



PIPELINES 2019 CONFERENCE

Nashville, TN | July 21 – 24

**Certa-Lok[®]: a restrained joint pipe
system for trenchless applications**

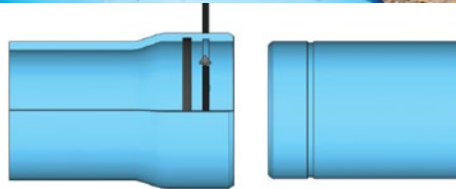
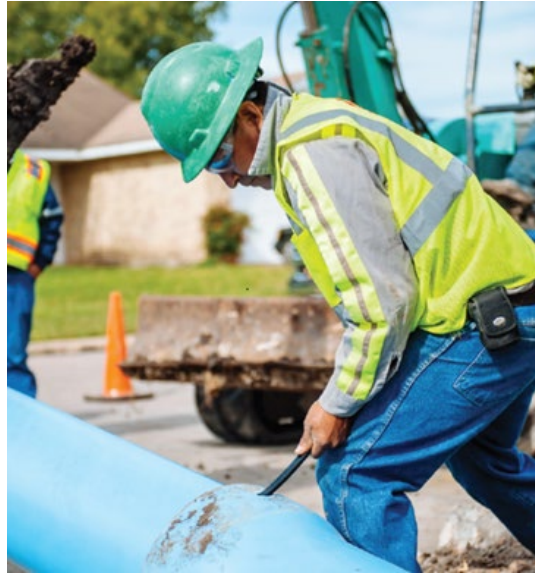
Rowena Patenaude, Regional Sales Engineer



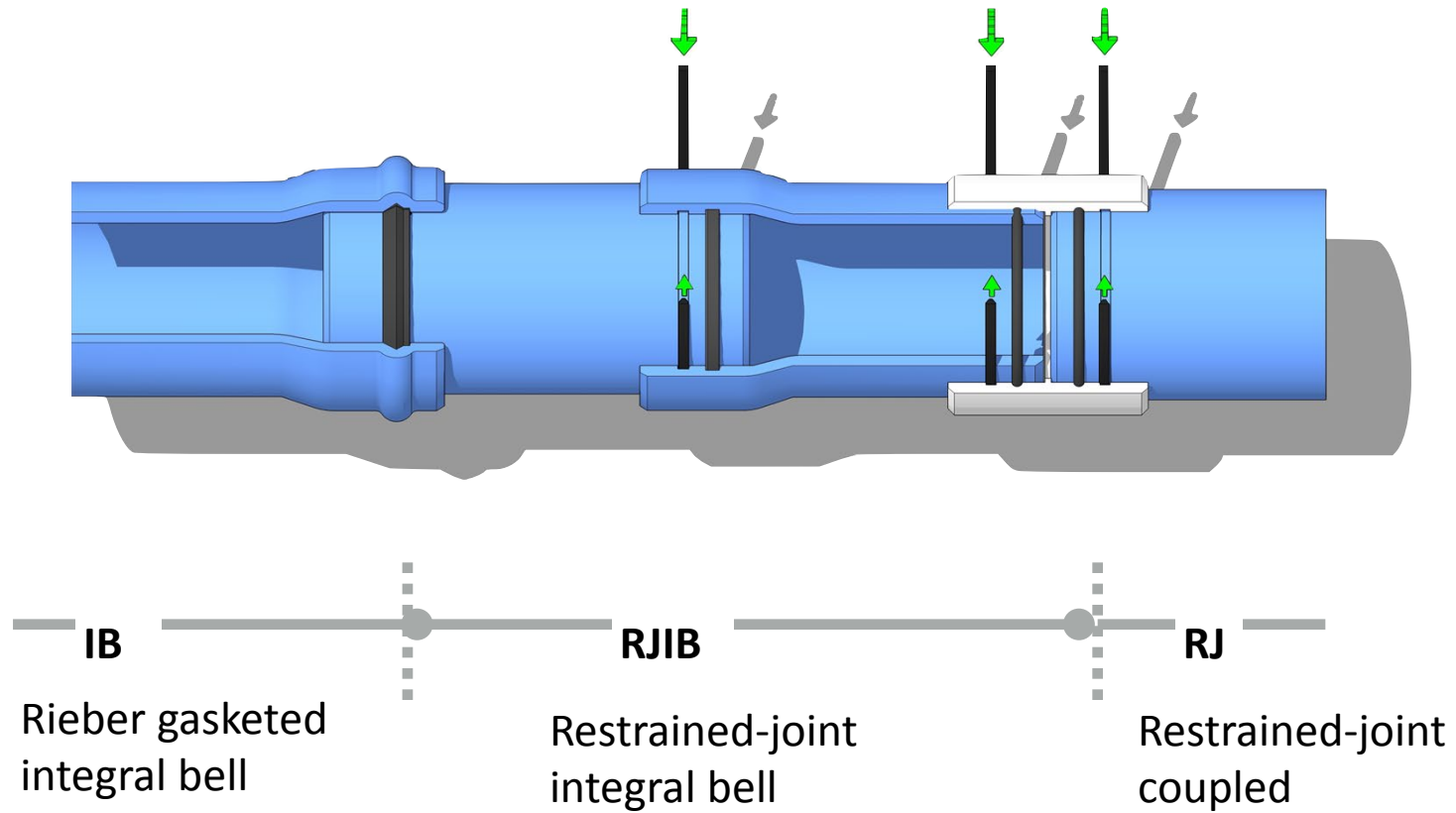
Pipeline Engineering – Concepts in Harmony



Certa-Lok[®] restrained joint system



Photos courtesy of NAPCO Pipe & Fittings, ©NAPCO 2019



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Certa-Lok[®] History

1970's: Certa-Lok[®] Yelomine[®] adopted in the mining industry as the first non-metallic, corrosion free restrained joint product.

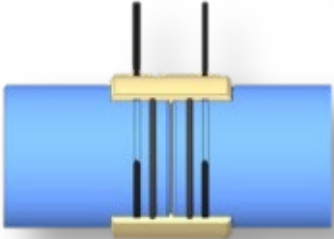
1980's: C900 RJ system introduced in municipal water and sewer markets.

1990's: Technology expands, Certa-Lok[®] agriculture mainline and the Certa-Set[®] row crop irrigation system introduced.

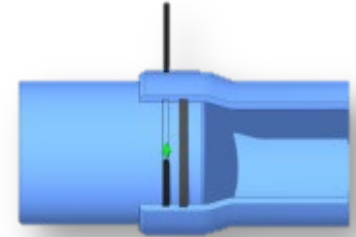
2000's: Introduction of the RJIB system as an option.

2010's: Certa-Flo[®] introduced for sewer systems. Horizontal Directional Drilling (HDD) and Static Pipe Bursting applications for sewer system repair projects, as well as new construction.

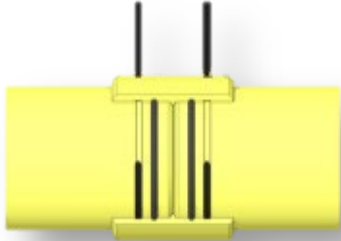
Certa-Lok® C900 RJ and RJIB



- Trenchless or open-cut installations
- Pipe-bursting, HDD, casing applications
- Potable water, sewer, force main, reclaim



Certa-Lok® Yelomine® Restrained Joint PVC Pressure Pipe



In addition to the applications mentioned above:

- High-impact, UV resistant pressure pipe suitable for above grade
- Temporary bypass installations

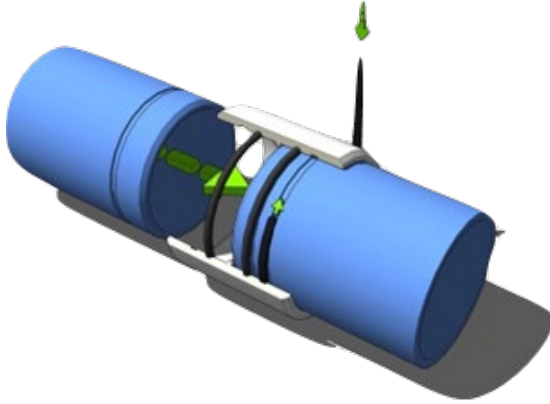
Photos courtesy of NAPCO Pipe & Fittings, ©NAPCO 2019

Yelomine[®] RJ / RJIB Temporary Bypass Pipe



Photos courtesy of NAPCO Pipe & Fittings, ©NAPCO 2019

Certa-Lok[®] RJ coupled system



Non-metallic restraint joint

Sizes 4" through 24"

Trenchless or open-cut

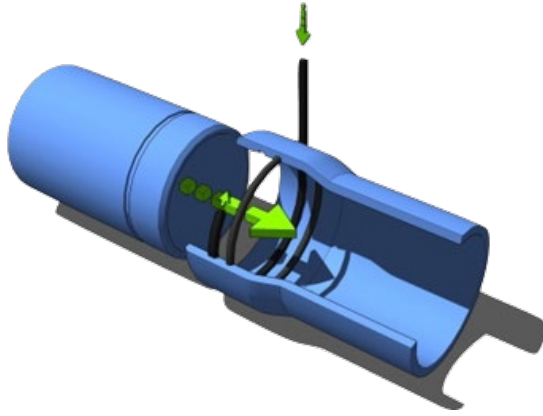
O-ring gasket

Max deflection 1° per joint

JOINT PERFORMANCE DATA				
Nom. Size	DR	Pressure Class (psi)	Min. Bend Radius (ft)	Max. Pull Force (lb/ft)
4"	18	235	100	7,800
	14	305		9,800
6"	18	235	144	16,000
	14	305		18,900
8"	18	235	188	23,100
	14	305		24,300
10"	18	235	232	40,500
	14	305		48,700
12"	18	235	275	50,500
	14	305		53,800
14"	25	165	319	52,500
	21	200		57,000
	18	235		61,500
16"	25	165	363	68,500
	21	200		68,500
	18	235		68,500
	14	305		68,500
18"	25	165	406	97,000
	21	200		105,000
	18	235		113,000
20"	25	165	450	107,500
	21	200		112,500
	18	235		117,500
24"	25	165	538	120,000
	21	200		132,500
	18	235		145,000

Photos courtesy of NAPCO Pipe & Fittings, ©NAPCO 2019

Certa-Lok® RJIB



Non-metallic restraint joint

Sizes 6" through 12"

Trenchless or open-cut

Fluid-Tite® gasket

Max deflection 0.5° per joint

JOINT PERFORMANCE DATA				
Nom. Size	DR	Pressure Class (psi)	Min. Bend Radius (ft)	Max. Pull Force (lbf)
6"	18	235	144	20,100
	14	305		22,300
8"	18	235	188	27,500
	14	305		31,000
10"	18	235	232	49,500
	14	305		52,600
12"	18	235	275	60,000
	14	305		60,000

Photos courtesy of NAPCO Pipe & Fittings, ©NAPCO 2019

Testing

Certa-Lok® joints are designed to several industry standard testing procedures: ASTM D1598, ASTM D1599 and ASTM D3139.

Maximum allowable pull force

RJ/RJIB joint assemblies are tensile tested as shown.

Max allowable pull force (lbf) determined by tensile testing to failure.

Actual force at failure is at least 2.0 times greater than the allowable maximum pull force, unless otherwise noted.



Photos courtesy of NAPCO Pipe & Fittings, ©NAPCO 2019

Applications

- Horizontal Directional Drilling
- Static Pipe Bursting
- Carrier pipe through casings

Certa-Lok® has a smaller OD compared to conventional bell & spigot with mechanical restraints.



Photos courtesy of NAPCO Pipe & Fittings, ©NAPCO 2019

Product Installation



Clean, lubricate &
assemble joint



Insert spline



Pullback continues

Photos courtesy of NAPCO Pipe & Fittings, ©NAPCO 2019

Product Installation Video

[Watch the video](#)



Case Study- Brownwood, TX

“Static Pipe Bursting with Restrained-Joint PVC Pipe is Ideal for Sewer Main Replacements”

- Crews completed 14 projects in a six-month span, nearly a mile (4,692 feet) of clay sewer main replacement.
- The process dramatically reduced disruption in neighborhoods and business areas.
- Quick assembly, small construction footprint.

Project goals:

- Increase capacity (allowed for upsizing the main by two pipe sizes)
- Address grade issues

Conclusion:

- Installation of segmented restrained joint PVC found to be a faster, safer, less disruptive, and more cost-effective method than open cut.

Conclusion

Both the restrained joint coupled (RJ) and the restrained joint integral bell (RJIB) systems have been successfully used in trenchless applications.

- Certa-Lok[®] joints are internally restrained
- Pipe can be pushed or pulled (designed not to over-bell)
- During HDD, this restraint system allows for quick and easy assembly without interrupting the pulling process
- Completely non-metallic; eliminates the risk of corrosion
- Segmented pipe allows for smaller staging area

Thank you!