

NSSGA INSTA-GUIDE

The National Stone, Sand and Gravel Association designed the NSSGA INSTA-GUIDES to provide the industry salespeople with a simple, basic and instant overview of sales issues within the industry. The NSSGA INSTA-GUIDES will show you where to find detailed and expanded background information highlighting a particular selling topic.

Topic #3 Selling Aggregate for Landfill

This INSTA-GUIDE will:

1. Describe the various layers of the typical landfill and show how aggregate products interface with the layers.
2. Highlight the aggregate advantage in landfill construction.
3. Provide more detailed landfill references.

1. **The Landfill and Its Layers (from top to bottom)**

- A. **Waste cover layer.** This is an *impermeable* top layer designed to keep birds, rodents and insects from carrying the waste away and possible spreading disease. Usually about two feet thick, this layer should promote rain to run off the top surface...not through it.
 - i. Aggregate – generally large (top size up to 2")
 - ii. Soil above could be made from overburden, sewage sludge, compost and wash pond fines or a combination.
- B. **Drainage Layer.** This is a *permeable* layer about one foot thick. Properly designed, it intercepts and removes surface water.
 - i. Aggregate – often clean stone (3/8" x 3/4")
 - ii. Natural/manufactured sand with a small amount of fines is also used frequently.
- C. **Gas Vent Layer.** This *permeable* base layer varies in thickness from about 2" – 12" and is designed to remove potentially explosive gases generated by the waste.
 - i. Aggregate – often clean stone (3/8" x 3/4")
 - ii. Natural/manufactured sand with a small amount of fines is also used frequently.

- D. **Waste.** Waste is placed in layers with a daily cover.
- E. **Leachate Collection and Removal Layer.** This *permeable* layer collects the liquids that pass from the waste. It's about 2" thick.
 - i. Aggregate – same as the drainage layer.
 - ii. The use of limestone has raised some questions since the landfill leachate is acidic. Research shows little reason for concern. Further, if a HDPE (High Density Polyethylene) or similar liner is used, its projected life is only 10-20 years, probably far sooner than the limestone could dissolve.
- F. **Clay Liner Layer.** This *impermeable* layer may be clay or HDPE or a like material. Clay liner layers are usually about 2" thick.
 - i. Aggregate – if there is a HDPE liner, it's probably protected by a sand-type material to enhance its puncture resistance. The sand-material would be placed both above and below the liner.
- G. **Leak Detection Layer.** This *permeable* layer detects leachate that may have passed through the clay liner. The detection layer is the safety sentinel for problems above and problems affecting the surrounding area.
 - i. Aggregate – often clean stone (3/8" to 3/4")
 - ii. Natural/manufactured sand with a small amount of fines is also used frequently.

2. **The Aggregate Advantage**

Our industry's biggest advantage is aggregate flexibility. It's particularly evident since so many landfills are designed by firms located far from the immediate market and are not directly familiar with local aggregate availability. Since proper drainage is a paramount concern, the specifications for permeable aggregate are very important and, therefore, are often over-designed.

Since the physical properties of the local aggregate are key, a wide range of local products might be better (and more economical) than what's called for in the specs. It's an ideal opportunity for local aggregate producers to prepare alternatives that are favorable to proper construction and to your own company.

3. **Landfill References**

Many landfills are designed by architects and engineers (AE) a long distance from the site. Materials specified by the AEs are known to them. Many times, sizes available locally are substituted for those in the spec.