

DuroMaxx[®] Steel Reinforced PE Liner Pipe Unloading, Handling & Installation Guide





PREFACE

This instruction book is for your crews. Distribute it to help them install Contech® DuroMaxx® liner pipe correctly. DuroMaxx is a steel reinforced polyethylene, segmental pipe that is inserted (sliplined) into an existing deteriorated pipe, or a into casing pipe or into a tunnel as a carrier pipe.

Do not assume experienced workers know all the answers. Review these instructions with your supervisors and crews. It can mean a safer and better job for you and your customer.

We recommend a preconstruction meeting with a Contech representative and all interested parties to ensure everyone involved in your project has a high level of understanding on what means and methods will be used to prepare for, install and grout the new structure(s).

If performance testing of the joints is required, we suggest testing the first few manhole runs in the early stages to ensure that jointing procedures are correct.

If you have any questions about these instructions, call your Contech representative.

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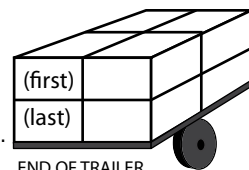
⚠️ WARNING

This safety alert symbol indicates important safety messages. When you see this symbol, it will alert you to hazards or unsafe practices that CAN result in severe personal injury (including death) or property damage. Be sure you understand the message that follows.

⚠️ SAFETY INSTRUCTIONS

Failure to follow these instructions can result in serious injury, death and/or damage to pipe.

1. Only trained and authorized equipment operators are to be permitted to unload the trailer.
2. Wear approved safety hat and shoes, gloves and eye protection.
3. Park the truck and trailer on level ground before you start unloading.
4. Keep all unauthorized persons clear of the area when the driver releases the binders from the trailer and during unloading.
5. Do not release steel strapping around the wood frame until the pallets or bundles have been placed on level ground and will not be moved again as a unit or until proper pipe chocks have been put in place.
6. When pipe has been shipped as nested loads, cut the longitudinal straps that pass through the pipe and hold the nested diameters in place prior to unloading. Failure to do so may result in pipe damage.
7. Know the capabilities and rated load capacities of your lifting equipment. Never exceed them.
8. Do not stand or ride on the load of pipe while it is being unloaded.
9. If unloading at multiple points, secure pallets between drop off points. Always unload the top pallets or bundles first.
10. Never attach chains or wire rope to the pipe. They could damage the pipe. Use nylon lifting slings for unloading and handling pipe.
11. Do not push pallets off the trailer or permit pipe to drop to the ground.
12. Do not drag DuroMaxx liner pipe across the ground.
13. Do not stack DuroMaxx liner pipe higher than the original stacked on the delivery truck. Stacking too high can damage bottom pipes and can become unstable.
14. Always follow all project, local, state, and OSHA rules and safety requirements – including but not limited to confined space, trenching, shoring and excavation procedures.



UNLOADING

1. Before unloading, observe the pipe for damage while it is still on the truck. Note any pipe damage on the bill-of-lading and have the truck driver initial the notes. Also, report any shipping damage to your local Contech representative.
2. **Do not overtighten strapping** as it may cause dimpling. If dimpling occurs, unstrap pipe to allow for rebound to occur at the dimpling of the pipe.
3. **On nested loads**, cut the internal strapping prior to unloading. Unload each pipe size independently.
4. Use a forklift with full-length forks or fork extensions (typically 8 feet), front-end loader or backhoe with fork adapters at full length to engage entire pallet width. Make sure back of forklift is free of protrusions or spikes that could damage the pipe.
5. Use Nylon lifting slings of sufficient strength, length and specifically intended to safely handle entire pallet or individual pipe, whichever is being lifted.
6. For 30" diameter pipe, one sling point located at mid-length is generally sufficient.
7. Use two (2) sling points for lifting sizes greater than 30" diameter. Sling spacing equal to 1/3rd of the pipe length is generally sufficient.
8. An approved unloading pole can be used inside the pipe to unload and handle individual pipe sections. Using forks or unapproved poles inside the pipe will result in damage.
9. Do not use steel cables, chains and/or hooks to unload or handle pipe.
10. Do not stand or ride on the pipe load during unloading or handling.
11. Do not scoop the pipe or strike with forks.
12. Do not drag or drop the pipe.
13. Proper on-site bell and spigot pipe storage practices and blocking should be used to avoid deformation of the pipe bells.

PREPARATION FOR SLIPLINING

Follow all requirements of the project plans and specifications. Prior to sliplining, the following procedures should be performed to ensure satisfactory results are obtained.

1. The existing sewer line or drainage structure should be inspected to determine the condition of the line and identify problem areas or obstructions such as displaced joints, crushed pipe, protruding service laterals, roots, unstable pipe, debris, out-of-roundness, or inside diameter reductions.
2. Verify and record the location, number, and size of all service laterals and connections.
3. Where the pipe is to be pushed through existing manholes or elbows, check the alignment and clearance.
4. Check for alignment changes, sags or other situations that could hinder the movement of the new pipe segments through the line.
5. Remove any obstructions in the existing line that will prevent insertion of, or cause damage to, the new liner pipe. Large joint offsets or severely deteriorated pipe may need to be removed or repaired prior to installing the pipe. These may be good locations for insertion pits or point repairs.
6. Consult with the Engineer for guidance when changes to construction methods could impact the intended end results for the project.
7. Thoroughly clean the existing line as required (high-pressure water, buckets, reamers, or other mechanical methods). Dirt and debris can result in excessive jacking/pulling loads or liner pipe hang ups that could damage the new liner pipe.
8. Verify adequate clearance for the liner pipe. Measure the inside diameter (ID) of the existing pipe at the worst location and compare the dimension to the liner pipe outside diameter (OD). Observe the general alignment of the existing pipe. Shorter liner pipe lengths may benefit in navigating past misalignment or curvature in the existing pipe. Depending on the condition of the existing pipe and the obstructions present, it may be desirable to pull a trial liner or mandrel of the same outside diameter as the liner pipe (outside diameters are listed in figure 11). The trial liner may be a short section of DuroMaxx liner pipe and should be attached to pulling cables at each end.
9. Develop and install a skid rail system in the invert of the existing pipe to protect the liner pipe during the insertion process. Contech can also provide factory attached HDPE skids at an additional charge (see figure 1).

INSERTION LOCATIONS

DuroMaxx liner pipe is installed from an excavated insertion pit or other location allowing access to the existing pipe (such as manholes, shafts or culvert ends).

When insertion locations have not been designated by the engineer or owner, the following conditions should be considered when selecting locations:

- Changes in line and grade
- Large joint offsets
- Severely deteriorated pipe sections
- Manholes being replaced
- Service laterals
- Accessibility (structures, traffic and existing utilities)
- Soil conditions
- Ability to redirect, bypass or pipe through the effluent with pumps, cofferdams or other means the Engineer has deemed to be appropriate
- Pushing and pulling distances

It is possible to reduce the number of insertion pits or the push/pull distance by sliplining in both directions from one location (or both ends of a culvert or sewer run). Depending on the liner pipe diameter, the condition of the existing line or casing pipe and safe jacking loads, sliplining up to 1,000 feet or more from a single location is possible. In some cases (tunnels, long runs of large diameter pipe, etc.) it may be desirable to insert and position individual pipe sections or pipe "trains" into the existing pipe and then join the pipe sections together while inside the existing pipe to extend the allowable working distance from one location.

When insertion pits are to be used and locations have been designated or selected, the required size of the pit should be determined. DuroMaxx liner pipe comes in standard lengths of 14 feet or 24 feet (20 feet for 60" and 120" diameters) are available. The insertion pit length should allow for the longest length of pipe being used, clearance for joining pipe sections, adequate space for pushing/pulling equipment and trench sheeting or shoring. The width of the insertion pit should be sufficient to accommodate the new liner pipe diameter plus provide safe working room for the crew. The depth of the insertion pit should allow for exposing and removing the existing pipe's top down to the springline. The remaining bottom half of the existing pipe can serve as an open channel to maintain water flow. By-pass pumping is generally not required for segmental sliplining. A clean, level work area between the existing pipe and trench shoring will minimize dirt and debris from being washed back into the opened pipe.

If sliplining will occur from an open end of a culvert or pipeline, a timber positioning frame or level work platform might be helpful to align each new liner pipe section.

CONTINUOUS PUSHING METHOD

1. This liner pipe installation method may be suitable for existing culverts or manhole runs where the length of the existing pipeline is equal to or less than the published allowable jacking distances shown in figure 3. The continuous pushing method involves placing each section of pipe from one location, homing of each joint at that location and pushing the pipe run into the existing pipe until the next piece of liner pipe is ready to be joined and pushed. As each pipe section is placed and joined, the amount of the liner pipe being pushed increases in length.
2. Before liner pipe insertion begins, a skid rail or runner system should be developed and put in place to ease liner installation and to protect the liner pipe exterior from excessive abrasion at the sliding surface. Contech can supply attached HDPE skid angles or skid pipes that may be suitable depending on the application (see figure 1).
3. DuroMaxx liner pipe having bell and spigot ends is placed spigot end first with the bell end trailing.
4. A pushing ring (or push piece) should be used in the bell end to evenly distribute the load from the pushing equipment. The pushing ring can be a short, sacrificial piece of liner pipe or a timber or metal frame.

▲ Do not push on the end of the bell.

5. Both the spigot gasket and the inside of the bell should be lubricated prior to placing the pipe into the existing (host) pipe and prior to joining. See the Assembling Gasketed Joints section on page 6 for more information on joining pipe sections.
6. Set the first pipe into the existing pipe and push until only 2 to 3 feet remain exposed. The pipe should be restrained in preparation for joint assembly with dog collar (this is simply a top side collar that has the ability to sit down in between the pipe ribs and hold the pipe in place while the next piece of pipe is pushed into place to complete the joint), inflatable air bags, wedges, or other devices. After several pipes are installed, a restraining device may not be necessary.
7. Lubricate and lower the next piece of pipe into position for joining. The spigot end is joined into the previously placed pipe's bell. Pipe sections can be joined using pushing/pulling equipment or a come-along.
8. Repeat steps 4, 5 and 6 until liner pipe installation is complete. The pipe pushing/pulling loads should be monitored. Excessive force can "telescope" pipe joints and/or buckle the liner pipe. On some installations, it may be

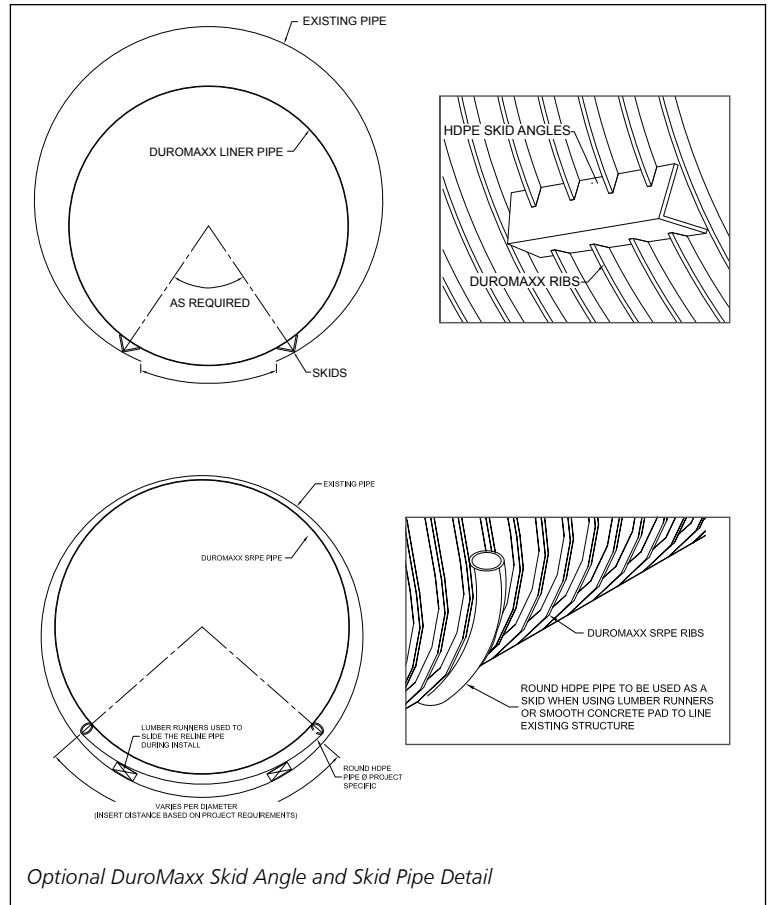


Figure 1



Figure 2

JACKING LOAD AND DISTANCE			
Diameter (in)	Safe Jacking Load (lbs)	Allowable Jacking Distance (ft) ¹	Allowable Jacking Distance (ft) ²
30	2,000	426	1,064
36	2,400	407	1,017
42	2,800	415	1,037
48	3,750	487	1,218
54	4,240	470	1,175
60	4,710	439	1,098
66	5,260	370	924
72	5,810	354	886
84	6,910	362	906
96	8,010	368	921
108	9,110	365	914
120	10,220	375	938

¹ Based on Slide coefficient of 0.25
² Based on Sliding coefficient of 0.10
Figure 3

feasible to swab the exterior surface of the liner pipe skids with lubricant to reduce friction.

9. When liner pipe has been installed in both directions from a single insertion pit, the terminal ends are joined with closure pieces and welded couplings or a new manhole.
10. Where DuroMaxx liner pipe has been installed continuously through manholes, cut and remove the pipe from within the manholes as required.
11. Cement or concrete bulkheads should be formed to seal the annular space between the liner pipe and the existing pipe at each culvert end or at all manhole and insertion pit entries and exits, as required. If the entire annular space between bulkheads is to be filled with grout or blown sand, then bulkheads should be constructed to provide adequate resistance to grouting pressures and to provide appropriate vent and drainage tubes. When service and lateral connections are to be connected, it may be desirable to complete downstream bulkheads for the line segment after connections have been reinstated to provide an outlet for sewage/drainage between the pipes.

SEGMENTAL PUSHING METHOD

1. The segmental pushing method involves pushing single sections of pipe or pipe "trains" into final position one at a time. A pipe "train" is constructed from several sections of pipe that have been joined together and then handled as a single unit. This method works well for existing culvert or manhole runs where the length of the existing pipeline is longer than the published allowable jacking distances shown in figure 3.
2. Each liner pipe section is aligned at or inside the insertion location and then carefully pushed into its final location.
3. After properly positioned in the existing pipe, the liner pipe sections are typically braced or blocked into place (unless the new pipe line will be floated to the crown of the host pipe).

4. When blocking the back end of a section, use blocking that extends out far enough to provide blocking for the next section to be placed.
5. Secure the blocking using wedges or fasteners. Tie them together across the crown as pipe movement can dislodge them.
6. If bell and spigot joints are not used, place internal joining system in accordance with the approved drawings.
7. Cement or concrete bulkheads are normally used on both ends of the existing pipe run, however, if the grouting plan includes intermediate bulkheads then install them at the locations needed.

PULLING METHOD

The pulling method is similar to the pushing method. A steel cable is threaded through the existing pipe and attached to a pulling ring (plate or frame) positioned inside the liner pipe bell or against the trailing liner pipe end.

The cable is attached to a winch assembly to facilitate pulling the liner through the existing pipe section. After each pull, the steel cable is disconnected from the pulling ring and threaded through the next liner pipe section to be joined. After the pulling ring is reconnected to the cable, the process is repeated.

When using gasketed joints, do not attempt to pull the leading spigot end. Doing so will disjoin gasketed liner sections. Optional fusion-welded joints may allow for pulling from the leading spigot end.

The pipe pushing/pulling loads should be monitored. Excessive force can "telescope" pipe joints and/or buckle the liner pipe. On some installations, it may be feasible to swab the exterior surface of the liner pipe skids with lubricant to reduce friction.

ASSEMBLING GASKETED JOINTS

DuroMaxx liner pipe gaskets are fitted on the spigot end of the pipe at the factory. Follow these steps:

1. Remove the protective film from the gasket prior to applying the lubricant or joining the pipe.
2. If the gasket is removed, make sure the gasket seat is clean and then reinstall properly.
3. Make sure the bell and spigot are thoroughly clean and free of soil of any type.
4. Use a johnny mop or brush to apply a liberal amount of gasket lube to the gasket and to swab the inside of the bell.

5. Align the spigot end of the pipe into the bell's leading edge during joining process - being careful not to allow soil or debris into the connection. User of a mat or plastic liner below the bell will eliminate debris when joining the pipe,
6. Do not push directly on the bell of the pipe! Use either a pushing ring, pulling ring, or other appropriate device to distribute the load in the bell to prevent damage. Do not use a cable or chain wrapped around the pipe to join the pipe. Use of a nylon strap or a come-a-long to pull the liner pipe sections together is also a commonly used method to join pipe sections (see figure 2).
7. Push or pull the pipe from the trailing end until the edge of the bell aligns with the home mark on the spigot end. Maintain joining pressure on the joint momentarily to ensure that the joint does not separate. When pushing the joint home, make sure that debris or dirt is not pulled into the bell by the spigot. Material such as small stones or sand pulled into the bell as the pipe is stabbed can impair gasket sealing and cause leaks.
8. Cold Weather Note: Rubber gaskets become harder as the ambient temperature decreases. Gaskets tend to compress less and jointing becomes less forgiving. Proper bell-spigot alignment, adequate bell and spigot lubrication and recommended joining procedures all become more essential as temperatures decreases.

FIELD CUTTING PIPE

Once DuroMaxx liner pipe is field cut, the cut end is no longer compatible with the factory bell. Field cutting should only be done at the end of pipe runs.

1. The recommended cutting tool for DuroMaxx liner pipe is a chop saw and abrasive saw blade (see figure 5). Refer to the Operating Instructions from the saw manufacturer for additional information.
2. Blade thickness should be no less than 1/8" thick and is recommended to be made of 2 ply material that is used to cut ductile iron pipe (see figure 4).
3. Use the leading edge of the blade to cut into the steel ribs of the pipe.
4. Bury the blade as much as possible into the pipe as you proceed to aid in keeping field cuts as square and true as possible.
5. The alternative cutting tool for DuroMaxx is a handheld reciprocating saw.



Figure 4



Figure 5



Always use safety glasses when cutting DuroMaxx liner pipe and use protective gloves in case sharp edges are exposed.

ANNULAR SPACE GROUTING

Most sliplining installations require the annular space between the existing (host) pipe and the liner pipe to be grouted. Grouting of the annular space fixes the position of the new liner pipe, provides uniform support, increases allowable external hydrostatic pressure on the liner pipe and inhibits further failure of the host pipe. Introducing the grout into the annulus is accomplished by gravity flow or by low pressure pumping. Properly controlled grouting is essential to prevent liner pipe flotation, deformation or liner pipe buckling/collapse.

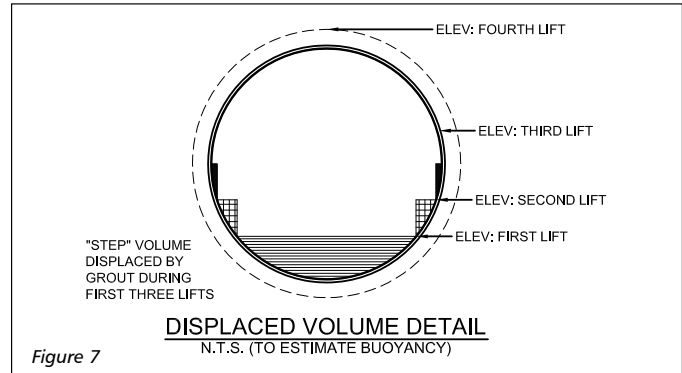
If the annular space will not be grouted, full length skids or pipe supports should be utilized to provide long-term uniform liner pipe support.

Placement

There are many acceptable grouting methods, and they usually fall under two general categories: monolithic grouting and staged grouting.

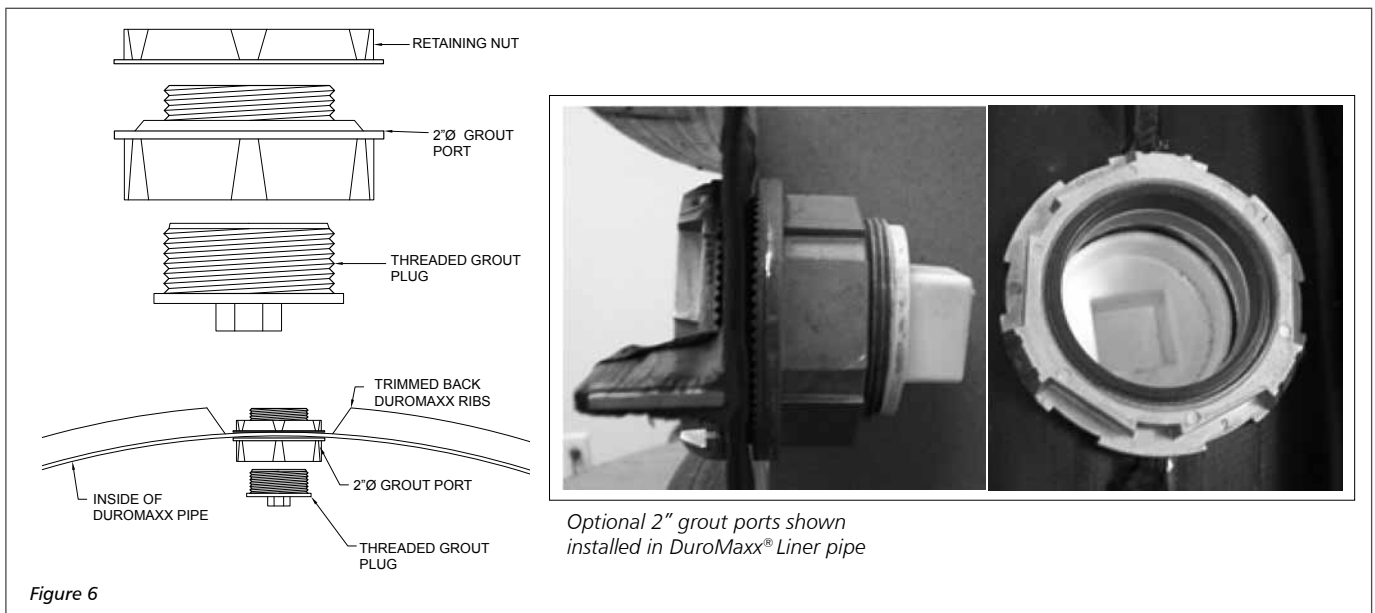
1. Monolithic grouting involves filling the entire annular space with one grout lift or one step. Grout is injected under low pressure from the upstream end of the pipe run from manhole to manhole, from an insertion pit to manhole or from an upstream bulkhead toward a downstream bulkhead.
2. Staged grouting involves placement of the grout in multiple lifts and when done properly can eliminate liner flotation. The liner pipe is grouted into a cradle in the first stage. After the first lift of grout has achieved initial set and is no longer fluid, the next lift of grout is placed and allowed to set. This process is repeated for remaining grout lifts until the annular space is completely filled. Factory installed grout ports (see figure 6) are optional and can simplify the grouting process. Locations of grout ports must be included with material orders.

On larger diameters, multiple lift(s) will be needed to control uplift, flotation and deformation. The unit weight of the fluid grout directly impacts the upward buoyant forces and the lateral side pressures. Buoyant force is defined as the weight of displaced fluid and acts upwards (see figure 7). Unrestrained buoyant forces can cause major problems and must be evaluated and considered by the installing contractor and any grouting subcontractor if used.



Other grout placement methods include grouting from the surface through drilled holes and slick-line grouting from a tube within the annulus.

For all placement methods, the annular space should be uniformly and completely filled on both sides of the liner simultaneously or in a balanced manner with no more than one foot differential from one side to the other. Unbalanced or uneven grouting can affect the liner pipe's shape, line and grade.



Flotation Control

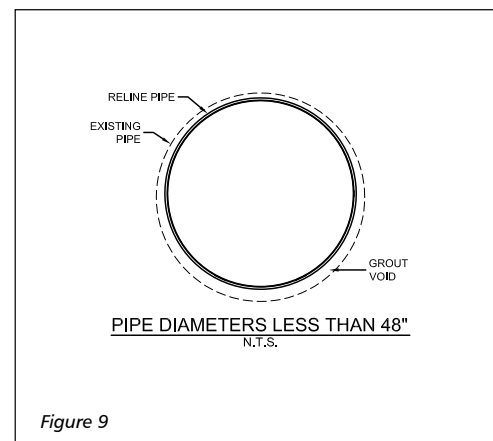
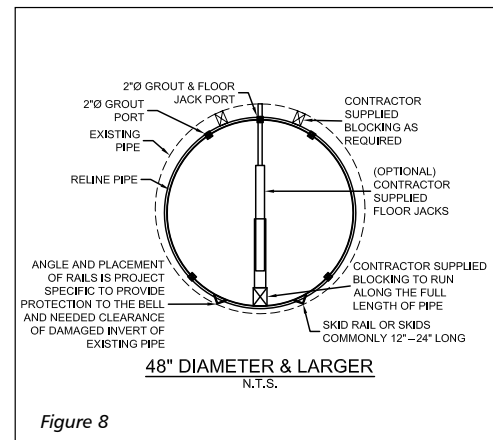
When project plans and specifications require the liner pipe to be positioned on the invert of the existing pipe, flotation of the liner pipe resulting from grouting operations should be addressed. Depending on the type of grout and the grouting method being used, it may be necessary to perform one or more of the following to offset buoyant forces on the pipe:

- a. Fill the liner pipe with water, partially or fully, depending on the grout density and grout lift thickness. For monolithic grouting, the liner pipe should be full of water, and the grout density must be lower than that of the pipe when full of water.
 - b. Stage grout with a suitable lift thickness, depending on grout density.
 - c. Attach continuous blocking and spacers to the pipe exterior with strapping or other means.
 - d. Attach continuous blocking and spacers to the interior of the existing pipe's crown.
 - e. Use internal screw jacks (sometimes referred to as "basement" or "floor" jacks) and spreader beams on the liner pipe invert that pass through liner grout ports (12 o'clock position) to offset buoyant forces (see figure 8).
1. If buoyant forces are expected to exceed the weight of the new liner pipe (plus any counter weighting such as sand bags or contained water) then blocking and bracing techniques are required. This involves placement of blocking that will act both as a spacer between the host and new liner pipes and as a means to transfer the buoyant forces up to the host pipe's crown. Blocking can be attached to the exterior of the new liner pipe at two locations (for example 11:00 and 1:00 locations). If blocking alone with no screw jacks is used, the blocking must be nearly continuous (no more than a 1 foot gap longitudinally).
 2. Another common technique employed with staged grouting uses blocking at the joint locations and screw jacks at specific locations along the centerline of the new pipe and in between the joint areas (see figure 8). The screw jacks extend freely through the 12:00 grout ports at the top of the liner pipe, and extend down to a longitudinal spreader beam on the liner pipe invert. The spreader beam is nearly continuous (no more than a 1' gap between segments of the beam). The beam is normally a 4"x4" or 4"x6" timber depending on the anticipated loads. The buoyant forces are transferred from the new liner pipe upward to the spreader beams and then transferred through the screw jacks and into the crown of the existing (host) pipe. If the existing (host) pipe is corrugated, the bearing surface of the top section of the jack needs to be a 6"x 6" plate so that the top end of the jack can bear across two corrugations and not slide when loaded.
 3. After all necessary bracing and blocking are in place, the grout placement begins.

Floating the Liner pipe

When permitted in project specifications, allowing the liner pipe to float to the crown of the existing (host) pipe during the grouting operation can be an acceptable procedure (see fig. 9). The grouting procedure and liner pipe flotation should be controlled such that liner pipe deflection is minimal (less than 2%) and that final liner pipe position provides a relatively uniform line and grade for efficient water flow after rehabilitation.

Contact your local Contech representative for more information on recommended grout lift thicknesses to control liner flotation, grout pressure and liner deflection.



Grout Placement

For monolithic techniques, the grout hose can be advanced with the liner pipe on long runs versus attempting to pump or gravity flow grout a long distance from a single upstream location. Guides or the blocking (placed at about 11:00 and 1:00 positions) keep the grout hose at the top of the pipe as it is extracted. Careful monitoring of pumping rates, grout delivery volumes and the anticipated grout quantity on a per foot basis help determine the hose extraction rate.

For stage grouting, the grout hose is attached to the lowest and most downstream grout port (as provided). If a high slump mix is used then connection to some ports along the same elevation (or gradient line if sloped) can be skipped and instead used as viewing ports to observe the elevation of the grout until such time that they need to be plugged.

After the elevation of the grout reaches the lowest grout port the hose is moved to the opposite side in order to balance out the lift from side to side. If this level is the height limit per the grouting plan then the grouting operation ceases until the first lift achieves initial set.

This process continues upstream and upwards as dictated by the grouting plan. Side to side hose movement is necessary to prevent an imbalance of grout on one side of the pipe compared to the other.

After grout achieves initial set at and below the springline, the screw jacks and spreader beams on the invert can be removed.

The final grout lift is normally placed through the 12:00 grout ports and therefore, shut off valves will be needed for these locations. The quantity of shut off valves depends on the slope of the new pipe, the volume of grout to be placed, the length of the void space and the slump of the grout

Important Grouting Tip

Use a 1/2" x 1/2" or 3/4" x 3/4" screen over the grout hopper when accepting delivery from a truck. The likelihood of the delivery truck containing large aggregate from a prior delivery is high. Large aggregate can bind up in the grouting equipment and create high back pressure and then a liner pipe blowout.

Maximum Pressure

The recommended maximum grouting pressure for DuroMaxx liner pipe will vary depending on specific site conditions and pipe stiffness. Appropriate gages or other methods should be used to monitor external pressures on the liner pipe. Generally recommended pressures are shown in figure 10.

RECOMMENDED MAXIMUM PRESSURE	
Diameter (in)	Recommended Maximum Grout Pressure ^{1*} (psi)
30	10.3
36	8.5
42	6.7
48	6.4
54	5.6
60	4.9
66	5.0
72	3.9
84	4.6
96	3.1
108	2.2
120	1.6

¹ Contact your local Contech representative for more information about recommended grout pressure and grout procedures
* Includes a Factor of Safety (FS) = 2.0 for liner pipe with 2% deflection.

Figure 10

Bulkhead designs should provide adequate venting and draining tubes. Hydrostatic head pressure (grout) resulting from the grout lift thickness, the slope of the pipe, elevation change between the gage and the pipe, elevation difference between grout pump and the nozzle, etc. should be considered in addition to the grouting pressure on the gage. The hydrostatic head pressure combined with the pressure on the gage should not exceed the recommended maximum pressure. Contact your local Contech representative for more information.

Heat of Hydration

During the grout curing process, heat is generated which can affect a thermoplastic liner pipe. A safe operating temperature for most thermoplastic pipe is approximately 140°F (60°C). There are many grout mixes available that cure below 120°F (49° C). Several factors can determine the amount of heat generated: the cement content, the cement type, and the volume of grout in the annular space. Heat buildup can be controlled by staged grouting, by filling the liner pipe with water, and by selecting suitable grout mixtures. American Concrete Institute practice 305R is a good source for additional information on controlling heat in concrete or grout mixes.

INSTALLATION TIPS

1. For curved sewers or severely misaligned sewers, using shorter DuroMaxx liner pipe sections may reduce pushing or pulling forces and prevent hang ups. Curved sewers may be built by cocking the pipe joint to a maximum of 1 degree . Safe jacking loads will be reduced as a result of uneven loading across a cocked joint.

For large diameter sewers or tunnels, individual pipe lengths or pipe “trains” can be pulled through the line and joined within the line when necessary. When pulling individual pipe lengths, care should be taken to prevent damage to the spigot ends and gaskets.

2. When the annular space between the liner pipe and the existing pipe is to be filled with grout, estimating the required grout volume before grout placement begins is important. The estimate may include grout volume requirements for filling voids or sink holes outside the existing (host) pipe.

REPAIRS

1. Should damage to the pipe occur at any point during installation, the Engineer and your local Contech representative should be contacted immediately.
2. For smaller abrasions or exposed steel, an approved rubberized undercoating spray can be used to cover the steel.
3. Contact your local Contech representative if you have any questions or concerns or need recommendations.

DIMENSIONS & HANDLING WEIGHTS				
Pipe Dia. (in)	Min. Outside Dia. (in)	Max. Inside Dia. (in)	Bell Outside Dia. (in)	Approx. Weight (lbs/ft)
30	30.9	29.6	34.0	18.8
36	37.0	35.5	39.9	23.6
42	42.9	41.4	45.8	27.0
48	49.4	47.3	52.3	30.8
54	55.4	53.2	58.2	36.1
60	61.4	59.1	64.1	42.9
66	67.8	65.1	NA	56.9
72	73.7	71.0	77.6	65.6
84	85.8	82.9	NA	76.3
96	97.7	94.7	NA	87.0
108	111.3	108	NA	99.7
120	121.3	118.3	NA	109.0

Figure 11

TAPS

1. DuroMaxx liner pipe can be supplied with standard prefabricated taps, fittings or components per job plans after pre-fabrication drawings are reviewed by Contech Engineering and approved by the Engineer.
2. DuroMaxx can be field tapped using Inserta-Tees®.
3. Reconnect required service laterals before grouting the annular space.
4. Consult the Engineer and your local Contech representative for further assistance.



Arizona DOT Reline Project

Support

My Primary Contech Contact: _____

Phone: _____

My Customer Solutions Coordinator (CSC) is: _____

Phone: _____

Project Site Address: _____

NOTES: _____

- Drawings and specifications are available at www.ContechES.com.
- Site-specific design support is available from our engineers.
- Additional safety information can be found at www.ContechES.com/safety.

Contech Engineered Solutions provides site solutions for the civil engineering industry. Contech's portfolio includes bridges, drainage, sanitary sewer, stormwater, earth stabilization and wastewater treatment products. For information on other Contech division offerings, visit www.ContechES.com or call 800-338-1122.

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For more information on installing DuroMaxx, refer to ASTM D2321.

