Automated Machine Guidance

AGC/ODOT Annual Meeting
February 20, 2015

Steve Cooley, ODOT Contract Administration Engineer
Ron Singh, ODOT Chief of Surveys/Geometronics Manager
Alex Culbertson, K&E Excavating Machine Control Manager

National Level Accomplishments on 3D Design

Steve Cooley
ODOT Contract Administration Engineer

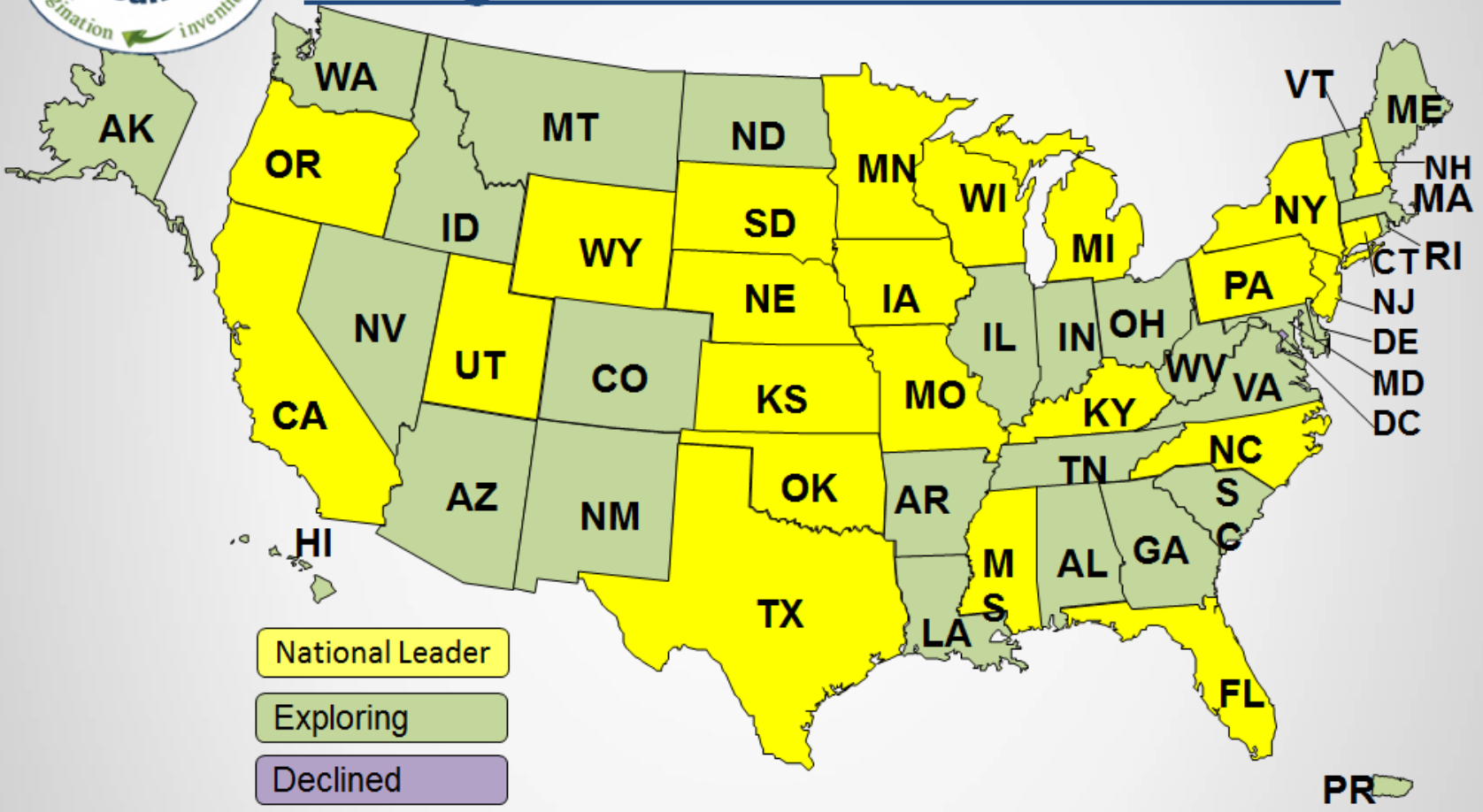
2014 National Overview

FHWA Every Day Counts 2 Initiative

- Deliver a series of webinars and workshops.
- Accelerate the deployment of 3D Engineered Models for Construction.
- Construct 50 projects using 3D Modeling in 25 States by the end of 2014.

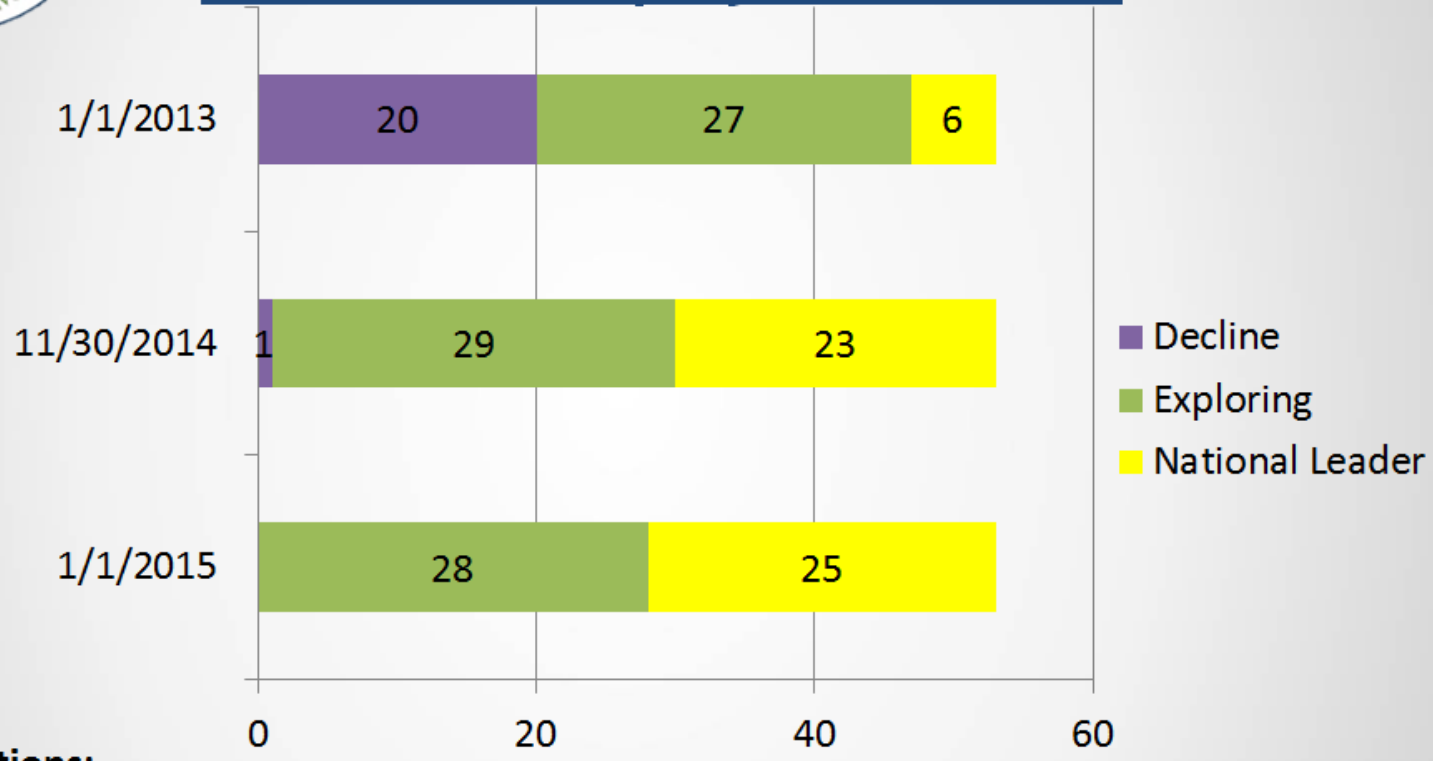
Reaching a Tipping Point

3D Engineered Models for Construction



Reaching a Tipping Point

EDC-2 3D – Deployment & Goal



Definitions:

National Leader - Has constructed 2 or more projects using 3D technology

Exploring – Investigating and/or piloting 3D technology

Decline – Not taking part in national EDC technology initiative

ODOT's Update

- 10 Projects were Developed and implemented using 3D Design for Construction deliverables in 2014.
- Majority of Projects are planned for 3D Construction deliverables in 2015.
- Assisted in Delivery of Several National Workshops in 2014.
- Hosted Design to Paver Conference
- Continued Development of 3D Design

Contractors Use of the Oregon Coordinate Reference System

Alex Culbertson
Machine Control Manager
K&E EXCAVATING INCORPORATED

Oregon Coordinate Reference System (OCRS)

- What is it?
- Why is it helpful?
- How is it used in construction?

OCRS – What Is It?

- Low distortion map projection coordinate systems
- Used in place of SPC and Local Datum Planes
- Integrates survey, engineering, and GIS

OCRS – Why is it helpful?

- Eliminates local datum planes
- Allows for everyone to use the same data without conversion
- Creates better GIS data for future projects
- Increases accuracies for machine control

OCRS in Use

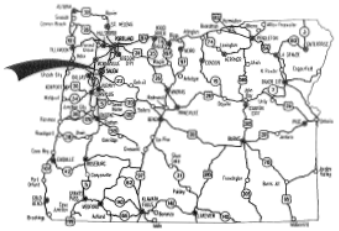
47V-181

INDEX OF SHEETS	
SHEET NO.	DESCRIPTION
1	Title Sheet
1A	Index Of Sheets Cont. & Std. Drg. Nos.

STATE OF OREGON
DEPARTMENT OF TRANSPORTATION
PLANS FOR PROPOSED PROJECT
GRADING, PAVING & BARRIER

I-5: CHEMAWA RD. - OR22 MEDIAN BARRIER (SALEM) SEC.

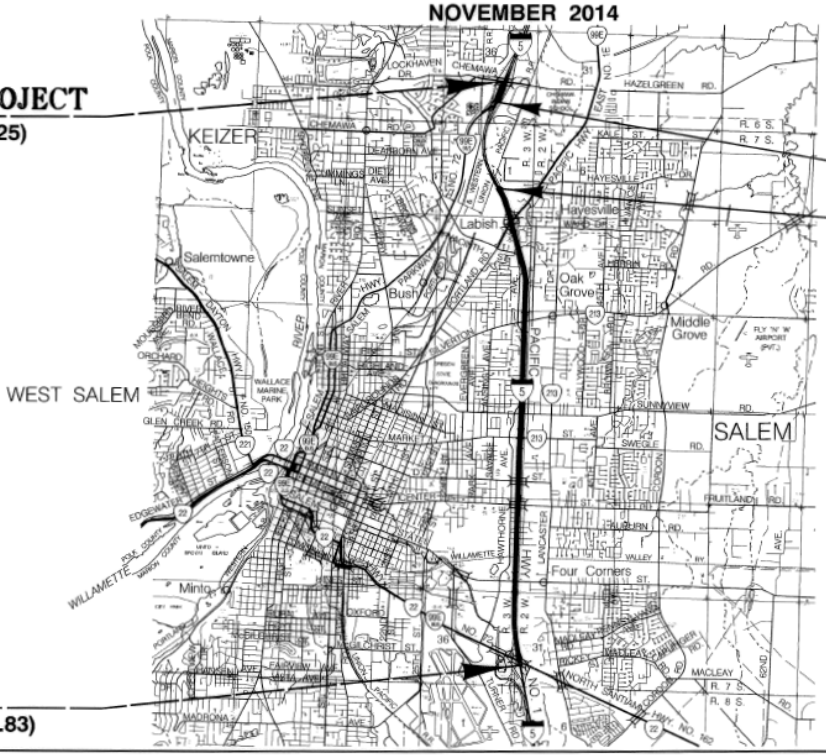
PACIFIC HIGHWAY
MARION COUNTY
NOVEMBER 2014



Overall Length Of Project - 6.40 Miles

ATTENTION:
Oregon Law Requires You To Follow Rules Adopted By The Oregon Utility Notification Center. Those Rules Are Set Forth In OAR 952-001-0010 Through OAR 952-001-0090. You May Obtain Copies Of The Rules By Calling The Center. Note: The Telephone Number For The Oregon Utility Center Is (503) 232-1987.)

BEGINNING OF PROJECT
STA. "L" 37+35 (M.P. 260.25)



STA. "L" 50+20 (M.P. 260.03)
NO WORK AREA
STA. "L" 107+55 (M.P. 258.92)

LET'S ALL WORK TOGETHER TO MAKE THIS JOB SAFE

END OF PROJECT
STA. "L" 376+50 (M.P. 253.83)

T. 6 & 7 S.,
R. 2 & 3 W., W.M.

OREGON TRANSPORTATION COMMISSION

Catherine Mater	CHAIR
Tammy Baney	COMMISSIONER
David Lohman	COMMISSIONER
Susan Morgan	COMMISSIONER
Alando Simpson	COMMISSIONER
Matthew L. Garrett	DIRECTOR OF TRANSPORTATION

These plans were developed using ODOT design standards. Exceptions to these standards, if any, have been submitted and approved by the ODOT Chief Engineer or their delegated authority.

By: _____
Signature & date

James E. West - R2 Tech Center Manager
Print name and title

I-5: CHEMAWA RD. - OR22 MEDIAN BARRIER (SALEM) SEC.
PACIFIC HIGHWAY
MARION COUNTY

FEDERAL HIGHWAY ADMINISTRATION	PROJECT NUMBER	SHEET NO.
OREGON DIVISION	STATE	1

F:\ODOT_DATA\Projects\17957_OR22MedianBarrier\17957R2.tsl :: Default 10/28/2014 12:22:13 PM hwye07x Rotation: 0° Scale: 1"=100'

Project Details

- 5.3 miles of concrete barrier / cable barrier through Salem
- 45,000 BCY of median berm removal
- Fast tracked schedule
- Need for a quick start

Quick Start

- Wednesday November 12th Pre-Con meeting/Notice to Proceed
- Monday November 17th Start Earthwork

Original Method

- Localized Site Calibration
  - Time Consuming
  - Approximation of the coordinate system
  - Multiple site calibrations required

A Better Way

- Oregon Coordinate Reference System
  - Reduces setup time for construction
  - Reduces chance for human error
  - Increases machine control and GPS survey accuracies

Thank you!