

# Snap-Pipes

Re-Imagining Undergrounding  
Helping Mitigate Climate Risk  
Reducing Time and Cost of Undergrounding



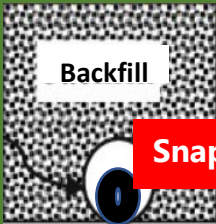
# 1. Re-Imagining Undergrounding

## Process Simplification

**Snap-Pipes**



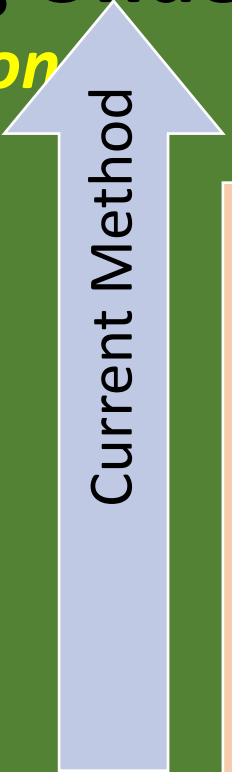
- All Terrain**
- Asphalt
- Concrete
- Rock
- Clay
- Loam
- Sand
- Marsh
- Forest
- Woods
- Water
- Snow
- Ice



**Snap-Pipe**

**Snap-Pipes**

**Paid from Construction Savings**



## Escalating Costs

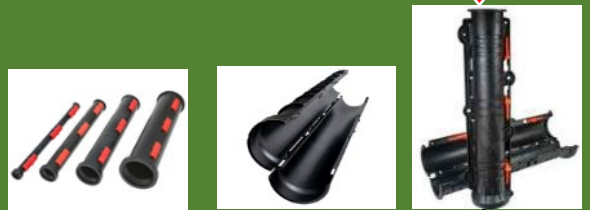
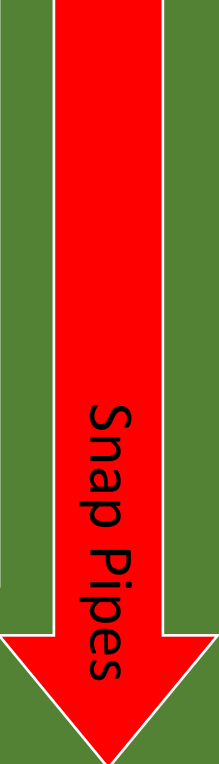
- Individual Project Planning
- Individual Project Engineering
- Construction Standards
- Construction Management:
  - Trench Fill Materials
  - Heavy Equipment
  - Scheduling Skilled Labour
  - Long Lead Time
- Complex Inventory Management

**Centralized Effort**

- ~~Individual Project Planning~~
- ~~Individual Project Engineering~~
- New Construction Standards**
- Construction Management:
  - ~~Trench Fill Materials~~
  - ~~Heavy Equipment~~
  - Plentiful Non-Skilled Labour**
  - ~~Long Lead Time~~
- Simple Inventory Management**

**Field Empowerment**

## Declining Costs



# 2. Re-Imagining Undergrounding

## Improving Efficiency & Effectiveness in cabling

### Snap-Pipes



- All Terrain**
- Asphalt
  - Concrete
  - Rock
  - Clay
  - Loam
  - Sand
  - Marsh
  - Forest
  - Woods
  - Water
  - Snow
  - Ice

- All Weather  
All Terrain**
- Single Solution
  - Less Inventory
  - Land + Water
  - Global Use

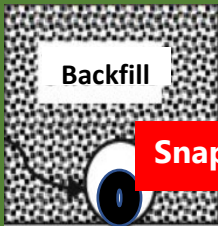
- No Heavy Machinery**
- Rental Savings
  - Fuel Savings
  - Job flexibility
  - Use Hand tools

- Env. Benefits  
(CO2 tons/mile)**
- Snap-Pipes->2.8
  - Machines-> +++
  - Fuel-> ++++
  - Vegetation-> ++

- Little or No Excavation**
- Surface Run
  - Shallow Trench
  - Time Saving
  - Labour Saving

- Eliminate "Fill" Materials**
- Sand
  - Flagstone/Brick Cover

- Other Savings**
- No Vegetation Management
  - Un-armoured Cable



Snap-Pipe



**Snap-Pipes** Paid from Construction Savings

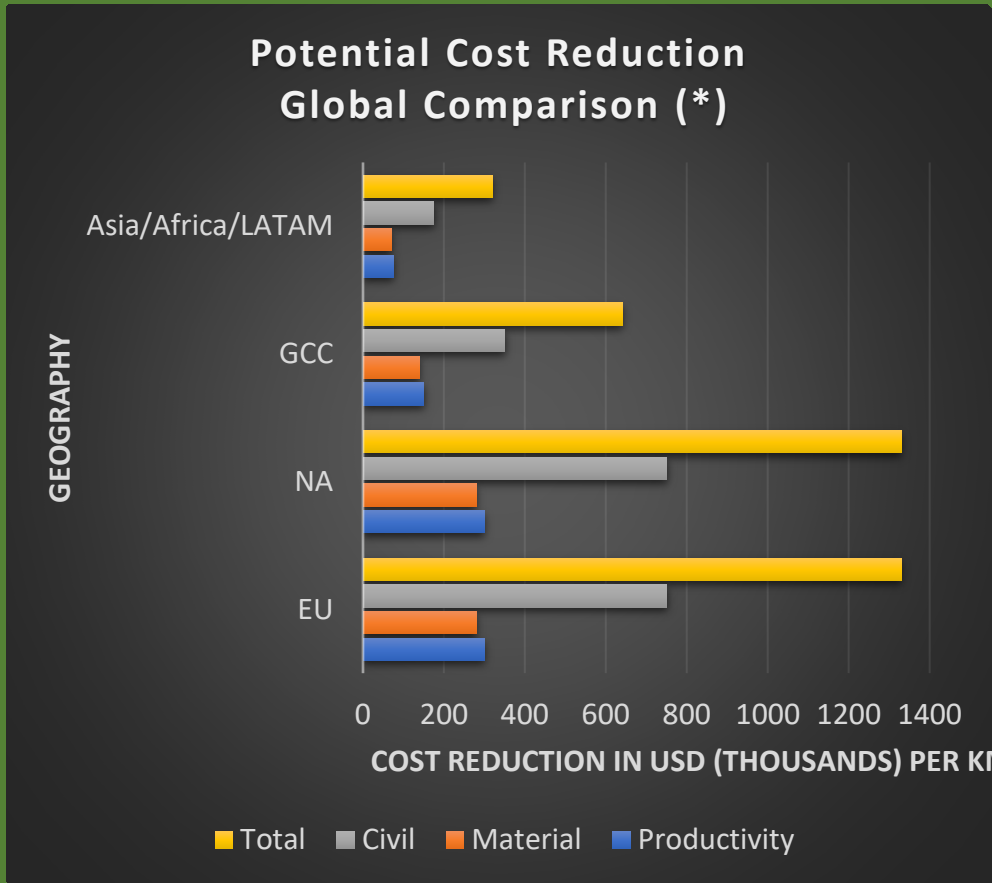




# 3. Re-Imagining Cost Reduction

**Snap-Pipes**

## Drastic Reduction in Civil Construction & Trenching Costs

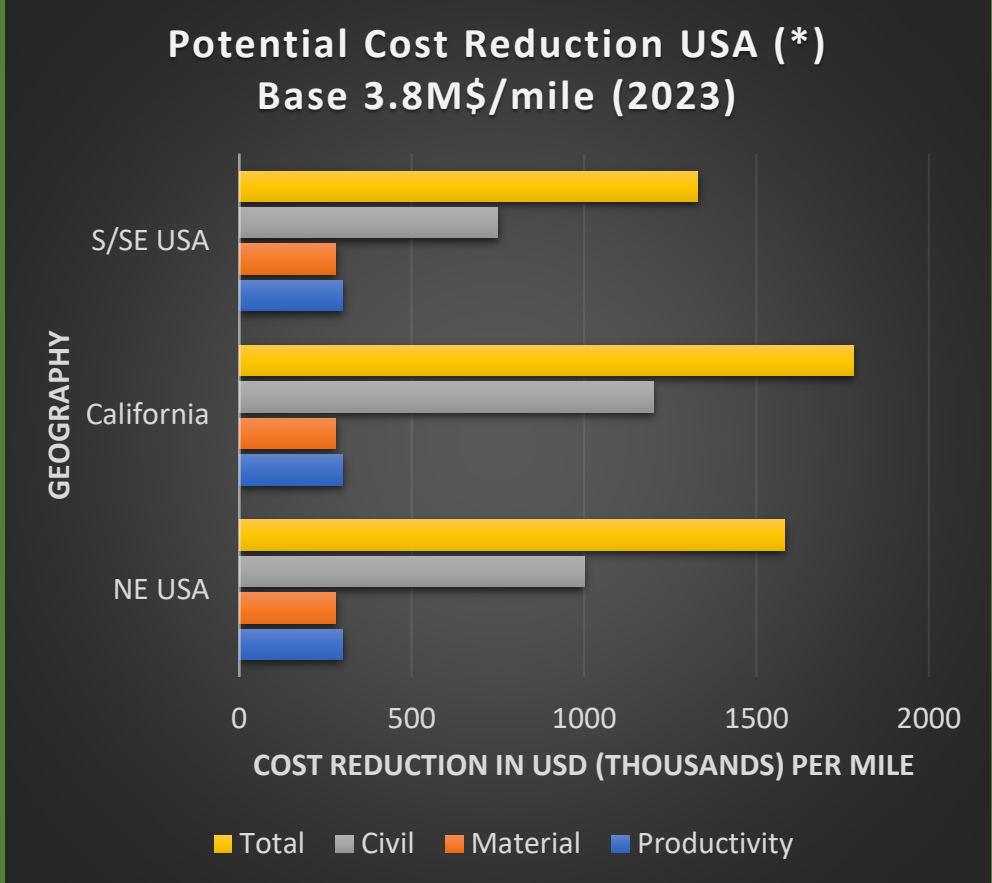


**Savings**

- Planning
- Material
- Process
- Labour
- Equipment
- Time

**Other Savings**

- No Vegetation Management
- Easy cable repair - open at fault location only

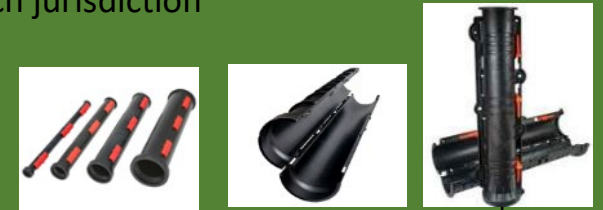


(\*) individual project cost reduction will depend on material and labour costs in each jurisdiction

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**Snap-Pipes** Paid from Construction Savings



# Snap-Pipes

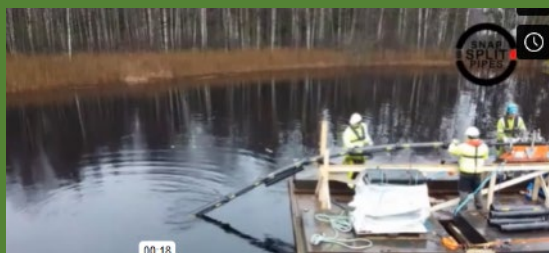
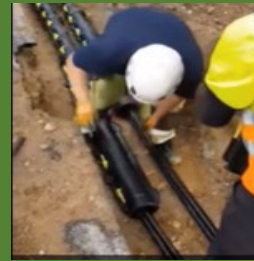
All-terrain - Single Solution

- **Flexible Split Pipe Interlocking System:**

- Recycled (PP-EPDM) Automotive Plastic (~2.8 t CO<sub>2</sub>-eq/mile)
- Ambient -40 to +55 ° C (-40° F to 135° F)
- UV & Impact Resistant
- Collar Flex 22/15/7 degrees (x-y-z planes)
- **Same Tests as Other Underground Electrical Pipes (EN 61386-24)**
- **Fire Resistance Coating available upon request**

- **Single System – Multiple Installation:**

- HV / MV / LV Cables (1C and 3C)
- Open only select fault location sections – Rest undisturbed
- **All-Topology - Above-Grade, Shallow Below-Grade; Underwater**
- **All Soils – Rocky, Clay, Sand. Forest, Marsh, Snow, Permafrost**
- **No Power Tools, Simple & Fast Operation**



Click View Button OR Click "Trust Document" in PDF to activate video



Cable Protection System | Biosirus Inc.



Cable Protection System | Biosirus Inc.



Cable Protection System | Biosirus Inc.

# Best Value

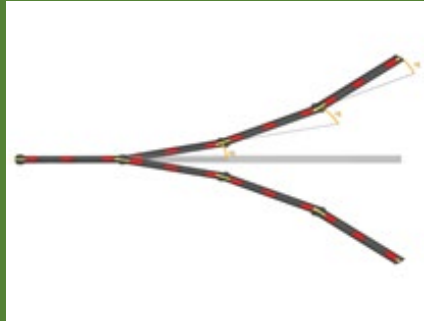


- High Fuel Costs
- Remote Distances
- Expensive Rentals
- Easy Scheduling

- Trade Special Labour
- High Labour Rates
- Project Delays
- Low Productivity

- Few Sizes
- All Terrain Application
- Outdoor/Site Storage

- Forest, Thicket
- Rock, Clay, Sand
- No Shoring
- Water Bodies





# North America Installations: Partner/Third Party

**Snap-Pipes**



**Canada**



**Manitoba Hydro**

- Little Grand Rapids, Family Lake, Manitoba
- 0.5 km (1640 ft) – Lake Crossing/Onshore



**Hydro One**

- Bancroft Lake Area. Ontario
- 1.2 km (0.75 miles); multiple shorelines



Channel/Service Partners



# EU & Asia Installations: Partner & Third Party



## Sweden



### Wind Farms

- Aland (4.4 Km), Blakliden, Fäbodberget
- Stigshöjden – Above ground (4.4 Km)



### Urban

- Tingsryd Town (just 0.35 m under asphalt)
- Above ground temporary construction cables (1.6 Km)



### Above Ground

- Archipelago, Stockholm (0.8 Km)
- Lustån, Dalarna county - alongside railway tracks (2.3 Km)
- Jönköping – alongside railway tracks (700 m)



### Sub-Sea / River / Under Water

- "Möcklö-Senoren" island, archipelago Karlskrona (850 m)
- "Alsterån" River Crossing, Kalmar County (50 m)
- Snäckö, east coast archipelago (1.65 Km)



### Railway

- Above ground along railway tracks



## Belgium



### Floating Solar

- Port Oostende



## France



### Nuclear Plant

- Above Ground - Temporary Cable (2.5 Km)



## Australia



### Railways - Above Ground

- Perth Area – along railway tracks
- 5.5 km



## Asia





# Wide Product Range



Ring Stiffness	Compression	Impact Test	Heat & UV Resistance	Material Evaluation
ISO 9969-2016	EN 61386-24	EN 61386-24	ISO 4892-3/527	ISO 14044
✓	✓	✓	✓	✓

Outer Dia.	Inner Dia.	Length(s)	Joint Angle	Weight
110 mm 4.33 in	102 mm 4.02 in	1200 mm 47.2 in	22.5 deg	1.7 Kg 3.75 lb
120 mm 4.73 in	110 mm 4.33 in	1200 mm 47.2 in	22.5 deg	2.7 Kg 5.95 lb
160 mm 6.3 in	150 mm 5.91 in	1200 mm 47.2 in	22.5 deg	3.1 Kg 6.83 lb

Outer Dia.	Inner Dia.	Length(s)	Joint Angle	Weight
60 mm 2.36 in	50 mm 1.97 in	1000 mm 39.4 in	15 deg	1.2 Kg 2.65 lb
110 mm 4.73 in	99 mm 3.89 in	1000 mm 39.4 in	15 deg	2.7 Kg 5.95 lb
160 mm 6.3 in	144 mm 5.67 in	1000 mm 39.4 in	15 deg	4.3 Kg 9.48 lb

220 mm 8.66 in	200 mm 7.87 in	1000 mm 39.4 in	15 deg	8.0 Kg 17.64 lb
110 mm 4.73 in	99 mm 3.89 in	220 mm 8.66 in	Straight Adaptor	0.3 Kg 0.66 lb
160 mm 6.3 in	144 mm 6.67 in	240 mm 9.45 in	Straight Adaptor	0.8 Kg 1.76 lb
110 mm 4.73 in	94 mm 3.7 in	1000 mm 39.4 in	15 deg	3.4 Kg 7.5 lb



Uni-Weights  
(Marine/Shore)

Pipe Nom. Dia.	Length	Weight	Tie Down	
76 mm 3 in	890 mm 36 in	10-12+ kg 22-27+ lb.	2 straps	
101 mm 4 in	890 mm 36 in	18-20+ kg 40-45+ lb.	2 straps	

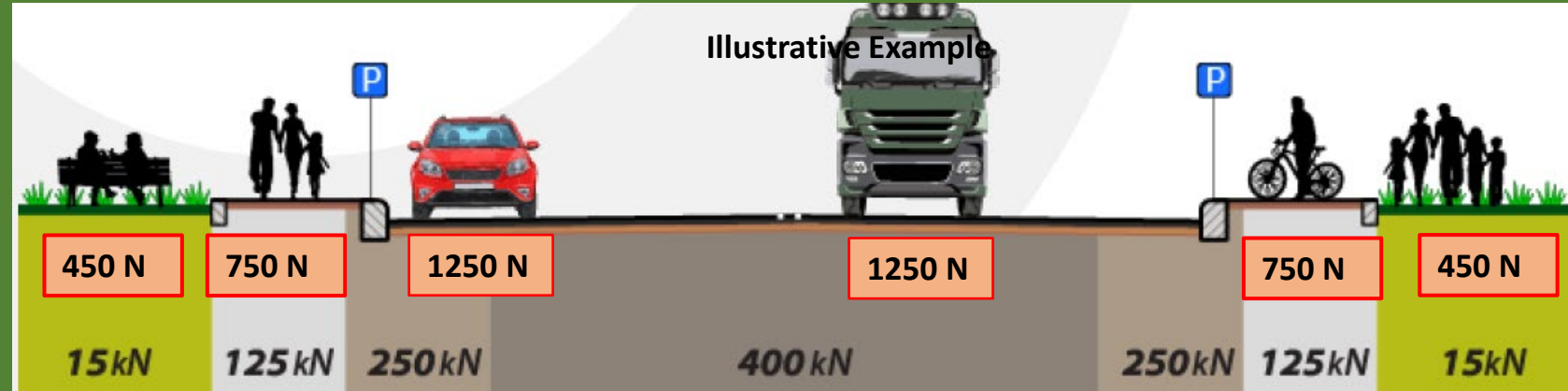
Outer Dia.	Inner Dia.	Length(s)	Joint Angle	Weight
70 mm 2.36 in	50 mm 1.97 in	300 mm 11.8 in	7 deg	1.0 Kg 2.20 lb
70 mm 2.36 in	50 mm 1.97 in	1000 mm 39.4 in	7 deg	3.4 Kg 7.5 lb
110 mm 4.73 in	90 mm 3.54 in	300 mm 11.8 in	7 deg	1.7 Kg 3.75 lb
110 mm 4.73 in	90 mm 3.54 in	1000 mm 39.4 in	7 deg	4.7 Kg 10.36 lb
160 mm 6.3 in	140 mm 5.51 in	300 mm 11.8 in	7 deg	2.1 Kg 4.63 lb
160 mm 6.3 in	140 mm 5.51 in	1000 mm 39.4 in	7 deg	6.0 Kg 13.23 lb



# Typical Application Notes

**Notes:**

- Generic guidelines per EN 61386 (5% limit)
  - Compression Strength Class: 450/ 750/ 1250
  - Impact Resistance: N
  - Deeper depths for higher loads, larger pipe dia.
- National Codes may differ
- Results may differ for non-typical loading



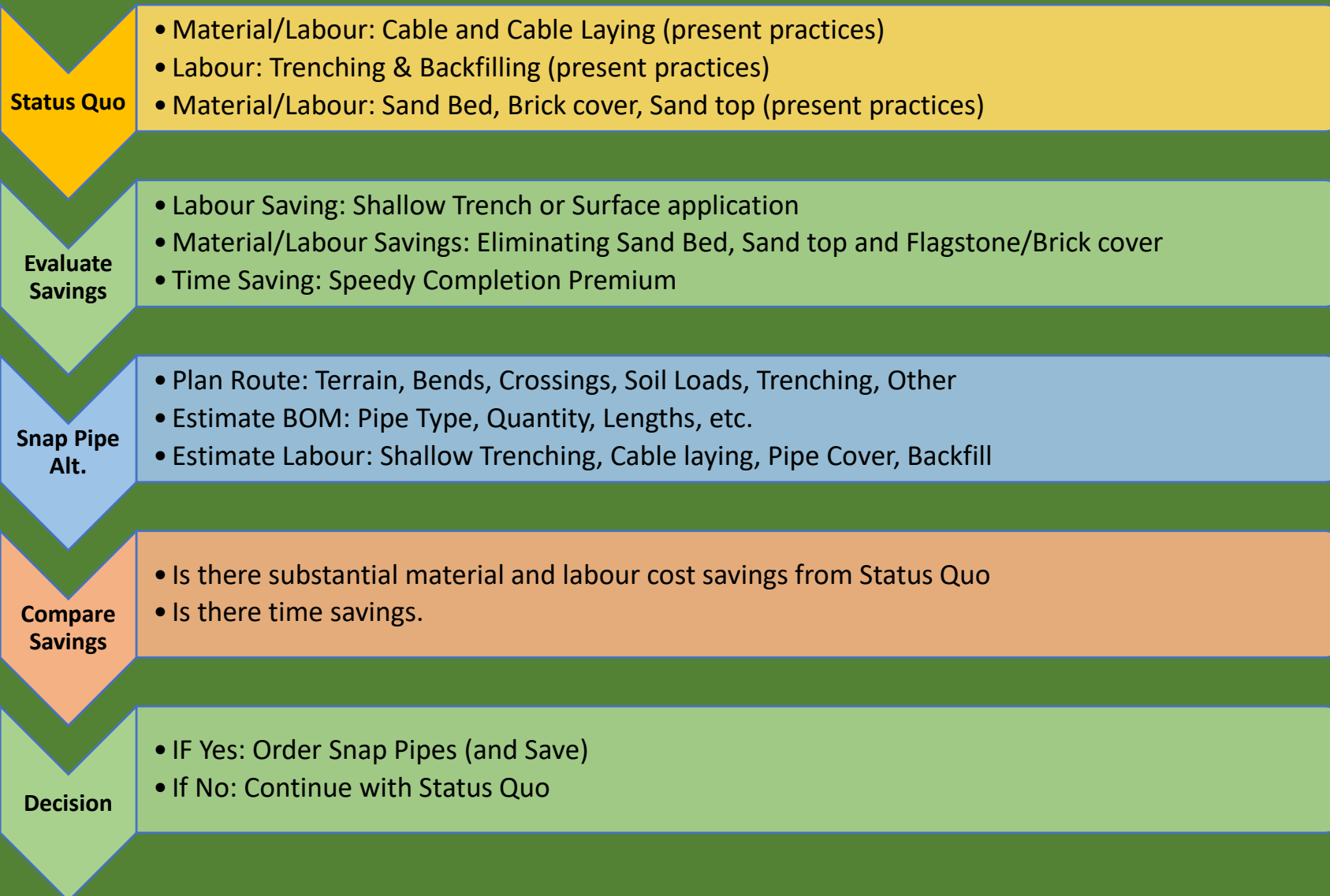
EN 61386-24: Load should not cause internal pipe diameter deformation by more than 5% (limit)  
10

Quicklock (Class 450 N) [Good]				
(Depth per EN: 61386-24)				
Outer Dia.	15 kN	125 kN	250 kN	400 kN
110 mm 4.33 in	0.3 m 11.8 in	0.5 m 19.7 in	0.7 m 27.6 in	0.8 m 31.5 in
120 mm 4.73 in	0.3 m 11.8 in	0.5 m 19.7 in	0.7 m 27.6 in	0.8 m 31.5 in
160 mm 6.3 in	0.3 m 11.8 in	0.6 m 23.6 in	0.7 m 27.6 in	0.8 m 31.5 in

Hardlock (Class 750 N) [Better]				
(Depth per EN: 61386-24)				
Outer Dia.	15 kN	125 kN	250 kN	400 kN
60 mm 2.36 in	0.3 m 11.8 in	0.4 m 15.7 in	0.5 m 19.7 in	0.5 m 19.7 in
110 mm 4.73 in	0.3 m 11.8 in	0.5 m 19.7 in	0.6 m 23.6 in	0.7 m 27.6 in
160 mm 6.3 in	0.3 m 11.8 in	0.5 m 19.7 in	0.6 m 23.6 in	0.7 m 27.6 in
220 mm 8.66 in	0.3 m 11.8 in	0.5 m 19.7 in	0.7 m 27.6 in	0.8 m 31.5 in

Panzar (Class 1250 N) [Best]				
(Depth per EN: 61386-24)				
Outer Dia.	15 kN	125 kN	250 kN	400 kN
70 mm 4.73 in	0.3 m 11.8 in	0.3 m 11.8 in	0.5 m 19.7 in	0.5 m 19.7 in
110 mm 4.73 in	0.3 m 11.8 in	0.4 m 15.7 in	0.5 m 19.7 in	0.6 m 23.6 in
160 mm 6.3 in	0.3 m 11.8 in	0.4 m 15.7 in	0.6 m 23.6 in	0.6 m 23.6 in

# Solution Steps





# In Closing:

Commercialized Technology - Simple – Fast – Less Expensive

*Climate Change Mitigation at a lower cost*

### Next Steps:

- **Client Meeting:**
  - Product Samples/Demo
  - Standardize Needs
- **Short Term: 100 miles**
  - Forest/Thickets (surface run)
  - Hilly Terrain (surface run)
  - Rural (shallow-trench)
  - Water Crossing (submarine)
- **Long Term: Partnership**
  - Achieve: 1,000 miles/year
  - Bulk PO → Periodic Release
  - Work with contractors
  - Establish local inventory

### Spec. Highlights

4", 5", 6"  
Sch.40 (4 mm wall)  
22° Collar Flex

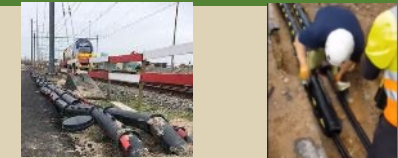
2", 4", 5", 6", 8"  
Sch.40 (5 mm wall)  
15° Collar Flex

2", 4", 6"  
Sch.80 (10 mm wall)  
7° Collar Flex

### Above-Grade

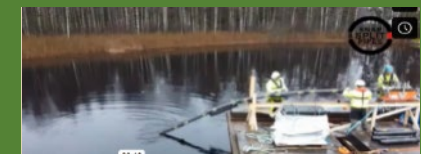
Limited Use

### Shallow Below-Grade



### Water-Crossing

Not Recommended





# Thank You

**Reducing Time and Cost of Undergrounding  
(Surface / Below Grade / Underwater)**

## Biosirus Inc.

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