ArcPAD Solution to Large Scale Data Collection
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Mark R. Valentino, GISP and
Stacey E. Metzler, GISP
Freese and Nichols, Inc.
Overview

• **Scope and Planning**
  – Scope of the Project
  – Timeline
  – Planning for the Project
  – The Path We Chose and Why

• **Equipment and Safety**

• **Data**
  – Data Structure
  – Lessons Learned
  – Demo
Scope of the Project

- Collect and Map Electric and Gas Utility Systems at Fort Hood.
- Use existing GIS data from the client, field verify all locations, adding new features as they are found.
  - Electric Features
    - Electric Poles
    - Electric Lines
    - Risers
    - Switches
    - Meters
    - Lights
  - Gas Features
    - Gas Lines
    - Meters
    - Regulators and Reducers
- Photograph all features.
- Populate ArcPAD forms with updated data.
Pole with Switch and Light
3 Phase Pole Transformers
Pole Information—varied from pole to pole...
Timeline

2009
- September: Notification
- October: Plan Collection Process
- November: Purchase Equipment
- November: Hired Field Staff
- December: Trained Field Staff
- December: Refine Collection Process
- December: Begin Line Data Collection
- December: Begin GGS Collection
- December: Begin Trans. Collection

2010
- January: Data Collection Complete
- February: Begin QA/QC of data
- March: Prepare for model
The Path Chosen

- **Project Start**
  - Who will do it?
    - In House Staff
  - How will it be done?
    - Hire Local Staff
      - Electronic Method: Computer or PDA
      - Cost Benefit Decision
    - Paper Forms and Maps
  - Purchase Equipment
  - Database Structure
  - Develop Application
    - Test Structure and Application
      - Needs Changes
  - Design Map layout for Field Collection
  - Export Data for Use
    - Load data on Field Computers
      - Start Field Data Collection
    - Send Data Back to Server
  - QA/QC data
    - Prepare and Export for Client Model

11/2/2010
• Computers vs. paper editing
  – Eliminate office translation work
Equipment

- **Field Equipment**
  - Computers (Fujitsu Slate)
    - ArcPad 8.0 SP3
    - GPS Cards (Compact Flash GPS)
  - Digital Camera (Nikon CoolPix)
  - Safety Vest
  - Small Backpack (For lunch, water and extra batteries)

- **Office Equipment**
  - ArcSDE 9.3.1
  - ArcMap 9.3.1 (ArcInfo)
Data Structure

• **Single table data model**
  – 102 Fields
  – 5 Features Shared Location
    • Photos
    • Coordinates
    • Stacked Points
  – Simplified Editing
  – Easier Primary Key Foreign Relationships
QA/QC

- **Office**
  - Took map book and hand drew lines
  - Used Snapping and Topology

- **Field**
  - Used data export form SDE to compare to real world view
Lessons Learned

• **Team Continuity**
  – Leader had Heart surgery
  – Field team leader’s wife had baby 2/3 through

• **Be Flexible**
  – Architecture
    • Database
    • Forms
  – Data Capture
  – Techniques

• **Employees**
  – Training
  – Safety Rules
  – Procedures
  – Encourage input
  – Staff Management
Safety

• Have a designated meeting place for emergencies.
  – We were working when shooting took place and there was no communications.

• Reinforce safety measures every day.
  – Strictly enforce any violations.
Data Going Forward

• **Data was used for a parallel project (Switching Study)**
  – Cost savings by project coordination
    • Communication on their needs
    • Hyperlinked photos saved on field visits

• **Data integration with Electrical Modeling software**
  – Prep data for integration
  – Training users
  – Coordinating software chosen for modeling
Final Project Totals

**Electric Utility System**

<table>
<thead>
<tr>
<th>Item</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electric Poles</td>
<td>22,337</td>
</tr>
<tr>
<td>Pole Transformers</td>
<td>4,825</td>
</tr>
<tr>
<td>Lights</td>
<td>10,706</td>
</tr>
<tr>
<td>Switches</td>
<td>871</td>
</tr>
<tr>
<td>Risers</td>
<td>1,818</td>
</tr>
<tr>
<td>Pad Transformers</td>
<td>1,177</td>
</tr>
<tr>
<td>Electric Lines (miles)</td>
<td>1,552</td>
</tr>
</tbody>
</table>

**Gas Gathering System**

<table>
<thead>
<tr>
<th>Item</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regulators/Reducers</td>
<td>5,215</td>
</tr>
<tr>
<td>Gas Valves</td>
<td>3,151</td>
</tr>
</tbody>
</table>
We Did Find the End of the Line
Questions?
Thank you

Mark Valentino
mrv@freese.com

Stacey Metzler
sm@freese.com

4055 International Plaza, Suite 200
Fort Worth, TX 76109
www.freese.com