Technical Note

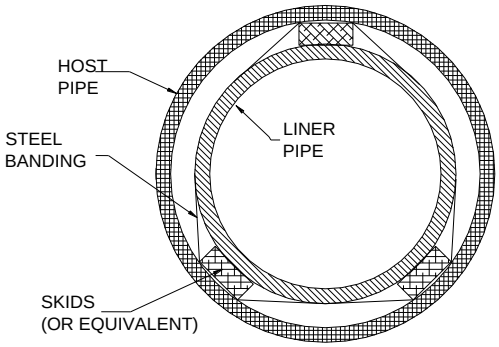
TN 5.11 Sliplining Extended Lengths with HDPE Pipe

This document supplements Technical Note 5.06: *Sliplining Considerations for HDPE Pipe,* by addressing sliplining lengths that are in excess of 100-ft. The recommendations and information provided in Technical Note 5.06 are still applicable and shall be reviewed prior to reading this document or proceeding with design or installation of HDPE pipe in sliplining applications.

HDPE Pipe Preparation

HDPE pipe joints are not designed to withstand large pulling forces. Furthermore, pushing a lining pipe in through the host pipe may damage the corrugations at the pipe ends as they butt up against each other. The method of installation will affect, in large part, the maximum length that can be slip lined without damaging the pipe. Using skids, especially in a corrugated host pipe, will help minimize resistance between the two surfaces.
Skids may be as simple as a pair of 2X4's placed near the invert and a third at the crown of the pipe. Refer to Figure 1 for recommended skid locations. Banding strips should be used to secure the skids to the pipe to ensure the skids will stay in place and no damage occurs to the HDPE pipe or bell. A push-and-pull technique keeps stress on the joints to a minimum. All wood skids should be treated with a preservative. Skids should extend for the full length of the pipe with the exception of the bell and spigot area which are necessary for proper assembly. In lieu of attaching skids to the lining pipe, skids can also be attached to the host pipe to reduce frictional forces while installing the lining pipe.

Figure 1
Skid Locations on HDPE Liner Pipe

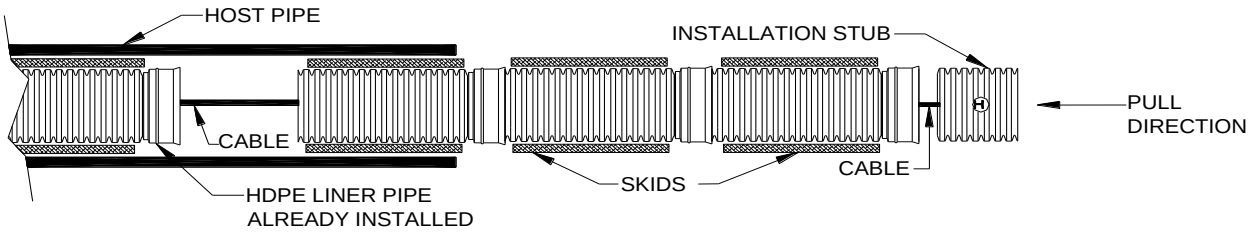


Installation of HDPE Pipe in Host Pipe

The contractor shall prevent 'over-homing' the pipe joints while installing the HDPE pipe through the host pipe. Adequate homing of the pipe may be determined by making a home mark on the spigot end of the pipe. This is done by measuring the length of the bell and then marking a distance equal to the bell length on the spigot end of the connecting pipe. When the spigot end of the pipe is fully inserted into the bell of the pipe in place, the edge of the bell should be close to home mark.

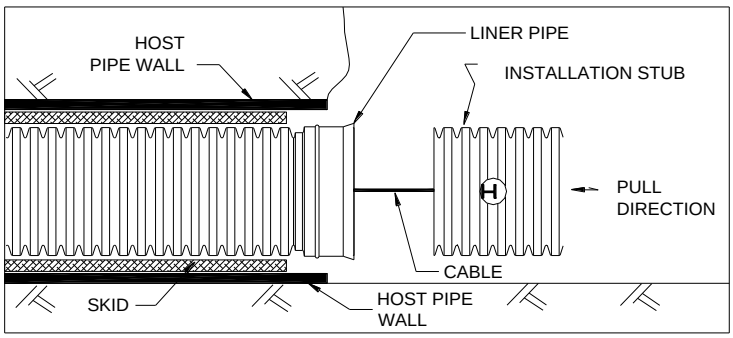
For slipline lengths exceeding 100-feet it is recommended that no more than three 20-foot lengths of HDPE pipe be connected and properly homed before being inserted into the host pipe. This recommendation is based on prevention of over-homing the pipe. Once the individual sticks of pipe are securely connected, they can be inserted into the host pipe so the spigot end of the group of pipe will lock into the bell end of the HDPE pipe already installed in the host pipe. Refer to Figure 2 for inserting the pre-connected pipe into the host pipe. This method of connecting three sticks of pipe and then inserting the HDPE into the casing pipe will minimize the compressive forces that are applied when attempting to home individual sticks of pipe within the casing. By ensuring that the connections are correct before being inserted into the casing pipe, the possibility of damage to the bell and spigot will be minimized while increasing joint integrity. Do not attempt to join more than one joint at a time.

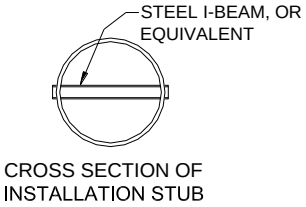
Figure 2
Inserting Sections into Host Pipe



One method of inserting HDPE pipe into the host pipe is to use a cable connected to an installation stub that will pull the spigot end of the pipe into the bell end of the pipe already in place. Installation stubs can be fabricated in the field or purchased through a local ADS distributor. Please refer to the ADS Installation Guide for Corrugated HDPE Pipe for instructions on fabricating an installation stub in the field. Installation stubs are used to avoid applying direct force and damaging the bell end of the pipe being installed. Insert a small steel I-beam, or equivalent, through the installation stub and connecting a cable, or chain, to the steel cross-member inside the installation stub. Once connected, the cable will run through to the opposite end of the host pipe. *Note: The force required to pull the carrier pipe can be significant, the pulling device chosen must be designed to handle the loads encountered. All personnel should maintain a safe working distance from the cable and pulling apparatus to avoid serious injury in the event of failure.* Once the pipe is pulled through and properly homed in the host pipe, the cable and installation stub may be removed and used to continue installing other pipe sections until the desired length is achieved. Figure 3 illustrates the use of a cable and installation stub to install the HDPE pipe into the host pipe.

Figure 3
Installation of Liner Pipe using Installation Stub





Additional Considerations

Design and installation considerations not discussed in this Technical Note but should be reviewed and accounted for before proceeding include, but are not limited to:

- Access to the host pipe
- Inside diameter of the host pipe versus the outside diameter of the HDPE lining pipe
- Pre- and post-installation hydraulics
- Structural integrity of the host pipe
- Grouting procedures

Technical Note 5.06: *Sliplining Considerations for HDPE Pipe* provides additional discussion on these and other considerations for any sliplining application using HDPE. The latest edition of *Sliplining Considerations for HDPE Pipe* shall be reviewed in association with this technical note. For a copy of the current edition of Technical Note 5.06 and other literature visit www.ads-pipe.com or contact an ADS representative.