1. Overview:

This specification covers Permanent Rigid Soil Retainers, hereinafter referred to as “Rigid Retainers,” also known as “Rib Retainers. Rigid Retainers serve as soil retainers, which maintain and preserve void envelopes beneath structural concrete and other critical building systems and components, thereby isolating them from the potential damaging effects of expansive soils. The Rigid Retainers furnished for this project shall be in accordance with these specifications and in reasonably close conformity with the lines, grades, design and dimensions shown on the plans or as established by the Engineer. The Rigid Retainers shall be resistant to water and UV rays and shall be chiefly comprised of extruded or injection molded High Density Polyethylene (HDPE), which is structurally efficient and non-biodegradable. The HDPE shall contain a minimum of 95% RECYCLED material. (5% for colorant and plastic foaming additives) In situations where two or more specifications apply to this work, the most stringent requirements shall govern.

2. Rigid Retainer Structure:

a) Rigid Retainers shall maintain a dimensionally stable void space beneath structural concrete and other critical building systems and components by physically restraining backfill material from entering the void space. The Rigid Retainers shall have sufficient structural strength to maintain the intended void space, without excessive deflection, while experiencing the anticipated lateral earth pressures.

b) The Rigid Retainers shall be designed to perform as a permanent soil retaining structure which shall remain in place after construction and shall not be reused.

c) For “Best Practice Standards,” the Rigid Retainers recommended installation is to overlap concrete castings by at least six (6) inches and extend a minimum of at least six (6) inches into the subgrade.

d) Rigid Retainers should be secured to the concrete at the top with at least three (3) anchors of sufficient size and securing strength, one at each end of the overlapping joint seal design and one centered.

e) A “Minimum Design Standard,” for the Rigid Retainers shall be designed to overlap concrete castings by at least three (3) inches and extend a minimum of at least three (3) inches into the subgrade.

3. Rigid Retainer Material:

a) The Rigid Retainers shall be constructed from extruded or injection molded High Density Polyethylene (HDPE).

b) The HDPE material shall be either HDPE-8 (Crate Grade) or HDPE-8 (Pail Grade) and shall contain a minimum of 95% RECYCLED material. (5% for colorant and plastic foaming additives)

c) The HDPE shall conform to the following: ASTM D 1238 or ASTM D 1238E, ASTM D 4883 ASTM D 638, ASTM D 790, ASTM D 256, ASTM D 2240 and ASTM D 648.
d) Rigid Retainers shall be manufactured entirely within the United States.

4. Rigid Retainer Material, Minimum Physical Properties Requirements:
   a) Rigid Retainer shall be naturally waterproof in terms of its intended use in this section.
   b) Rigid Retainer shall have negligible buoyancy.
   c) Rigid Retainer shall maintain structural integrity in 100% relative humidity.
   d) Rigid Retainer material shall be non-biodegradable.

5. Rigid Retainer Material, Minimum Performance Requirements:
   a) Rigid Retainers material shall provide sufficient dynamic live and dead load support capacities of but
      not limited to all loads common to this type of construction;
      • Installation of backfill material – construction live loads
      • Manpower and foot traffic loads
   b) Rigid Retainers material shall possess sufficient structural strength to resist anticipated lateral earth
      pressures.
   c) Rigid Retainers must be able to be delivered and stored unprotected in the open jobsite environment
      for a minimum of 90 days without loss of design strength.
   d) The structural integrity and installation of the Rigid Retainer shall be functionally unaffected by high/low
      ambient temperatures and elevated surface temperatures from direct sunlight extremes, above or sub-
      freezing, frozen soil and ice buildup.
   e) Rigid Retainer material strength shall not be affected by becoming damp, wet, or when completely
      submerged in standing water.
   f) These Rigid Retainer general specifications, with recommended application height and position
      adjustments, also apply to other Rigid Retainer assemblies such as, SV – Pipe Void Systems.

6. Rigid Retainer, Industry History:
   a) Rigid Retainer must have an industry history of providing consistent performance integrity during and
      after all types of weather event applications, while in readiness storage or installed, without the threat of
      partial or full section collapse during or after backfill.
Approved Rigid Retainers Manufacturers meeting All Required Section Specifications:

1) **SuperVoid Systems, LLC**


   1172 County Rd. 24

   Prattville, Alabama  36067

   Larry W. Primm               David S. Primm, P.E.
   Founder                   Chief Engineer
   334-730-3614             334-221-5761
   Lprimm@SuperVoid.com       primmd@SuperVoid.com

2) **Other Retainer manufacturers** must meet ALL of the requirements stated in these specifications and be approved prior to project bid in order to be considered.