Demonstrating INVEST for a Corridor Project

Peoria Road / Historic Route 66
Springfield, IL

IDOT Fall Planning Conference, 2015

SSC RPC Springfield-Sangamon County Regional Planning Commission

Project posted as a Case Study on FHWA website

www.sustainablehighways.org

U.S. Department of Transportation
Federal Highway Administration

INVEST
ECONOMIC • SOCIAL • ENVIRONMENTAL

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Case Studies

Springfield Sangamon County Regional Planning Commission (SSRPC)

Visualizing Sustainability in the Historic Route 66 Corridor Project

Springfield, IL

Lead Agency: Springfield Sangamon County Regional Planning Commission (SSRPC)

INVEST Module: Project Development

Links: SSRPC

Peoria Road / Route 66 Corridor Improvement Project (PPT) (View in Slideshow Mode to See Animation)

Peoria Road/ Route 66 Corridor Improvement Project (PDF)

The metropolitan planning organization (MPO) for Springfield, IL applied criteria from the INVEST Project Development (PD) module to a corridor improvement project along the Peoria Road / Route 66 Corridor. This corridor includes the historic Route 66, the state fairground, the SHEA's Museum, transit service, and a mix of residential and commercial development. Using the INVEST criteria, planners identified improvements that could be made to the corridor that would enhance sustainability.

For instance, INVEST criterion *PD-15: Historical, Archaeological and Cultural Preservation* aims to protect or enhance cultural and historic assets. Installing interpretive signs and improving pedestrian access as suggested by the INVEST criterion could enhance the preservation and enjoyment of historic Route 66 and the museum (see Springfield MPO's artist renderings of these improvements in the figure below). The actions also improve linkage of Historic Route 66 with the State Fairground. The improvements would provide the project with three out of three available points under the INVEST PD-15 criterion.

As another example, INVEST criterion *PD-10: Pedestrian Access* aims to improve the safety and convenience of pedestrian networks for people of all ages and

Project Presentations

- **AMPO (Association of Metropolitan Planning Organizations) Annual Conference, Portland (OR),**

- FHWA INVEST Panel Session (MPO INVESTments in Sustainability), 2013

- **FHWA National Webinar**

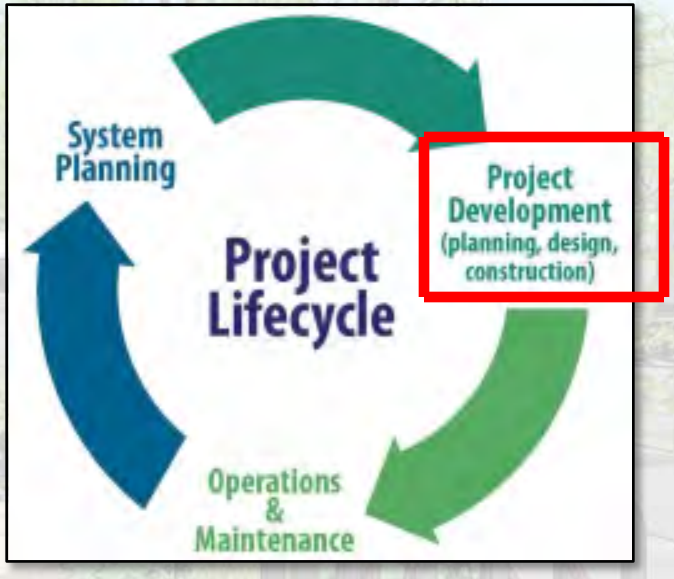
- Implementation Webinar: System Planning (SP) Module, 2013

Infrastructure Voluntary Evaluation Sustainability Tool

INVEST 1.0 is developed by FHWA as a practical, web-based collection of voluntary best practices called **criteria**, designed to help transportation agencies integrate sustainability into their **programs** (policies, processes, procedures and practices) and **projects.**

Sustainability is based on three principles of "Triple Bottom Line"

When does INVEST measure Sustainability?



INVEST is composed of four modules:

1. **System Planning for States (SPS)**
2. **System Planning for Regions (SPR)**
3. **Project Development (PD)**
4. **Operation & Maintenance (OM)**

How does INVEST measure Sustainability?

Each INVEST criteria describes a particular sustainability best practice and assigns it **a point value** or **"weight"** according to its impact on transportation sustainability.

Criteria in SP and OM modules are all equally weighted at 15 points

System Planning Criteria by Sustainability Principle

Criterion Number and Title	Triple Bottom Line Principles: Social	Environmental	Economic
SP-1: Integrated Planning: Economic Development and Land Use			x
SP-2: Integrated Planning: Natural Environment		x	
SP-3: Integrated Planning: Social	x		
SP-4: Integrated Planning: Bonus	x	x	x
SP-5: Access & Affordability	x	x	x
SP-6: Safety Planning	x		x
SP-7: Multimodal Transportation and Public Health	x		x
SP-8: Freight and Goods Movement	x	x	x
SP-9: Travel Demand Management	x	x	x
SP-10: Air Quality	x	x	
SP-11: Energy and Fuels	x	x	x
SP-12: Financial Sustainability			x
SP-13: Analysis Methods	x	x	x
SP-14: Transportation Systems Management & Operations	x	x	x
SP-15: Linking Asset Management and Planning		x	x
SP-16: Infrastructure Resiliency	x	x	x
SP-17: Linking Planning and NEPA	x	x	x

Operations & Maintenance Criteria by Sustainability Principle

Criterion Number and Title	Triple Bottom Line Principles: Social	Environmental	Economic
OM-1: Internal Sustainability Plan	x	x	x
OM-2: Electrical Energy Efficiency and Use		x	x
OM-3: Vehicle Fuel Efficiency and Use	x	x	x
OM-4: Reuse and Recycle		x	x
OM-5: Safety Management	x		x
OM-6: Environmental Commitments Tracking System	x	x	
OM-7: Pavement Management System		x	x
OM-8: Bridge Management System		x	x
OM-9: Maintenance Management System	x	x	x
OM-10: Highway Infrastructure Preservation and Maintenance	x	x	x
OM-11: Traffic Control Infrastructure Maintenance	x	x	x
OM-12: Road Weather Management Program	x	x	x
OM-13: Transportation Management and Operations	x	x	x
OM-14: Work Zone Traffic Control	x	x	x

Project Development Module

Project Development Module is where **specific projects** conceptualized and programmed in the System Planning process are **Planned, Designed** and **Constructed.**

INVEST is both a **Prospective tool** and a **Retrospective tool**, and can be used at any time to evaluate a project.

Project - Peoria Road / Route 66 Corridor

SATS PY 2013 Unified Planning Work Program
230.5 Corridor Development and Transportation Planning.
Core Tasks:
- Provide planning assistance as needed for U.S. Route 66 Heritage Corridor Project.

How does INVEST measure Sustainability?

Project Development by Criteria Scorecard

	Paving	Urban Basic	Urban Extended	Rural Basic	Rural Extended	Custon Core Criteria[1]
PD-1 Economic Analyses			√		√	
PD-2 Life-Cycle Cost Analyses	√	√	√	√	√	√
PD-3 Context Sensitive Project Development		√	√	√	√	√
PD-4 Highway and Traffic Safety	√	√	√	√	√	√
PD-5 Educational Outreach	√	√	√	√	√	√
PD-6 Tracking Environmental Commitments	√	√	√	√	√	√
PD-7 Habitat Restoration		√	√	√	√	√
PD-8 Stormwater		√	√	√	√	√
PD-9 Ecological Connectivity			√	√	√	
PD-10 Pedestrian Access		√	√			
PD-11 Bicycle Access		√	√			
PD-12 Transit & HOV Access		√	√			
PD-13 Freight Mobility			√		√	
PD-14 ITS for System Operations		√	√		√	
PD-15 Historical, Archaeological, and Cultural Preservation		√	√	√	√	√
PD-16 Scenic, Natural, or Recreational Qualities			√	√	√	
PD-17 Energy Efficiency		√	√	√	√	√
PD-18 Site Vegetation		√	√	√	√	√
PD-19 Reduce and Reuse Materials	√	√	√	√	√	√
PD-20 Recycle Materials	√	√	√	√	√	√
PD-21 Earthwork Balance			√		√	
PD-22 Long Life Pavement Design	√	√	√	√	√	√
PD-23 Reduced Energy and Emissions in Pavement Materials	√	√	√	√	√	√
PD-24 Contractor Warranty	√	√	√	√	√	√
PD-25 Construction Environmental Training		√	√	√	√	√
PD-26 Construction Equipment Emission Reduction	√	√	√	√	√	√
PD-27 Construction Noise Mitigation		√	√			
PD-28 Construction Quality Control Plan	√	√	√	√	√	√
PD-29 Construction Waste Management	√	√	√	√	√	√
Total Number of Criteria in Scorecard	12	24	29	21	25	19

1 – Indicates the core criteria that must be included in the custom scorecard. The user may choose as many additional criteria as desired.

Criteria are organized in to Scorecard

INVEST 1.1

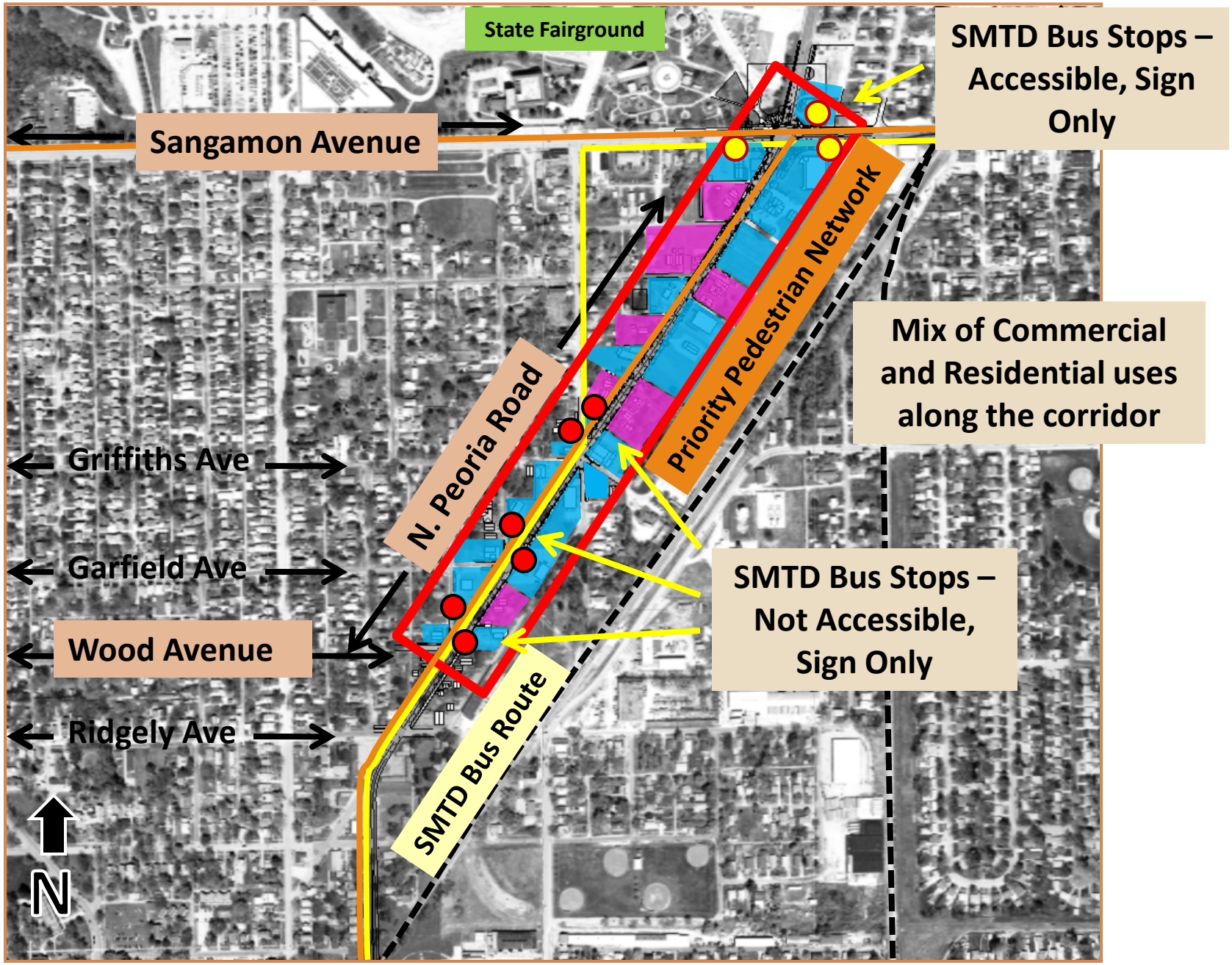
PD module has **6 scorecard** options, including different combination of the 29 criteria based on the **project type** and the **location**

INVEST 1.2

Five new criteria has been added and one criteria has been removed, includes combination of 33 criteria

No.	Criterion Description	Action
PD-24	Contractor Warranty	Removed
PD-24	Permeable Pavement	Added
PD-30	Low Impact Development	Added
PD-31	Infrastructure Resiliency in Planning and Design	Added
PD-32	Light Pollution	Added
PD-33	Noise Abatement	Added

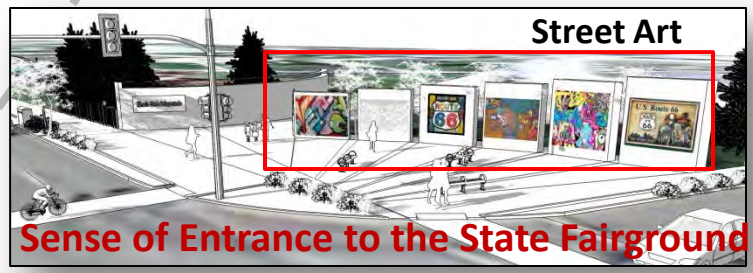
Project Demonstration Site

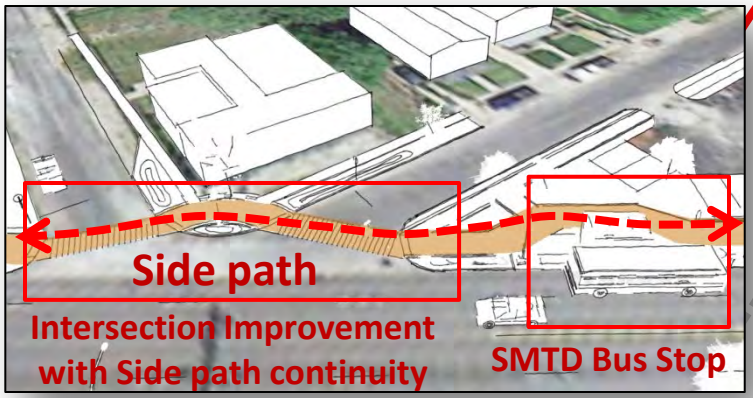


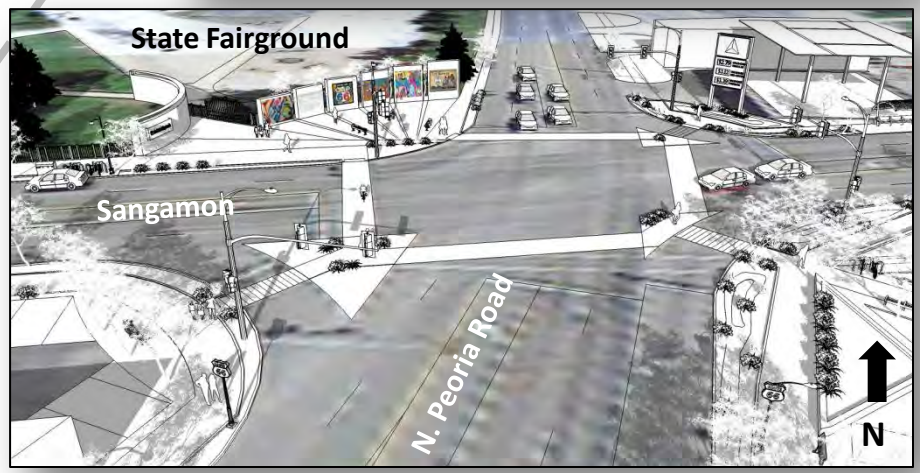
The Design Concept

State Fairground

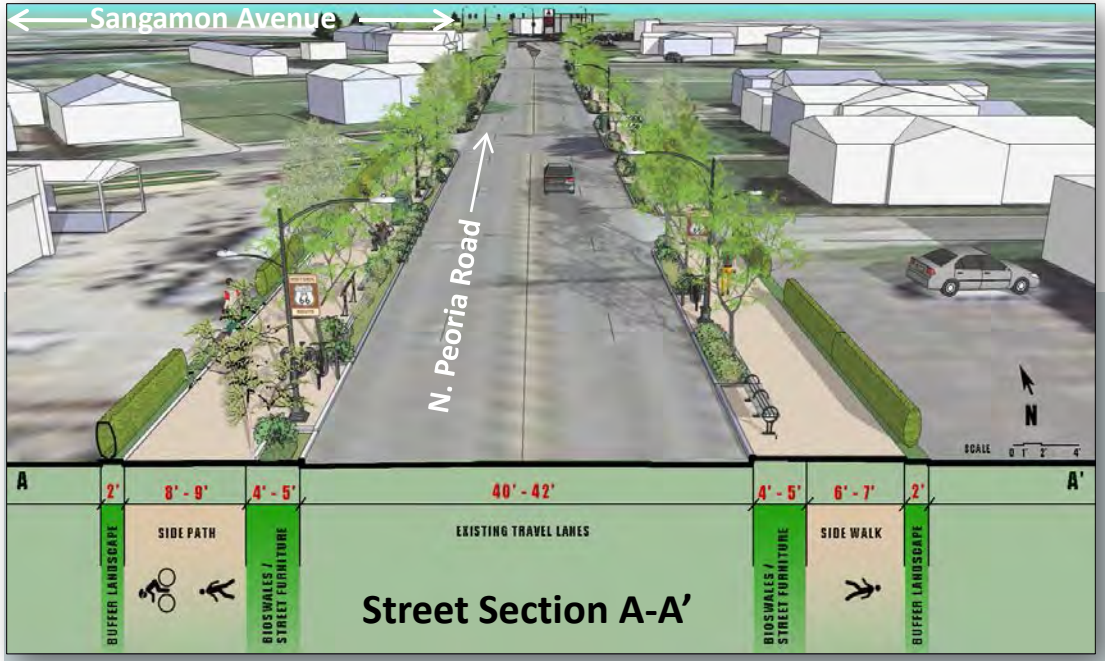
Improving Linkage of Route 66 with State Fairground







The Design Concept



View 1

Sangamon Avenue

A

A'

2

View 2

N

N. Peoria Road

1

Small pockets of green community spaces

Project-specific Planning, Design and Construction

Project Development by Criteria Scorecard	Urban Basic
PD-1 Economic Analyses	
PD-2 Life-Cycle Cost Analyses	√
PD-3 Context Sensitive Project Development	√
PD-4 Highway and Traffic Safety	√
PD-5 Educational Outreach	√
PD-6 Tracking Environmental Commitments	√
PD-7 Habitat Restoration	√
PD-8 Stormwater	√
PD-9 Ecological Connectivity	
PD-10 Pedestrian Access	√
PD-11 Bicycle Access	√
PD-12 Transit & HOV Access	√
PD-13 Freight Mobility	
PD-14 ITS for System Operations	√
PD-15 Historical, Archaeological, and Cultural Preservation	√
PD-16 Scenic, Natural, or Recreational Qualities	
PD-17 Energy Efficiency	√
PD-18 Site Vegetation	√
PD-19 Reduce and Reuse Materials	√
PD-20 Recycle Materials	√
PD-21 Earthwork Balance	
PD-22 Long Life Pavement Design	√
PD-23 Reduced Energy and Emissions in Pavement Materials	√
PD-24 Contractor Warranty	√
PD-25 Construction Environmental Training	√
PD-26 Construction Equipment Emission Reduction	√
PD-27 Construction Noise Mitigation	√
PD-28 Construction Quality Control Plan	√
PD-29 Construction Waste Management	√
Total Number of Criteria in Scorecard	24

Total 23 criteria could be applied in the project

Planning

Planning & Design

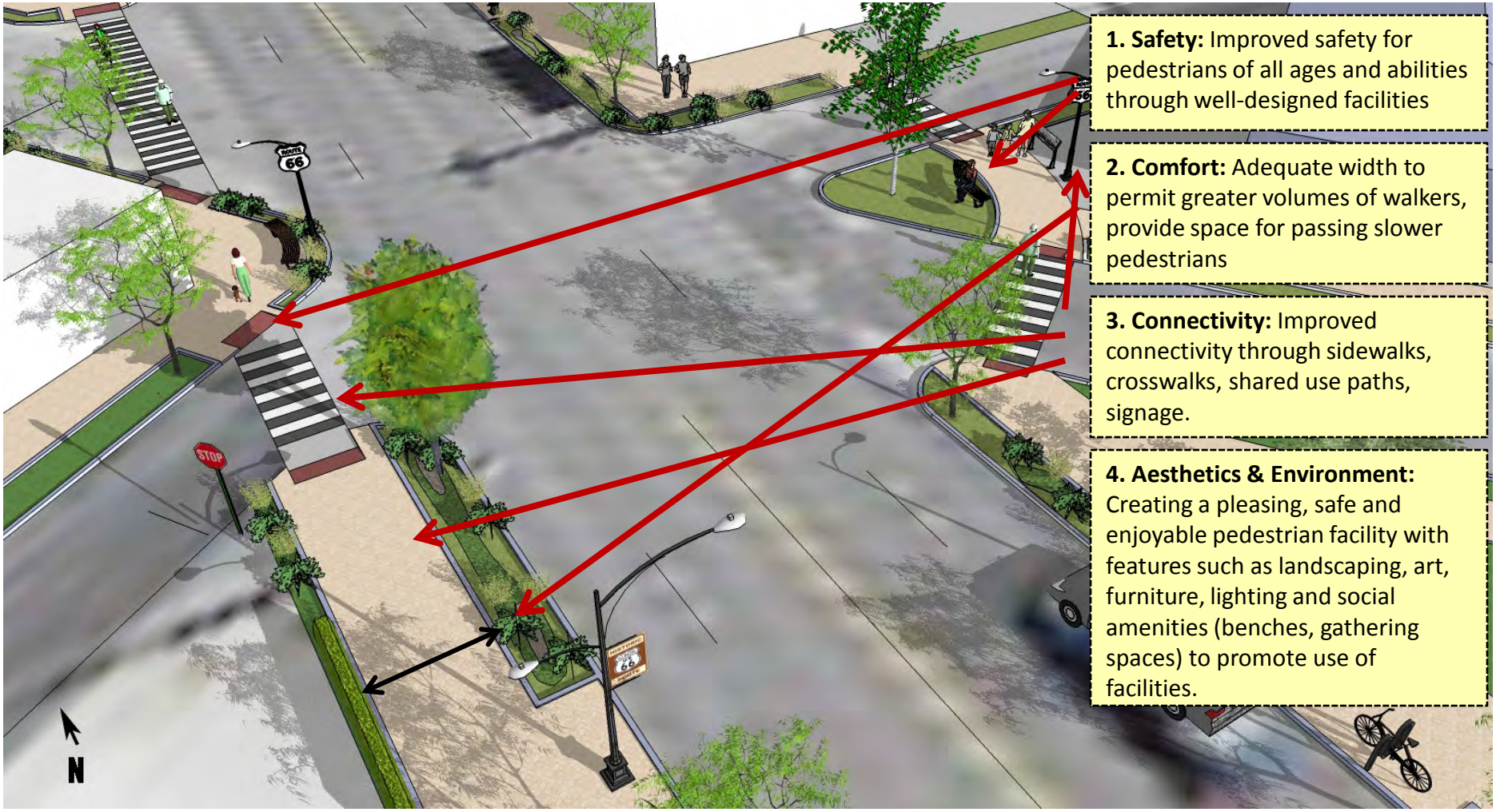
Construction

PD-10: Pedestrian Access

1-2 points available
2 points achievable

Goal: Improve the safety and convenience of pedestrian networks for people of all ages and abilities by providing or enhancing facilities within the project footprint.

Requirements: **1. Safety** **2. Comfort** **3. Connectivity** **4. Aesthetics & Environment**



1. Safety: Improved safety for pedestrians of all ages and abilities through well-designed facilities

2. Comfort: Adequate width to permit greater volumes of walkers, provide space for passing slower pedestrians

3. Connectivity: Improved connectivity through sidewalks, crosswalks, shared use paths, signage.

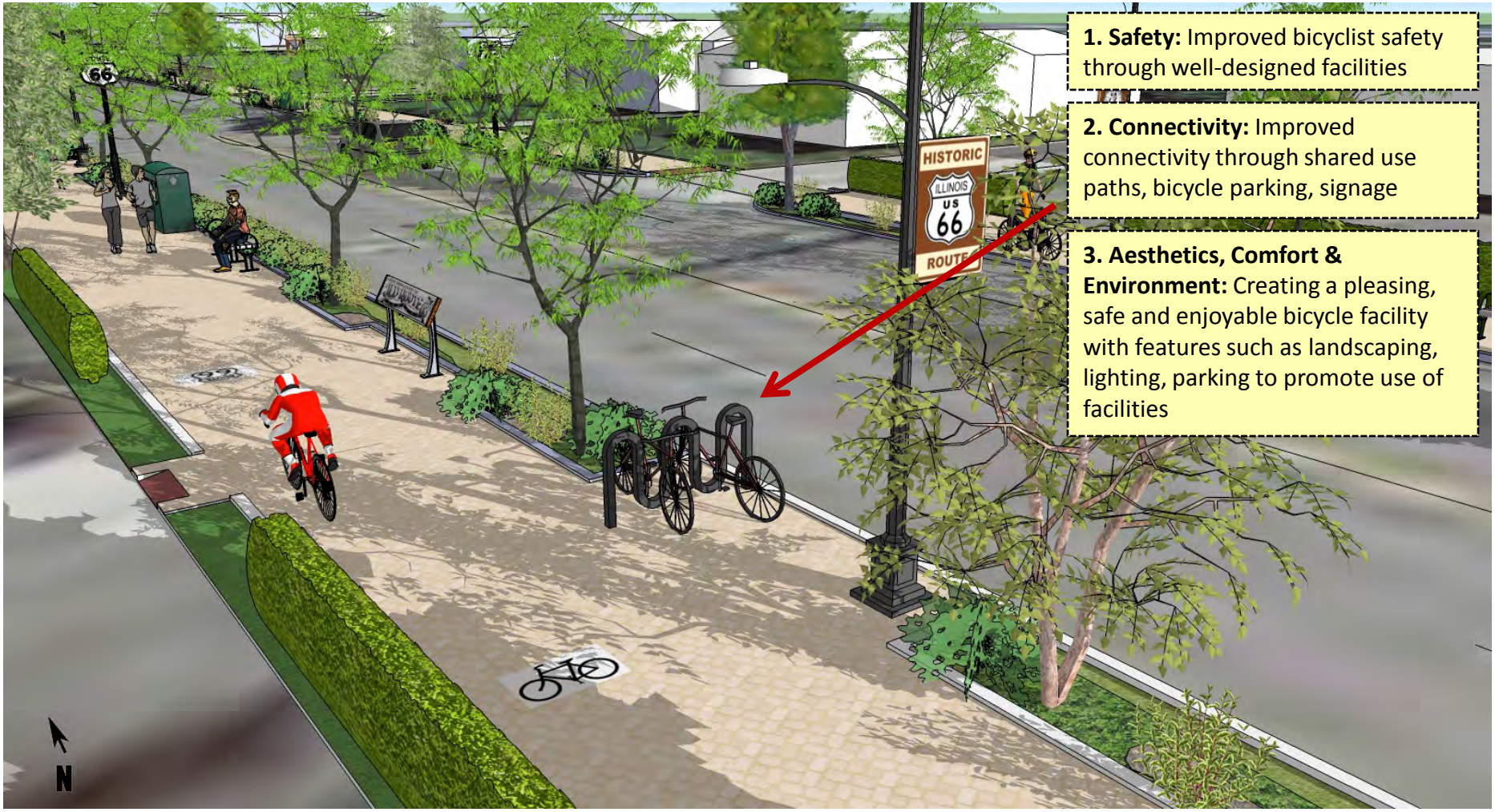
4. Aesthetics & Environment: Creating a pleasing, safe and enjoyable pedestrian facility with features such as landscaping, art, furniture, lighting and social amenities (benches, gathering spaces) to promote use of facilities.

PD-11: Bicycle Access

1-2 points available
2 points achievable

Goal: Promote bicycling in communities by providing or enhancing safe and convenient bicycling facilities within the project footprint.

Requirements: **1. Safety** **2. Connectivity** **3. Aesthetics, Comfort & Environment**



1. Safety: Improved bicyclist safety through well-designed facilities

2. Connectivity: Improved connectivity through shared use paths, bicycle parking, signage

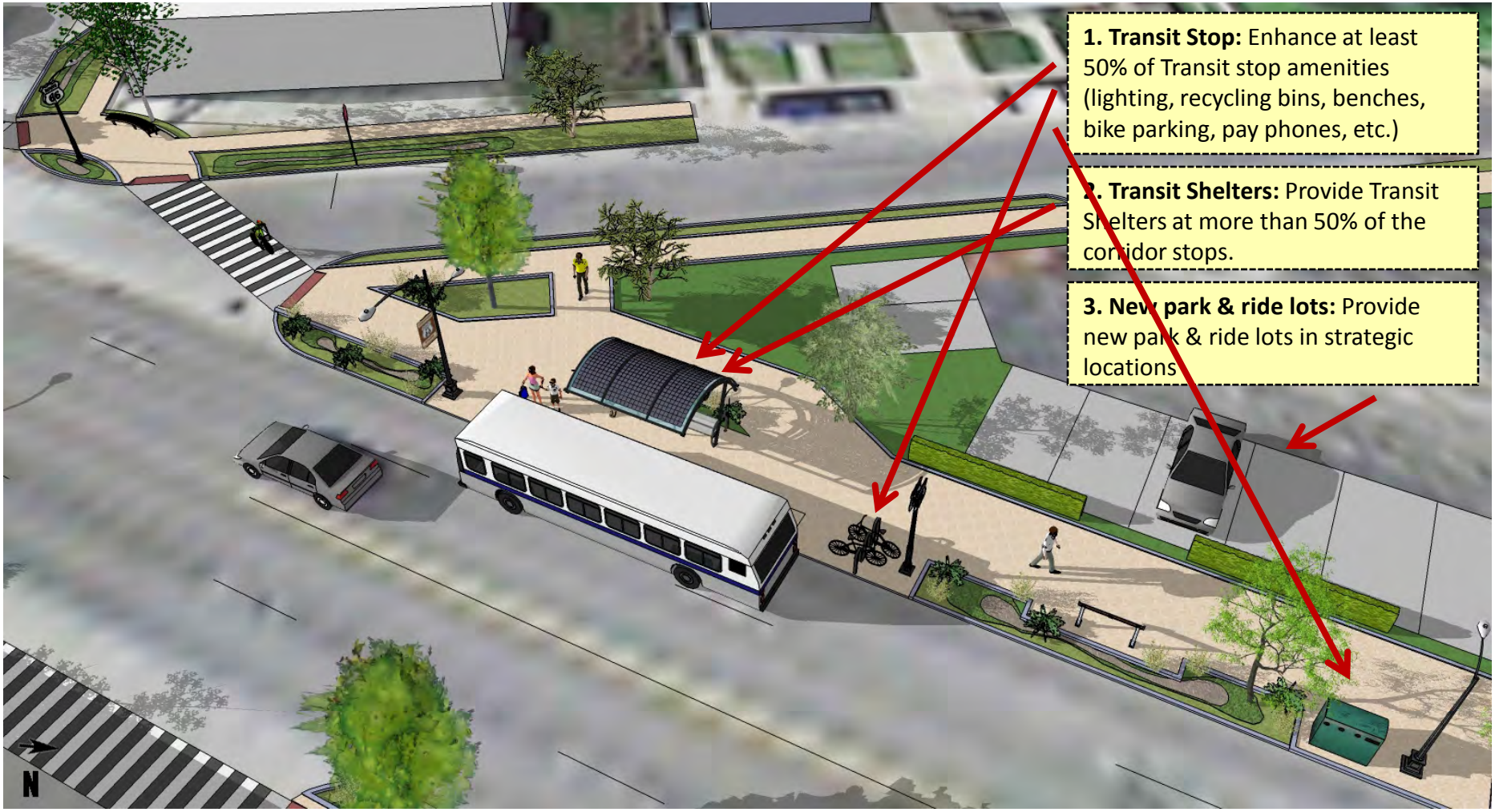
3. Aesthetics, Comfort & Environment: Creating a pleasing, safe and enjoyable bicycle facility with features such as landscaping, lighting, parking to promote use of facilities

PD-12: Transit and HOV Access

1-5 points available
2 points achievable

Goal: Promote use of public transit and carpools in communities by providing new transit and high occupancy vehicle (HOV) facilities, or by upgrading existing facilities within the project footprint.

Requirements: Any two or more of the following



PD-14: ITS for System Operations

1-5 points available
3 points achievable

Goal: Improve the efficiency of transportation systems without adding infrastructure capacity in order to reduce emissions and energy use, and improve economic and social needs.

Requirements: Install 1 or more allowable applications from the categories

PD-15: Historical, Archaeological and Cultural Preservation

1-3 points available
3 points achievable

Goal: Preserve, protect or enhance cultural and historic assets, and/or feature National Byways Program (NSBP) historic, archaeological, or cultural intrinsic in a roadway

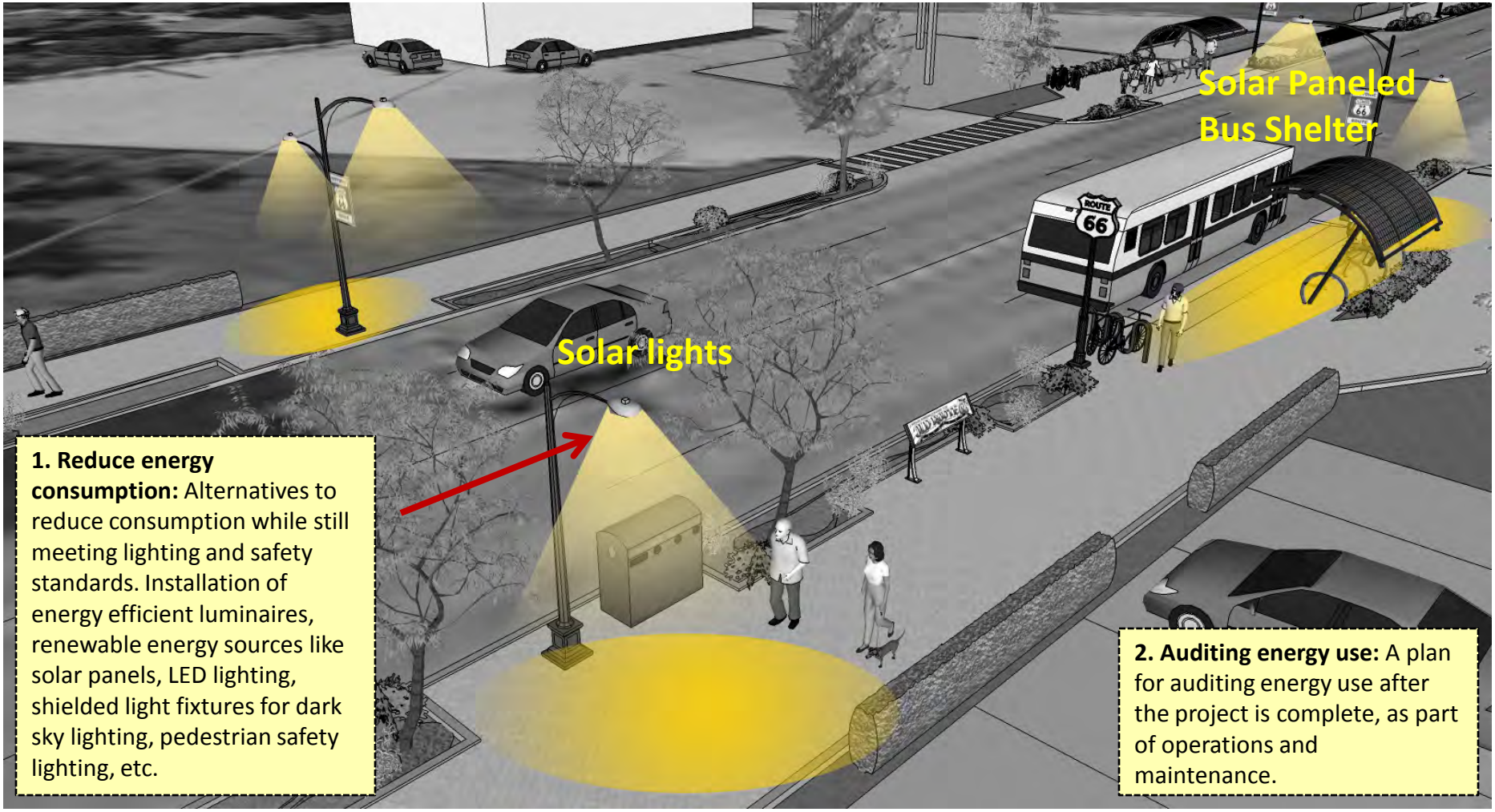
Prerequisite 2: Any portion of the project is along one of America's Byways, a State Scenic Byway, an Indian Tribe Scenic Byway, or other route that was designated or officially recognized as such because of its significant historical, cultural and/or archaeological features.

PD-17: Energy Efficiency

1 - 8 points available
6 - 8 points achievable

Goal: Reduce energy consumption of lighting systems through the installation of efficient fixtures and the creation and use of renewable energy.

Requirements: **1. Reduce energy consumption** **2. A plan for auditing energy use**



1. Reduce energy consumption: Alternatives to reduce consumption while still meeting lighting and safety standards. Installation of energy efficient luminaires, renewable energy sources like solar panels, LED lighting, shielded light fixtures for dark sky lighting, pedestrian safety lighting, etc.

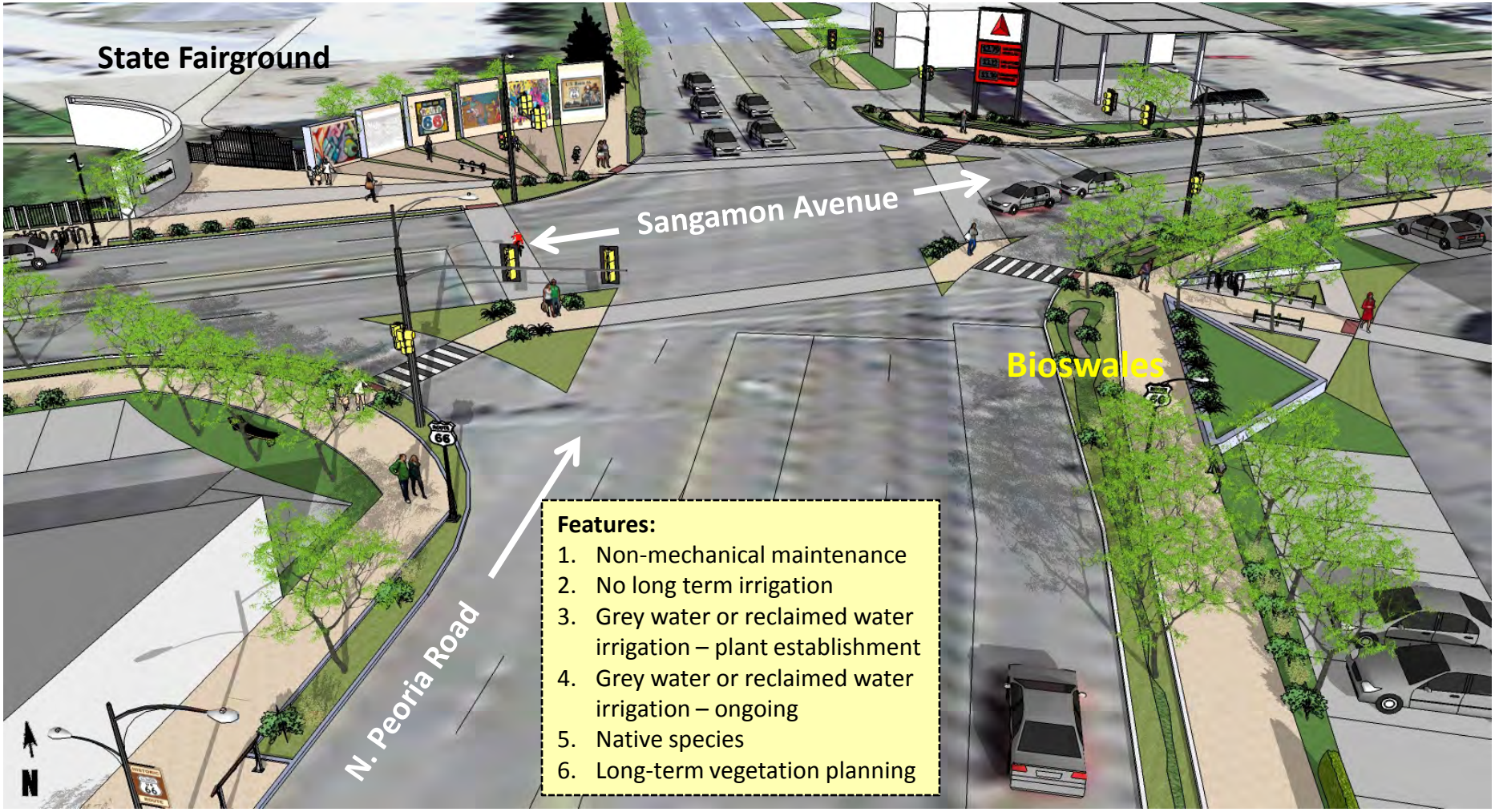
2. Auditing energy use: A plan for auditing energy use after the project is complete, as part of operations and maintenance.

PD-18: Site Vegetation

1-3 points available
3 points achievable

Goal: Promote sustainable site vegetation within the project footprint that does not require long-term irrigation, consistent mowing, or invasive/noxious weed species removal.

Prerequisite 1: All site vegetation shall use non-invasive, non-toxic species only, seeding not requiring consistent mowing, minimize disturbance of native species.



PD-19: Reduce and Reuse Materials

1-8 points available
4-8 points achievable

PD-20: Recycle Materials

1-8 points available
3 points achievable

Goal: Reduce lifecycle impacts from extraction, production and transportation of virgin materials by recycling materials

PD-19 Requirements

1. Pavement Preservation: Activities like crack sealing, chip sealing, micro-surfacing to increase service life of pavements

2. Reduce Pavement Materials: Reduce amount of new pavement materials through incorporating existing pavement structures into new structures

3. Repurpose Pavements or Structures: Example, Converting pavement to multiuse paths

4. Reuse Industrial By-products: Reuse industrial by-products in pavement materials

PD-20 Requirements

1. Recycled Asphalt Pavement or recycled concrete aggregate: Average recycle content

2. In-Place Pavement Recycling: Pavement area recycled

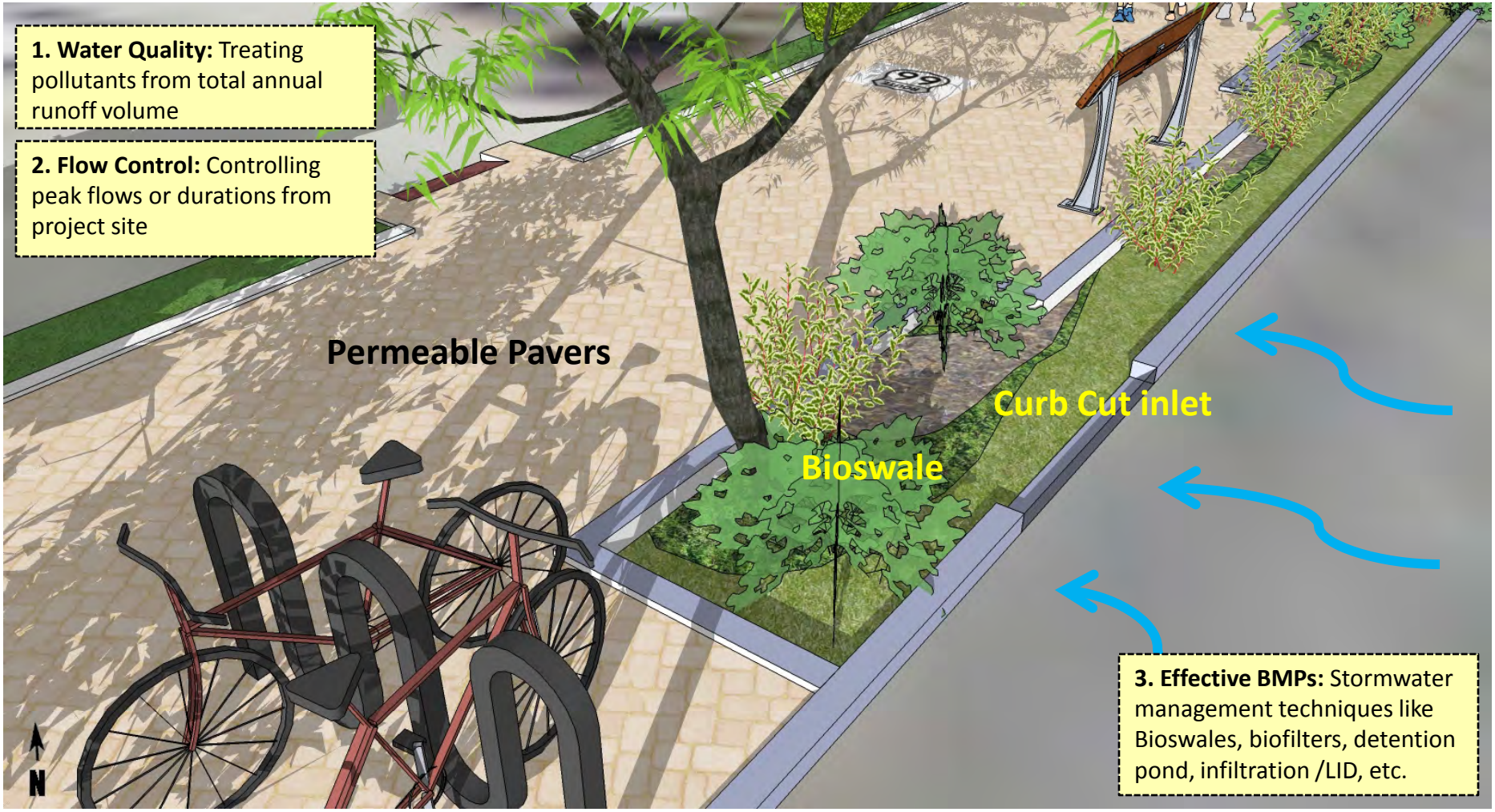
3. Recycle Minor Structural Elements: Existing luminaires, Signal Poles, Sign structures to be reused onsite.

PD-8: Stormwater

1-9 points available
4-5 points achievable

Goal: Improve stormwater quality from the impacts of the project and control flow to minimize their erosive effects on receiving water bodies and related water resources, using management methods and practices that reduce the impacts associated with development and redevelopment.

Requirements: **1. Water Quality** **2. Flow Control** **3. Effective BMPs**



Project-specific Planning, Design and Construction

Project Development by Criteria Scorecard	Urban Basic
PD-1 Economic Analyses	
PD-2 Life-Cycle Cost Analyses	√
PD-3 Context Sensitive Project Development	√
PD-4 Highway and Traffic Safety	√
PD-5 Educational Outreach	√
PD-6 Tracking Environmental Commitments	√

Planning **(13 – 16) / 25 Points**

PD 2 – Life-Cycle Cost Analysis of Key Project Features: all pavement structure alternatives and all stormwater infrastructure alternatives considered.

2 / 1-3 points

PD 3 – Context Sensitive Project Development: Context Sensitive Solution (CSS) -based Project Development, Deployment of a Multi-disciplinary Team, Creation of Public "Champions", Acceptance of Project-level "Problems, Opportunities, and Needs".

3-4 / 1-5 points

PD 4 – Highway and Traffic Safety: Incorporate **Human Factors Consideration (Road Safety Audits),** Build Awareness among the Public Regarding Contributing Factors to Crashes, explicit consideration of Safety using Quantitative, Scientifically Proven Methods, Evaluate Safety Performance of the Project after Implementation.

4-6 / 1-10 points

PD 5 – Educational Outreach: Educational Elements: Include sustainability in a Project Development Process like **Complete Street**, CSS, neighborhood aware design; **Install point of interest**, project website, stakeholder guide, School Presentations, **Professional Presentations**.

2 / 2 points

PD 6 – Tracking Environmental Commitments: Environmental Tracking System updated and maintained throughout the project development from **transportation planning, design, construction and maintenance**.

2 / 2-5 points

Project Achievement Level

Project Development by Criteria Scorecard	Urban Basic	
PD-1 Economic Analyses		
PD-2 Life-Cycle Cost Analyses	√	Planning
PD-3 Context Sensitive Project Development	√	
PD-4 Highway and Traffic Safety	√	13 – 16 Points
PD-5 Educational Outreach	√	
PD-6 Tracking Environmental Commitments	√	
PD-7 Habitat Restoration	√	
PD-8 Stormwater	√	Planning & Design
PD-9 Ecological Connectivity		
PD-10 Pedestrian Access	√	
PD-11 Bicycle Access	√	
PD-12 Transit & HOV Access	√	
PD-13 Freight Mobility		
PD-14 ITS for System Operations	√	
PD-15 Historical, Archaeological, and Cultural Preservation	√	30 – 39 Points
PD-16 Scenic, Natural, or Recreational Qualities		
PD-17 Energy Efficiency	√	
PD-18 Site Vegetation	√	
PD-19 Reduce and Reuse Materials	√	
PD-20 Recycle Materials	√	
PD-21 Earthwork Balance		
PD-22 Long Life Pavement Design	√	Construction
PD-23 Reduced Energy and Emissions in Pavement Materials	√	
PD-24 Contractor Warranty	√	
PD-25 Construction Environmental Training	√	24 Points
PD-26 Construction Equipment Emission Reduction	√	
PD-27 Construction Noise Mitigation	√	
PD-28 Construction Quality Control Plan	√	
PD-29 Construction Waste Management	√	
Total Number of Criteria in Scorecard	24	

Project Development
Achievement Levels

Achievement level	Fraction of Total Points Possible	Points Required: Paving	Basic Rural	Extended Rural	Basic Urban	Extended Urban
Platinum	60%	34	57	69	63	76
Gold	50%	29	48	58	53	63
Silver	40%	23	38	46	42	50
Bronze	30%	17	29	35	32	38

Total of Planning and Design Points

43 - 55

Reviving the Historic Landmark – SHEA'S Route 66 Museum

Creating Community spaces with Intersection Improvement along the corridor

Making accessible Transit Stops with provision of amenities

Connecting Route 66 and State Fairground through a sense of Entrance

Thank You

SSC RPC
Springfield-Sangamon County
Regional Planning Commission