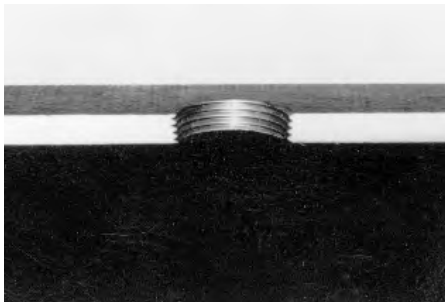
# AMERICAN Ductile Iron Pipe
# Tapping and Cutting

## TAPPING* DUCTILE IRON PIPE

AMERICAN Ductile Iron pipe is readily tapped either dry or under pressure by using conventional tapping equipment utilized by most contractors and water utilities.

Taps made directly into the pipe result in clean, sharp, strong threads, making tapping saddles unnecessary for small diameter taps.

Teflon tape or a commercial thread compound which is suitable to the service is recommended to be used on threads.



**Above is shown a 6" AMERICAN Ductile Iron pipe that has been tapped for a 1" corporation stop, showing the excellent threading properties of ductile iron pipe.**

## CUTTING* DUCTILE IRON PIPE

AMERICAN Ductile Iron pipe is easily cut in the field by several methods, the most common being as follows:

### Abrasive Wheel

A rotary-type abrasive wheel saw is probably one of the most popular tools used for cutting ductile iron pipe. This equipment is commercially available with gasoline engines as well as pneumatic motors. Cutting time is usually no more than one minute per inch of pipe diameter with most commonly used thicknesses.

**Cutting ductile iron pipe with abrasive wheel.**

### Torch Cutting

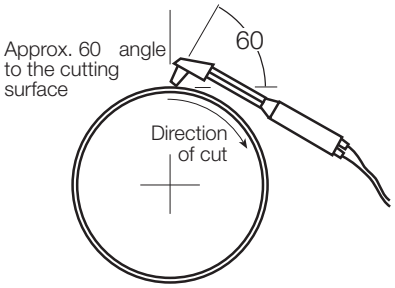
Ductile iron pipe can be cut in the field or shop by using an oxyacetylene torch. Best results are obtained by using a No. 8 or No. 10 tip with approximately 75 psi oxygen and 10 to 15 psi acetylene. For cement-lined ductile pipe, the best results are normally obtained when the torch head is inclined approximately 60 degrees to the direction of cutting. See Fig. 3-3.

**Cutting ductile iron pipe with torch.**

Metallurgical studies have shown that the heat-affected zone in pipe cut by this method exists within only 1/4-inch from the cut face. The hardening of the metal in the 1/4-inch affected heat zone causes some difficulty in

*Caution should be employed when cutting or tapping pipe when any potentially hazardous condition might exist.

threading or machining in this particular portion of the pipe, but such hardening does not interfere with push-on or mechanical joint assembly or performance. Cutting speed for pipe cut by oxyacetylene methods is approximately one




**Torch cutting ductile iron pipe**
**Fig. 3-3**

minute per inch of diameter for cement-lined pipe and even less for unlined pipe.

### Milling Cutter

Several types of milling pipe cutters are available which operate hydraulically, pneumatically or electrically, or are self-powered by a gasoline engine.

The milling-type cutter will normally cut pipe from 6"- 64" diameter. This type of cutter is usually supplied with an air motor which also makes submarine cuts possible. The set-up time for this cutter is usually less than ten minutes; it requires a minimum clearance of 12" and has a cutting speed of approximately one minute per inch of pipe diameter.

**Cutting ductile iron pipe with milling cutter.**

### Other Cutting Methods

Portable guillotine saws are available for cutting pipe from 3"- 18" diameter.

**Caution:** Hydraulic squeeze cutters are not suitable for cutting ductile iron pipe.

### Field Gauging/Rounding

AWWA C151 requires the factory-gauging of the spigot ends of ductile iron pipe. Accordingly, pipe selected for cutting in the field should be field-gauged. A circumferential "π" tape can be used for this. Also, a mechanical joint gland inserted over the barrel of the pipe might serve as a convenient indicator for field cutting. Some pipe, especially in the largest diameters, may be out-of-round to the degree that they will need to be rounded by jacking or other methods to facilitate making the joint. This is a normal occurrence and does not in any way affect the serviceability of ductile iron pipe. Instructions for the rounding operation can be obtained from AMERICAN if desired.

### Preparation of Field-Cut Joints

Field cuts that will be assembled with mechanical joints will require little or no preparation other than cleaning. When a torch cut is made, the last few inches of the plain end need to be cleaned of any oxides, slag or other protrusions.

When the cut end is to be assembled in a Fastite® bell, an adequately smooth (without sharp edges) bevel should be ground or filed on the cut edge to prevent damage to or dislodgement of the gasket during assembly. See Fig. 3-4. If desired, a thin field "Assembly Line" can be drawn in marker or with paint, with the line located from the spigot end the same distance as the far edge of factory-applied assembly stripe.

Note: Generous bevels are advantageous in the assembly of field-prepared ends. To confirm the effectiveness of pipe end preparation and the subsequent assembly of a field-prepared end, a thin "automotive" or other feeler gauge can be effectively used to check (probe) for proper and uniform gasket positioning all around the assembled joints.

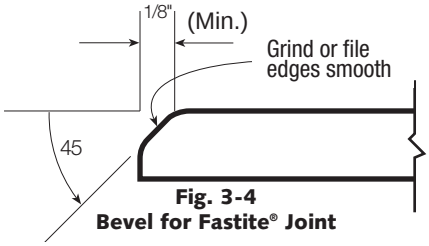



**Fig. 3-4**
**Bevel for Fastite® Joint**

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