

People Moving People

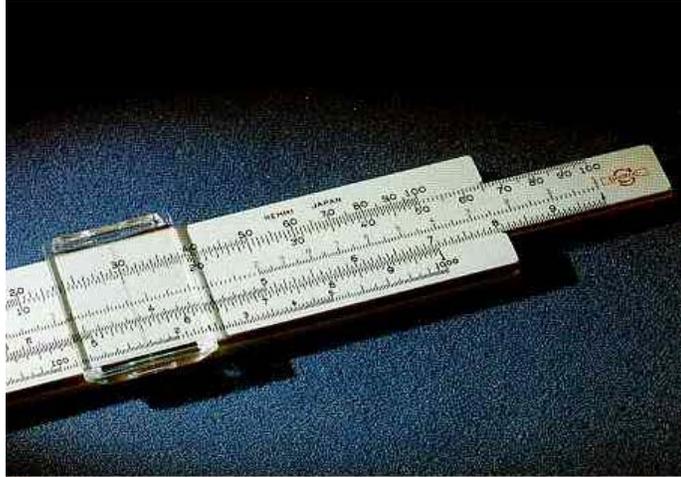
Automated Machine Control.

Moving Road Construction and Its
People More Efficiently

Lance A. Brown
Kiewit Southern



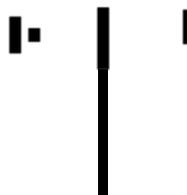
The Mechanical Analog Computer



Better Technology?



Avoid Missing Ball for High Score!



Today's Version



Type	Video game console
Generation	Seventh generation era
First available	November 22, 2005 (details)
CPU	3.2 GHz PPC Tri-Core Xenon
GPU	500 MHz ATI Xenos
Media	DVD , DVD-DL , CD , Add-On: HD DVD
System storage	20 or 120 GB hard drive , 64, 256 or 512 MB memory cards
Controller input	4 maximum (wired or wireless or combination of either)
Connectivity	3 × USB 2.0 , IR port , 100Mbit Ethernet
Online service	Xbox Live , Xbox Marketplace
Units sold	Worldwide: 17.7 million (sold to retailers as of January 3, 2008) ^[1] United States : 6.3 million (as of September 1, 2007) ^[2]
Top-selling game	Halo 3 , 8.1 million (as of January 3, 2008) ^[1]

Where's the Copier?



I need those copies Now!



What's in your Family Room?



Automated Machine Guidance.

Conventional GPS



Laser Augmented GPS



Robotic UTS



Automated Machine Guidance

Concrete Pavers



Trimmers



Excavators



D-6

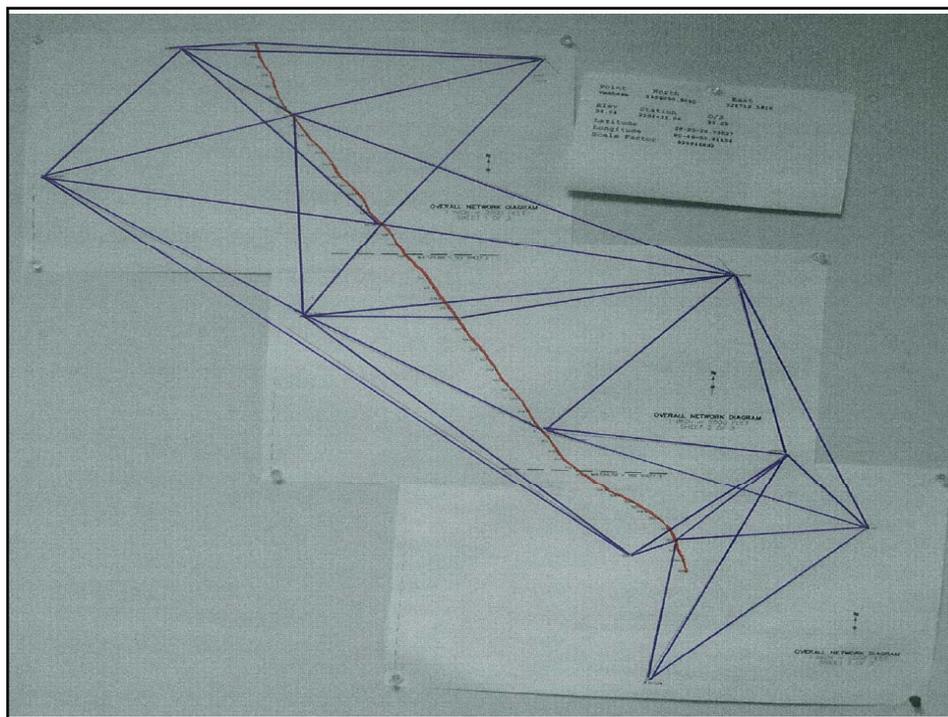


Conventional GPS primarily used for very rough grading work

Cat-14

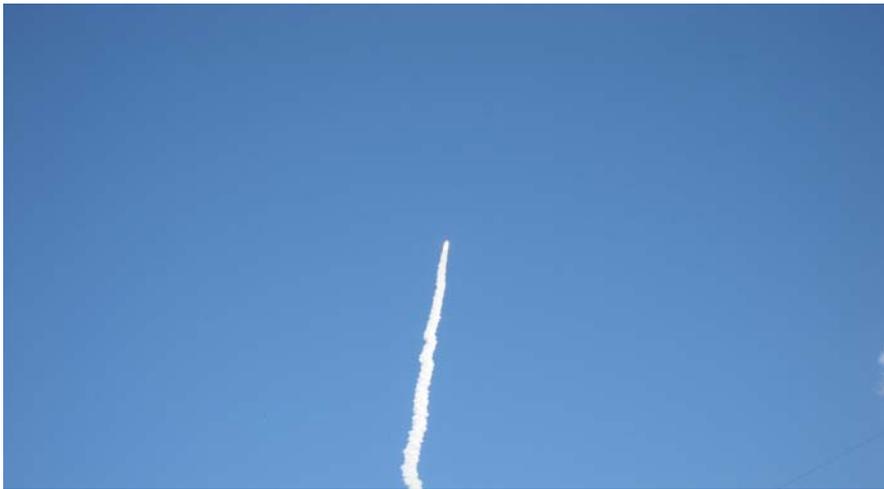


GPS with Laser Augmentation





Lesson Learned



NASA is in Complete Control of all Radio Communications



Machine Control – GPS w/ Laser Augmentation



GPS Combined with Laser Augmentation affords better Vertical Accuracies.

GPS and Laser Augmentation



Useless without proper training

Cat-140



The ultimate grading system

UTS-ATS



UTS-ATS-Blade-Pro



The Trimble UTS is one of the most advanced Systems available. It's Capable of real time Asbuilts on the fly.

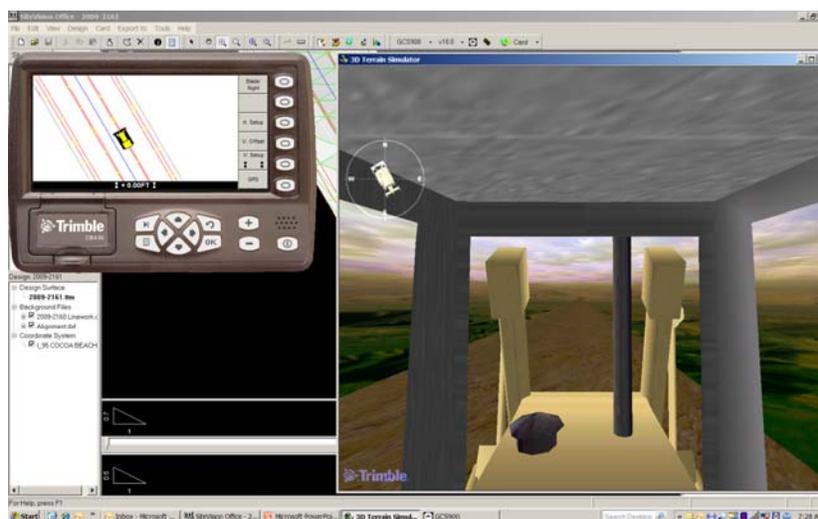
Machine Controls



Being able to pave without string lines is a huge advantage especially where room is at a premium.

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Machine Control



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It takes Training.



It takes a Team!



It takes communication.



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Keys to Success

- ❖ It Takes Training
- ❖ It Takes a Team
- ❖ It Takes Communication

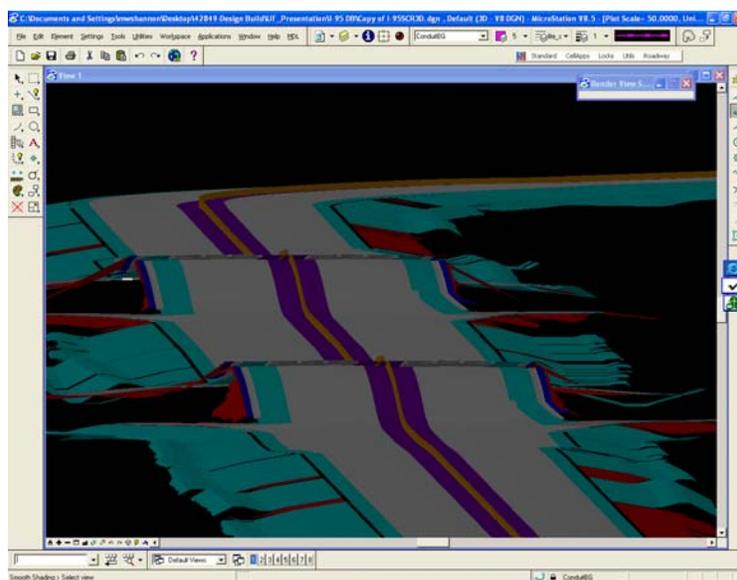
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Advantages of 3D Design

- ▶ Proposal Stage
- ▶ After NTP
- ▶ During Construction

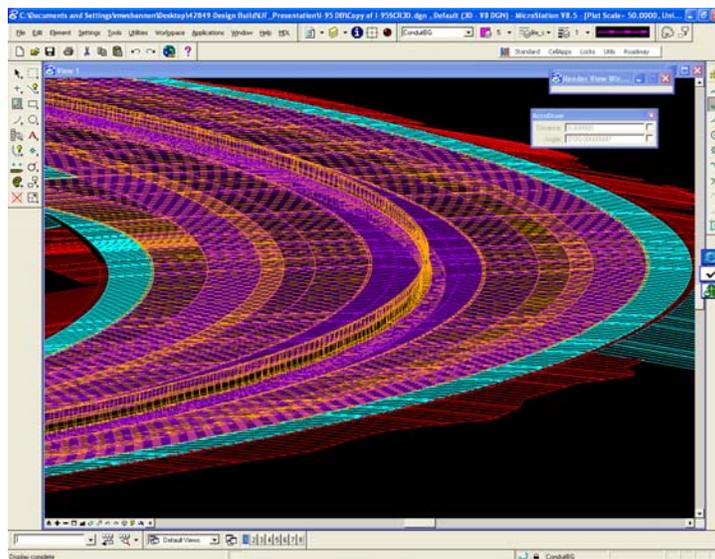
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Proposal Stage



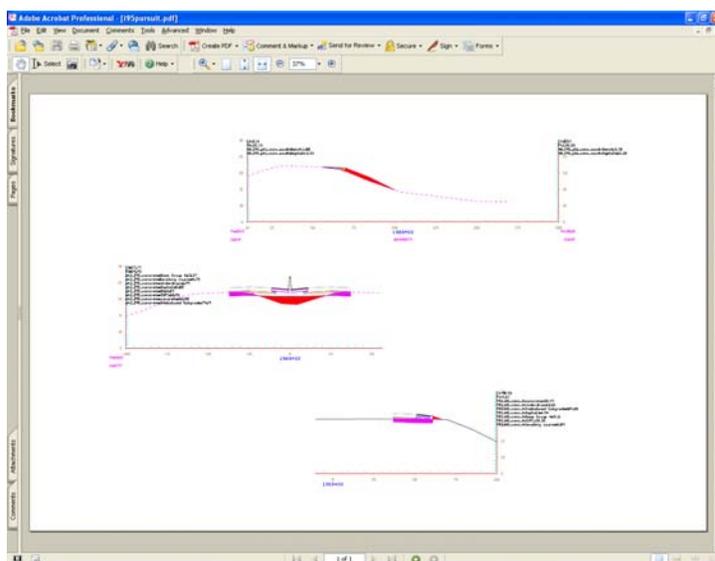
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Proposal Stage



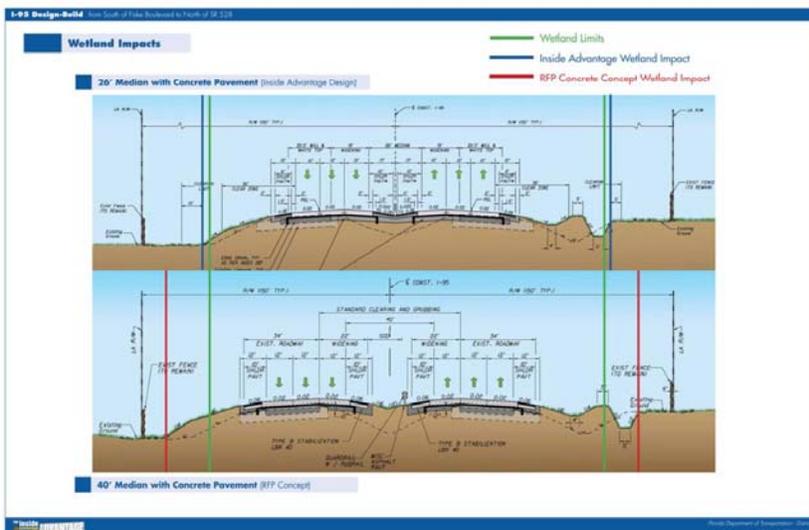
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Proposal Stage



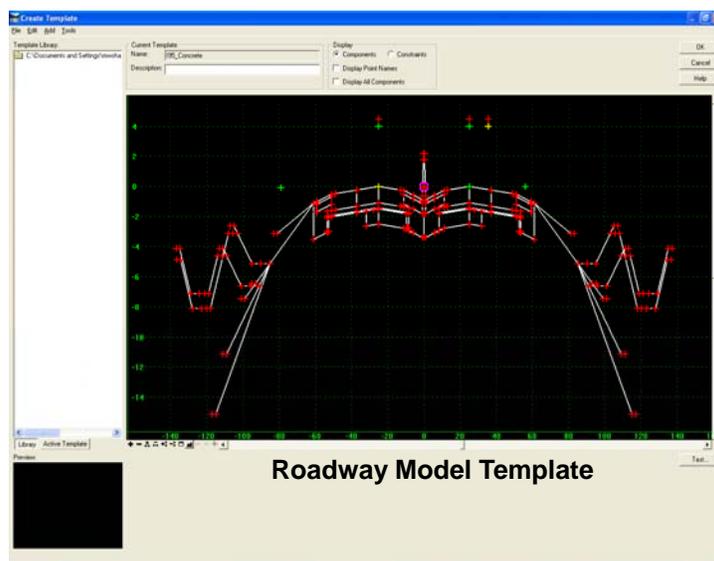
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Proposal Stage



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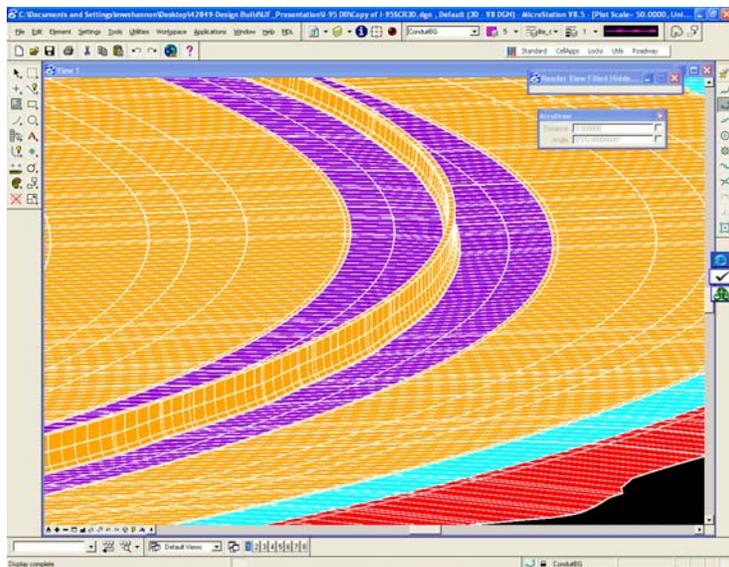
After NTP



Roadway Model Template

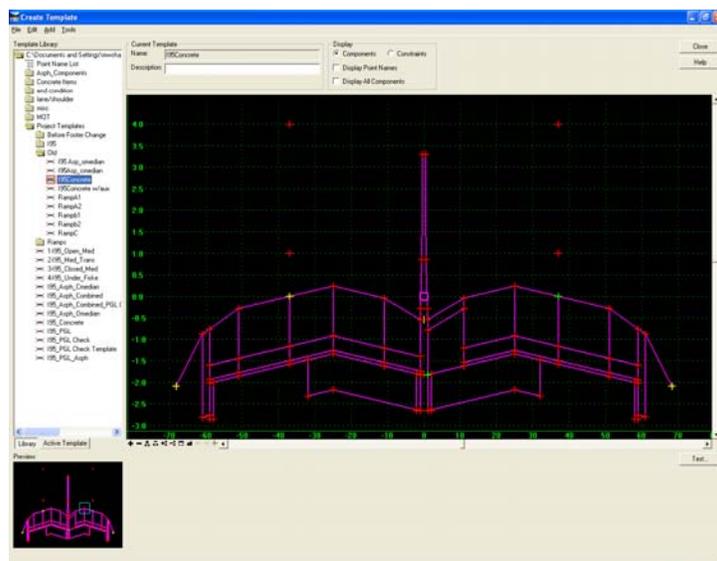
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After NTP



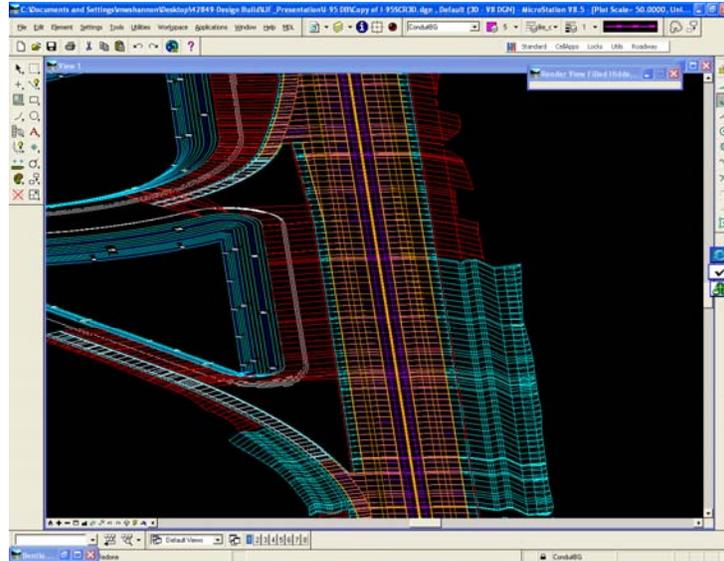
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After NTP



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After NTP



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After NTP

- ▶ Pond H1 Bottom El 13.6 (current) 10.5 min

Elevation	Incremental Volume cu ft	Cumulative Volume cu ft	Acre-Feet	Surface Area sq ft
11.00	71039.53	71039.53	1.63	142852.56
12.00	144404.97	215444.50	4.95	145960.99
13.00	147524.23	362968.73	8.33	149091.08
13.60	90020.79	452989.51	10.40	150979.52

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