Technical Note

TN 5.13 SaniTite® HP Sanitary Sewer Pipe Repair Options

Introduction

ADS® SaniTite HP for sanitary sewer is made of polypropylene (PP) resin making the pipe lightweight and very easy to handle. The attributes that make the pipe easy to use can also make it susceptible to abuse, possibly resulting in damaged pipe or joints. This technical note discusses some of the products available that can be used to repair damaged PP pipe or joints in the field.

Repair Options

One of the primary considerations in selecting a repair method is the degree of joint performance required. For sanitary sewer applications, a watertight repair is always necessary in contrast to storm drain repairs that may have a less stringent joint performance. A commonly accepted industry maximum allowance specified for infiltration/exfiltration acceptance for sanitary pipelines is 200 gal/in-diam./mile of sewer/day (18.5 L/mm-diam./km of sewer/day), though regional specifications may vary and be as stringent as 50 gal/in-diam./mile of sewer/day (4.6 L/mm-diam./km of sewer/day).

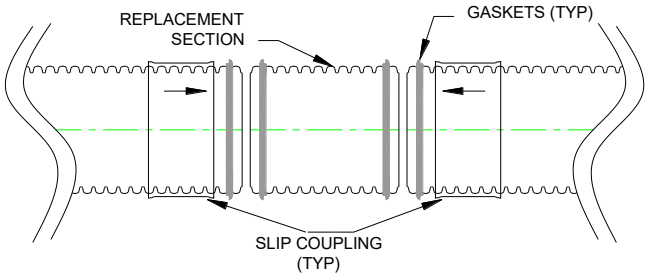
The way in which a pipe can be accessed is another primary consideration which influences what type of repair alternative is selected. Pipe that is not yet buried, or can be easily excavated, can be repaired from the exterior. If the pipe is buried and cannot be conveniently excavated, an internal repair may be the best alternative. If the pipe is too small to enter, there are companies with remote controlled equipment that can install the product. Each situation must be considered individually.

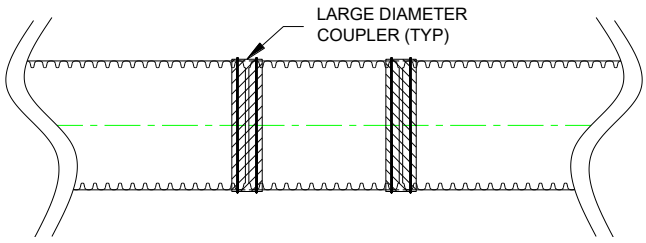
The repair options addressed below are divided into external repairs and internal repairs. During any pipe repair, backfill should be placed and compacted per project specifications to provide proper support for the pipe and coupler.

External Mechanical Repairs

Slip Couplings 12” – 30” (300–750 mm), provides a watertight repair that will meet most pressure testing requirements, when installed correctly. The slip coupling uses PVC bells with gaskets. The gaskets are placed in the valleys on either side of the section to be repaired and slip couplings are then slid over the gaskets. Due to the exterior gasket, the slip coupling can only be used on pipe with a corrugated exterior. PVC slip couplings are most commonly used with watertight smooth interior thermoplastic pipe products. Note: This repair method cannot be used with the triple wall, smooth exterior profile pipe.

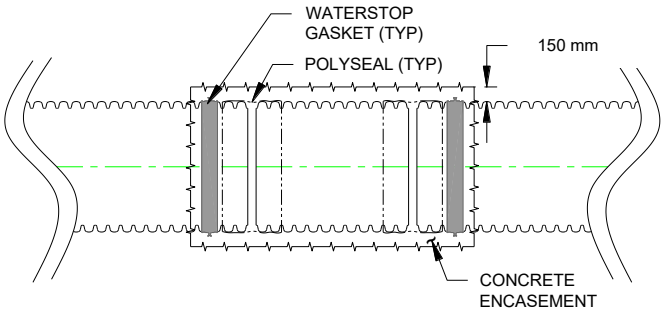
Large Diameter Repair Coupler 12” – 60” (300–1500 mm) are ideal for repairs and alterations of large diameter sewer pipe. Repair couplers similar to those provided by Mission Rubber Company LLC, Fernco® or equal may be used on SaniTite HP pipe.





The couplers are used by removing the damaged section of pipe, replacing it with a new section and then sliding the coupler back around the joint, similar to the slip coupling above. The couplers stainless steel bands are then tightened to the manufactures recommendations. These rubber couplings are capable of meeting watertight field test requirements when installed per the manufacturer's recommendations.

Concrete Collar 12" – 60" (300–1500 mm), provides a water tight repair testable to most hydrostatic test with an appropriate leakage requirement. Installing a concrete collar involves building a form around the area to be repaired and encasing it in concrete. A Mar Mac Polyseal Pipe Coupler is wrapped around the repair area or joint prior to pouring the collar to keep the concrete from seeping into the pipe. WaterStop gaskets are installed outside of the Polyseal coupler towards the outside edge of the concrete collar. Typically, approximately 6" (150 mm) is excavated beneath the pipe to allow for proper application of the Polyseal coupler and concrete encasement. If the pipe itself is damaged, the damaged area shall be removed and a replacement pipe section spliced in prior to pouring the collar. This repair option may be employed for either dual wall or triple wall sanitary pipe.



Internal Repairs

Internal mechanical repair products generally consist of a flexible cylindrical gasket sleeve, which is expanded to conform to the inner wall of the pipe. The feasibility of this repair method depends on the size of the damaged section or joint and available access into the pipe. Internal mechanical seals slightly restrict the inside diameter of the pipe. This should be considered when assessing the risk of debris obstruction.

NPC Internal Joint Seal, 18" – 60" (450–1500 mm), consists of an EPDM rubber seal and stainless steel bands. The rubber seal is inserted into the pipe and positioned over the joint. A torque wrench is used to expand the bands against the inner wall of the pipe. The Internal Joint Seal is designed to seal joints – not repair damaged pipe sections. The damaged area of the pipe must be removed and a replacement section spliced in if necessary in order to use the Internal Joint Seal. This system may provide a watertight joint when installed as recommended. The manufacture should be contacted to verify the product meets the specific application requirements including test requirements, if specified. If pressure tests are required, NPC should be contacted to ensure that the product is suitable for the specific test criteria.

Welding, 36" –60" (900–1500 mm), is another method of internal joint repair where personnel use hand-held welding guns to make the needed repair. Extrusion welding techniques are most commonly utilized, however other welding methods may be used depending on the condition of the damage. Clean and dry working conditions and skilled operators are critical to a successful repair. Contact ADS to discuss the type of damage and to assess if a welded repair will be suitable.

Link Pipe Grouting Sleeve™, 12" – 60" (300–1500 mm), is a stainless steel grouting sleeve that is installed with an inflatable plug. The sleeve may be used to seal a joint or repair short sections of damaged pipe. The manufacture should be contacted to verify the product meets the specific application requirements including test requirements, if specified.

Internal chemical sealing is another method of internal joint repair using chemically activated gel or grout to minimize joint leakage. The grout is typically applied with specialized remote-controlled equipment. Test/seal packer is used to remotely seal a joint. The grouting chemicals are forced through the joint out into the surrounding soil where they gel with the soil. The gelled mass forms a waterproof collar around the pipe. The result is significantly reduced leakage. There are several types of chemical grouts available and the manufacturer should be contacted to review the specific situation and any joint tightness or pressure test criteria. Companies such as Avanti International, Strata Tech Inc., and Carylon Corporation manufacture and/or install chemical grout. Stephen's Technologies *New Life Coatings and NewLife Liner Systems* as well as Avast Hydro-Lining International, are examples of companies that offer cured in place epoxy lining systems that have been effectively used with HDPE pipe. Most pipe diameters can be chemically grouted provided the grouting contractor has the appropriate equipment.

Manufacturer Contact Information

Contact the Regional Engineer or Application Engineering Department for assistance with other unique conditions or for contact information regarding any companies listed in this technical note.

Note: Thermoplastic pipe products are solely intended for the conveyance of fluids. Access into this product for maintenance, inspection, repair, or other reason should be done in strict accordance with OSHA recommendations for confined space entry.

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