

Lincoln Water System Spring Meeting - March 2009

- Standard Specs & LSPs, Revisions and Reminders
- Corrosion & poly-wrap
- Recent repair examples
- Construction Checklist

Standard Specification & LSPs Revisions

- Reference to manufacturer's or trade organization installation instructions
Retainer Glands & Polyethylene encasement
- Utility Conflicts
Shorten loop, State Health Rules
- Temporary Hydrants and Blow-offs
Basis of payment

Standard Specification & LSPs Revisions

- Named manufacturer's, retainer glands
- Pressure Testing
Hydrant branch piping
- Tracer Wires
Taping wire to pipe, termination
- Thrust blocks
Using forms & prevent encasing the fitting

Reminders

- Compaction around valves and hydrants
Hand methods @ 95% MDD
- Blocking and drainage material around hydrants
Dry blocking & no cement containing materials
- 12 inch gate valves w/ support blocking
- Valves operated only by LWS staff

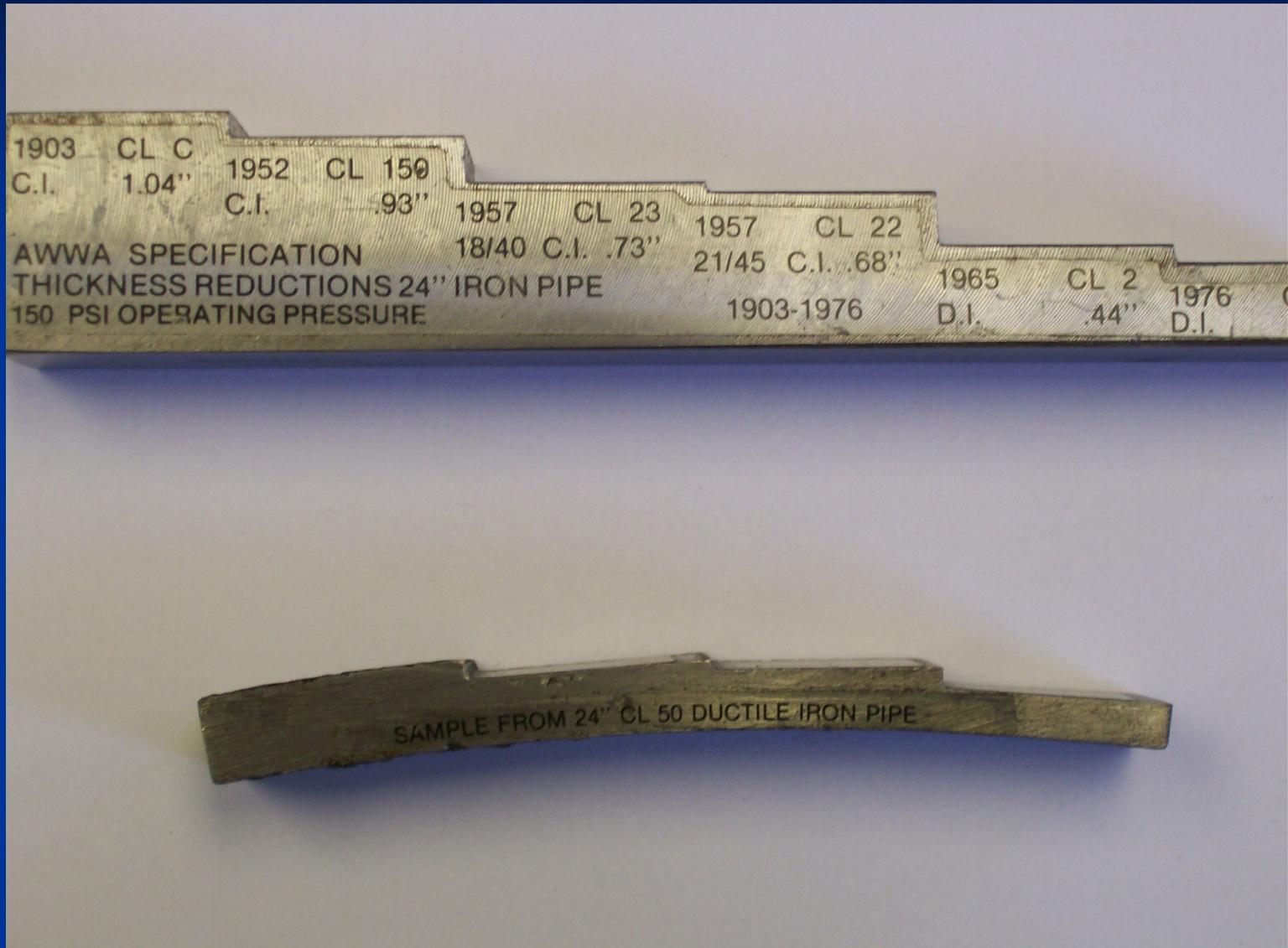
Corrosion

- Ductile iron, steel and concrete pipe
- Polyethylene encasement is key on DI
- Maintain integrity of PE during installation, tapping and repairs
- Evaluation of soils and cathodic protection of metallic pipe becoming more prevalent
- Retrofitting of cathodic protection systems

Ductile Iron Pipe, Valves & Fittings



Cast Iron vs Ductile Iron Thickness



Ductile Iron Pipe, Valves & Fittings



Damage to poly-wrap



Major Repairs

| Location | Pipe Size | Age | Cost | Cause of Failure | Description |
|-------------------------------------|-----------|-----------------------|---------------------------|--|--|
| 63 rd & Pine Lake Road | 24" | 1998 10 years | \$49,000 Contractor | Corrosion failure due to damage of polywrap when | Pipe had to be removed from casing in the bottom of a creek crossing requiring the use of a private contractor. While the repair did not result in an interruption of water service, having the water supply interrupted for a large fire |
| 84 th and Cuthills Drive | 24" | 1982 26 years | \$36,000 Contractor | Watering project | Service interruption require one lane in this area did not result in an out of service could have seriously affected water supply in southeast Lincoln during hot weather, high demand or a large fire event |
| 12 th and Q Street | 12" | 1994 14 years | \$7,400 Contractor | Corrosion of 3" water service fittings and settlement of tap valve due to inadequate blocking. | The water service to 1217 Q Street failed causing extensive damage to Q Street and interruption of water service to several dining establishments and a large telemarketing firm. Businesses that had been previously interrupted prior to water main being replaced in 1994 were again disrupted in 2008. |
| 611 North 27th Street | 8" | 2004 5 years | \$7,500 (est.) City | Three failures have occurred on this water main since construction in 2004. Two services have broken and a fitting has leaked. | The first service failed within the warranty period and the contractor fixed it under protest. The more recent failures have been fixed by private contractor and the LWS crews. Service to shopping mall was disrupted on several occasions. |
| 86 th and Pioneers | 16" | 2002 6year | Unknown \$0 - \$50,000 | LWS crews discovered that polywrap was missing around a pipe joint when installing a valve. | The extent of other defects is currently unknown on this project but the condition that was observed may be an indicator of more problems. Unwrapped joints will cause corrosion to occur rapidly in these areas. Failures could begin occurring with 20 years. Same contractor also constructed a 24" pipe in 84 th Street which could have the same defects. Investigative and corrective actions could be very expensive if City elects to pursue. |
| 14 th & Garfield | 6" | 2005 4 years | \$10,000 City | Fitting was improperly blocked and caused a service | Contractor was fined for this occurrence on this failure. Service |
| 98 th & Holdrege | 16" | 2007 2 years | No cost | Fitting | |
| NW 34 th and West Luke | 8" | 2009 | No Cost | New | |
| NW12th & West Alvo Rd | 30" | N/A | \$16,000 | The workmanship, however having a higher level of inspection may have prevented this event. A plug fitting was disturbed by a contractor causing a very large leak, pressure loss and less than desirable fire protection for approximately 3 weeks. | The failure was caused by a contractor working too close to a large fitting which was not anticipated in the area of construction. This is an example of where additional field inspection oversight may have prevented the incident. |
| Total Approx Range of Cost | | \$125,000 - \$175,000 | | | |

Average Age = 8.5 Years

Repair Costs = \$125,000 +

Examples



Examples



Examples



Examples



Examples



Water Main Construction Checklist