

TERRE ARCH - GENERAL NOTES:

THE TERRE ARCH™ (PATENT PENDING 11/569,437 (10-30-2007)) UNDERGROUND STORAGE SYSTEMS, CONTACT: TERRE HILL STORMWATER SYSTEMS AT P.O. BOX 10, 485 WENGERLAND VALLEY ROAD, TERRE HILL, PA 17581 (PHONE: 1-800-242-1509) OR WWW.TERRERHILL.COM

CONCRETE f'c= 5,000 PSI AT 28 DAYS, WITH ASTM C-33 #57 OR #67 COARSE AGGREGATE AND FIBER REINFORCING.

DEFORMED STEEL REINFORCING CONFORMS TO ASTM A615 GRADE 60 WELDED WIRE FABRIC CONFORMS TO ASTM A65. DEFORMED WELDED WIRE FABRIC OF EQUAL SIZE MAY BE SUBSTITUTED FOR SMOOTH WELDED WIRE FABRIC AND SHALL CONFORM TO ASTM A497.

OPENINGS AROUND INFLUENT AND EFFLUENT PIPES SHALL BE GROUTED IN FIELD BY OTHERS. NON-SHRINK GROUT SHALL BE USED.

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

PA THREADED INSERTS MANUFACTURED BY PENNSYLVANIA INSERT CORPORATION.

JOINT SEALING MATERIAL SHALL BE BRIMEN CONSEAL CS-102B, JOINT MATERIAL MANUFACTURED BY TENSAR EARTH TECHNOLOGIES, INC. OR EQUAL. ANTI-SOIL MAT SHALL BE TENSAR BR-1200 BROWN GEOTEXTILE, JOINT SEALANT MUST BE INSTALLED IN ACCORDANCE WITH CONCRETE SEALANTS, INC. RECOMMENDATIONS.

EROSION & ANTI-SOIL MATS SHALL BE INSTALLED UNDER DISTRIBUTION MANIFOLDS AT EACH INFLUENT PIPE LOCATION. EROSION MAT TO BE TENSAR BR-1200 BROWN GEOTEXTILE, JOINT SEALANT MUST BE INSTALLED IN ACCORDANCE WITH CONCRETE SEALANTS, INC. RECOMMENDATIONS.

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MANHOLE FRAMES AND COVERS SUPPLIED BY TERRE HILL STORMWATER SYSTEMS, INSTALLATION AND GRADE ADJUST BY OTHERS. MANHOLE FRAMES AND COVERS TO BE QUINN MODEL NO. MHR44, EAST JORDAN IRON WORKS MODEL NO. 1310, OR EQUAL. COVERS TO BE MARKED "STORM".

EXCAVATION, COMPACTED STONE BASE, BACKFILL AND GRADING BY OTHERS.

IT IS RECOMMENDED THAT AN INSPECTION BE MADE ON A QUARTERLY BASIS AND AFTER EACH SIGNIFICANT RAINFALL EVENT. ANY ACCUMULATED DEBRIS/SEDIMENTATION THAT IMPAIRS THE PERFORMANCE OF THE SYSTEM IS TO BE REMOVED THROUGH THE PROVISION OF FULL ACCESS INTO ALL AREAS OF THE UNDERGROUND STORAGE SYSTEM.

WHEN A TERRE KLEEN HYDRODYNAMIC SEPARATOR IS PLACED IN FRONT OF EACH UNDERGROUND STORAGE SYSTEM NO CLEAN OUT OR MAINTENANCE IS ANTICIPATED. AS LONG AS THE TERRE KLEEN HYDRODYNAMIC SEPARATOR IS PROPERLY MAINTAINED.

EXCAVATION, DEMOLITION AND SPACING OF EXCAVATION WILL BE BY OTHERS. THIS SHALL BE IN ACCORDANCE WITH PROJECT SPECIFICATIONS AS PROVIDED BY ENGINEER AND OSHA REQUIREMENTS.

UNLESS OTHERWISE SPECIFIED, SUB-GRADE SHALL BE ESTABLISHED AS SHOWN ON THE DRAWINGS. UNDERLYING SOIL AND SUB-GRADE MATERIAL SHALL HAVE DESIGN LOADING OF NOT LESS THAN 2,000 POUNDS PER SQUARE FOOT (PSF), AS ESTABLISHED BY ENGINEER. (MINIMUM STONE BED SHALL BE 5" OF #3 STONE, TOPPED WITH 1" OF #8 STONE) LEVEL TO 1 1/4".

THE TERRE ARCH™ UNDERGROUND STORAGE SYSTEM SHALL BE WARRANTED FOR 4 YEARS FROM DATE OF SUBSTANTIAL COMPLETION FOR LABOR AND MATERIAL. IN THE EVENT THAT THE MATERIAL IS NOT FREE FROM DEFECTS.

THE TERRE ARCH™ PRECAST CONCRETE UNDERGROUND STORAGE SYSTEMS ARE DESIGNED, MANUFACTURED AND INSTALLED BY TERRE HILL STORMWATER SYSTEMS OR ITS AFFILIATES. ALL MATERIALS SHALL CONFORM TO ALL APPLICABLE PERFORMANCE & DESIGN SPECIFICATIONS OF THE TERRE ARCH™.

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TERRE ARCH PERFORMANCE, DESIGN & INSTALLATION SPECIFICATIONS

The Terre Arch is a precast concrete modular roman arch structure consisting of four connected parallel vaults for subsurface storage of stormwater for accessory components such as inflow and outflow manholes, manhole frames and covers, and other accessories. The system is designed to be installed in a trench and backfilled with compacted stone base and backfill. The system is designed to be installed in a trench and backfilled with compacted stone base and backfill.

1. Inflow and outflow manholes, manhole frames and covers shall be installed in accordance with the manufacturer's specifications.

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3. HS-25 load rating on the crown of the arch; no minimum cover or fill requirements; no requirement for load bearing stone between or above structure; direct access for heavy installation equipment, including stone fill dump truck. (Pneumatic stone fill is required prior to imposing HS-25 loading on the system);

4. Maximum cover up to 20 ft. (verify sub-base depth and soil bearing)

5. The Terre Arch is designed to be installed in a trench and backfilled with compacted stone base and backfill.

6. Structure has 5,000 psi compressive strength and 100 year design life.

7. 180 sqft. (8 feet by 20 feet) infiltration surface per structure.

8. 541 cuft. of storage in customer installation, i.e. voids between arches filled with stone to the top of the butresses (40% void space typical with stone);

9. Each structure is less than 16,000 lbs. allowing shipment of 3 structures per truck; placement from 10' to 20' depth.

10. No on-site preparation or fill cleanup for stability.

11. Ventilation and draining orifices in top and valley areas of structure.

12. Communication holes in the legs of the arches to allow flow between all sections; molyb leg with stone perimeter will have no cross flow hole;

13. Erosion matting is required of all influent pipes;

14. No requirement for separate separation layer below. Use filterfabric or geotextile where silt migration is a concern.

15. Manufacturer shall submit shop drawings and such other information requested by Engineer to verify performance and Design Specifications.

16. Each Terre Arch shall contain lifting points with Uni-Lift pins, manufacturer shall loan the lifting hardware to the contractor, which shall be the property of manufacturer. Contractor shall provide equipment with sufficient lifting capacity to unload and set the Terre Arch.

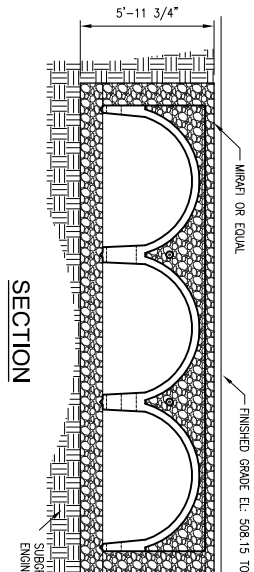
PRODUCT INSTALLATION PROCEDURES

- Contractor shall excavate according to the latest dated approved drawing set, dewater and shore in accordance with project specifications, as provided by Engineer.
- Unless otherwise specified, sub-grade shall be established as shown on the Drawings. Underlying soil and sub-grade material shall have design loading of not less than 2,000 pounds per square foot (psf), as established by Engineer. (Typical stone bed shall be 12" of #8 MS10 (1/2" stone) level to plus or minus 3/8" inch.
- Archets shall be placed within a nominal 8'-0" by 20'-0" matrix.
- THSS Recommended anchoring of the arched system relative the influent manholes or distribution manholes. Place riser sections on manholes.
- Install perimeter drain caps prior to final placement into the standing bag opening. Two required per perimeter leg.
- Level on the joints between the arches to prevent migration of fines into the joint gap.
- Prior to allowing any top loading of stone.
- Fill the arches with at least 12 inches of stone.
- Buildize stone onto the arches with about 2 inches of stone above the butress elevations.
- Use vibrating roller to compact stone to stabilize the top stone and settle the arches into the sub-base.
- Provide covering the system with the specified stone top bedding and cover with filter fabric to prevent erosion.
- Place additional soil amendments and grading equipment.
- Contractor shall remove all material and debris from the Terre Arch.
- Warranty: 4 years from date of substantial completion for labor and material in the event that the material supplied is not free from defects; equipment shall be installed and used only in the particular application for which it was specifically manufactured.
- Terre Arch installation may require distribution box(es) and end cap plates as shown on the Drawings.

PRODUCT SUBSTITUTION PROCEDURES

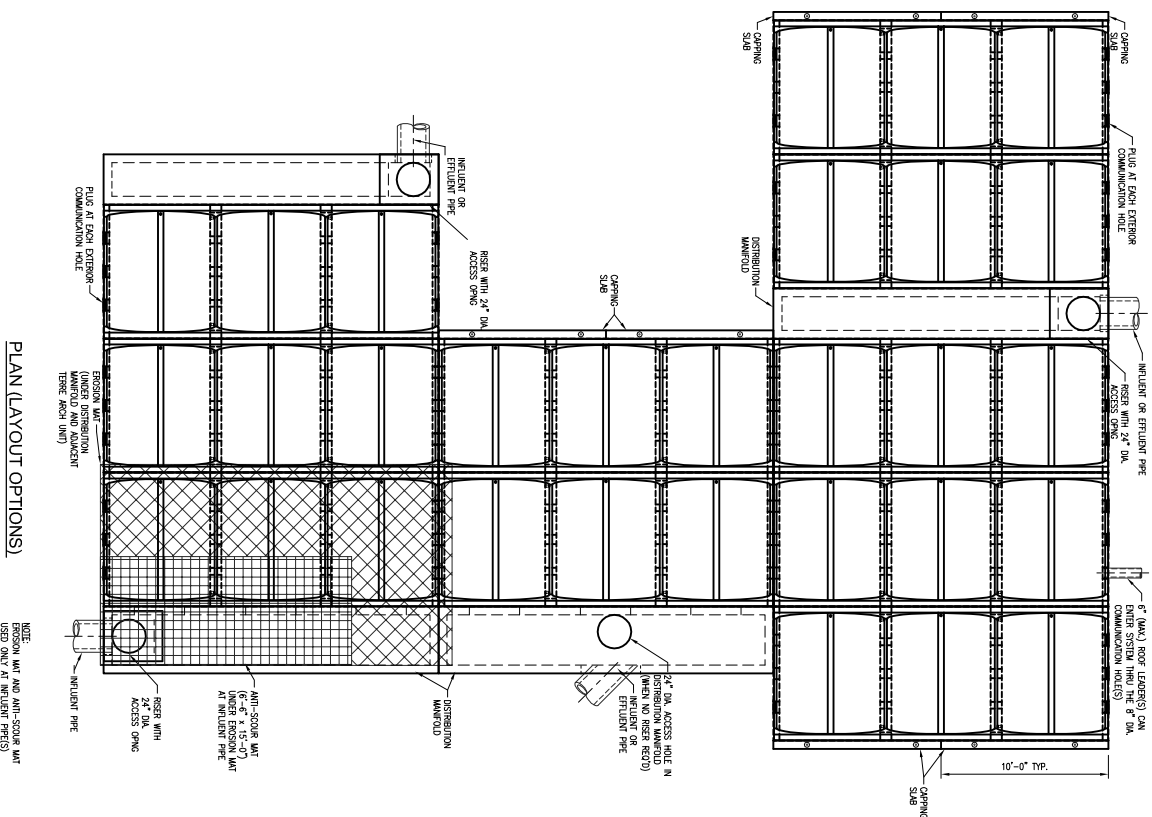
- No underground stormwater storage system shall be approved as an equivalent substitution for a Terre Arch system unless the Engineer shall receive and approve drawings and specifications stamped and sealed by proper specific design calculations clearly showing that the proposed substitution meets the Performance & Design Specifications of the Terre Arch.
- MAINTENANCE PROCEDURES**
- When a Terre Klean Hydrodynamic Separator is placed in front of the Terre Arch system no clean out or inspection is required.
 - Inspection can be accomplished from grade with proper equipment by entry through the grade opening(s).
 - System shall contain sufficient Distribution Manifolds to allow entry for inspection and maintenance into each arch or each Terre Arch.

SAMPLE LAYOUT NOT FOR CONSTRUCTION



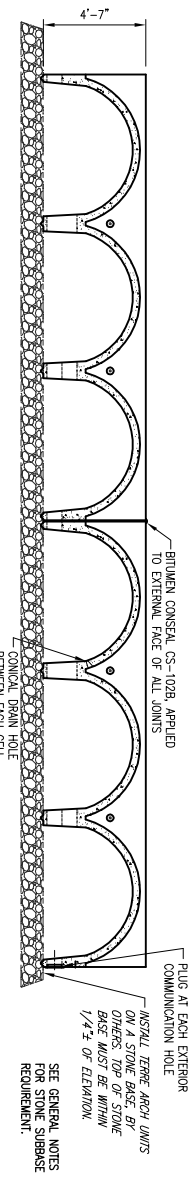
SECTION

PLAN (LAYOUT OPTIONS)

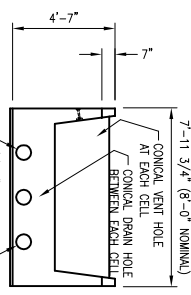


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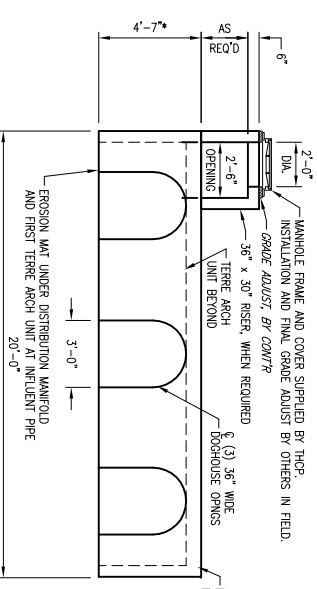
TYPICAL TERRE ARCH ADJOINING PIECE SECTIONS



TYPICAL TERRE ARCH PIECE ELEVATION



SECTION THRU DISTRIBUTION MANIFOLD



<p>TERRE ARCH™ (Patent Pending 11/569,437 (10-30-2007))</p> <p>TERRE HILL STORMWATER SYSTEMS Improving Your World.</p> <p>TERRE HILL, PA. (717)445-3100</p> <p>PRECAST TERRE ARCH™ 48 INCH MODEL™ (FIRST MODEL) RETENTION / DETENTION FACILITY</p>			
<p>REVISIONS</p>			
JOB:	CONTR:	ENGR:	DATE:
BY: HDB	DATE:	DATE:	SHT.