Landfill Maintenance Shops: Determine Needs Before Designing

Maintenance shops serve different purposes throughout the waste industry. Determining what is needed from these facilities at a hauling company or landfill site will best define the design.

By Jeff Eriks

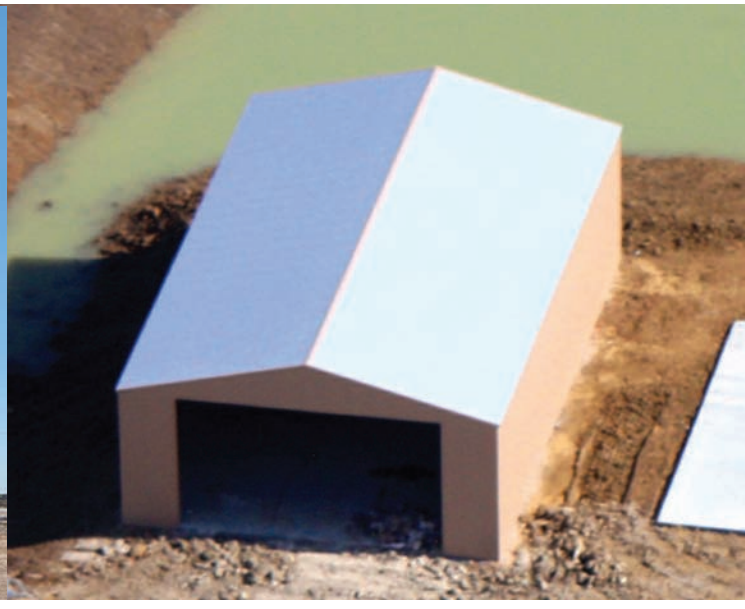
Maintenance shops are sometimes a necessary component at a landfill site and can serve multiple functions. The main function of this facility is to house and maintain landfill equipment such as dozers, compactors and haul trucks, and is commonly co-located with your landfill employees break room, locker room and offices. This article will focus on the maintenance shop as a key component in keeping your equipment functioning properly. Due to the type of equipment used at a landfill, the design of the shop should include accommodations for the equipment as well as a safe environment for employees to perform equipment maintenance. One of the major factors in determining the type of shop construction is how long the maintenance shop will be left in this location. Oftentimes, maintenance shops are built on future landfill cells and need to be moved in the not-so-distant-future to allow for the cell expansion. The shop should be kept in close proximity to the working face in order to limit the distance from the work area to where the equipment will be maintained.

Shop Structures and Environment

Due to the nature of how long maintenance shops will be in the same location, they are constructed out of various types of materials and structural systems. Materials for maintenance shops can range from fabric, to steel, to wood pole barns or stacked shipping containers with a roof installed. One of the advantages to temporary structures such as pole barns, fabric buildings and sea cans is that they don't require concrete foundations. This is advantageous if the structure will not be in this location long-term and can help to reduce costs on foundations. A much more solid and permanent solution is a metal building with concrete foundation, as this will provide a solid structure for 50 years or more. The decision for a temporary or permanent facility depends on the overall function of the facility. Questions such as how long the maintenance shop will be in a specific location, what is the budget and in what kind of climate will the facility will be located should be asked prior to contracting a company to design and/or build the maintenance shop. These factors are important to know but don't necessarily affect how the building will be used.

No matter the building type, the area for the most concern should be the concrete slab the equipment will be pulled onto for maintenance. If you are using a more permanent structure that will have a concrete maintenance slab, you need to make sure it is designed to serve as long as you will need it. While the rubber wheeled equipment won't be excessively hard on the concrete, equipment such as compactors, dozers, and sheepsfoot graders can wreak havoc on it. The loads placed

Left: Landfill shop and offices.
Right: Pole barn at a landfill site. Images courtesy of Cambridge Companies.



on the concrete at these points can be quite excessive. It is important to protect the concrete slab in order to have it last long-term. Again, the method you choose really depends on the budget and the life of the facility.

The concrete slab can be protected by laying a material over it or embedding something in the concrete. Items such as tires, used conveyor belts or steel plates have commonly been used to drive heavy machinery over the concrete and into the bay for maintenance. In terms of embedded materials, old railroad ties, steel plate or I-beams have been used in the concrete for these landfill maintenance shops. Again, the decision regarding what materials to use depends on the longevity that is required from the facility, the equipment that will be driven into the shop for maintenance and the cost of the selected concrete protection method.

Shop Equipment

The maintenance shop itself needs to be outfitted with the necessary equipment and materials for your mechanics to efficiently work on the equipment. A locked parts storage area and a location for fluids such as oils, grease, waste oil and other necessities based on equipment used at the site should be included in the design of the maintenance shop. Oftentimes, there is an overhead bridge crane located in the building used to lift heavy parts or the equipment itself. Lighting in the facility is also an important factor. Ideally your equipment is out working in the daylight, so adequate lighting for nighttime maintenance should be placed throughout the maintenance shop. The better the mechanics can see, the more efficient they will be. It is also important to have a wash down area outside the shop location in order for the equipment to be washed before being pulled into the shop. This allows your mechanics to clean the equipment, or at minimum, the area they will be working on for better access. Also, mud and dirt may be kept off the shop floor by having this take place outside the shop itself. Oftentimes, this uses reclaimed water or rain water.

Employee Areas

The maintenance shop's final factor to consider is the employee areas. A design firm should be directed to fully program the building and understand the office needs and required adjacencies, the locker room sizes, the break areas required, and any necessary ancillary spaces such as mechanical rooms or training rooms. The inclusion of these items depends on if there is a separate landfill office onsite, or if the office and maintenance shops should be combined into one building and who will be housed out of each. The employee building needs to be built to withstand the mud and dirt typically associated with landfill maintenance. Everything should be constructed of durable, cleanable materials that can be cleaned easily and quickly. The layout should also accommodate site traffic, parking areas, visitor access (if required) and landfill equipment roads.

The Best Solution

Owners should ensure to include a design firm in the design process of their landfill maintenance shop to vet out the different features of the building as well as discuss the short- and long-term use of the facility. The best solution should be focused on optimal operation and working within their budget. Every user is different and their operational needs and goals should be fully understood in order to develop the best solution. It is in the best interest of landfill owners to partner with a design or design-build firm that invests the time and energy to fully understand their operations completely prior to beginning the design for their project. | WA

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