PART 1 - GENERAL

The following specification is intended for use for the design and construction of erosion and sediment control. Erosion and sediment control, if applicable, shall meet the requirements of the Florida Department of Environmental Protection (FDEP) permit.

1.1 SCOPE

1.1.1 General

It is the intent of these Specification Requirements to provide the requirements for erosion and sediment control for the project and to provide guidelines for completing the required regulatory permit form(s).

1.1.2 Work Included

The Contractor shall be solely responsible for all sediment and erosion control measures as required by the regulating agencies, directed in the field by CCU, and as otherwise required to maintain compliance with:

- Storm Water Pollution Prevention Plan,
- National Pollutant Discharge Elimination System (NPDES) General Storm Water Permit for Construction Activity,
- Florida Department of Environmental Protection (FDEP),
- Southwest Florida Water Management District (SWFWMD),
- U.S. Army Corps of Engineers,
- Environmental Protection Agency (EPA),
- Charlotte County Community Development (CCCD)

and with all other agencies having jurisdiction.

The Contractor shall provide all labor, equipment, tools, materials, all temporary dikes, culverts, check dams, sediment traps, hay and/or straw mulch and all other associated appurtenances, services and methods necessary to insure adequate erosion and sediment control measures. These measures shall conform to the plans and specifications and all state and local requirements.

1.1.3 Location of the Work

The location of this work is as shown on the Contract Documents.

1.1.4 Coordination of the Work

The Contractor shall be responsible for the satisfactory coordination of the erosion and sediment control measures with other construction and activities in the area. Delays in work resulting from lack of such harmony shall not in any way be a cause for extra compensation by any of the parties.

1.1.5 Working Hours

The work shall be carried out in accordance with local ordinance and so as not to cause any unreasonable nuisance to affected residents. This includes the capture of water pumped from the site being dewatered. Under emergency conditions, this limitation may be waived by the consent of Charlotte county Utilities (CCU).

1.2 METHOD OF MEASUREMENT & PAYMENT

The work shall be measured and the compensation determined in the following manner:

1.2.1 Payment for silt fence as detailed shall be on a linear foot basis for the length furnished and installed. Payment shall also include the removal of the silt fence from the project site after turf is established.

1.2.2 All other erosion and sediment control measures required to complete the project shall be considered incidental to the project, unless a specific bid item is provided in the bid proposal.

1.3 REFERENCED STANDARDS (LATEST REVISION)

See section 1.1.2 for a partial list of agencies having applicable standards such as:

- Section 306 of the Clean Air Act (42USC §1857(11))
- Section 508 of the Clean Water Act (33 USC §1368)
- Executive Order 11738
- 40 CFR Part 15 of EPA regulations

Other Standards/applicable documents:

- State of Florida Erosion and Sediment Control Designer and Reviewer Manual (E&SC Manual)
- FDOT Standard Specifications
- CCCD Standard Specifications and details

1.4 PARTIAL LISTING OF RELATED SECTIONS

002240 - Dewatering
002310 - Pipe Removal, Disposal, Alteration, Modification or Pipe Abandonment
002320 - Gravity Sewer Systems
002325 - Force Mains
002330 - Low Pressure Sewer Systems
002335 - Potable Water and Reclaimed Water Mains

002345 - Fire Hydrants
002530 - Submersible Sewage Pump Lift Station-Package Design
002540 - Submersible Sewage Pump Lift Station- Standard Design
002920 - Landscaping
002930 - Grassing

Note: This is only a partial listing of related sections. The Contractor shall be responsible to review the entire contract documents.

1.5 SUBMITTALS

The Contractor shall obtain all required permits from all governing regulatory agencies such as FDEP General Permit for Stormwater Discharge for Large and Small Construction Activities (CGP) which includes a Storm Water Pollution Prevention Plan (SWPPP). Copies of all permits such as the FDEP CGP approval letter, certification page, and the Notice of Intent to Use General Permit for Stormwater From Large and Small Construction Activities (NOI) must be submitted to the County.

Additional information may be required for projects where the regulatory agency(s) deem that erosion, sedimentation or stormwater quality control problems are not be adequately handled by the submitted SWPPP. Such data may include, but not be limited to, other engineering studies, computations, schedules, and supportive data such as product design information and specifications as deemed necessary by the regulatory agency(s).

Although these standards and regulations have been closely structured after those outlined by the FDEP, the Contractor should note that compliance with one program does not fill the need to comply with the others. Compliance with all other local, state and federal regulations is the responsibility of the Contractor as it relates to the development of the site.

PART 2 - PRODUCTS

Refer to the latest revisions of the following documents:

- State of Florida Erosion and Sediment Control Designer and Reviewer Manual (E&SC Manual).
- FDOT Standard Specifications
- CCCD Standard Specifications

PART 3 - EXECUTION

3.1 STORM WATER POLLUTION PREVENTION PLAN

3.1.1 General

The Contractor shall comply with all requirements outlined in the Storm Water Pollution Prevention Plan (SWPPP) as they apply to this project and implement Best Management Practices (BMPs) identified in this SWPPP and shown on the construction plans to minimize

soil erosion, control sediment from construction activities, and protect receiving waters and storm water conveyance systems.
All storm water prevention activities shall ensure that the 29 NTU turbidity or current requirement is met.

The SWPPP does not waive the Contractor from their responsibilities to comply with all other standards, orders, or requirements by all regulatory agencies.

3.1.2 Erosion Prevention Practices

3.1.2.1 The Contractor must plan for and implement appropriate construction phasing, vegetative buffer strips, horizontal slope grading, and other construction practices that Minimize erosion, so that the inspection and maintenance requirements outlined in the SWPPP are complied with. The location of areas not to be disturbed shall be delineated (e.g. with flags, stakes, signs, silt fence etc.) on the development site before work begins.

3.1.2.2 All exposed soil areas with a continuous positive slope within 200 lineal feet of a surface water, must have temporary erosion protection or permanent cover for the exposed soil areas year round, according to the following table of slopes and time frames:

Type of Slope	Time*
Steeper than 3:1	7 days
Between 10:1 and 3:1	14 days
Flatter than 10:1	21 days

**The maximum time an area can remain open when the area is not actively being worked. The Contractor shall always comply with these requirements or the more stringent requirements of the regulatory agencies*

These areas include constructed storm water management pond side slopes, and any exposed soil areas with a positive slope to a storm water conveyance system, such as a curb and gutter system, storm sewer inlet, temporary or permanent drainage ditch or other natural or manmade systems that discharge to a surface water. Temporary stockpiles without significant silt, clay or organic components (e.g., clean aggregate stockpiles, demolition concrete stockpiles, sand stockpiles) are exempt from this requirement but must comply with Section 3.1.3.5.

3.1.2.3 The normal wetted perimeter of any temporary or permanent drainage ditch that drains water from a construction site, or diverts water around a site, must be stabilized within 200 lineal feet from the property edge, or from the point of discharge to any surface water. Stabilization must be completed within 24 hours of connecting to surface water.

3.1.2.4 Pipe outlets must be provided with temporary or permanent energy dissipation within 24 hours of connection to surface water.

3.1.3 Sediment Control Practices

3.1.3.1 Sediment control practices must minimize sediment from entering surface waters, including curb and gutter systems and storm sewer inlets.

a. Temporary or permanent drainage ditches and sediment basins that are designed as part of a treatment system (e.g., ditches with rock check dams) require sediment control practices only as appropriate for site conditions.

b. If the down gradient treatment system is overloaded, additional upgradient sediment control practices must be installed to eliminate the overloading, and the SWPPP must be amended to identify these additional practices.

c. In order to maintain sheet flow and minimize rills and/or gullies, there shall be no unbroken slope length of greater than 75 feet for slopes with a grade of 1:3 or steeper.

3.1.3.2 Sediment control practices must be established on all down gradient perimeters before any upgradient land disturbing activities begin. These practices shall remain in place until final stabilization has been established in accordance with Section 3.1.7 of the SWPPP (Final Stabilization).

3.1.3.3 The timing of the installation of sediment control practices may be adjusted to accommodate short-term activities such as clearing or grubbing, or passage of vehicles. Any short-term activity must be completed as quickly as possible and the sediment control practices must be installed immediately after the activity is completed. However, sediment control practices must be installed before the next precipitation event even if the activity is not complete.

3.1.3.4 All storm drain inlets must be protected by appropriate BMPs during construction until all sources with potential for discharging to the inlet have been stabilized.

3.1.3.5 Temporary soil stockpiles must have silt fence or other effective sediment controls, and cannot be placed in surface waters, including storm water conveyances such as curb and gutter systems, or conduits and ditches.

3.1.3.6 Vehicle tracking of sediment from the construction site must be minimized by BMPs such as stone pads, concrete or steel wash racks, or equivalent systems. Street sweeping must be used if such BMPs are not adequate to prevent sediment from being tracked onto the street (see Section 3.1.5.3.d).

3.1.3.7 The Contractor must install temporary (or permanently) sedimentation basins where ten (10) or more acres of disturbed soil drain to a common location prior to the runoff leaving the construction site or entering surface waters. The Contractor is encouraged, but not required, to install temporary sediment basins where appropriate in areas with steep slopes or highly erodible soils even if less than ten (10) acres drains to one area. The basins must be designed and constructed according to the following requirements:

a. The basins must provide storage below the outlet pipe for a calculated volume of runoff from a 2 year, 24 hour storm from each acre drained to the basin, except that in no case shall the basin provide less than 1800 cubic feet of storage below the outlet pipe from each acre drained to the basin.

b. Where no such calculation has been performed, a temporary (or permanent) sediment basin providing 3,600 cubic feet of storage below the outlet pipe per acre drained to the basin, shall be provided where attainable until final stabilization of the site.

c. Temporary basin outlets must be designed to prevent short-circuiting and the discharge of floating debris. The basin must be designed with the ability to allow complete basin drawdown (e.g., perforated riser pipe wrapped with filter fabric and covered with crushed gravel, pumps or other means, (see Section 3.1.4) for maintenance activities, and provide a stabilized emergency overflow to prevent failure of pond integrity. Energy dissipation must be provided for the basin outlet (see Section 3.1.2.4).

d. The temporary (or permanent) basins must be constructed and made operational concurrent with the start of soil disturbance that is upgradient of the area and contributes runoff to the pond.

e. Where the temporary sediment basin is not attainable due to site limitations, equivalent sediment controls such as smaller sediment basins, and/or sediment traps, silt fences, vegetative buffer strips, or any appropriate combination of measures are required for all down slope boundaries of the construction area and for those side slope boundaries deemed appropriate as dictated by individual site conditions. In determining whether installing a sediment basin is attainable, the Contractor must consider public safety and may consider factors such as site soils, slope, and available area on site. This determination must be documented in the SWPPP.

3.1.4 Dewatering and Basin Draining

3.1.4.1 Dewatering or basin draining (e.g., pumped discharges, trench/ditch cuts for drainage) related to the construction activity that may have turbid or sediment laden discharge water must be discharged to a temporary or permanent sedimentation basin on the project site whenever possible. If the water cannot be discharged to a sedimentation basin prior to entering the surface water, it must be treated with the appropriate BMPs, such that the discharge does not adversely affect the receiving water or downstream landowners. The Contractor must ensure that discharge points are adequately protected from erosion and scour. The discharge must be dispersed over natural rock riprap, sand bags, plastic sheeting or other accepted energy dissipation measures. Adequate sedimentation control measures are required for discharge water that contains suspended solids.

3.1.4.2 All water from dewatering or basin draining activities must be discharged in a manner that does not cause nuisance conditions, erosion in receiving channels or on downslope properties, or inundation in wetlands causing significant adverse impact to the wetland.

3.1.5 Inspections and Maintenance

3.1.5.1 The Contractor shall be responsible for routinely inspecting the construction site once every seven (7) days during active construction and within 24 hours after a rainfall event greater than 0.5 inches in 24 hours. Any deficiencies found during the inspection shall be corrected within seven days of the inspection report unless otherwise noted.

3.1.5.2 All inspections and maintenance conducted during construction must be recorded in writing. The Contractor shall provide copies of these records to the CCU.

Records of each inspection and maintenance activity shall include:

a. Date and time of inspections;

b. Name of person(s) conducting inspections;

c. Findings of inspections, including recommendations or corrective actions;

d. Corrective actions taken (including dates, times, and party completing maintenance activities);

e. Date and amount of all rainfall events greater than 1/2 inch (0.5 inches) in 24 hours; and

f. Documentation of changes made to the SWPPP.

3.1.5.3 All erosion prevention and sediment control BMPs must be inspected to ensure integrity and effectiveness. All nonfunctional BMPs must be repaired, replaced, or supplemented with functional BMPs. The Contractor must investigate and comply with the following inspection and maintenance requirements:

a. All silt fences must be repaired, replaced, or supplemented when they become nonfunctional or the sediment reaches 1/3 of the height of the fence. These repairs must be made within 24 hours of discovery, or as soon as field conditions allow access.

b. Temporary and permanent sedimentation basins must be drained and the sediment removed when the depth of sediment collected in the basin reaches 1/2 the storage volume. Drainage and removal must be completed within 72 hours of discovery, or as soon as field conditions allow access (see Section 3.1.4).

c. Surface waters, including drainage ditches and conveyance systems, must be inspected for evidence of sediment being deposited by erosion. The Contractor must remove all deltas and sediment deposited in surface waters, including drainage ways, catch basins, and other drainage systems, and restabilize the areas where sediment removal results in exposed soil. The removal and stabilization must take place within seven (7) days of discovery unless precluded by legal, regulatory, or physical access constraints. The Contractor shall use all reasonable efforts to obtain access. Precluded, removal and stabilization must take place within seven (7) calendar days of obtaining access. The Contractor is responsible for contacting all local, regional, state and federal authorities and receiving any applicable permits, prior to conducting any work.

d. Construction site vehicle exit locations must be inspected for evidence of off-site sediment tracking onto paved surfaces. Tracked sediment must be removed from all off-site paved surfaces, within 24 hours of discovery, or if applicable, within a shorter time to comply with Section 3.1.3.6.

e. The Contractor is responsible for the operation and maintenance of temporary and permanent water quality management BMPs, as well as all erosion prevention and sediment control BMPs, for the duration of the construction work at the site. The Contractor is responsible until CCU or another Contractor has assumed control over all areas of the site that have not been finally stabilized or the site has undergone final stabilization, and a National Pollutant Discharge Elimination System (NPDES) Stormwater Notice of Termination (NOT) has been submitted to the FDEP.

f. If sediment escapes the construction site, off-site accumulations of sediment must be removed in a manner and at a frequency sufficient to minimize off-site impacts (e.g., fugitive sediment in sheets could be washed into storm sewers by the next rain and/or pose a safety hazard to users of public streets).

3.1.5.4 All infiltration areas must be inspected to ensure that no sediment from ongoing construction activities is reaching the infiltration area and these areas are protected from compaction due to construction equipment driving across the infiltration area.

3.1.5.5 Repair all damages caused by soil erosion or construction equipment at or before the end of each work day.

3.1.5.6 Sediment shall be removed from sump areas. The sediment shall be placed in such a manner that it will not erode from the site. The sediment shall not be deposited downstream from the embankment or in or adjacent to a stream or flood plain.

3.1.5.7 After construction is completed and areas are seeded and/or sodded in accordance with CCU specification 002930 “Grassing”, maintenance is limited to visual inspections on a routine basis. Any damage to the berm shall be repaired at once and re-sodded and/or re-seeded. If the level of water is being maintained over the expected draw down time, the outfall system shall be cleaned and repaired.

3.1.6 Pollution Prevention Management Measures

3.1.6.1 The Contractor shall implement the following pollution prevention management measures on the site:

a. Solid Waste: Collected sediment, asphalt and concrete millings, floating debris, paper, plastic, fabric, construction and demolition debris and other wastes must be disposed of properly and must comply with FDEP disposal requirements.

b. Hazardous Materials: Oil, gasoline, paint and any hazardous substances must be properly stored, including secondary containment, to prevent spills, leaks or other discharge. Restricted access to storage areas must be provided to prevent vandalism. Storage and disposal of hazardous waste must be in compliance with FDEP regulations.

c. External washing of trucks and other construction vehicles must be limited to a defined area of the site. Runoff must be contained and waste properly disposed of. No engine degreasing is allowed on site.

3.1.7 Final Stabilization

The Contractor must ensure final stabilization of the site. The Contractor must submit a NOT within 30 days after final stabilization is complete or CCU or another Contractor has assumed control over all areas of the site that have not undergone final stabilization. Final stabilization can be achieved in one of the following ways:

3.1.7.1 All soil disturbing activities at the site have been completed and all soils must be stabilized by a uniform perennial vegetative cover with a density of 100 percent over the entire pervious surface area, or other equivalent means necessary to prevent soil failure under erosive conditions and:

a. All drainage ditches, constructed to drain water from the site after construction is complete, must be stabilized to preclude erosion;

b. All temporary synthetic, and structural erosion prevention and sediment control BMPs (such as silt fence) must be removed as part of the site filial stabilization; and

c. The Contractor must clean out all sediment from conveyances and from temporary sedimentation basins that are to be used as permanent water quality management basins. Sediment must be stabilized to prevent it from being washed back into the basin, conveyances or drainage ways discharging off-site or to surface waters. The cleanout of permanent basins must be sufficient to return the basin to design capacity.

3.2 SILT FENCE

3.2.1 General

The Contractor shall provide silt fence as shown on the plans and as directed in the field by the Engineer. The Contractor shall remove all silt fences from the project site after the Engineer has approved the turf establishment.

3.3 WETLAND PROTECTION

In areas of Construction adjacent to wetlands, the following shall be performed:

3.3.1 The actual wetland and required buffers, as shown on the plans, must be Roped off prior to the start of any construction activity adjacent to said areas.

3.3.2 Prior to the placement of any fill material adjacent to wetlands or buffer areas, a siltation barrier shall be constructed. An accepted alternate barrier would be a line of hay bales.

3.3.3 No rim ditching of the wetlands shall be performed. Water levels in the Wetlands should be maintained.

3.3.4 In areas of wetlands in which work is to be performed, such areas must be clearly staked and roped off. Along such limits, a siltation barrier must be constructed. The use of small equipment in these areas is recommended.

3.3.5 The Contractor shall be responsible for the maintenance of these barriers. Barriers shall remain in place until areas are stabilized.

3.3.6 If damage is done to the wetland area, the engineer shall be notified immediately. The Contractor is responsible for any damage to protected areas.

3.3.7 In areas where impacts will be performed in wetlands, such areas shall be stripped of existing material and stockpiled for use in the re-creation of these areas or in littoral zones.

3.4 EARTH MOVING ACTIVITIES

3.4.1 The Contractor shall exercise care to preserve the natural landscape and Shall conduct his/her construction operations so as to prevent any unnecessary Destruction, scarring or defacing of the natural surroundings in the vicinity Of the work area. Except where clearing is required for permanent work, for Approved construction roads or for excavation operations, all trees, native Shrubbery and vegetation shall be preserved and shall be protected from Damage which may be caused by the Contractor's construction operations And equipment.

3.4.2 The first stage of the earth moving activity shall be confined to the excavation of the storm water facility.

3.4.3 Topsoil should be taken from the construction areas and should be stockpiled for reuse in finished grading. Stockpiles should be placed so as Not to add any additional sediment to the construction. The stockpiles should be mulched and/or seeded when exposed beyond thirty (30) days.

3.4.4 Graded areas are to be seeded and/or sodded within twenty one (21) days following Earth moving procedures. If the time of year is not conducive for permanent seeding, temporary mulch and/or seeding shall be used.

3.4.5 Temporary diversion berms and/or barriers shall be removed only after the Construction of those areas directed to the berms and/or barriers have been completed.

3.4.6 The silt collection ponds should be removed and/or regraded for Permanent use, as the final grading and seeding overlap the area used by same.

3.5 FILLS

3.5.1 Land to be cut or filled should be cleared of trees, stumps, roots, brush, Boulders, sod and debris.

3.5.2 Fill areas should be scarified, keyed and drained.

3.5.3 Fill material should be free of sod, roots, or other decomposable material.

3.5.4 The placing and spreading of fill material should be started at the lowest Point.

3.5.5 Generally, a 6:1 slope should be used unless specific engineering data shows a steeper slope is stable. Slopes of 4:1 or flatter are desirable for erosion control and maintenance.

3.5.6 Fills should be seeded and/or mulched immediately upon completion of Earth placement.

3.5.7 Water management systems should be provided to prevent water concentration and eroding the face of the slope. Keep surface water off the face of the slope.

3.6 CUTS

3.6.1 Diversions should be constructed at top of the slopes prior to cutting operations to convey water from face of slope.

3.6.2 Steepness of cuts will depend on soil type and design; however, cut slopes of 4:1 or flatter are desirable for erosion control and stability.

3.6.3 Cut slopes should be benched to provide access for seeding and mulching Equipment.

3.6.4 Cut slopes should be seeded and/or mulched immediately after removal of earth.

3.7 TEMPORARY SEDIMENT BASINS AND PERMANENT STORM WATER BASINS

3.7.1 Site preparation

Areas under the embankment and any structural works shall be cleared, grubbed and stripped of topsoil to remove trees, vegetation, roots and other objectionable materials in order to facilitate clean-out and restoration, the pool area (measured at the top of the spillway) will be cleared of all brush and trees.

3.7.2 Cut-off trench

A cut-off trench, when pond depths are in excess of three feet, shall be excavated along the centerline of earth fill embankments. The minimum depth shall be two feet.

The cut-off trench shall extend up both abutments to the riser crest elevation. The minimum bottom depth shall be four feet, but wide enough to permit operation of excavation and compaction equipment. The side slopes shall be no steeper than 3:1. Compaction requirements shall be the same as those for the embankment. The trench shall be dewatered during the backfilling-compacting operations.

3.7.3 Embankment

The fill material shall be taken from approved borrow areas. It shall be clean soil free of roots, woody vegetation, over-sized stones, rocks or other objectionable material. Areas on which fill is to be placed shall be scarified prior to placement of fill. Fill material shall be placed in six to eight inches thick continuous layers over the entire length of the fill. Compaction shall be obtained by routing hauling equipment over the fill so that the entire surface of each layer of the fill is traversed by at least one wheel of tread truck of the equipment or by the use of a compactor. The embankment shall be constructed to an elevation of 10% higher than the design height to allow for settlement if compaction is obtained with hauling equipment. If compactors are used for compaction, the overbuild may be reduced to not less than 5%.

3.7.4 Pipe Spillways

The riser shall be securely attached to the barrel of the outfall pipe. The barrel and riser shall be placed on a firm, smooth soil foundation. The connection between the riser and riser base shall be watertight. The fill material around the pipe spillway shall be placed in six inch layers and compacted under the shoulders and around the pipe to at least the same density as the adjacent embankment. Hand compacted backfill shall be placed over the pipe spillway before crossing it with Construction equipment.

3.7.5 Erosion Pollution Control

Construction operations shall be carried out in such a manner that erosion and Water pollution will be minimized. State and local laws concerning pollution abatement shall be complied with.

END OF SECTION