



Delaware Build a Better Mousetrap: Entry Form

Project Name: Salt Spreader Cleaning Manifold

Category: Maintenance Tools and Methods

Contact:

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Problem Statement:

The Delaware River and Bay Authority uses a “V Box” material spreader to apply material to road surfaces. These require maintenance and adjustment for proper operation and readiness. When annual maintenance is performed, one step in the process is to clean and adjust the conveyer chains. A heated high-pressure washer is used to clean the chains and remove any material and rust. The next step is to apply a protective and lubricating encapsulant specifically designed for conveyer chains. It is crucial to have a clean surface to apply the encapsulant for proper adhesion. The process is a labor intensive and time-consuming task.

Discussion of Solution:

Fabrication of a specifically designed manifold reduces the overall time and fatigue to accomplish the task of properly maintaining conveyer chains. The design utilizes two different spray patterns spaced at specific intervals. The patterns and spacing are intended to focus the high-pressure water jet into areas of concern. The 25-degree nozzles on the outside provide a focused spray to concentrate on the moving linkages and pins. The two 40-degree inner nozzles provide a wide spray pattern designed to clear debris and material from the conveyer bars.

David Holland explains the purpose and functionality of the multi-nozzle manifold in this video:

<https://youtu.be/OhJ3RD6MTEA>

Labor, Equipment, & Materials Used:

Approximately 26” of 2” stainless square tubing, 2” stainless flat bar, five ¼”NPT quick couplers, two 25-degree and two 40-degree pressure washer nozzles. The tube was drilled and tapped to accept the five couplers. The end caps were TIG welded using 308 stainless TIG filler rod at 90 amps.

Cost:

\$80 for the couplers and nozzles. The stainless tubing and flat bar are estimated to cost less than \$20.



Savings& Benefits:

Use of this manifold will benefit both the community and our maintenance staff by reducing the amount of time and fatigue required to service and adjust our snow removal equipment. It will also improve the effectiveness of our equipment in those adverse conditions resulting in a safer environment for the traveling public.

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