



GTI Keyhole Summit

November 13-14

Kevin Bullion – General Superintendent, Maryland



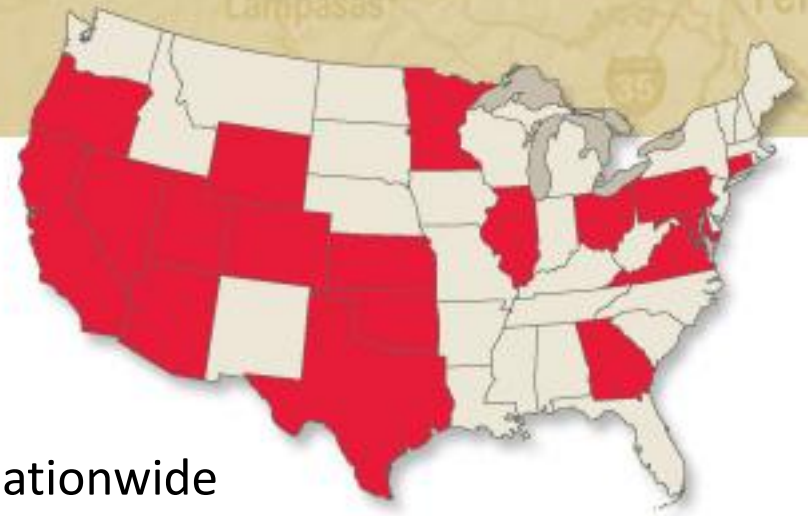


Who is NPL?

CORE BUSINESS:

The safe installation and maintenance of reliable energy distribution systems

- Industry Leader in Safety & Quality
- 4000 + employees
- On pace to work over 8 MM work hours
- Operating in more than 20 area offices nationwide
- 12.7M Feet Installed/Replaced
- Fleet of over 3500 units ranked in Top 10 in Construction Industry



Customer Base





Full Service Resources

Turnkey Products and Services:

Pre-Construction

- Construction Management
- Job Design/Engineering
- Permitting
- Customer Marketing
- Training
- CSRs
- Work Management Systems
- Scheduling/Routing
- Materials Management
- Consolidated Spend
- Utility Line Locating
- Internal Camera Inspect
- Traffic Control Services

Construction

- Joint Trench
- Vacuum Excavation
- Keyhole Coring
- Riser Replacement
- Deep/Mass Excavating
- Dig & Inspects/Verify
- Bridge Pipeline Rehab
- Trenchless Technology: Split & Pull, Directional/Auger Boring, Insertion, etc.
- Large Diameter Steel
- Large Diameter Live Taps
- Large Diameter PE (up to 54")
- Cathodic Protection

Post-Construction

- DIMP
- Relights
- Inspection/QC
- Landscaping Restoration
- Hard Surface Restoration
- Milling
- ROW Maintenance
- Meter Change-Outs & Move-Outs
- Collections/Cutoffs
- O & M Services
- Computerized As-Built Drawings
- Record Keeping
- Emergency Response



NPL – Virginia/Maryland

Virginia “SAVE” Act/Maryland “PLAN” Rate Case

- **Crew Compliments**
 - 31 Construction Crews
 - 28 Keyhole Support Crews
- **Equipment**
 - 7 Hydro-Vacs (Mud Dogs)
 - 12 Vac-masters
 - 5 Core Drilling Trucks
 - 5 Core Setting Crews
- **15 MM in Capital Expenditures in 2012**

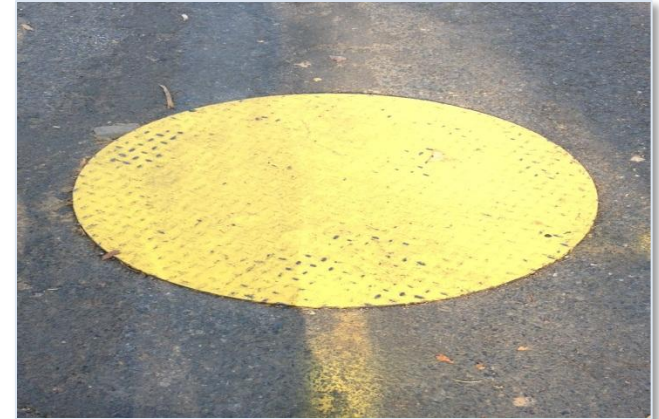




Keyhole - Successes

Process Efficiencies

- Engaged in design phases
- “Production Line” approach
- Pre-coring
- Vacuuming holes ahead of time and plating
- Dedicated core setting crews
- Harvesting cores from core farm
- Customer satisfaction





Keyhole - Challenges

- Locating facilities so accurate keyhole can be drilled
 - Pinpointing tee locations
- Angle of pipeline
- Working in residential neighborhoods with oversized equipment
 - Overhead utilities, trees, etc
- “Production Line” – coordination with homeowners schedules
 - Inside meter locations



Hydro-Vac with 1800 gallon water tank and 10.6 cubic yard storage capacity



MONTGOMERY COUNTY SPECIFICATIONS FOR UTILITY CONSTRUCTION PERMIT

DEPARTMENT OF PERMITTING SERVICES
DIVISION OF LAND DEVELOPMENT SERVICES
RIGHT-OF-WAY PERMITTING AND PLAN REVIEW SECTION
255 ROCKVILLE PIKE, 2ND FLOOR
ROCKVILLE, MARYLAND 20850

240-777-6300

<http://www.montgomerycountymd.gov/permittingservices>

AUGUST 2009

"Keyhole" excavation and pavement restoration consists of coring the existing pavement to excavate and perform the required utility operation and then restoring the pavement. The "keyhole" technique minimizes pavement excavation by coring small excavation openings of 12 to 18 inches in diameter through existing pavement. Typically, the operation consists of two vehicles; a truck mounted coring machine and a vacuum truck. The need for other conventional equipment such as backhoes and dump trucks is eliminated. Once the pavement has been cored, high-pressure air tools are used to cut the soil in the excavation below the pavement allowing the vacuum truck to remove the soil. Once the excavation and the work is complete and backfill placed, the removed pavement core is grouted back in place with an approved bonding agent (grout).

- (A) "Keyhole" pavement coring shall be performed with equipment designed for this purpose.
- (B) Once the pavement has been cored, and prior to excavation, a metal template shall be placed over the cored hole to minimize damage to the pavement edge of the cored hole.
- (C) "Keyhole" soil excavation shall be performed using vacuum excavator tools and equipment through the cored pavement opening.
- (D) Backfill material shall be select borrow meeting the requirements of in paragraph 3 of these specifications. Compaction of the backfill material shall be in accordance with paragraphs 3 and 14, as applicable, of these specifications.
- (E) Pneumatic compaction equipment (pneumatic rammers or equivalent) shall be used for compaction of the backfill material. The size of the compactor shall not exceed half the diameter of the cored keyhole.
- (F) Once backfill and compaction of the excavation has been completed, the intact cored pavement section (plug) shall be reset and grouted in the keyhole from which it came and the surface of the reset pavement section shall be restored to the grade of the adjacent road surface. The keyhole section may be marked before coring in order to restore the core to its original position.
 - Grout used to secure the pavement core shall comply with the definition for grout as listed on page 21 of these Specifications.
 - The cored pavement section shall be set centered in hole, plumb and flush with the adjacent road surface. The grout used in core replacement shall be placed under the core to insure proper leveling of the core. During core installation, the grout should flow upward to the road surface through the core side (saw kerf) and pilot hole to insure proper grouting around the core. Bonding agent should flow uniformly around the core. Excess grout shall be removed and the street surface cleaned after grouting in accordance with the requirements of Specification 8.

The grout shall be allowed to set per manufacturer's instructions prior to



Questions?