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FRONT STEER GUIDED AUGER BORING

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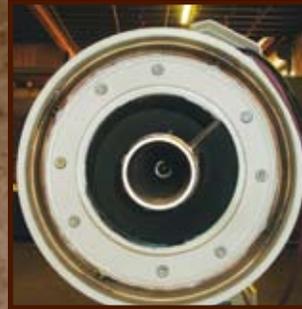
FRONT STEER GUIDED AUGER BORING

What is Front Steer Guided Auger Boring?

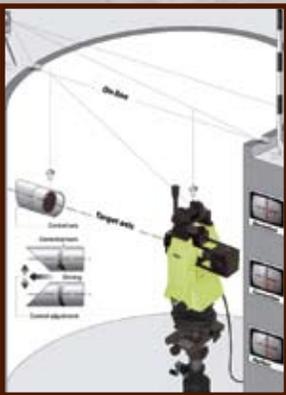
The Front Steer Guided Auger Boring Method shall be defined as a steerable microtunneling auger system for the trenchless installation of jacking pipes. The Front Steer Guided Auger Boring System is a multistage system which allows for the direct jacking of product pipes (without the use of permanently installed steel casing) while providing a 1" or better line and grade in hard non-displaceable soil conditions up to a possible maximum of 2,900 PSI or 20 MPa. The Front Steer Guided Auger system being proposed consists of a Front Steer Boring Unit (FSBU) with open face cutting wheel and articulating head, temporary steel casings with hollow stem augers, pilot tube machine with jacking cylinders, and a hydraulic power pack. The FSBU guidance system consists of a digital theodolite electronic camera, an L.E.D. illuminated target, and a control monitor for real time constant monitoring and maintaining of line and grade. Water conditions of up to 10' can be controlled with a soil plug using the patented "Water Auger Adaptor" in conjunction with the FSBU.



Front Steer Boring Unit (FSBU) with open face cutting wheel.



Backside of Front Steer Boring Unit (FSBU) showing hollow stem auger which allows for constant viewing of the illuminated LED Target directly behind the open face cutting wheel.



Digital Theodolite Camera

This system has already been proven and is the same digital theodolite camera system that our already popular Pilot Tube Systems have been using in the field for over 25 years. The use of this camera system allows the contractor to constantly monitor the illuminated LED Target and FSBU in order to make steering corrections as the FSBU advances through the ground for Line and Grade.

Control Panel



A guidance control station allows the contractor to constantly monitor and make immediate steering corrections in order to maintain line and grade throughout the drive length.

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Key Features of the Front Steer Boring Unit



Two high pressure water jets are located on the bottom side of the open face cutting wheel to ease the movement of material through the system.



Hydraulic fluid is sent to the FSBU and causes an articulated movement which instantly makes corrections to the intended Line and Grade.



The open face cutting wheel can be removed and unbolted for maintenance and insertion of the illuminated LED Target.



A specially hardened cutting edge helps excavate and maintain overcut in harder soil conditions.



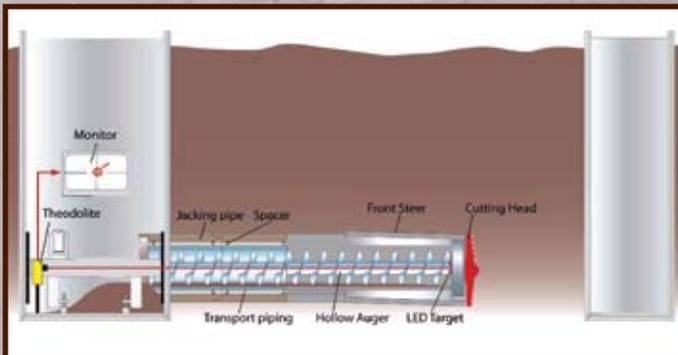
Connections for hydraulic and electric to the FSBU, which is protected by a steel cover plate (not shown), are conveniently located at the back of the unit.

FRONT STEER GUIDED AUGER BORING

Front Steer Applications: Three Different Applications with One System

Application 1:

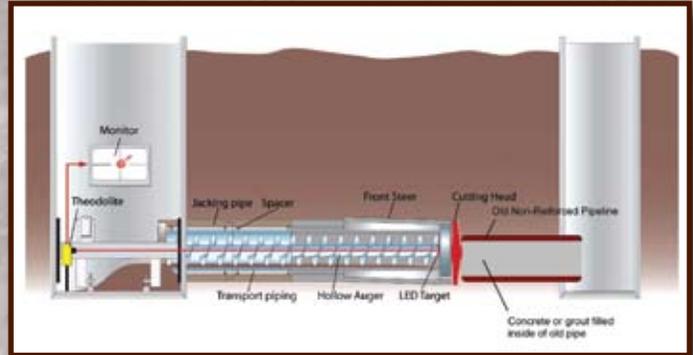
New Installation of Jacking Pipes for Gravity Sewers



The first application is an alternative method to micro-tunneling known as “Front Steer Guided Auger Boring”. Microtunneling is used as a trenchless method for installing new pipelines within very tight tolerances typically for longer drive lengths in excess of 400 feet. Using Front Steer Guided Auger Boring allows the contractor to install shorter drive lengths under 400 feet within 1” or better line and grade exactly the same as microtunneling for half the purchase price with half the equipment needed.

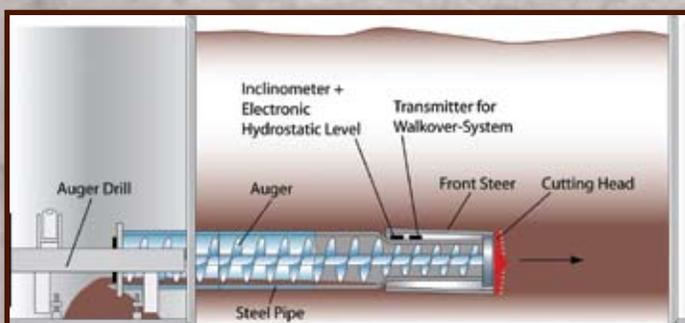
Application 2:

Front Steer Pipe Eating



The second application is an alternative method to Pipe Bursting known as “Pipe Eating”. Pipe Bursting is used as a trenchless replacement method for non-reinforced pipelines in displaceable soil which follows the existing line and as a result will follow any problems that pipeline may have had to begin with. The Front Steer Pipe Eating system allows for the removal of the existing pipeline while installing a new pipeline on the designed line and grade, removing the problems of the old pipeline.

Application 3: Front Steer Boring Unit Method for Steel Casings



The third application is the trenchless installation of steel casing for the auger boring industry. Thousands of contractors own conventional auger boring machines for trenchless crossings but lack the superior line and

grade guidance of the Front Steer Guided Boring System needed for sanitary sewer work. That is why the FSBU system is designed to be used as an attachment and can adapt to any auger boring machine on the market today. Accurately install steel casings on the designed line and grade for the project up to 500’ in length or better depending on your machine and the soil conditions of the job. “The Front Steer Boring Unit (FSBU) Method uses a built-in digital water level and simple but very accurate line control system to constantly monitor line and grade so you can make immediate corrections throughout the bore path.”

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The Front Steer Guided Auger Boring system can excavate extremely hard ground up to 100 blow counts/12" or up to 2,900 psi soils and as small as 16" in diameter.



ICON provides the maximum amount of training on each Front Steer Guided Auger Boring rental or sale of a system to our customers.



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