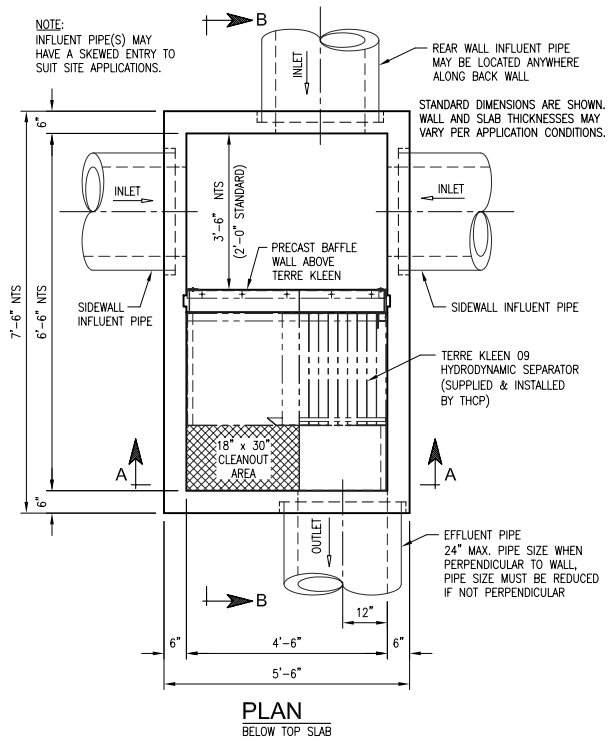
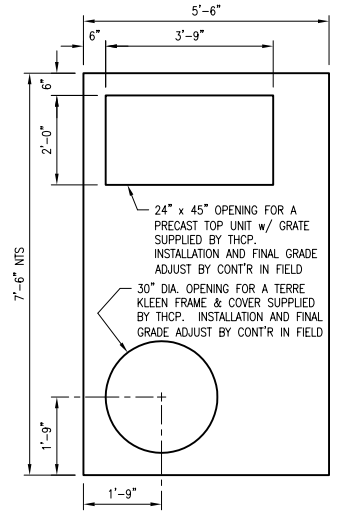
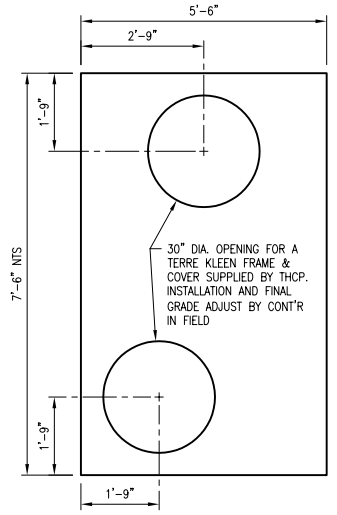



PLAN
BELOW TOP SLAB

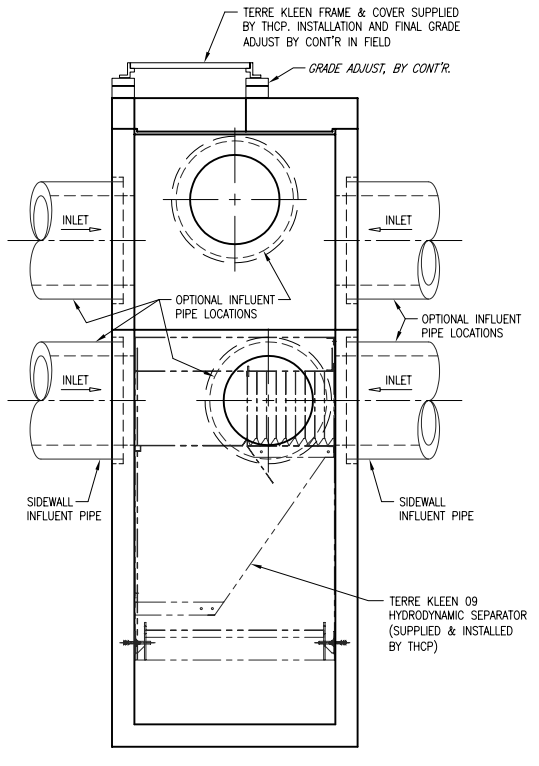



PLAN - TOP SLAB
(INLET & TERRE KLEEN FRAME & COVER)

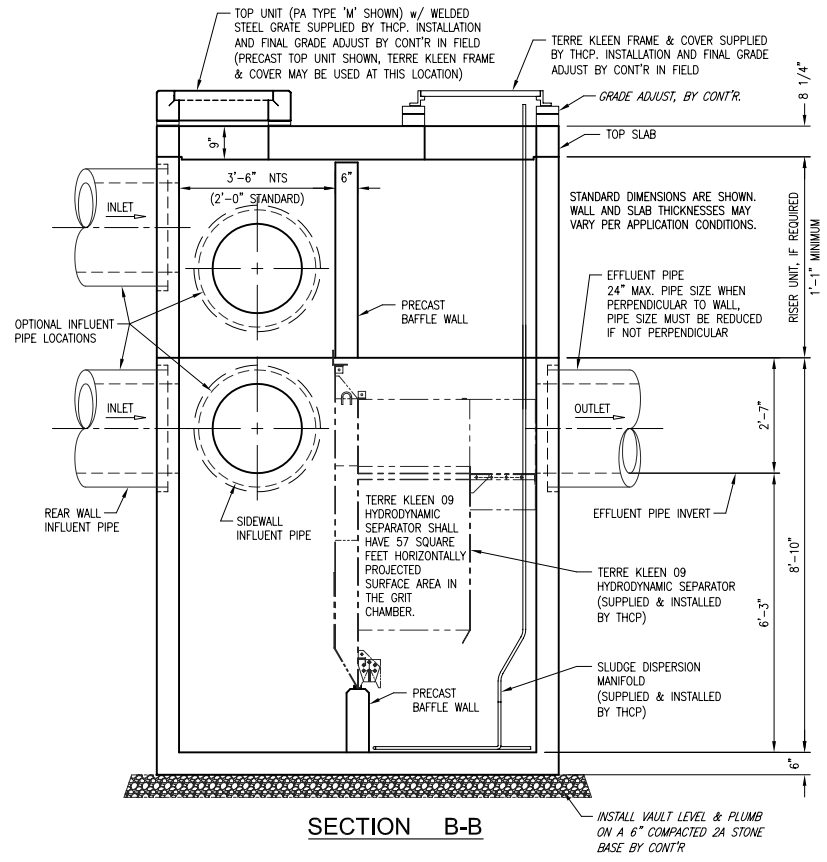



PLAN - TOP SLAB
(2 TERRE KLEEN FRAMES & COVERS)

# TOP SLAB LAYOUT OPTIONS




SECTION A-A




SECTION B-B

| Terre Kleen Model | Settling area In sedimentation chamber | Design[1] Capacity $d_{50}$=50 Micron | Design flow head loss | Design[1] Capacity $d_{50}$=110 Micron | Design flow head loss | Design[1] Capacity $d_{50}$=150 Micron | Design flow head loss | Design[1] Capacity $d_{50}$=200 Micron | Design flow head loss | Peak flow | Peak[2,4] head loss | max pipe Diam. | Standard[5] Sediment Storage | Standard[5] Trash and Oil volume | Minimum grade to pipe invert[3] | Standard pipe invert to device bottom |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TK01 | 8 SqFt | 0,1 cfs | < 0,50 In. | 0,5 cfs | < 0,50 In. | 1,0 cfs | < 0,50 In. | 1,7 cfs | < 0,50 In. | 2,5 cfs | 0,08 In. | 18 In. | 66 CF | 192 Gallon | 2,52 Ft | 6,25 Ft |
| TK02 | 13 SqFt | 0,2 cfs | < 0,50 In. | 0,8 cfs | < 0,50 In. | 1,6 cfs | < 0,50 In. | 2,8 cfs | < 0,50 In. | 4,0 cfs | 0,21 In. | 18 In. | 66 CF | 123 Gallon | 3,27 Ft | 6,25 Ft |
| TK05 | 32 SqFt | 0,4 cfs | < 0,50 In. | 2,1 cfs | < 0,50 In. | 3,9 cfs | < 0,50 In. | 6,9 cfs | < 0,50 In. | 10,0 cfs | 0,56 In. | 18 In. | 132 CF | 236 Gallon | 3,27 Ft | 6,25 Ft |
| TK09 | 57 SqFt | 0,8 cfs | 0,09 In. | 3,7 cfs | 1,93 In. | 6,9 cfs | 6,70 In. | 12,3 cfs | 21,30 In. | 15,0 cfs | 33,00 In. | 24 In. | 80 CF | 140 Gallon | 3,27 Ft | 6,25 Ft |
| TK18 | 115 SqFt | 1,5 cfs | 0,10 In. | 7,5 cfs | 2,44 In. | 13,9 cfs | 8,37 In. | 24,7 cfs | 26,44 In. | 28,0 cfs | 35,00 In. | 36 In. | 116 CF | 203 Gallon | 3,27 Ft | 6,25 Ft |
| TK27 | 172 SqFt | 2,3 cfs | 0,11 In. | 11,2 cfs | 2,71 In. | 20,8 cfs | 9,36 In. | 37,0 cfs | 29,62 In. | 42,0 cfs | 39,00 In. | 42 In. | 151 CF | 265 Gallon | 3,27 Ft | 6,25 Ft |
| TK36 | 230 SqFt | 3,1 cfs | 0,13 In. | 15,0 cfs | 2,94 In. | 27,8 cfs | 10,11 In. | 49,5 cfs | 32,06 In. | 56,0 cfs | 42,00 In. | 52 In. | 216 CF | 327 Gallon | 3,27 Ft | 6,25 Ft |
| TK45 | 288 SqFt | 3,9 cfs | 0,13 In. | 18,7 cfs | 3,08 In. | 34,9 cfs | 10,71 In. | 62,0 cfs | 33,81 In. | 70,0 cfs | 44,00 In. | 60 In. | 257 CF | 389 Gallon | 3,27 Ft | 6,25 Ft |
| TK54 | 346 SqFt | 4.7 cfs | 0.16 In. | 22.5 cfs | 3,58 In. | 41.9 cfs | 12,41 In. | 74,5 cfs | 39,25 In. | 77,0 cfs | 43,00 In. | 72 In. | 299 CF | 452 Gallon | 3,27 Ft | 6,25 Ft |

1. Design flow rates based on Weighted Removal according to NJDEP lab protocol and adjusted for a particle density 140lbs/cft and 60 degree Fahrenheit water temperature.
2. Peak headloss is defined by the standard insert clearance and defines peak flow. Higher flows at reduced treatment rates are optional and avoid external by
3. Add 9" for grade adjust and frame and cover, otherwise cast into the lid.
4. Excess design overflow through a screen is possible above insert.
5. Special designs are available to increase these values.

## TERRE KLEEN - GENERAL NOTES:

THE TERRE KLEEN ™ (US PATENT 6,676,832 B2) HYDRODYNAMIC SEPARATOR AS DESIGNED, MANUFACTURED AND INSTALLED BY TERRE HILL STORMWATER SYSTEMS.
CONTACT: TERRE HILL STORMWATER SYSTEMS AT P.O. BOX 10, 485 WEAVERLAND VALLEY ROAD, TERRE HILL, PA 17581 (PHONE 1-800-242-1509) OR WWW.TERRESTORM.COM

CONCRETE: f'c = 5,000 PSI @ 28 DAYS, WITH ASTM C-33 NO. 57 OR NO. 67 COARSE AGGREGATE.

DEFORMED STEEL CONFORMS TO ASTM A615 GRADE 60. WELDED WIRE FABRIC CONFORMS TO ASTM A185. DEFORMED WELDED WIRE FABRIC OF EQUAL SIZE MAY BE SUBSTITUTED FOR SMOOTH WELDED WIRE FABRIC AND SHALL CONFORM TO ASTM A497.

BITUMEN CONSEAL CS-102B JOINT MATERIAL MANUFACTURED BY CONCRETE SEALANTS, INC. AND CONFORMS TO FEDERAL SPECIFICATION SS-S-210A. JOINT SEALANT MUST BE INSTALLED IN ACCORDANCE WITH CONCRETE SEALANTS, INC. RECOMMENDATIONS.

ANNULAR SPACE BETWEEN PIPE AND HOLE TO BE FILLED, BY OTHERS, WITH AN APPROVED NON-SHRINK GROUT OR CONCRETE AS SPECIFIED.

ALL PIPES TO BE CUT FLUSH WITH INSIDE WALL, AFTER GROUT HAS DRIED.

DROP-IN ANCHORS TO BE HILTI 316 STAINLESS STEEL KWIK BOLT II AS MANUFACTURED BY HILTI CORP.

UNI LIFT ANCHORS MANUFACTURED BY UNIVERSAL FORM CLAMP COMPANY, OR EQUAL. UNI LIFT ANCHORS TYPICAL FOR HANDLING.

MANHOLE FRAMES AND COVERS SUPPLIED BY TERRE HILL STORMWATER SYSTEMS. INSTALLATION AND GRADE ADJUST BY OTHERS. COVERS TO BE MARKED WITH "TERRE KLEEN STORMWATER TREATMENT SYSTEM" LOGO.

INSTALLATION AND MAINTENANCE MUST BE IN ACCORDANCE WITH THE MANUFACTURERS WRITTEN INSTRUCTIONS AND COMPLY WITH LOCAL ORDINANCES AND NPDES PHASE II REGULATIONS.

Terre Kleen TK09 Performance, Design and Installation Specifications

Terre Kleen is a HYDRODYNAMIC SEPARATOR consisting of preinstalled, stacked inclined plates housed inside a precast structure. Terre Kleen removes pollutants by separating sediment and floatables such as oils, grease, trash and debris from stormwater. Terre Kleen features are as follows:

1. capture & permanently retain 100 percent of floatable trash & debris at all flows
2. capture & permanently retain > 90 percent of floatable free oil, grease and Total Petroleum Hydrocarbons (TPH) at all flows; unit shall be capable of receiving "oil sorbents" to permanently remove captured oil, grease and TPH
3. capable of removing silt and clay size particles
4. All storm water flows shall enter the Terre Kleen and, flows in excess of design flows, shall pass through the internal flow through duct to the effluent pipe without the use of an external bypass.
5. stacked inclined plates in the grit chamber are self cleaning settling surfaces
6. HS 25 traffic and earth loadings
7. buoyancy prevention
8. Certified sediment, organic solids and other settled material in the primary and grit chambers are stored in a sump area containing not less than 99.0 Cuft; entire sump area is below the settling surfaces and the treatment flow path, preventing re-suspension of captured pollutants
9. Minimum volume of captured gross pollutant sump area is 99.0 Cuft
10. Minimum gross oil storage volume is 245 gallons
11. 30 inch manhole access for maintenance from grade by vacuum truck; with not less than 18 inch continuous access opening to bottom of sump area
12. Air and water pressurized sludge dispersion manifold below stacked inclined plate sediment sump area, causing pollutants to drain to vacuum truck suction hose
13. Manufacturer shall submit shop drawings and such other information requested by Engineer to verify Performance and Design Specifications
14. Warranty : Labor and material for 4 years from date of installation in the event that the product supplied is not free from defects that materially affect its performance; Terre Kleen shall be installed and used only in the particular application for which it was specifically designed, engineered and manufactured (see written Terre Kleen warranty for entire warranty)

Product Substitution Procedure

1. No stormwater treatment BMP shall be approved as an equivalent substitution unless the Engineer shall receive and approve drawings and specifications stamped and sealed by a professional engineer registered in the state wherein the project is located showing the following:
a. project- specific sizing calculations, with 3rd party performance verification, clearly showing that the unit meets or exceeds the Performance and Design Specifications of the Terre Kleen.
b. project-specific hydraulic calculations, with 3rd party performance verification, showing the Hydraulic Grade Line (HGL) plotted through the structure for the design flow

Maintenance Procedures
1. Quarterly inspection is recommended to record sediment, oil, and trash accumulation.
2. Cleaning is recommended when the sediment reaches 16 inches in depth in one or both sediment sump areas.
3. No confined space entry required; Terre Kleen design allows access, from grade, to both chambers by vacuum hose for removal of 100% of all captured pollutants.
4. Air and water pressurized sludge dispersion manifold, under inclined plates
5. Removed material must be handled and disposed according to local, state, and federal regulations

Terre Kleen Installation Specifications

1. Terre Kleen inclined plate assembly shall arrive at the job site fully assembled inside precast concrete structure. Precast structure may arrive in sections due to weight and transportation issues. Each precast structure shall contain lifting points with Uni-lifts, manufacturer shall provide lifting equipment required between the uni-lift and the lifting straps / crane hook, which shall be the property of manufacturer. Contractor shall provide equipment with sufficient lifting capacity to unload and set the Terre Kleen.
2. Contractor shall excavate, dewater and shore in accordance with project specifications, as provided by Engineer and OSHA regulations.
3. Sub-grade shall be established as shown on the Drawings. Underlying soil and sub-grade material shall have design loading of not less than 2000 pounds per square foot (psf). Precast components shall be placed on the compacted base (95% Proctor Density), elevation confirmed, level and aligned to ensure that the entire unit will be properly positioned when fully installed.
4. Contractor shall place "CONSEAL" or equivalent water tight mastic material between each precast component.
5. Precast structure containing the Terre Kleen component shall be aligned horizontally and vertically plumb. Contractor must confirm that the entire Terre Kleen shall be level during and after completion of backfill of the structure.
6. Manhole frame/cover and inlets frame/grate, if required shall be installed as shown on the drawings and grade adjusted to match final grade elevations by Contractor.
7. Connect and seal storm drain inlet and outlet pipes to Terre Kleen unit using non-shrink grout-fill material in accordance with project specifications.
8. BACKFILL SPECIFICATIONS: It is recommended that the stone sub-base be extended a minimum of one foot (1 ft) beyond the exterior face of the precast and compacted to 95% Proctor Density to sub-grade. Upon completion of the precast installation the backfill material shall be placed and compacted achieving a minimum compaction of 90% Proctor Density, or as specified by the Engineer, when tested by ASTM A1557. Backfill material may be a "minimal compaction effort" material. Native material may be used if the material provides an allowable bearing pressure of 2000 pounds per square foot (psf) and compacts to 90% Proctor Density per ASTM A1557, if approved by the Engineer. In areas of vehicular use, the upper two feet (2 ft) of backfill shall be aggregate base, compacted to 95% Proctor Density (ASTM A1557).
9. Contractor shall remove all foreign material and debris, including all sediment, oils, grease and construction materials and debris from the inlet pipe, outlet pipe and Terre Kleen upon completion of installation.



TERRE KLEEN™ is a registered US Patent (US Patent 6,676,832 B2)

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TERRE HILL, PA. (717)445-3100

TERRE KLEEN™ 09
PRECAST
WATER QUALITY CHAMBER

JOB:

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ENG'R:

BY: | DATE: | SHT. 1 OF 1

FILE NO.

REVISIONS

Revision ⚠ 11-12-08
Initial Release 9-16-08