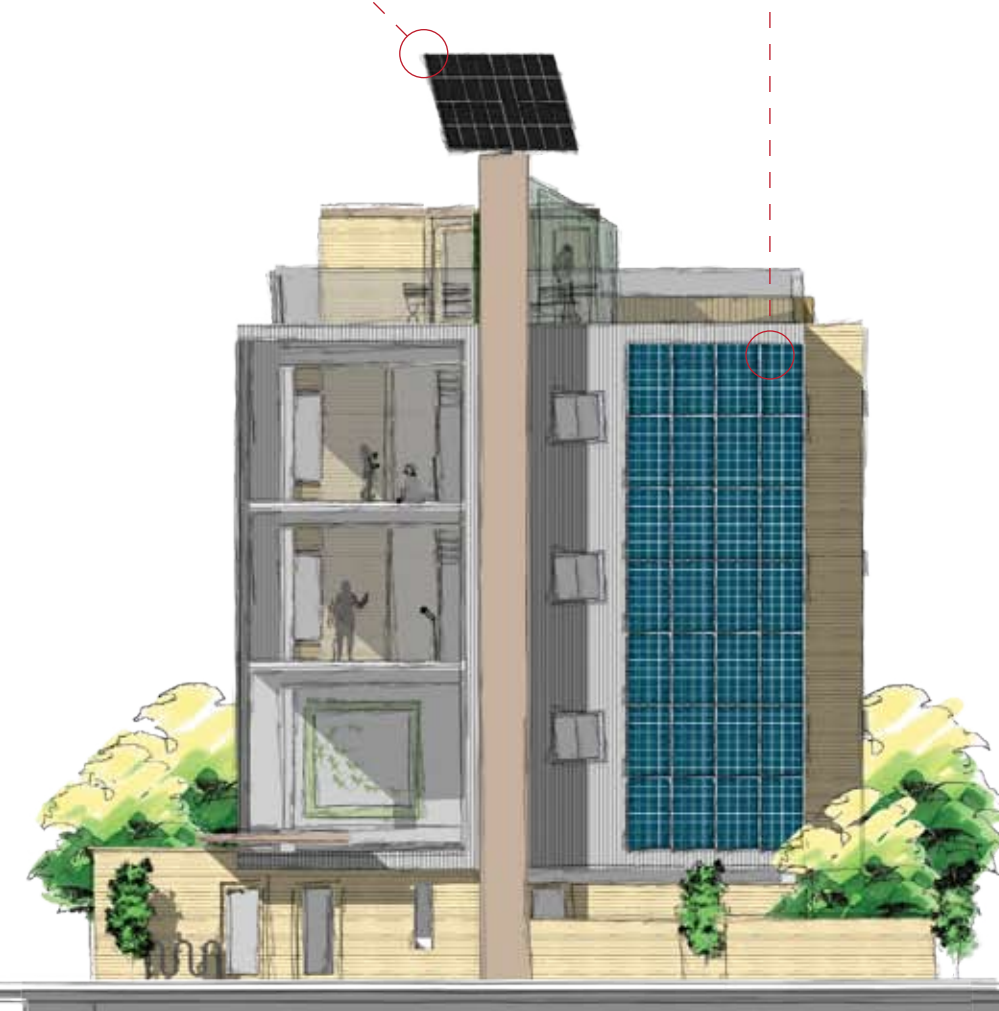
Solar Hot Water System
Manufacturer: Enerworks
Location: Dorchester, Ontario
Life Span: 25+ Years

Rammed Earth Wall
On Site Construction
Location: Soil from local construction sites
Life Span: 50+ Years

Vertical Green Wall Plants
Kinnikinnick
Clematis
Bunch Berry
Blue Ice Bog Rosemary

Concrete Cap With High Fly Ash Content
Life Span: 50+ Years

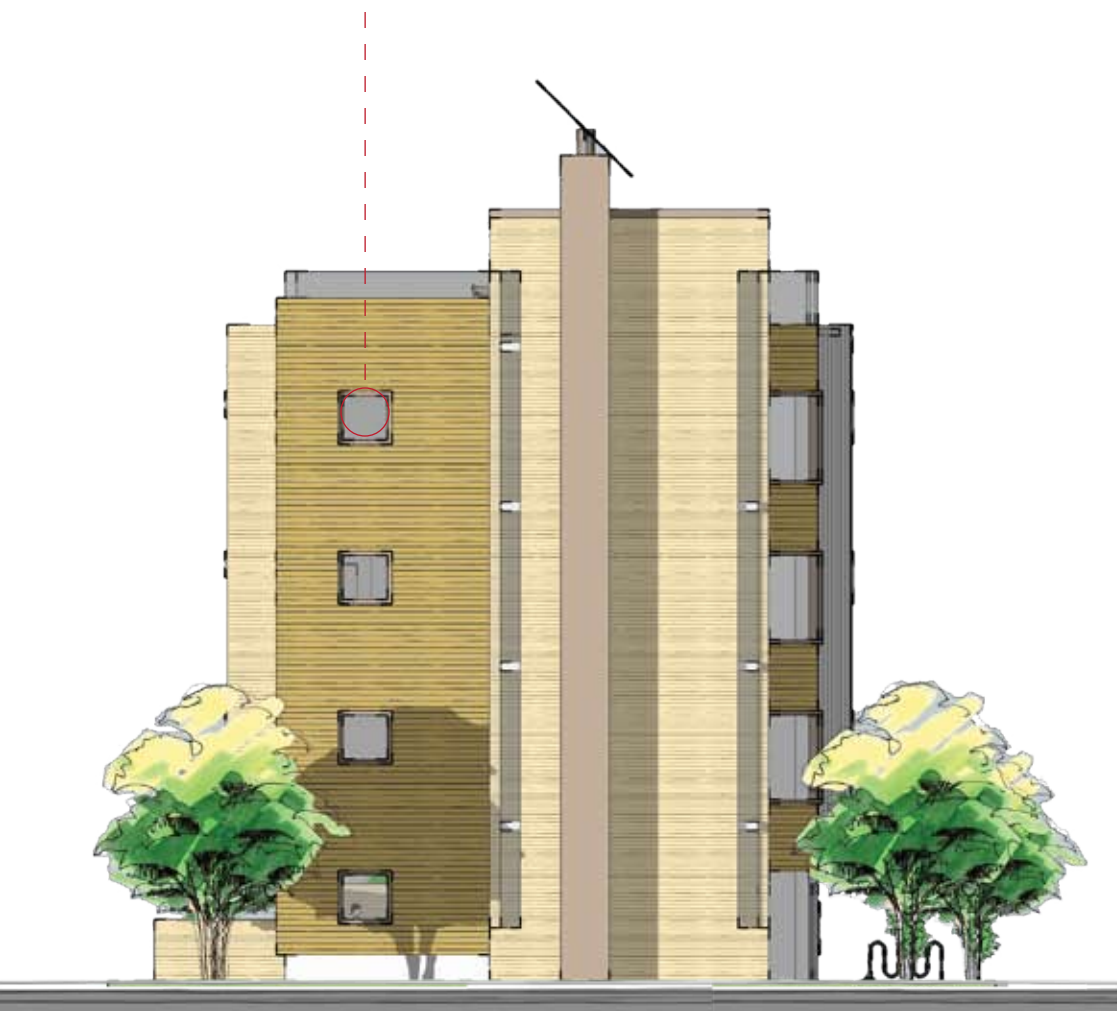
Operable Double Pane Fiberglass Windows
Manufacturer: All Weather Windows and Doors
Location: Edmonton, Alberta
Life Span: 20+ Years



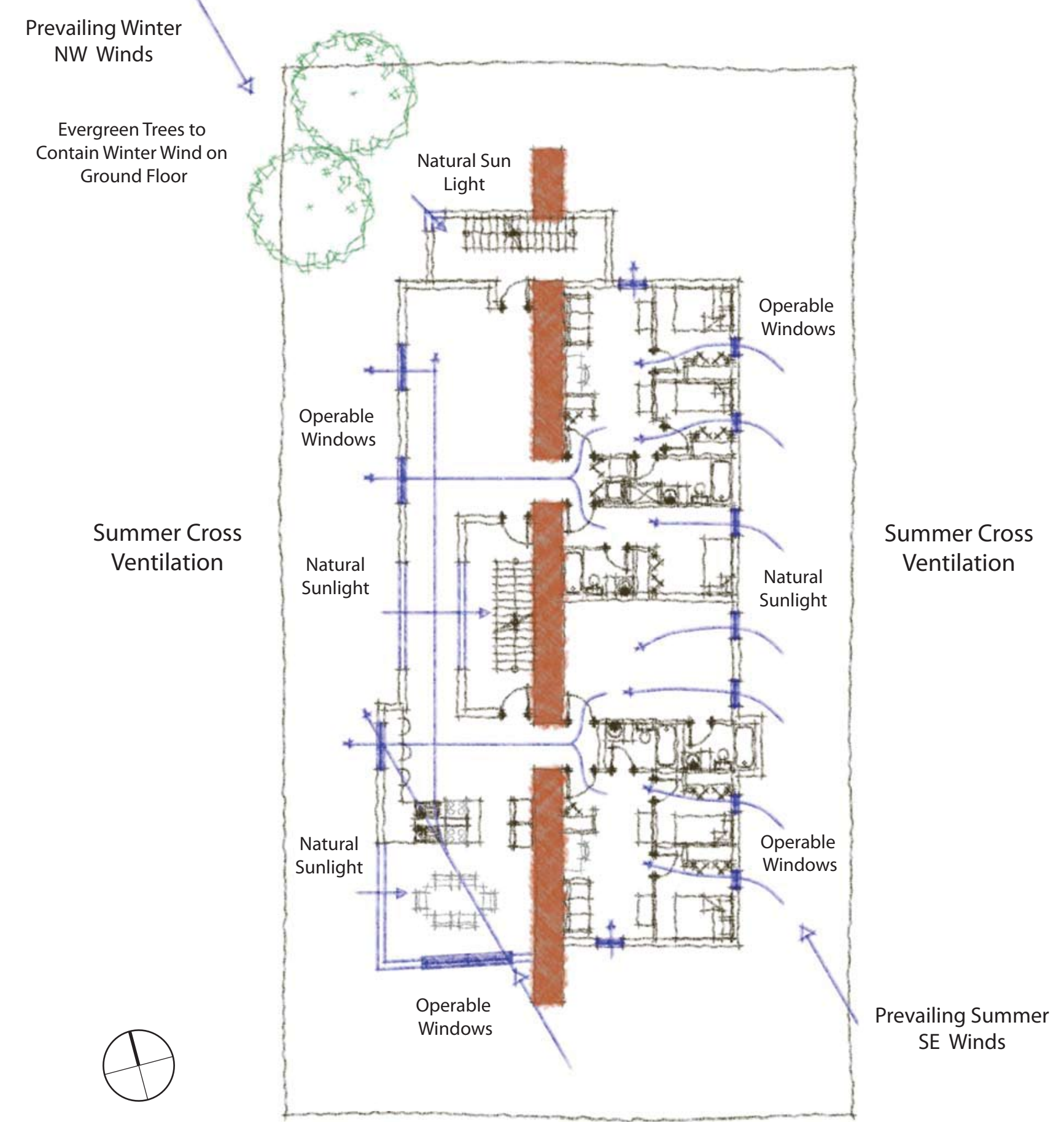
SOUTH ELEVATION



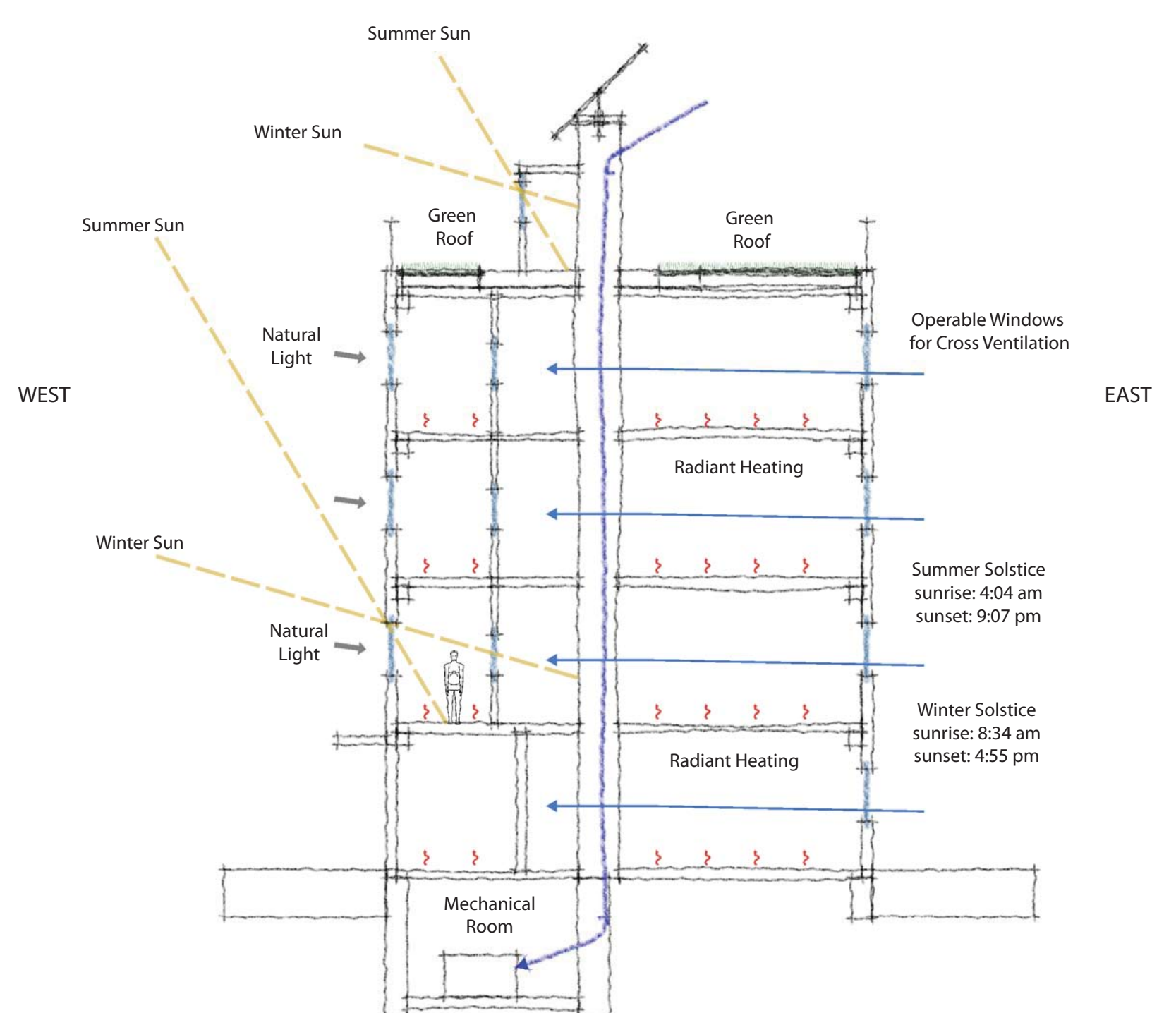
WEST ELEVATION



NORTH ELEVATION



NATURAL LIGHTING AND CROSS VENTILATION STUDY TYPICAL FLOOR LAYOUT



NATURAL LIGHTING AND CROSS VENTILATION STUDY CROSS SECTION

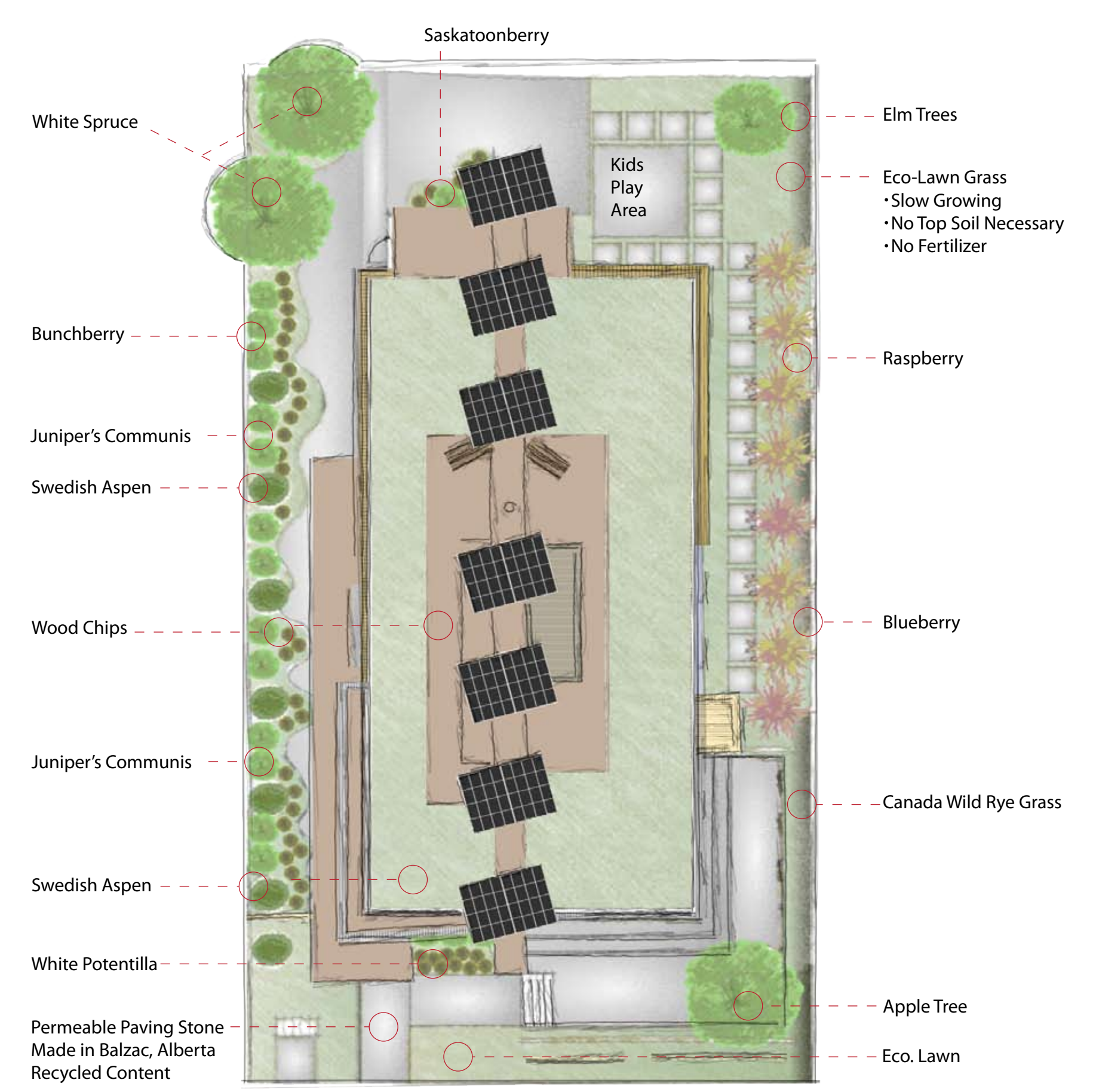
DAYLIGHT STUDY



- Effects observed from southwest quadrant looking into the common kitchen area.
- Summer solstice (June 23, noon) – shading provides reduced sunlight entering the area resulting in lower heat gain.
- Winter solstice (December 23, noon) – sunlight penetrates into the space providing both daylight and greater heat gain.
- Summer evening (June 23, 8pm) – sunlight penetrates into the space, the integrated blind system reflects the majority of light and heat away.



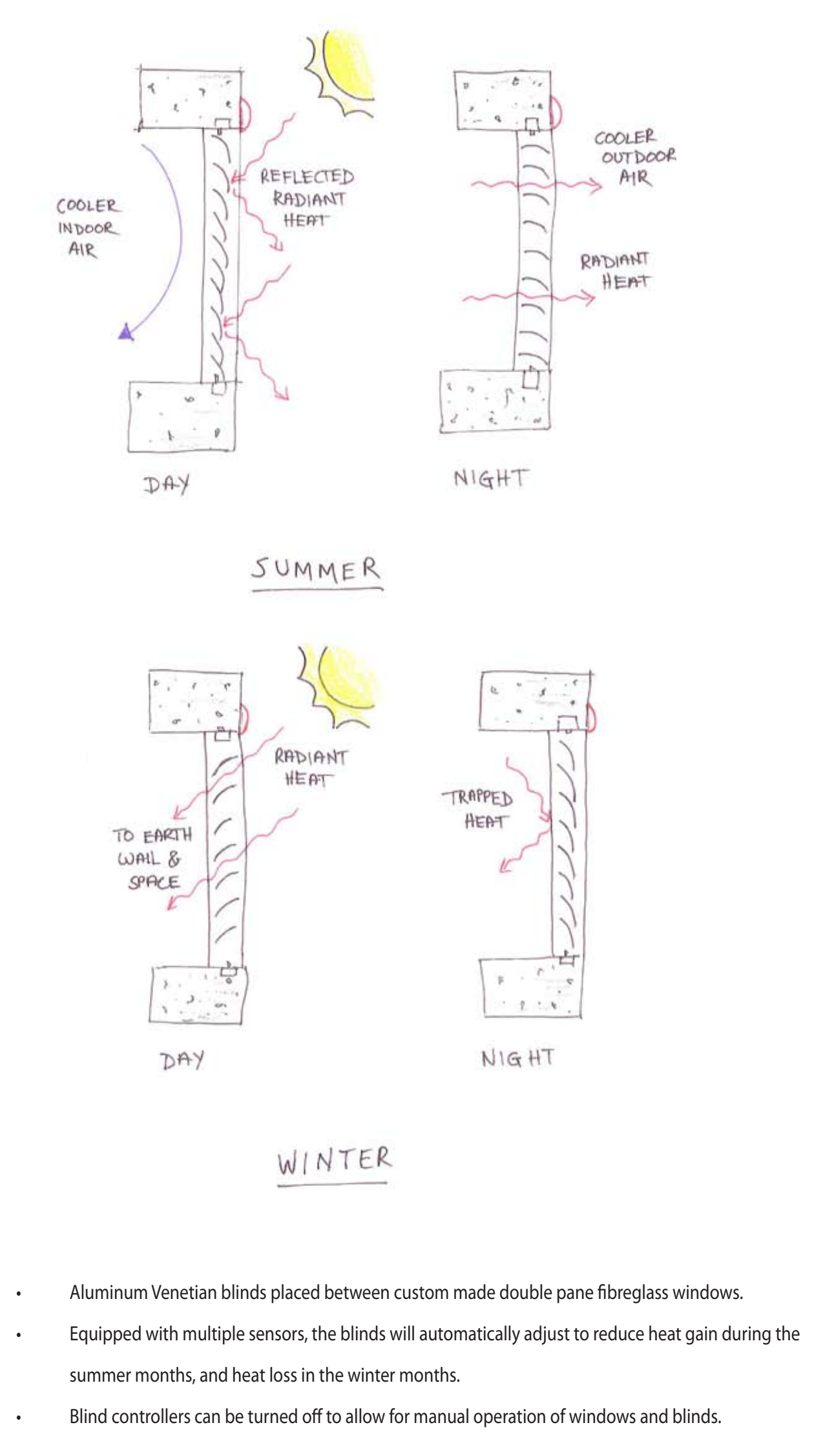
EAST ELEVATION



GROUND LEVEL LANDSCAPING

Landscaping is a mix of shrubs and trees that are suitable to the climate in Edmonton and commonly found in the area. Watering needs are reduced by having a low-maintenance, slow growing grass, covering plant beds with wood chips to retain moisture and having permeable paving stone which allows water to seep into the soil. Fruit bearing plants include an apple tree, raspberry bushes, blueberry bushes and saskatoon bushes to be enjoyed by the residents and visitors to the community centre. White spruce trees are placed at the north-east corner of the building to block prevailing winter winds. Small flowering shrubs and tall native grasses are incorporated to add visual interest.

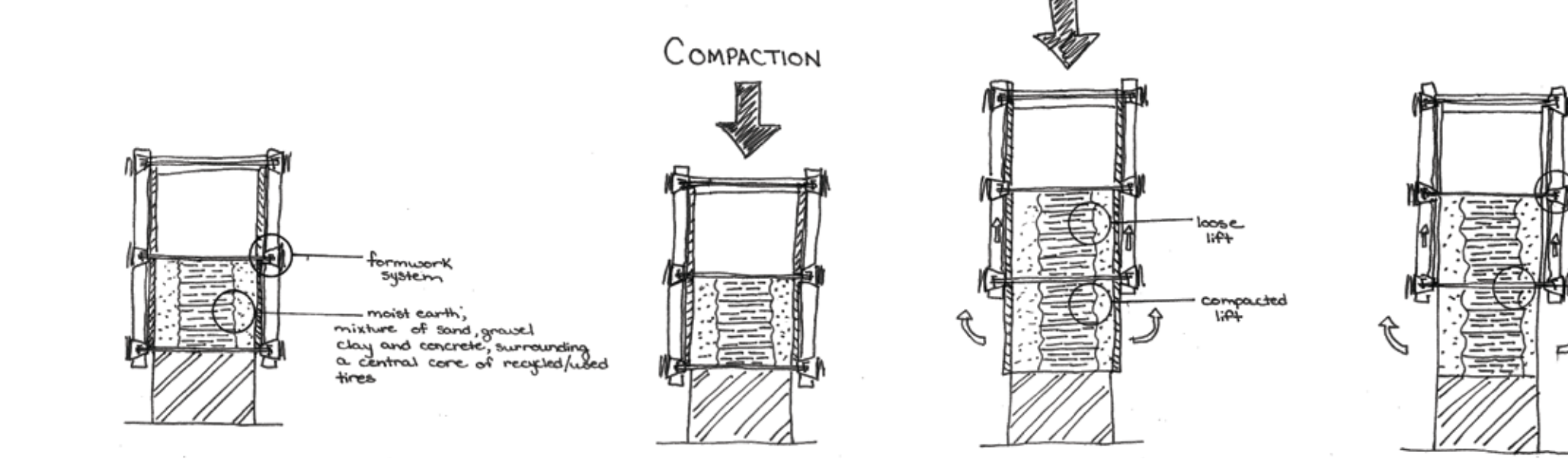
INTEGRATED WINDOW AND BLINDS



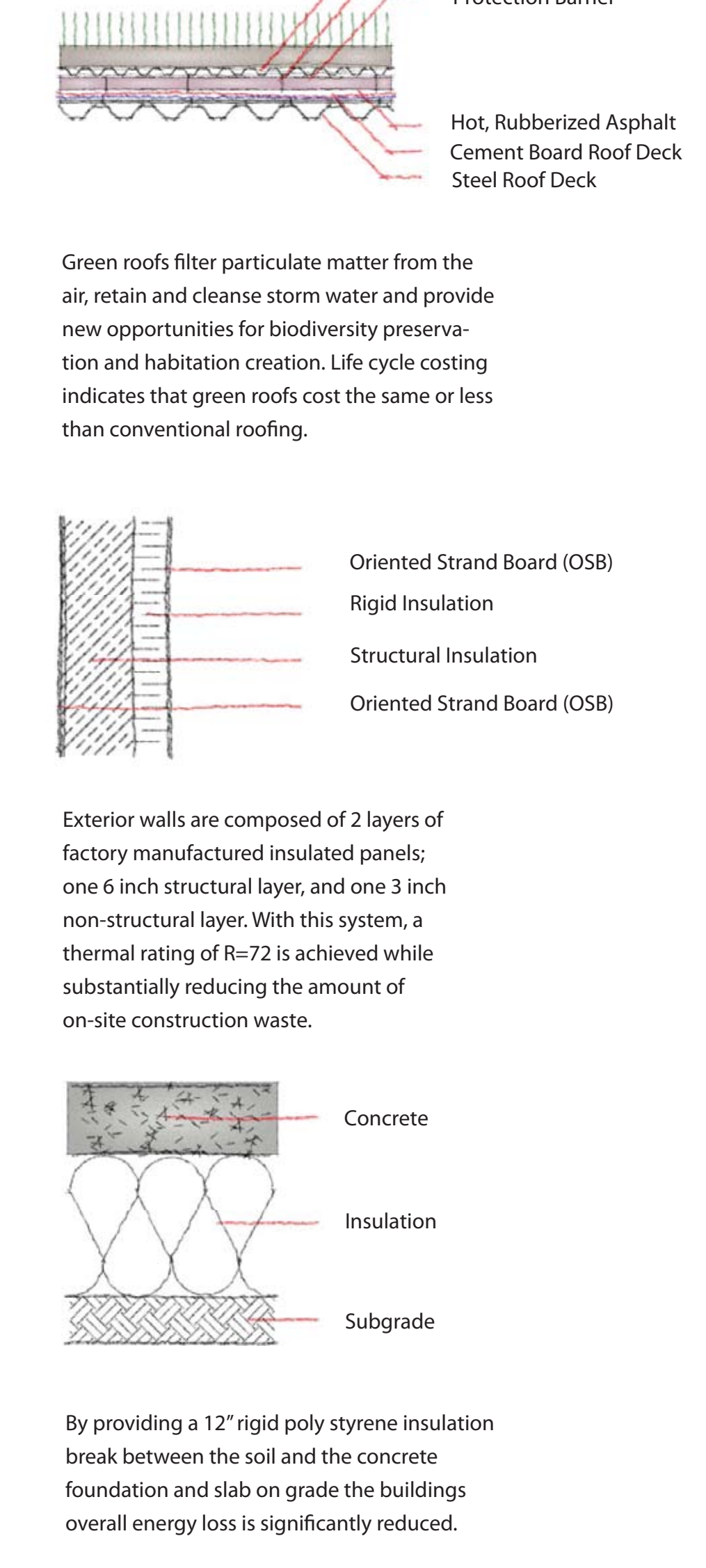
RAMMED EARTH WALL

Rammed earth is a building method whereby a mixture of earth is compacted in layers between formwork. Each layer of earth is approximately 150mm deep and can contain recycled items such as glass and automotive tires. Forms typically consist of reinforced plywood externally braced with laterally running beams. The formwork is entirely removable and reusable. As each form is filled and compacted, another form is placed above, and the process begins again. This process is continued until the desired wall height is achieved. Forms can be stripped off as soon as the form above is begun, since the rammed earth wall is immediately self-supporting. The rammed earth feature wall provides as a thermal mass for the building. Thermal mass is the ability of a material to hold heat and slowly release it back into the building environment, evening out daily indoor temperature variations and reducing the heating and air conditioning loads. Rammed earth also naturally regulates the internal relative humidity of the building which improves overall air quality. In addition, rammed earth is known for its durability, low maintenance, sound proofing and fire resistance making it a perfect choice for this project.

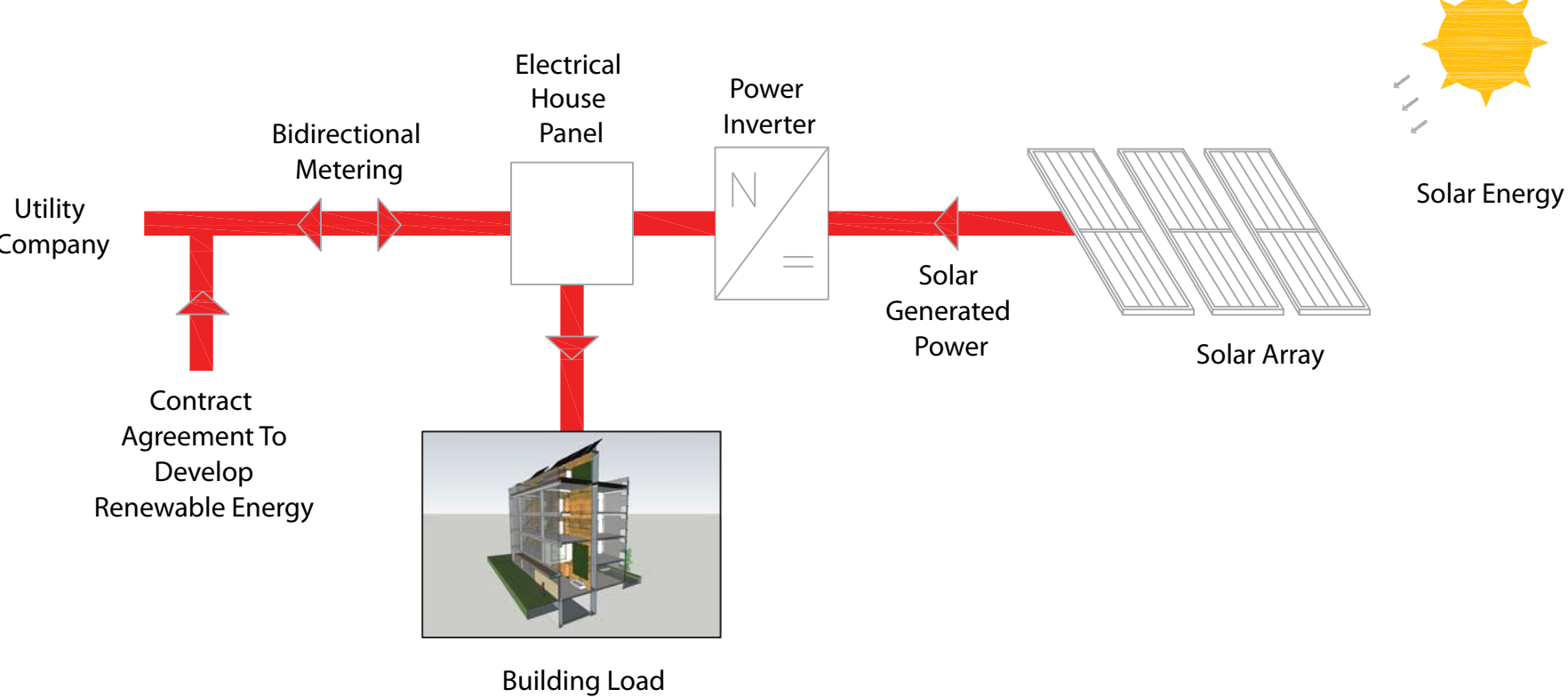
RAMMED EARTH CONSTRUCTION SEQUENCE



SECTIONS



PHOTOVOLTAIC SYSTEM

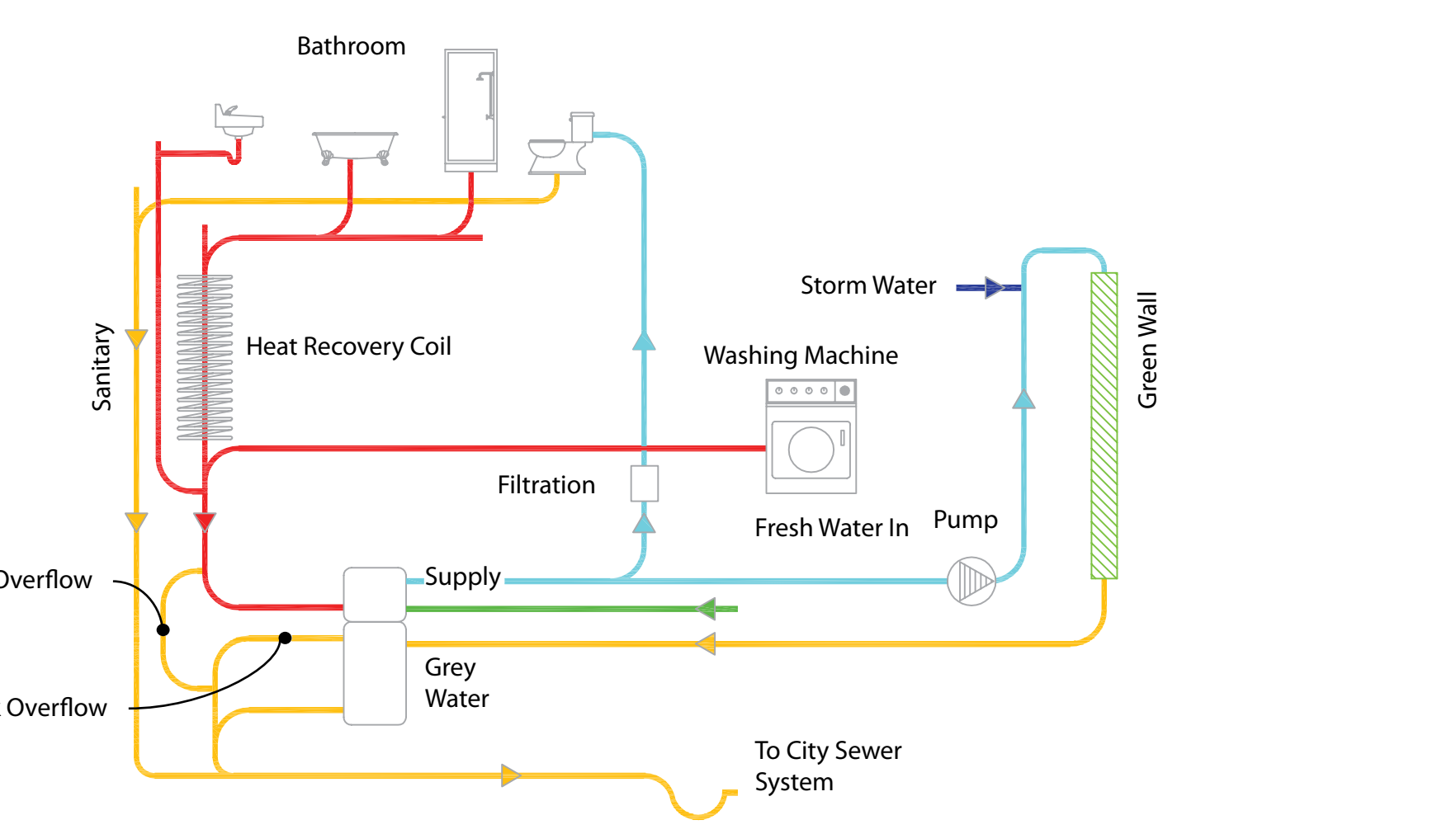


- The amount of electricity supplied by fossil fuels is reduced by having energy efficient appliances and lighting combined with on-site solar generation by photovoltaic (PV) panels.
- Each PV panel is equipped with a sun tracker to optimize electrical generation.
- Any excess electricity produced during summer months is supplied to the grid, offsetting winter electricity and reducing net annual building consumption.

ENERGY EFFICIENCY

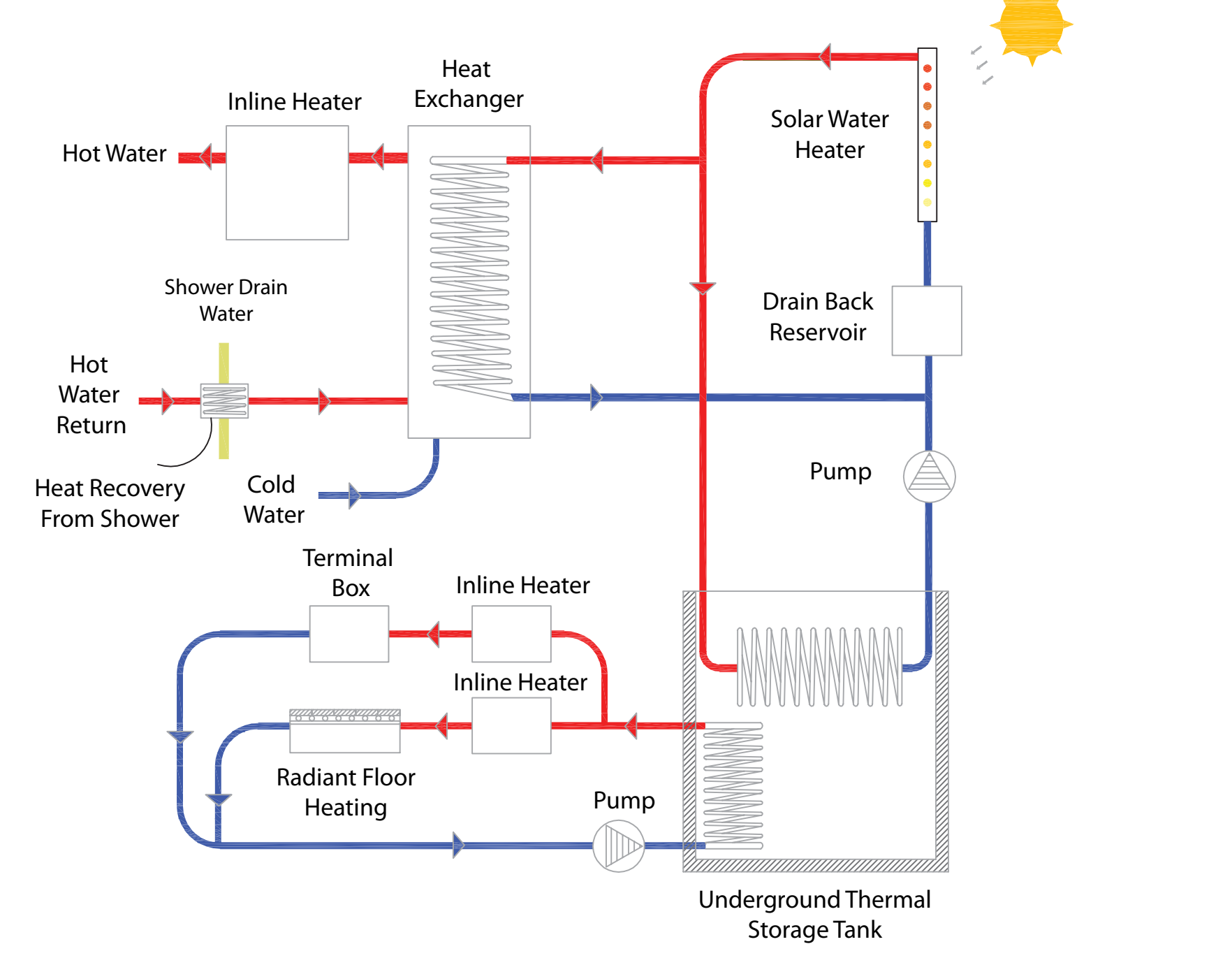
- All appliances that can be rated by Energy Star, will be Energy Star rated.
- Compact fluorescent lighting bulbs used. A 13 watt compact fluorescent produces as much light as a 60 watt incandescent.
- Automated blinds used to reduce cooling and heating loads during the summer and winter months.
- Daylight sensors inside units automatically turn lights off when a certain light level is reached.
- Occupancy sensor switches turn the lights off when a room is not in use.
- Roof mounted photovoltaic system reduces dependence on utility generation.
- Net billing system to gain credit from utility company when on-site consumption is less than on-site production of electricity.

GREY WATER SYSTEM



- Low flow fixtures are used to reduce potable water use and building waste water going to the city sewer system.
 - Shower and bathtub waste water is used to pre-heat incoming cold water.
 - Site storm water and rain barrels are used to water the green wall and other plants.
 - Shower, bathtub, sink and washing machine waste water (grey water) is used to flush toilets and water the green wall.*
 - *Grey water reuse is currently illegal in Alberta, but the equipment needed to make it safe is available.
- The grey water system is designed with the intention that legislation will be passed legalizing grey water systems by the time building construction starts.

SOLAR HEATING & THERMAL STORAGE SYSTEM



- The solar water system is a closed loop drain back system. Water from the solar collectors is piped to a thermal storage tank and heat exchanger. The heat exchanger is used to warm up domestic hot water.
- The drain back system uses gravity to drain water from the collectors when the pump is not running. This prevents that the water from freeze in the pipes.
- Water is the heat transfer liquid because it has a high heat capacity, a low viscosity, does not degrade the piping and is more environmentally responsible than glycol alternatives.
- Solar water heaters are used all summer to maintain the temperature in the thermal storage tank. The thermal storage tank offsets building heat loss throughout the year.
- The 200,000 L thermal storage tank is made of concrete with rigid insulation.
- Water from the thermal storage tank is used for in-floor radiant heating. The thermal storage tank is also used to heat the ventilation air.
- The heating system will have controls in each unit to control the temperature of on the floor and the air entering the rooms, which increases occupant comfort.