Specification for Rainwater Storage Stabilization Base used with permeable pavement surfaces

PART 1 – GENERAL

1.1 General Provisions

A. The Conditions of the Contract and all Sections of Division 1 are hereby made a part of this Section.

1.2 Description of Work

A. Work Included:

1. Provide excavation and sub base preparation per Geotechnical Engineer's recommendations and/or as shown on drawings, to provide adequate support for project designs loads. See 2.2 Materials.

2. Provide all components of Rainwater Storage Stabilization Base system/assembly: Base, Grate, Paver Restraint, and accessory components necessary to complete the assembly; and installation per the manufacturer's instructions as furnished under this section and supplemented with the manufacturers latest construction guidelines.

3. Install permeable pavement is accordance with Section 32 14 00 Unit Paving.

B. Related Work:

1. Subgrade preparation under Section 31 20 00 Earth Moving.

2. Subsurface drainage materials - Section 33 46 00 Subdrainage, when needed

3. Permeable Pavement – Section 32 14 00 Unit Paving

1.3 Quality Assurance

A. Follow Section 01 33 00 Submittal Procedures requirements.

B. Installation: Performed only by skilled workpeople with satisfactory record of performance on landscaping, hardscape, or paving projects of comparable size and quality.

1.4 Delivery, Storage, and Handling

A. Protect all components from damage during delivery, storage, handling and installation.

B. Storage and handling must meet manufacturer’s standard.

1.5 Project Conditions

A. Review installation procedures and coordinate permeable paving system work with other work affected and with manufacturer. Generally, permeable paver systems are nearly the last site construction activity.

B. All hard surface paving adjacent to permeable paver system areas, including concrete walks and asphalt paving should be completed prior to installation of Permeable Paving and components, to include Rainwater Storage Stabilization Base.

C. Weather:
1. Do not use frozen materials or materials mixed or coated with ice or frost.

2. Do not build on frozen work; or wet, saturated subgrade.

D. Protect partially completed paving against damage from other construction activities, adjacent sites, and traffic when work is in progress.

E. Protect adjacent work from damage during Permeable Paver installation.

F. Protect permeable paving from sediment laden runoff from adjacent areas.

PART 2 – MATERIALS

2.1 Products

A. Subgrade of Excavation: Shall be smooth soil, level and free of lumps or debris. Compact to a minimum of 90% maximum dry density or as specified by Engineer. Structural fill material or other structural enhancement materials may be used to amend the structural capacity of the soil, as specified by the Engineer on the Contract Drawings.

B. ASTM D-448 / AASHTO M43 No. 8 aggregate.

C. Rainwater Storage Stabilization Base Assembly Components shall be manufactured with 100% recycled polypropylene material with UV inhibitors and impact polymers.

a. The Rainwater Storage Stabilization Base assembly shall have a Base component. The Base shall meet these specifications: Injection Molded (nominal dimensions 20-¼ inches long by 24-¼ inches wide by 3-¼ inches thick; installed dimensions 20-inches long by 24-inches wide by 3-¼ inches thick - 3.33 square feet each), linked, column matrix consisting of hollow columns; the columns are structurally connected to each other by struts at the top and bottom column edges. Base sections shall connect with an integrated connecting feature which allows a 5% adjustment at the connection to accommodate underlying terrain. Minimum void space is 89%. The Base shall have connectors which lock the Grate to the Base.

b. The Rainwater Storage Stabilization Base assembly shall have a Grate component. The Grate shall meet these specifications: Injection Molded, 20 inches long by 24 inches wide by ¼ inches thick (3.33 square feet each), having apertures that restrict aggregate or paving material placed on top from passing through while allowing water to pass through. The grate spacing shall prevent the passage of a 3/16-inches diameter sphere into the base, without the use of geotextile. The grate surface shall have paver alignment guide lines running in both directions and spaced every 4-inches on center. The grate shall have connectors for attaching the Grate to the Base or multiple Base sections. The Grate shall be used to bridge the joints between Base sections to provide interlocking rigidity to the Base sections and maintain horizontal and vertical alignment of the Base sections.

c. The Rainwater Storage Stabilization Base assembly shall include a ⅛-inches thick plastic edge cap component to cover the perimeter edge of the base. The edge cap component may be integral with the plastic straight paver restraint in section (d) below.

d. The Rainwater Storage Stabilization Base assembly shall include an edge cap with a molded 1-inch by 12-inch oval opening for an adapter which provides a positive connection to a 1-inch by 12-inch piece of flat pipe or flat pipe adapter to 4-inch pipe.

e. When a concrete or stone curb is not used, the Rainwater Storage Stabilization Base assembly shall have the option of an integrated, straight plastic paver restraint component and/or a flexible plastic paver restraint component, or an aluminum straight paver restraint component and/or an aluminum flexible paver restraint component, which directly connects to the Base with a fastening system.

B. Soil: Obtain specified topsoil to backfill the paver restraint and compact as necessary to stabilize the soil adjacent to the paver restraint to a distance of one foot away from the paver restraint

PART 3 – EXECUTION

3.1 Inspection

A. Examine subgrade conditions. Do not start installation of the sub base and Rainwater Storage Stabilization Base, until unsatisfactory conditions are corrected. Check for improperly compacted trenches, debris, and improper gradients.

B. Installation constitutes acceptance of existing conditions and responsibility for satisfactory performance. Contact the manufacturer if the existing conditions do not meet typical construction standards.

3.2 Preparation

A. Excavate to subgrade elevations, as shown on Contract Drawings. Prepare subgrade by compacting to 90% maximum dry density. Subgrade shall be smooth and free of lumps or debris.

B. Install a minimum of 1-inch thick AASHTO M43 No. 8 aggregate subbase over prepared subgrade to grades shown on the plans. Lifts shall not exceed 6 inches, compact each lift separately. Level the subbase.

3.3 Installation of Rainwater Storage Stabilization Base

A. Install the Rainwater Storage Stabilization Base sections on the prepared subbase. Place Base sections and secure with the integrated connecting mechanism. Attach the Edge Cap, Edge Cap/Paver Restraint, and/or pipe adapters if required. Attach the Grate to the Base sections so that the grate covers the joints between adjoining base sections. Components may be cut to fit area limits. It may be helpful to check alignment and elevations prior to placing pavers.

B. When installing permeable pavement on slopes, it is advisable to use terracing, check dams, or weirs to limit flow. Refer to Contract Drawings for plan details related to slope and construction details.

C. Install any overdrain or underdrain pipe in accordance with Contract Drawings.

D. Install pavement in accordance Section 32 14 00 Unit Paving and Contract Drawings.

E. After paving surface is placed, backfill and compact the backfill.

END OF SECTION