Work Instructions for Installation of Delastic Pavement Seals

Responsibility

- It is the responsibility of installer to understand all the requirements of this document before attempting to install Delastic Pavement Seals.
  - Failure to perform any of the steps outlined in this document will result in underperformance or failure of the product.
  - Failure to perform any of the steps outlined in this document shall void any warranties, either expressed or implied, regarding Delastic Pavement Seals.
- It is the responsibility of The D.S. Brown Company to provide written instructions regarding the proper installation and handling of Delastic Pavement Seals.
- It is the responsibility of The D.S. Brown Company to provide technical support, training, and quality control testing as requested by the installer, contractor, or owner of the project.
  - Technical support, training, and quality control testing is available for a fee.

Product Description

- Delastic Pavement Seals are supplied in standard lengths on spools or reels.
  - Consult product data sheets for proper seal size requirements.
  - Delastic Pavement Seals meet or exceed the requirements of ASTM D 2628.
- Delastiseal 1516 Lubricant Adhesive is a hydrocarbon solvent-based lubricant/adhesive supplied in 5-gallon pails.
  - Delastiseal 1516 Lubricant Adhesive meets or exceeds the requirements of ASTM D 2835.
  - Delastiseal 1516 Lubricant Adhesive does not require thinning and shall not be modified in any way.
- The Delastall Kompressor installation machine is shipped in a shipping create that should be used as a permanent home for the Kompressor.

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Product Safety

- Please review each component's SDS before installation to fully understand the safety concerns related to this system. Failure to do so could result in serious injury or death.
- All jobsite safety rules and regulations as specified by the owner or project management are to be followed and are not superseded by any statement in this document.
- The following guidelines are recommendations consistent with the SDS literature. These recommendations are not intended to supersede or replace any existing requirements set forth by local laws or policies.
  - Delastiseal 1516 Lubricant Adhesive is a solvent based adhesive. Keep this product away from all sources of ignition.
  - ***Personal Protective Equipment (PPE)***
    - Use approved respiratory protection equipment when airborne exposure is excessive.
    - Solvent resistant chemical gloves (e.g., nitrile)
    - Protective work clothing
    - Safety glasses with side shields.
- Workers not wearing the correct PPE should not enter the installation area.

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Material Storage

- Materials can be stored/staged on the jobsite until needed.
  - Protect cardboard packaging from the weather.

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- Store Delastiseal 1516 away from sources of heat.
  - Material stored in open containers should be tested before use later.
  - For best results material should be conditioned to 70° F or 21° C.
  - Open containers of material cannot be returned to D.S. Brown.

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Equipment

- Delastic Pavement Seals can be installed by hand or using installation machines available from The D.S. Brown Company.
  - Installation by hand is only recommended for very small jobs.
  - The installation machine that is available for paving seal installation is called a Kompressor.
- Tools required for installation of pavement seal include the following:
  - Tape measure/hand wheel capable of measuring at least 100 ft.
  - A dull edging tool (scraper or 5 in one tool).
  - Dial Calipers.
  - A dull flat regular screwdriver.
  - Depth gauge.
  - Wire brush.
  - Consult installation machine manual for any additional tool requirements for maintenance and adjustments on the Kompressor.

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Joint Preparation

- Joints shall be cut to the width and depth as required for the seal to be installed.

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  - Consult product specifications chart for proper joint dimensions.

    Checked By _____
- Joint width and depth must be uniform. These dimensions shall be checked with dial calipers.

  Checked By _____
  - Any variation in the width by more than +15% of the specified movement range can cause sealant failure or installation issues.

    Checked By _____
  - Joint walls shall be parallel and vertical. Any variation in parallelism by more than +15% of the specified movement range can cause sealant failure or installation issues.

    Checked By _____
  - Joint depth must be greater than the minimum specified. It is recommended that saw cut depth be set at lease 1/4”-inch deeper than specification to allow for blade wear, saw riding, and uneven deck surfaces.

    Checked By _____
- All joints shall be abrasive media (preferred), or high-pressure water blasted to remove concrete laitance and any other foreign material that will inhibit bond of the lubricant adhesive.

  Checked By _____
  - Any previous sealants must be completely removed from the block-out area before the paving seal installation is to begin.

    Checked By _____
  - It is recommended to only clean the joints that will be sealed in one day’s work. Working too far ahead may cause some joints to become contaminated again while waiting to be sealed, this would require more cleaning on the same joint area.

    Checked By _____
- Joints must be clear of all debris. Blow out or vacuum clean the joints to remove any remaining debris from the abrasive blasting or concrete cutting operations. Any block-out area that has been cleaned by water blasting, must be completely dry before the installation of any paving seal. This could require 12-24 hour drying time.

  Checked By _____

- Sweep or vacuum the deck surface to prevent joint contamination. Never allow the sweeping machine to wash laitance back into the block-out area. Debris left on the deck surface will reduce installation machine performance or installation of the paving seal.

  Checked By _____

- Loose concrete, spalls, and cracks must be fixed and repaired prior to the paving seal installation.

  Checked By _____

- Any small amount of remaining loose concrete or laitance materials may be removed with a wire brush.

  Checked By _____

- Joints must be completely dry before sealing with Delastic Pavement Seals.

  Checked By _____

  - Delastic Pavement Seals cannot be installed when it is raining, or the concrete deck is wet.

    Checked By _____

Installation

- When installing by hand the 1516 Lubricant Adhesive shall be applied by brush to the joint walls.

  Checked By _____

  - Only apply enough adhesive to cover 10-15 feet of joint at a time. Lubricating too far ahead may cause the adhesive to start to cure before the seal is placed.

    Checked By _____

- The Delastall Kompressor machine have adjustment valves that allow the flow rate of lubricant adhesive to be adjusted. These adjustment valves are located on the Inner frame weldment.

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  - Consult the owner's manual for the machine to adjust these settings.

    Checked By _____

- Lubricant adhesive shall be applied at the rates specified in Table 1.

Table 1

1516 Lubricant Adhesive usage guide			
E-437	450	-	650 feet/gallon
E-562	450	-	650 feet/gallon
E-686	375	-	525 feet/gallon
E-816	325	-	425 feet/gallon
E-1006	250	-	400 feet/gallon
E-1256	250	-	400 feet/gallon

- The adjustments for the lubricate adhesive are made using the 3-way valve located on the inner frame weldment.

  - Lubricant adhesive usage rates for the Kompressor system are typically 150 feet/gallon to 250 feet/gallon regardless of the seal size.

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- Sections of seal shall be pulled and visually inspected for uniform lubricant adhesive coverage every 1 to 2 hours during the installation process. This check is to make sure that there is plenty of lubricate adhesive being used.

  Checked By _____

- The following installation guidelines shall be followed regardless of whether the seal is installed by hand or machine.

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  - Consult machine owner's manuals for proper operation of Delastall Kompressor installation machine or for the proper installation of the paving seal.

    Checked By _____

- Twisting of the seal in the joint area is unacceptable and needs to be corrected.

  Checked By _____

- Pull up twisted sections and reset over joint opening.

  Checked By _____

- Use a thin, blunt edged tool (putty knife) to press down on the center of the seal until it reaches the proper depth. Never stretch the paving seal to get it back in. Over stretching can cause paving seal to pull back, allowing for water penetration.

  Checked By _____

- Twisting of the seal is generally caused by uneven pavement, rough joint openings, improper lubricate adhesive settings or improper machine settings. Consult machine owner's manual for recommended adjustments.

  Checked By _____

- Delastic Pavement Seals are to be installed to the proper depth and rate of stretch as specified in the contract documents. NEVER OVER STRETCH THE PAVING SEALS.

  Checked By _____

- Should the contract documents not contain requirements for proper stretch and depth of the sealant the following guidelines shall be followed:

  - Seal depth shall be 3/16-inch +1/16-inch below the concrete surface for straight cut joints or 1/8-inch +1/16-inch below the bottom edge of the bevel on beveled joints (Fig. 1).

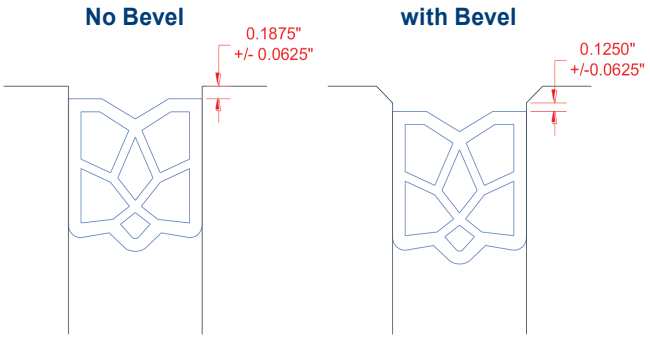

Figure 1 – Proper Seal Depth Setting

  - If it is necessary to adjust the seal depth after placement use a dulled sharp-edged tool (5-in-one tool) to separate the seal from the joint wall. Take care to not cut the rubber seal. If the rubber seal is cut or damaged the entire length will need to be replaced.

    Checked By _____

  - If the adhesive has already cured, more adhesive will need to be applied in the repaired area before resetting the seal.

    Checked By _____

    - The lubricant adhesive will bond to itself, so it is not necessary to clean the joint opening.

      Checked By _____

  - To adjust the depth of the seal, use a thin, blunt edged tool (putty knife) to press down on the center of the seal until it reaches the proper depth.

    Checked By _____

    - Apply even, steady pressure to avoid driving the seal too deep into the joint opening and to prevent damage to the seal.

      Checked By _____

  - Sections of seal that are too deep need to be pulled up above joint level and then pressed back down to the required depth. Additional lubricate adhesive may be required for proper installation.

    Checked By _____

  - Depth adjustments are easier performed immediately after the seal is installed. This is best accomplished by having someone following the Kompressor installation machine to make necessary adjustments.

    Checked By _____

    - If seal depth requires frequent adjustment, change the machine settings for depth (consult owner's manual).

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- The maximum allowable stretch for Delastic Pavement Seals is 4% per D.S. Brown spec.

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  - It is recommended that machine stretch be set at <3% to account for surface irregularities and surging. (Follow owners contract plans.)

    Checked By _____

- Stretch shall be measured at the start of each shift of installation and, at a minimum, one additional measurement per shift.

  Checked By _____

- Stretch should also be measured if there are changes to seal size, joint quality, or pavement surface condition.

  Checked By _____

- Stretch is best measured by the following method:

  - Cut a specific length of seal (i.e., 100 feet).
  - Install the full length of seal.
  - Measure final length of installed seal in the joint.
  - Stretch is calculated by the following formula:

    $$\% \text{ Stretch} = \frac{\textit{Final Length} - \textit{Original Length}}{\textit{Original Length}} \times 100$$

- Any sections of seal that have been installed with stretch greater than the allowable amount specified will need to be removed and replaced.

  Checked By _____

- Joint intersections are typically installed with the longitudinal seal installed first.

  Checked By _____

- The longitudinal seal is then cut through at the intersection, removing the whole center section of the paving seal, not just cut down the middle of the paving seal. Make sure that the cut is vertical and parallel with the joint walls.

  Checked By _____

- This seal may retract slightly, leaving an opening for the transverse sealant. Allow time for the seal to retract before installing the transverse joint or adjusting the opening.

  Checked By _____

- If the longitudinal seal was installed with too much stretch, it will retract beyond the transverse joint opening. The paving seal must be remove and replaced per section 7.7.10.

  Checked By _____

- If the longitudinal seal was installed with little to no stretch (ideal) it may be necessary to trim the seal to match the transverse joint opening.

  Checked By _____

- The transverse joint seal shall be installed continuous through the joint opening.

  Checked By _____

- The intersection with the longitudinal seal shall be tight with no gaps between the seals.

  Checked By _____

- Both seals should be compressed at the joint intersection and at the same depth.

  Checked By _____

Clean Up

- Consult installation machine owner's manual for procedure on proper cleanup of each machine.

  Checked By _____

- Failure to clean machines properly may result in poor performance at the time of the next use.

  Checked By _____

  - Failure to clean rental machines properly will result in clean up charges upon return up to and including the replacement of damaged parts due to improper cleaning methods.

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- 1516 Lubricant Adhesive is best removed by a solvent based cleaner like Acetone, toluene, or MEK spirits.

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- Dried adhesive can be scraped from smooth surfaces.

  Checked By _____

Final Repairs and Checks

- Walk the project site at the end of the day, making sure that the paving seal has been placed properly.

  Checked By _____

- Repair or fix any height, depth, or twisting of the paving seal using the proper methods of repair.

  Checked By _____

- Close off all the ends to the paving seal next to any adjacent decking, fod, or sealant/hot pour area.

  Checked By _____

- Sealant or hot pour should be placed roughly 1" over the end of the paving seal, closing off the cavity.

  Checked By _____

- Closing the paving seal cavity off, prevents water penetration inside the seal cavity and helps hold the paving seal end in place. Failure to do this step can damage concrete and or the paving seal.

  Checked By _____

- There is no need to add a sealant or hot pour to the paving seal intersections.

  Checked By _____

- The intersections are bonded together from the compression of the paving seal and the lubricate adhesive.

- The D.S. Brown Company recommends Sika-A-Flex 1A as a proper sealant for patch work/touch up work, consult the D.S. Brown Company about other products.

Company's Name _____

Supervisor's Name (Print) _____

Supervisor's Signature _____

Installation Date _____

Inspecting Agency _____

Inspector's Name _____

Inspector's Signature _____

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APPENDIX A
Sample Stretch Calculations

Method 1: Joint Length Measurement

When joint length is not excessively long (<200 feet) it is practical to cut a piece of seal the exact length of the joint. For this example, we will us a transverse joint with a length of 45 ft. (exact).

1. Uncoil a length of seal and cut the seal to match the length of the joint opening (exactly 45 ft.).
2. Install the seal in the joint opening.
3. Measure the amount of seal left at the end of the joint after installation. For this example, we will assume that there is 14 inches left at the end of the joint.
4. Using the previously supplied equation:

$$\% \text{ Stretch} = \frac{\textit{Final Length} - \textit{Original Length}}{\textit{Original Length}} \times 100$$

$$\% \text{ Stretch} = \frac{\textit{46.167 ft} - \textit{45 ft}}{\textit{45 ft}} \times 100 = 2.6\%$$

5. This type of stretch measurement is required a minimum of twice per shift of installation.

Method 2: Small Trial Installation

Small trial installations are typically done at the beginning of the job to familiarize the installers with installation and check machine set up. These are easier to accomplish and waste less material.

1. Cut a 10 ft. (exact) length of seal.
2. Install the seal in the joint opening.
3. Measure the final length of the seal in the joint. For this example, we will assume that the installed seal measures 10 ft.-6in.
4. Using the previously supplied equation:

$$\% \text{ Stretch} = \frac{\textit{Final Length} - \textit{Original Length}}{\textit{Original Length}} \times 100$$

$$\% \text{ Stretch} = \frac{\textit{126 in} - \textit{120 in}}{\textit{120 in}} \times 100 = 5.0\%$$

5. This would indicate that the installation machine is providing too much stretch. Make the necessary adjustments as indicated in the owner's manual and repeat the trial installation.
6. The trial installations need to be repeated until the measured stretch is below the required value.

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APPENDIX B
Installer's Daily Checklist

Install Date: _____ Contractor: _____ Inspector: _____

Seal Size: _____ Footage to Install: _____ ft Footage Installed: _____ ft

Joint Width: _____ Movement Range: _____ in Required Seal Depth: _____ in

Minimum Joint Opening _____ in Minimum Joint Opening _____ in

Description	See Section	Required Value	Reported Value
Joint Preparation			
1. Measured joint width	*Per Contract*		
2. Joint width variation	6.2.1		
3. Joint walls – parallel and vertical	6.2.2		
4. Joint depth	6.2.3		
5. Joint finish	6.3		
6. Prior sealants/contamination present?	6.3.1	**None**	
7. Debris/slurry/abrasive media in joints?	6.4	**None**	
8. Deck surface clear of debris?	6.5	**Yes**	
9. Loose concrete, spalls, or cracks?	6.6	**None**	
10. Moisture present	6.8	**None**	
Seal Installation			
1. 1516 Lubricant Adhesive usage rate	7.3		
2. 1516 Lubricant Adhesive coverage	7.5		
3. Seal twisting?	7.7	**No**	
4. Seal depth, *see Figure 1*	7.9.1		
5. Seal Stretch, *less than 4% or contract specifications*	7.9.7	***Per Contract***	
6. Tight Joint Intersections? *Joint intersections shall have no gaps*	7.13	**Yes**	

Comments:

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