ATTACHMENT N:

ESCAPE SPECIFICATION

Project Name
CONTRACT Pxxxx

SECTION 01 57 23

TEMPORARY STORM WATER POLLUTION

EROSION AND SEDIMENT CONTROL ACTION PLAN ELEMENT (ESCAPE)

PART 1 GENERAL

1.05 SECTION INCLUDES

A. For projects that disturb less than 1 acre, an ESCAPE is required on VTA projects. An ESCAPE is similar in nature to a SWPPP and require BMPs to be used that are site-specific. Attachment M of the VTA Stormwater Design Criteria Manual includes VTA Appendix G of the VTA contract specifications and contains the ESCAPE template for contractors to complete. This manual assists designers with the selection of compliant BMPs.

B. This Section includes requirements for water pollution control water pollution control during construction including Best Management Practices (BMPs), maintenance, erosion, sediment control, dust control, and waste management.

C. Water pollution control maintenance work and Erosion Sediment (ESCAPE) must be considered as integral functional practices to implement water pollution control.

D. Water pollution control maintenance work and the ESCAPE are integral functional practices that Contractor must implement to control water pollution.

E. Failure to fully comply with the requirements of this spec will subject Contractor to all fines, damages, and delays incurred due to failure to implement the ESCAPE.

1.06 RELATED SECTIONS

Appendix G Environmental Coordination and Cooperation
Special Conditions, General Conditions, and these Technical Specifications.
SECTION 6 SPECIAL CONDITIONS
SECTION 7 GENERAL CONDITIONS
01 35 29 HAZARDOUS MATERIALS ACCIDENT PREVENTION
01 35 70 ENVIRONMETNAL REQUIRMENTS
01 57 00 TEMPORARY CONTROLS
01 74 14 CLEANING
01 74 15 DUST CONTROL
01 74 21 WASTE MANAGEMENT
01 74 25 CONTAMINANT MANAGEMENT
01 75 00 PRESERVATION AND RESTORATION
02 41 00 DEMOLITION
02 41 10 TREE PROTECTION AND REMOVAL
03 05 15 PORTLAND CEMENT CONCRETE
22 14 01 STORM DRAINAGE
31 00 00 EARTHWORK
31 11 00 CLEARING AND GRUBBING
31 23 19 DEWATERING
31 23 43 STRUCTURE EXCAVATION AND BACKFILL

31 32 00 HYDROSEEDING
31 35 00 SLOPE PROTECTION
32 90 00 PLANTING
33 40 00 STORM DRAINAGE UTILITIES
33 41 13 STORM DRAINAGE
33 46 00 OUTFALL PROTECTION

1.07 REGULATORY REQUIREMENTS

A. Include the permits that are relevant, depending on the project's disturbance acreage and the right-of-way: Pursuant to the applicable laws and requirements for the work, including but not limited to the:

1. The National Pollutant Discharge Elimination System (NPDES) permits General Permit No. CAS000002 for Storm Water Discharges Associated with Construction and Land Disturbance Activities adopted by the State Water Resources Control Board on September 2, 2009 as Order No. 2009-0009-DWQ, This section is subject to changes proposed by the revised Construction General Permit (DRAFT ORDER 20XX-XXXX-DWQ NPDES NO. CAS000002). Designer to include when the new CGP is issued, and update the above reference.

2. The Municipal Regional Permit No. CAS612008 for Municipal Separate Storm Water Discharges Associated with jurisdictions and entities permitted under the San Francisco Bay Municipal Regional Stormwater Permit adopted by the State Water Resources Control Board on November 19, 2015 as Order No. R2-2015-0049 , and Phase II MS4 Permit No. CAS000004 for Storm Water Discharges Associated with Small Municipal Separate Storm Water Discharges adopted by the State Water Resources Control Board on February 5, 2013 as Order No. 2013-0001-DWQ.

B. VTA's Design Criteria Manual for Landscaping and Stormwater

1.08 MEASUREMENT AND PAYMENT

A. Full compensation for conforming to the requirements of this section will be paid for as described in the various associated bid items in the Schedule of Quantities and Prices (SQP).

B. Prepare ESCAPE

The contract lump sum price paid per each for ESCAPE Preparation includes full compensation for all Work necessary for developing, preparing, obtainingapproval of, revising, and amending the ESCAPE. For the pay item "Prepare ESCAPE", Contractor will receive 50% of the pay item for submittal of the ESCAPE and the remaining 50% when the ESCAPE is approved, no more corrections are required, and the corrected ESCAPE has been submitted. Refer to Section 7 for details on special withholding.

C. Amend ESCAPE

For the pay item "Amend ECAPE", contractor will receive 0% of the pay item for submittal of the ESCAPE Amendment or if VTA identifies "Amend and Resubmit", 50% of the pay item if VTA identifies "Make Correction Noted", and 100% of the pay item if VTA identifies "No Exception Taken". For any amendment not transmitted to VTA within 14 days of request, VTA

will deduct from the pay item. Refer to Section 7 for details on special withholding.

D. Inspections

Inspections will be paid per each and will be Weekly/bi-weekly/Monthly for the duration of the project. Contractor will receive 100% of the pay item for Weekly/bi-weekly/Monthly "ESCAPE Inspections" upon completion of the submitted Weekly/bi-weekly/Monthly inspection to VTA. ESCAPE Inspections will be captured in the CloudCompli (www.cloudcompli.com) inspection software within 24-hours of performing the inspection. Contractor must purchase annual licenses from CloudCompli as necessary to meet this requirement. VTA will deduct from the pay item for any inspections not performed per the template or for any reports not submitted within a pay period. Refer to VTA Section 7 for details on special withholding.

Designer to estimate all of the below quantities as outlined in the VTA Design Criteria Manual for Stormwater, Planting, and Irrigation (VTA DCM). Customize the Measurement and Payment section to only include the applicable BMPs and items.

E. Construction Site Management

The contract lump sum price paid for Construction Site Management must include furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in construction site management including but not limited to run-on run-off controls, rock bags, spill prevention and control, material management, waste management, non-stormwater management, and dewatering activities, as specified in these technical specifications, and as directed by VTA.

F. Temporary Cover

The contract price paid per lump sum for Temporary Cover must include furnishing all labor materials, tools, equipment, and incidentals and for doing all the work involved in installing, maintaining, removing and disposal of Temporary Covers as shown on the Plans, as specified in these technical specifications, and as directed by VTA.

G. Erosion Control Blanket

Erosion Control Blanket will be measured by the square foot. The area will be calculated on the basis of actual or computed slope measurements. The contract price paid per square foot includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in installing Erosion Control Blanket, complete in place and removal of Temporary Erosion Control Blanket, as shown on the Plans, as specified in these technical specifications, and as directed by VTA.

H. Temporary Hydraulic Mulch

The contract price paid per square yard for Temporary Hydraulic Mulch must include furnishing all labor materials, tools, equipment, and incidentals and for doing all the work involved in installing, maintaining, removing and disposal of temporary hydraulic mulch as shown on the Plans, specified in these technical specifications, and as directed by VTA.

I. Erosion Control (Hydroseed)

Erosion control (hydroseed) will be measured by the square foot. The area will be calculated on the basis of actual or computed slope measurements. The contract price paid per square foot for erosion control (hydroseed) includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the Work involved in erosion control (hydroseed) complete in place, as shown on the Plans, as specified in these technical specifications, and as directed by VTA

J. Temporary Drainage Inlet Protection.

The contract price paid per unit for Temporary Drainage Inlet Protection must include furnishing all labor materials, tools, equipment, and incidentals and for doing all the work involved in installing, maintain, removing and disposal of temporary drainage inlet protection as shown on the Plans, specified in these technical specifications, and as directed by VTA. Deduct from the pay item for any DI protection that is not placed, replaced, or not maintained in a timely fashion (i.e., within 14 days of a VTA request).

K. Temporary Perimeter Protection

The contract price paid per linear feet for Temporary Perimeter Protection measured along the centerline of the installed strip for hard surfaces include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in installing the Temporary Perimeter Protection, complete in place, including maintenance, and in these special provisions, and as directed by VTA. Where Temporary Perimeter Protection segments are joined and overlapped, the overlap will be measured as a single installed strip.

L. Temporary Construction Entrance

Temporary construction entrance will be paid per each. The price for Temporary Construction Entrance includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the Work involved in constructing temporary construction entrance, complete in place, including removal of temporary construction entrance, as shown on the Plans, these technical specifications, and as directed by the VTA.

No additional compensation will be made if the temporary construction entrance is relocated during the course of construction.

M. Street Sweeping

The contract lump sum price for Street Sweeping must include furnishing all labor materials, tools, equipment (Sweepers shall be self-loading, motorized, and shall have spray nozzles and vacuum apparatus, dry brooming is not permitted.), and incidentals and for doing all the work involved in street sweeping as specified in these technical specifications, and as directed by VTA.

N. Temporary Concrete Washout

The contract lump sum for Temporary Concrete Washout must include furnishing all labor materials, tools, equipment, and incidentals and for doing all the work involved in installing, maintaining, removing and disposal of temporary concrete washout as shown on the Plans, specified in these technical specifications, and as directed by VTA. One washout/300 yards of concrete will be required at a minimum.

O. All other items of temporary controls will not be measured for payment but will be considered incidental to the Work of this Contract

1.09 REFERENCE STANDARDS

VTA Design Criteria Manual for Stormwater , Landscaping, and Irrigation (most recent version)

California Environmental Protection Agency, State Water Resource Control Board http://www.swrcb.ca.gov/

California Storm water Quality Association (CASQA) Stormwater Best Management Practice Online Handbook: Construction (the Construction BMP Handbook is available at CASQA.org)

California Regional Water Quality Control Board (RWQCB) – Region 2, Order No. R2-2015-0049, NPDES Permit No. CAS612008, San Francisco Bay Region Municipal Regional Storm water NPDES Permit, November 19, 2015 (hereafter Municipal Regional Permit or MRP)

State Water Resources Control Board (SWRCB) – Order No. 2013-001-DWO, NPDES Permit No. CAS000004, Waste Discharge Requirements for Storm Water Discharges form Small Municipal Separate Storm Sewer System (MS4s) February 5, 2013 (hereafter Small Phase 2, Permit).

Santa Clara Valley Urban Runoff Pollution Prevention Program (SCVURPPP), C.3 Storm water Handbook, (latest version, and addendum.)

1.10 SUBMITALS

A. ESCAPE Preparation:

1. Contractor will prepare the ESCAPE using the VTA template format included in this specification in accordance with the VTA Stormwater Design Criteria Manual. VTA will oversee compliance with these requirements. VTA prefers that the contractor use a Qualified SWPPP Developer (QSD), a Certified Professional in Erosion and Sediment Control (CPESC) registered through Enviro Cert International, Inc., or a Certified Professional in Storm Water Quality (CPSWQ) registered through Enviro Cert International, Inc.to prepare and amend the ESCAPE.

2. The Contractor must submit for review and approval an ESCAPE with WPCD showing the project specific locations to implementation the proposed BMPs and if site conditions change. Refer to the ESCAPE template attached to this specification section and update the ESCAPE template accordingly specific to the contract work means and methods.

3. All revisions will be submitted to VTA for approval prior to incorporation.

4. The Contractor will submit to VTA a list of the Contractor's materials and sources. The list will be submitted in sufficient time to implement the proper level of controls before the construction work commences. No plastic mesh (monofilament wrapped) is permitted in rolled products on VTA projects (i.e., fiber rolls and erosion control blankets must be made from fully biodegradable, not photodegradable, materials)

5. Submit the following submittals for the stormwater treatment BMP: include the details, calculations, manufactures recommendation as part of an Operations and Maintenance Plan for the post construction BMP selected to treat the impervious area constructed by the project.

6. Contractor will update the WPCD for specific means and methods drawings to show the site conditions:

- Contractor will update the WPCD to show the site conditions, drainage, and water pollution control components. At a minimum, the WPCD will include:

- All exposed graded surfaces, finished and unfinished construction slopes, stockpiles, haul roads and storage areas, top and toe of slope lines and drainage arrows will be graphically shown.

- Drainage patterns within each watershed area (shown by slope arrows) and the drainage system or containment area where runoff will be conveyed for removal or storage. Drainage swales, temporary culverts, active and inactive drainage inlets, gutters, and dikes will be clearly shown at a minimum as well as where offsite water enters or exits the site, along with uniquely named or numbered sampling point locations.

- Locations where offsite run-on to the Work area and where runoff leaves the work area.

- Contractor will identify, as minimum, storage facilities, concrete washout areas and proposed stockpile locations.

- Water pollution control BMPs will also be shown and may consist of providing drainage inlet protection around or temporarily capping selected drainage systems within areas of active construction. Contractor will monitor the weather forecast to anticipate if inclement weather is approaching. Uncapping drainage inlets and providing measures to trap sediment will be installed prior to the storm. Contractor will maintain BMPs as required during and after the storm event.

B. Designer to confirm whether dewatering will be addressed in this section and not in a separate dewatering spec Before dewatering, the Contractor will submit a dewatering and discharge work plan. The dewatering and discharge work plan will include:

1. Title sheet and table of contents.

2. Description of dewatering and discharge activities detailing locations, quantity of water, equipment, and discharge point.

3. Estimated schedule for dewatering and discharge start and end dates of intermittent and continuous activities.

4. Discharge alternatives, such as dust control or percolation.

5. Visual monitoring procedures with inspection log.

6. Copy of written approval to discharge into a sanitary sewer system at least 7 days before starting discharge activities.

C. The Contractor will submit the following:

1. Material Safety Data Sheet at least 7 days before material is used or stored.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

A. Prepare Erosion and Sediment Control Action Plan Element (ESCAPE):

1. This section covers Work necessary for stabilization of soil to prevent erosion during construction and land disturbing activities in compliance with VTA's MS4 permit. VTA reserves right to modify use, location, and quantities of soil erosion and sediment control measures based on activities of Contractor.

2. Conformance with the requirements of this Section in no way relieves Contractor from its responsibilities, as provided in GC-45, Protection and Restoration of Property and SC-1, Indemnification. Contractor will be fully responsible for all costs and liabilities associated with storm water pollution and temporary erosion control Work for the project.

3. Contractor will monitor the weather forecast on a daily basis. If rain is predicted within 48 hours, construction scheduling will be modified, as required, to implement BMPs prior to the onset of the rains

B. Amend ESCAPE

1. All ESCAPE amendments will be submitted to VTA for approval prior to incorporation. During the course of construction, unanticipated changes may occur, such as schedule changes, phasing changes, and staging area modifications. The ESCAPE must be revised to reflect these changes and must also be revised when a new BMP is needed. All revisions will be submitted to VTA for approval prior to incorporation.

C. Inspections

1. All SWPPP Inspections will be captured in the CloudCompli (www.cloudcompli.com) inspection software within 24-hours of performing the inspection, and inspection documentation will be formally submitted to VTA Weekly/bi-weekly/Monthly. Contractor will purchase CloudCompli licenses at a cost of $1,200 per user per year from CloudCompli (Designer to confirm cost with VTA compliance Officer) as necessary to meet this requirement, so they can be given a log-on identification and password to access the VTA's CloudCompli project dashboard.

2. All inspections, daily visual monitoring of track-out and trash areas, and BMP inspections before and after a storm event, are required to be conducted in CloudCompli.

3. All deficiencies must be corrected within 72-hours.

Designer to customize all of the below BMPs as outlined in the VTA Design Criteria Manual for Stormwater, Planting, and Irrigation (VTA DCM). Customize this section to only include the applicable BMPs and items.

D. Construction Site Management:

4. Keep materials or waste storage areas clean, well-organized, and equipped with enough cleanup supplies for the material being stored.

5. Implement spill and leak prevention procedures for chemicals and hazardous substances stored on the job site. All associated cleanup costs and related liability for spilled or leaked chemicals or hazardous substances at the job site are the responsibility of the Contractor.

6. Report minor, semi-significant, and significant or hazardous spills to the VTA immediately.

7. As soon as it is safe, contain and clean up spills of petroleum materials and sanitary and septic waste substances listed under 40 CFR, Parts 110, 117, and 302.

8. Conduct construction operations in a manner that will minimize pollution of the environment surrounding the area of the Work by all practicable means and methods. Apply specific controls as specified in the Contract Specifications and as follows:

a. Waste Materials: No waste or eroded materials will be allowed to enter natural or man-made water or sewage removal systems. Eroded materials from excavations, borrow areas, or stockpiled fill will be contained within the Work area. The Contractor will develop methods for control of erosion.

b. Burying: No burying of waste materials and debris will be permitted.

9. Provide for and maintain the flow of all sewers, drains, building or inlet connections, and all water courses which may be encountered during progress of the Work. Do not allow the contents of any sewer, drain, or building or inlet connection to flow into trenches. Immediately remove from proximity of the Work all offensive matter, using such precautions as are required by local authorities having jurisdiction.

10. The Contractor will prevent erosion of excavated areas, embankments, stockpiled earth materials, and other erodible areas, and will provide control of runoff sediment from siltation and pollution of the drainage systems.

11. Prevent erosion of excavated areas, embankments, stockpiled earth materials, and other erodible construction areas, and prevent pollution of drainage systems by diversion of storm runoff around construction activities or by trapping or retaining sediment delivered by storm runoff.

12. Provide control of construction operations so that sediment or siltation will not be introduced into the drainage systems from storm runoff.

13. If the earthwork/paving in any area has not progressed to a point where all or part of the facilities on the SWPPP for that area can be constructed, Contractor will construct such supplementary temporary erosion control facilities as are necessary to protect adjacent private and public property at all times.

14. Water pollution control measures will be constructed and functioning to prevent water pollution from areas where portions of the Contract have been completed and no further earthwork/paving is planned.

15. All egress from the site will be maintained in a dry condition, and any sediment tracked onto

streets, sidewalks, or drives will be immediately removed, and the affected area will be cleaned. VTA may order such work at any time the conditions warrant.

16. All trucks coming to the jobsite or leaving the jobsite with materials or loose debris will be loaded in a manner that will prevent dropping of materials or debris on streets. Spillage resulting from hauling operations along or across any public traveled way will be removed immediately.

17. Dust palliative will conform to the provisions in 01 57 00, Temporary Controls, of these technical specifications

E. Temporary Cover

1. Protect stockpiled materials to prevent erosion and exposure of stormwater to pollutants.

E. Erosion Control Blanket

1. Erosion Control Blanket shall conform to the provisions of Section 13, Water Pollution Control, and Section 21, Erosion Control, of the State of California 2018 Standard Specifications and to these technical specifications or as directed by VTA.

2. Erosion Control Blanket shall be furnished and installed, as specified in the technical specifications, as shown on The Plans and at the locations designated by VTA

3. Monofilament plastic mesh shall not be used.

4. Temporary blanket shall be installed at locations to control erosion on critical areas of unfinished earthwork slopes. When no longer required for the purpose as determined by VTA, temporary blanket shall be abandoned or removed as directed by VTA.

F. Temporary Hydraulic Mulch

1. The designer to select Hydraulic Mulch or Bonded Fiber Matrix (BFM) based on project type and shall conform to the provisions in Section 21, Erosion Control, of the State of California 2018 Standard Specifications and these technical specifications

G. Erosion Control (Hydroseed)

1. Erosion Control (Hydroseed) work shall include removing and disposing of weeds and applying erosion control materials including seed, fiber, commercial fertilizer, organic fertilizer, straw, and tackifier to erosion control (hydroseed) areas as shown on the Plans.

2. Erosion Control (hydroseed) shall conform to the provisions in Section 21, Erosion Control, of the State of California 2018 Standard Specifications and these technical specifications.

3. If notified by VTA that an area is ready to receive erosion control materials, start erosion control (hydroseed) work within 5 business days of the VTA notification to perform the Work.

4. Seed:

5. Seed shall conform to the provisions in Section 21, Erosion Control, of the State of California 2018 Standard Specifications and these technical specifications. Individual seed species shall

be measured and mixed in the presence of VTA.

6. Seed shall have been tested for purity and germination not more than one year prior to application of seed or said seed shall be retested at Contractor's expense.

7. Results from testing or retesting seed for purity and germination shall be furnished to VTA prior to applying seed. Non-Legume Seed. Non-legume seed shall consist of the following:

Non-Legume Seed			
Botanical Name (Common Name)	**Percent (Minimum) Purity**	**Percent (Minimum) Germination**	**lbs. per acre (Slope measurement)**
Festuca Idahoensis (Idaho Fescue)	95	85	11.0
Eschscholzia Californicum (California Poppy)	95	85	12.0
Nassella Lipida (Foothill Needlegrass)	95	85	6.5
Lotus Scoparius (Deerweed)	95	85	2.0
Nassella Pulchra (Purple Needlegrass)	95	85	1.0
		Total	32.5

8. A sample of approximately 1 oz of non-legume seed may be taken from each seed container by VTA.

H. Temporary Drainage Inlet Protection:

1. Temporary drainage inlet protection will be installed, maintained, and later removed as shown on the WPCD, shall conform to the provisions in Section 13, Water Pollution Control, of the State of California 2018 Standard Specifications, and these technical specifications, and as directed by VTA.

2. Contractor will use temporary drainage inlet protection as one of the various measures to prevent water pollution.

3. Temporary Gravel Filled Bag Dikes:

4. Temporary gravel filled bag dikes consisting of gravel bags placed in multiple layers will be installed as shown on The Plans.

5. Gravel filled bag dikes installed as part of temporary drainage inlet protection will be maintained to provide for adequate sediment holding capacity. Sediment deposits will be removed when the deposit reaches one-half of the temporary dike height. Removed sediment will be deposited within the project in such a way that it is not subject to erosion by wind or water, or as directed by VTA.

6. Sediment Filter Bags:

7. Sediment bags will be installed by removing the drainage inlet grates, placing the sediment bag in the opening, and replacing the grate to secure the sediment bag in place.

8. Sediment bags installed as part of temporary drainage inlet protection will be emptied when the restraint cords are no longer visible. The sediment bag will be emptied of material and rinsed before replacement in the catch basin or drop inlet.

9. The storage capacity of the sump area around each drain inlet will be maintained to provide for maximum capacity and as directed by VTA.

10. When no longer required for the purpose, as determined by VTA, temporary drainage inlet protection facilities will be removed. Removed facilities will become the property of Contractor and will be removed from the site of the Work

I. Temporary Perimeter Protection:

1. Sediment control will be achieved by well-planned and scheduled excavation, backfill, and paving and grinding operations and implementation of BMPs.

2. Temporary Perimeter Protection will be provided as a sediment control device at the perimeter of construction staging areas and as needed for other work areas.

3. Fiber Roll:

4. The contract price paid per linear foot for Temporary Fiber Roll must include furnishing all labor materials, tools, equipment, and incidentals and for doing all the work involved in installing, maintaining, removing and disposal of temporary fiber rolls as shown on the WPCDs shall conform to the provisions in Section 21, Erosion Control, of the State of California 2018 Standard Specifications, and as specified in these technical specifications or directed by VTA. They are to be placed at the top of the slope, face of the slope, and at grade breaks, per the following spacing (measured perpendicular to the slope):

Critical Slope/Sheet Flow Length Combinations	
Slope Percentage	Sheet Flow Length Not to Exceed
0 – 25	20 ft
25 – 50	15 ft
Over 50	10 ft

5. Fiber Rolls shall be installed approximately parallel to the slope contour across the centerline of ditch or drainage line and secured as shown on the Plans. Fiber rolls shall be installed before application of other erosion control materials.

6. Fiber rolls shall be installed to a depth of 2 in to 4 in, and at a sufficient width to hold the fiber rolls. The furrow shall be cleared of obstructions including rocks, clods, mulch, and debris greater than 1 in in diameter before installation. Fiber rolls shall be installed in the furrow and secured as shown on Plans. Excess soil from excavation of the furrow shall be disposed of uphill of the installed fiber rolls. Stakes shall be installed 24 in apart along the total length of the rolls, and 12 in from the end of each individual roll. Stakes shall be driven flush or a maximum of 2 in above the roll.

7. Fiber Rolls should be left in place until the upgradient area is permanently stabilized. Remove Fiber Roll when upgradient areas are stabilized. Fill and compact post holes and anchor trench, remove sediment accumulation, grade fence alignment to blend with adjacent ground, and stabilize disturbed area. Refer to the SC-5 cut sheet in the CASQA or Caltrans handbook.

8. No plastic mesh (monofilament wrapped) Fiber Roll is permitted on BMPs for VTA projects; specify fully biodegradable, not photodegradable, materials will be used.

9. Silt Fence

10. Silt Fence must be prefabricated and conform to the provisions in Section 96, Geosynthetics, of the State of California 2018 Standard Specifications and these technical specifications.

11. Silt fence fabric must be a prefabricated silt fence of woven polypropylene with or without an integral reinforcement layer of the same material and must have a minimum width of 36 in and a minimum tensile strength of 440 N, conforming to ASTM D4632.

12. A trench should be excavated approximately 6 in. wide and 6 in. deep along the line of the proposed silt fence (trenches should not be excavated wider or deeper than necessary for proper silt fence installation).

13. Bottom of the silt fence should be keyed-in a minimum of 12 in. Posts should be spaced a maximum of 6 ft apart and driven securely into the ground a minimum of 18 in. or 12 in. below the bottom of the trench.

14. When standard strength geotextile is used, a plastic or wire mesh support fence should be fastened securely to the upslope side of posts using heavy–duty wire staples at least 1 in. long. The mesh should extend into the trench.

15. Woven geotextile should be purchased in a long roll, then cut to the length of the barrier. When joints are necessary, geotextile should be spliced together only at a support post, with a minimum 6 in. overlap and both ends securely fastened to the post.

16. The trench should be backfilled with native material and compacted.

17. Construct the length of each reach so that the change in base elevation along the reach does not exceed 1/3 the height of the barrier; in no case should the reach exceed 500 ft.

18. Repair undercut silt fences.

19. Repair or replace split, torn, slumping, or weathered fabric. The lifespan of silt fence fabric is generally 5 to 8 months.

20. Silt fences that are damaged and become unsuitable for the intended purpose should be removed from the site of work, disposed, and replaced with new silt fence barriers.

21. Sediment that accumulates in the BMP should be periodically removed in order to maintain BMP effectiveness. Sediment should be removed when the sediment accumulation reaches 1/3 of the barrier height.

22. Silt fences should be left in place until the upgradient area is permanently stabilized. Until then,

the silt fence should be inspected and maintained regularly. Remove silt fence when upgradient areas are stabilized. Fill and compact post holes and anchor trench, remove sediment accumulation, grade fence alignment to blend with adjacent ground, and stabilize disturbed area. Refer to the SE-1 cut sheet in the CASQA handbook or SC-1 Caltrans handbook.

23. Hard Surface Guard

24. Use Hard Surface Guard™ from ERTEC®. Perimeter Sediment Control System or equivalent product for hard surfaces (such as asphalt or concrete). The intended function of the Sediment Control System for Hard Surfaces is to minimize the flow of sediment into storm drain systems.

25. Perform maintenance as required. Inspect following rainfall events and at least daily during prolonged rainfall. Maintain to provide an adequate sediment holding capacity. Sediment will be removed as needed. Removed sediment will be disposed-of outside the project or in conformance with requirements. Damage to Perimeter Sediment Control System for hard surfaces resulting from the Contractor's vehicles, equipment, or operations will be repaired at the contractor's expense. Split or torn segments will be repaired with zip-ties, 16-gauge galvanized wire or replaced. Deformed segments will be reshaped. Locations where evidence of runoff has occurred beneath the Perimeter Sediment Control System for hard surfaces will be corrected. Segments needing repair will be repaired or replaced within 24 hours of identifying the deficiency.

26. Furnish “L” shaped sediment control device with a height of 6 inches as per manufacturers recommendations. Each segment will be 7 feet long and have minimum vertical freeboard of at least 6 inches with a 4-inch hinged horizontal flap at the base, to be secured in place with pneumatically applied nails, pea gravel, gravel bags or bonding agent. Apparent Opening Size. Furnish Perimeter Sediment Control System for hard surfaces containing a filter fabric such that the Apparent Opening Size is between 200 and 250 microns. The Percentage Open Area (POA) should be greater than 20%. Structure. Furnish sediment control device manufactured from non- biodegradable materials which is UV Stable for at least 4 years. The system will comprise semi-rigid, overlapping layers of thermally extruded, apertured polymeric high-density polyethylene (HDPE) sheets, and one or more integrated filter sheets. The system will be durable, such that it can be returned to original shape when deformed on the job site. The Perimeter Sediment Control System for hard surfaces will have an integrated filter fabric. The system will comprise a gasket attached to the bottom to prevent underflow. The system will also conform to the following:

Specification	Requirements
Height (freeboard), inches, min. – sheet flow – typically 99% of perimeter	6 or 10
Mass per Unit Weight, (pounds/foot) (maximum) (6” / 10”)	0.39 / 0.50
Tensile Yield ASTM D-638 (lb/in2)	1800 - 2800
Ultimate Tensile Strength: ASTM D-638 (lb/in2)	2000 - 2800
Filter Percentage Open Area (POA) (COE 22125-86) (min %)	20
Filter Average Opening Size (AOS) (ASTM D 4751) microns	250
Ultraviolet stability (outer jacket & filter), percent tensile strength retained after 500 hours, min. ASTM Designation: D 4355 (xenon-arc lamp and water spray weathering method)	90
Gasket Weight (minimum ounces per square yard)	14.5
Life in application (years - minimum)	4
* or appropriate test method for specific polymer	

27. A copy of the manufacturer's product sheet together with instructions for installation will be furnished to VTA 5 days before installation.

28. Temporary Perimeter Protection for hard surfaces can be installed in the following alternative ways: On asphalt: Install nails flush with netting so that gasket is in good contact with surface. Install 4 to 5 nails per each seven-foot segment. Use HILTI X-ZF 1½ inch fasteners with 23 millimeter pre-mounted steel washer (X-ZF 32 P8 S23) or equivalent with automatic powder-actuated hand tool.

29. Concrete: Install anchors flush with netting so that gasket is in good contact with surface. Install 4 to 5 anchors per each seven-foot segment. Use Red Head Redi-Drive or Hammer Set "¼ x 1-1/4" anchors or equivalent. Asphalt or Concrete: Install bonding agent between gasket and surface. Use PaverBond, Liquid Nails, or other equivalent. Anchor with gravel bags or other weights until set.

J. Temporary Construction Entrance

1. Temporary construction entrance shall be constructed, maintained, and later removed as shown on WPCD, as specified in these technical specifications, and as directed by VTA. The work shall consist of furnishing all materials and installing construction entrances at points of construction ingress and egress for the purpose of reducing track out of sediments and other pollutants onto paved roadways.

2. Temporary construction entrances shall be removed immediately following completion of work at the above locations and as directed by VTA.

3. The fabric for construction entrances shall be handled and placed in accordance with the manufacturer's recommendations. A 2 ft minimum overlap will be required at adjoining pieces. Care shall be taken to install the fabric taut and aligned with as little wrinkling as possible. Should the fabric be damaged during placing, the torn or punctured sections shall be repaired as required and shall meet overlapping requirements. Damage incurred due to Contractor's vehicles, equipment or operations shall be repaired by Contractor at his expense.

4. A 3.3 ft skirt of fabric shall extend beyond the cross-sectional limits of the rock bed as shown in the CASQA BMP Handbook or as directed by VTA.

5. The temporary construction entrance shall be graded to prevent runoff from leaving the construction site and flowing onto paved roadways.

6. The temporary construction entrance shall be a minimum of 50 ft in length.

7. The rock bed shall be spread to a minimum depth of 6 in. Additional rock shall be added as directed by VTA to maintain the rock bed

K. Street Sweeping:

1. Perform street sweeping daily, prior to rain, and as needed where sediment is tracked from the active work areas onto paved areas in accordance with the CASQA BMP Handbook, during hauling operations, and to keep all paved surfaces free of sediment and erodible materials. Sweepers will be self-loading, motorized, and will have spray nozzles and vacuum apparatus. Dry brooming is not permitted.

L. Temporary Concrete Washout

1. Concrete washouts must be constructed per an approved engineering detail (reference WM-8 cut sheet in California Department of Transportation (Caltrans) handbook, or equivalent standard details), no recreational kiddie pools will be used.

2. The washout must be placed properly to avoid leaks and prevent overfill.

3. Ensure that the concrete residue solidifies prior to moving or dispose of concrete waste within a timely fashion after concrete residue solidifies.

4. Cover all washouts prior to forecast rain.

4.01 QUALITY ASSURANCE

A. Refer to SC-33, Contractor's Quality Management Plan (CQMP) for Contractor's responsibilities for Quality Assurance

B. Regulatory Requirements: Contractor to comply with provisions of the MS4 permit requirements.

5.01 RESTORATION

A. Holes, depressions, sumps, or any other ground disturbance caused by the removal of the facilities will be backfilled and repaired in accordance with the provisions in the first paragraph of Section 15-1.03A, "General," of the State of California 2018 Standard Specifications.

END OF SECTION 01 57 23

ATTACHMENTS FOLLOW: ESCAPE Template