“Site Construction & Design Changes Live with ArcPad”
Introduction

- I am William H. Dennis, PE with Civil Design Team, LLC a design firm in South Carolina.
- I am a civil engineer with 28 years of experience.
- I have been designing and working with construction with ArcPad for 11 years.

Presentation Objectives

- Why “Live Field Construction” ™ ?
- Process to see Plans Live in the Field
- The Live Construction Process
- Seeing the Live Design.
- Field Change example “Derbyshire Development”
- Live As-Builds' Field to Office

“Live Field Construction” (LFC)™

- Developed to meet the needs and goals of fast paced projects
- It is a Dynamic Process matching Field Conditions,not a snap shot
- Protects environmentally sensitive natural features

Natural Features and the Live Experience

Trees Saved

Views

Access Routing

How Would You Like To?

- See your design projected on the site in one day after the final design is issued!
- Have an on-site meeting with the development team and propose field changes to the design as you see it on site.
- Avoid field issues that effect your project.
- Track construction progress, then forward to the designer and owner.

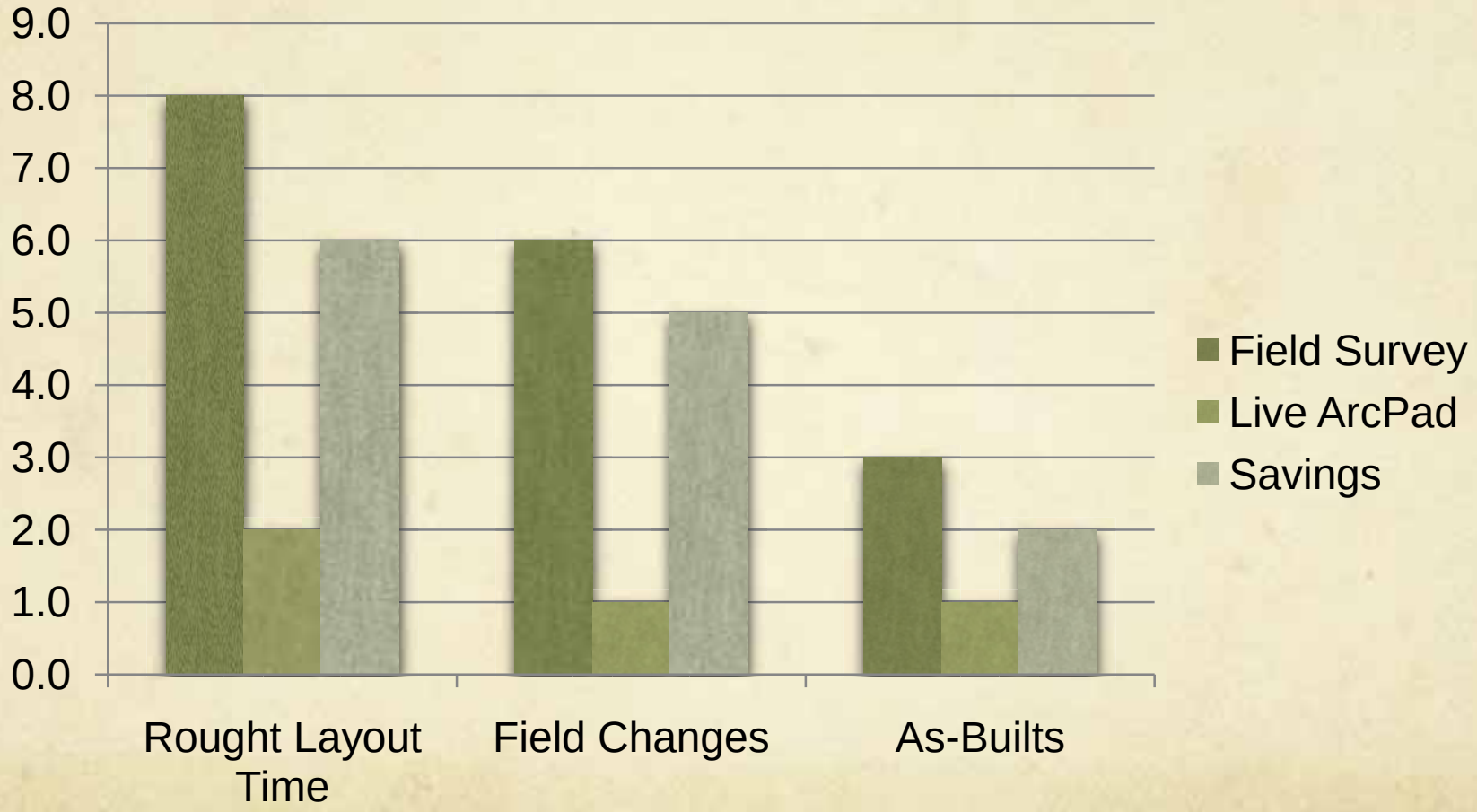
Why Construct Live?

- The project construction team can visualize the final design at the start of the process
- Saves time and associated cost
- Changes are made during the on-site Live Process

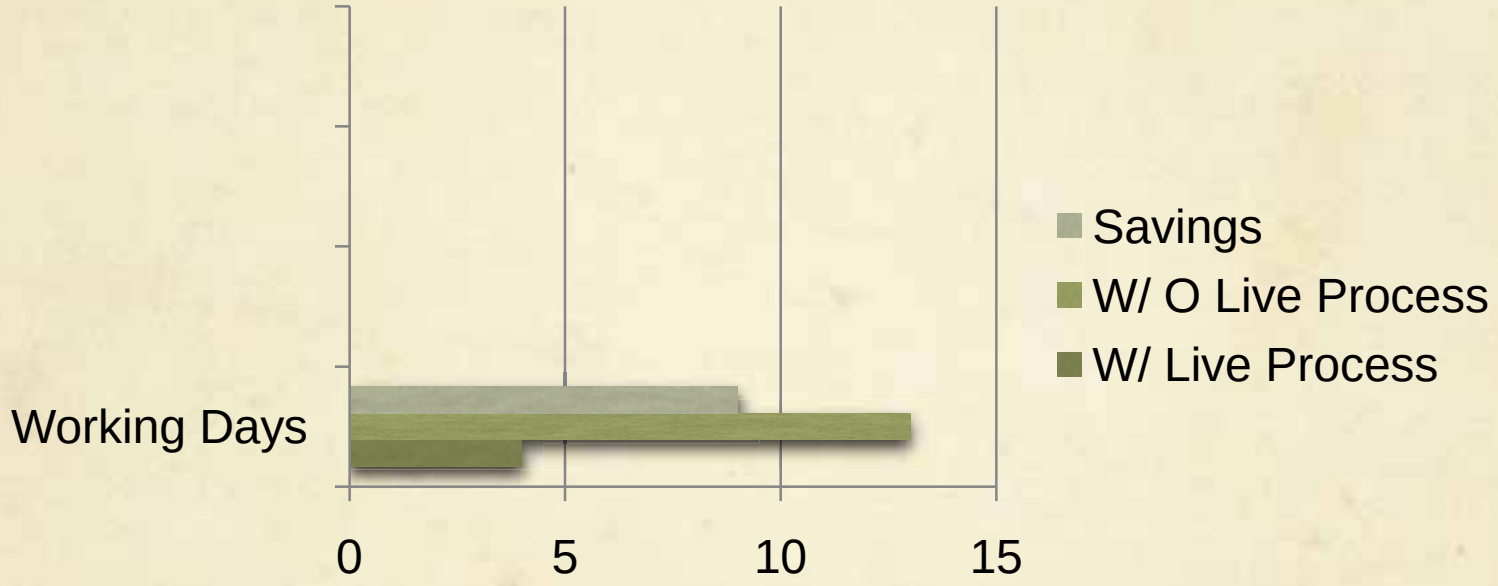
Example

- Based on :
  - One mile (5280 LF) of road in a rural mountainous terrain
  - Serving 50 lots
- Show time and cost savings with Live Design Process Field Time for Survey is $750/day and GPS Tec is $500/day
- Show total project savings for 40 miles of road and 1000 lots

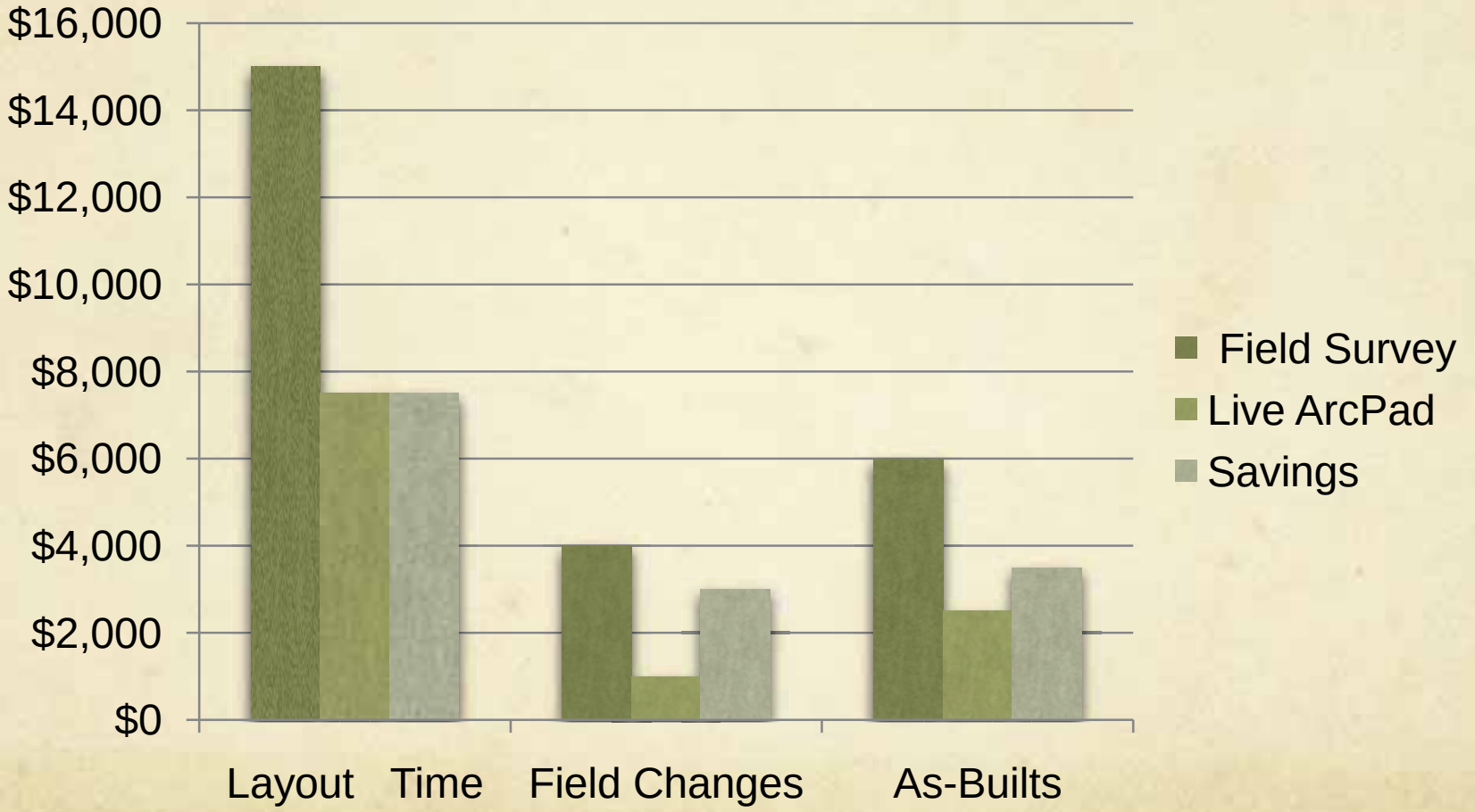
Time (Days) Savings Example for One Mile Mountain Road



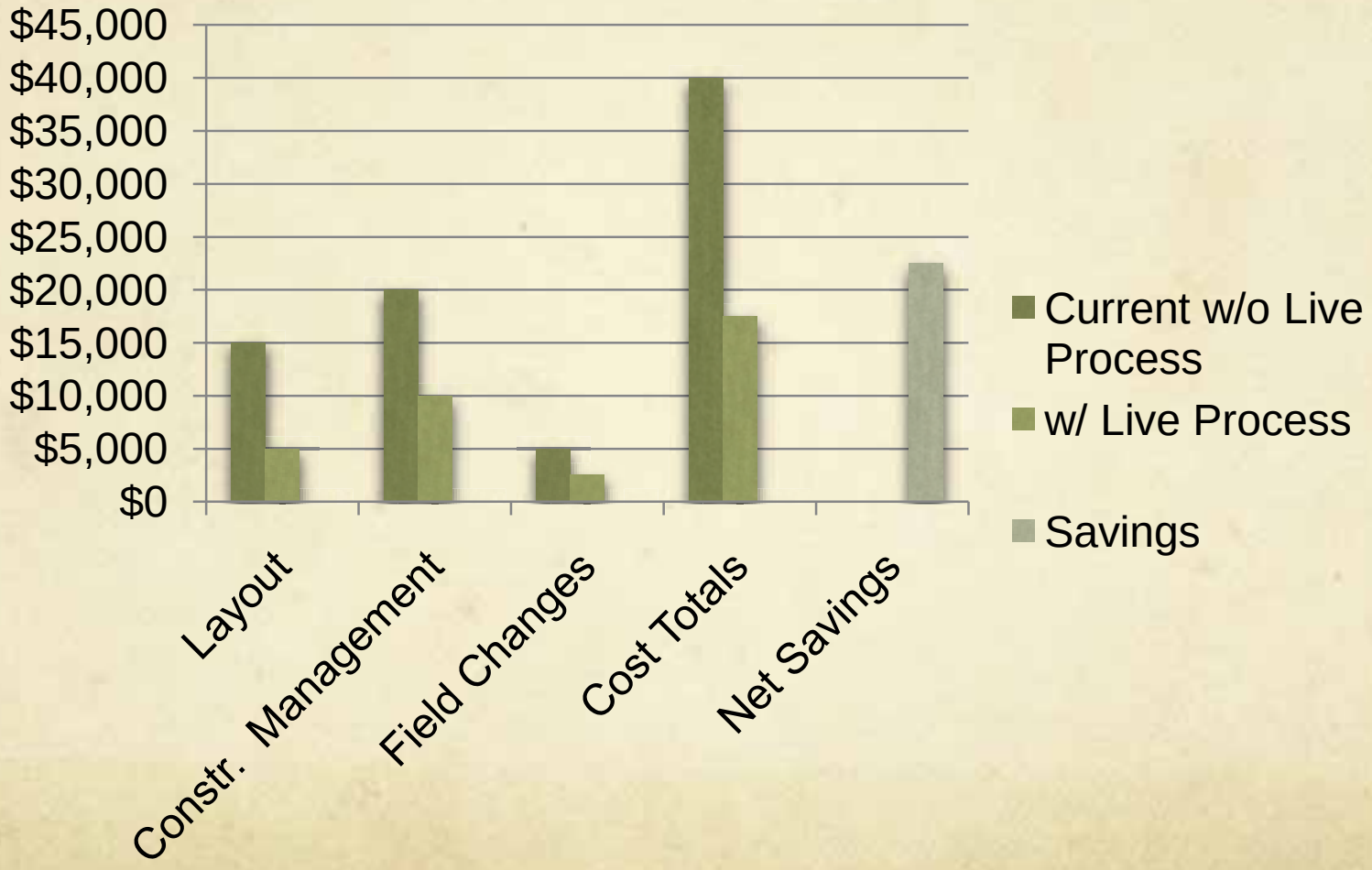
Summary of Time Savings for One Mile of Mountain Road



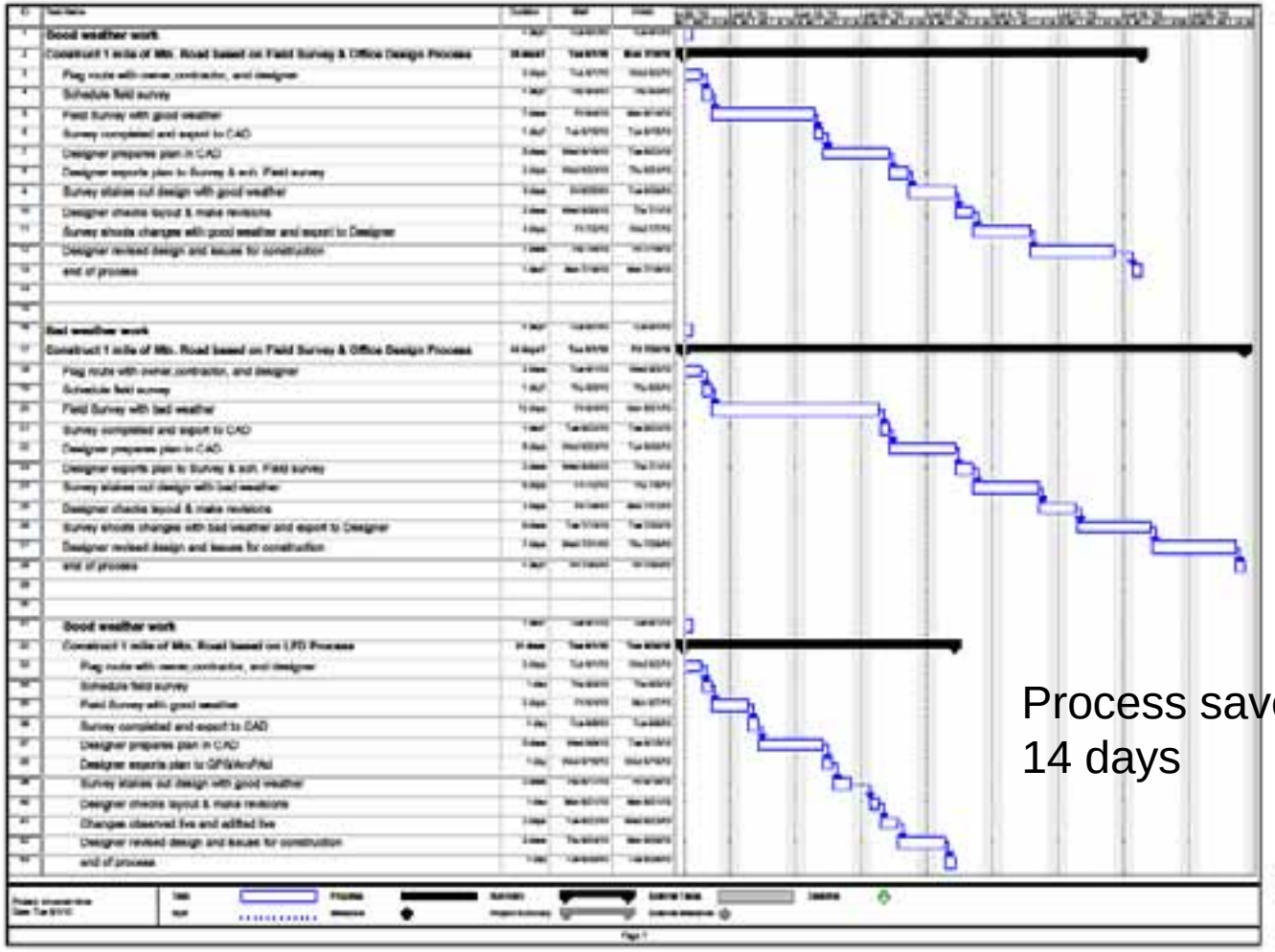
Cost Savings Example for One Mile of Mountain Road



Summary Cost Savings on One Mile of Mountain Road



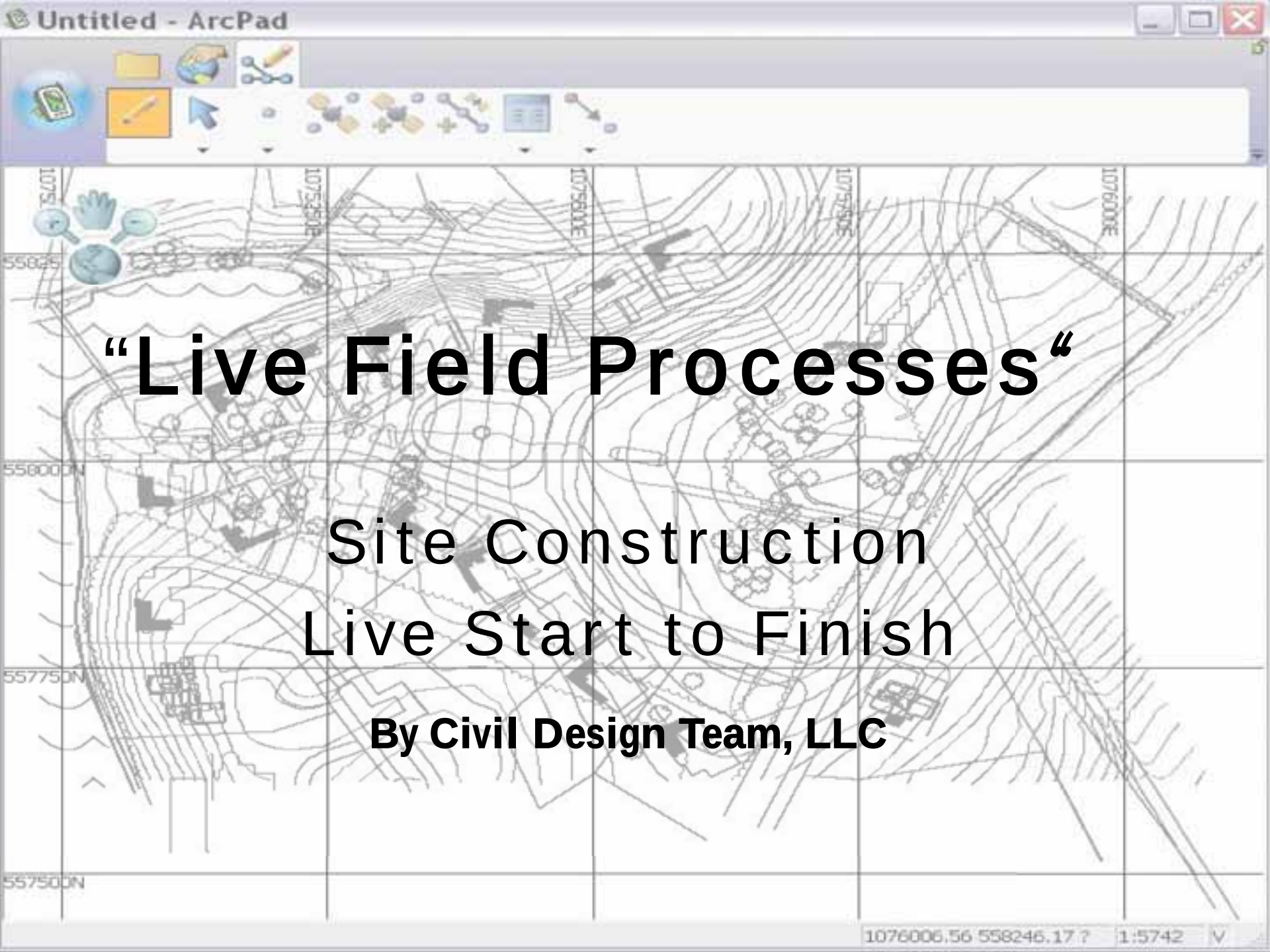
Project Gantt Chart



Process saves
14 days

Summary of Example

- Based on one mile (5280 LF) of road in a rural mountainous terrain
- Savings is $10,900 and thirteen (13) days
- The total project savings for this development with 40 miles of road is:
  - **$436,000 Saved**
  - **520 days of field time Saved.**



“Live Field Processes“

Site Construction
Live Start to Finish

By Civil Design Team, LLC

Old and New

Design Drawings

Survey Staking

GPS On Site

The Live Process

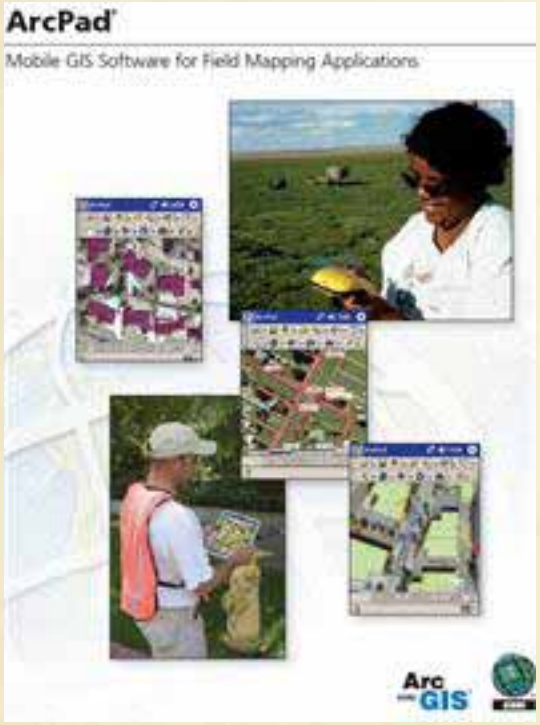
Live Field Design ™ is the interaction of the designer with the site , the project team, and the surrounding environment.

What Will I Need to Get This Done?

1) Trained GeoDesigner ™ with at ArcPad and a Graphic GPS.
2) Project design drawing exported to ArcPad
3) Other GIS maps and data
4) Surveys and plats for reference
5) View Live in Field with Construction Team
6) Record changes and work progress

Software & Equipment

ArcPad



Field PDA or Computer

Cost Range: 3 meter accuracy -$1300 to $2000

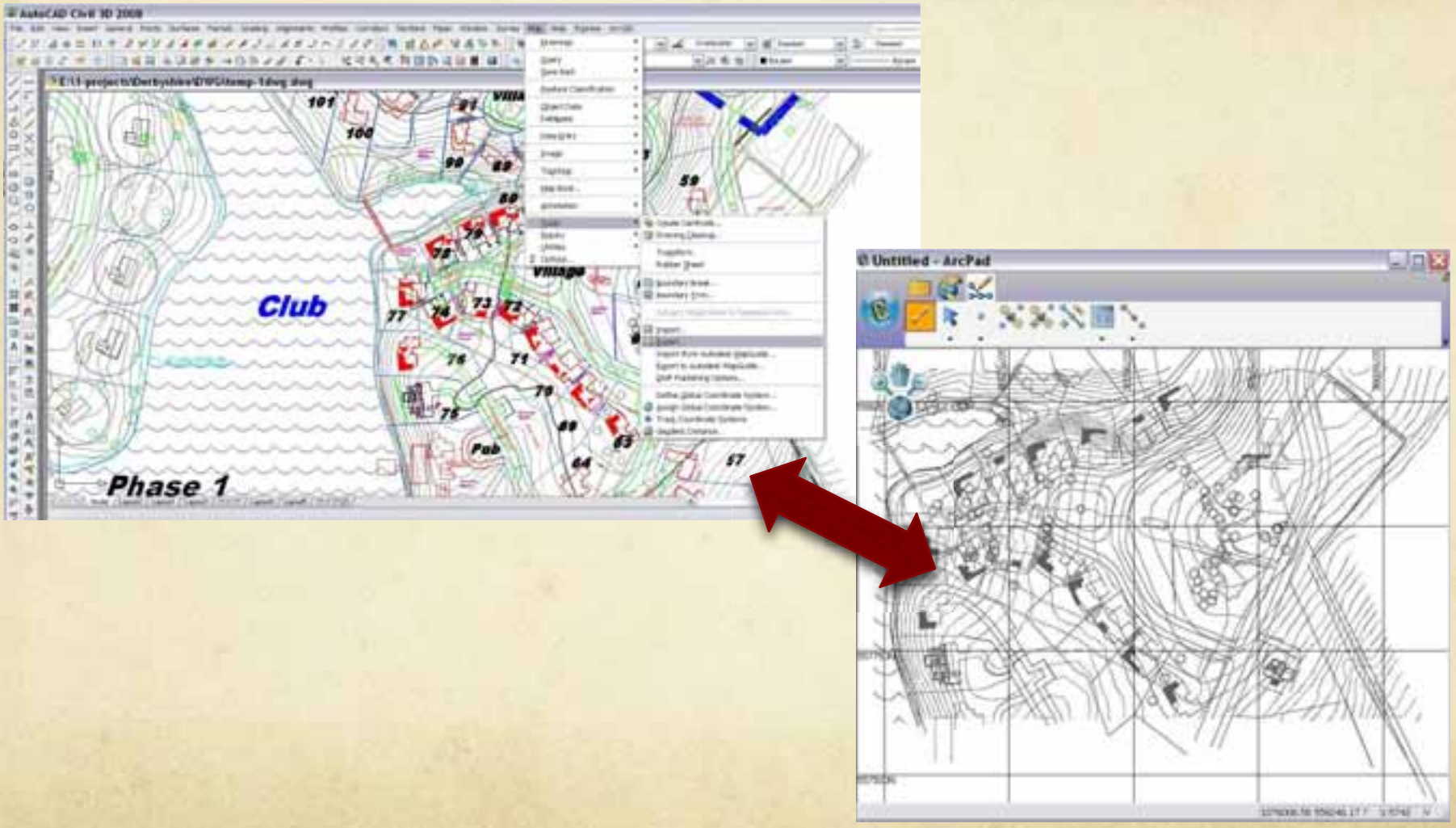
Cost Range: 30 cm accuracy -$4000 to $6000

New Equipment

Tablet PC

Tablet PC

Seeing the Design Live



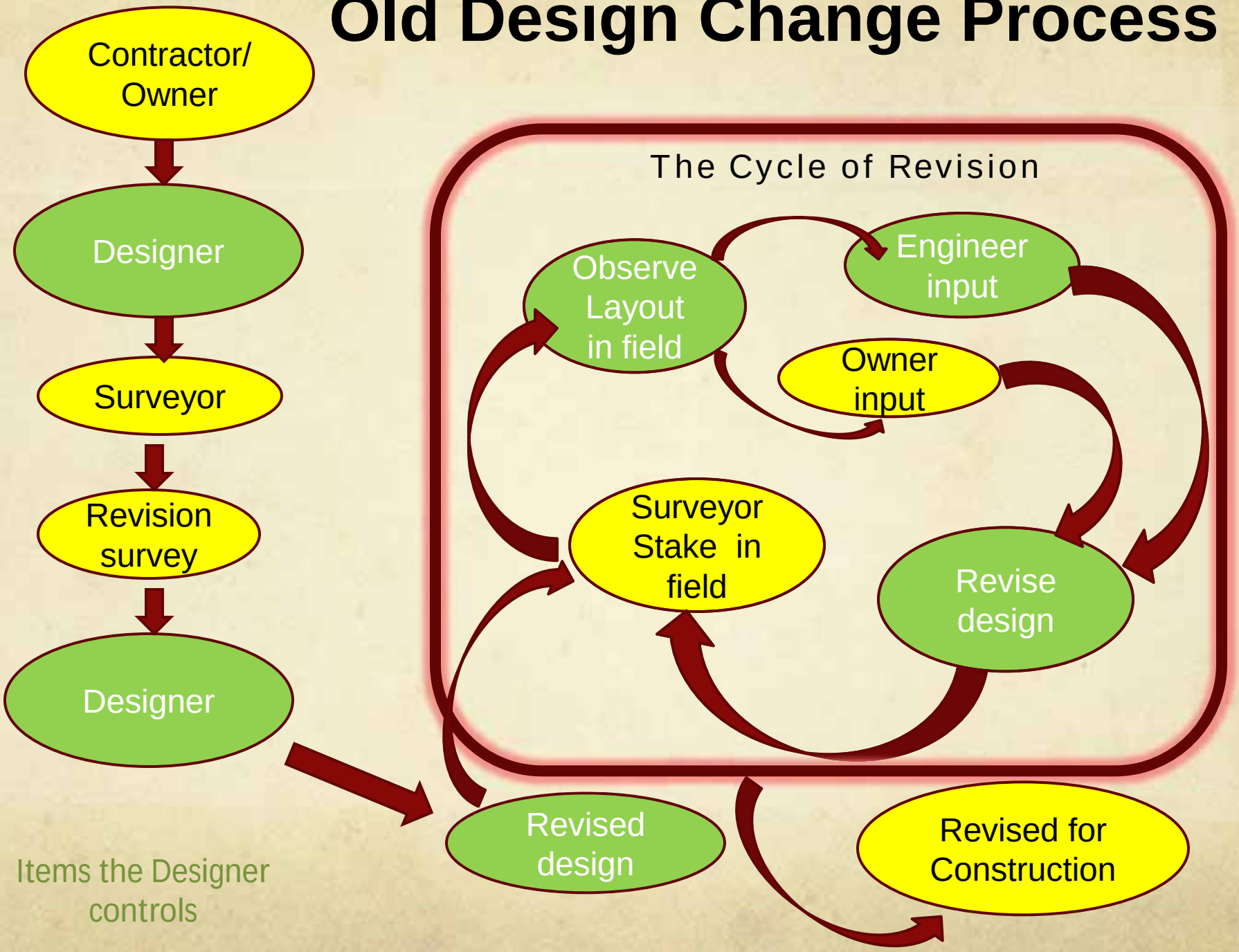
Field Staking

- **Items Suitable for ArcPad Staking**:
  - General clearing limits
  - Road route clearing
  - Rough building locations
  - Rough drives and parking lots
  - Utility locations
  - Sediment traps
  - Erosion control measures
  - Site lighting
  - Landscaping

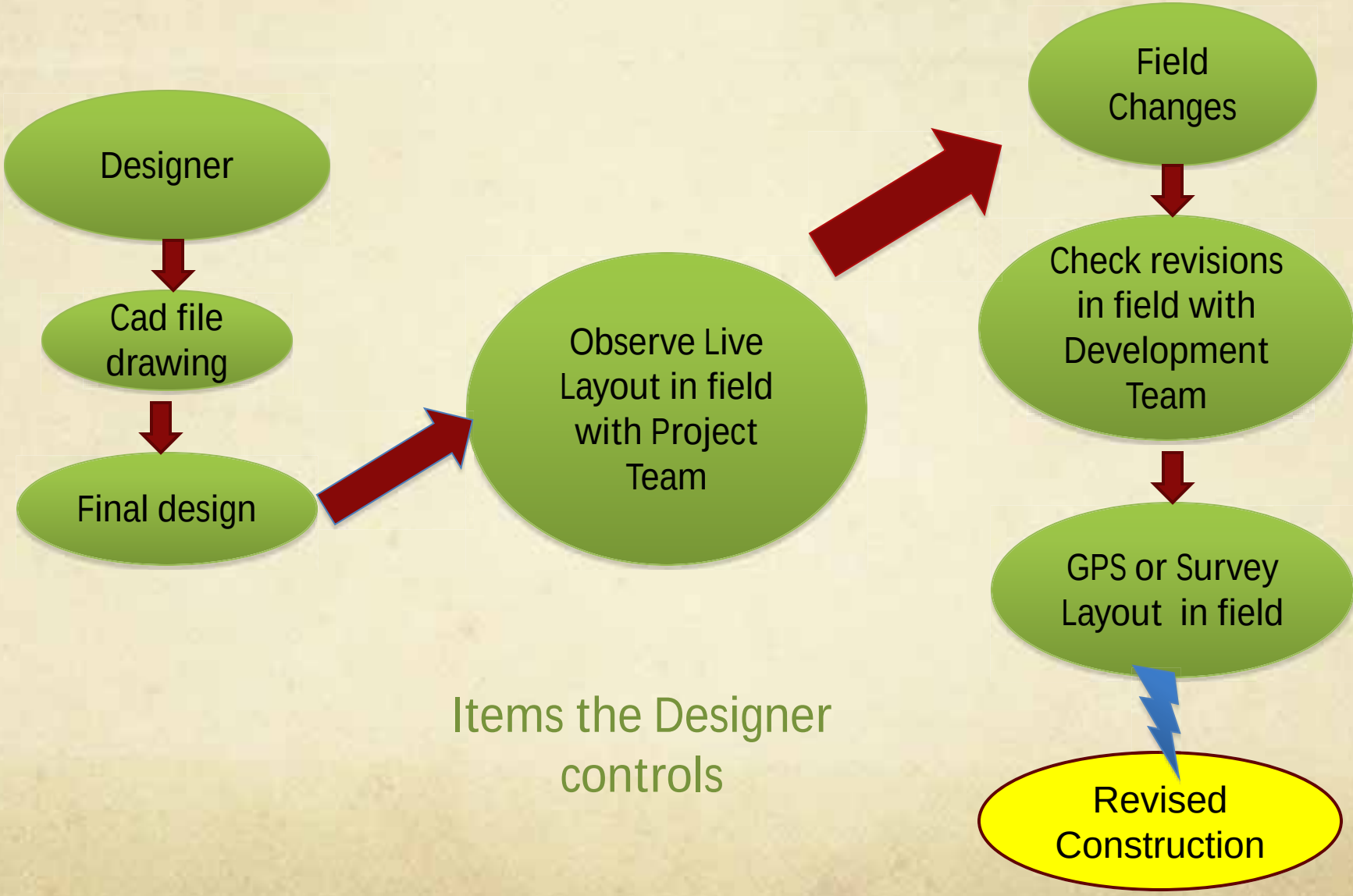
Field Changes

- The field changes occur when a contractor and/or a designer see something in the field that changes the original design. It may be a better design or site conditions that dictate a change. The construction may have to stop for this change.
- A fast and accurate solution is needed.

Old Design Change Process



Live Field Process



Items the Designer controls

An Example of “Live Field Design”™
An English Countryside Equestrian Community
In Tryon, North Carolina

The Current Design

Master Plan

The Village

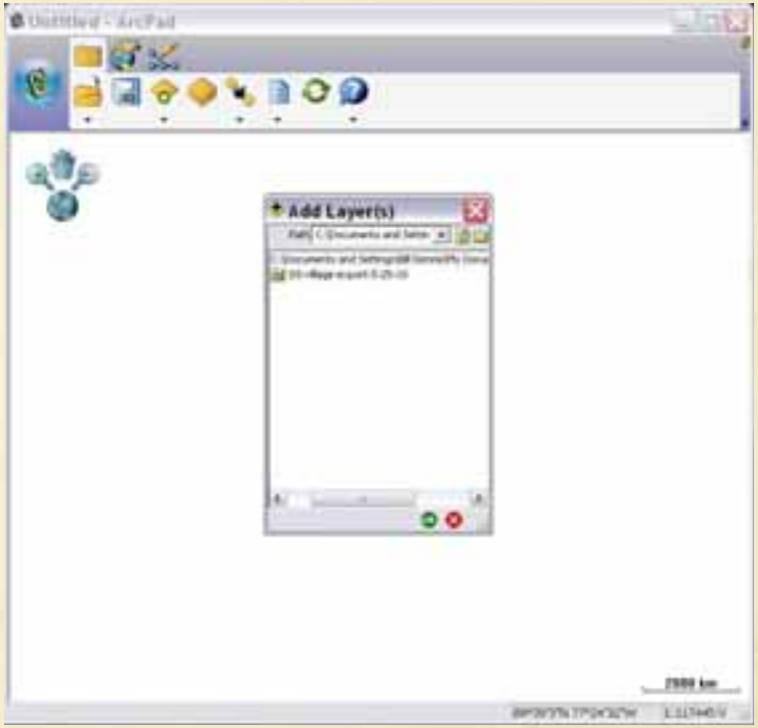
The Pub

Export and/or Import to ArcPad

Design to Export

Acad Design File

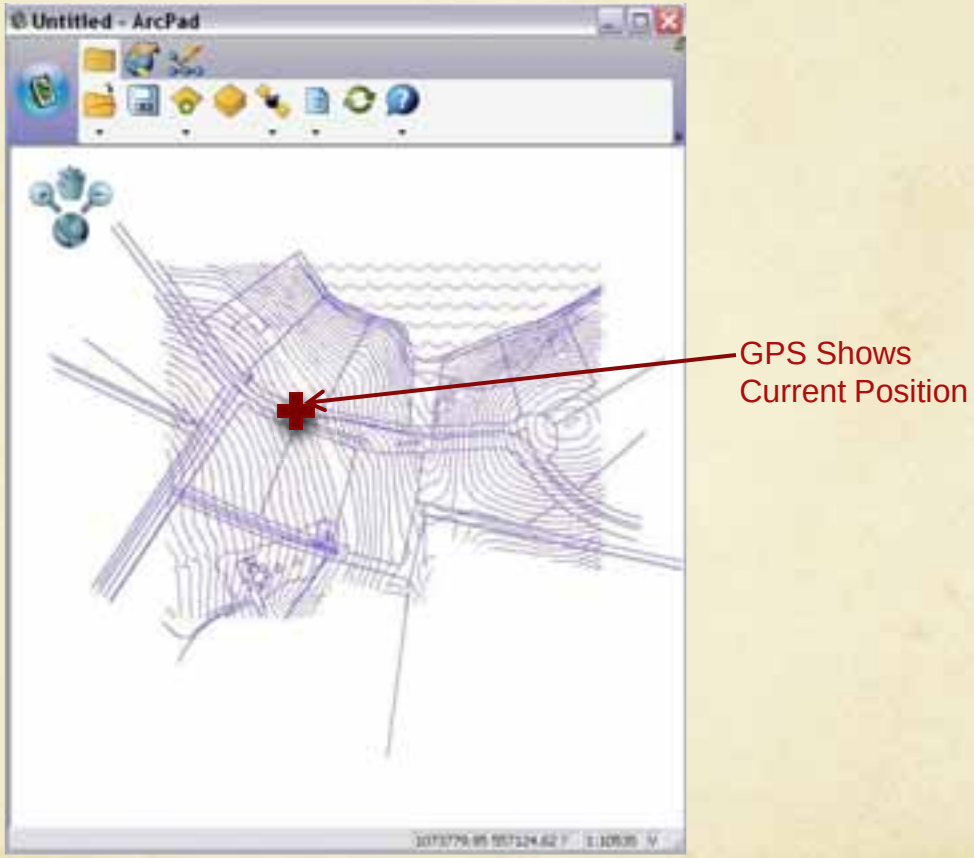
Importing Design



ArcPad Import Screen

ArcPad Imported Design

On-site the trees could be observed to determine if they were worth saving. The changes in ROW and property line could be checked and the minimum lot area could be measured to verify that the change did meet design requirements.

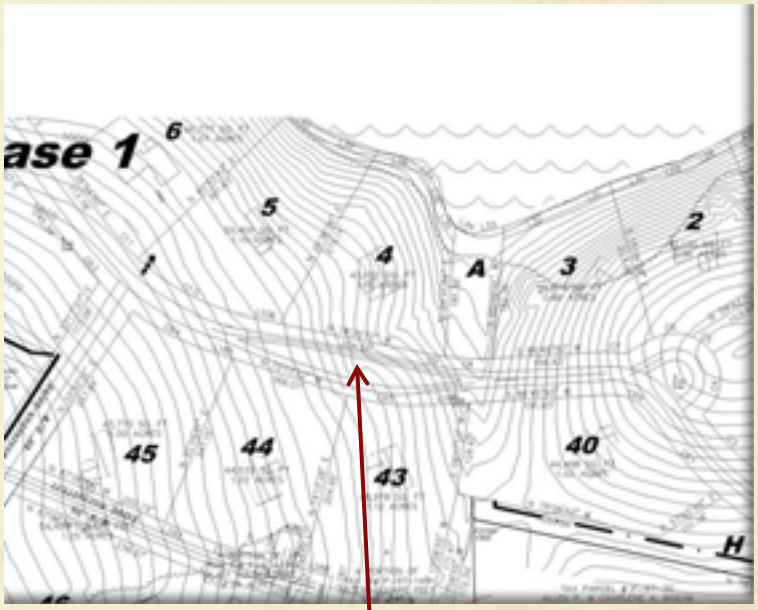


Field Changes & Designer

Original Design

Initial Design without
Road Split Lanes

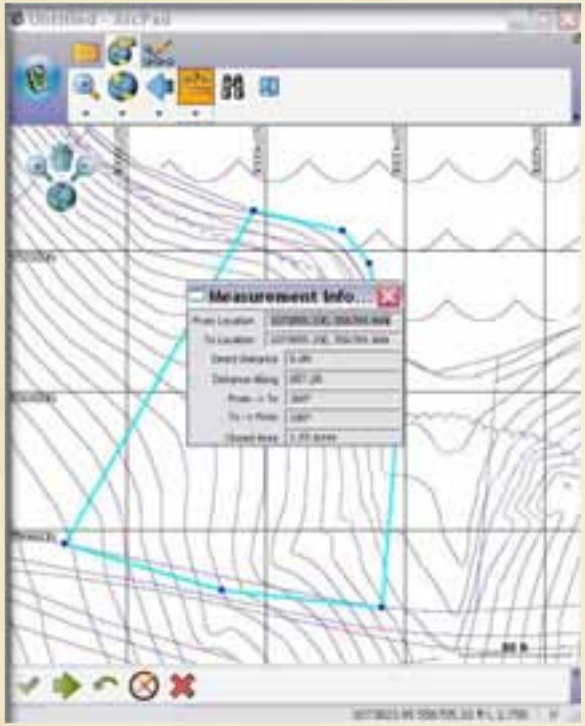
Field Changes



Revised Design Saving Trees
and Adjusting to Lot Grades

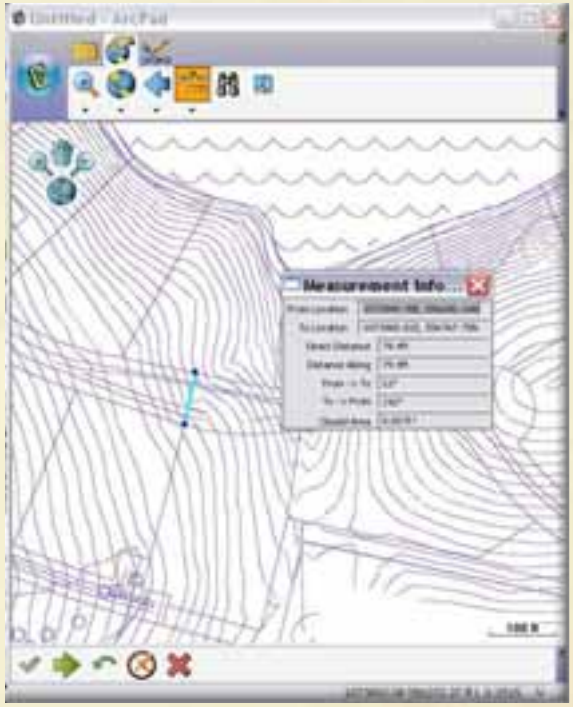
Field Changes & Designer

Measure Lots



Measure new lot area with changes & verify it meets minimum size required

Field Changes



Measure width of split to check field locations

Photos of Changes

Road Split Saves Trees and Improves Natural Feel

Road Split adjust to High and Low Lots

Live As-Builts

Live As-Builts

For More Information

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