Anatomy of a Successful Pressure Sewer Project

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Overview

Objective – Provide insights to enhance your pressure sewer experience

1. Review pressure sewer basics
2. Discuss "level of service" and owner expectations
3. Evaluate the elements of a successful pressure sewer project in each phase of the project:
   a. Design
   b. Construction
   c. Maintenance/Servicing

What is a Pressure Sewer System?

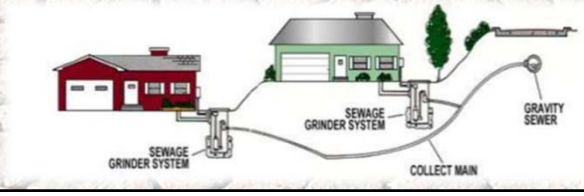
- Wastewater collection systems that use individual grinder pumps to convey the flow to a central treatment system, lift station, gravity sewer, or force main
- First used in the early 1970s, they now provide service to over 1 million end-users
- System consists of:
  - Grinder pump
  - Small diameter pressure pipe

Prototype Grinder Pump

Early Development

Gained popularity due to the ability to provide central sewer service to areas where gravity sewer couldn't be installed or the installation was cost prohibitive, such as:

- High ground water
- Waterfront communities
- Rural areas
- Flat terrain
- Undulating terrain
- Rocky ground conditions

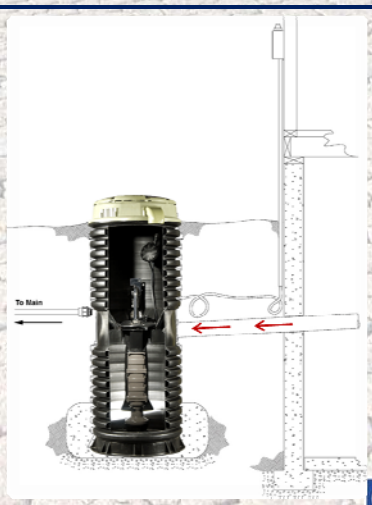


Wider Acceptance

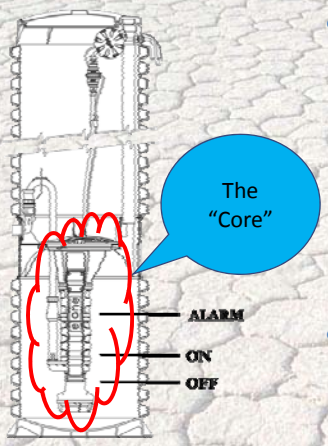
- After 46 years, it is a proven technology
- Experience and demonstrated advantages have expanded the use of pressure sewers
- Competitive alternative to conventional gravity sewer
  - Lower capital cost
  - Flexibility / Construction phasing
  - Abbreviated construction schedule
  - Reduced environmental/social costs
  - Marginal Land

The Basics

- A grinder pump station is located in the yard or basement of each property
- Sewage flows into the station from the building's service lateral



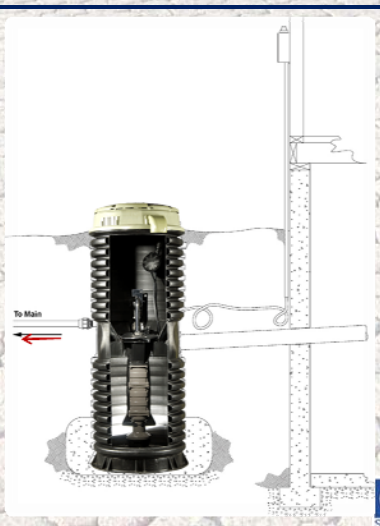
The Basics



- Pump is activated when the sewage in the tank reaches a predetermined "on" level and runs until it reaches the "off" level
- Run time is short, power consumption is low

The Basics

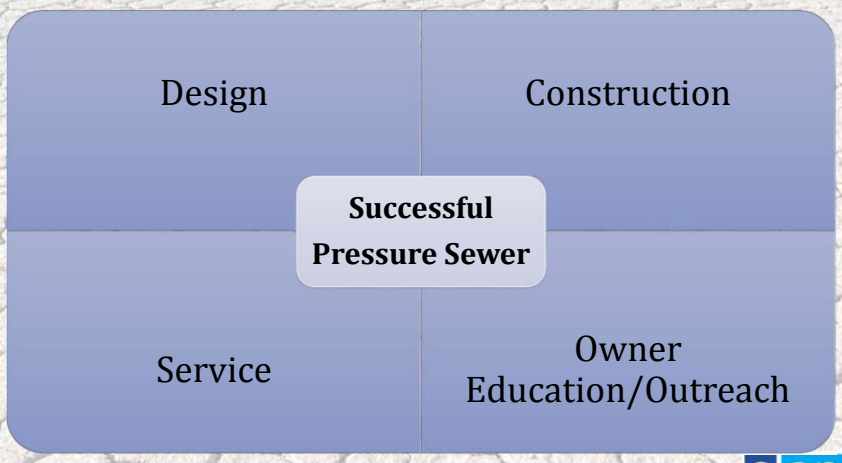
- The pump grinds solids in the wastewater into small particles and discharges it to the sewer main
- Pressure sewer main is a small diameter flexible pipe that can follow the topography



Level of Service

- Two types of projects – New development & septic abandonment
- Utility Perspective
- Serve your "Customer"
- Manage Expectations
- Expect to be Involved

Project Components



Design for Success

Design

- Scouring velocities
- Air control
- Life cycle cost
- Cost of ownership

- Centrifugal or PD?
- Pump Downhill?
- Preventive Maintenance?
- Installation Cost?
- Operating Cost?
- Electrical Service Needs?
- Premise Isolation (valving)?

Design Best Practices

- Experienced Designer
- Application Modeling
- Educate Homeowners
  - Stakeholder Meetings
  - Mailers/Website
  - Site Visits
- Educate Utilities
  - Be Prepared
  - Bring in Experts

Construct for Success

- Traditional Gravity Sewer:
  - Large, deep trenches
  - Road closings and detours
  - Expensive dewatering
  - Utility replacement
  - Costly restoration
- Pressure sewer eliminates these construction headaches, lowering cost and expediting the schedule.

Construction

Construct for Success

- Traditional Gravity Sewer:
  - High social and environmental costs for established areas
  - Large, upfront cost for developers
- Pressure sewer systems offer phasing and flexibility

Construct Best Practices

- Best Practices
  - Construction Quality
  - Inspection
  - Commissioning
- Education Element

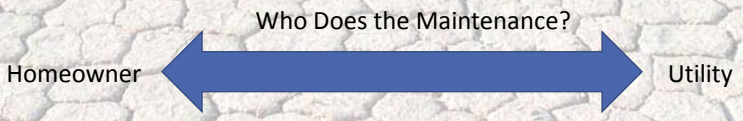
Service for Success

- Appliance model
- Trained and certified
- Customer-service oriented
- A paradigm shift!

Service

Service for Success

- How much maintenance is required?
- Who assumes the cost of repairs?
- How often are repairs needed?
- What kind of track record does the manufacturer have?



Service Metrics

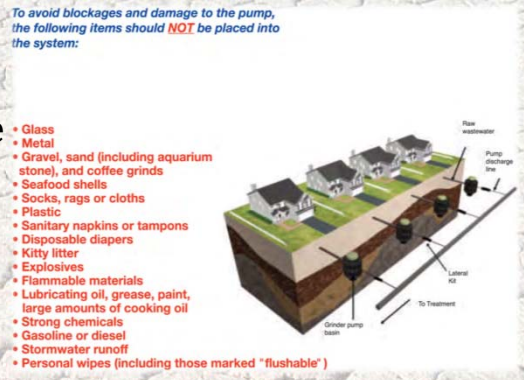
$$MTBSC = \frac{\sum(pump * months\ of\ operation)}{cumulative\ service\ calls * 12\ months/year}$$

Not all service calls result in Repairs

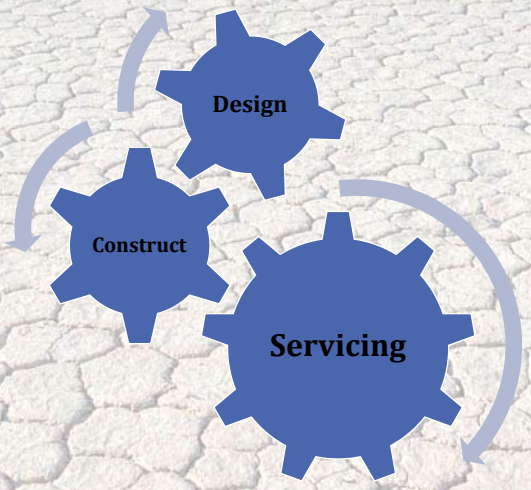
Project	Duration of Service	# Pumps	MTBSC	Annual Maintenance Cost
Jerusalem, NY	10 Years	274	19 years	$37/year
Fairfield Bay, AR	30 Years	600	11 years	$20/year
Beach Drive, WA	7 Years	350	22 years	$23/year
Chelmsford, MA	12 Years	500	13 years	$49/year

Educate for Success

- Homeowners do not understand sewer systems
- Utilities or service providers must engage the customer to reduce calls and costs



Summary



Thank You

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