

TEMPORARY AIR AND WATER POLLUTION, SOIL EROSION, AND SEDIMENT CONTROL

SECTION P-156

{Instruction to Consultants: The Master Specification must only be considered to be general guidelines as it is not prepared for a Specific Project. If the items described in the Master Specification do not match the items actually going to be used in a Specific Project, then the Consultant must add new text or modify the existing text so that the final specification is fully coordinated and consistent with the Contract Drawings. The Master Specification must not be considered complete. Additions and deletions necessary to make it project specific are required from the Consultant. Items that are not part of the scope of the Specific Project must be deleted.

The Consultant must add to and/or delete paragraphs, items, etc. to the Master Specification section as required by the scope and nature of the Specific Project. The general format and general statements of the various sections must remain unchanged. The Consultant must modify and finalize the footer to identify the Specific Project as to name of project, project number, and issued for/issue date.}

PART 1 DESCRIPTION

1.01 GENERAL

- A. This item consists of temporary control measures as shown on the Plans or as ordered by the Director during the life of a Contract to control water pollution, soil erosion, and sediment control through the use of aggregate berms, earth berms, temporary ditches, ditch and watercourse checks, sediment traps, sediment logs, erosion control blankets, stone, temporary seeding, inlet and pipe protection, and other erosion control devices or methods.
- B. This special provision will be used in conjunction with the plan documents and the Storm Water Pollution Prevention Plan (SWPPP).
- C. The Contractor must control soil erosion in accordance with the provisions of NPDES permit issued by the Illinois Environmental Protection Agency (IEPA) for stormwater discharges from construction site activities.
- D. The Contractor must meet the Specifications of the Illinois Urban Manual (2002, published by IEPA and Illinois Natural Resources Conservation Service), as modified in the Contract Drawings and Specifications.
- E. The Contractor must coordinate temporary erosion control measures with the permanent erosion control measures to the extent practical to assure economical, effective, and continuous erosion control throughout the construction period.

- F. Temporary erosion control is not limited to areas within the construction limits; construction operations at sites such as borrow pits, equipment and material storage sites, waste areas, temporary stock piles, temporary plant sites, and others are also subject to erosion control requirements.
- G. The best way to prevent sediment from entering storm sewer systems and waterways is to stabilize the disturbed areas of a site as quickly as possible, preventing erosion and stopping sediment transport at its source.
- H. Prior to commencing land disturbing activities other than those indicated on the Plans (including but not limited to additional phases of the development and off-site borrow, waste, asphalt and/or concrete batch plant areas) a supplemental erosion and sediment control plan must be submitted to the Director for review and approval by North Cook County Soil and Water Conservation District (NCCSWCD) or Kane Dupage Soil and Water Conservation District (KDSWCD).

1.02 REFERENCES

- A. Illinois Department of Transportation - Standard Specifications for Road and Bridge Construction, latest edition (SSRBC).
- B. Illinois Urban Manual: A Technical Manual for Urban Ecosystem Protection and Enhancement, latest edition. United States Department of Agriculture, Natural Resources Conservation Service, Champaign, Illinois.
- C. Soil Erosion and Sediment Control Plan for the O'Hare Modernization Program.

1.03 DEFINITIONS

- A. Channels: All ditches and watercourses will be considered "channels."

PART 2 MATERIALS

2.01 SEEDING, TEMPORARY

- A. Temporary Protection by Vegetation.
 - 1. Seed:
 - a. For disturbed areas that will not be in the active work area between 14 days and 365 days, seed must be applied at the following rates:
 - 1) Seed with 90 lbs. per acre of cereal rye and 25 lbs. per acre of perennial ryegrass, or
 - 2) Seed with 90 lbs. per acre of spring oats and 25 lbs. per acre of perennial ryegrass.

Mixture	Temporary Grass Seed Mixture	Lbs/acre (pure live seed)
1	Cereal rye	90
	Perennial ryegrass	25
2	Spring Oats	90
	Perennial ryegrass	25

2.02 MULCH

- A. Mulches must not consist of hay, straw, bark, or woodchips. Mulch may be hydromulch, polymer, or other suitable material approved by the Director that is reasonably clean and free of noxious weeds and deleterious materials.
- B. Erosion Control Blanket must meet requirements of the Manufacturer's Specification and Recommendation.

2.03 FERTILIZER

- A. Fertilizer must meet the Specifications of Section T-901, Seeding. Fertilizer must be a standard commercial grade and must conform to all federal and state regulations and to the standards of the Association of Official Agricultural Chemists.

2.04 SILT FENCE

- A. Materials for silt fence must be in accordance with the detail Drawings. Filter fabric for the silt fence must meet the Illinois Urban Manual material Specification 592 as indicated on the Drawings.

2.05 COARSE AGGREGATE AND RIPRAP

- A. Coarse Aggregate and Riprap material (for Rock Check Dam, Aggregate Berm, Riprap, Inlet and Pipe Protection, Construction Entrances, or other erosion control functions) used for erosion control must meet the requirements of IDOT SSRBC. Coarse Aggregate must consist of CA-1, CA-2, CA-3 or CA-4 as indicated on the Drawings; and Riprap must consist of Gradation No. RR3 or RR 4; and geotextile fabric must meet the requirements of the Illinois Urban Manual material Specification 592, unless otherwise directed by the Director.

2.06 SEDIMENT LOG AND GEOSYNTHETIC CHECK STRUCTURE

- A. Material for Sediment Logs must be either American Excelsior Company standard 12-inch diameter Curlex Sediment Log, North American Green Sediment Stop, Western Excelsior Excel Aspen Excelsior Logs or similar 12-inch diameter (minimum) and as approved by the Director.

- B. Material for Geosynthetic check structure must be rigid or foam pad wrapped with geosynthetic fabric material meeting requirements of the Illinois Urban Manual material Specification 592. Fabric material must be stapled in a 3 to 6 inch trench on the upstream end and securely stapled to the ground on both sides of the check structure.

2.07 SEDIMENT CONTAINMENT FILTER BAG

- A. Sediment Control Filter Bags must be ACF Environmental ERO-TEX dewatering filter bag, US Fabrics filter bag, or JMD Enviro-Protection filter bag as approved by the Director, of the size required to adequately filter pumped water per the manufacturers' specifications.

2.08 INLET PROTECTION AND PIPE (CULVERT) PROTECTION

- A. Material for Pipe Culvert Protection must be Coarse Aggregate (must meet the standards defined above for Coarse Aggregate and Riprap).
- B. Materials for Drop basket or any above ground inlet protection must be per manufacturer's specification, and as approved by the Director. Acceptable products for above ground inlet protection include the following:
 1. Catch-All Inlet Protector by Mar-Mac Manufacturing Co., Inc.
 2. Storm Drain Inlet Frame and Filter Assembly by Silt Saver Sediment Control Products
 3. Sediguard Inlet Protection Device by Earth Support Systems
 4. Dandy Bag, Curb Bag, and Dandy Pop by Dandy Products.

2.09 DEWATERING SUMP

- A. Material for Dewatering Sump must be 2 inch Coarse Aggregate and a filter fabric, with a ¼ to ½ inch hardware cloth wire placed around the standpipe prior to attaching the filter fabric, as shown on the detail Drawings.

2.10 POLYMER

- A. The polymer must be a water-soluble anionic polyacrylamide (PAM) used to minimize soil erosion, bind soil particles, remove suspended particles, and act as a construction aide. All site-specific soils must be tested by a Certified Professional in Erosion and Sediment Control (CPESC) each time a PAM is used. The polymer must be used in accordance with manufacturer's guidelines and as approved by the Director.
- B. Anionic PAM mixture must have ≤ 0.05% free acrylamide monomer by weight as established by the Food and Drug Administration (FDA) and the Environmental Protection Agency (EPA).

- C. The PAM mixture must be accompanied by manufacturers written instructions to ensure proper (1) Product and Site Preparation, (2) Application, (3) Maintenance/Re-application, (4) Storage, and (5) Safety, in accordance with Occupational Health and Safety Administration (OSHA) material safety data sheet (MSDS) requirements and other applicable guidelines including manufacturer's recommendations for specified use.
- D. Anionic PAM application must comply with all federal, state, and local laws, rules or regulations governing anionic PAM. The Contractor will be responsible for securing required permits.
- E. In addition to soil testing, a CPESC must design the installation plan for the polymers based on mix time and point of entry.
- F. The materials used must be harmless to plant and aquatic life.
- G. Different types of polymers may be required for each soil type or combination of soils. The manufacturer or supplier will provide general written application methods, based on site conditions, such as slope and soil type.

2.11 GEOTEXTILE FABRIC

- A. Geotextile fabric material must meet the requirements of the Illinois Urban Manual material Specification 592 – Geotextile as indicated on the detail Drawings.

2.12 JUTE NETTING

- A. Jute netting must be of a uniform, open, plain weave, undyed and unbleached single jut yarn. The yarn must be of loosely twisted construction and must not vary in thickness by more than one-half its normal diameter.
- B. Minimum width must be 48 inches, + or – 1 inch from manufacturer's rated width.
- C. Seventy-eight warp ends per 4 feet of width.
- D. Forty one weft ends per yard.
- E. Weight must average 1.22 lbs per linear yard with a tolerance of + or – 5%.
- F. Jute netting must be used in conjunction with polymer (PAM) as per CPESC and Director.

2.13 OTHER

- A. All other materials must meet commercial grade standards and must be approved by the Director before being incorporated into the Project.

PART 3 CONSTRUCTION METHODS

3.01 GENERAL

- A. 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 laws, rules, or regulations must apply.

3.02 SCHEDULE

- A. Prior to the start of construction, the Contractor must submit schedules (timing for erosion control work to be performed relative to other construction items) for accomplishment of temporary and permanent erosion control work. The Contractor must also submit a proposed method of erosion and dust control on haul roads and borrow pits and a plan for disposal of waste materials. Work must not be started until the erosion control schedules and methods of operation for the applicable construction have been accepted by the Director and initial erosion control items have been properly installed.

3.03 AUTHORITY OF DIRECTOR

- A. The Director 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 to minimize contamination of adjacent streams or other watercourses, lakes, ponds, or other areas of water impoundment.

3.04 TEMPORARY RE-ROUTING OF CHANNELS

- A. Re-Routing Channels. All channels must continue to provide existing flow capacities until new stormwater conveyance and storage structures are constructed and fully operational. For construction practices that reduce channel capacity for longer than the working hours of one work day, the Contractor must re-route the channel, and allow at least the original flow capacity and in the case of regulated streams, according to the IDNR permit requirements. The channel must be replaced to original contours after construction, unless otherwise directed by the Plans or by the Director.
- B. Re-routed Channel Protection. Re-routed channels must be protected from erosion and sediment using Erosion Control Blanket (single or double net), Turf Reinforcement Mat (TRM), Geofabric, Temporary Seeding, Riprap, Sediment Log, Geosynthetic Check Structure, Aggregate Ditch Check, and as directed by the Director.

3.05 CHANNEL CHECKS

- A. All channels must be protected from erosion from surrounding construction zones. Channel checks must consist of Rock Check Dams, Aggregate Berms, Sediment Logs and others. Channel checks must be installed prior to disturbing land within their drainage areas; must be installed during the lowest reasonable flow conditions; and must be installed in a manner to minimize disturbance. The purpose of this practice is to reduce flow velocity and to pond water, thereby reducing active channel erosion and promoting settling of suspended solids.
- B. Sediment accumulated upstream of channel checks (including Rock Check Dams, Aggregate Berms, Sediment Logs, and others) must be removed when it reaches $\frac{1}{2}$ the height of the check spillway invert. Removed sediment must be deposited in an area previously approved by the Director. Sediment must not be placed in areas that contribute to sediment off-site or are not permanently stabilized.
- C. Remove and replace stone for Rock Check Dams and Aggregate Berms when the structures become plugged, silt laden, or as required by the the Director.
- D. Rock Check Dams and Aggregate Berms. Rock Check Dams and Aggregate Berms in channels must be constructed from stone (coarse aggregate and riprap) as shown on the Drawings. Stone for Rock Check Dams and Aggregate Berms must be placed on the surfaces and to the depths specified. Stone must be placed in one operation and in such a manner to avoid serious displacement of the underlying materials. Stone must be delivered and placed in a manner to ensure that the stone is reasonably homogeneous with the larger stones evenly distributed and firmly in contact with one another with smaller stones filling the voids between the larger stones.
 - 1. Height. Rock Check Dams and Aggregate Berms must have a minimum height of 12 inches and a maximum height of 36 inches.
 - 2. Spillway. Rock Check Dams and Aggregate Berms must be installed with sides 6 inches to 12 inches higher than the central spillway, forming a weir.
 - 3. Dimensions. Rock Check Dams and Aggregate Berms must have a minimum top width of 2-feet measured in direction of flow with maximum side slopes of 2:1 (h:v).
 - 4. Location. Rock Check Dams and Aggregate Berms must be placed and sized such that resultant ponding must not cause inconvenience or damage to adjacent areas, such as roads.

5. Stability. For additional stability in higher flow channels, Rock Check Dams and Aggregate Berms should be keyed into the soil to a depth of 6-inches.

Filter fabric used in Rock Check Dam must be in accordance with the Illinois Urban Manual material Specification 592 Geotextile, as shown on the Drawings, and it is included in the pay item Rock Check Dam. No additional payment will be made for filter fabric.

- E. Sediment Logs. Sediment logs must be installed according to the manufacturer's instructions, except as modified in the Contract Drawings and Specifications. Sediment logs must be keyed into the soil to a depth of two inches, unless otherwise directed by the Director.
- F. Geosynthetic Check Structure: Fabric material that covers rigid foam pad must be stapled in a 3 to 6 inch trench on the upstream end and securely stapled to the ground on both sides of the check structure. The center of the geosynthetic check structure must be 6 inches lower than the sides and secured (barrier and fabric) in the ground staples.

3.06 TEMPORARY STREAM CROSSING

- A. Whenever construction equipment must cross streams at frequent intervals, temporary stream crossing must be provided.
- B. As a minimum, structure must be designed to pass 2-year, 24-hour storm without overtopping and no erosion will result from the 10 year peak storm. In case of regulated streams, the Director will facilitate the permit application process through the IDNR-OWR. Temporary stream crossing must be designed and installed according to the IDNR permit requirements.
- C. Outlet of the crossing structure must be stabilized if the flow velocity can cause erosion for the receiving stream channel.
- D. The aggregate for the roadway must be a minimum of 6 inches thick stone meeting requirements of IDOT SSRBC.

3.07 STABILIZED CONSTRUCTION ENTRANCE / EXIT

- A. Construction entrance / exit must be used at all points of construction ingress and egress to the public road.
- B. The aggregate for the construction entrance / exit must meet the requirements of IDOT SSRBC and Geotextile Fabric must meet the requirements of the Illinois Urban Manual material Specification 592.
- C. Each construction entrance / exit must meet the following minimum dimensions: thickness of 6 inches, width of 14 feet; but not less than full width of ingress or egress point, and length of 70 feet. Filter fabric must be installed under aggregate to minimize the migration of the stone into the underlying soil.

3.08 DEWATERING

- A. Temporary Dewatering Sump. Pumping water from open trenches or other areas must be performed in a manner to minimize the turbidity of the pumped water in accordance with Illinois Urban Manual IL-650. This pumping must involve using filter fabric over the inlet hose and burying the inlet hose in an aggregate-filled hole at the bottom of the trench, as shown in the Drawings, or other methods approved by the Director. Water must be pumped directly into a sediment trap, into a ditch or temporary ditch that leads to a sediment trap, or into a sediment containment filter bag.
- B. Sediment Containment Filter Bag. When water cannot be pumped to a sediment trap, or site conditions call for use of an additional layer of erosion control, water must be pumped directly to a Sediment Containment Filter Bag. Sediment Containment Filter Bags must be used according to the manufacturer's instructions, as modified by the Contract Drawings and Specifications. Sediment Containment Filter Bag must be placed on bedding as shown in the Drawings.

3.09 TEMPORARY STOCKPILES

- A. Stockpile Sediment and Erosion Control. If a stockpile is to remain in place more than 3 days, perimeter barrier and "tracking" with machinery (grooving) up and down the slope must be provided. If the construction activity temporarily or permanently ceased and construction activity will not occur for a period of 14 days, temporary stabilization must be provided for each stockpile by the 7th day after activity has ceased. Stockpile sediment and erosion control can include Temporary Seeding, Polymer, Silt Fence, Erosion Control Blanket, or other methods approved by the Director.

3.10 SEDIMENT TRAPS and TEMPORARY DITCHES

- A. Sediment Trap: Sediment Traps are relatively effective at trapping medium to coarse-grained particles, and must meet the following Specifications:
 - 1. Depth. Sediment trap must be a minimum of 2 feet measured from the sediment trap bottom to the invert of the stone outlet to provide sediment and detention storage..
 - 2. Shape: Sediment trap must have a length-width ratio of at least 2:1. Side slopes must be no steeper than 2:1 (h:v) and must be stabilized.
 - 3. Outlet: The position of the outlet must be as such to minimize short-circuiting of the water flow path. The crest of the spillway must be at least 1 foot below the top of the embankment. The width of the rock check dam outlet must span the width of the

outlet channel. The top of the rock check dam outlet must be constructed so that the center is approximately 6 inches lower than the outer edges. Discharge from the outlet must be to a stabilized area.

- B. Stone Outlet Structure for Sediment Trap
 - 1. Riprap (RR-4) for Stone Outlet Structure must meet requirements of the Standard Specifications for Road and Bridge Construction (SSRBC).
 - 2. Geotextile Fabric must meet requirements of the Illinois Urban Manual material Specification 592.
 - 3. Cost of Geotextile Fabric is included in the pay item of stone outlet structure for sediment trap and no additional payment will be made.
- C. Temporary Ditch. Temporary Ditches must be constructed as shown on the Drawings or as directed by the Director to provide drainage paths to sediment traps. These ditches must have side slopes no steeper than 2:1 (h:v). The slopes of the temporary ditch must be stabilized with Temporary Seeding, Erosion Control Blanket, (single, double net or TRM), Geofabric, and/or Riprap as directed by the Director, before ditches convey flow.

3.11 INLET AND PIPE (CULVERT) PROTECTION

- A. All inlets to storm sewers that will potentially be affected by the Contractor's construction activities must be protected with Inlet and Pipe Protection barriers. Coarse Aggregate for culvert protection, Drop Basket or any above ground inlet protection meeting manufacturer's specification and as approved by the Director must be installed at the direction of the Director.
- B. Inlet protection must be constructed before upslope land disturbance begins and before the storm drain becomes operational.
- C. The inlet protection barriers must allow for overflow from a severe storm event.

3.12 SILT FENCE

- A. Silt Fence must be installed in accordance with the Illinois Urban Manual where erosion would occur in the form of sheet flow and there is no concentration of water flowing to the barrier. Silt Fence must be placed as close to the contour as possible with the ends extending upslope. The area below the fence if possible, must be undisturbed or stabilized. Fence posts must be a minimum of 48 inches long and with a minimum cross sectional area of 3.0 square inches. The maximum spacing between posts must be 5 feet and driven a minimum of 18

inches into ground. The silt fence must be entrenched to a minimum depth of 6 inches with an additional 6 inches extending along the bottom of the trench in the upslope direction.

3.13 RIPRAP AND COARSE AGGREGATE

- A. Riprap and Coarse Aggregate are specified for use in several erosion control items as shown on the detail Drawings.
- B. Where filter fabric is required on the Drawings, the fabric must conform to the Illinois Urban Manual material Specification 592 Geotextile.
- C. Coarse aggregate and riprap or rock/reclaimed concrete for Culvert Inlet Stone Protection, Rock Check Dams, Temporary Sediment Trap, Stabilized Construction Entrance, Construction Road Stabilization, and Temporary Steam Crossing must be placed in accordance with the IL Urban Manual construction Specification 25 Rockfill, using Method 1 and Class III compaction.
 - 1. Foundations for rockfill must be stripped to remove vegetation and other unsuitable materials. Earth foundation surfaces must be graded to remove surface irregularities and cavities filled with compacted earthfill of approximately the same kind and density as the adjacent foundation material. Rockfill and/or bedding must not be placed until the foundation preparation is completed and the foundation or excavations have been inspected and approved by the Director.
 - 2. When a bedding layer beneath rockfill is specified, the bedding material must be spread uniformly on the prepared subgrade surfaces to the depth indicated.
 - 3. Reclaimed concrete materials must be free from reinforcing bars.
 - 4. For Method 1 placement, the rock must be dumped and spread into position in approximately horizontal layers not to exceed 3 feet in thickness. It must be placed in a manner to produce a reasonably homogeneous stable fill that contains no segregated pockets of large or small fragments or large unfilled rock fragments.
 - 5. Moisture content of the bedding material must be controlled to ensure that bulking of the sand material does not occur.
 - 6. Class III Compaction of Rockfill and Bedding – No compaction will be required beyond that resulting from the placing and spreading operations.

- D. Riprap for Pipe Outlets and Structural Streambank Stabilization must be placed in accordance with the Illinois Urban Manual construction Specification 61 Rock Riprap.
1. The subgrade surfaces on which the rock riprap, filter, bedding or geotextile is to be placed must be cut or filled and graded to the lines and grades as shown on the Drawings. When fill to subgrade lines is required, it must consist of approved materials and conform to the requirements of the specified class of earthfill. Rock riprap, filter, bedding or geotextile must not be placed until the foundation preparation is completed and the subgrade surfaces have been inspected and approved by the Director.
 2. **Equipment–Placed Rock Riprap**
The rock riprap must be placed by equipment on the surfaces and to the depths specified. The rock riprap must be installed to the full course thickness in one operation and in such a manner as to avoid serious displacement of the underlying materials. The rock for riprap must be delivered and placed in a manner that will ensure that the riprap in-place will be reasonably homogeneous with the larger rocks uniformly distributed and firmly in contact one to another with the smaller rocks and spalls filling the voids between the larger rocks. Some hand placing may be required to provide a neat and uniform surface. Rock riprap must be placed in a manner to prevent damage to structures. Hand placing will be required or necessary to prevent damage to any new and existing structures.
 3. **Hand–Placed Rock Riprap**
The rock riprap must be placed by hand on the surfaces and to the depths specified. It must be securely bedded with the larger rocks firmly in contact one to another without bridging. Spaces between the larger rocks must be filled with smaller rocks and spallo. Smaller rocks must not be grouped as a substitute for larger rock. Flat slab rock must be laid on its vertical edge; except where it is laid like paving stone and the thickness of the rock equals the specified depth of the riprap course.
 4. When the Drawings specify filter, bedding or geotextile beneath the rock riprap, the designated material must be placed on the prepared surface as specified. Compaction of filter or bedding aggregate will not be required, but the surface of such material must be finished reasonably smooth and free of mounds, dips, or windrows.

3.14 MULCH AND EROSION CONTROL BLANKET

- A. Mulch must be installed immediately after seeding by conventional method or hydromulching, after seedbed preparation, when dormant seeding is to be provided and when temporary erosion control is to be attained. Mulch must be applied any time soil and site conditions are suitable for spreading and anchoring.
- B. The erosion control blanket (single, double net or TRM) must be installed in accordance with the Manufacturer's specification and requirements. The erosion control blanket must be in firm contact with the soil. It shall be anchored per the manufacturer's recommendation with the proper number and spacing of wire staples. The staples must be the proper width and length to meet the Manufacturer's specification. On slopes and in channels the blanket shall be unrolled upstream to downstream parallel to the direction of flow. The upstream end and at the top of the slope, each blanket must be anchored in a minimum 6-inch deep anchor trench. The blankets must be laid like shingles, i.e., ends and edges of blanket sections must be overlapped in rows in the direction of flow.
- C. The type of erosion blanket must be based on the flow velocity and shear force in the channel.

3.15 POLYMER AND FLOC LOG

- A. All vendors and suppliers of polyacrylamide (PAM), PAM mix or blends must present or supply a written toxicity report which verifies that the PAM, PAM mix or blend exhibits acceptable toxicity parameters which meet or exceed the requirements for the state and federal water quality standards. No Cationic formulations of PAM, PAM blends, polymers of Chitosan are allowed for use under this Specification.

The manufacturer or supplier must provide a product expiration date for anionic PAM mixtures based on product expiration date of PAM in pure form.

The application method must provide uniform coverage to the target area and avoid drift to non-target areas. The applicator of anionic PAM must document, at the time of application, the following:

1. Name of applicator
2. Application rate per acre
3. Date applied
4. Product type
5. Weather conditions during application
6. Method of application

Copies of this documentation must be entered into the Contractor's monitoring log or project diary and made available upon request.

Unused liquid anionic PAM mixtures must be minimized. Excess material will not be applied at a rate greater than the maximum application rate. Disposal must not occur in Waters of the U.S. (W.U.S.) and stormwater conveyance systems (i.e. Storm sewer manholes, storm sewer inlets, ditches, and culverts).

Anionic PAM mixtures must achieve $\geq 80\%$ reduction in soil loss as measured by a 1 hour storm duration 2"/hour rainfall simulator test performed in accordance with methods used by Bubenzer and Patterson (1982) as pre-qualification for field testing.

Performance of anionic PAM mixtures must be verified and field-tested. The manufacturer must provide a toxicological report for the Polymer Binder performed by a third-party, EPA approved laboratory.

Anionic PAM use must conform to all federal, state, and local laws, rules, and regulations regarding use, discharge, and disposal of chemical materials.

- B. Floc Log Application: A Floc Log is a semi-hydrated polyacrylamide block that when placed within storm water or construction site drainages will remove fine particles and reduce NTU values. Placement of the floc log should be as close to the source of particle suspension as possible. Ideal performance of the floc logs results when used in conjunction with other best management practices. Each floc log is formulated for the soil and water chemistry at the site. Soil and water samples, when tested, will determine which formula floc log is needed along with proper placement.

3.16 TEMPORARY SEEDING

- A. This work consists of the temporary seeding of unfinished, disturbed areas as designated by the Director within the construction site.
- B. Except as provided in paragraphs 3.16C and 3.16D below, stabilization measures must be initiated as soon as practical in portions of the site where construction activities have temporarily or permanently ceased.
 - 1. Disturbed areas that will not be in the active work area for 14 to 90 days must be seeded within 24 hours after suspension of work in the area with no fertilizer or seedbed preparation, or, must be seeded within 7 working days after suspension of work in the area with no fertilizer and with rough seedbed preparation.
 - 2. Disturbed areas that will not be in the active work area for 90 to 365 days must be seeded and fertilized within 24 hours after

suspension of work in the area with no seedbed preparation, or, must be seeded and fertilized within 7 working days after suspension of work in the area with rough seedbed preparation.

3. Disturbed areas that will not be in the active work area for longer than one year must be seeded and fertilized in accordance with Section T-901 (Seeding) within 7 working days after suspension of work in the area with seedbed preparation.
- C. Where the initiation of stabilization measures by the 7th day after construction activity temporary or permanently cease is precluded by snow cover, stabilization measures must be initiated as soon as practical.
- D. Where construction activity will resume on a portion of the site within 14 days from when activities ceased, (e.g. the total time period that construction activity is temporarily ceased is less than 14 days) then stabilization measures do not have to be initiated on that portion of site by the 7th day after construction activity temporarily ceased.
- E. Dates: Temporary seeding must occur between March 15 and October 1. If protection is required outside of these dates, mulch must be used.
- F. Seed Bed Preparation: Seedbed preparation must be as described in Section T-901, Seeding. A rough seedbed must be obtained with a minimum of one pass with a disc harrow.
- G. Fertilization of Temporary Vegetation. The Contractor must perform soil tests to determine the amount of fertilizer necessary. The following rates of fertilizer application are the benchmark application rates per acre, but the Contractor must aim to minimize the amount of fertilizer used, while still allowing for the healthy growth of the seed.
 1. Nitrogen (N) - 120 pounds of N
 2. Phosphorus (P) - 60 pounds of P₂O₅
 3. Potassium (K) - 60 pounds of K₂O

3.17 CONSTRUCTION DETAILS

- A. The Contractor must incorporate all permanent erosion control features into the Project at the earliest practical time as outlined in the accepted schedule.
- B. Temporary erosion and pollution control measures must be used (1) to correct conditions that develop during construction that were not foreseen during the design stage; (2) where needed prior to installing permanent control features; or (3) to temporarily control erosion that develops during normal construction practices, but are not associated with permanent control features on the Project.

- C. Where erosion is likely to be a problem, clearing and grubbing operations should be scheduled and performed so that grading operations and permanent erosion control features can follow immediately thereafter if the Project conditions permit; otherwise, temporary erosion control measures may be required between successive construction stages.
- D. The Director will limit the area of clearing and grubbing, 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 control measures current in accordance with the accepted schedule. Should seasonal limitations make such coordination unrealistic, temporary erosion control measures must be taken immediately to the extent feasible and justified.
- E. 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 are ordered by the Director, such work must be performed by the Contractor at his/her own expense.
- F. The Director may increase or decrease the area of erodible earth material to be exposed at one time as determined by analysis of Project conditions.
- G. The erosion control features installed by the Contractor must be maintained by the Contractor during the construction period to the satisfaction of the Director.
- H. Whenever construction equipment must cross watercourses at frequent intervals, temporary structures must be provided.
- I. Pollutants such as fuels, lubricants, bitumen, raw sewage, wash water from concrete mixing operations, and other harmful materials must not be discharged into or near rivers, streams, and impoundments or into natural or manmade channels leading thereto. Contractor must dispose all materials properly at an approved location and according to the local regulations.

3.18 OPERATION AND MAINTENANCE

- A. All installed erosion control features must, at a minimum, be inspected at least once every 7 days and within 24 hours of a storm event that produces 0.5 inches of rain or more during a 24-hour period, in accordance with NPDES permit.
- B. Removal. Unless incorporated into the permanent stormwater management system, all erosion control features must be removed

and properly disposed of once final grading and stabilization has been completed, or at the direction of the Director.

- C. Surplus or waste material. Surplus or waste material resulting from the riprap operations must be disposed of by the Contractor at his own expense.
- D. The Contractor must be solely responsible for the maintenance of all soil erosion devices installed by the Contractor. Maintenance must be completed as soon as possible with consideration to site conditions.
- E. For each specific Erosion and Sediment control measure maintenance and inspection, refer to the Illinois Urban Manual Standard practice.

PART 4 METHOD OF MEASUREMENT

4.01 MEASUREMENT

- A. Temporary erosion and pollution control work includes all labor and materials for installation, maintenance, and removal of each erosion control item. Temporary erosion and pollution control work required which is not attributed to the Contractor's negligence, carelessness, or failure to install permanent controls must be performed as scheduled or ordered by the Director. Completed and accepted work will be measured as follows:
 - 1. Coarse Aggregate for Erosion Control: This work must include furnishing, placing, maintaining and removing coarse aggregate for erosion control and will be measured for payment in cubic yards in place, for the gradation specified. CA-1, CA-2, CA-3 or CA-4 must be used in erosion control measures unless otherwise approved by the Director.
 - 2. Rip Rap for Erosion Control: This work must include furnishing, placing, maintaining and removing riprap for erosion control and will be measured for payment in tons in place, for the gradation specified. Riprap RR3 and Riprap RR4 must be used in erosion control measures unless otherwise approved by the Director.
 - 3. Silt Fence: This work must include furnishing, installing, maintaining and removing Silt Fence and will be measured for payment in linear feet in place.
 - 4. Inlet and Pipe (Culvert) Protection: This work must include furnishing, installing, maintaining and removing Inlet and Pipe Protection barriers and will be measured for payment per each in place of the type specified.
 - 5. Sediment Logs and Geosynthetic Check Structure: This work must include furnishing, placing, maintaining and removing Sediment Logs or Geosynthetic Check Structures and will be

measured for payment as each. Each Sediment Log barrier must cross the entire ditch or channel and will not exceed 25' in length.

6. Polymer and Floc Logs: This work must include furnishing, placing, maintaining and removing PAM to any disturbed areas shown in the Plans and measured for payment in pounds or per each, respectively.
7. Mulch: This work must include furnishing, installing, and maintaining Mulch and will be measured for payment per acre installed for the type specified.
8. Erosion Control Blanket (single or double net) and Turf Reinforcement Mat (TRM): This work must include furnishing, installing and maintaining Erosion Control Blanket and /or TRM and will be measured for payment in square yards in place, for the type specified.
9. Sediment Containment Filter bags: This work must include furnishing, bedding, maintaining, and disposing of Sediment Containment Filter bag and will be measured for payment per each, for the size specified.
10. Temporary Seeding: This work must include furnishing, installing, and maintaining seed for erosion control and will be measured for payment per acre installed for the seed mix specified.
11. Sediment Traps, Temporary Ditches, and Erosion Control Berms: Excavation required for construction of Temporary Sediment Traps, Temporary Ditches, and Erosion Control Berms will not be measured for payment, but will be considered included in the total erosion control work. Excavation to remove accumulated sediments in Sediment Traps and Temporary Ditches will not be paid for separately but will be considered included in maintenance efforts.
12. Pumping: Pumping water from excavated trenches or other areas will be considered included in the work item to which it pertains and will not be paid for separately.
13. Geotextile Fabric: Geotextile fabric required to construct erosion control items will not be paid for separately but will be considered included in the appropriate coarse aggregate or riprap pay items.
14. Stabilized Construction Entrance / Exit: This work must include furnishing, installing, maintaining, and removing Stabilized

Construction Entrance / Exit as shown on Plans and will be measured for payment in square yards in place.

15. Temporary Stream Crossing will not be measured for payment; but, will be considered as included in the Contract.

Control work performed for protection of construction areas outside the construction limits, such as borrow and waste areas, haul roads, equipment and material storage sites, and temporary plant sites, will not be measured and paid for directly but will be considered as a subsidiary obligation of the Contractor with costs included in the Contract prices bid for the items to which they apply. Routine maintenance of soil erosion control measures will not be paid for separately but must be considered included in the Contract pay items to which they apply. Soil erosion items damaged by Contractor must be immediately replaced at no additional cost to the Contract.

PART 5 BASIS OF PAYMENT

- A. Accepted quantities of temporary water pollution, soil erosion, and sediment control work ordered by the Director and measured as provided in paragraph 4.01 will be paid for under:

1. Item P-156-01 – Coarse Aggregate, CA-1, CA-2, CA-3 or CA-4--per cubic yard
2. Item P-156-02 – Riprap, RR3--per ton
3. Item P-156-03 – Riprap, RR 4--per ton
4. Item P-156-04 – Silt Fence--per linear foot
5. Item P-156-05 – Inlet and Pipe Protection--per each
6. Item P-156-06 – Sediment Log and/or Geosynthetic Check Structure--per each
7. Item P-156-07 – Polymers and Floc Logs for Erosion Control--per pound or each respectively
8. Item P-156-08 – Erosion Control Blanket/TRM--per square yard
9. Item P-156-09 – Mulch--per acre
10. Item P-156-10 – Sediment Containment Filter Bag--per each
11. Item P-156-11 – Temporary Seeding--per acre
12. Item P-156-12 – Stabilized Construction Entrance/Exit – per square yard

END OF ITEM P-156