Section 628 Erosion Control

628.1 Description

(1) This section describes furnishing and installing, or constructing erosion control mats, bale checks or dikes, fences, screens, blankets, and other erosion control devices.

(2) This section also describes cleaning sediment basins and mobilizations for erosion control.

628.2 Materials

628.2.1 General

628.2.1.1 Acronyms

(1) Interpret acronyms used throughout this section as follows:

PAL The department's erosion control product acceptability list. The contractor may obtain a copy of the PAL and the prequalification procedure for products not on the PAL from the department.

ECRM Class I, II, and IIIA erosion control revegetative mats.

TRM Class III B, C, and D turf reinforcement mats.

628.2.1.2 Product Acceptability

(1) The department prequalifies selected erosion control products in the PAL. If the contract specifies, furnish products of the class, type, and subject to the seasonal limitations the PAL designates. Before installing a PAL product, submit to the engineer a written copy of the manufacturer's specifications for installing that product on slopes, channels, shorelines, high wind locations, and next to live traffic lanes as applicable to the contract installation. Install PAL products conforming to those manufacturer's specifications. The department may specify modifications to the manufacturer's procedures for individual materials here within section 628.

(2) The department may sample and test products supplied in the field to verify that they conform to the PAL prequalification requirements. Provide samples as the engineer directs.

628.2.2 Erosion Mat

(1) The department must prequalify all erosion mat products before use. Furnish erosion mat products from the PAL.

(2) The PAL identifies prequalified erosion mat products by class and type. Use the required class and type of erosion mat the plans show or the engineer specifies. The contractor may furnish any prequalified erosion mat product of the class and type the plans show or that the engineer specifies.

(3) If using jute fabric for a Class II Type A erosion mat, use a woven fabric of a uniform open weave of single jute yarn. Use a jute yarn of loosely twisted construction with an average twist of not less than 1 1/2 turns per one inch. Ensure the average size of the warp and weft yarns are approximately the same. Furnish the woven fabric in rolled strips. Submit a certificate of compliance certifying that the jute fabric erosion mat conforms to the following:

- Is a minimum 48 inches wide with a tolerance of minus one inch.
- Has 78 warp ends, +/- one for each 48 inches of width. Has 45 weft yarns, +/- 2, per linear yard of length.
- Weighs 92 pounds per 100 square yards +/- 10 percent, measured under average atmospheric conditions.
- Is non-toxic to vegetation.

628.2.3 Staples

(1) Furnish U-shaped staples, made of No. 11 or larger diameter steel wire, or other engineer-approved material, are one to 2 inches wide, and not less than 6 inches long for firm soils and not less than 12 inches for loose soils. The contractor may use anchors the staple gun manufacturer recommends, either lighter gage staples or equivalent, for engineer-approved staple gun systems.

628.2.4 Bales

(1) For bales, use straw, hay, or other engineer-approved material, in good condition, of the dimensions the plans show.

628.2.5 Stakes

(1) Furnish wood or metal stakes of the dimensions the plans show.

628.2.6 Silt Fence

628.2.6.1 Geotextile Fabric

(1) Furnish one of the following geotextile fabrics: woven or non-woven polyester, polypropylene, stabilized nylon, polyethylene, or polyvinylidene chloride. For non-woven fabric the contractor may use needle punched, heat bonded, resin bonded, or combinations of all 3. Submit a certificate of compliance certifying that the geotextile conforms to the following:

TEST REQUIREMENT	METHOD	VALUE[1]
Minimum grab tensile strength (machine direction)	ASTM D4632	120 lb
Minimum grab tensile strength (cross machine direction)	ASTM D4632	100 lb
Maximum apparent opening size (equivalent standard sieve)	ASTM D4751	No. 30
Minimum Permittivity	ASTM D4491	0.05 s^{-1}
Minimum ultraviolet stability (strength retained at 500 hrs of exposure)	ASTM D4355	70 %

[1] All numerical values represent minimum or maximum average roll values. Average test results from all rolls in a lot must conform the tabulated values.

628.2.6.2 Fence Support System

(1) Conform to plan requirements.

628.2.7 Silt Screen

(1) Furnish fabric and submit a certificate of compliance certifying that the fabric conforms to the following:

Thickness ..... 15 mils
Minimum grab tensile strength..... 120 lb
Minimum equivalent opening ..... No.170 sieve

(2) Heat seal or sew all fabric seams.

(3) For flotation, use an 8-inch diameter solid expanded polystyrene log, or engineer-approved equal, with a buoyancy of approximately 20 pounds per foot. Do not use polystyrene beads or chips.

(4) For the main load line, use 5/16-inch cable. For ballast, use a 1/4-inch chain.

628.2.8 Sand Bags

(1) Furnish bags made of canvas, burlap, nylon, or other engineer-approved material filled with concrete sand or other engineer-approved granular material.

628.2.9 Polyethylene Sheeting

(1) Furnish 6 mil or thicker polyethylene sheeting conforming to ASTM D4397.

628.2.10 Turbidity Barriers

(1) Furnish barrier made of coated impervious fabric capable of containing all sediment at the location placed. It shall have a cable, with a 5/16 inch or larger diameter, capable of supporting the barrier at the required height above the water. It shall have a self-contained ballast that weighs at least 0.7 pound per foot. The ballast may be either chain or flexible cable. Barrier ends shall have grommets to lace together adjoining sections. For anchor posts use one of the following: steel fence posts, steel pipes, or steel channels.

(2) Submit a certificate of compliance certifying that the turbidity barrier fabric conforms to the following:

TEST REQUIREMENT	METHOD	VALUE[1]
Minimum grab tensile strength	ASTM D4632	200 lb
Minimum puncture strength	ASTM D4833	90 lb
Maximum permeability	ASTM D4491	$1x10^{-7}$ cm/s
Minimum ultraviolet stability (strength retained at 500 hrs of exposure)	ASTM D4355	70 %

[1] All numerical values represent minimum or maximum average roll values. Average test results from all rolls in a lot must conform the tabulated values.

628.2.11 Soil Stabilizer

(1) Soil stabilizer type A is one of the following: a cementitious soil binder added to wood cellulose fiber mulch, or a bonded fiber matrix. Soil stabilizer type B is a polyacrylimide.

(2) Furnish soil stabilizer products from the PAL.

628.2.12 Inlet Protection

(1) Use a type FF geotextile fabric conforming to 645.2.1 except use a woven polypropylene fabric. Furnish type FF geotextile fabrics, or bags manufactured from type FF geotextile fabrics, from the PAL.

628.2.13 Rock Bags

Revise 628.2.13(1) to change the design volume rock bags to make them easier to handle in the field. This change was implemented in ASP 6 effective with the November 2012 letting.

(1) Furnish rock bags made of a porous, ultraviolet resistant, high-density polyethylene or geotextile fabric that will retain 70% of its original strength after 500 hours of exposure according to ASTM D4355 and a minimum in-place filled size of 18 inches long by 12 inches wide by 6 inches high. Ensure that the fabric conforms to the following:

TEST REQUIREMENT	METHOD	VALUE
Minimum Tensile	ASTM D4632	
Machine direction		70 lb minimum
Cross direction		40 lb minimum
Elongation	ASTM D4632	
Machine direction		20% minimum
Cross direction		10 % min
Puncture	ASTM 4833	65 lbs minimum
Minimum Apparent Opening		0.0234 inches (No. 30 sieve)
Maximum Apparent Opening		0.0787 inches (No. 10 sieve)

(2) Fill the bags with a clean, sound, hard, durable, engineer-approved coarse aggregate conforming by visual inspection to the gradation specified for No. 2 coarse aggregate for concrete in 501.2.5.4.4.

628.2.14 Tracking Pads

(1) Furnish tracking pad aggregate conforming to 312.2 for select crushed material except the material shall be substantially free of particles passing the No. 10 sieve. Furnish type R geotextile conforming to 645.2.6.

628.3 Construction

628.3.1 General

(1) Arrange to have available a sufficient quantity of contract-required temporary erosion control materials to protect the project site from erosion at all times during construction. Include erosion mat, erosion bales, silt fence, manufactured alternative materials for temporary ditch checks, and other temporary erosion control materials the contract requires.

(2) Ensure that erosion control products selected from the PAL are properly installed and maintained to remain in place and functioning as the contract specifies.

628.3.2 Erosion Mat

(1) Furnish and install protective covering mats or soil retention mats for erosion control on prepared planting areas of slopes, ditches, channels, or shorelines, at locations the plans show or the engineer directs. Conform to the seasonal limitations designated in the PAL for photodegradable products.

(2) Install as the manufacturer specifies except as follows:

1. Do not use single roll material less than 6 feet wide in channels.
2. Entrench mats approximately 3 inches deep along the edge facing traffic for all installations within 5 feet of active traffic lanes.
3. Overlap mats by 3 inches or less and anchor with anchoring devices selected from the PAL for all mats the PAL designates as urban.

(3) Cover TRM's immediately after installation with materials from the PAL as follows:

1. On slopes use either an ECRM or a type A soil stabilizer. If using a soil stabilizer, apply at the manufacturer's recommended rate unless the contract or engineer specifies otherwise.

2. In channels use an ECRM of a class and type the PAL allows for channel applications.

(4) Remove all stones, clods, roots, sticks, or other foreign material that prevent the mat from bearing completely on the surface before placing the mat.

(5) Reseed any seeded areas damaged or destroyed during placement of the erosion mat as specified for the original seeding.

(6) Dispose of all surplus excavation or materials, and all stones, clods, or other foreign material removed in preparing for placing the mat.

(7) Apply water uniformly after placing the mat over a seeded area to sufficiently moisten the seedbed to a depth of 2 inches and in a way that precludes washing or erosion.

(8) Maintain the erosion mat and repair any damaged areas until the work is accepted.

(9) The contractor shall not overlap type urban erosion mat with type urban or other type erosion mat.

628.3.3 Erosion Bales

(1) Furnish bales of straw, hay, or other suitable baled material to form erosion control structures other than ditch checks. Install at locations the plans show or as the engineer directs.

(2) Maintain the bales as required including removing and disposing of sediment deposits. Remove erosion bales after slopes and ditches are stable and turf develops enough to make future erosion unlikely. The engineer will determine when the contractor meets these criteria satisfactorily. The contractor may use bales as mulch. Dispose of bales not used as mulch in a manner acceptable to the engineer. Reshape ditches; fill sumps and trenches; dispose of excess eroded material; and topsoil, fertilize, and seed the affected area.

628.3.4 Silt Fence

628.3.4.1 Installation and Removal

(1) Erect the silt fence before starting a construction operation that might cause sedimentation or siltation at the site of the proposed silt fence.

(2) If possible, construct the silt fence in an arc or horseshoe shape with its ends pointing up slope. Construct the silt fence to the dimensions, and according to the details the plans show. Remove silt fences, as the engineer determines, after stabilizing the slopes and ditches and developing the turf to the extent that future erosion is unlikely. Clean up and restore the surface after removal. The contractor owns all materials remaining after removal and is responsible for their disposal off the right of way.

628.3.4.2 Inspection and Maintenance

(1) Inspect all silt fences immediately after each rainfall and at least daily during prolonged rainfall. Correct any deficiencies immediately. Additionally, review the locations for silt fences and filter barriers in areas that construction activity changed the earth contour and drainage runoff on a daily basis to ensure that the silt fences are properly and effectively located. If deficiencies exist, install additional silt fences as the engineer directs or approves.

(2) Remove sediment deposits when the build-up exceeds approximately 1/2 the volume capacity of the silt fence. The engineer may order the contractor to remove deposits if the engineer determines deposits exceed 1/2 the volume capacity of the silt fence. The contractor shall dress, to the existing grade, sediment deposits remaining in place after the silt fence is no longer required, this includes topsoiling, fertilizing, and seeding the affected area.

628.3.5 Silt Screen

(1) Install the silt screen to prevent drift shoreward or downstream. Securely attach the flotation log to the fabric in both the horizontal and vertical direction.

(2) Attach the 5/16-inch cable at the flotation members and extend along the entire length of each section of silt screen. Seal a 1/4-inch chain in the lower hem for ballast.

(3) Use connectors to join the main load line and ballast chain to carry all tensile pressure. Join the fabric for its entire height with grommets and lacing rope.

(4) Ensure the silt screen extends from the water surface to a maximum 10 foot depth.

(5) Install anchorages or stakes on both shore and stream side to maintain stability. Use a post with deadman or engineer-approved equal for shore anchors. Ensure stream anchors are of sufficient size, type, and strength to stabilize the barrier beyond the construction area.

(6) Buoy anchors to prevent pulling the barrier under water. Use Danforth-type anchors in sandy bottom and heavy kedge type or mushroom anchors on mud bottoms.

(7) Maintain the barrier throughout construction operations.

(8) After completing the work, remove the barrier in a way that prevents siltation of the river.

628.3.6 Cleaning Sediment Basins

(1) Clean sediment basins when the engineer determines the sediment has accumulated to an extent that impairs the effectiveness of the sediment basin.

(2) Dispose of the surplus material according to 205.3.12 for disposal of surplus or unsuitable material.

628.3.7 Mobilizations for Erosion Control

(1) Move personnel, equipment, and materials to the project site for constructing erosion control items at the stages the contract indicates or the engineer directs.

(2) Submit for approval an ECIP required in 107.20 for accomplishing temporary and permanent erosion control work. Stage the ECIP erosion control work to conform to the number of Mobilizations Erosion Control bid items the contract plans show. The department will not allow any deviation from approved staging without the engineer's written approval. The engineer will direct each of the mobilizations. Mobilize with sufficient personnel, equipment, supplies, and incidentals, within 72 hours of the engineer's written order.

628.3.8 Mobilizations Emergency Erosion Control

(1) Move personnel, equipment, and materials to the project site to install temporary erosion control items on an emergency basis as the engineer directs.

(2) Mobilize with sufficient personnel, equipment, materials, and incidentals on the job site within 8 hours the engineer's written order to install temporary erosion control items on an emergency basis.

(3) An emergency is a sudden occurrence of a serious and urgent nature, beyond normal maintenance of erosion control items and mobilizations the ECIP includes. Under this definition, an emergency mobilization requires immediate action to move necessary personnel, equipment, and materials to the emergency site followed by immediate installation of temporary erosion control measures.

(4) Unless the engineer directs otherwise, replenish stockpiled material delivered as specified for plan quantities in 628.3.1 and subsequently used for emergency erosion control to the pre-emergency totals of these stockpiles.

628.3.9 Polyethylene Sheeting

(1) Install polyethylene sheeting at locations the plans show or as the engineer directs.

(2) Secure the sheeting from wind and water dislocation. Before placing, remove stones, roots, sticks, and other materials that interfere with the sheeting bearing completely on the soil. Overlap adjacent sheets a minimum of 3 feet in the direction of flow; and seal the edges with waterproof tape or other engineer-approved method. Patch damaged areas with sheeting overlapped a minimum of 3 feet and seal the joints with waterproof tape or other engineer-approved method. Maintain the sheeting and make satisfactory repairs of damaged areas.

(3) Upon completing the work, remove the polyethylene sheeting. The contractor shall assume ownership of all removed material.

628.3.10 Turbidity Barriers

(1) Install turbidity barriers at locations the plans show or as the engineer directs.

(2) Place all barriers, before beginning adjacent construction, in a way that causes minimum disturbance of the streambed and banks. Extend the barrier into the stream banks far enough to preclude washing out or erosion around the ends. Drive posts securely into the streambed at 10 foot intervals along the line of the barrier installation. Fasten the barrier to the posts and securely anchor the barrier load lines at the barrier ends and at 10 foot intervals between the barrier ends, unless the engineer directs otherwise. Provide additional anchoring if necessary to maintain the barrier location during construction operations. Install sand bags as the plans show to anchor the barrier to the streambed. The engineer may require additional sand bags to ensure adequate performance. The contractor, as required by permit under 107.19, shall provide and anchor both danger buoys and navigational markers.

(3) Maintain the integrity of the barrier as necessary to contain erosion from adjacent construction operations. Promptly correct all deficiencies. Barrier maintenance includes removing and disposing of accumulations of soil and other detrimental material.

(4) Remove the barrier after completing the adjacent work. Delay removal until removing and disposing of accumulated soils and other suspended materials, and all suspended materials settle. Minimize disturbing the streambed and banks during removal operations.

(5) If the engineer approves, the contractor may substitute sheet pile installed as a part of their construction operation for all or part of the turbidity barrier the plans show.

628.3.11 (Vacant)

628.3.12 Soil Stabilizer

628.3.12.1 General

(1) Provide soil stabilizer as a soil bonding agent to prevent or minimize erosion. Install on exposed soil surfaces of temporary or permanent slopes as the plans show or as the engineer directs.

628.3.12.2 Soil Stabilizer Type A

(1) Apply soil stabilizer with conventional hydraulic seeding equipment. Ensure that surrounding surfaces, structures, signs, trees, and shrubs are not over-sprayed. The engineer will not accept the work until the contractor satisfactorily cleans over-sprayed surfaces. Provide a finished application 3/16 inch to 1/4 inch thick.

(2) For permanent slope applications, sow seed separately, before applying the soil stabilizer, to ensure that the seed has direct contact with the soil.

628.3.12.3 Soil Stabilizer Type B

(1) Apply soil stabilizer with conventional hydraulic seeding equipment or by dry spreading. Apply the material at the manufacturer's recommended rate unless the engineer directs otherwise.

(2) For permanent slope applications, apply a department-approved mulch when applying the soil stabilizer or after applying it to protect the seed.

628.3.13 Inlet Protection

(1) Furnish, install, maintain, and remove type FF geotextile fabric, and fabric hold down and support systems for inlet protection where the plans show or the engineer directs. The contractor may provide manufactured alternatives selected from the PAL.

(2) For type A inlet protection, install around field inlets until establishing permanent soil stabilization; and around pavement inlets before placing curb, gutter, or curb & gutter.

(3) For type B inlet protection, install on curb, gutter, curb & gutter, and pavement inlets after placing the surrounding pavement surfaces.

(4) For type C inlet protection use a wooden 2 x 4, wrapped and secured in type FF geotextile fabric, installed in front of the curb head as the plans show. The wood shall not block the entire opening of the curb box.

(5) For type D inlet protection, the contractor may make the bag from type FF geotextile fabric or choose a manufactured type FF bag from the PAL. Ensure that the device is designed to fit the size and shape of the inlet. At a minimum, inspect and maintain after every precipitation event.

628.3.14 Temporary Ditch Checks

(1) Provide suitable ditch check materials, installed and maintained at locations the plans show or as the engineer directs.

(2) Construct temporary ditch checks using a double row of erosion bales or a manufactured alternative from the PAL. Place temporary ditch checks across ditches at locations the plans show or as the engineer directs immediately after shaping the ditches or slopes. Excavate upstream sumps as the engineer directs.

(3) Remove sediment deposits when the build-up exceeds approximately 1/2 the erosion bale structures volume capacity. The engineer may order the contractor to remove deposits if the engineer determines that sediment deposits exceed 1/2 the erosion bale structures volume capacity. Dispose of excess sediment as the engineer directs.

(4) Remove ditch checks after the slopes and ditches are stable and the turf develops enough to make future erosion unlikely. The engineer will determine when the contractor meets these criteria. The contractor may use bales as mulch. Dispose of bales not used as mulch in a manner acceptable to the engineer. Reshape the ditch; fill sumps and trenches; dispose of excess eroded material; and topsoil, fertilize, and seed the affected area.

628.3.15 Culvert Pipe Checks

(1) Install rock bag culvert pipe checks as the plans show and as the engineer directs. Place bags immediately after installing new culverts and before beginning earth disturbing activities in areas drained by existing culverts. Place rock bags on the inlet end of the culvert only. Leave rock bags in place until slopes and ditches are stable and turf develops enough to make future erosion unlikely. Periodically remove sediment to maintain effective function. Remove and dispose of the bags and rock filler when they are no longer needed to control erosion. Dispose of accumulated sediment and restore the site. The contractor may spread accumulated sediment to form a surface suitable for seeding.

628.3.16 Tracking Pads

(1) Install tracking pads at the locations the plans show, locations consistent with an engineer-approved ECIP, or where the engineer directs before allowing construction traffic to leave the site. Ensure that the pad is wide enough to cover the full width of the egress point. Design the installation to divert surface water flow away from the pad and, if field conditions dictate, provide a culvert to channel flow under the pad.

(2) Replace or rework material in the surface of the pad to ensure that the amount of material tracked onto public roads is minimized. Maintain the driving surface in a clean and safe operating condition. Remove the pad and restore the site upon completion of contract work.

628.3.17 Rock Bags

(1) Install rock bags as the plans show or the engineer directs either in conjunction with work done under other contract bid items or as stand-alone erosion control devices. Periodically remove sediment to maintain effective function. Remove and dispose of the bags and rock filler when they are no longer needed to control erosion. Dispose of accumulated sediment and restore the site. The contractor may spread accumulated sediment to form a surface suitable for seeding.

628.4 Measurement

628.4.1 General

628.4.1.1 Borrow Sites and Material Disposal Sites

(1) The department will measure work acceptably completed under selected bid items placed on borrow sites and material disposal sites if that work is consistent with an engineer-approved ECIP. The department will measure only the following bid items using the methods described in their respective measurement subsections:

Erosion Mat (type)	Soil Stabilizer (type)	Mulching
Erosion Bales	Culvert Pipe Checks	Seeding
Temporary Ditch Checks	Polyethylene Sheeting	Seeding Temporary
Silt Fence	Tracking Pads	Fertilizer Type (type)
Silt Fence Maintenance	Rock Bags	
Inlet Protection (type)	Mobilizations Emergency Erosion Control	

628.4.1.2 Sand Bags

(1) The department will not measure sand bags. Sand bags are incidental to the bid items that use sand bags.

628.4.2 Erosion Mat

(1) The department will measure the Erosion Mat bid items by the square yard acceptably completed. The department will not make allowance for portions of the mat that must be entrenched in the soil for any end or junction slot, or for required overlaps.

628.4.3 (Vacant)

628.4.4 Erosion Bales

(1) The department will measure Erosion Bales as each individual bale acceptably completed.

628.4.5 (Vacant)

628.4.6 Silt Fence

(1) The department will measure Silt Fence by the linear foot acceptably completed. The department will measure along the base of the fence, center-to-center of end post, for each section of fence.

628.4.7 (Vacant)

628.4.8 Silt Fence Maintenance

(1) The department will measure Silt Fence Maintenance by the linear foot acceptably completed. The department will measure along the base of the fence, end-to-end of the section maintained, for each time a section of fence is cleaned and repaired.

628.4.9 Silt Screen

(1) The department will measure Silt Screen by the linear foot acceptably completed.

628.4.10 Cleaning Sediment Basins

(1) The department will measure Cleaning Sediment Basins by the cubic yard acceptably completed, measured in the vehicle.

628.4.11 Mobilizations Erosion Control

(1) The department will measure Mobilizations Erosion Control by each individual mobilization acceptably completed. The department will not include the following:

1. Delivering and installing materials provided for in specific contract bid items.
2. Work specified under the Mobilizations Emergency Erosion Control bid item, or the work and operations necessary for normal contractor maintenance of erosion control items.
3. The movement of personnel, equipment, and materials to the work site to accomplish installing additional erosion control items the engineer deems necessary to control erosion between the stages contained in the department-approved plan of operations, unless the engineer directs otherwise in writing.

628.4.12 Mobilizations Emergency Erosion Control

(1) The department will measure Mobilizations Emergency Erosion Control by each individual mobilization acceptably completed. The department will not include delivering and installing temporary erosion control materials provided for in specific contract bid items.

628.4.13 Polyethylene Sheeting

(1) The department will measure Polyethylene Sheeting by the square yard acceptably completed.

628.4.14 Turbidity Barriers

(1) The department will measure Turbidity Barrier by the square yard acceptably completed. The department will make no allowance for portions of the turbidity barrier considered as part of the anchorages, required overlaps, or having a bottom flap greater than 48 inches.

(2) If the contractor substitutes sheet pile for turbidity barrier as allowed in 628.3.10, the department will measure that turbidity barrier as the plan quantity in square yards of material replaced.

628.4.15 Soil Stabilizer

(1) The department will measure the Soil Stabilizer bid items by the acre acceptably completed within the limits the contract designates or as the engineer directs.

628.4.16 Inlet Protection

(1) The department will measure the Inlet Protection bid items as each individual location and type acceptably completed.

628.4.17 Temporary Ditch Checks

(1) The department will measure Temporary Ditch Checks by the linear foot acceptably completed. If using erosion bales, the department will only measure the length across the ditch, not the length of each row of bales. The department will not measure ditch checks constructed with a single row of bales.

628.4.18 (Vacant)

628.4.19 Culvert Pipe Checks

(1) The department will measure Culvert Pipe Checks as each as each individual bag acceptably completed.

628.4.20 Tracking Pads

(1) The department will measure Tracking Pads as each individual location acceptably completed measured only at the locations the plans show, consistent with an engineer-approved ECIP, and where the engineer directs.

628.4.21 Rock Bags

(1) The department will measure Rock Bags as each individual bag acceptably completed.

628.5 Payment

628.5.1 General

(1) The department will pay for measured quantities at the contract unit price under the following bid items:

ITEM NUMBER	DESCRIPTION	UNIT
628.1104	Erosion Bales	EACH
628.1504	Silt Fence	LF
628.1520	Silt Fence Maintenance	LF
628.1550	Silt Screen	LF
628.1905	Mobilizations Erosion Control	EACH
628.1910	Mobilizations Emergency Erosion Control	EACH
628.1920	Cleaning Sediment Basins	CY
628.2000 - 2099	Erosion Mat (class) (type)	SY
628.5505	Polyethylene Sheeting	SY
628.6005	Turbidity Barriers	SY
628.6500 - 6599	Soil Stabilizer (type)	ACRE
628.7000 - 7099	Inlet Protection (type)	EACH
628.7504	Temporary Ditch Checks	LF
628.7555	Culvert Pipe Checks	EACH
628.7560	Tracking Pads	EACH
628.7570	Rock Bags	EACH

(2) The department will pay for measured quantities at the contract unit price under selected bid items placed on borrow sites and material disposal sites if that work is consistent with an engineer-approved ECIP. The department will pay for only the following bid items using the methods described in their respective payment subsections:

Erosion Mat (type)	Soil Stabilizer (type)	Mulching
Erosion Bales	Culvert Pipe Checks	Seeding
Temporary Ditch Checks	Polyethylene Sheeting	Seeding Temporary
Silt Fence	Tracking Pads	Fertilizer Type (type)
Silt Fence Maintenance	Rock Bags	
Inlet Protection (type)	Mobilizations Emergency Erosion Control	

628.5.2 Erosion Mat

(1) Payment for the Erosion Mat bid items is full compensation for providing, protecting, and storing erosion mat materials on the project; for placing and anchoring the mat, including staples; for preparing the seeded areas; for installing end and junction slots; for repairing and reseeding damaged areas; for providing and applying water; and for disposing of all surplus and waste materials.

(2) The department will pay separately for covering class III types B, C, and D mats with an ECRM under the applicable Erosion Mat bid item, or with type A soil stabilizer under the Soil Stabilizer Type A bid item.

628.5.3 (Vacant)

628.5.4 Erosion Bales

(1) Payment for Erosion Bales is full compensation for providing, protecting, and storing erosion bales on the project; for placing all materials, including stakes; for anchoring the bales; for all excavating, including trenches and sumps; for removing excess sediment during construction; for removing and disposing of the bales and all waste or surplus materials, including eroded materials; and for shaping and restoring ditches.

(2) The department will pay separately for any required topsoiling, fertilizing, or seeding under the applicable bid item.

628.5.5 (Vacant)

628.5.6 Silt Fence

(1) Payment for Silt Fence is full compensation for providing, protecting, and storing silt fence on the project; for erecting fence, including all excavating, placing posts, backfilling, and attaching geotextile fabric; and for removing the fence at project completion.

628.5.7 (Vacant)

628.5.8 Silt Fence Maintenance

(1) Payment for Silt Fence Maintenance is full compensation for all required cleaning and repairing; for removing or spreading the accumulated sediment to form a surface suitable for seeding; and for replacing silt fence and all damages caused by overloading sediment material or ponding water adjacent to the silt fence.

628.5.9 Silt Screen

(1) Payment for Silt Screen is full compensation for providing, assembling, erecting, maintaining, and removing the silt screen barrier.

628.5.10 Cleaning Sediment Basins

(1) Payment for Cleaning Sediment Basins is full compensation for all excavating; and for disposing of surplus material.

628.5.11 Mobilizations Erosion Control

(1) Payment for Mobilizations Erosion Control is full compensation for the staged moving of personnel, moving equipment, and moving materials. The department will pay separately for delivery and installation of erosion control devices under the other bid items in this section.

(2) Failure to mobilize within 72 hours of the engineer’s written order will result in a $300 per calendar day deduction from money due under the contract, for each calendar day of delay. The engineer may extend the 72-hour period for delays not the contractor's fault.

628.5.12 Mobilizations Emergency Erosion Control

(1) Payment for Mobilizations Emergency Erosion Control is full compensation for the staged moving of personnel, moving equipment, and moving materials. The department will pay separately for delivery and installation of temporary erosion control devices under the other bid items in this section.

(2) Failure to mobilize within 8 hours, will result in a $300 per calendar day deduction from money due under the contract, for each calendar day of delay. The engineer may extend the 8-hour period for delays not the contractor's fault.

628.5.13 Polyethylene Sheeting

(1) Payment for Polyethylene Sheeting is full compensation for furnishing and delivering the polyethylene sheeting to the project site; for storing on the project; for installing the sheeting; for all excavating and backfilling; for securing the sheeting and sealing the edges of the sheeting; and for removing and disposing of the sheeting and surplus materials.

628.5.14 Turbidity Barriers

(1) Payment for Turbidity Barriers is full compensation for furnishing, assembling, installing, maintaining, and removing the turbidity barrier; and for sandbags, buoys, navigational markers, anchors, and anchor ropes.

(2) If the contractor substitutes sheet pile for turbidity barrier as allowed in 628.3.10, the department will pay for the plan quantity of turbidity barrier replaced.

628.5.15 Soil Stabilizer

(1) Payment for the Soil Stabilizer bid items is full compensation for furnishing, mixing, and applying soil stabilizer.

628.5.16 Inlet Protection

(1) Payment for the Inlet Protection bid items is full compensation for furnishing, transporting, and installing all materials; and for maintaining and removing the inlet protection devices.

628.5.17 Temporary Ditch Checks

(1) Payment for Temporary Ditch Checks is full compensation for providing, protecting, and storing ditch check materials on the project; for installing and removing ditch checks at project completion or as the engineer directs; for repairing and reseeding damaged areas; and for disposing of all surplus and waste material.

(2) The department will not pay for installing ditch checks if constructed of a single row of erosion bales.

628.5.18 (Vacant)

628.5.19 Culvert Pipe Checks

(1) Payment for Culvert Pipe Checks is full compensation for furnishing and installing rock bags;; for periodic sediment removal; for removing and disposing of rock bags and rock filler; for disposing of surplus eroded materials; and for restoring the site.

628.5.20 Tracking Pads

(1) Payment for Tracking Pads is full compensation for providing tracking pads including aggregate and geotextile; for replacing or reworking material as required to maintain performance; and for removing the pad and restoring the site.

628.5.21 Rock Bags

(1) Payment for Rock Bag**s** is full compensation for providing rock bags; for periodic sediment removal; for removing and disposing of rock bags and rock filler; for disposing of surplus eroded materials; and for restoring the site.