3D Models for Construction
EDC - 2

2013 Design Training Expo

Cathy Cassar, PE

MDOT
Michigan Department of Transportation

FHWA States…

Three-dimensional (3D) modeling in transportation construction is a mature technology that serves as the building block for the modern-day digital jobsite. The technology allows for faster, more accurate and more efficient planning and construction. As the benefits are more widely recognized, many in the U.S. highway industry will transition to 3D modeling over the traditional two-dimensional (2D) design process.

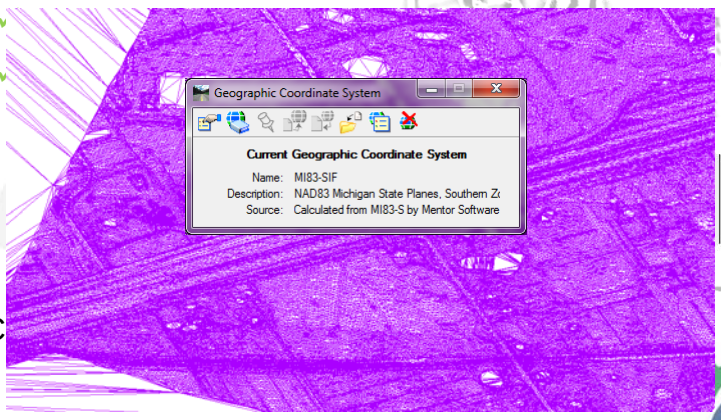
The combined technologies of 3D modeling and GPS machine control can increase productivity by up to **50 percent** for some operations and cut survey costs by up to **75 percent**. Reduced idle time of equipment and rework cuts fuel consumption and the associated green house gas emissions by up to **40 percent**.

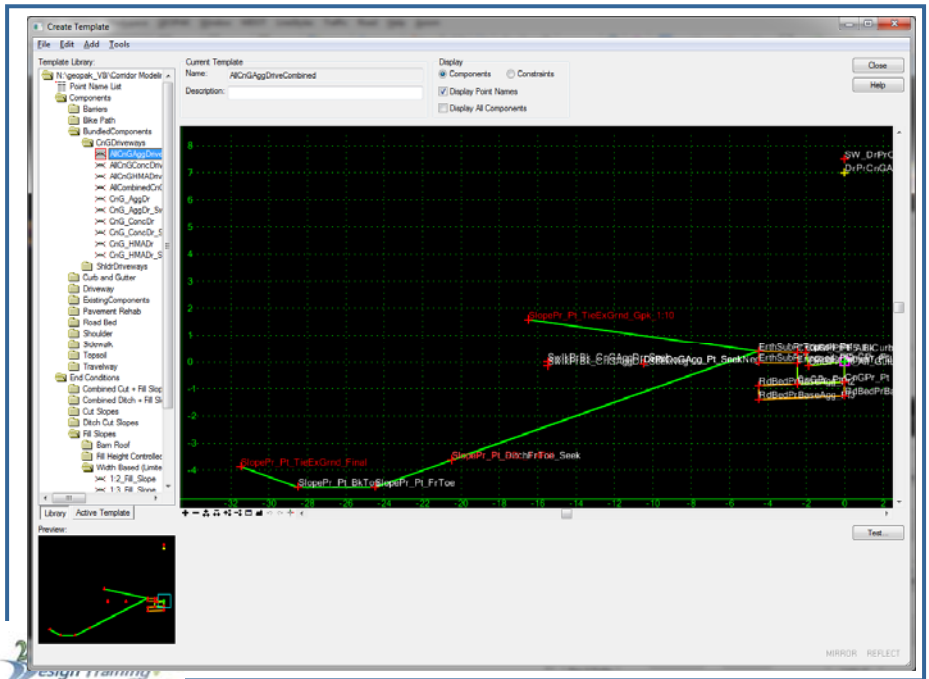
Michigan DOT – EDC -2 Action Plan

Activity	2013												2014											
	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
1. Develop Design Model Requirements/ Recommendations.				X	X	X	X	X	X															
2. Train Design Staff				X	X	X	X	X	X	X	X													
3. Develop construction standards				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X					
4. Procure modern survey equipment for QA purposes				X	X	X	X	X	X	X	X	X	X	X	X									
5. Develop electronic inspection methods				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
6. Train construction staff											X	X	X	X	X									
7. Implement on projects																X	X	X	X	X	X	X		

Where We Started

- Implementation of Roadway Designer in 2011





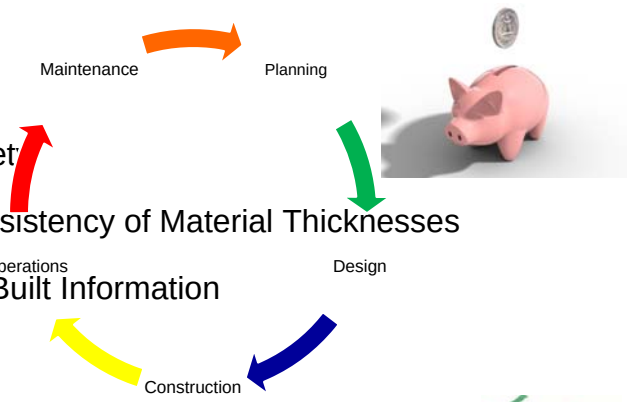
What we Supply to Construction

- R
  -
  -
- B

# of Pages:	**414 pgs**	**154 pgs**	**63% reduction**
File Size:	**4.76 MB**	**1.62 MB**	**66% reduction**

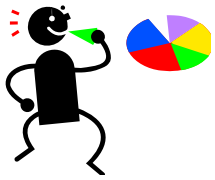
What Outcomes are Anticipated

- Cost Savings
- Time Savings
- Improved Safet
- Improved Consistency of Material Thicknesses
- Improved As-Built Information



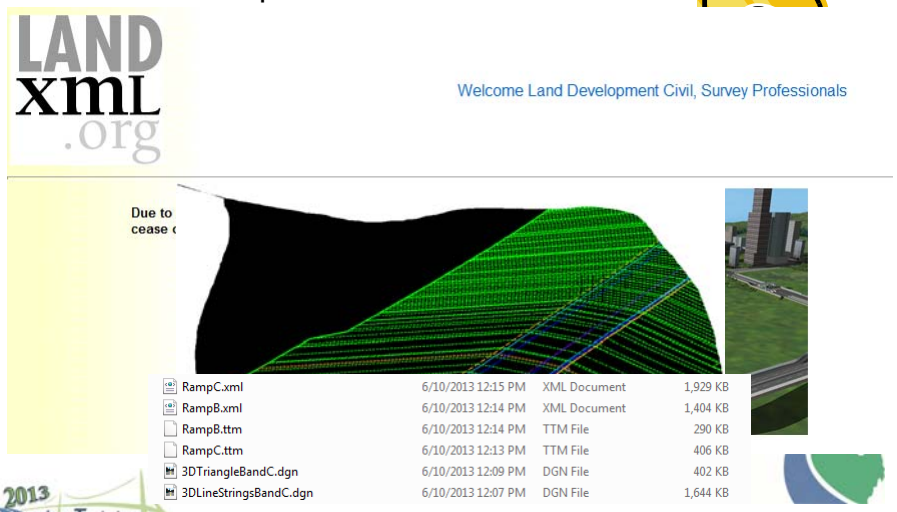
Actual Outcomes

- Percentage of Models Submitted
- Percentage of Models In Use
- Cost Savings Realized
- Successes
- Issues



Current Unknowns & Challenges

- 3D Model Requirements



What is Next for Michigan DOT

- Develop Standards for 3D Model Preparation
  - ✓ Level of Completeness
  - ✓ Quality
  - ✓ Verification of Quality
  - ✓ File Format
- Requirements for Plan Revisions
- Provisions for Field Use
- Construction Verification Methods
- How to Adapt to SS3

Questions?