SEEDING REQUIREMENTS

Dates for Seeding

Permanent Seeding	Jan	Feb	March	April	May	June	July	Aug	Sep	Oct	Nov	Dec
Tall Fescue			O	O	O			O	O			
Smooth Brome			O	O	O			O	O			
Fescue & Brome			O	O	O	O		O	O			
Fescue, Rye & Bluegrass	A	A	O	O	O	P	P	O	O	P	P	A

Temporary Seeding	Jan	Feb	March	April	May	June	July	Aug	Sep	Oct	Nov	Dec
Rye or Sudan	A	A	O	O	O	O	O	O	O	O	A	A
Oats		A	O	O	O	O	O	O	O			

O = Optimum seeding dates
A = Acceptable seeding dates
P = Permitted seeding dates with reseeding 2 months later - Initially use 50% of seed and 75% of fertilizer. Reseed with additional 75% seed and remaining fertilizer.

Minimum Fertilizer and Seeding Rates

Permanent Seeding*	Pounds per acre	Pounds Per 1000 sq. ft.
Tall Fescue	300	7.0
Smooth Brome	200	4.6
Mixture # 1	250	5.7
Mixture # 2	210	4.8

Mixture # 1 = Tall Fescue @ 150 pounds per acre and Brome @ 100 pounds per acre.
Mixture # 2 = Tall Fescue @ 100 pounds per acre; Perennial Rye grass @ 100 pounds per acre; and Kentucky Blue grass @ 10 pounds per acre.
* = Seeding rate for slopes in excess of 20% (5:1), shall be 10 pounds per 1000 sq. ft.

Temporary Seeding	Pounds per acre	Pounds Per 1000 sq. ft.
Rye or Sudan	150	3.5
Oats	200	2.5

Fertilizer	Permanent Seeding (pounds per acre)	Temporary Seeding (pounds per acre)
Nitrogen	45	30
Phosphate	65	30
Potassium	65	30
Lime - ENM	600	600

ENM = Effective neutralizing material per State evaluation of quarried rock.

MULCH

PHYSICAL DESCRIPTION - A layer of organic material designed to protect exposed soil or freshly seeded areas from erosion by eliminating direct impact of precipitation and slowing overland flow rates. Mulch materials may include, but are not limited to, such things as grass, hay, straw, wood chips, wood fibers, and shredded bark.

- Type I Mulch-Vegetative (includes grass, hay, straw), 802-10.00.
- Type II Mulch-Vegetative with asphalt emulsion (includes grass, hay, straw), 802-20.00.
- Type III Mulch-Vegetative with overspray (includes grass, hay, straw), 802-30.00.
- Type IV Mulch-Hydro mulch (includes wood fiber, wood cellulose), 802-50.00.
- Shredded Hardwood Bark Mulch, 802-60.90.
- Wood Chips, (not recycled lumber), 802-60.92.

WHERE BMP IS TO BE INSTALLED - Typically installed on seeded areas for temporary use, and in landscaped areas for permanent use

CONDITIONS FOR EFFECTIVE USE OF BMP:
Type of Flow: Sheet flow only
Slopes: See attached chart for types of mulch acceptable as a function of slope length and steepness
Mulching Rates: See attached table

WHEN BMP IS TO BE INSTALLED - Immediately after grading landscaped areas or seeding other areas

INSTALLATION/CONSTRUCTION PROCEDURES:
- ✓ Install upstream BMP's to protect area to be mulched
- ✓ Rough grade area and remove all debris larger than 1 inch if area is to be vegetated and mowed in the future, larger than 2 inches if area is to be permanently mulched
- ✓ If area is to be seeded, follow requirements of Seeding BMP
- ✓ Spread mulch and anchor by punching it into the ground, using netting, peg and twine, or tacking with liquid binder
- ✓ For additional information see Section 802 of St. Louis County's Standard Specification for Highway Construction.

O&M PROCEDURES:
- ✓ Inspect every week and after every storm until adequate vegetation is established; annually for permanent mulch
- ✓ Protect from vehicular and foot traffic
- ✓ Repair damaged, degraded or eroded areas reseed as needed and replace mulch

SITE CONDITIONS FOR REMOVAL - Temporary mulch should be removed when adequate vegetation is established .

TYPICAL DETAILS - Type of mulch required for various slopes and application rates attached

SEEDING

PHYSICAL DESCRIPTION - Establishment of vegetation by spreading grass seed designed to protect exposed soil from erosion by eliminating direct impact of precipitation and slowing overland flow rates. Once established, the vegetative cover will also filter pollutants from the runoff.

WHERE BMP IS TO BE INSTALLED - Exposed soil after a phase of rough or finish grading has been completed, or areas where no activity will occur for 30 days

CONDITIONS FOR EFFECTIVE USE OF BMP:
Type of Flow: Sheet flow
Contributing Slope Length: 30 foot maximum for 3:1 slopes
50 foot maximum for slope between 3:1 and 10:1
100 foot maximum for slopes under 10%
Minimum Rates: See attached chart(s)
Acceptable Dates: See attached chart

WHEN BMP IS TO BE INSTALLED - Immediately after rough or finished grading is completed

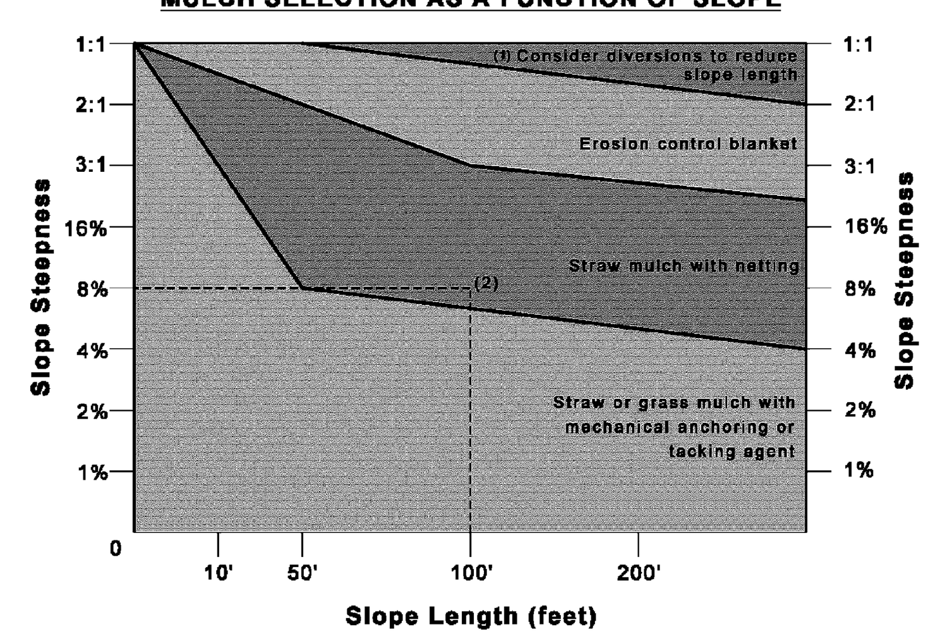
INSTALLATION/CONSTRUCTION PROCEDURES:
- ✓ Install upstream BMP's to protect area to be seeded
- ✓ Rough grade area and remove all debris larger than 1 inch in diameter and concentrated areas of smaller debris
- ✓ Install stabilization grids, if needed
- ✓ Mix soil amendments (lime, fertilizer, etc.) into top 3"-6" of soil as needed
- ✓ Plant seed ¼ - ½ inch deep
- ✓ Roll lightly to firm surface
- ✓ Cover seeded area with mulch unless seeding completed during optimum spring and summer dates
- ✓ Install additional stabilization (netting, bonded fiber matrix, etc.) as required
- ✓ Water immediately enough to soak 4 inches into soil without causing runoff

O&M PROCEDURES:
- ✓ Inspect every week and after every storm
- ✓ Protect area from vehicular and foot traffic
- ✓ Reseed areas that have not sprouted within 21 days of planting.
- ✓ Repair damaged or eroded areas and reseed and stabilize as needed
- ✓ Do not mow until 4 inches of growth occurs
- ✓ During the first 4 months, mow no more than 1/3 the grass height
- ✓ Refertilize during 2nd growing season

SITE CONDITIONS FOR REMOVAL - Does not require removal, but temporary seeding can be removed immediately prior to work returning to an area

TYPICAL DETAILS - Minimum seeding rates and acceptable dates for work attached

MULCH SELECTION AS A FUNCTION OF SLOPE



(1) For slopes steeper than 1:1, consider building a diversion above slope to divert water.
(2) Example: An 8% slope, 100 feet long, requires straw mulch with netting

GENERAL MULCH RECOMMENDATIONS TO PROTECT FROM SPLASH AND SHEET FLOW

Material	Rate Per Acre	Requirements	Notes
Straw	2 to 2.5 tons	Dry, unchopped unweathered; avoid weeds	Spread by hand or machine; must be tacked or tied down
Wood Fiber or Wood Cellulose	0.5 to 1 ton		Use with hydro seeder; may be used to tack straw. Do not use in hot, dry weather.
Wood Chips	5 to 6 tons	Air dry. Add nitrogen fertilizer at 12 lb per ton	Apply with blower, chip handler, or by hand. Not for fine turf areas.
Bark	35 cu. yds.	Air dry, shredded, or hammermilled; or chips	Apply with mulch blower, chip handler or by hand. Do not use asphalt tack.

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

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

DUST CONTROL

PHYSICAL DESCRIPTION - Control measures designed to reduce the transport of dust, thereby preventing pollutants from infiltrating into stormwater. Examples for construction activities include vegetative cover, wind barriers, minimization of soil disturbance, spray on adhesives, tilling, chemical treatment and water sprays.

The contractor / permittee is required by Missouri State Law (10 CSR 10-6.170) to control fugitive dust blown from the construction site, land disturbance site, signal installation, etc. Dust control, including saw-cut material etc., on the construction site shall be monitored for safety purposes and to prevent nuisances. The contractor / permittee shall apply resonable measures to control dust and particulate matter (of any size or source) due to roadway / construction traffic, grading, clearing and grubbing, building demolition, wind erosion, saw-cutting etc. from migrating off the site of origin.

WHERE BMP IS TO BE INSTALLED - Critical in areas of exposed soil.

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 tillage 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 wing 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

POLLUTION PREVENTION PROCEDURES

DESCRIPTION - 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 or 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 wastes 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.
- 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 overfilling.
- 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. Contact a local environmental agency to identify these disposal sites.

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 contain 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, oilbased paints, and cement curing compounds require special handling. These materials will be removed from the site and recycled or disposed of in accordance with MoDNR requirements.
8) State law requires the party responsible for a petroleum product spill in excess of 50 gallons to report the spill to Missouri Department of Natural Resources (MoDNR) 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 drains into one of the above

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.

EROSION CONTROL PLAN FOR
WATERWAY GAS & WASH
O'FALLON, 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. 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 temorary grass within the disturbed areas shall begin as indicated on these plans. As other areas around the building construction are finish graded, they too shall have lawns planted or sodded.

WORK AREA AND PHASING
Approximately 0.25 acres will be disturbed. The proposed start date is Summer 2021. Site work will include demolition, grading, and pavement. The estimated duration of the project is approximately 6 months.

GRADING OPERATION
All access to the development will be by the existing entrances, as shown on the SWPPP. The existing pavement shell be used to access the site and for construction-related off-street parking. Provisions for the washing of vehicles exiting the site must be made. 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 are of good quality for vegetation. No additional preparation measures are needed prior to re-vegetation. Temporary siltation control devices shall remain in place until the establishment of turf. Permanent erosion control measures include the establishment of turf.

ADDITIONAL SWPPP NOTES

1. Erosion and siltation control shall be installed prior to any grading and be maintained throughout the project until acceptance of the work by the owner and/or controlling regulatory agency and adequate vegetative growth insures no further erosion of the soil and work is acceptable to the owner and/or controlling regulatory agency.
2. Temporary siltation control measures (structural) shall be maintained until vegetative cover is established at a sufficient density to provide erosion control on the site or until suitable replacement basins have been provided.
3. When clearing and/or grading operations are completed or suspended for more than 14 days, all necessary precautions shall be taken to retain soil materials on site. Protective measures may be required by the City of O'Fallon and/or MDNR, such as permanent seeding, periodic wetting, mulching, or other suitable means.
4. If cut and fill operations occur during a season not favorable for immediate establishment of permanent ground cover, a fast germinating annual such as rye grasses or sudan grasses shall be utilized to retard erosion, if adequate erosion control devices have not been established.
5. Storm water pipes, outlets and channels shall be protected by silt barriers and kept free of waste and silt at all times prior to final surface stabilization and/or paving.
6. Siltation fences, sewer structures, and curb inlet protection shall be inspected periodically for damage and for the amount of sediment which has accumulated. Removal of sediment will be required when it reaches ½ the height of the siltation fence device. Removed sediment will be placed on excess cut areas.
7. Contractor shall schedule and conduct his work such that parking for construction workers is provided on either paved or gravel surfaces. Parking on private property or public streets will not be allowed.
8. All existing structures, sidewalks, concrete or asphalt surfaces, curbing, walls, sewers, fences, trees, shrubs, and debris noted for removal on the site shall be demolished, removed from the site, and properly disposed of all in a manner approved by the regulating governmental agencies. Contractor shall be responsible for contacting all utility companies affected or in the vicinity of proposed demolition.
9. Contractor shall preserve and protect all existing improvements and vegetation (which are not to be removed) within the project limits or adjacent thereto from damage as a result of his activities in the performance of work.
10. Contractor shall keep a surplus of erosion and siltation control devices for emergency repair in the approximate amount of 15% of total quantity onsite at all times.
11. The City of O'Fallon and MODOT must be notified at least forty-eight (48) hours prior to the commencement of any grading operations.
12. Equipment and vehicles shall be cleaned before entering public roadways so that no silt, mud, or debris shall be tracked onto the streets. A tractor with a blade, a broom tractor, and a street sweeper or a high pressure wash truck shall be available for the site at all times for the removal of mud from the streets.
13. When grading operations are completed, permanent grass must be established at sufficient density (at least seventy-five (75) percent vegetative cover) to provide erosion control on the site. Between permanent grass seeding periods, temporary cover shall be provided.
14. Where natural vegetation is removed during grading, temporary vegetation shall be re-established in such a density (at least seventy-five (75) percent vegetative cover of area disturbed) as to prevent erosion. Permanent type grasses shall be established as soon as possible after grading has been completed.
15. All areas shall be seeded and mulched in a final form or sodded before final escrow is released.
16. The ground adjoining the development site shall be provided with protection from accelerated and increased surface water, silt from erosion, and any other consequences of erosion. Runoff water from developed areas (parking lots, paved sites, buildings, etc.) above the area to be developed shall be directed to diversion ditches, concrete gutters and/or underground outlet systems.
17. Any depositing of silts or mud off-site, on new or existing pavement or in new or existing storm sewers or swales shall be removed after each rain and affected areas cleaned to the satisfaction of the City of O'Fallon, St. Charles County, MODOT and/or the affected property owners.
18. The Contractor shall assume complete responsibility for controlling all siltation and erosion of the project area. The Contractor shall use whatever means necessary to control erosion and siltation control in accordance with the approved plans and as directed by the City of O'Fallon and/or MDNR.

PLANNED RESPONSE TO LOSS OF CONTAINED SEDIMENT

1. BMP's shall be repaired and/or replaced immediately, as required to stabilize stie and contain sediment laden runoff. Offsite areas shall be reviewed for extent of impact from BMP failure. Permit holder shall be required to provide documentation of the BMP measures installed and scheduled maintenance and repairs. Permit holder shall be required to report any BMP failures to the City of O'Fallon Department of Public Works.
2. The Contractor is responsible for installing additional BMP measures beyond those shown, if conditions dictate or current measures are insufficient.

PERMIT HOLDER REQUIREMENTS

1. Any land clearing, construction or development involving the movement of earth shall be in accordance with the Storm Water Pollution Prevention Plan.
2. Notify all contractors and other entities (including utility crews, City employees, or their agents) that will perform work at the site, of the existence of the Storm Water Pollution Prevention Plan (SWPPP) and what actions or precautions shall be taken while on site to minimize the potential for erosion and the potential for damaging any Best Management Practices (BMPs);
3. Determine the need for and establish training programs to ensure that all site workers have been trained, at a minimum, in erosion control, material handling and storage, and housekeeping; and
4. Provide copies of the Storm Water Pollution Prevention Plan (SWPPP) to all parties who are responsible for installation, operation or maintenance of any Best Management Practices (BMPs); and
5. Maintain a current copy of the Storm Water Pollution Prevention Plan (SWPPP) on the site at all times.

THE FOLLOWING NON-STORM WATER DISCHARGES ARE AUTHORIZED BY THE EPA PROVIDED IT HAS BEEN DETERMINED BY THE PERMITTEE THAT THEY ARE NOT SIGNIFICANT CONTRIBUTORS OF POLLUTANTS TO THE MS4. IMPLEMENTATION OF POLLUTION PREVENTION MEASURES FOR NON-STORM WATER DISCHARGES IS REQUIRED FOR SIGNIFICANT CONTRIBUTORS.

A. WATER LINE FLUSHING.
B. LANDSCAPE IRRIGATION.
C. DIVERTED STREAM FLOWS.
D. RISING GROUND WATERS.
E. UNCONTAMINATED GROUND WATER INFILTRATION (AS DEFINED AT 40 CFR 35.2005(20)).
F. UNCONTAMINATED PUMPED GROUND WATER.
G. DISCHARGE FROM POTABLE WATER SOURCES.
H. FOUNDATION DRAINS.
I. AIR CONDITIONING CONDENSATION.
J. IRRIGATION WATER, SPRINGS.
K. WATER FROM CRAWL SPACE PUMPS.
L. FOOTING DRAINS.
M. LAWN WATERING.
N. INDIVIDUAL RESIDENT CAR WASHING.
O. FLOWS FROM RIPARIAN HABITATS AND WETLANDS.
P. DE-CHLORINATED SWIMMING POOL DISCHARGES.
Q. STREET WASH WATER.
R. RESIDENTIAL BUILDING WASH WATERS, WITHOUT DETERGENTS.

DISCHARGES OR FLOWS FROM FIRE FIGHTING ACTIVITIES OCCUR DURING EMERGENCY SITUATIONS. THE PERMITTEE IS NOT EXPECTED TO EVALUATE FIRE FIGHTING DISCHARGES WITH REGARD TO POLLUTANT CONTRIBUTIONS. THEREFORE, THESE DISCHARGES ARE AUTHORIZED AS ALLOWABLE NON-STORM WATER DISCHARGES, UNLESS IDENTIFIED, BY EPA, AS SIGNIFICANT SOURCES OF POLLUTANTS TO WATERS OF THE U.S.

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 of O'Fallon, St. Charles County 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.

CONCRETE WASTE MANAGEMENT

DESCRIPTION - The purpose of this specification is to set forth procedures and practices designed to eliminate the discharge of concrete waste materials to storm drainage systems, drainage areas, streets or watercourses, which shall be required of the contractor.

APPROPRIATE APPLICATION OF BMP - Concrete waste management procedures and practices will be implemented on construction projects as follows:

- Where concrete is used as a construction material or where concrete dust and debris result from demolition activities.
- Where slurries containing Portland cement concrete (PCC), asphaltic concrete (AC) or bituminous concrete (BC) are generated, such as from saw cutting, coring, grinding, grooving and hydro-concrete demolition.
- Where concrete trucks and other concrete-coated equipment are washed on-site, when approved by the Resident Engineer or Construction Inspector.
- Where mortar-mixing station exist.

AWARENESS / ENFORCEMENT

- Contractor's and / or permit holder's superintendent or representative shall oversee and enforce concrete waste management procedures.
  - ➢ Discuss the concrete management techniques described in this BMP (such as handling of concrete waste and washout) with the ready-mix concrete supplier before any deliveries are made.
- The site superintendent shall make drivers aware of the presence of the concrete waste management facilities. The site superintendent should post signage indicating the location and designated use of the concrete waste management areas, and provide careful oversight to inspect for evidence of improper dumping of concrete waste and wash water.

IMPLEMENTATION

- Contractors, private individuals, public agencies, etc. using concrete material, shall incorporate requirements for concrete waste management into material supplier and subcontractor agreements. Include requirements in contracts with concrete delivery companies that drivers must use designated concrete washout facilities.
- Store dry and wet materials under cover, away from drainage areas.
- Avoid mixing excess amounts of fresh concrete.
- Do not allow excess concrete to be dumped on-site, except in designated areas.
- Cover the structures before predicted rainstorms to prevent overflows.
- Monitor on site concrete waste storage and disposal procedures at least weekly or as directed by the Resident Engineer or Construction Inspector.

- In St. Louis County, the contractor is required by Missouri State Law (10 CSR 10-6.170) and County Ordinance (612.340) to control fugitive dust blown from the construction site, signal installation, etc. Dust control, including saw-cut material etc., on the construction site shall be monitored for safety purposes and to prevent nuisances. The contractor / permittee shall apply reasonable measures to control dust and particulate matter (of any size or source) due to roadway / construction traffic, grading, clearing and grubbing, building demolition, saw-cutting etc. from migrating off the site of origin. Operations residue from grinding, saw-cutting etc. should be picked up (cleaned-up) by means of a vacuum device or swept up. Compressed or blown air may be used to clean negligible residual dust that the vacuum or sweeping did not clean up, as long as the above dust control procedures (and law and ordinance) are met. Saw cutting residue, slurry or dry, should not be allowed to enter storm drains or watercourses. Saw cutting residue should not be allowed to flow across the pavement and should not be left on the surface of the pavement when traffic is present, when precipitation is anticipated before cleanup or overnight. In approved locations, saw-cut slurry may flow into the dirt (where it can soak into the ground) adjacent to the saw-cutting operation and be buried, on site, 2' minimum below finished grade. Other dust control and clean-up procedures may be acceptable as approved by the Engineer or St. Louis County. See additional Concrete Waste Management requirements in this Manual.

WASHOUT AREA PROTOCOL

- Contain concrete washout on site or take it offsite for disposal in designated areas only.
- Do not wash out concrete trucks into storm drains, open ditches, streets, or streams.
- For onsite washout:
  - ➢ Locate washout area on-site at least 50 feet from storm drains, open ditches, or water bodies. Do not allow runoff from this area by constructing a temporary pit or bermed area large enough to contain liquid and solid waste. Locate it in a dirt area where the liquid portion of the washout can soak into the ground. They are preferably built below-grade to prevent breaches and reduce the likelihood of runoff. Discontinue use of the washout once it reaches 75% capacity. Washouts should be sized to handle solids and wash water to prevent overflow. It is estimated that 7 gallons of wash water are used to wash one truck chute and 50 gallons are used to wash out the hopper of a concrete pump. Implement a maintenance schedule for washout areas.
  - ➢ Temporary washout facilities should have pit or bermed areas of sufficient volume to completely contain all liquid and waste concrete materials generated during washout procedures.
  - ➢ Wash out wastes into the pit where the concrete can set, be broken up, and used on site; or buried on site; or disposed of properly.
- Do not wash sweepings from exposed aggregate concrete into the street or storm drain. Collect and return sweepings to aggregate base stockpile or dispose of in the trash.
- Do not place concrete wash water in a pit that is connected to the storm drain system or that drains to nearby waterways.

- Locate concrete washout facilities in an area that allows convenient access for concrete trucks, preferably near the area where the concrete is being poured. Appropriate gravel or rock should cover paths to concrete washout facilities if the facilities are located on undeveloped property. These areas should be far enough away from other construction traffic to reduce the likelihood of accidental damage and spills. The number of facilities you install should depend on the expected demand for storage capacity. On large sites with extensive concrete work, place washouts in multiple locations for ease of use. If the dried concrete washout is buried on the site it shall have a 2-foot cover minimum. The 2-foot cover shall match with surrounding finished grade.
- Concrete washed out in areas other than those designated for such activity, shall be cleaned up by the contractor.
- Install signage adjacent to each washout facility to inform concrete equipment operators to utilize the proper facilities.
- Perform washout of concrete mixers, delivery trucks and other delivery systems in designated areas only.
- Wash out concrete from concrete pumper bins into concrete pumper trucks and discharge into designated washout area.
- Equipment that cannot be easily moved, such as concrete pavers, shall only be washed in designated areas that do not drain to waterways or storm drain systems.
- Backfill and repair holes, depressions or other ground disturbance caused by the removal of the temporary concrete washout facilities.
- Wash out concrete on site into a future designated final concrete pour location. This location cannot be within 50 feet of a storm or sanitary sewer; or water course; or where it can drain off site. The washout cannot jeopardize the integrity of the final concrete pour. Concrete to be removed from the site shall be disposed of in conformance with the provisions in Standard Specification Manual, Section 202, all as directed by the Engineer. No additional payment will be made for complying with the above specification.
- A self-contained and watertight container may be used to control, capture, and contain concrete wastewater and wash-out material. The container must be portable and temporary, damage resistant, protect against spills and leaks, and sized to handle solids and wash water to prevent overflow. The container should be emptied and cleaned when 75% of its capacity is reached. After all liquids evaporate or are pumped or vacuumed, and the remaining slurry solidified, the Contractor may bury the solids on site. On County Highway Projects the solids may be buried on site if approved by the Engineer. In either case, solids shall be buried a minimum of 2 feet below finished grade. Disposal of container contents that are removed from the site shall be made at an approved landfill. In order to prevent overflows caused by natural occurrences and to provide security for safety purposes and against acts of vandalism, the container shall be covered at the end of each workday and remain covered until the beginning of the next workday. The cover shall remain on site with the container at all times. Container shall be free of liquids during any on-site relocation process or transport to another site. On County Highway projects, location(s) for the container shall be approved by the Engineer.

TYPICAL DETAIL - 806-46.03

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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 of, 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.

The original signed and sealed of this drawing is on file at the office of The Clayton Engineering Company. Any modifications to this drawing shall release said The Clayton Engineering Company, the Engineer and/or Surveyor whose seal appears hereon from any liability resulting from said unauthorized modifications. The signed and sealed original is the official document and shall take precedence over any digital version.

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REVISIONS

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Prepared for:
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SWPPP DETAILS 1

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STATE OF MISSOURI
JOHN R. WILLHITE
PE-2018000295
PROFESSIONAL ENGINEER
07-29-2021

Designed	JRW
Drawn	JRW
Checked	JRW
Date	07-29-2021

Project Number
05048-2
Sheet Number
C6