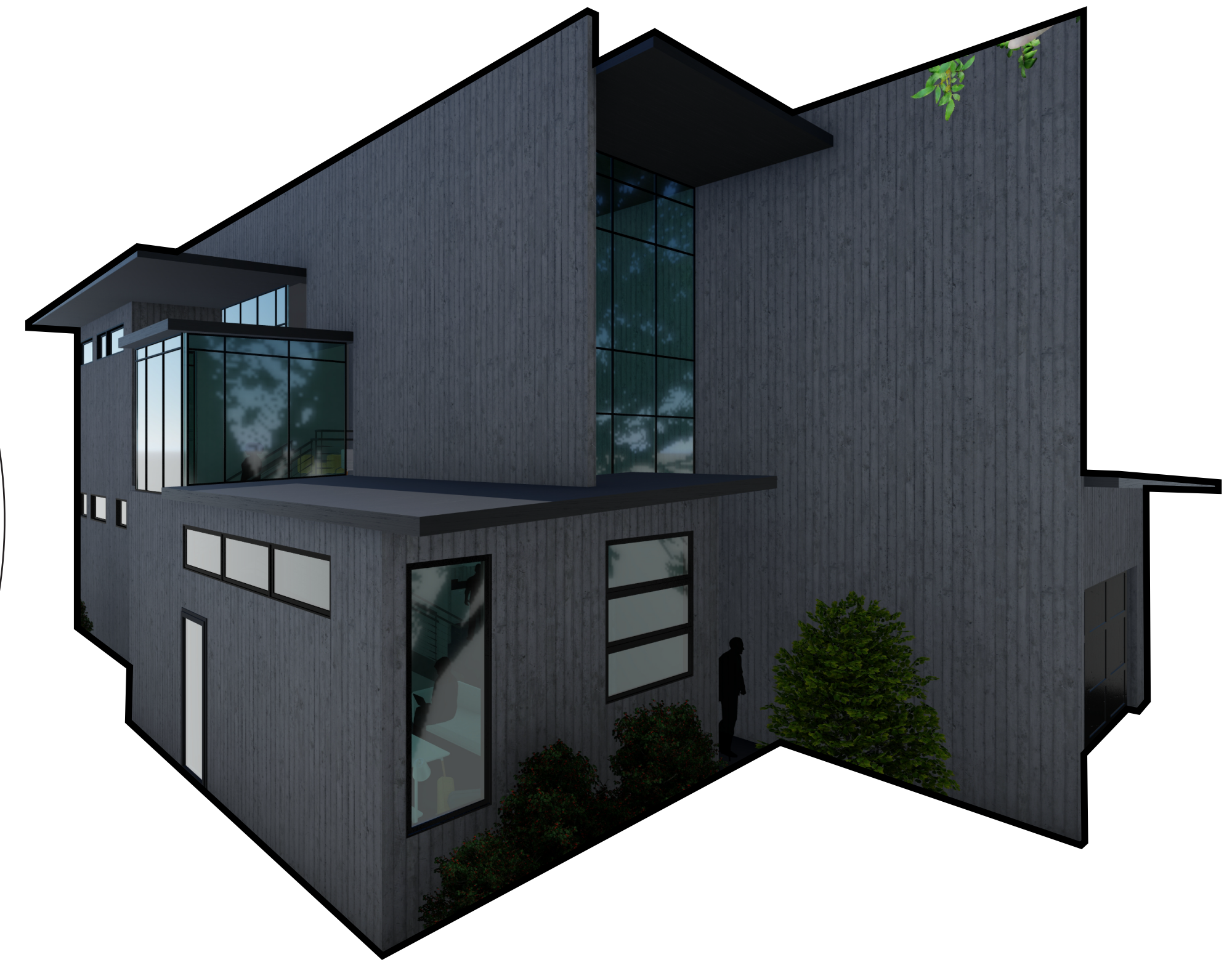


Coastal EnviroHome

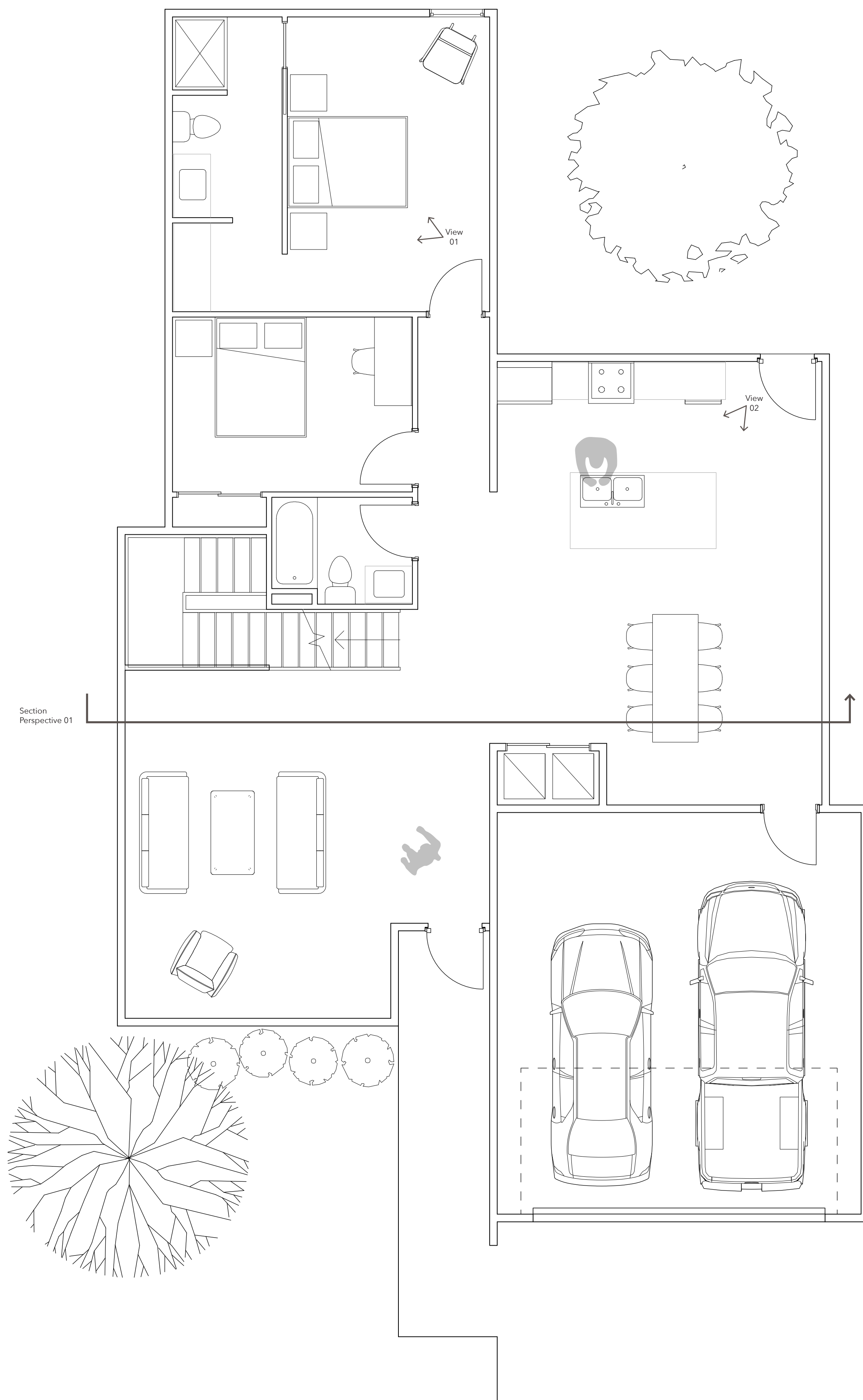
Despite technological advances in every other area, the housing industry has been slow to embrace improvements in manufacturing and energy efficiency. In order to address the most pressing needs in the 21st century, homebuilders and owners must evolve away from traditional building methods and towards more energy-efficient, healthier, and sustainable practices. The EnviroHome system provides an opportunity to look at building technologies and innovation in a new light. Due to its energy efficiency, prefabrication, and its self-contained structure, the EnviroHome wall system alleviates many of the variables that constrain the home building industry. For that reason, our proposal capitalizes on these advantages by taking a look at the home in its entirety. Located in Miami Beach, Florida, our 60' x 120' site sits less than ¼ mile from the Atlantic Ocean and less than ½ a mile from Biscayne Bay. Miami Beach sits at the intersection of prime real estate and severe threat from climate change. This makes the area a perfect location for the adoption of the EnviroHome system. Our proposal is a comprehensive, whole-house investigation into creating a residence that is energy-efficient, viable during water infiltration event such as flooding due to its use of modern and composite materials throughout. The home avoids all use of cellulose products, relying on PVC, stone wool, and the EnviroHome system in lieu of traditional wood and paper products. The Coastal EnviroHome will serve as a model for the future of homebuilding - especially in areas that are particularly vulnerable to climate change. While this proposal was tailored specifically for the warm-weather climate of Miami Beach, this model can be slightly modified and replicated along coastlines anywhere around the world.



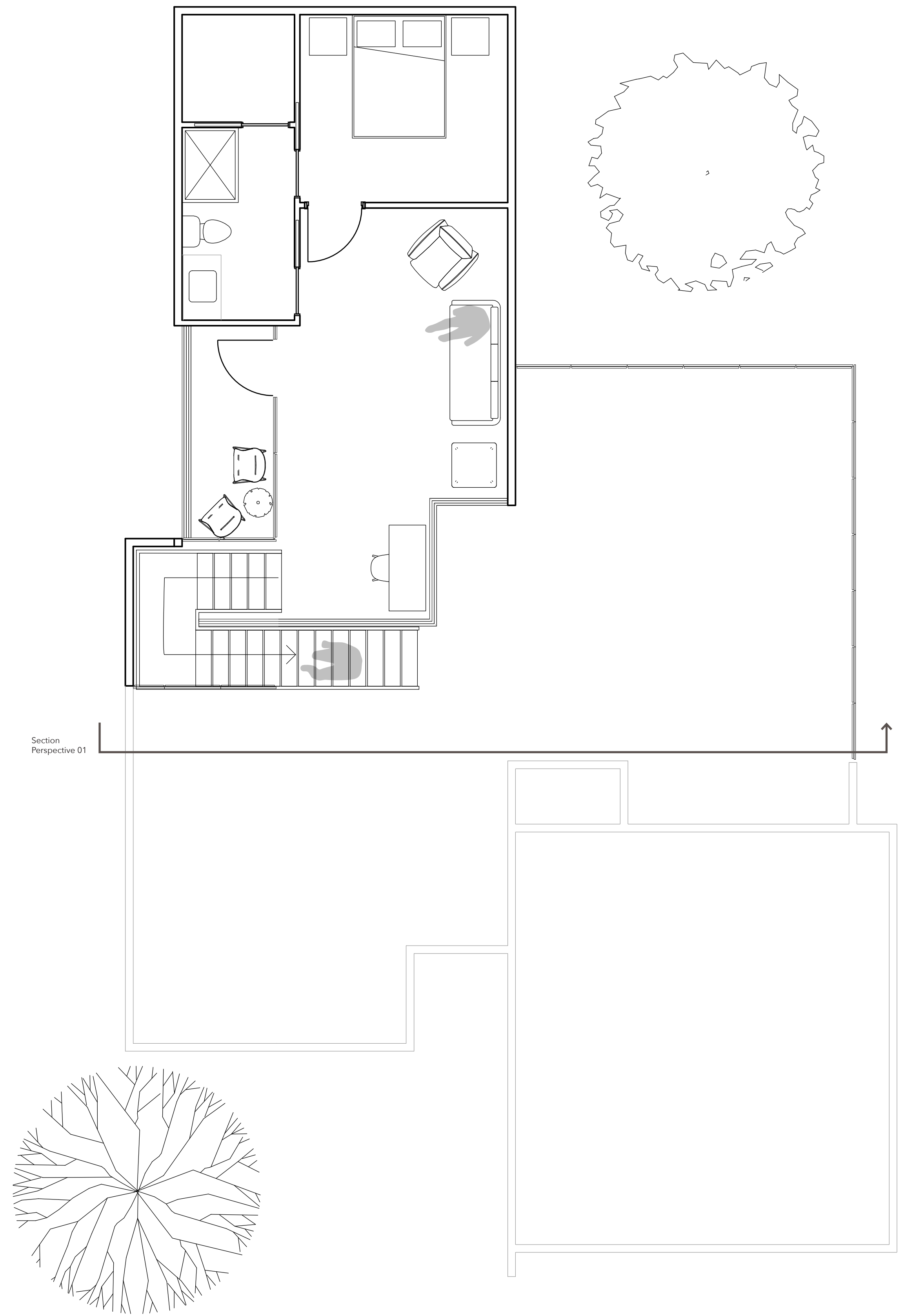
Miami Beach Site Context



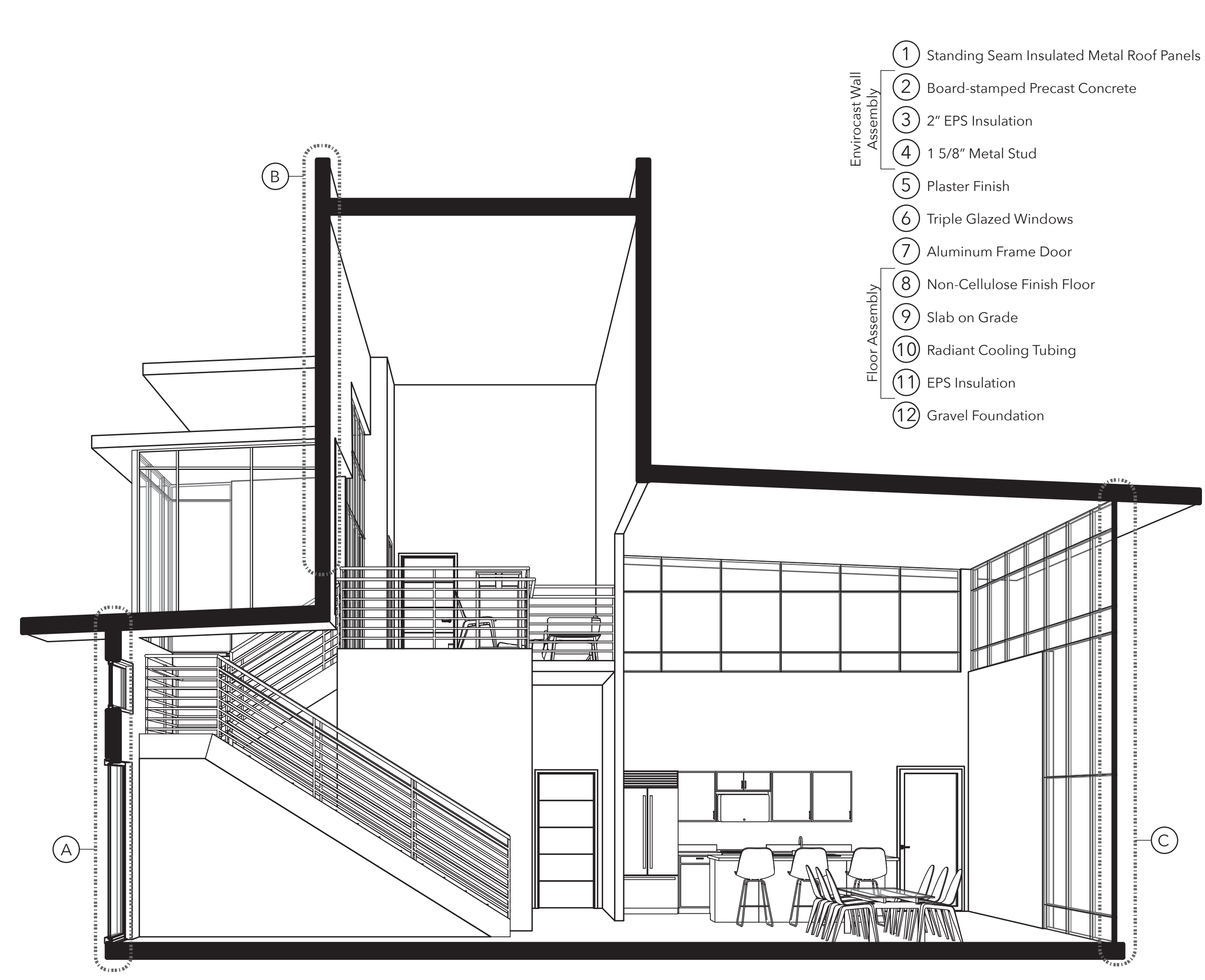
Northwest Perspective Render



Level 01 Plan - 1978 sf
1/4" = 1'-0" ↑N

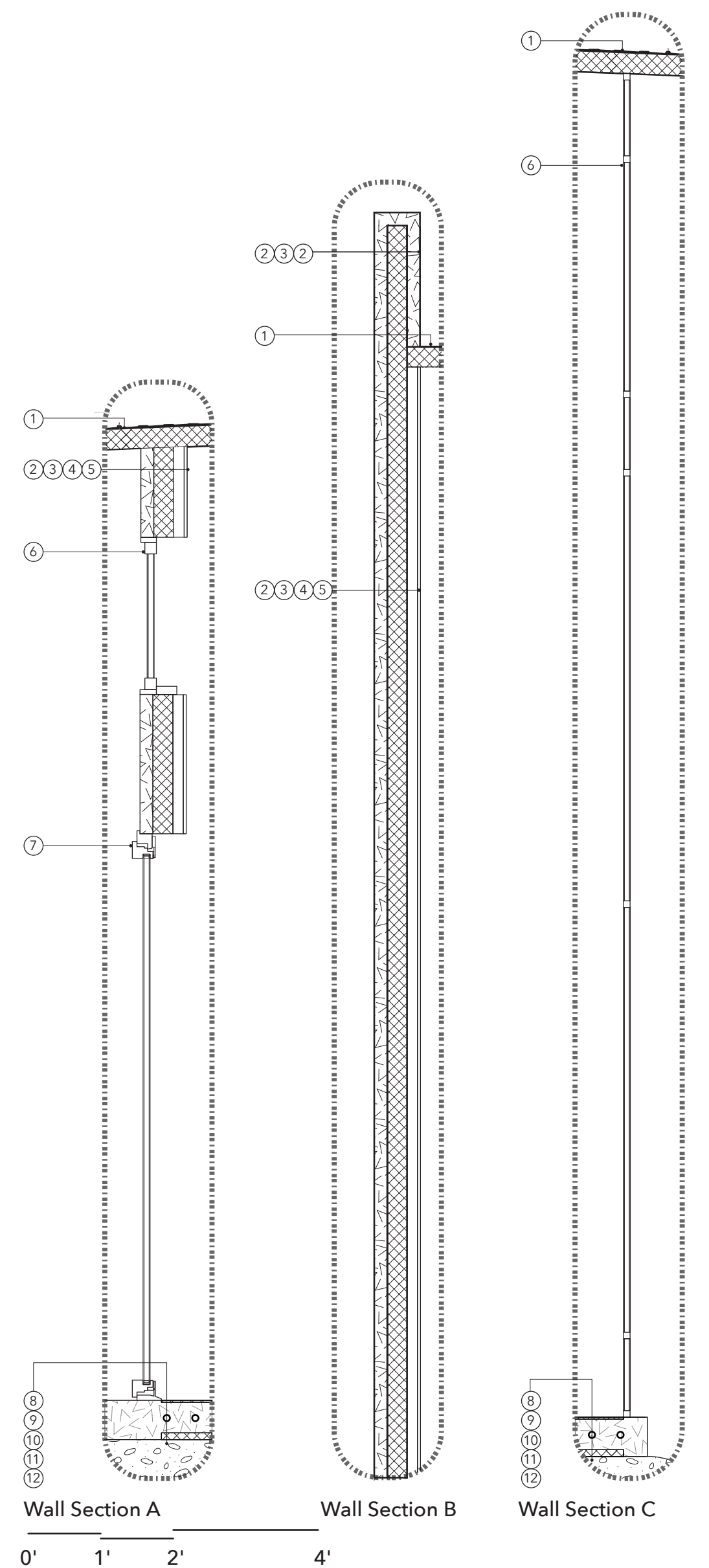


Level 02 Plan - 465 sf
1/4" = 1'-0" ↑N



Section Perspective 01

- ① Standing Seam Insulated Metal Roof Panels
- ② Board-stamped Precast Concrete
- ③ 2" EPS Insulation
- ④ 1 5/8" Metal Stud
- ⑤ Plaster Finish
- ⑥ Triple Glazed Windows
- ⑦ Aluminum Frame Door
- ⑧ Non-Cellulose Finish Floor
- ⑨ Slab on Grade
- ⑩ Radiant Cooling Tubing
- ⑪ EPS Insulation
- ⑫ Gravel Foundation



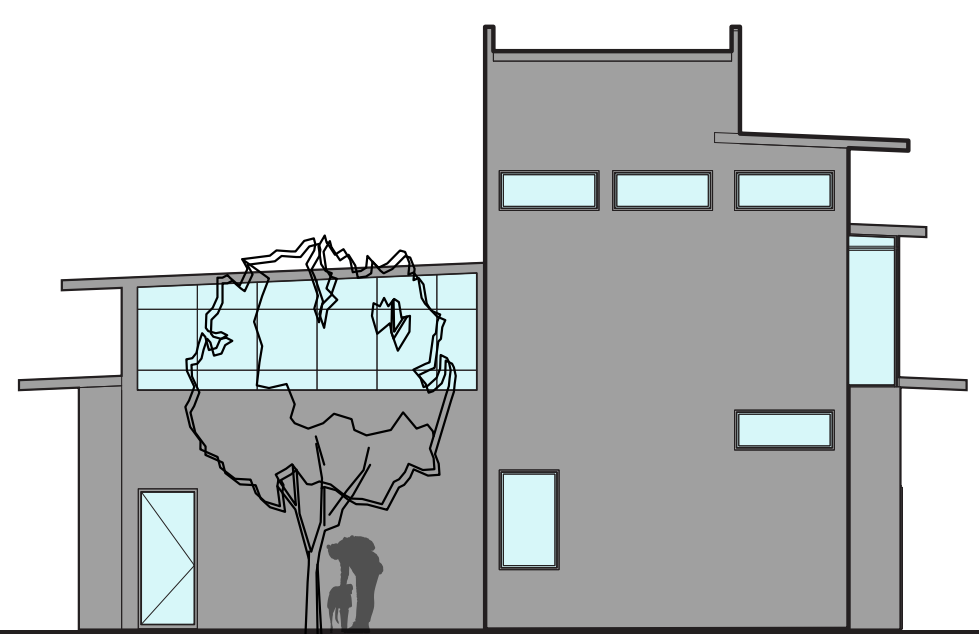
Wall Section A Wall Section B Wall Section C



Miami Flood Risk



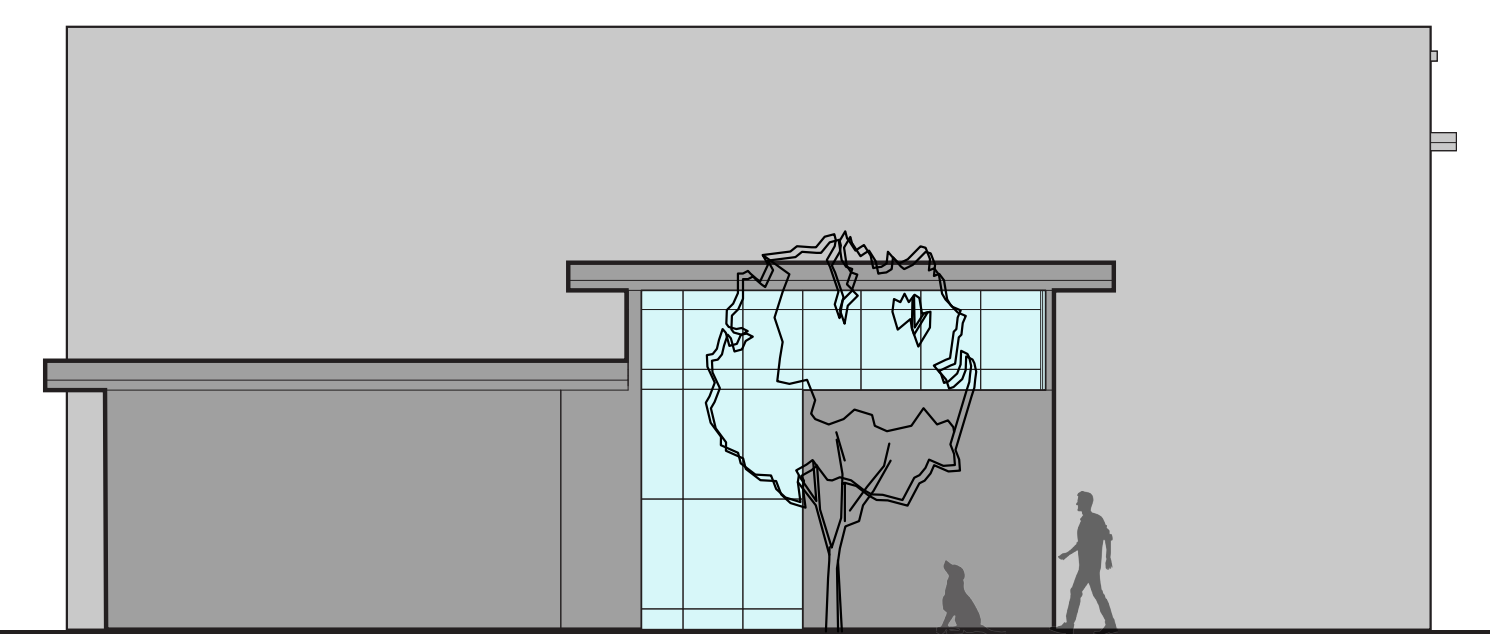
West Elevation



South Elevation



North Elevation

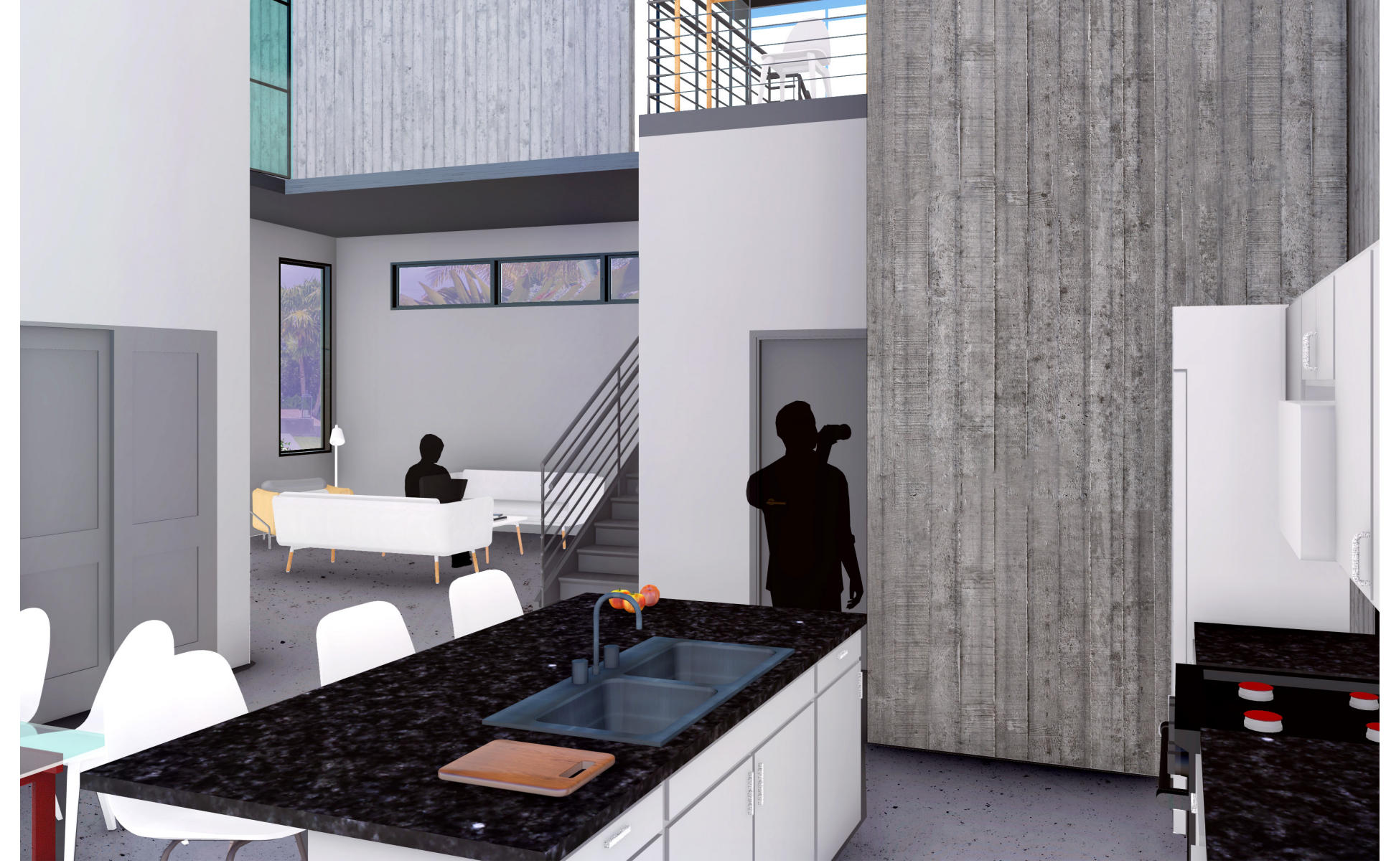


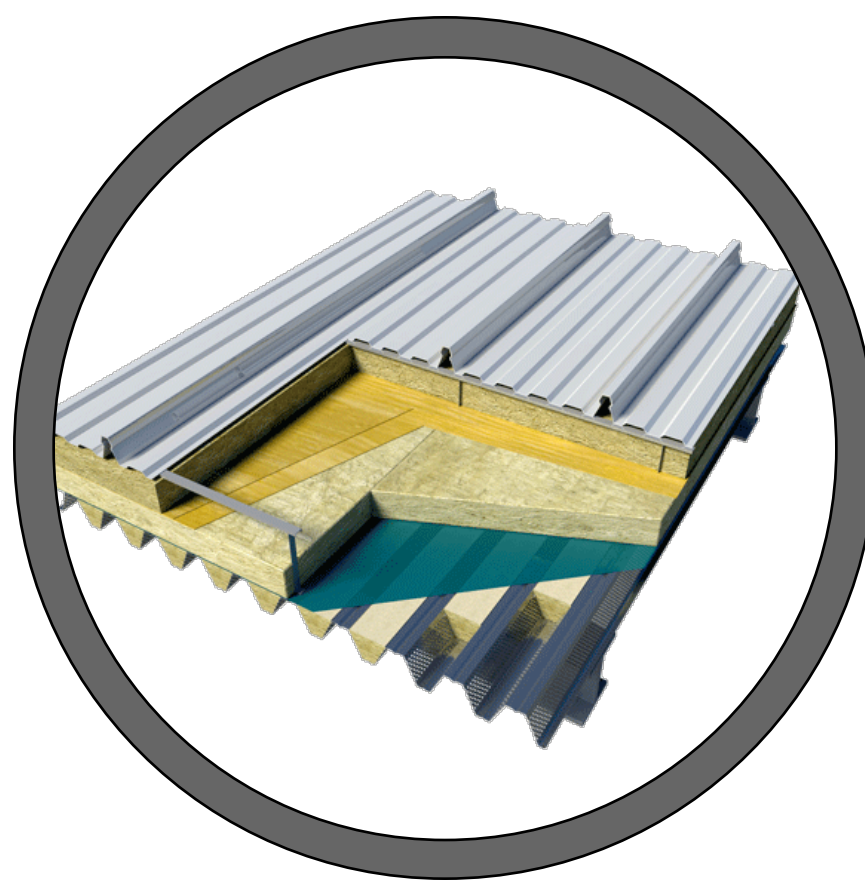
East Elevation



Above: Interior View 01 - Master Suite

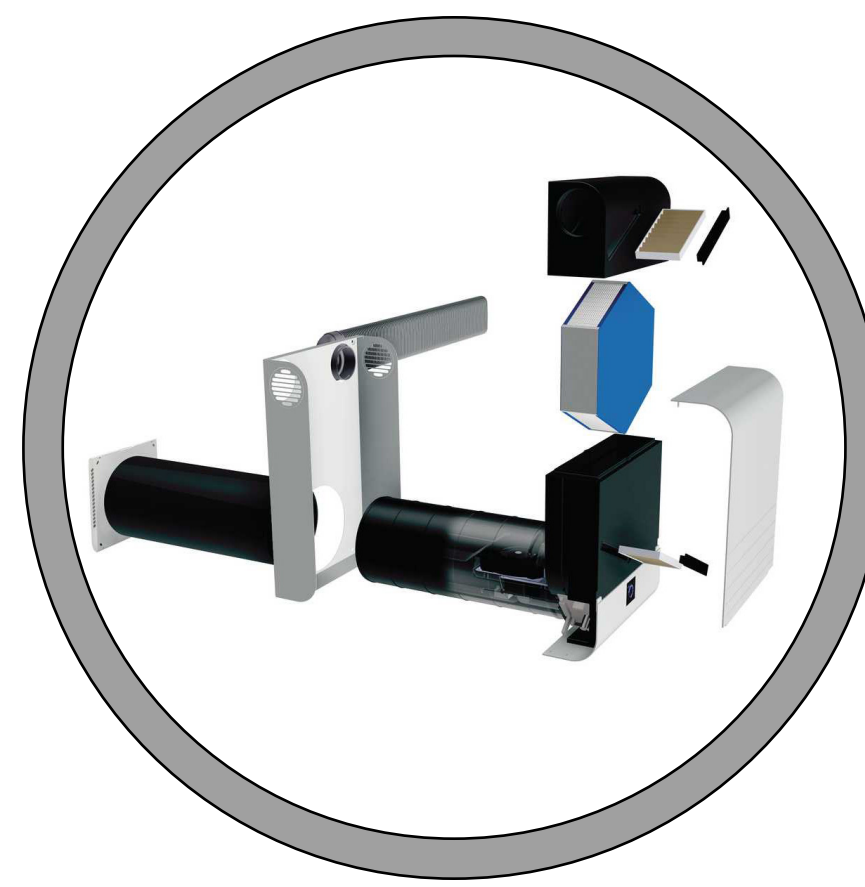
Below: Interior View 02 - Kitchen and Living Areas





Standing Seam Insulated Metal Roof Panels

The connection of these panels allows for movement, reducing risk of damage to panels as the house settles. The metal material reflects the sun and disperses the heat from entering the house, keeping the internal temperature cool. Maintaining the layer of insulation continuously across the building envelope also prevents climate controlled air from escaping.



Ductless HVAC

A ductless heat pump or air conditioner typically consists of a wall-mounted indoor unit combined with an outside compressor. By removing air ducts from the system, the Envirohome with conserve approximately 25% more energy because ductless units require only a very small hole to be drilled into the wall, making them less vulnerable to air leakage and security problems.



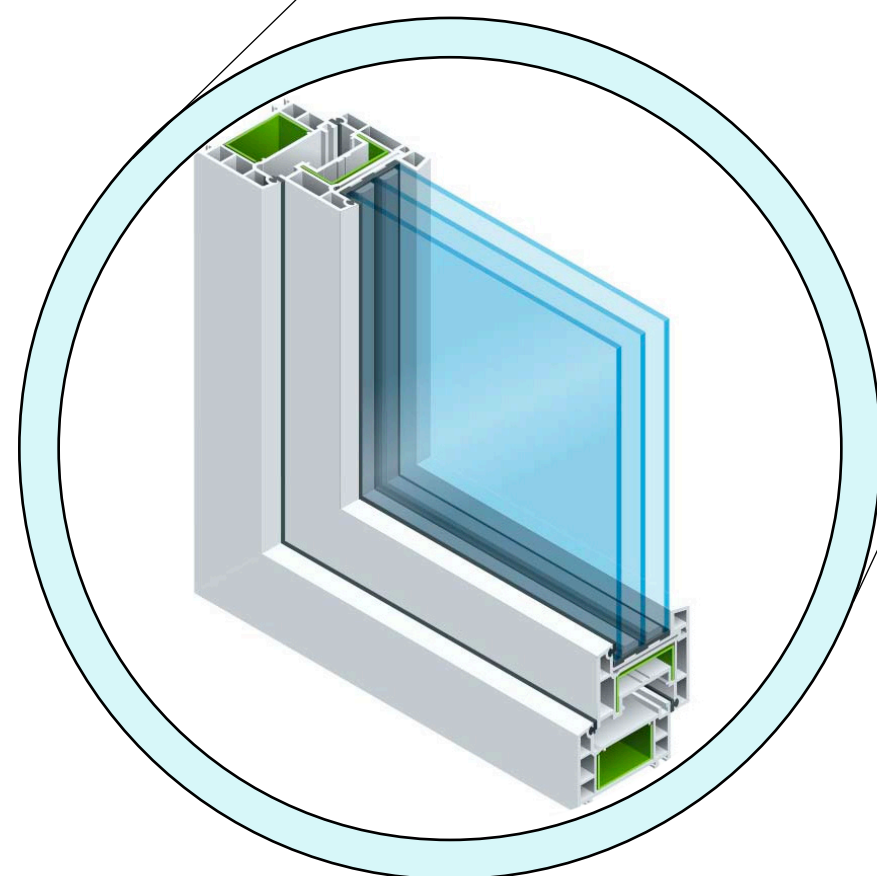
Energy Efficient Appliances

By using energy efficient appliances, such as those of the Beko line, the EnviroHome reduces its' impact on the environment. The investment made to install these features is returned through reduced electric use over the course of the first initial years in the home.



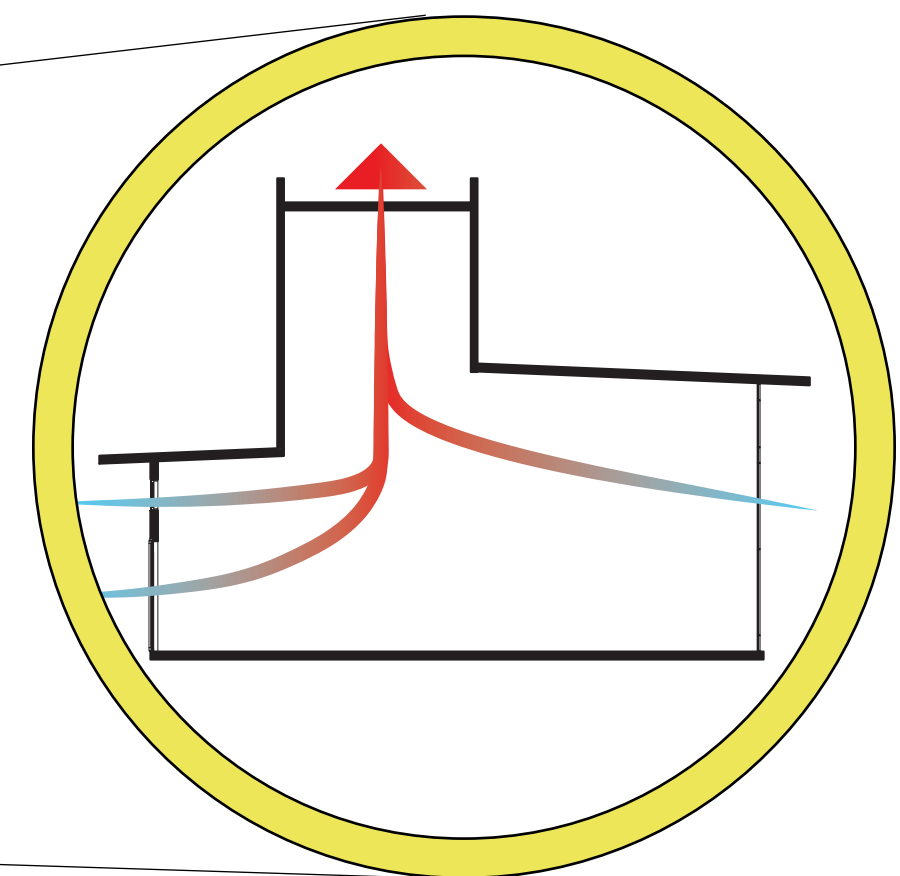
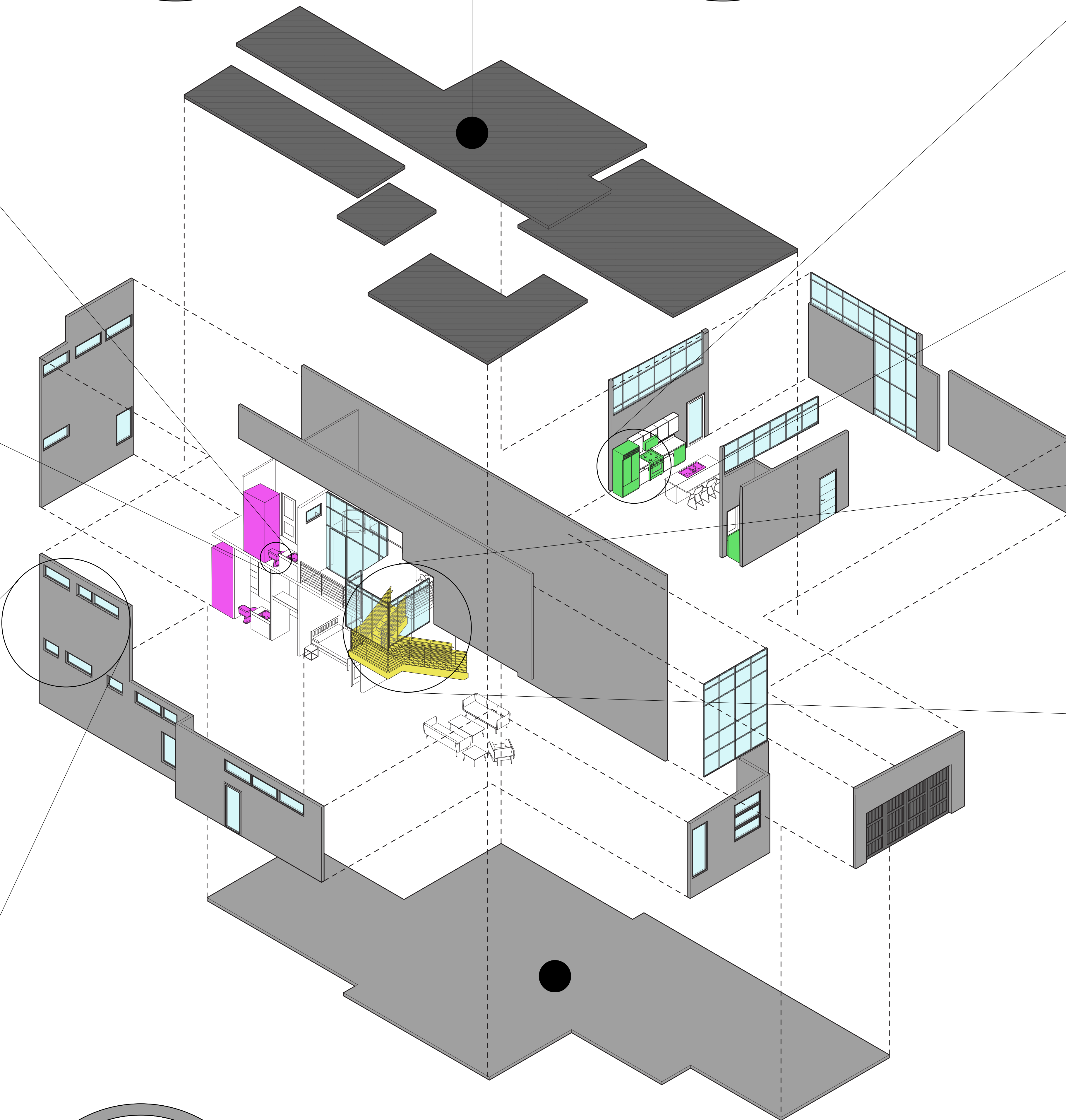
Low Flow Plumbing Fixtures

Low flow fixtures such as water saving toilets and faucets with leak and flow system detection technology further embrace the role of this house as the EnviroHome.



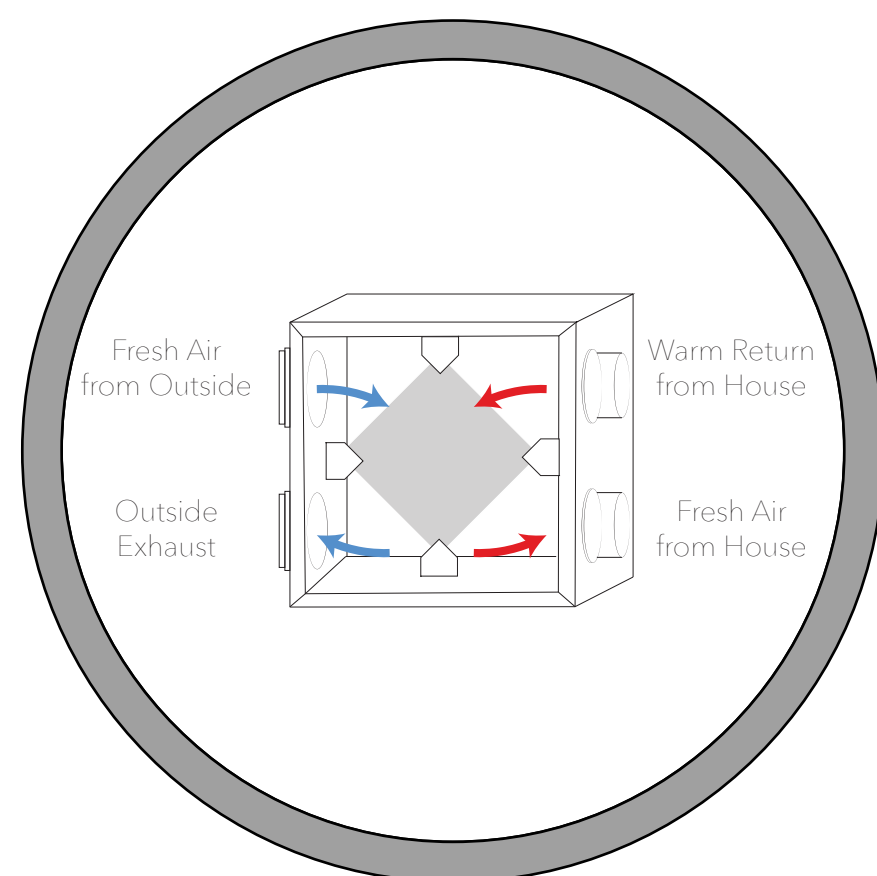
Triple Glazed Windows

Three layers of glazing in the EnviroHome windows maintain a higher level of thermal insulation to keep the conditioned interior air inside the building.



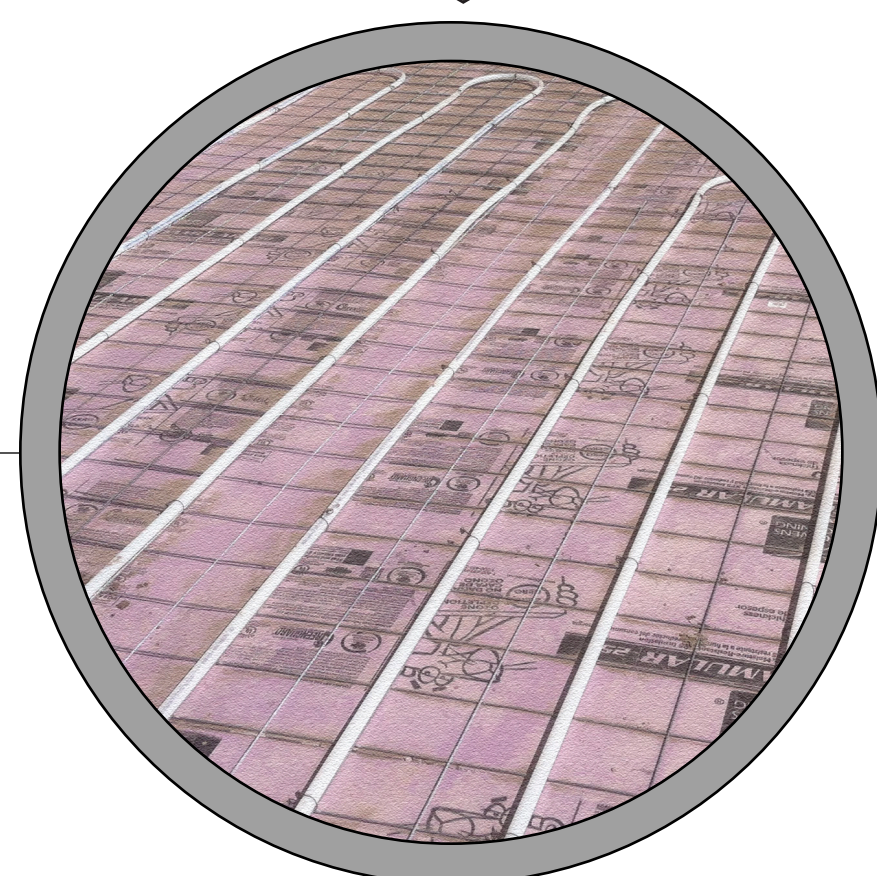
Chimney Stack Effect Ventilation

The open stair tower and higher ceilings in the center of the house provide a means of natural ventilation in the Florida climate. Air is pulled into the house through windows and doors. As it warms inside the house, it rises into the unoccupied tower to help keep the occupied spaces comfortable.



Energy Recovery Ventilator

Energy recovery ventilation exchanges the energy that is contained in normally exhausted building air and uses it to precondition the incoming outdoor ventilation air. This system maximizes the efficiency of air exchange in the house to keep it comfortable.



Radiant Cooling

Embedded into the concrete floor slab is radiant cooling tubing, through which water is circulated to remove heat from the areas above. Water has a higher cooling capacity than air so this system is more efficient in terms of energy consumption. This can be easily adapted to cooler climates by using hot water and heating technologies in place. A layer of insulation fully encloses the building envelope and maximizes the efficiency of this system.