

**NORTH AMERICAN DISTRICT  
ENERGY SYSTEMS  
DESIGNED AND CONSTRUCTED TO  
EUROPEAN STANDARDS**

# AGENDA

- 1. North American Project**– Guelph, Ontario, Canada
- 2. ASME & EN** – Quick Comparison
- 3. “What’s your point!?”**
- 4. Current North American Project** – Sheridan College, Ontario, Canada
- 5. Summary**
- 6. Questions?**

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# NORTH AMERICAN PROJECTS





# PIPE INSTALLATION



# ETS INSTALLATION



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# PIPING INSTALLATION BEST OF BOTH CONTINENTS ASME vs. EN STANDARDS

Temp = < 100°C (212°F)

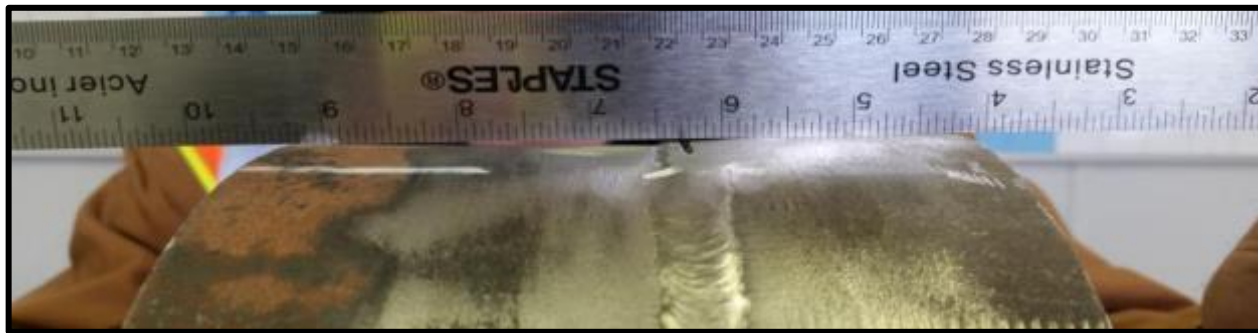
Pres. = < 10 bar (145 PSI)

Regulation: ASME B31.1 – Power Piping

- X-Ray not required
- Alignment to be within 2mm
- Hydrostatic pressure test to be 1.5 times the design pressure, held for 10 minutes, then reduced to design for leak test

Standard: EN 13941 – Design and installation of preinsulated bonded pipe systems for district heating

- X-Ray required on 10% of welds
- Alignment to be within 1mm
- Pressure test is not required, but weld leak tightness test of all welds is







# REGULATIONS AND STANDARDS *IMPACT* *QUALITY*



ASME B36.10	Welded and Seamless Wrought Pipe	EN 10216	Seamless Steel Pipe
ASTEM A53	Steel Pipe	EN 10217	Welded Steel Pipe
ASTEM A106	Seamless Steel Pipe		
ASTM ???	Pre-Insulated Bonded Piping	EN 253	District Heating Pipes
		EN 448	District Heating Fittings
		EN 488	District Heating Valves
		EN 489	District Heating Joints
ASME B31.1	Power Piping	EN 13941	Design and Installation of District Heating Pipes
		EN 14419	Surveillance Systems

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# WHY ISN'T EVERYONE DOING DE?



- Cost and Risk
- Typical repayment time on investment is 10-20+ years
- Initial cost and risk is capital investment
- Secondary cost and risk is operation costs



# WHAT DOES ALL THIS HAVE TO DO WITH STANDARDS?



Project class <b>A</b>	<ul style="list-style-type: none"><li>— Small and medium diameter pipes with low axial stresses</li><li>— pipes with low risk of personal damage or damage to the surroundings</li><li>— pipes with low risk of economic losses</li></ul>
Project class <b>B</b>	<ul style="list-style-type: none"><li>— High axial stresses, small and medium diameter pipes</li></ul>
Project class <b>C</b>	<ul style="list-style-type: none"><li>— Large diameters pipes and/or high pressures</li><li>— pipes with higher risk of personal damage or damage to the surroundings</li><li>— special or complex constructions</li></ul>



# PREINSULATED PIPING ADVANTAGES

- Bending flexibility – easier installation around bends which reduces installation costs
- Insulation – retains heat/energy which reduces operating costs
- Leak alarm system – detects and locates leaks which reduces operating costs
  - For both heating and cooling pipes



## QUALITY CONTROL

**Supplement A**

**RAMBOLL**

Date: 20-04-2016

## Pipe Control Plan

Civil Control

Task	What is Controlled	Extent / Requirements	Documentation	Method	Send to Inspection /	Control
<b>Before start</b>						
Welding procedure WPS	Welding procedure					
Welding certificates	Welders					
Joint certificates	Joint casing					
QA program	Quality					
<b>Material control</b>						
District heating pipes Joint etc.	All used material					
Main- and disposal-valves etc.	All used material					
<b>Process control</b>						
Welds	Visual control					
Welds	Leak test					
Welds	X-ray Control					
Joints	Visual control					
Pipe Cleaning	Purty					
Alarm Wires	Electrical Connection					
<b>Final control</b>						
Surveillance system	Per section/are Entire installation					

**Supplement B**

**RAMBOLL**

Date: 20-04-2016

No.	Subject of control	Reference	Control method	Time and frequency of control
<b>Before start</b>				
1	Digging permits			
2	Line information			
3	Sign and traffic planning			
4	Original conditions insd & documentation			
5	Education / Occupation Health and Safety			
6	Work Schedule			
7	Proposal for QA - foldes			
<b>Material control</b>				
10	Gravel quality			
12	Hot mix asphalt			
13	Other materials			
<b>Process control</b>				
14	Offshak			


**Supplement C**


**RAMBOLL**

Date: 20-04-2016

No.	Subject of control	Reference	Control method	Time and frequency of control
<b>Before start</b>				
1	Digging permits			
2	Line information			
3	Sign and traffic planning			
4	Original conditions insd & documentation			
5	Education / Occupation Health and Safety			
6	Work Schedule			
7	Proposal for QA - foldes			
<b>Material control</b>				
10	Gravel quality			
12	Hot mix asphalt			
13	Other materials			
<b>Process control</b>				
14	Offshak			

[illegible]

<div style="text-align: right;">  </div>	
Leak Tightness Test	QA doc. no.:

Project name:			
Project number:			
Pipeline system:			
Pipeline section:	Installing Joint Casing	QA doc. no.:	
Reference to drawing:	Project name:	Date:	
Testing liquid:	Project number:		

[illegible]

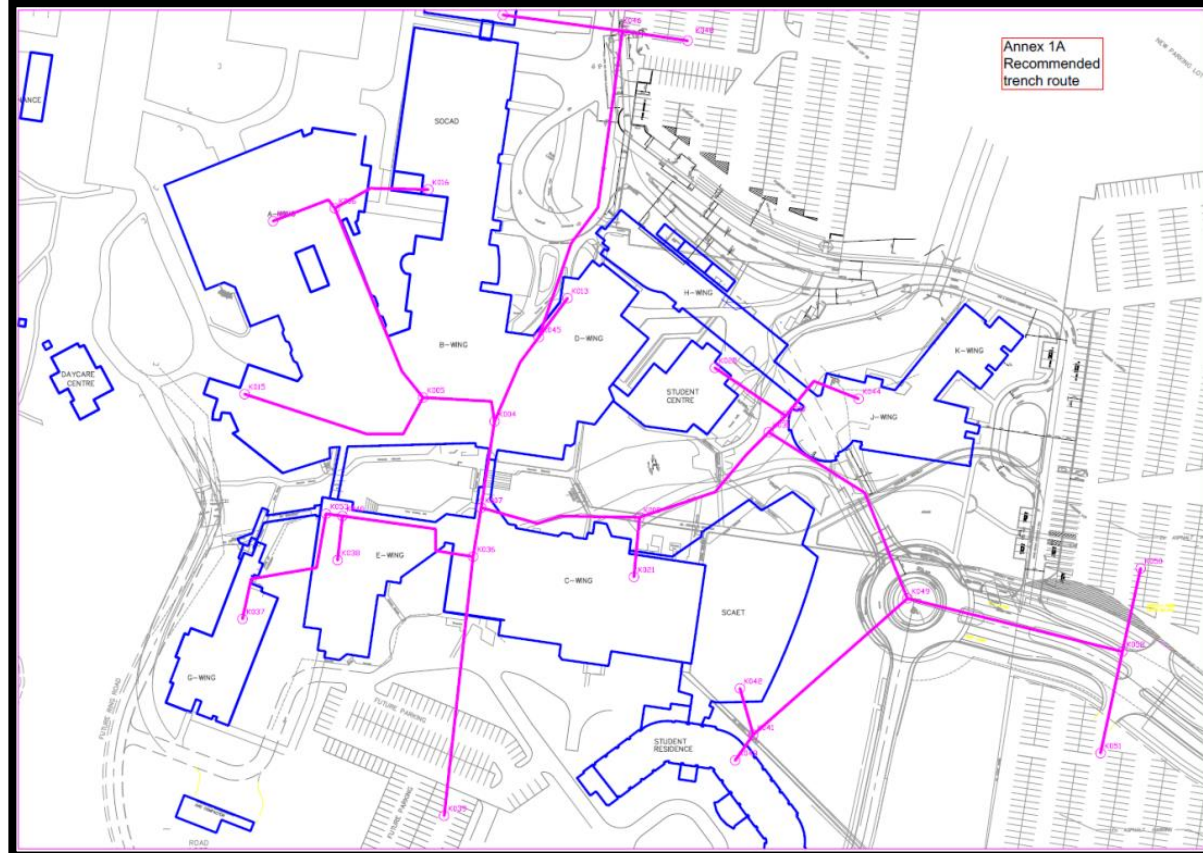
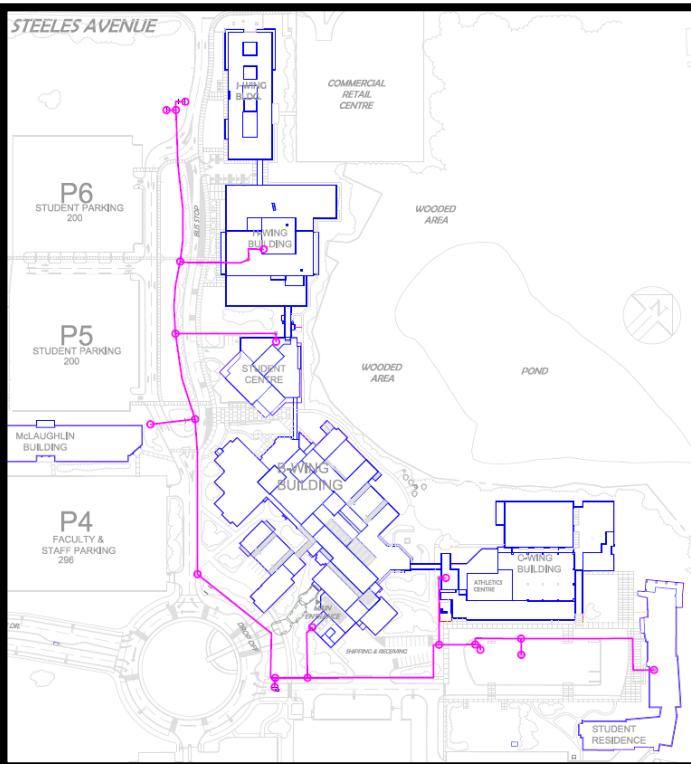
Notes:	Joint no.	Time:	Start		End		
		Cleaning section:					
			Hydro jetting	Cleaning-pig / foam balls	Cleaning with high pressure air	Manual cleaning	Other method
			Cleaning-pig type:				
		Pipe section:					Notes:
Leak tightness test		Comments:					
Signature (Contractor)							
Date:							
	Signature (Fitter):						
	Date:						
VI-LT scheme)		Pipe Cleaning approval: <input type="checkbox"/> No <input type="checkbox"/> Yes					
		Signature (Contractor responsible):		Signature (Owner supervision):			
		Date:		Date:			



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# NEXT NORTH AMERICAN PROJECTS





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# STRETCH EVERY DOLLAR INVESTED

- “See further by standing on the shoulders of giants”. Isaac Newton
- “Learn from the mistakes of others. You can’t live long enough to make them all yourself.” Eleanor Roosevelt

# THANK YOU

# QUESTIONS?

**JOHRA@ramboll.com**

**READ MORE ON OUR WEBSITE:  
[WWW.RAMBOLL.COM/ENERGY](http://WWW.RAMBOLL.COM/ENERGY)**

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