



THE **UNDERGROUND** UTILITIES EVENT

Underground Construction Technology | Jan. 29-31, 2019 | Fort Worth, TX

Large-Diameter CIPP: Veritable Golden Goose at Top of the Beanstalk

Grace Sober – LAN

Philip Wheat – LAN



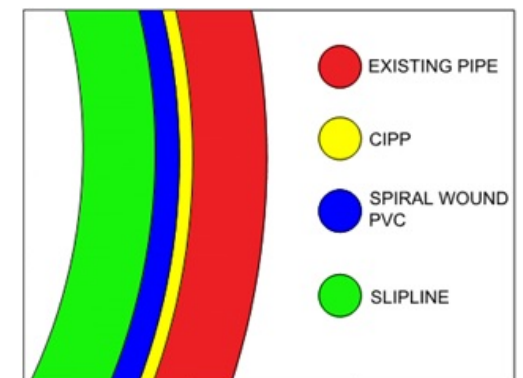
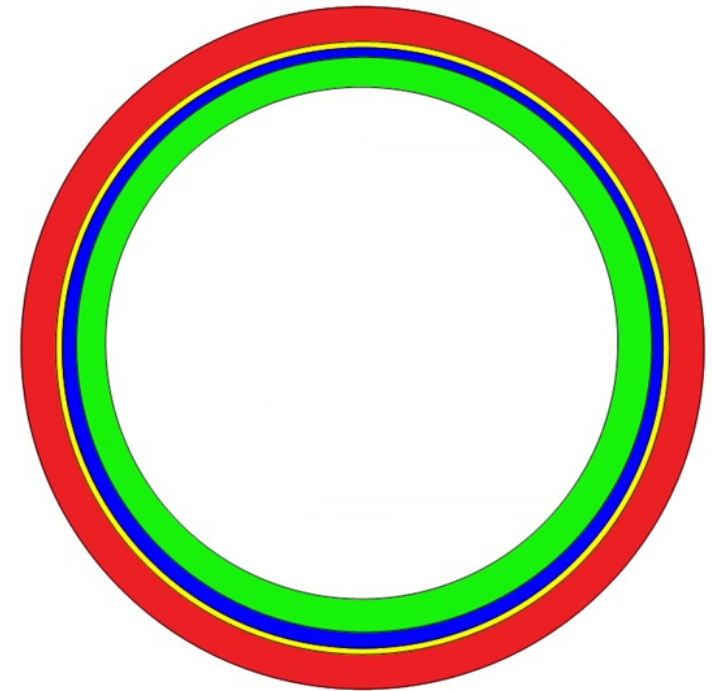
- **CONGESTED CORRIDORS**
- COST COMPARISON TO OPEN CUT
- CONSTRUCTION TIMELINE

WHY REHAB?

WHY NOT REHAB?

- CAPACITY LOSS
- SPECIALIZED CONTRACTORS

	CAPACITY (MGD)	REDUCTION (%)
Existing Pipe	12.7	N/A
CIPP	12.1	5
Spiral Wound	10.9	14
Slipline	8.3	35





TYPES OF REHAB

- CURED-IN-PLACE PIPE (CIPP)
- SLIPLINING
 - STANDARD
 - STRETCHED
 - FOLDED
- SPRAYED-IN-PLACE PIPE
- SPRAY-ON LINERS
- SPIRAL WOUND PVC AND HDPE

PRIMARY
CONSIDERATIONS

CAPACITY LOSS

BYPASS REQUIREMENTS

SURFACE IMPACTS

CONSTRUCTION TIMELINE

CONDITION OF THE HOST PIPE

COST

REHAB COMPARISONS

		CAPACITY LOSS	BYPASS	SURFACE IMPACT	CONSTRUCTION TIMELINE	CONDITION	COST
	CIPP	Green	Red	Yellow	Yellow	Yellow	Red
	SLIPLINE	Red	Green	Red	Green	Green	Green
	SIPP	Yellow	Red	Green	Green	Red	Red
	SPRAY ON	Green	Red	Green	Green	Red	Yellow
	SPIRAL WOUND	Yellow	Yellow	Green	Green	Yellow	Red



BYPASS DESIGN

- **STAGING**
- PIPELINE CORRIDOR
- FLOWRATE - WET WEATHER
- CHECKLIST
- TESTING
- DECONSTRUCTION OF BYPASS PIPING



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- TESTING
- **DECONSTRUCTION OF BYPASS PIPING**



CIPP REHAB DESIGN

- **CLEANING**
 - PIPELINE ACCESS
 - INSERTION PHASING
 - LINER THICKNESS
- **INVERSION HEAD**
 - MANHOLE REHAB



ACCESS AND STAKEHOLDER IMPACTS

- **ACCESS - VEHICULAR**
- **ODOR CONTROL**
- NOISE
- PIPELINE MONITORING PERSONNEL
- TRAFFIC CONTROL – MANHOLES IN ROADWAYS



RISK MITIGATION

- **FLOODPLAIN –
CONSTRUCTION
TIMELINE VS.
WEATHER
PATTERN**

- ACCESS EASEMENT
ACQUISITION
- BYPASS CHECKLIST
- PUBLIC COORDINATION



LARGE DIAMETER REHAB CHALLENGES

- LIMITED INVERSION LENGTHS
- TRUCKING WEIGHT
- OVER THE HOLE INSTALL
- FLOWRATES/BYPASS RISK
- **ACCESS TO CLEAN WATER**

BEANSTALKS: OPTIONS TO DESCEND LARGE VEGETATION

- LADDER
- ROPE
- JUMP

QUESTIONS?