Technology Deployment Initiatives and Partnership Program

Request for Funding FY 2003

FHWA Strategic Goal Area:

Productivity

Project Title:

Digital Continuing Education on Field Inspection of Soil Nails for WFLHD

Problem Statement:

The key to any successful project is access to timely knowledge in user-friendly formats. The present formats for teaching short courses and seminars covering increasingly diverse and complex topics put the construction support staff in overload. The traditional hardcopy format is both cumbersome and inconvenient. Visual technologies such as VHS videos require video players and monitor hardware, they are expensive, bulky, and prone to transportation damage.

Rapid advances of ground support technologies are not being effectively transferred to the FHWA and DOT inspectors due to the severe time constraints with traditional, inflexible, conference formats. The advancing digital market of CD has now been explored for Western Federal Lands, Highway Division, field personnel by PSU using Multi-Media formats including text, analysis and schematic animation, interactive feedback, 'expert speaks' testimony, online links to existing internet documents, as well as 'inbuilt' self assessments. These new distance-learning techniques have been successfully proven by WFL-HD in the first 2 CD's covering *Introduction to Inspection of Ground Anchors and Soil Nails*, and the *Endangered Species Act in Highway Construction*. Both CD and emerging DVD formats bring on-line yet another component of the digital information revolution as the learning product is better idealized as the surface of a ball, so the uses moves in the optimum direction easily skipping irrelevant information.

Proposal:

Highway and geotechnical knowledge continues to advance to meet the new challenges of the 21st Century. Field personnel can only review new procedures, including Geotechnical site investigation and construction methodologies, on limited technical topic areas on VHS videotape. For the construction project supervisor, and their staff, a critical area identified as a candidate for digital Continuing Education is the technique of Soil Nailing. Soil Nailing has emerged as the most popular technique for temporary and permanent soil support in excavations. Originally developed and introduced as just a temporary support technology; now increasingly throughout the 1990's the more critical permanent applications have been designed and installed in the US. This places much more emphasis on thorough construction documentation and field construction inspection to ensure satisfactory long-term performance. This proposal calls for the following Tasks:

- An expert technical QC professional engineer will be retained and work with the PI and

Muti-media group at Portland State to develop appropriate content.

- A Technical Working Group will be formed comprising as a minimum the PI, Richard Barrows of FHWA (WFL-HD), a Technical Expert and an experienced Field Specialist.

- Creation of a multi-media CD with Shockwave Director S/W covering the complete *Field Inspection of Soil Nailing*. An Alpha for format review, Beta for technical content and Gold for typographical clearance only, versions will be produced.

  The CD is viewed as a companion product to the 1994 "Soil Nailing Field Inspectors Manual." Report FHWA-SA-93-068, Federal Highway Administration Washington, D.C. It draws from the existing knowledge base made available by FHWA, ADSC, and local design and construction practice. Visual interactive animation can be employed, digital stills with text, live video streaming, expert speaks, and self-assessment used to ensure learning has occurred before moving further into the topic.
  This proposal further advances the development of a **WFL-HD Digital Library** by creating CD materials on advanced Soil Nail Inspection. The library of PSU produced CD's will have a uniform look and feel to the User. A total of 25 masters will be produced with soft covers.

Benefits:

Moving entirely to a digital format for information the dissemination system makes use of lap-portables and removes the obstacles of remote location. Both CD and emerging DVD formats bring on-line another component of the digital information revolution. Most technologies to complete this change exist, and for CD format are becoming more reasonable in cost. Lap portable PCs have reached hard drive capacities, and speeds, to store and present vast amounts data, including full animation video, course notes, photographs, and commentary. Field engineering personnel issued the CD see the following benefits:

- View the selected CD at their most convenient time on site, print inspection standard forms, and *immediately* apply the knowledge.
- Replay the video CD as necessary and scan to focus on relevant portions.
- Small compact and highly portable media format with viewing by lap-portable

Resources/Cost:

	FHWA	Engr. College	PSU
Content and Curriculum Development			
Prof Trevor Smith (inc fringe & I.C.)	16,560		
Graduate Student for 6 mos.(inc tuition etc)	9,520		
Site Travel	1,400		

CD Multi-Media Costs include:	33,600		
Digital video production and direction			
Graphics and animation			
Prototype Development			
Content Design and Navigation			
IRS Overhead I.C.			
CD production and duplication			
Cost Sharing		2,700	3,300
Personal Services Contract for external QC Specialist	2,520		
Totals:			
Sponsor FHWA	**63,600**		
Portland State University Cost Sharing:		**$6,000**	

Duration:

The *Field Inspection of Soil Nailing* CD library module is expected in one year.

Organization/Method:

Trevor D. Smith, a Professor of Civil and Environmental Engineering at Portland State University will lead the development of the course material and electronic presentation method. An independent expert will review material for quality and accuracy. The champion will guide the contractors.

Submitter:

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