PROCEDURES
PLASTIC PIPE HANDLING AND CARE

2.0 PURPOSE

Care not to damage the pipe should be taken in the handling and storage of PE pipe. PE pipe shall be covered to avoid exposure to ultraviolet rays.

2.1 SCOPE

A. Handling and Loading
B. Storage
C. Exposure
D. Contaminated Pipe
E. Cold Weather Fusion

2.2 HANDLING AND LOADING

A. Four inch (4") and larger pipe shall be loaded and unloaded by the use of a mechanical lifting device. Pipe straps should be utilized to protect against damage to the pipe.

B. The pipe shall not be turned loose to roll down the skids. It shall also be properly supported to prevent dragging ends of the pipe on the ground.

2.3 STORAGE

A. Pipe and tubing should be stacked in straight rows and contained by upright stakes or racks so it will remain straight.
B. Pipe should not be stacked so high as to cause the bottom rows to become out-of-round due to excessive loading.
C. Pipe should be stored on wooden strips not less than 6" wide to prevent it from being damaged or becoming out of round.
D. Pipe should be stored so as to eliminate debris and other undesirable elements from entering the pipe.
E. Care should be taken when loading and unloading pipe to avoid cuts and punctures that occur when pushed or pulled over sharp projections.
F. Pipe should not be dropped or struck by objects.
G. Polyethylene pipe may be laid on the ground without pads or similar support where the terrain will not damage the pipe.
H. All piping and tubing shall be carefully inspected for cuts, gouges and deep scratches upon delivery**.** Harmful imperfections shall be noted for proper disposition. Small imperfections may be cut out and destroyed while major damage or imperfections shall

not be accepted and/or returned to the supplier.

2.4 EXPOSURE TO ULTRAVIOLET LIGHT

A. Plastic pipe shall not be subjected to unprotected outdoor exposure to ultraviolet light for longer than 2 years.

B. This applies to all pipe kept in storage and to all temporary piping installations.

2.5 LIQUID HYDROCARBON PERMEATION

A. When present, liquid hydrocarbons may permeate (solvate) polyethylene pipe. Liquid hydrocarbon permeation may occur when liquid hydrocarbons are present in the pipe, or where soil surrounding the pipe is contaminated with liquid hydrocarbons, or where liquid hydrocarbon condensates can form in gas pipelines. All types of liquid hydrocarbons (aromatic, paraffinic, etc.) have a similar effect, and the relative effect on different polyethylene pipe resins is essentially the same. Heat fusion joining to liquid hydrocarbon permeated pipes may result in a low strength joint.

CAUTION — once polyethylene pipe has been permeated with liquid hydrocarbons, heat fusion or electrofusion joining is NOT recommended because liquid hydrocarbons will leach out during heating and contaminate the joint. Liquid hydrocarbon permeated polyethylene pipe should be joined using suitable mechanical connection methods.

B. Liquid hydrocarbon contamination is indicated by a rough, sandpaper-like, bubbly, or pockmarked surface when a fusion heating iron is removed from the pipe surface, and may be indicated by discoloration or by a hydrocarbon fuel odor.

2.6 FUSION IN COLD WEATHER

A. In cold weather, polyethylene becomes more sensitive to impact and less flexible. Use additional care in handling. When temperatures are very cold, avoid sharp impact such as dropping the pipe from moderate heights. Cold pipes will be harder to bend or uncoil. In inclement weather and especially in windy conditions, the fusion operation should be shielded to avoid precipitation or blowing snow and excessive heat loss from wind chill.

B. Remove all frost, ice, or snow from the OD and ID surfaces of areas to be fused.

Surfaces must be clean and dry before fusing.

C. Polyethylene pipe and fittings will contract slightly in the cold. Most butt and saddle fusion equipment will accommodate the slightly reduced diameter of cold pipe. In socket fusion, it will be more difficult to fit a cold socket fitting on the heating tool socket face. One way to compensate is to warm socket fittings in the cab of the service truck before using them.

D. In some cases, socket fusion cold ring clamps may fit loosely on cold pipe. Using two cold ring clamps, set the first cold ring clamp to proper distance with the depth gauge. Shim around the pipe behind the clamp with tape, and place a second, backup cold ring clamp over the tape. The backup cold ring clamp prevents slippage, and the inner cold ring clamp allows the pipe to expand to normal dimensions when heated.

E. When fusing in cold weather, the time required to obtain the proper melt may increase.
   - *Maintain the specified heating tool surface temperature.* ***Do not increase heating tool surface temperature.***
   - *Do not apply pressure during zero pressure butt or saddle fusion heating steps.*
   - *Do not increase butt or saddle fusion joining pressure.*

F. In butt fusion, melt bead size determines heating time; so the procedure automatically compensates when cold pipe requires longer time to form the proper melt bead size.

G. For saddle fusion, establish the necessary cold weather heating time by making trial melt patterns in the field on non-pressurized, excess pipe that is at field temperature. Use the standard heating time plus additional heating time in 3-second increments until the proper melt pattern is established on the pipe. A clean wood board or heat shield ("flyswatter") should be used between the saddle fitting and the heater to avoid heating the fitting when making trial melt patterns. Use only the cold weather heating time required to obtain the proper melt. Avoid excessive heating time. Do not make saddle fusion trial melt patterns on pressurized pipe.

H. In cold weather socket fusion, it takes more time to push a cold socket fitting onto the male socket heater face so trials to develop a heating time for the fitting are not needed. For the pipe, establish the necessary heating time by making trial patterns on excess pipe that is at field temperature. Use the recommended heating time plus additional heating time in three-second increments until the proper melt pattern is established.