

# Northeast Gas Association

Transmission Integrity Committee

Presentation to PHMSA

Chicago, IL July 15-16, 2008

# Questions Posed to Members

The Transmission Integrity Working Group surveyed the members of the committee with a series of questions related to the assessment and inspection of cased carrier pipe.

- A member company of the NGA that represents a large area of the Association territory reports that there are 487 casings in their franchise that will require assessment under the current rules.
- Based on a median cost to only excavate the casing ends of \$11,250, that utility would spend \$10,957,500. This estimate does not include additional safety measures or permits that may be required.

# NGA Member Survey

## Casing Costs

NGA Company Survey	Failure Due to External Corrosion within Waxed-Filled Casing	Cost of Excavating Casing End	Cost of Replacing Carrier Pipe	Cost of Removing the Casing to Inspect Carrier Pipe	Cost of Inspecting Casings
Summary	No	\$2,500-\$150,000	\$100,000-\$500,000	Often not an option to open cut-20 to 60K(if allowed)	\$10,000-\$600,000

Note: Member companies are reporting that accessing some casings may be extremely difficult and costly due to the expansion of roadways that place the casing and carrier pipe under highway pavement.

Casings require special regulatory consideration for the following reasons:

Casings are not readily assessable using the four regulatory options currently available. (In-line inspection, hydro-test, direct assessment, and other technologies)

- \* Most are non-piggable
- \* Taking lines out of service to hydro-test is often not feasible (due to supply issues and the introduction of water into the line)
- \* ECDA of cased piping requires additional considerations per NACE RP0502 and the development of an “acceptable” engineering procedure. The original regulations did not specifically consider assessment issues regarding cased pipe.
- \* Casings were implemented as a safety enhancement device to dissipate external loads from the carrier pipe and often were vented further away from the crossing itself to reduce the consequence of failure.

- NGA research has found that Guided Wave is not applicable for all cased pipe. One issue in particular is that GWUT tests on certain conditions and coatings experience signal attenuation issues which result in not being able to complete the assessment.
- More flexible compliance solutions are being explored including risk analysis, prevention and mitigation measures, and threat removal.
- Member companies of the Northeast Gas Association are participants in the development of risk model software to assess the cased carrier pipe.
- Research to date finds that cased pipe has a lower risk factor than uncased pipe, is less subject to damage by third party excavation, and has been found to be within acceptable standards.

# In-Line Inspection Casing Statistics

- External metal loss in cased segments:
- # Casings Inspected **376**
- # Casings With Metal Loss **30** → **8%**

Note: No anomalies found would have ruptured during a hydro-test yielding a 10 year re-assessment interval.

# Cased Carrier Assessment

- SME –History/Engineering Evaluation
- Run Risk Model for Casings (NGA)
- Risk Rank Casings (Low, Susceptible, At Risk)
- Take Pipe to Soil Potentials-Casing & Carrier Pipe  
For Low Ranked Casings;
- Visually Examine End Seal(s)
- Clean carrier pipe (if necessary)
- Fill the casing with Wax



- One method utilized to prevent corrosion on coated carrier pipes is to fill the casings with dielectric wax.
- Wax filled casings are sealed and eliminate the threat of atmospheric or external corrosion on the carrier pipe.
- Pipe to soil readings confirm that the carrier pipe is protected.



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GM#10  
DA DIG #14  
SLEEVE #4  
10/8, 10/9/07  
I/O MERRICK AVE., FRONT ST.

<b>Network Infrastructure Inc.</b>					
<b>Misc Excavation Contract LI</b>					
<b>Merrick Ave and N. Entry to Eisenhower Park Drainage Sleeve Pit</b>					
<b>Item</b>	<b>Description</b>	<b>UOM</b>	<b>Qty</b>	<b>Price</b>	<b>Amount</b>
ME010	Machine and Hand Dig 0 - 25 yd	Cu Yd		\$173.85	\$ -
ME015	Machine and Hand Dig >25 yd	Cu Yd		\$133.00	\$ -
ME020	Hand Dig Only 0-25 yd	Cu Yd		\$245.10	\$ -
ME025	Hand Dig Only >25 yd	Cu Yd	61.93	\$200.45	\$ 12,413.87
ME030	Machine Dig Only 0-25 yd	Cu Yd		\$151.05	\$ -
ME035	Machine Dig Only >25 yd	Cu Yd		\$114.95	\$ -
ME040	Penetrations up to and including 1 sq ft	Ea	2	\$61.75	\$ 123.50
ME045	Penetrations > 1 sq ft and up to and incl. 2 sq ft	Ea	2	\$123.50	\$ 247.00
ME050	Penetrations > 2 sq ft	Ea	3	\$237.50	\$ 712.50
ME055	Vacuum Truck with Crew	Ea	2.5	\$1,662.50	\$ 4,156.25
ME060	Test Holes (A) in Dirt/Grass/Sod	Cu Yd		\$86.45	\$ -
ME065	Test Holes (B) in Asphalt (up to & incl 6")	Cu Yd		\$111.15	\$ -
ME070	Test Holes (S) In Asphalt (>6") and A/C upto 8"	Cu Yd		\$114.95	\$ -
ME075	Test Holes (T) In A/C (>8")	Cu Yd		\$118.75	\$ -
ME080	Test Holes (U) In non rein. Conc. Any Depth	Cu Yd		\$111.15	\$ -
ME085	Test Holes (V) In reinforced conc (>6")	Cu Yd		\$122.55	\$ -
ME090	Permanent Restoration (B)	Sq Yd		\$44.89	\$ -
ME095	Permanent Restoration (S)	Sq Yd		\$71.82	\$ -
ME100	Permanent Restoration (T)	Sq Yd	50.00	\$80.80	\$ 4,040.00
ME105	Permanent Restoration (U)	Sq Yd		\$49.38	\$ -
ME110	Permanent Restoration (V)	Sq Yd		\$107.73	\$ -
AA550	Clean Sand Backfill	Cu Yd	54	\$25.65	\$ 1,385.10
ME115	Clean Fill	Cu Yd		\$11.88	\$ -
MI005	Furnish Deliver install Plates	LF	19	\$23.75	\$ 451.25
ME120	Jersey Barrier	LF		\$95.00	\$ -
AA547	Hay Bales	Ea		\$23.75	\$ -
AA548	Silt Fence	LF		\$1.90	\$ -
T&M	Time and Material	LS	26599	\$ 1.00	\$ 26,599.00
				<b>Total</b>	<b>\$ 50,128.47</b>

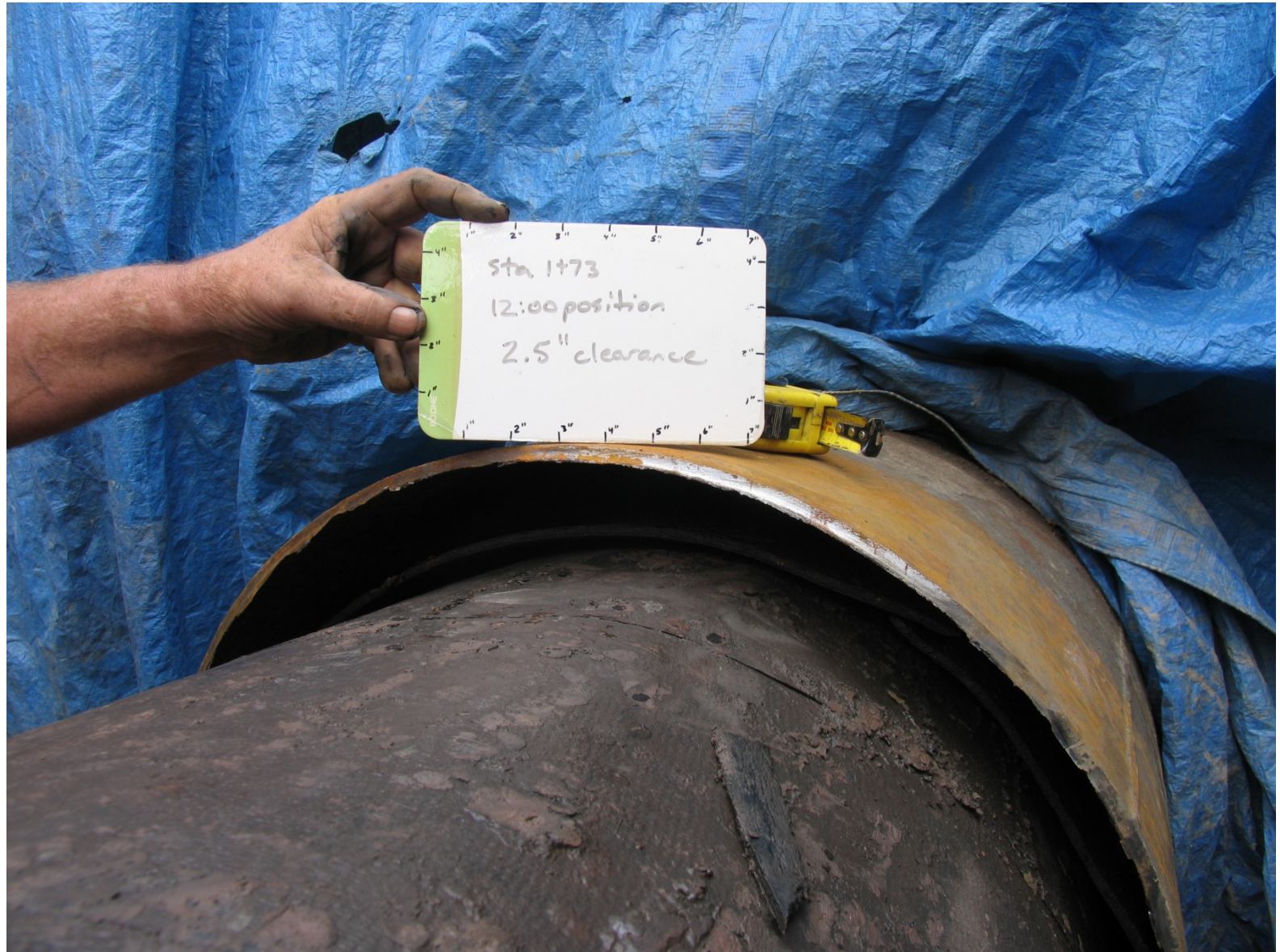
**24" carrier pipe in 30" casing**  
**Depth of Cover – 9' Depth to excavation bottom– 14'**  
**Final excavation – 40' width X 30' length**  
**Location – New York State, rural**  
**Company – Rochester Gas and Electric**



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# 30" Casing & 24" Carrier Pipe Company – Rochester Gas and Electric



**26" Casing & 22.5" Carrier Pipe  
Company – Rochester Gas and Electric**





# Central Hudson Gas & Electric Corporation

164 miles of Gas Transmission Pipeline (Range 565 – 750 psig)

- 16.4 miles of High Consequence Areas (10% Total Mileage)
- Casings are bare steel pipes running under Railroad tracks/Roadways
- Average length of a casing is 100 ft. (Range from 6ft to 609ft)
- 28 casings in HCA's (3% IMP Mileage); 102 casings in non-HCAs
- Many filled with wax subsequent to installation
- Casings in HCA's were installed between 1949 and 1993



## Road Casing Parallel To RR Company – Central Hudson Gas & Electric



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**1957-10.75" Coal Tar Coated Carrier  
14" Casing (13.25" ID)  
Company – Central Hudson Gas and Electric**





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