



EL544

Design of Buried High Density Polyethylene (HDPE) Piping Systems

Module 1

- Introduction and Objectives
- Course Outline and Overview
- Background
 - Piping Design to ASME BPVC
 - ASME SWG for Polyethylene Pipe
 - Relationship of Code Case N-755 to ASME BPVC
 - Scope of Code Case N-755
 - EPRI HDPE Testing Program
 - EPRI Report 1013549
 - Relationship of EPRI Report to Code Case

Module 2

- Basis of development of allowable design stress
- Strain Limits
- Elastic modulus and flexural modulus
- Coefficient of thermal expansion
- Poisson's ratio
- Bending fatigue of polyethylene piping
- Buried HDPE Pipe Design Requirements
 - Design Loads and Failure Modes
 - Mechanical Properties
- Overview of Code Case N-755

Module 3

- Buried HDPE Pipe Design Requirements
 - Demand Definition
 - Capacity Evaluation

Module 4:

- Buried HDPE Piping Analysis Methods
- Manual Methods
- Computer Methods
- Soil Spring Calculations

Module 5: Soil Spring Example

- Integrated Piping Design Methods
 - Above Ground Piping Model
 - Buried Steel Piping Model
 - Buried HDPE Piping Model
 - Steel Pipe -HDPE Interface Model
 - Soil - Above Ground Pipe Interface Model
 - Analysis
 - Deadweight
 - Thermal
 - Seismic
 - Combination Results
 - Piping Design/Analysis
 - Pipe Support Design/Analysis

Module 6

- Example problems (exercises)
- Solutions to example problems (exercises)
- Final Exam