

SPUR

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Ideas + Action for a Better City

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BART Canopy Living Roofs

Design Concept, October 2022



SPUR Digital Discourse Agenda

- **SPUR Introduction (Jessica)**
- **Streets, Equity, Transit and Urban Nature - SF Context (Kay)**
- **BART 50th Anniversary, Canopies Overview + Purpose (Cam)**
- **BART Canopies Design (Steve)**
- **Tigers on Market Project Background (Amber)**
- **Canopy Living Roof Design Intent + Concept (Kirstin)**
- **Panel Discussion + Q & A**

Streets, Equity, Transit and Urban Nature

Kay Cheng, Lyft





Better Roofs

Project Status: Completed

This project is part of the Climate Resilience component of the *Resilience and Sustainability program*.

Effective January 1st, 2017, San Francisco became the first U.S. city to mandate solar and living roofs on most new construction. With the passage of this legislation, between 15% and 30% of roof space on most new construction projects will incorporate solar, living roofs, or a combination of both.

[About](#) [Timeline](#) [Case Studies](#) [Cost Benefit Analysis](#) [Supporting Info](#) [Contact](#)

Our team loves touring living roofs in San Francisco to learn more about different projects. We traveled to each of these projects to learn first-hand about the project details. Click on each to learn more! Do you know a living roof we can visit? Please let us know!



1 South Van Ness



38 Dolores



50 UN Plaza



California Academy of Sciences



Graze the Roof



Heron's Head Ecocenter



1355 Market



USF Center for Science and
Innovation



Bernal Home



UCSF Mission Bay



Stem Kitchen and Garden



Matarozzi Pelsinger Builders



SAN FRANCISCO
LIVING ROOF
MANUAL



DRAFT FALL 2015



Park(ing) Day!

Lyft and Zicla delivered and provided, **Zipper bike lane separators and planters** to use for installation for park(ing) day and future safe streets events in Portland and Denver this year.





Tap [Me Too](#) to show your support for this idea, and we'll keep you updated on its progress.



We want Living Roofs at Your Feet – a series of vegetated areas designed to educate passersby on [Market Street](#).

By [Market Street Prototyping Festival](#)



About

In 2012, social media giant Twitter relocated their headquarters into the historic Market Square building, originally built in 1937. On the ninth floor, the project incorporated a lush living roof area and surrounded by fun activity space with tables and chairs. Unfortunately, most people do not even know it's there!

Supporters [All](#)



681 views

Topics

[Culture](#) [Public Space](#)
[Sustainability](#)

Location



SHARED CIVIC SPACES

Market Street is the symbolic heart of the city. It is a civic space where people from all ages and backgrounds can come together meet eye to eye. Many of the prototypes generated opportunities for meaningful and playful interactions between strangers, fostering a sense of community among the diverse people of San Francisco.



COMMON GROUND

An interactive game combined seating, plants, and water to appeal to people of all ages and backgrounds. Users were encouraged to interact and coordinate their movements to activate water features. The game rewarded participation and cooperation with a surprising, contagious experience by users literally sharing common ground. Common Ground provided a physical and conceptual model for encouraging inclusivity, cooperation and shared experience.

Block: Embarcadero
Team: Cloud Arch Studio

BART Canopy Project - Background, Goals, Status

Cam Bauer, BART





Canopy at Powell Street Station



BART Canopies Design

Steve Line, VIA, a Perkins Eastman Studio



Tigers on Market Project + BART Canopy Living Roofs

Amber Hasselbring, Nature in the City





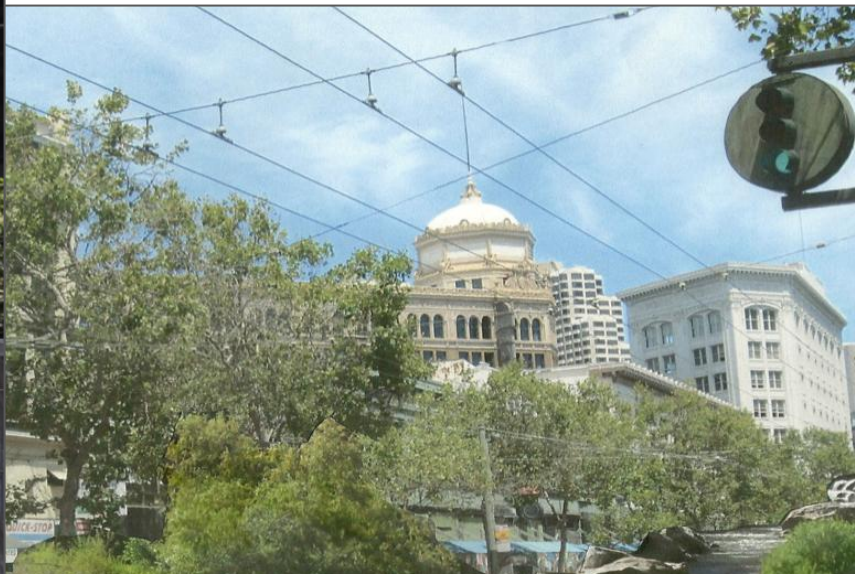


Canyon:
tall buildings
lining a busy
thoroughfare

Trees:
butterfly larval
food &
dappled
sunlight

**BART Living
Roofs:**
canopy-level
plantings
offering
nectar & rest

Glades:
light-filled
plazas &
intersections



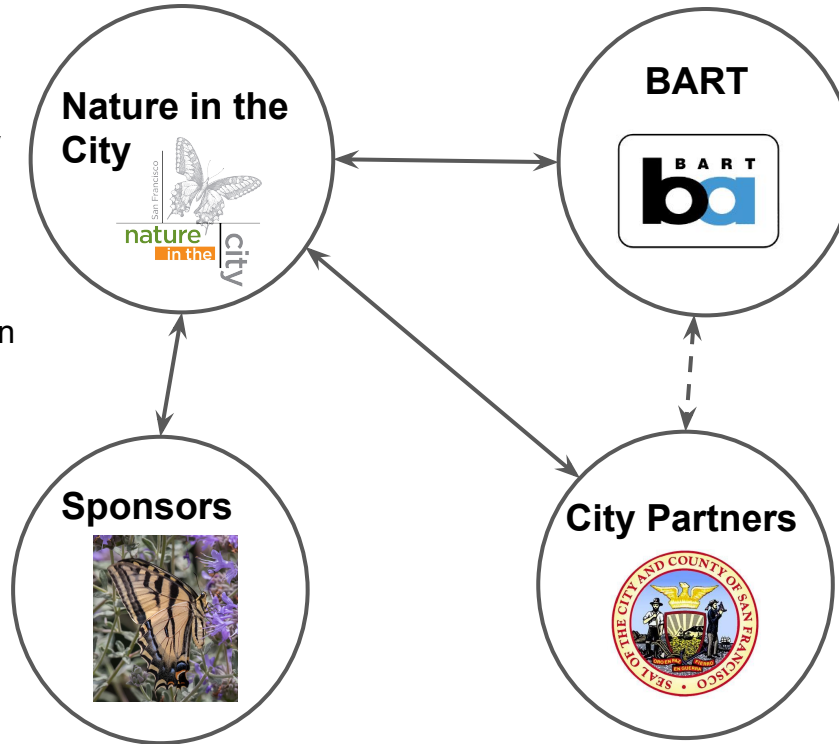


Canopy Living Roof Concept Rendering



Project Partnerships

- Fundraising and sponsor relations
 - Long-term funding strategy
 - Manage installation and maintenance
 - Facilitate city permits and permissions
 - Provide sponsor recognition
 - Media and public relations/events
-
- Provide maintenance funding
 - Amplify media and public relations/events



- Access to canopies
 - Canopies equipped for living roof installation
 - Water supply for irrigation
 - Design & installation contract approvals
 - Provide sponsor recognition
 - Permission for partners to engage in media and public relations/events
-
- Maintenance backup MOU
 - Provide sponsor recognition
 - Program approvals and permitting
 - Grants for installation

BART Canopy Living Roofs: Performance Criteria and Concept Design

Kirstin Weeks, Bio Studio



In a word or two, how would you define success for the BART Living Roof Project?

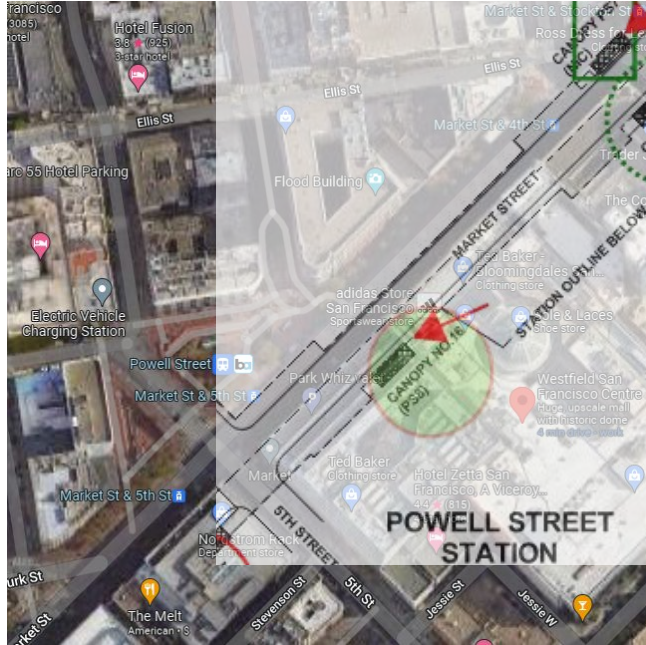


Canopy Living Roof Goals

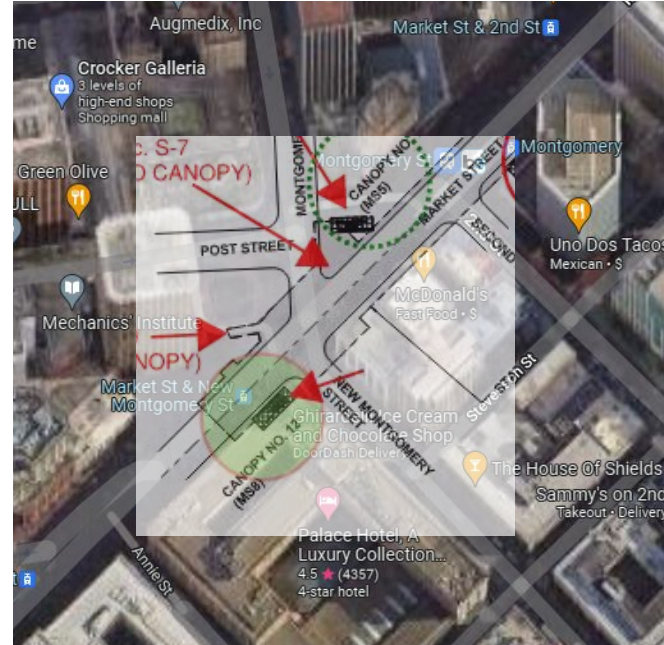
- Delivers habitat benefits (Tigers +)
- Delivers community benefits (aesthetics and much more!)
- Sustainable and water-smart
- Compatible with canopy structure
- Compatible with BART operations
- Continuously maintained



Living Roof Pilot Canopy Locations

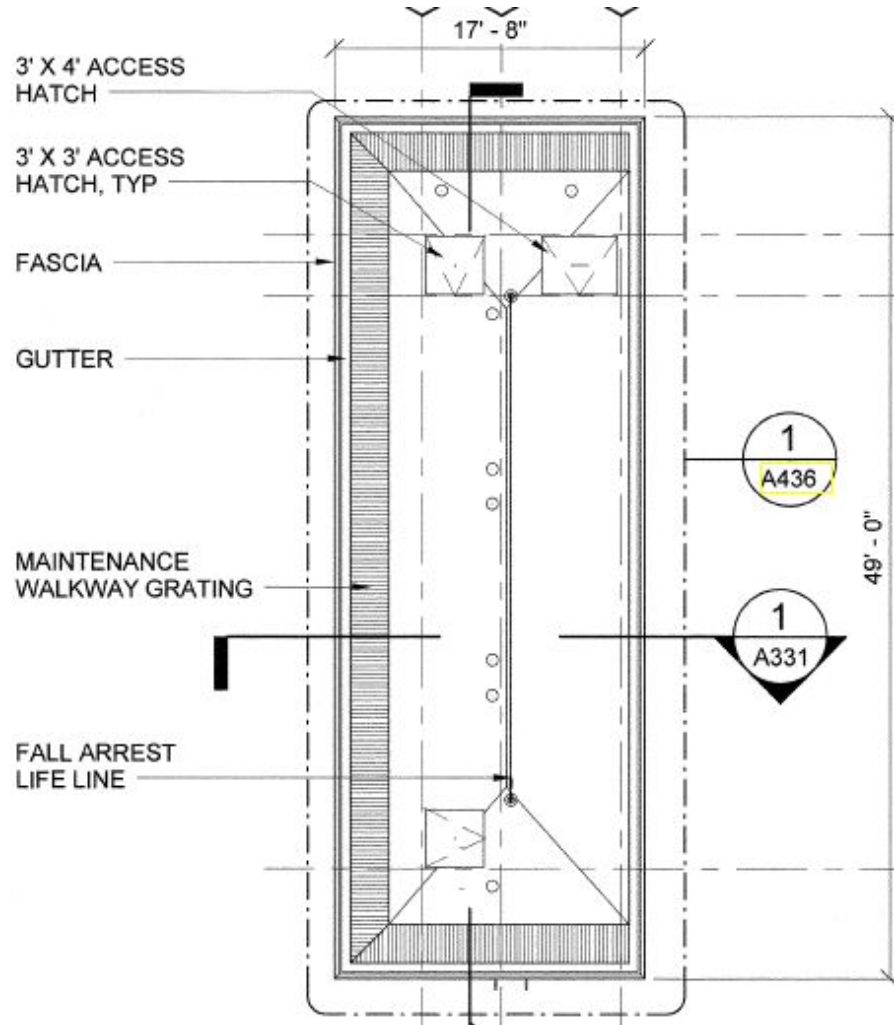


Powell Station Near Westfield Mall

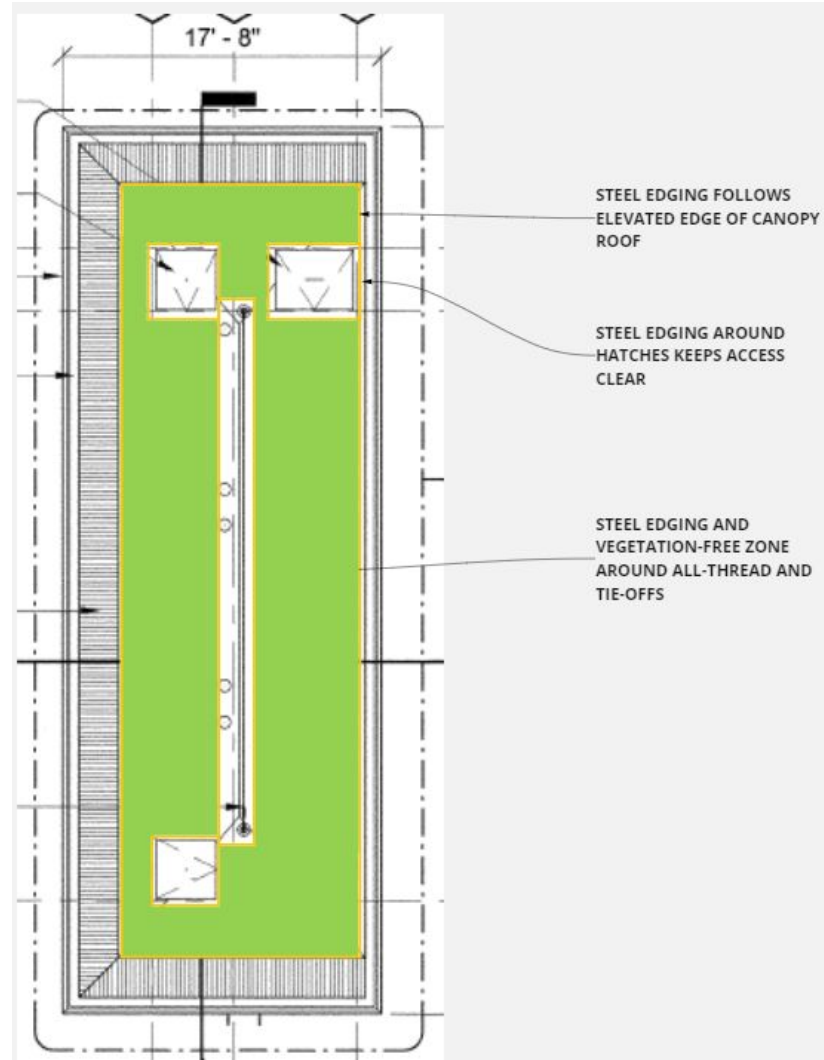


Montgomery Station Near Palace Hotel

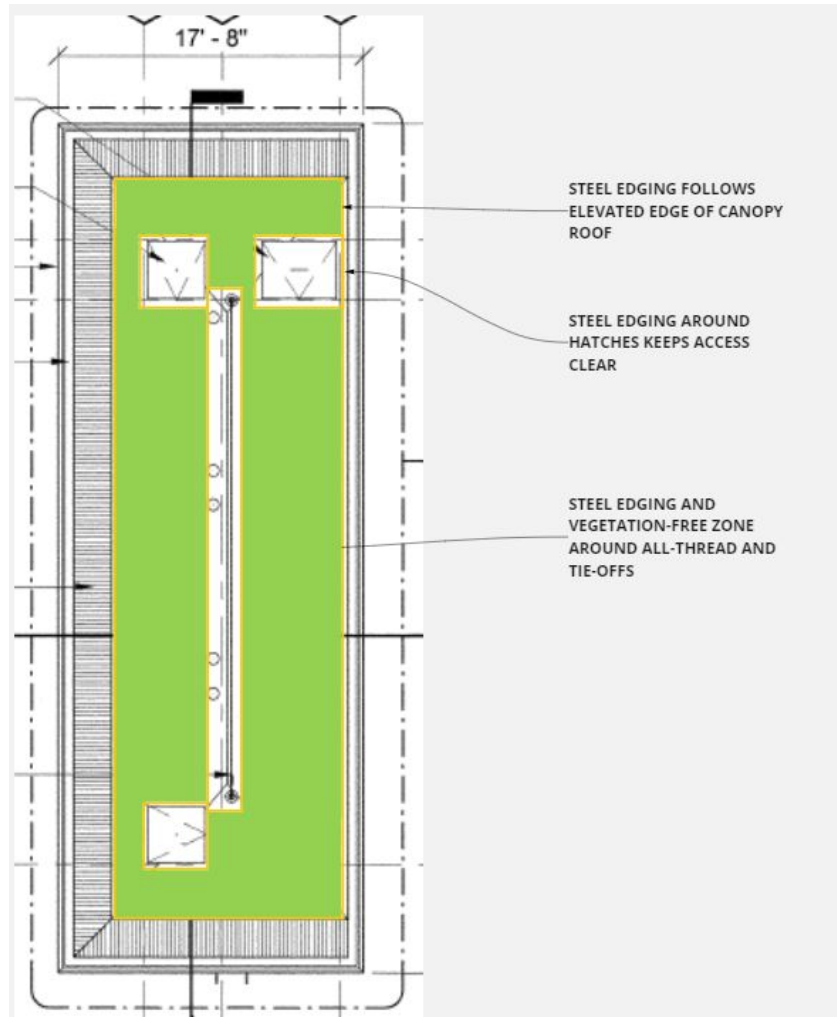
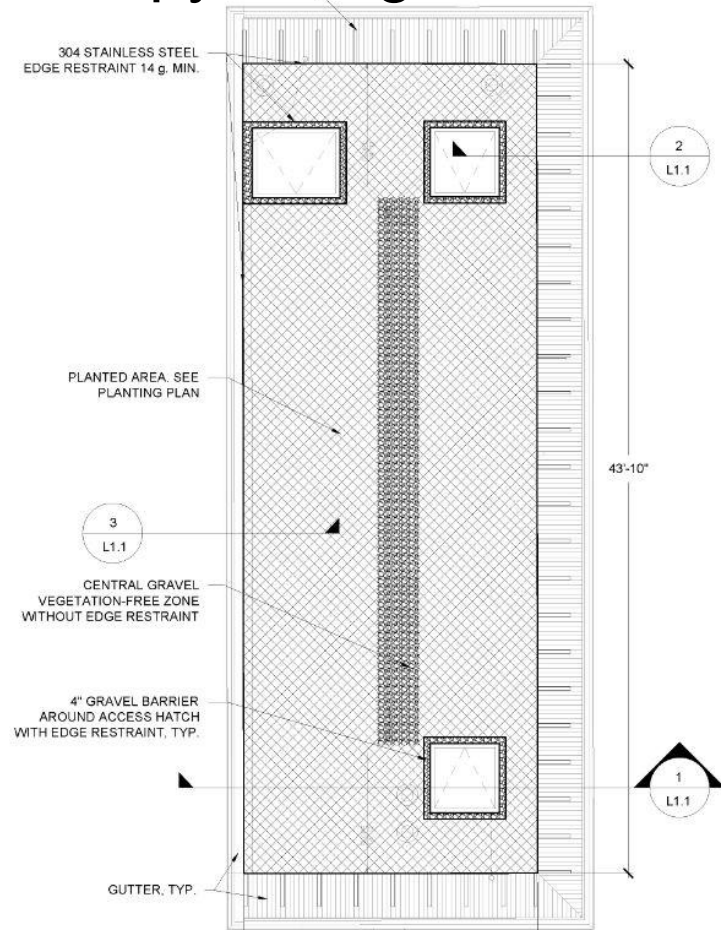
Canopy Roof Plan



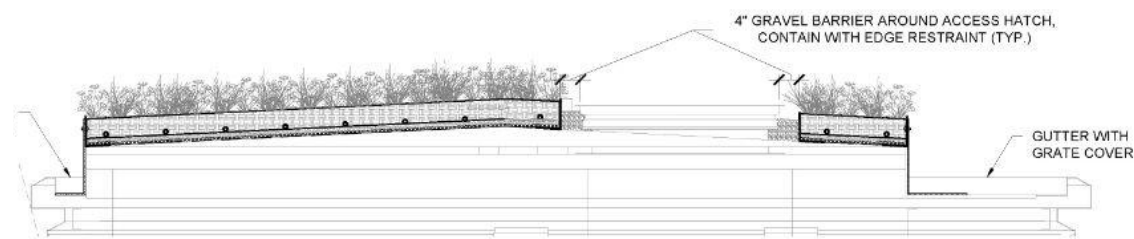
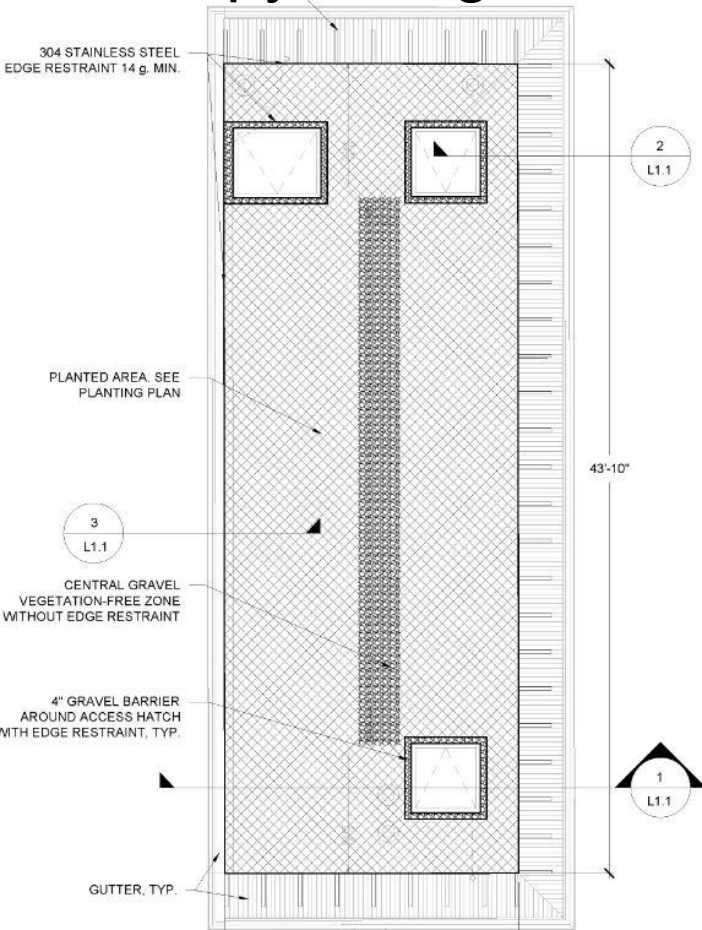
Canopy Living Roof Concept



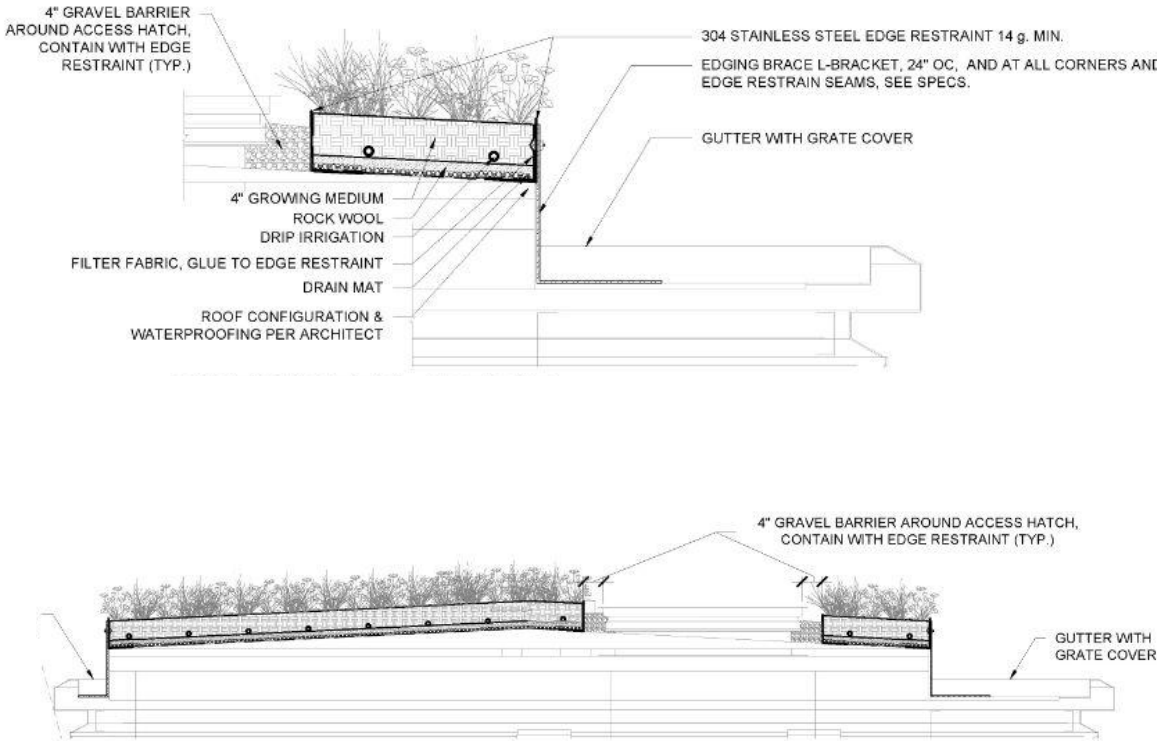
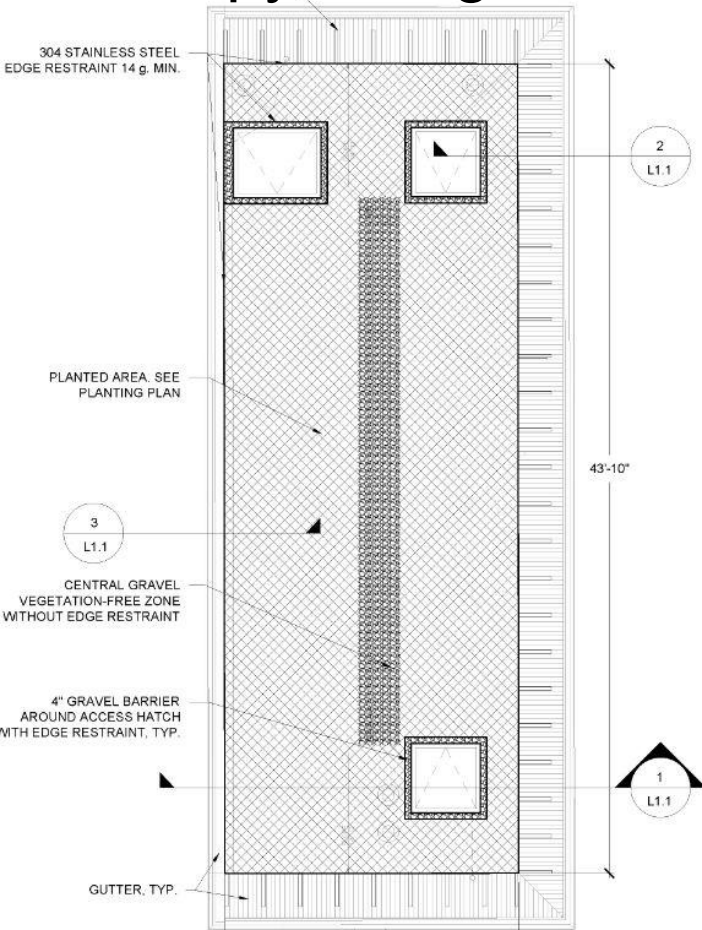
Canopy Living Roof Concept



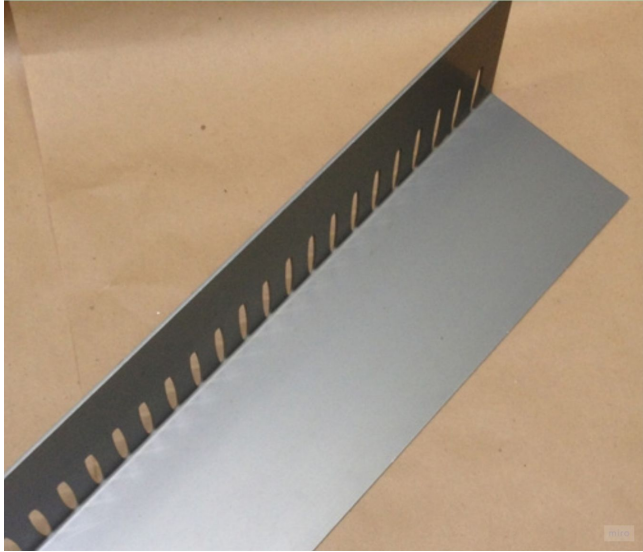
Canopy Living Roof Concept



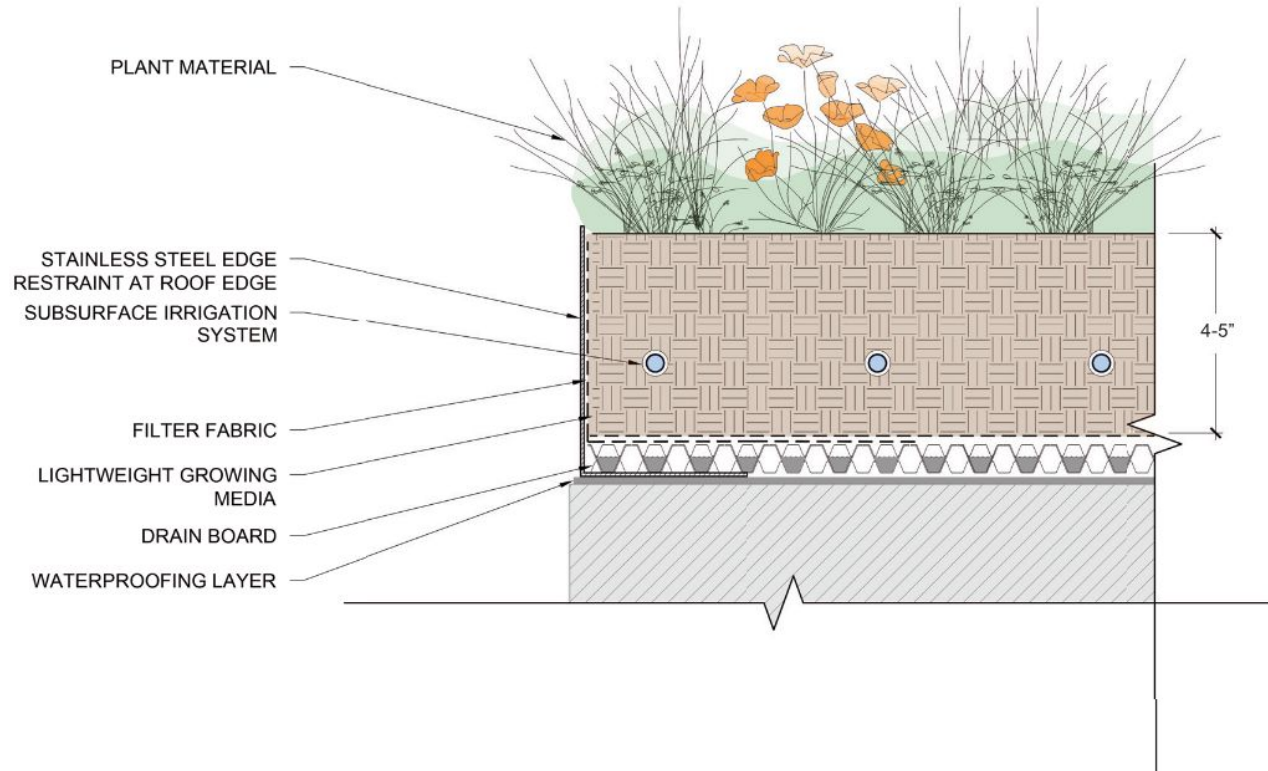
Canopy Living Roof Concept



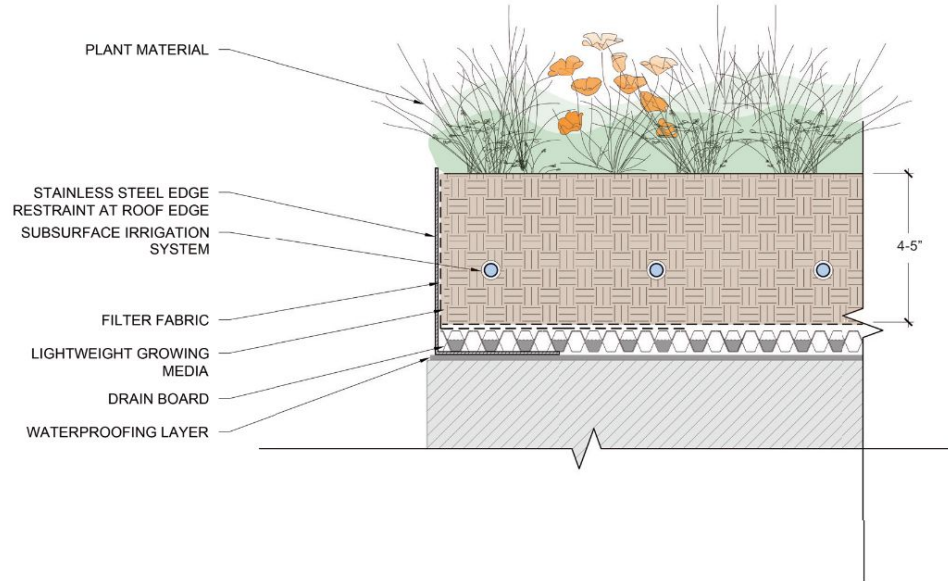
Canopy Living Roof Concept Edge



Living Roof Layers




Living Roof Layers



Living Roof Section Detail

BRO-400-0316



J·DRAIN[®]

Prefabricated Drainage Composites



APPLICATIONS

- FOUNDATION WALLS
- RETAINING WALLS
- PLANTERS
- UNDER SLABS
- BRIDGE ABUTMENTS

J-DRAIN[®] 400 Series

J-DRAIN[®] 400 Series performs a multi-faceted role by providing protection for waterproofing systems and managing sub-surface water around building foundations. Soil back fill is retained by a filter fabric while allowing water to pass into the drainage core providing hydrostatic relief. Collected water is then conveyed to a proper collection system.

Consists of a impermeable polypropylene sheet cusped under heat and pressure to form a high flow dimpled drainage core. The core is then bonded to a layer of nonwoven filter fabric. The filter fabric retains soil or sand particles as well as freshly placed concrete or grout, allowing filtered water to pass into the drainage core.

J-DRAIN[®] 400 / 420*

Maintains a very high flow rate while providing a higher compressive strength for greater depths. A very popular choice for vertical and horizontal single sided drainage applications. Moderate duty.


J-DRAIN[®] 400 XL / 420 XL*

Designed for extra heavy duty vertical and horizontal applications that demand greater compressive strength and improved filtration for challenging soil conditions. Heavier duty drain core & fabric.

*420 & 420 XL are identical to 400 & 400 XL with the addition of a membrane protective film on the back side.

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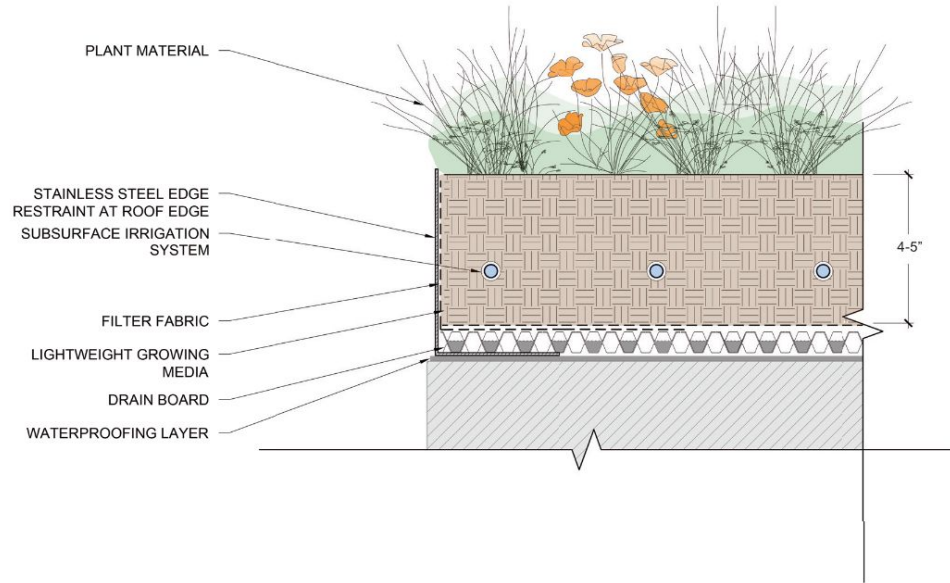
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Enterprises, Inc.

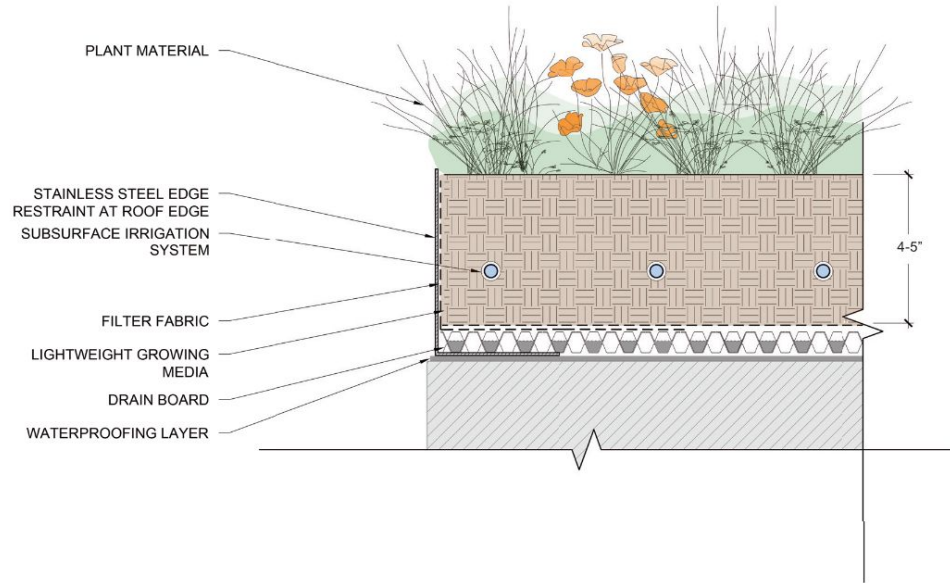
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 (800) 843-7569 (770) 442-1461 Fax: (770) 664-7951

Living Roof Layers



Urbanscape® Green Roll

Living Roof Layers



LIGHTWEIGHT GROWING MEDIA

Preliminary Plant List

Flowering Perennials



Sea thrift
Armeria maritima



California Poppy
Eschscholzia californica



Tidy tips
Leyla platyglossa



Nude Buckwheat
Eriogonum nudum



Checkerbloom
Salicore nuttalliana



Miniature Lupine
Lupinus bicolor



Coyote Mint
Manardella villosa
"Russian River"



Seaside Daisy
Eriogonum glaucus



Blue-Eyed Grass
Sisyrinchium bellum



Sandpaper Verbena
Verbena rigida

Drought-Tolerant Ground Covers



Yellow sand verbena
Abronia latifolia



Beach Strawberry
Fragaria chiloensis



Oregon Stonecrop
Sedum oregonum



Cape Blanco Stonecrop
Sedum spathulifolium



Sedum Mix Blanket
Pre-Planted Sedum blanket
for Soil Retention



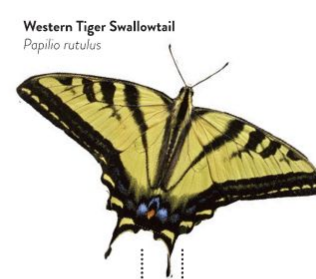
West Coast Lady
Vanessa annabella



Monarch
Danaus plexippus



Anise Swallowtail
Papilio zelicaon



Western Tiger Swallowtail
Papilio rutulus

Flowering Perennials



Sea Thrift
Armeria maritima



California Poppy
Eschscholzia californica



Tidy tips
Leyla platyglossa



Nude Buckwheat
Eriogonum nudum



Chuckerbloom
Salicore nutiflora



Miniature Lupine
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