



CONSTRUCTION ENTRANCE
PHYSICAL DESCRIPTION - A stabilized entrance to a construction site designed to minimize the amount of sediment tracked from the site on vehicles and equipment. Stabilization generally consists of aggregate over geogrid and geosynthetic material. Mud and sediment fall off of tires as they travel along the stabilized entrance; however, additional measures in the form of a washdown area should also be included on site. The stabilized entrance also distributes the axle load of vehicles over a larger area, thereby mitigating the rutting impact vehicles normally have on unpaved areas. See additional in the "Construction Site Access Requirements" section of this manual.

WHERE BMP IS TO BE INSTALLED - At locations where it is safe for construction vehicles and equipment to access existing streets - preferably at location of future streets or drives.

CONDITIONS FOR EFFECTIVE USE OF BMP:
 Drainage: Ditches or pipes, if needed, sized for 15 year, 20 minute storm; HGL 6" below surface of entrance

WHEN BMP IS TO BE INSTALLED - First order of work, along with washdown area, prior to vehicles or equipment accessing unpaved areas.

INSTALLATION/CONSTRUCTION PROCEDURES:
 ✓ Grade and compact area of construction entrance.
 ✓ Install culvert under entrance if needed to maintain positive drainage.
 ✓ Place geosynthetic material next to compacted soil, lay geogrid on top of this, and cover with aggregate, forming diversion across entrance if needed to direct runoff away from roadway.
 ✓ See Washdown Station BMP for additional steps.

O&M PROCEDURES:
 ✓ Immediately remove any mud or debris tracked onto paved surfaces.
 ✓ Remove sediment and clods of dirt from construction entrance continuously.
 ✓ Replace rock if necessary to maintain clean surface.
 ✓ Repair settled areas.

SITE CONDITIONS FOR REMOVAL - Remove when vehicles and equipment will no longer access unpaved areas

TYPICAL DETAIL: ESC-4

WASHDOWN STATION
PHYSICAL DESCRIPTION - An area located at construction entrances designed to wash sediment from the tires and undercarriage of exiting vehicles and prevent sediment from being tracked onto existing roadways.

WHERE BMP IS TO BE INSTALLED - Across or immediately adjacent to exit paths from unpaved construction sites.

CONDITIONS FOR EFFECTIVE USE OF BMP:
 Drainage: Downstream BMP sized to treat dirty runoff from washdown station

WHEN BMP IS TO BE INSTALLED - First order of work, along with construction entrance, prior to vehicles or equipment accessing unpaved areas.

INSTALLATION/CONSTRUCTION PROCEDURES:
 ✓ Grade and compact area for drainage under washdown pad.
 ✓ Install steel-ribbed plate on frame or other support to allow a 2" drain space.
 ✓ Grade and vegetate downstream BMP (v-ditch shown on detail).
 ✓ Install water supply and hose.
 ✓ Post sign in advance of station indicating that all exiting vehicles and equipment must use station prior to exiting site.

O&M PROCEDURES:
 ✓ Remove sediment daily.
 ✓ Repair settled areas.
 ✓ Replace rock if necessary to maintain clean surface.

SITE CONDITIONS FOR REMOVAL - Remove when vehicles and equipment will no longer access unpaved areas

TYPICAL DETAIL: ESC-4

SILT FENCE
PHYSICAL DESCRIPTION - A temporary sediment barrier consisting of a synthetic fabric stretched across and attached to supporting posts and entrenched or sited in place. A properly installed silt fence will detain small amounts of sediment from disturbed areas of limited extent in order to prevent sediment from leaving the construction site and it will decrease the velocity of sheet flows.

Silt fence can be used for sheet flow with less than 1/2 acre drainage area per 100 linear feet of barrier. Silt fence should be placed at least 10 feet from the toe of slopes steeper than 15% to provide a broad shallow sediment pool. Silt fence should be installed on the contour where fence can intercept runoff as sheet flow only. The ends of the fence should be flared uphill to temporarily impound water.

Silt fence cannot be used in channels, waterways, or other concentrated flow paths. Limitations for using silt fence are shown in Drawing ESC-5.

Support Posts
 • 4-inch diameter hardwood or 1.33 lb./linear foot steel, braced or driven to a depth of 24 inches.
 • 1-1/4" square hardwood to be used when they are prefabricated with backing.
 • Posts shall be placed at 10 foot spacing with support backing, or 5 foot spacing for high strength fabric without support backing.

Support Backing
 • Wire backing
 • Plastic net backing

Sediment Fence Fabric
 • Filtering Efficiency 75%, ASTM 5141
 • Flow Rate 0.2 gal./sq.ft./minute ASTM 5141
 • Standard strength 30 lb./in. linear ASTM 4632

CONDITIONS FOR EFFECTIVE USE OF BMP - A combination of the following actions should be used to help reduce the dust and air pollution at a construction site.

Minimize Concurrent Areas of Soil Disturbance - Phase work to the extent practical

Vegetative Cover - For areas not subjected to traffic, vegetation provides the most practical method of dust control and should be established as early as possible. Temporary vegetation should also be used. See Seeding and Sodding BMP's for additional information.

Sprinkling - The site can be sprinkled with water until the surface is moist. This practice is effective for dust control on large areas, haul routes or other traffic routes, but constant repetition is required for effective control.

Tilling - Roughen the surface and bring clods to the surface. This is an emergency measure that should be used before soil blowing starts. Begin tilling on windward side of the site. Chisel plows with shanks spaced about 12 inches to 18 inches apart and spring toothed harrows are examples of equipment that may produce the desired effect. See Surface Roughening BMP for additional information.

Wind Barriers - Solid board fences, snow fences, burlap fences, crate walls and similar materials can be used to control air currents and blowing soil. Barriers placed at right angles to prevailing wind currents at intervals of about 10 times their height are effective in controlling soil blowing.

Street Cleaning - Paved areas that have soil on them from construction sites should be cleaned continuously, at least daily, utilizing a street sweeper or bucket type end loader or scraper.

Mulching - This practice offers a fast and effective means of controlling dust when properly applied. Binders and tackifiers should be used on organic mulches. Mulching is not recommended for areas with heavy traffic. See Mulching BMP for additional information.

NOTE: If calcium chloride or spray-on adhesives are used for dust control, a permit may be required from the Missouri Department of Natural Resources.

WHEN BMP IS TO BE INSTALLED - Routinely, especially in advance of and during periods of dry weather.

INSTALLATION / CONSTRUCTION PROCEDURES - See Conditions for Effective Use above.

O&M PROCEDURES - Inspect daily and renew as needed.

SITE CONDITIONS FOR REMOVAL - Maintain practices until all disturbed areas are vegetated or paved and blowing soil is no longer a concern.

TYPICAL DETAILS - Not Applicable.

EROSION CONTROL PLAN
 FOR
RANGE USA INDOOR GUN RANGE
 OFFALLON, MISSOURI

GENERAL STATEMENT AND BEST MANAGEMENT PRACTICE
 The control of erosion of soil is important on any site where earth movement is required and un-vegetated slopes are created. No impoundments downstream will be affected.

To guard against erosion, the contractors, engineers, and project owner must work together to properly sequence the placement of siltation controls and diligently maintain their effectiveness. The siltation fences be placed prior to clearing. The placement of the silt fence will serve as a large measure of protection to downstream properties. Next, the storm water collection system to direct drainage to the existing storm system should then be constructed. Siltation protection should be constructed around all storm sewer inlets.

Planting of landscaping materials and establishment of lawn areas will aid in the control of erosion. If landscaping cannot be accomplished in a timely fashion, at a minimum the planting of grass sodding within sensitive areas shall begin as soon as it in place. As other areas around the construction site are finished graded, they too shall have lawn seeded or sodded. Mulch and/or erosion control blankets are alternative for areas unable to immediately establish vegetation.

WORK AREA AND PHASING
 Approximately 2.29+ acres will be disturbed. The proposed start date is SUMMER 2022. Site work should commence under approximately three stages. First, the site demolition, clearing and grading will be done. The second phase will consist of construction of the pavement, curbs, and walkways. The final phase will consist of any landscaping and storm water quality BMP installation. The estimated time needed to construct the project is approximately three (3) months.

GRADING OPERATION
 All access to the development will be by the use of proposed entrance on Veterans Memorial Parkway, as shown. Provisions for the washing of vehicles exiting the site must be made. The existing parking areas will be utilized for temporary off-street parking. If a haul route is necessary for importing fill or removal of excess soil materials, the Contractor shall provide the necessary information prior to permit issuance.

DEVELOPMENT DETAILS
 Soils on site appear to be of good quality for vegetation. However, a landscape/soils expert should be consulted for any additional preparation measures needed prior to re-vegetation. If available, review the Geotechnical Report for further details on soil conditions. Temporary siltation control devices shall remain in place until the establishment of turf. Permanent erosion control measures include the establishment of turf.

POLLUTION PREVENTION PROCEDURES
DESCRIPTION - Pollution prevention includes best management practices that need to be set up at the beginning of the project. Pollution prevention practices consist of site management considerations that do not fit into the other categories of erosion or sediment controls, such as materials inventory, good housekeeping, spill prevention and clean up, solid waste management and concrete washout. Building materials and other construction site wastes must be properly managed and disposed of to reduce the risk of pollution from materials such as surplus and refuse building materials or hazardous wastes. Practices such as trash disposal, recycling, proper material handling, and spill prevention and cleanup measures can reduce the potential for storm water runoff to mobilize construction site wastes and contaminate surface or ground water.

APPROPRIATE APPLICATION OF BMP - The proper management and disposal of waste should be practiced at every construction site to reduce contaminated storm water runoff. Use waste management practices to properly locate refuse piles, to cover materials that might be displaced by rainfall or storm water runoff, and to prevent spills and leaks from hazardous materials that were improperly stored.

Solid Wastes
 • Designate a waste collection area on the site that does not receive a substantial amount of runoff from upland areas and does not drain directly to a water body.
 • Dumpsters or other collection containers should be provided as needed and ensure that containers have lids so they can be covered before periods of rain, and keep containers in a covered area whenever possible.
 • Schedule waste collection to prevent the containers from overflowing.
 • Clean up spills immediately. For hazardous materials, follow cleanup instructions on the package.
 • During the demolition phase of construction, provide extra containers and schedule more frequent pickups.
 • Collect, remove, and dispose of all construction site wastes at authorized disposal areas in accordance with state and local laws and regulations. Contact a local environmental agency to identify these disposal sites.
 • Solid waste may not be buried or burned on the site.
 • Good Housekeeping on a construction site is very important. Keep the site clean.

Pesticides and Fertilizers
 • Follow all federal, state, and local regulations that apply to the use, handling, or disposal of pesticides and fertilizers.
 • Do not handle the materials any more than necessary.
 • Store pesticides and fertilizers in a dry, covered area.
 • Construct berms or dikes to contain stored pesticides and fertilizers in case of spillage.
 • Follow the recommended application rates and methods.
 • Have equipment and absorbent materials available in storage and application areas to immediately contain and clean up any spills that occur.

Detergents - Phosphorous and nitrogen containing detergents are used in wash water for cleaning vehicles. Excesses of these nutrients can be a major source of water pollution. Use detergents only as recommended, and limit their use on the site. Do not dump wash water containing detergents into the storm drain system; direct it to a sanitary sewer or collect it so that it can be treated at a wastewater treatment plant.

1) HANDLING AND DISPOSAL OF HAZARDOUS MATERIALS
DO
 • Prevent spills
 • Use products up
 • Follow label directions for disposal
 • Remove lids from empty bottles and cans when disposing in trash
 • Recycle wastes whenever possible

DON'T
 • Don't pour waste into sewers or waterways or on the ground
 • Don't pour waste down the sink, floor drain or septic tanks
 • Don't bury chemicals or containers, or dispose of them with construction debris
 • Don't burn chemicals or containers
 • Don't mix chemicals together
 • Don't remove the original product label from the container

2) Containers shall be provided for collection of all waste material including construction debris, trash, petroleum products and any hazardous materials to be used onsite. All waste material shall be disposed of at facilities approved for that material.
 3) No waste materials shall be buried on-site.
 4) Mixing, pumping, transferring or otherwise handling construction chemicals such as fertilizer, lime, asphalt, concrete drying compounds, and all other potentially hazardous materials shall be performed in an area away from any water course, ditch or storm drain.
 5) Equipment fueling and maintenance, oil changing, etc., shall be performed only in an area designated for that purpose. The designated area is equipped for recycling oil and catching spills.
 6) Concrete wash water shall not be allowed to flow directly to storm sewers, streams, ditches, lakes, etc. without being treated. A sump or pit shall be constructed to contain concrete wash water. See additional requirements in the "Concrete Waste Management" section of this manual.
 7) If substances such as oil, diesel fuel, hydraulic fluid, antifreeze, etc. are spilled, leaked, or released onto soil, the soil shall immediately be dug up and disposed of at a licensed sanitary landfill (not a construction / demolition debris landfill). Spills on pavement shall be immediately absorbed with sawdust, kitty litter or product designed for that purpose and disposed of at a licensed sanitary landfill. Hazardous or industrial wastes such as most solvents, gasoline, oil based paints, and cement curing compounds require special handling. These materials will be removed from the site and recycled or disposed of in accordance with MDNR requirements.
 8) State law requires the party responsible for a petroleum product spill in excess of 50 gallons to report the spill to the Missouri Department of Natural Resources (MDNR) at (537) 634-2436, as soon as practical after discovery. Federal law requires the responsible party to report any release of oil if it reaches or threatens a sewer, lake, creek, stream, river, groundwater, wetland, or area, like a road ditch, that drain into one of the above.
 9) The contractor / permittee shall ensure adequate training is provided to the site superintendent and all field personnel, etc. on the proper protocol for reporting and cleaning up spills.
 10) Manufacturer's recommended method for spill cleanup should be clearly posted and the site personnel should be made aware of the procedures and the location of the information and clean up supplies.
 11) Material and equipment necessary for spill cleanup should be kept in the material storage area on site.
 12) Minimize the material inventory stored on-site (e.g., only a few days' supply).
 13) Do not store hazardous chemicals, drums, or bagged / boxed materials directly on the ground. Place these items on a pallet and under cover in secondary containment.
 14) Storage areas shall be kept clean and well organized.

O&M PROCEDURES - The only way to be sure that waste management practices are being followed is to be aware of worker habits and to inspect storage areas regularly. Extra management time may be required to ensure that all workers are following the proper procedures. Inspect storage and use areas and identify containers or equipment that could malfunction and cause leaks or spills. Check equipment and containers for leaks, corrosion, support or foundation failure, or other signs of deterioration, and test them for soundness. Immediately repair or replace any that are found to be defective.

TYPICAL DETAILS - Not applicable.

NON-SEDIMENT POLLUTION CONTROL
PHYSICAL DESCRIPTION - Control measures designed to prohibit chemicals, hazardous materials, solid waste and construction debris from polluting stormwater. Pollutants carried in solution or as surface films on runoff will be carried through most erosion control and sediment capture BMP's. Keeping substances like fuel, oil, asphalt, paint, solvents, fertilizer, soil additives, concrete wash water, solid waste and construction debris from polluting runoff can be accomplished to a large extent through good housekeeping on the site and following the manufacturer's recommendations for disposal.

WHERE BMP IS TO BE INSTALLED - Collection, storage and fueling areas should be located onsite in an area that does not receive a substantial amount of runoff from upland areas and does not drain directly to lakes, creeks, streams, rivers, sewers, groundwater, wetlands, or road ditches.

CONDITIONS FOR EFFECTIVE USE OF BMP:
 • Reduction in pollutants depends heavily on how construction personnel perform their duties. An effective management system requires training and signage to promote proper storage, handling and disposal of materials. Follow up observations of actions and inspection of storage areas by management personnel is also required.
 • Plans should contain notes clearly stating requirements for addressing potential pollutants.
 • Fueling areas and storage areas for hazardous materials should be protected by berms or other means of catching leaks or spills. Do not store hazardous chemicals, drums, or bagged materials directly on the ground. Place these items on a pallet and under cover in secondary containment.

WHEN BMP IS TO BE INSTALLED - Immediately following installation of construction entrance and wash station.

INSTALLATION/CONSTRUCTION PROCEDURES:
 • Place waste receptacles near area of work
 • Construct protective berm or other devices around fueling and hazardous materials storage areas.
 • Install appropriate signage.
 • Post guidelines for proper handling, storage and disposal of materials, and emergency spill cleanup on site.

O&M PROCEDURES:
 • Inspect activities on regular basis.
 • Inspect storage areas and control devices at least every two weeks and after every storm.
 • Make necessary corrections and repairs.

SITE CONDITIONS FOR REMOVAL - Maintain practices until all construction on the site has been completed

TYPICAL DETAILS - General pollution prevention notes attached.

St. Charles County
 Erosion & Sediment Controls
 Standard Drawings
CONSTRUCTION TRAFFIC WASH-OFF PAD
 DATE: APRIL 2008 DRAWING: ESC-4

Additional erosion control measures may be required during construction that are not shown on these plans. Contractor is responsible for installing and maintaining temporary and/or interim erosion control measures during construction progression or as required by the City and/or MDNR Inspector. Any changes/additions to the Storm Water Pollution Prevention Plan (SWPPP) shall be documented by the contractor and remain on file at the site.

Underground facilities, structures & utilities have been plotted from available surveys, records & information, and therefore, do not necessarily reflect the actual existence, nonexistence, size, type, number, or location of these facilities, structures, & utilities.

The Contractor shall be responsible for verifying the actual location of all underground facilities, structures, & utilities, either shown or not shown on these plans. The underground facilities, structures, & utilities shall be located in the field prior to any grading, excavation or construction of improvements. These provisions shall in no way absolve any party from complying with the Underground Facility Safety and Damage Prevention Act.

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1	04-25-22	05-13-22			
2					
4					

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SWPPP DETAILS 1
RANGE USA INDOOR GUN RANGE
 9100 Veterans Memorial Parkway

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 REG. STATE OF MISSOURI
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 EXPIRES 06-09-22

Designed: EAS
 Drawn: EAS
 Checked: EAS
 Date: March 19, 2022

Project Number: 21100
 Sheet Number: C8.1 of

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