



PROJECT CONSULTING SERVICES®, INC.

2009 PHMSA New Pipeline Construction Workshop

Pipeline Construction Lessons Learned

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Pipeline Construction Lessons Learned

- Safety
- Environmental Challenges
- Route Selection/ Right-of-Way
- Pipe
- Welding
- Pipe Burial
- Coating
- Backfill
- Quality Assurance
- Schedule, Costs and Scope Changes



Safety

- Regulatory issues
- Environmental restrictions
- Changing work environment (linear project)
- Hazardous environment
- Continuous training
- Improving safety records



Environmental Challenges

- Wetlands
- Mats
- Seasonal restrictions
- Construction Workspace Restrictions
- Essential Habitat Restrictions
- Silt/Turbidity
- Cultural Resources Avoidance
- Weather



Route Selection/Right of Way

- Right of way widths
- Work space requirements
- Ground conditions
- Water bodies
- Above ground obstructions
- Under ground obstructions



Pipe

- Pipe issues that cause additional challenges

- Varying pipe metallurgy (within API 5L)

- Tensile strength variations

- Multiple plate manufacturers

- Excessive High / Low

- Seam grinding near bevel

- Improper coating cut-back

- Magnetism

- Ends not square

- Bevel consistency and care



Welding

Items critical to the welding process

- Consumable selection and control
- Bevel preparation
- Preheating of the pipe
- Spacing / Gap for root bead
- Inter pass temperatures
- Travel speed / amperage / voltage (Heat Input)



Pipeline Burial

- Ditch preparation
- Marsh
- Dredging (Open Water)
- Spoil Handling
- Lowering Pipe (Stress Analysis)





Coating

Field Joints

- Coating cutback to small or to large
- Surface preparation
 - Sand blasting
 - Preheating
- Application
- Verification of correct coating thickness
- Visual Inspection
- Holiday detection



Backfill

- Ditch preparation
- Pipe support in the ditch
 - Padding
 - Sand bags
- Backfill (prevent dents)
 - Padding
 - Rockshield
- Pipe Design (wall thickness)
 - Overburden/ovality



Quality Assurance



Insulated Pipe?



Piping Issues!

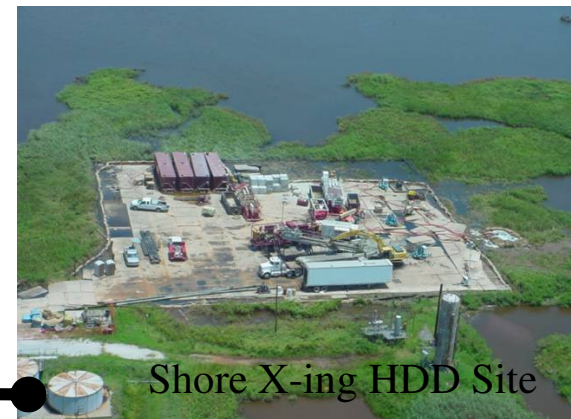
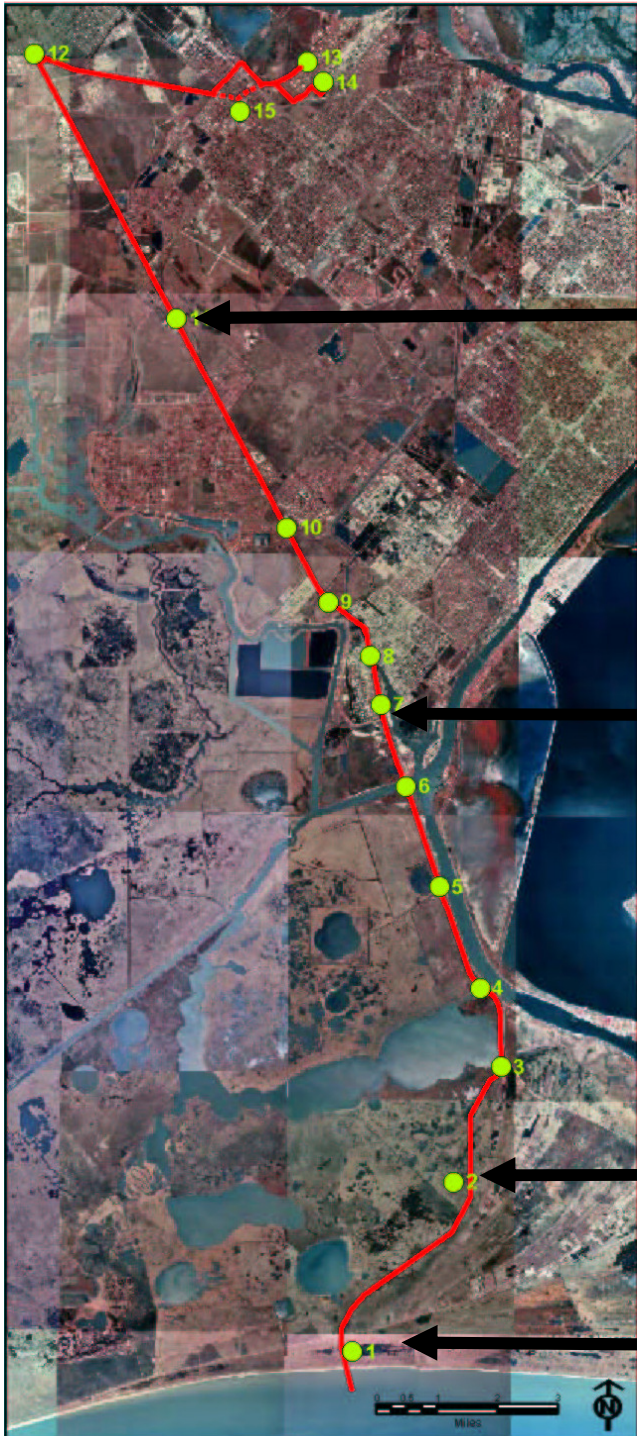


Quality Assurance

- Experienced and qualified inspectors
- Traceability and documentation verification
- Detailed inspection reports
- Accurate as-built
- Timely communication of information
- Require Contractor to know specifications
- Develop project specific procedures



Schedule, Costs and Scope Changes





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Questions ?

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