



Freeport-Pownal Natural Gas Distribution System

Recently, issues associated with climate change have become increasingly important for businesses, and led to an emerging focus on reducing “carbon footprint”. With that, many industries began looking at opportunities to make reductions in their overall emissions, leading to an increase in the demand for alternative energy sources, such as natural gas.

Maine Natural Gas (MNG), a subsidiary of Ibedrola USA, has been providing natural gas to Maine communities since 1999. In 2010, Maine Natural Gas, moved forward with the final design and construction of the Pownal to Freeport natural gas distribution system. The expansion was initially driven by L.L. Bean, an advocate for energy efficiency, who realized the potential reduction in carbon emissions and cost savings that was associated with the use of natural gas at their Freeport facilities. The partnership between Maine Natural Gas and L.L. Bean to bring natural gas to Freeport and Pownal was also an opportunity for both communities of Pownal and Freeport, as well as area businesses and

residents to have an alternative energy source.

The 2010 Pownal to Freeport natural gas distribution system includes approximately 8 miles of 8-inch, 1.4 miles of 6-inch and 0.6 miles of 4-inch HDPE gas main extending from the Maritimes and Northeast Pipeline in Pownal to downtown Freeport. The project included 15 stream crossings, work adjacent to natural resources, two railroad crossings and the crossing of Interstate 295 (I-295) along with work in bustling downtown Freeport. Enterprise Trenchless Technologies, Inc. (ETTI) was the contractor selected for the project. Construction began in June 2010, and installation of the distribution lines was completed in November 2010. Commissioning of the Metering and Regulator Station was conducted in December 2010 bringing the entire Pownal to Freeport natural gas distribution system online, allowing customers to begin conversion and use of natural gas.

Design Considerations

Design of the project included an evaluation of potential routes, natural resource reviews, geotechnical evaluations and preliminary

coordination with local utilities, permitting agencies such as the Maine Department of Environmental Protection (MDEP) and Maine Department of Transportation (DOT), local communities and project stakeholders such as L.L. Bean.

Selection of the final route was based on final procurement and local permitting for the Metering and Regulator Station required to reduce pressure from the interstate pipeline pressure (1,400 psi) of the Maritimes and Northeast Pipeline to a distribution pressure of 100 psi. Of additional consideration were natural resources along the project route including stream crossings, wetlands of special significance and one potential vernal pool. Coordination and meetings with MDEP to review the project and natural resources led to inclusion of numerous horizontal directional drills (HDD), thereby limiting the excavation adjacent to these resources and the associated potential environmental impacts.

Additional HDD locations were identified during the design process due to limitations on allowable



pavement disturbances. Major roadway crossings including an I-295 and Route 1, and railroad crossings requiring the installation of the natural gas lines a minimum of 10-feet below the base of the track.

Construction

An aggressive construction schedule combined with project limitations, as defined by local agencies, required significant coordination by ETTI and their sub-contractors to complete the project on-time. These companies worked as a team, along with Maine Natural Gas and Wright-Pierce to address limitations such as a bustling downtown Freeport, restricted lane closures, roadway moratoriums, and restrictions on work zones.

Construction methods employed by ETTI included the installation of infrastructure within the L.L. Bean campus using directional drilling to the maximum extent possible, thereby limiting the disruption of traffic flow, deliveries and site disturbance during their peak Christmas season.

Preliminary geotechnical evaluations identified varying depths of ledge along the proposed route, which was

confirmed during the construction phase. In an effort to quantify and maintain schedule, additional ledge probes along the 4,000 linear feet of the proposed route were completed at 10-15 foot intervals. Shallow ledge dictated a directional drill ledge bore on a portion of the I-295 crossing.

Project Success

The overall installation of the Pownal to Freeport natural gas distribution system was completed on schedule. Additional expansion within Freeport is expected in 2011.