



PRE-CONSTRUCTION REQUIREMENTS

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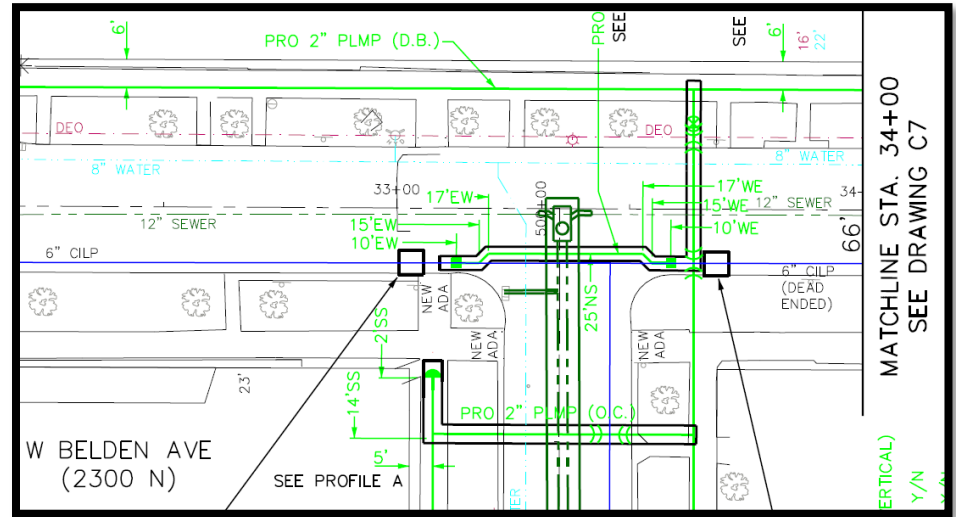
Factors to Consider Prior to Construction

- Construction Prints
- Relative Company Procedures
- Bill of Materials
- Shutdown/Purging Requirements
- Site Inspection
- Pre-Construction Meeting
- Change Management System
- OQ Covered Tasks
- Inspector Documentation Requirements
- Permitting
- 3rd Party Underground Facilities



Construction Print

- Familiarize yourself on the details of the Construction Prints
 - How construction affects gas system, public, traffic, businesses
- Identify job requirements
 - Main & Service Installation
 - Method of Installation
 - Retirement
 - Pressure testing requirements
 - X-rays required
 - Shoring needed / available
 - EPA requirements
 - Erosion control
 - Equipment needed
 - Soft/Hard restoration



Main & Service Installation Examples

Open Cut Installation



Directional Drill Installation



Retirement Example

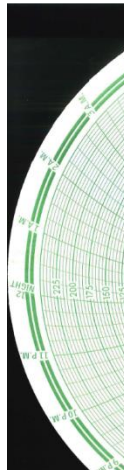
Retired Gas Main

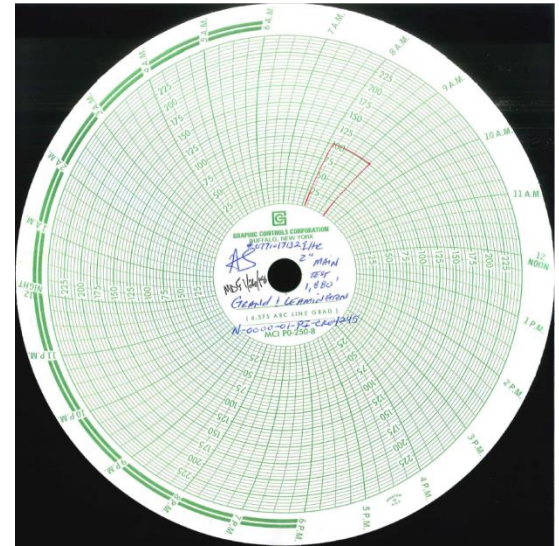


Retired Gas Valve



Pressure Testing Requirements

- Items to consider prior to a project start:
 - What is the system Maximum Allowable Operating Pressure (MAOP)?
 - What is the duration of the pressure test?
 - What is the test medium?
 - Air
 - Nitrogen
 - Hydrostatic
 - Temperature Monitoring
 - Calibrated testing equipment
 - Always refer to company procedures
- 



Is Shoring Needed / Available

- What type of shoring will be utilized?
 - Timber Shoring: Walers, sheeting, struts available?
 - Hydraulic Shoring Available?
 - Pneumatic Shoring Available?
 - Trench Boxes Available?
- Is an engineered Earth Retention System design needed?
- Who will be the competent person on site?



Environmental Protection Agency (EPA) / Erosion Control Requirements

- What needs to be considered?
 - Storm Water Runoff
 - Example: Using silt fences, geotextile fabric under storm inlets/catch basins/sewer manholes
 - Solid & Hazardous Wastes
 - Example: Excavation near a gas station
 - Soil testing prior to construction can determine if site contains special or hazardous soil
 - Polychlorinated Biphenyl (PCB) Wastes
 - Example: Storage & Disposal of retired Cast Iron gas main
 - Air Quality
 - Example: Regulation of dust emissions during saw cutting



Equipment

- Any specialized equipment needed?
 - Directional drill rig / drilling chemicals
 - Cranes / Larger Excavators / Compressors, etc.
 - Tapping equipment
- Will equipment be available when needed?
- Will the equipment be able to be stored on the jobsite?



Soft/Hard Restoration

- What restoration will be included in the project?
 - Soft Restoration
 - Example: Sod, vegetation
 - Will these be available based on the schedule?
 - Hard Restoration
 - Example: Concrete sidewalks/driveways, Asphalt roads
 - Will these materials be available based on the schedule?
- Customer/Stakeholder notification is key



Review Relative Company Procedures

- After reviewing the construction prints and requirements, choose the relative company procedures and review them prior to construction
 - Example: If plastic main is being installed via directional bore method, the inspector should review fusing and trenchless technology procedures prior to construction
 - Inspector guides can be helpful to provide an overview of what specific items are included in a project, and what procedures to review

<u>Plastic Main Installation</u>	Check		Check		<u>Comments</u>
Direction Bore Method	✓	Yes		No	Review Company Procedures for Trenchless Technology & Fusing
Open Cut Method		Yes	✓	No	
Insertion Method		Yes	✓	No	
Jack & Bore Method		Yes	✓	No	

<u>Steel Main Installation</u>	Check		Check		<u>Comments</u>
Open Cut Method	✓	Yes		No	Review Company Procedures for Welding & Coating
Jack & Bore Method		Yes	✓	No	

Bill of Materials

- On-hand / On-order?
- Lead-times?
 - Match long lead items with the construction schedule
- Coordinate job-site delivery?
- Inspect on-hand and delivered material
 - Type, condition, quantity, shelf-life
- Material Storage
 - Will materials be stored onsite?
 - Will materials be stored at a yard offsite?
- Discuss special materials
 - Special Tie In Materials
 - Special Retirement Materials
 - Purging Materials



Shutdown/Purging Procedures

- Is there a need to shutdown any existing gas mains in order to complete a tie-in?
 - How does the shutdown affect the overall gas distribution system?
- Will gas be purged into the atmosphere?
 - Do you have the correct purging equipment?
 - Vent Stacks/Air Movers
 - Air Compressors
- Do customers need to be notified of a gas purge?
- Is there specific valving for the shutdown that requires a procedure?
- Always review relative company procedures prior to gassing/purging



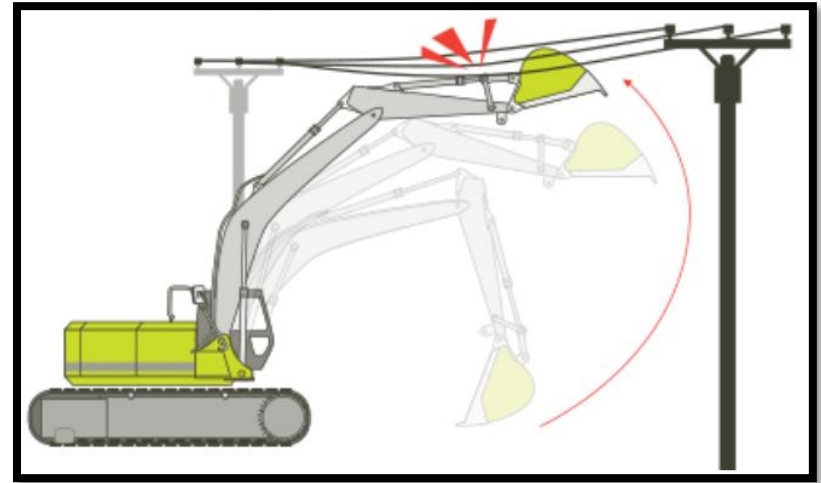
Site-Inspection

- Familiarize yourself with physical layout of the construction area
 - Drainage
 - Traffic Control needed?
 - Streets / Sidewalks / Driveways – condition of asphalt or concrete
 - Preconstruction video of existing conditions
 - 3rd Party manholes & structures
 - “White-line” proposed main installation location and verify obstructions
 - If obstructions exist is there a reasonable construction change to resolve the issue
 - If not is there a design change that is needed?



Site-Inspection Continued

- Overhead Obstructions?
 - Electric lines
 - Trees
- Construction space
 - Can materials be stored on site?
 - Can equipment be stored on site?
 - Is there enough room for excavation activities
- Is all work in the public ROW?
- Is there proposed work in private property?



Internal Pre-Construction Meeting

- Can be formal or informal, depending on the size of the project.
- Meet with Contractor and other company personnel
- Discuss the awarded contract
 - Time & Material
 - Unit Pricing
 - Lump Sum
- Discuss how to handle potential changes in the scope of work
- Discuss construction sequencing & schedule
- Discuss tie-in and cut-off procedures

Internal Pre-Construction Meeting Continued

- Discuss Safety – workforce & public
- Discuss Contractor Staffing & Oversight
- Confirm welding / fusion qualifications & OQ
 - Are the employees on the project qualified to complete the necessary tasks?
- Discuss QA/QC
- Identify Relative Operating Procedures
 - Worker qualifications
 - Special situations (such as burial grounds, protected animals, vaulted sidewalks)
 - Construction procedures

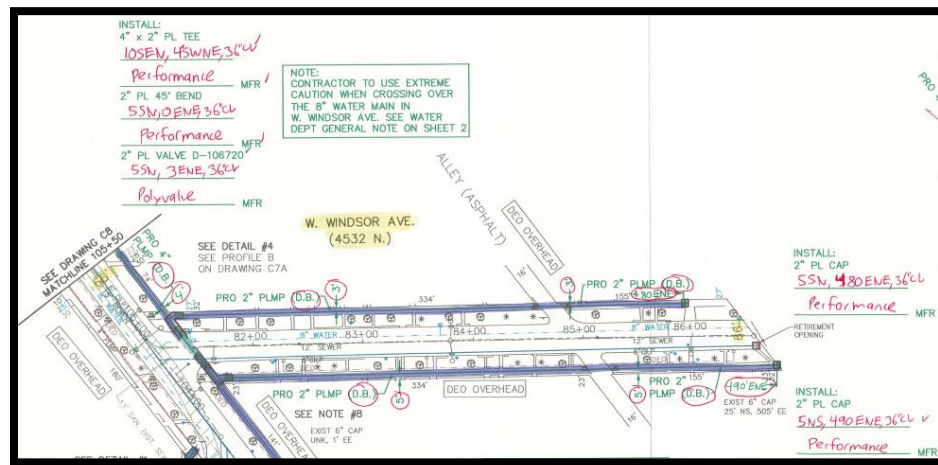
External Pre-Construction Meeting

- Others working in same area
 - Private contractors
 - 3rd Party Utilities
 - Railroads
- 3rd party facility owners
- Official agencies (DOT, EPA, etc.)
- Construction sequence/timeline
 - Including restoration schedules
 - Hours of work/Days of the week
- Impacts on emergency response services
 - Will there be detours or traffic congestion?



Inspector Documentation Requirements

- Know what documentation is necessary to maintain prior to construction
 - Permits
 - Most recent construction prints
 - Contractual documents
 - T&M sheets
 - Pressure Testing documentation
 - As-built documents



Permitting / Easements

- Types of permits needed?
 - DOT permits
 - Material Storage permits
 - Park district permits
 - Railroad permits
- Landowners affected by installation?
 - Will easements be necessary?
- Status (copy on-hand)
- Hours of work/Days of the week approved on the permit



Underground Facilities

- Know applicable One-Call number(s) & rules
- Who is responsible for calling and maintaining current locate tickets?
- Ensure all facilities are located prior to start
- Know how to contact other facility owners

