

# “Specify It, Bury It, Forget It”?



## Hard Facts About Rigid Pipe

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# Hard Facts About Rigid Pipe

The concrete pipe industry de-emphasizes the importance of proper installation for RCP. If proper installation is not that important, then why did the Concrete Pipe Association publish a handbook outlining proper installation practices for RCP?

According to the Concrete Pipe Handbook, "**Foundation Preparation:** A stable and uniform foundation is necessary for satisfactory performance of any pipe"

"**Under Pipe Bedding:** Once a stable and uniform foundation is

provided, it is necessary to prepare the bedding in accordance with the requirements of the plans, specifications and drawings. An important function of the bedding is to assure uniform support along the barrel of each pipe section"

"**Bedding Materials:** It is essential that the bedding material be uniformly compacted under the haunches of the pipe".

According to the Concrete Pipe Technology Handbook ... "if silty clay soils are used in the haunch zone, or below this zone, they must be compacted to at least 85

percent of Standard Proctor Density and plastic clays should not be used in this zone."

Even though the American Concrete Pipe Association's own handbooks make the above statements about **proper** installation, the concrete pipe industry continually promotes that installation is a minimal factor when it comes to the successful performance of RCP. If proper installation is not important to RCP, then how do they explain the following problems?

## Case: Fairfield County, OH

In Fairfield County, Ohio, an installed 54" RCP with 15-20 ft. of cover under Route 256 was headed for disaster. After just one year, this pipe showed longitudinal cracking, circumferential cracking and infiltration and misalignment due to settlement.

That's why the owner took the time, and expense to reline the RCP with Polyethylene pipe. Reline failed RCP is a common practice.



Preparing a proper bedding and foundation is key to installing any type of pipe. Whether the pipe is



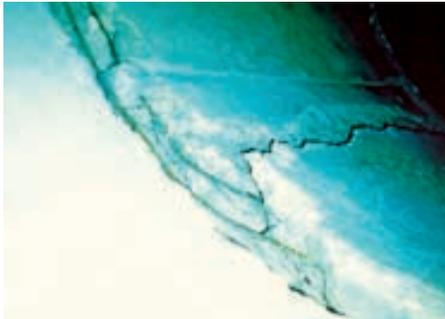
RCP or High Density Polyethylene, proper installation is important to a successful project.



# Case: Defiance County, OH

A statement made by the concrete pipe industry is *"RCP is manufactured with its strength built into the product. It does not rely heavily on the quality and care of the installation for its survival"*.

If that's the case, then what hap-



pened to this 60" RCP project in Defiance, Ohio? Was the "built in" strength of the RCP not strong enough? If the concrete pipe is not strong enough to withstand the load on a particular project, where does the liability for design

of the load bearing for RCP lie? Is the engineer liable for the design of every foot of RCP on every construction site?

The concrete pipe industry says RCP "does not rely heavily on the quality and care of the installation for its survival". If that's truly the case, then how do you explain the structural distress and misaligned and open joints of RCP on this project? Is this the fault of the concrete pipe?

Proper backfill is necessary for all pipes, whether it's a rigid pipe like RCP or a flexible pipe like High Density Polyethylene.



# Case: Unacceptable RCP Shipped to Projects

The concrete pipe industry says that when you design a storm sewer using RCP the structure is delivered on the truck. Would you accept pipe that has chips, spalls, cracks voids and poor consolidation? The projects in these pictures that had the RCP installed were compromised before the pipe ever went into the ground.



**Severe damage and exposed reinforcing steel**



**"D" Crack**



**Broken tongue**



**Cracking**



**Exposed reinforcing steel**

# Case: Sam's Club in Little Rock, AR



Failed Class V pipe had to be replaced at Sam's Club in Little Rock, AR. There were multiple modes of failure, including structural longitudinal



cracks, leaking joints and D ring cracking. Who bears the cost of such a dig up?

Quote from RCP circular:  
*"Remember, the cheapest pipe is the one you don't have to dig up and replace."*



# Case: City Project, Little Rock, AR

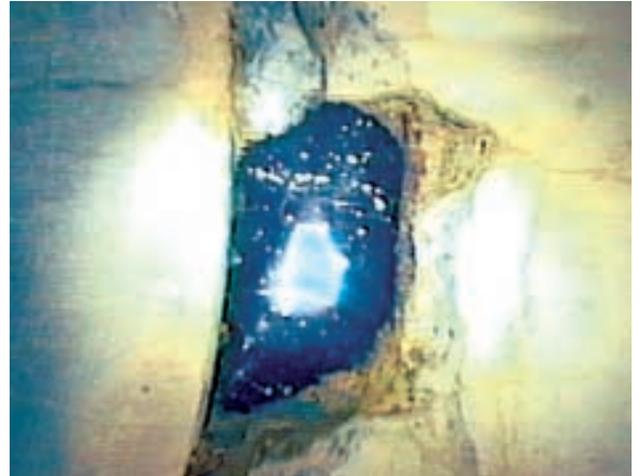
This Little Rock, Arkansas project was installed in 1995. From the looks of the storm sewer lines, it's hard to determine if the problems were the result of

poor installation practices or poor-quality pipe being shipped to the site by the concrete company.

How comfortable would you feel with these storm lines? Would you leave them in or replace them?



**Exposed rebar and cracked bell**



**Cracked bell and hole in pipe**



**Misaligned pipe - offset joints**



**Open joint**



**Hole in pipe at joint**

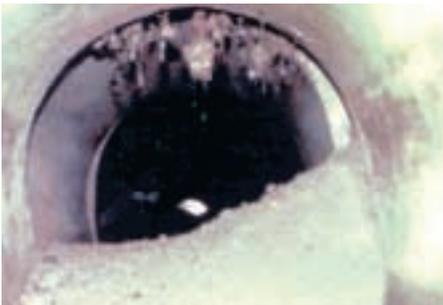
# Case: Culvert Inspection Manual

The Concrete Pipe Industry would like you to think that specifying and designing RCP for storm sewers is risk free. As it says in one of their flyers "Specify it, bury it and forget it." If that's the case, then why did the Federal Highway

Administration deem it necessary to publish a Culvert Inspection Manual that includes a Ratings Guideline Chart that ranks RCP from a rating of "9-New Condition" to a rating of

## "0-Total Failure of Culvert and Fill".

The following are some of the more common problems of RCP that are illustrated in the *Culvert Inspection Manual Report No. FHWA-IP-86-2*.



**Exhibit 106.**

Example of severe infiltration of backfill material through separated joints



**Exhibit 110.**

Severe longitudinal crack with differential movement and spalling



**Exhibit 113.**

Shear Slabbing

## Summary

Don't be fooled by the concrete pipe industry's phrase "Specify it, bury it and forget it." As illustrated in this flyer, reinforced concrete pipe does have problems with design, quality and installation. Successful installations of flexible and rigid pipe are dependent on quality material and on proper design, backfill and installation. According to a Michigan DOT study that evaluated concrete, corrugated metal and polyethylene pipe, "Although each material had there [sic] own unique associated problems, none were determined significantly more severe than the others."

Municipalities, contractors and owners have all benefited from using ADS N-12® pipe. There have been millions of feet of N-12 pipe installed

successfully for storm sewer applications nationwide. According to a memo from the City of Columbus (Ohio) Construction Inspection Department, "We have used in excess of 600,000 feet of N-12 pipe to date with no major problems ..." The memo concludes, "we can summarize by saying the City has been satisfied with the performance of N-12 and feel it has conformed to our specification requirements."

ADS N-12 pipe offers many benefits over RCP:

- better water-tight & soil-tight joints
- an inert material that is not subject to corrosion or abrasion
- high impact resistance common on all construction sites
- a uniform quality product not subject to material or human variations
- a design based on field conditions, not empirical, three-edge bearing tests that have little to do with successful field performance

When designing your next storm sewer project, call your ADS representative for the facts about using N-12 pipe at 800-821-6710.