

# Know You Should



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A Message from the American Concrete Pipe Association

Bulletin No. 120

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## HDPE Pipe Showcased on Web Site Fails

WYSIWYG is an acronym in computer terminology for “What you see is what you get.” It might apply to screen prompts, but often does not reflect reality in web site information. As a vivid example, a project that has been featured on a major HDPE pipe manufacturer’s web site has performed poorly in Pueblo, Colorado. As a result, the City of Pueblo has banned the use of that manufacturer’s HDPE pipe and limited the use of other manufacturer’s HDPE pipe to a demonstration basis only.

The North Pueblo Commercial Park Project is touted on the HDPE pipe manufacturer’s web site as saving time and money for the contractor and owner. The web site case study explains that the pipe provided cost savings to the contractor because it was easier to install than RCP and required less equipment, in addition to the money saved with cheaper pipe material.

Prior to the North Pueblo project, the City had not allowed the use of HDPE pipe with diameters larger than 36” for municipal drainage projects. However, the manufacturer was successful in convincing the commercial park owner and private developer to use larger diameter HDPE drainage products. The project included a broad range of diameters, including 12”, 15”, 18”, 24”, 30”, 42”, 48”, 54”, and 60” pipe.

The major installation of HDPE pipe at the North Pueblo Commercial Park was considered failed and unacceptable by the City of Pueblo’s Department of Public Works. The project includes stormwater drainage for roads, parking lots, strip malls and other businesses at the 55-acre development. The installation consisted of over 4800 linear feet of corrugated polyethylene pipe with an interior liner. The failures occurred less than five years from the date of completion of the project.

The failed pipe was discovered as part of a study conducted by the consulting firm, Wiss, Janney, and Elstner (WJE) in conjunction with the American Concrete Pipe Association, and the Portland Cement Association. The study is a survey of HDPE pipe installations throughout the United States.

While inspecting the pipeline, the WJE team was joined by a City of Pueblo employee. The resulting inspection was alarming. Todd Nelson of WJE stated, “Several pipe had severe cracking and tears up to 4 inches in width. The deflections were greater than 4 inches (up to 8%) and there was quite a bit of soil infiltration.” When asked to describe the condition of the soil embankment, Todd said, “You could tell the soil was of good quality, which kept the system from collapsing.”

Because the project was a private development, the City of Pueblo only participated in an inspection within the City’s right-of-way. The City is responsible for only that part of the project within the right-of-way, and therefore is not aware of other possible failures not in the City right-of-way.

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The failures at North Pueblo Commercial Park demonstrate how a municipality or agency that is cautious in allowing alternate pipe materials can still suffer damages. Manufacturers of alternate materials often market their product with claims of large savings that only show pipe (material only) costs, and that one can install their product the same way that one installs concrete pipe. These claims do not include the increased installation cost (select backfill, compaction, haulage offsite of native material, etc.) of flexible pipe versus rigid pipe nor do they consider the long-term cost difference (concrete pipe has the longest, maintenance-free service life).

Furthermore, because most of the pipe is placed within the private property of the commercial development, many times a close inspection of the final project is not conducted. In this case, the City would not have had a reason to perform an inspection if WJE had not already begun an investigation of the site. Currently, the City is conducting a review of other HDPE installations.

The purpose of the “You Should Know” series is to assist engineers, specifiers, and owners in what to look for in comparing gravity pipe materials. The North Pueblo Commercial Park incident highlights several areas to investigate before specifying HDPE pipe:

- Verify the facts of promotional information. This project was a showcase project on a major HDPE pipe manufacturers web site. It has since been removed from the manufacturers web site. The web site claimed that HDPE pipe is easy to install. However, the “easy to install” pipe has become the contractor’s nightmare.
- How many “successful” installations have been verified? Pueblo, like many other communities, is a rapidly growing city whose staff does not have the time to inspect all storm drainage on a regular basis. Do we have any idea how many miles of HDPE pipelines are showing similar signs of failure?
- A lower initial pipe cost does not always mean a lower overall project cost. The cost of a project not only includes the pipe material costs, but also the additional pipe embedment costs for HDPE pipe. Unlike HDPE pipe, RCP may be designed for use with virtually any type of embedment soil.
- HDPE pipe manufacturers claim that HDPE pipe strength does not decrease over time and that failures will occur within the first 30 days after installation. However, the Pueblo failures show that the final acceptance of the pipe should not occur until one or two years after installation.
- Is an alternate pipe material worth the risk? What is the cost of additional inspection, not to mention legal fees, social costs and the loss of one’s reputation? The definition of a successful project includes not having to worry about replacement and other costs associated with pipe failure.

The next time an HDPE sales person asks you to specify their product, ask them to explain the City of Pueblo web site case study. Ask them if there are others. And then, check them out yourself. You might be surprised what you discover—just like the City of Pueblo!