

## MILLER PIPELINE HORIZONTAL DIRECTIONAL DRILLING (HDD) BEST PRACTICES

### 1. General

Prior to any excavating or boring, the appropriate One Call agency shall be notified in advance to locate all underground structures and utilities.

All underground structures and utilities that have been located within the construction limits, which crosses or runs parallel to the proposed work, **shall be exposed to the required limits by either hand digging or vacuum excavating.** Adequate clearances shall be verified in all situations. All spot holes shall be excavated in a manner to prevent damage.

If our contract requires us to locate customer owned lines (specifically gas mains and services), the locating will be performed by the crew foreman. The foreman is required to obtain prints from the owner prior to locating. The prints should be large enough to clearly see all potential conflicts. If the owner is unable to provide adequate drawings, the foreman must notify the local superintendent.

If crew foreman elects to delegate to a responsible member on the crew, said individual shall have gone through pre-determined training related to locating gas lines and be familiar with customer specific prints.

Prior to installation activities, the crew foreman and directional drill leader must walk intended route of the directional bore, then sign and date the construction drawings, signifying both have reviewed the site, and that all utilities have been properly identified and located.

### 2. Perpendicular Boring (Gas & Other)

Prior to boring across existing utility lines or buried structures of any type, physical verification is required by either hand digging or vacuum/hydro excavation, in accordance with state laws. When crossing **High Consequence Utility Lines** (see examples below), spot holes will extend at least 24" on either side of the actual utility line or structure and at a minimum, 24" below the exposed facility or to the proposed depth of the bore. During the bore and pull back, the spot holes shall be left open and monitored as the tooling passes over/under the high consequence utility. **Rotating drill head or back reamer within 24" of the exposed high consequence utility is strictly prohibited.** At all times, the utility must be protected from the drill rods, as changes in elevation within the bore path and soil conditions can lead to significant deflections in the drill string, particularly when drilling through spot holes where more than a few feet of boring rods are exposed or where there may be less than 24" of clearance. If higher than normal push or pull pressures are encountered during the boring or reaming process, drill operator must stop and consult with crew foreman or supervisor, to make sure adequate measures are taken to prevent damage to exposed utilities.

Once located and verified for depth, utility lines not deemed high consequence (CATV, residential

water services, telephone drops, street light cables, etc....) may be backfilled before boring begins.

- **High Consequence Utility Lines (HCU)** include but are not limited to: Gas lines (mains or services), electric lines, water mains, telephone duct runs, toll cables or fiber optic lines.

3. **Sewer Laterals** shall also be treated as high consequence utilities, with the following exceptions:

- 1) If electronic locates have been completed and it is determined that there will be more than 24" between the lateral and the bore path, no excavation is required.
- 2) If a physical inspection of the property has determined that the lateral will not conflict with the bore path, no excavation is required.
- 3) If the laterals are inspected with CCTV units after the directional drilling process, and before the new main is energized, no excavation is required.

#### 4. Parallel Boring

##### **Distribution Gas Lines and High Consequence Utilities (HCU)**

When directional boring parallel to natural gas distribution lines of High Consequence Utilities, the bore path should be established to maintain a **minimum of five (5') feet clearance** between the existing structure and the back reamer. Normal safe boring practices shall be utilized outside the five (5') foot range. In cases where the clearance of the bore path and the existing line will be less than five (5') feet, authorization from the local superintendent shall be obtained prior to boring and recorded on the pre-job plan or construction prints. Also, the existing utility line shall be exposed and verified at a **minimum of one hundred (100') foot intervals**. The actual location of the bore head in relation to the structure must be verified and adequate clearance must be maintained at all times.

##### **Transmission Lines (Natural gas or flammable liquids)**

When directional boring parallel to transmission gas or hazardous liquid pipelines, or any pipeline where pressure exceeds 60 pounds, the bore path shall be established to maintain a **minimum of ten (10') feet of clearance** between the existing pipeline and the back reamer. Normal safe boring practices will be utilized outside the ten (10') foot range. In cases where the bore path is less than ten (10') feet from the existing pipeline, authorization from the Regional Manager or Vice President shall be obtained prior to boring and recorded on the pre-job plan or construction drawings. Also, the existing pipeline shall be exposed and verified at a **minimum of fifty (50') foot intervals**. The actual location of the bore head in relation to the structure must be verified and adequate clearance must be maintained at all times.

**AT NO TIME WILL BORING BE ALLOWED WITHIN (5') FEET ON ANY TRANSMISSION LINE.**

## 5. Parallel Boring (Other)

When directional boring parallel to other utilities, the bore path should be established to maintain a **minimum of five (5') feet of clearance** between the existing utility and the back reamer. The utility should be spotted at reasonable intervals to verify its exact location. If boring within five (5') feet is required, the utility must be spotted at a minimum of one hundred (100') foot intervals. The minimum distance allowed by state law – between the back reamer and the utility – must be maintained at all times.

## 6. Target Steering

**When target steering is used, the drill operator and the locator must remain in contact at all times.**

**Target steering is prohibited when crossing any utility or drilling parallel within five feet (5') of a utility.** Target steering should only be used when absolutely necessary, (road crossings, water ways, or obstructions not moveable in the bore path).

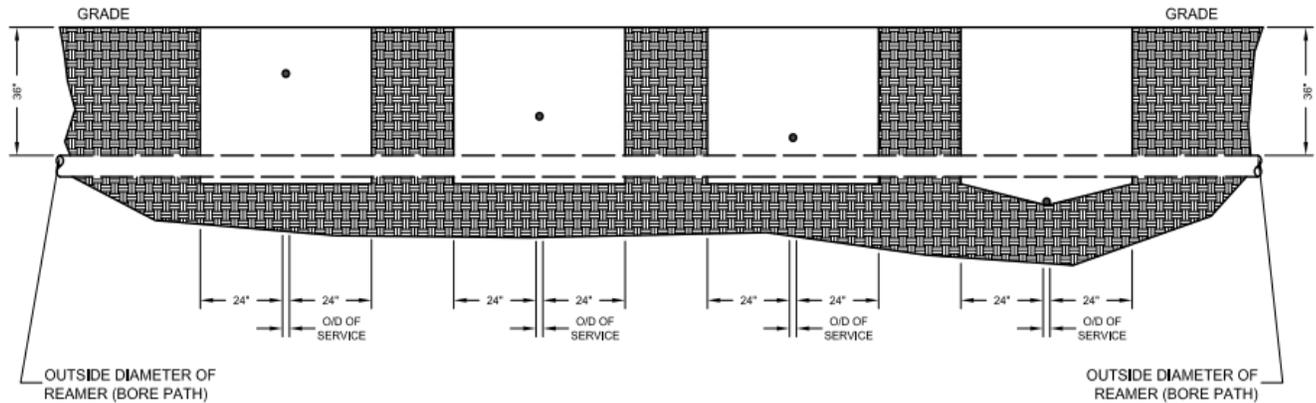
There must always be an operator and a locator present during drilling operations. **A single person drilling and locating a bore is strictly prohibited.**

**NOTE:** These are Miller Pipeline's minimum standards. Miller Pipeline has based the 24" on both sides and below the facility on the Indiana 811 law. If your state or customer exceeds the 24" tolerance zone, then that standard shall be applied to both sides and below the facility being spotted. If your state or customer has a tolerance zone less than 24", adhere to the Miller Pipeline minimum standard of 24".

\*\* See attached drawings for examples of utility crossings and proper spot holes.

Rev Level	Rev Date	Description of Change
1	1/1/2012	Original
2	1/23/2015	Supervisor approval of deviations from procedure. Clarification
3	4/2/2015	Multiple changes
4	4/28/2022	Added spot holes shall be excavated to at least 24" below the facility or to the proposed bore depth. Added language around adherence to state & customer standards & tolerance zones, the 24" each side and below is based on the Indiana Tolerance Zone and has been adopted as the minimum by Miller Pipeline.
5	1/18/2023	Added language in section 2 (perpendicular boring) around watching bore rods when normal pressures increase, especially in larger than average spot holes

**EXAMPLES OF SPOT HOLES FOR DIRECTIONAL DRILLING  
OVER/UNDER 3/4" GAS LINE SERVICE AT VARIOUS DEPTHS**



**NOTES ON CROSSING HIGH CONSEQUENCE UTILITY (HCU):**

- 1 - SPOT HOLE MUST EXTEND TO A POINT 24" BELOW THE HCU UTILITY OR TO A POINT JUST BELOW THE ACTUAL BORE PATH.
- 2 - ROTATION OF BORE HEAD OR REAMER WITHIN 24" OF THE HCU IS STRICTLY PROHIBITED.
- 3 - SPOT HOLES MUST BE PHYSICALLY MONITORED WHILE CROSSING HCU'S.



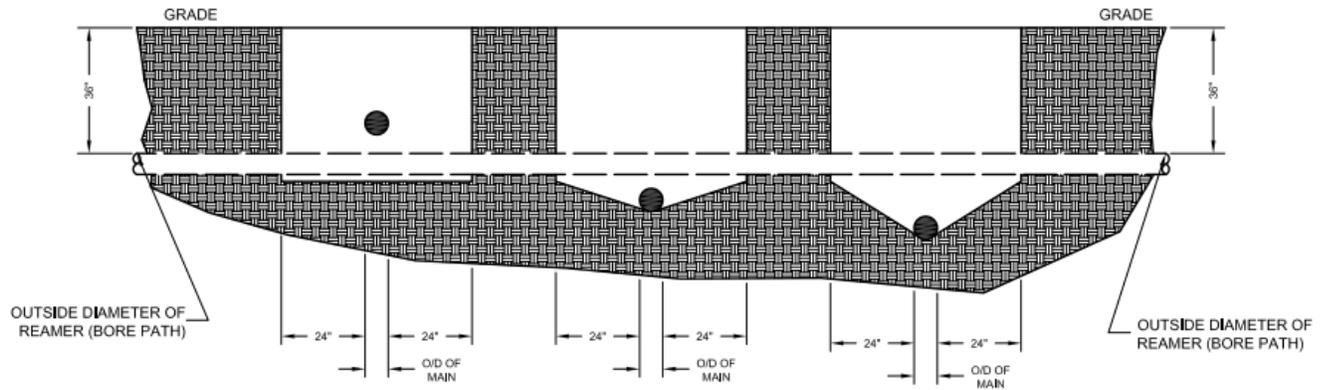
**Miller  
Pipeline**

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**EXAMPLES OF SPOT HOLES FOR DIRECTIONAL DRILLING  
OVER/UNDER 6" GAS OR WATER MAIN AT VARIOUS DEPTHS**



**NOTES ON CROSSING HIGH CONSEQUENCE UTILITY (HCU):**

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- 2 - ROTATION OF BORE HEAD OR REAMER WITHIN 24" OF THE HCU IS STRICTLY PROHIBITED.
- 3 - SPOT HOLES MUST BE PHYSICALLY MONITORED WHILE CROSSING HCU'S.



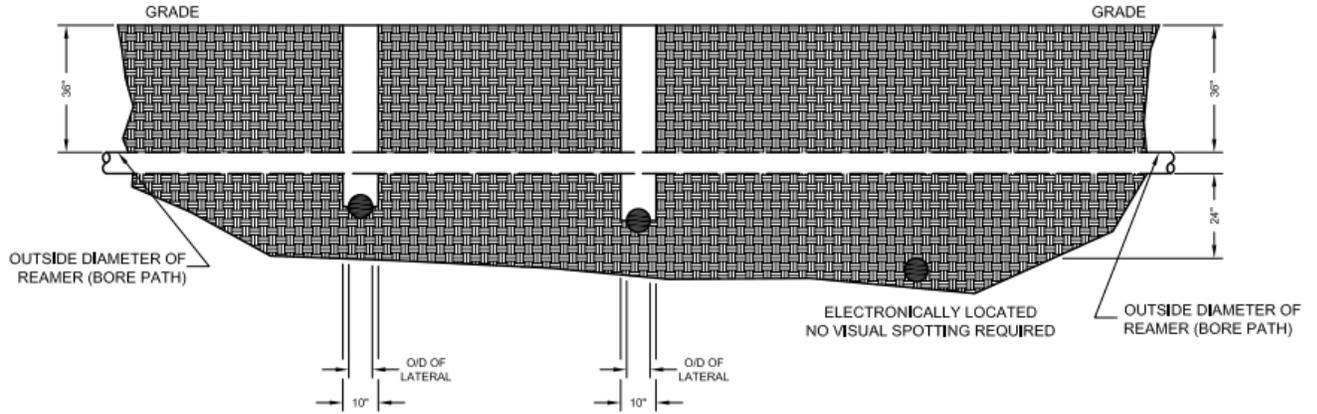
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**EXAMPLES OF SPOT HOLES FOR DIRECTIONAL DRILLING  
OVER/UNDER 6" SANITARY LATERAL AT VARIOUS DEPTHS**



**NOTES ON CROSSING HIGH CONSEQUENCE UTILITY (HCU):**

- 1 - IF LATERALS HAVE BEEN ELECTRONICALLY LOCATED WITHIN 24" OF THE PROPOSED BORE PATH, SPOTTING IS REQUIRED BUT IT IS **NOT NECESSARY** TO EXPOSE 24" EITHER SIDE OF THE LATERAL.
- 2 - ROTATION OF BORE HEAD OR REAMER WITHIN 24" OF THE HCU IS STRICTLY PROHIBITED.
- 3 - SPOT HOLES MUST BE PHYSICALLY MONITORED WHILE CROSSING HCU'S.



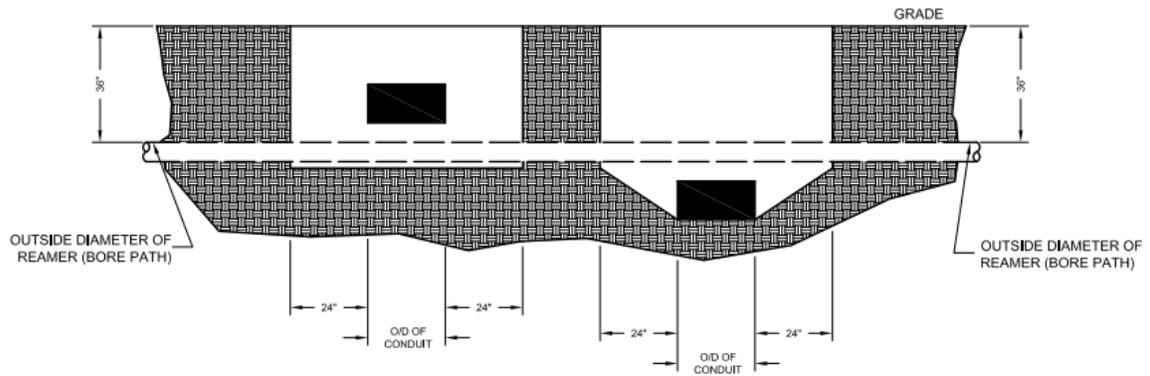
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**EXAMPLES OF SPOT HOLES FOR DIRECTIONAL DRILLING  
OVER/UNDER ELECTRIC AND OR TELEPHONE DUCT AT VARIOUS DEPTHS**



**NOTES ON CROSSING HIGH CONSEQUENCE UTILITY (HCU):**

- 1 - SPOT HOLE MUST EXTEND TO A POINT 24" BELOW THE HCU UTILITY OR TO A POINT JUST BELOW THE ACTUAL BORE PATH.
- 2 - ROTATION OF BORE HEAD OR REAMER WITHIN 24" OF THE HCU IS STRICTLY PROHIBITED.
- 3 - SPOT HOLES MUST BE PHYSICALLY MONITORED WHILE CROSSING HCU'S.



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