

*DIPRA and NYSWWA/NEWWA present:*

## MAKING THE MOST OF YOUR DUCTILE IRON PIPE

**Time:** NYAWWA - Tuesday, August 20, 2024; 8:00am – 3:30pm  
NEWWA - Thursday, August 22, 2024; 8:00am – 3:30pm

**Contact Hours:** 6.0 Water (technical) and 6.0 Wastewater (technical)/ 6.0 PE

**Presenters:** **Paul H. Hanson, P.E.; DIPRA RE Director**  
10271 Normandy Ct., Fishers, IN 46040: 205-790-6704

**Allen H. Cox, P.E.; DIPRA RE Director**  
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**Janine Alexander, P.E.: DIPRA Sr. Regional Engineer**  
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**Workshop:** **Making the Most of Your Ductile Iron Pipe**

**Agenda:**

### Manufacture, Features and Design of Ductile Iron Pipe

- What is DIPRA?
- Manufacturing process using recycled materials, including quality controls and testing
- Differences and similarities of DI and Cast iron
- Features of DI pipe including cement mortar lining, joints and gaskets, fittings, etc.
- Wall thickness design per AWWA C150 and shallow cover and deep bury
- Thickness concerns of direct tapping and external corrosion are briefly reviewed

Ductile Iron Pipe Installation – Basics and details of installation of ductile iron pipe. Safety is Job One!

- Inspection, unloading and handling
- Pipe and fitting ID markings
- Cement mortar lining inspection and field repair
- Trench preparation
- Pipe laying conditions – trench types
- Joint installations
- Cutting pipe and fitting installation
- Backfilling
- Fire hydrant installation
- Flushing, pressure testing and disinfection
- Clean up and as-builts

## Corrosion Control for Ductile Iron Pipe –Part 1

- Define corrosion – generic and electro-chemical
- Elements required and factors that effect the rate of corrosion: Ohm's law
- Examples of dry cell battery, how it occurs on pipe
- What environments are corrosive and how is this determined? Soil evaluation
- DIPRA/CIPRA research since 1928 on corrosion of iron pipe\
- Latest advancement in polyethylene encasement – Vbio™
- Theory and practice of protection with polyethylene encasement: construction considerations
- Cost and effectiveness over 55 years in the field

## Corrosion Control for DI Pipe – Part 2

### Thrust Restraint

- Define thrust as vector force and where it occurs
- Perspective on magnitude of force as it varies with pressure and pipe size
- Common methods for providing thrust restraint will be detailed:
  - Thrust blocks – Bearing and Gravity
  - Design, construction and applications
  - Restrained joint systems – Theory, design, common types, practical considerations and construction issues
  - Tie rods – another method for restraining joints
  - Combining systems – generally redundant and not cost effective, however there are situations where this may be appropriate.

### Horizontal Directional Drilling with Ductile Iron Pipe

Cover basics of procedure and equipment for this installation method

Design and pre-construction requirements

Specific applications and details in the use of DI pipe

Polyethylene encasement requirements and installation recommendations for HDD

Review several case histories

Limitations and risks associated with this technique

Summary & evaluations

Resumes:

Paul H. Hanson, P.E., Regional Director– Paul covers the DIPRA’s Region 1. He received his Bachelor of Science Degree in Civil Engineering from Valparaiso University. Paul’s previous experience includes the position of Project Engineer for a consulting firm, Construction Engineer for a large underground contractor and the positions of Supervisor of Construction and General Superintendent for a water/sewer utility in Suburban Chicago.

Paul joined DIPRA in 1989. He is a Registered Professional Engineer in Illinois and Indiana and a NACE International Certified Corrosion Specialist. He is a member of the American Water Works Association, NACE International, the American Public Works Association (APWA), and the National Society of Professional Engineers (NSPE).

***Allen H. Cox, P.E., Regional Director*** - Allen covers the DIPRA Region 2 and is a graduate of the University of Tennessee at Knoxville in Civil Engineering. Allen’s previous professional experience includes employment with Texaco, Inc., the US Army Corps of Engineers (Memphis Branch), a Tennessee-based construction company and Memphis Light, Gas and Water Division.

Mr. Cox joined DIPRA in 1981. He is a registered Professional Civil Engineer in the State of Tennessee and a NACE International Certified Corrosion Specialist. He is a member of the American Water Works Association (AWWA), National Association of Corrosion Engineers (NACE) International, American Society of Civil Engineers (ASCE) and the Water Environment Federation (WEF).

***Janine M. Alexander, P.E. Senior Regional Engineer***, Southeastern States, for DIPRA. She has more than 26 years of utility experience, including project management for the design of new facilities, relocations of existing facilities, utility coordination, permitting, construction administration, construction management, inspections, and certifications for numerous public and private sector projects. She additionally has written and presented over a dozen technical papers at conferences including NASTT No Dig, NASTT No Dig North, FSAWWA (various), ACE, USEI Pipelines, FWRC, USTDA and others. Janine is a licensed professional engineer in both Florida and Texas. Her education includes a BS in Environmental Engineering from the University of Central Florida. Prior to joining DIPRA, Janine worked for Tetra Tech as a Senior Project Manager.