Context Sensitive and Sustainable Solutions (CS³)

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Historical Context of OTIA

- More vehicle miles traveled, but no increase in gas tax since 1993
- Gap between preservation, modernization needs, and funding
- Oregon’s aging transportation system threatens economic recovery
OTIA I and II + Partnerships = 160 Statewide Projects

• $500 million in bonds from 2001-02
  OTIA I and II plus matching funds from local governments equals $672 million for 160 projects
• Move away from pay-as-go to innovative debt financing
• New project delivery to include outsourcing model

OTIA III: $2.46 Billion Over 10 Years

• 2003 Legislature designates $1.3 billion to address Oregon’s aging infrastructure
• OTIA III State Bridge Delivery Program

"Community values shaping a new generation of bridges"
Innovative Outsourcing Approach

- ODOT hires Oregon Bridge Delivery Partners (OBDP) as Program Management Firm
- OTIA III Bridge Delivery Unit (BDU) formed to oversee OBDP
- Agency shifts business model to focus on outsourcing
- Partnering with industry is vital to agency success

Organization of Program Management

Context Sensitive Design (CSD)

- Also known as Context Sensitive Solutions (CSS)
- An interdisciplinary approach that involves all stakeholders
- Collaboration leads to transportation solutions that
  - Fit the physical setting
  - Preserve scenic, aesthetic, historic, and environmental resources
  - Maintain safety and mobility (FHWA)
**Sustainability**

Using, developing, and protecting resources at a rate and in a manner that enables people to meet their current needs and also ensures that future generations can meet their own needs

- Development of a State Strategy Promoting Sustainability in Internal State Government Operations (Executive Order EO-00-07)

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**CSD + Sustainability = CS³**

ODOT integrates sustainability with Context Sensitive Design philosophy

- Context Sensitive Solutions
  - Federal Highway Administration
  - State Departments of Transportation
- Sustainable Solutions
  - Longer history in vertical construction
  - Area of opportunity for other state DOT's

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**Context Sensitive Sustainable Solutions (CS³)**

- A philosophy
- A framework
- A process
Innovative Implementation

- ODOT identified early tasks and partners needed for program success
- Engineering and environmental baseline reports (context)
- Programmatic permits lead to environmental stewardship
- Stakeholder Alignment
- Partnering

CS³: Achieving Program Goals

- Communication on opportunities
- Evaluate
- Aligning
- Performance
- Alternatives
- Innovative
- Analysis
- Management
- Training
- Metrics
- Partnerships

Program- and project-level integration

CS³ Transportation Project Delivery Model
CS³ Transportation Project Delivery Model

- Goals
- Objectives
- Metrics
- Resources and tools
- Program checklist
- Designer checklist
- Contractor checklist
- Contractor certification

CS³ Critical Success Factors

- **Instill the principles** (goals and objectives) of CS³ in managing the program and projects
- **Design** the principles of CS³ from the beginning of the project
- **Collaborate** with stakeholders, building trust and relationships
- **Execute** the program and projects within the framework of CS³
- **Communicate** clearly, effectively, and in a timely manner

CS³ Process: Program Level

- Build on goals and objectives
- ODOT/OBDP identify key task areas necessary for program success
- Task area define individual processes and tools
- CS³ team streamlines requirements into CS³ tools and resources
- Identify metrics
- Designers and contractor use these to plan for and implement CS³
- CS³ change management; adaptive management
**CS³ Process: Project Level**

- CS³ Plan
- Public involvement
- Stakeholder information
- Cost-effective design methodologies
- Implementation of programmatic permits
- Environmental compliance
- Traffic Management Plan
- Performance reporting
- Monitoring of Contractor performance

**CS³ Key Areas: Integration at Project Level**

**DESIGN & CONSTRUCTION SOLUTIONS**

- Public involvement
- Mobility
- Diversity
- Economic stimulus
- Environmental program
- Environmental justice

The solution must also provide:
- Sustainability
- Cost-effectiveness

**CS³ Tools, 13-Step Implementation Process**

- Material Recycling
- Contractor Workshop
- Submit Diversity & Economic Stimulus Data
- Material Analysis i.e. Steel vs. Concrete
- Environmental Impact 1 pre-construction assessment
**CS³ Implementation: Roles and Responsibilities**

Designers and contractors:
- Develop a draft and final CS³ Plan
- Produce CS³ summary reports
- Implement the plan

OBDP:
- Review plan
- Track metrics
- Report on outcomes

BDU:
- Track metrics
- Report on performance measures

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**Tools: CS³ Contract Language**

Engineer shall prepare for submission of a CS³ Plan for review and acceptance by OBDP. It shall be in conformance with the CS³ Program goals and address all elements of the work.

A template/model of a CS³ Plan is provided in the A&E Consultant Guide to OTIA III State Bridge Delivery Program as a suggested starting point for the Engineer’s CS³ Plan.

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**Tools: CS³ Plan Template**

**Mobility**

Engineer will provide a narrative describing the approach to mobility issues as addressed in the following documents:
- Project-level TMP Guidance Document
- Project scoping meetings
- Baseline reports
- Project Kickoff meeting
- Other sources

Example: The project requires complicated staging to maintain the existing number of lanes to preserve roadway capacity. The mobility narrative will briefly explain how this staging will be addressed in the Project-Level TMP and TCP/CS³ Plan template.
**CS³ Tools**

- Decision matrix
- CS³ matrix
- CS³ Framework, program-wide performance & process measures
- CS³ Framework, project-level performance & process measures

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**CS³ Implementation: Relevant Criteria and Methods for Assessment**

- Qualitative and quantitative
  - Meets criteria
  - Below criteria
  - Needs immediate action

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**CS³ Certification Requirements**

- ODOT Staff
- A/E Prime Consultants
  - Principal
  - Project manager
  - Technical lead(s)
- A/E Specialty Consultants
  - Principal
  - Technical lead(s)
- Construction Contractors
Tools: Training Requirements

CS³ Implementation: Conventional and Unique Challenges

- New skills needed for designers and builders
- Established organizational protocols may conflict
- Resistance to change
- Few predecessors means more monitoring and flexibility

CS³ Success Stories
**Job Stimulus**

- OTIA III makes the most of employment opportunities for Oregonians—5,600 jobs at peak construction in 2009
- Of the $163,277,613 spent on construction and design, 96.3 percent has gone to Oregon firms

**Staton Companies—Jeanne Staton**

- Dismantling sections of 28 bridges: $1.46 million contract
- Bought $600,000 in excavation equipment, hired four

**Diversity**

- Improve workforce diversity relative to surrounding community
- Workforce Development Plan
  - Increased hiring targets
  - Apprenticeship program
- Recruitment of engineering interns
- To-date payments to DMWESB firms: $105 million
Cooper Zietz Engineering — Fred Cooper, Ph.D, PE
- Elder in Shoalwater Bay Indian tribe
- Quality control management on 21 bridges on I-5: $1 million in contracts

Michael Minor & Associates (MM&A) — Michael Minor
- Mitigating construction noise on eight bridges on Interstate 84
- MM&A’s contract is for general construction noise analysis on I-84, and environmental analysis of the Hwy. 341 over Hwy. 6 (Hilgard Interchange) bridge

Cost-Effectiveness and Efficiency
- Bundle projects for efficient delivery
- Standardize design elements
- Cost-loaded scheduling
- Innovative contracting methods
- Design-Build method
  - Flexibility
  - Creativity
  - Collaboration
  - Efficiency
Big Beams Speed Construction
Precast single spans of concrete more than half the length of a football field

Streamlined Permitting
Environmental Programmatic Permitting
- Merges multiple standards into one
- Sets expectations before construction

Enhancing Mobility
- Statewide Mobility Management
  - Mobility Operations Room
  - Mobility Manual
- Minimizes disruption to traveling public and freight industry
Solving Mobility Issues: Pleasant Hill Bridge

- Problem: fast cars, slows trucks
- Solution: four-lane not two-lane

Sensitivity to Communities and Landscape

Recycling: Madras Bridge

- Total recycled: 24,800 tons and $204,000
Public Involvement

- Vision, Strategy, and Design Guidelines for the Columbia River Gorge National Scenic Area

Funding

- As of July 31, 2005, the bridge program had applied for 11 grants from five sources and obtained $480,000 in funding

Grants for Long-Term Worker and Community Health

- LRAPA grant for clean fuels
- AGC application to retrofit engines
CS³ and OTIA III

Meeting program goals leads to sustainable revenue streams

CS³ - A New Era in Transportation

- Sustainable programs mean sustainable jobs
- Sustainable infrastructure leads to a sustainable economy
- Sustainable project delivery leads to sustainable revenue streams, i.e. OTIA IV and V

Questions
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