

## BMP 36.00 & 37.00. Tire Wash

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### DESIGN CONSIDERATIONS

#### *Objectives*

Tire Washes reduce the amount of sediment transported onto paved roads by motor vehicles.

#### *Description*

A Tire Wash is an area located at a stabilized construction exit to remove sediment from tires and undercarriages.

#### *Other Names*

Tire Wash, Vehicle Washing, Wash Station.

#### *Applicability*

Tire Washes are applicable when a Stabilized Construction Exit (see BMP-23 and BMP-24) alone is not expected to prevent sediment from being tracked onto pavement. Tire Washes are used in conjunction with stabilized construction exits.

#### *Selection Considerations*

Tire washing is generally an effective best management practice (BMP) when installed with careful attention to topography. For example, a Tire Wash can be detrimental if installed at the top of a slope abutting a right-of-way where the water from the dripping truck can run off the project area unimpeded.

Pressure washing combined with an adequately sized and surfaced pad with direct drainage to a large sump can be very effective.

#### *Design*

Suggested details are shown in Drawing BMP-36, showing a passive system and in Drawing BMP-37 showing a mechanical (spray) system. The Project Engineer may allow other designs.

Entrances and Exits: Stabilization of the roadway before and after any Tire Wash area is critical. Stabilization methods will vary depending on the traffic volumes and vehicle type. Pavement may be necessary to prevent the underlying soils from becoming saturated and contributing more sediment to the Tire Wash system. Unstabilized areas at the exit from the tire washing will be exposed to wash-water draining off vehicles and can become additional sources of sediment trackout. Stabilization

can be achieved with coarse rock (typically a 12-inch thick layer of 3- to 6-inch crushed aggregate over geotextile filter fabric), metal plates and grates or rattle racks, pavement, and/or combinations of various methods.

#### Passive and Mechanical Systems:

- Passive systems are configurations in which equipment is driven through a Tire Wash pond with no sprayers. The Tire Wash pond overflow discharges through a pipe to a sump or is routed through a drainage channel to a sediment trap/basin.
- Mechanical systems involve spraying water at the tires and undercarriages. The spray and sediment is collected in a containment structure, which may either be the Tire Wash pond or may be separated from the driving area, for instance by a grate. Mechanical systems are only needed in extremely muddy conditions. Mechanical systems may be commercially available.

Pond Depth: If the system is designed for equipment to drive through the pond, keep the water level in the pond from 12 to 14 inches deep to avoid damage to truck hubs and filling the truck trailer tongues with water.

Bottom Slope of the Pond: Tire Wash ponds, sumps, or containment areas should be designed with a small grade change, 6 to 10 inches for a 12-foot-wide pond, which will allow sediment to flow to the low side of pond to help prevent re-suspension of sediment. A drainpipe with a 2- to 3-foot riser should be installed on the low side of the pond to allow for easy cleaning and refilling.

Treatment and Discharge of Wash Water: Wash water may not be discharged to waters of the U.S. or to a municipal storm water system (MS4). Discharge Tire Wash wastewater to a separate, on-site treatment system that prevents discharge to surface water, such as closed-loop recirculation or upland land application, or to the sanitary sewer with local sewer utility approval.

Polymers may be used to promote coagulation and flocculation in a closed-loop system. Polyacrylamide (PAM) added to the Tire Wash water at a rate of

0.25 to 0.5 pounds per 1,000 gallons of water increases effectiveness and reduces cleanup time.

Vehicle Volume and Tire Wash Capacity:

Designers must consider the traffic volumes and wash water capacity in designing appropriate controls.

Frequency of Changing Wash Water: In ponds that are driven through, the Tire Wash should begin the day with fresh water and the water should be changed a minimum of once per day. On large earthwork jobs where more than 10 to 20 trucks per hour are expected, the wash water will need to be changed more often and multiple Tire Wash facilities may be necessary.

Commercial Systems: Commercial manufactured tire and wheel wash systems are available for purchase and rental. Many commercial Tire Wash systems can be installed with adjacent tanks or ponds to allow sediment to accumulate. Commercial systems that combine chemical flocculants and recirculation capabilities can reduce maintenance frequency.

*Relationship to Other Erosion and Sediment Control Measures*

Sediment control measures such as Tire Washes are secondary to erosion prevention or soil stabilizing measures. Tire Washes may be used as part of a sequential system with other temporary or permanent measures such as temporary stabilization. Tire Washes are used in conjunction with a stabilized construction exit and street sweeping.

*Common Failures or Misuses*

- Failure to change wash water or remove sediment may cause track-out.

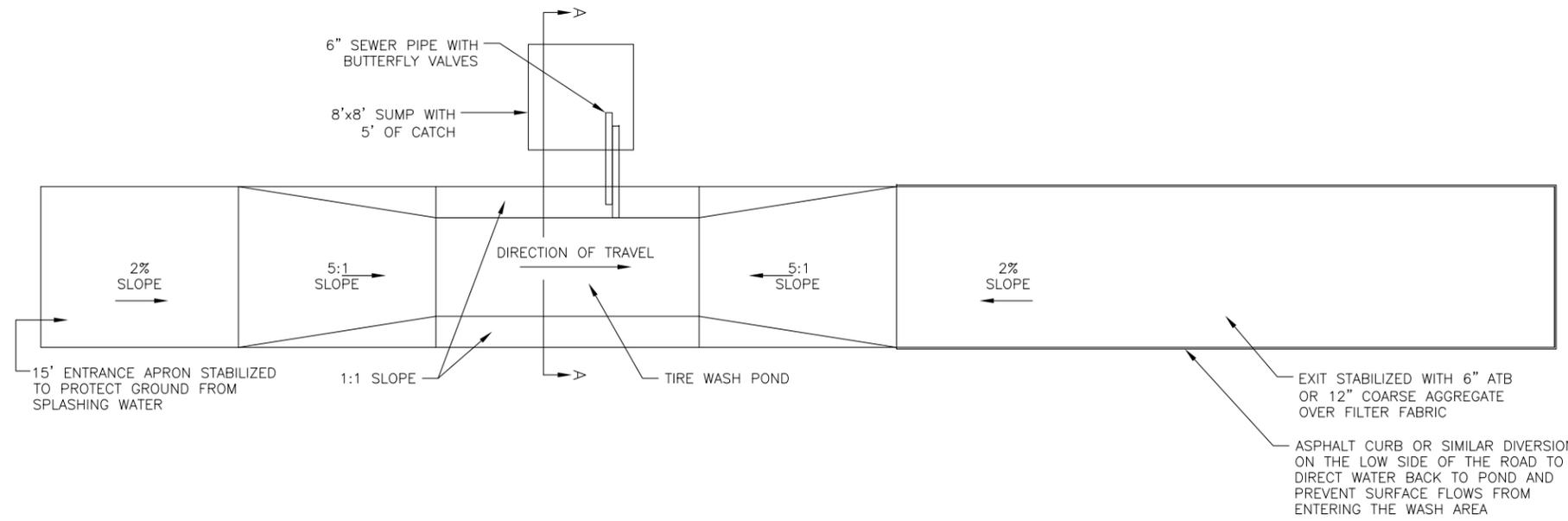
SPECIFICATIONS

Standard Specification

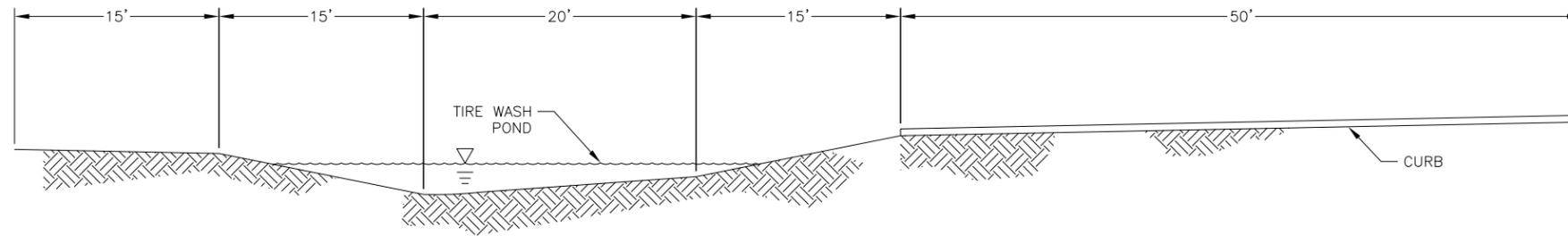
687 – Tire Wash

Drawings

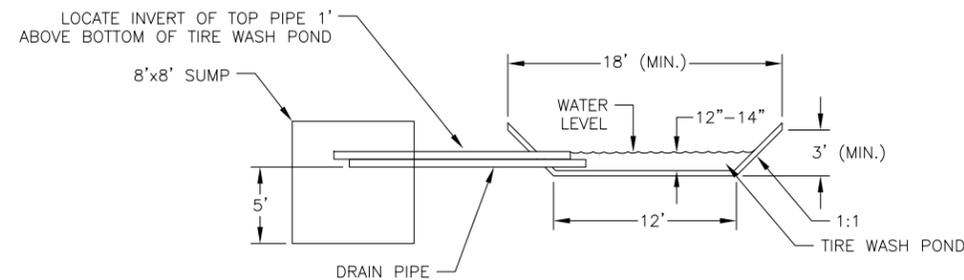
- BMP-36.00 Tire Wash (Notes & Passive System)
- BMP-37.00 Tire Wash (Mechanical System)



PLAN



ELEVATION



SECTION A-A

PASSIVE SYSTEM TIRE WASH  
NOT TO SCALE

TIRE WASH GENERAL NOTES:

MATERIALS

STABILIZATION: ASPHALT TREATED BASE (ATB) OR COARSE AGGREGATE (3-INCH TO 6-INCH STONE) AND GEOTEXTILE FABRIC

PIPE: SCHEDULE 40 PIPE, FITTINGS, AND VALVES.

PUMP: MECHANICAL SYSTEM ONLY.

SPRAY NOZZLE: MECHANICAL SYSTEM ONLY.

SUMP: TANK, PIT (IF SOIL, SLOPE THE SIDES), OR 8' OR MORE VERTICAL CULVERT PIECE.

INSTALLATION

1. CONSTRUCT THE SUMP SO THAT IT CAN BE CLEANED WITH A BACKHOE.
2. ENSURE THAT THE ENTIRE WASH AREA IS PAVED AND THERE ARE NO BARE SOILS.
3. USE A BELLY DUMP, LOWBOY OR OTHER LOW CLEARANCE TRUCK TO TEST THE TIRE WASH BEFORE STABILIZING OR PAVING.
4. TIRE WASH WASTEWATER SHOULD NOT INCLUDE WASTEWATER FROM CONCRETE WASHOUT AREAS.
5. IF PAM IS ALREADY BEING USED FOR DUST OR EROSION CONTROL AND IS BEING APPLIED BY A WATER TRUCK, THE SAME TRUCK CAN BE USED TO CHANGE THE WASH WATER.

INSPECTION

1. INSPECT FOR ADEQUATE DEPTH OF WATER IN THE POND, 12"-14".
2. INSPECT FOR SEDIMENT ACCUMULATION IN THE POND AND SUMP.
3. INSPECT FOR DISPLACEMENT OR STRUCTURAL DAMAGE TO THE STABILIZED ENTRANCE AND EXIT, POND, OR SUMP.

MAINTENANCE

1. USE FRESH WATER AT THE START OF EACH DAY IN THE POND.
2. CHANGE THE WATER A MINIMUM OF ONCE PER DAY, OR MORE OFTEN WHEN MORE THAN 15 TRUCKS PER HOUR USE THE TIRE WASH, OR AS DIRECTED.
3. DO NOT DISCHARGE WASH WATER TO WATERS OF THE U.S. OR TO A STORM SEWER SYSTEM. REMOVE AND PROPERLY DISPOSE OF EXCESS WASH WATER.
4. BEFORE SEDIMENT ACCUMULATES TO ONE-HALF OF THE DESIGN DEPTH, REMOVE SEDIMENT FROM THE SUMP.

REMOVAL

1. REMOVE AND PROPERLY DISPOSE OF THE TRAPPED SEDIMENT AND WASH WATER.
2. REMOVE ALL TEMPORARILY PAVED AREAS, SUCH AS THE ENTRANCES AND EXITS.

REVISIONS		
Date	Description	By

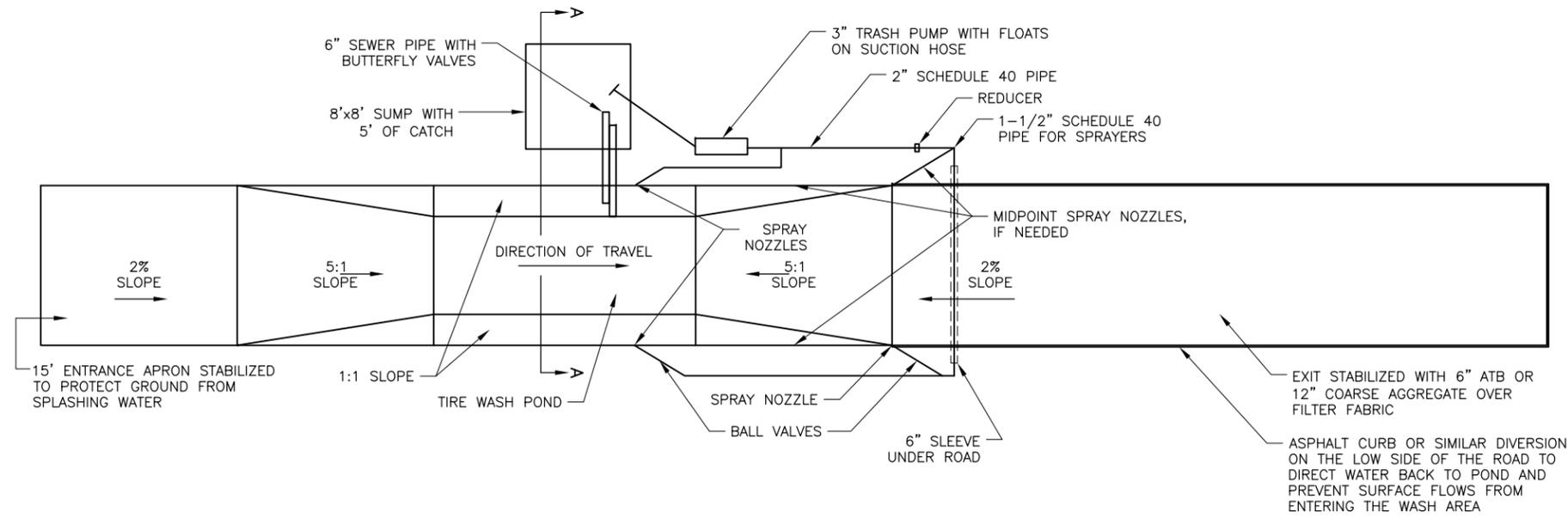
State of Alaska DOT&PF

**TIRE WASH  
(NOTES & PASSIVE SYSTEM)**

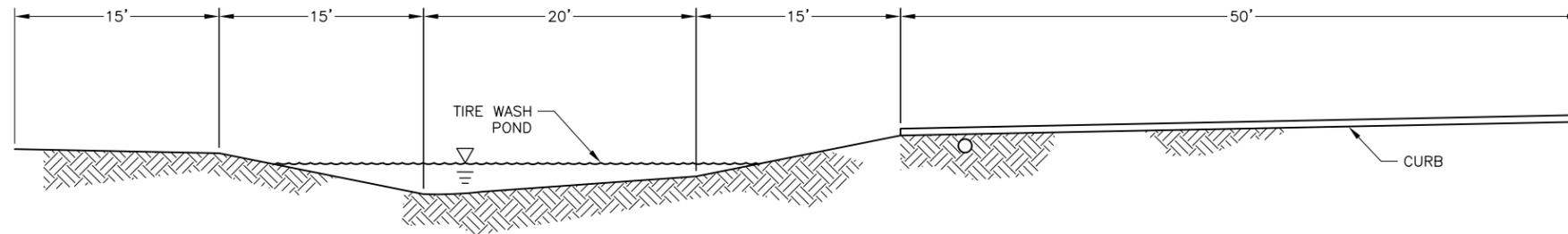
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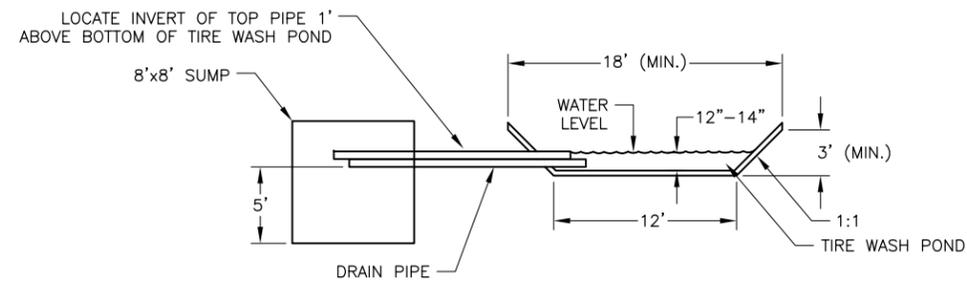
SEE TIRE WASH GENERAL NOTES ON  
BMP-36.00 TIRE WASH, SHEET 1.



**PLAN**



**ELEVATION**



**SECTION A-A**

**MECHANICAL SYSTEM TIRE WASH**  
NOT TO SCALE

REVISIONS		
Date	Description	By

State of Alaska DOT&PF

**TIRE WASH  
(MECHANICAL SYSTEM)**

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BMP-37.00