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Installation Manual

CONCRETEPRODUCTS

# Envirokeeper® Installation Manual

CXT® Inc. is a licensee of Envirokeeper, LLC.

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## I. Introduction to Envirokeeper®

CXT®, Inc. is dedicated to the success of your project. The Envirokeeper® System Installation Guide is a reference to assist in your success installing an Envirokeeper System.

In all instances, the Envirokeeper System shall be installed in accordance with AASTM C891, "Standard Practice for Installation of Underground Precast Utilities Structures." and all drawings, and contract documents or otherwise specified.

## II. Preparing the Site for Envirokeeper

### a. Excavation

- > Site must be accessible for tractor trailer deliveries immediately adjacent to the Envirokeeper installation footprint. Discuss staging, delivery cycling and timing with your CXT Envirokeeper representative.
- > Excavation work and subgrade preparation shall be completed prior to delivery of the Envirokeeper system at the location and following methods as shown on the plans.
- > Depth of excavation shall be to native, undisturbed subgrade and will include required subgrade material thickness (aggregate bearing layer, if required), height of any required footings, modules and slabs, and cover to grade (including pavement).
- > Size of excavation shall include sufficient access for backfilling and compaction, with a minimum of a 2' over dig.
- > Excavation trench sloping shall follow OSHA requirements.
- > Site shall be graded according to project plans including drainage to prevent hydrostatic pressure against the outside of modules.

### b. Subgrade

- > Contractor to ensure adequate bearing capacity of subgrade according to plans.
- > Install compacted stone base (aggregate bearing layer) as specified on the plans. Aggregate bearing layer shall be level and extend to the full extent of the 2' over-dig.
- > 8 oz non-woven filter fabric shall be installed on the aggregate bearing layer as shown on the plans.

## III. Envirokeeper Delivery

### a. Access:

- > Site must be accessible for tractor trailer deliveries immediately adjacent to the Envirokeeper installation footprint. Installation methods will impact how close trailers will need to get to the excavation.

### b. Staging:

- > Efficient and successful installation requires planned delivery coordination. Discuss staging, delivery cycling and timing with your CXT Envirokeeper representative.

## IV. Envirokeeper System Installation

### a. Equipment, Rigging, Handling:

- > Contractor to have erection equipment (crane or excavator) of sufficient capacity to pick and maneuver all system components from tractor trailers, into place without damage.
- > Each Envirokeeper component is designed to be lifted from embedded lifters as shown on the plans.
- > Envirokeeper uses the A-Anchor Lifting System from Conac which allows the use of standard hooks or clevises for lifting.
- > Contractor is responsible for having appropriate hooks or clevises for use with the cast-in A-Anchors. Discuss with your Envirokeeper representative,
- > Proper rigging is required to ensure rigging, embedded lifters and the Envirokeeper products are not excessively loaded or damaged during handling. Proper rigging includes slings of sufficient length to provide minimum 60-degree angles to the top of each component when connected to the embedded lifters. Rigging that equalizes load amongst all lifters for a given pick is also recommended.

### b. Component Installation:

- > Contractor shall use approved plans to establish correct location of each Envirokeeper system component.
- > Modules:
  - > Beginning at 1 corner of the system, set 1st bottom module in place while confirming it is level.
  - > For Clam-Shell style modules (tops and bottoms), we recommend setting the top module on each bottom module before moving on to adjacent modules in order to maintain best-fit alignment of successive modules.
  - > Prior to setting top modules, install a continuous butyl sealant such as Conseal 102, or equal as shown on the drawings (and provided by CXT). Butyl sealant shall be installed according to manufacturer's instructions, with minimum several inches in a side-by-side overlap for splicing.
  - > Set consecutive bottom and top modules in place while ensuring module rows are level and straight.
  - > As shown on the plans, wrap vertical and horizontal joints between modules with minimum 8" wide butyl joint wrap as provided by CXT.
  - > \*NOTE: If successive rows of modules go directly against each other, we recommend leaving a minimum ¼" gap between rows of modules to provide allowance for standard tolerances in installation and module fabrication.
- > Span slabs:
  - > Install a continuous butyl sealant such as Conseal 102, or equal on the 2 top module surfaces to receive the span slab edges. Butyl sealant should be installed per manufacturer's instructions, with minimum several inches in a side-by-side overlap for splicing.
  - > Once consecutive rows of modules are in place, span slabs can be installed at locations shown on the plans, spanning from one row of modules across the gap to the next row of modules. Confirm minimum 6" bearing on each long edge.
- > End Caps:
  - > End Cap sections shall be lifted using threaded lifters. Discuss with CXT Envirokeeper representative.
  - > Install butyl sealant, or equal, in a single row around the perimeter of the surface to receive the End Cap section. Butyl sealant should be installed per manufacturer's instructions, with minimum several inches in a side-by-side overlap for splicing.
  - > Pre-drill and install Titen Anchors (or equivalent as provided by CXT) to attach end caps in place. Anchors shall be tightened to appropriate Ft Lbs of torque. Do not overtighten as this could damage units.
- > After installation of modules, install inlet and outlet pipes at times that are appropriate before/during/after the backfilling process through cast in holes as shown on plans. Use specified sealing methods for piping as indicated on the plans.

## V. Backfill and Closeout

- > Native excavated soil may be used for system perimeter backfill provided that the soil meets the requirements of ASTM C1675, Section 10. The density of the compacted in-place material must not exceed 120 pcf.
- > Engineered fill must be arranged in horizontal layers not to exceed 8" of loose thickness, moisture conditioned to above minimum design moisture content, and compacted resulting in a minimum relative compaction of 90 percent of the ASTM D 1557 maximum dry density.
- > All backfill must be mechanically compacted.
- > Engineered fill must be arranged in vertical increments uniformly around the perimeter of the Envirokeeper system.
- > Special attention must be given when compacting adjacent to pipe penetrations, seals, and or waterproofing of the system.
- > Install access openings (grade rings, castings, etc.) as shown on the plans.
- > Once backfilling is complete, overburden and pavement can be completed pursuant to project specifications. Contractor to confirm that rolling equipment used to install overburden does not exceed design loading of the Envirokeeper system.



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