# GEW182-14
## 707.11.2, 707.11.9, 707.12.7

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**Revise as follows:**

**707.11.2 Debris excluders.** Downspouts and leaders shall be connected to a ~~roof washer~~ pre-tank filtration device and shall be equipped with a debris excluder or equivalent device to prevent the contamination of collected rainwater with leaves, sticks, pine needles and similar material. Debris excluders and equivalent devices shall be self-cleaning and shall not allow debris larger than 400 micron to pass through.

**707.11.9 ~~Roof washer.~~ Pre-tank filtration device.** A sufficient amount of rainwater shall be diverted at the beginning of each rain event, and not allowed to enter the storage tank, to wash accumulated debris from the collection surface. The amount of rainfall to be diverted shall be ~~field adjustable as necessary~~sufficient to minimize storage tank water contamination. The ~~roof washer~~ pre- tank filtration device shall not rely on manually operated valves or devices, and shall operate automatically. Diverted rainwater shall not be drained to the roof surface, and shall be discharged in a manner consistent with the storm water runoff requirements of the jurisdiction. ~~Roof washers~~ Pre-tank filtration devices shall be accessible for maintenance and service.

**707.12.7 ~~Roofwasher~~ Pre-tank filtration device test.** ~~Roofwashers~~ Pre-tank filtration devices shall be tested by introducing water into the gutters. Proper diversion of the first quantity of water in accordance with the requirements of Section 707.11.9 shall be verified. Proper filtration of the water entering the storage tank shall be verified in accordance with Section 707.11.2.

**Reason:** Modern pre-tank filtration devices are a portion of an overall rainwater harvesting system. They aid in insuring a high oxygen level is maintained in the water storage tank and help to insure that the tank will rarely, if ever, require cleaning. For example, vertical, vortex type pre-tank rainwater harvesting filters have all but replaced roof washers in the rainwater harvesting industry. Roofwashers often retain moisture and material with a high organic content collects on the filter insert which results in an excellent media for bacteria growth. Vertical, vortex filters utilize surface tension (adhesion) in conjunction with a fine stainless steel filter mesh which excludes unwelcome debris. By this process about 90% of the rainwater is captured, filtered and diverted into a storage tank, while the remaining water carrying leaves and other debris is redirected to an appropriate stormwater catchment device/area. Further, with the unit having a vertical filter element, moisture and debris build up is all bu elimanated making the unit virtually maintenance free. These vertical, vortex type filters are sized for specific roof capacities and as a result, do not require field adjustment which reduces potential installation errors. Good quality harvested rainwater stored in a tank is the goal, so water quality, which can be determined by particulate size entering the tank, is what should be measured during the testing phase. Simply measuring the amount of water divereted from a roof washer, which is only one type of pre-tank filtration device, limits the ability of manufacturers and installers to improve upon existing designs. Vertical, vortex style units require less maintenance and reduce the life cycle cost of the overall rainwater harvesting system because this type of pre-tank filter requires negligable maintenance and the tank may never need to be cleaned.

Vortex style units conform to European DIN 1986 standard for rainwater harvesting.

**Bibliography:**

Virginia Rainwater Harvesting Manual, Lawson, et all, 2009, pages 36-37.

**Cost Impact:** Will not increase the cost of construction. The use of modern rainwater harvesting pre-tank filtration devices, such as the vertical, vortex filter will drastically reduce the cost of a rainwater harvesting system over its life span. The initial filtration device is comparable in cost to roof washer boxes and requires no replacement filter elements and sets in place a situation where tank maintenance is minimal and may never require cleaning the interior of the tank.