Municipal

CASE STUDY

# RESTRAINED-JOINT PVC PIPE, HDD FOR SEWER MAIN REPLACEMENT MINIMIZES DISRUPTION IN HISTORIC SHOPPING AND BUSINESS DISTRICT

When the city of Novato, California underwent a $10.7-million infrastructure project to improve its Old Town shopping and business district, city leaders wanted to do more than update the area's aesthetics. They recognized the project provided an opportunity to replace Old Town Novato's outdated waterlines before a future pipe failure would require digging up the new city streets.

**Application:**
Water & Force Main Sewer

**Project Type:**
Horizontal Directional Drilling

**Owner:**
City of Novato

**Product Used:**
Certa-Lok® C900/RJ PVC Pipe

**Contractor:**
Redline Directional, Inc.

## CHALLENGE

Open trench projects in a busy, pedestrian-friendly area lead to major headaches for merchants as well as those who visit to shop and dine. Moreover, a network of waterlines in a dense business setting creates a congested underground environment from which to work.

## APPLICATION

A portion of the project entailed the installation of a new 12-inch size waterline, 500 feet in length, under an old freeway right of way. The area was composed of asphalt layers up to two-feet thick with an eight-inch reinforced concrete base.
In order to minimize costs, the North Marin Water District, purveyor of the city's water supply, turned to horizontal directional drilling, a process up to four times less costly than open trench projects. When it came to choosing a pipe material, Joe Kauwe, project engineer of North Marin Water District, opted for Certa-Lok® C900/RJ Restrained Joint PVC Pipe by Westlake Pipe & Fittings over high-density polyethylene (HPDE). Beyond its PVC construction, Certa-Lok is highly adaptable in a congested underground environment such as Old Town Novato.

"PVC is a rugged material," said Kauwe. "Our selection of PVC restrained joint was based on availability of common water plumbing components that can connect to it. Plus, the parts we needed weren't readily available in HDPE."

## SOLUTION

PVC is inherently 2.5 times stronger than HDPE, allowing it to be extruded with a thinner wall for a comparable pressure rating and a larger inside diameter (ID) to maximize flow performance. Conversely, HDPE pipe can stretch during installation, further reducing its ID.

PVC is easier and faster to assemble since it does not require expensive and time-consuming heat fusion. It also can be assembled one joint at a time to minimize a project's work site and prevent blocking of streets and driveways. Plus, Water District construction crews easily learned the Certa-Lok restrained joint assembly process in less than 15 minutes.

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The Certa-Lok Restrained Joint PVC Pipe also outperforms HPDE in applications such as Old Town Novato with its complex network of existing underground utilities.

Redline Directional, hired to perform the installation, was cognizant to watch for existing utilities and as a result, varied the elevations of the new 12-inch size Certa-Lok pipe accordingly.

"The maps for this water line replacement project failed to note several abandoned storm drains and one very large concrete vault measuring 10 feet by 20 feet," explained Kauwe.

Kauwe added, "We were able to stay within the manufacturer's 300-foot minimum bend radii, making it easy to go under, over and around existing and newly-found utilities. Besides navigating around the 10-foot by 12-foot vault, Redline was able to adjust the PVC pipe elevation and clear high-pressure gas mains within a 30-foot distance."

"It's critical to get as much information as you can up front about the underground environment where you are drilling," says Kevin Stevens, president of Redline Directional. "There's always an element of the unknown when you dig underground."

Local residents and merchants experienced minimal disruption during this vital stage of Old Town Novato's revitalization, due in large part to the non-invasive directional drilling and the speed and efficiency of the Certa-Lok restrained joint.


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