

## CASE STUDY: Foundry Sand as Structural Fill and Road Base

### Littlestown Foundry, Inc. Littlestown, Pennsylvania

Littlestown Foundry, Inc. (Littco) in Littlestown, Pennsylvania, produces commercial aluminum castings and has been in operation since 1916. Since the mid-1990's, Littco has been supplying most of its spent foundry sand, between 300 and 400 tons annually, free of charge to the Borough of Littlestown, Pennsylvania, for use in civil construction projects.

One project is now complete and two more are currently in progress. The completed project is a new street – Bridge Street – and an embankment built over an abandoned railroad bed. Littco purchased the abandoned railroad right of way and sold it to the borough for \$1, allowing the borough to avoid uncertainties in the legal process of purchasing the right of way. Once the purchase was complete, Littco began transporting its spent foundry sand less than 300 feet to the construction site and assumed the cost of labor for transporting and applying the material. Littco's "in-kind" cost was about \$20,000, and the foundry received a Beneficial Use Permit from the Pennsylvania Department of Environmental Protection for this project.



Photo 1: Looking east across the new Bridge Street towards Littlestown Foundry.

The second set of projects undertaken by Littco and the Borough of Littlestown operated the same way and cost about \$10,000 to date,

with an ongoing cost of about \$2,000 annually. They involve using Littco's spent sand as a base fill for a truck turn-around and storm sewer. Like the Bridge Street project, both the turn-around and the borough's storm sewer are directly adjacent to Littco's property. In both the completed project and the ongoing projects, Littco transports and applies its spent foundry sand to those sites.



Photo 2: A view (looking west) of the old bridge crossing the abandoned railroad bed. The bridge was removed by Littco and an embankment was built up directly under its old location to support the portion of Bridge Street that now crosses the former railroad bed.

All of these projects were pursued because they offer economical and practical benefits to both the Borough of Littlestown and Littco. The borough benefits primarily from having a free supply of fill for the projects, while Littco saves approximately \$35 per ton on disposal costs for its spent foundry sand. Furthermore,

the projects use 100% of Littco's spent foundry sand, and the extremely close proximity of the sites to Littco's facility makes transportation and application both easy and convenient. Finally, both the borough and Littco benefit from having improved infrastructure at a relatively low cost.

Littlestown Foundry is extremely pleased with all the projects due to the benefits experienced for both Littco and the borough. Though Littco may have to return to more traditional disposal methods for its spent foundry sand once the truck turn-around and storm sewer projects are complete, they hope to be able to find additional beneficial uses in the future that will be both practical and economical for all parties involved – government, end users, and Littco.



Photo 4: A view looking east from atop the old bridge in Photo 2. Note that this photo is a "before" and Photo 1 is an "after" taken from approximately the same location.



Photo 3: A view looking south along Bridge Street before its completion.



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<p>Personnel</p>	<p><b>Foundry:</b> Littlestown Foundry, Inc.  <b>Engineers:</b> Littlestown Foundry, Inc. and Borough of Littlestown  <b>Regulatory Agency:</b> PADEP</p>
<p>Site</p>	<p><b>Location:</b> Littlestown, Pennsylvania</p> <p><b>Site Description:</b> Littco transports its waste sand less than 300 feet from its facility to be used in construction projects for both the Borough of Littlestown and Littco. The sand was originally used as base and embankment fill for a new street that was built over an abandoned railroad adjacent to Littco's property. It is currently being used as base fill to complete construction of Littco's truck turn-around and the borough's storm sewer system adjacent to Littco's property.</p>
<p>Materials Utilized</p>	<p>300 tons annually of foundry waste sand.</p>
<p>Project Costs and Benefits</p>	<p><b>Littco's "In Kind" Costs Include:</b></p> <ul style="list-style-type: none"> <li>• \$20,000 for Bridge Street base fill and embankment.</li> <li>• \$10,000 to date for Box Factory truck turn-around and storm sewer base fill (ongoing at about \$2,000 per year).</li> </ul> <p><b>Benefits Include:</b></p> <ul style="list-style-type: none"> <li>• Littco saves \$35 per ton on landfill disposal costs for its sand.</li> <li>• The projects have used 100% of Littco's foundry waste sand since the mid-1990's.</li> <li>• Application/disposal is easy and convenient for Littco due to the projects' proximity to Littco's facility.</li> <li>• Littco gets to make use of the finished projects for its own operations.</li> <li>• The Borough of Littlestown pays nothing for base fill or structural fill for these projects.</li> <li>• The projects provide improved personal and emergency vehicular access to residential areas.</li> </ul>