Greenroads

If Green Buildings, Why Not Greenroads?

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Greenroads Staff Visit 23rd Avenue Phase II Project
Seattle, WA, USA

Overview

- The Case for Greenroads
- What is Greenroads?
- Example Projects
- How to Get Involved

Sustainability

"I think of it as living the life you want, with as much Earth-wise efficiency as your time and budget reasonably allow."

-Scott Adams, How I (Almost) Saved the Earth
WSJ, 21 August 2010

Road splits in 2011 Japan earthquake. Photo by LA Times.

Business As Usual Just Isn't Cutting It

Transport has substantial impacts on the environment, society and the economy.

We invest a lot of money in transportation.

2017-19 WSDOT Capital Budget Compared to 2015-17 with 2017 Supplemental				
Program		**2017-19**	**2015-17 w/ 2017 Supp.**	**Change from 2015-17**
Code & Title		$ in Millions	$ in Millions	$ in Millions
	Capital Budget			
D	Facilities–Capital	$30.3	$13.3	$17.1
I	Highway Improvements	2,225.9	2,093.4	132.5
P	Highway Preservation	822.5	718.4	104.1
Q	Traffic Operations–Capital	10.5	13.7	(3.2)
W	Ferries–Capital	374.2	391.9	(17.7)
Y	Rail–Capital	137.7	531.5	(393.8)
Z	Local Programs–Capital	276.7	85.4	191.3
Total Capital		**$3,877.8**	**$3,847.6**	**$30.2**
Total Appropriated Funds		**$5,723.8**	**$5,490.6**	**$233.2**

0.78 % of the budget shown here, is subject to a statute requiring LEED certification

https://www.wsdot.wa.gov/sites/default/files/2018/01/12/Budget-Enacted2017-19-BudgetBook_0.pdf

Greenroads

If green buildings, why not Greenroads?

Research & Development of Greenroads

- Began in 2006 at University of Washington
- Industry, local and DOT research support
- 5 years, over 100 people
- Calibrated on 120+ test projects
- Managed by 501c3 nonprofit Greenroads Foundation since 2010

Who owns Greenroads?

Greenroads Foundation (operating internationally as Greenroads International), an independent non-profit corporation, manages the education and certification process for sustainable transportation projects.

Greenroads® INTERNATIONAL

OUR PARTNERS & COLLABORATORS

OUR BIG AUDACIOUS GOAL

Fundamentally change the way transport projects are built on a global scale.

1. They can and must be built to be more sustainable.
2. We have the technology, skills, and desire to do so now.
3. We just need to get beyond “business as usual.”


Our Collective Impact:
Better for People
• 28 acres of pedestrian space
• 55 miles of bike lanes
• 29 miles transit friendly lanes
• Reduced crashes by 21%
• 30% have worksite safety plans
• Travel times reduced up to 30 min
Photo by HBB

Our Collective Impact: Better for Planet

- Up to 33% reduced CO2 per built lane mile
- 25% average recycled content
- 137 acres treated to enhanced quality
- 92.7% waste diversion rate

Photo by City of Santa Ana

Our Collective Impact: Better for Bottom Line

- +$2 billion USD/yr local economic impact
- 86.9% regional sourcing
- Added 3128 local jobs (person years)
- Up to 19% savings on maintenance
- Demonstrated initial cost savings up to 23%
- Millions saved with innovative finance

Photo by Sundt

The Greenroads® Rating System

West Dowling Road Phase II

Alaska Department of Transportation, Anchorage, AK

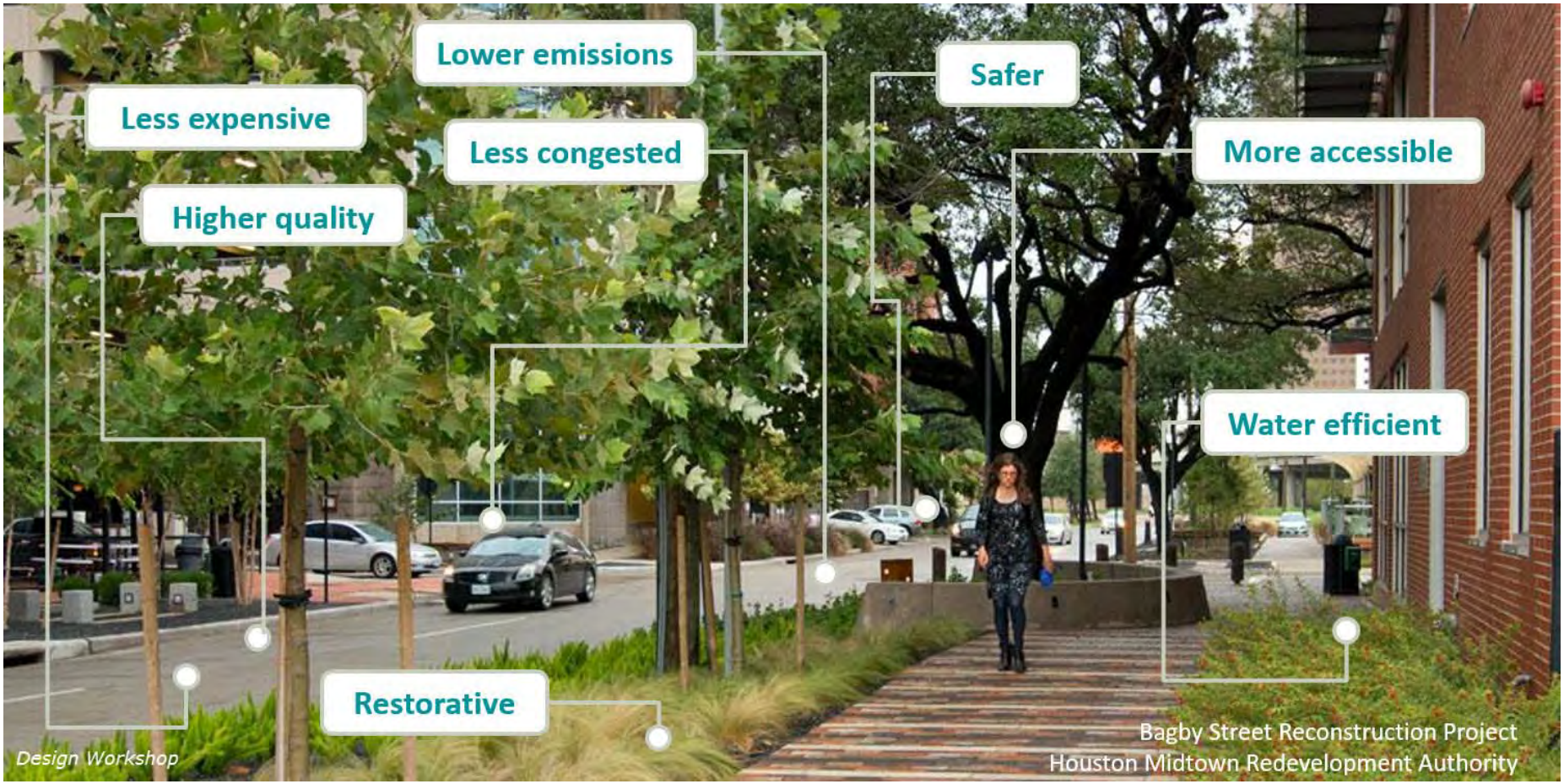
What is Greenroads?

An independent 3rd party sustainability rating system for transportation design and construction. It awards points for more sustainable practices and can help quantify and communicate the sustainable attributes of a transport project.

It is like LEED® for transportation.

So what does a Greenroad look like?

High Performance Transportation Infrastructure



Because if you're not measuring, you're just guessing.

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James Street Bridge Replacement and Road Improvements
City of Bellingham, WA

Benefits of Greenroads

- ✓ Define sustainable features on your project
- ✓ Benchmark and manage sustainability
- ✓ Communicate sustainability efforts to key stakeholders
- ✓ Stimulate the market for green transportation

It helps improve transportation project sustainability.

5 Ways "Greenroads" Appears So Far

In Policy and Plans

- City of Tacoma (policy)
- City of Bellingham (comp plan)
- City of Austin (plan)
- NZ Transport Agency (policy + plan)

In Specs

- TxDOT/CTRMA (reference)
- NZ Transport Agency (required)
- City of Bellingham (compel to perform)
- Community Transit (specials)
- Multnomah County (built in)
- City of Campbell (built in)

RFPs (Design, Design Build, P3)

- County of San Diego
- City of Ocean Shores
- Alaska DOT

In Bid Administration

- City of Santa Ana (flat rate for all)
- City of Raleigh (itemized, alternates)
- City of Fayetteville (cash incentive)
- City of Charlotte (2017)
- City of Bothell (itemized)
- City of Campbell (built in, alternates)
- City of San Jose (alternates)

In Alternative Delivery Contracts

- Caltrans (promised, required)
- Indiana DOT (promised)
- Ministry of Transport Ontario (required)
- NZ Transport Agency (required)
- TxDOT/CTRMA (promised, required)

Coming soon….in green bonds!

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Why bother?

Greenroads Save Money and Have An ROI.

Credit		Cost & Savings	Source
PR-3	Low-Impact Development	15-80% initial cost savings Lower initial cost	EPA
EW-5	Vegetation Quality	30% premium on initial const. 15% savings per year Payback in 2 years	Santa Monica, CA
AL-1	Safety Audit	$1,000-$8,000 initial cost B/C ratio: 3:1 or more Payback in 1 year	NCHRP Synthesis 336
MD-2	Recycled Materials	17% savings for materials 10% savings for HMA in-place Lower initial cost	Kristjansdottir et al. (2007) using 20% RAP
MD-6	Long-Life Pavement	$65,000 premium on initial const. $165,000/lane-mile over 50 yrs Payback in 20 yrs	Muench et al. (2004) for 2-lane road
CA-2	Workzone Health & Safety	$6.2 billion lost between 1995-97 alone in workzone crashes Average $3,678 per crash Priceless: avoid injury and death	Yingfeng (2008)

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Meet changing regulations and funding goals

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Be consistent with green development policy.

King County
Ordinance 17709 (replaced expired Ordinance 16147)
Highest LEED level achievable based on life-cycle cost analysis and funding. Other rating systems as alternates are allowed with project manager request. Update expanded scope of sustainability ratings to other types of projects.

City of Seattle: Sustainable Building Policy
All City construction projects over 5,000 ft^2 must meet LEED Silver rating level. LEED Pilot program provides small grants to help.

Washington State
All State funded projects over 5,000 ft^2 have a goal of LEED silver.

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Set a higher standard for transportation projects.

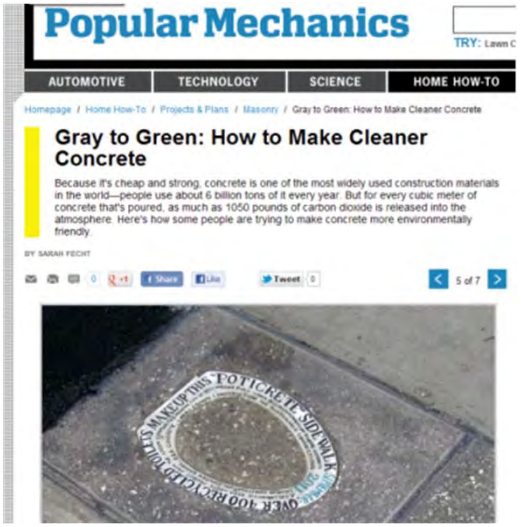
City of Tacoma: Greenroads Ordinance 38495 (2014)
All City construction projects over $5 million required to pursue Certification, with Gold aspirational goal and minimum Bronze Rating.

City of Bellingham: Comprehensive Plan Multimodal Transportation Chapter Policy T-23 (2016)
City shall strive to achieve Certification for projects exceeding $500,000, where feasible and appropriate, excepting some project types.

New Zealand Transport Agency (2015)
All alliance, design build and PPP projects >$15 mil NZD required to certify with level determined by business case process. Silver Certification required >$100 mil NZD.

Tell people (if you are an Owner).

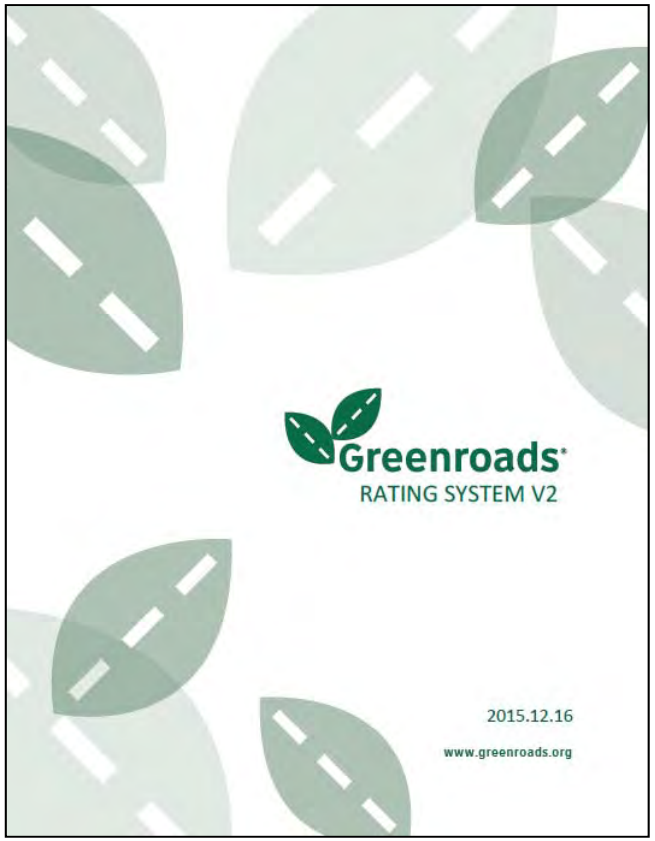
"Resulting Glory" – Slide adapted from 2012 APWA Congress Presentation by Freeman Anthony, Project Engineer, City of Bellingham Public Works



Version 2

Version 2 (July 2015)

Rating System (2019 Update)



Available at greenroads.org/publications

Rating Handbook

Available at greenroads.org/policies

Greenroads

Greenroads Categories: Version 2

Category	Description	Points
Project Requirements (!)	12 minimum requirements for a Greenroad	0
Core Credits		
Environment & Water	Habitat, vegetation, soil, water, stormwater	30
Construction Activities	Construction equipment, processes, quality	20
Materials & Design	Material processing, transport, design	24
Utilities & Controls	Operational systems, mobility, maintenance	20
Access & Livability	Modal access, culture, aesthetics, safety	21
	Total Voluntary Credit Points	**115**
Creativity & Effort (★)	Local values, integrated teams, write your own	15
	Total Points	**130**

Certification Levels

Greenroads BRONZE CERTIFIED

40-49 points

Greenroads SILVER CERTIFIED

50-59 points

Greenroads GOLD CERTIFIED

60-79 points

Greenroads EVERGREEN CERTIFIED

80+ points

Greenroads

What's Inside

Greenroads®

Greenroads®

PR-1

REQUIRED

ECOLOGICAL IMPACT ANALYSIS

GOAL

Encourage comprehensive evaluation of the Project's ecological impacts for its whole lifecycle.

INSTRUCTIONS

1. Collect, document and disclose all available information about:

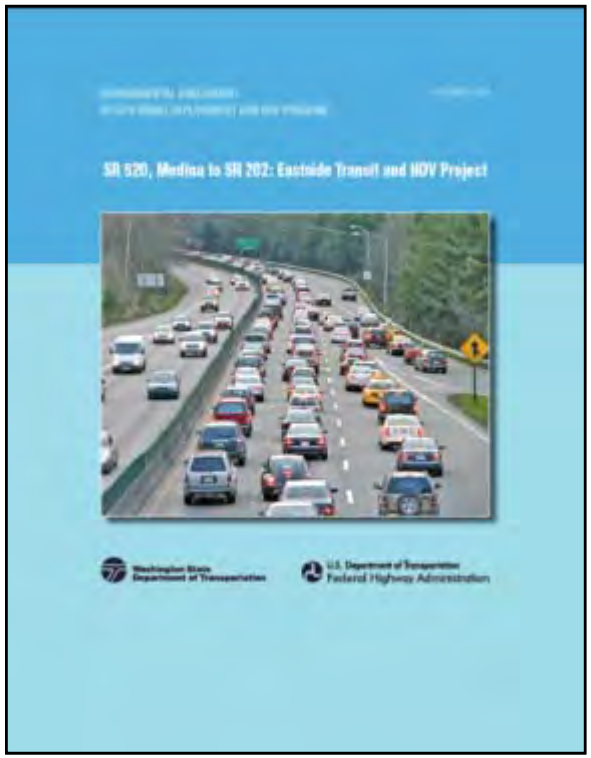
    a. The existing ecological state, geographical and topographical conditions, and designated land use of the proposed Project site, prior to any construction works.
    b. The proposed ecological impacts and/or improvements to the Project site expected as a result of the construction works for all alternative builds considered.
    c. The committed approach for mitigation and compensatory works for any adverse ecological impacts.

2. Evaluate the information and prepare a narrative describing how the ecological impacts of the Project will be managed by the Project. Include, at minimum, a review of the following:

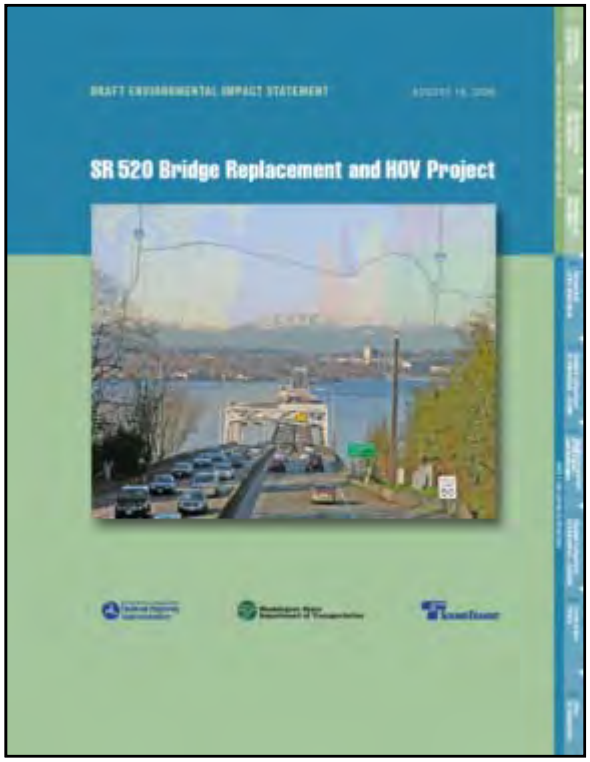
    a. Air, surface water, groundwater, stormwater, earthen materials and energy impacts
    b. Noise, odor, light and glare impacts

PR-1 Ecological Impact Analysis

Encourage comprehensive evaluation of the Project's ecological impacts for its whole lifecycle.



Environmental Assessment



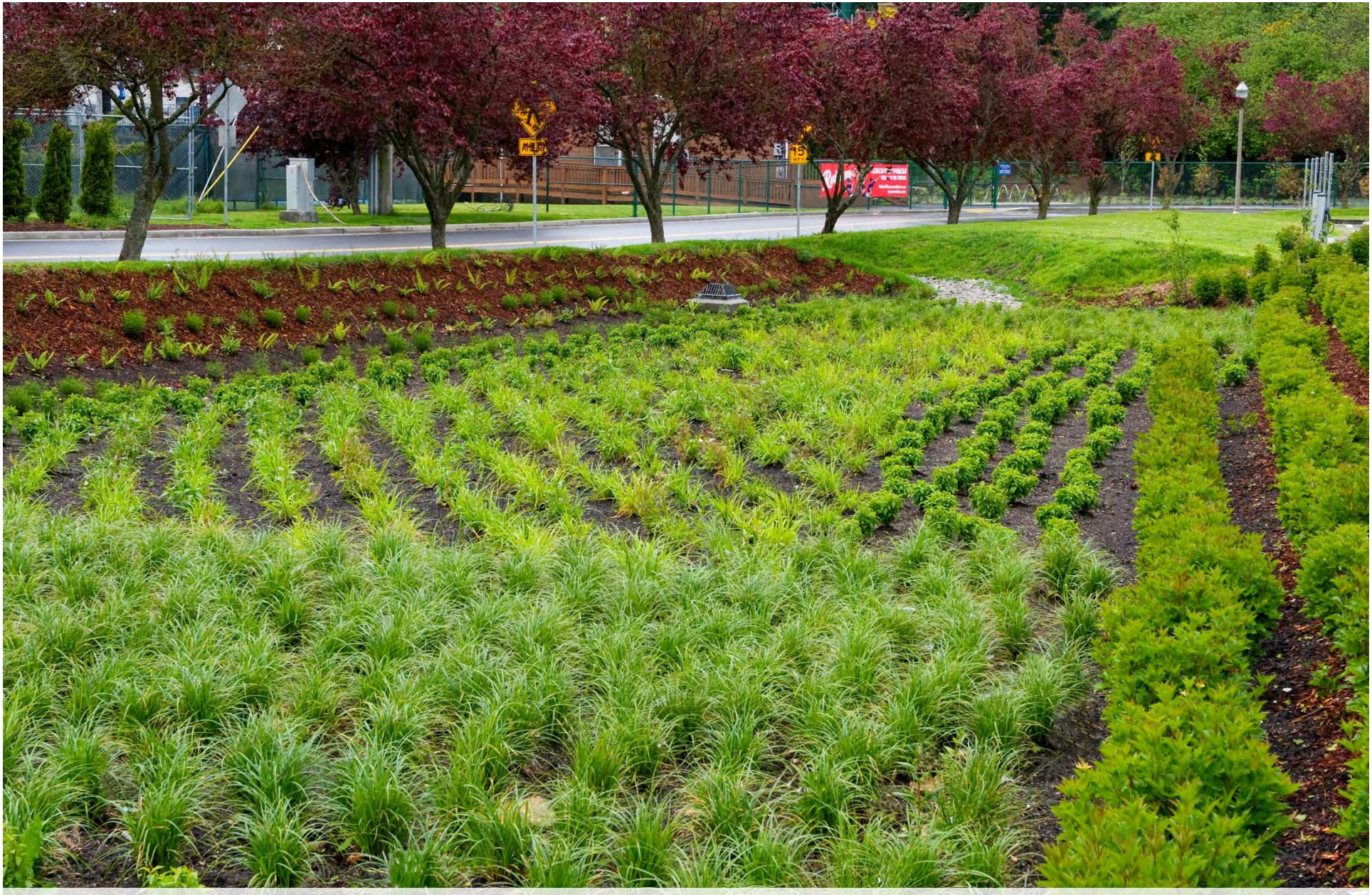
Environmental Impact Statement

Supplemental EIS

National Environmental Policy Act (NEPA) documents for SR 520 Bridge Replacement and HOV project, Seattle, WA

PR-3 Low Impact Development

Encourage consideration of low-impact stormwater management practices for the Project.



Bioswale on Cheney Stadium Sustainable Stormwater Project, Tacoma, WA

PR-7 Quality Control

Encourage systematic quality management practices during Project construction.

Density testing and paving operations on Central Federal Lands first WMA project and Greenroads Pilot Project.

EW-2 Ecological Connectivity

Reduce habitat fragmentation impacts due to the Project, and improve biodiversity.

James Street Bridge now daylights the rechanneled Squalicum Creek, improving salmon habitat, in Bellingham, WA.

CA-2 Workzone Health & Safety

Improve work-zone safety by using best practice methods to minimize injury risk.

Tailgate talk for safety.

CA-7 Workzone Water Use

Encourage responsible water resource management during Project construction.

A water meter being used on South Division Street Promenade, Auburn, WA

MD-2 Recycled Content

Reduce or eliminate the Project's needs for the extraction and production of virgin materials.

"Poticrete" in Bellingham, WA

UC-4 Energy Efficiency

Reduce lifetime energy consumption of operational systems on the Project.

Night shot of porous asphalt pavement lit by LED street lights on Clay Huntington Way, Tacoma, WA

AL-4 Equity & Accessibility

Encourage Projects that provide a net social benefit, improve disproportionally impacted communities, and provide universal accessibility.

Champion Street improved accessibility and sense of place with sidewalk and stormwater improvements (Bellingham, WA)

CE-1 Educated Team

Reward educated and integrated Project Teams.

Craig Weiland and Travis Rauscher are both accredited Greenroads Sustainable Transportation Professionals (STP).

Example Projects

Greenroads®

Northshore Drive Improvements

Bellingham, WA, USA

Greenroads® Summary

Northshore Drive: 2009 Pilot Project
City of Bellingham, WA

Total Score*	29
Project Requirements	6/11
Environment & Water	6
Access & Equity	9
Construction Activities	1
Materials & Resources	10
Pavement Technologies	3
Custom Credits	0

*Does not include Project Requirements

Meador-Kansas-Ellis Trail

Bellingham, WA, USA

Greenroads® Summary

Meador Kansas Ellis Trail
City of Bellingham, WA

Total Score*	**44**
Project Requirements	11/11
Environment & Water	7
Access & Equity	11
Construction Activities	3
Materials & Resources	15
Pavement Technologies	8
Custom Credits	0

*Does not include Project Requirements

Todd Lane Improvements

Austin, TX

Greenroads® Summary

Todd Lane Improvements

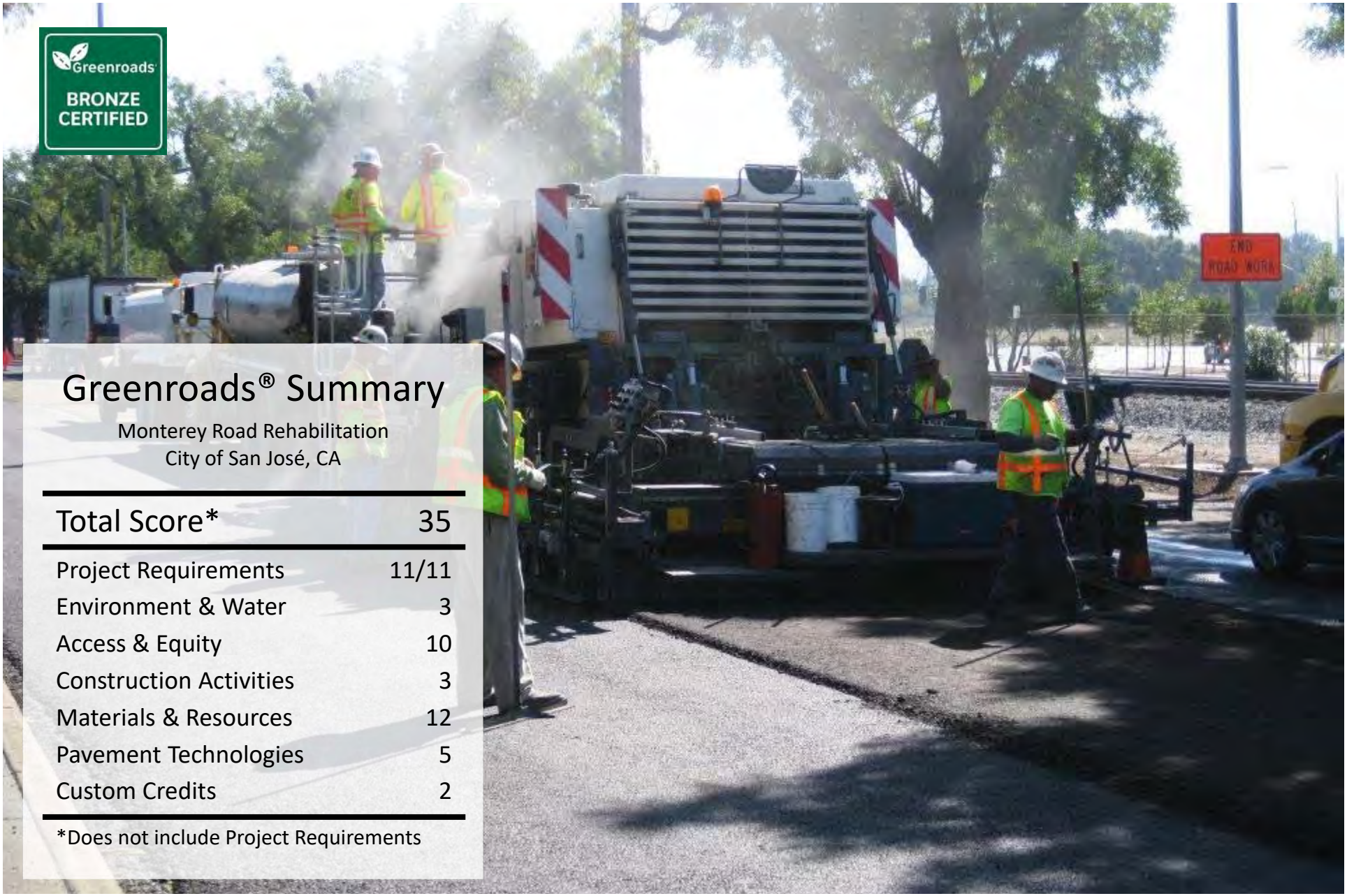
Austin, TX, USA

Total Score*	44
Project Requirements	11/11
Environment & Water	12
Construction Activities	11
Materials & Design	1
Utilities & Controls	9
Access & Livability	5
Creativity & Effort	6

*Does not include Project Requirements

Monterey Road Rehabilitation

City of San José, CA



Greenroads® Summary

Monterey Road Rehabilitation
City of San José, CA

Total Score*	35
Project Requirements	11/11
Environment & Water	3
Access & Equity	10
Construction Activities	3
Materials & Resources	12
Pavement Technologies	5
Custom Credits	2

*Does not include Project Requirements

Greenroads
SILVER CERTIFIED

Greenroads® Summary

SR 522 Crossroads

Bothell, WA, USA

Total Score*	43
Project Requirements	11/11
Environment & Water	9
Construction Activities	13
Materials & Design	5
Utilities & Controls	10
Access & Livability	5
Creativity & Effort	1

*Does not include Project Requirements

SR 522 Bothell Crossroads

Bothell, WA

Greenroads® Summary

Sandy Forks Road Reconstruction

Raleigh, NC, USA

Total Score*	51
Project Requirements	12/12
Environment & Water	7
Construction Activities	7
Materials & Design	12
Utilities & Controls	7
Access & Livability	8
Creativity & Effort	10

*Does not include Project Requirements

Sandy Forks Road Reconstruction

Raleigh, NC

Razor Clam Bridge Replacement

Ocean Shores, WA

Greenroads® Summary

Razor Clam Bridge Replacement

Ocean Shores, WA, USA

Total Score*	**42**
Project Requirements	✓
Environment & Water	11
Construction Activities	12
Materials & Design	0
Utilities & Controls	8
Access & Livability	6
Creativity & Effort	5

*Does not include Project Requirements

What You Can Do

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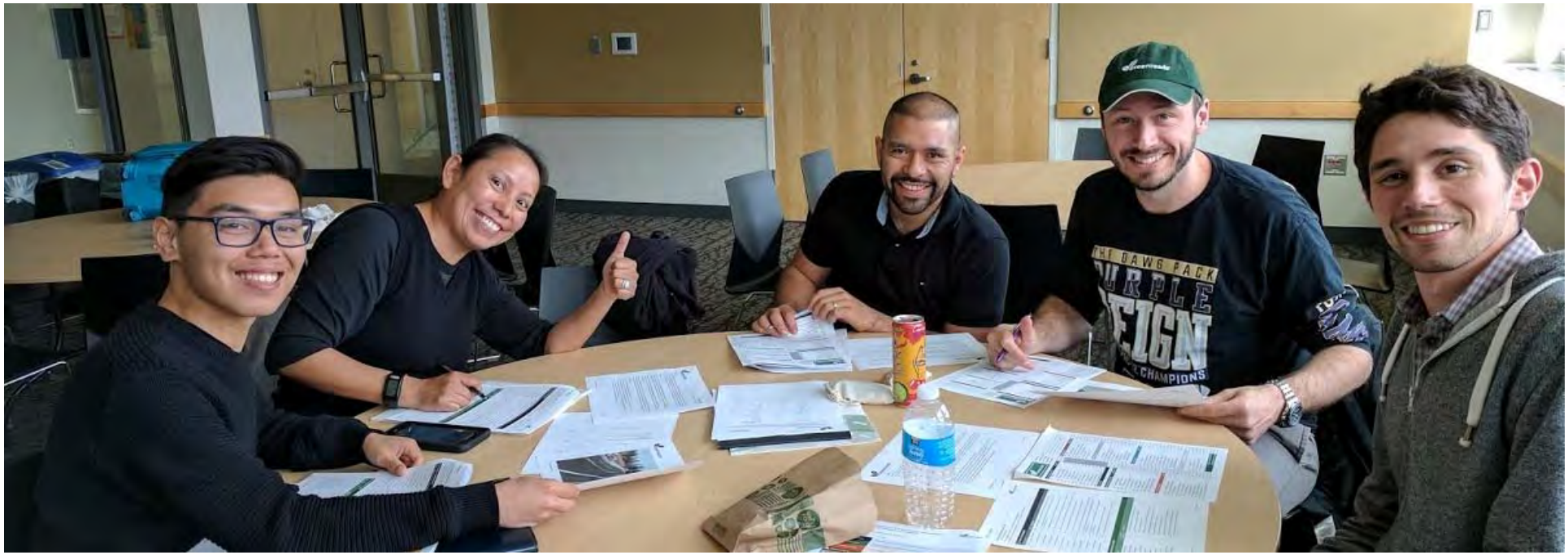
Greenroads Seattle Bootcamp
April 2016



Learn More

- Visit the website: greenroads.org
- Download a free sample of the rating system: greenroads.org/publications
- Attend a free webinar: greenroads.org/events
- Try free online learning, webinars, case studies