



TECHNICAL MEMORANDUM

DPW Vehicle & Equipment Storage – Indoors vs. Outdoors

Weston & Sampson's Senior Project Manager, Jeff Alberti, is one of the leading planners of Department of Public Works (DPW) facility projects in Massachusetts and has been involved in the planning and design of 38 public works facility projects in the last 10 years. Based on this experience, Weston & Sampson has prepared this technical memorandum to address the question of whether or not a community should store DPW vehicles and equipment indoors or outdoors.

As you will see from our experiences, analyses, and knowledge gathered over the last 10 years, it has been demonstrated that it is safer, more efficient, and more economical to store DPW vehicles indoors rather than outdoors. It is important to note that of the 38 DPW facility projects in which Mr. Alberti has been involved, 36 of these facilities included new or expanded vehicle storage garage facilities to allow the DPW to store all their equipment indoors in a safe and efficient manner. In fact, in many of these communities, planning for indoor storage of all vehicles and equipment was the number one priority of the project. The remaining two DPW projects already contained adequate interior vehicle storage garage facilities and did not require additional interior storage space.

Using our experience and the experiences of the DPW directors and DPW workforce personnel from the 38 DPW planning projects, we have identified the following seven main reasons why DPW vehicles and equipment should be stored indoors:

1. Public Safety
2. Employee Safety
3. Cost Savings
4. Efficient & Cost Effective Operations
5. Protection of Equipment
6. Impacts to Abutters
7. Impacts to the Environment

The following is a brief discussion on each of these reasons:

Public Safety

It is important that the public first understand how critical a role the DPW plays within the community. Many have the false impression that the DPW only plows the streets in the winter and cuts the grass in the summer. The community must be informed of the miles of road, miles of sidewalks, acres of grounds, miles of utility and drainage lines, and number of vehicles that the DPW is responsible for maintaining during normal operating hours. In addition, the community needs to be aware that most DPWs are on call 24 hours a day for, among other things, snow storms, water main breaks, flooding, downed trees, and removal of road obstructions.



The equipment that is used to respond to these emergencies is temperature sensitive and, if stored outdoors during the cold weather months, may be subject to starting problems that can delay the DPW's response time during these emergencies. This can result in unsafe conditions for the public. In addition to starting problems, employees may be required to waste valuable time warming up and cleaning off a vehicle prior to responding to an emergency.

Employee Safety

During the normal course of the day or during unscheduled emergencies, a DPW crew will be required to access motorized equipment and non-motorized towed equipment or equipment attachments to meet the needs of the community. Storage of the larger DPW vehicles outdoors during inclement weather may require an employee to climb around the exterior of the vehicle to clean off and prepare the vehicle for use. This exposes the employee to unnecessary risks associated with slipping or falling from the large equipment. In addition, employees must also access and connect smaller non-motorized equipment attachments such as plows, mower attachments, towed compressors, etc., which may also pose risks when conducted in foul weather or in areas with inadequate lighting.

Cost Savings

Weston & Sampson prepared a cost/benefit analysis to determine the financial impact of storing vehicles and equipment outdoors. This analysis compared the construction costs and operation costs of a new storage garage to the added costs of storing a DPW fleet outdoors. For a fleet of approximately 30 vehicles, it was determined that a community would pay an additional \$4 million over the life of the building if the vehicles were stored outdoors.

The primary added costs associated with storing a vehicle outdoors include:

1. Increased unscheduled maintenance activities
2. Reduction in vehicle life expectancy, accelerating vehicle replacement schedules
3. Loss of productive labor associated with cold weather and storm event impacts

It is important to note that this cost/benefit analysis does not take into consideration:

1. Potential increase in costs associated with delaying regularly scheduled maintenance activities to address the increase in unscheduled maintenance activities
2. Costs associated with potential injuries to employees and/or the public due to unsafe conditions resulting from inclement weather and/or delayed response times
3. Costs associated with impacts to the environment
4. Costs associated with impacts to abutters



Efficient & Cost Effective Operations

Storing vehicles and equipment in a minimally heated and well-lit storage garage will result in efficient operations by providing an environment that is conducive to both vehicles and the employees. The minimally heated environment will enhance the performance of the vehicles, eliminating potential delays associated with cold engines and frozen equipment. This will also allow employees to quickly access their vehicles and connect to the necessary equipment needed to meet the immediate needs of the community, thus eliminating the loss of productive labor associated with preparing vehicles and equipment for operation.

Protection of Equipment

One of the most important reasons to store the vehicles indoors is to protect a community's investment in equipment. In many cases, communities have millions of dollars invested in the equipment used to service the city/town and its infrastructure. For example, a new standard DPW dump truck will cost a community approximately \$130,000 to replace today, and this is one of the most inexpensive types of large service vehicles used by DPWs.

A vehicle and equipment storage garage is the most inexpensive space to construct, but it is responsible for protecting the single largest investment in equipment in many communities. Locating vehicles indoors will reduce maintenance costs, protect the vehicles from corrosive conditions, extend the useful life of the vehicles, and protect the vehicles from exposure to potential vandalism.

Impacts to Abutters

Many DPW facilities are located in residential neighborhoods. Although many of these facilities existed well before the residential properties were developed, the DPWs are and strive to continue to be good neighbors. The outdoor storage of vehicles will most likely jeopardize any chances that a DPW may have at being a good neighbor by increasing the noise output and exhaust emissions from the site. The exterior storage of vehicles will require extended periods of idling as vehicles are prepared to respond to the needs of the community. Due to unanticipated emergency calls or storm events at any time of the day or night, these extended idle periods could take place at 2:00 or 3:00 in the morning, increasing the inconveniences already imposed on the neighbors.



Impacts to the Environment

Storage of vehicles and equipment outdoors increases potential impacts to the environment associated with oil or grease entering the stormwater system. Engine fluids from leaks or hydraulic line breaks have the potential to be washed into the stormwater system if the vehicle is stored outdoors. However, any leaks that occur within a vehicle storage garage will be captured in a closed floor drain system, which will prevent the fluids from reaching the stormwater system, which in turn will assist in protecting the environment.

For additional information pertaining to this document or questions concerning the programming, design, and construction of public works facilities, please contact Jeff Alberti.

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