Northwest Cascade Construction

Case Study

Compaction Grouting

DATE: April 2005
PROJECT: White River Re-Route
OWNER: Williams Northwest Pipeline Corporation
LOCATION: Auburn, Washington

The White River Re-Route project consisted of replacing approximately 3,500 feet of 30-inch diameter natural gas pipeline underneath the White River in Auburn, Washington. The existing gas pipeline had become exposed thus necessitating a deeper replacement pipe. It took three attempts for the General Contractor to complete the 3500 feet of horizontal drilling. Left were two partially abandoned holes near the existing pipeline. In addition, a 900+ cubic yard sinkhole emerged in the middle of Cameron Park during the installation of the 30" pipeline. The contractor filled the 35' wide sinkhole and then the geotechnical engineer performed a ground penetrating radar (GPR) survey to analyze the surrounding area for potential impact.

Northwest Cascade was recommended by the geotechnical engineer to perform compaction grouting to stabilize around the new pipeline and help prevent future sinkholes in Cameron Park. The plan called for four grout lines with holes on 6 foot centers and each line being approximately 300 feet long. Holes ranged from 45 to 112 feet deep, following the grade of the existing gas pipeline. Northwest Cascade drilled holes totaling 5200 feet using a Klemm 803 and injected a low slump CDF mix into the holes in 6 foot stages. The placement of grout was accomplished with a Schwing concrete pump and Redi-Mix trucks, and the CDF was pumped through a 4" grout swivel.

The swivel allowed for the constant vertical movement and rotation of the 6" drill casing, as well as greater pressure control while the grout was being placed. A total of 417 CY of grout mix was placed under pressure. Due to the close proximity of two other live 30" natural gas lines, ground surface movement was monitored very closely. The grout placement was completed when 1/10th of an inch of surface movement was reached.

The compaction grouting took place from January through April of 2005. The new gas line is expected to be in operation in July of 2005. The completion of the grouting operations allowed for the restoration and re-opening of Cameron Park to the neighboring community, it also allowed the start of the final contract to tie in the 3,500 foot gas line on both side of the White River. The owner and the geotechnical engineer were both very pleased with Northwest Cascade's ability to provide a fast and economical solution.

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