Case Analysis of Inherent Programmatic Sustainability Resulting from Application of Context Sensitive Design Principles

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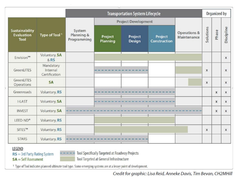
Background

- *"Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs."—Our Common Future,1987*
- The project objective was for the Kentucky Transportation Center (KTC) to work with the Kentucky Transportation Cabinet (KYTC) to:
  - Establish a baseline for current sustainability efforts in KYTC projects
  - Identify areas for improving KYTC sustainability
  - Educate and assist in building sustainability into the Kentucky Highway Program

Sustainability Performance Metrics

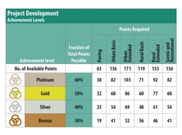
- There are many sustainability performance metrics available



Credit for graphic: *Lisa Reid, Annelee Davis, Tim Barnes, CH2MHill*

Correlation between Sustainability & Context Sensitive Design (CSD)

- The project team hypothesized that KYTC would score well within the INVEST metrics
- KYTC does not have formal protocols for building sustainability into their projects
- Since the 1990's KYTC has been a recognized leader in Context Sensitive Design practices; one of the first six adopters
- Multidisciplinary teams bring sustainability to the table



Case Study 2—Elizabethtown-Radcliff Connector

- Use of RAP and RAS in a Warm-Mix Asphalt application
- Multiple ITS applications for Emergency Services
- Additional sustainable criteria not included in Rural Extended scorecard

INVEST Scorecard:	Basic Urban	Bronze	Silver	Gold	Platinum
INVEST Max Poss.:	115	35	46	58	69
	Project Achieved:	35			
	Project Capable:	79			

Case Study 3—12th St. Reconstruction

- Long Life Cycle (Stakeholder needs)
- Historic Preservation Efforts
- Freight Mobility Needs

INVEST Scorecard:	Basic Urban	Bronze	Silver	Gold	Platinum
INVEST Max Poss.:	126	38	50	63	76
	Project Achieved:	39			
	Project Capable:	79			

Why did KYTC chose FHWA's INVEST?

- ⇒ Criteria seemed more moderate compared with other systems; more appropriate for the region
- ⇒ Specific to transportation and developed through FHWA
- ⇒ Self-assessment; does not require certification or third-party evaluation
- ⇒ Intended to educate and enhance project sustainability
- ⇒ Multiple scorecards according to project types or customizable
- ⇒ The system covers the full transportation life-cycle (planning, design, construction, operations, maintenance)
- ⇒ Use of the system is FREE! FREE! FREE!

The Sustainability Triple Bottom Line

Case Study Analysis

- Analyzed KYTC procedures for alignment with INVEST Criteria
- Reviewed project documentation and plans
- Conducted project team interviews

Category	Description
Possible	The total number of points a project can earn for a given criterion
Achieved	The total number of points a project actually earned for a given criterion
Capable	The total number of points a project could achieve for a given criterion with modest additional investment. This would be on the order of 5-10% for the entire project.

Case Study 1—US68 Double Crossover Diamond

- Utilized existing footprint to form new traffic pattern and solve safety and traffic problems
- Incorporated several ITS applications (CENTRACS)
- Multi-use paths on each side of the intersection

INVEST Scorecard:	Basic Urban	Bronze	Silver	Gold	Platinum
INVEST Max Poss.:	105	32	42	53	63
	Project Achieved:	38			
	Project Capable:	75			

Conclusions

- The photos show the look of "sustainable" projects can vary greatly
- There was never any intent for these projects to be reviewed for sustainability. Why did KYTC perform well?
  - ⇒ Prior to the 1990's KYTC's Project Development was Engineering & $ driven
  - ⇒ CSD brought more (stakeholders) to the table; KYTC has moved to Practical Design
  - ⇒ Regardless of what you call it, Project Managers are trying to apply the best, most cost effective, long-lasting solution possible while meeting the needs of the stakeholders = SUSTAINABILITY
  - ⇒INVEST can help Project Managers consider all angles of sustainability similar to CSD
- Don't allow terms like sustainability, green, CSD, or environmentally friendly deter you from using approaches to achieve the best project for all stakeholders

To learn more about INVEST— https://www.sustainablehighways.org/