

Typical Pervious Concrete Detail

PRECAST PERVIOUS CONCRETE PAVING SLABS

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1.1. Precast Porous Concrete Paving Slab
 - 1.2. Edge Restraint
 - 1.3. Compacted Storage Reservoir (Subbase) and Screed Choker (Base)

1.02 SUBMITTALS

- A. Shop drawings; installation plan showing edge restraint detail(s).
- B. Test results performed by an independent testing laboratory of the following:
 - 1.1. Particle-size analysis in accordance with ASTM C 136 for the crushed stone storage reservoir (subbase) and crushed stone choker (base) with source(s) of supply noted. Visual examination of washed stone.

1.04 QUALITY ASSURANCE

- A. Installation Contractor Qualifications
 - 1.1. Installation shall include planning the work, horizontal and vertical layout, fine grading of subgrades, installing geotextile in accordance with the respective manufacturer's recommendations, placing and compacting crushed stone reservoir storage (subbase), place and screed crushed stone choker (base), installation of edge restraint, and placing precast porous concrete paving slabs.
 - 1.2. The installation contractor shall use adequate forces including equipment and skilled workers. Workers shall be trained and experienced in the necessary crafts and completely familiar with the specified methods needed for proper performance of this Specification.
 - 1.3. All materials, methods of installation and workmanship shall conform to requirements of ASTM, Vermont Agency of Transportation, and/or other applicable Standards.
 - 1.4. Precast porous concrete paving slabs shall be visually inspected by the manufacturer for completeness, texture and consistency with installation drawings. A small amount of "skinning", not to exceed 1% of the top or bottom of slab surface areas, will be allowed.
- 2. Review the contractor's installation plan in a pre-construction meeting with manufacturer's representatives, paving slab installation contractor, general contractor, project design professional and owner's representative.

1.05 WEATHER CONSIDERATIONS

- A. Do not place and/or compact crushed stone subbase in rain or snow, or on saturated or frozen subgrade.
- B. Do not place and/or screed crushed stone base in rain or snow, or on saturated or frozen subbase.
- C. Do not install precast porous concrete slabs in rain or snow, or on saturated or frozen base.

1.06 DELIVERY, HANDLING AND STORAGE

- A. Coordinate delivery to not interfere with other construction and avoid delays.
- B. Slabs shall be off-loaded one-at-a-time by forklift operated by a trained and experienced operator. Forklift must be equipped with 6-ft. long forks to safely off-load slabs.
- C. Verify safe load capacity of forklift in accordance with Occupational Safety & Health Administration (OSHA) recommended practices. Only use forklifts with adequate safe load capacity.
- D. Store slabs on level ground and propped with 4-in. by 4-in., minimum, timbers placed parallel to one another located directly beneath imbedded lifting points. Place timbers between each slab.
- E. Slabs shall be stored in stacks not more than 4 slabs high.
- F. Store slabs such that they are kept free from mud, dirt, grass cuttings, accumulation of foliage and debris.

PART 2 MATERIALS

- 2.01 CRUSHED STONE STORAGE RESERVOIR (SUBBASE) AND CHOKER (BASE)
 - A. Crushed Stone with 90% fractured faces, LA Abrasion less than 40 per ASTM C 131, minimum CBR of 80% per ASTM D 1863.
 - B. Use of screened rounded gravel is prohibited.
 - C. All crushed stone shall be double-washed and clean and free of all fines and debris.
 - D. Compacted crushed stone for storage reservoir (subbase) shall conform to ASTM C 33 Size Number 57 Grading Requirements for Coarse Aggregates. Minimum thickness of compacted storage reservoir (subbase) as shown in cross section detail.
 - E. Un-compacted/screed crushed stone for choker (base) shall conform to ASTM C 33 Size Number 8 Grading Requirements for Coarse Aggregates. Minimum thickness of un-compacted/screed choker (base) layer shall be as shown in cross section detail.
 - F. Product Substitutions: Substitutions may be allowed for gradations of crushed stone storage reservoir (subbase) and choker (base). Compacted crushed stone for storage reservoir (subbase) shall have a minimum porosity of 0.40. All substitutions shall be approved by the project design professional and the precast porous concrete paving slab manufacturer.
- 2.02 GEOTEXTILE
 - A. Geotextile between subgrade and around perimeter of choker (base) and storage reservoir (subbase) layers, as detailed, shall be as follows:
 - 1. Material Type: Geotextile shall be a Mirafix 170 N, or approved equal, Non-Woven geotextile.

PART 3 - EXECUTION

3.01 INFILTRATION SYSTEM SUBGRADE PREPARATION

- A. The subgrade under all infiltration [bed] areas shall not be compacted or permanently covered with impermeable geotextile unless approved by the Engineer.
- B. Prepared subgrades shall not be subject to construction equipment traffic.
- C. Only light equipment shall be used to build the precast porous concrete pavement system.
- D. Contamination or damage to the subgrade during construction shall be repaired to the satisfaction of the Engineer. This may include additional excavation and placement of subbase material at no expense to the Owner.
- E. Do not proceed with installation of subbase and precast porous concrete paving system until subgrade has been reviewed by the Engineer.

3.02 INSTALLATION

- A. General
 - 1. Any excess thickness of soil placed over the soil subgrade to trap sediment transported by runoff from adjacent construction areas shall be removed before placement of geotextile and storage reservoir layer.
 - 2. Keep area where precast porous concrete paving slabs are to be installed free of sediment during the entire construction period. Storage reservoir crushed stone contaminated with sediment shall be removed and replaced with clean material at no cost to the Owner.
 - 3. Do not damage drainpipes, underdrains, roadway boxes, manholes or any other utilities during installation. Report any damage immediately to the Engineer.
- B. Compacted Reservoir Storage Layer (Subbase)
 - 1. Geotextile and porous media bed aggregate shall be placed immediately after approval of subgrade preparation. Any accumulation of debris or sediment which has taken place after approval of subgrade shall be removed prior to installation of geotextile at no extra cost to the Owner.
 - 2. Place AASHTO M43 No. 2 or No. 24 crushed stone over the prepared subgrade and spread and level evenly by raking to minimum thickness specified on the plans. Do not disturb prepared subgrade or shift, wrinkle or fold the geotextile. Place crushed stone to protect geotextile from tearing under equipment tires and tracks.
 - 3. Place coarse aggregate in (12 inch) maximum lift thickness. The aggregate material shall be distributed evenly over the subgrade in lifts of specified depth to achieve the proposed grades without significant alteration of the gradation supplied. Care shall be taken to limit the disturbance of the subgrade materials.
 - 4. Compact layer with a minimum of two complete coverages, one pass each in mutually perpendicular directions, with a 3 to 5 ton smooth, double or single, drum roller operated in vibratory mode. Following vibratory compaction, apply two complete coverages, one pass each in mutually perpendicular directions, with the roller operated in static mode. Continue static rolling until there is no visible movement, weaving or deflection in the surface of the storage reservoir layer.
 - 5. The surface tolerance of the compacted storage reservoir layer shall be $\pm 3/8$ in. under a 10 ft. straightedge and the surface shall be suitable for the placement of a choker course of aggregate.
 - 6. Following placement of bed aggregate, the geotextile shall be folded back along all bed edges to protect from sediment washout along bed edges.
- C. Un-compacted/Screed Crushed Stone Choker (Base) Layer
 - 1. Place and spread AOT 704.02 for 3/8" washed crushed stone evenly over the Compacted Reservoir Storage Layer and screed rolls to the thickness detailed. Level surface of crushed stone with screed.
 - 2. Do not compact or disturb screed choker layer.
 - 3. The surface tolerance of the screed choker layer shall be $\pm 1/4$ in. under a 10 ft. straightedge.
 - 4. Screed choker layer placed shall not substantially exceed that which is covered by paving slabs by the end-of-day.

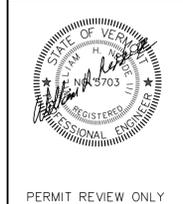
3.03 SLAB PLACEMENT

- A. Slab Placement
 - 1. Lay slabs in pattern(s) shown on approved drawings.
 - 2. Slabs shall only be lifted and placed using swivels and spreader chains. Chains, cables or slings should never be wrapped around slabs for lifting under any circumstances. Swivels shall be bolted securely but not over-tightened.
 - 3. Place units hand tight without using metal hammers, pry bars or drift pins. Make horizontal adjustments to placement of laid slabs with wood wedges and levers, and rubber mallets as needed.
 - 4. Provide joints between slabs of 1/16 in. - 3/16 in. wide. No joints shall exceed 3/16" wide.
 - 5. Joint lines shall not deviate more than $\pm 1/8$ in. over 50 ft. from string lines.
 - 6. Fill gaps at the edges of the paved area with properly-sized and slabs.
 - 7. Cut end slabs to be placed along the edge or corners with a masonry saw. The masonry saw blade shall be kept wet during cutting. Cut units shall be no shorter than 1/4 of a whole slab.
 - 8. Adjust bond pattern at pavement edges such that cutting of edge slabs is minimized. Do not expose cut slabs to vehicular traffic. Cut slabs at edges as indicated on the drawings.
 - 9. Keep skid steer and forklift equipment off unrestrained paving slabs.
 - 10. After an area is completely prepared, set the precast porous concrete slabs into the screed crushed stone choker (base) layer by trafficking with light rubber-tired equipment.
 - 11. Remove and replace any slabs cracked or damaged during installation with new ones. Reset slabs not in conformance with specified installation tolerances. Slabs damaged during improper construction shall be replaced at no cost to the Owner.
 - 12. Check final surface elevations of set slabs for conformance to design drawings. The final surface tolerance from grade elevations shall not deviate more than $\pm 3/8$ in. under a 10 ft. straightedge.
 - 13. The surface elevation of set slabs shall be flush with manholes or the top of utility structures.
 - 14. Slabs shall be sawcut to accommodate utility structures. Void between concrete panels and utility structure shall be filled with high strength, non-shrink grout (2" gap or less) or 3,500 psi concrete for gaps greater than 2" thick.
 - 15. After installation of concrete slabs fill all 1/2" diameter lifting holes with small amount Sika-flex joint sealer.

3.05 PROTECTION

- A. After work in this section complete, the general contractor shall be responsible for protecting the precast porous paving slab system from damage and/or contamination with mud, dirt, grass cuttings, accumulation of foliage and debris.

Date revised	Description	Checked	Date
Design	WHN		
Drawn	SLM		
Checked			
Scale	As Noted		
Date	10/21/14		
Project	14201 North Ave. and Haswell Street		Burlington, Vermont
KREBS & LANSING Consulting Engineers, Inc. 164 Main Street, Colchester, Vermont 05446		The user of this drawing shall be responsible for checking the date of the drawing.	CD-5



PERMIT REVIEW ONLY