

SECTION 642

TEMPORARY POLLUTION CONTROL

Purpose-The Contractor shall exercise every reasonable precaution throughout the life of the project to control water pollution. Construction of permanent drainage facilities as well as performance of other contract work which will contribute to the control of siltation shall be accomplished at the earliest practicable time during the life of the Contract. Pollutants such as chemicals, fuels, lubricants, bitumens, raw sewage, and other harmful waste shall not be discharged into or alongside of rivers, streams, impoundments (lakes, reservoirs, etc.) or into natural or manmade water courses leading thereto. The Contractor shall also comply with the applicable regulations of the Department of Natural Resources and other statues relating to the prevention and abatement of pollution. The purpose of these Specifications is to set forth certain temporary water pollution control measures which shall be required by the Contract in addition to the above.

642.1-DESCRIPTION:

This work shall consist of temporary control measures performed during the life of the Contract to control water pollution through use of berms, ditch checks, check dams, sediment structures (traps, ponds, or dams), mulches, fiber mats, seeding slope drains, and other erosion control devices or construction methods, in accordance with these Specifications and in reasonably close conformity with the lines, grades, thickness and typical cross sections shown on the Plans or established by the Engineer

The temporary pollution control provisions contained shall be coordinated with the permanent erosion control features specified elsewhere in the Contract to the extent practical to keep total erosion control costs to a minimum. These provisions shall also apply to work conducted outside the project right-of-way, such as operations in a borrow pit or waste site, where such work occurs as a result of the construction of the project.

These temporary water pollution control measures shall be continued until; permanent controls have been established; the need has been eliminated as determined by the Engineer; or the project has been accepted.

642.2-MATERIALS:

Materials will be considered acceptable when they are capable of accomplishing the intended purpose, do not in themselves contribute to pollution and comply with the following:

- i. Mulches may be hay, straw, wood cellulose fiber, wood chips, bark, matting or other material acceptable to the Engineer. Mulch materials shall be reasonably free of noxious weeds. Asphalt for anchoring hay or straw mulch shall be of a commercial grade. Chemical mulch binders shall conform to the requirements in [715.27.1](#).

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- ii. Slope drains may be constructed of pipe, fiber mats, rubble, portland cement concrete, bituminous concrete, or other material that will adequately control erosion and is acceptable to the Engineer.
- iii. Temporary seed, such as annual ryegrass (Italian ryegrass), weeping lovegrass, cereal rye or wheat, barley or oats, and millet, used in temporary seed mixture or seed mixtures B or D, shall be of a commercial grade meeting requirements of the State Seed Law, Temporary seed labeled with the notation "germination below standard" will not be acceptable for use on projects. Temporary seed shall not be used on the project after one year from the date of germination test shown on the label. Seed other than that specified above shall meet the requirements of 715.28.
- iv. Fertilizer shall be a commercial grade of 1-2-1 ratio, meeting requirements of the governing state and federal laws.
- v. Others as shown on the Plans or specified by the Engineer (i.e. Temporary Pipe, Temporary Structures, etc.).
- vi. Ground agricultural limestone shall be of a commercial grade.
- vii. Engineering Fabric for Silt Fence shall meet the requirements of 715.11.

CONSTRUCTION METHODS

642.3-PRECONSTRUCTION CONFERENCE:

At the pre-construction conference, the Contractor shall submit for approval their schedules and methods for accomplishing the required temporary and permanent pollution control work during the construction stages involving clearing and grubbing; grading and drainage; structures; bases and pavement; and others as applicable. The Contractor shall also submit for approval proposed schedules and method for pollution control on haul roads, borrow pits, waste sites, and other project related operations, as applicable, conducted outside the right-of-way.

No work shall be started until the above pollution control schedules and methods have been approved by the Engineer.

642.4-GENERAL REQUIREMENTS:

The Engineer has the authority to limit the surface area of erodible earth material exposed by clearing and grubbing, to limit the surface area of erodible earth material exposed by excavation, borrow and fill operations and to direct the Contractor to provide immediate permanent or temporary pollution control measures as necessary to prevent contamination of adjacent streams or other watercourses, lakes, ponds, or other areas of water impoundment. Such work may involve the construction of temporary berms, ditch checks, check dams, sediment structures (traps, ponds or dams), slope drains, and use of temporary mulches, mats, seeding or other control devices or methods as necessary to control erosion.

The Contractor shall incorporate all permanent erosion control features into

the project at the earliest practicable time as outlined in their acceptable schedule. Temporary pollution control measures shall be used to correct conditions that develop during construction that were not foreseen during the design stage; that are needed prior to installation of permanent pollution control features, or that are needed temporarily to control erosion that develops during normal construction practices, but are not associated with permanent control features on the project.

Where erosion is likely to be a problem, clearing and grubbing operations shall be so scheduled and performed that grading operations and permanent erosion control features can follow immediately if the project conditions permit; otherwise temporary erosion control measures may be required between successive construction stages.

The Engineer will limit the area of excavation, borrow and embankment operations in progress commensurate with the Contractor's capability and progress in keeping the finish grading, mulching, seeding, and other such permanent pollution control measures current in accordance with the accepted schedule. Should seasonal limitations make such coordination unrealistic, temporary erosion control measures shall be taken immediately to the extent feasible and justified.

Unless otherwise approved in writing by the Engineer, construction operations in rivers, streams, and impoundments shall be restricted to those areas where channel changes are shown on the Plans and to those areas which must be entered for the construction of temporary or permanent structures. Rivers, streams, and impoundments shall be promptly cleared of all falsework, piling, debris or other obstructions placed or caused by the construction operations.

Excavation from any source shall not be deposited in or near rivers, streams, or impoundments or other wise located in such a manner which might be susceptible to erosion due to high water, flooding, or runoff.

Frequent fording of live streams with construction equipment will not be permitted; therefore, temporary bridges or other structures shall be used wherever an appreciable number of stream crossings are necessary. Unless otherwise approved in writing by the Engineer, mechanized equipment shall not be operated in live streams except as may be required to construct channel changes and temporary or permanent structures.

The location of all local material pits other than commercially operated sources, and all waste areas will be subject to the approval of the Engineer, and construction operations shall be conducted and pollution control measures implemented so that, both during and after completion of the work, erosion will not result in water pollution.

The Contractor shall, in accordance with the guidance contained in 642.3, submit schedules and methods in complete consonance with the intent of this Specification to prevent water pollution to the maximum extent possible. To provide a positive guide in this area, no more than 750,000 sq. ft. (7 hectares) each of erodible soil shall be exposed as a result of (1) clearing and grubbing and (2) excavation, embankment, borrow or waste for a maximum cumulative

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total of 1,500,000 sq. ft. (14 hectares) without the approval of the Engineer. Approval to proceed beyond this point will be contingent upon (1) the Engineer's satisfaction, based on performance, as to the Contractor's ability to proceed with their operation and still maintain pollution control at the level contemplated by this Specification, and (2) seeding and mulching of disturbed areas at the Contractor's expense.

It is further understood that regardless of an approval such as the above or compliance with an approved schedule as set forth in 642.3, the Engineer may impose whatever limitations deemed necessary to assure an operation providing for pollution control consistent with the intent of this Specification. Reimbursement for such necessary temporary control measures required to eliminate the need for such limitation will be in accordance with the pertinent sections of this Specification. There will be no additional reimbursement to the Contractor due to losses from delays, production decreases or other causes resulting from the imposition of such a limitation.

In the event of conflict between these requirements and pollution control laws, rules, or regulations of other Federal, State, or local agencies, the more restrictive shall apply.

642.5-SEEDING AND MULCHING:

642.5.1-General: Seeding paid for under this section will include seed mixtures as defined in 642.5.3. The mixtures to be used will be determined by the Engineer. Seeding and mulching shall be performed on a continual basis starting when earth moving begins in the spring and stopping when the work stops in the winter or weather becomes too cold to operate seeding or mulching equipment. Embankments and cuts constructed during the winter season shall be treated as specified under 642.5.4,iii.

Seeding or mulching, or both, shall be performed on all cut and fill slopes, including waste sites and borrow pits, during the construction process. All disturbed areas such as diversion ditches, sediment dams, areas around sediment structures, haul road slopes, cleared and grubbed areas to remain exposed during a period of critical erosion, storage areas, location of batch plants, etc. shall be seeded when and where necessary to eliminate erosion.

Any areas failing to establish a satisfactory stand of grass due to weather conditions, adverse soil conditions, or due to erosion, shall be reseeded, refertilized and remulched as directed by the Engineer.

Final seeding, or second and third step seeding following the original seeding shall be performed in accordance with 652.

642.5.2-Schedule of Seeding Operations: Fill slopes, embankments, and waste sites shall be seeded and mulched in 10-ft lifts or once every two weeks, whichever occurs first.

Cut slopes and borrow pits shall be seeded and mulched each 15-ft depth of excavation or once every two weeks, whichever occurs first. However,

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benched areas shall be seeded after completion of each bench, regardless of height.

642.5.3-Seed Mixtures and Planting Seasons: Temporary seed mixtures shall be used on any embankment or area which will be subject to further construction work before the project is completed. Seed mixtures B or D shall be used on cut slopes and fill or other areas not likely to be destroyed by further construction activities. It is the intent of the specifications that fill slopes be constructed to template and seeded with Type B or D mixtures, in successive stages, without fill slopes being fine graded or dressed. The type of seed mixture to be used on any area will be determined by the Engineer in accordance with Tables 642.5.3.1 and 642.5.3.2.

TABLE 642.5.3.1-TEMPORARY SEEDING MIXTURES			
Variety of Seed	Spring Mar. 1-May 15	Summer May 15-Aug. 15	* Fall & Winter Aug. 15-Mar. 1
	lb per acre (kg per ha)	lb per acre (kg per ha)	lb per acre (kg per ha)
Annual ryegrass	10 (11.25)		10 (11.25)
Barley or Oats (local seeds)	50 (56)		
Millet (Hungarian, Ger- man or Japanese)		50 (56)	
Cereal rye or Ceral wheat			50 (56)
TOTAL	60 (67.25)	50 (56)	60 (67.25)

* See Paragraph 642.5.4. iii.

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TABLE 642.5.3.2-SEED MIXTURES B, D, & L

Variety of Seed	Seed Mixtures		
	*Type B	**Type D	Type L
	Median, Shoulders (Ditch Slope), Waterways, and Mowable Areas of Interchanges	Cut and Fill Slopes (Including Benches)	All Areas
	lb per acre (kg per ha)	lb per acre (kg per ha)	lb per acre (kg per ha)
Kentucky 31 fescue	65 (72.9)	20 (22.4)	
Red Fescue (Pennlawn)	20 (22.4)	20 (22.4)	41 (46.0)
Crownvetch		20 (22.4)	
White dutch clover	3 (3.4)		
Annual ryegrass Aug. 1 to May 15 or	7 (7.8)	7 (7.8)	
Hard Fescue Mixture***			63 (70.6)
Annual Ryegrass August 1 to May 15 Or Weeping Lovegrass May 15 to August 1/Aug. 1	3 (3.4)	3 (3.4)	12 (13.5) 5 (5.6)

* Areas shall be considered mowable when slopes are 3 to 1 or flatter.

** 30 lb. (13.6 kg) of cereal rye or cereal wheat shall be added to Type D mixture when wood cellulose fiber is used as a mulch for fall seeding, after October 1, at no additional cost to the Division.

*** A combination of approved certified varieties with no one variety exceeding 50% of the total hard fescue component.

642.5.4-Mulch, Fertilizer and Lime: Mulching, fertilizing and liming shall be in accordance with the following requirements:

- i. Two tons per acre (4.5 Mg per ha) of straw or hay mulch shall be applied on slopes of 1½ to 1 or flatter. Asphalt material to anchor the mulch shall be used at the rate of 50 gal. per ton (210 L per Mg) of straw or hay mulch. Other types of chemical mulch binders may be used in lieu of asphalt material. These mulch binders shall be applied according to the manufacturer's specifications through the

asphalt spray system or by agricultural crop sprayer.

Wood cellulose fiber mulch shall be applied on slopes steeper than 1½ to 1 at the rate of 1,500 lb. per acre (1 680 kg per ha).

Fertilizer shall be applied at the rate of 800 lb. per acre (900 kg per ha) of 10-20-10 fertilizer or equivalent.

Lime application rate will be determined by the Engineer based upon pH test conducted in accordance with MP 700.04.10.

- ii. Wood chips, recovered from clearing and grubbing operations, or bark will be acceptable as a mulch for seeding and shall be used at a rate of 35 cu. yd. per acre (66 cubic meters per hectare) in lieu of straw or hay.
- iii. Mulch Alone--For embankments or cuts 1½ to 1 or flatter, susceptible to critical erosion during periods of cold weather, the Engineer may require a two ton per acre (4.5 Mg per ha) application of straw or hay mulch for temporary erosion control and later seeding. Asphalt for anchoring mulch shall be at the rate of 50 gal. per ton (210 L per Mg) of mulch. The straw or hay may be rolled immediately with a sheep foot roller to anchor the mulch in lieu of using asphalt. A chemical mulch binder may be used for anchoring mulch in accordance with the provisions in paragraph i. above. When the weather becomes favorable in the spring, these areas shall be seeded using the normal application rates of seed, fertilizer and lime. If additional mulch is needed, wood cellulose fiber, hay or straw shall be used; the rate of application and areas to be mulched with wood cellulose fiber, hay or straw shall be as determined by the Engineer.

642.6-TEMPORARY PIPE, CONTOUR DITCHES, BERMS, SLOPE DRAINS, DITCH CHECKS AND SILT FENCE:

Temporary pipe and contour ditching shall be provided as necessary to control erosion.

Prior to suspension of construction operations for any appreciable length of time due to seasonal or other conditions, the Contractor shall shape the top of earthwork in such a manner as to permit and facilitate the runoff of rain water and shall construct earth berms along the top edges of embankments to intercept runoff water. The berm construction shall not be permitted to decrease the stability of the embankment section. In addition, the Contractor shall construct a berm at the end of each day's operation at the top edges of the embankment.

Temporary slope drains shall be provided to accommodate the runoff water intercepted above. These drains shall be located as needed and at no greater than 500 ft. (150 m) intervals.

Silt fence or bales of hay or straw shall be used to control erosion and trap sediment as required. Ditch checks shall be constructed in cut or median ditches by installing silt fence, anchoring bales of hay or straw, or by using wood, plywood, logs, steel, or other devices to control velocity and to aid in

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sediment control. Each bale of hay or straw used for the above purpose shall weigh a minimum of 50 pounds (23 kg).

Engineering fabric for silt fence shall be supported on wood or steel fence posts, wood stakes or other supports approved by the Engineer. The center to center spacing of the supports shall be no more than 10 feet (3 meters). A full length trench, at least 6 inches deep by 6 inches wide (150 mm by 150 mm), shall be excavated adjacent to the proposed barrier on the upslope side.

The fabric shall be placed to provide a minimum of 8 inches (200 mm) of fabric extending into and conforming to the lines of the trench. The fabric shall be attached, on the upslope side, to the supports by metal staples, nails or other suitable means.

The trench, with fabric in place, shall then be backfilled with the excavated material and compacted so as to provide stable anchorage.

642.7-METHOD OF MEASUREMENT:

The work will be measured for payment at the unit bid prices for the items specified in 642.9.

Berms constructed prior to suspension of construction operations and slope drains will be measured in linear feet (meters); check dams will be measured by the unit; sediment traps, ponds, or dams and sediment removal will be measured by the cubic yard (meter); for sediment dams, risers will be measured by the unit and conduit for principal spillway under the dam will be measured in linear feet (meters) and included under Item 642008-*; seed will be measured by the pound (kilogram); straw, hay and wood cellulose fiber mulch will be measured by the ton (megagram); wood chips or bark mulch will be measured by the cubic yard (meter); fertilizer and agricultural limestone will be measured by the ton (megagram); matting will be measured by the square yard (meter); contour ditching will be measured by the linear foot (meter). Measurements will be made on the surface of the work done when applicable.

Asphalt for anchoring mulch or other chemical binders will not be measured separately, but their cost shall be included in the unit price bid for mulch. Cereal rye or cereal wheat added to Type D mixture in fall seeding will not be included for payment but its cost shall be included in the unit prices in 642.9.

Temporary pipe will be measured by the linear foot (meter) complete and in place. If the Contractor elects to utilize a series of small pipes in lieu of one large pipe, measurement for payment will be made only for a length necessary to extend one conduit under the haul road or sediment dam.

Berms constructed at the end of each day's operation will not be measured for payment but their cost shall be included in the unit bid price for Item 207001-*, "Unclassified Excavation."

Ditch checks will be measured by the unit except when constructed of hay or straw bales or silt fence. Hay or straw bales or silt fence used in ditch checks and other areas for erosion control will be measured by each and linear foot (meter), respectively.

Wood chips or bark will be measured by the cubic yard (meter). It is

assumed that 17.5 cubic yards (14.75 cubic meters) of chips or bark are equal to one ton (megagram) of straw for seeding. Wood chips or bark mulch will be measured by the truck load or other loose volume measurement, and payment will be made on a one ton (megagram) equivalent of straw for each 17.5 cubic yards (14.75 cubic meters) of wood chips or bark mulch.

Quantities reseeded, refertilized, or remulched will be measured and included for payment.

The bid price for fertilizer shall be based on 10-20-10 type. When other types of fertilizer are used, pay quantities will be determined using the following table:

TYPE OF FERTILIZER	ACTUAL QUANTITY USED POUNDS (kg)	PAY QUANTITY POUNDS (kg)
5-10-5	100	50
8-16-8	100	80
10-20-10	100	100
12-24-12	100	120
15-30-15	100	150

When fertilizer types other than those shown above are used, the relationship between the pay quantity and the actual quantity used will be established by the Engineer.

Silt fence will be measured by the linear foot (meter) at the bottom of the fence, excluding laps. Decomposed or ineffective fabric in the silt fence which is required to be replaced after six months from the installation date will be measured and paid for, however, such replacement prior to six months after installation will not be measured for payment.

In the event that temporary erosion and pollution control measures are required due to the Contractor's negligence, carelessness, or failure to install permanent controls as a part of the work as scheduled, or as ordered by the Engineer, such work shall be performed by the Contractor at their own expense.

Temporary erosion and pollution control work required, which is not attributed to the Contractor's negligence, carelessness or failure to install permanent controls, shall be performed as ordered by the Engineer. Where the work to be performed is not attributed to the Contractor's negligence, carelessness or failure to install permanent controls and falls within the Specifications for a work item that has a contract price, the units of work will be paid for at the proper contract price. Should the work not be comparable to the project work under the applicable contract items, the Contractor shall perform the work in accordance with 104.3.

In case of repeated failure on the part of the Contractor to control erosion, pollution, or siltation, the Engineer reserves the right to employ outside

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assistance or to use their own forces to provide the necessary corrective measures. Such incurred direct costs plus project engineering costs will be charged to the Contractor and appropriate deductions made from the Contractor's monthly progress estimate.

Temporary pollution control may include construction work outside the right-of-way where such work is necessary as a result of roadway construction such as borrow pit and waste site operations, haul roads and equipment storage sites.

642.8-BASIS OF PAYMENT:

The quantities, determined as provided above, will be paid at the contract unit prices bid for the items listed below, which prices and payment shall be full compensation for furnishing all the materials and doing all the work prescribed in a workmanlike and acceptable manner, including all labor, tools, equipment, supplies, and incidentals necessary to complete the work, including necessary maintenance, and removal where applicable.

642.9-PAY ITEMS:

ITEM	DESCRIPTION	UNIT
642001-*	TEMPORARY BERM	LINEAR FOOT (METER)
642002-*	SLOPE DRAIN	LINEAR FOOT (METER)
642004-*	SEED MIXTURE, "type"	POUND (KILOGRAM)
642005-*	MULCH, "type"	TON (MEGAGRAM)
642006-*	FERTILIZER	TON (MEGAGRAM)
642007-*	FIBER MATTING	SQUARE YARD (METER)
642008-*	TEMPORARY PIPE	LINEAR FOOT (METER)
642009-*	CONTOUR DITCH	LINEAR FOOT (METER)
642010-*	AGRICULTURAL LIMESTONE	TON (MEGAGRAM)
642011-*	HAY OR STRAW BALE	EACH
642012-*	SILT FENCE	LINEAR FOOT (METER)
642031-*	DITCH CHECK	EACH
642032-*	CHECK DAM	EACH
642033-*	SEDIMENT TRAP	CUBIC YARD (METER)
642034-*	SEDIMENT DAM	CUBIC YARD (METER)
642035-*	RISER	EACH
642036-*	SEDIMENT REMOVAL	CUBIC YARD (METER)
642037-*	SEDIMENT POND	CUBIC YARD (METER)

* Sequence number