APPENDIX F: SUSTAINABILITY AND CONSERVATION TOOLBOX

The Sustainability and Conservation Toolbox provides tools, descriptions and illustrations for consideration when planning or designing a project where applicable.

Table F-1: *Sustainability and Conservation Toolbox*

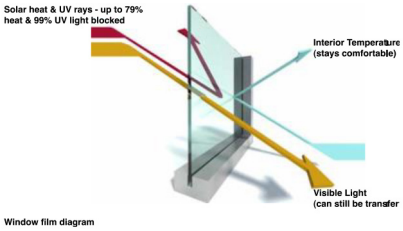
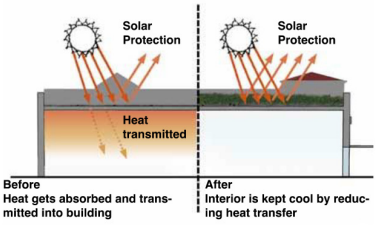
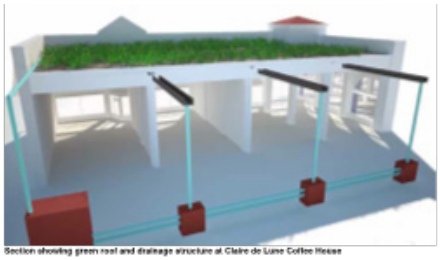
Sustainability and Conservation Tool	Description	Illustration
Storefront Shading	To allow for a visual indoor-outdoor connection without heat gain, all fenestration that is exposed to the sun must be shaded. It is important to consider the building's orientation as the sun rise and set low in the sky. Therefore, east facades are best treated with a vertical shade device such as louvers and west façade is most effective shaded by a horizontal shading device such as an awning.	
Applied Window Film	Applying a window film saves energy by reflecting unwanted infrared radiation, which cuts summer heat gain and complements other energy efficiency measures. A reduced cooling load of the building decreases energy demand and lowers utility costs.	
Green Roof	Green roofs improve the thermal performance of a building. Because less heat flows across the roofing system less energy is required to heat the interior in winter or cool it in summer. Green roofs reduce the heat island effect by limiting solar reflection and consequently reduce the cooling load on surrounding buildings. A green roof keeps hold of stormwater where a portion evapotranspirates and consequently only a flow-through portion is released. When captured, the excess water can be stored and used in times of drought or allowed to future infiltrate using swales and trenches. Green roofs produce oxygen and absorb carbon dioxide which reduces the greenhouse effect. Green roofs reduce the heat island effect by limiting solar reflection and enabling urban ventilation.	  Section showing green roof and drainage structure at Claire de Lune Coffee House
Solar Tubes & Skylights	Energy savings are generated when less artificial light sources are powered to illuminate a space. Studies have shown the natural sunlight greatly contributes to increased productivity in the workplace and may offer other benefits to people as well. Improvements to the indoor atmosphere may encourage customers to stay longer.	Interior view of Filter Coffee House showing solar tube light wells
Vent Stacks	Vent stacks provide natural ventilation and consequently reduce the energy use and improve the indoor environment. By cooling passively the cooing load of building is reduced and consequently utility costs are lowered.	View of Filter Coffee House from 30th Street

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Table F-1: *Sustainability and Conservation Toolbox (Continued)*

Sustainability and Conservation Tool	Description	Illustration
Cool Roof	A cool roof reduces roof temperatures, which consequently impacts the temperature of the interior. A cool roof reflects sunlight away from the building, and combined with the roofing material's ability to release absorbed heat, the transfer of the heat into the building is diminished. When a cool roof's materials stay cooler than conventional materials during peak summer weather, this may prolong the roof's life and reduce maintenance costs.	Reflectance diagram
Greywater System	Common sources of greywater include showers, baths, sinks, and clothes washers. Water from kitchen sinks and dishwashers is sometimes referred to as dark greywater due to the high concentration of organic matter. A diversion system reuses greywater directly without treating or storing it and it diverts grey water into toilet tanks or to outdoor irrigation. Another approach involves storing greywater onsite and treating it.	Section shows the path of recycled greywater for use in washers, toilets and for irrigation.
Permeable Surface	Rainwater infiltration can be achieved by changing a solid concrete surface to a permeable surface. Rainwater that is allowed to infiltrate prevents urban runoff and consequently protects surface and groundwater resources. It also sustains the conveyance capacity of a city's storm water system.	Potential permeable surface between the Lynhurst building and Jack 'n' the Box restaurant
Porous Paving	Porous paving utilizes an air void mixture that permits fluids to pass through the pavement into a stone base and then into the soil below to recharge groundwater supply. The temporary storage of water reduces the peak flow volumes on city storm drains. Porous paving options include porous concrete, porous asphalt, and paving systems with openings for planting and gravel.	View to proposed porous paved alley adjacent to Aloha Sunday
Bioswales	A bioswale provides for an attractive streetscape and natural habitat. At the threshold of a sidewalk and street, stormwater runoff can be diverted into a bioswale, where water is allowed to soak into the ground and is filtered from pollutants by plants and soil. A curb bioswale can be designed to accommodate various spatial conditions of the sidewalk.	View to curb swale from Polk Street

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Table F-1: *Sustainability and Conservation Toolbox (Continued)*

Sustainability and Conservation Tool	Description	Illustration
Rainwater Cistern	A rainwater cistern is a collection device and part of rainwater harvesting systems. Rainwater that falls onto a building's roof is channeled through gutters to a collection tank for storage until used for landscaping, ornamental fountains, or other non-potable uses. The cistern can be an underground basin of water or an above ground barrel or tank. A rainwater cistern can hold large amounts of water and is sealed from external contaminants. Systems can range from as simple as rain barrels at down spouts, to more sophisticated systems including filtration, bypass and overflow features, and pumping equipment.	
Composting Co-Op	Composting provides us with the best natural example of zero waste operations. Composting is the controlled biological decomposition of organic matter, such as food and yard wastes, into humus, a soil-like material that can be used to grow new product. Recovering and composting this portion of our waste stream is key to improving our ability to reduce waste.	Possible location for community composting at alley behind the Lynhurst building
Recycling	Recycling is key to modern waste reduction. It prevents the waste of useful material that provides a substitute to virgin raw materials. The separation of waste reduces the total amount of waste being placed in landfills or incinerated consequently reducing energy use, water use and air pollution.	
Validations & Discounts	The central North Park Parking Structure acts as a parking reservoir and enables automobilists to take advantage of the walkable business district. The parking rates could include carpool and carshare promotions for employees. Businesses could promote validation service to discount parking rates of the parking structure. Similarly business operators can offer discounts toward merchandise and services if the customer arrived by bike.	The North Park parking garage acts as a reservoir to the district