

**Rammed Aggregate Pier® Foundation Construction Notes**

- Rammed Aggregate Pier® (RAP) foundation support is as designed by Geopier Foundation Company, Inc., Mooresville, North Carolina (Designer).
- RAP element layout is the responsibility of the General Contractor (GC). Rammed Aggregate Pier® elements shall be installed in the field within 6-inches of locations shown on these plans.
- An on-site modulus test is required for this project.
- A qualified, full-time Quality Control (QC) representative provided by the RAP Installer (the Installer) shall be responsible for installation of the RAP elements in accordance with the design, and shall report all RAP foundation construction activities to the Designer. If authorized by the Owner, the QC representative shall coordinate QC activities with the Testing Agency hired by the Owner. Under no circumstances shall the Testing Agency direct RAP installation procedures.
- RAP elements shall be based on the following criteria unless otherwise approved in writing by the Designer:
  - Drill depths shall be within 3 inches or deeper than the depths shown on the plans and/or on the Design Submittal.
  - Average compacted lift thickness during each day's production shall be approximately 12-24 inches
  - RAP element displacement measured during bottom stabilization tests (BST) shall be within 150% of the BST value achieved in the modulus test pier and shall be performed on at least 10% of the day's production piers.
  - RAP element aggregate relative density shall be recorded periodically throughout the day. The average blow counts obtained utilizing a Dynamic Cone Penetrometer (DCP) in accordance with ASTM STP-399, shall be greater than 15 blows for 1.75 inches of penetration (bpi). No more than 10% of tests conducted on each day shall be below 15 bpi.  
 Note: Use of DCP is not appropriate for open graded aggregate such as #57 stone.
  - RAP element aggregate shall be the same as used in a successful modulus test, unless otherwise approved in writing by the Designer (typical aggregate consists of clean ¾" minus gravel for the bottom bulb, and graded ¾" minus crushed stone for the shaft).
  - The aggregate shall be tamped in a manner consistent with the test pier but for no less than 10 seconds per lift.
- When obstructions are encountered that cannot be removed with conventional RAP installation equipment, the GC shall be responsible for removing the obstructions. If the GC does not do so in a timely manner that does not interrupt RAP production, the installer may remove obstruction(s) and shall be reimbursed for costs incurred, including labor, equipment, and materials.  
 In the event obstructions are encountered below the design bottom of footing elevation the obstruction shall be removed as outlined above. The resulting excavation shall then be backfilled and compacted in accordance with the project specifications. The area shall be tested by the Owner's Testing Agency and the compaction test results shall be submitted to the Installer and the Designer.
- If cave-ins occur on top of a lift of aggregate such that the volume of caved soil is greater than approximately 10% of the volume of the aggregate in the lift, then the aggregate shall be considered contaminated, and shall be removed and replaced with uncontaminated aggregate.
- RAP elements not meeting the requirements defined in the design and modulus test shall be re-drilled and tamped to meet project requirements unless otherwise approved in writing by the Designer.
- Utility locations are the responsibility of the GC. The designer shall be notified of any conflicts with RAP locations shown on the plans. New utilities excavations shall be limited to the zone depicting on Detail 1 on this sheet. If excavations are planned within the RAP zone depicted, the designer should be notified immediately to discuss excavation options.
- After completion of RAP installations, the GC is responsible for protection of the work. This includes, but is not limited to, proper site drainage to prevent ponding of water above the RAP elements and appropriate control and coordination of earthwork and any subsequent drill activities such as elevator shaft construction, to prevent damage to installed RAP elements.
- All RAP elements have a minimum diameter of 30 inches and a minimum shaft length as outlined in the attached "Rammed Aggregate Pier® Schedule" in the Design Submittal as measured from existing grade unless otherwise noted on these plans or otherwise agreed upon by the Designer and the Owner's representative.
- These drawings are based on the structural/architectural drawings prepared by MSE of Kentucky, Inc sheet S100 dated June 2011. The "RAP Element Layout Location Plan" plan are for RAP element number, location, and layout only. Please refer to structural plans for specific foundation dimensions and location. The Designer accepts no responsibility for location of footings shown on these plans. The Designer shall be notified immediately if information on these plans conflicts with structural or architectural drawings.
- The RAP foundation design is based on the geotechnical information provided in the subsurface exploration by Consulting Services Inc., of Kentucky in their report dated 7/22/11. Geopier Foundation Company, Inc., has relied on this information and we have no reason to suspect any of the information in the report is in error. Geopier Foundation Company, Inc. is not responsible for errors or omissions in the report that may affect the parameter values in our design. If the subsurface or site conditions differ from those utilized in the design the Designer shall be notified immediately.
- RAP fill support area as delineated by MSE of Kentucky, Inc. In the event the limits of fill support vary, the designer shall be notified immediately.

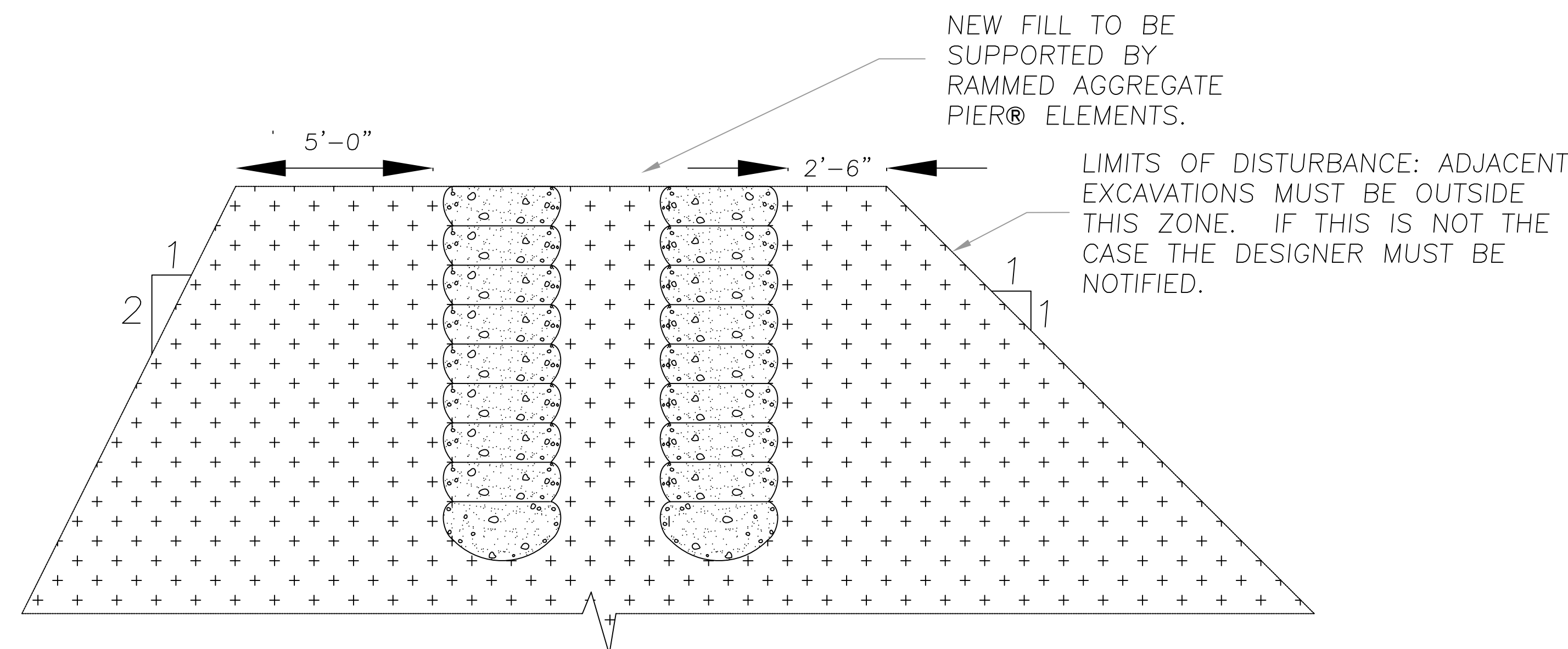
**Fill Placement Notes**

- RAP shall be placed prior to fill.
- All new fill shall be placed and compacted as recommended by the Geotechnical Engineer.
- Compaction test results shall be forwarded to the Designer.
- Building/Foundation construction shall not begin until fill settlement is complete as determined by Settlement Monitoring program.
- Settlement monitoring records shall be forwarded to us for review.

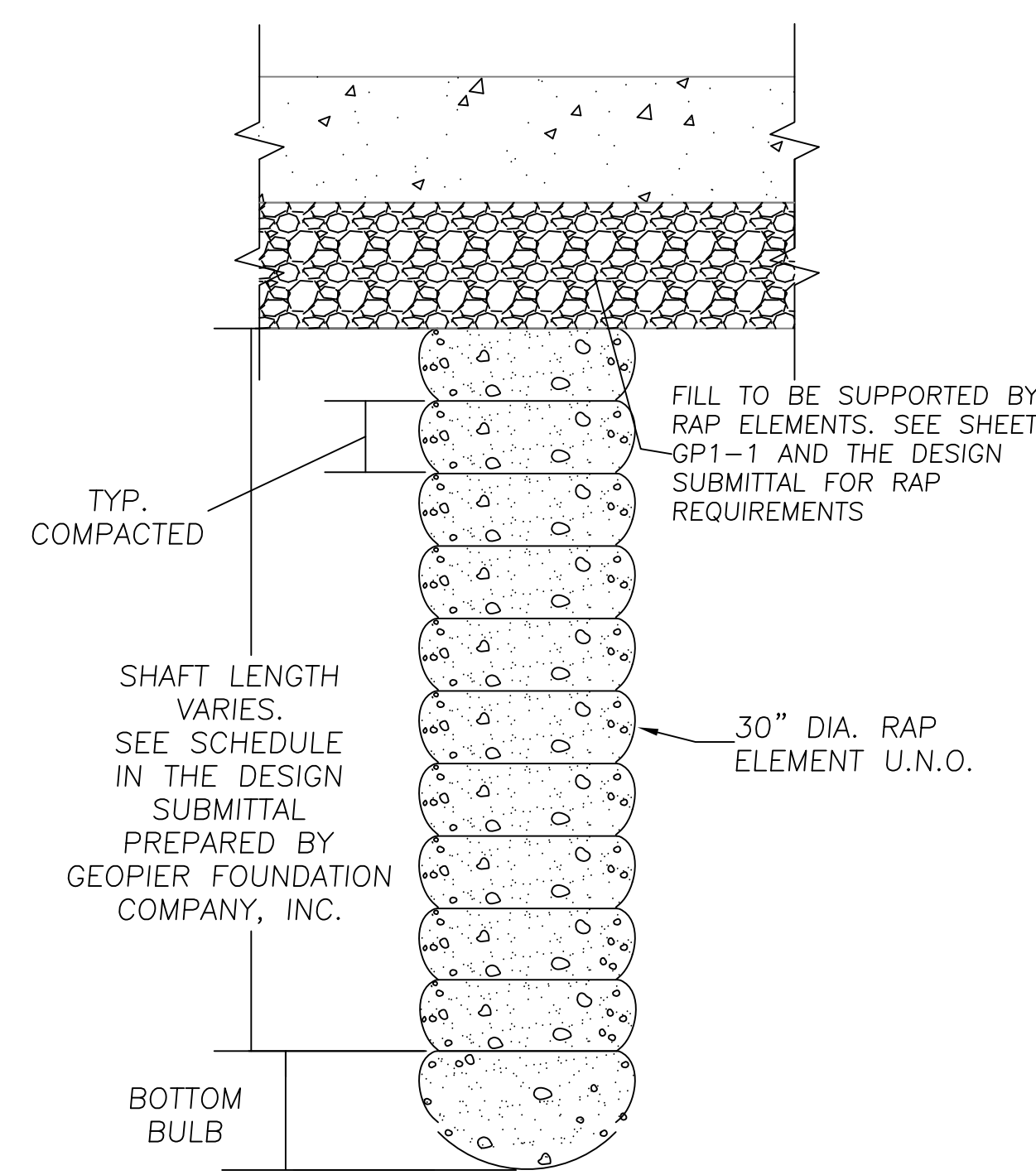


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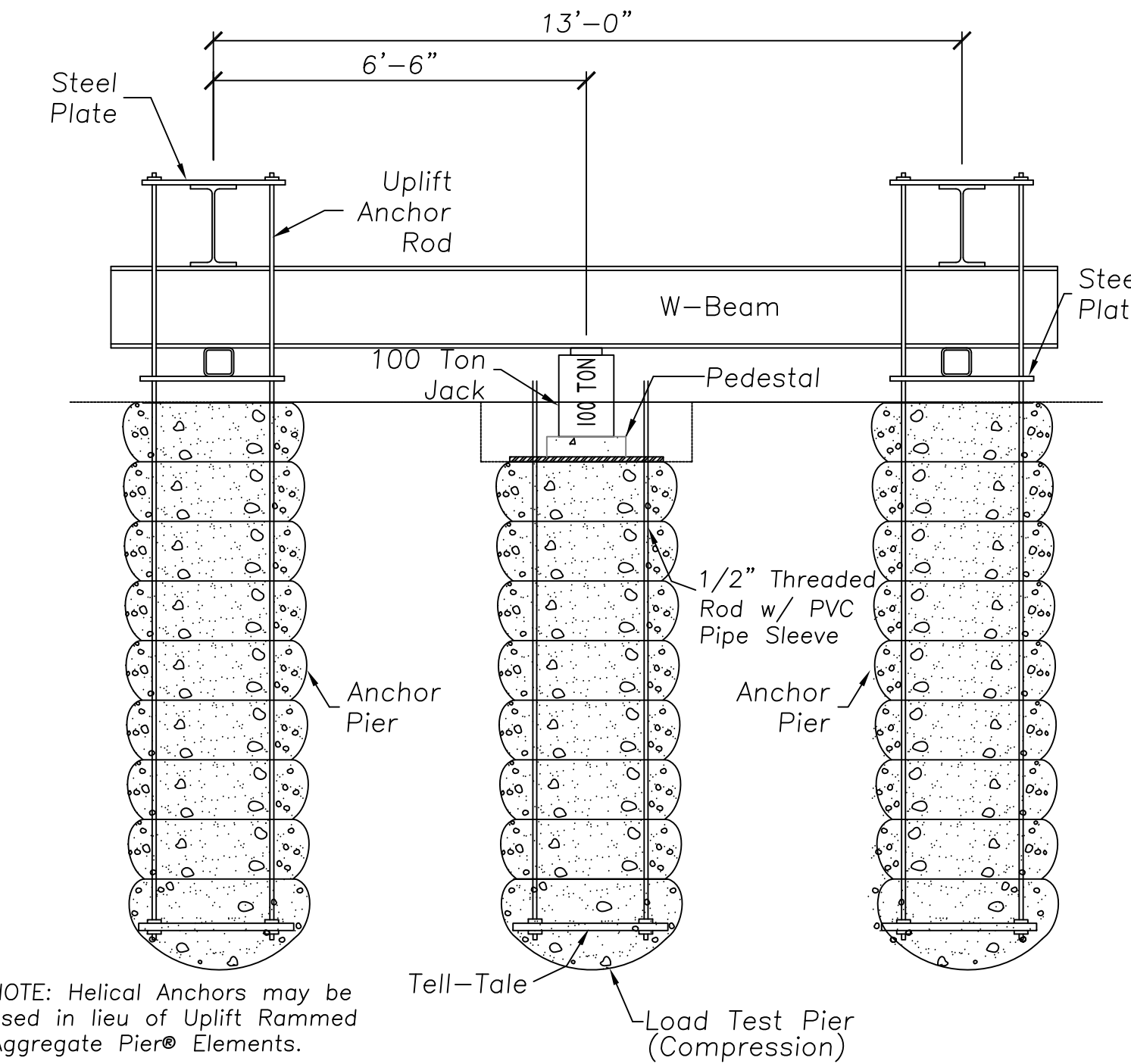
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**1 ADJACENT EXCAVATION DETAIL**  
NOT TO SCALE



**2 TYPICAL RAMMED AGGREGATE PIER® ELEMENT**  
NOT TO SCALE

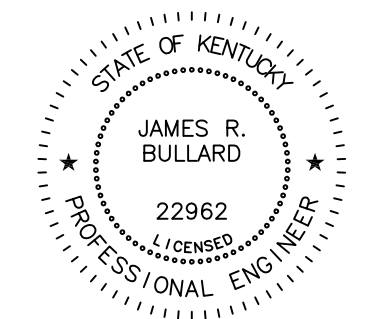


NOTE: Helical Anchors may be used in lieu of Uplift Rammed Aggregate Pier® Elements.

**3 MODULUS TEST SETUP**  
NOT TO SCALE

REVISIONS	DATE	APPROVED

Rammed Aggregate Pier® Notes & Details



FLEX FILM BUILDING A

ELIZABETHTOWN, KY

**GEOPIER FOUNDATION COMPANY**



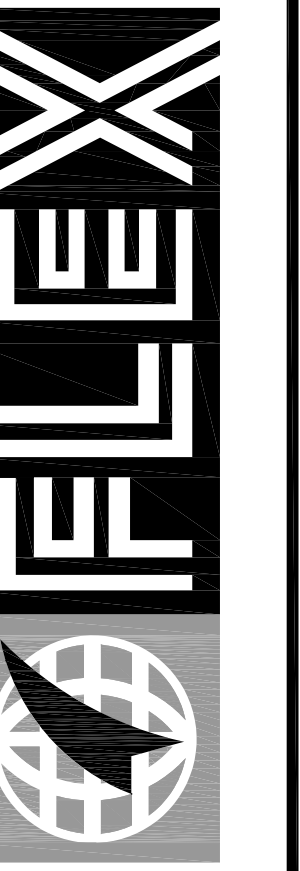
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PROJECT NUMBER  
PGL-1149

DATE  
8/19/11

SHEET NUMBER  
GP0.1

The Rammed Aggregate Pier® system may only be installed by installers approved and licensed by Geopier Foundation Company, Inc. These drawings are not to be used by any other installer or ground improvement system as a basis for building support. In the event of unauthorized use of these drawings, Geopier Foundation Company is not responsible for performance. The design team and owner bear responsibility for performance if this information is used by contractors not approved by GFC.



**FLEX FILMS (USA) INC.**  
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ELIZABETHTOWN, KENTUCKY 42702  
PROJECT L-12 BOPET U.S.A.

DATE	BY	REVISION
10-2011	AUG	POST BID REVISIONS

Project No. 2064-25  
DESIGNED BY MSE  
DRAWN BY AJG  
CHECKED BY GAR  
REVIEWED BY  
DATE JUNE 2011  
SCALE AS NOTED

Engineers  
Architects  
Planners  
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DRAWING NO.  
UFL-L12  
C-101.4E