

HOMER PRESSURE-REDUCING VALVE DESIGN: MIDHILL / HILLTOP STATIONS

Type of Contract:
Time & Materials

Role:
Prime

Location:
Homer, AK

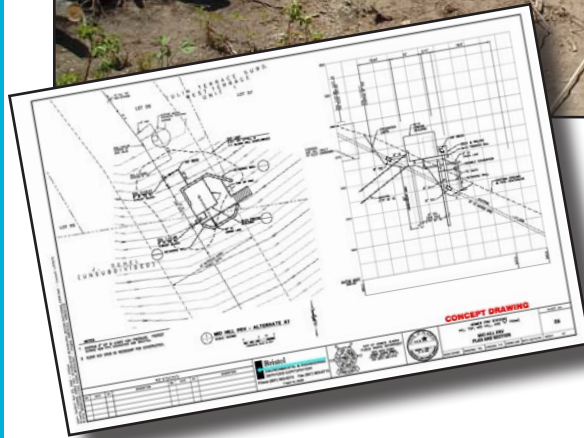
Contract Number:
N/A

Award Date:
2004

Completion Date:
2005

Customer:
City of Homer

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Pictured above is one of the two replaced PRV station vaults. Both locations were located on very steep terrain, presenting unique design challenges.

The City of Homer, a city located in Southcentral Alaska, about 220 miles south of Anchorage, contracted with Bristol in 2004 to plan and design the relocation and replacement of two Pressure Reducing Valve (PRV) stations serving the West Hill primary city water main.

The intent of the project was to make the transmission system more reliable and reduce maintenance costs by ensuring appropriate pressure ranges for downstream water service users—who included the local hospital.

A pump station carries untreated water from the city's water source, Bridge Creek Reservoir, up to a water treatment plant facility located on Skyline Drive, nearly 1,000 vertical feet above Homer. From there, multiple Pressure-Reducing Valve (PRV) stations are necessary to control water pressure as the treated water is delivered down to Homer for use by the community.

Homer Public Works had funding for coordinating the design and replacement of the two stations, which were in poor condition and required constant maintenance.

Bristol provided construction documents to replace the Midhill PRV station, at about 560 feet up the bluff, and the Hilltop PRV Station, which

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The view up at one of the new PRV vaults (left), and (top right) a look down toward Homer gives a sense of some of the challenges of the site. Multiple pressure-reducing valves (bottom right) are critical for the community's water delivery.

is another 300 vertical feet up. These PRV stations, located on very steep terrain, presented regular maintenance problems. Project considerations included installation on an extremely steep bluff, and unique soils problems that required solutions that included installation of temporary bypass lines and soil anchors during construction.

Under another contract, Bristol engineers prepared and calibrated a system-wide water model that predicted flows and pressures throughout the city's system. This enabled us to specify exact flow and pressure limits for each station.

At the time of this project, the transmission main was one of only two primary mains for the core downtown area, and it was the primary water main serving the hospital and a number of large subdivisions.