Installation Procedures

Note: To ensure proper installation, we recommend a brief pre-construction meeting at the job site involving the installer, project engineer and an STS representative in order to review the site plans, installation procedures and discuss any site-specific issues. Please refer to the following steps to assure the STS is installed to manufacturers specifications.

1. **Site Storage and Handling Precautions**
   a. Store tanks on level surface, avoid areas with stumps, large rocks or other obstacles that may damage or puncture tank bottoms.
   b. Keep lids securely fastened to prevent warping and debris from accumulating within the inner sedimentation chambers.
   c. Do Not attempt to move or lift tanks with standing water inside. Pump all standing water from tanks before moving or lifting.
   d. Handle with Care! Only lift tanks with a three-point sling, lifting bar, forklift with 8 ft min. bottom plate or other technique capable of carrying tanks in a level, balanced position.

2. **Excavate** pit for STS tanks, associated connection pipes and related structures.
   a. Size to be determined by the system layout. A minimum of 2 ft. clearance is recommended between sidewall and edge of tanks.
   b. Depth of excavation should allow for adequate base material below tanks, 12” minimum is typical.
   c. See engineer's specifications for actual dimensions and elevations.

3. **Level excavation base** and prepare for setting of tanks.
   a. Using sand or crushed stone, level bottom of the excavation to the design elevation of the base of the STS tanks.
   b. Note: A sand or clean gravel base is preferable over crushed stone, as the tank feet must sink in to achieve the design elevation.
   c. In tight situations, it is helpful to mark tank locations on the leveled base using a (9.75ft diameter) circular template.

4. **Install tanks**
   a. Carefully lower STS tanks into position using our lifting bar, a three-point sling hanging from a backhoe or, in sensitive areas, place by hand.
   b. Avoid dropping, banging or rough handling of tanks to prevent damage to internal components or outer walls. Punctured tanks will need to be repaired or replaced.

5. **Connect external inflow & discharge manifold pipes**
   a. All connections, fittings and valves must be durable and watertight.
   b. Pipe consists of 4-inch diameter schedule 40 PVC, or equivalent.

c. Assemble and connect discharge manifold pipes to outlet (lower) ports on STS tanks.
d. Reduce detention system outlet to accommodate 4-inch pvc.
e. Assemble and connect inflow manifold pipes (from detention) to STS inlets (upper ports on STS tanks).
f. Set elevations, level and support pipe manifolds using crushed stone mounds or equivalent. See engineer's plans for actual elevations.

6. **Install flow control valves**.
   a. Valves are generally located at system inlet and outlet locations.
   b. Valves must be accessible to allow flow rate setting, monitoring and shut-off.
   c. See engineering plans for valve and valve assembly details.

7. **Add stone** to wetland containers.
   a. Stone is 3/8-inch rounded. Do not substitute with crushed or larger stone, the plants will not survive in larger media.
   b. Stone must be clean, washed prior to delivery to remove fines.
   c. Replace STS lid to keep stone out of sedimentation tank.
   d. Cover lid with geo-technical fabric for protection and to prevent debris from clogging threaded bolt openings.
   e. Fill inside STS tanks to an elevation approximately 4-6" below STS rim (~6.5yards per STS tank).
   f. Avoid getting dirt/debris into outer wetland area during filling.

8. **Backfill** around tanks.
   a. Take care not to deform tanks when backfilling the excavation. If possible, progressively backfill around tanks during filling.
   b. Backfill material must be moderate to well-drained gravel, course sand or stone. See engineer's material specifications if tank rim is located significantly below surrounding surface elevations.
   c. Finished grade elevations around the tanks should be about 3-inches below STS rim to prevent surface water flooding tanks.
   d. If tank rim elevation is set significantly below surrounding grade, use maximum slope of 3:1. If 3:1 must be exceeded use rip rap or retaining wall as necessary.

9. **Install plants**, or make arrangements with plant installer.
   a. 24 plants per tank.
   b. Species vary by region and local conditions.
   c. Communicate with STS and/or local nursery for assistance.
   d. Plant in peat pots or burlap bags with starter soil around root zone.
   e. Straw can be spread over top of stone to help hold in moisture during plant establishment period.
   f. Watering may be necessary during adaptation period to assure establishment of plant root zone.

10. **Erosion control**
    a. Secure all areas sloping toward the STS tanks using erosion control blankets, silt fence w/ hay bails or other reliable means.
    b. Plant appropriate ground cover or erosion control mix as soon as possible in order to stabilize areas draining towards the tanks.
    c. If erosion is a concern during or after construction, surround the STS tanks with silt fence, SedimentStop, straw wattles or other equivalent material to prevent introduction of soil and debris into wetland area of tanks.

11. **Setting Discharge Flow Rate**
    a. The discharge flow rate is generally set at 2 gallons/minute/tank, or per engineer's specification. Example: 5 tanks connected together = 10 gals/min at the common discharge valve.
    b. Close inlet and outlet valves and fill tanks to a depth of 2.5 feet.
    c. Note: since flow rate will decrease with the elevation of water in the tanks, rate must be set while water level inside the tanks is between 2.0 and 2.5 ft.
    d. If water is not available on site, the system can be left with the outlet control valve closed in order to allow the system to fill during subsequent rain events. During this time the tanks will be effectively off-line.
    e. Measure flow rate using a timed-volume measurement of the outflow and adjust using the outlet ball valve. It may take several attempts to get the valve set correctly.
    f. Once established, mark valve arm position on valve body with permanent marker for reference.
    g. If the outlet (discharge) manifold or pipe is fitted with an orifice plate to control flow (instead of a valve), it is the engineer's responsibility to ensure that the orifice is sized correctly and yields the correct flow volume.