Effective Process for Alignment Sheet Design

Colby Smith
Senior Product Manager
New Century Software, Inc.

Agenda

- How we got here
- Requirements planning
- Design
- Implementation
- The future of Alignment Sheets

History of Alignment Sheets

- Probably not cost effective
- Typically done in CAD environment
  - Estimate 24-40 hrs per drawing
- Data congestion handled on a case by case basis
  - Used to be artwork
- Details insets added as needed

History of Alignment Sheets

- Used to be the GIS and the Record System
  - Handled re-locations, cutouts, re-routes etc...
  - New pipeline crossings
  - Drawing revisions
  - Map of the pipeline

History of Alignment Sheets

- Now it is simply a report of the GIS
  - Revisions documented in the GIS
  - Reroutes etc... occur in the GIS
  - Crossings are new rows in a table

Requirements Planning

- Who
- What
- When
- Where
- Why

Who will use the Sheets and What for...

- Operations – Engineering Sheet, Emergency Response Map, Quad Map, etc...
- Right of Way
- Integrity Management – ILI Sheet, HCA Sheet
- General Public – Public Awareness Map

When are the sheets built?

- Regeneration Interval
  - Yearly
  - Quarterly
  - On Demand
- Interval should be cost effective
  - Could be influenced by software
  - Could be influenced by sheet design

Where are the Sheets used?

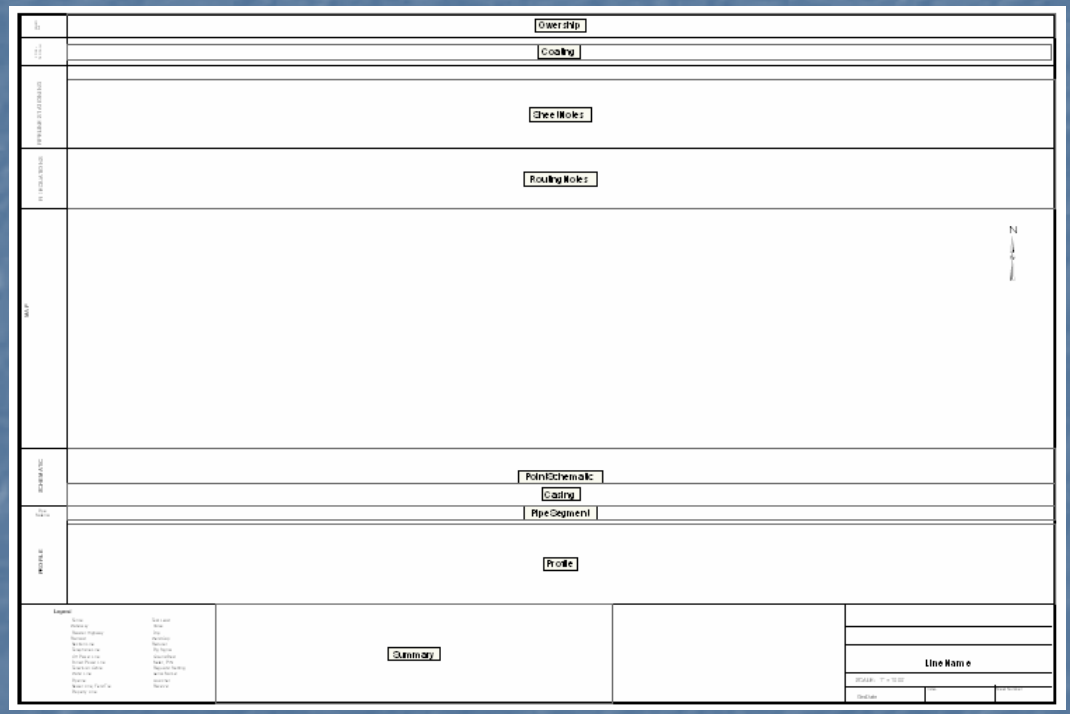
- In a truck
  - Should influence paper size
- In the office
- Over the web
  - Should influence file size

Why do the Sheets exist?

- Report of pipeline design / construction
- Help in locating pipeline “Map”
- Integrate desperate data sources
- Fulfill regulations
- QC of pipeline GIS / database

Alignment Sheet Design

- Page Layout
- Alignment Data
- Basemap Data



Page Layout

- Paper Size – printed at full and half size
- Output Formats – PDF, Paper, MXD, DWG
- Map Size
- Map Scale
  - Manageable number of sheets
  - Will all the data fit?
- Multi-line Sheet
  - Can be confusing
  - Eat up white space quickly
  - Drastically reduce the number of sheets

Alignment Data

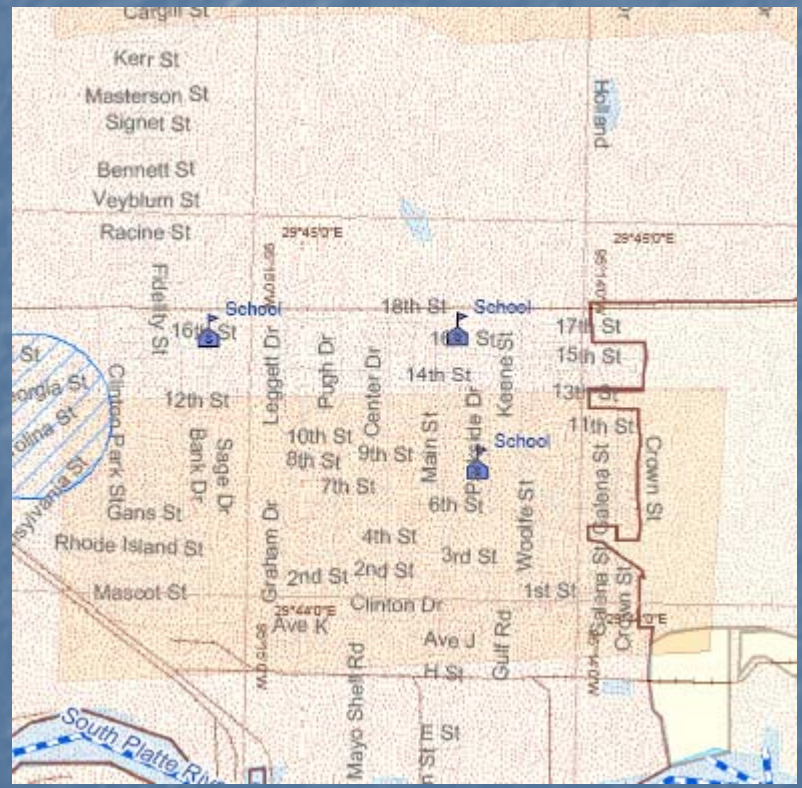
- Enterprise Pipeline Database / GIS
  - Pipe Material
  - Coating
  - Appurtenances
  - Crossings
  - Pipeline Location and Elevation
  - Right of Way
  - Historical Information (job books, revisions, etc)
- What about each of these types of data

Alignment Data

- Other Data Sources
  - ILI Interchange database
  - HCA data
  - Structure data
  - CIS data

Basemap Data

- Imagery
  - Affects projection
  - Affects file size
- Vector Data
  - Roads
  - Waterways
  - Legal boundaries
  - Etc...



Implementation

- Software Selection
- Template Building / Software Configuration
- Sheet Production

Software Selection – GIS or CAD

- The drawings were the data management system
- Now the drawings are a report of the data
- CAD has better tools for maintaining the data in the sheets
- Data should be maintained in the GIS / Enterprise Pipeline database; then run a new report (Alignment Sheet)

Software Selection – ASG

- Fit your requirements
- Cost effective
- Built on technology you know and use
- Flexible
- COTS or Custom

Building a Template

- Spiraling In (Iterative Approach)
  - Requirements and design analysis
  - General sheet layout
  - Test template with production generation tools
  - Refine template
  - Generate some sheets
  - “Rinse and repeat”

Building a Template

- Set a finish line
  - Maps are never “perfect”
  - Refining could go on forever
  - At some point you just have to stop

Building a Template

- Set a quality level
  - Review with potential users
  - Do most of the maps look good
  - Do they require manual editing

Sheet Production

- Should not start until...
  - Format has been reviewed
  - Quality level is met
  - Template is “Complete”

Future of Alignment Sheets

- Automatic Generation
- Published in Google Earth or Arc Explorer

Thank You

Questions?