BMP 06.00. Concrete Washout

DESIGN CONSIDERATIONS

Objectives

Concrete Washout Containment prevents the discharge of concrete waste pollutants to stormwater by providing on-site washout containment in a designated and contained area.

Description

Concrete Washout Containment contains concrete and fluids from the chutes of concrete mixers and hoppers of concrete pumps when they are rinsed out after delivery. Containment areas allow for easier disposal of consolidated solids and prevent pollution from run-off or infiltration to groundwater. A washout facility can consist of a pre-fabricated container or self-installed (fabricated on-site) lined containment area, which can be above- or below-grade. Containment areas require sufficient volume to completely contain all liquid and waste concrete materials.

Applicability

Concrete Washout Containment is required on projects where concrete, stucco, mortar, grout, and/or cement are used as construction materials.

Selection Considerations

The number and size of containment areas provided should be based on the expected demand for storage capacity.

- *Pre-fabricated Washout Containers:* Pre-fabricated washout containments can be any watertight unit that can contain all liquids and solid waste generated by washout operations. When available, pre-fabricated containers are delivered to the site and minimize installation efforts. They are also resistant to damage and protect against spills and leaks. Some companies will also offer complete service with their product, such as providing maintenance and regular disposal of waste materials. Such full-service options could relieve the superintendent of these responsibilities. However, when a contractor selects a company that provides such an option, they must also ensure that the company is properly disposing of materials and it would be prudent to give preference to companies that recycle collected materials.
- *Below-grade Containment:* Use of below-grade containment areas helps prevent breaches and reduces the likelihood of run-off. This option is recommended for projects expecting extensive concrete work or for airport projects. However, this option is not recommended for areas with high water tables or shallow groundwater; such as near natural drainages, springs, or wetlands.
- *Above-grade Containment:* Above-grade containment areas must be sized and installed correctly, and diligently maintained in order to be effective. However, particularly if a pre-fabricated container is unavailable, this option is better suited in areas with potentially high water tables to prevent leaching of wash water into groundwater, or in areas where excavation is not practical.

Design

Location: Concrete Washout Containment should be placed in a location that provides convenient access for concrete trucks, preferably near the area where the concrete is being poured. Place Concrete Washout Containment a minimum of 50 feet from storm drains, open ditches, or waterbodies, or provide secondary containment for the Concrete Washout Containment.

Number of Containments: Larger sites with extensive concrete work should have Concrete Washout Containment at multiple locations for ease of use. Multiple Washout Containments are also required if a single containment unit is not adequate for the volume of waste material generated before the containment structure is cleaned.

Capacity: Concrete Washout Containment should provide sufficient capacity to handle the expected volume of solids, wash water, and rainfall to prevent overflow and allow 12 inches of freeboard. To estimate capacity, assume 7 gallons of wash water and solids are generated from washing one truck chute, and 50 gallons are generated in washing out the hopper of a concrete ready-mix or pump truck. Estimate the number of trucks based on the total volume of concrete in the project, the hopper capacity of each concrete pump truck, the expected number of loads, and the planned maintenance interval.

Containment Area: For larger sites, it is recommended that self-installed containment (both above- and below-grade) areas be at least 10 feet wide with sufficient length and depth to provide the required capacity. Above-grade self-installed containment areas shall be limited to a size and capacity for which the selected outside barrier is designed to remain structurally sound when filled with waste materials.

Cover: A temporary cover should be provided to prevent rain or other precipitation from filling the containment area and causing wash water overflow. The cover should be a secure, non-collapsing, non-water collecting cover.

Signage: Each on-site facility must have highly visible signage to indicate washout containment locations. Signs should be at least 48 by 24 inches and have 6-inch high contrasting letters, placed at a height of at least 3 feet above ground level and within 30 feet of the facility.

Relationship to Other Erosion and Sediment Control Measures

Operator Education: Use of Concrete Washout Containment as a best management practice (BMP) is only successful if concrete truck operators utilize them. Operators need to be made aware of the presence of these containments. All concrete truck operators, including those of subcontractors, should be trained on the importance of managing concrete waste, washout procedures, and washout locations.

Common Failures or Misuses

- Overflow and discharge of waste when the containment area is not covered prior to anticipated rainfall and/or when accumulated liquid wastes have not been removed.
- Leaking resulting from torn or damaged liners going unnoticed or not being replaced, with consequent discharge of washout liquid or slurry to waterways, storm drains, or directly onto the ground.
- Lack of communication to truck drivers of the necessity of using the containment area for washout.
- Compromised structural integrity due to miscalculated capacity and installation, particularly for self-installed, above-grade containment.
- Insufficient quantity and/or size to contain all liquid and concrete waste generated by washout operations.

SPECIFICATIONS

Standard Specification

- 665 – Concrete Washout

Drawing

- BMP – 06.00 Concrete Washout, Sheets 1 & 2

CONCRETE WASHOUT GENERAL NOTES:

MATERIALS

PRE-FABRICATED CONTAINERS: MADE OF STURDY MATERIALS THAT ARE WATER TIGHT.

FABRICATED ON-SITE CONTAINMENT:

1. BARRIER/SIDEWALLS: MAKE SIDEWALLS OF AN ABOVE-GRADE CONTAINMENT AREA FROM EARTHEN BERMS, BARRIER WALLS, WOOD PLANKS, OR OTHER MATERIALS THAT WILL BE STRUCTURALLY SOUND WHEN FILLED WITH WASTE MATERIALS.
2. LINER: IMPERMEABLE PLASTIC SHEETING OF AT LEAST 10 MIL THICKNESS, AND FREE OF HOLES, TEARS, AND OTHER DEFECTS THAT COMPROMISE THE IMPERMEABILITY OF THE MATERIAL.
3. ANCHORS: SECURE THE LINER FOR ABOVE-GRADE CONTAINMENT AREAS AND SIDEWALL MATERIALS OTHER THAN BERMS WITH ANCHORS. USE SANDBAGS, 6-INCH WIRE STAPLES, AND WOOD OR METAL STAKES AS ANCHORS, BUT NOT LIMITED TO ONLY THEM.

SIGNS: DURABLE, RIGID MATERIAL WITH 6-INCH HIGH CONTRASTING LETTERS, PLACED AT A HEIGHT OF AT LEAST 3 FEET ABOVE GROUND LEVEL.

RAIN COVER: SECURE, NON-COLLAPSING, NON-WATER COLLECTING RAIN COVER, REQUIRED PRIOR TO PREDICTED WET WEATHER TO PREVENT ACCUMULATION AND OVERFLOW OF PRECIPITATION.

INSTALLATION

1. INSTALL SIGNS WITHIN 30 FEET OF THE WASHOUT.
2. IF THE WASHOUT IS LOCATED ON UNDEVELOPED PROPERTY OR OFF-PAVEMENT, PROVIDE A STABILIZED CONSTRUCTION EXIT.
3. PLACE CONCRETE WASHOUT CONTAINMENT A MINIMUM OF 50 FEET FROM STORM DRAINS, OPEN DITCHES, OR WATERBODIES, OR PROVIDE SECONDARY CONTAINMENT FOR THE WASHOUT.
4. PROVIDE SUFFICIENT CAPACITY TO HANDLE THE EXPECTED VOLUME OF SOLIDS AND WASH WATER AT 50% MAX CAPACITY AND ALLOW 12 INCHES MINIMUM OF FREEBOARD.
5. PRE-FABRICATED WASHOUT CONTAINERS ARE USUALLY DELIVERED ASSEMBLED. IF ASSEMBLY IS REQUIRED, FOLLOW MANUFACTURER'S INSTRUCTIONS.
6. SELF-INSTALLED CONTAINMENT:
   a. ABOVE-GRADE WASHOUT: CONSTRUCT THE SIDEWALLS TO THE DIMENSIONS SHOWN ON THE DRAWINGS. IF NOT USING AN EARTHEN BERM FOR THIS PURPOSE, ENSURE THAT THE SIDEWALL MATERIAL IS SECURE AND EACH UNIT IS BUTTED TIGHTLY END TO END. LINE THE ENTIRE AREA WITH THE LINING MATERIAL, BRINGING THE SHEETING UP OVER THE SIDEWALLS AND SECURING THE ENDS WITH SANDBAGS, STAPLES OR OTHER APPROPRIATE ANCHORS.
   b. BELOW-GRADE WASHOUT: EXCAVATE A FLAT, SUBSURFACE PIT TO THE DESIRED SIZE AND CAPACITY FOR THE CONTAINMENT AREA. THE RESULTING SIDEWALL SHOULD NOT EXCEED 3:1 SLOPES. PREVENT DAMAGE TO THE LINER BY KEEPING THE BASE OF THE PIT FREE OF ROCKS AND DEBRIS. USE THE EXCAVATED MATERIAL TO CREATE A BERM ALONG THREE SIDES OF THE PIT, LEAVING THE SIDE PROVIDING ACCESS RELATIVELY FLAT. IT IS RECOMMENDED THAT THE BERM BE AT LEAST 1-FOOT HIGHER THAN EXISTING GROUND. LINE THE ENTIRE AREA WITH THE LINING MATERIAL, BRINGING THE SHEETING UP OVER THE SIDEWALLS AND BERM, AND SECURING THE ENDS WITH SANDBAGS OR OTHER APPROPRIATE ANCHORS.

INSPECTION

1. INSPECT AND VERIFY THAT CONCRETE WASHOUT BMPS ARE IN PLACE PRIOR TO THE COMMENCEMENT OF CONCRETE WORK.
2. DETERMINE IF THE CONCRETE WASHOUT IS FILLED TO 50 PERCENT CAPACITY.
3. FOR SELF-INSTALLED CONTAINMENT:
   a. INSPECT THE PLASTIC LINER TO ENSURE IT IS SECURELY ANCHORED AND INTACT.
   b. INSPECT THE SIDEWALLS FOR LEAKS. ENSURE THE CONSTRUCTION DOESN'T DAMAGE THE SIDEWALLS.
4. FOR PRE-FABRICATED CONTAINMENT, INSPECT THE UNIT FOR LEAKS AND POTENTIAL DAMAGE.
5. CHECK TO ENSURE THAT EACH WASHOUT SIGN IS STILL SECURE AND VISIBLE.
6. IF THERE IS EVIDENCE THAT WASHOUTS ARE OCCURRING IN LOCATIONS OTHER THAN THE DESIGNATED WASHOUT: IMPROVE EXISTING SIGNAGE, INSTALL ADDITIONAL SIGNAGE, INCREASE COMMUNICATION WITH CONCRETE TRUCK DRIVERS, AND PROVIDE CONCRETE TRUCK DRIVERS WITH MAPS OF WASHOUT LOCATIONS WITH RESPECT TO POUR LOCATIONS.

MAINTENANCE

1. CLEAN EXISTING WASHOUTS BEFORE THE WASHOUT IS 50 PERCENT FULL. SOLIDIFY WITH BAGGED GROUT, VACUUM AND DISPOSE OF LIQUIDS IN AN APPROVED MANNER, OR ALLOW FOR EVAPORATION (CHECK WITH THE LOCAL SANITARY SEWER AUTHORITY TO DETERMINE IF THERE ARE SPECIAL DISPOSAL REQUIREMENTS FOR CONCRETE WASH WATER).
2. IF NECESSARY, PROVIDE AN ALTERNATE WASHOUT DURING EXISTING WASHOUT CLEANING.
3. RELINE SELF-INSTALLED CONTAINERS AFTER EACH CLEANING, BECAUSE EQUIPMENT CAN DAMAGE THE LINER. BEFORE RELINING, INSPECT THE CONTAINMENT STRUCTURE FOR SIGNS OF WEAKENING OR DAMAGE AND MAKE ANY NECESSARY REPAIRS. THEN LINE THE STRUCTURE WITH NEW PLASTIC SHEETING, CHECKING THAT IT IS FREE OF HOLES, TEARS, AND OTHER DAMAGE.
4. REPAIR DAMAGED WASHOUTS BEFORE THE NEXT CONCRETE POUR. IF NECESSARY, PROVIDE NEW WASHOUTS UNTIL THE EXISTING WASHOUTS ARE OPERATIONAL.
5. CONTAIN ANY SPILL OR DISCHARGE OF CONCRETE WASTE MATERIALS.
6. REPLACE OR INSTALL NEW SIGNAGE AS NEEDED.

REMOVAL

1. AN OPERATIONAL CONCRETE WASHOUT SHOULD REMAIN IN PLACE UNTIL ALL CONCRETE FOR THE PROJECT (OR PHASE OF THE PROJECT) IS POURED. WHEN THE CONCRETE WASHOUT IS NO LONGER NEEDED, THE LIQUID MUST BE EVAPORATED OR VACUUMED FOR DISPOSAL AND THE HARDENED SOLIDS MUST BE BROKEN UP, REMOVED, AND PROPERLY DISPOSED OF. DISPOSAL LOCATION TO BE APPROVED BY ENGINEER.
2. REMOVE FROM THE SITE PRE-FABRICATED WASHOUTS AND MATERIALS USED TO CONSTRUCT ABOVE-GRADE CONTAINMENT AREA AND PROPERLY DISPOSE OF THEM.
3. BACKFILL AND STABILIZE HOLES, DEPRESSIONS OR OTHER GROUND DISTURBANCE CAUSED BY THE CREATION OR REMOVAL OF THE WASHOUT WITH AN APPROVED BMP.

REVISIONS		
Date	Description	By

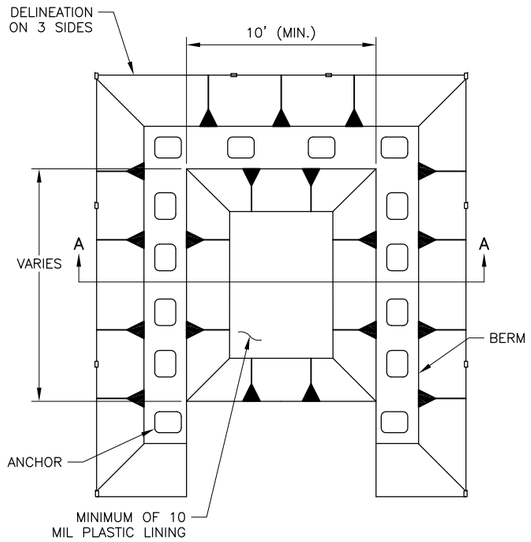
State of Alaska DOT&PF

CONCRETE WASHOUT (NOTES)

APPROVED

Date 12/2015 XXXXXX

BMP-6.00



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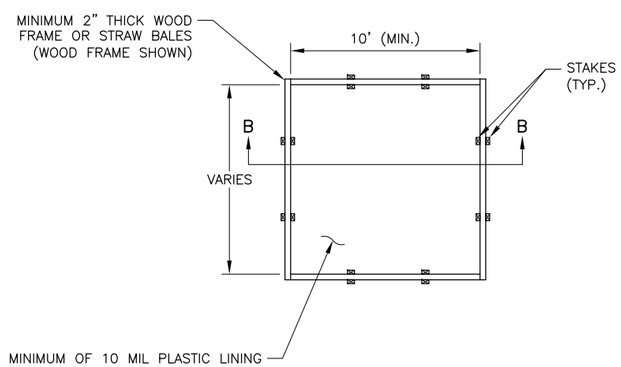

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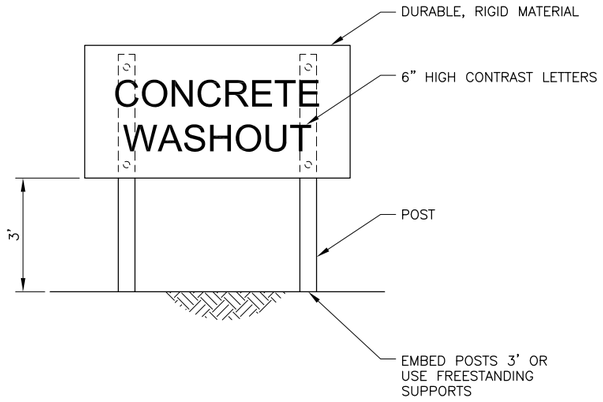
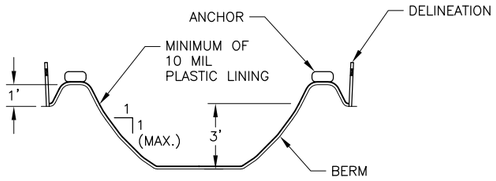
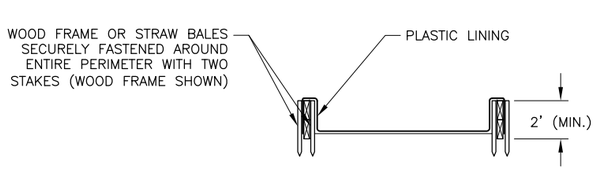


WASHOUT SIGN

NOT TO SCALE



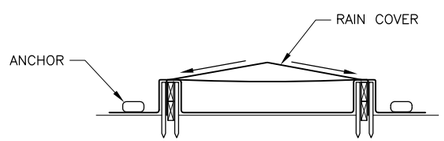
SECTION A–A



SECTION B–B

BELOW–GRADE CONCRETE WASHOUT
FABRICATED ON–SITE

NOT TO SCALE



SECTION B–B
WITH PLASTIC RAIN COVER

ABOVE GRADE CONCRETE WASHOUT
FABRICATED ON–SITE

NOT TO SCALE

REVISIONS		
Date	Description	By

State of Alaska DOT&PF

CONCRETE WASHOUT
(FABRICATED ON–SITE)

APPROVED

Date XX/XX/XX

BMP–06.00