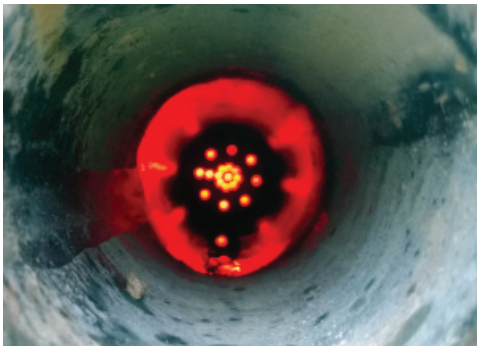
# GUIDED AUGER BORING WITH THE GBM 240A SYSTEM

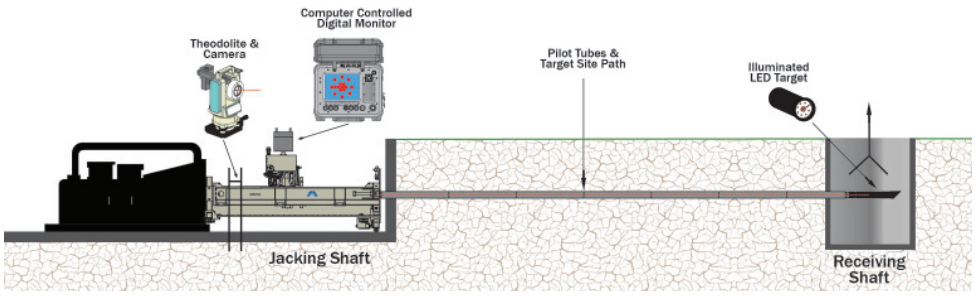






One of the most common applications for the single stage **GBM 240A Jacking Frame System** is its use in conjunction with a standard auger boring machine to install steel casing pipe. With the GBM providing guidance, contractors are empowered with the possibility for longer drives, extreme accuracy and reduced casing diameters. In addition, using a GBM 240A system can also serve as a probing tool for uncharted obstacles with minimal commitment to the bore.

The GBM 240A Single Stage Jacking Frame can install up to 24-in. OD one meter pipe with a 48-in. stroke cylinder for smooth and continuous advancement. The 240A Jacking Frame is hydraulically powered with any of our power packs and controlled with an in-shaft remote pendant.

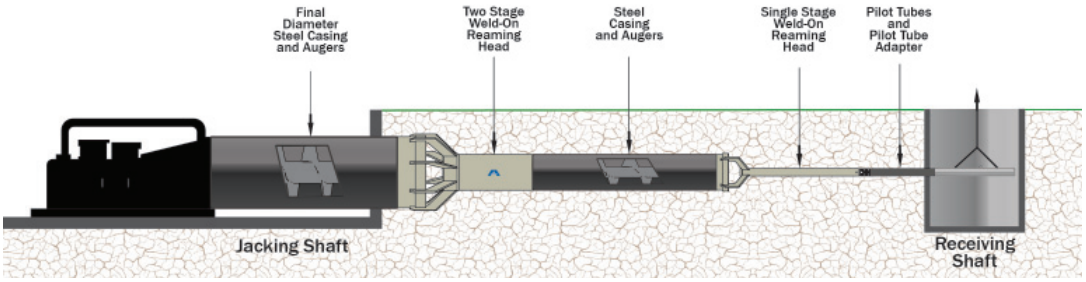



When using the GBM 240A Jacking Frame for guided auger boring, the first step is **Pilot Tube** installation to establish the desired path on line and grade. The jacking frame is mounted on the auger bore machine rails with a universal adapter. The **Theodolite and Camera** are mounted between the cylinders on the jacking frame on a stand to sight-down the center of the pilot tubes. A **LED Target** is placed in the steering head. The theodolite's cross hairs are aligned to the drive's line and grade and the camera relays this data to the **Computer-Controlled Digital Monitor**, which is mounted to the jacking frame where the operator assesses the target's position. If a line and grade adjustment is necessary, the operator turns the pilot tube string in the appropriate direction, which rotates the angled steering head to displace the ground until it's back on line and grade. When the pilot tubes span the full length of the drive, several tooling options for guided auger boring are available and detailed on the reverse. As the pipe string advances, pilot tube sections are removed in the receiving shaft.

# TOOLING OPTIONS TO UPSIZE TO STEEL CASING DIAMETER:

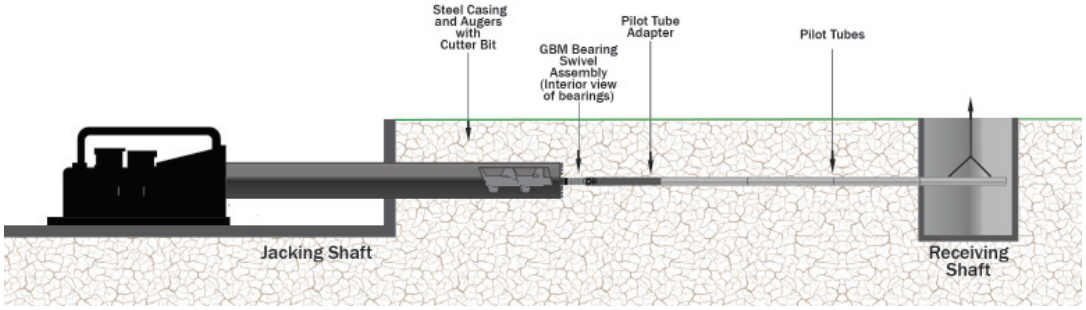
## TO UPSIZE FROM 12-72-IN. IN ONE OR TWO STAGES

**Weld-On Reaming Heads (WORHs)** upsize the bore in one or two stages from 12-72-in. The WORH is connected to the pilot tube adpater. WORHs feature a reaming head that creates a 1.5-in. overcut and arms that are flush with the inside diameter of the steel casing to allow for correct positioning of the cutter bit and standard soil removal from the pipeline with augers.



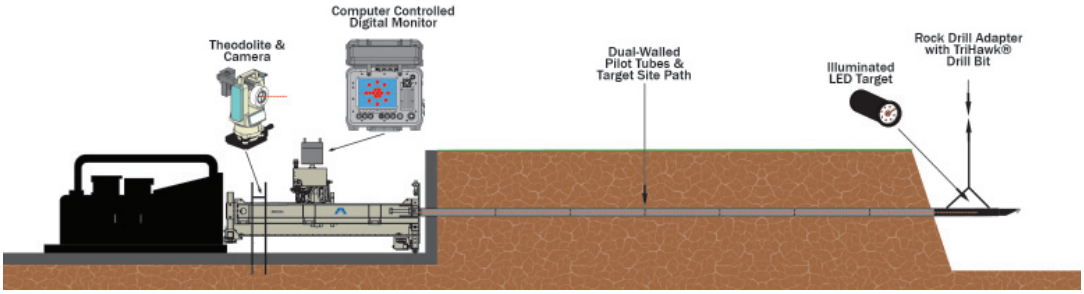

## PREVENTS ROTATION OF PILOT TUBES USED WITH CUTTER BIT FOR 25 OR 50 TONS OF THRUST

The **Guide Rod Swivel (GRS-25)** and **GBM Bearing Swivel Assembly** are used between the pilot tube adapter and cutter bit in order to withstand twenty-five or fifty tons of continuous thrust loads. They connect with a 3-in. hex and function to maintain pilot tube line and grade for the cutter bit while preventing rotation of the pilot tubes. The GRS-25 is selected for projects under 24-in. OD and 200-lf. The GBM Bearing Swivel assembly performs best on projects from 24-30-in. OD and 200-400-lf.



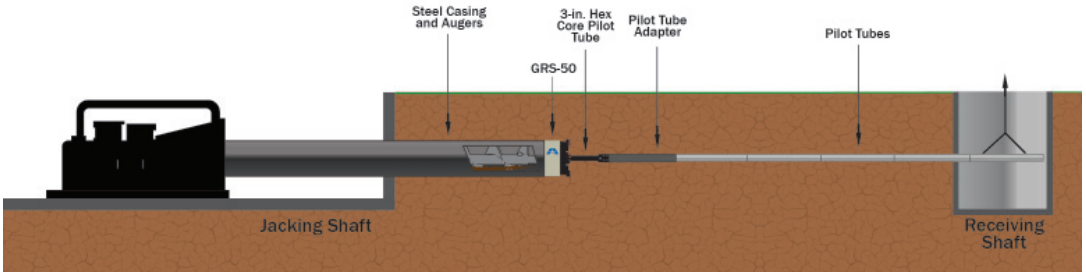

## TO INSTALL PILOT TUBES IN UP TO 18,000 PSI UCS ROCK

In difficult soil in lieu of a steering head, the **Rock Drill Adapter (RDA)** provides a means for accurate rock pilot tube boring in rock formations up to 18,000 psi UCS with a cutting diameter of 5.75-in. The RDA features a bolt-less, square drive spline to accept TriHawk® drill bits. Depending on the ground conditions, the RDA is followed with a **Guide Rod Swivel (GRS-50)** and **GBM Bearing Swivel Assembly** or the **Rock Boring Unit (RBU)** to upsize to the final diameter steel casing.




## PREVENTS ROTATION OF PILOT TUBES FOR UP TO 42-IN. STEEL CASING IN WEATHERED ROCK

The **Guide Rod Swivel (GRS-50)** family of high thrust bearing upsizing tools keep pilot tubes stationary and are able to withstand up to fifty tons of continuous thrust loads for 24, 30, 36, and 42-in. steel casing installations. The GRS-50 is used in densely compacted soil in lieu of a WORH or follows the RDA with TriHawk® drill bit tooling in weathered rock conditions. A 3-in. **Hex Core Pilot Tube** receives the connection from the front of the GRS-50 which connects to the pilot tube adapater.




## UP TO 42-IN. STEEL CASING INSTALLATION IN UP TO 25,000 PSI UCS ROCK

The **Rock Boring Unit (RBU)** 24, 30, 36 and 42-in. is used for up to 18,000 psi UCS (guided) and 25,000 psi UCS (unguided) rock boring. The RBU follows pilot tubes led by a **Rock Drill Adapter (RDA)** and TriHawk® drill bit for guided auger boring applications with any conventional auger boring machine. The RBU can be used for unguided rock boring with a full-face disc cutter insert. The **GBM Bearing Swivel Assembly** is used between the pilot tube adapter and RBU to withstand thrust loads.